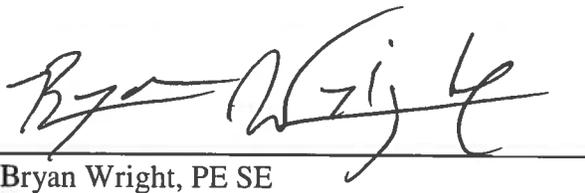


CONTRACT DOCUMENTS AND SPECIFICATIONS
FOR THE REHABILITATION AND WIDENING OF:

**HAMILTON COUNTY BRIDGE NO. 207
LOGAN STREET over WHITE RIVER
NOBLESVILLE TOWNSHIP
HAMILTON COUNTY, INDIANA**

PB-18-0001


Bryan Wright, PE SE



Prepared by: Butler, Fairman, and Seufert Inc.
8450 Westfield Blvd. Suite 300
Indianapolis, IN. 46240

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NOTICE TO BIDDERS

Notice is hereby given that the Board of Commissioners of Hamilton County, Indiana; hereinafter referred to as the *OWNER*, will receive sealed bids for the following project:

**Hamilton County Bridge No. 207
Logan Street over White River
Noblesville Township
Hamilton County, Indiana
PB-18-0001**

Proposals may be forwarded individually by registered mail or delivered in person, addressed to the Hamilton County Auditor, 33 North 9th Street, Suite L21, Noblesville, Indiana, 46060, prior to **11:30 a.m., July 23rd, 2018**. After 11:30 a.m., bids can be delivered to the Commissioners Courtroom up until the noticed bid opening time. Bids received after the noticed bid opening time will not be considered but will be returned to the bidder unopened. Only proposals from those *CONTRACTORS* who are registered on the Indiana Department of Transportation's current listing of Prequalified Contractors for item D(A) "Bridges: Highway Over Water" will be considered. Any bids submitted by *CONTRACTORS* not approved for this item on the list will be returned to the bidder unopened.

All proposals will be considered by the *OWNER* at a public meeting held in the Hamilton County Government & Judicial Center in Noblesville, Indiana, Commissioners' Courtroom, and opened and read aloud at **1:00 p.m. local time, July 23rd, 2018**.

The work to be performed and the proposals to be submitted shall include a bid for all general construction, labor, material, tools, equipment, taxes, permits, licenses, insurance, service costs, etc. incidental to and required for this project.

All materials furnished and labor performed incidental to and required by the proper and satisfactory execution of the contracts to be made, shall be furnished and performed in accordance with requirements from the drawings and specifications included in these documents. Bidding documents may be examined at BF&S., 8450 Westfield Blvd. Suite 300, Indianapolis, IN. 46240 beginning at 9:00 am. on **June 28th, 2018**. Electronic copies of the Proposal, Specifications, Contract Documents and Plans must be obtained from Reprographix (<http://reprographix.com/>) or contact **Laura Morgan** at Lmorgan@bfsengr.com for further information and cost on obtaining the Contract Documents. Payments and costs of Contract Documents are non-refundable. Interested parties can view the Contract Documents and Plans at www.hamiltoncounty.in.gov. Documents posted to the county website are for informational purposes only. It shall be the responsibility of the Bidder to periodically check for addendums posted online. Only those who obtain Contract Documents and Plans through Reprographix or BF&S. will be automatically notified of addenda. Contract Documents and Plans must be obtained through Reprographix or BF&S to be eligible to bid on this contract.

Each proposal must be enclosed in a sealed envelope with the county supplied sealed bid notice, bearing the title of the project, bid opening date and the name and address of the bidder firmly affixed. **The bidder shall affix identifying tabs to the following sheets of each proposal:**

- Form 96
- Non-Collusion Affidavit
- Bid Bond
- Financial Statement
- Itemized Proposal
- Receipt of Addendum (if applicable)
- Employment Eligibility Verification
- Drug Testing Program Compliance

Each individual proposal shall be accompanied by a certified check or acceptable **Bidder's Bond**, made payable to the Hamilton County Auditor, in a sum of not less than **ten percent** of the total amount of the proposal, which check or bond will be held by the said Hamilton County Auditor as evidence that the bidder will, if awarded a contract, enter into the same with the *OWNER* upon notification from him to do so within ten days of said notification. Failure to execute the contract and to furnish performance bond to Hamilton County, Indiana, will be cause for forfeiture of the amount of money represented by the certified check, or bidder's bond, as and for liquidated damages. Form 96, as prescribed by the Indiana State Board of Accounts, shall be properly completed, and submitted with bid proposals. The Commissioners at their discretion reserve the right to waive any and all informalities in the bidding. All bids submitted shall be valid for 90 days from the opening of the bids.

Robin M. Mills
Hamilton County Auditor

Dated: June 25th, 2018

Noblesville Times & Hamilton County Reporter: **June 28th, 2018 and July 5th, 2018**

< NOTICE >

Sealed Bid Documents shall contain on the outside of the sealed envelope the following label:

SEALED BID DOCUMENTS
(To be completed by bidder before submission)

Equipment Type _____

Annual Bid Category # _____

Road Contract # / Bridge # _____
(Desc.) _____

(Circle One)

Name of Bidder: _____

Bid Opening Date: _____

Other Documents Enclosed:

Bid Bond	(Y)	(N)	
Certified Check	(Y)	(N)	
Form HC BID 06 / 03	(Y)	(N)	
Form 96	(Y)	(N)	
Other			_____

For Hamilton County Use Only!
Received by the Auditor
 File Stamp

Time Received: _____

All mailer packers will be opened upon receipt. Make sure the sealed envelope is contained within.

< NOTICE >

PROPOSAL

To the Board of County Commissioners of Hamilton County, of the State of Indiana; hereinafter referred to as OWNER:

**Hamilton County Bridge No. 207 Rehabilitation and Widening
Logan St. over White River
Noblesville, Township
Hamilton County, Indiana**

Pursuant to the legal notice that sealed proposals for the above project would be received by the Board of County Commissioners of Hamilton County, Indiana,

The undersigned hereby tenders this bid to construct the work in accordance with the plans, profiles, drawings, specifications, and all authorized revisions for this contract which are on file in the office of the Hamilton County Highway Department; and to furnish all necessary machinery, equipment, tools, labor and other means of construction and to furnish all material specified in the manner and at the time prescribed and under the supervision and direction of the OWNER or his duly authorized representative and pursuant to the terms of the **Performance Bond** and the **Payment Bond** in the amount of not less than **One Hundred Percent (100%)** of the amount of the Proposal, for the unit prices given on the attached Itemized Proposal dated _____.

Together with this PROPOSAL, the undersigned has:

- A. Filed an Acknowledgment of Receipt of Addendum herewith for each Addendum issued;
- B. Filed an Itemized Proposal with a unit price for each item listed, together with a total amount for all items, based upon the unique characteristics of this contract;
- C. Executed the Form No. 96 filed herewith;
- D. Filed a properly executed Bid Bond or certified check made payable to the Hamilton County Auditor herewith in an amount greater than or equal to ten percent (10%) of the total amount of this proposal;
- E. Executed the Non-Collusion affidavit filed herewith;
- F. Executed the Legal Status of Bidder Form filed herewith;
- G. Filed a current Financial Statement herewith;
- H. Filed an Employment Eligibility Verification Form herewith.

I. Drug Testing Program Compliance

If awarded the contract, the undersigned promises to prosecute the work so as to complete the contract within the time specified in the Special Provisions.

Witness our hands this _____ day of _____, 20__.

Firm Name _____

Address _____

By: _____
(Signature)

Name: _____
(Printed)

Title: _____
(Printed)

HAMILTON COUNTY
HAMILTON COUNTY BRIDGE NO. 207 - LOGAN STREET OVER WHITE RIVER
ITEMIZED PROPOSAL

Item No.	INDOT Pay Item No.	Pay Item	Quantity	Unit	Unit Cost	Total
1	105-06845	Construction Engineering	1	LSUM		
2	110-01001	Mobilization and Demobilization	1	LSUM		
3	201-52370	Clearing Right-of-Way	1	LSUM		
4	202-02240	Pavement Removal	243	SYS		
5	202-01066	Hydrodemolition	1319	SYS		
6	202-51328	Present Structure, Remove Portions	1	LSUM		
7	702-51005	Concrete, "A", Substructure	438.4	CYS		
8	702-51015	Concrete, "B", Footings	147.5	CYS		
9	702-51863	Field Drilled Holes, Concrete	3326	EACH		
10	203-02020	Foundation Excavation, Unclassified	189.5	CYS		
11	202-51822	Bridge Deck Overlay, Remove	1322	SYS		
12	206-51220	Excavation, Wet	375	CYS		
13	205-06937	Temporary Silt Fence	500	LFT		
14	205-09543	No. 2 Stone, Undistributed	100	TON		
15	211-06467	Aggregate for End Bent Backfill	71	CYS		
16	302-07455	Dense Graded Subbase	50	SYS		
17	805-01844	Conduit, Steel Galvanized, 2 IN	1045	LFT		
18	805-06595	Conduit, PVC, 2 IN (Zayo)	688	LFT		
19	306-08043	Milling, Transition	500	SYS		
20	604-12083	Detectable Warning Surface	5	SYS		
21	601-01522	Guardrail Transition, Type WGB	1	EACH		
22	601-99105	Guardrail, W-Beam, 6 FT 3 IN Spacing	100	LFT		
23	604-06070	Sidewalk Concrete, 4 IN	53	SYS		
24	604-08086	Curb Ramp, Concrete,	24	SYS		
25	619-11052	Clean Steel Bridge, QP-2	1	LS		
26	619-51859	Paint Steel Bridge	1	LS		
27	702-51863	Grates Basins and Fittings	8	EACH		
28	609-06259	Reinforced Concrete Bridge Approach, 12 IN	294	SYS		
29	615-92498	Benchmark	1	EACH		
30	616-51367	Sloped Concrete, 6 IN	26	SYS		

31	731-07016	Face Panels, Wire	196	SFT		
32	731-93946	Wall Erection	196	SFT		
33	731-93947	Leveling Pad, Concrete	38	LFT		
34	734-10240	Cut Wall	418	SFT		
35	715-05048	Pipe, Type 4 Circular, 6 IN, Perforated	112	LFT		
36	616-05688	Riprap, Class I	600	TON		
37	616-12246	Geotextile for Riprap, Type 1A	400	SYS		
38	616-12248	Geotextile for Riprap, Type 2A	165	SYS		
39	622-05649	Plant, Deciduous Tree, Single Stem, 1.25 to 2 IN	35	EACH		
40	621-02770	Erosion Control Blanket	700	SYS		
41	621-06560	Mulched Seeding, U	700	SYS		
42	715-10238	Drain Pipe Casting Extension	8	EACH		
43	711-51038	Structural Steel	1	LS		
44	703-06028	Reinforcing Bars, Plain	27618	LBS		
45	703-06029	Reinforcing Bars, Epoxy Coated	134,990	LBS		
46	704-51002	Concrete, C, Superstructure	351.1	CYS		
47	706-06354	Concrete Bridge Railing Transition, TPS-2, Modified	6	EACH		
48	711-51877	Jack and Support Existing Steel Beams	1	LS		
49	706-11419	Railing, Steel, PS-2	605	LFT		
50	706-11605	Railing, Concrete, PS-2	66.4	CYS		
51	709-51821	Surface Seal	1	LS		
52	713-04331	Temporary Causeway	1	LS		
53	701-06011	Pile, Dynamic Load Test	3	EACH		
54	701-09557	Test Pile, Dynamic Production	260	LFT		
55	701-09559	Test Pile, Dynamic Restrike	3	EACH		
56	701-0967	Pile, Steel Pipe, 0.375 IN X 14 IN	2070	LFT		
57	701-09679	Conical Pile Shoe, 14 IN	30	EACH		
58	703-97936	Threaded Tie Bar Assemblies, Epoxy Coated	214	EACH		
59	715-05407	End Bent Drain Pipe, 6 IN	180	LFT		
60	722-51842	Bridge Deck Overlay	1429	SYS		
61	722-51401	Bridge Deck Patching, Full Depth	350	SFT		
62	722-60824	Surface Milling	1319	SYS		
63	726-62406	Elastomeric Bearing Assembly	10	EACH		
64	722-51846	Bridge Deck Overlay, Additional	10	CYS	\$550.00	\$5,500
65	801-06640	Construction Sign, A	25	EACH		

66	801-06645	Construction Sign, B	12	EACH		
67	801-03290	Construction Sign, C	10	EACH		
68	801-03291	Construction Sign, D	6	EACH		
69	801-06203	Temporary Pavement Marking, 4 IN	1420	LFT		
70	801-06207	Temporary Pavement Marking, Removable, 4 IN	3000	LFT		
71	801-01504	Temporary Pavement Message Marking Lane Indication Arrow	4	EACH		
72	801-06211	Temporary Pavement Message Marking, Removable, Lane Indication Arrow	6	EACH		
73	801-08401	Temporary Traffic Barrier, Type 2	740	LFT		
74	801-06216	Temporary Transverse Pavement Marking 24 IN	10	LFT		
75	801-06577	Temporary Transverse Pavement Marking, Removable, 24 IN	10	LFT		
76	808-06716	Line, Remove	775	LFT		
77	808-05866	Pavement Message Marking, Remove	9	SYS		
78	808-06368	Transverse Marking, Remove	26	LFT		
79	801-06775	Maintaining Traffic	1	LSUM		
80	801-06775	Maintaining Traffic (Waterway)	1	LSUM		
81	801-07118	Barricade, III A	192	LFT		
82	801-07119	Barricade, III B	48	LFT		
83	401-07328	HMA Surface, Type D	45	TON		
84	808-10052	Pavement Message Marking, Multi Component, ONLY	2	EACH		
85	808-10033	Line, Multi Component, Solid White, 4 IN	580	LFT		
86	808-10034	Line, Multi Component, Solid Yellow, 4 IN	380	LFT		
87	808-10031	Line, Multi Component, Broken White, 4 IN	50	LFT		
88	808-10077	Pavement Message Marking, Multi Component, Lane Indication Arrow	4	EACH		
89	808-10051	Transverse Marking, Multi Component, Stop Line, 24 IN	24	LFT		
90		2" PVC Conduit (Lighting)	1000	LFT		
91		Aluminum Railing, Riverwalk Type I	68	LFT		
92		Aluminum Railing, Riverwalk Type II	30	LFT		
93		Aluminum Railing, Riverwalk Type III	20	LFT		
94		PCCP, 4 INCH	20	SYS		
95		Compacted Agg. No. 53	2	CYS		
96		No. 8 Stone	150	CYS		
97		Steps, Concrete	8	CYS		
98		Seal Coat, Graffiti Protection	615	SFT		
99		Drilled Hole	56	EACH		
100		Fence, Decorative, Remove and Reset	20	LFT		

101		Casting, Adjust to Grade	2	EACH		
102		Common Excavation	100	CYS		
103		Integral Concrete Curb	49	LFT		
104		Concrete Facing	196	SFT		
105		Pedestrian Push Button, APS	2	EACH		
106		Pedestrian Signal Head	2	EACH		
107		Signal Cable, Control Copper, 3C/14GA	350	LFT		
108		Signal Cable, Control, Copper, 5C/14GA	350	LFT		
109	801-06625	Detour Route Marker Assembly	12	EACH		
110	601-02241	Guardrail, Remove	130	LFT		
					Total	

Contractor (Bidder): _____

Address: _____

Authorized Agent: _____

Title: _____

Signature: _____ **Date:** _____

BID BOND

KNOWN BY ALL PERSONS BY THESE PRESENTS THAT THE UNDERSIGNED:

BIDDER: _____

as principal, and

SURETY: [Name] _____

[Address] _____

as Surety,

are firmly bound unto Hamilton County, Indiana in the full and just sum of an amount equal to TEN PERCENT of the amount of the Principal's bid, to the payment of which, well and truly to be made, we bind ourselves jointly and severally, and our joint and several heirs, executors, administrators and assigns, firmly by these presents.

THE CONDITIONS OF THE ABOVE OBLIGATIONS ARE SUCH THAT, whereas, the Principal is herewith submitting a bid and proposal for construction and completion of this contract in accordance with plans and specifications, which are made part of this bond;

NOW, THEREFORE, if Hamilton County shall award the Principal the contract and the Principal shall promptly, enter into contract with Hamilton County, then this obligation shall be void; otherwise to remain in full force, virtue, and effect.

IT IS AGREED that no modifications, omissions, or additions in or to the terms of such contract or in or to the plans or specifications therefore shall affect the obligation of such sureties on this bond.

IN WITNESS WHEREOF, we hereto set our hands and seals:

< <BIDDER > >

(Bid Bond)

(Signature)

(Printed)

(Title)

State of Indiana, County of _____, SS:
Before me, the undersigned Notary Public, personally appeared;

_____ As Principal and acknowledged the execution of the
above bond on this _____ Day of _____, 20__.

My commission Expires: _____

(County of Residence)

(Notary Signature & Seal)

< <SURETY > >

(Bid Bond)

(Signature)

(Printed)

(Title)

State of Indiana, County of _____, SS:
Before me, the undersigned Notary Public, personally appeared;

_____ As Principal and acknowledged the execution of the
above bond on this _____ Day of _____, 20__.

My commission Expires: _____

(County of Residence)

(Notary Signature & Seal)

PAYMENT BOND

KNOWN BY ALL PERSONS BY THESE PRESENTS THAT THE UNDERSIGNED:

BIDDER: _____
as principal, and

SURETY: [Name] _____

[Address] _____

as Surety,

are firmly bound unto Hamilton County, Indiana in the penal sum of an amount equal to ONE HUNDRED PERCENT of the amount of the Principal's bid, to the payment of which, well and truly made, we bind ourselves jointly and severally, and our joint and several heirs, executors, administrators and assigns, firmly by these presents.

THE CONDITIONS OF THE ABOVE OBLIGATIONS ARE SUCH THAT, whereas, the Principal is herewith submitting a bid and proposal for construction and completion of this contract in accordance with plans and specifications, which are made part of this bond;

NOW, THEREFORE, if Hamilton County shall award the Principal the contract for work and the Principal shall promptly enter into contract with Hamilton County, for the work and shall promptly make payments of all amounts due to all Claimants, then this obligation shall be void; otherwise to remain in full force, virtue, and effect. Claimant shall mean any subcontractor, material supplier or the person, firm, or corporation furnishing materials or equipment for or performing labor or services in the prosecution of the work provided in such an agreement, including lubricants, oil, gasoline, coal, and coke, repairs on machinery, and tools, whether consumed or used in connection with the construction of such work, and all insurance premiums on said work, and for all labor, performed in such work.

IT IS AGREED that no modifications, omissions, or additions in or to the terms of such contract or in or to the plans or specifications therefore shall affect the obligation of such sureties on this bond.

IN WITNESS WHEREOF, we hereto set our hands and seals:

< <BIDDER > >

(Payment Bond)

(Signature)

(Printed)

(Title)

State of Indiana, County of _____, SS:
Before me, the undersigned Notary Public, personally appeared;

_____ As Principal and acknowledged the execution of the
above bond on this _____ Day of _____, 20__.

My commission Expires: _____

(County of Residence)

(Notary Signature & Seal)

< <SURETY > >

(Payment Bond)

(Signature)

(Printed)

(Title)

State of Indiana, County of _____, SS:
Before me, the undersigned Notary Public, personally appeared;

_____ As Principal and acknowledged the execution of the
above bond on this _____ Day of _____, 20__.

My commission Expires: _____

(County of Residence)

(Notary Signature & Seal)

PERFORMANCE BOND

KNOWN BY ALL PERSONS BY THESE PRESENTS THAT THE UNDERSIGNED:

BIDDER: _____

as principal, and _____

SURETY: [Name] _____

[Address] _____

as Surety,

are firmly bound unto Hamilton County, Indiana in the penal sum of an amount equal to ONE HUNDRED PERCENT of the amount of the Principal's bid, to the payment of which, well and truly made, we bind ourselves jointly and severally, and our joint and several heirs, executors, administrators and assigns, firmly by these presents.

THE CONDITIONS OF THE ABOVE OBLIGATIONS ARE SUCH THAT, whereas, the Principal is herewith submitting a bid and proposal for construction and completion of this contract in accordance with plans and specifications, which are made part of this bond;

NOW, THEREFORE, if Hamilton County shall award the Principal the contract for work and the Principal shall promptly enter into contract with Hamilton County, for the work and shall well and faithfully do and perform the same in all respects according to the plans and specifications and according to the time, terms, and conditions specified in this contract to be entered into, and in accordance with all requirements of law and shall promptly pay all debts incurred by the Principal or a subcontractor in the construction of the work, including labor, service, and materials furnished, and shall remain in effect at least until one year after the date when final payment becomes due, then this obligation shall be void; otherwise to remain in full force, virtue, and effect.

IT IS AGREED that no modifications, omissions, or additions in or to the terms of such contract or in or to the plans or specifications therefore shall affect the obligation of such sureties on this bond.

IN WITNESS WHEREOF, we hereto set our hands and seals:

< <BIDDER > >

(Performance Bond)

(Signature)

(Printed)

(Title)

State of Indiana, County of _____, SS:
Before me, the undersigned Notary Public, personally appeared;

_____ As Principal and acknowledged the execution of the
above bond on this _____ Day of _____, 20__.

My commission Expires: _____

(County of Residence)

(Notary Signature & Seal)

< <SURETY > >

(Performance Bond)

(Signature)

(Printed)

(Title)

State of Indiana, County of _____, SS:
Before me, the undersigned Notary Public, personally appeared;

_____ As Principal and acknowledged the execution of the
above bond on this _____ Day of _____, 20__.

My commission Expires: _____

(County of Residence)

(Notary Signature & Seal)

NON-COLLUSION AFFIDAVIT

STATE OF _____)
) SS
COUNTY OF _____)

The undersigned contractor, being duly sworn, on oath, says that he has not, nor has any other member, representative, or agent of the firm, company, corporation or partnership represented by it, entered into any combination, collusion or agreement with any person relative to the price to be bid by anyone, nor to prevent any person from bidding nor to induce anyone to refrain from bidding, and that this bid is made without reference to any other bid and without any agreement, understanding or combination with any other person in reference to such bidding in any way or manner whatever.

BY _____
(Signature)

(Title)
FOR _____
(Firm or Corporation)

Before me, the undersigned Notary Public, personally appeared;

_____ this _____ day of _____, 20__.

My commission expires: _____

(County of Residence)

(Notary Signature)

LEGAL STATUS OF BIDDER

This Proposal is submitted in the name of:

Firm Name _____

The undersigned hereby designates below his business address to which all notices, directions or other communications may be served or mailed:

Street _____

City _____

State _____ Zip Code _____

The undersigned hereby declares that he has legal status checked below:

- () INDIVIDUAL
- () INDIVIDUAL DOING BUSINESS UNDER AN ASSUMED NAME
- () CO-PARTNERSHIP (The Assumed name of the partnership is registered in the County of _____, Indiana.)
- () CORPORATION INCORPORATED UNDER THE LAWS OF THE STATE OF _____. The Corporation is:
 - () LICENSED TO DO BUSINESS IN INDIANA
 - () NOT NOW LICENSED TO DO BUSINESS IN INDIANA

The name, titles and home address of all persons who are officers or Partners in the organization are as follows:

<u>NAME AND TITLE</u>	<u>HOME ADDRESS</u>
_____	_____
_____	_____
_____	_____

Signed and Sealed this _____ day of _____, 20__.

By _____
(Signature)

(Printed)

(Title)

Employment Eligibility Certification

This Certification is submitted by the undersigned, _____, as part of the contract with Hamilton County for the project known as _____ entered into on the _____ day of _____, 20__.

The undersigned affirms under the penalties of perjury that the Contractor does not knowingly employ an unauthorized alien. The Contractor shall enroll in and verify the work eligibility status of all newly hired employees through the E-Verify program as defined in IC 22-5-1.7-3. The Contractor is not required to participate if the Contractor is self-employed and does not employ any employees.

The Contractor shall not knowingly employ or contract with an unauthorized alien. The Contractor shall not retain an employee or contract with a person that the Contractor subsequently learns is an unauthorized alien.

The Contractor shall require all subcontractors who perform work under its contract, to certify to the Contractor that:

1. The subcontractor does not knowingly employ or contract with an unauthorized alien;
2. The subcontractor has enrolled and is participating in the E-Verify program. The Contractor agrees to maintain this certification at least two years after the term of a contract with a subcontractor.

The County may terminate the contract if the Contractor fails to cure a breach of this provision no later than thirty (30) days after being notified by the County.

The terms of this Certification shall be incorporated within the contract between the Contractor and the County.

I, _____, verify under the penalties of perjury that the facts set out in the above Employment Eligibility Certification are true.

Witness this _____ day of _____, 20__.

Contractor: _____

Address: _____

Signature: _____, _____

Printed: _____ Title

AFFIDAVIT AND WAIVER OF LIEN

Final Partial Payment to Follow

State of Indiana, County of _____ SS

_____ Being duly sworn states that he is the _____ of
(Name of Officer) (Title)

_____ having contracted with _____ to furnish
certain materials and/or labor as follows _____
(Description)

for the project known as _____

located at _____ and owned by _____
Hamilton County
(Owner)

and does hereby further state on behalf of the aforementioned subcontractor/supplier:

(PARTIAL WAIVER) that there is due from the CONTRACTOR the sum of
_____ Dollars (\$ _____)

- () receipt of which is hereby acknowledged; or
- () the payment of which has been promised as the sole consideration of this affidavit and Partial Waiver of Lien which is given solely with respect to said amount and which waiver shall be effective only upon receipt of payment thereof by the undersigned:

(FINAL WAIVER) that the final balance due from the CONTRACTOR is the sum of
_____ Dollars (\$ _____)

- () receipt of which is hereby acknowledged or
- () the payment of which has been promised as the sole consideration for the Affidavit and Final Waiver of Lien which shall become effective upon receipt of such payment

THEREFORE, the undersigned waives and releases unto the OWNER of said premises, any and all lien or claim whatsoever on the above-described property and improvements thereon on account of LABOR or material or both, furnished by the undersigned thereto, subject to limitations or conditions expressed herein, if any; and further certifies that no other party has any claim or right to a lien on account of any work performed or material furnished to the undersigned for said project, and within the scope of this affidavit and waiver.

By _____ Title _____
(Firm) (Authorized Representative)

WITNESS MY HAND AND NOTARIAL SEAL this _____ day of _____ 20__

(Notary Public)

(Printed)

My Commission Expires _____

Residing in _____ County

CERTIFICATION LETTER

TO BE COMPLETED BY ALL SUB-CONTRACTORS AND MATERIAL SUPPLIERS

Reference:

**HAMILTON COUNTY BRIDGE NO. 207 REHABILITATION AND WIDENING
LOGAN STREET over WHITE RIVER
NOBLESVILLE TOWNSHIP
HAMILTON COUNTY, INDIANA**

We hereby certify that we have examined the Contract Plans and Specifications for this project and that all materials and workmanship will be in strict compliance therewith.

Company Name _____

Address _____

By _____

(Signature)

(Printed)

(Title)

Date _____

Describe Item of work or material to be furnished:

Drug Testing Program
IC -4-13-18

This is submitted by the undersigned, _____, as part of the contract with Hamilton County for the project known as _____ entered into on the _____ day of _____, 20___. The undersigned affirms under the penalties of perjury that the Contractor has a drug testing program in compliance with IC 4-13-18 and the program shall continue during the term of the contract with Hamilton County.

The Contractor shall also require the maintenance of a drug testing program from all subcontractors who perform work under its contract.

The County may terminate the contract if the Contractor fails to comply with the terms of IC 4-13-18 provision no later than thirty (30) days after being notified by the County.

The terms of this requirement shall be incorporated within the contract between the Contractor and the County.

I, _____, verify under the penalties of perjury that all requirements of Drug Testing Program per IC 4-13-18 are in compliance:

Witness this _____ day of _____, 20__.

Contractor: _____

Address: _____

Signature: _____, _____

Printed: _____ Title _____

GENERAL PROVISIONS

GP1. CONTRACT DOCUMENTS

The Indiana Department of Transportation, Standard Specifications dated 2018 shall be used in conjunction with these Plans, Contract Forms, General Provision, Special Provisions, Modifications to the Specifications, Standard Sheets and any addenda which may be issued for this project.

It is the intent of these Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance therewith. Any work, materials or equipment that may reasonably be inferred will be supplied whether or not specifically called for.

Wherever reference is made to the Indiana Department of Transportation, Director, or Chief Highway Engineer, it shall be interpreted as the Board of County Commissioners of Hamilton County, Indiana.

GP2. OWNER

The Board of County Commissioners of Hamilton County, Indiana

GP3. ENGINEER

The Hamilton County Highway Engineer or his authorized representative.

GP4. CONTRACTOR

The Firm or Corporation with whom the *OWNER* has entered into the Construction Contract.

GP5. BIDDING RESTRICTIONS

Only bids from those *CONTRACTORS* who are currently registered on the Indiana Department of Transportation's listing of Prequalified Contractors will be considered. INDOT required pre-qualifications for primes and sub-contractors will be qualification codes 0135, 0136, 0250, D (A), E(D), E(F), E(K), E(P), 0998, E(M), E (C), E(B), *Any bids submitted by CONTRACTORS or their Sub Contractors not on this list will be returned to the bidder unopened.*

GP6. EXAMINATION OF THE PROJECT SITE

Before the bid date, all bidders shall carefully and thoroughly examine the entire site of the proposed work and adjacent premises and the various means of approach and access thereto by means of a site inspection visit, and make all necessary investigations to inform themselves thoroughly as to the facilities necessary for delivering, placing, and operating the necessary construction equipment, and for delivering and handling materials at the site, and shall inform themselves thoroughly as to any and all actual or potential difficulties, hindrances, delays, and constraints involved in the commencement, prosecution and completion of the proposed work in accordance with the requirements of this contract. The *CONTRACTOR*, by the execution of the Contract, shall in no way be relieved of any obligation under it, due to his failure to receive or examine any form or legal instrument, or to visit the site and acquaint himself with the conditions there existing. The *OWNER* will be justified in rejecting any claim based on facts which he should have noticed as a result thereof.

GP7. CONTRACT QUESTIONS

Submit all questions in writing to *Butler, Fairman, and Seufert Inc.* prior to **12:00 p.m. local time July 18th, 2018**. A written response will be sent to the emails on the “Record of Plans Purchased” that is required to be filled out by anyone purchasing plans. No questions will be answered by telephone.

GP8. PUBLIC OPENING OF BIDS

Bids will be opened publicly and read aloud at the time and place specified in the “Notice to Bidders”. Bidders, or their authorized agents, are invited to be present. Any Bids received after the time specified in the “Notice to Bidders” will be returned to the bidder unopened.

GP9. AWARD OF CONTRACT

The *OWNER* reserves the right to reject any or all bids or to waive any informalities and to accept the bid which it deems favorable to the interest of the *OWNER* after all bids have been examined and scrutinized.

GP10. NOTICE TO PROCEED

The *CONTRACTOR* shall start to perform the work on the date designated in the written Notice to Proceed, but no work shall be done at the site prior to the date of the Notice to Proceed.

GP11. PRECONSTRUCTION CONFERENCE

Before the *CONTRACTOR* is issued Notice to Proceed, a conference attended by the *OWNER*, *ENGINEER*, *CONTRACTOR* and others as appropriate will be held. The purpose of this conference will be to discuss procedures for making submittals, processing applications for payment, and to establish other procedures and understandings bearing upon coordination and performance of the work.

GP12. PROGRESS SCHEDULE

Within ten days after the date of the Notice to Proceed, the *CONTRACTOR* shall submit to the *ENGINEER* for review a proposed schedule indicating the starting and completion dates of the various stages of the work to be performed under this contract. The *ENGINEER* shall review the proposed schedule to determine conformity with the contract and will make recommendations to the *OWNER* concerning approval thereof; however the review, approval or other action taken by the *ENGINEER* or *OWNER* in respect of such schedules shall not relieve the *CONTRACTOR* of its obligations to perform the work within the contract schedule(s).

GP13. SUPERVISION

The *CONTRACTOR* shall supervise and direct the work completely and efficiently devoting such attention thereto and applying such skills and expertise as may be necessary to perform the work in accordance with the Contract Documents.

GP14. RESIDENT SUPERINTENDENT

The *CONTRACTOR* shall keep on the work site at all times during its progress, a competent resident superintendent, who shall not be replaced without written notice to the *ENGINEER* except under extraordinary circumstances. The superintendent will be the *CONTRACTOR*'s representative at the site and shall have authority to act on behalf of the *CONTRACTOR*. All communications given to the superintendent shall be as binding as if given to the *CONTRACTOR*.

GP15. PROJECT STAFFING

The *CONTRACTOR* shall provide competent, suitably qualified personnel to survey and lay out the work and perform construction as required by the Contract Documents. The *CONTRACTOR* shall at all times maintain good discipline and order at the site.

GP16. NOTIFICATION OF WORK SCHEDULE

The *CONTRACTOR* shall provide a listing of the next work day's work activities by 12:00 p.m. of that day's work for the *ENGINEER'S* scheduling and inspection. All work scheduled for Monday shall be provided on Friday of the preceding week.

Failure to provide such notice within the specified time may result in the failure of the *ENGINEER* to pay for any material placed that day.

GP17. PROJECT RESPONSIBILITY

Unless otherwise specified in the Contract Documents, the *CONTRACTOR* shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, and sanitary facilities and all other facilities and incidentals necessary for the furnishing, performance, start-up, and completion of the work.

GP18. STANDARDS OF QUALITY

All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for in the Contract Documents shall expressly run for the benefit of the *OWNER*. If requested by the *ENGINEER*, the *CONTRACTOR* shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

GP19. WARRANTY OF WORK

The *CONTRACTOR* warrants and guarantees to the *OWNER* that all work will be performed, supplied, furnished and installed, and that the work will perform in strict accordance with the Contract Documents and will not be defective. Notice of all work determined or suspected to be defective or not in conformity with the Contract Documents shall be given to the *CONTRACTOR* within reasonable time after observance thereof.

GP20. INSPECTION OF WORK

The *ENGINEER* and his representatives shall at all times have access to the work wherever it is in preparation or progress and the *CONTRACTOR* shall provide proper facilities for such access and for inspection.

If the specifications, the *ENGINEER'S* instructions, laws, ordinances or any public authority require any work to be specially tested or approved, the *CONTRACTOR* shall give the *ENGINEER* timely notice of its readiness for inspection and, if the inspection is by an authority other than the *ENGINEER*, the date fixed for such inspection. If any work should be covered up without the approval or consent of the *ENGINEER*, it must, if required by the *ENGINEER*, be uncovered for examination at the *CONTRACTOR'S* expense.

Re-examination of questioned work may be ordered by the *ENGINEER* and if so ordered the work must be uncovered by the *CONTRACTOR*. If such work is found to be in accordance with the

Contract Documents, the *OWNER* shall pay the cost of the re-examination and replacement. If such work is not found to be in accordance with the Contract Documents, the *CONTRACTOR* shall pay the cost, unless he shows that the defect in the work was caused by another *CONTRACTOR*, and in that event the *OWNER* shall pay the cost of the re-examination and replacement.

GP21. CHANGES IN THE WORK

The *OWNER*, without invalidating the Contract, may order extra work or make changes by altering, adding to or deducting from the work, the Contract Sum being adjusted accordingly. All such work shall be executed under the conditions of the original contract except that any claim for extension of time caused thereby shall be adjusted at the time of ordering such change.

In giving instructions, the *ENGINEER* shall have authority to make minor changes in the work, not involving extra cost, and not inconsistent with the purposes of the work, but otherwise, except in an emergency endangering life or property, not extra work or change shall be made unless in pursuance of a written order from the *OWNER* signed or countersigned by the *ENGINEER*, or a written order from the *ENGINEER* stating that the *OWNER* has authorized the extra work or change, and no claim for an addition to the contract sum shall be valid unless so ordered. The value of any such extra work or change shall be determined in one or more of the following ways:

- (a) By estimate and acceptance in a lump sum
- (b) By unit prices named in the contract or subsequently agreed upon
- (c) By cost and percentage or by cost and a fixed fee

If none of the above methods is agreed upon, the *CONTRACTOR* provided he receives an order as above, shall proceed with the work. In such case and also under case (c), he shall keep and present in such form as the *ENGINEER* may direct, a correct account of the cost, together with vouchers. In any case, the *ENGINEER* shall certify to the amount including reasonable allowance for overhead and profit, due to the *CONTRACTOR*. Pending final determination of value, payments on account of changes shall be made on the *ENGINEER*'s certificate.

Should conditions encountered below the surface of the ground be at variance with the conditions indicated by the drawings and specifications, the contract sum shall be equitably adjusted upon claim by either party made within a reasonable time after the first observance of the conditions.

GP22. DELETION OF WORK

The *OWNER* has the right to delete any items that are a part of this contract.

GP23. DELAY AND EXTENSION OF TIME

If the *CONTRACTOR* should be delayed at any time in the progress of the work by and act or neglect of the *OWNER* or the *ENGINEER*, or of any employee of either, or by any separate *CONTRACTOR* employed by the *OWNER*, or by changes ordered in the work, or by strikes, lockouts, fire, unusual delay in transportation, unavoidable casualties or any causes beyond the *CONTRACTOR*'S control, or by delay authorized by the *ENGINEER* pending arbitration, or by any cause which the *ENGINEER* shall decide to justify the delay, then the time of completion shall be extended for such reasonable time as the *ENGINEER* may decide.

No such extension shall be made for delay occurring more than seven days before claim therefore is made in writing to the *ENGINEER*. In the case of continuing cause of delay, only one claim is necessary.

GP24. HOLIDAYS THAT WORK IS NOT PERMITTED

The *CONTRACTOR* may not perform work on this project on the following days without written permission from the *ENGINEER*:

- 1) Sundays
- 2) New Years Day
- 3) Memorial Day
- 4) Independence Day
- 5) Labor Day
- 6) Thanksgiving Day and the day after Thanksgiving
- 7) Christmas Day

GP25. PERMITS

All permits and licenses which may be required due to construction methods such as, but not limited to, borrow or disposal pits, steam crossings, causeways, work bridges, cofferdams, etc., but which are not part of the contract documents shall be procured by the *CONTRACTOR* prior to beginning the work which requires the permit.

All charges, fees, and taxes shall be paid, and all notices necessary and incidental to the due and lawful prosecution of the work shall be given.

GP26. UTILITIES

The *CONTRACTOR* shall be responsible for contacting and coordinating with all utilities affected by this project. Contract working days will be charged unless the *CONTRACTOR* can show written evidence that he is making every possible effort on his part to get the utility work completed.

GP27. NON-DISCRIMINATION

In compliance with the Acts of Indiana General Assembly, 1933, Chapter 270, the *CONTRACTOR* hereby agrees:

That with respect to hire, tenure, terms, conditions, or privileges of employment of employees for the performance of work, under this Contract, or any Subcontract hereunder, no *CONTRACTOR*, Subcontractor, nor any person acting on behalf of such *CONTRACTOR* or subcontractor shall, by reason of race, color, religion, sex, national origin, or ancestry discriminate against any citizen qualified to do work to which the employment relates;

That no *CONTRACTOR*, Subcontractor, nor any person on his behalf shall, in any manner, discriminates against or intimidate any employee hired for the performance or work under this Contract on account of race, color, religion, sex, national origin, or ancestry;

That this Contract may be canceled or terminated by the *OWNER*, and all money due or to become due hereunder may be forfeited for a violation of the terms or conditions of this section of the Contract.

GP28. INSURANCE

Contractor's Liability Insurance

The *CONTRACTOR* shall maintain such insurance as well as protect himself from claims under Workmen's Compensation Acts and other employee benefit acts; from claims for damages because

of bodily injury, including death, to his employees and all others; and from claims for damages to property, any or all of which may arise out of or result from the *CONTRACTOR'S* operation under the Contract, whether such operations be by himself or by any subcontractor, or anyone directly or indirectly employed by either of them. This insurance shall be written for not less than any limits of liability specified herein.

Contractor's Insurance

The types and minimum amount of insurance to be provided for by the *CONTRACTOR* shall be as follows:

(A) Workmen's Compensation and Occupational Disease Insurance

The *CONTRACTOR* shall provide Workmen's compensation and Occupational Disease Insurance as required by law. Such policy shall specifically include coverage for the State of Indiana, and such adjoining states as required by the *CONTRACTOR'S* operations.

(B) Employer's Liability Insurance

The *CONTRACTOR* shall provide Employer's Liability with minimum limits as follows:

\$100,000 bodily injury by accident, each accident;
 \$100,000 bodily injury by disease, each employee;
 \$500,000 bodily injury by disease, policy limit.

(C) Comprehensive General Liability Insurance

The *CONTRACTOR* shall maintain a Comprehensive General Liability form of Insurance with a combined single limit for bodily injury and property damage of not less than \$1,000,000 each occurrence, \$2,000,000 annual aggregate. The insurance policy shall include the following:

1. Premises Operations: The policy shall include coverage for the following special hazards when applicable to the project:
 - (a) Property damage arising out of blasting or explosion
 - (b) Property damage arising out of collapse of or structural injury to any building or structure due to grading of land, excavation, burrowing, filling, backfilling, tunneling, pile driving, cofferdam work or caisson work or to moving, shoring, under pining, raising, or demolition of any building or structure or rebuilding of any structural support thereof.
 - (c) Injury to or destruction of wires, conduits, pipes, mains, sewers, and other similar property of any apparatus in connection therewith below the surface of ground, if caused by use of mechanical equipment.
2. Contractual (Broad Form Indemnification): The *CONTRACTOR* agrees to indemnify and save harmless the *OWNER*, his agents and employees, from and against all loss or expense (including costs and attorneys' fees) by reason of liability imposed by law upon the *OWNER* for damages because of bodily injury, including death, at any time resulting therefrom sustained by any person or persons or on account of damage to property is due or claimed to be due to negligence of the *CONTRACTOR*, his Subcontractors, employees or agents.

3. Contractor's Protective: The *CONTRACTOR* shall maintain this type of coverage on a "Blanket" basis to cover the operations of any Subcontractors.

(D) Automotive Liability Insurance

The *CONTRACTOR* shall maintain Comprehensive Automobile Liability Insurance policy with a combined single limit of not less than \$500,000. This coverage may be provided either as a separate policy or as a part of the comprehensive liability policy described above. The automobile insurance must include coverage for all owned, non-owned, and hired vehicles.

- (E) Furnish Indiana State Forms No. 19 (Workmen's Compensation) and No. 105 (Occupational Disease Act).

(F) Umbrella Insurance

The *CONTRACTOR* shall maintain an umbrella policy with limits of not less than \$1,000,000 per occurrence, \$1,000,000 aggregate in addition to their primary insurance.

GP29. ADDITIONAL INSURED

The *CONTRACTOR* shall submit a "Certificate of Insurance" indicating the above necessary coverage as well as naming the *OWNER*, its employees and representatives and *ENGINEER* as "Additional Insured" on all policies except Worker's Compensation.

GP30. PROOF OF INSURANCE

The *CONTRACTOR* shall not commence work until he has obtained all insurance specified herein, has filed with the *OWNER* one (1) copy of Certificate of Insurance, and such insurance has been approved by the *OWNER*.

Should any coverage approach expiration during the Contract period, it shall be renewed prior to its expiration, and certificate again filed with the *OWNER*. If any of such policies are canceled or are changed so as to reduce the coverage evidenced by the Certificate, at least ten (10) days prior written notice by registered mail of such cancellation or change shall be sent to the *OWNER*.

All insurance provided for under this Section shall be written by Insurance Companies licensed to do business in Indiana and countersigned by registered Indiana agent. The insurance company shall file with the *OWNER*, one (1) copy of Affirmation of Authority, on the form furnished by the *OWNER*, as verification of the resident agent.

All insurance shall be maintained in full force and effect until the Contract has been fully and completely performed.

GP31. PARTIAL PAYMENTS

Partial payments will be made once each month as the work progresses. Said payments will be based upon estimates prepared by the *CONTRACTOR* using the provided HCHD FORM 8049, and approved by the *ENGINEER* for the value of the work performed and materials complete in place in accordance with the contract, plans and specifications. No partial payment will be made when the amount due the *CONTRACTOR* since the last estimate amounts to less than Five Hundred Dollars. From the total of the amount determined to be payable on a partial payment, ten percent of such total amount will be deducted and retained by the *OWNER* until the final completion and acceptance of the work.

GP32. FINAL PAYMENT

When the contract work has been completed in an acceptable manner in accordance with the terms of the contract, the *CONTRACTOR* will prepare a final estimate for the work and will furnish the *ENGINEER* with a copy thereof. Before final payment of the contract, the *CONTRACTOR* shall furnish the provided Affidavit and Waiver of Lien from all subcontractors, material suppliers and equipment suppliers who provided goods and/or services valued at \$500.00 or greater. Final payment will not be made until a final inspection has been performed, the work has been accepted by the County and has met the requirements of Section 109.08 of the Indiana Department of Transportation Standard Specifications. The *ENGINEER*, acting for the Board of County Commissioners, will then certify to the County Auditor the balance due the *CONTRACTOR*, and said certificate will be deemed an acceptance of the completed contract by the *OWNER*.

SPECIAL PROVISIONS

SP 1. CONTRACT TIME

The schedule for the completion of the work included in this contract including incidentals and clean up, shall be governed on a *Completion Date* basis.

The Completion Date for this Contract shall be *August 31st 2019*

SP 2. ROAD CLOSURE

Logan Street shall remain open throughout the duration of this contract. Two lanes of traffic (one each direction) shall be provided at all times during construction. In no case shall the road be closed without prior consent from the *OWNER*.

SP 3. LIQUIDATED DAMAGES

The *CONTRACTOR* shall pay one thousand five hundred dollars (\$1,500.00) for each calendar day after the Calendar Completion Date of August 31st, 2019 for failure to complete the work in accordance with this contract.

SP 4. EXISTING CONDITIONS

The *CONTRACTOR* shall verify the elevation and measurements of all points where new construction is to match existing conditions prior to the commencement of any construction activities.

Where new work is to be fitted to old work, the *CONTRACTOR* shall check all dimensions and conditions in the field and report any errors or discrepancies to the *ENGINEER* or assume responsibility for their correctness and the fit of new parts to old. If such parts do not fit properly, the *CONTRACTOR* shall make such alterations to new parts as may be necessary to assure proper fits and connection, which meets the approval of the *ENGINEER*.

No direct payment shall be made for this work, but the cost thereof shall be included in the costs of other items of the contract.

SP 5. GEOTECHNICAL INVESTIGATION

A Geotechnical investigation for this project site has been performed by ATC and Associates, Indianapolis, Indiana. This report presents the soil evaluation, Geotechnical recommendations and construction considerations for this project.

A copy of the geotechnical report may be found in Appendix A

SP 6. CLEARING RIGHT-OF-WAY

Clearing Right-of-Way shall be in accordance with the requirements of Section 201 except as follows: The initial payment for clearing right-of-way will be limited to 2 percent of the

original total bid. If the contract lump sum price for clearing right-of-way is greater than 2 percent of the original total bid, the amount over 2 percent will not be paid until the contract has been completed and accepted.

Trees, brush, and other obstructions shall be cleared from the entire construction limits of the project. In addition, trees and brush shall be cleared from land between construction limits and project right-of-way wherever such clearing is necessary to build the project or relocate utilities, subject to any notes on the plans that identify specific trees or areas to remain undisturbed. Clearing is to include trimming all tree branches that overhang the right-of-way unless otherwise directed by the *ENGINEER*. The cost of tree and stump removal will not be paid for, but shall be included in the lump sum price for "Clearing Right-of-Way."

This item includes the removal of all existing pipes, box culverts, and all other drainage structures in accordance with Section 202, to be removed during this project.

All trees located in the quadrant of the planned construction entrance and causeway have been removed, but their stumps remain. The removal of the remaining stumps shall be included in the cost of clearing right of way.

SP 7. DISPOSAL OF EXCESS MATERIAL

All excess material not to be salvaged (waste) shall be removed from the project site. Whether a private or public waste site is utilized, such disposal shall comply with all Federal, State and local ordinances and permit requirements. A copy of all permits obtained or applied for shall be submitted to the *ENGINEER* prior to the material leaving the site.

The *CONTRACTOR* shall submit, in writing, the location of the proposed dump site, for review, prior to the commencement of construction.

No direct payment will be made for this work but the cost thereof shall be included in the costs of the other items of the contract.

SP 8. OPEN BURNING OF NATURAL GROWTH

Open burning of natural growth will not be permitted on this contract.

SP 9. TREE AND LAWN PROTECTION

When constructing private drives, the *CONTRACTOR* shall use reasonable care for the protection of trees, shrubbery, and lawn areas beyond the permanent right-of-way.

The cost of the protection or trimming and proper restoration of disturbed areas shall not be paid for directly, but shall be included in the cost of Clearing Right-of-Way.

SP 10. RESTORATION OF DISTURBED AREAS

Cavities formed by the removal of shrubs, trees and/or stumps and located outside of proposed pavement areas shall be backfilled and compacted with "B" Borrow. Such

compaction shall comply with Section 211.04. The top six (6) inches of the backfilled area shall be topsoil in accordance with Section 914.01.

Any roots remaining after all the removal of any designated item shall be removed to a depth of 6 inches below the surface of the surrounding ground area. The final preparation of these areas shall be in accordance with Section 621.

No direct payment shall be made for this work, but shall be included in the cost of other items.

SP 11. PRIOR TO CHANGES IN TRAFFIC PATTERNS AND LANE SHIFTS

The *CONTRACTOR* is to notify U.S. Post Office, rural fire departments, affected schools, local police agencies and Hamilton County Sheriff's Department, copy to *ENGINEER*.

SP 12. AFTER RETURNING TRAFFIC PATTERNS AND LANE SHIFTS

The *CONTRACTOR* is to notify the U.S. Post Office, rural fire departments, affected schools, local police agencies and Hamilton County Sheriff's Department, copy to *ENGINEER*.

SP 13. DECREASED OR INCREASED QUANTITIES OF WORK

These Special Provisions shall not be considered as a waiver of, nor shall they invalidate the right of the *ENGINEER* to increase or decrease quantities of work.

SP 14. TESTING OF MATERIALS

The *CONTRACTOR* shall be responsible for all testing and sampling of materials as hereinafter specified. The *CONTRACTOR* shall furnish certified tests for the following materials, which are to be made by an *independent* laboratory approved by the *ENGINEER*. Testing performed by an agent of a material producer or supplier will not be considered independent. The cost of providing samples and testing will not be paid for directly, but will be included in the cost of other items.

CONCRETE:

- Air Entrainment and Slump tests for each 25 CYS or fraction thereof per day
- Cylinders (set of 3) for compressive testing for each 50 CYS or fraction thereof per day

BORROW: The *CONTRACTOR* shall determine the location of the borrow pit and shall have laboratory density tests made as prescribed in Section 203.24 and outlined in AASHTO T-99. The subgrade shall be constructed in accordance with Section 207.

SP 15. UTILITY INFORMATION

All applicable sections for 105.06 and 107.20 shall apply except as amended elsewhere within the contract documents and as follows:

The utilities are beyond the control of the *OWNER*. Coordination with any applicable utility(s) is the sole responsibility of the *CONTRACTOR*.

The following is provided for information only. The *CONTRACTOR* shall contact the following personnel or companies to coordinate his work prior to the commencement of any construction activities:

	<u>Utility:</u>
Duke Energy	317-736-2047
City of Noblesville	317-776-6330
USGS	317-600-2781
Zayo Bandwidth	765-341-1199
Indiana American Water	317-885-2444
Centurylink	720-888-1089
Lighttower	585-697-5145
INDOT Greenfield District	317-467-3423

Please see SP 52 for additional utility information. Work plans are located in App. D

SP 16. PROTECTION OF FIELD TILE

All field tiles encountered and affected by the scope of work specified within the contract documents shall be given a positive outlet. Animal guards are required on the ends of all field tiles. The cost of all animal guards shall be included in the cost of the pipe.

Any tile outside the construction limits damaged by the *CONTRACTOR'S* operations shall be replaced by the *CONTRACTOR* at his own expense.

SP 17. BENCHMARK

The *CONTRACTOR* shall install a Hamilton County Geodetic Control benchmark at Bridge 207. This work is to be done in accordance with Section 105.08 and Section 615 of the Standard Specifications. The *CONTRACTOR* shall coordinate with the Hamilton County Surveyor's Office (HCSO) for the location of the benchmark.

The HCSO will provide the *CONTRACTOR* with the new monument to be installed. In addition, the *CONTRACTOR* shall notify the HCSO 30 days prior to construction so that the necessary steps to offset an elevation may be taken.

The cost of all labor, materials and equipment necessary to complete this work shall be included in the cost of the pay item "Benchmark, Each".

SP 18. PERMITS

Copies of all permits obtained by the *OWNER* are included as a part of the contract documents. According to the requirements of the governing agencies, the authorizations must be conspicuously displayed at the project site and the *CONTRACTOR* shall perform his work in accordance with the conditions contained in all permits.

The *CONTRACTOR* shall procure all permits and licenses required due to construction methods in accordance with Section 107.02. A copy of each permit application and approval must be provided to the *ENGINEER* prior to issuance of notice to proceed with

work which requires the permit.

A copy of the permits can be found in Appendix C

SP 19. EMBANKMENT OVER EXISTING ROADBEDS

Placement of embankment over the existing roadbed shall not be permitted. The existing pavement shall be removed entirely, or milled full-depth, spread and re-compacted prior to any fill being placed in the roadbed. The cost of removal of the existing pavement is included in the pay item "Excavation, Common".

SP 20. GUARDRAIL DELINEATORS

This work shall consist of installing Mono and/or Bi-directional traffic Guardrail Delineators furnished by Hamilton County Highway Department and installed by the CONTRACTOR. The ENGINEER shall mark delineator location.

This material is manufactured by AKT Corporation, item No. 567 Triangular Guardrail Delineator. The delineators attach to the existing guardrail hex bolt; no additional material is required.

All labor, equipment, supervision and other related work required to complete this installation shall be included in the cost of other items.

SP 21 COUNTY, CITY, AND STATE ROAD MAINTENANCE DURING CONSTRUCTION

The Hamilton County, Noblesville, State Roads, which the Contractor utilizes for the hauling of any construction materials (excavation, subbase, bituminous materials, concrete, structural members, reinforcing steel, etc.) or construction equipment, shall be coordinated with the Hamilton County Highway Department and the inspecting Engineer. The Contractor shall provide a map or sketch showing the County, City, and or State Roads that will be used during the construction of this project so that they can be monitored during construction.

SP 22 DEBRIS REMOVAL IN WATERWAY

The Contractor shall remove all the debris and loose rocks that have collected in the waterway within the limits of the proposed construction or as directed by the Engineer. This work shall not be measured directly. All labor and equipment required to complete this activity to the approval of the inspecting Engineer shall be included in the pay item of "Clearing Right of Way."

SP 23 PROTECTION OF PAVEMENT

The Contractor shall take all necessary precautionary measures and perform the work in such a manner as to adequately protect and safeguard the existing pavement or pavement surface to remain in place from any damage due to such operations. The Contractor's attention is also called to the fact that the operation of crawler type construction equipment on these portions of the surface to remain in place will not be permitted and the operation

of over-weight or oversize equipment in those areas shall be governed by state and local laws and regulations. Any damaged portion of surface or pavement and surface removed in excess of that required for the construction as set out in the plans, shall be satisfactorily replaced or repaired by the Contractor at his own expense. The Contractor's attention is specifically directed to Articles 107.14 and 107.17 regarding his responsibility under this contract

SP 24 COFFERDAMS AND FALSEWORK

The Contractor shall submit, for the approval of the Engineer, detailed plans for cofferdams and falsework, in accordance with Article 206.09 of the Specifications. Also, detailed plans for the forms and falsework shall be in accordance with 702.13 and 702.14, including the portion of the formwork supporting the bridge floor and coping beyond the fascia girders or beams, where such overhang is 18 inches or more. All falsework plans shall be certified by a professional engineer unless waived.

SP 25 ADJACENT PROJECT COORDINATION

There is no planned adjacent project coordination associated with this project. The planned Government Center Expansion will take place at a later date.

SP 26 BRIDGE CONSTRUCTION SEQUENCING

The contractor shall conduct his construction sequencing as approved by the Engineer prior to beginning each major operation.

SP 27 TEMPORARY CAUSEWAY

A temporary causeway has been permitted for this project. The Contractor will be responsible for maintaining and installing the temporary causeway. Material and size of the causeway will be at the discretion of the Contractor. The cost of installation, materials, maintenance, and removal of the temporary causeway shall be included in the cost of Temporary Causeways.

SP 28 FORMLINERS

Formliners shall be installed on various portions of the project. These include all faces of walls adjacent to the proposed stairs, concrete bridge railings, and transitions as shown in the plans. No additional payment will be made for concrete formliners and they shall be included in the cost of other items. A formliner cut sheet has been included with these specifications in Appendix E. Formliner shall match Aged Benicia Block by Fitzgerald Formliners or approved equal.

SP 29 CONSTRUCTION STAGING AREAS

A construction staging area has been designated for the duration of this project. A section of parking lot adjacent to 5th Street, south of Conner St., may be used by the Contractor to store materials and equipment throughout construction. A copy of the staging area is included with these specifications in Appendix E. It will be the responsibility of the

Contractor to restore this area to its original condition upon demobilization from the project site. In addition to the parking lot, the contractor may stage materials along portions of SR 19 that are closed during construction.

SP 30 BRUSH CLEARING & WATERWAY MAINTENANCE OF TRAFFIC

Brush and debris shall be removed from the designated portage locations to help facilitate waterway traffic. Light brush within limits of where boaters will be traversing the construction site shall also be removed to help facilitate portage. In the areas where portage shall take place, mulch or easily traversable material shall be placed if the area is not suitable for foot traffic. Location and amount of material will be determined by the engineer. Cost of removing brush for portage shall be included in the cost of clearing right of way.

SP 31 BRIDGE PAINTING

All existing beams and bearing assemblies shall be cleaned and painted color RAL 7016 "Anthracite Grey" to match existing Riverwalk railing. The painting Contractor shall follow INDOT standards for bridge painting and cleaning, but will not be required to achieve this in 3 coats. If the contractor can achieve the minimum thickness required by INDOT standards in 2 coats, this will be acceptable. Bearings to be embedded within proposed abutments will not be required to be painted.

SP 32 SIDEWALK CONDUIT

The 2, 2" diameter PVC conduit proposed to be placed within the sidewalk will be for the utility relocation of Zayo. Zayo will provide the PVC conduit for the Contractor, but the Contractor will be in charge of installing the final conduit. The unit price for the PVC conduit within the sidewalk shall be for the contractor to install, but not supply the PVC pipe. Final location of the conduit within the sidewalk will be determined by Zayo prior to installation.

SP 33 ELASTOMERIC BEARING ASSEMBLIES

New elastomeric bearing assemblies will only be required for existing beams, at abutments 1 and 5, to replace beams who currently have steel assemblies. Beams that currently have elastomeric assemblies will not be required to have their bearing assemblies replaced

SP 34 POWDER COATED PAINT

All powder-coating of material and painting, including fasteners, shall take place in the shop. This work shall consist of hot-dip galvanizing and shop-applied powder-coating of the steel components of the bridge railing as shown on the plans and as directed, in accordance with the manufacturers recommendations as approved by the ENGINEER. The steel on the bridge railing shall be painted Black or approved equal. The ENGINEER must approve color prior to fabrication. Only the bolt components of the bridge railing shall be field painted. Paint shall be homogenous, free of contamination, and of a consistency suitable for use in the capacity for which it is specified. Finished paint shall be well ground, and the pigment shall be properly dispersed in the vehicle according to the requirements of the paint. The dispersion shall be of such nature that the pigment does not

settle, does not cake or thicken in the container, and does not become granular or curdled. The paint shall be easily broken up with a paddle to form a smooth uniform product of the proper consistency and shall possess satisfactory properties in all respects which affect its application and curing. Unless otherwise provided, the materials entering into the composition of the paint shall conform to the requirements of the applicable ASTM and AASHTO standards covering such materials. Testing shall be in accordance e with the latest tests methods of the ASTM and AASHTO. However, the ENGINEER reserves the right to make use of any information or methods of testing to determine the quality of paint and paint materials. No direct payment shall be made for this work. The cost of this work shall be included in the cost of “Railing, Steel, PS-2.” All PS-2 Railing components shall be powder coated federal color standard 37038 “Black”. The final chosen color shall be approved by the owner prior to installation and fabrication.

SP 35 BRIDGE LIGHT FIXTURES

Bridge decorative pole lights shall be Universe Collection Large LED-UCL, 4 luminous window style luminaires as detailed in the cut sheets in Appendix E. All luminaires shall be post top mounted at 25 feet utilizing manufacturer recommended anchor bolts and assemblies. All luminaires and poles shall be powder coated black using KIM’s standard black from Federal Hill Commons, or matched equivalent. The cost of anchor bolts and assemblies shall be included in the cost of the luminaires and decorative poles. Poles shall be coated and painted as outline in special provision 34.

SP 36 PEDESTRIAN ACCESS DURING CONSTRUCTION

Safe pedestrian traffic shall be maintained during construction. During Phase 1 contractor shall permit safe passage on the north side of the structure along the existing sidewalk. During phase 2, sidewalk access will not be permitted along the northside or southside of the structure. Signage detouring pedestrian traffic shall be installed as per the contract documents. Riverwalk traffic will not be permitted throughout construction due to bridge and courthouse construction. The Riverwalk shall be closed prior to SR 32 and prior to Logan Street. Pedestrians shall be detoured as detailed in the contract documents. Pedestrian traffic will not be permitted in areas of Riverwalk adjacent to the courthouse. Pedestrian detours may be altered at the discretion of the engineer during construction.

SP 37 TREE PLANTING

Tree planting is required per the environmental mitigation plan as a result of construction. After construction is complete, the contractor will be required to install 7, balled and burlap sized trees at the location cleared to facilitate construction access and causeway installation. Acceptable trees for this location are as follows.

Scientific Name	Common Name	WIS	Habit
<i>Quercus bicolor</i>	Swamp white oak	FACW	Tree
<i>Carya laciniosa</i>	Shellbark hickory	FACW	Tree
<i>Platanus occidentalis</i>	American sycamore	FACW	Tree
<i>Quercus macrocarpa</i>	Bur oak	FAC	Tree
<i>Quercus shumardii</i>	Shumard’s oak	FACW	Tree

In addition to the project site planting, a total of 28 trees shall be plated at the mitigation site located in Appendix E. The 28 additional trees shall be 3-gallon container grown stock 1-2 inch dbh. All canopy trees must be placed 12 feet apart in an irregular pattern and shall be stock from the list above.

SP 38 SEEDING IN CONSTRUCTION ENTRANCE AREA

All exposed areas disturbed as a result of construction shall be permanently seeded at the completion of construction. The seed mix shall be applied at a rate of 10.5 lbs/acre (1.05 lbs total). The species composition within the seeding area shall be as follows.

Scientific Name	Common Name	Wetland Indicator Status
<i>Symphyotrichum lateriflorum</i>	Calico aster	NI
<i>Heliopsis helianthoides</i>	False sunflower	FACU
<i>Monarda fistulosa</i>	Wild bergamot	FACU
<i>Rudbeckia laciniata</i>	Green-headed coneflower	FACW
<i>Silphium perfoliatum</i>	Cupplant	FACW
<i>Solidago gigantea</i>	Late goldenrod	FACW
<i>Verbesina alternifolia</i>	Wingstem	FACW

SP 39 WATERWAY MAINTENANCE OF TRAFFIC

The Contractor shall provide a line of buoys 200 ft upstream and downstream of the project site to warn boats and other watercraft of the work zone. This particular reach of The White River is known to carry recreational boat traffic and pedestrian recreational traffic (tubes).

Buoys shall be navigation buoys in accordance with 312 IAC 5-4 and have a maximum spacing of 15 ft. Each buoy line shall be accompanied by Construction Signs as shown in the plans. Signs may be placed at the water's edge nearest to plan location, provided they are completely visible from upstream. The Contractor shall provide a safe channel for watercraft to pass through the work zone during phases of construction. The channel through the construction zone shall be as wide as feasible, but a minimum of 10 ft wide at any time. Channelization is anticipated to pass underneath the center span (Span "C"), but may pass underneath other spans as necessary to permit waterway travel. Channelization need not be relocated unless blocked by temporary causeway or other long-term obstruction. With approval from the Engineer, the Contractor may close the channel to watercraft during critical operations to ensure the safety of the public. All buoys shall conform to 312 IAC 5-4. The buoys shall be equipped with Type 'A' construction warning lights unless buoys are of insufficient size to support such a light. If buoys are not of sufficient size to support a Type 'A' construction light, then one Type 'A' construction light shall be mounted on each construction sign. Any equipment operated within the limits of the waterway shall be equipped with Type 'A' construction warning lights.

If the channel is to remain permanently underneath the end span (Span "C"), work will occasionally be taking place above the channel. During this time, a spotter(s) shall be designated in order to spot boat traffic. Spotter(s) shall communicate to boater whether or not it is safe to pass underneath the structure at that time. Spotter(s) is not to be solely dedicated to this activity, as there is no known boat access to this reach of stream. However, it remains the Contractor's responsibility to ensure the safe passage of any waterway traffic during work

hours, and a clear safe channel after work hours.

Overnight or long-term channel closures are not anticipated and shall be only as authorized by the Owner.

The buoy lines shall be in place prior to any in-channel work and shall be maintained and left in place until all work over the waterway is completed.

Buoy lines, warning lights used to delineate the buoy line, channel delineation and maintaining boat traffic will not be measured for payment.

Construction Signs Type C and D, will be measured in accordance with 801.

The cost of furnishing, placing, moving, removal and maintenance of buoy lines, and warning lights used to delineate a buoy line and maintaining boat traffic shall be included in the lump sum cost of Maintaining Traffic Waterway.

Construction Signs, Type C and D will be paid for in accordance with 801.

SP 40 BUSINESS ACCESS

Contractors shall conduct their operations in such a manner that permits access to local businesses throughout construction. If access must be restricted at times during construction, the contractor shall contact the engineer and get approval from Hamilton County prior to restrictions take place.

SP 41 EXISTING PLANS

Existing plans are available for the Logan Street Bridge and all portions of the Riverwalk. In addition, portions of the courthouse plans may be available. Copies of existing plans will be made available to contractors upon request. Copies of the courthouse plans may be obtained through Hamilton County and Noblesville.

SP 42 USGS GAUGE STATION

A USGS gauging station is located adjacent to the proposed construction entrance and within Span A of the existing bridge. The existing gauging station adjacent to the construction entrance is a masonry column with a steel housing unit. The USGS will remove all equipment from the structure prior to construction. It will be the responsibility of the contractor to remove this structure and it will be paid for under clearing right of way. The additional gauging station is attached to the existing concrete coping. The USGS will remove this gauging station prior to construction and will relocate it to an offsite location.

SP 43 V-RAIL LIGHTED RAILING

Special lighted rail shall be provided in two locations of the project. The first location shall be mounted to the ornamental aluminum rail located on the exterior parapet of the pedestrian overlook, which will be part of an additional contract. The railing shall be installed per

manufacturer recommendations. Driver locations and their housings shall be provided at the locations within the electrical plan sheets and shall follow manufacturer recommendations. The second lighted rail shall be attached to the backside of the proposed PS-2 Railing adjacent to the pedestrian pathway. Manufacturer shall provide access holes for wiring to facilitate wiring for the lighted rail. The cost of providing access points and mountable surfaces will be included in the cost of the PS-2 rail. The lighted rail shall be mounted to the back of the PS-2 railing and brackets will be provided by the lighting manufacturer. All conduit locations for wiring and access points will be located by the electrical contractor prior to final installation. Additional information and details and information regarding the V-Rail lighting and wiring may be obtained from Travis Belden at ESL Spectrum, 317-223-2603, tbelden@esl-spectrum.com. All electrical items will be installed as part of another contract. It will be the responsibility of the contractor to coordinate with the selected lighting contractor to help facilitate conduit installation.

SP 44 SR 19 OPERATIONS

A construction entrance is planned off SR 19 to help facilitate construction. The Owner has obtained a road closure permit from INDOT which will allow the Contractor to close the NB lanes between Logan and Conner Street. The Contractor will be required to follow the stipulations of the road closure permit and return the existing roadway to its original condition at the completion of construction. If the Contractor would like to amend the permit, it will be the responsibility of the contractor to contact INDOT and get a permit amendment. It will also be the contractor's responsibility to contact INDOT prior to closing the roadway to allow for the signal timing adjustments.

The proposed detour route for the NB lane closure of SR 19 will be SR 32 to SR 38, then to Logan. A detour route is located within the contract documents.

A pedestrian signal will be installed on SR 19 in addition to line painting for the proposed crosswalk. A separate permit will be forthcoming that permits this work.

SP 45 UNDISTRIBUTED QUANTITIES

100 Tons of No. 2 stone has been included as an undistributed quantity for establishing a stable construction entrance. The location has not been specified in the plans and shall be determined by the contractor and approved by the Engineer prior to its installation.

SP 46 PAVILION CONCRETE TEXTURE

Concrete outside the 10 foot pedestrian walkway will be considered the pavilion area of the Logan Street widening. The concrete is to be integrally colored using Solomon Colors, Color-Flo #920, Slate Color, or equivalent approved by the Engineer. Stamp pattern shall be random interlocking sandstone and shall be submitted for approval to the Engineer. A 4' x 4' mock up is required for Engineer's approval. Concrete shall cure for a minimum of four days prior to applying sealant. The sealant shall have a sand additive. There will be no direct payment to apply this pattern or texture to the pavilion area and it shall be included in the cost of concrete.

SP 47 SLOPEWALL CONCRETE

The existing slopewall under Logan Street shall be partially removed and widened to accommodate the widening of the structure and to facilitate the installation of new stairs and walls. The proposed slopewall shall match the slope and thickness of the existing. The contractor shall continue the tooling pattern of the existing slopewall onto the proposed slopewall. All stains shall match the existing Riverwalk color and texture. Final location of tooling and color shall be approved by the Engineer prior to installation. The cost of tooling and coloring will not be paid for directly and shall be included in the cost of slopewall concrete, 4”.

SP 48 ORNAMENTAL RAILING

Aluminum ornamental railing shall be provided in various areas of the project site. The ornamental railing placed on the bridge shall be paid for as Ornamental Railing, Bridge, and will be included in another contract. Railing shall be mounted per the contract documents. Areas designated for drivers shall have their uprights fabricated in such a manner that will permit the housing of drivers that power the proposed V-Rail. Driver housing locations shall be established per the lighting design plans and shall have access panels installed per manufacturer recommendations. Additional details may be obtained from Travis Belden at ESL Spectrum. The cost of all mounting hardware, shop drawing generation, powder coating, and incidentals shall be included in the cost of Ornamental Railing, Bridge. All ornamental railing on the bridge shall be powder coated black using KIM’s standard black from Federal Hill Commons, or matched equivalent. Color of rail shall match PS-2 railing on the bridge.

Aluminum ornamental railing and hand railing shall be provided on and adjacent to the walls near Riverwalk. Color shall match existing Riverwalk railing, and shall be Anthracite Grey. Railing shall be fabricated and mounted per the contract documents. The cost of providing anchor bolts, mountain brackets, fixtures, and labor required to install ornamental railing adjacent to the Riverwalk shall be paid for under Aluminum Railing, Riverwalk Types I, II, and III.

SP 49 US WEATHER SERVICE GAUGE

The US Weather Service has a wooden measuring gauge attached to pier 2. This is to not be disturbed during construction. If it must be disturbed, the contractor shall coordinate through the engineer.

SP 50 COORDINATION WITH EXISTING UTILITY COMPANIES

- A. Existing utilities will be required to perform work within and adjacent to this project. It is the responsibility of the Contractor to coordinate, schedule, and complete the necessary work concurrently with utility relocation work. The active engagement of the Utility Coordinator does not minimize nor negate the responsibility of the Contractor to perform duties per the Standard Specifications. The Contractor must use caution and is required to follow all laws and safety precautions when digging, excavating, or working near aerial lines or underground utility facilities.

When the Contractor is required to clear and stake the right-of-way, the Contractor shall inform the Engineer when clearing and staking of the right-of-way for the project is completed or the right-of-way is sufficiently cleared for a specific area that will allow for a particular utility to

relocate. Upon the Engineer's written and dated acceptance that the clearing and staking work is completed, the Engineer will notify the Utility Coordinator. The Contractor shall copy the Engineer and the Utility Coordinator on all correspondence with utilities.

There shall be no direct compensation for coordination with utility companies; it is assumed that costs of coordination are included in other bid items.

- B. The status and contact information of all utility companies and organizations potentially involved with the work to be performed are described below as known at the time this contract was prepared:

The facilities of Indiana American Water Company exist within the project limits, but are not expected to be affected by the proposed construction. INAW has a single water main crossing Logan Street to the north of the bridge site, but this is outside of the area of construction. If questions arise, Maninder Singh, P.E., of the utility may be contacted at 317-559-2445 or maninder.singh@amwater.com. The work plan was executed on March 28, 2018 and approved on March 28, 2018.

The facilities of Crown Castle / Lighttower exist within the project limits, but are not expected to be affected by the proposed construction. Crown Castle has a single buried fiber cable that crosses under Logan Street to the south of the bridge site under the approach slab. If questions arise, Joseph MacDonald of the utility may be contacted at 585-491-2646 or Joseph.macdonald@crowncastle.com. The work plan was executed on March 8, 2018 and approved on March 8, 2018.

The facilities of CenturyLink (Level 3) exist within the project limits, but are not expected to be affected by the proposed construction. CenturyLink has a single aerial fiber cable that crosses over Logan Street and SR 19 to the north of the bridge site in the intersection. If questions arise, Tim Hill of the utility may be contacted at 704-733-3204 or tim.w.hill@level3.com. The work plan was executed on April 3, 2018 and approved on April 3, 2018.

The facilities of Duke Energy exist within the project limits and will be affected by the proposed new construction. These facilities include an existing overhead service and a pole on the southwest corner of the bridge serving the USGS equipment shelter to be removed; existing cables from the west serving the existing lighting on the bridge; and an existing buried power cable in conduit that crosses Logan Street from the northeast to the southeast of the bridge under the approach slab that will be replaced. The new buried Duke Energy cable shall be placed 10-feet to the east of the new retaining wall for the stairs. It is anticipated that the utility shall complete their relocation by the end of September, 2018, after notification from the Contractor that all required staking of the right-of-way has been completed. If questions arise, Dan Benson of the utility may be contacted at 317-776-5340 or dan.benson@duke-energy.com. The work plan was executed on April 16, 2018 and was approved on April 16, 2018.

The facilities of Zayo Bandwidth exist within the project limits and will be affected by the new construction. These facilities include an existing underground fiber cable in conduit that runs the length of the bridge deck within conduit and hand holes at either end of the bridge. Zayo's work plan calls for a temporary aerial fiber cable to be placed a minimum of 10-feet away from the north side of the bridge structure on two temporary poles. Once the bridge work is complete, Zayo shall place a new permanent fiber cable in one of two conduits placed by the Contractor and provided by Zayo within the bridge deck for their use. It is anticipated that the utility will take 30 calendar days to complete their temporary relocation after notification that all required staking of the right-of-way has been completed by the Contractor. If questions arise, Waylon Higgins of the utility may be contacted at 765-341-1199 or Waylon.higgins@zayo.com. The work plan was executed on April 24, 2018 and was approved on April 24, 2018.

The facilities of The City of Noblesville exist within the project limits and are under review as to whether or not conflicts exist on the east side of the bridge. If questions arise, Andrew Rodewald of the utility may be contacted at 317-776-6330 or at arodewald@noblesville.in.us.

The facilities of The United States Geological Survey (USGS) exist within the project limits and will be affected by the new construction. The USGS facilities consist of monitoring equipment in a shelter to the southwest of the bridge. The USGS shall set up temporary monitoring equipment at another location beyond the construction limits to allow the existing shelter to be demolished. Once the Logan Street bridge work is sufficiently complete, the USGS may install a new monitoring station on or next to the bridge, and this follow-on work will be negotiated with the City of Noblesville. It is anticipated that the USGS will take 2 calendar days to complete their temporary relocation. If questions arise, Paul Baker of the USGS may be contacted at 317-600-2781 or prbaker@usgs.gov.

Utility Coordination was performed on this project by Kevin A. Hintz & Ted Foster, of Butler, Fairman & Seufert, Inc., should you have any questions or concerns in regards to utilities on this project you may contact them at 317-713-4615 or uc@bfsengr.com.

Note: Utility Work plans will be provided upon request (or included as part of these special provisions?)

- C. Preconstruction Conference Notification. The Contractor shall provide notification during the preconstruction conference about known corrections to or omissions of the information presented above. Notifications regarding such corrections or omissions shall not alleviate the Contractor's inquiry or interpretation obligations as contained in 120 IAC 3-6-6.

SP 51 GRAFFITI PROTECTION

Description

The Contractor shall furnish and install Graffiti Protection to exposed surfaces at the locations shown on the plans, in accordance with 105.03.

Materials

The Contractor shall provide the following products for use on this project, or approved equal:

Graffiti Gard 111W by Textured Coatings of America, 2422 E. 15th Street, Panama City FL 32405-6348, 1-800-454-0340.

Si-COAT Remarkable by CSL Silicones, Inc., 1-888-979-5602, www.cslsilicones.com.

Graffiti Proofer Anti-Stick by SEI Chemical, www.seichemical.com, 3137 E 26th Street, Vernon, CA 90058, 1-323-266-7111.

The Contractor shall use base coat formulated by the Graffiti Resistant Coating manufacturer for use with finish coating selected. Base coat shall be clear or pigmented acrylic or urethane based material formulated for application over specified surfaces. The clear base coat shall have a minimum of 24% solids and applied at a rate to provide a minimum dry film thickness of 2.0 mil. The pigmented base coat shall be a minimum of 59% solids and applied at a rate to provide a minimum dry film thickness of 4.0 mil. Optional clear or pigmented base coat materials approved by the manufacturer for specific project conditions shall be submitted to

the Engineer for approval.

The intermediate and final finish coats shall consist of an aliphatic urethane base and a catalyst hardener. The mixture shall satisfy the requirements as follows:

Dry Film Thickness: 2.0 mil
Solids by Volume: 24%
Pot Life at 75°: Approx. 3 hrs
Color: Matte Clear Finish
Set to Touch: 1-2 hrs
Maximum Cure: Approx. 36 hrs

Construction Requirements

The Contractor shall prepare the test wall surfaces with Graffiti Resistant Coating to represent the standard of texture and workmanship in accordance with the manufacturer's specifications. The Contractor shall allow the Graffiti Resistant Coating to cure, apply graffiti as directed by the Engineer, and then remove the graffiti. The cleaned surface shall remain undamaged and shall display no graffiti residue of any kind, including shadows. The Graffiti Resistant Coating shall not be applied to the work prior to the sample surface being approved by the Engineer.

The Contractor shall ensure that the surface is free of graffiti and contaminants such as dust, dirt, form oil, grease, wax, curing compounds, grime and loose paint. The surface shall be cleaned by waterblasting, steam cleaning, sandblasting, cleaning solution, solvent wash, sand paper or wire wool, or acid etch. The Contractor shall provide 10 gal of graffiti remover of the type recommended by the Graffiti Resistant Coating manufacturer for use by the Owner.

The Contractor shall apply the base coat when the ambient temperature is between 45°F and 90°F, the surface temperature is between 50°F and 100°F, and the relative humidity is not greater than 70%. The Contractor shall ensure that surface is thoroughly clean and dry before applying base coat. Concrete and mortar shall have cured for a minimum of 28 days before being coated. The base coat shall be mixed according to manufacturer's specifications and applied by brush, roller or airless spray. The Contractor shall ensure that areas to be coated are adequately ventilated, and that operators are protected from exposure to fumes and chemicals. The Contractor shall comply with the base coat manufacturer's recommendations.

The Contractor shall apply the Graffiti Resistant Coatings when the ambient temperature is between 45°F and 90°F, the surface temperature is between 50°F and 100°F, and the relative humidity is not greater than 70%. The Contractor shall ensure that surface is thoroughly clean and dry before applying anti-graffiti coatings by airless spray. The Contractor shall ensure that areas to be coated are adequately ventilated, and that operators are protected from exposure to fumes and chemicals. The Contractor shall comply with the Graffiti Resistant Coating manufacturer's recommendations.

The following curing times are based on an ambient temperature of 75°F, and shall be modified for variations in temperatures as recommended by the coating manufacturer. After the surface coating preparation and before applying the base primer has a curing time of 24-48 hrs. After the base primer and before the first finish coating has a curing time of 24 hrs. After the finish coating and before the graffiti removal has a curing time of 36 hrs.

The Contractor shall clean drippings, runs, and smudges from the finished work surface with an

appropriate solvent as recommended by the coating manufacturer. A curing time of 36 hrs shall be allowed prior to using graffiti remover to remove any graffiti applied to the finished work. The Contractor shall provide a 1 gal kit of each finish coat per every 10,000 sft of exposed surface covered to allow for repairs of minor damage to coating surface.

The Contractor shall submit a notarized Certificates of Compliance from the coating manufacturer for all coating products installed in this project. The Contractor shall submit material safety data sheets and a list of all materials used in the coating system.

Method of Measurement

Graffiti Protection will be measured per square foot of exposed wall surface area coated.

Basis of Payment

Graffiti Protection will be paid for at the contract unit price per square foot.

Payment will be made under:

Pay Item	Pay Unit Symbol
Seal Coat, Graffiti Resistant	SFT

The cost of all materials, labor, and equipment shall be included in the cost of the Seal Coat, Graffiti Resistant pay item. The cost of testing, test applications, and miscellaneous items associated with Graffiti Protection will also be included in this pay item. No additional payment over the contract unit price per square foot installed in excess of that shown on the plans.

SP 52 CUT WALL

This work shall consist of designing and constructing a permanent earth retention system utilizing a cut-wall application in accordance with 105.03. Cut-wall applications refer to a class of earth retention systems in which construction of the system is performed from the top of the wall to the base utilizing externally and/or internally stabilized elements. (See Geotechnical Engineering Circular No. 2 – Earth Retaining Systems, Report No. FHWA-SA-96-038 for additional discussion of cut-wall applications.)

The Contractor shall have a minimum of 5 years experience in permanent earth retention systems involving cut-wall applications. The Contractor shall submit evidence of successful completion of at least five similar projects in subsurface conditions like those at the project. A professional engineer employed by the Contractor and having experience in the construction of at least five completed permanent earth retention systems involving cut-wall applications over the past 5 years shall be in responsible charge of the work. A superintendent or foreman employed by the Contractor and having 5 years of experience in the supervision of permanent earth retention systems involving cut-wall applications shall be assigned to the field. The permanent earth retention system shall be designed by a professional engineer having experience in the design of at least five successfully completed systems involving similar cut-wall applications in the past 5 years. The system designer may be either an employee of the Contractor or a separate Consultant meeting the stated experience requirements.

The Contractor shall submit the experience qualifications and details for the referenced design and construction projects, including a brief project description with the owner’s name and

telephone number. Upon receipt of the experience qualifications submittal, the Engineer will approve or reject the Contractor and/or Designer.

The Contractor shall submit complete design calculations and working drawings for review and approval. Include all details, dimensions, quantities, ground profiles, and cross-sections necessary to construct the wall. Verify the limits of the wall and ground survey data before preparing the drawings. The calculations and drawings shall be signed and sealed by the Contractor's professional engineer, previously approved by the Department.

The Contractor shall submit three sets of the drawings with the initial submission. One set will be returned with any indicated corrections. The Engineer will approve or reject the Contractor's submittals after receipt of a complete submission. If revisions are necessary, make the necessary corrections and resubmit three revised sets. Once the drawings are approved, furnish five sets of the drawings. The Contractor will not be permitted to begin construction of the wall or incorporate materials into the work until the submittal requirements are satisfied and found acceptable to the Engineer. Changes or deviations from the approved submittals must be resubmitted for approval. No adjustments in contract time will be made due to incomplete submittals.

The Contractor shall revise the drawings once plan dimensions are revised due to field conditions or for other reasons. Within 30 calendar days after completion of the work, submit as-built drawings. Provide revised design calculations signed by the approved professional engineer for all design changes made during the construction of the retention system.

(c) VERIFICATION TESTING PROGRAM. At least 30 calendar days before the planned start of the wall construction, the Contractor shall submit a verification testing program of all production and test anchors/nails. The program shall identify the test locations, the type of test (i.e., proof, performance and/or pullout), testing procedures, acceptance criteria, and load and measuring devices to be used.

(d) MONITORING PROGRAM. At least 30 calendar days before the planned start of the wall construction, the Contractor shall submit a monitoring program. The program shall identify points of monitoring interest, in accordance with 734.01, and the frequency of monitoring during and following construction of the wall. The program shall also include a baseline survey for points of monitoring interest.

(e) QUALITY CONTROL PLAN. At least 30 calendar days before the planned start of the wall construction, the Contractor shall submit a quality control plan, and pre- and post-construction surveys for structures of interest, in accordance with 734.01.

DESIGN REQUIREMENTS. Design the wall using procedures contained in the current edition of AASHTO's *Standard Specifications for Highway Bridges*, including current interim specifications, or in a report published by the FHWA titled "Manual for Design and Construction Monitoring of Soil Nail Walls," Report No. FHWA-SA-96-069. The required partial safety factors/allowable strength factors for Service Load Design (SLD) and load and resistance factors for Load and Resistance Factor Design (LRFD) shall be in accordance with AASHTO and FHWA manuals. Minimum factor of safety for global stability (SLD) or minimum required global stability soil resistance/load ratio (LRFD) shall be in accordance with the AASHTO and FHWA manuals, unless specified otherwise. Structural design of any individual wall elements not covered in the FHWA manual shall be designed in conformance with the AASHTO manual.

Geometric data and design criteria including shear strength parameters and unit weights for soil and rock, corrosion protection, internal and external drainage requirements, horizontal and vertical alignment of the wall, and all known site and construction constraints, wall facing and facing architectural requirements shall be as shown on the Contract Plans.

DESIGN CALCULATIONS. Design calculations shall include, but not be limited to, the following items:

- a. A written summary report which describes the overall design.
- b. Applicable code requirements and design references.
- c. Design cross-section(s) geometry including soil/rock strata and location, magnitude and direction of design slope and external surcharge loads, and piezometric levels.
- d. Design criteria including undrained and drained shear strength parameters for soil and rock (i.e., angle of internal friction and cohesion), and dry and moist/saturated unit weights.
- e. Unit bond resistances for externally and internally stabilized elements.
- f. Partial safety factors/strength factors for SLD or load and resistance factors for LRFD used in the design on the pullout resistance, surcharges, dry and moist/saturated unit weights of soil and rock, and all materials (e.g., shotcrete, steel and concrete). Minimum required factor of safety for global stability (SLD) or minimum required global stability soil resistance/load ratio (LRFD).
- g. Seismic design acceleration coefficient.
- h. Design calculation sheets with the contract number, project number, designation number, wall location and designation, date of preparation, initials of designer and checker, and page number at the top of each page. Provide an index page with the design calculations.
- i. Design notes including an explanation of any symbols and computer programs used in the design.
- j. Design cross-section(s) geometry including soil/rock strata and location, magnitude and direction of design slope and external surcharge loads and piezometric levels with the most-critical slip surface shown along with the minimum calculated factor of safety for global stability (SLD) or minimum required global stability soil resistance/load ratio (LRFD).
- k. Structural design calculations for any temporary and permanent facing(s) and facing connections including consideration of flexural and shear strength of the facing and any externally stabilized elements, tensile strength of any headed studs, upper cantilever, minimum reinforcement ratio, mechanical splices, welds, built-up sections, and cover and splice requirements.

WORKING DRAWINGS. Working drawings shall include, but not be limited to, the following items:

- a. A plan view of the wall(s) identifying:
 - (1) A reference centerline and elevation datum.
-

- (2) The offset from the construction centerline to the finished face of the wall at its base and at all changes in horizontal alignment.
 - (3) Beginning and ending stations of the wall.
 - (4) Right-of-way and permanent or temporary construction easement limits, location of all known active and abandoned existing utilities, adjacent structures or other potential interferences. The centerline of any drainage structure or drainage pipe behind, passing through, or passing under the wall.
 - (5) Limit of externally and internally stabilized elements.
 - (6) Subsurface exploratory locations shown on a plan view of the proposed wall alignment with appropriate reference base lines to fix the locations of the explorations relative to the wall.
- b. An elevation view of the wall(s) identifying:
- (1) The elevation at the top of the wall, at all horizontal and vertical break points, and at least every 30 feet along the wall.
 - (2) Elevations at the base and top of the wall for casting the facing (*if applicable*).
 - (3) Beginning and ending stations of the wall.
 - (4) The distance along the face of the wall to all steps in the base of the wall.
 - (5) Elevation views of the wall showing all externally and internally stabilized elements as well as vertical and horizontal spacing; and the location of drainage elements and permanent facing expansion/contraction joints along the wall length.
 - (6) Existing and finished grade profiles both behind and in front of the wall.
- c. Design parameters and applicable codes.
- d. General notes for constructing the wall including sequencing or other special construction requirements including dewatering, if required.
- e. Horizontal and vertical curve data affecting the wall and control points. Match lines or other details to relate the wall stationing to centerline stationing.
- f. A listing of the summary of quantities on the elevation drawing of each wall showing estimated square feet of exposed wall face areas and other pay items.
- g. Typical sections including staged excavation elevations, wall elements, and corrosion protection details.
- h. Typical details of production and test anchors or nails defining the orientation and

dimensional relationships of the unbonded and bonded lengths.

- i. Details, dimensions, and schedules for all externally and internally stabilized elements, reinforcing steel, wire mesh, bearing plates, headed studs, etc. and/or attachment devices for shotcrete, cast-in-place or prefabricated facings.
- j. Details and dimensions for appurtenances such as barriers, coping, drainage gutters, fences, etc.
- k. Details for constructing the wall around drainage facilities.
- l. Details for terminating the wall and adjacent slope construction.
- m. Facing finishes, color and architectural treatment requirements (*if applicable*) for permanent facing elements.

Construction Requirements

The Contractor shall monitor the performance of the wall and movements of buildings, roads, and other facilities within a distance of three times the excavation depth for the wall. Performance monitoring by the Contractor shall be made during construction and for a period of not less than one year following the completion of the wall or as directed by the engineer. The Contractor shall be responsible for making prompt and continuous evaluations of the test and monitoring data and performance of the wall(s). The Contractor, whenever necessary during the monitoring period, shall take immediate steps to correct any deficiencies in the capacities of individual elements or other corrective measures which may be required to prevent damage or excessive movement of the wall and adjacent facilities at no cost to the Department. The Contractor shall submit all test and monitoring data to the Engineer on a weekly basis or as directed by the Engineer.

The Contractor shall limit maximum lateral wall movements during and following construction of the wall to a value of 0.4% of the excavation depth. The Contractor shall limit maximum settlement of the ground behind the wall during and following construction of the wall to a value of 0.4% of the excavation depth. If these values are exceeded, the Contractor shall submit in writing to the Engineer a course of action which identifies appropriate measures to arrest and/or limit any additional movement/settlement.

Method of Measurement

The unit of measurement will be per square foot for each Wall listed on the bid schedule. When plan dimension changes are authorized during construction to account for field conditions, the lump sum price of the system will be adjusted by applying a calculated per square foot cost adjustment factor to the added or decreased wall exposed face area resulting from the change. The adjustment factor will be determined by dividing the lump sum price bid for each wall by its original permanent front face area shown on the original approved working drawings. If the actual quantity increases by more than 20% or decreases by more than 10% from the original plan quantity, as authorized by the Engineer, the contract price will be adjusted per the Standard Specifications.

Basis of Payment

The accepted quantities of cut wall will be paid for at the contract unit price per square foot f

or cut wall.

Compacted Aggregate No. 53 Base, complete and in place, will be paid for in accordance with 301.10.

Payment will be made under:

Pay Item	Pay Unit Symbol
Cut-Wall.....	SFT
Compacted Aggregate, No. 53, Base.....	TON

The costs of professional services, labor, excavation, structure backfill, equipment, materials, tests, QCP, Concrete Facing, Geotextile, Timber Lagging, Steel Piles, Wall Panels, Reinforcing Steel, Expansion Anchor Bolts, Steel Plates, Field Drilled Holes in Concrete and incidentals necessary to design, construct, and monitor the wall including all drainage required by the wall design and all temporary construction facing or permanent facing, if applicable, and correction required by the wall design of deficiencies which may be required to prevent damage of excessive movement, of the wall shall be included in the cost of the cut wall pay item. No additional payment will be made for the costs of providing and taking corrective actions.

SP 53 WIRE FACE WALL

This work shall consist of furnishing materials and placement of Wire-Faced Mechanically Stabilized Earth (MSE) Walls constructed in accordance with 105.03 and in reasonably close conformity with the lines, grades, design, and dimensions shown on the plans or otherwise established.

Materials

The Contractor shall make arrangements to purchase the materials described herein necessary to install cast in place Wire-Faced MSE walls, and all necessary incidentals from a wire-faced MSE wall system manufacturer.

The minimum required amount of galvanizing shall be stated in ounces per square foot for each element being sampled. This information will be attached to the IT-530 or the sample itself for testing purposes.

Wire reinforcement shall be shop fabricated of cold drawn steel conforming to the minimum requirements of ASTM A-82 and welded into the finished configuration in accordance with ASTM A-185. Galvanizing shall conform to the minimum requirements of ASTM A-123. One sample for each 10 tons or fraction thereof from each source shall be required. Each sample shall be at least 3 ft square and shall include each wire size. Samples shall be cut, not burned. The sequence number or seal number shall be the basis for approval. The sequence number shall be the basis for use. Samples not fully complying with the specifications shall be rejected and shall be replaced.

All ground reinforcement and connector bars shall be shop fabricated of cold drawn steel wire in accordance with ASTM A-82 and shall be welded into the finished mesh fabric in accordance with ASTM A-185. Galvanization shall be in accordance with ASTM A-123. The ground reinforcement may be a steel ladder strip or a welded wire grid. The grid or ladder strip used shall be consistent with

that used in the pullout test and shall be consistent throughout the project. The grid or ladder strip shall consist of not less than two longitudinal wires, perpendicular to the wall, welded to equally spaced cross ribs capable of developing passive pressure with the fill. Longitudinal and transverse wires shall be of the same diameter.

All retention fabric or filter cloth as shown on the plans shall be non-woven geotextile in accordance with Article 913.19.

Backfill material used in the MSE wall structure shall be as listed in the contract documents and per the geotechnical report.

Construction Requirements

The MSE wall shall consist of galvanized-wire facing and shall be cast in place, as required to achieve the design life and the design specifications.

The quantities shown in the itemized proposal will be the same for all MSE wall systems. The proposed MSE wall system shall not be indicated when preparing the bid. Wire-Faced MSE Walls shall be built in accordance with the approved plans and shop drawings, based on the requirements herein. The recommendations of the wall system suppliers shall not override the minimum performance requirements shown herein.

Before the letting date, the wall manufacturer shall provide preliminary engineering plans to all Bidders and to the Indiana Department of Transportation (INDOT), Design Division. Such preliminary engineering plans shall show ground reinforcement, length by section, actual detail, bearing pressures, the number of wire-faced panels, and the actual wall square footage. Receipt of preliminary plans and acknowledgment thereof will not constitute acceptance of a proposed wire-faced MSE wall system. Wall manufacturers which do not supply preliminary engineering plans prior to the letting shall not be permitted to have their wall system used by the Contractor.

If the wall manufacturer needs additional information to complete the design, the Contractor shall be responsible for obtaining such information. All appurtenances behind, in front of, under, mounted upon, or passing through the wall, such as drainage structures, utilities, or other appurtenances shown on the plans shall be accounted for in the stability design of the wall. The MSE wall design shall follow the general dimensions of the wall envelope shown on the plans. The top of the cast in place wall shall be at or above the top of the wall elevation shown on the plans. Where coping or barrier is utilized, the wire-faced wall shall extend up into the coping or barrier a minimum of 2 in.

Prior to the start of construction, the Engineer will schedule a preconstruction meeting to be attended by the Contractor, the Wall Manufacturer and the Design Engineer, Butler, Fairman and Seufert, Inc.

The design by the wall manufacturer shall consider the internal and the external stability of the wall mass including the bearing pressure, overturning, sliding, and stability of temporary construction slopes. The design shall be in accordance with AASHTO Standard Specifications for Highway Bridges. The analysis of settlement, bearing capacity, and overall slope stability will be the responsibility of the wall designer.

The theoretical failure plane within the soil mass shall be analyzed so that the soil-stabilizing component extends sufficiently beyond the failure plane to stabilize the material. External loads that

affect the internal stability such as those applied through piling, bridge footings, traffic, and slope surcharge, shall be accounted for in the design. The size of all structural elements shall be determined such that the design load stresses do not exceed the allowable stresses found in the AASHTO Standard Specifications for Highway Bridges, unless otherwise shown on the plans.

The design life of MSE retaining walls shall be 75 years. The maximum allowable yield stress for reinforcement shall be 65,000 lbs per sq in. The maximum allowable stress in the reduced section after sacrificial steel has been removed at the 75-year life shall be $0.47 F_y$ for wire mesh or steel grid where more than two connection points per individual grid or mesh are used to connect to the face panel. The maximum allowable stress of $0.55 F_y$ shall be used when two wire connectors per grid or mesh are utilized to connect to the face panel.

The phi angle for the internal design of the volume shall be assumed to be 34° . The phi angle of the backfill behind the MSE mass and reinforcement shall be assumed to be 30° . Sliding and overturn calculations shall also utilize a foundation assumption of a 30° phi angle in preparing the calculations.

The factor of safety for pullout resistance shall not be less than 1.5 based on pullout resistance at 0.5 of an inch deformation based on a comparable backfill. The factor of safety for connections between the wire-faced panels and the ground reinforcement shall not be less than 2.0 at failure nor less than 1.5 at 0.75 of an inch deformation. The factor of safety for connections from the wire-faced panels and the cast-in-place facing to the ground reinforcement shall not be less than 2.0 at failure nor less than 1.5 at 0.75 of an inch deformation.

The wall shall be defined by the wall envelope shown on the plans. For design purposes, the height of wall, H, shall be measured from the top of the leveling pad to the top of the wall. For a level surcharge situation, the top of the wall shall be measured to the top of the coping or to the gutter line of the traffic barrier. The top of the wall shall be the theoretical top of the wire panels only when a coping or barrier is not used. For an abutment faced, the design height, H, shall be defined as the height measured from the top of the leveling pad to the top of the roadway surface. For a wall with a sloping surcharge, the top of the wall shall be measured at a point $0.3H$ back from the face where the design height is H' and the actual wall height is H.

The vertical stress at each reinforcement level shall be computed before considering local equilibrium of all the forces acting above the level of investigation. The vertical stress or bearing pressure at each reinforcement level shall be computed using the Mayerhof Method in the same manner as the bearing pressure is computed for the base of the wall.

The ground reinforcement shall be the same length from the bottom to the top of each wall section whether bar mats, grids, or ladder strips are used. Only one steel element diameter or size shall be used in a particular wall section. This element may be used individually or in a prefabricated grouping. The reinforcement length defining the width of the stabilized mass shall vary in section as the wall height changes. The minimum length of the ground reinforcement, from the back of the wire-faced, shall be 8 ft, or $0.7H$ for walls with level surcharges, or $0.7H'$ for walls with slope surcharges or for an abutment face whichever is greater.

The ground reinforcement, either $1.0H$ or $1.0H'$, shall be required unless otherwise shown on the design plans where global stability or bearing pressure limitations override the minimum. Such information shall be in the contract documents. The length of the minimum reinforcement will be $0.1.0H$ or $1.0H'$ unless such note appears on the plans. One hundred percent of the ground

reinforcement that is designed and placed in the reinforced earth volume shall extend to and be connected to the wire-faced wall.

The corrosion rate for determining loss of sacrificial metal for mats, grids, and strip reinforcement shall be as follows:

ZincFirst two years, 15 microns per year
ZincSubsequent years to depletion, 4 microns per year
Carbon Steel12 microns per year

For mats, grids or ladder strip steel, the minimum zinc coating thickness shall be 2 oz per sft. Such thickness shall be assumed to be 86 microns for purpose of calculation of reduced structural section.

The factor of safety for overturning of the wall mass shall not be less than 2.0. The factor of safety for sliding of the wall mass shall not be less than 1.5.

The actual applied bearing pressures under the stabilized mass for each reinforcement length shall be clearly indicated on the shop drawings and shall be equal to or less than the maximum allowable soil pressure shown on the plans. Passive pressure in front of the wall mass will be assumed to be zero for design purposes.

The Contractor shall be responsible for providing a MSE system that meets all the requirements herein. If the submitted system cannot be approved, the Contractor shall provide an acceptable system at no additional compensation and with no time extension. The Contractor shall submit two copies of the design computations and four sets of design drawings for approval.

The final design drawings shall not be produced until after the Contractor has verified in the field the existing ground elevations along the face of the wall, profiles along the top of the proposed wall, and has verified the top of rock elevations. The design drawings shall include all details, dimensions, quantities, and cross sections necessary to construct the wall and shall include, but shall not be limited to, the following:

1. A plan and elevation sheet or sheets for each wall.
2. An elevation view of the wall which shall include the elevation at the top of the wall at all horizontal and vertical break points at least every 50 ft along the face of the wall, all steps in the foundation soil, the designation as to the type of wire panel, the length of soil reinforcing systems, the distance along the face of the wall to where changes in length of the soil reinforcing systems occur, and an indication of the original and final ground lines and maximum bearing pressures.
3. The plan view of the wall shall reference the existing structure as identified in the bid documents. A plan view and elevation view shall detail the placing position of all ground reinforcement steel in the areas where piling, utilities or other structures are near the wall and would interfere with normal placement.
4. A typical cross section or cross sections showing elevation relationship between ground conditions and proposed grades.
5. All general notes required for constructing the wall.
6. All horizontal and vertical curve data affecting the wall.

7. A listing of the summary of quantities on the elevation sheet for each wall.
8. Wire wall details shall show all dimensions necessary to construct the element, all wire in the element, and the location of soil reinforcing system devices attached to the wall.
9. Clearly indicated details for construction of walls around drainage facilities.
10. The details for diverting ground reinforcement around obstructions such as piles, guardrail posts, catch basins, and other utilities shall be submitted for approval.
11. The details for each connection between the wire panel and the ground reinforcement.

Design computations shall include, but shall not be limited to the following:

1. Calculations for bearing pressure, overturning and sliding.
2. Face panels to ground reinforcement connection factor of safety.
3. Longhand example of one cross-section to support and explain any computer programs utilized in developing the system sent in for approval.
4. Laboratory analysis verifying the pullout resistance of the ground reinforcement.

Approval of the proposed MSE system is the responsibility of the Department. Shop drawing checking will be the responsibility of the Department. Design calculation and design drawing checking will be the responsibility of a Consultant, if utilized, or the Department if a Consultant is not utilized. Upon design approval of the MSE system, the Contractor shall submit five sets of shop drawings.

The wall supplier shall provide technical instruction, shall provide guidance in preconstruction activities including the preconstruction conference and shall provide on-site technical assistance to the Contractor during construction. All instructions from the supplier shall be closely followed by the Contractor unless otherwise directed in writing.

The foundation for the structure shall be graded level for a width equal to or exceeding the length of the reinforcing strips or as shown on the plans. Prior to wall construction, the foundation, if not in rock, shall be compacted as directed. The base of the wall excavation shall be proof-rolled with a heavy vibratory roller. If unsuitable foundation material is encountered, it shall be removed and replaced with compacted aggregate No. 53.

This work shall consist of excavation of material whose removal is necessary for the construction of the MSE wall in accordance with the plans, the requirements herein, or as directed. Excavation shall include the construction and subsequent removal of all necessary bracing, shoring, sheeting; and cribbing and all pumping, bailing, and draining. Prior to starting excavation operations at the wall site, all necessary clearing and grubbing at the site shall have been performed in accordance with Article 201.03. All timber, stumps and debris shall be disposed of in accordance with Article 201.04 or Article 201.05. All clearing and grubbing and removal of debris shall be included in the cost of clearing right-of-way. All excavation, except class X excavation, required for construction of the MSE wall shall be included in the cost of common excavation in accordance with these special provisions. After the excavation for each wall location has been performed, the Contractor shall notify the Engineer. No concrete leveling pad shall be placed until the Engineer has approved the depth of the excavation and the character of the foundation material, and has given permission to proceed. All sheeting and bracing shall be removed as the backfilling progresses.

The wall system components shall be constructed in accordance with the wall system supplier's recommendations and construction manual. Plumbness, vertical tolerances and horizontal alignment tolerances shall not exceed 1-1/2 in. when measured with a 10 ft straightedge. The overall plumbness from top to bottom of the wall shall not exceed 1 in. per 10 ft of wall height. Reinforcing mesh shall be placed normal to the face of the wall unless otherwise shown on the plans or as directed. Prior to placement of the reinforcing mesh, backfill shall be compacted in accordance with the backfill placement requirements below.

Backfill placement shall closely follow erection of each course of panels. Backfill shall be placed so as to avoid damage or disturbance to wall material or misalignment of the wire-faced panels. Wall materials that become damaged or disturbed during backfill placement shall be either removed or replaced with no additional payment or corrected as directed. All misalignment or distortion of the wire-faced panels due to placement of backfill outside the limits described herein shall be corrected as directed. The work shall also include backfilling beyond the theoretical length of the ground reinforcement in accordance with the details shown on the plans and the disposal of surplus of unsuitable excavated materials as permitted. Compacted aggregate No. 8 shall be compacted by means of a minimum of three passes with a 24 in. vibratory plate that shall deliver a 5,000 lb blow. The maximum loose lift thickness shall not exceed 9 in. except that lifts 3 ft from the wall or closer shall not exceed 5 in. in loose thickness. This lift thickness shall be decreased if directed by the Engineer. Compaction within 3 ft of the back face of the wire-faced panels shall be achieved by means of a minimum of three passes with a lightweight mechanical tamper, roller, or vibratory system. Borrow shall be placed as shown on the plans in lifts not to exceed 8 in. in the region of the galvanized-ground reinforcement. The galvanized-ground reinforcement shall be supported such that it is encased a minimum of 2 in. within a lift placement. Cutting or altering of the basic structural section of either ladder strip or grid at the site will be prohibited unless the cutting is pre-planned and detailed on the approved design drawings. Cutting shall only be considered if adequate additional steel is provided to produce the required ground reinforcement strength shown in the approved calculations. If the grid or strip is shortened in the field, the cut ends shall be covered with a galvanized paint or Bitumastic 50 coal tar to prevent corrosion of the metal.

Method of Measurement

Wire Faced MSE wall and Concrete Facing will be measured per square foot of vertical wall surface area. The pay quantities for Wire Face MSE wall and Concrete Facing will be measured on the basis of the details shown on the plans. The wall envelope limits will be considered to be the vertical distance from the top of the leveling pad to the top of the wall, and the horizontal distance from the beginning to the end of the leveling pad.

Cast-in-place concrete for the leveling pad will be measured by the linear foot.

Common excavation will be that quantity of such material actually removed from vertical planes defining the neat lines of the concrete leveling pad.

Compacted aggregate No. 8 will be the theoretical quantity placed between the wire faced panels to a 1:1 cut line located 1.0H or 1.0H' normal to the wire faced panels at the approximate rock elevation as shown on the plans.

Geotextile used to retain backfill along the wire-faced panels will not be measured for payment.

Reinforcing steel for the concrete wall facing will not be measured.

Partial payment will be made for material stockpiled on the project site or at the Contractor's approved storage location. Such partial payment will be the delivered cost of the wire panels as verified by invoices that include freight charges. Such invoices shall be furnished by the Contractor. The payment will not exceed 75% of the contract unit price for wire faced panels. Prior to authorizing partial payment, verification will be obtained that all required inspection has been made and that the wire panels are acceptable. Stockpiled ground reinforcement will not be paid for separately.

Basis of Payment

Wire Face Panels and Concrete Facing will be paid for at the contract unit price per square foot. No. 8 compacted aggregate for backfill will be paid at the cubic yard price. Concrete leveling pad will be paid at the contract unit price per linear foot.

Payment will be made under:

Pay Item	Pay Unit Symbol
Concrete Facing	SFT
Face Panels, Wire.....	SFT
Wall Erection	SFT
Concrete Leveling Pad.....	LFT
No. 8 Stone.....	CYS

The costs of all wire-faced MSE wall materials including wire-faced panels, ground reinforcement, connectors, geotextile and incidentals shall be included in the cost of the Face Panels, Wire pay item. The costs of all labor and materials required to prepare the wall foundation, place the reinforcing strips, and erect the wire-faced MSE wall shall be included in the cost of wall erection. The cost of the reinforcing steel for the concrete facing shall be included in the cost of the Concrete Facing.

SP 54 ASSOCIATED LIGHTING WORK AND SCOPE

Lighting and electrical work is included in the project. Items pertaining to electrical installation will be completed as part of an additional contract and will be completed by others. The Contractor will be required to coordinate with the selected lighting contractor in regards to conduit installation and elements within the bridge deck to help facilitate the final lighting items. The contractor will be required to submit for approval final conduit locations within the deck and rail to facilitate future lighting installation, which must be approved by the Engineer and Owner.

Pertaining to scope, this contract shall include the rehabilitation of all bridge elements and necessary approach work. The Contractor shall install all concrete railing elements and embedded conduit as detailed in the contract documents. Final location of conduit will be determined by the selected lighting contractor. The Contractor shall install the PS-2 railing, but will not be required to install the lighted railing attached to the PS-2 railing. PS-2 railing shall be properly modified to receive the proposed lighted railing per the contract documents. Ornamental bridge rail will be installed by the lighting manufacturer, but the Contractor shall install anchor bolts per the manufacturer shop drawings. Contractor shall also provide anchor bolts for the proposed ornamental overhead lights to facilitate installation at a later date by others.

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ENVIRONMENTAL • GEOTECHNICAL
BUILDING SCIENCES • MATERIALS TESTING

GEOTECHNICAL ENGINEERING INVESTIGATION - REVISED

PROPOSED BRIDGE WIDENING
LOGAN STREET OVER WHITE RIVER
HAMILTON COUNTY BRIDGE NO. 207
NOBLESVILLE, HAMILTON COUNTY, INDIANA

ATC PROJECT NO. 170GC00513

FEBRUARY 21, 2018

PREPARED FOR:

BUTLER, FAIRMAN & SEUFERT, INC.
8450 WESTFIELD BOULEVARD, SUITE 300
INDIANAPOLIS, INDIANA 46240

ATTENTION: MR. BRYAN WRIGHT, P.E., S.E.

February 21, 2018

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Re: **Geotechnical Engineering Investigation - Revised**
Proposed Bridge Widening
Logan Street over White River
Hamilton County Bridge No. 207
Noblesville, Hamilton County, Indiana
ATC Project No. 170GC00513

Dear Mr. Wright:

Submitted herewith is the revised report for the geotechnical engineering investigation prepared by ATC Group Services LLC (ATC) for the referenced project. This study was authorized in accordance with ATC Proposal-Agreement No. PE-17-1129 dated June 21, 2017. This report has been revised based upon a request by Butler, Fairman & Seufert, Inc. to provide foundation recommendations based on the Load Factor Design (LFD) methodology. The report previously referenced the Load Resistance Factor Design (LRFD) methodology.

This revised report contains the results of our field and laboratory testing program, an engineering interpretation of this data with respect to the available project characteristics and recommendations to aid design and construction of the earth-related elements of this project. We wish to remind you that we will store the samples for 90 days after which time they will be discarded unless you request otherwise.

We appreciate the opportunity to be of service to you on this project. If we can be of any further assistance, or if you have any questions regarding this report, please do not hesitate to contact either of the undersigned.

Sincerely,



Stephen Rushfeldt, P.E.
Senior Project Engineer



Thomas J. Struewing, P.E.
Principal Engineer

SUMMARY OF GEOTECHNICAL ENGINEERING INVESTIGATION

Proposed Bridge Widening
Logan Street over White River
Hamilton County Bridge No. 207
Noblesville, Hamilton County, Indiana
ATC Project No. 170GC00513

GENERAL INFORMATION

Butler, Fairman & Seufert, Inc. (BF&S) is developing plans for the widening of the bridge carrying Logan Street over White River in downtown Noblesville in Hamilton County, Indiana. The bridge is designated as Hamilton County Bridge No. 207. The proposed widening project will begin at the intersection of Logan Street and State Road 19 (Station 35+41, Line "A") and end approximately 410 ft east at the east end of the existing bridge (Station 39+51, Line "A"). The existing bridge is a 300 ft long steel girder bridge with the superstructure having been built in 1985 over foundation elements that were constructed in 1960 with four spans of 75 ft each with no skew. The bridge was widened in 2001 to accommodate a right turn lane and widened sidewalk on the north side of the bridge.

The existing bridge is currently about 53 ft wide from the outside coping on either side of the bridge. The original superstructure section of the bridge includes a concrete deck with metal deck pan while the 2001 addition was constructed as a pre-cast concrete deck with no underlying deck pan. The currently proposed widening project will include widening the existing bridge about 11 ft on the south side of the bridge to accommodate a new pedestrian pathway. An overlook will be extended a total of 28 ft south from the existing bridge between Pier Nos. 2 and 4, which are in the White River channel. The existing end bents will be widened 11 ft and Pier Nos. 2, 3 and 4 will be widened 28 ft. The profile grade on the south side of the bridge will not be modified significantly (less than 1 ft of change in profile grade), with the exception of a small area at the southwest corner of the existing bridge where an existing gage station will be relocated.

The original bridge structure end bents (abutments) and the interior piers are reportedly supported on steel H-piles with the bottom of pile cap elevations ranging from about EL 735.3 to EL 737.3 (the bottom of pile cap elevation for the interior piers range from approximately EL 735.3 to 735.7). The 2001 end bent and interior pier additions are reportedly supported on 14 in. diameter steel pipe piles.

BRIDGE STRUCTURE

Considering the project characteristics, the general geology in the vicinity of the project, the subsurface conditions encountered in the test borings drilled at the bridge location and the existing foundations of the original bridge, it is recommended that pile foundations be used for the widened end bents and interior piers. Specific design recommendations for steel pipe piles (INDOT Standard Specifications Section 915.02) are presented in Section 5.1.

Based on geologic mapping and the results of the test borings, it is our opinion that the subsurface conditions within this project site meet the criteria for Site Class Definition C based on Table 3.10.3.1-1 (Site Class Definitions) in the 2017 AASHTO LRFD Bridge Design Specifications.

ROADWAY RECOMMENDATIONS

A resilient modulus value of 3,500 lbs/sq.in. is recommended for use in pavement design for the predominant subgrade soil. A resilient modulus value of 6,000 lbs/sq.in. is recommended for use in pavement design in conjunction with Type IC subgrade treatment in accordance with Section 207.04 of the INDOT Standard Specifications. The following tables summarize the recommended parameters for the design of the pavements for rehabilitation of the existing pavement.

Pavement Design Parameters – Predominant and Critical soil

Natural Subgrade Soil Resilient Modulus Value, lbs/sq.in.	3,500
Modified/Prepared Subgrade Soil Resilient Modulus Value, lbs/sq.in.	6,000
Predominant and Critical Subgrade Soil	Sandy Loam (A-4)
Percent Passing #200 Sieve	38
Percent Silt	29
Liquid Limit, percent	24
Plastic Limit, percent	15
Plasticity Index, percent	9
Approximate Depth to Ground Water, ft	21
Natural Dry Density of Natural Subgrade (pcf)	100
Natural Moisture Content of Natural Subgrade Soil, percent	20
Maximum Organic Content, percent	<5
Filter Fabric Required for Underdrains	Yes
Subgrade / Foundation Treatment	IC*

* For reconstruction areas, after removing any unsuitable soil material, the pavement foundation treatment shall consist of a maximum of 18 inches of excavation below the bottom of the subgrade elevation as determined to be necessary based upon field conditions. A geotextile in accordance with the INDOT Standard Specification 918.02 (c), Type 2A shall be placed at the bottom of the excavation. The excavation shall then be backfilled with INDOT No. 5 stone. The subgrade treatment shall then be constructed on top of the foundation improvement.

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1 INTRODUCTION

This report presents the results of the geotechnical engineering investigation for the proposed bridge widening project in Noblesville, Hamilton County, Indiana. The bridge widening project will include the construction of a new pedestrian walkway and overlook along the Logan Street bridge crossing the White River in downtown Noblesville, Indiana. The general location of the project site is shown on the Project Location Map and Vicinity Map (see Figures 1 and 2 in Appendix A).

This investigation was performed to characterize and evaluate the soil beneath the project site and to develop recommendations relative to the support of the proposed widened bridge elements. The investigation consisted of an exploratory drilling and sampling program, laboratory testing of soil samples obtained from the test borings, engineering analyses and preparation of this report.

2 PROJECT DESCRIPTION

Butler, Fairman & Seufert, Inc. (BF&S) is developing plans for the widening of the bridge carrying Logan Street over White River in downtown Noblesville in Hamilton County, Indiana. The bridge is designated as Hamilton County Bridge No. 207. The proposed widening project will begin at the intersection of Logan Street and State Road 19 (Station 35+41, Line “A”) and end approximately 410 ft east to the east end of the existing bridge (Station 39+51, Line “A”). The existing bridge is a 300 ft long steel girder bridge with the superstructure having been built in 1985 over foundation elements that were constructed in 1960 with four spans of 75 ft each with no skew. The bridge was widened in 2001 to accommodate a westbound right turn lane and widened sidewalk on the north side of the bridge.

The existing bridge is currently about 53 ft wide from the outside coping on either side of the bridge. The original superstructure section of the bridge includes a concrete deck with metal deck pan while the 2001 addition was constructed as a pre-cast concrete deck with no underlying deck pan. The currently proposed widening project will include widening the existing bridge about 11 ft on the south side of the bridge to accommodate a new pedestrian pathway. An overlook will be extended a total of 28 ft south from the existing bridge between Pier Nos. 2 and 4, which are in the White River channel. The existing end bents will be widened 11 ft and Pier Nos. 2, 3 and 4 will be widened 28 ft. The profile grade on the south side of the bridge will not be modified significantly (less than 1 ft of change in profile grade), with the exception of a small area at the southwest corner of the existing bridge where an existing gage station will be relocated.

The original bridge structure end bents (abutments) and the interior piers are reportedly supported on steel H-piles with the bottom of pile cap elevations ranging from about EL 735.3 to EL 737.3 (the bottom of pile cap elevation for the interior piers range from approximately EL 735.3 to 735.7). The 2001 end bent and interior pier additions are reportedly supported on 14 in. diameter steel pipe piles.

The proposed widened bridge piers and abutments are proposed to be supported on driven piles bearing at or below elevation El 717 and will be protected from scour by a 3 ft deep layer of riprap. The bottom of the stream channel for the White River is reportedly at about El 740 and the low water elevation is reported as El 742.2 (although the water level during our investigation in September 2017 was below El 742). The 100-year flood elevation is reported to be El 763.8. The 100-year scour elevation is reported to be estimated at about El 728.1.

3 PURPOSE AND SCOPE OF WORK

3.1 Field Investigation

The general subsurface conditions at the site were investigated by drilling three test borings. The drilling was performed with using hollow-stem-augers to advance the boreholes. Split-barrel samples were obtained of the soils using standard penetration test (SPT) procedures (American Association of State Highway and Transportation Officials-AASHTO-Method T206) at 2.5 ft to 5.0 ft intervals. Wash-rotary drilling methods were used to advance the test borings within the saturated sand layers. The test boring locations were staked in the field by an ATC representative, with approximate boring stations and offsets estimated from roadway plans prepared in 2001 by Floyd E. Burroughs & Associates, Inc and the ground surface elevations at the boring locations were estimated from preliminary plans developed by Butler Fairman & Seufert, Inc. for the currently proposed bridge widening. The test borings were drilled at the approximate locations as depicted on Figure 3 in Appendix A and as noted on the test boring logs in Appendix B.

Logs of all borings, which show visual descriptions of all soil strata encountered using the AASHTO classification system are included in Appendix B. Sampling information and other pertinent field data and observations are also included on the boring logs. In addition, a sheet defining the terms and symbols used on the logs and explaining the SPT procedure is provided immediately preceding the test boring logs in Appendix B.

3.2 Laboratory Investigation

The disturbed soil samples were visually classified by an engineer in accordance with the AASHTO Soil Classification System and the visual classifications were verified or modified based upon the results of laboratory tests. Final test boring logs were subsequently prepared and are included in Appendix B. Soil index property tests including natural moisture content tests (AASHTO T265), grain size analyses (AASHTO T88), Atterberg limits tests (AASHTO T89 and T90), soil pH tests (AASHTO T200), unconfined compressive strength tests (AASHTO T208) and natural dry density tests (AASHTO T233) were performed on representative soil samples. In addition to the soil index property tests, calibrated hand penetrometer tests (“pocket penetrometer” tests) were performed on selected samples. The results of the laboratory tests are included on the test boring logs in Appendix B and/or on the summary sheets in Appendix C.

4 GENERAL SITE CONDITIONS

4.1 Regional and Site Geology

The project site is located within the Tipton Till Plain, which is part of the Central Till Plain Physiographic Unit of the State of Indiana. The overburden soils consist mainly of Wisconsinan age glacial till soils. However, large pre-glacial valleys are filled with deposits of outwash sand and gravel that were deposited by meltwater during glacial recession. The mapped depth to bedrock is reported to be approximately 50 to 150 ft, although occasionally deeper or shallower bedrock depths in the vicinity of the project site are reported near the extremities of the White River Basin. The bedrock in this area consists mostly of Silurian dolomite and limestone. The Fortville Fault runs north-northeast through adjacent Marion and Madison Counties and runs within about 12 miles to the east of the project site.

4.2 Subsurface Conditions

The general subsurface conditions at the site were investigated by drilling three test borings to depths of 100 ft to 125 ft below the existing ground (or bridge deck) surface. The subsurface conditions disclosed by the field investigation are summarized in the following paragraphs. Detailed descriptions of the subsurface conditions encountered in each test boring are presented on the test boring logs in Appendix B. It should be noted that the stratification lines shown on the test boring logs represent approximate transitions between material types. In-situ stratum changes could occur gradually or at different depths.

Test Borings TB-1 and TB-3 were drilled in the eastbound lane of Logan Street and encountered 7 inches of asphalt pavement and 14 inches of concrete pavement, respectively, at the ground surface. The pavement materials were placed directly over subgrade soils. Test Boring TB-2 was drilled in the westbound turn lane of Logan Street through the deck of the existing bridge. The bridge deck was 9.5 inches thick. The stream channel bed was encountered 27.1 ft below the surface of the bridge deck at the boring location. At the time of the test boring, approximately 2 inches of water was present above the bottom of the river channel at Boring TB-2.

Table 1 – Summary of Surface Materials at Boring Locations

Boring Designation	Asphalt Thickness, inches	Concrete Thickness, inches
TB-1	7.0	-
TB-2	-	9.5*
TB-3	-	14.0

*Bridge deck thickness.

Borings TB-1 and TB-3 encountered fill materials consisting of sand with varying amounts of silt and gravel, along with crushed limestone, asphalt and concrete fragments (encountered at TB-1).

Beneath the fill material in Borings TB-1 and TB-3, and beneath the bottom of the river channel at TB-2, the test borings encountered varying layers of non-cohesive soils such as sand (A-1-b), sandy loam (A-2-4) and sandy gravel (A-1-a) interbedded with cohesive soils such as sandy loam (A-6, A-4) and clay loam (A-6). The clay loam layer extends to approximately El 729 to El 725 in the three test borings drilled for this project. This layer is significant since it is apparently located below the existing bridge foundations and is highly overconsolidated glacial till (i.e., referred to as “hardpan”). In general, the soils within the upper 11.0 to 33.5 ft below the existing ground (or bridge deck) surface were looser or softer. The clay loam encountered below depths of about 23.5 to 33.5 ft below the existing ground surface was generally stiff to hard glacial till.

Below the clay loam (glacial till) at depths beginning at about 38 to 43 ft below the existing ground surface (or bridge deck surface), the test borings encountered medium dense to very dense sand and gravel (A-1-b), gravelly sand (A-1-b) and sandy gravel (A-1-a) to depths of 100 to 111.5 ft below the existing ground surface. Boring TB-2 encountered cohesive soils below the sand to the termination depth of 125 ft below the existing ground surface. These cohesive soils consisted of hard silty loam (A-4) and clay loam (A-6).

The cohesive soils encountered in the test borings exhibited liquid limit (LL) values of approximately 18 to 33 percent and plasticity index (PI) values of approximately 5 to 15 percent. The natural moisture content values of the cohesive soil samples throughout the soil profile generally were within a range from the high single-digits to low teens indicating that these soils are highly overconsolidated.

4.3 Ground Water Conditions

Ground water level observations were made during drilling operations by noting the depth of water on the drilling tools and in the open boreholes following withdrawal of the drilling augers. Ground water was encountered in each of the test borings. Ground water was encountered during drilling in Borings TB-1 and TB-3 at depths of about 21.0 to 23.5 ft below the existing ground surface. Ground water readings were obscured in boring TB-2 as a result of being drilled within the river bottom, although ground water is assumed to be present from immediately beneath the stream bed. The ground water level remained unchanged at Boring TB-1 after withdrawal of the drilling augers, while it was not observed in Boring TB-3, which had a cave-in depth above the initial ground water level. It must be noted that short term ground water level observations made in test borings are only an indicator of the ground water level at the time of the observation. Fluctuations in the level of the ground water should be expected due to variations in rainfall, the flow level in White River and other factors not evident at the time of our investigation.

5 DESIGN RECOMMENDATIONS

The following design recommendations have been developed on the basis of the previously described project characteristics (Section 2) and subsurface conditions (Section 4). If there are any changes to the project criteria, or any variations from the information or assumptions presented herein, including loading conditions, proposed grading, etc., a review should be made by this office.

Based on geologic mapping and the results of the test borings, it is our opinion that the subsurface conditions at this project site meet the criteria for Site Class Definition C based on Table 3.10.3.1-1 (Site Class Definitions) in the 2017 AASHTO LRFD Bridge Design Specifications. A Design Spectral Response Acceleration Coefficient at 1-second period (S_{D1}) of 0.080 has been estimated based on Section 3.10.3 of the 2017 AASHTO LRFD Bridge Design Specifications and the project site has been determined to be in Seismic Zone 1 based on Table 3.10.6-1 of the 2017 AASHTO LRFD Bridge Design Specifications. The Acceleration Coefficient, A_s , at this site is 0.055 and thus it is our opinion that the risk of liquefaction at this site is very low and liquefaction mitigation is not required.

5.1 Bridge Foundation Recommendations

Considering the project characteristics, the general geology in the vicinity of the project site and the subsurface conditions encountered in the test borings drilled at the bridge location, it is recommended that pile foundations be used for support of the end bents and interior piers for the proposed widened portion of the bridge. It is our understanding that the original bridge foundations are supported on H-piles and that the widened portion of the bridge on the left (north) side of the bridge is reportedly supported on 14-in. diameter pipe piles. Since the pipe piles for the previously widened portion of the bridge were apparently installed successfully and have apparently performed satisfactorily, it is our opinion that 14 in. diameter pipe piles should be used to support the currently proposed widened bridge section.

Final loading information for the widened bridge foundations is not available at the current stage of planning. Based on discussion with Butler Fairman & Seufert, Inc., Allowable Design Pile Loads have been selected for a 14 in. diameter pipe pile section for the end bents and interior piers. If needed, ATC can provide revised Ultimate Driving Loads (kips) and revised estimated pile tip elevations that are compatible with the actual allowable loads required for the piles once the required allowable loads have been determined.

It is recommended that the dynamic pile load test (PDA) in accordance with the INDOT Standard Specifications Section 701.05(b) be used to establish driving criteria and to verify pile capacities for all piles on this project. The actual pile tip elevations must be determined based on the results of the PDA tests. It is recommended that one PDA test be performed at one end bent location and one PDA test be performed at each of two interior pier locations. Restrike of the piles shall be after a waiting period of 72 hours after initial drive of the piles.

Since the soils that underlie the bridge are relatively incompressible, it is our opinion that settlement will be negligible and therefore downdrag on the piles has not been included. It has been assumed that the end bents will be protected from scour, therefore, the pile analyses at the end bent locations do not include loss of friction from scour.

Estimated pile tip elevations were determined using the computer program APILE Plus for static capacity and the estimated pile tip elevations are presented in the following tables based on the results of the computer analyses. It is important to note that the actual pile lengths will vary considerably due to the variability in the glacial till and glacial outwash soils along with variability and limitations associated with static pile analysis methods used to estimate pile lengths and dynamic test methods used for determining the actual pile tip elevations. Hard driving conditions should be anticipated due to the hard glacial till soils and very dense sand and gravel, which may contain cobbles and boulders above the estimated pile tip elevations. The piles should be installed and monitored in accordance with Section 701 of the INDOT Standard Specifications.

The 14-inch diameter steel pipe piles shall be spaced at least 4 ft apart. The steel pipe piles should be fitted with conical driving tips (INDOT Standard Specifications Section 915.01(a) 2. The sequence for driving the piles shall begin with the inner-most pile within the pile cap and progress outward from the inner-most pile to the outer-most piles. Based upon the test borings, it appears that foundation seals may not be necessary for the interior pier installations. However, since a foundation seal is strictly a construction measure (i.e., it is part of the contractor's means and methods and is not part of the permanent foundation design), the contractor may elect to install a foundation seal to aid in the construction of the interior pier foundations. If the contractor elects to install a foundation seal, the foundation seal should be designed in general accordance with the requirements described in the Indiana Design Manual Chapter 408, Section 408-2.12. The contractor shall be required to take all measures as necessary to prevent heaving of the soils and loss of ground due to the installation of the cofferdams, foundation seals (if utilized), the piles, etc.

**Table 2 – Summary of Pile Capacities for Steel Pipe Piles
 Hamilton County Bridge No. 207
 Logan Street over White River
 Hamilton County, Indiana**

Substructure Locations	End Bent Nos. 1 & 5	Interior Pier Nos. 2, 3 & 4
Pile Type	Pipe	Pipe
Pile Size (diameter)	14 in.	14 in.
Grade of Steel	ASTM A252, Grade 3	ASTM A252, Grade 3
Minimum Shell Thickness, in.	0.375	0.375
Allowable Design Load / Pile, (kips)	160	175
Factor of Safety	2.0	2.0
Relaxation of Pile Tip in Shale, (kips)	0	0
Downdrag Friction, (kips)	0	0
Scour Zone Friction, (kips)	0	30
Ultimate Driving Load, (kips)*	320	380
Estimated Pile Tip Elevation	671	667
Minimum Pile Tip Elevation**	718	718
<p>* “Ultimate Driving Load” is equivalent to “Nominal Driving Resistance (R_{ndr})” in the 2018 INDOT Standard Specifications Section 701.05(b).</p> <p>**Minimum pile tip elevation should be at least 20 ft below the bottom of the end bent pile cap elevation or as required for end bent structural requirements and at least 10 ft below the Q_{100} scour elevation.</p> <p>Method of Testing – Dynamic Pile Load Test – 2018 ISS 701.05(b) – One PDA test at an end bent and one PDA test at each of two different interior piers.</p>		

5.2 Pavement Design Considerations

The pavement associated with this project will be limited to minimal modifications around the bridge approaches. Boring TB-1 at the west end of the bridge encountered crushed limestone, asphalt and concrete fill material overlying silty sand fill with little gravel. The miscellaneous rubble fill extended to a depth of about 3.5 ft below the existing ground surface and the underlying sand fill extended to a depth of 6 ft below the existing ground surface. Boring TB-3 at the east end of the bridge encountered a relatively thin layer of sandy fill with little gravel overlying very soft to medium stiff natural sandy loam (A-4) to a depth of about 8.5 ft below the existing ground surface. The sandy loam exhibited an organic content of about 2.2 percent.

Based upon the results of the laboratory testing program performed for this investigation; in conjunction with engineering judgement and our experience, subgrade soil parameters for use in the design of the new pavement have been determined. The table below summarizes the recommended soil parameters for use in pavement design. The subgrade treatment should be in accordance with INDOT Standard Specifications (ISS) Section 207.

The 2020 AADT for Logan Street is expected to be 23,170 V.P.D. A resilient modulus value of 6,000 lbs/sq.in. is recommended for use in pavement design in conjunction with Type IC subgrade treatment (based upon current INDOT Office of Geotechnical Services policy for subgrade treatment) in accordance with Section 207.04 of the INDOT Standard Specifications. The following table summarizes the recommended pavement design parameters:

Table 3 – Pavement Design Parameters – Predominant and Critical soil

Natural Subgrade Soil Resilient Modulus Value, lbs/sq.in.	3,500
Modified/Prepared Subgrade Soil Resilient Modulus Value, lbs/sq.in.	6,000
Predominant and Critical Subgrade Soil	Sandy Loam (A-4)
Percent Passing #200 Sieve	38
Percent Silt	29
Liquid Limit, percent	24
Plastic Limit, percent	15
Plasticity Index, percent	9
Approximate Depth to Ground Water, ft	21
Natural Dry Density of Natural Subgrade (pcf)	100
Natural Moisture Content of Natural Subgrade Soil, percent	20
Maximum Organic Content, percent	2
Filter Fabric Required for Underdrains	Yes
Subgrade / Foundation Treatment	IC*

* For reconstruction areas, after removing any unsuitable soil material, the pavement foundation treatment shall consist of a maximum of 18 inches of excavation below the bottom of the subgrade elevation as determined to be necessary based upon field conditions. A geotextile in accordance with the INDOT Standard Specification 918.02 (c), Type 2A shall be placed at the bottom of the excavation. The excavation shall then be backfilled with INDOT No. 5 stone. The subgrade treatment shall then be constructed on top of the foundation improvement.

The actual extent/magnitude of pavement foundation improvement will depend to a large extent upon weather conditions, the construction schedule, sequencing of the earthwork, the types of materials exposed and the methods and procedures utilized by the earthwork contractor.

It must be noted that even those soils that may currently be relatively firm can easily become unstable during construction when exposed to precipitation and construction traffic. This case has been encountered in many instances where existing pavement sections are removed. Therefore, it is likely that some form of pavement foundation improvement will be required in some areas before the subgrade treatment is applied. It is not possible to accurately determine beforehand the amount of pavement foundation soil modification or improvement that may be required since this is dependent upon seasonal conditions (problematic soils are more likely to occur during late fall, winter or spring), the sequencing of construction, construction equipment and methods and the specific soil type encountered at the foundation level. In order to address pavement foundation soil problems, it is suggested that an undistributed quantity of foundation soil improvement (i.e., removal and replacement with crushed limestone) equal to approximately 50 percent of the pavement area be included in the contract to be used where determined to be necessary to provide a suitable foundation for the pavement subgrade treatment. Based on the presence of uncontrolled fill material, sand and very soft soils, and the very short project length, it is unlikely that chemical modification and stabilization of the foundation and subgrade materials will be possible for this project. Therefore, subgrade improvement may be limited to removal and replacement with crushed limestone.

5.3 Site Grading

It is our understanding that the finished pavement grade will remain unchanged and that minimal fill will be required to achieve the matching grades for the widened pedestrian area south of the existing roadway. However, a significant amount of fill may be required at the southwest portion of the existing bridge where an existing gage station is to be relocated. It is important that all earth fill that is placed adjacent to the existing roadway embankments be carefully benched into the existing embankments in accordance with INDOT Standard Specifications Section 203.21 in order to preclude a weak zone from forming at the interface between the existing embankment soils and the new fill soil. The foundation soils beneath the new pavement areas should be prepared in accordance with Section 6.2 of this report and the fill placed and compacted in accordance with Section 6.3 of this report. All conventional earth subgrade and embankment work should be performed in accordance with current INDOT Standard Specifications. The expanded embankment should be suitably protected to prevent scour and erosion.

5.4 Corrosion Protection

The soil samples tested for pH (as tabulated below) during the laboratory investigation do not indicate that the soil at the site has a significant potential for causing corrosion. Corrosion protection does not appear to be needed for steel piles based on the pH results of the samples tested, as summarized in the table below.

Table 4 –Summary of Soil pH Values

Test Boring	Depth, ft	pH Value
TB-1	11.0 – 12.5	8.4
TB-1	13.5 – 15.0	8.7
TB-1	26.0 – 27.5	8.4
TB-1	31.0 – 32.5	8.1
TB-1	88.5 – 90.0	7.8
TB-2	3.5 – 5.0	8.3
TB-2	43.5 – 45.0	8.2
TB-2	53.5 – 55.0	8.5
TB-2	88.5 – 90.0	8.2
TB-2	113.5 – 115.0	8.1
TB-2	123.5 – 125.0	8.2
TB-3	6.0 – 7.5	8.1
TB-3	8.5 – 10.0	8.4
TB-3	21.0 – 22.5	8.6
TB-3	53.5 – 55.0	8.3
TB-3	88.5 – 90.0	8.5

6 GENERAL CONSTRUCTION PROCEDURES AND RECOMMENDATIONS

Since this investigation identified actual subsurface conditions only at the test boring locations, it was necessary for our geotechnical engineers to extrapolate these conditions in order to characterize the entire project site. Even under the best of circumstances, the conditions encountered during construction can be expected to vary somewhat from the test boring results and may, in the extreme case, differ to the extent that modifications to the recommendations become necessary.

6.1 Site Preparation and Earthwork

Any topsoil, as well as any wet, soft or otherwise unsuitable surficial bearing soils should be stripped from the project site within the construction limits prior to construction of the roadway subgrade and pavement. Proofrolling of the foundation soils should be performed in accordance with the INDOT Standard Specifications, Section 203.26 within all areas where new fill or pavement will be placed. Care should be exercised during grading operations at the site. Due to the nature of the near-surface soils, the traffic of heavy equipment, including heavy compaction equipment, may create pumping and general deterioration of the shallower soils, especially if excess surface water is present. The grading, therefore, should be done during a dry season, if possible.

Even those soils that may currently be relatively firm can easily become unstable during construction when exposed to precipitation and construction traffic. It is not possible to accurately determine beforehand the amount of pavement foundation soil modification or improvement that may be required since this is dependent upon seasonal conditions (problematic soils are more likely to occur during late fall, winter or spring), the sequencing of construction, construction equipment and methods and the specific soil type encountered at the foundation level. It is suggested that an undistributed quantity of pavement foundation soil improvement equal to approximately 50 percent of the pavement area be included in the contract to be used where determined to be necessary to provide a suitable foundation for the pavement subgrade. The foundation improvement options may include removal and replacement with crushed limestone.

6.2 Placement and Compaction of Engineered Fill

Engineered fill should be placed in lift thicknesses not to exceed about 8 in. and compacted to a minimum of 95 percent of the standard Proctor maximum dry density (AASHTO T99) as specified in the current INDOT Standard Specifications. It is likely that some drying of the fill material will be required before being placed in order to meet the INDOT Specification for fill placement. It is probable that this will also be the case for most of the soil materials encountered within the range of subgrade treatment. However, adequate moisture conditioning may be difficult during wet seasons and, during such seasons, a granular material may be necessary to satisfy the minimum compaction requirements.

Where fill material is placed on existing slopes, benches should be cut into the existing slopes so as to preclude a shear plane from developing at the interface. Benches having a minimum width of 10 ft should be cut into the natural slopes and existing embankment side slopes that are 4 (horizontal) to 1 (vertical), or steeper, before new engineered fill is placed. These benches should be excavated in accordance with Section 203.21 of the INDOT Standard Specifications.

6.3 Pile Installation

In order to confirm that the new piles are properly installed, it is recommended that a representative of the geotechnical engineer who is independent of the contractor perform continuous inspection during pile installation. An accurate record should be kept of the date, time, depth of penetration, driving resistance and other pertinent data for each pile as well as the characteristics of the pile driver that is used. The pile driver should have sufficient energy to drive the piles to bearing as prescribed in Section 5.1 of this report. To verify proper pile resistance, the driving criteria to be used during production pile driving should be determined based upon the pile hammer and pile section that is used. The driving criteria will be established by the geotechnical engineer at the time of construction once the specific details regarding pile installation have been established. All pile driving should be done in accordance with INDOT Standard Specifications Section 701.

6.4 Construction Dewatering

At the time of our field investigation, free ground water was encountered at depths ranging from about 21.0 to 23.5 ft below the current ground surface at the ends of the bridge, which corresponds to ground water at about El 746.0 to El 743.5. Boring TB-2 was drilled within White River and therefore ground water readings are not available, however the water level in the White River was at about El 741.1 at the time the test borings were drilled. Therefore, it appears that significant dewatering will not likely be required during construction at the end bents. However, seepage into the end bent excavations may be experienced due to surface run-off and other factors. In excavations that are made in cohesive soils, the ground water can likely be removed by pumping from sumps. However, in cases where a saturated sand or silt layer is encountered in the base of the excavation, it will not be possible to pump water directly from the base of the excavation without causing deterioration of the subgrade soil. In this case, it will probably be necessary to depress the ground water using other means.

For the interior piers, significant dewatering measures may be required to address ground water well in advance of making the interior pier excavations in order to adequately control the ground water level below the deepest excavations in conjunction with the need for cofferdams. No excavations should be initiated until it is demonstrated that means for controlling ground water and the effects of hydrostatic pressure have been sufficiently implemented in order to prevent heaving in the bases of the excavations and loss of ground. It may not be possible to pump water directly from the base of an excavation without causing deterioration of the subgrade soil or resulting in heaving in the base of the excavation. Inadequate or insufficient dewatering could result in heaving of the foundation soils and loss of ground. Furthermore, it is important to understand that ground water levels higher than those measured at the time of this investigation should be expected due to seasonal variations in the ground water level. Variations in the flow level of the White River will also have a significant impact on ground water conditions.

The contractor should be prepared for variable ground water conditions, including cases as described above, and variable temporary dewatering conditions. It is recommended that an experienced specialty dewatering contractor be retained to provide temporary dewatering measures for the excavations for the foundations. The proposed dewatering system shall be provided to the Engineer for review.

7 LIMITATIONS OF STUDY

An inherent limitation of any geotechnical engineering study is that conclusions must be drawn on the basis of data collected at a limited number of discrete locations. The recommendations provided in this report were developed from the information obtained from the test borings that depict subsurface conditions only at these specific locations and at the particular time designated on the logs. Soil and ground water conditions at other locations may differ from conditions occurring at these boring locations. The nature and extent of variations between the borings may not become evident until the course of construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report after performing on-site observations during the excavation period and noting the characteristics of any variation.

Any comments or recommendations made herein regarding construction related issues are solely for the purpose of planning the design of the proposed building addition. The scope of this investigation is not sufficient to identify all potential construction related issues, variations, anomalies, etc. or all factors that may affect construction means, methods and costs.

Our professional services have been performed, our findings obtained and our recommendations prepared in accordance with customary principles and practices in the field of geotechnical engineering at the time when the services were performed and at the location where the services were performed. This warranty is in lieu of all other warranties either express or implied. This company is not responsible for the independent conclusions, opinions or recommendations made by others based on the field exploration and laboratory test data presented in this report.

The scope of our services does not include any environmental assessment or investigation for the presence or absence of hazardous or toxic materials in the soil, ground water or surface water within or beyond the site studied.

ATC assumes no responsibility for any construction procedures, temporary excavations (including utility trenches), temporary dewatering or site safety during or after construction. The contractor shall be solely responsible for all construction procedures, construction means and methods, construction sequencing and for safety measures during construction as well as the protection of all existing facilities. All applicable federal, state and local laws and regulations regarding construction safety must be followed, including current Occupational Safety and Health Administration (OSHA) Regulations including OSHA 29 CFR Part 1926 “Safety and Health Regulations for Construction”, Subpart P “Excavations”, and/or successor regulations. The Contractor shall be solely responsible for designing and constructing stable, temporary excavations and should brace, shore, slope, or bench the sides of the excavations as necessary to maintain stability of the excavation sides and bottom and to protect the integrity of all existing facilities (i.e., existing foundations, utilities, streets, etc.).

Appendices

APPENDIX A

PROJECT LOCATION MAP – Figure 1
VICINITY MAP – Figure 2
BORING PLAN – Figure 3
GENERALIZED SUBSURFACE PROFILE – Figure 4
LEGEND FOR GENERALIZED SUBSURFACE PROFILE – Figure 5

APPENDIX B

FIELD CLASSIFICATION SYSTEM FOR SOIL EXPLORATION
TEST BORINGS LOGS

APPENDIX C

SUMMARY OF CLASSIFICATION TEST RESULTS
SUMMARY OF SPECIAL LAB TESTS
GRAIN SIZE DISTRIBUTION TEST REPORTS
SUMMARY OF UNCONFINED COMPRESSIVE STRENGTH
UNCONFINED COMPRESSIVE STRENGTH TEST REPORTS

APPENDIX D

AASHTO SEISMIC PARAMETERS

APPENDIX E

APILE ANALYSES

APPENDIX A

PROJECT LOCATION MAP – Figure 1

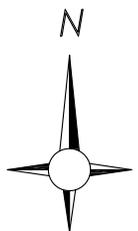
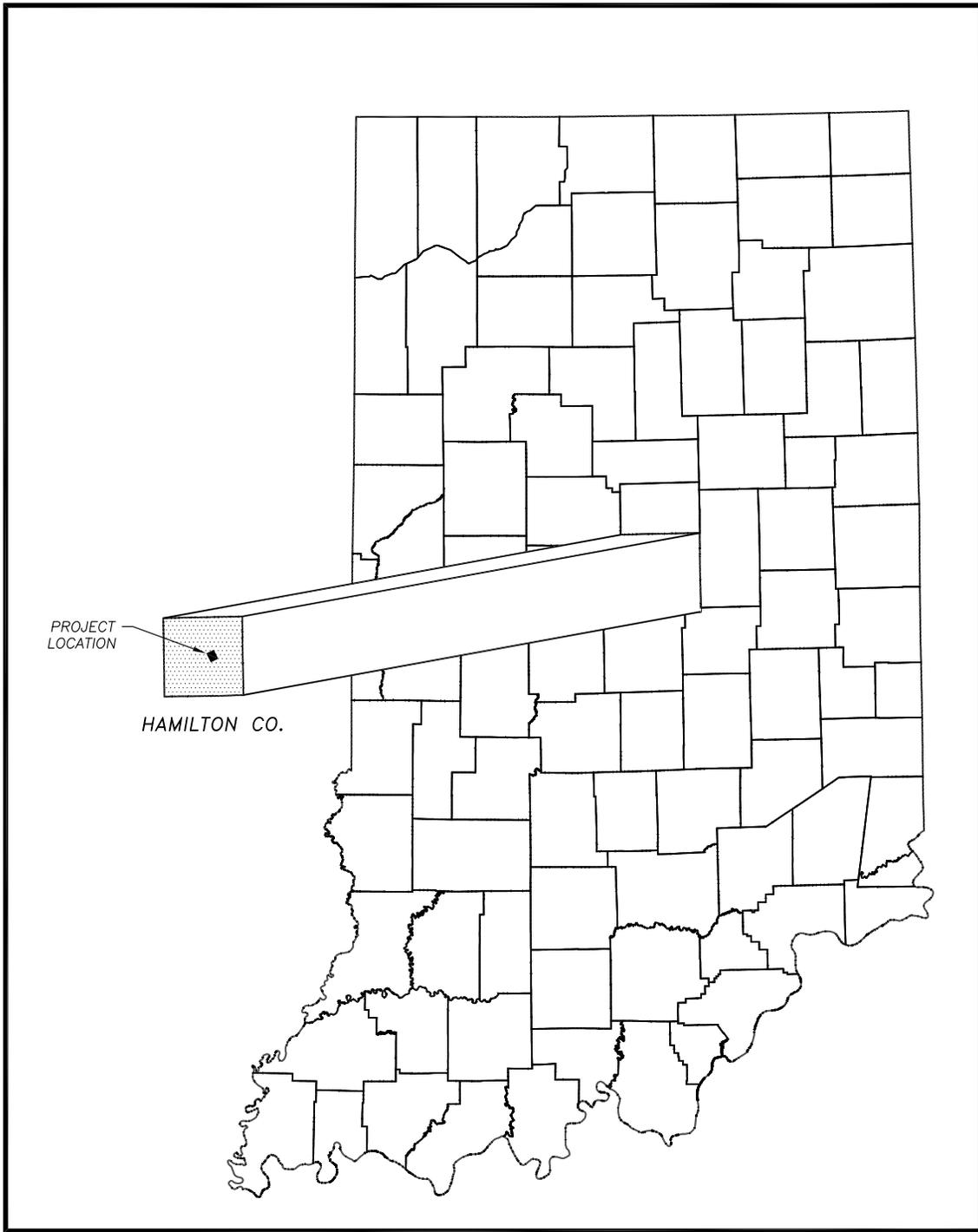
VICINITY MAP – Figure 2

BORING PLAN – Figure 3

GENERALIZED SUBSURFACE PROFILE – Figure 4

LEGEND FOR GENERALIZED SUBSURFACE PROFILE – Figure 5

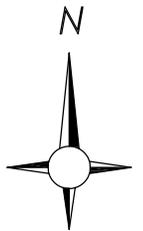
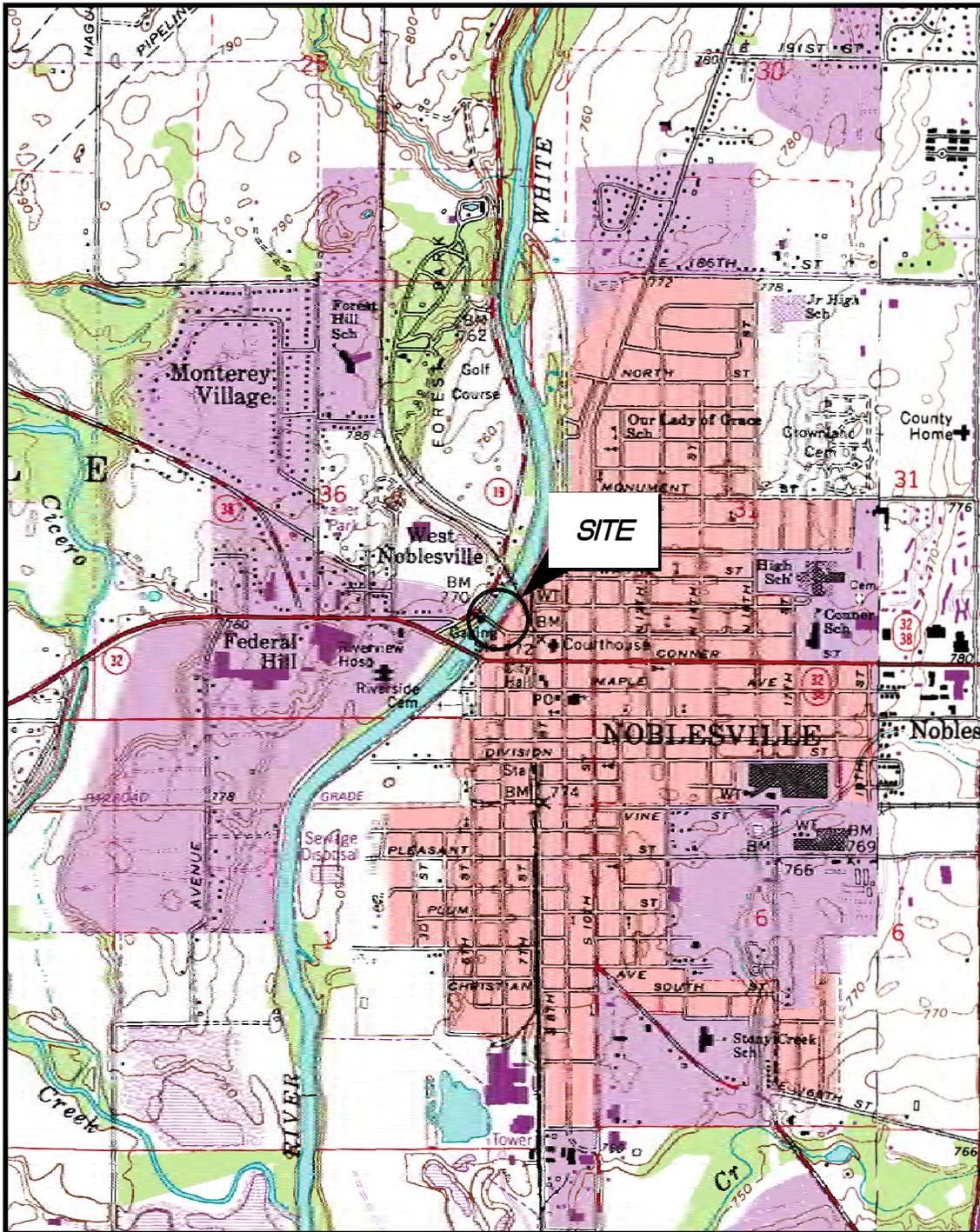
H:\2017\BUTLER FAIRMAN & SEUFERT, INC\LOGAN STREET BRIDGE, NOBLESVILLE\GEOTECH\170GC00513-VIC.DWG, PROJ



PROJECT LOCATION MAP

PROPOSED BRIDGE WIDENING
 LOGAN STREET OVER WHITE RIVER
 HAMILTON COUNTY BRIDGE NO. 207
 NOBLESVILLE, HAMILTON COUNTY, INDIANA

Project Number: 170GC00513		Drn. By: AK
Drawing File: SEE LOWER LEFT		Ckd. By: SR
Date: 8/17	Scale: NOT TO SCALE	App'd By:
ATC		Figure: 1



VICINITY MAP

PROPOSED BRIDGE WIDENING
 LOGAN STREET OVER WHITE RIVER
 HAMILTON COUNTY BRIDGE NO. 207
 NOBLESVILLE, HAMILTON COUNTY, INDIANA

Project Number:
170GC00513

Drawing File:
SEE LOWER LEFT

Date:
8/17

Scale:
1"=2,000'

Drn. By:
AK

Ckd. By:
SR

App'd By:

Figure:

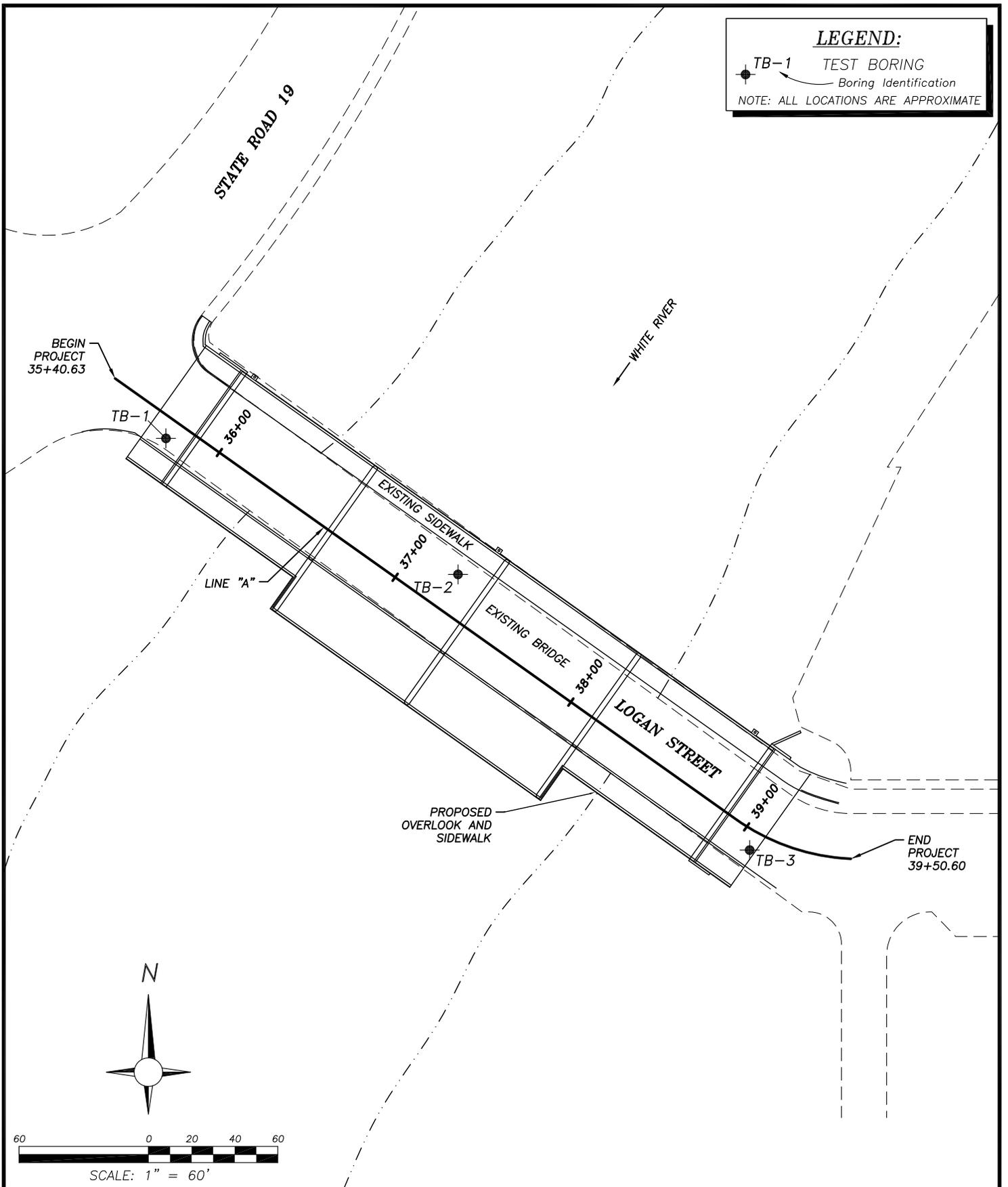
ATC

2

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LEGEND:

TB-1 TEST BORING
Boring Identification
NOTE: ALL LOCATIONS ARE APPROXIMATE



BORING PLAN

PROPOSED BRIDGE WIDENING
LOGAN STREET OVER WHITE RIVER
HAMILTON COUNTY BRIDGE NO. 207
NOBLESVILLE, HAMILTON COUNTY, INDIANA

Project Number: 170GC00513		Drn. By: AK
Drawing File: SEE LOWER LEFT		Ckd. By: SR
Date: 8/17	Scale: AS SHOWN	App'd By:



Figure:
3

PROFILE ON LINE "A"

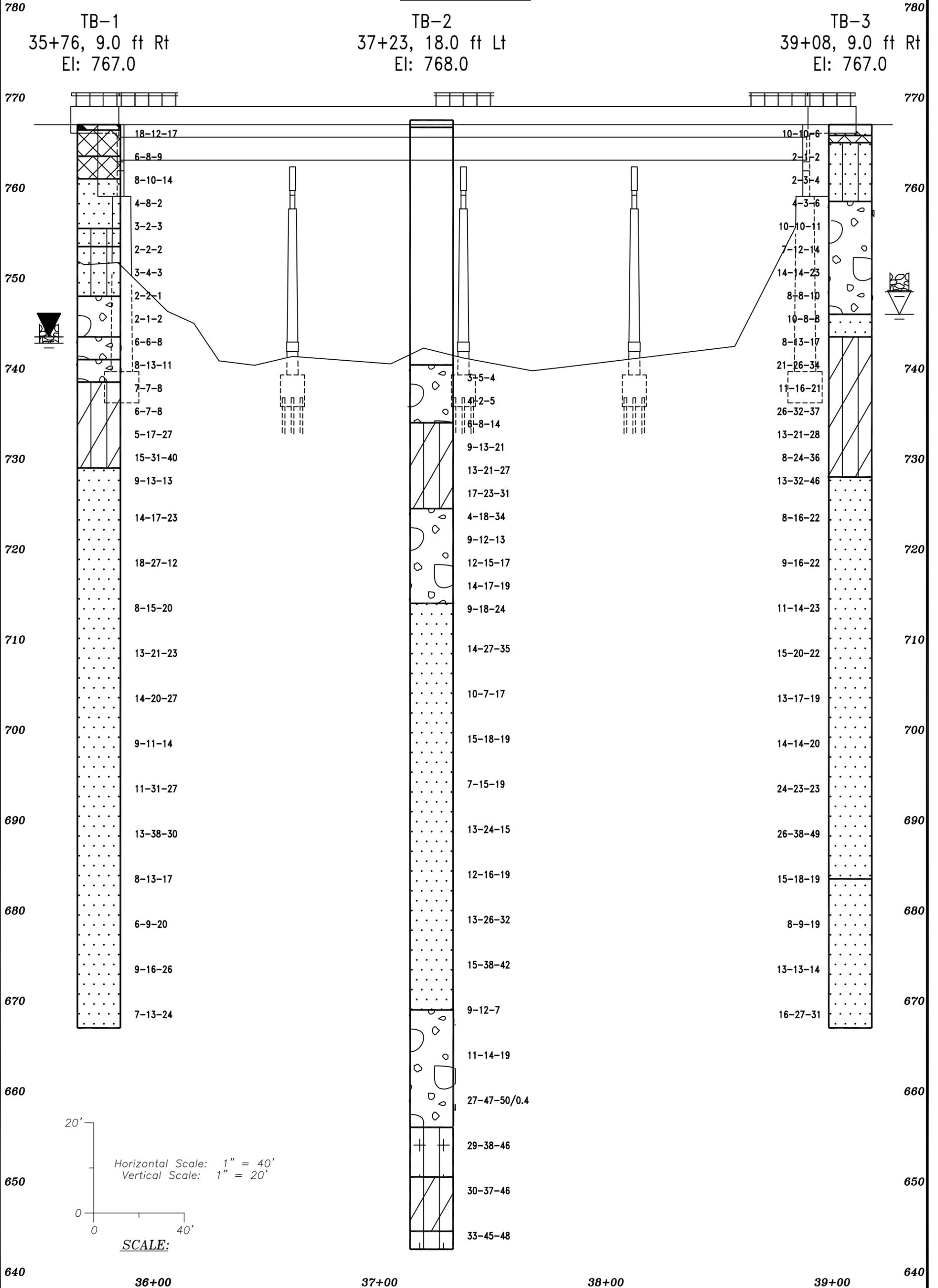
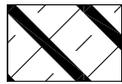


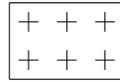
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AS SHOWN
Date: 12/17
Scale: AS SHOWN

GENERALIZED SUBSURFACE PROFILE
PROPOSED BRIDGE WIDENING
LOGAN STREET OVER WHITE RIVER
HAMILTON COUNTY BRIDGE NO. 207
NOBLESVILLE, HAMILTON COUNTY, INDIANA

Project Number: 170GC00513	Drn. By: AK
Drawing File: SEE LOWER LEFT	Ckd. By: SR
ATC	
	App'd By:
	Ckd. Date:



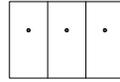
ASPHALT AND
AGGREGATE BASE



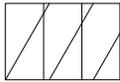
INDOT: SILT



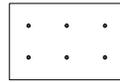
TOPSOIL



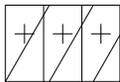
INDOT: SANDY LOAM



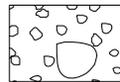
INDOT: CLAY LOAM



INDOT: SAND



INDOT: SILTY CLAY LOAM



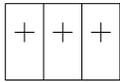
INDOT: GRAVELLY SAND
OR SAND & GRAVEL



INDOT: LOAM



INDOT: SANDY GRAVEL



INDOT: SILTY LOAM



Water Level
During Drilling



BOREHOLE
CAVE-IN DEPTH



Water Level At
Completion of Drilling



Standard Penetration
Test (SPT) "N" Value



Water Level 24
Hours (or More)
After Drilling

LEGEND FOR GENERALIZED SUBSURFACE PROFILE

PROPOSED BRIDGE WIDENING
LOGAN STREET OVER WHITE RIVER
HAMILTON COUNTY BRIDGE NO. 207
NOBLESVILLE, HAMILTON COUNTY, INDIANA

Project Number:
170GC00513

Drawing File:
SEE LOWER LEFT

Date:
8/17

Scale:
AS SHOWN

Drn. By:
AK

Ckd. By:
SR

App'd By:



Figure:

5

APPENDIX B

FIELD CLASSIFICATION SYSTEM FOR SOIL EXPLORATION
TEST BORINGS LOGS

FIELD CLASSIFICATION SYSTEM FOR SOIL EXPLORATION

Particle Size Identification

(Based on INDOT Standard Specifications Section 903)

Boulders	- 3 in. (75 mm) diameter or more
Gravel	- 2.0 mm (No. 10 Sieve) to 3 in.
Sand (Coarse)	- 0.425 mm to 2.0 mm (No. 40 Sieve to No. 10 Sieve)
Sand (Fine)	- 0.075 mm to 0.425 mm (No. 200 Sieve to No. 40 sieve)
Silt	- 0.002 mm to 0.075 mm (No. 200 Sieve)
Clay	- Smaller than 0.002 mm

NON-COHESIVE SOILS

(Silt, Sand, Gravel and Combinations)

Density

Very Loose	- 5 blows/ft or less
Loose	- 6 to 10 blows/ft
Medium Dense	- 11 to 30 blows/ft
Dense	- 31 to 50 blows/ft
Very Dense	- 51 blows/ft or more

COHESIVE SOILS

(Clay, Silt and Combinations)

Consistency

Very Soft	- 3 blows/ft or less
Soft	- 4 to 5 blows/ft
Medium Stiff	- 6 to 10 blows/ft
Stiff	- 11 to 15 blows/ft
Very Stiff	- 16 to 30 blows/ft
Hard	- 31 blows/ft or more

Plasticity

Degree of Plasticity	Plasticity Index
None to slight	0 - 4
Slight	5 - 7
Medium	8 - 22
High to Very High	over 22

Classifications shown on the test boring logs are made by visual inspection of samples and confirmed / modified based on index property tests.

Standard Penetration Test (AASHTO T 206) — Driving a 2.0" O.D., 1-3/8" I.D. sampler a distance of 1.0 foot into undisturbed soil with a 140 pound hammer free falling a distance of 30 inches. It is customary for ATC to drive the sampler 6 inches to seat the sampler into undisturbed soil, then perform the test. The number of hammer blows for seating the sampler and making the test are recorded for each 6 inches of penetration on the drill log (Example — 6-8-9). The standard penetration test result can be obtained by adding the last two figures (i.e., 8 + 9 = 17 blows/ft).

Strata Changes — In the column "Soil Classification" on the test boring logs, the horizontal lines represent strata changes. A solid line (_____) represents an actually observed change. A dashed line (_ _ _ _ _) represents an estimated change.

Ground Water observations were made at the times indicated. Porosity of soil strata, weather conditions, site topography, etc., may cause changes in the water levels indicated on the logs.

BORING LOG

BORING NO.: **TB-1**
 SHEET 1 OF 3
 NORTHING : 1
 EASTING : 1
 DATUM : _____
 DATE STARTED : 08-28-17
 DATE COMPLETED : 08-28-17

GEOTECHNICAL CONSULTANT : ATC Group Services LLC
 DES NO. : N/A STRUCTURE # : Hamilton Co. No. 207

PROJECT TYPE : Bridge Widening
 LOCATION : Logan Street over White River, Noblesville, Indiana
 COUNTY : Hamilton PROJECT NO.: 170GC00513

ELEVATION : <u>767.0</u>	BORING METHOD : <u>Hollow Stem Auger</u>	HAMMER : <u>Auto</u>
STATION : <u>35+76</u>	RIG TYPE : <u>Truck</u>	DRILLER/INSP : <u>W. Bates/S. Rushfeldt</u>
OFFSET : <u>9.0 ft Right</u>	CASING DIA. : <u>--</u>	TEMPERATURE : <u>70 °F</u>
LINE : <u>"A"</u>	CORE SIZE : <u>--</u>	WEATHER : <u>Night</u>
DEPTH : <u>100.0 ft</u>		

GROUNDWATER: ∇ Encountered at 23.5 ft ▼ At completion 23.5 ft ▼ -- After -- hours ☒ Caved in at 24.2 ft

ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	SAMPLE NUMBER	SPT per 6"	% RECOVERY	MOISTURE CONTENT	DRY DENSITY, pcf	POCKET PEN., tsf	UNCONF. COMP., tsf	ATTERBERG LIMITS			REMARKS		
										LL	PL	PI			
		7 in. Asphalt													
765.0		Light gray, slightly moist, crushed limestone, asphalt and concrete fragments (Visual) (FILL)	SS1	18-12-17	44								0.0, Station and offset estimated from 2001 bridge plans prepared by Floyd E. Burroughs & Associates, Inc. 0.1, Ground surface elevation estimated from preliminary bridge plans provided by BF&S.		
	5	Dark brown, slightly moist, medium dense, sand A-2-4 (Visual) (FILL)	SS2	6-8-9	67										
760.0		Gravelly Sand A-1-b (0) , Light brown, slightly moist, medium dense to loose, (Lab No. 1)	SS3	8-10-14	100						NP	NP		NP	
	10		SS4	4-8-2	44										
755.0		Sandy Loam A-6 (3) , Brown and gray, moist, soft, (Lab No. 2)	SS5	3-2-3	100	26.7					33	18		15	
	15		SS6	2-2-2	100						NP	NP		NP	
750.0		Sandy Loam A-2-4 (0) , Brown, slightly moist, very loose to loose, (Lab No. 3)	SS7	3-4-3	100										
	20		SS8	2-2-1	44										
745.0		Sandy Gravel A-1-a (0) , Brown, slightly moist, very loose, (Lab No. 4)	SS9	2-1-2	100										
	25		SS10	6-6-8	100										
		Sandy Gravel A-1-a , Gray, wet, medium dense, (Lab No. 4)	SS11	8-13-11	67						NP	NP		NP	
740.0			SS12	7-7-8	67	14.6		2.0						25.0, Begin wash rotary drilling methods at 25 ft.	
	30		SS13	6-7-8	100	13.2		1.75			25	12			13
735.0		Clay Loam A-6 (6) , Gray, moist, stiff to hard, (Lab No. 5)	SS14	5-17-27	100	9.2	134.9	4.5+	5.76						
	35		SS15	15-31-40	100	11.3		2.5							
730.0			SS16	9-13-13	100										
	40	Sand and Gravel A-1-b (0) , Gray, wet, medium dense to very dense, (Lab No. 6)													

Continued on next page

INDOT BORING LOG GC00513.GPJ INDOT TEMPLATE.GDT 12/4/17

BORING LOG

GEOTECHNICAL CONSULTANT : ATC Group Services LLC
 DES NO. : N/A STRUCTURE # : Hamilton Co. No. 207

BORING NO.: TB-1
 SHEET 3 OF 3
 NORTHING : 1
 EASTING : 1
 DATUM :

PROJECT TYPE: Bridge Widening

ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	SAMPLE NUMBER	SPT per 6"	% RECOVERY	MOISTURE CONTENT	DRY DENSITY, pcf	POCKET PEN., tsf	UNCONF. COMP., tsf	ATTERBERG LIMITS			REMARKS
										LL	PL	PI	
90	X		SS26	6-9-20	100								
675.0													
95	X	Sand and Gravel A-1-b (0) , Gray, wet, medium dense to very dense, (Lab No. 6)	SS27	9-16-26	100								
670.0													
100	X		100.0	SS28	7-13-24	100							
665.0		Bottom of Boring at 100.0 ft											
105													
660.0													
110													
655.0													
115													
650.0													
120													
645.0													
125													
640.0													
130													
635.0													
135													
630.0													

BORING LOG

BORING NO.: **TB-2**
 SHEET 1 OF 3
 NORTHING : 1
 EASTING : 2
 DATUM : _____
 DATE STARTED : 08-30-17
 DATE COMPLETED : 08-30-17

GEOTECHNICAL CONSULTANT : ATC Group Services LLC
 DES NO. : N/A STRUCTURE # : Hamilton Co. No. 207

PROJECT TYPE : Bridge Widening
 LOCATION : Logan Street over White River, Noblesville, Indiana
 COUNTY : Hamilton PROJECT NO.: 170GC00513

ELEVATION : <u>768.0</u>	BORING METHOD : <u>Hollow Stem Auger</u>	HAMMER : <u>Auto</u>
STATION : <u>37+23</u>	RIG TYPE : <u>Truck</u>	DRILLER/INSP : <u>W. Bates/S. Rushfeldt</u>
OFFSET : <u>18.0 ft Left</u>	CASING DIA. : <u>--</u>	TEMPERATURE : <u>70 °F</u>
LINE : <u>"A"</u>	CORE SIZE : <u>--</u>	WEATHER : <u>Night</u>
DEPTH : <u>125.0 ft</u>		

GROUNDWATER: Encountered at 27.0 ft At completion 27.0 ft -- After -- hours Caved in at --

ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	SAMPLE NUMBER	SPT per 6"	% RECOVERY	MOISTURE CONTENT	DRY DENSITY, pcf	POCKET PEN., tsf	UNCONF. COMP., tsf	ATTERBERG LIMITS			REMARKS
										LL	PL	PI	
765.0	5	9.5 in. Concrete											0.0, Station and offset estimated from 2001 bridge plans prepared by Floyd E. Burroughs & Associates, Inc.
760.0	10												0.1, Ground surface elevation estimated from preliminary bridge plans provided by BF&S.
755.0	15	Augers advanced to 27.1 ft through bridge deck. 2 inches of water in river channel at this location											
750.0	20												
745.0	25												
740.0	30	Sandy Gravel A-1-a (0), Brown and gray, wet, loose, (Lab No. 7)	SS1	3-5-4	22								27.1, Begin wash rotary drilling methods at 27.1 ft.
			SS2	4-2-5	67						NP	NP	NP
735.0	35	Clay Loam A-6, Gray, moist, very stiff to hard, (Lab No. 5)	SS3	6-8-14	67	10.7		3.0					
			SS4	9-13-21	100	10.6		4.0					
730.0	40		SS5	13-21-27	89	9.5		4.5+					

Continued on next page

BORING LOG

GEOTECHNICAL CONSULTANT : ATC Group Services LLC
 DES NO. : N/A STRUCTURE # : Hamilton Co. No. 207

BORING NO.: TB-2
 SHEET 2 OF 3
 NORTHING : 1
 EASTING : 2
 DATUM :

PROJECT TYPE: Bridge Widening

ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	SAMPLE NUMBER	SPT per 6"	% RECOVERY	MOISTURE CONTENT	DRY DENSITY, pcf	POCKET PEN., tsf	UNCONF. COMP., tsf	ATTERBERG LIMITS			REMARKS
										LL	PL	PI	
725.0		Clay Loam A-6 , Gray, moist, very stiff to hard, (Lab No. 5)	SS6	17-23-31	100	10.0	132.2	4.5+	6.78				
	45		SS7	4-18-34	100								
720.0		Sandy Gravel A-1-a (0) , Gray, wet, very dense to medium dense, (Lab No. 8)	SS8	9-12-13	67								
	50		SS9	12-15-17	100								
	55		SS10	14-17-19	100								
715.0			SS11	9-18-24	100								
	60		SS12	14-27-35	100								
	65		SS13	10-7-17	100								
700.0		Sand and Gravel A-1-b (0) , Gray, wet, medium dense to very dense, (Lab No. 9)	SS14	15-18-19	100								
	70		SS15	7-15-19	67								
	75		SS16	13-24-15	100								
	80		SS17	12-16-19	67								
	85												80.0, Borehole backfilled with auger cuttings and patched with concrete at the surface.

INDOT BORING LOG GC00513.GPJ INDOT TEMPLATE.GDT 12/4/17

Continued on next page

BORING LOG

GEOTECHNICAL CONSULTANT : ATC Group Services LLC
 DES NO. : N/A STRUCTURE # : Hamilton Co. No. 207

BORING NO.: TB-2
 SHEET 3 OF 3
 NORTHING : 1
 EASTING : 2
 DATUM :

PROJECT TYPE: Bridge Widening

ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	SAMPLE NUMBER	SPT per 6"	% RECOVERY	MOISTURE CONTENT	DRY DENSITY, pcf	POCKET PEN., tsf	UNCONF. COMP., tsf	ATTERBERG LIMITS			REMARKS
										LL	PL	PI	
90			SS18	13-26-32	78								
675.0		Sand and Gravel A-1-b (0) , Gray, wet, medium dense to very dense, (Lab No. 9)	SS19	15-38-42	67								
95													
670.0													
670.0			SS20	9-12-7	67						NP	NP	NP
100													
665.0													
665.0		Sandy Gravel A-1-a (0) , Gray, wet, medium dense to very dense, (Lab No. 10)	SS21	11-14-19	67								
105													
660.0													
660.0			SS22	27-47-50/0.4	90								
110													
655.0													
655.0		Silty Loam A-4 (3) , Gray, moist, hard, (Lab No. 11)	SS23	29-38-46	100	20.3		3.25			21	14	7
115													
650.0													
650.0		Clay Loam A-6 , Gray, very moist, hard, (Lab No. 5)	SS24	30-37-46	100	12.3	126.5	0.75	1.43				
120													
645.0													
645.0		Silty Loam A-4 (0) , Gray, moist, very dense, (Lab No. 12)	SS25	33-45-48	100						18	13	5
125													
125		Bottom of Boring at 125.0 ft											
640.0													
130													
635.0													
135													

INDOT BORING LOG GC00513.GPJ INDOT TEMPLATE.GDT 12/4/17

BORING LOG

BORING NO.: **TB-3**
 SHEET 1 OF 3
 NORTHING : 1
 EASTING : 3
 DATUM : _____
 DATE STARTED : 08-29-17
 DATE COMPLETED : 08-29-17

GEOTECHNICAL CONSULTANT : ATC Group Services LLC
 DES NO. : N/A STRUCTURE # : Hamilton Co. No. 207

PROJECT TYPE : Bridge Widening

LOCATION : Logan Street over White River, Noblesville, Indiana

COUNTY : Hamilton PROJECT NO.: 170GC00513

ELEVATION : <u>767.0</u>	BORING METHOD : <u>Hollow Stem Auger</u>	HAMMER : <u>Auto</u>
STATION : <u>39+08</u>	RIG TYPE : <u>Truck</u>	DRILLER/INSP : <u>W. Bates/S. Rushfeldt</u>
OFFSET : <u>9.0 ft Right</u>	CASING DIA. : <u>--</u>	TEMPERATURE : <u>70 °F</u>
LINE : <u>"A"</u>	CORE SIZE : <u>--</u>	WEATHER : <u>Night</u>
DEPTH : <u>100.0 ft</u>		

GROUNDWATER: Encountered at 21.0 ft At completion None -- After -- hours Caved in at 18.5 ft

ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	SAMPLE NUMBER	SPT per 6"	% RECOVERY	MOISTURE CONTENT	DRY DENSITY, pcf	POCKET PEN., tsf	UNCONF. COMP., tsf	ATTERBERG LIMITS			REMARKS	
										LL	PL	PI		
765.0		14 in. Concrete											0.0, Station and offset estimated from 2001 bridge plans prepared by Floyd E. Burroughs & Associates, Inc. 0.1, Ground surface elevation estimated from preliminary bridge plans provided by BF&S. 6.0, Organic Content=2.2%, Ca/MgCO3=4%	
		Gravelly Sand A-1-b, Brown, slightly moist, medium dense, (FILL) (visual)	SS1	10-10-6	67									
	5	Sandy Loam A-4 (0), Dark brown, moist, very soft to medium stiff, (Lab No. 13)	SS2	2-1-2	89	20.2								
760.0			SS3	2-3-4	100	18.1		0.25			24	15		9
	10		SS4	4-3-6	44						NP	NP		NP
755.0			SS5	10-10-11	100									
	15	Sandy Gravel A-1-a (0), Brown, slightly moist, loose to dense, (Lab No. 14)	SS6	7-12-14	89									
750.0			SS7	14-14-23	67									
	20		SS8	8-8-10	67									
745.0			SS9	10-8-8	89						NP	NP		NP
	25	Sand and Gravel A-1-b (0), Brown and gray, wet, medium dense, (Lab No. 15)	SS10	8-13-17	100	11.0		4.5+						
740.0			SS11	21-26-34	100	10.5		4.5+						
	30		SS12	11-16-21	100	10.3		4.5+						
735.0		Clay Loam A-6, Gray, moist, very stiff to hard, (Lab No. 5)	SS13	26-32-37	100	8.9	132.6	4.5+	10.48					
	35		SS14	13-21-28	100	10.5		4.5+						
730.0			SS15	8-24-36	89	10.8	131.8	3.5	3.56					
	40		SS16	13-32-46	100									

Continued on next page

INDOT BORING LOG GC00513.GPJ INDOT TEMPLATE.GDT 12/4/17

BORING LOG

GEOTECHNICAL CONSULTANT : ATC Group Services LLC
 DES NO. : N/A STRUCTURE # : Hamilton Co. No. 207

BORING NO.: **TB-3**
 SHEET 2 OF 3
 NORTHING : 1
 EASTING : 3
 DATUM :

PROJECT TYPE: Bridge Widening

ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	SAMPLE NUMBER	SPT per 6"	% RECOVERY	MOISTURE CONTENT	DRY DENSITY, pcf	POCKET PEN., tsf	UNCONF. COMP., tsf	ATTERBERG LIMITS			REMARKS
										LL	PL	PI	
725.0													drilling methods at 38.5 ft. 60.0, Borehole backfilled with auger cuttings and patched with concrete at the surface.
45			SS17	8-16-22	100								
720.0			SS18	9-16-22	67								
50													
715.0			SS19	11-14-23	39					NP	NP	NP	
55													
710.0			SS20	15-20-22	67								
60		Gravelly Sand A-1-b (0) , Gray, wet, very dense to dense, (Lab No. 16)											
705.0			SS21	13-17-19	61								
65													
700.0			SS22	14-14-20	78								
70													
695.0			SS23	24-23-23	100								
75													
690.0			SS24	26-38-49	89								
80													
685.0													
83.5													
680.0			SS25	15-18-19	67								
85		Gravelly Sand A-1-b (0) , Gray, wet, medium dense to very dense, (Lab No. 17)											
											NP	NP	NP

INDOT BORING LOG GC00513.GPJ INDOT TEMPLATE.GDT 12/4/17

Continued on next page

BORING LOG

GEOTECHNICAL CONSULTANT : ATC Group Services LLC
 DES NO. : N/A STRUCTURE # : Hamilton Co. No. 207

BORING NO.: **TB-3**
 SHEET 3 OF 3
 NORTHING : 1
 EASTING : 3
 DATUM :

PROJECT TYPE: Bridge Widening

ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	SAMPLE NUMBER	SPT per 6"	% RECOVERY	MOISTURE CONTENT	DRY DENSITY, pcf	POCKET PEN., tsf	UNCONF. COMP., tsf	ATTERBERG LIMITS			REMARKS
										LL	PL	PI	
90	X	Gravelly Sand A-1-b (0) , Gray, wet, medium dense to very dense, (Lab No. 17)	SS26	8-9-19	44								
95	X		SS27	13-13-14	100								
100	X		100.0	SS28	16-27-31	100							
665.0		Bottom of Boring at 100.0 ft											
675.0													
670.0													
105													
660.0													
110													
655.0													
115													
650.0													
120													
645.0													
125													
640.0													
130													
635.0													
135													
630.0													

INDOT BORING LOG GC00513.GPJ INDOT TEMPLATE.GDT 12/4/17

APPENDIX C

SUMMARY OF CLASSIFICATION TEST RESULTS

SUMMARY OF SPECIAL LAB TESTS

GRAIN SIZE DISTRIBUTION TEST REPORTS

SUMMARY OF UNCONFINED COMPRESSIVE STRENGTH

UNCONFINED COMPRESSIVE STRENGTH TEST REPORTS

Boring	Sample	Depth	Lab #	Soil Classification	Gravel %	Sand %	Silt %	Clay %	Colloid %	LL	PL	PI	LOI %	Ca/Mg %	Moisture %	pH
TB-1	SS3	6	1	Gravelly Sand A-1-b (0)	23.2	67.6	9.2			NP	NP	NP				
TB-1	SS5	11	2	Sandy Loam A-6 (3)	2.5	54.9	32.1	10.5		33	18	15			26.7	8.41
TB-1	SS6	13.5	3	Sandy Loam A-2-4 (0)	0.3	69.0	23.3	7.4		NP	NP	NP				8.71
TB-1	SS11	26	4	Sandy Gravel A-1-a (0)	57.0	31.7	11.3			NP	NP	NP				8.41
TB-1	SS13	31	5	Clay Loam A-6 (0)	8.1	24.8	46.2	20.8		25	12	13			13.2	8.12
TB-1	SS26	88.5	6	Sand and Gravel A-1-b (0)	42.1	41.4	16.5			NP	NP	NP				7.83
TB-2	SS2	31	7	Sandy Gravel A-1-a (0)	68.9	26.8	4.3			NP	NP	NP				
TB-2	SS7	43.5	8	Sandy Gravel A-1-a (0)	60.4	33.6	6.0			NP	NP	NP				8.24
TB-2	SS11	53.5	9	Sand and Gravel A-1-b (0)	47.9	43.8	8.3			NP	NP	NP				8.49
TB-2	SS20	98.5	10	Sandy Gravel A-1-a (0)	62.4	33.1	0.9			NP	NP	NP				
TB-2	SS23	113.5	11	Silty Loam A-4 (3)	3.3	19.6	62.8	14.4		21	14	7			20.3	8.12
TB-2	SS25	123.5	12	Silty Loam A-4 (0)	3.7	30.0	59.3	7.0		18	13	5				8.16
TB-3	SS3	6	13	Sandy Loam A-4 (0)	12.1	49.6	28.7	9.6		24	15	9	2.2		18.1	8.06
TB-3	SS4	8.5	14	Sandy Gravel A-1-a (0)	56.0	35.7	8.3			NP	NP	NP				8.42
TB-3	SS9	21	15	Sand and Gravel A-1-b (0)	44.2	50.4	5.4			NP	NP	NP				8.56
TB-3	SS19	53.5	16	Gravelly Sand A-1-b (0)	30.4	64.2	5.4			NP	NP	NP				8.25
TB-3	SS26	88.5	17	Gravelly Sand A-1-b (0)	26.7	70.1	3.2			NP	NP	NP				8.51

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Summary of Classification Tests

DES # : N/A County : Hamilton
 Route # : Logan Street Project # : 170GC00513
 Project Type : Bridge Widening
 Location : Logan Street over White River, Noblesville, Indiana

INDOT CLASSIFICATION SUMM- SAND OVERRIDE GC00513.GPJ INDOT_169 11/20/2009.GDT 12/1/17

Boring	Sample	Depth	Specific Gravity	Dry Density (pcf)	Qu (tsf)	c (tsf)	φ (deg)	Moisture %	Max Dry Density (pcf)	Opt. Moisture %	Resilient Modulus (MR)		Void Ratio	Collapse Index	K Falling H (mm/sec)	K Constant H (mm/sec)
											MR @ Optimum	MR @ Optimum +2%				
TB-1	SS3	6 - 7.5														
TB-1	SS5	11 - 12.5						26.7								
TB-1	SS6	13.5 - 15														
TB-1	SS11	26 - 27.5														
TB-1	SS12	28.5 - 30						14.6								
TB-1	SS13	31 - 32.5						13.2								
TB-1	SS14	33.5 - 35		134.9	5.76	2.88		9.2				0.25				
TB-1	SS15	36 - 37.5						11.3								
TB-1	SS26	88.5 - 90														
TB-2	SS2	3.5 - 5														
TB-2	SS2	31 - 32.5														
TB-2	SS3	33.5 - 35						10.7								
TB-2	SS4	36 - 37.5						10.6								
TB-2	SS5	38.5 - 40						9.5								
TB-2	SS6	41 - 42.5		132.2	6.78	3.39		10.0				0.27				
TB-2	SS7	43.5 - 45														
TB-2	SS11	53.5 - 55														
TB-2	SS18	88.5 - 90														
TB-2	SS20	98.5 - 100														
TB-2	SS23	113.5 - 115						20.3								
TB-2	SS24	118.5 - 120		126.5	1.43	0.71		12.3				0.33				
TB-2	SS25	123.5 - 125														
TB-3	SS2	3.5 - 5						20.2								
TB-3	SS3	6 - 7.5						18.1								
TB-3	SS4	8.5 - 10														
TB-3	SS9	21 - 22.5														
TB-3	SS10	23.5 - 25						11.0								
TB-3	SS11	26 - 27.5						10.5								



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Summary of Special Lab Tests

DES # : N/A County : Hamilton
 Route # : Logan Street Project # : 170GC00513
 Project Type : Bridge Widening
 Location : Logan Street over White River, Noblesville, Indiana

INDOT SUMMARY SPECIAL TESTS GC00513.GPJ INDOT 4.GDT 12/12/17

Boring	Sample	Depth	Specific Gravity	Dry Density (pcf)	Qu (tsf)	c (tsf)	φ (deg)	Moisture %	Max Dry Density (pcf)	Opt. Moisture %	Resilient Modulus (MR)		Void Ratio	Collapse Index	K Falling H (mm/sec)	K Constant H (mm/sec)
											MR @ Optimum	MR @ Optimum +2%				
TB-3	SS12	28.5 - 30						10.3								
TB-3	SS13	31 - 32.5		132.6	10.48	5.24		8.9				0.27				
TB-3	SS14	33.5 - 35						10.5								
TB-3	SS15	36 - 37.5		131.8	3.56	1.78		10.8				0.30				
TB-3	SS19	53.5 - 55														
TB-3	SS26	88.5 - 90														

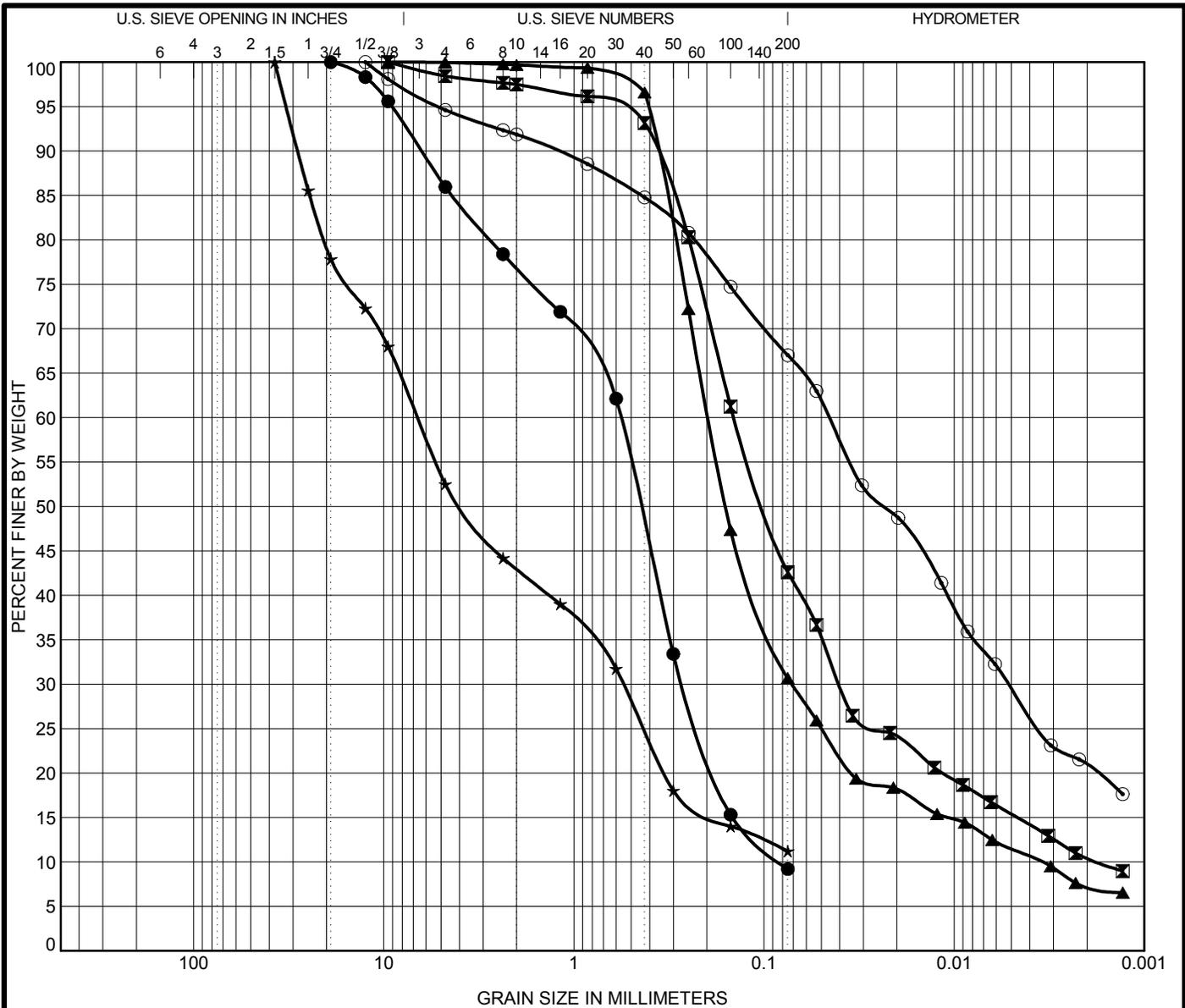
INDOT SUMMARY SPECIAL TESTS GC00513.GPJ INDOT 4.GDT 12/12/17



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Summary of Special Lab Tests

DES # : N/A County : Hamilton
 Route # : Logan Street Project # : 170GC00513
 Project Type : Bridge Widening
 Location : Logan Street over White River, Noblesville, Indiana



COBBLES	GRAVEL	SAND		SILT	Clay
		coarse	fine		

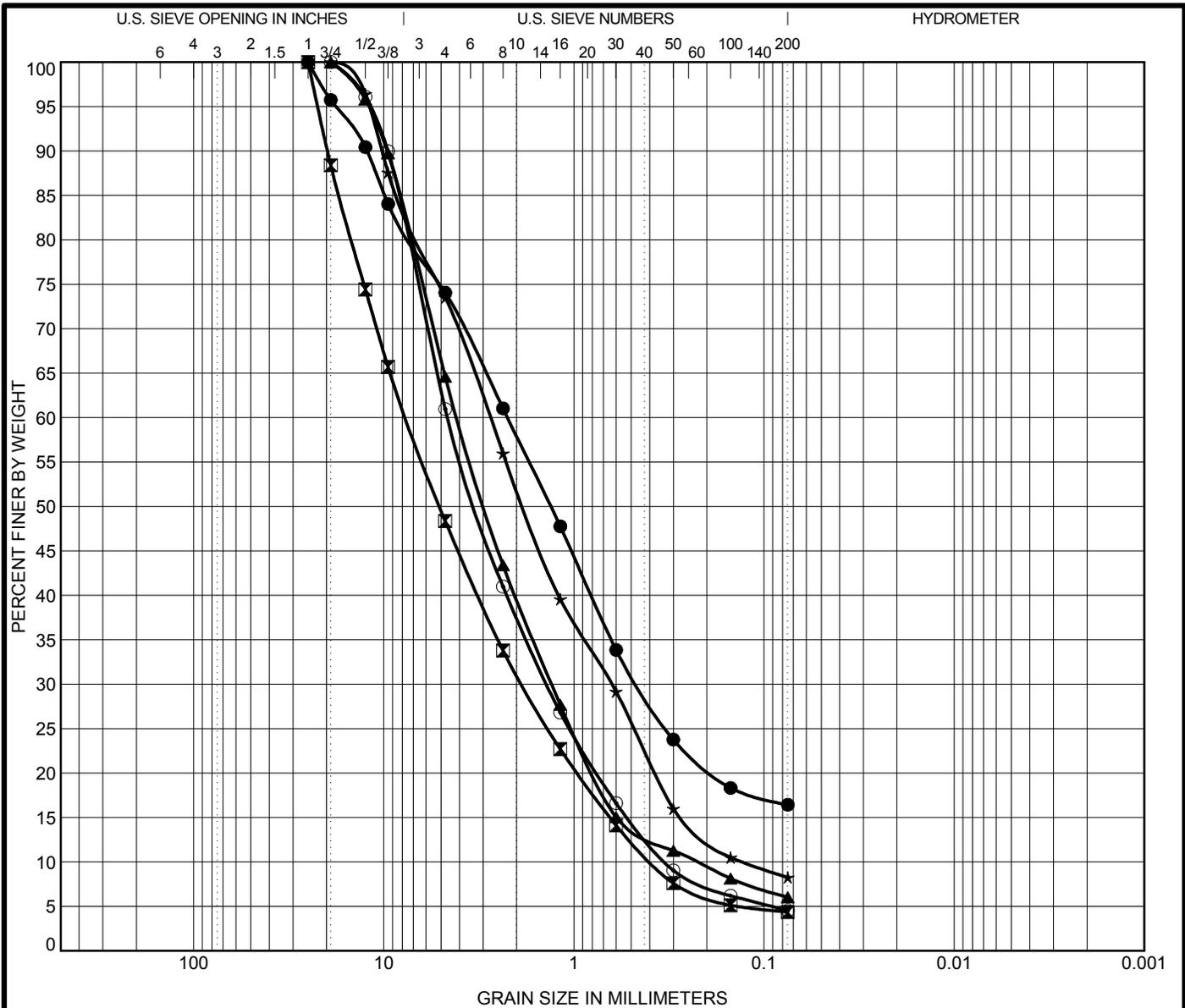
Specimen Identification	Lab #	Textural Classification					LL	PL	PI	Cc	Cu
● TB-1 SS3 6.0 1		Gravelly Sand A-1-b (0)					NP	NP	NP	1.48	6.94
☒ TB-1 SS5 11.0 2		Sandy Loam A-6 (3)					33.0	18.0	15.0	6.39	82.83
▲ TB-1 SS6 13.5 3		Sandy Loam A-2-4 (0)					NP	NP	NP	7.54	55.84
★ TB-1 SS11 26.0 4		Sandy Gravel A-1-a (0)					NP	NP	NP	0.82	119.65
◎ TB-1 SS13 31.0 5		Clay Loam A-6 (0)					25.0	12.0	13.0		

Specimen Identification	D60	D30	D10	LOI	Ca/Mg	%Gravel	%Sand	%Silt	%Clay	%Colloid
● TB-1 SS3 6.0 1	0.57	0.263	0.082			23.2	67.6			
☒ TB-1 SS5 11.0 2	0.143	0.04	0.002			2.5	54.9	32.1	10.5	
▲ TB-1 SS6 13.5 3	0.195	0.071	0.003			0.3	69.0	23.3	7.4	
★ TB-1 SS11 26.0 4	6.64	0.549				57.0	31.7			
◎ TB-1 SS13 31.0 5	0.045	0.005				8.1	24.8	46.2	20.8	

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GRAIN SIZE DISTRIBUTION TEST REPORT
 DES #: N/A Structure #: Hamilton Co. No. 207
 Project #: 170GC00513
 County: Hamilton
 Location: Logan Street over White River, Noblesville, IN

INDOT-SAND-OVERRIDE GC00513.GPJ INDOT I69 11202009.GDT 12/12/17



COBBLES	GRAVEL	SAND		SILT	Clay
		coarse	fine		

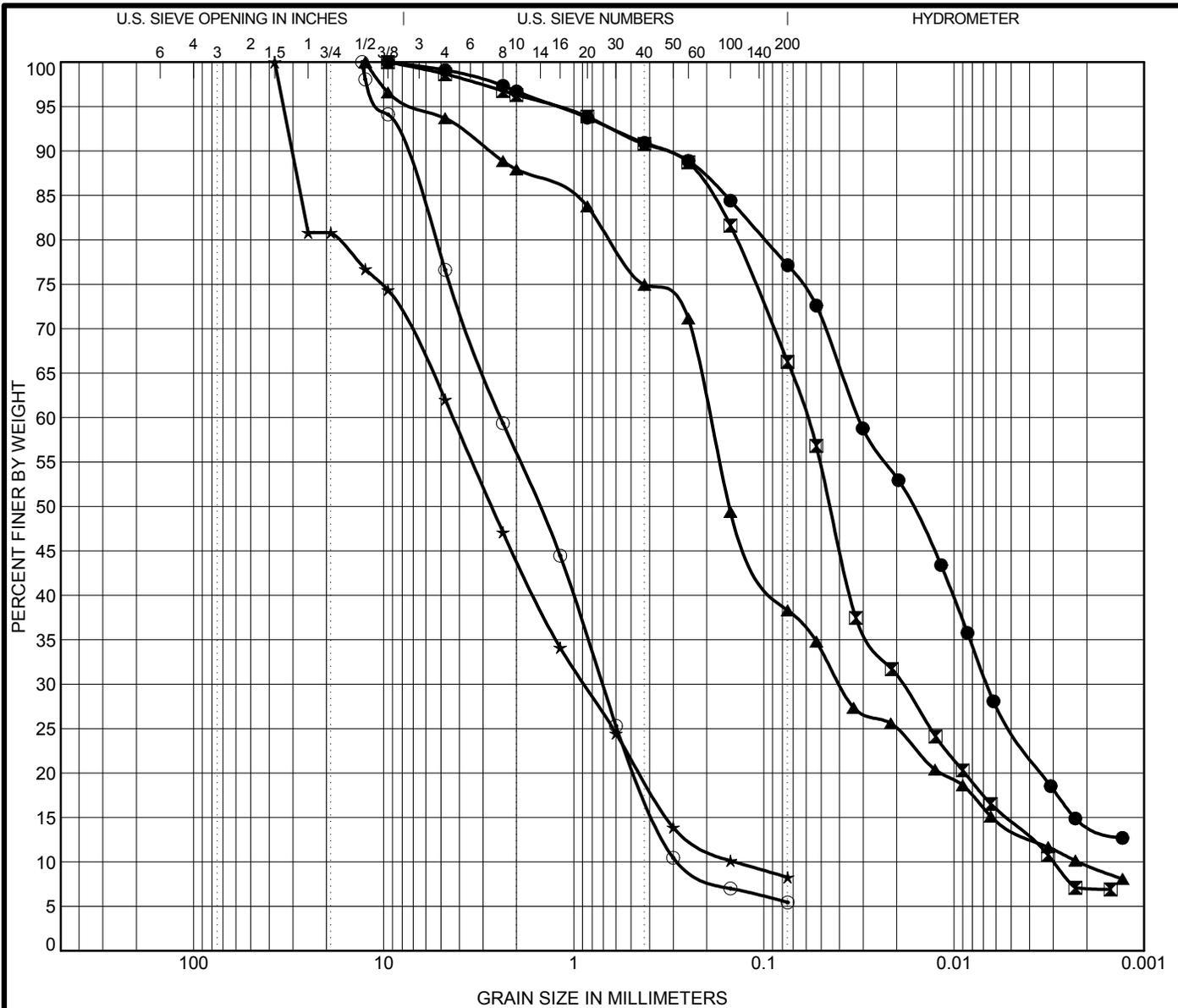
Specimen Identification	Lab #	Textural Classification	LL	PL	PI	Cc	Cu
● TB-1 SS26 88.5 6	6	Sand and Gravel A-1-b (0)	NP	NP	NP		
☒ TB-2 SS2 31.0 7	7	Sandy Gravel A-1-a (0)	NP	NP	NP	1.18	19.54
▲ TB-2 SS7 43.5 8	8	Sandy Gravel A-1-a (0)	NP	NP	NP	1.85	17.99
★ TB-2 SS11 53.5 9	9	Sand and Gravel A-1-b (0)	NP	NP	NP	1.13	21.57
⊙ TB-2 SS20 98.5 10	10	Sandy Gravel A-1-a (0)	NP	NP	NP	1.26	14.03

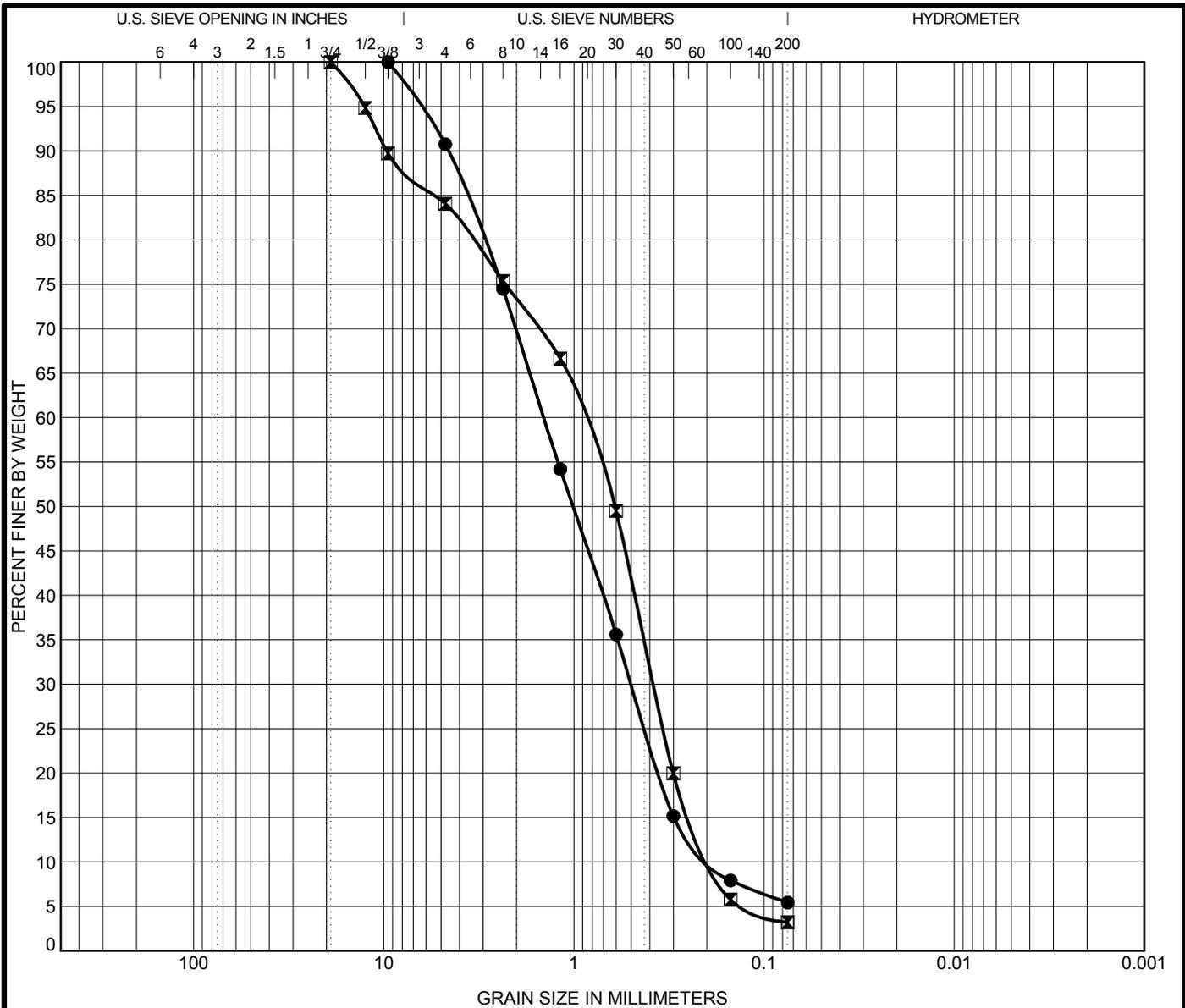
Specimen Identification	D60	D30	D10	LOI	Ca/Mg	%Gravel	%Sand	%Silt	%Clay	%Colloid
● TB-1 SS26 88.5 2.236 0.46	2.236	0.46				42.1	41.4			
☒ TB-2 SS2 31.0 7.564 1.863 0.387	7.564	1.863	0.387			68.9	26.8			
▲ TB-2 SS7 43.5 4.08 1.307 0.227	4.08	1.307	0.227			60.4	33.6			
★ TB-2 SS11 53.5 2.771 0.633 0.128	2.771	0.633	0.128			47.9	43.8			
⊙ TB-2 SS20 98.5 4.594 1.379 0.327	4.594	1.379	0.327			62.4	33.1			

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GRAIN SIZE DISTRIBUTION TEST REPORT
 DES #: N/A Structure #: Hamilton Co. No. 207
 Project #: 170GC00513
 County: Hamilton
 Location: Logan Street over White River, Noblesville, IN

INDOT-SAND-OVERRIDE GC00513.GPJ INDOT I69 11202009.GDT 12/12/17





COBBLES	GRAVEL	SAND		SILT	Clay
		coarse	fine		

Specimen Identification	Lab #	Textural Classification					LL	PL	PI	Cc	Cu
● TB-3 SS19 53.5	16	Gravelly Sand A-1-b (0)					NP	NP	NP	0.93	7.86
■ TB-3 SS26 88.5	17	Gravelly Sand A-1-b (0)					NP	NP	NP	0.86	4.92

Specimen Identification	D60	D30	D10	LOI	Ca/Mg	%Gravel	%Sand	%Silt	%Clay	%Colloid
● TB-3 SS19 53.5	1.439	0.496	0.183			30.4	64.2			
■ TB-3 SS26 88.5	0.908	0.38	0.185			26.7	70.1			

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GRAIN SIZE DISTRIBUTION TEST REPORT
 DES #: N/A Structure #: Hamilton Co. No. 207
 Project #: 170GC00513
 County: Hamilton
 Location: Logan Street over White River, Noblesville, IN

INDOT-SAND-OVERRIDE GC00513.GPJ INDOT I69 11202009.GDT 12/12/17

Boring	Sample	Depth	Classification	Specific Gravity	Natural Density (pcf)	Qu (tsf)	Shear Strength (tsf)	Void Ratio	Moisture %
TB-1	SS14	33.5 - 35	Clay Loam A-6 (0)		134.9	5.76	2.88	0.249	9.2
TB-2	SS6	41 - 42.5	Clay Loam A-6		132.2	6.78	3.39	0.274	10.0
TB-2	SS24	18.5 - 120	Clay Loam A-6		126.5	1.43	0.71	0.332	12.3
TB-3	SS13	31 - 32.5	Clay Loam A-6		132.6	10.48	5.24	0.271	8.9
TB-3	SS15	36 - 37.5	Clay Loam A-6		131.8	3.56	1.78	0.298	10.8

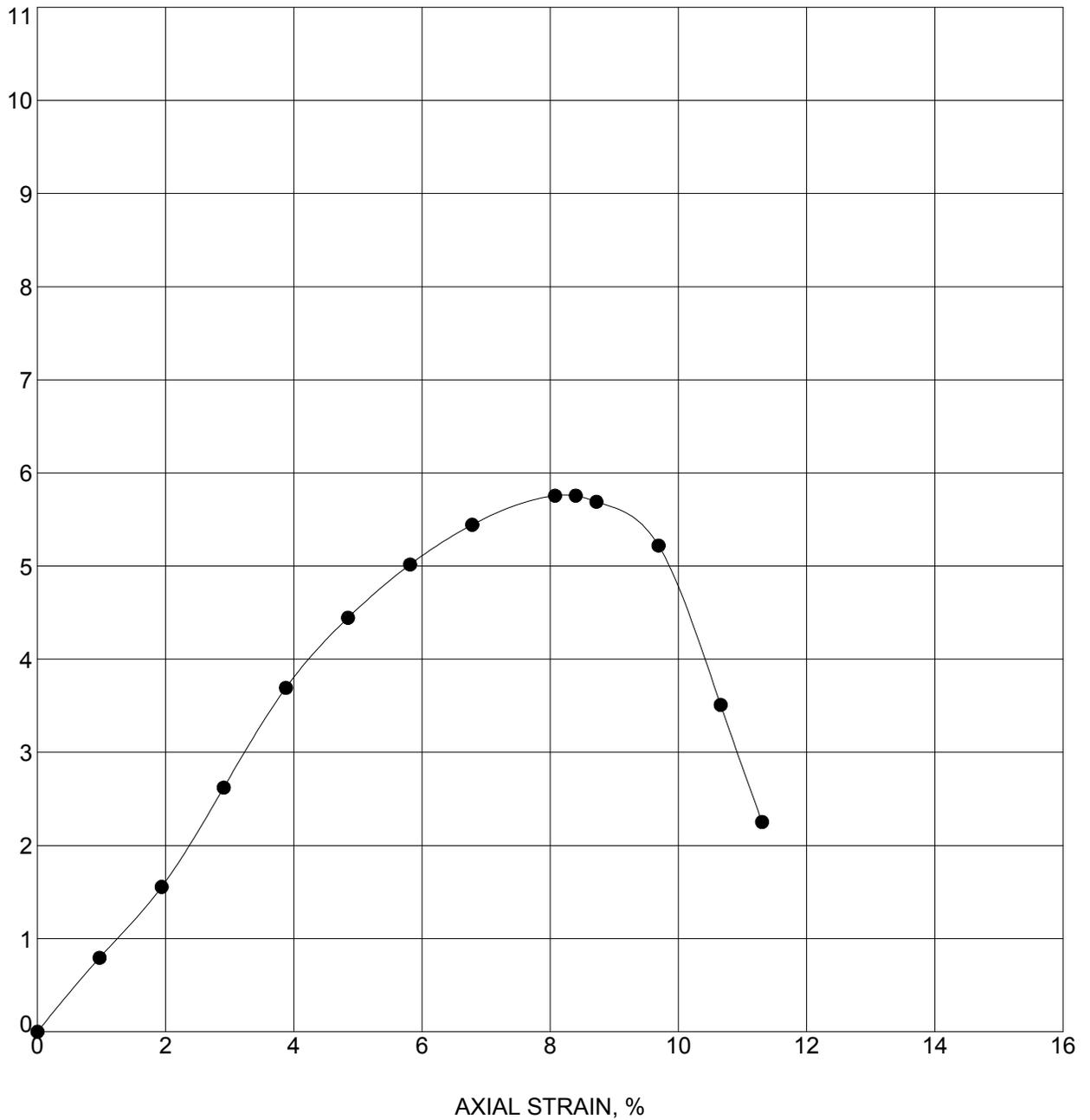
INDOT UNCONFINED SUMMARY GC00513.GPJ ALT & WITZIG TEMPLATE.GDT 12/12/17

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Summary of Unconfined Compressive Tests

DES #: N/A Structure #: Hamilton Co. No. 207
 Project #: 170GC00513
 County: Hamilton
 Location: Logan Street over White River, Noblesville, IN

COMPRESSION STRESS, tsf



Boring	Sample	Depth	Classification
TB-1	SS14	33.5 - 35	Clay Loam A-6 (0)

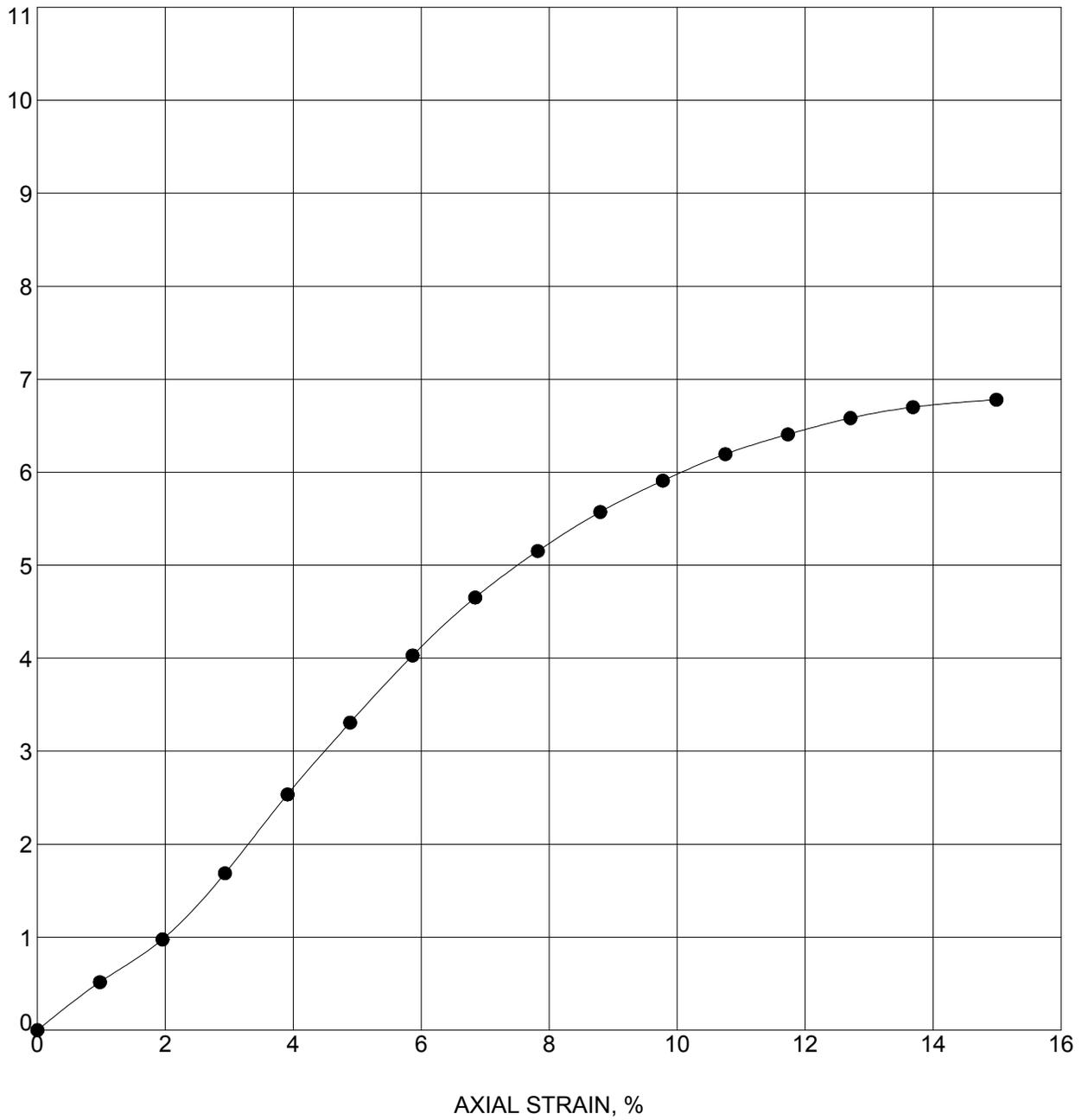
Moisture Content (%)	Wet Density (pcf)	Dry Density (pcf)	Unconfined Strength (tsf)	Strain Rate (%)	Failure Strain (%)
9.2	147.3	134.9	5.76	1.0	8.4
Shear Strength (tsf)	Saturation (%)	Void Ratio	Specimen Diameter (mm)	Specimen Height (mm)	Height/Diameter Ratio
2.88	100	0.249	35.92	78.64	2.2

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UNCONFINED COMPRESSION TEST

DES #: N/A Structure #: Hamilton Co. No. 207
 Project #: 170GC00513
 County: Hamilton
 Location: Logan Street over White River, Noblesville, IN

COMPRESSION STRESS, tsf



Boring	Sample	Depth	Classification
TB-2	SS6	41 - 42.5	Clay Loam A-6

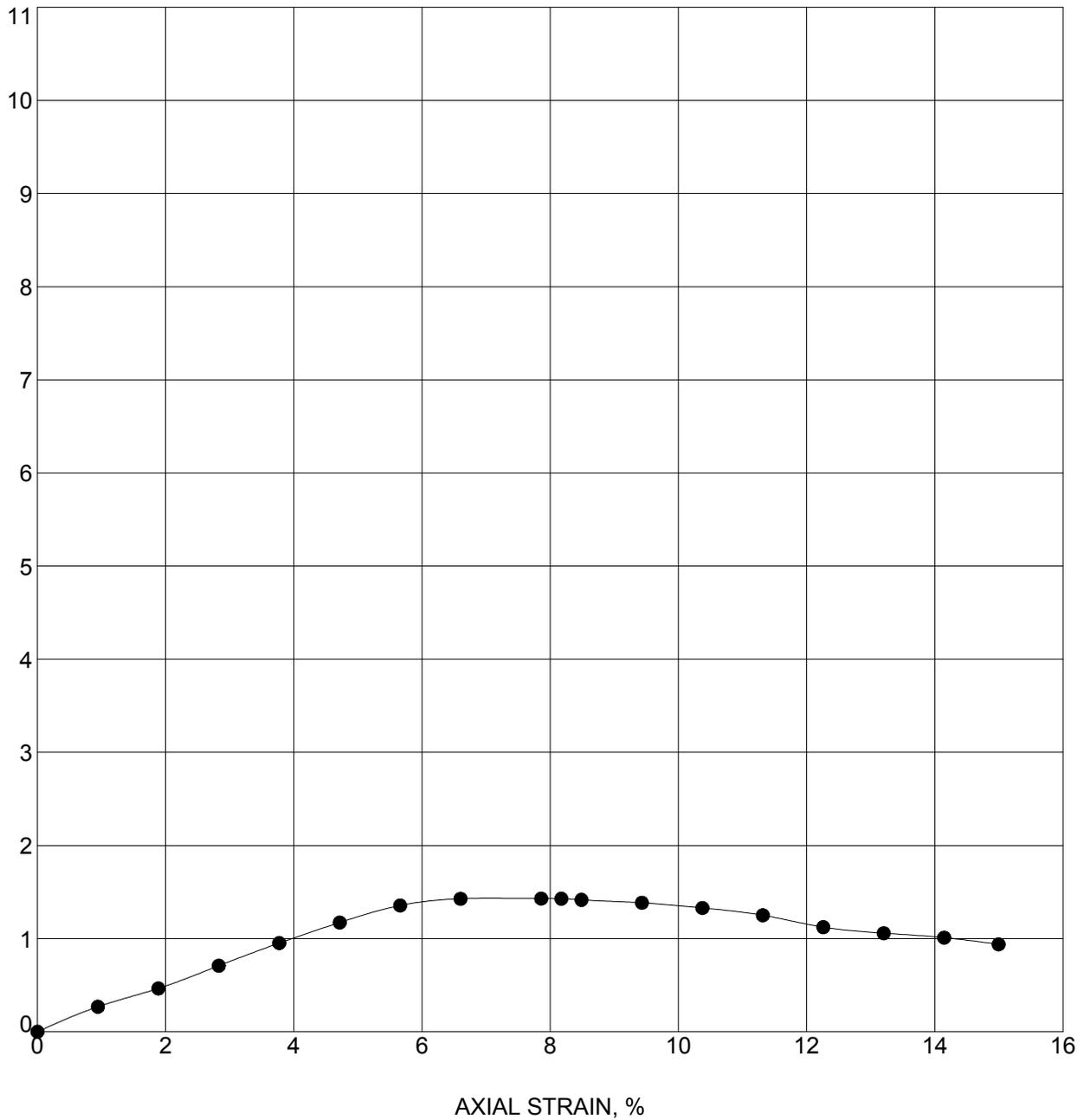
Moisture Content (%)	Wet Density (pcf)	Dry Density (pcf)	Unconfined Strength (tsf)	Strain Rate (%)	Failure Strain (%)
10.0	145.5	132.2	6.78	1.0	15.0
Shear Strength (tsf)	Saturation (%)	Void Ratio	Specimen Diameter (mm)	Specimen Height (mm)	Height/Diameter Ratio
3.39	99	0.274	36.89	77.95	2.1

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UNCONFINED COMPRESSION TEST

DES #: N/A Structure #: Hamilton Co. No. 207
 Project #: 170GC00513
 County: Hamilton
 Location: Logan Street over White River, Noblesville, IN

COMPRESSION STRESS, tsf



Boring	Sample	Depth	Classification
TB-2	SS24	118.5 - 120	Clay Loam A-6

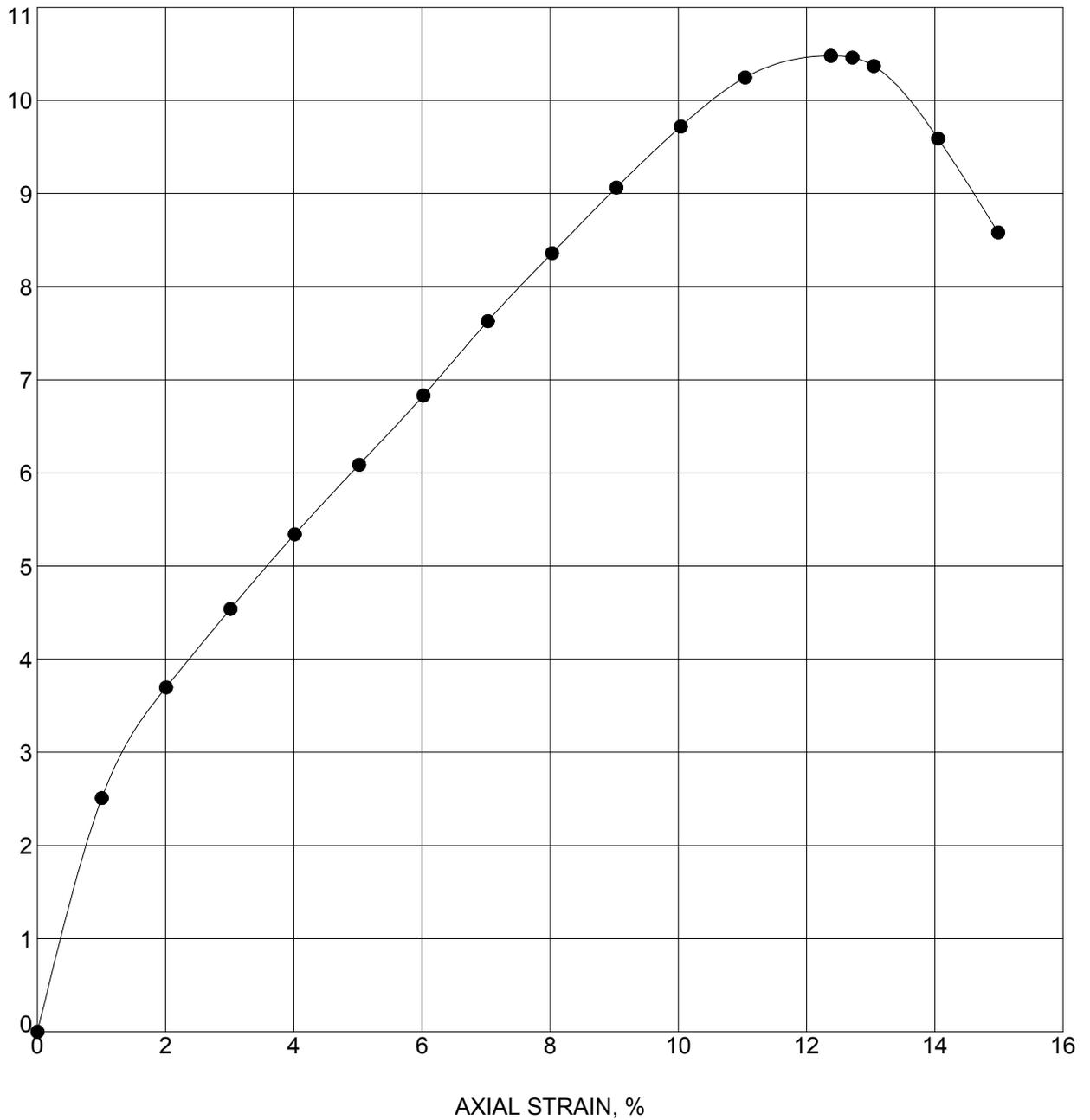
Moisture Content (%)	Wet Density (pcf)	Dry Density (pcf)	Unconfined Strength (tsf)	Strain Rate (%)	Failure Strain (%)
12.3	142.0	126.5	1.43	1.0	7.9
Shear Strength (tsf)	Saturation (%)	Void Ratio	Specimen Diameter (mm)	Specimen Height (mm)	Height/Diameter Ratio
0.71	100	0.332	39.34	80.8	2.1

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UNCONFINED COMPRESSION TEST

DES #: N/A Structure #: Hamilton Co. No. 207
 Project #: 170GC00513
 County: Hamilton
 Location: Logan Street over White River, Noblesville, IN

COMPRESSION STRESS, tsf



Boring	Sample	Depth	Classification
TB-3	SS13	31 - 32.5	Clay Loam A-6

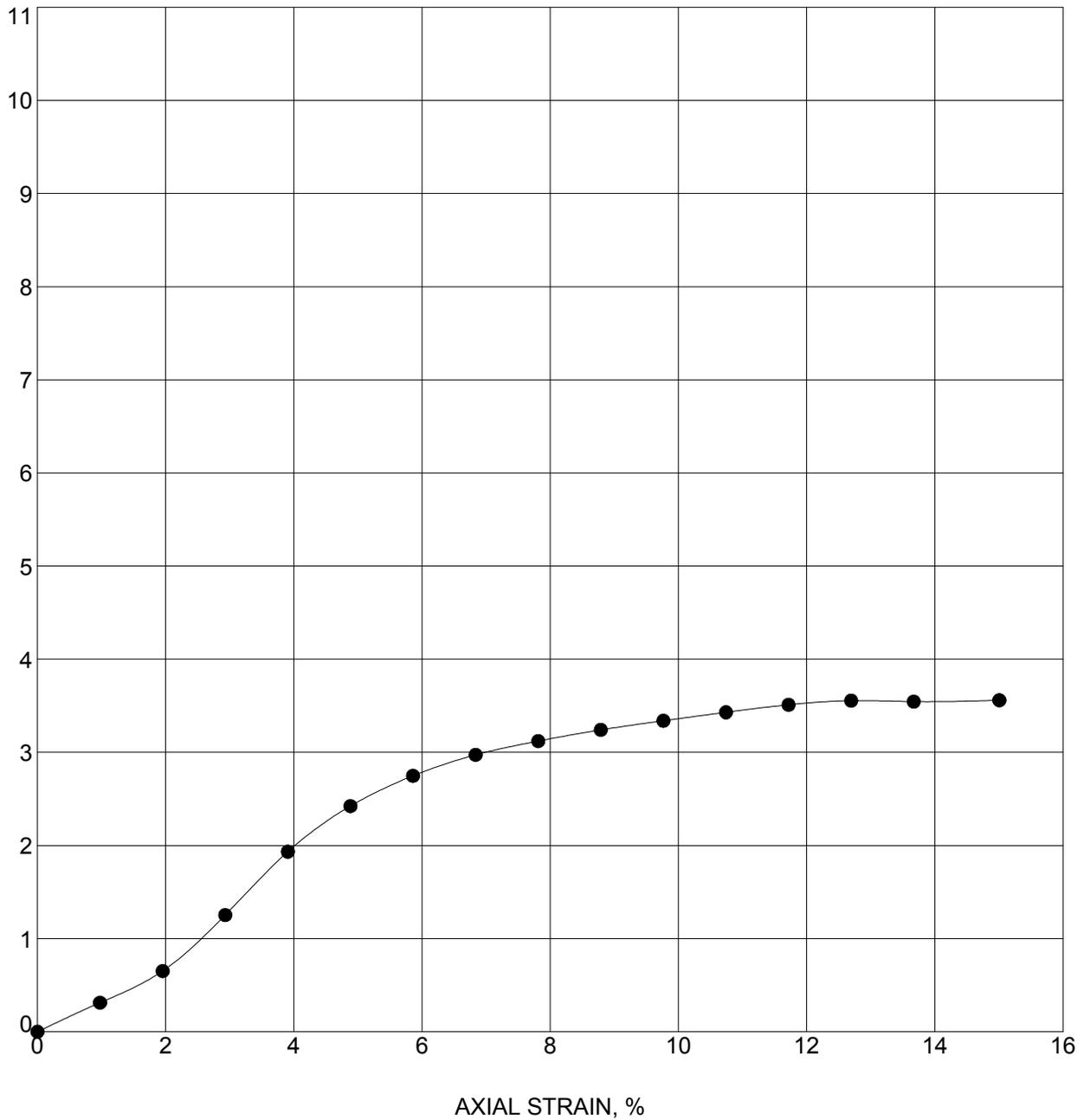
Moisture Content (%)	Wet Density (pcf)	Dry Density (pcf)	Unconfined Strength (tsf)	Strain Rate (%)	Failure Strain (%)
8.9	144.5	132.6	10.48	1.0	12.4
Shear Strength (tsf)	Saturation (%)	Void Ratio	Specimen Diameter (mm)	Specimen Height (mm)	Height/Diameter Ratio
5.24	89	0.271	34.9	75.92	2.2

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UNCONFINED COMPRESSION TEST

DES #: N/A Structure #: Hamilton Co. No. 207
 Project #: 170GC00513
 County: Hamilton
 Location: Logan Street over White River, Noblesville, IN

COMPRESSION STRESS, tsf



Boring	Sample	Depth	Classification
TB-3	SS15	36 - 37.5	Clay Loam A-6

Moisture Content (%)	Wet Density (pcf)	Dry Density (pcf)	Unconfined Strength (tsf)	Strain Rate (%)	Failure Strain (%)
10.8	145.9	131.8	3.56	1.0	15.0
Shear Strength (tsf)	Saturation (%)	Void Ratio	Specimen Diameter (mm)	Specimen Height (mm)	Height/Diameter Ratio
1.78	99	0.298	37.01	78.03	2.1

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 Telephone: 317-849-4990
 Fax: 317-849-4278

UNCONFINED COMPRESSION TEST

DES #: N/A Structure #: Hamilton Co. No. 207
 Project #: 170GC00513
 County: Hamilton
 Location: Logan Street over White River, Noblesville, IN

APPENDIX D

AASHTO SEISMIC PARAMETERS

Design Maps Summary Report

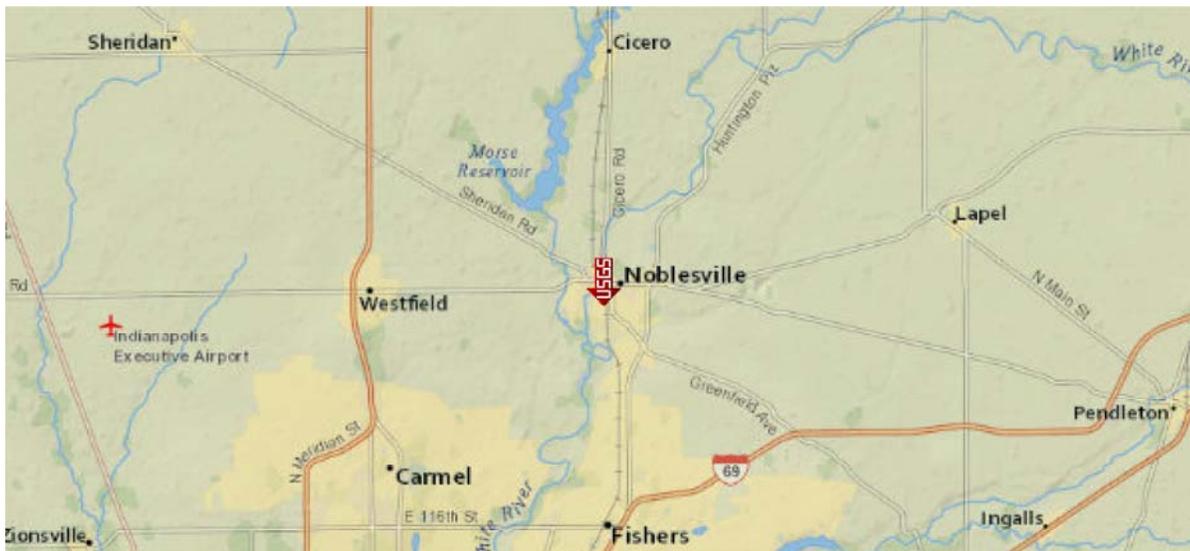
User-Specified Input

Report Title Logan Street Bridge
Wed November 15, 2017 15:13:10 UTC

Building Code Reference Document 2009 AASHTO Guide Specifications for LRFD Seismic Bridge Design
(which utilizes USGS hazard data available in 2002)

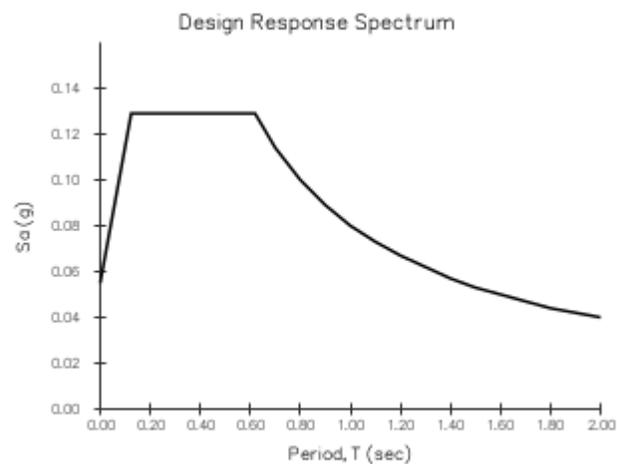
Site Coordinates 40.04693°N, 86.01663°W

Site Soil Classification Site Class C – “Very Dense Soil and Soft Rock”



USGS-Provided Output

PGA = 0.045 g	A_s = 0.055 g
S_s = 0.108 g	S_{DS} = 0.129 g
S₁ = 0.047 g	S_{D1} = 0.080 g



Although this information is a product of the U.S. Geological Survey, we provide no warranty, expressed or implied, as to the accuracy of the data contained therein. This tool is not a substitute for technical subject-matter knowledge.

 **Design Maps Detailed Report**

2009 AASHTO Guide Specifications for LRFD Seismic Bridge Design (40.04693°N,
86.01663°W)

Site Class C – “Very Dense Soil and Soft Rock”

Article 3.4.1 — Design Spectra Based on General Procedure

Note: Maps in the 2009 AASHTO Specifications are provided by AASHTO for Site Class B.
Adjustments for other Site Classes are made, as needed, in Article 3.4.2.3.

From [Figure 3.4.1-2](#)^[1] PGA = 0.045 g

From [Figure 3.4.1-3](#)^[2] $S_s = 0.108$ g

From [Figure 3.4.1-4](#)^[3] $S_1 = 0.047$ g

Article 3.4.2.1 — Site Class Definitions

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class C, based on the site soil properties in accordance with Article 3.4.2.

Table 3.4.2.1-1 Site Class Definitions

SITE CLASS	SOIL PROFILE NAME	Soil shear wave velocity, \bar{v}_s, (ft/s)	Standard penetration resistance, \bar{N}	Soil undrained shear strength, \bar{s}_u, (psf)
A	Hard rock	$\bar{v}_s > 5,000$	N/A	N/A
B	Rock	$2,500 < \bar{v}_s \leq 5,000$	N/A	N/A
C	Very dense soil and soft rock	$1,200 < \bar{v}_s \leq 2,500$	$\bar{N} > 50$	>2,000 psf
D	Stiff soil profile	$600 \leq \bar{v}_s < 1,200$	$15 \leq \bar{N} \leq 50$	1,000 to 2,000 psf
E	Stiff soil profile	$\bar{v}_s < 600$	$\bar{N} < 15$	<1,000 psf
E	—	Any profile with more than 10 ft of soil having the characteristics: <ol style="list-style-type: none"> 1. Plasticity index $PI > 20$, 2. Moisture content $w \geq 40\%$, and 3. Undrained shear strength $\bar{s}_u < 500$ psf 		
F	—	Any profile containing soils having one or more of the following characteristics: <ol style="list-style-type: none"> 1. Soils vulnerable to potential failure or collapse under seismic loading such as liquefiable soils, quick and highly sensitive clays, collapsible weakly cemented soils. 2. Peats and/or highly organic clays ($H > 10$ feet of peat and/or highly organic clay where H = thickness of soil) 3. Very high plasticity clays ($H > 25$ feet with plasticity index $PI > 75$) 4. Very thick soft/medium stiff clays ($H > 120$ feet) 		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Article 3.4.2.3 — Site Coefficients

Table 3.4.2.3-1 (for F_{PGA})—Values of F_{PGA} as a Function of Site Class and Mapped Peak Ground Acceleration Coefficient

Site Class	Mapped Peak Ground Acceleration				
	PGA \leq 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA \geq 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See AASHTO Article 3.4.3				

Note: Use straight-line interpolation for intermediate values of PGA

For Site Class = C and PGA = 0.045 g, $F_{PGA} = 1.200$

Table 3.4.2.3-1 (for F_s)—Values of F_s as a Function of Site Class and Mapped Short-Period Spectral Acceleration Coefficient

Site Class	Spectral Response Acceleration Parameter at Short Periods				
	$S_s \leq 0.25$	$S_s = 0.50$	$S_s = 0.75$	$S_s = 1.00$	$S_s \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See AASHTO Article 3.4.3				

Note: Use straight-line interpolation for intermediate values of S_s

For Site Class = C and $S_s = 0.108$ g, $F_s = 1.200$

Table 3.4.2.3-2—Values of F_v as a Function of Site Class and Mapped 1-sec Period Spectral Acceleration Coefficient

Site Class	Mapped Spectral Response Acceleration Coefficient at 1-sec Periods				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See AASHTO Article 3.4.3				

Note: Use straight-line interpolation for intermediate values of S_1

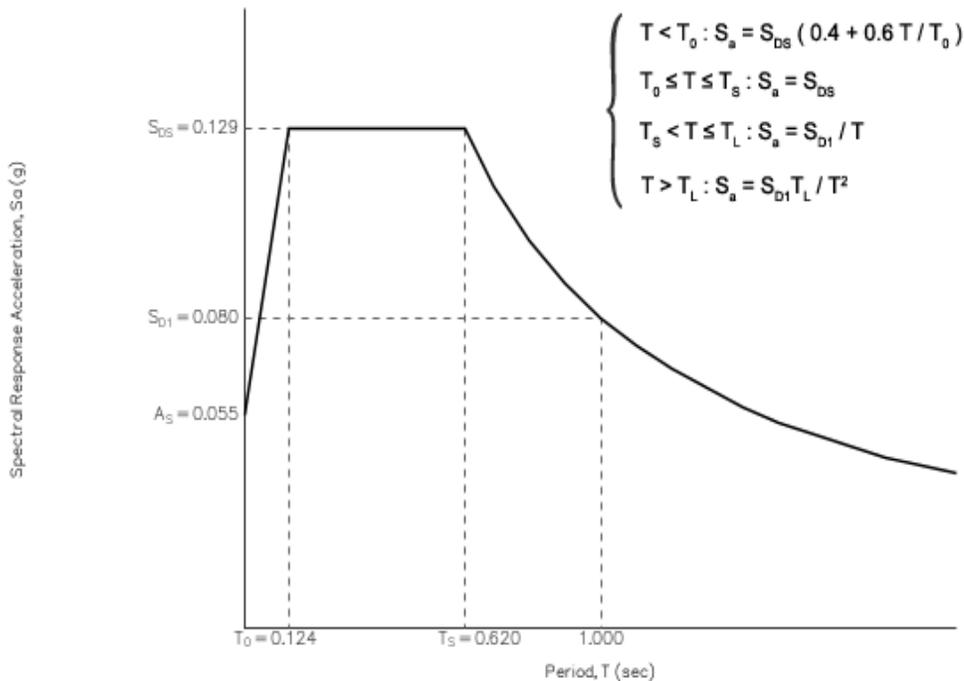
For Site Class = C and $S_1 = 0.047$ g, $F_v = 1.700$

Equation (3.4.1-1): $A_S = F_{PGA} PGA = 1.200 \times 0.045 = 0.055$ g

Equation (3.4.1-2): $S_{DS} = F_a S_S = 1.200 \times 0.108 = 0.129$ g

Equation (3.4.1-3): $S_{D1} = F_v S_1 = 1.700 \times 0.047 = 0.080$ g

Figure 3.4.1-1: Design Response Spectrum



Article 3.5 - Selection of Seismic Design Category (SDC)

Table 3.5-1—Partitions for Seismic Design Categories A, B, C, and D

VALUE OF S_{D1}	SDC
$S_{D1} < 0.15g$	A
$0.15g \leq S_{D1} < 0.30g$	B
$0.30g \leq S_{D1} < 0.50g$	C
$0.50g \leq S_{D1}$	D

For $S_{D1} = 0.080 g$, Seismic Design Category = A

Seismic Design Category \equiv "the design category in accordance with Table 3.5-1" = A

References

1. *Figure 3.4.1-2*: <https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/AASHTO-2009-Figure-3.4.1-2.pdf>
2. *Figure 3.4.1-3*: <https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/AASHTO-2009-Figure-3.4.1-3.pdf>
3. *Figure 3.4.1-4*: <https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/AASHTO-2009-Figure-3.4.1-4.pdf>

APPENDIX E

APILE ANALYSES

1

AXIALLY LOADING PILE ANALYSIS PROGRAM - APILEplus
 VERSION 5.0 - (C) COPYRIGHT ENSOFT, INC., 1987-2008.

Logan Street Bridge Widening

DESIGNER : SR

DATE : 2017

PILE PROPERTIES :

PERIMETER OF PILE WITH NONCIRCULAR SECTION= 0.00 IN.
 TIP AREA OF PILE WITH NONCIRCULAR SECTION = 0.00 SQF
 OUTSIDE DIAMETER OF CIRCULAR PILE = 14.00 IN.
 INTERNAL DIAMETER OF CIRCULAR PILE = 13.25 IN.
 PILE LENGTH = 80.00 FT.
 MODULUS OF ELASTICITY = 0.290E+08 PSI

LENGTH OF SURFACE SECTION WITH ZERO SKIN FRICTION = 0.00 FT.
 INCREMENT OF PILE LENGTH USED IN COMPUTATION = 2.00 FT.

SOIL INFORMATIONS :

DEPTH FT.	SOIL TYPE	LATERAL EARTH PRESSURE	EFFECTIVE UNIT WEIGHT LB/CF	FRICTION ANGLE DEGREES	BEARING CAPACITY FACTOR
0.00	SAND	1.00	63.00	28.00	17.80
2.50	SAND	1.00	63.00	28.00	17.80
2.50	CLAY	0.00	68.00	0.00	0.00
9.50	CLAY	0.00	68.00	0.00	0.00
9.50	SAND	1.00	63.00	35.00	41.40
20.00	SAND	1.00	63.00	35.00	41.40
20.00	SAND	1.00	68.00	33.00	32.20
65.00	SAND	1.00	68.00	33.00	32.20
65.00	SAND	41.40	68.00	35.00	0.00
78.00	SAND	41.40	68.00	35.00	0.00
78.00	CLAY	0.00	68.00	0.00	0.00
91.50	CLAY	0.00	68.00	0.00	0.00

MAXI MUM UNIT FRICTION KSF	MAXI MUM UNIT BEARING KSF	UNDI STURB SHEAR STRENGTH KSF	REMOLDED SHEAR STRENGTH KSF	BLOW COUNT	UNIT SKIN FRICTION KSF	UNIT END BEARING KSF
10.00	10.00	0.00	0.00	0.00	0.00	0.00

Pipe Piles No Scour

10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	10.00	8.00	8.00	0.00	0.00	0.00	0.00
10.00	10.00	8.00	8.00	0.00	0.00	0.00	0.00
10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	10.00	6.00	8.00	0.00	0.00	0.00	0.00
10.00	10.00	6.00	8.00	0.00	0.00	0.00	0.00

1

 * COMPUTATION RESULT *

***** * FED. HWY. METHOD * * ARMY CORPS METHOD * * LAMBDA 2 METHOD *

PILE PENETRATION FT.	TOTAL SKIN FRIC KIP	END BEARING KIP	ULTIM CAPACITY KIP	TOTAL SKIN FRIC KIP	END BEARING KIP	ULTIM CAPACITY KIP	TOTAL SKIN FRIC KIP	END BEARING KIP	ULTIM CAPACITY KIP
0.0	0.0	0.0*	0.0	0.0	0.0*	0.0	0.0	0.0*	0.0
2.0	0.0	0.4*	0.4	0.2	0.5*	0.6	0.5	0.4*	0.9
4.0	0.2	1.1*	1.3	0.7	1.3*	2.0	1.7	1.2*	3.0
6.0	12.0	10.7	22.7	15.7	10.7	26.4	38.1	10.7	48.7
8.0	32.5	10.7	43.2	45.0	10.7	55.7	67.6	10.7	78.3
10.0	50.0	10.7	60.7	74.4	10.7	85.1	94.0	10.7	104.7
12.0	60.4	10.7	71.1	90.4	10.7	101.1	94.8	10.7	105.5
14.0	63.9	10.7	74.6	93.5	10.7	104.2	96.3	10.7	107.0
16.0	67.9	10.7	78.6	97.0	10.7	107.7	98.4	10.7	109.1
18.0	72.5	10.7	83.2	101.1	10.7	111.8	101.1	10.7	111.8
20.0	77.6	10.7	88.3	105.0	10.7	115.7	104.2	10.7	114.8
22.0	82.7	10.7	93.4	108.8	10.7	119.5	107.5	10.7	118.2
24.0	87.9	10.7	98.6	112.6	10.7	123.3	111.3	10.7	122.0
26.0	93.5	10.7	104.2	116.4	10.7	127.1	115.5	10.7	126.2
28.0	99.6	10.7	110.3	120.3	10.7	131.0	120.0	10.7	130.7
30.0	106.2	10.7	116.9	124.1	10.7	134.8	124.9	10.7	135.6
32.0	113.2	10.7	123.9	127.9	10.7	138.6	130.1	10.7	140.8
34.0	120.7	10.7	131.4	131.8	10.7	142.4	135.6	10.7	146.3
36.0	128.7	10.7	139.4	135.6	10.7	146.3	141.4	10.7	152.1
38.0	137.2	10.7	147.9	139.4	10.7	150.1	147.5	10.7	158.2
40.0	146.1	10.7	156.8	143.2	10.7	153.9	153.8	10.7	164.5
42.0	155.5	10.7	166.2	147.1	10.7	157.8	160.4	10.7	171.1
44.0	165.4	10.7	176.1	150.9	10.7	161.6	167.2	10.7	177.8
46.0	175.7	10.7	186.4	154.7	10.7	165.4	174.2	10.7	184.8
48.0	186.5	10.7	197.2	158.5	10.7	169.2	181.3	10.7	192.0
50.0	197.8	10.7	208.5	162.4	10.7	173.1	188.7	10.7	199.4
52.0	209.5	10.7	220.2	166.2	10.7	176.9	196.3	10.7	207.0
54.0	221.7	10.7	232.4	170.0	10.7	180.7	204.0	10.7	214.7
56.0	234.4	10.7	245.1	173.9	10.7	184.5	211.9	10.7	222.6
58.0	247.6	10.7	258.3	177.7	10.7	188.4	219.9	10.7	230.6
60.0	261.2	10.7	271.9	181.5	10.7	192.2	228.1	10.7	238.7
62.0	275.3	10.7	286.0	185.3	10.7	196.0	236.3	10.7	247.0
64.0	289.9	10.7	300.6	189.2	10.7	199.8	244.7	9.2	253.9
66.0	304.9	10.7	315.6	193.3	10.7	203.9	253.2	0.0	253.2

Pipe Piles No Scour									
68.0	322.0	10.7	332.7	197.3	10.7	208.0	326.5	0.0	326.5
70.0	341.1	10.7	351.8	201.4	10.7	212.1	399.8	0.0	399.8
72.0	360.8	10.7	371.4	205.5	10.7	216.2	937.1	0.0	937.1
74.0	381.0	10.7	391.7	209.6	10.7	220.3	1010.4	0.0	1010.4
76.0	401.8	10.7	412.5	213.7	10.7	224.4	1547.7	8.2	1556.0
78.0	423.1	10.7	433.8	287.0	10.7	297.7	1621.0	10.7	1631.7
80.0	442.8	10.7	453.5	334.7	10.7	345.4	1694.3	10.7	1705.0

 * API RP-2A (1994) *

PILE PENETRATI ON FT.	TOTAL SKI N FRI CTI ON KIP	END BEARI NG KIP	ULTI MATE CAPACI TY KIP
0.00	0.0	0.0*	0.0
2.00	0.2	0.4*	0.6
4.00	0.8	1.2*	2.0
6.00	8.1	10.7	18.7
8.00	22.4	10.7	33.0
10.00	37.6	10.7	48.3
12.00	47.1	10.7	57.8
14.00	50.7	10.7	61.4
16.00	54.9	10.7	65.6
18.00	59.5	10.7	70.2
20.00	64.7	10.7	75.4
22.00	70.2	10.7	80.9
24.00	76.1	10.7	86.7
26.00	82.4	10.7	93.1
28.00	89.3	10.7	100.0
30.00	96.7	10.7	107.4
32.00	104.6	10.7	115.3
34.00	113.1	10.7	123.8
36.00	122.1	10.7	132.8
38.00	131.7	10.7	142.3
40.00	141.7	10.7	152.4
42.00	152.3	10.7	163.0
44.00	163.4	10.7	174.1
46.00	175.1	10.7	185.8
48.00	187.3	10.7	198.0
50.00	200.0	10.7	210.7
52.00	213.2	10.7	223.9
54.00	227.0	10.7	237.7
56.00	241.3	10.7	252.0
58.00	256.1	10.7	266.8
60.00	271.5	10.7	282.2
62.00	287.4	10.7	298.1
64.00	303.8	9.2	313.0
66.00	320.8	0.0	320.8
68.00	394.1	0.0	394.1
70.00	467.4	0.0	467.4
72.00	540.7	0.0	540.7
74.00	614.0	0.0	614.0
76.00	687.3	8.2	695.5
78.00	760.6	10.7	771.3
80.00	833.9	10.7	844.5

AN ASTERISK WILL BE PLACED IN THE END-BEARING COLUMN IF THE TIP RESISTANCE IS CONTROLLED BY THE FRICTION OF SOIL PLUG INSIDE AN OPEN-ENDED PIPE PILE.

Pipe Piles No Scour

 * COMPUTE LOAD-DISTRIBUTION AND LOAD-SETTLEMENT *
 * CURVES FOR AXIAL LOADING *

T-Z CURVE NO.	NO. OF POINTS	DEPTH TO CURVE FT.	LOAD TRANSFER PSI	PILE MOVEMENT IN.
1	10	0.0000E+00	0.0000E+00	0.0000E+00
			0.1857E-01	0.1400E-01
			0.3714E-01	0.2800E-01
			0.7428E-01	0.5600E-01
			0.1114E+00	0.8400E-01
			0.1486E+00	0.1120E+00
			0.1671E+00	0.1260E+00
			0.1857E+00	0.1400E+00
			0.1857E+00	0.7000E+00
			0.1857E+00	0.1400E+01
2	10	0.1275E+01	0.0000E+00	0.0000E+00
			0.1857E-01	0.1400E-01
			0.3714E-01	0.2800E-01
			0.7428E-01	0.5600E-01
			0.1114E+00	0.8400E-01
			0.1486E+00	0.1120E+00
			0.1671E+00	0.1260E+00
			0.1857E+00	0.1400E+00
			0.1857E+00	0.7000E+00
			0.1857E+00	0.1400E+01
3	10	0.2458E+01	0.0000E+00	0.0000E+00
			0.5571E-01	0.1400E-01
			0.1114E+00	0.2800E-01
			0.2228E+00	0.5600E-01
			0.3343E+00	0.8400E-01
			0.4457E+00	0.1120E+00
			0.5014E+00	0.1260E+00
			0.5571E+00	0.1400E+00
			0.5571E+00	0.7000E+00
			0.5571E+00	0.1400E+01
4	10	0.2500E+01	0.0000E+00	0.0000E+00
			0.1671E+00	0.2240E-01
			0.2786E+00	0.4340E-01
			0.4178E+00	0.7980E-01
			0.5014E+00	0.1120E+00
			0.5571E+00	0.1400E+00
			0.5014E+00	0.2800E+00
			0.5014E+00	0.4200E+00
			0.5014E+00	0.7000E+00
			0.5014E+00	0.2800E+01
5	10	0.6025E+01	0.0000E+00	0.0000E+00
			0.4063E+01	0.2240E-01
			0.6772E+01	0.4340E-01
			0.1016E+02	0.7980E-01
			0.1219E+02	0.1120E+00
			0.1354E+02	0.1400E+00

			Pi	Pi	es	No	Scour	
							0. 1219E+02	0. 2800E+00
							0. 1219E+02	0. 4200E+00
							0. 1219E+02	0. 7000E+00
							0. 1219E+02	0. 2800E+01
6	10	0. 9458E+01					0. 0000E+00	0. 0000E+00
							0. 4341E+01	0. 2240E-01
							0. 7235E+01	0. 4340E-01
							0. 1085E+02	0. 7980E-01
							0. 1302E+02	0. 1120E+00
							0. 1447E+02	0. 1400E+00
							0. 1302E+02	0. 2800E+00
							0. 1302E+02	0. 4200E+00
							0. 1302E+02	0. 7000E+00
							0. 1302E+02	0. 2800E+01
7	10	0. 9500E+01					0. 0000E+00	0. 0000E+00
							0. 1447E+01	0. 1400E-01
							0. 2894E+01	0. 2800E-01
							0. 5788E+01	0. 5600E-01
							0. 8682E+01	0. 8400E-01
							0. 1158E+02	0. 1120E+00
							0. 1302E+02	0. 1260E+00
							0. 1447E+02	0. 1400E+00
							0. 1447E+02	0. 7000E+00
							0. 1447E+02	0. 1400E+01
8	10	0. 1478E+02					0. 0000E+00	0. 0000E+00
							0. 3909E+00	0. 1400E-01
							0. 7818E+00	0. 2800E-01
							0. 1564E+01	0. 5600E-01
							0. 2345E+01	0. 8400E-01
							0. 3127E+01	0. 1120E+00
							0. 3518E+01	0. 1260E+00
							0. 3909E+01	0. 1400E+00
							0. 3909E+01	0. 7000E+00
							0. 3909E+01	0. 1400E+01
9	10	0. 1996E+02					0. 0000E+00	0. 0000E+00
							0. 4919E+00	0. 1400E-01
							0. 9839E+00	0. 2800E-01
							0. 1968E+01	0. 5600E-01
							0. 2952E+01	0. 8400E-01
							0. 3936E+01	0. 1120E+00
							0. 4428E+01	0. 1260E+00
							0. 4919E+01	0. 1400E+00
							0. 4919E+01	0. 7000E+00
							0. 4919E+01	0. 1400E+01
10	10	0. 2000E+02					0. 0000E+00	0. 0000E+00
							0. 5219E+00	0. 1400E-01
							0. 1044E+01	0. 2800E-01
							0. 2087E+01	0. 5600E-01
							0. 3131E+01	0. 8400E-01
							0. 4175E+01	0. 1120E+00
							0. 4697E+01	0. 1260E+00
							0. 5219E+01	0. 1400E+00
							0. 5219E+01	0. 7000E+00
							0. 5219E+01	0. 1400E+01
11	10	0. 4252E+02					0. 0000E+00	0. 0000E+00
							0. 1054E+01	0. 1400E-01
							0. 2108E+01	0. 2800E-01

Pipe Piles No			Scour	
12	10	0. 6496E+02	0. 4215E+01	0. 5600E-01
			0. 6323E+01	0. 8400E-01
			0. 8431E+01	0. 1120E+00
			0. 9484E+01	0. 1260E+00
			0. 1054E+02	0. 1400E+00
			0. 1054E+02	0. 7000E+00
			0. 1054E+02	0. 1400E+01
			0. 0000E+00	0. 0000E+00
			0. 1606E+01	0. 1400E-01
			0. 3212E+01	0. 2800E-01
13	10	0. 6500E+02	0. 6425E+01	0. 5600E-01
			0. 9637E+01	0. 8400E-01
			0. 1285E+02	0. 1120E+00
			0. 1446E+02	0. 1260E+00
			0. 1606E+02	0. 1400E+00
			0. 1606E+02	0. 7000E+00
			0. 1606E+02	0. 1400E+01
			0. 0000E+00	0. 0000E+00
			0. 1606E+01	0. 1400E-01
			0. 3212E+01	0. 2800E-01
14	10	0. 7153E+02	0. 6425E+01	0. 5600E-01
			0. 9637E+01	0. 8400E-01
			0. 1285E+02	0. 1120E+00
			0. 1446E+02	0. 1260E+00
			0. 1606E+02	0. 1400E+00
			0. 1606E+02	0. 7000E+00
			0. 1606E+02	0. 1400E+01
			0. 0000E+00	0. 0000E+00
			0. 6944E+01	0. 1400E-01
			0. 1389E+02	0. 2800E-01
15	10	0. 7796E+02	0. 2777E+02	0. 5600E-01
			0. 4166E+02	0. 8400E-01
			0. 5555E+02	0. 1120E+00
			0. 6249E+02	0. 1260E+00
			0. 6944E+02	0. 1400E+00
			0. 6944E+02	0. 7000E+00
			0. 6944E+02	0. 1400E+01
			0. 0000E+00	0. 0000E+00
			0. 6944E+01	0. 1400E-01
			0. 1389E+02	0. 2800E-01
16	10	0. 7800E+02	0. 2777E+02	0. 5600E-01
			0. 4166E+02	0. 8400E-01
			0. 5555E+02	0. 1120E+00
			0. 6249E+02	0. 1260E+00
			0. 6944E+02	0. 1400E+00
			0. 6944E+02	0. 7000E+00
			0. 6944E+02	0. 1400E+01
			0. 0000E+00	0. 0000E+00
			0. 2083E+02	0. 2240E-01
			0. 3472E+02	0. 4340E-01
17	10	0. 8478E+02	0. 5208E+02	0. 7980E-01
			0. 6249E+02	0. 1120E+00
			0. 6944E+02	0. 1400E+00
			0. 6249E+02	0. 2800E+00
			0. 6249E+02	0. 4200E+00
			0. 6249E+02	0. 7000E+00
			0. 6249E+02	0. 2800E+01

Pipe Piles No Scour

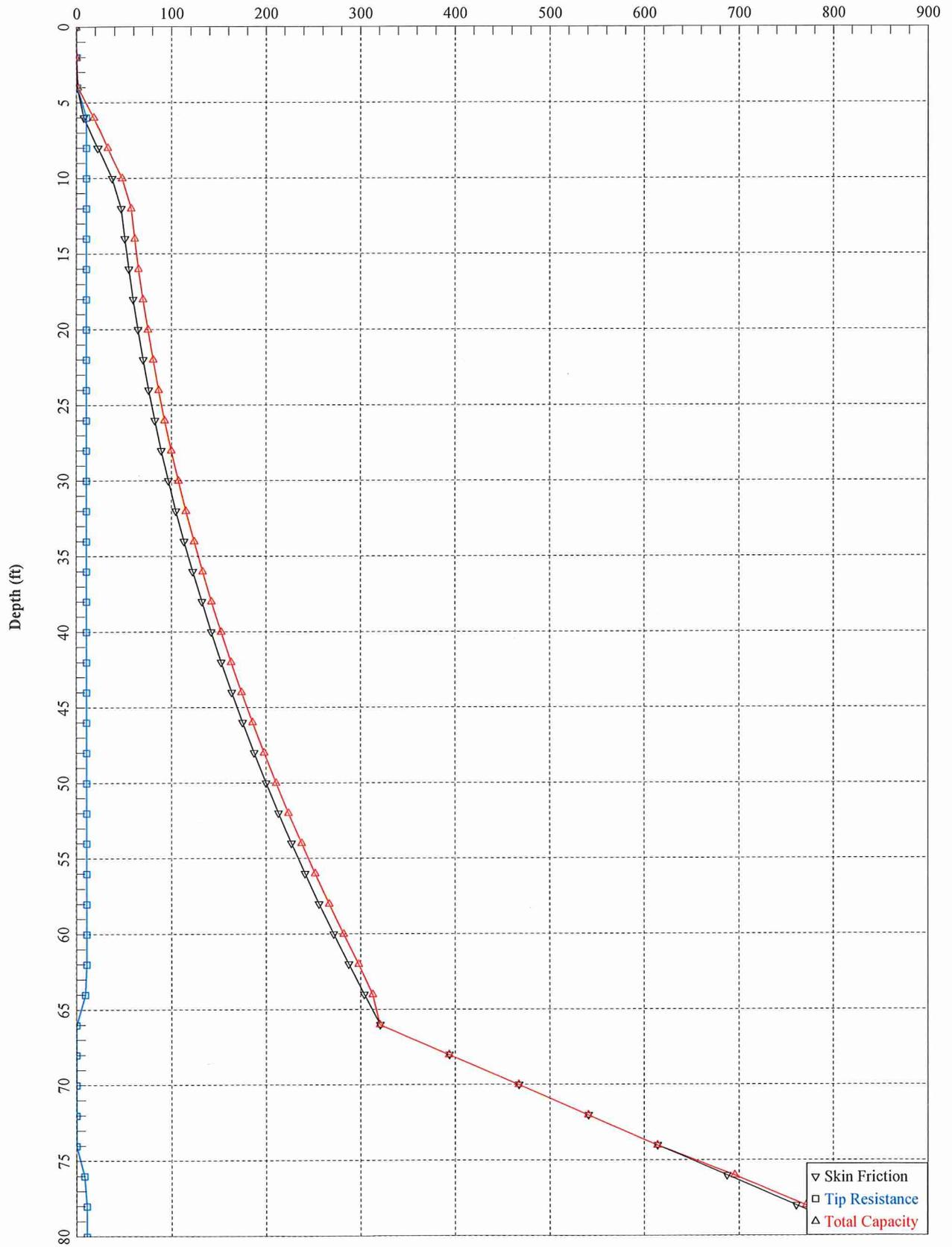
			0. 0000E+00	0. 0000E+00
			0. 2083E+02	0. 2240E-01
			0. 3472E+02	0. 4340E-01
			0. 5208E+02	0. 7980E-01
			0. 6249E+02	0. 1120E+00
			0. 6944E+02	0. 1400E+00
			0. 6249E+02	0. 2800E+00
			0. 6249E+02	0. 4200E+00
			0. 6249E+02	0. 7000E+00
			0. 6249E+02	0. 2800E+01
18	10	0. 9146E+02		
			0. 0000E+00	0. 0000E+00
			0. 2083E+02	0. 2240E-01
			0. 3472E+02	0. 4340E-01
			0. 5208E+02	0. 7980E-01
			0. 6249E+02	0. 1120E+00
			0. 6944E+02	0. 1400E+00
			0. 6249E+02	0. 2800E+00
			0. 6249E+02	0. 4200E+00
			0. 6249E+02	0. 7000E+00
			0. 6249E+02	0. 2800E+01

TIP LOAD KIP	TIP MOVEMENT IN.
0. 0000E+00	0. 0000E+00
0. 6681E+00	0. 7000E-02
0. 1336E+01	0. 1400E-01
0. 2672E+01	0. 2800E-01
0. 5345E+01	0. 1820E+00
0. 8017E+01	0. 5880E+00
0. 9620E+01	0. 1022E+01
0. 1069E+02	0. 1400E+01
0. 1069E+02	0. 2100E+01
0. 1069E+02	0. 2800E+01

LOAD VERSUS SETTLEMENT CURVE

TOP LOAD KIP	TOP MOVEMENT IN.	TIP LOAD KIP	TIP MOVEMENT IN.
0. 7779E+00	0. 2098E-03	0. 9544E-02	0. 1000E-03
0. 7779E+01	0. 2098E-02	0. 9544E-01	0. 1000E-02
0. 3890E+02	0. 1049E-01	0. 4772E+00	0. 5000E-02
0. 7821E+02	0. 2102E-01	0. 9544E+00	0. 1000E-01
0. 3587E+03	0. 1023E+00	0. 3054E+01	0. 5000E-01
0. 6499E+03	0. 1986E+00	0. 3922E+01	0. 1000E+00
0. 7821E+03	0. 6240E+00	0. 7438E+01	0. 5000E+00
0. 7842E+03	0. 1124E+01	0. 9539E+01	0. 1000E+01
0. 7853E+03	0. 2125E+01	0. 1069E+02	0. 2000E+01

Axial Capacity (kips)



Pipe Piles

G:\GEOTECH-PROJECTS\Butler Fairman & Seufert (05952)\GC00513 (Logan Street Bridge Noblesville)\ApiLe\Pipe Piles.cpt

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AXIALLY LOADING PILE ANALYSIS PROGRAM - APILEplus
 VERSION 5.0 - (C) COPYRIGHT ENSOFT, INC., 1987-2008.

Logan Street Bridge Widening

DESIGNER : SR

DATE : 2017

PILE PROPERTIES :

PERIMETER OF PILE WITH NONCIRCULAR SECTION= 0.00 IN.
 TIP AREA OF PILE WITH NONCIRCULAR SECTION = 0.00 SQF
 OUTSIDE DIAMETER OF CIRCULAR PILE = 14.00 IN.
 INTERNAL DIAMETER OF CIRCULAR PILE = 13.25 IN.
 PILE LENGTH = 80.00 FT.
 MODULUS OF ELASTICITY = 0.290E+08 PSI

LENGTH OF SURFACE SECTION WITH ZERO SKIN FRICTION = 9.00 FT.
 INCREMENT OF PILE LENGTH USED IN COMPUTATION = 2.00 FT.

SOIL INFORMATIONS :

DEPTH FT.	SOIL TYPE	LATERAL EARTH PRESSURE	EFFECTIVE UNIT WEIGHT LB/CF	FRICTION ANGLE DEGREES	BEARING CAPACITY FACTOR
0.00	SAND	1.00	63.00	28.00	17.80
2.50	SAND	1.00	63.00	28.00	17.80
2.50	CLAY	0.00	68.00	0.00	0.00
9.50	CLAY	0.00	68.00	0.00	0.00
9.50	SAND	1.00	63.00	35.00	41.40
20.00	SAND	1.00	63.00	35.00	41.40
20.00	SAND	1.00	68.00	33.00	32.20
65.00	SAND	1.00	68.00	33.00	32.20
65.00	SAND	41.40	68.00	35.00	0.00
78.00	SAND	41.40	68.00	35.00	0.00
78.00	CLAY	0.00	68.00	0.00	0.00
91.50	CLAY	0.00	68.00	0.00	0.00

MAXIMUM UNIT FRICTION KSF	MAXIMUM UNIT BEARING KSF	UNDISTURB SHEAR STRENGTH KSF	REMOLDED SHEAR STRENGTH KSF	BLOW COUNT	UNIT SKIN FRICTION KSF	UNIT END BEARING KSF
10.00	10.00	0.00	0.00	0.00	0.00	0.00

Pipe Piles

10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	10.00	8.00	8.00	0.00	0.00	0.00	0.00
10.00	10.00	8.00	8.00	0.00	0.00	0.00	0.00
10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	10.00	6.00	8.00	0.00	0.00	0.00	0.00
10.00	10.00	6.00	8.00	0.00	0.00	0.00	0.00

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 * COMPUTATION RESULT *

***** * FED. HWY. METHOD * * ARMY CORPS METHOD * * LAMBDA 2 METHOD *

PILE PENETR- ATION FT.	TOTAL SKIN FRIC KIP	END BEARING KIP	ULTIM CAPAC- ITY KIP	TOTAL SKIN FRIC KIP	END BEARING KIP	ULTIM CAPAC- ITY KIP	TOTAL SKIN FRIC KIP	END BEARING KIP	ULTIM CAPAC- ITY KIP
0.0	0.0	0.0*	0.0	0.0	0.0*	0.0	0.0	0.0*	0.0
2.0	0.0	0.4*	0.4	0.0	0.5*	0.5	0.0	0.4*	0.4
4.0	0.0	1.1*	1.1	0.0	1.3*	1.3	0.0	1.2*	1.2
6.0	0.0	10.7	10.7	0.0	10.7	10.7	0.0	10.7	10.7
8.0	0.0	10.7	10.7	0.0	10.7	10.7	0.0	10.7	10.7
10.0	8.8	10.7	19.5	14.7	10.7	25.3	37.8	10.7	48.5
12.0	19.2	10.7	29.8	30.7	10.7	41.4	40.4	10.7	51.1
14.0	22.7	10.7	33.4	33.8	10.7	44.5	43.5	10.7	54.2
16.0	26.7	10.7	37.4	37.3	10.7	48.0	47.1	10.7	57.8
18.0	31.3	10.7	41.9	41.4	10.7	52.1	51.2	10.7	61.9
20.0	36.3	10.7	47.0	45.3	10.7	55.9	55.6	10.7	66.3
22.0	41.5	10.7	52.1	49.1	10.7	59.8	60.3	10.7	71.0
24.0	46.6	10.7	57.3	52.9	10.7	63.6	65.3	10.7	76.0
26.0	52.3	10.7	62.9	56.7	10.7	67.4	70.7	10.7	81.3
28.0	58.4	10.7	69.1	60.6	10.7	71.3	76.3	10.7	87.0
30.0	64.9	10.7	75.6	64.4	10.7	75.1	82.3	10.7	93.0
32.0	72.0	10.7	82.7	68.2	10.7	78.9	88.6	10.7	99.3
34.0	79.5	10.7	90.2	72.0	10.7	82.7	95.2	10.7	105.9
36.0	87.5	10.7	98.2	75.9	10.7	86.6	102.0	10.7	112.7
38.0	95.9	10.7	106.6	79.7	10.7	90.4	109.0	10.7	119.7
40.0	104.9	10.7	115.6	83.5	10.7	94.2	116.3	10.7	127.0
42.0	114.3	10.7	124.9	87.4	10.7	98.0	123.8	10.7	134.5
44.0	124.1	10.7	134.8	91.2	10.7	101.9	131.5	10.7	142.2
46.0	134.5	10.7	145.1	95.0	10.7	105.7	139.3	10.7	150.0
48.0	145.3	10.7	156.0	98.8	10.7	109.5	147.4	10.7	158.1
50.0	156.5	10.7	167.2	102.7	10.7	113.4	155.6	10.7	166.2
52.0	168.3	10.7	179.0	106.5	10.7	117.2	163.9	10.7	174.6
54.0	180.5	10.7	191.2	110.3	10.7	121.0	172.4	10.7	183.1
56.0	193.2	10.7	203.9	114.1	10.7	124.8	181.0	10.7	191.7
58.0	206.3	10.7	217.0	118.0	10.7	128.7	189.8	10.7	200.5
60.0	220.0	10.7	230.7	121.8	10.7	132.5	198.6	10.7	209.3
62.0	234.1	10.7	244.8	125.6	10.7	136.3	207.6	10.7	218.3
64.0	248.6	10.7	259.3	129.5	10.7	140.1	216.7	9.2	225.8
66.0	263.7	10.7	274.4	133.5	10.7	144.2	225.8	0.0	225.8

Pipe Piles									
68.0	280.7	10.7	291.4	137.6	10.7	148.3	299.1	0.0	299.1
70.0	299.8	10.7	310.5	141.7	10.7	152.4	372.4	0.0	372.4
72.0	319.5	10.7	330.2	145.8	10.7	156.5	909.7	0.0	909.7
74.0	339.7	10.7	350.4	149.9	10.7	160.6	983.0	0.0	983.0
76.0	360.5	10.7	371.2	154.0	10.7	164.7	1520.3	8.2	1528.5
78.0	381.9	10.7	392.6	227.3	10.7	238.0	1593.6	10.7	1604.3
80.0	401.5	10.7	412.2	275.0	10.7	285.6	1666.9	10.7	1677.6

 * API RP-2A (1994) *

PILE PENETRATI ON FT.	TOTAL SKI N FRI CTI ON KIP	END BEARI NG KIP	ULTI MATE CAPACI TY KIP
0.00	0.0	0.0*	0.0
2.00	0.0	0.4*	0.4
4.00	0.0	1.2*	1.2
6.00	0.0	10.7	10.7
8.00	0.0	10.7	10.7
10.00	7.9	10.7	18.5
12.00	17.4	10.7	28.1
14.00	21.0	10.7	31.7
16.00	25.1	10.7	35.8
18.00	29.8	10.7	40.4
20.00	34.9	10.7	45.6
22.00	40.5	10.7	51.1
24.00	46.3	10.7	57.0
26.00	52.6	10.7	63.3
28.00	59.5	10.7	70.2
30.00	66.9	10.7	77.6
32.00	74.9	10.7	85.6
34.00	83.3	10.7	94.0
36.00	92.4	10.7	103.0
38.00	101.9	10.7	112.6
40.00	111.9	10.7	122.6
42.00	122.5	10.7	133.2
44.00	133.7	10.7	144.4
46.00	145.3	10.7	156.0
48.00	157.5	10.7	168.2
50.00	170.2	10.7	180.9
52.00	183.5	10.7	194.2
54.00	197.2	10.7	207.9
56.00	211.5	10.7	222.2
58.00	226.4	10.7	237.1
60.00	241.7	10.7	252.4
62.00	257.6	10.7	268.3
64.00	274.1	9.2	283.2
66.00	291.0	0.0	291.0
68.00	364.3	0.0	364.3
70.00	437.6	0.0	437.6
72.00	510.9	0.0	510.9
74.00	584.2	0.0	584.2
76.00	657.5	8.2	665.7
78.00	730.8	10.7	741.5
80.00	804.1	10.7	814.8

AN ASTERISK WILL BE PLACED IN THE END-BEARING COLUMN IF THE TIP RESISTANCE IS CONTROLLED BY THE FRICTION OF SOIL PLUG INSIDE AN OPEN-ENDED PIPE PILE.

Pipe Piles

 * COMPUTE LOAD-DISTRIBUTION AND LOAD-SETTLEMENT *
 * CURVES FOR AXIAL LOADING *

T-Z CURVE NO.	NO. OF POINTS	DEPTH TO CURVE FT.	LOAD TRANSFER PSI	PILE MOVEMENT IN.
1	10	0.0000E+00	0.0000E+00	0.0000E+00
			0.0000E+00	0.1400E-01
			0.0000E+00	0.2800E-01
			0.0000E+00	0.5600E-01
			0.0000E+00	0.8400E-01
			0.0000E+00	0.1120E+00
			0.0000E+00	0.1260E+00
			0.0000E+00	0.1400E+00
			0.0000E+00	0.7000E+00
			0.0000E+00	0.1400E+01
2	10	0.1275E+01	0.0000E+00	0.0000E+00
			0.0000E+00	0.1400E-01
			0.0000E+00	0.2800E-01
			0.0000E+00	0.5600E-01
			0.0000E+00	0.8400E-01
			0.0000E+00	0.1120E+00
			0.0000E+00	0.1260E+00
			0.0000E+00	0.1400E+00
			0.0000E+00	0.7000E+00
			0.0000E+00	0.1400E+01
3	10	0.2458E+01	0.0000E+00	0.0000E+00
			0.0000E+00	0.1400E-01
			0.0000E+00	0.2800E-01
			0.0000E+00	0.5600E-01
			0.0000E+00	0.8400E-01
			0.0000E+00	0.1120E+00
			0.0000E+00	0.1260E+00
			0.0000E+00	0.1400E+00
			0.0000E+00	0.7000E+00
			0.0000E+00	0.1400E+01
4	10	0.2500E+01	0.0000E+00	0.0000E+00
			0.0000E+00	0.2240E-01
			0.0000E+00	0.4340E-01
			0.0000E+00	0.7980E-01
			0.0000E+00	0.1120E+00
			0.0000E+00	0.1400E+00
			0.0000E+00	0.2800E+00
			0.0000E+00	0.4200E+00
			0.0000E+00	0.7000E+00
			0.0000E+00	0.2800E+01
5	10	0.6025E+01	0.0000E+00	0.0000E+00
			0.0000E+00	0.2240E-01
			0.0000E+00	0.4340E-01
			0.0000E+00	0.7980E-01
			0.0000E+00	0.1120E+00
			0.0000E+00	0.1400E+00

Pi pe P i l es

			0. 0000E+00	0. 2800E+00
			0. 0000E+00	0. 4200E+00
			0. 0000E+00	0. 7000E+00
			0. 0000E+00	0. 2800E+01
6	10	0. 9458E+01	0. 0000E+00	0. 0000E+00
			0. 2233E+01	0. 2240E-01
			0. 3722E+01	0. 4340E-01
			0. 5583E+01	0. 7980E-01
			0. 6699E+01	0. 1120E+00
			0. 7444E+01	0. 1400E+00
			0. 6699E+01	0. 2800E+00
			0. 6699E+01	0. 4200E+00
			0. 6699E+01	0. 7000E+00
			0. 6699E+01	0. 2800E+01
7	10	0. 9500E+01	0. 0000E+00	0. 0000E+00
			0. 7444E+00	0. 1400E-01
			0. 1489E+01	0. 2800E-01
			0. 2977E+01	0. 5600E-01
			0. 4466E+01	0. 8400E-01
			0. 5955E+01	0. 1120E+00
			0. 6699E+01	0. 1260E+00
			0. 7444E+01	0. 1400E+00
			0. 7444E+01	0. 7000E+00
			0. 7444E+01	0. 1400E+01
8	10	0. 1478E+02	0. 0000E+00	0. 0000E+00
			0. 3909E+00	0. 1400E-01
			0. 7818E+00	0. 2800E-01
			0. 1564E+01	0. 5600E-01
			0. 2345E+01	0. 8400E-01
			0. 3127E+01	0. 1120E+00
			0. 3518E+01	0. 1260E+00
			0. 3909E+01	0. 1400E+00
			0. 3909E+01	0. 7000E+00
			0. 3909E+01	0. 1400E+01
9	10	0. 1996E+02	0. 0000E+00	0. 0000E+00
			0. 4919E+00	0. 1400E-01
			0. 9839E+00	0. 2800E-01
			0. 1968E+01	0. 5600E-01
			0. 2952E+01	0. 8400E-01
			0. 3936E+01	0. 1120E+00
			0. 4428E+01	0. 1260E+00
			0. 4919E+01	0. 1400E+00
			0. 4919E+01	0. 7000E+00
			0. 4919E+01	0. 1400E+01
10	10	0. 2000E+02	0. 0000E+00	0. 0000E+00
			0. 5219E+00	0. 1400E-01
			0. 1044E+01	0. 2800E-01
			0. 2087E+01	0. 5600E-01
			0. 3131E+01	0. 8400E-01
			0. 4175E+01	0. 1120E+00
			0. 4697E+01	0. 1260E+00
			0. 5219E+01	0. 1400E+00
			0. 5219E+01	0. 7000E+00
			0. 5219E+01	0. 1400E+01
11	10	0. 4252E+02	0. 0000E+00	0. 0000E+00
			0. 1054E+01	0. 1400E-01
			0. 2108E+01	0. 2800E-01

Pi pe P i l es

			0. 4215E+01	0. 5600E-01
			0. 6323E+01	0. 8400E-01
			0. 8431E+01	0. 1120E+00
			0. 9484E+01	0. 1260E+00
			0. 1054E+02	0. 1400E+00
			0. 1054E+02	0. 7000E+00
			0. 1054E+02	0. 1400E+01
12	10	0. 6496E+02		
			0. 0000E+00	0. 0000E+00
			0. 1606E+01	0. 1400E-01
			0. 3212E+01	0. 2800E-01
			0. 6425E+01	0. 5600E-01
			0. 9637E+01	0. 8400E-01
			0. 1285E+02	0. 1120E+00
			0. 1446E+02	0. 1260E+00
			0. 1606E+02	0. 1400E+00
			0. 1606E+02	0. 7000E+00
			0. 1606E+02	0. 1400E+01
13	10	0. 6500E+02		
			0. 0000E+00	0. 0000E+00
			0. 1606E+01	0. 1400E-01
			0. 3212E+01	0. 2800E-01
			0. 6425E+01	0. 5600E-01
			0. 9637E+01	0. 8400E-01
			0. 1285E+02	0. 1120E+00
			0. 1446E+02	0. 1260E+00
			0. 1606E+02	0. 1400E+00
			0. 1606E+02	0. 7000E+00
			0. 1606E+02	0. 1400E+01
14	10	0. 7153E+02		
			0. 0000E+00	0. 0000E+00
			0. 6944E+01	0. 1400E-01
			0. 1389E+02	0. 2800E-01
			0. 2777E+02	0. 5600E-01
			0. 4166E+02	0. 8400E-01
			0. 5555E+02	0. 1120E+00
			0. 6249E+02	0. 1260E+00
			0. 6944E+02	0. 1400E+00
			0. 6944E+02	0. 7000E+00
			0. 6944E+02	0. 1400E+01
15	10	0. 7796E+02		
			0. 0000E+00	0. 0000E+00
			0. 6944E+01	0. 1400E-01
			0. 1389E+02	0. 2800E-01
			0. 2777E+02	0. 5600E-01
			0. 4166E+02	0. 8400E-01
			0. 5555E+02	0. 1120E+00
			0. 6249E+02	0. 1260E+00
			0. 6944E+02	0. 1400E+00
			0. 6944E+02	0. 7000E+00
			0. 6944E+02	0. 1400E+01
16	10	0. 7800E+02		
			0. 0000E+00	0. 0000E+00
			0. 2083E+02	0. 2240E-01
			0. 3472E+02	0. 4340E-01
			0. 5208E+02	0. 7980E-01
			0. 6249E+02	0. 1120E+00
			0. 6944E+02	0. 1400E+00
			0. 6249E+02	0. 2800E+00
			0. 6249E+02	0. 4200E+00
			0. 6249E+02	0. 7000E+00
			0. 6249E+02	0. 2800E+01
17	10	0. 8478E+02		

Pi pe Pi I es

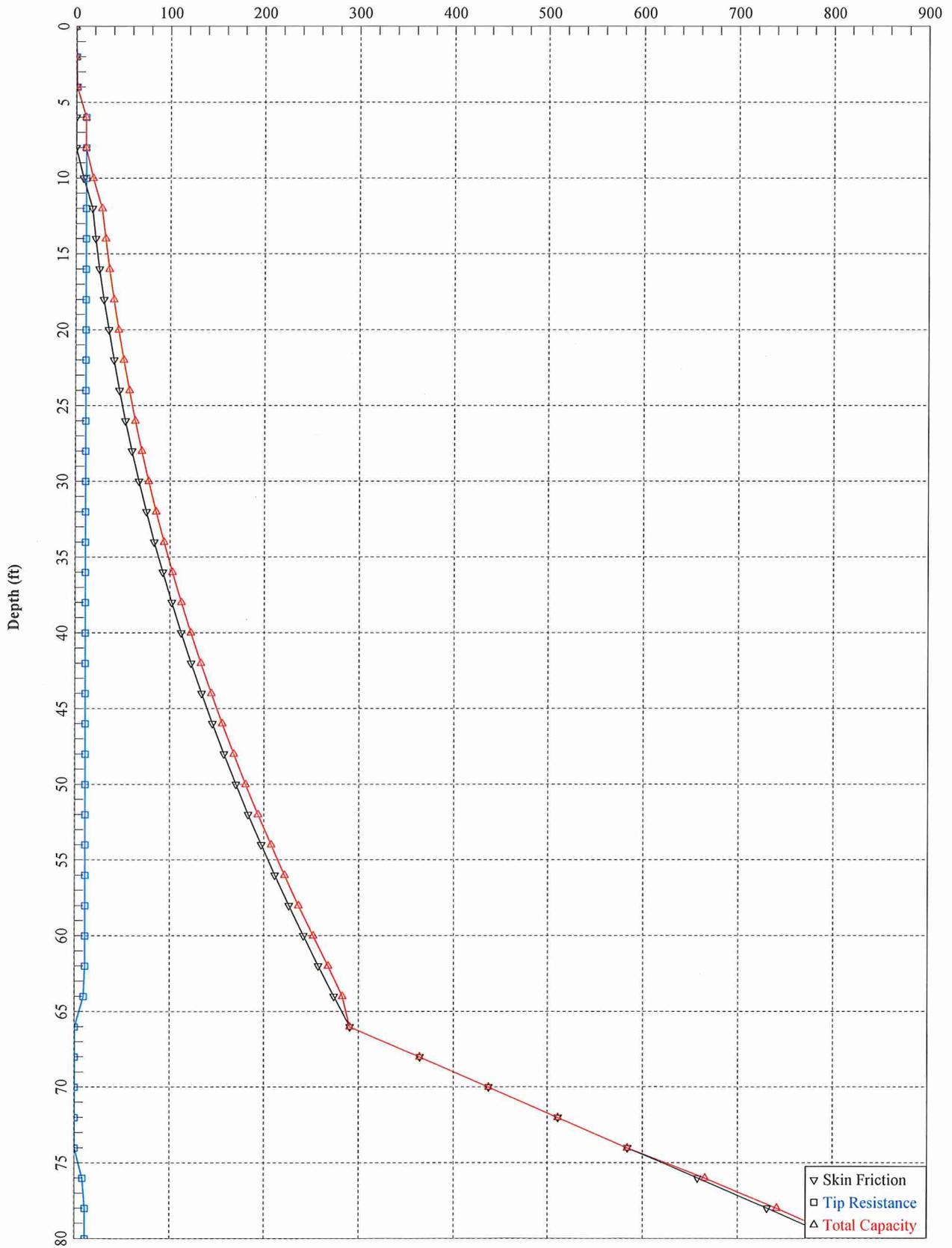
			0. 0000E+00	0. 0000E+00
			0. 2083E+02	0. 2240E-01
			0. 3472E+02	0. 4340E-01
			0. 5208E+02	0. 7980E-01
			0. 6249E+02	0. 1120E+00
			0. 6944E+02	0. 1400E+00
			0. 6249E+02	0. 2800E+00
			0. 6249E+02	0. 4200E+00
			0. 6249E+02	0. 7000E+00
			0. 6249E+02	0. 2800E+01
18	10	0. 9146E+02		
			0. 0000E+00	0. 0000E+00
			0. 2083E+02	0. 2240E-01
			0. 3472E+02	0. 4340E-01
			0. 5208E+02	0. 7980E-01
			0. 6249E+02	0. 1120E+00
			0. 6944E+02	0. 1400E+00
			0. 6249E+02	0. 2800E+00
			0. 6249E+02	0. 4200E+00
			0. 6249E+02	0. 7000E+00
			0. 6249E+02	0. 2800E+01

TIP LOAD KIP	TIP MOVEMENT IN.
0. 0000E+00	0. 0000E+00
0. 6681E+00	0. 7000E-02
0. 1336E+01	0. 1400E-01
0. 2672E+01	0. 2800E-01
0. 5345E+01	0. 1820E+00
0. 8017E+01	0. 5880E+00
0. 9620E+01	0. 1022E+01
0. 1069E+02	0. 1400E+01
0. 1069E+02	0. 2100E+01
0. 1069E+02	0. 2800E+01

LOAD VERSUS SETTLEMENT CURVE

TOP LOAD KIP	TOP MOVEMENT IN.	TIP LOAD KIP	TIP MOVEMENT IN.
0. 6809E+00	0. 2080E-03	0. 9544E-02	0. 1000E-03
0. 6809E+01	0. 2080E-02	0. 9544E-01	0. 1000E-02
0. 3405E+02	0. 1040E-01	0. 4772E+00	0. 5000E-02
0. 6840E+02	0. 2083E-01	0. 9544E+00	0. 1000E-01
0. 3259E+03	0. 1017E+00	0. 3054E+01	0. 5000E-01
0. 6095E+03	0. 1978E+00	0. 3922E+01	0. 1000E+00
0. 7438E+03	0. 6232E+00	0. 7438E+01	0. 5000E+00
0. 7459E+03	0. 1124E+01	0. 9539E+01	0. 1000E+01
0. 7471E+03	0. 2124E+01	0. 1069E+02	0. 2000E+01

Axial Capacity (kips)



REPORT OF ASBESTOS INSPECTION

Logan Street Bridge over the White River

Located in Section 36, T. 19 North, R. 4 East, Noblesville Township

in

Hamilton County

Greenfield District

April 19, 2018

DEFINITIONS

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.

Miscellaneous Material - Any building material on structural components, structural members of fixtures, such as floor and ceiling tiles, excluding surfacing materials or thermal system insulation. Abbreviated AM.

Regulated Asbestos-Containing Material -

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 ASM.

Thermal System Insulation - Material applied to pipes, fittings, boilers, breeching, tanks, ducts, or other structural components to prevent heat loss or gain, or water condensation, or for other purposes. Abbreviated TSI.

BRIDGE ASBESTOS INVESTIGATION

Re: Results of Bridge Asbestos Inspection

Property Description: Logan Street Bridge over the White River

District: Greenfield

County: Hamilton

INTRODUCTION

Butler, Fairman, and Seufert, Inc. Inspectors have completed an asbestos investigation for the bridge on April 17, 2018. Matthew Domogalik, Indiana Certification No. 19A008484, expiring September 26, 2018, conducted the investigation. The structure is a concrete deck on seven steel I-beams. The structure is slated to be modified for trail improvements. Based on observations made at the time of the investigation, it was determined that suspected asbestos containing materials were present that required sampling. No presumed asbestos containing materials were found or sampled. **Suspected Non-friable Category II asbestos containing materials were sampled and found not to contain asbestos fibers. No ACM's must be removed prior to renovation or demolition of this structure.** However, proper notification must be made to federal, state, and if applicable, local regulatory agencies prior to beginning renovation or demolition projects on this structure.

METHODOLOGY

The inspection methodology included:

- Inspection of all exposed and accessible surfaces of the structure for friable and non-friable suspect ACM and PACM, identification of homogeneous areas and collection of bulk samples of suspect material according to the standards of the Asbestos Hazard Emergency Response Act (AHERA).
- Documentation of the asbestos investigation including the sample identification number, the sample location, the sample description, the friability of the sample, the sample condition and any additional comments regarding the suspect ACM bulk sample.
- Collection of bulk samples was done in a manner as to minimize the material damage that could result in ACM dust releases, completed a chain of custody form documenting the sample transport process, and submitted the samples to Micro-Air of Indianapolis, IN for analysis.
- Potential ACM containing bulk samples were analyzed by Micro-Air, a National Voluntary Laboratory Accreditation Program (NVLAP) approved laboratory having a

NVLAP code of 101221-0 Bulk sample analysis was conducted by the Polarized Light Microscopy (PLM) methodology in accordance with the U.S. EPA Interim Method for the Determination of Asbestos in Bulk Insulation Samples, A 40 CFR 763, Subpart F, Appendix A, 1987.

SUMMARY AND CONCLUSIONS

The results of the asbestos investigation for the Logan Street bridge over the White River can be summarized as follows:

1. Contractor shall provide 10 working days notice to the Indiana Department of Environmental Management (Reference IAC 14-10) prior to the date on which removal or demolition operations are anticipated to begin. Local government agencies may have additional regulations that must be followed. The contractor shall contact IDEM's Air Management Office to determine what local agencies have such regulations.
2. No ACM's must be removed prior to renovation or demolition of this structure.
3. 10 homogenous areas were identified for the structure in question. 10 bulk samples for suspect ACM were obtained from the areas.
4. Bulk sample PLM analytical results indicate there is no asbestos present in the samples 6063-A through 6063-J.
5. No presumed asbestos containing materials (ACM) were identified at this site.

Summary of RACM/Presumed ACM

Presumed ACM present?	None
Category II Non-friable?	None
RACM identified by lab testing?	None


Matthew W. Domogalik



6320 LA PAS TRAIL, INDIANAPOLIS, INDIANA 46268

TELEPHONE: (317) 293-1533 FAX: (317) 290-3569

E-MAIL: microair@microair.com

WEB SITE: www.microair.com

Indoor Air Quality
Catastrophe Services
Microbiology
Asbestos Surveys
Air Monitoring
Industrial Hygiene
Epidemiology
Radon Testing
Water Testing
Lead Testing

April 18, 2018

Butler, Fairman, and Seufert, Inc.
Matt Domogalik
8450 Westfield Blvd.
Indianapolis, IN 46240

RE: Polarized Light Microscopy (PLM) Bulk Sample Results

Project Name: Logan St. Bridge

Location: Logan St. Bridge - Noblesville, IN

Project Number: 6063

Date Received: April 17, 2018

Dear Mr. Domogalik:

Enclosed is(are) the result(s) of the analysis performed on the sample(s) received by Micro Air, Inc.

Method of Analysis:

Polarized Light Microscopy (PLM) with Dispersion Staining using EPA-600-M4-82-020 & EPA Method/600/R-93/116 (1993). All samples may be heated to release fibrous material.

Negative PLM results of non-friable organic bound (NOB) materials, such as floor tiles and roofing materials, can be inconclusive due to analytical difficulties in standard bulk sample analysis techniques. If desired, negative results can be confirmed with transmission electron microscopy (TEM) to ensure that asbestos has not been missed during PLM analysis.

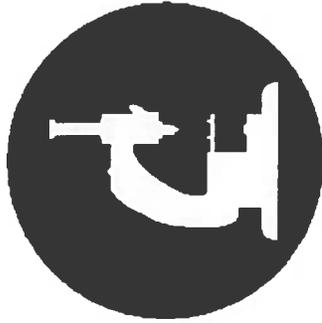
Asbestos regulations and EPA methods state that distinct layers must be analyzed and reported separately. If composite analysis is requested and performed on multi-layered samples, the sample is considered asbestos containing material (ACM) if any quantity of asbestos is found.

This report may not be reproduced, except in full, without written approval from Micro Air, Inc., and only relates to the items tested. This report should not be used to imply product or service endorsement by NVLAP or any agency of the U.S. Government.

If you have any questions concerning this report please do not hesitate to contact us.

Sincerely,

Betsie L. McAfee
Technical Manager



micro air, inc.

6320 La Pas Trail
 Indianapolis, IN 46268
 Telephone: (317) 293-1533
 Fax: (317) 290-3566
 e-mail: microair@microair.com
 Website: www.microair.com

Client: Butler, Fairman, and Seuf
 Project Number: 6063
 Project Name: Logan St. Bridge
 Report Date: 4/18/2018
 Lab Number: 113832
 Date Received: 4/17/2018



Polarized Light Microscopy (PLM) Bulk Sample Results

Location: Logan St. Bridge - Noblesville, IN

Sample ID	Client Sample ID	Date Collected	Date Analyzed	Sample Description	Asbestos Present?	Color	Homogeneous	Sample Composition	
								Asbestos	Non-Asbestos
001	6063A	4/17/2018	4/18/2018	N.W. Concrete Abut	NO	G	YES	N/A	Binder 100%
002	6063B	4/17/2018	4/18/2018	W. End Joint Mat.	NO	G	YES	N/A	Binder 100%
003	6063C	4/17/2018	4/18/2018	N. Conc. Sidewalk	NO	G	YES	N/A	Binder 100%
004	6063D	4/17/2018	4/18/2018	Conc. BR. Deck	NO	G	YES	N/A	Binder 100%
005	6063E	4/17/2018	4/18/2018	N. Conc. Wall	NO	G	YES	N/A	Binder 100%

Client: Butler, Fairman, and Seufert, Inc.
 Report Date: 4/18/2018
 Lab Number: 113832

Project Number: 6063
 Project Name: Logan St. Bridge

Polarized Light Microscopy (PLM) Bulk Sample Results

Location: Logan St. Bridge - Noblesville, IN

Sample ID	Client Sample ID	Date Collected	Date Analyzed	Sample Description	Asbestos Present?	Color	Homogeneous	Sample Composition Asbestos	Sample Composition Non-Asbestos
006	6063F	4/17/2018	4/18/2018	East. Joint Mat.	NO	G	YES	N/A	Cellulose <1% Binder 100%
007	6063G	4/17/2018	4/18/2018	N.E. Joint Mat	NO	B	YES	N/A	Cellulose 3% Binder 97%
008	6063H	4/17/2018	4/18/2018	E. Conc. Abut	NO	G	YES	N/A	Binder 100%
009	6063I	4/17/2018	4/18/2018	S. Conc. Wall	NO	G	YES	N/A	Binder 100%
010	6063J	4/17/2018	4/18/2018	S.W. Conc. Ret. Wall	NO	G	YES	N/A	Binder 100%



micro air, inc.

Lab # 113832

6320 La Pas Trail, Indianapolis, IN 46268
Phone: (317) 293-1533 Fax: (317) 290-3566
email: microair@microair.com website: www.microair.com

Chain of Custody and Analysis Request Form (Please Print Neatly)

Client Name: <u>Butler, Fairman & Seufert, Inc.</u>	Project Name: <u>LOGAN ST. BRIDGE</u>	Results To: <u>Matt Domogalik</u>
Contact: <u>Matt Domogalik</u>	Project Site: <u>LOGAN ST. OF WHITE RIVER NOBLESVILLE</u>	P.O. Number: _____
Address: <u>8450 Westfield Boulevard</u> <u>Indianapolis, IN. 46240</u>	Project #: <u>6063</u>	Report Results: (Choose One)
Phone: <u>317-713-4615</u>	Sample Date: <u>4.17.18</u>	Verbal: <input type="checkbox"/> Yes / <input type="checkbox"/> No
Fax: <u>317-713-4616</u>	Email: <u>mdomogalik@bfsengr.com</u>	Fax: <input type="checkbox"/> Yes / <input type="checkbox"/> No
		Email: <input checked="" type="radio"/> Yes <input type="radio"/> No

Sample ID	Sample Location	Sample Type	Analysis Requested*	Air Volume (L), Area IN2	Turnaround Requested	Comments
001-6063A	N.W. CONC. ABUT	M	A02		24 HR.	
002-6063B	W. END JOINT MAT.	M	A02		24 HR.	
003-6063C	N. CONC. SIDEWALK	M	A02		24 HR.	
004-6063D	CONC. BR. DECK	M	A02		24 HR.	
005-6063E	N. CONC. WALL	M	A02		24 HR.	
006-6063F	EAST. JOINT MAT.	M	A02		24 HR.	
007-6063G	N.E. JOINT MAT	M	A02		24 HR.	
008-6063H	E. CONC. ABUT	M	A02		24 HR.	
009-6063I	S. CONC. WALL	M	A02		24 HR.	
010-6063J	S.W. CONC. ^{RET.} WALL	M	A02		24 HR.	

*USE THE FOLLOWING CODES FOR ANALYSIS REQUESTED:

MICROBIOLOGY

- M01 Air-O-Cell (Mold ID and Quantification)
- M02 Mold Culture - Air or Rodac (ID and Quantification)
- M03 Bacteria Culture - Air or Rodac (ID and Quantification)
- M04 Mold by Swab (ID and Quantification)
- M05 Mold by Swab (Direct Read)
- M06 Bacteria by Swab (ID and Quantification)
- M07 Bacteria by Swab (Direct Read)
- M08 Mold by Direct Examination - Tape (ID and Quantification)
- M09 Mold by Direct Examination - Bulk (ID and Quantification)
- M10 Bacteria by Direct Examination - Bulk (ID and Quantification)

TURNAROUND TIMES AVAILABLE

- 24 Hour 3-5 Day
- 5-10 Day
- 5-10 Day
- 5-10 Day
- 24 Hour 3-5 Day
- 5-10 Day
- 24 Hour 3-5 Day
- 24 Hour 3-5 Day
- 5-10 Day
- 5-10 Day

ASBESTOS

- A01 Air - PCM NIOSH 7400 2 Hour Same Day 24 Hour 48 Hour 3-5 Day
- A02 Bulk - EPA 600/R-93/116 (1993) 2 Hour Same Day 24 Hour 48 Hour 3-5 Day
- A03 EPA Point Count - 400 Points 24 Hour 3-5 Day

OTHER

OTH Please Specify: _____

PAYMENT

Payment Type (Circle): Invoice Cash Credit Card Check Amount: \$ _____
(Established Customers Only)

Relinquished By: Matt Domogalik Date: 4.17.18 Time: 3:50 AM PM

Received By: [Signature] Date: 4-17-18 Time: 3:50 AM PM

Received in Lab By: [Signature] Date: 4/17/18 Time: 4:30 AM PM



STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES



CERTIFICATE OF APPROVAL
CONSTRUCTION IN A FLOODWAY

APPLICATION # : FW-29239
STREAM : West Fork White River
APPLICANT : Hamilton County Highway Department
Alison Krupski
1700 South 10th Street
Noblesville, IN 46060

MAILED: June 12, 2018

AGENT : Butler, Fairman & Seufert Inc
Neal Bennett
8450 Westfield Boulevard, Suite 300
Indianapolis, IN 46240

AUTHORITY : IC 14-28-1 with 312 IAC 10 and IC 14-29-1 with 312 IAC 6

DESCRIPTION : The superstructure of the existing four-span bridge at the Logan Street crossing will be widened to accommodate a pedestrian trail on the south side and a sidewalk on the north side. The existing bridge deck will be increased to a width of 64'-5" by extending abutments and piers downstream. The approach roads will not be raised. Riprap will be placed 3' deep and 6' wide around the bridge piers. A temporary causeway will be installed to the southwest of the bridge and extend approximately 25' into the river. Tree mitigation planting will occur as a result of the project. Details of the project are contained in information received electronically at the Division of Water on December 19, 2017 and in plans and information received at the Division of Water on January 9, 2018, February 15, 2018, April 17, 2018 and May 18, 2018.

LOCATION : At the Logan Street crossing near Noblesville, Noblesville Township, Hamilton County
Section 36, T 19N, R 4E, Noblesville Quadrangle
UTM Coordinates: Downstream 4433427 North, 583883 East

APPROVED BY : Markita Shepherdson
Markita Shepherdson, CFM, Sr Environmental Manager
Division of Water

APPROVED ON : June 12, 2018

Included: Notice Of Right To Administrative Review - General Conditions - Special Conditions - Service List

STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES

NOTICE OF RIGHT TO ADMINISTRATIVE REVIEW

APPLICATION #: FW- 29239

This signed document constitutes the issuance of a permit by the Department of Natural Resources, subject to the conditions and limitations stated on the pages entitled "General Conditions" and "Special Conditions".

The permit or any of the conditions or limitations which it contains may be appealed by applying for administrative review. Such review is governed by the Administrative Orders and Procedures Act, IC 4-21.5, and the Department's rules pertaining to adjudicative proceedings, 312 IAC 3-1.

In order to obtain a review, a written petition must be filed with the Division of Hearings within 18 days of the mailing date of this notice. The petition should be addressed to:

Natural Resources Commission
Division of Hearings
Indiana Government Center North, Room N103
100 North Senate Avenue
Indianapolis, Indiana 46204-2200

The petition must contain specific reasons for the appeal and indicate the portion or portions of the permit to which the appeal pertains.

If an appeal is filed, the final agency determination will be made by the Natural Resources Commission following a legal proceeding conducted before an Administrative Law Judge. The Department of Natural Resources will be represented by legal counsel.

STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES

GENERAL CONDITIONS

APPLICATION #: FW- 29239

- (1) If any archaeological artifacts or human remains are uncovered during construction, federal law and regulations (16 USC 470, et seq.; 36 CFR 800.11, et al) and State Law (IC 14-21-1) require that work must stop and that the discovery must be reported to the Division of Historic Preservation and Archaeology within 2 business days.

Division of Historic Preservation and Archaeology
Room W274
402 West Washington Street
Indianapolis, IN 46204

Telephone: (317) 232-1646, FAX: (317) 232-8036

- (2) This permit must be posted and maintained at the project site until the project is completed.
- (3) This permit does not relieve the permittee of the responsibility for obtaining additional permits, approvals, easements, etc. as required by other federal, state, or local regulatory agencies. These agencies include, but are not limited to:

<u>Agency</u>	<u>Telephone Number</u>
Hamilton County Drainage Board	(317) 776-8495
US Army Corps of Engineers	(502) 315-6686
Indiana Department of Environmental Management	(317) 233-8488 or (800) 451-6027
Local city or county planning or zoning commission	

- (4) This permit must not be construed as a waiver of any local ordinance or other state or federal law.
- (5) This permit does not relieve the permittee of any liability for the effects which the project may have upon the safety of the life or property of others.
- (6) This permit may be revoked by the Department of Natural Resources for violation of any condition, limitation or applicable statute or rule.
- (7) This permit shall not be assignable or transferable without the prior written approval of the Department of Natural Resources. To initiate a transfer contact:

Director
Division of Water
Room W264
402 West Washington Street
Indianapolis, IN 46204

Telephone: (317) 232-4160, Toll Free: (877) 928-3755
FAX: (317) 233-4579

- (8) The Department of Natural Resources shall have the right to enter upon the site of the permitted activity for the purpose of inspecting the authorized work.
- (9) The receipt and acceptance of this permit by the applicant or authorized agent shall be considered as acceptance of the conditions and limitations stated on the pages entitled "General Conditions" and "Special Conditions".

STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES

SPECIAL CONDITIONS

APPLICATION #: FW- 29239

PERMIT VALIDITY : This permit is valid for 24 months from the "Approved On" date shown on the first page. If construction work in the floodway has not been completed by June 12, 2020 the permit will become void. This permit may be renewed one (1) time if a written request is received by DNR, Division of Water prior to June 12, 2020. Thereafter the permit will become void and a new permit will be required in order to continue work on the project.

This permit becomes effective 18 days after the "MAILED" date shown on the first page. If both a petition for review and a petition for a stay of effectiveness are filed before this permit becomes effective, any part of the permit that is within the scope of the petition for stay is stayed for an additional 15 days.

CONFORMANCE : Other than those measures necessary to satisfy the "General Conditions" and "Special Conditions", the project must conform to the information received by the Department of Natural Resources on: December 19, 2017, January 9, 2018, February 15, 2018, April 17, 2018 and May 18, 2018. Any deviation from the information must receive the prior written approval of the Department.

<u>Number</u>	<u>Special Condition</u>
(1)	revegetate all bare and disturbed areas that will not be mowed and maintained with a mixture of grasses, sedges, and wildflowers native to Central Indiana and specifically for stream bank/floodway stabilization purposes as soon as possible upon completion; turf-type grasses (including low-endophyte, friendly endophyte, and endophyte free tall fescue but excluding all other varieties of tall fescue) may be used in regularly mowed areas only
(2)	minimize and contain within the project limits inchannel disturbance and the clearing of trees and brush
(3)	do not work in the waterway from April 1 through June 30 without the prior written approval of the Division of Fish and Wildlife
(4)	do not cut any trees suitable for Indiana bat or Northern Long-eared bat roosting (greater than 3 inches dbh, living or dead, with loose hanging bark, or with cracks, crevices, or cavities) from April 1 through September 30
(5)	do not excavate in the low flow area except for the placement of piers, foundations, and riprap, or removal of the old structure
(6)	use minimum average 6 inch graded riprap stone extended below the normal water level to provide habitat for aquatic organisms in the voids
(7)	do not use broken concrete as riprap
(8)	underlay the riprap with a bedding layer of well graded aggregate or a geotextile to prevent piping of soil underneath the riprap
(9)	minimize the movement of resuspended bottom sediment from the immediate project area
(10)	do not deposit or allow demolition/construction materials or debris to fall or otherwise enter the waterway

STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES

SPECIAL CONDITIONS

APPLICATION #: FW- 29239

- (11) appropriately designed measures for controlling erosion and sediment must be implemented to prevent sediment from entering the stream or leaving the construction site; maintain these measures until construction is complete and all disturbed areas are stabilized
- (12) seed and protect disturbed stream banks and slopes not protected by other methods that are 3:1 or steeper with erosion control blankets that are heavy-duty, biodegradable, and net free or that use loose-woven / Leno-woven netting to minimize the entrapment and snaring of small-bodied wildlife such as snakes and turtles (follow manufacturer's recommendations for selection and installation); seed and apply mulch on all other disturbed areas
- (13) implement the mitigation plan received at the Division of Water on April 17, 2018, by the end of spring 2020
- (14) the mitigation site must be monitored for the survival of the plantings for a minimum of three years; a report must be submitted to the Central Region Environmental Biologist at the Division of Water, 402 W. Washington St., RM W264, Indianapolis, IN 46204-2641 by December 31 of each year to monitor the initiation, progress, and success of the mitigation site; the report must include appropriate pictures of vegetative plantings; a narrative must describe the activity accomplished to date, acres planted, number planted, list of species planted on site, and estimated survival; reports must be submitted each year, even if work has not been initiated on site, a minimum of three reports are required with additional reports until the mitigation site is complete or determined to be successful; if the mitigation site is not successful three years after work initiation, the permit will be considered in violation, and another plan must be submitted for approval
- (15) the replacement habitat areas must have a minimum survival of 75% of planted material at the end of the monitoring period or additional trees and shrubs must be installed to meet the minimum survival; if the site fails to meet success in any year, replanting shall occur prior to the next monitoring period; an additional year of monitoring shall be required for each year of additional planting
- (16) place a restrictive covenant (developed in coordination with a DNR biologist) on the mitigation site property within 60 days of project initiation to protect the mitigation site from any future disturbance; a copy of the covenant must be provided to the Central Region Environmental Biologist by mailing it to the Division of Water, 402 W. Washington St, Room W264, Indianapolis, IN 46204-2641
- (17) use only the species approved in the mitigation plan; if modifications become necessary to the approved species, a DNR Environmental Biologist must approve all changes
- (18) do not place riprap or other streambed stabilization materials in the active stream channel above the existing streambed or flowline elevation in order to prevent obstructions to the movement of aquatic organisms upstream and downstream of the crossing structure
- (19) except for the material used as backfill as shown on the above referenced project plans on file at the Division of Water, place all excavated material landward of the floodway *
- (20) do not leave felled trees, brush, or other debris in the floodway *
- (21) upon completion of the project, remove all construction debris from the floodway *

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- (22) issuance of this Certificate does not constitute approval of any additional temporary causeways, coffer dams, runarounds, access bridges or borrow areas associated with the proposed bridge construction; separate written approval must be obtained from the Department for these types of projects prior to beginning any work within the floodway *
- (23) keep the bridge waterway opening free of debris and sediment at all times
- (24) any equipment and/or cables placed on a public waterway must be clearly marked with navigation buoys described in 312 IAC 5-4 in a manner that would be visible to any watercraft operator in the area
- (25) any equipment and/or cables left in a public waterway in times of limited visibility must, in addition to the requirement listed above, be marked with flashing amber warning lights and reflective signage warning watercraft operators of the hazards
- (26) * NOTE: for regulatory purposes, the floodway is defined as that shown on Panel 142 of the Hamilton County Flood Insurance Rate Map dated November 19, 2014

STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES

SERVICE LIST

APPLICATION #: FW- 29239

Hamilton County Highway Department
Alison Krupski
1700 South 10th Street
Noblesville, IN 46060

Butler, Fairman & Seufert Inc
Neal Bennett
8450 Westfield Boulevard, Suite 300
Indianapolis, IN 46240

Joan Bolden
151 North 8th Street
Noblesville, IN 46060-2205

City of Noblesville
Denise E Aschleman, CFM
16 South 10th Street, Suite 150
Noblesville, IN 46060

City of Noblesville
16 South 10th Street
Noblesville, IN 46060-2809

Department of Natural Resources
Division of Law Enforcement
District 4 Headquarters
3734 Mounds Road
Anderson, IN 46017

Duke Energy Indiana Inc
550 Tyrone Street South DEC41B
Charlotte, NC 28202

Godby Properties LP
14550 Mundy Drive
Noblesville, IN 46060

Hamilton County Drainage Board
1 Hamilton County Square, Suite 188
Noblesville, IN 46060-2653

Hamilton County Public Building Corporation
33 North 9th Street, Suite L-21
Noblesville, IN 46060-2200

Hamilton County SWCD
Mark McCauley
1717 Pleasant Street, Suite 100
Noblesville, IN 46060

Michael Howard
694 Logan Street
Noblesville, IN 46060

Chuck Kiphart
One Hamilton County Square, Suite 306
Noblesville, IN 46060

Sharon Paskins
19909 North State Road 37
Noblesville, IN 46060

Stephen L Schwartz
118 Cicero Road
Noblesville, IN 46060-1401

Glen L Schwartz
117 Cicero Road
Noblesville, IN 46060-1402

US Army Corps of Engineers
Louisville District
PO Box 59
Louisville, KY 40201-0059

Staff Assignment:

Administrative
Technical
Environmental
Fish and Wildlife
Law Enforcement
Historic Preservation & Archaeology

: Jason Wenning
: Jason Wenning
: J. Matthew Buffington
: Brian Boszor
: Andy Wuestefeld
: Cathy Draeger-Williams



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
INDIANAPOLIS REGULATORY OFFICE
8902 OTIS AVENUE, SUITE S106B
INDIANAPOLIS, INDIANA 46216
FAX; (317) 547-4526
<http://www.lrl.usace.army.mil/>
April 3, 2018

Regulatory Division
North Branch
ID No. LRL-2018-303-sjk

Ms. Alison Krupski
Hamilton County Highway Department
1700 South 10th Street
Noblesville, Indiana 46060

Dear Ms. Krupski:

This is in regards to the letter dated March 22, 2018, from Butler, Fairman, & Seufert concerning the proposed widening of the bridge carrying Logan Street over White River. The proposed activity would require the extension of the existing piers and installation of riprap scour protection totaling 0.077 acre. Additionally, a temporary causeway would be used during construction. The project is located at latitude 40.0469° and longitude -86.0165° in Noblesville, Hamilton County, Indiana. We have reviewed the submitted data relative to Section 404 of the Clean Water Act (CWA).

The Louisville, Detroit, and Chicago Districts issued Regional General Permit (RGP) No. 1 pursuant to Section 10 of the Rivers and Harbors Act of 1899 and Section 404 CWA on December 15, 2014, for certain activities having minimal impact in Indiana. Since the project is considered to have minimal impact on the aquatic environment, your project is authorized under the RGP. Compliance with the enclosed RGP General Conditions and the Water Quality Certification issued by the Indiana Department of Environmental Management dated December 12, 2014, is required.

The enclosed compliance certification document must be completed and submitted to this office within 30 days of completion of the authorized activity. **This verification is valid until December 15, 2019.**

If you have any questions, please contact me by writing to the above address or by calling 317-543-9424. Any correspondence should reference our assigned Identification Number LRL-2018-303-sjk.

Sincerely,



Sarah Keller
Regulatory Specialist
Indianapolis Regulatory Office

Enclosure
Copy Furnished: IDEM (Turner)
(w/o encl) BF&S (Bennett)



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosiers and Our Environment.

100 N. Senate Avenue • Indianapolis, IN 46204
(800) 451-6027 • (317) 232-8603 • www.idem.IN.gov

Michael R. Pence
Governor

Thomas W. Easterly
Commissioner

December 12, 2014

VIA CERTIFIED MAIL 91 7190 0005 2710 0036 9499

Ms. Lee Anne Devine
U.S. Army Corps of Engineers
Louisville District
P.O. Box 59
Louisville, KY 40201-0059

Dear Ms. Devine:

Re: Section 401 Water Quality Certification
Project: 2014 Reissuance of Regional
General Permit No. 1 for Indiana

The Office of Water Quality has reviewed the Joint Public Notice/Application for Section 401 Water Quality Certification (WQC) dated September 11, 2014. According to the application, the U.S. Army Corps of Engineers (USACE) proposes to reissue the Regional General Permit No. 1 (RGP #1) for the state of Indiana. The RGP #1 is intended to authorize categories of activities that are similar in nature and cause minimal individual and cumulative impacts to the aquatic environment.

The Louisville, Detroit, and Chicago Districts of the USACE developed the existing Indiana RGP to replace several Nationwide Permits (NWP). As a consequence of this action, the following NWPs have been suspended and will not be in effect for the state of Indiana. The USACE proposes to suspend the following:

- NWP 13 Bank Stabilization
- NWP 14 Linear Transportation Projects
- NWP 18 Minor Discharges
- NWP 29 Residential Developments
- NWP 36 Boat Ramps
- NWP 39 Commercial and Institutional Developments
- NWP 40 Agricultural Activities
- NWP 41 Reshaping Existing Drainage Ditches
- NWP 42 Recreational Facilities
- NWP 43 Storm Water Management Facilities
- NWP 44 Mining Activities

Since these NWPs are suspended in Indiana, no Section 401 WQC decision is required.



Based on available information, it is the judgment of this office that the RGP #1 will comply with the applicable provisions of 327 IAC 2 and Sections 301, 302, 303, 306, and 307 of the Clean Water Act if the recipient of the certification complies with the conditions set forth below. Therefore, subject to the following terms and conditions, the Indiana Department of Environmental Management (IDEM) hereby grants Section 401 WQC for the RGP #1. Any changes in the language or scope of the RGP #1 not detailed in the Joint Public Notice/Application, or as modified by the conditions below, are not authorized by this certification.

APPLICANT RESPONSIBILITIES:

- (1) An applicant seeking coverage under this Section 401 WQC must:
 - (a) Demonstrate, via letter from the Indiana Department of Natural Resources (IDNR), Division of Nature Preserves, that no state endangered, threatened, or rare species are documented on a permanent or seasonal basis within ½-mile radius of the proposed project site by the Indiana Natural Heritage Data Center, or provide documentation from the IDNR that states that the activities proposed will not constitute a violation of state laws protecting these species.
 - (b) Submit a complete Section 401 WQC Regional General Permit Notification Form (most current State Form 51937) at least 30 days prior to the activity. The notification must at a minimum provide applicant information, project location, existing project site conditions, project impacts, and a proposed plan. Failure to submit all required information will result in the project being considered out-of-scope and not authorized.
 - (c) Provide any additional information required by the IDEM to verify that a given project will qualify under the terms and conditions of this Section 401 WQC. If the applicant fails to provide any requested information, the project is not authorized.
 - (d) Allow the commissioner or an authorized representative of the commissioner (including an authorized contractor), upon the presentation of credentials, to enter upon the applicant's property to inspect the project site during the review of a proposed project.
 - (e) Notify IDEM of any project for which the USACE District Engineer has issued a waiver for the linear feet of stream impact in order to authorize the project under the RGP. IDEM will review the notification within 30 days to determine whether or not IDEM will also waive the linear feet of stream impact limit.

PERMITEE RESPONSIBILITIES

- (1) Permittees qualifying for impacts under this Section 401 WQC must:
 - (a) Allow the commissioner or an authorized representative of the commissioner (including an authorized contractor), upon the presentation of credentials to:

1. Enter upon the permittee's property.
 2. Access and copy at reasonable times any records that must be kept under the conditions of this certification.
 3. Inspect, at reasonable times, any monitoring or operational equipment or method; collection, treatment, pollution management or discharge facility or device; practices required by this certification; and any mitigation wetland site.
 4. Sample or monitor any discharge of pollutants or any mitigation site.
- (b) Obtain any other permits or authorizations required for this project or related activities from IDEM or any other local, state, or federal agency or person. Land disturbing activities of one (1) acre or more or disturbances of less than an acre that are part of a larger common plan will require permit coverage for discharges associated with construction site run-off. Additional information should be obtained through the IDEM Storm Water Program at 317-233-1864. In addition, the Indiana Department of Natural Resources (317-232-4160 or toll free at 877-928-3755) should be contacted concerning the possible requirement of natural freshwater lake or floodway permits.
- (c) Deposit any dredged material in a contained upland disposal area and implement appropriate measures to prevent sediment run-off to any waterbody.
- (d) Install run-off and sediment control measures prior to any land disturbance to manage storm water and to minimize sediment from leaving the project site or entering a waterbody. All operations must phase project activities to minimize the impact of sediment to the receiving waterbody(ies). Erosion and sediment control measures shall be implemented using an appropriate order of construction (sequencing) relative to the land disturbing activities. Wetlands and/or water bodies that are adjacent to land disturbing activities must be protected with appropriate sediment control measures. As work progresses, all areas void of protective cover shall be re-vegetated or stabilized as described in the plan. Areas that are to be re-vegetated must utilize mulch that is anchored or, under more severe conditions, the erosion control blankets. Erosion control blankets or other armament shall be used for all areas associated with concentrated flow. Standards and specifications for storm water management, including erosion and sediment control can be obtained in the Indiana Storm Water Quality Manual or similar guidance documents.

TERMS OF THIS SECTION 401 WQC:

- (1) IDEM, for any project that qualifies under the terms and conditions of this certification, may choose to require an individual Section 401 WQC if the agency determines that the project would have more than minimal impacts to water quality, either viewed individually or collectively with other projects that may impact the same waterbody affected by the proposed project.
- (2) IDEM retains the right to review, modify, terminate, replace or amend this certification as needed to ensure that the federal permits or licenses certified do not result in violations of Indiana's Water Quality Standards or other applicable state laws. In the absence of another action by IDEM that would alter the termination

date of this certification, this certification shall expire with the expiration of the federal permit it certifies.

SPECIFIC CONDITIONS OF THIS SECTION 401 WQC

- (1) This Section 401 WQC does not :
 - (a) Convey any property rights of any sort, or any exclusive privileges.
 - (b) Preempt any duty to obtain federal, state or local permits or authorizations required by law for the execution of the project or related activities.

- (2) This Section 401 WQC does not authorize:
 - (a) Impacts or activities that do not meet the terms and conditions of this Section 401 WQC. Such activities require an individual Section 401 WQC from the IDEM.
 - (b) Any injury to permittees or private property or invasion of other private rights, or any infringement of federal, state or local laws or regulations.
 - (c) Changes to the original plan design detailed in the notification.
 - (d) The discharge of pollutants, principally sediment, associated with storm water run-off.
 - (e) Point source discharges of pollutants other than clean fill¹ and uncontaminated dredged material.
 - (f) Activities on or in any of the State's waters that have been designated as salmonid waters (cold water streams), tributaries of salmonid waters within a two river mile reach upstream from the confluence with the salmonid water, or Outstanding State and/or National Resource waters (see Attachment #1).
 - (g) Activities on or in any critical wetland or critical special aquatic sites (see Attachment #2).
 - (h) Activities associated with the establishment of a mitigation bank.

- (3) This Section 401 WQC authorizes:
 - (a) Activities that will permanently impact one-tenth (0.10) of an acre or less of waters of the U.S.
 - (b) Activities that will have a cumulative permanent impact of 300 linear feet or less of waters of the U.S.
 - (c) Activities that will not permanently change the sinuosity, flow path, velocity, cross-sectional area under the Ordinary High Water Mark (OHWM), or the slope of a stream² except as specified in Conditions (3)(d), (3)(g), and (3)(i).

¹ Clean fill, for purposes of this WQC, means uncontaminated rocks, bricks, concrete without rebar, road demolition waste materials other than asphalt, or earthen material.

² Stream, for the purposes of this WQC, means waters of the U.S. that have a defined bed and bank and convey water ephemeral, intermittently or perennially. This term includes natural streams, relocated streams, channelized streams, artificial channels, encapsulated channels and ditches.

- (d) Minimal changes to stream morphology, including minor relocations, which result in a net benefit to the aquatic ecosystem. Stream relocations may be authorized, provided the activity:
 - 1. Is associated with the installation of a stream crossing or replacement of an existing crossing, and results in a net benefit to the stream morphology.
 - 2. Does not reduce the cross-sectional area under the OHWM.
 - 3. Is accompanied by an acceptable restoration/stabilization plan.
 - 4. Does not accelerate stream instability. Examples of instability include, but are not limited to, stream bank erosion, channel enlargement, channel incision, degradation, aggradation, meander migration (down-valley and lateral accretion), avulsion and base-level shifts.
- (e) Stream bank stabilization activities or new lake and reservoir shoreline stabilization that will permanently affect 300 linear feet or less and the applicant demonstrates that the bank or shoreline in question is unstable. Natural shoreline stabilization methods are required where there is no pre-existing seawall or other shoreline hard armament on a lake or reservoir. Natural shoreline stabilization methods include bank stabilization practices that benefit the aquatic environment by incorporating organic materials to produce functional structures, provide wildlife habitat, and provide areas for revegetation.
- (f) Placement of riprap or other bank stabilization materials provided the design and installation is flush with the upstream and downstream bank and stream channel/lake bed elevations and grades.
- (g) New bridge piers, piles, shafts or other support structures and their associated scour protection measures that do not significantly reduce the cross-sectional area of the stream and are located below the OHWM and outside the low flow channel of the stream.
- (h) Activities that do not result in a permanent secondary effect to waters of the U.S. Potential secondary effects include, but are not limited to damming, loss of hydrology, and creation of in-channel ponds.
- (i) New permanent stream encapsulations that are for the purpose of constructing a crossing must:
 - 1. Allow the passage of aquatic organisms in the waterbody.
 - 2. Not exceed 150 cumulative linear feet of encapsulation.
 - 3. Have a cross-sectional area at least twenty percent (20%) larger than the area under the OHWM of the stream immediately upstream and downstream of the encapsulation in the form of a single opening.
 - 4. Have a streambed slope within the encapsulation that matches the slope of the bed both immediately upstream and downstream.
 - 5. Not create or accelerate stream instability. Examples of stream instability include, but are not limited to head cutting, stream bank erosion, channel enlargement, channel incision, degradation, aggradation, meander migration, (down-valley and lateral accretion), avulsion and base-level shifts.

6. Either have no bottom (e.g., three sided culvert) or are embedded (sumped)³ into the stream channel based on the following structure sizes and substrate types:
 - a. Stream bed of sand
 - Structure < four (4) feet wide: Six (6) inch sump
 - Structure four (4) feet wide to 12 feet wide: 12 inch sump
 - Structure 12 feet to 20 feet wide: 18 inch sump
 - b. Stream bed of other soil or unconsolidated till⁴
 - Structure < four (4) feet wide: Three (3) inch sump
 - Structure four (4) feet wide to 12 feet wide: Six (6) inch sump
 - Structure 12 feet to 20 feet wide: 12 inch sump
 - c. Stream bed of bedrock or consolidated till⁵
 - Inside elevation of the structure bottom shall be a minimum of three (3) inches below the surface of the bedrock or consolidated till
7. Meet the following requirements when installed in perennial streams with OHWM width of 12 feet or greater. These encapsulations must:
 - a. Be sumped to a greater depth if needed for the design of the streambed inside the encapsulation.
 - b. Have a width equal to or wider than the existing OHWM.
 - c. Have a natural stream bottom. If the stream bottom will be disturbed during construction (e.g. four sided box culverts or pipe culverts or because of footer work for three sided culverts), natural stream substrate must be placed in the encapsulation in accordance with the Federal Highway Administration Hydraulic Engineering Circular No. 26: Culvert Design for Aquatic Organism Passage.
 - d. Have a low flow channel constructed or restored through the encapsulation. The low flow channel shall have the same width, depth, and side slope as the natural upstream and downstream low flow channel. If the upstream and downstream channels are highly degraded a V-shaped channel with 5:1 slopes within the structure may be substituted.
- (j) Stream pump-around activities, provided:
 1. The discharge from the activity does not cause erosion at the outlet.
 2. Cofferdam dewatering activities are directed to a filter bag(s), upland sediment basins/traps, or a combination of other appropriate sediment control measures to minimize the discharge of sediment-laden water into waters of the U.S.
 3. All sediment control measures are installed and maintained in good working order.
 4. Any materials used for an in-stream dam are constructed using non erodible materials. Examples include sand bags and sheet pile walls.

³ Sump, for the purpose of this Water Quality Certification, means the inside elevation of the bottom of the structure is placed at a specified depth below the grade of the stream.

⁴ Other soil and unconsolidated till includes substrates that are more cohesive and less mobile (e.g. clay, silt, gravel, and cobble substrates).

⁵ Consolidated till includes dense hard materials such as hardpan.

- (k) The installation of temporary work causeways when the activity is conducted in a manner that maintains near normal downstream flows and is constructed of material that can be expected to withstand high flow events.
- (l) The use of temporary structures provided the structures are removed in their entirety and the stream channel restored to preconstruction grades, contours, and vegetative conditions.
- (m) Multiple impacts on a project as long as the cumulative amount of those impacts are less than the most restrictive thresholds of this Section 401 WQC.

Failure to comply with the terms and conditions of this Section 401 Water Quality Certification may result in an enforcement action. If an enforcement action is pursued, civil penalties could be assessed up to \$25,000 per day. Criminal liability may apply if it is determined that the Section 401 Water Quality Certification was violated willfully or negligently.

This certification is effective eighteen (18) days from the mailing of this notice unless a petition for review and a petition for stay of effectiveness are filed within this 18-day period. If a petition for review and a petition for stay of effectiveness are filed within this period, any part of the certification within the scope of the petition for stay is stayed for fifteen (15) days, unless or until an Environmental Law Judge further stays the certification in whole or in part.

This decision may be appealed in accordance with IC 4-21.5, the Administrative Orders and Procedures Act. The steps that must be followed to qualify for review are:

- (1) You must petition for review in writing that states facts demonstrating that you are either the person to whom this decision is directed, a person who is aggrieved or adversely affected by the decision, or a person entitled to review under any law.
- (2) You must file the petition for review with the Office of Environmental Adjudication (OEA) at the following address:

Office of Environmental Adjudication
100 North Senate Avenue
IGCN Room N501
Indianapolis, IN 46204

- (3) You must file the petition within eighteen (18) days of the mailing date of this decision. If the eighteenth day falls on a Saturday, Sunday, legal holiday, or other day that the OEA offices are closed during regular business hours, you may file the petition the next day that the OEA offices are open during regular business hours. The petition is deemed filed on the earliest of the following dates: the date it is personally delivered to OEA; the date that the envelope containing the petition is postmarked if it is mailed by United States mail; or, the date it is shown to have been deposited with a private carrier on the private carrier's receipt, if sent by private carrier.

Identifying the certification, decision, or other order for which you seek review by number, name of the applicant, location, or date of this notice will expedite review of the petition.

Note that if a petition for review is granted pursuant to IC 4-21.5-3-7, the petitioner will, and any other person may, obtain notice of any prehearing conferences, preliminary hearings, hearings, stays, and any orders disposing of the proceedings by requesting copies of such notices from OEA.

If you have procedural questions regarding filing a petition for review you may contact the Office of Environmental Adjudication at 317-232-8591.

If you have any questions about this certification, please contact Jason Randolph, Project Manager, of my staff by phone at 317-233-0467, or by e-mail at jrandolp@idem.in.gov.

Sincerely,



Martha Clark Mettler
Deputy Assistant Commissioner
Office of Water Quality

cc: Norma Condra, USACE-Louisville
Kerrie Kuhne, USACE-Detroit
Paul Leffler, USACE-Chicago
Scott Pruitt, USFWS
Matt Buffington, IDNR
Randy Braun, IDEM

Attachment 1: Indiana Waters Designated for Special Protection

Designated Salmonid Waters: [327 IAC 2-1.5-5(a)(3)]

- Trail Creek and its tributaries downstream to Lake Michigan, LaPorte County
- East Branch of the Little Calumet River and its tributaries downstream to Lake Michigan via Burns Ditch, Porter and LaPorte Counties
- Salt Creek above (upstream of) its confluence with the Little Calumet River, Porter County
- Kintzele Ditch (Black Ditch) from Beverly Drive downstream to Lake Michigan, Porter County
- The Galena River and its tributaries, LaPorte County
- The St. Joseph River and its tributaries in St. Joseph County from the Twin Branch Dam in Mishawaka downstream to the Indiana/Michigan state line, St. Joseph County
- The Indiana portion of the open waters of Lake Michigan
- Those waters designated by the Indiana Department of Natural Resources (IDNR) for put-and-take trout fishing⁶

Waterbodies which have been designated all or partially as Outstanding State Resource Waters: [327 IAC 2-1.3-3 and 327 IAC 2-1.5-19(b)]

- The Blue River in Washington, Crawford, and Harrison Counties, from river mile 57.0 to river mile 11.5
- The North Fork of Wildcat Creek in Carroll and Tippecanoe Counties, from river mile 43.11 to river mile 4.82
- The South Fork of Wildcat Creek in Tippecanoe County, from river mile 10.21 to river mile 0.00
- Cedar Creek in Allen and DeKalb counties, from river mile 13.7 to its confluence with the St. Joseph River
- The Indiana portion of the open waters of Lake Michigan
- All waters incorporated in the Indiana Dunes National Lakeshore.

Waterbodies which have been designated all or partially as Exceptional Use Streams⁷: [listed in: 327 IAC 2-1-11(b) and IC 13-11-2-72.5 (before its repeal)]

- Big Pine Creek in Warren County downstream of the State Road 55 bridge near the town of Pine Village to its confluence with the Wabash River
- Mud Pine Creek in Warren County from the bridge on the County Road between Brisco and Rainsville to its confluence with Big Pine Creek
- Fall Creek in Warren County from the old C.R. 119 bridge in the NW quarter of Section 21, Township 22N, Range 8W downstream to its confluence with Big Pine Creek
- Indian Creek in Montgomery County from the County Road 650 West bridge downstream to its confluence with Sugar Creek
- Clifty Creek in Montgomery County within the boundaries of Pine Hills Nature Preserve
- Bear Creek in Fountain County from the bridge on County Road 450 North to its confluence with the Wabash River

⁶ Available on the internet under trout stocking locations at: <http://www.in.gov/dnr/fishwild/3622.htm>.

⁷ As per IC 13-18-3-2(u): "Each exceptional use water (as defined in IC 13-11-2-72.5, before its repeal) designated by the board before June 1, 2009, becomes an outstanding state resource water on June 1, 2009, by operation of law."

- Rattlesnake Creek in Fountain County from the bridge on County Road 450 North to its confluence with Bear Creek
- The small tributary to Bear Creek in Fountain County within the Portland Arch Nature Preserve which enters Bear Creek at the sharpest bend and has formed the small natural bridge called Portland Arch
- Blue River from the confluence of the West and Middle Forks of the Blue River in Washington County downstream to its confluence with the Ohio River
- The South Fork of Blue River in Washington County from the Horner's Chapel Road bridge downstream to its confluence with Blue River.
- Lost River and all surface and underground tributaries upstream from the Orangeville Rise (T2N, R1W, Section 6) and the Rise of Lost River (T2N, R1W, Section 7) and the mainstem of the Lost River from the Orangeville Rise downstream to its confluence with the East Fork of White River.

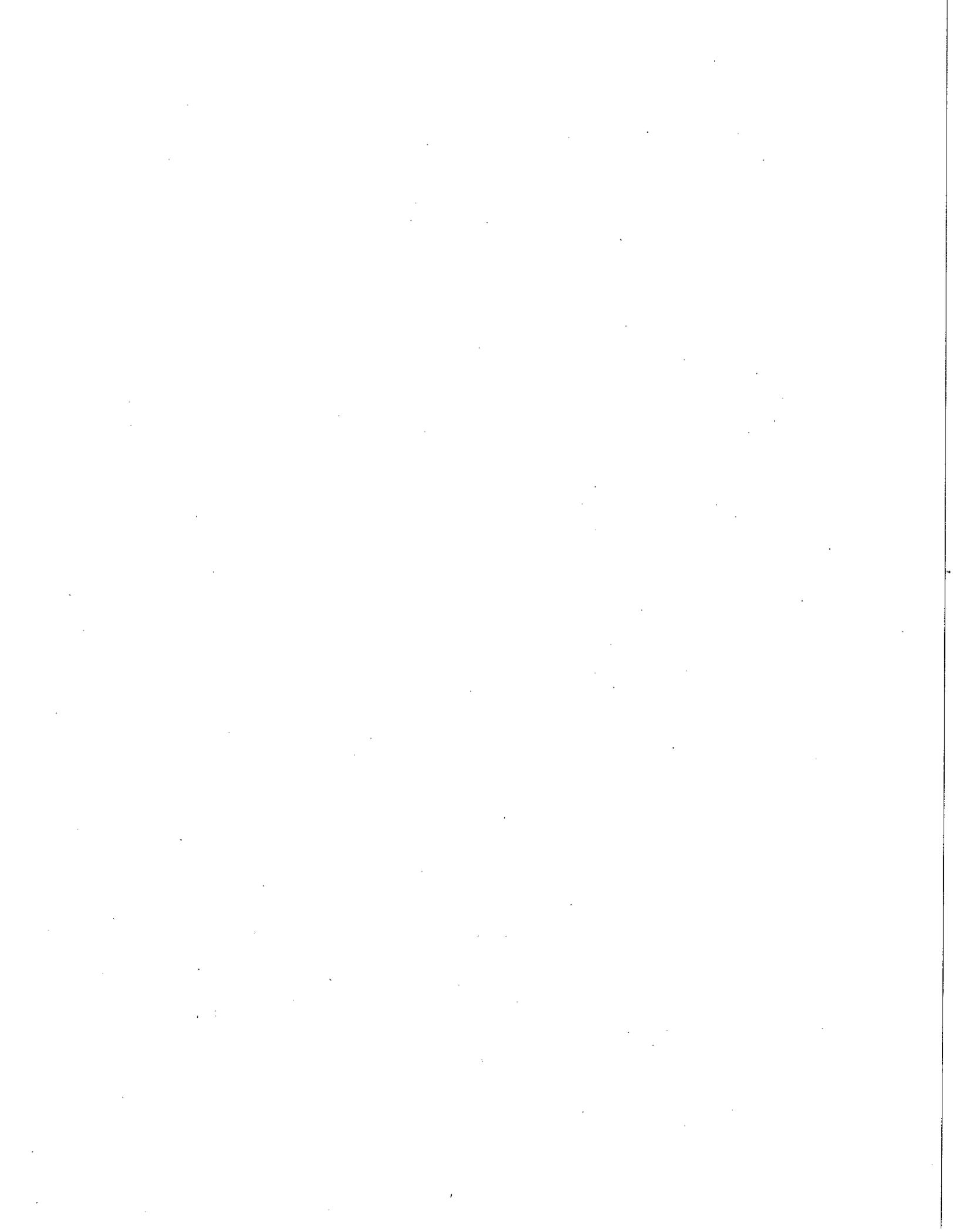
Attachment 2: Critical Wetlands and Critical Special Aquatic Sites

In the interest of maintaining consistency with the State Regulated (Isolated) Wetland program established at 327 IAC 17, IDEM defines Critical Wetlands and Critical Special Aquatic Sites to be synonymous with Rare and Ecologically Important Wetland Types under 327 IAC 17-1-3(3)(B):

- **Acid bog:** Acid bog is an acidic wetland of kettle holes in glacial terrain. Bogs can be graminoid (*Carex* spp. and *Sphagnum* spp.) or low shrub (*Chamaedaphne calyculata* and *Betula pumila*). The graminoid bog can be a floating, quaking mat. The soils in acid bogs are saturated and acidic peat. Bogs have non-flowing or very slow flowing water. The water level fluctuates seasonally. When a sphagnum mat floats, it rises and falls with the water table. Acid bogs can be found in northern Indiana.
- **Acid seep:** Acid seep is a bog-like wetland typically found in unglaciated hill regions. This community is a small groundwater-fed wetland located primarily in upland terrain. A thin layer of muck may lie over a mineral substrate. The soil reaction is acid. This seep community is characterized by flowing water during at least part of the year. Acid seeps are located primarily in southern Indiana.
- **Circumneutral bog:** Circumneutral bog is a bog-like wetland that receives groundwater. Circumneutral bogs can be a mosaic of tall shrub bog, graminoid bog, and other communities. The graminoid bog often occurs on a quaking or floating mat. Although a few bogs occur in unglaciated regions, most are found in glacial ice-block depressions. The soils in circumneutral bogs are usually peat, or other low nutrient organic substrates, which are saturated and circumneutral to slightly acid. Circumneutral bogs have non-flowing or very slow flowing water. The water level fluctuates seasonally. Circumneutral bogs are usually found in northern Indiana.
- **Circumneutral seep:** The circumneutral seep (or seep-spring) is a groundwater-fed wetland on organic soil. It is primarily herbaceous. Species typically include marsh marigold (*Caltha palustris*) and skunk cabbage (*Symplocarpus foetidus*) with a scattered tree canopy. Circumneutral seep is typically situated on or near the base of a slope. The soil is typically circumneutral muck. This seep community is characterized by slowly flowing water during at least part of the year. Circumneutral seeps can be found scattered throughout Indiana.
- **Cypress swamp:** Bald cypress swamps are seasonally to permanently inundated wetlands found in depressions and sloughs of large bottomlands associated with the Wabash/Ohio River system. Poorly to very poorly drained soils characterize this environment. Bald cypress (*Taxodium distichum*) is present, and green ash (*Fraxinus pennsylvanica*), silver maple (*Acer saccharinum*), and overcup oak (*Quercus lyrata*) are also usually present. This community is restricted to extreme southwest Indiana.
- **Dune and swale:** Dune and swale is an ecological system consisting of a mixture of upland (black oak sand savanna, dry to mesic sand prairie) and wetland (pond, panne, sedge meadow, marsh, wet prairie) natural communities. These communities occur in long, narrow, linear complexes, with the dry communities occupying sand ridges, and the wet communities occurring in the intervening swales. Black oak (*Quercus velutina*), paper birch (*Betula papyrifera*), jack pine (*Pinus banksiana*), and prairie vegetation typically occur on the ridges, and sedges, reeds, and marsh/aquatic vegetation line are found in the swales. Water levels are directly influenced by ground water, with the interdunal swales controlled largely by lateral flow through porous beach ridges. Dune and swale is restricted to extreme northwest Indiana, near Lake Michigan.

- **Fen:** Fen is a calcareous, groundwater-fed wetland. Fens are often a mosaic of grassy areas, sedge areas, graminoid-shrubby cinquefoil, and tall shrub areas. The extent of the tall shrub component of fens may be determined by fire frequency and/or soil moisture. Drying of the soil increases the growth of shrubs. Fens typically occur in the vicinity of glacial moraines. Fens typically have a muck or peat substrate. The water level fluctuates seasonally and is fed by groundwater. Fens can be found in central and northern Indiana.
- **Forested fen:** Forested fen is a tree-dominated wetland on organic soil which receives groundwater. Forested fens are often a mosaic of treed areas, tall shrub areas, and herbaceous areas. A tall shrub layer is often well developed in forested fens. Indicative species typically include tamarack (*Larix laricina*), black ash (*Fraxinus nigra*), yellow birch (*Betula alleghaniensis*), poison sumac (*Toxicodendron vernix*), and red maple (*Acer rubrum*). Forested fens occur in wet lowlands, where moraines meet outwash features or depressions. Forested fens have saturated, poorly to very poorly drained soils that are often muck, but some seasonal flooding can occur in forested fens that are especially level. This community is a late successional stage of fen or circumneutral bog. Forested fens occur in northern Indiana.
- **Forested swamp:** Forested swamp is a seasonally inundated to intermittently exposed wetland of large river bottoms. Forested swamps do not receive direct flow from river flooding except under exceptional circumstances. Forested swamps occur in depressions, sloughs and large bottomlands, typically dominated by tree species such as swamp cottonwood (*Populus heterophylla*), green ash (*Fraxinus pennsylvanica*), and swamp white oak (*Quercus bicolor*). In northern Indiana important tree species include black ash (*Fraxinus nigra*), yellow birch (*Betula alleghaniensis*), and red maple (*Acer rubrum*). Poorly to very poorly drained and aerated soils characterize the swamp environment. Soils usually are mineral not muck or peat. This community type is found throughout Indiana.
- **Marl beach:** Marl beach is a fen-like community located on the marly muck shorelines of lakes. Marl precipitate is evident. A thin layer of water is present in spring, but dries down in summer. Draw-down of a lake creates additional area for this community to develop on. Marl beaches can be found in extreme northern Indiana, primarily in the northeast.
- **Muck flat:** Muck flat is a shoreline and lake community possessing a unique flora of sedges and annual plants, many of which are also found on the Atlantic and Gulf Coastal Plains. This community is found at the margins of lakes or covering shallow basins. This community has a peat substrate. The muck flats can float on the water surface, but during high water periods are usually inundated. The water level of a basin fluctuates during a season or from year to year in response to the amount of precipitation. This exposes bare substrate needed for germination by species of the community. Muck flats are found in northern Indiana.
- **Panne:** Panne is a groundwater fed herbaceous wetland occupying interdunal swales near Lake Michigan. Pannes are located on the lee side of the first or second line of dunes from the lakeshore. The soil is wet, calcareous sand. Pannes are located in counties bordering Lake Michigan.
- **Sand flat:** Sand flat is a shoreline and lake community possessing a unique flora of sedges and annual plants, many of which are also found on the Atlantic and Gulf Coastal Plains. This community is found at the margins of lakes or covering shallow basins. This community has a sand substrate. During high water periods sand flats at the margins of lakes or ponds are inundated. The water level of a basin fluctuates during a season or from year to year in response to the amount of precipitation. This exposes bare substrate needed for germination by species of the community. Sand flats occur in northern Indiana, and in the Plainville Sand Section of southwest Indiana.

- **Sedge meadow:** Sedge meadow is an herbaceous wetland typically dominated by graminoid species such as flat sedge (*Cyperus* spp.), spike rush (*Eleocharis* spp.), rushes (*Juncus* spp.) and sedges (*Carex* spp.). Sedge meadow is an herbaceous wetland of stream margins and river floodplains, and lake margins or upland depressions. Streamside sedge meadows are frequently flooded in the spring and early summer. Sedge meadows of lake margins and depressions often contain standing water during wet months and after heavy rains; during dry periods, the water level is at or just below the substrate. Sedge meadow usually occupies the ground between a marsh and the uplands, or a shrub swamp or wet forest. Periodic high water can kill trees and shrubs invading sedge meadows. Sedge meadows can be found in the northern half of the state.
- **Shrub swamp:** Shrub swamp is a shrub-dominated wetland that is seasonally inundated to intermittently exposed. This community occurs in depressions and the substrate in either mineral soils or muck, as opposed to peat which is characteristic of bogs. Shrub swamp is characterized by non-flowing or very slowly flowing water with levels that fluctuate seasonally. Shrub swamps are persistent, though considered successional. Two opportunistic native shrubs, sandbar willow (*Salix exigua*) and gray dogwood (*Cornus racemosa*), by themselves, are not indicative of shrub swamps. This community type is found throughout Indiana.
- **Sinkhole pond:** Sinkhole ponds are water-containing depressions in karst topography. Sinkhole ponds are found in the Mitchell Karst Plain in south-central Indiana.
- **Sinkhole swamp:** Sinkhole swamps are depressions in karst topography dominated by tree or shrub species. Sinkhole swamps are found in the Mitchell Karst Plain in south-central Indiana.
- **Wet floodplain forest:** Wet floodplain forest is a broadleaf deciduous forest of river floodplains. Wet floodplain forests occur in depressions and flats on narrow to wide floodplains and also on recently exposed substrates that are frequently flooded. Wet floodplain forests are frequently flooded and may have standing water seasonally to permanently present. Wet floodplain forests occur statewide.
- **Wet prairie:** Wet prairie is an herbaceous wetland typically dominated by graminoid species such as prairie cordgrass (*Spartina pectinata*), bluejoint (*Calamagrostis canadensis*), and sedges (*Carex* spp.). Vegetation height is often 2-3 m. The species diversity of wet prairies is lower than that of mesic prairies. Wet prairies occur in deep swales and the substrate ranges from very deep black mineral soils (which are high in organic matter) to muck. Ponding in spring lasts for several weeks prior to drainage. Wet prairies commonly occur in the Grand Prairie Natural Region, the Tipton Till Plain and the Bluffton Till Plain, with a few examples found in the Northern Lakes Natural Region.
- **Wet sand prairie:** Wet sand prairie is an herbaceous wetland typically dominated by graminoid species such as prairie cordgrass (*Spartina pectinata*), bluejoint (*Calamagrostis canadensis*), and sedges (*Carex* spp.). Vegetation height is often 2-3 m. The species diversity of wet prairies is lower than that of mesic prairies. Wet lowland prairies occur in deep swales and the substrate is sand, sometimes mixed with muck. Flooding is a regular springtime occurrence in wet sand prairie and may last several weeks. This community occurs in a mosaic with marsh and other wetlands, and with upland prairies and sand savannas. Fire was frequent occurrence, but more common in the fall when waters had receded. This community occurs in northwest Indiana and in the Plainville Sands area.



Neal Bennett

From: Driscoll Farid, Aileen <ADriscol@idem.IN.gov>
Sent: Friday, June 01, 2018 8:53 AM
To: Neal Bennett
Subject: RE: IDEM No 2018-197-29-ADF-X

The project has been approved with IDEM ID # 2018-360-29-ADF-X. Have a great weekend!

From: Neal Bennett [mailto:NBennett@bfsengr.com]
Sent: Tuesday, May 29, 2018 3:49 PM
To: Driscoll Farid, Aileen <ADriscol@idem.IN.gov>
Subject: RE: IDEM No 2018-197-29-ADF-X

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Awesome. Thank you!

-Neal

Neal Bennett, PWS
Environmental Scientist

Butler, Fairman & Seufert, Inc.
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From: Driscoll Farid, Aileen [mailto:ADriscol@idem.IN.gov]
Sent: Tuesday, May 29, 2018 3:47 PM
To: Neal Bennett <NBennett@bfsengr.com>
Subject: RE: IDEM No 2018-197-29-ADF-X

Thanks. I sent it through for approval. I'll let you know once it's processed with the IDEM ID #.

Aileen

From: Neal Bennett [mailto:NBennett@bfsengr.com]
Sent: Tuesday, May 29, 2018 10:26 AM
To: Driscoll Farid, Aileen <ADriscol@idem.IN.gov>
Subject: RE: IDEM No 2018-197-29-ADF-X

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Hello Aileen-

Attached is the updated application. Let me know if there is anything else that you need. Thank you for your help.

-Neal

**Neal Bennett, PWS
Environmental Scientist**

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From: Driscoll Farid, Aileen [<mailto:ADriscol@idem.IN.gov>]
Sent: Friday, May 25, 2018 3:12 PM
To: Neal Bennett <NBennett@bfsengr.com>
Subject: RE: IDEM No 2018-197-29-ADF-X

Hi Neal,

This looks acceptable under the RGP. I will need a re-submission since the original has already been processed as out-of-scope. Once I get that, it will be quick turn around on my end. Thanks for your patience.

Best,

Aileen

From: Neal Bennett [<mailto:NBennett@bfsengr.com>]
Sent: Tuesday, May 15, 2018 10:41 AM
To: Driscoll Farid, Aileen <ADriscol@idem.IN.gov>
Subject: RE: IDEM No 2018-197-29-ADF-X

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Hi Aileen-

Here is an update on the information for this project. We don't think the existing bridge piers are scour critical, so we will not be adding any riprap around the existing piers. As a result, only the fill from the pier extensions and riprap around them would be the permanent fill impacts. That is 0.035 acre for the piers and 0.029 acre for the stone, so total 0.064 acre. That is well below the 0.1 acre threshold. The causeway will be a combination of pipes and stone in order to maintain normal water flow. Attached is the cofferdam detail and project photos, and USACE permit. The IDNR are finishing up the last of their review. I shall forward you a copy of their permit once I have it. Will this require that I resubmit a new RGP application? Thank you.

-Neal

**Neal Bennett, PWS
Environmental Scientist**

Butler, Fairman & Seufert, Inc.
8450 Westfield Blvd., Suite 300 | Indianapolis, IN 46240-8302

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From: Driscoll Farid, Aileen [<mailto:ADriscol@idem.IN.gov>]
Sent: Tuesday, April 10, 2018 9:02 AM
To: Neal Bennett <NBennett@bfsengr.com>
Subject: RE: IDEM No 2018-197-29-ADF-X

Right, that's fine then.

From: Neal Bennett [<mailto:NBennett@bfsengr.com>]
Sent: Tuesday, April 10, 2018 8:06 AM
To: Driscoll Farid, Aileen
Subject: RE: IDEM No 2018-197-29-ADF-X

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Christie said that since there is a DNR permit under review, there was no reason for her to comment about the project. Double work on there end.

Neal Bennett, PWS
Environmental Scientist

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From: Driscoll Farid, Aileen [<mailto:ADriscol@idem.IN.gov>]
Sent: Monday, April 09, 2018 12:32 PM
To: Neal Bennett <NBennett@bfsengr.com>
Subject: RE: IDEM No 2018-197-29-ADF-X

Great. For the DNR, you will need to follow-up with Christie Stanifer on the SE species that are listed in the first letter. When you get that, you can just e-mail it to me.

From: Neal Bennett [<mailto:NBennett@bfsengr.com>]
Sent: Monday, April 09, 2018 11:29 AM
To: Driscoll Farid, Aileen <ADriscol@idem.IN.gov>
Subject: RE: IDEM No 2018-197-29-ADF-X

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OK. I have sent this on to the designer for his feedback. We are double checking our impact calculations and discussing your other points. I will get pictures today. I have the ETR stuff. See attached.

Neal Bennett, PWS
Environmental Scientist

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From: Driscoll Farid, Aileen [<mailto:ADriscol@idem.IN.gov>]
Sent: Monday, April 09, 2018 11:01 AM
To: Neal Bennett <NBennett@bfsengr.com>
Subject: RE: IDEM No 2018-197-29-ADF-X

Neal,

The plans you sent look good, but there are still some issues for meeting RGP conditions.

- In the narrative description page in your original application, the permanent fill below OHWM totals to 0.112 acres. The 0.07 acres on the notification form doesn't include replacement of the riprap around existing piers. Even though this impact is "already existing", it still counts towards the permanent impacts for this project. So, for this to be processed as an RGP, I'd need those impacts to be lowered to 0.10 acres or less.
- Please include the following:
 - o Plans for any pump around, cofferdams etc., and a more detailed plan for the temporary causeway. A cross section view would be best for the temporary causeway, and I'll need to know what material it will be constructed of. Because it is 150 long, I have concerns that it may not meet Specific Condition 3(k), maintaining near normal downstream flows.
 - o Photos of the project area
 - o IDNR correspondence for ETR species.

Feel free to give me a call if you want to discuss any of this. Have a great day!

Aileen

From: Neal Bennett [<mailto:NBennett@bfsengr.com>]
Sent: Monday, April 09, 2018 9:51 AM
To: Driscoll Farid, Aileen <ADriscol@idem.IN.gov>
Subject: IDEM No 2018-197-29-ADF-X

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Aileen-
Attached is the plans/exhibits, etc. Thanks.

-Neal

Neal Bennett, PWS
Environmental Scientist

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Lafayette
Merrillville
Plainfield
South Bend
Louisville



March 8, 2018

Mr. Joseph MacDonald
800 Oliver Avenue, Suite 1
Indianapolis, IN 46225

Subject: Work Plan Approved for Project: Logan Street Bridge Reconstruction and Widening

Dear Mr. MacDonald;

Your work plan dated March 6, 2018 is approved for the proposed project: Logan Street Bridge Reconstruction and Widening in City of Noblesville in Hamilton County, Indiana. We are returning a copy of the approved work plan for your records.

In accordance with 105 IAC 13-3-1(c), the following information is provided. The dates listed in items (4) and (5) below are the currently scheduled dates.

- | | |
|---|---|
| (1) Name or route number: | Logan St |
| (2) Geographical limits: | Along South State Rd 19 from approximately 80 ft North of Conner St to Logan St then East along Logan Street from South State Rd 19 to approximately 375 ft east of South State Rd 19 |
| (3) General description of work: | Bridge Widening, Deck Replacement, Path & Sidewalks |
| (4) Date approved work plan will be needed: | March 23, 2018 |
| (5) Letting date: | April 23, 2018 |
| (6) Name of designer and contact information: | Bryan Wright, P.E., S.E. – Butler, Fairman & Seufert, Inc.,
E: BWright@BFSEngr.com , P: 317-713-4615 |
| (7) Major or minor project: | Minor |

If you have any questions on this subject please contact Kevin A. Hintz, P.E., Butler, Fairman & Seufert, Inc., 8450 Westfield Blvd. Suite 300, Indianapolis, Indiana, 46240, P: (317) 713-4615, F: (317) 713-4616, UC@BFSEngr.com. Thank you for your attention to these matters.

Sincerely;

Kevin A. Hintz, P.E.
Utility Coordinator

Cc: Bryan Wright, P.E., S.E., BF&S
Ted Foster, BF&S

Crown Castle/Lighttower

Date: 3/6/2018

Subject:

Utility Relocation Work Plan for:	Crown Castle/Lighttower
Facility Type:	Communication Fiber Optic

Section 1: General Information

A. INDOT/LPA Project Information

1. DES NO.:	N/A
2. Route Number:	Logan St
3. Location:	Along South State Rd 19 from approximately 80 ft North of Conner St to Logan St then East along Logan Street from South State Rd 19 to approximately 375 ft east of South State Rd 19
4. Work Type:	Bridge Widening, Deck Replacement, Path & Sidewalks
5. Letting Date:	September 1, 2018
6. Date Work Plan Needed	July 2018
7. Target Date for Utility to be out of conflict with INDOT Project	September 1, 2018
Intermediate Phase	NA
Intermediate Phase	NA

B. Utility Designated Contact – Information

1. Designated Contact Name:	Joseph Macdonald
2. Office telephone:	585-491-2646
3. Mobile telephone:	585-491-2646
4. Email address:	Joseph.macdonald@crowncastle.com
5. Agency name	Crown Castle/Lighttower
6. Address:	800 Oliver Ave. Suite 1
7. City, State, Zip Code:	Indianapolis, IN 46225
8. Construction Emergency Contact:	Crown Castle NOC
Name:	Crown Castle NOC
Number:	1-800-497-5578

C. By signing here, the Utility has determined to the best of their ability that they do not have facilities within the project area:

Signature of Utility Representative

Print Name

Date

Crown Castle/Lighttower

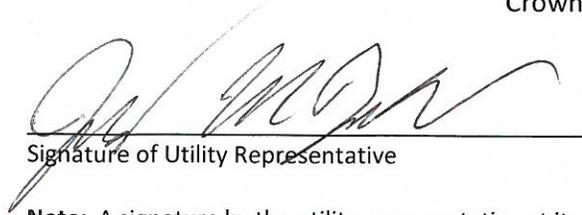
Note: A signature by the utility representative at item "(C)" fulfills the requirement to complete the rest of this form and affirms their contact information above is correct

D. INDOT/LPA Utility Coordinator Contact Information

1.	Utility Coordinator Name:	Kevin A. Hintz, P.E.
2.	Office Telephone:	317-713-4615
3.	Mobile Telephone:	317-627-7501
4.	Email Address:	uc@bfsengr.com
5.	Agency Name:	Butler, Fairman & Seufert, Inc.
6.	Address:	8450 Westfield Blvd., Suite 300
7.	City, State, Zip Code	Indianapolis, Indiana 46240

Section 2: A narrative description of the facility relocation that will be required. [IAC 13-3-3(c)]

- A. Describe what types of existing active and inactive facilities are present.
Crown Castle has one fiber optic cable just inside of the project limits and is in a shared handhole with Zayo.
- B. Describe the location of existing active and inactive facilities.
North to south underground fiber on the east end of Logan St. Bridge. Fiber is located under transition from bridge deck to road. Also in a shared handhole with Zayo on south east end of bridge. New sidewalk will be routed around handhole location. Handhole is located 15' south of existing curb. I do not see conflict with new sidewalk and existing handhole.
- C. Describe what will be done with existing active and inactive facilities.
No relocation is necessary.
- D. Describe the details of the proposed new facilities.
No Change
- E. Describe the proposed location of the new facilities.
No Change
- F. By signing here, the Utility has determined to the best of their ability that they have facilities within the project area and the facilities are not in conflict with the project based upon the plans received on <3/2/2018>



Signature of Utility Representative

Joseph MacDonald

3/6/2018

Print Name

Date

Note: A signature by the utility representative at item "(F)" fulfills the requirement to complete the rest of this form and affirms their contact information above is correct.

Section 3: A statement whether the facility relocation is or is not dependent on the acquisition of additional property interests with a description of that work. [IAC 13-3-3(c) (2) (B)]

Section 4: A statement whether the utility is or is not willing to allow the INDOT contractor to do the required work as part of the highway contract. [IAC 13-3-3(c) (3)]

Section 5: From the date the work plan is approved by both parties; please provide the Utility's pre-construction scheduling information. [IAC 13-3-3(c) (4), IAC 13-3-3(c) (5)]

A.	The expected lead time in calendar days to obtain required permits:	Enter Total Days
B.	The expected lead time in calendar days to obtain materials:	Enter Total Days
C.	The expected lead time in calendar days to schedule work crews:	Enter Total Days
D.	If the contractor is being selected by competitive bid what is the date of selection?	Enter Bid Date
E.	The expected lead time in calendar days to obtain new property interests:	Enter Days
F.	The earliest date when the utility could begin to implement the pre-construction activities of the work plan:	Enter Date
G.	The total number of calendar days for pre-construction activities: (accounting for concurrent activities)	Enter Total Days

Crown Castle/Lighttower

Section 6: The Utility Construction Scheduling Information. [IAC 13-3-3(c) (4), IAC 13-3-3(c) (5)]

A. A statement whether the facility relocation is or is not dependent on work to be done by another utility with a description of that work. [IAC 13-3-3(c)(2)(A)(i)]

1. Utility A, with a description of the required work.

2. Utility B, with a description of the required work.

3. Utility C, with a description of the required work.

B. A statement whether the facility relocation is or is not dependent on work to be done by the department or the department's contractor with a description of that work. [IAC 13-3-3(c)(2)(A)(ii)]

1. Work item A

2. Work item B

3. Work item C

C. How many calendar days after the events identified in Sec 6 A and B are completed can the utility begin construction: **Enter Total Days**

D. The number of calendar days to complete the relocation work: **Enter Total Relocation Days**

Crown Castle/Lighttower

Section 7: A drawing of sufficient detail with station, offset, elevations, and scale to show the proposed location of the facility relocation, which takes precedence over the narrative description of the work, needs to be on INDOT Construction drawings. [IAC 13-3-3(c) (6)]. Plans must be attached to this Work Plan Document.

Section 8: For each work plan the utility shall include a cost estimate for the facility relocation. For reimbursable work the estimate will identify betterment and salvage which is not reimbursable. [IAC 13-3-3(d)]

Section 9: For work the utility is entitled to be compensated by the Department, the work plan shall include documentation of property interests and compensable land rights. [IAC 13-3-3(d)]

Section 10: The implementation of this approved work plan is dependent upon the issuance of: (a notice to proceed will be provided when items in Section 6 are accomplished)

Items Completed	Yes	Not Applicable
An executed reimbursement agreement with INDOT/LPA:	<input type="checkbox"/>	<input type="checkbox"/>
A relocation permit from INDOT/LPA:	<input type="checkbox"/>	<input type="checkbox"/>

(Note: Double-click on box in Yes or NA to mark it with an "X")

Submitter Signature

Date

Crown Castle/Lighttower

Submitter Name Printed

INDOT/LPA use only below this point ----- INDOT/LPA use only below this point

INDOT/LPA use only below this point ----- INDOT/LPA use only below this point

The following sections are to be used by INDOT personnel to review the utility relocation work plan.

Section 11: The Department shall review the work plan to ensure that it: [IAC 13-3-3(e)]

Description	Yes	No	Initials
(1.a) is compatible with department permit requirements	<input type="checkbox"/>	<input type="checkbox"/>	KAH
(1.b) is compatible with the project plans	<input type="checkbox"/>	<input type="checkbox"/>	KAH
(1.c) is compatible with the construction schedule	<input type="checkbox"/>	<input type="checkbox"/>	KAH
(1.d) is compatible with other utility relocation work plans	<input type="checkbox"/>	<input type="checkbox"/>	KAH
(2.a) has reasonable relocation scheme	<input type="checkbox"/>	<input type="checkbox"/>	KAH
(2.b) has a reasonable cost for compensable work	<input type="checkbox"/>	<input type="checkbox"/>	KAH

(Note: Double-click on box under Yes or No to mark it with an "X")

Comments on any sections (1.a – 2.b) that were marked No:

No Relocations

Kevin A. Hintz
 Reviewer Signature

3-8-18
 Date

Kevin A. Hintz P.E.
 Reviewer Name Printed
 Utility Coordinator

Section 12: Approved Work Plan. [IAC 13-3-3(f)]

I have reviewed the work plan and found it acceptable.

[Signature]
 Project Manager Signature

3/8/18
 Date

Crown Castle/Lighttower

Bryan Wright

Project Manager Name Printed

Logan St. Bridge Replacement
Noblesville, IN.
Crown Castle fiber path.

Existing UG fiber

Existing Aerial fiber

1 Hamilton County Square (Court House)

Google Earth

40°02'48.13" N 86°00'56.88" W elev 764 ft eye alt 1460 ft

1998





Headquarters:
8450 Westfield Blvd., Suite 300
Indianapolis, IN 46240-5920
T 317.713.4615
F 317.713.4616
E bfs@BFSEngr.com
www.BFSEngr.com

Branch Locations:
Ft. Wayne
Lafayette
Merrillville
Plainfield
South Bend
Louisville



April 16, 2018

Mr. Dan Benson
Duke Energy
100 South Mill Creek Road
Noblesville, IN 46062

Subject: Work Plan Approved for Project: Logan Street Bridge Reconstruction and Widening

Dear Mr. Benson;

Your work plan dated April 5, 2018 is approved for the proposed project: Logan Street Bridge Reconstruction and Widening in City of Noblesville in Hamilton County, Indiana. We are returning a copy of the approved work plan for your records.

- **This letter serves as your Notice To Proceed for all pre-construction and relocation activities identified outlined in your approved work plan to fully complete your relocation**

In accordance with 105 IAC 13-3-1(c), the following information is provided. The dates listed in items (4) and (5) below are the currently scheduled dates.

- | | |
|---|---|
| (1) Name or route number: | Logan St |
| (2) Geographical limits: | Along South State Rd 19 from approximately 80 ft North of Conner St to Logan St then East along Logan Street from South State Rd 19 to approximately 375 ft east of South State Rd 19 |
| (3) General description of work: | Bridge Widening, Deck Replacement, Path & Sidewalks |
| (4) Date approved work plan will be needed: | March 23, 2018 |
| (5) Letting date: | April 23, 2018 |
| (6) Name of designer and contact information: | Bryan Wright, P.E., S.E. – Butler, Fairman & Seufert, Inc.,
E: BWright@BFSEngr.com , P: 317-713-4615 |
| (7) Major or minor project: | Minor |

If you have any questions on this subject please contact Kevin A. Hintz, P.E., Butler, Fairman & Seufert, Inc., 8450 Westfield Blvd. Suite 300, Indianapolis, Indiana, 46240, P: (317) 713-4615, F: (317) 713-4616, UC@BFSEngr.com. Thank you for your attention to these matters.

Sincerely;

Kevin A. Hintz, P.E.
Utility Coordinator

Cc: Bryan Wright, P.E., S.E., BF&S
Ted Foster, BF&S



Date: **April 13, 2018**

Subject:

Utility Relocation Work Plan for:	Duke Energy
Facility Type:	Electric

Section 1: General Information

A. INDOT/LPA Project Information

1. Des Number.:	NA
2. Route Number:	Logan St.
3. Location:	Noblesville, IN
4. Work Type:	Bridge Widening, Deck Replacement, Path & Sidewalks
5. Letting Date:	April 23,2018
6. Date Work Plan Needed:	March 23,2018
7. Target Date for Utility to be out of conflict with INDOT Project:	TBD
Intermediate Phase:	NA
Intermediate Phase:	NA

B. Utility Designated Contact – Information

1. Designated Contact Name:	Dan Benson
2. Office telephone:	317-776-5340
3. Mobile telephone:	317-315-4681
4. Email address:	Dan.Benson@duke-energy.com
5. Agency name:	Duke Energy
6. Address:	100 S. Mill Creek Rd.
7. City, State, Zip Code:	Noblesville, IN 46062
8. Construction Emergency Contact:	
Name:	Dan Benson
Number:	317-315-4681

**** For Outage and Damage Issues please contact 1-800-521-2232 ****

C. By signing here, the Utility has determined to the best of their ability that they do not have facilities within the project area:

Signature of Utility Representative

Print Name

Date

Note: A signature by the utility representative at item “(C)” fulfills the requirement to complete the rest of this form and affirms their contact information above is correct



D. INDOT/LPA Utility Coordinator Contact Information

1.	Utility Coordinator Name:	Ted Foster
2.	Office Telephone:	317-713-4615
3.	Mobile Telephone:	NA
4.	Email Address:	TFoster@bfsengr.com
5.	Agency Name:	Butler, Fairman & Seufert, Inc.
6.	Address:	8450 Westfield Blvd. Suite 300
7.	City, State, Zip Code	Indianapolis, IN 46240

Section 2: A narrative description of the facility relocation that will be required. [IAC 13-3-3(c)]

DESCRIBE IN DETAIL

A. Describe what types of existing active and inactive facilities are present.

- Duke Energy has the Noblesville 8th St. substation just north of the project location. From that substation there is a 3-phase, 12kV underground primary conductor that runs southwest from the substation, under Logan Street (approximately under the bridge approach slab on the southeast end of the bridge), to the switch gear that sits west of the Hamilton County Judicial Center.
- Duke Energy also has an overhead 3-phase, 12kV primary conductor that heads west from the substation to an H structure on the northwest corner of the bride, then proceeds to cross Logan Street at the northwest corner, and SR 19, then continues west.
- Duke Energy also has underground secondary conductors in the parking lot to the north of the Hamilton County Judicial Center.
- There is also another underground secondary conductor along the north side of the Logan Street Bridge.
- There is an overhead secondary conductor that extends from the H structure on the northwest corner to the southwest corner of the bridge to provide service to that metered location on the southwest corner of the bridge.

Duke Energy is unable to confirm whether or not there are any underground, inactive Duke Energy facilities present. Regardless, any such inactive facilities should be considered abandoned in place, and therefore, subject to neither removal nor preservation by Duke Energy.

B. Describe the location of existing active and inactive facilities.

- Duke Energy has the Noblesville 8th St. substation just north of the project location. From that substation there is a 3-phase, 12kV underground primary conductor that runs southwest from the substation, under Logan Street (approximately under the bridge approach slab on the southeast end of the bridge), to the switch gear that sits west of the Hamilton County Judicial Center.
- Duke Energy also has an overhead 3-phase, 12kV primary conductor that heads west from the substation to an H structure on the northwest corner of the bride, then proceeds to cross Logan Street at the northwest corner, and SR 19, then continues west.
- Duke Energy also has underground secondary conductors in the parking lot to the north of the Hamilton County Judicial Center.
- There is also another underground secondary conductor along the north side of the Logan Street Bridge.
- There is an overhead secondary conductor that extends from the H structure on the northwest corner to the southwest corner of the bridge to provide service to that metered location on the southwest corner of the bridge.



Duke Energy is unable to confirm whether or not there are any underground, inactive Duke Energy facilities present. Regardless, any such inactive facilities should be considered abandoned in place, and therefore, subject to neither removal nor preservation by Duke Energy.

- C. Describe what will be done with existing active and inactive facilities.
- The underground 3-phase, 12kV primary conductors, that proceed southwest from the substation, will be relocated east, approximately 7 ft., and to a further depth to become out of conflict with the project.
 - The remainder of the existing Duke Energy facilities will remain as there is no conflict with these facilities.
 - Please note that when the existing overhead service on the southwest corner of the bridge is relocated to the northwest corner of the bridge, customer is to call 1-800-774-0246 to schedule disconnect/reconnect services.

Duke Energy is unable to confirm whether or not there are any underground, inactive Duke Energy facilities present. Regardless, any such inactive facilities should be considered abandoned in place, and therefore, subject to neither removal nor preservation by Duke Energy.

PLEASE REFER TO THE OSHA WEBSITE FOR ALL CLEARANCE REQUIREMENTS BASED ON THE VOLTAGE OF OUR LINES LISTED ABOVE.

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=19

WARNING: ANY ORANGE OR YELLOW COVER-UP THAT DUKE ENERGY WOULD PLACE ON THE DISTRIBUTION LINE WOULD BE FOR VISUAL IDENTIFICATION ONLY AND WILL NOT PROTECT AGAINST THE TRAVEL OF ELECTRICITY, THEREFORE ALL WIRES WOULD BE CONSIDERED BARE, UNINSULATED, AND ENERGIZED AT ALL TIMES.

IF THE CONTRACTOR WOULD LIKE VISUAL COVER INSTALLED ON THE DISTRIBUTION WIRES, THEY WILL NEED TO CONTACT THE DUKE ENERGY CALL CENTER FOR SCHEDULING AT 1.800.521.2232, MONDAY THROUGH FRIDAY FROM 7A TO 7P OR ON SATURDAY FROM 8A TO 1P.

- D. Describe the details of the proposed new facilities.
- The underground 3-phase, 12kV primary conductors, that proceed southwest from the substation, will be spliced at two locations on either side of the bridge. One splice pit will be on the northern side of the bridge, southwest of the parking lot, in the landscape mound (landscape mound to be restored by Hamilton County). The second splice pit will be approximately 23 ft. southwest from the existing sidewalk. The existing conductors between the splice pits will be abandoned and new primary conductors will be spliced in at both splice pit locations, installed approximately 7 ft. east of the northern splice pit, then heading southwest to intercept the existing line at the southern splice pit, to eliminate the conflict with the bridge retaining wall, and installed at a depth of no less than 5 ft. The new conductor will be bored east of the existing conductor to eliminate conflicts the retaining wall on the bridge.
Please see "Attachment B"
 - The remainder of the existing Duke Energy facilities will remain as there is no conflict with these facilities.
 - Please note that when the existing overhead service on the southwest corner of the bridge is relocated to the northwest corner of the bridge, customer is to call 1-800-774-0246 to schedule disconnect/reconnect services.

- E. Describe the proposed location of the new facilities.



- The underground 3-phase, 12kV primary conductors, that proceed southwest from the substation, will be spliced at two locations on either side of the bridge. One splice pit will be on the northern side of the bridge, southwest of the parking lot, in the landscape mound (landscape mound to be restored by Hamilton County). The second splice pit will be approximately 23 ft. southwest from the existing sidewalk. The existing conductors between the splice pits will be abandoned and new primary conductors will be spliced in at both splice pit locations, installed approximately 7 ft. east of the northern splice pit, then heading southwest to intercept the existing line at the southern splice pit, to eliminate the conflict with the bridge retaining wall, and installed at a depth of no less than 5 ft. The new conductor will be bored east of the existing conductor to eliminate conflicts the retaining wall on the bridge.
Please see "Attachment B"
- The remainder of the existing Duke Energy facilities will remain as there is no conflict with these facilities.
- Please note that when the existing overhead service on the southwest corner of the bridge is relocated to the northwest corner of the bridge, customer is to call 1-800-774-0246 to schedule disconnect/reconnect services.

F. By signing here, the Utility has determined to the best of their ability that they have facilities within the project area and the facilities are not in conflict with the project based upon the plans received on **March 1, 2018**

Signature of Utility Representative

Print Name

Date

Note: A signature by the utility representative at item "(F)" fulfills the requirement to complete the rest of this form and affirms their contact information above is correct.

Section 3: A statement whether the facility relocation is or is not dependent on the acquisition of additional property interests with a description of that work. [IAC 13-3-3(c) (2) (B)]

- (A) Duke Energy must have acquired all ROW, RR, State or Federal permits before relocation construction begins.**
- (B) Duke Energy must have acquired all private "possessory rights" needed for the approved relocation plan before relocation construction begins.**
- (C) Duke Energy will not be acquiring easements for the said project.**

Section 4: A statement whether the utility is or is not willing to allow the INDOT contractor to do the required work as part of the highway contract. [IAC 13-3-3(c) (3)]

Duke Energy Indiana is not willing to have a HAMILTON COUNTY HIGHWAY DEPARTMENT's contractor perform the required relocation.



Section 5: From the date the work plan is approved by both parties; please provide the Utility’s pre-construction scheduling information. [IAC 13-3-3(c) (4), IAC 13-3-3(c) (5)]

A.	The expected lead time in calendar days to obtain required permits:	60 Days
B.	The expected lead time in calendar days to obtain materials:	120 Days
C.	The expected lead time in calendar days to schedule work crews:	60 Days (Minimum)
D.	If the contractor is being selected by competitive bid what is the date of selection?	Not Applicable
E.	The expected lead time in calendar days to obtain new property interests:	INDOT to obtain all ROW
F.	The earliest date when the utility could begin to implement the pre-construction activities of the work plan:	Material Reservation Contingent on Work Plan Approval. Scheduling Contingent on Notice to Proceed.
G.	The total number of calendar days for pre-construction activities: (accounting for concurrent activities)	120 Days

Section 6: The Utility Construction Scheduling Information. [IAC 13-3-3(c) (4), IAC 13-3-3(c) (5)]

- A. A statement whether the facility relocation is or is not dependent on work to be done by another utility with a description of that work. [IAC 13-3-3(c)(2)(A)(i)]

The removal of Duke Energy's pole(s) is dependent upon the removal of attachers to our poles. The attachers must remove their facilities before the existing poles can be removed. The existing attachers to our poles on this project are:

NOT APPLICABLE

If the existing attacher is transferring their facilities to our new poles, the existing attacher’s construction schedule may begin only after Duke Energy’s relocation construction is completed. Duke Energy has no control over the start date or finish date for attachers vacating our existing poles.

- B. A statement whether the facility relocation is or is not dependent on work to be done by the HAMILTON COUNTY HIGHWAY DEPARTMENT or the HAMILTON COUNTY HIGHWAY DEPARTMENT’S contractor with a description of that work. [IAC 13-3- 3(c)(2)(A)(ii)]

Work item A

HAMILTON COUNTY HIGHWAY DEPARTMENT will give written notice to Duke Energy that all “possessory rights” have been acquired for the entire length of the approved work plan area before relocation construction begins.

Work item B

HAMILTON COUNTY HIGHWAY DEPARTMENT will work closely with Duke Energy to safely clear all trees, shrubs and structures, at the HAMILTON COUNTY HIGHWAY DEPARTMENT’S cost, for the entire length of the approved relocation plan area, including areas sufficiently beyond the construction limits to accommodate the approved relocation work plan before relocation construction begins.



Work item C

**HAMILTON COUNTY HIGHWAY DEPARTMENT will notify Duke Energy after staking (A or B):
NOT APPLICABLE**

Work item D

HAMILTON COUNTY HIGHWAY DEPARTMENT will provide signed copies of all reimbursement agreements before relocation construction begins. NOT APPLICABLE

Work item E

HAMILTON COUNTY HIGHWAY DEPARTMENT will provide Duke Energy a “Signed” work plan on or before as the ready for contracts date.

Work item F

HAMILTON COUNTY HIGHWAY DEPARTMENT will provide Duke Energy a “Letter to Proceed” on or before the ready for contracts date but no event later than the required pre-construction lead time prescribed in Sections 5 F & G.

In the event that Duke Energy Indiana decides to hold, protect or guard its installed facilities before, after or during relocation construction, for the safe installation of another facility or utility, Duke Energy Indiana will notify the HAMILTON COUNTY HIGHWAY DEPARTMENT immediately. Because time is of the essence, the HAMILTON COUNTY HIGHWAY DEPARTMENT and Duke Energy Indiana agree to work together to minimize costs and delays for all parties involved, and Duke Energy Indiana agrees to not proceed until an agreement is reached with the HAMILTON COUNTY HIGHWAY DEPARTMENT regarding reimbursement of Duke Energy Indiana's costs for holding protecting or guarding its facilities.

- C. How many calendar days after the events identified in Sec 6 A and B are completed can the utility begin construction:

Absent an agreement expediting the work between the HAMILTON COUNTY HIGHWAY DEPARTMENT and Duke Energy Indiana, the earliest date when Duke Energy Indiana could begin construction.

- 1.) **If the HAMILTON COUNTY HIGHWAY DEPARTMENT ROW staking and clearing is contained in the HAMILTON COUNTY HIGHWAY DEPARTMENT’s construction contract, Duke Energy Indiana will begin construction within 60 days after Duke Energy Indiana has received from HAMILTON COUNTY HIGHWAY DEPARTMENT both a “Notice to Proceed” (confirming the staking and clearing has been completed) and a fully executed Work Plan.**

If the HAMILTON COUNTY HIGHWAY DEPARTMENT ROW staking and clearing is let as a separate contract, Duke Energy Indiana will begin construction within 60 days after Duke Energy Indiana has received from HAMILTON COUNTY HIGHWAY DEPARTMENT both a “Notice to Proceed” (confirming the staking and clearing has been completed) and a fully executed Work Plan.

If at any time within 120 days from the most current published letting date, the HAMILTON COUNTY HIGHWAY DEPARTMENT changes the letting date by more than fourteen (14) days, Duke Energy Indiana reserves the right upon written notice sent by mail to the HAMILTON COUNTY HIGHWAY DEPARTMENT, to provide to the HAMILTON COUNTY HIGHWAY DEPARTMENT a revised work plan within 60 days from the date Duke Energy Indiana is notified of the change.

- D. The number of calendar days to complete the relocation work: **90 Days**

Duke Energy will work with the customer to do everything we can to complete the relocation of their facilities to eliminate conflicts by September 28, 2018



Section 7: A drawing of sufficient detail with station, offset, elevations, and scale to show the proposed location of the facility relocation, which takes precedence over the narrative description of the work. [IAC 13-3-3(c) (6)].

See "Attachment B"

Section 8: For each work plan the utility shall include a cost estimate for the facility relocation. For reimbursable work the estimate will identify betterment and salvage, which is not reimbursable. [IAC 13-3-3(d)]

NOT APPLICABLE

Section 9: For work the utility is entitled to be compensated by the Department, the work plan shall include documentation of property interests and compensable land rights. [IAC 13-3-3(d)]

Not Applicable.



Section 10: The implementation of this approved work plan is dependent upon the issuance of: (a notice to proceed will be provided when items in Section 6 are accomplished)

Items Completed	Yes	Not Applicable
An executed reimbursement agreement with INDOT/LPA:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
A relocation permit from INDOT/LPA:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

(Note: Double-click on box in Yes or NA to mark it with an "X")

(KAT) City permit may be req'd

Dan Benson
Submitter Signature

04/13/2018
Date

Dan Benson
Submitter Name Printed



INDOT/LPA use only below this point ----- INDOT/LPA use only below this point

The following sections are to be used by INDOT personnel to review the utility relocation work plan.

Section 11: The Department shall review the work plan to ensure that it: [IAC 13-3-3(e)]

Description	Yes	No	Initials
(1.a) is compatible with department permit requirements	<input checked="" type="checkbox"/>	<input type="checkbox"/>	KAH
(1.b) is compatible with the project plans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	KAH
(1.c) is compatible with the construction schedule	<input checked="" type="checkbox"/>	<input type="checkbox"/>	KAH
(1.d) is compatible with other utility relocation work plans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	KAH
(2.a) has reasonable relocation scheme	<input checked="" type="checkbox"/>	<input type="checkbox"/>	KAH
(2.b) has a reasonable cost for compensable work	<input type="checkbox"/> N/A	<input type="checkbox"/>	KAH

(Note: Double-click on box under Yes or No to mark it with an "X")

Comments on any sections (1.a – 2.b) that were marked No:

Kevin A. Hintz
Reviewer Signature

4-16-18
Date

Kevin A. Hintz, P.E.
Reviewer Name Printed
Utility Coordinator

Section 12: Approved Work Plan. [IAC 13-3-3(f)]

I have reviewed the work plan and found it acceptable.

Bryan Wright
Project Manager Signature

4/16/18
Date

Bryan Wright
Project Manager Name Printed



Upstream Protection	
Type (recloser, breaker, sectionalizer), ID, Location	

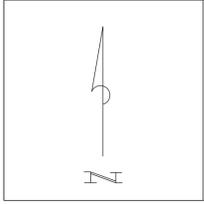
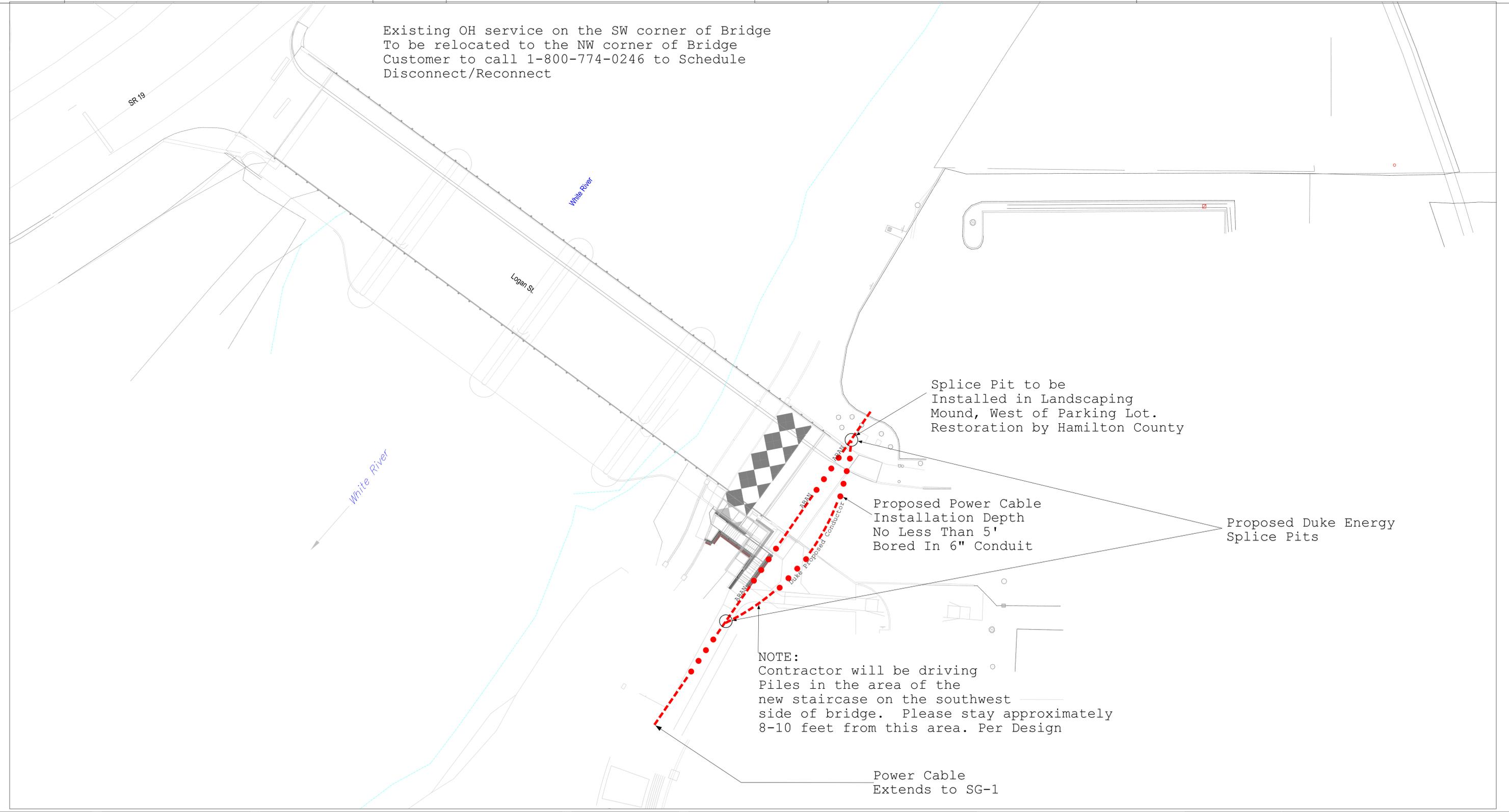


Safety Reminders / Adverse Conditions	
Remember "Your Circle of Safety"	



REMEMBER: Work zone area conditions may have changed for this job. Everyone is responsible for verifying the safety information is correct prior to any work being performed each day.

Other Project Notes	



General Information	
INDOT DES #	NA
Logan Street	
Hamilton County, IN Noblesville Township	

Work Order Information					
Distribution					
Emax #	Install	Remove	OH Maint.	UG Maint.	OU / Center
Transmission					
Emax #	Install	Remove	OH Maint.	UG Maint.	OU / Center

Circuit Information	
Distribution	
Pendleton 69	
1201 Circuit	
Transmission	

Duke Energy Legend			
	Existing Duke Pole		Existing Downguy
	Proposed Duke Pole		Proposed Downguy
	Remove Duke Pole		Transmission Line
	Existing Foreign Pole		Distribution Line
	Proposed Foreign Pole		Secondary Line
	Remove Foreign Pole		Overhead Light

DATE 4.16.2018		LOCATION 40°2' 47.8108" N, 86°0' 57.8786" W	
DRAWN Dan Benson		PHONE 317.315.4681	
ELECTRIC TRANSMISSION & DISTRIBUTION LINE ENGINEERING		APPROVAL SIGNATURE	
INDEX Exhibit "B"		DETAIL Logan Street Bridge Work Plan Drawing	
		DWG NO SHEET 1 OF 1	



Headquarters:
8450 Westfield Blvd., Suite 300
Indianapolis, IN 46240-5920
T 317.713.4615
F 317.713.4616
E bfs@BFSEngr.com
www.BFSEngr.com

Branch Locations:
Ft. Wayne
Lafayette
Merrillville
Plainfield
South Bend
Louisville



March 28, 2018

Mr. Maninder Singh, P.E.
Indiana American Water Company
153 north Emerson Street
Greenwood, IN 46143

Subject: Work Plan Approved for Project: Logan Street Bridge Reconstruction and Widening

Dear Mr. Singh;

Your work plan dated March 28, 2018 is approved for the proposed project: Logan Street Bridge Reconstruction and Widening in City of Noblesville in Hamilton County, Indiana. We are returning a copy of the approved work plan for your records.

In accordance with 105 IAC 13-3-1(c), the following information is provided. The dates listed in items (4) and (5) below are the currently scheduled dates.

- | | |
|---|---|
| (1) Name or route number: | Logan St |
| (2) Geographical limits: | Along South State Rd 19 from approximately 80 ft North of Conner St to Logan St then East along Logan Street from South State Rd 19 to approximately 375 ft east of South State Rd 19 |
| (3) General description of work: | Bridge Widening, Deck Replacement, Path & Sidewalks |
| (4) Date approved work plan will be needed: | March 23, 2018 |
| (5) Letting date: | April 23, 2018 |
| (6) Name of designer and contact information: | Bryan Wright, P.E., S.E. – Butler, Fairman & Seufert, Inc.,
E: BWright@BFSEngr.com , P: 317-713-4615 |
| (7) Major or minor project: | Minor |

If you have any questions on this subject please contact Kevin A. Hintz, P.E., Butler, Fairman & Seufert, Inc., 8450 Westfield Blvd. Suite 300, Indianapolis, Indiana, 46240, P: (317) 713-4615, F: (317) 713-4616, UC@BFSEngr.com. Thank you for your attention to these matters.

Sincerely;

Kevin A. Hintz, P.E.
Utility Coordinator

Cc: Bryan Wright, P.E., S.E., BF&S
Ted Foster, BF&S

Indiana American Water

Date: **March 28, 2018**

Subject:

Utility Relocation Work Plan for:	Indiana-American Water Company
Facility Type:	Water

Section 1: General Information

A. INDOT/LPA Project Information

1. DES NO.:	N/A
2. Route Number:	Logan St
3. Location:	Along South State Rd 19 from approximately 80 ft North of Conner St to Logan St then East along Logan Street from South State Rd 19 to approximately 375 ft east of South State Rd 19
4. Work Type:	Bridge Widening, Deck Replacement, Path & Sidewalks
5. Letting Date:	September 1, 2018
6. Date Work Plan Needed	July 2018
7. Target Date for Utility to be out of conflict with INDOT Project	September 1, 2018
Intermediate Phase	NA
Intermediate Phase	NA

B. Utility Designated Contact – Information

1. Designated Contact Name:	Maninder Singh, P.E.
2. Office telephone:	(317) 885-2445
3. Mobile telephone:	(317) 560-8441
4. Email address:	maninder.singh@amwater.com
5. Agency name	Indiana-American Water Company
6. Address:	153 N. Emerson Ave
7. City, State, Zip Code:	Greenwood, IN 46143
8. Construction Emergency Contact:	
Name:	Ryan Smith
Number:	(317) 773-2497 Ext. 2

C. By signing here, the Utility has determined to the best of their ability that they do not have facilities within the project area:

Signature of Utility Representative

Print Name

Date

Indiana American Water

Note: A signature by the utility representative at item "(C)" fulfills the requirement to complete the rest of this form and affirms their contact information above is correct

D. INDOT/LPA Utility Coordinator Contact Information

1.	Utility Coordinator Name:	Kevin A. Hintz, P.E.
2.	Office Telephone:	317-713-4615
3.	Mobile Telephone:	317-627-7501
4.	Email Address:	uc@bfsengr.com
5.	Agency Name:	Butler, Fairman & Seufert, Inc.
6.	Address:	8450 Westfield Blvd., Suite 300
7.	City, State, Zip Code	Indianapolis, Indiana 46240

Section 2: A narrative description of the facility relocation that will be required. [IAC 13-3-3(c)]

A. Describe what types of existing active and inactive facilities are present.

Indiana American Water Company has 8" PVC, 10" PVC, 16" Ductile Iron, and 4" Cast Iron water mains in the proposed project area.

B. Describe the location of existing active and inactive facilities.

See the attached aerial exhibit that shows approximate locations of existing water mains in the proposed project area.

C. Describe what will be done with existing active and inactive facilities.

No conflicts anticipated with the existing facilities, approximate depth of water mains in the project area is 4ft to 4.5ft below existing grade. INAWC strongly recommends that the water mains be field located prior to occurrence of any construction operations.

D. Describe the details of the proposed new facilities.

N/A

E. Describe the proposed location of the new facilities.

N/A

F. By signing here, the Utility has determined to the best of their ability that they have facilities within the project area and the facilities are not in conflict with the project based upon the plans received on February 27, 2018.

Maninder Singh
Signature of Utility Representative

MANINDER SINGH 03/28/2018
Print Name Date

Note: A signature by the utility representative at item "(F)" fulfills the requirement to complete the rest of this form and affirms their contact information above is correct.

Section 3: A statement whether the facility relocation is or is not dependent on the acquisition of additional property interests with a description of that work. [IAC 13-3-3(c) (2) (B)]

Section 4: A statement whether the utility is or is not willing to allow the INDOT contractor to do the required work as part of the highway contract. [IAC 13-3-3(c) (3)]

Section 5: From the date the work plan is approved by both parties; please provide the Utility’s pre-construction scheduling information. [IAC 13-3-3(c) (4), IAC 13-3-3(c) (5)]

A.	The expected lead time in calendar days to obtain required permits:	Enter Total Days
B.	The expected lead time in calendar days to obtain materials:	Enter Total Days
C.	The expected lead time in calendar days to schedule work crews:	Enter Total Days
D.	If the contractor is being selected by competitive bid what is the date of selection?	Enter Bid Date
E.	The expected lead time in calendar days to obtain new property interests:	Enter Days
F.	The earliest date when the utility could begin to implement the pre-construction activities of the work plan:	Enter Date
G.	The total number of calendar days for pre-construction activities: (accounting for concurrent activities)	Enter Total Days

Section 6: The Utility Construction Scheduling Information. [IAC 13-3-3(c) (4), IAC 13-3-3(c) (5)]

Indiana American Water

- A. A statement whether the facility relocation is or is not dependent on work to be done by another utility with a description of that work. [IAC 13-3-3(c)(2)(A)(i)]
 - 1. Utility A, with a description of the required work.

 - 2. Utility B, with a description of the required work.

 - 3. Utility C, with a description of the required work.

- B. A statement whether the facility relocation is or is not dependent on work to be done by the department or the department's contractor with a description of that work. [IAC 13-3-3(c)(2)(A)(ii)]
 - 1. Work item A

 - 2. Work item B

 - 3. Work item C

- C. How many calendar days after the events identified in Sec 6 A and B are completed can the utility begin construction: **Enter Total Days**

- D. The number of calendar days to complete the relocation work: **Enter Total Relocation Days**

Section 7: A drawing of sufficient detail with station, offset, elevations, and scale to show the proposed location of the facility relocation, which takes precedence over the narrative description of the work, needs to be on INDOT

Construction drawings. [IAC 13-3-3(c) (6)]. Plans must be attached to this Work Plan Document.

Section 8: For each work plan the utility shall include a cost estimate for the facility relocation. For reimbursable work the estimate will identify betterment and salvage which is not reimbursable. [IAC 13-3-3(d)]

Section 9: For work the utility is entitled to be compensated by the Department, the work plan shall include documentation of property interests and compensable land rights. [IAC 13-3-3(d)]

Section 10: The implementation of this approved work plan is dependent upon the issuance of: (a notice to proceed will be provided when items in Section 6 are accomplished)

Items Completed	Yes	Not Applicable
An executed reimbursement agreement with INDOT/LPA:	<input type="checkbox"/>	<input type="checkbox"/>
A relocation permit from INDOT/LPA:	<input type="checkbox"/>	<input type="checkbox"/>

(Note: Double-click on box in Yes or NA to mark it with an "X")

Submitter Signature

Date

Submitter Name Printed

INDOT/LPA use only below this point ----- INDOT/LPA use only below this point

INDOT/LPA use only below this point ----- INDOT/LPA use only below this point

Indiana American Water

The following sections are to be used by INDOT personnel to review the utility relocation work plan.

Section 11: The Department shall review the work plan to ensure that it: [IAC 13-3-3(e)]

Description	Yes	No	Initials
(1.a) is compatible with department permit requirements	<input type="checkbox"/>	<input type="checkbox"/>	KAH
(1.b) is compatible with the project plans	<input type="checkbox"/>	<input type="checkbox"/>	KAH
(1.c) is compatible with the construction schedule	<input type="checkbox"/>	<input type="checkbox"/>	KAH
(1.d) is compatible with other utility relocation work plans	<input type="checkbox"/>	<input type="checkbox"/>	KAH
(2.a) has reasonable relocation scheme	<input type="checkbox"/>	<input type="checkbox"/>	KAH
(2.b) has a reasonable cost for compensable work	<input type="checkbox"/>	<input type="checkbox"/>	KAH

(Note: Double-click on box under Yes or No to mark it with an "X")

Comments on any sections (1.a – 2.b) that were marked No:

No Relocations

Reviewer Signature

Kevin A. Hintz

Date

3-28-18

Reviewer Name Printed

Kevin A Hintz, P.E.
Utility Coordinator

Section 12: Approved Work Plan. [IAC 13-3-3(f)]

I have reviewed the work plan and found it acceptable.

Project Manager Signature

Bryan Wright

Date

3/28/18

Project Manager Name Printed

Bryan Wright

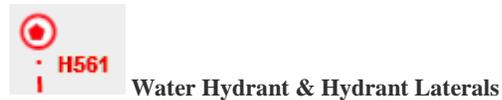
Logan St Bridge Widening over White River (NOBLESVILLE, IN)

INDIANA AMERICAN WATER - FACILITIES

AERIAL EXHIBITS – Project Des. No. N/A

Legend

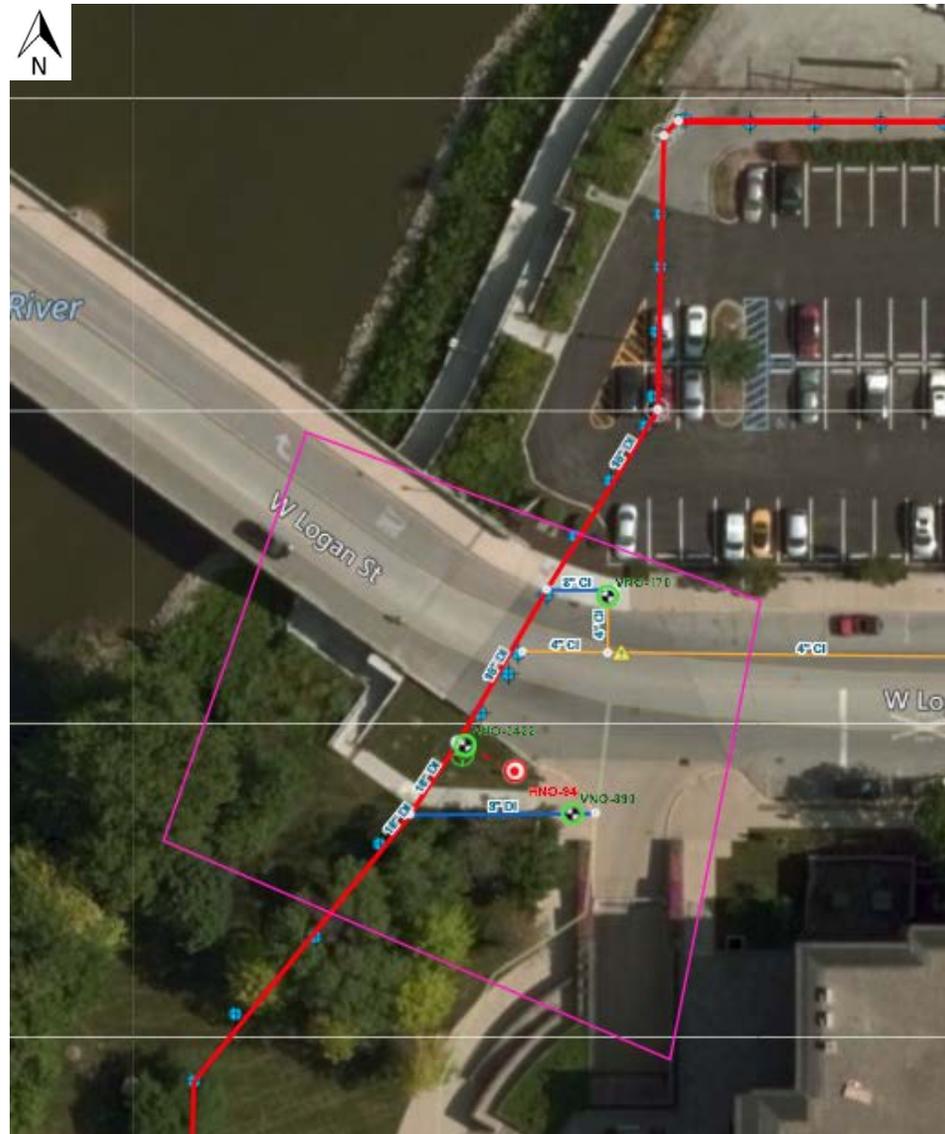
Abbreviation	Facility Name
8" PVC	8" Polyvinyl Chloride
10" PVC	10" Polyvinyl Chloride
16" DI	10" Ductile Iron
4" CI	4" Cast Iron



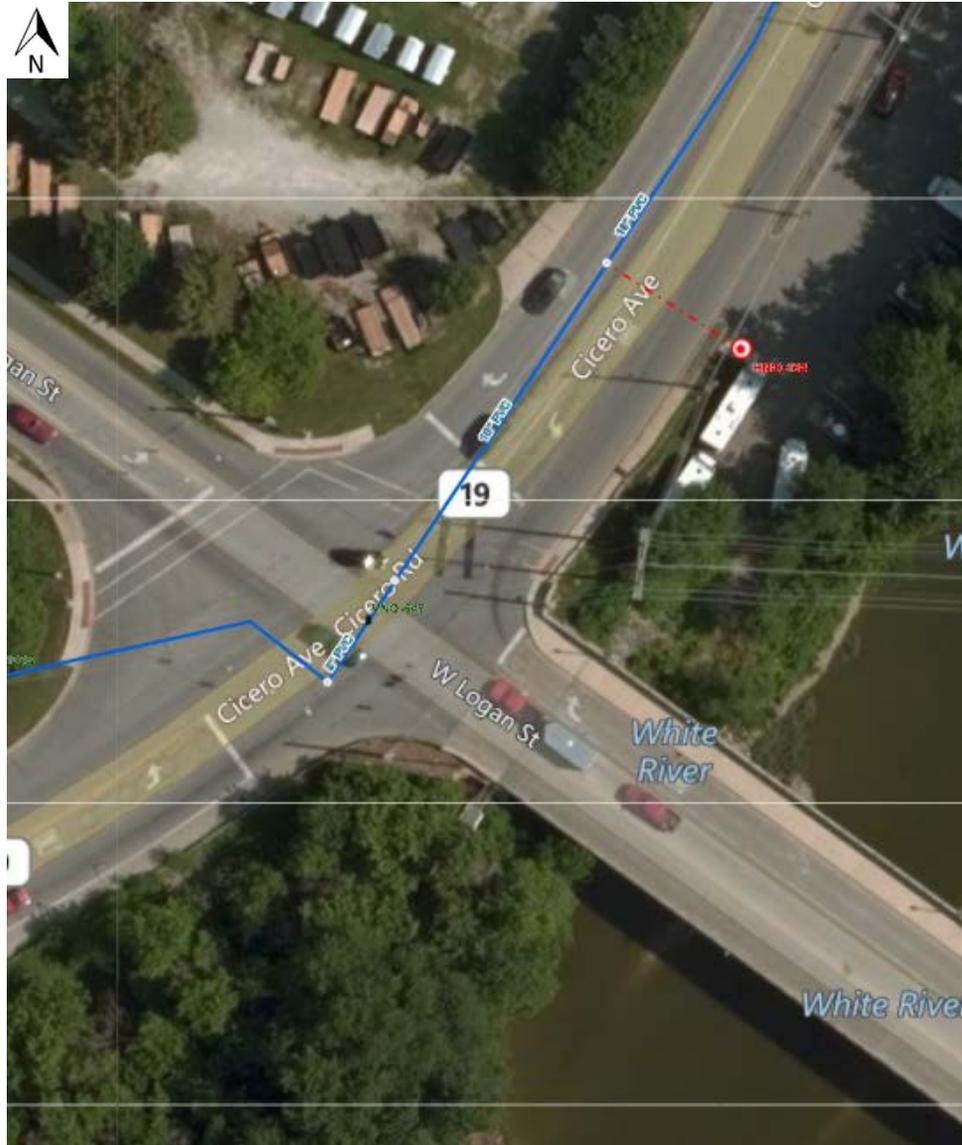
Logan Street Bridge (Area Overview)



Logan Street Bridge – East End (Area Overview)



Logan Street Bridge – West End (Area Overview)





Headquarters:
8450 Westfield Blvd., Suite 300
Indianapolis, IN 46240-5920
T 317.713.4615
F 317.713.4616
E bf@BFSEngr.com
www.BFSEngr.com

Branch Locations:
Ft. Wayne
Lafayette
Merrillville
Plainfield
South Bend
Louisville



April 3, 2018

Mr. Tim Hill
CenturyLink (Level 3 Communications)
1025 Eldorado Boulevard
Broomfield, CO 80021

Subject: Work Plan Approved for Project: Logan Street Bridge Reconstruction and Widening

Dear Mr. Hill;

Your work plan dated March 22, 2018 is approved for the proposed project: Logan Street Bridge Reconstruction and Widening in City of Noblesville in Hamilton County, Indiana. We are returning a copy of the approved work plan for your records.

In accordance with 105 IAC 13-3-1(c), the following information is provided. The dates listed in items (4) and (5) below are the currently scheduled dates.

- | | |
|---|---|
| (1) Name or route number: | Logan St |
| (2) Geographical limits: | Along South State Rd 19 from approximately 80 ft. North of Conner St to Logan St then East along Logan Street from South State Rd 19 to approximately 375 ft. east of South State Rd 19 |
| (3) General description of work: | Bridge Widening, Deck Replacement, Path & Sidewalks |
| (4) Date approved work plan will be needed: | March 23, 2018 |
| (5) Letting date: | April 23, 2018 |
| (6) Name of designer and contact information: | Bryan Wright, P.E., S.E. – Butler, Fairman & Seufert, Inc.,
E: BWright@BFSEngr.com , P: 317-713-4615 |
| (7) Major or minor project: | Minor |

If you have any questions on this subject please contact Kevin A. Hintz, P.E., Butler, Fairman & Seufert, Inc., 8450 Westfield Blvd. Suite 300, Indianapolis, Indiana, 46240, P: (317) 713-4615, F: (317) 713-4616, UC@BFSEngr.com. Thank you for your attention to these matters.

Sincerely;

Kevin A. Hintz, P.E.
Utility Coordinator

Cc: Bryan Wright, P.E., S.E., BF&S
Ted Foster, BF&S

Level 3 Communications, L.L.C.

Date: 3/22/18

Subject:

Utility Relocation Work Plan for:	Level 3 Communications, L.L.C.
Facility Type:	Fiber Optic Transmissions

Section 1: General Information

A. INDOT/LPA Project Information

1. DES NO.:	N/A
2. Route Number:	Logan St
3. Location:	Along South State Rd 19 from approximately 80 ft North of Conner St to Logan St then East along Logan Street from South State Rd 19 to approximately 375 ft east of South State Rd 19
4. Work Type:	Bridge Widening, Deck Replacement, Path & Sidewalks
5. Letting Date:	September 1, 2018
6. Date Work Plan Needed	July 2018
7. Target Date for Utility to be out of conflict with INDOT Project	September 1, 2018
Intermediate Phase	NA
Intermediate Phase	NA

B. Utility Designated Contact – Information

1. Designated Contact Name:	Tim Hill
2. Office telephone:	704) 733-3204
3. Mobile telephone:	Enter Mobile Telephone
4. Email address:	tim.w.hill@level3.com
5. Agency name	CenturyLink
6. Address:	1025 Eldorado Blvd
7. City, State, Zip Code:	Broomfield CO 80021
8. Construction Emergency Contact:	
Name:	Hamilton, Dewayne
Number:	317-916-2708

C. By signing here, the Utility has determined to the best of their ability that they do not have facilities within the project area:

Signature of Utility Representative

Print Name

Date

Level 3 Communications, L.L.C.

Note: A signature by the utility representative at item "(C)" fulfills the requirement to complete the rest of this form and affirms their contact information above is correct

D. INDOT/LPA Utility Coordinator Contact Information

1.	Utility Coordinator Name:	Kevin A. Hintz, P.E.
2.	Office Telephone:	317-713-4615
3.	Mobile Telephone:	317-627-7501
4.	Email Address:	uc@bfsengr.com
5.	Agency Name:	Butler, Fairman & Seufert, Inc.
6.	Address:	8450 Westfield Blvd., Suite 300
7.	City, State, Zip Code	Indianapolis, Indiana 46240

Section 2: A narrative description of the facility relocation that will be required. [IAC 13-3-3(c)]

A. Describe what types of existing active and inactive facilities are present.

Level 3 is aerial over the west end of Logan St

B. Describe the location of existing active and inactive facilities.

See above.

C. Describe what will be done with existing active and inactive facilities.

The existing facilities are not in conflict.

D. Describe the details of the proposed new facilities.

N/A

E. Describe the proposed location of the new facilities.

N/A

F. By signing here, the Utility has determined to the best of their ability that they have facilities within the project area and the facilities are not in conflict with the project based upon the plans received on <3/22/18>

Xan M Rypkema
Signature of Utility Representative

Xan Marie Rypkema
Print Name

3/22/18
Date

Level 3 Communications, L.L.C.

Note: A signature by the utility representative at item "(F)" fulfills the requirement to complete the rest of this form and affirms their contact information above is correct.

Section 3: A statement whether the facility relocation is or is not dependent on the acquisition of additional property interests with a description of that work. [IAC 13-3-3(c) (2) (B)]

Section 4: A statement whether the utility is or is not willing to allow the INDOT contractor to do the required work as part of the highway contract. [IAC 13-3-3(c) (3)]

Section 5: From the date the work plan is approved by both parties; please provide the Utility's pre-construction scheduling information. [IAC 13-3-3(c) (4), IAC 13-3-3(c) (5)]

A.	The expected lead time in calendar days to obtain required permits:	Enter Total Days
B.	The expected lead time in calendar days to obtain materials:	Enter Total Days
C.	The expected lead time in calendar days to schedule work crews:	Enter Total Days
D.	If the contractor is being selected by competitive bid what is the date of selection?	Enter Bid Date
E.	The expected lead time in calendar days to obtain new property interests:	Enter Days
F.	The earliest date when the utility could begin to implement the pre-construction activities of the work plan:	Enter Date
G.	The total number of calendar days for pre-construction activities: (accounting for concurrent activities)	Enter Total Days

Level 3 Communications, L.L.C.

Section 6: The Utility Construction Scheduling Information. [IAC 13-3-3(c) (4), IAC 13-3-3(c) (5)]

- A. A statement whether the facility relocation is or is not dependent on work to be done by another utility with a description of that work. [IAC 13-3-3(c)(2)(A)(i)]
1. Utility A, with a description of the required work.
 2. Utility B, with a description of the required work.
 3. Utility C, with a description of the required work.
- B. A statement whether the facility relocation is or is not dependent on work to be done by the department or the department's contractor with a description of that work. [IAC 13-3-3(c)(2)(A)(ii)]
1. Work item A
 2. Work item B
 3. Work item C
- C. How many calendar days after the events identified in Sec 6 A and B are completed can the utility begin construction: **Enter Total Days**
- D. The number of calendar days to complete the relocation work: **Enter Total Relocation Days**

Level 3 Communications, L.L.C.

Section 7: A drawing of sufficient detail with station, offset, elevations, and scale to show the proposed location of the facility relocation, which takes precedence over the narrative description of the work, needs to be on INDOT Construction drawings. [IAC 13-3-3(c) (6)]. Plans must be attached to this Work Plan Document.

Section 8: For each work plan the utility shall include a cost estimate for the facility relocation. For reimbursable work the estimate will identify betterment and salvage which is not reimbursable. [IAC 13-3-3(d)]

Section 9: For work the utility is entitled to be compensated by the Department, the work plan shall include documentation of property interests and compensable land rights. [IAC 13-3-3(d)]

Section 10: The implementation of this approved work plan is dependent upon the issuance of: (a notice to proceed will be provided when items in Section 6 are accomplished)

Items Completed	Yes	Not Applicable
An executed reimbursement agreement with INDOT/LPA:	<input type="checkbox"/>	<input type="checkbox"/>
A relocation permit from INDOT/LPA:	<input type="checkbox"/>	<input type="checkbox"/>

(Note: Double-click on box in Yes or NA to mark it with an "X")

Submitter Signature

Date

Submitter Name Printed

INDOT/LPA use only below this point ----- INDOT/LPA use only below this point

Level 3 Communications, L.L.C.

INDOT/LPA use only below this point ----- INDOT/LPA use only below this point

The following sections are to be used by INDOT personnel to review the utility relocation work plan.

Section 11: The Department shall review the work plan to ensure that it: [IAC 13-3-3(e)]

Description	Yes	No	Initials
(1.a) is compatible with department permit requirements	<input type="checkbox"/>	<input type="checkbox"/>	KAH
(1.b) is compatible with the project plans	<input type="checkbox"/>	<input type="checkbox"/>	KAH
(1.c) is compatible with the construction schedule	<input type="checkbox"/>	<input type="checkbox"/>	KAH
(1.d) is compatible with other utility relocation work plans	<input type="checkbox"/>	<input type="checkbox"/>	KAH
(2.a) has reasonable relocation scheme	<input type="checkbox"/>	<input type="checkbox"/>	KAH
(2.b) has a reasonable cost for compensable work	<input type="checkbox"/>	<input type="checkbox"/>	KAH

(Note: Double-click on box under Yes or No to mark it with an "X")

Comments on any sections (1.a – 2.b) that were marked No:

No Relocations

Kevin A. Hintz

Reviewer Signature

4-3-18

Date

Kevin A. Hintz P.E.
Utility Coordinator

Reviewer Name Printed

Section 12: Approved Work Plan. [IAC 13-3-3(f)]

I have reviewed the work plan and found it acceptable.

Boyer Wright

Project Manager Signature

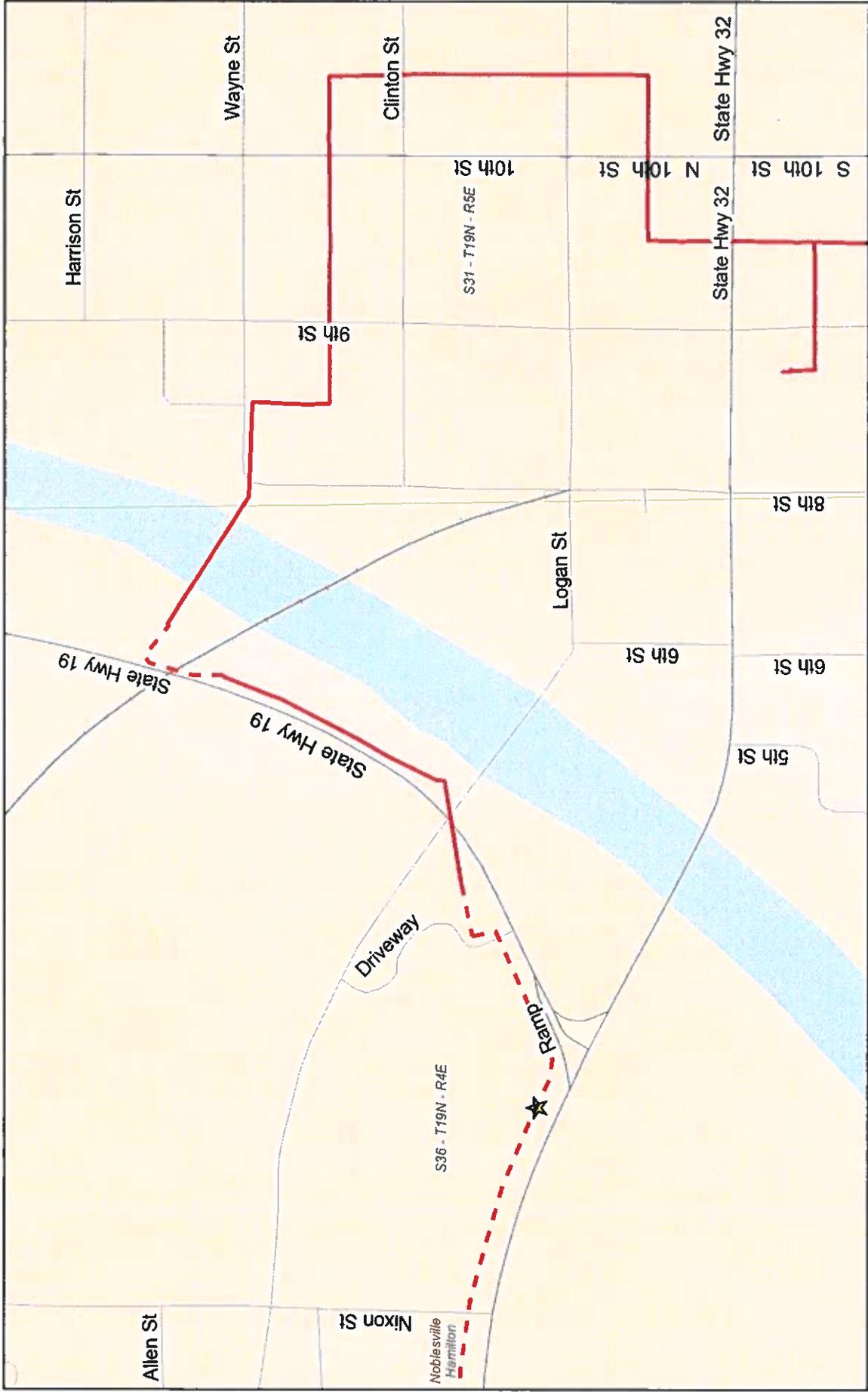
4/3/18

Date

Boyer Wright

Project Manager Name Printed

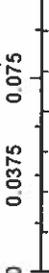
CenturyLink and Level 3 Network



March 14, 2018

- All CTL National Routes**
- Owned, Aerial
 - Owned, Underground
 - Leased, Aerial
 - Leased, Underground
 - Non Level 3 Facilities
 - Aerial
 - Underground
 - Streets
 - Highways
 - Railroad

1:4,514



Level 3 Data is Highly Confidential and Proprietary. Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan.

★ Network Data (Asbuilt Hyperlink)

Persons working in the area covered by this data must contact the statewide Call-Before-You-Dig System to ascertain the location of underground facilities prior to performing any excavation. CenturyLink and Level 3 Data is Highly Confidential and Proprietary. CenturyLink and Level 3 Communications Data is Confidential.



Headquarters:
 8450 Westfield Blvd., Suite 300
 Indianapolis, IN 46240-5920
 T 317.713.4615
 F 317.713.4616
 E bf@BFSEngr.com
www.BFSEngr.com

Branch Locations:
 Ft. Wayne
 Lafayette
 Merrillville
 Plainfield
 South Bend
 Louisville



April 24, 2018

Mr. Waylon Higgins
 Zayo Bandwidth
 9209 Castlegate Drive
 Indianapolis, IN 46256

Subject: Work Plan Approved for Project: Logan Street Bridge Reconstruction and Widening

Dear Mr. Higgins;

Your work plan dated March 29, 2018 is approved for the proposed project: Logan Street Bridge Reconstruction and Widening in City of Noblesville in Hamilton County, Indiana. We are returning a copy of the approved work plan for your records.

- **This letter serves as your Notice to Proceed for all preconstruction activities as outlined in Zayo Bandwidth’s approved work plan.**
- **This letter serves as your Notice to Proceed for all relocation construction activities as outlined in Zayo Bandwidth’s approved work plan.**

In accordance with 105 IAC 13-3-1(c), the following information is provided. The dates listed in items (4) and (5) below are the currently scheduled dates.

- | | |
|---|---|
| (1) Name or route number: | Logan St |
| (2) Geographical limits: | Along South State Rd 19 from approximately 80 ft North of Conner St to Logan St then East along Logan Street from South State Rd 19 to approximately 375 ft east of South State Rd 19 |
| (3) General description of work: | Bridge Widening, Deck Replacement, Path & Sidewalks |
| (4) Date approved work plan will be needed: | March 23, 2018 |
| (5) Letting date: | April 23, 2018 |
| (6) Name of designer and contact information: | Bryan Wright, P.E., S.E. – Butler, Fairman & Seufert, Inc.,
E: BWright@BFSEngr.com , P: 317-713-4615 |
| (7) Major or minor project: | Minor |

If you have any questions on this subject please contact Kevin A. Hintz, P.E., Butler, Fairman & Seufert, Inc., 8450 Westfield Blvd. Suite 300, Indianapolis, Indiana, 46240, P: (317) 713-4615, F: (317) 713-4616, UC@BFSEngr.com. Thank you for your attention to these matters.

Sincerely;

Kevin A. Hintz, P.E.
 Utility Coordinator

Cc: Bryan Wright, P.E., S.E., BF&S
 Ted Foster, BF&S



Date: 03/29/2018

Subject:

Utility Relocation Work Plan for:	Zayo Bandwidth
Facility Type:	Fiber Optic/Communications

Section 1: General Information

A. INDOT/LPA Project Information

1. DES NO.:	N/A
2. Route Number:	Logan St
3. Location:	Along South State Rd 19 from approximately 80 ft North of Conner St to Logan St then East along Logan Street from South State Rd 19 to approximately 375 ft east of South State Rd 19
4. Work Type:	Bridge Widening, Deck Replacement, Path & Sidewalks
5. Letting Date:	September 1, 2018
6. Date Work Plan Needed	July 2018
7. Target Date for Utility to be out of conflict with INDOT Project	September 1, 2018
Intermediate Phase	NA
Intermediate Phase	NA

B. Utility Designated Contact – Information

1. Designated Contact Name:	Waylon Higgins
2. Office telephone:	(765) 341-1199
3. Mobile telephone:	(765) 341-1199
4. Email address:	Waylon.higgins@zayo.com
5. Agency name	Zayo Bandwidth
6. Address:	9209 Castlegate Dr
7. City, State, Zip Code:	Indianapolis, IN 46256
8. Construction Emergency Contact:	
Name:	Waylon Higgins
Number:	(765) 341-1199

C. By signing here, the Utility has determined to the best of their ability that they do not have facilities within the project area:

 Signature of Utility Representative

 Print Name

 Date

Note: A signature by the utility representative at item "(C)" fulfills the requirement to complete the rest of this form and affirms their contact information above is correct

D. INDOT/LPA Utility Coordinator Contact Information

1.	Utility Coordinator Name:	Kevin A. Hintz, P.E.
2.	Office Telephone:	317-713-4615
3.	Mobile Telephone:	317- 627-501 213-5947
4.	Email Address:	uc@bfsengr.com
5.	Agency Name:	Butler, Fairman & Seufert, Inc.
6.	Address:	8450 Westfield Blvd., Suite 300
7.	City, State, Zip Code	Indianapolis, Indiana 46240

Section 2: A narrative description of the facility relocation that will be required. [IAC 13-3-3(c)]

- A. Describe what types of existing active and inactive facilities are present.
Zayo has an active 144 fiber and 2 handholes within the Limits of the project

- B. Describe the location of existing active and inactive facilities.
See included drawing

- C. Describe what will be done with existing active and inactive facilities.
See included Drawing

- D. Describe the details of the proposed new facilities.
Per the attached drawing, Zayo will place to poles 10' from the bridge on each side of the river, and place a temporary aerial cable. The temp cable will tie in to the existing handholes on each side of the bridge, and the existing cable in the bridge will be removed from service and removed from the duct if possible. Once bridge construction is complete and the 2-2" ducts are available to Zayo, they will place a new fiber optic cable in the ducts, and remove the temporary aerial cable from service. Ad remove the poles.

- E. Describe the proposed location of the new facilities.
See Attached drawing

- F. By signing here, the Utility has determined to the best of their ability that they have facilities within the project area and the facilities are not in conflict with the project based upon the plans received on **<Enter Date Received Plans>**

Signature of Utility Representative

Print Name

Date

Note: A signature by the utility representative at item “(F)” fulfills the requirement to complete the rest of this form and affirms their contact information above is correct.

Section 3: A statement whether the facility relocation is or is not dependent on the acquisition of additional property interests with a description of that work. [IAC 13-3-3(c) (2) (B)]

Not Dependent

Section 4: A statement whether the utility is or is not willing to allow the INDOT contractor to do the required work as part of the highway contract. [IAC 13-3-3(c) (3)]

The placement of the new ducts will be performed by the bridge contractor. All other work will be completed by a contractor chosen by Zayo

Section 5: From the date the work plan is approved by both parties; please provide the Utility’s pre-construction scheduling information. [IAC 13-3-3(c) (4), IAC 13-3-3(c) (5)]

A.	The expected lead time in calendar days to obtain required permits:	7
B.	The expected lead time in calendar days to obtain materials:	14
C.	The expected lead time in calendar days to schedule work crews:	14
D.	If the contractor is being selected by competitive bid what is the date of selection?	TBD
E.	The expected lead time in calendar days to obtain new property interests:	NA
F.	The earliest date when the utility could begin to implement the pre-construction activities of the work plan:	04/18/2018
G.	The total number of calendar days for pre-construction activities: (accounting for concurrent activities)	14

Section 6: The Utility Construction Scheduling Information. [IAC 13-3-3(c) (4), IAC 13-3-3(c) (5)]

- A. A statement whether the facility relocation is or is not dependent on work to be done by another utility with a description of that work. [IAC 13-3-3(c)(2)(A)(i)]
1. Utility A, with a description of the required work.
Not Dependent

 2. Utility B, with a description of the required work.
Not Dependent

 3. Utility C, with a description of the required work.
Not Dependent
- B. A statement whether the facility relocation is or is not dependent on work to be done by the department or the department's contractor with a description of that work. [IAC 13-3-3(c)(2)(A)(ii)]
1. Work item A
Zayos work plan is dependent upon the placement of 2-2" ducts underneath the north sidewalk of the bridge
 2. Work item B
 3. Work item C
- C. How many calendar days after the events identified in Sec 6 A and B are completed can the utility begin construction: **Construction can BEGIN prior to that work being completed, but the work plan can not be completed until that work is complete**
- D. The number of calendar days to complete the relocation work: **30**

Zayo Bandwidth shall provide the 2-inch conduit to be placed on the bridge along with any couplings or other material needed to complete the installation. Zayo Bandwidth will also be billed for the labor to install the conduit per a phone call with Waylon Higgins on April 4, 2018. EAF

Section 7: A drawing of sufficient detail with station, offset, elevations, and scale to show the proposed location of the facility relocation, which takes precedence over the narrative description of the work, needs to be on INDOT Construction drawings. [IAC 13-3-3(c) (6)]. Plans must be attached to this Work Plan Document.
Included

Section 8: For each work plan the utility shall include a cost estimate for the facility relocation. For reimbursable work the estimate will identify betterment and salvage which is not reimbursable. [IAC 13-3-3(d)]
NA

Section 9: For work the utility is entitled to be compensated by the Department, the work plan shall include documentation of property interests and compensable land rights. [IAC 13-3-3(d)]
NA

Section 10: The implementation of this approved work plan is dependent upon the issuance of: (a notice to proceed will be provided when items in Section 6 are accomplished)

Items Completed	Yes	Not Applicable
An executed reimbursement agreement with INDOT/LPA:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
A relocation permit from INDOT/LPA:	<input checked="" type="checkbox"/>	<input type="checkbox"/>

(Note: Double-click on box in Yes or NA to mark it with an "X")

KAH



Submitter Signature

03/29/2018

Date

Brian Cravens (Agent for Zayo)

Submitter Name Printed

INDOT/LPA use only below this point ----- INDOT/LPA use only below this point

INDOT/LPA use only below this point ----- INDOT/LPA use only below this point

The following sections are to be used by INDOT personnel to review the utility relocation work plan.

Section 11: The Department shall review the work plan to ensure that it: [IAC 13-3-3(e)]

Description	Yes	No	Initials
(1.a) is compatible with department permit requirements	<input checked="" type="checkbox"/>	<input type="checkbox"/>	KAH
(1.b) is compatible with the project plans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	KAH
(1.c) is compatible with the construction schedule	<input checked="" type="checkbox"/>	<input type="checkbox"/>	KAH
(1.d) is compatible with other utility relocation work plans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	KAH
(2.a) has reasonable relocation scheme	<input checked="" type="checkbox"/>	<input type="checkbox"/>	KAH
(2.b) has a reasonable cost for compensable work	<input type="checkbox"/> N/A	<input type="checkbox"/>	KAH

(Note: Double-click on box under Yes or No to mark it with an "X")

Comments on any sections (1.a – 2.b) that were marked No:

Kevin A. Hintz
Reviewer Signature

4-24-18
Date

Kevin A. Hintz, P.E.
Reviewer Name Printed
Utility Coordinator

Section 12: Approved Work Plan. [IAC 13-3-3(f)]

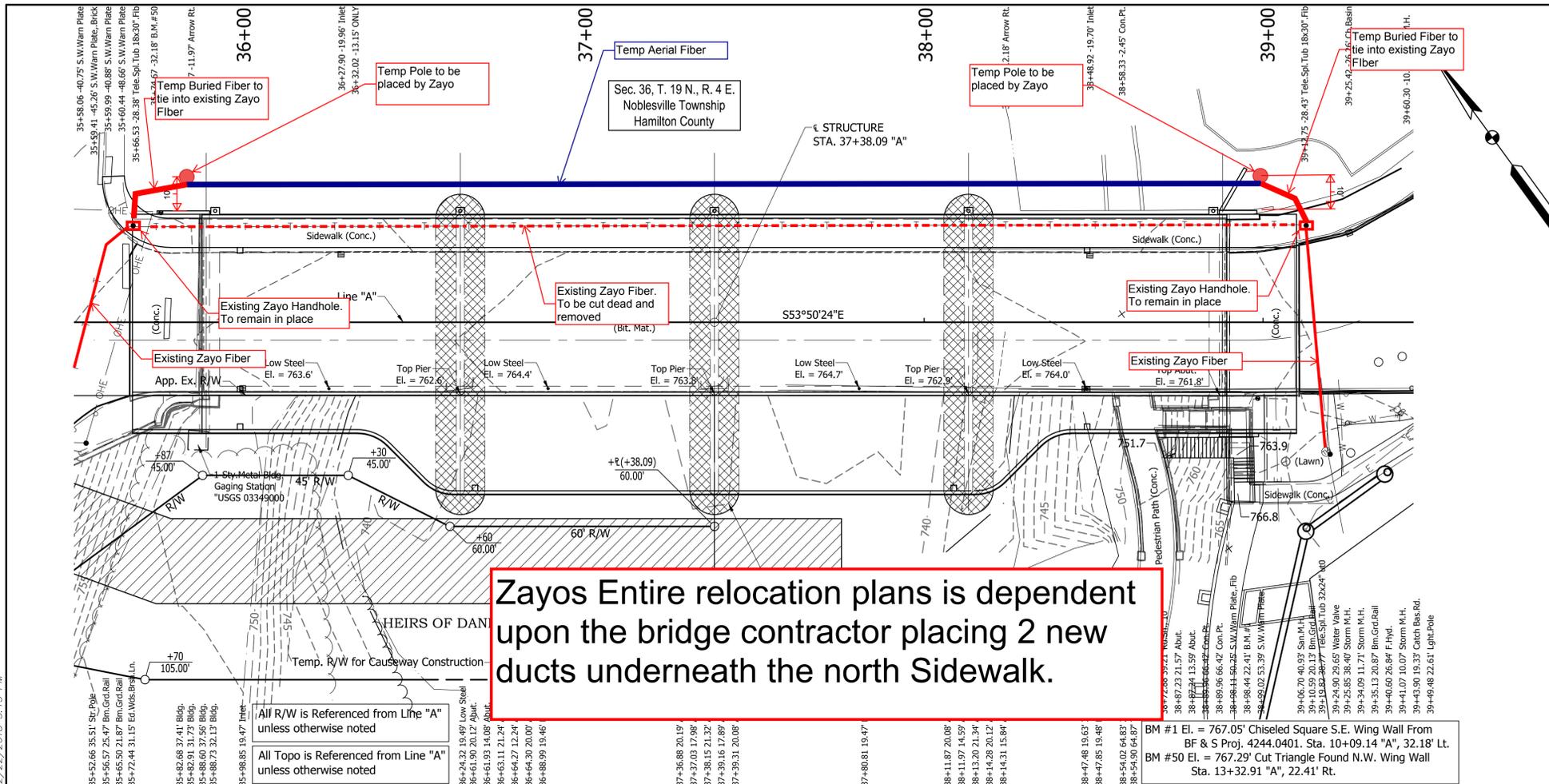
I have reviewed the work plan and found it acceptable.

Bryan Wright
Project Manager Signature

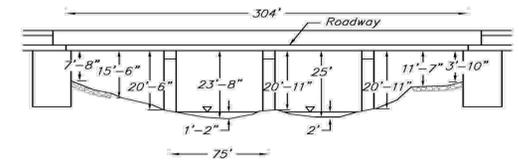
4/24/18
Date

Bryan Wright
Project Manager Name Printed

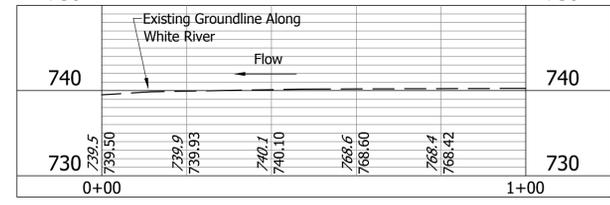
H:\1606300\0000\ProDevelopment\Design\Drawings\6063B211.dwg Donald Sheets Plot: 3/1/2018 2:21 PM Save: 2/22/2018 3:13 PM



Zayos Entire relocation plans is dependent upon the bridge contractor placing 2 new ducts underneath the north Sidewalk.



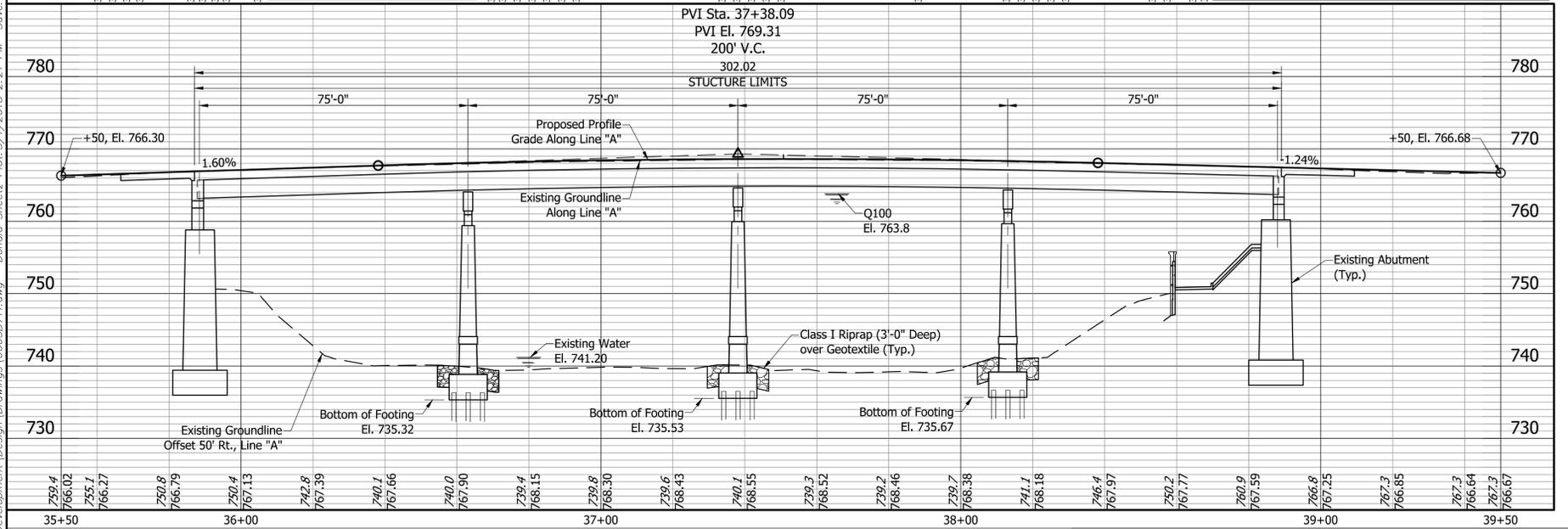
EXISTING STRUCTURE
The Existing Structure is a 4 Span Continuous Steel Beam Bridge. The Out to Out Width = 53.4'±. Portions of existing structure to be removed.



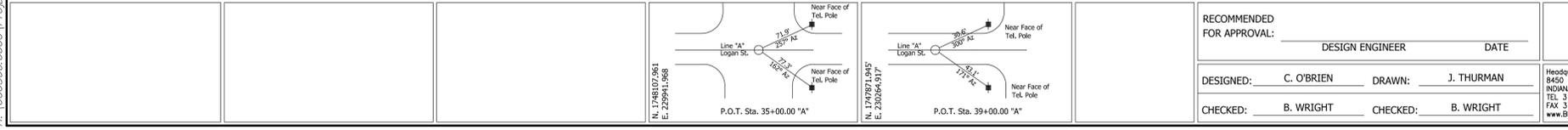
EXISTING PROFILE ALONG WHITE RIVER
Scale: Horz. 1" = 20'-0"

HYDRAULIC SCOUR DATA	
Q100 FLOW	46,000 Ft./Sec.
Q100 ELEVATION	El. 763.8
Q100 CONTRACTION SCOUR	1.36 Ft.
Q100 TOTAL SCOUR	12.05 Ft.
Q100 MAX VELOCITY	11.10 FT./SEC.

EARTHWORK	
ITEM	EXISTING STRUCTURE
FILL + 20%	Cys.
COMMON EXCAVATION	Cys.
BORROW	Cys.
AGGREGATE FOR END BENT BACKFILL	Cys.
FOUNDATION EXCAVATION (UNCLASSIFIED)	Cys.
WET EXCAVATION	Cys.



LAYOUT
COMPOSITE STEEL W-BEAM BRIDGE
4 SPANS AT 75'-0", NO SKEW,
42'-10" CLEAR ROADWAY, ON LOGAN STREET
OVER WHITE RIVER



BRIDGE NO.207 OVER WHITE RIVER HAMILTON COUNTY

RECOMMENDED FOR APPROVAL: _____ DESIGN ENGINEER DATE _____

DESIGNED: C. O'BRIEN DRAWN: J. THURMAN

CHECKED: B. WRIGHT CHECKED: B. WRIGHT

Headquarters: 8450 WESTFIELD BLVD., SUITE 300 INDIANAPOLIS, IN 46240-8302 TEL: 317-713-4615 FAX: 317-713-4616 www.BFSeng.com

Branch Locations: FORT WAYNE 260-459-1532 LOUISVILLE 502-593-1996 LAFAYETTE 765-423-5602 MERRILLVILLE 219-769-2333 PLAINFIELD 317-839-3242

HORIZONTAL SCALE	BRIDGE FILE
1" = 20'-0"	HAMILTON 207
VERTICAL SCALE	DESIGNATION
1" = 10'-0"	
SURVEY BOOK	SHEET
ELECTRONIC	10 OF -
CONTRACT	PROJECT



Forming The Future™

PATTERN 17986

Aged Benicia Block

Large interlocking splitfaced blocks with filler panel

GrayLastic™

Elastomeric Urethane - up to 100 uses.
 Mold bonded to 0.75" plywood. Add 1.125" to liner thickness.

Stone & Rock

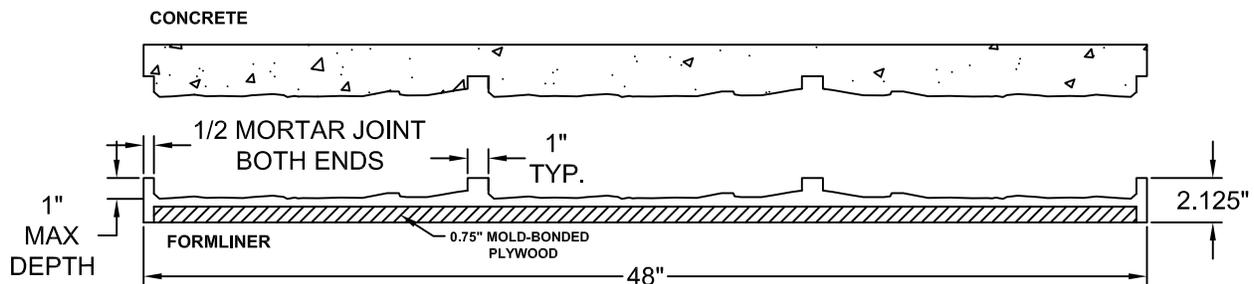
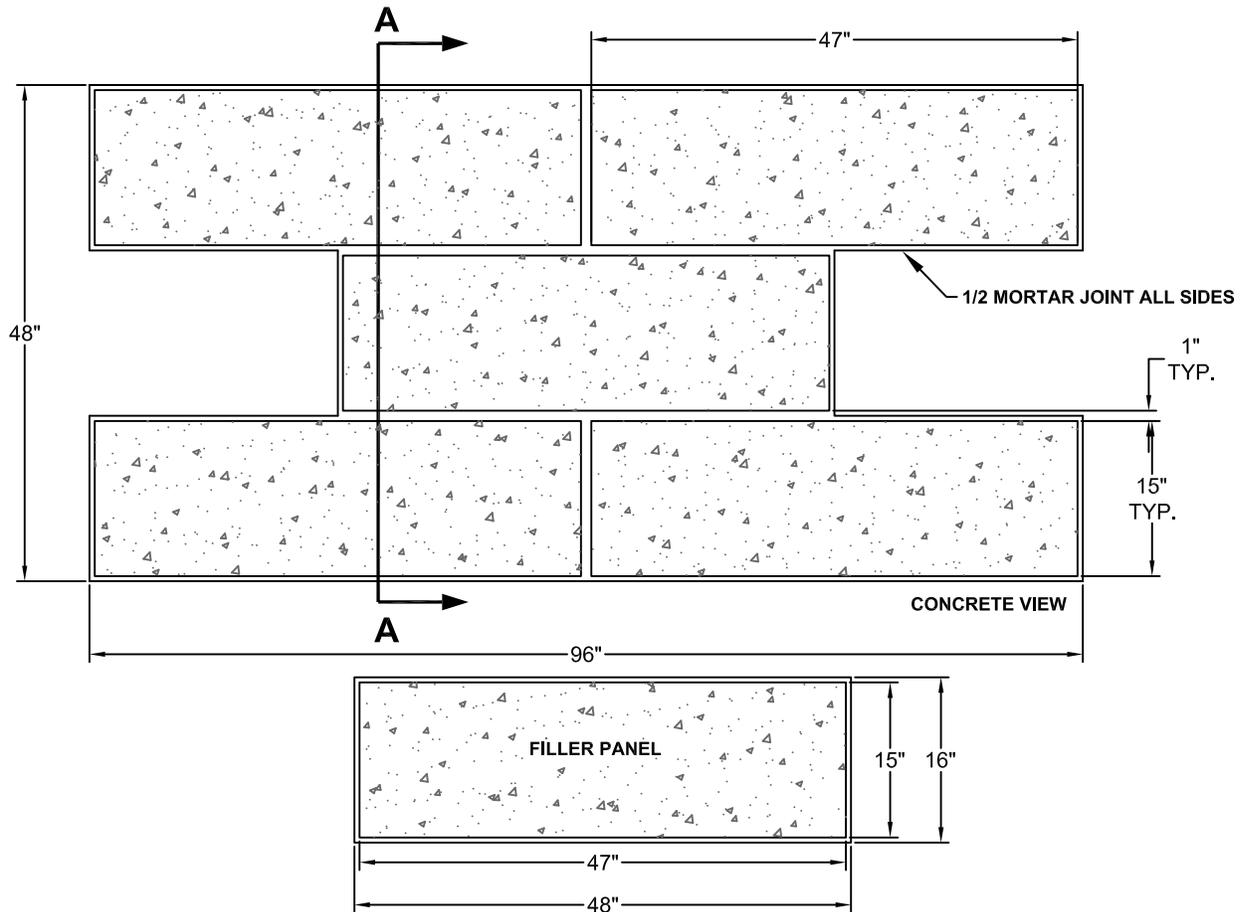
Part Size: 96" W x 48" H

Block Size: 47" W x 15" H

Max Depth: 1.0"

Grout Width: 1"

See assembly pattern on sheet 2 of 2



SECTION A-A
FORMLINER DETAIL

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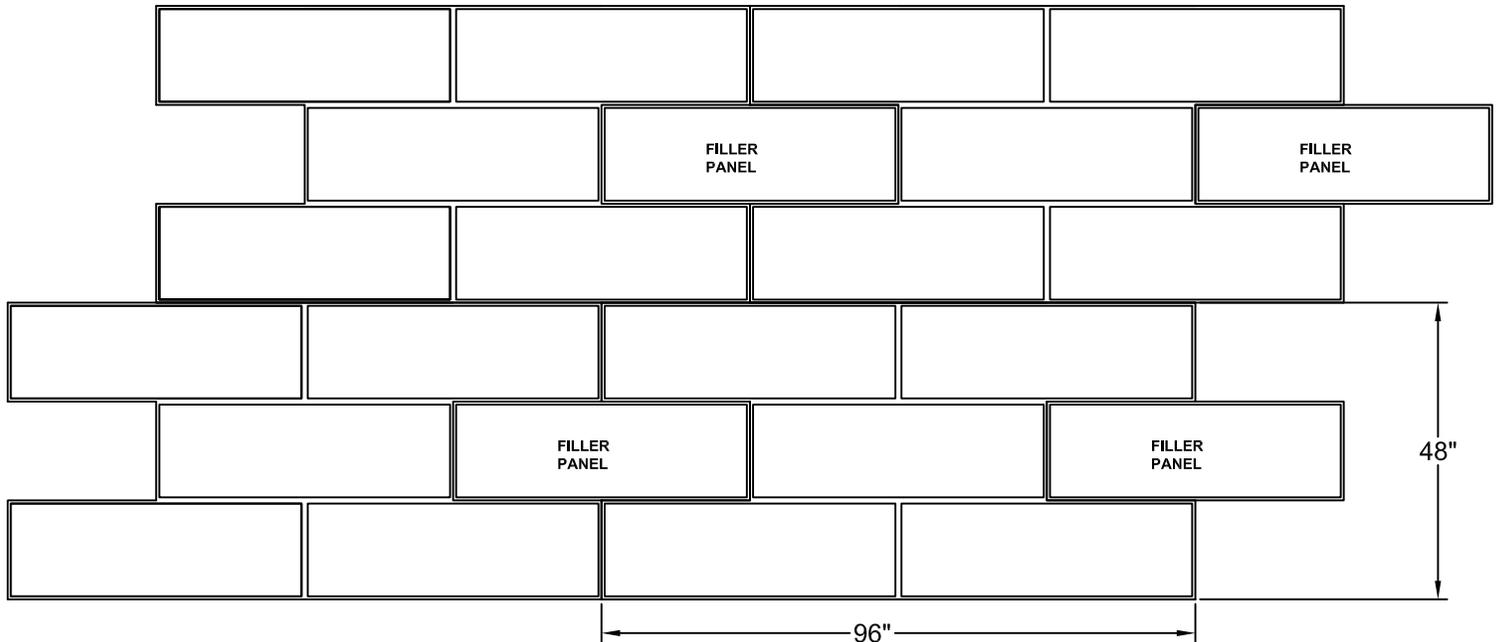
Stone & Rock

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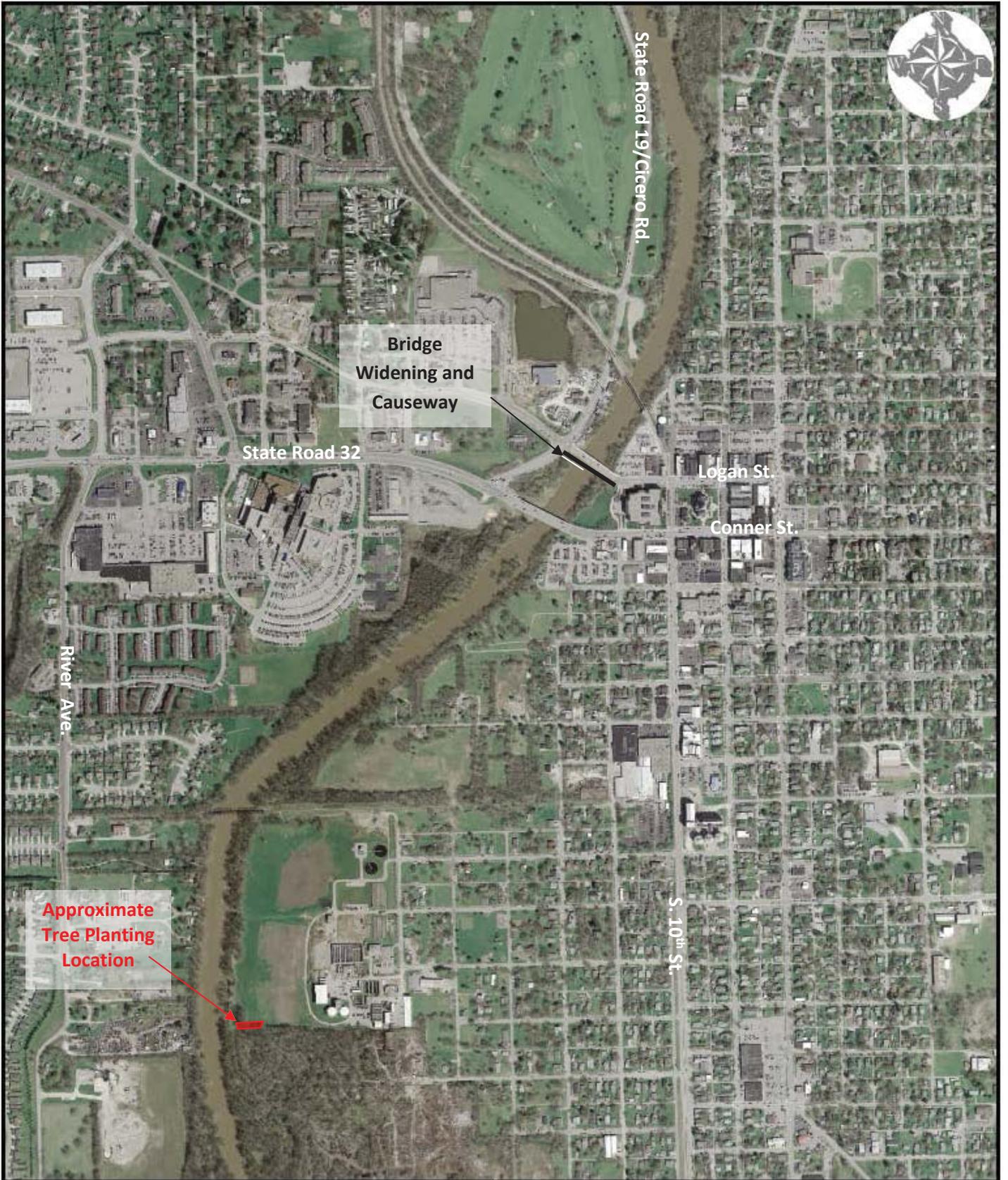
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Pattern can be requested in AutoCad format.

File Name: S-17986-GR-12-31-09

Page 2 of 2



Bridge
Widening and
Causeway

State Road 32

State Road 19/Cicero Rd.

Logan St.

Conner St.

River Ave.

Approximate
Tree Planting
Location

S. 10th St.



0 210 420 840 Feet

Aerial Overview
Logan Street Bridge Widening
Tree Mitigation Proposal

Logan Street Bridge

Staging Area for Contractor

Legend

 Bridge No. 207

Bridge No. 207

Staging Area for Logan Street Bridge Construction

S 5th St

Maple Ave



300 ft