

REQUEST FOR PROPOSALS

to Design and Build the
I-69 Section 6 Contract 5 Project
through a Public-Private Agreement

VOLUME II **TECHNICAL PROVISIONS**

a Project of the
INDIANA FINANCE AUTHORITY
ISSUED MARCH 12, 2020

Indiana Finance Authority
One North Capital Avenue, Suite 900
Indianapolis, Indiana 46204

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1 GENERAL SCOPE OF WORK

1.1 General

Design-Build Contractor shall perform the Work in accordance with the PPA Documents, including Project Standards, this Section 1 and its attachments; Governmental Approvals; and Governmental Rules.

1.1.1 Interpretation

In accordance with Section 24.15 of the PPA, the Parties acknowledge that IFA is the Party contracting with Design-Build Contractor and INDOT will be involved in Project administration and implementation. The Parties further acknowledge that these Technical Provisions reference various rights and responsibilities of IFA and INDOT. Any reference to INDOT that may, on its face, appear to set forth a particular responsibility, shall be interpreted as a responsibility of IFA, which IFA may delegate to INDOT in whole or in part. In the case of any ambiguity or question as to whether IFA or INDOT is the relevant party, IFA shall make a determination as to the relevant party, in its sole discretion.

1.2 Project Identification and Description

1.2.1 Project Identification

Contract No.: R-41536
Project No.: 1801695
Roadway Des. No.: 1802075 (Segment A and C), 1801695 (Segment B and D), and 1901381 (Segment E)
Structure Des. No.: See Table 1-3. Specific Work is described in Section 14 (Structures).
Route No.: Interstate 465 & Interstate 69
Counties: Marion & Johnson
District: Greenfield & Seymour
Federal Oversight: Yes
Project Limits: The Project limits are described in Section 1.2.2.

1.2.2 Project Description

The Project includes the conversion of existing SR 37 to future I-69 from Fairview Road to I-465, as well as widening and reconstruction of I-465 from I-70 to I-65 on the southwest side of Indianapolis. The new I-69 route will depart the existing SR 37 alignment at Epler Avenue and traverse northwesterly to a new system interchange with I-465, west of the existing Harding Street interchange.

A general map of Project limits and Project segments is shown in Attachment 1-3 (Project Segments Exhibit). Project limits are the minimum limits of Construction Work along the various roadways within the Planned ROW Limits as defined by approximate stationing in Attachment 1-3 (Project Segments Exhibit). The Project segments have been developed for convenience of describing the Work within the Project limits, are defined by approximate stationing in Attachment 1-3 (Project Segments Exhibit), and are further described below.

1. Segment A – The western Project limit on I-465 begins at the I-465/I-70 interchange. This Segment includes added travel lanes and pavement rehabilitation ending west of the Mann Road partial interchange, connecting with Segment B.
2. Segment B – Connecting with Segment A, this Segment includes added travel lanes and full reconstruction on I-465 beginning west of Mann Road and ending west of the US 31/East Street interchange, connecting with Segment C. Limits include the I-465 and I-69 system interchange ending north of Epler Avenue, connecting with Segment D.
3. Segment C – Connecting with Segment B, this Segment includes added travel lanes and pavement rehabilitation of I-465 beginning west of the US 31/East Street interchange, extending to the eastern Project limit west of the I-465/I-65 interchange.
4. Segment D – Connecting with Segment B, this Segment includes added travel lanes and full reconstruction of existing SR 37 as part of the conversion to future I-69. Limits for I-69 begin north of Epler Avenue and end north of Wicker Road, connecting with Segment E.
5. Segment E – Connecting with Segment D, this Segment includes added travel lanes and full reconstruction of existing SR 37 as part of the conversion to future I-69. Limits for I-69 begin north of Wicker Road and extend to the southern Project limit south of Fairview Road.

The Planned ROW Limits are shown in Attachment 1-2 (Planned ROW Limits). The Planned ROW Limits do not include areas needed for temporary traffic control devices or local street detours or driveway Construction Work. The Temporary ROW Limits are shown in Attachment 1-4 (Temporary ROW Limits) representing the areas where Design-Build Contractor shall construct driveways for access to commercial and residential properties.

Ramps within the Planned ROW Limits include those shown in Table 1-1. The minimum limits for ramp Work shall be as described in Table 1-1 and as further defined by approximate stationing in Attachment 1-3 (Project Segments Exhibit).

Table 1-1: Ramps within the Planned ROW Limits

Segment	Description
A	I-465 Westbound to I-70 (System Exit)
A	SR 67 to I-465 Eastbound (Service Entrance)
A	I-465 Westbound to SR 67 (Service Exit)
C	US 31 Southbound to I-465 Westbound (Service Entrance)
B	I-69 Northbound to I-465 Eastbound (System)
B	I-69 Northbound to I-465 Westbound (System)
B	I-465 Eastbound to I-69 Southbound (System)
B	I-465 Westbound to I-69 Southbound (System)
B	Harding Street to I-465 Eastbound (Service Entrance)
B	I-465 Eastbound to Harding Street (Service Exit)
B	Harding Street to I-465 Westbound (Service Entrance)
B	I-465 Westbound to Harding Street (Service Exit)
B	Mann Road to I-465 Eastbound (Service Entrance)
B	I-465 Westbound to Mann Road (Service Exit)
C	I-465 Eastbound to US 31 Southbound (Service Exit)

Segment	Description
C	I-465 Eastbound to US 31 Northbound (Service Exit)
C	I-465 Westbound to US 31 Northbound (Service Exit)
C	US 31 Northbound to I-465 Eastbound (Service Entrance)
C	US 31 Southbound to I-465 Westbound (Service Entrance)
C	I-465 Eastbound to I-65 Southbound (System)
D	I-69 Northbound to Epler Avenue Exit (Service Exit)
D	Epler Avenue to I-69 Southbound (Service Entrance)
D	Southport Road to I-69 Northbound (Service Entrance)
D	I-69 Northbound to Southport Road (Service Exit)
D	Southport Road to I-69 Southbound (Service Entrance)
D	I-69 Southbound to Southport Road (Service Exit)
E	I-69 Northbound to County Line Road (Service Exit)
E	County Line Rd to I-69 Northbound (Service Entrance)
E	I-69 Southbound to County Line Road (Service Exit)
E	County Line Road to I-69 Southbound (Service Entrance)

Local streets within the Planned ROW Limits include those shown in Table 1-2. The minimum limits of local street Work shall be as described in Table 1-2 and as further defined by approximate stationing in Attachment 1-3 (Project Segments Exhibit).

Table 1-2: Local Streets within the Planned ROW Limits

Location	Segment	Description
West Mooresville Road Bypass	A	From east approach of intersection of Mooresville Road and Tincher Road to west approach of intersection of Mooresville Road and Norcroft Drive
Mann Road	B	From south approach of intersection of Mann Road and W. Thompson Road to north approach of intersection of Mann Road and I-465 WB exit ramp to Mann Road
West Thompson Road	B	New cul-de-sacs just west of Harmon (State) Ditch and approximately 2000 feet west of S. Harding Street
South Concord Street	B	From north approach of intersection of S. Concord Street and Byrkit Street to approximately 110 feet north of same intersection with a dead-end standard turning area into two residential drives
South Harding Street	B	From south approach of intersection of S. Harding Street and I-465 EB Entrance/Exit ramps to north approach of intersection of S. Harding and I-465 WB Entrance/Exit ramps
Harding Court	B	New alignment and cul-de-sac
Bluff Road	B	Overhead bridge construction on I-465
South Meridian Street	B	Overhead bridge construction on I-465
Madison Avenue	C	From north approach of intersection of Madison Avenue and Lick Creek Parkway S. Drive to just south of intersection of Madison Avenue and first private driveway north of I-465
South Keystone Avenue	C	From south approach of intersection of S. Keystone Avenue to Redfern Drive. to just south of intersection of S. Keystone Avenue and Fox Harbour Drive

Location	Segment	Description
Carson Avenue	C	From north approach of intersection of Carson Avenue and Redfern Drive to south of intersection of Carson Avenue and Carson Drive
West Epler Avenue	D	From west approach of intersection of W. Epler Avenue and I-69 SB Entrance ramp to east approach of intersection of W. Epler Avenue and Kopetsky Drive
West Edgewood Avenue	D	From west approach of intersection of W. Edgewood Avenue and S. Belmont Avenue to west of intersection of W. Edgewood Avenue and Kopetsky Drive
West Banta Road	D	From west approach of intersection of W. Banta Road and S. Belmont Avenue to west of intersection of W. Banta Road and Sonesta Drive
South Belmont Ave.	D	From north approach of intersection of S. Belmont Avenue and W. Southport Road to north approach of intersection of S. Belmont Avenue and W. Banta Road
West Southport Road	D	From west approach of intersection of W. Southport Road and S. Belmont Avenue/Wellingshire Boulevard to west approach of intersection of W. Southport Road and S. Harding Street
Wicker Road	E	From west approach of intersection of Wicker Road and West Connector Road to west approach for Wicker Road and S. Belmont Avenue
Glenns Valley Lane	E	From east approach of intersection of W. Bluff Road and West Connector Road to intersection with driveway for Glenns Valley United Methodist Church
West County Line Road	E	From west approach of intersection of W. County Line Road and I-69 Southbound Ramps to intersection with Morris Road
West Connector Road	E	From north approach of intersection of W. Connector Road and I-69 Southbound Ramps north to intersection with Wicker Road

Bridge structures within the Planned ROW Limits include those shown in Table 1-3.

Table 1-3: Bridge Structures within Planned ROW Limits

Bridge No.	Segment	Des. No.	Existing Structure Number	Proposed Structure Number	Location	Anticipated Work Type
1	E	1901678	N/A	(37)I69-140-10545-NBL	I-69 NB over County Line Road	New Bridge
2	E	1901679	N/A	(37)I69-140-10546-SBL	I-69 SB over County Line Road	New Bridge
3	E	1901675	037-49-05024 BNBL	(37)I69-140-10543-NBL	I-69 NB over Pleasant Run Creek	Replacement Bridge
4	E	1901676	037-49-05024 JASB	(37)I69-140-10544-SBL	I-69 SB over Pleasant Run Creek	Replacement Bridge

TECHNICAL PROVISIONS – Section 1
 General Scope of Work

Bridge No.	Segment	Des. No.	Existing Structure Number	Proposed Structure Number	Location	Anticipated Work Type
5	E	1901689	N/A	49-04516F	West Connector Road over Pleasant Run Creek	New Bridge
6	E	1901680	N/A	(37)I69-141-10547-NBL	I-69 NB over Wicker Road	New Bridge
7	E	1901681	N/A	(37)I69-141-10548-SBL	I-69 SB over Wicker Road	New Bridge
8	E	1901691	CV 037-049-141.56	(37)I69-141-10550-NBL	I-69 over Orme Ditch	Replacement Bridge
9	D	1901693	N/A	(37)I69-142-10552	Southport Road over I-69	New Bridge
10	D	1901715	N/A	(37)I69-142-10553-NBLR	Southport NBEN over Little Buck Creek	New Bridge
11	D	1901721	037-49-05025 BNBL	(37)I69-49-10555-NBL	I-69 NB over Little Buck Creek	Replacement Bridge
12	D	1901722	037-49-05025 JASB	(37)I69-49-10556-SBL	I-69 SB over Little Buck Creek	Replacement Bridge
13	D	1901717	N/A	(37)I69-142-10554-SBLR	Southport SBEX over Little Buck Creek	New Bridge
14	D	1901749	N/A	49-4506-L	Belmont Avenue over Little Buck Creek	Replacement Bridge
15	D	1901757	N/A	(37)I69-143-10560-NBL	I-69 NB over Banta Road	New Bridge
16	D	1901758	N/A	(37)I69-143-10561-SBL	I-69 SB over Banta Road	New Bridge
17	D	1901760	N/A	(37)I69-143-10563-NBL	I-69 NB over Edgewood Avenue	New Bridge
18	D	1901761	N/A	(37)I69-143-10564-SBL	I-69 SB over Edgewood Avenue	New Bridge

TECHNICAL PROVISIONS – Section 1
 General Scope of Work

Bridge No.	Segment	Des. No.	Existing Structure Number	Proposed Structure Number	Location	Anticipated Work Type
19	D	1901764	N/A	(37)I69-144-10565-NBL	I-69 NB over Epler Avenue	New Bridge
20	D	1901766	N/A	(37)I69-144-10567-SBL	I-69 SB over Epler Avenue	New Bridge
21	A	1900750	I465-157-04721 B	I465-157-10516	Mooreville Road Bypass over I-465	Replacement Bridge
22	B	1901768	I465-158-04459 B	I465-158-10569	Mann Road over I-465	Replacement Bridge
23	B	1901769	I465-158-04458 CEBL	I465-158-10570-EBL	I-465 EB over Harmon (State) Ditch	Replacement Bridge
24	B	1901770	I465-158-04458 CWBL	I-465-158-10571-WBL	I-465 WB over Harmon (State) Ditch	Replacement Bridge
25	B	1901799	I465-159-04456 EEBL	I465-159-10580-EBL	I-465 EB over White River	Replacement Bridge
26	B	1901800	I465-159-04456 EWBL	I465-159-10581-WBL	I-465 WB over White River	Replacement Bridge
27	B	1901801	N/A	I-465-5-10582-NWDR	I-69 NB to I-465 WB over I-465	New Bridge
28	B	2001108	N/A	I69-144-10669-WSDR	I-465 WB to I-69 SB over I-69 NB to I-465 WB	New Bridge
29	B	2001109	N/A	I69-144-10670-WSDR	I-465 WB to I-69 SB over I-465 and I-465 EB to Harding	New Bridge
30	B	1901822	N/A	I465-5-10589-NEDR	I-69 NB to I-465 EB over I-465 EB to Harding	New Bridge
31	B	1901817	I465-161-08742	I465-161-10588-EWBL	I-465 over Haueisen Ditch	Replacement Bridge

TECHNICAL PROVISIONS – Section 1
General Scope of Work

Bridge No.	Segment	Des. No.	Existing Structure Number	Proposed Structure Number	Location	Anticipated Work Type
32	B	1901825	N/A	I465-4-10590-WSDR	I-465 WB to I-69 SB over Harding to I-465 WB	New Bridge
33	B	1901826	N/A	I465-4-10591-WSDR	I-465 WB to I-69 SB over Harding Street	New Bridge
34	B	2001107	I465-161-04455-BEBL	I465-161-10668-EBL	I-465 EB over Harding Street	Replacement Bridge
35	B	1901752	I465-161-04455-BWBL	I465-4-10559-WBL	I-465 WB over Harding Street	Replacement Bridge
36	B	1901829	I465-161-02246-BEBL	I465-161-2828-EBL	I-465 EB over The Indiana Rail Road Company	Replacement Bridge
37	B	1901830	I465-161-02246-JBWB	I-465-161-2829-WBL	I-465 WB over The Indiana Rail Road Company	Replacement Bridge
38	B	1901832	I465-162-04454-CEBL	I-465-162-10594-EBL	I-465 EB over Bluff Road	Replacement Bridge
39	B	1901834	I465-162-04454-BWBL	I-465-162-10595-WBL	I-465 WB over Bluff Road	Replacement Bridge
40	B	1901759	I465-162-04452-CEBL	I-465-162-10562-EBL	I-465 EB over Meridian Street	Replacement Bridge
41	B	1901765	I465-162-04452-BWBL	I-465-162-10566-WBL	I-465 WB over Meridian Street	Replacement Bridge
42	B	1901837	I465-162-04451-BWBL	I-465-162-10598-WBL	I-465 WB over Lick Creek	Replacement Bridge
43	C	N/A	(I465)31-49-04450 B	N/A	US 31 SB Ramp over I-465 and Lick Creek	No Work

TECHNICAL PROVISIONS – Section 1
General Scope of Work

Bridge No.	Segment	Des. No.	Existing Structure Number	Proposed Structure Number	Location	Anticipated Work Type
44	C	1900744	031-49-04448 B	031-49-04448 C	US 31 over I-465 and Lick Creek	Bridge Rehabilitation
45	C	N/A	(I465)31-49-04449 B	N/A	US 31 NB Ramp over I-465 and Lick Creek	No Work
46	C	1700949	I465-163-04447 BEBL	I465-163-04447 CEBL	I-465 EB over Lick Creek	Bridge Preventative Maintenance - Overlay
47	C	1900757	(I465)431-49-4445 B	(I465)431-49-10517	Madison Ave over I-465 and Lick Creek	Replacement Bridge
48	C	N/A	I465-164-02245	N/A	L & I Railroad Company over I-465	No Work
49	C	1900748	I465-164-04444 CEBL	I465-164-04444 DEBL	I-465 EB over Lick Creek	Bridge Rehabilitation
50	C	1900749	I465-164-04444 BWBL	I465-164-04444 CWBL	I-465 WB over Lick Creek	Bridge Rehabilitation
51	C	1701345	I465-164-04798	I465-164-10255	Keystone Avenue over I-465	Replacement Bridge
52	C	1901390	CV I465-049-00.30	N/A	I-465 over McFarland Creek	Bridge Rehabilitation
53	C	1900758	I465-165-04442 B	I465-165-10518	Carson Avenue over I-465 and Lick Creek	Replacement Bridge
54	A	N/A	I465-155-09161	N/A	Hanna Avenue over I-465	No Work
55	A	1901827	I465-156-02152 JB NB	I465-156-02152 JC NB	I-465 NB over SR 67/ Kentucky Avenue & ISRR	Bridge Preventative Maintenance - Overlay

Bridge No.	Segment	Des. No.	Existing Structure Number	Proposed Structure Number	Location	Anticipated Work Type
56	A	1901828	I465-156-02152 BSBL	I465-156-02152 CSBL	I-465 SB over SR 67/ Kentucky Avenue & ISRR	Bridge Preventative Maintenance - Overlay
57	B	N/A	49-3710L	N/A	Thompson Road over Harmon (State) Ditch	No Work

1.2.3 Progress Meetings

Design-Build Contractor shall hold Progress Meetings on a weekly basis, or at a frequency agreed upon with IFA at the field office, or other mutually agreed-upon location. Design-Build Contractor shall document the Progress Meetings with meeting minutes and distribute to IFA for review and comment within three days after the Progress Meetings. At a minimum, Progress Meetings shall be attended by the relevant Key Personnel and the relevant additional personnel listed in Section 1.3.1.2. Design-Build Contractor shall invite the IFA personnel listed in Section 2.3.1 (Overview) and Section 5.2 (IFA Public Involvement Responsibilities) to the Progress Meetings. Other personnel for both Design-Build Contractor and IFA will be invited on an as-needed basis as mutually agreed upon.

Design-Build Contractor shall provide a rolling four-week look-ahead schedule at the Progress Meetings, to include, at a minimum, the number of work crews, work hours, delineation of day-time and night-time Work and the specific portions of the Work to be performed during the four-week period. Design-Build Contractor shall also discuss the status of the Project Schedule, including critical operations and potential problems.

1.2.4 Progress Reports

Design-Build Contractor shall submit a Progress Report to IFA for review and comment on a monthly basis documenting progress of Design Work and Construction Work. Content of the Progress Report shall include, at a minimum:

1. Executive summary
 - a. Overall summary
 - b. Summary of resolutions related to critical issues/significant events since previous Progress Report
 - c. Outstanding critical issues/significant events
2. Progress summaries
 - a. PMP
 - b. Design

- c. Construction
 - d. Railroads
 - e. Utilities
 - f. Environmental
3. Quality - Design and construction
 4. Safety
 5. DBE and EEO compliance
 6. Change management
 - a. Deviations
 - b. Directive Letters
 - c. Change Requests
 - d. Change Orders
 - e. Claims
 7. Public coordination and communication
 8. Schedule
 - a. Major milestone tracking
 - b. Upcoming Activities
 - c. TMP/closures
 - d. Progress photography

1.2.5 Coordination with Other Projects

Design-Build Contractor shall coordinate all Work with other projects in accordance with Section 23 of the PPA and Section 105.07 of the Standard Specifications. The following is a non-comprehensive list of other projects:

1. Citizen's Energy Group, Deep Tunnel Project, under construction, anticipated completion date December 2021.

A non-comprehensive list of INDOT projects that may be under construction within the same time frame as the Project are as follows:

1. I-65/I-70 North Split Project under Contract B-36910 with anticipated construction starting winter 2020\2021 and substantially complete winter 2022\2023.
2. Clear Path 465 under Contract R-38526 with anticipated construction starting winter 2021\2022 and approximate substantial completion in fall 2024.

3. I-69 Section 6 Contract 2 under Contract R-33493: construction started winter 2019\2020 and approximate substantial completion in fall 2022.
4. I-69 Section 6 Contract 3 under Contract R-33541: construction started winter 2019\2020 and approximate substantial completion in spring 2021.
5. I-69 Section 6 Contract 4 or “Contract 4” under Contract R-41542 with anticipated construction starting winter 2021\2022 and approximate substantial completion in spring 2024.
6. SR 135 under Contracts R-42140 and R-40870 with anticipated construction starting spring 2020 and approximate substantial completion fall 2022.
7. US 31 Intersection Improvements under Contract R-40869 with anticipated construction starting summer 2021 and approximate substantial completion fall 2022.
8. US 31 Intersection Improvements with added turn lanes under Contract R-42526 with anticipated construction starting summer 2023 and approximate substantial completion **[NTD: fall 2024]**.
9. Tree Clearing Contract under Contract R-42635 with anticipated construction starting November 2020 and approximate substantial completion March 2021.
10. Three demolition packages under Contracts R-42592, R-42593, and R-42594 with anticipated construction starting spring 2020 and approximate substantial completion fall 2020.

Information on INDOT projects is available on the contract letting page and the 18-month letting list on the INDOT website at:

http://www.in.gov/indot/div/lettings/18MonthsConstLettingDetails_Ext.pdf

Design-Build Contractor shall become fully informed of the conditions relating to construction of these and any other contracts under which the work will be or is now being performed.

Design-Build Contractor shall coordinate access to the Site with other contractor(s). Design-Build Contractor shall afford other contractors reasonable opportunity for the delivery of their materials and the execution of their work, and shall properly integrate, incorporate, and/or coordinate its Work with theirs. Design-Build Contractor shall take due account of all such Work and shall arrange its methods of operation and storage of materials and equipment so as to cause a minimum of interferences with the work to be performed by other contractors, Utilities, or any Governmental Entity.

If any part of the Work depends on proper execution or results on the work of any other contractor, Design-Build Contractor shall promptly report to IFA any defect in work by another contractor which renders it unsuitable for such proper execution and results. Design-Build Contractor's failure to inspect and report such defects shall constitute an acceptance of the other contractor's work as fit and proper for the integration or incorporation of its Work, except as to defects which may develop in the other contractor's work after the execution of Design-Build Contractor's Work.

1.3 Project Management

1.3.1 Personnel

1.3.1.1 Key Personnel

Design-Build Contractor shall provide Key Personnel in accordance with Section 7.3 of the PPA. The following describes the roles and responsibilities of the Key Personnel:

1. **Project Manager:** The Project Manager shall be responsible for all aspects of the Project, including overall design, environmental compliance, construction, quality management, and contract administration. Targeted/desired experience for the Project Manager includes at least 15 years of design-build experience managing the design and construction of major highways, interstate-to-interstate interchanges and bridge structures. The Project Manager shall be assigned to the Project full time and shall be on-Site for the term of the PPA.
2. **Design Manager:** The Design Manager shall be responsible for ensuring the overall Project design is completed and all design requirements are met. Targeted/desired experience for the Design Manager includes at least 10 years of recent experience (design-build experience preferred) managing the design of major highways, interstate-to-interstate interchanges, and bridge structures. The Design Manager must be a Registered Professional Engineer or shall obtain licensure by award of the PPA. The Design Manager shall be assigned to the Project full time and be on-Site when design Activities are being performed. During Construction Work, the Design Manager shall be readily available for on-Site consultation and to coordinate designer-initiated and contractor-initiated plan, design, specification, and quantity revisions.
3. **Structural Design Lead Engineer:** The Structural Design Lead Engineer shall be responsible for ensuring all structural components on the Project are completed and all design requirements are met. Targeted/desired experience for the Structural Design Lead Engineer includes at least 10 years of recent experience (design-build experience preferred) designing major highway bridge structures, interstate-to-interstate interchange bridge structures and having been engineer of record for at least one completed interchange and bridge project similar in scope, budget, schedule and environmental conditions. Targeted/desired experience also includes complex bridge design in accordance with INDOT Design Memorandum No. 17-20. In addition to the criteria listed in the memorandum, complex bridges shall also include accelerated bridge construction (ABC), concrete straddle bents or integral pier caps requiring post-tensioning, spans over 200 feet, and curved bridges with a radius less than 1,000 feet. The Structural Design Lead Engineer must be a Registered Professional Engineer or shall obtain licensure by award of the PPA. The Structural Design Lead Engineer shall be available on-Site for weekly Progress Meetings at the field office.
4. **Construction Manager:** The Construction Manager shall be responsible for managing all aspects of the Construction Work. Targeted/desired experience for the Construction Manager includes at least 10 years of recent management experience, design-build experience preferred, on major highways, interstate-to-interstate interchanges and bridge structure construction with complex maintenance of traffic challenges. The Construction Manager shall be assigned to the Project full time and shall be on-Site for the term of the PPA.

5. Design-Build Coordinator: The Design-Build Coordinator shall be responsible for providing overall coordination between Design Work and Construction Work. The Design-Build Coordinator shall provide oversight and supervision over the technical Work of the design team and work to resolve issues, including review of plans and designer submittals to ensure Project and constructability standards are met. The Design-Build Coordinator shall have a strong understanding of the technical and contractual requirements of the Project. Targeted/desired experience for the Design-Build Coordinator includes at least 10 years of recent experience (design-build experience preferred) with construction of major highways, interstate-to-interstate interchanges and bridge structures. The Design-Build Coordinator shall be assigned to the Project full time and shall be on-Site when Design Work and Construction Work is being performed. During Construction Work, the Design-Build Coordinator shall be readily available for on-Site consultation and coordinate designer-initiated and contractor-initiated plan, design, specification, and quantity revisions.
6. Design Quality Manager: The Design Quality Manager shall be the Lead Engineering Firm's engineer who is responsible for QA/QC for all Design Work that is performed for the Project, including any design changes during the Construction Work and the production of As-Built Drawings. The Design Quality Manager shall include a certification with each design Submittal that all necessary design QC checks have been completed and that any design changes resulting from such checks are incorporated in the Submittal. The Design Quality Manager shall report directly to Design-Build Contractor's executives or Authorized Representative.
7. Construction Quality Manager: The Construction Quality Manager shall be responsible for the overall management and supervision of Design-Build Contractor's construction quality programs and quality assurance. Targeted/desired experience for the Construction Quality Manager includes at least 10 years of recent experience (design-build experience preferred) on major highways, interstate-to-interstate interchanges and bridge structure construction. The Construction Quality Manager shall be assigned to the Project full time upon commencement of construction, as defined in Section 4.5 of the PPA, and shall be on-Site through Final Acceptance. The Construction Quality Manager shall report directly to Design-Build Contractor's executives or Authorized Representative. The Construction Quality Manager shall be delegated the authority to make needed improvements to the quality of Work, including the suspension of the Work, if required.
8. Maintenance of Traffic Manager: Section 12.2.1.1 (MOT Manager) describes roles and responsibilities. Targeted/desired experience for the MOT Manager includes at least 10 years of recent experience (design-build experience preferred) managing maintenance of traffic activities of major highways, interstate-to-interstate interchanges and bridge structure construction with complex maintenance of traffic challenges. The MOT Manager must be a Registered Professional Engineer or shall obtain licensure by award of the PPA. The MOT manager shall be readily available through Final Acceptance. The MOT Manager shall be different from and report to the Construction Manager.
9. Environmental Compliance Manager: The Environmental Compliance Manager shall be responsible for implementation of all the environmental design and construction commitments and conditions identified in the Environmental Determination and Environmental Approvals. The ECM can also be the Level 2 SWQM per Section 7.2.1 (Environmental Personnel) and shall be a full-time, on-Site staff member for the term of the PPA and report to the Design-Build Contractor's Project Manager. The ECM shall

have a minimum of five years of experience with a demonstrated expertise in a similar role with managing environmental construction compliance, permitting compliance, environmental reporting, and overall environmental compliance with transportation construction projects. The ECM shall have the authority to stop or redirect Construction Work as needed at any time to maintain environmental compliance for the Project. The ECM shall be the primary liaison with IFA for any environmental or permitting issues.

10. Utility Coordination Manager: The Utility Coordination Manager shall be responsible for organizing and leading utility coordination Activities. The Utility Coordination Manager shall be certified through INDOT's Utility Coordinator Certification Training and shall have a minimum of five years of experience with demonstrated expertise in a similar role. The Utility Coordination Manager shall be responsible for completing the utility coordination process as defined in Chapter 104 of the *Indiana Design Manual*, 105 IAC 13, and the INDOT Utility Accommodation Policy.
11. Safety Manager: The Safety Manager shall be responsible for developing, implementing, and managing the safety program. The Safety Manager shall report directly to the Project Manager. The Safety Manager shall be assigned to the Project full time and on-Site for the term of the PPA. Targeted/preferred experience for the Safety Manager includes at least 10 years of recent experience (design-build experience preferred) managing complex infrastructure projects as well as five years of construction safety management experience in implementing and managing safety programs and maintaining compliance with health, safety, and environmental regulations during construction activities on major urban freeways. The Safety Manager should have certification from a recognized organization of industry standard such as the Board of Certified Safety Professionals (BCSP), The National Examination Board in Occupational Safety and Health (NEBOSH), or a similar recognized professional Health, Safety and Environmental (HSE) organization. The Safety Manager shall have authority to stop Work and experience in authorizing to stop Work. The Safety manager must be familiar with FHWA work zone safety regulations and targeted/preferred experience shall be at least 10 years of experience working with roadway work zone safety and OSHA regulations.
12. Project Scheduler: The Project Scheduler shall be responsible for developing and maintaining the Project Schedule and associated Submittals, including but not limited to: Project Baseline Schedule, Project Status Schedule, Final Schedule, and time extension requests, if approved. Project Scheduler shall be responsible for schedule change management, incorporating contract revisions, and providing what-if scenarios to assist Design-Build Contractor and IFA. Project Scheduler shall report directly to the Project Manager. Project Scheduler shall be on-Site for attendance of Project meetings and responsible for reporting schedule related progress and potential completion date impacts. Targeted/desired experience for the Project Scheduler includes at least 10 years of scheduling experience (design-build experience preferred) with procurement and construction of major highways, interstate-to-interstate interchanges and bridge structures. Project Scheduler shall be proficient in the use of Primavera project management software.

1.3.1.2 Additional Personnel

Design-Build Contractor shall provide additional personnel with the following roles and responsibilities:

1. Construction Superintendent(s): The Construction Superintendent(s) shall be responsible for supervision and oversight of all field Activities and construction operations. This person(s) shall be responsible for daily scheduling, supervising all construction activities and tasks, and ensuring the safety and compliance of the Site. The Construction Superintendent(s) shall report directly to the Construction Manager.
2. Public Information Coordinator: The Public Information Coordinator shall be responsible for identifying public information issues related to the Design-Build Contractor's Work, and for formulating and implementing strategies to address those issues, in accordance with Section 5.3.2 (Public Information Coordinator). The Public Information Coordinator shall work with IFA to maintain public satisfaction. The Public Information Coordinator shall be available at the field office full-time to respond to the communications needs of the Work and shall be readily available by telephone during all business hours with immediate computer and email access. Targeted/desired experience for the Public Information Coordinator includes at least three years of recent experience coordinating information on public projects, preferably on large highway improvement projects.
3. DBE Compliance Manager: The DBE Compliance Manager shall be responsible for overseeing DBE compliance in accordance with Section 7.1 of the PPA. The DBE Compliance Manager shall have experience in a similar role and be familiar with INDOT-certified DBE firms. Responsibilities shall include promotion of DBE contract opportunities and participation, administration of DBE contracts, prompt payment and resolution of any payment issues, and reporting of monthly DBE participation goals to IFA.

1.3.2 Project Administration

1.3.2.1 NTP + 180 Schedule and Project Baseline Schedule

Design-Build Contractor shall submit the NTP + 180 Schedule in accordance with requirements for the Project Baseline Schedule as described in Attachment 1-1 (USP: Critical Path Method Schedule) but limited to the first 180 days following issuance of the NTP. The NTP + 180 Schedule is not required to be cost-loaded.

Design-Build Contractor shall submit the Project Baseline Schedule in accordance with Attachment 1-1 (USP: Critical Path Method Schedule). Design-Build Contractor shall submit the Project Baseline Schedule for approval by IFA in accordance with Section 4.7 of the PPA.

1.3.2.2 Project Status Schedule

Design-Build Contractor shall submit Project Status Schedule updates to IFA to reflect the current status of the Project and the Work, including Recovery Schedules, schedule revisions due to Change Requests, and approved Change Orders.

Design-Build Contractor shall submit the Project Status Schedule to IFA for approval in accordance with Attachment 1-1 (USP: Critical Path Method Schedule).

1.3.2.3 Final Schedule

Design-Build Contractor shall submit the Final Schedule to IFA for approval in accordance with Attachment 1-1 (USP: Critical Path Method Schedule).

1.3.2.4 Revisions

If it becomes necessary to add, combine, eliminate, or modify schedule Activities to reflect modifications to the Work, as approved by IFA, it shall be reflected in the revised Project Schedule. Revisions to the Project Schedule and consequent realignment of funds between payment activities may be requested by Design-Build Contractor in accordance with, and subject to, Section 13 of the PPA.

1.3.2.5 Time Impact Analysis

1. As part of a Change Request as set forth in Section 13 of the PPA, Design-Build Contractor shall submit a written time impact analysis illustrating the influence of each claimed delay to IFA. Each time impact analysis shall include a fragmentary network demonstrating how Design-Build Contractor proposes to incorporate the change, delay, or Design-Build Contractor request into the current Project Status Schedule. The time impact analysis shall demonstrate the time impact to each and every affected schedule Activity in the most recent Project Status Schedule at the time of the occurrence.
2. The time impact analysis Submittal shall include the details of the change, including added, changed, or deleted data for schedule Activities and logic. If the current Project Status Schedule is revised subsequent to submittal of a time impact analysis but prior to its approval, Design-Build Contractor shall promptly indicate in writing to IFA the need for any modification to its time impact analysis.
3. As part of the time impact analysis, Design-Build Contractor shall submit one electronic PDF Gantt chart and Primavera (.xer format) file, including all schedule Activities affected by the time impact analysis, grouped and sorted by WBS and compared to the current Project Baseline Schedule. In addition, Design-Build Contractor shall submit one electronic backup of the Project Schedule with the time impact analysis and a comprehensive narrative for each Change Request. Design-Build Contractor shall incorporate the results of the Change Notices from IFA into the Project Status Schedule for the next Progress Report.

1.3.2.6 Recovery Schedule

Design-Build Contractor shall prepare and submit a Recovery Schedule as and when required and otherwise in accordance with Section 4.6 of the PPA. Design-Build Contractor shall submit the Recovery Schedule in a format in accordance with Attachment 1-1 (USP: Critical Path Method Schedule). Design-Build Contractor shall include with the Recovery Schedule Submittal a narrative report describing Design-Build Contractor's proposed plan to regain lost schedule progress and to achieve the original contractual milestones in accordance with the PPA, including Substantial Completion by the Substantial Completion Deadline.

1.3.3 Project Management Plan

Design-Build Contractor shall prepare a PMP, which is an umbrella document that describes Design-Build Contractor's managerial approach, strategy, and quality procedures to design and build the Project and achieve all requirements of the PPA Documents.

IFA will audit and monitor the Activities described in the PMP to assess Design-Build Contractor performance. All commitments and requirements contained in the PMP shall be verifiable.

The PMP shall be submitted for IFA approval in accordance with Section 2.1.1 of the PPA. The general outline and minimum content of the PMP is described in Section 1.3.3.1 through Section 1.3.3.5:

1.3.3.1 Project Administration Plan

1. Organizational diagram, with all Key Personnel clearly identified
2. Management structure and personnel names and contact details, titles, and job roles
3. Design-Build Contractor's contracting plan
4. Design-Build Contractor's main contractual arrangements with Subcontractors
5. Project Baseline Schedule
6. Quality control procedures to establish and encourage continuous improvement
7. Procedures to facilitate review and audit by IFA
8. Auditing and management review of Design-Build Contractor's own Activities under the PMP
9. Revisions to PMP - Procedures for preparation of amendments and submission of amendments to any part of the PMP
10. Internal organization systems:
 - a. A description of Design-Build Contractor's team decision-making process, how internal disputes between team members will be resolved, and how Design-Build Contractor will avoid adverse impacts to the Project (cost, schedule, or quality) in the event of such disputes.
 - b. A description of the methods to be used to establish lines of communication and documentation within Design-Build Contractor's team, including communication among the sub-organizations and management personnel.
 - c. A description of how Design-Build Contractor intends to interface with IFA and its consultants; applicable third-parties; relevant federal, State, and local agencies, including the Stakeholders; and local police and fire departments on all matters including planned transportation and Utility infrastructure in the Project area.
 - d. Document management – The manner in which records will be maintained in compliance with the Technical Provisions, including any specific systems Design-Build Contractor will use. A description of the Design-Build Contractor's approach to store and retain Project-related documents and information, including:
 - 1) In what medium (digital or otherwise) the documents will be maintained;
 - 2) If electronic, what format will be used;
 - 3) The Design-Build Contractor's approach for security and backup of the Project documentation.

1.3.3.2 Quality Management Plan

1. Organizational structure covering the activities to be performed in accordance with the PPA Documents
2. Personnel – Resource plan for Design-Build Contractor and its Subcontractors
3. Arrangements for coordinating and managing staff interaction with IFA and its consultants, including Key Personnel and description of approach to coordinating Work of off-Site personnel
4. Names and contact details, titles, job roles, and specific experience required for the Key Personnel and for other principal personnel during Design Work
5. Names, contact details, titles, and job roles of principal personnel of Design-Build Contractor and any third-party with which Design-Build Contractor will coordinate activities
6. Provisions for its design and construction obligations with respect to Utilities
7. Design Quality Management Plan
 - a. Arrangements for coordinating and managing staff interaction with IFA and its consultants, including Key Personnel and description of approach to coordinating Work of off-Site personnel
 - b. Responsibility of Design-Build Contractor and Affiliates, including constructability reviews
 - c. Steps taken to ensure Design-Build Contractor and its Subcontractors meet the obligations imposed by their respective subcontracts
 - d. Interfaces between Design-Build Contractor, Subcontractors, and independent certifiers during design, including interfaces between the structural design auditor, the safety auditor, and quality reviewers
 - e. Coordination with Utility Owners
 - f. Procedures describing how the principal Activities will be performed during the design stage: to include geotechnical Site investigation, surveys and mapping, environmental management, safety audit, structural audit, and checking
 - g. QA/QC procedures, including a resource table for monitoring and auditing all design services, design review and certification, verification of Plans and Working Drawings; NDCs, FDCs; and Witness Points and Hold Points described in Section 2 (Quality Management)
 - h. Procedures to establish Hold Points in design process where checking and review will take place
 - i. Procedures to ensure accuracy, completion, and quality in Submittals to IFA and Governmental Entities, including conformance with federal oversight requirements
 - j. Procedures to establish and encourage continuous improvement, including corrective and preventive action procedures

8. Construction Quality Management Plan
 - a. Complete procedures for preparing for and complying with Hold Points during Construction Work described in Section 2 (Quality Management)
 - b. Project-specific construction quality control procedures
 - c. Steps taken to ensure Design-Build Contractor and its Subcontractors and Suppliers meet the obligations imposed by their respective subcontracts
 - d. Construction monitoring plan, including testing and inspection for which Design-Build Contractor is responsible for QA/QC
 - e. Pre-activity meetings
 - f. Control and traceability of materials
 - g. Reporting procedures, methodologies, and corrective action relating to Nonconforming Work, including how IFA will be involved
 - h. Training, mentoring, and audits

1.3.3.3 Environmental Management Plan

1. Organizational structure covering the activities to be performed in accordance with the PPA Documents and consistent with that in the Proposal
2. Environmental contact list
3. Personnel – Resource plan for Design-Build Contractor and its Subcontractors
 - a. Arrangements for coordinating and managing staff interaction with IFA and its consultants, including Key Personnel and description of approach to coordinating Work of off-Site personnel
 - b. Names, contact details, titles, job roles and specific experience required for Key Personnel and for other environmental personnel
4. Subcontractors – Overall control procedures for Subcontractors
5. Environmental Compliance and Mitigation Plan (ECMP) as described in Section 7 (Environmental)
6. Spill Prevention, Control, and Counter-measure Plan (SPCCP)
7. Environmental compliance and mitigation training program as described in Section 7.3.4.2 (Environmental Compliance and Mitigation Training Program)
8. Methods for ensuring adequate installation, maintenance, and repair of erosion and sediment control devices
9. Potential environmental risk and the approach to mitigate, eliminate, or reduce those risks
10. Methods and procedures for monitoring environmental commitments and ensuring those have been implemented in the design and construction

1.3.3.4 Safety Plan

1. Organization – Personnel, policies, plans, training programs, Work Site controls, and Incident management and response plans to ensure the health and safety of personnel involved in the Project and the general public affected by the Project
2. Procedures for immediately notifying IFA of all Incidents arising out of or in connection with the performance of the Work

1.3.3.5 Public Information Plan

1. The manner in which Design-Build Contractor's organization will respond to requests for information, communicate changes or revisions to relevant Design-Build Contractor personnel, and notify affected stakeholders before and after changes are made, as outlined in Section 5.3 (Design-Build Contractor Public Information Responsibilities and Requirements)
2. Processes and procedures for communication of Project information between Design-Build Contractor's organization, IFA, Governmental Entities (e.g., permitting agencies), Utility Owners, other third-parties, and the public, as outlined in Section 5.3 (Design-Build Contractor Public Information Responsibilities and Requirements)

1.3.3.6 Revisions to the PMP

Design-Build Contractor shall submit a revised PMP to IFA for approval in accordance with the deliverable schedule in Section 1.4 in the event of the following:

1. The occurrence of any changes to Key Personnel, Quality Management Plan, Safety Plan, Project Baseline Schedule, or Project administration policies and procedures
2. The occurrence of other changes necessitating revision to the PMP, including as a result of any Change Order or Directive Letter
3. As otherwise directed by IFA

1.3.4 Document Management System

Design-Build Contractor shall submit a document management plan and system that satisfies the following requirements:

1. Uses data protocols, standards, and procedures compatible with those employed by IFA (e.g., SharePoint, ERMS, SiteManager, etc.). Design-Build Contractor shall implement any new operating practices required as a result of IFA's amendments to any of its systems, standards, and procedures.
2. Provides a secure location for any interface, as may be required by IFA, such that only authorized IFA users have access and that such secure location is protected from loss, theft, damage, and unauthorized or malicious use.
3. Employs appropriate standards and procedures and ensures training Design-Build Contractor personnel to operate any IFA data management system which IFA may require in connection with the Project.

4. Provides a mechanism for the electronic transfer of meta-data along with the associated PDF images for uploading into an EDMS.
5. Provides IFA with procedures and software for accessing all Project-related documents as a component of Design-Build Contractor's obligations under Section 21 of the PPA.

Design-Build Contractor shall train identified IFA personnel to operate any Design-Build Contractor data management system approved by IFA for Design-Build Contractor use in connection with the Project.

Design-Build Contractor shall submit all Submittals, Design Documents, and Construction Documents to IFA in a legible and searchable electronic format in as small a file size as possible without loss of legibility.

Design-Build Contractor shall submit a detailed description of:

1. Methods by which all Submittals, Design Documents, and Construction Documents will be uniquely coded, including the use of drawing numbers (Dwg. Nos.) for Plan sheets, and retrievable in a user-friendly format.
2. The routing, filing, control, and retrieval methods for all documents.
3. Methods to facilitate sharing of data, including procedures and software for accessing all Project-related documents.
4. All documents and data elements that will support records. These documents and data elements shall include, as a minimum: document class, document type/subtype, document name, form number, IFA records series item number, IFA agency item number, IFA records series title, IFA retention period, turnover media, turnover frequency, submission type, special requirements, and remarks.

To allow for disaster recovery, Design-Build Contractor shall back up and store all Project-related documents in a secure off-Site area no less than on a weekly basis.

1.3.5 Facilities

1.3.5.1 Project Field Office

Design-Build Contractor shall provide for IFA's exclusive use, one modified type C field office meeting the following requirements immediately adjacent to or collocated with Design-Build Contractor's field office and within one mile of the Project Site. IFA's field office must be fully operational at least 30 days after NTP or at least 60 days prior to commencement of design, as defined in Section 4.4 of the PPA, whichever occurs earlier. IFA's field office shall meet all of the requirements of Section 628.02 of the Standard Specifications, except:

1. IFA's field office and all of its equipment and supplies shall be maintained and replenished in a satisfactory manner during the term of the PPA and up to a maximum of six months after Final Acceptance or until released by IFA.
2. Field office must meet all local zoning requirements.
3. Field office shall be a permanent structure, with a minimum size of 5,500 square feet, minimum width of 40 feet, with a minimum of six cubicles, and a minimum of 10 private

offices. Each private office shall have at least 120 square feet of area, desk, office chair, folding table, bookcase, and two side chairs.

4. Field office shall have two conference rooms. One conference room shall be suitable for conducting meetings with up to 60 participants and one conference room for up to 30 participants.
5. Field office shall have two kitchen/common areas.
6. Field office shall have secure 5G high-speed internet service and wifi connectivity capable of providing simultaneous service to at least 60 staff.
7. All of the field office equipment and supplies listed in Section 628.02(b) of the Standard Specifications for a type C field office are required, except the requirements for the following items shall be modified as follows:
 - a. 12 adding machines
 - b. 80 conference room chairs
 - c. One set of conference room tables for 40 people with additional seating room for up to 20 people and one set of conference room tables for 20 people with additional seating room for up to 10 people
 - d. Two large, high-quality, wideband speaker phones with control panel and dial pad and two wired expansion microphones per phone (one phone for each conference room)
 - e. Five wi-fi hotspots for field connectivity
 - f. Two projectors, two screens, and two 75-inch or larger with minimum 4K HDR TVs with wireless computer mirroring capability (one set for each conference room)
 - g. One field office desktop computer system with internet access meeting the following requirements:
 - 1) Processor – I7 Intel 4.6-GHz
 - 2) Memory – 32 GB RAM
 - 3) Hard Drive – 512 GB SSD
 - 4) Optical Drive – 24X CD-RW, DVD-RW capability
 - 5) USB Ports – five USB 3- and four USB 2-compliant ports
 - 6) Network – integrated or add-on 10/100/1000 Ethernet capability
 - 7) Graphics – AMD 4GB Radeon RX550
 - 8) Monitor – minimum of one 22-inch wide-screen LCD
 - 9) Keyboard – one USB 104-key keyboard
 - 10) Mouse – one USB three-button mouse

- h. 20 four-drawer file cabinets
- i. Eight four-drawer fireproof file cabinets
- j. 20 folding office tables
- k. 20 folding office chairs
- l. 40 office desks and office chairs
- m. 40 two-drawer desk file cabinets
- n. 120 linear feet of book shelving
- o. Two refrigerator/freezers with minimum capacity of 20 cubic feet each
- p. Two microwaves with minimum capacity of 1.9 cubic feet each
- q. Two bottled drinking water dispensers having both hot and cold-water capabilities
- r. Indoor toilet facilities for up to 60 staff with separate facilities for men and women
- s. 40 wastepaper baskets
- t. Five dry-erase boards, 3-foot-by-5-foot with erasers
- u. Two dry-erase boards, 4-foot-by-8-foot with erasers
- v. Multiple colored dry erase markers (required to be replenished for the duration of the Contract)
- w. Five GPS rovers per Recurring Special Provisions (GPS Rover for Use by Project Personnel)
- x. Three high-end, color, multifunctional copiers with 11-inch-by-17-inch color printing and wi-fi capabilities
- y. Adequate parking for up to 60 vehicles including appropriate amount of handicap accessible spots (per local zoning requirements)

Design-Build Contractor shall provide cleaning services (floors, toilet facilities, kitchen/common area, and trash) on a regular basis, but no less than weekly.

Design-Build Contractor shall provide regularly scheduled exterior maintenance service (lawn care, landscaping upkeep, snow removal, and general exterior maintenance) with a weekly scheduled trash service dumpster (at least 5 cubic yards).

1.3.5.2 Management and Design Oversight

Design-Build Contractor shall provide the following space within the Project field office for IFA design oversight and program management personnel:

1. Four private offices, each at a minimum of 120 square feet with a desk, office chair, folding table, bookcase, two side chairs and lockable doors.
2. Four work cubicles at a minimum of 64 square feet each.

Design-Build Contractor shall provide telephones and a telephone system separate from the Design-Build Contractor's system, that provides services to the conference rooms and telephones at each desk for IFA's offices and workstations described in Sections 1.3.5.1 and 1.3.5.2.

1.3.5.3 Project Field Laboratory

Design-Build Contractor shall provide for IFA's exclusive use, one type C field laboratory as specified in Section 628.02(f) of the Standard Specifications immediately adjacent to or collocated with Design-Build Contractor's field office and within one mile of the Project Site. In addition to the provisions of Section 628.02(f), Design-Build Contractor shall provide hot and cold running water (potable), three portable cook stoves for drying samples, and propane fuel in containers of suitable size to be transported to the Site and with continuingly sufficient quantities for IFA to use during the term of the PPA.

Design-Build Contractor does not need to include telephone lines or telephones in the field laboratory. Design-Build Contractor shall provide for IFA's use in accordance with applicable ITMs and AASHTO T 23, concrete test beam forms, annually certified beam breaking machine (manual or hydraulic), and lime bath cure tanks required for IFA quality assurance testing of QA/QC PCCP, JPCP, and CRCP. The quantity of equipment shall be sufficient to meet the production schedule of Design-Build Contractor.

1.3.6 IFA Contacts

INDOT Project Manager:

Indiana Department of Transportation
100 North Senate Avenue
Indianapolis, IN 46204
Attention: Andrew Pangallo
Telephone: (317) 946-9855
E-mail: apangallo@indot.in.gov

INDOT Construction Manager:

Indiana Department of Transportation
32 South Broadway Street
Greenfield, IN 46140
Attention: Chad Nierman
Telephone: (317) 467-3426
E-mail: d30nier@indot.in.gov

Existing plans and as-built plans:

Submit on-line request to:
Plans Information Request Form:
<https://entapps.indot.in.gov/OPSM/Dashboard/UserRequest>

1.4 Deliverables

Deliverables under this Section 1, a non-exhaustive list of which is set forth in Table 1-4, shall be submitted in electronic format in accordance with the schedule set forth below. Acceptable electronic formats include PDF and current versions of Microsoft Word and Microsoft Excel, unless otherwise indicated.

Table 1-4: Deliverables

Deliverable	Deliverable Schedule	TP Section
Progress Reports	Monthly	1.2.3 & 1.2.4
NTP + 180 Schedule	See <u>Section 6.1.2</u> of the ITP and <u>Exhibit 15</u> of the PPA	1.3.2.1
Project Baseline Schedule	See <u>Section 4.7</u> of the PPA	1.3.2.1
Project Status Schedule	Initial and periodic Submittal schedule per <u>Attachment 1-1</u> (USP: Critical Path Method Schedule)	1.3.2.2
Final Schedule	Submittal schedule per <u>Attachment 1-1</u> (USP: Critical Path Method Schedule)	1.3.2.3
Revisions	Included with next Project Status Schedule following occurrence	1.3.2.4
Time Impact Analysis	Included with next Project Status Schedule following occurrence	1.3.2.5
Recovery Schedule	See <u>Section 4.6</u> of the PPA	1.3.2.6
Project Management Plan	No later than 30 days following NTP	1.3.3
Revisions to the PMP	No later than 14 days after the occurrence of the change triggering the need for revisions to the PMP	1.3.3.6
Document Management Plan	No later than 30 days following NTP	1.3.4

2 QUALITY MANAGEMENT

2.1 General

Design-Build Contractor shall perform all Work necessary to meet the quality requirements for the Project, including schedule management, Submittals and electronic posting of documents, and other quality-related items, all in accordance with the PPA Documents, including Project Standards, this Section 2; Governmental Approvals; and Governmental Rules.

2.2 Schedule Management

Design-Build Contractor shall schedule its Work to meet review time periods described elsewhere in the PPA Documents for Witness Points and Hold Points.

2.2.1 *Witness Points*

At each Witness Point, Design-Build Contractor shall submit the identified items to IFA for review. Work may proceed beyond a Witness Point, at Design-Build Contractor's risk.

Witness Points for design are as follows:

1. Plan sheets not defined as Hold Points
2. Preliminary layout, typical sections, and design computations not included with the Stage 1 Review Submission
3. Supplemental geotechnical subsurface exploration and testing program described in Section 13 (Geotechnical)
4. Finalized cross sections
5. Level 1 FDCs, including red-line markups of RFC Plans
6. Concept Drainage Report described in Section 10 (Hydraulics & Drainage)

In its reasonable discretion, IFA reserves the right to add Witness Points to any aspect of the Project.

2.2.2 *Hold Points*

At each Hold Point, Design-Build Contractor shall submit the information required to IFA for review and comment, or approval, as required. No Work relating to a Hold Point shall proceed beyond that Hold Point until Written Release is given by IFA.

Hold Points shall occur for all construction Activities which require inspection by IFA as described in the Standard Specifications, RSPs, USPs, or these Technical Provisions.

Hold Points for construction are as follows:

1. Vibration and noise abatement management plans

2. QC plan approval for grading and borrow sources
3. QC plan approval for CRCP, PCCP, JPCP, HMA, and temporary HMA paving
4. QC plan approval for storm water management plan
5. QC plan approval for structural steel painting or metallizing
6. Pre-paving conference for roadway
7. Pre-pour conference for bridge decks
8. Fabrication plant inspections
9. Working Drawings
10. Pre-phase Site construction meeting
11. After reinforcing bar placement and prior to structural concrete placement
12. Structural concrete placement
13. Falsework plan approvals
14. Post tensioning technical data and details
15. Erection plan approval for overhead structural members
16. Removal plan approval for existing structures
17. Sound barrier Working Drawings and calculations
18. Work area access plan approval
19. ITS Submittals
20. Hazardous Materials removal plan, if required
21. Approval of Rule 5 permit NOI

Hold Points for design are as follows:

1. Required documentation for NEPA noise re-analysis
2. Sound barrier design and Plans
3. Hydraulic report Submittal
4. Storage facility Submittal
5. Marion and Johnson County Surveyor's Office plan review of regulated drains
6. Construction sequencing, MOT, and temporary traffic control Plans
7. MOT Level One design criteria checklist for each major traffic phase
8. Level One design criteria checklist and calculations for design items

9. Level One and Level Two Design Exceptions
10. Level Two design criteria calculations for design items
11. Finalized typical sections
12. Finalized plan and profile grade
13. Clearances and geometrics for structures
14. Foundation review
15. Foundation design of overhead sign structures and high mast light towers
16. Roadside barrier design
17. Load ratings for bridges
18. Geotechnical Design Report
19. Retaining wall design and details
20. Signing Plans
21. Lighting Plans
22. ITS Plans
23. Signalization Plans
24. Requirements under USPs
25. Environmental permit revisions
26. Required documentation for NEPA Document modifications
27. Required documentation for IAD modifications
28. IHCP modifications
29. Interstate closure modifications
30. Preliminary Plans for bridge preservation with calculations
31. Final Plans for bridge preservation with calculations
32. Stage 1 Review Submission
33. Stage 3 Review Submission
34. RFC Plans with calculations
35. Working Drawings
36. NDCs
37. Level 2 and 3 FDCs

In its reasonable discretion, IFA reserves the right to add Hold Points to any aspect of the Project.

NDC and Level 3 FDC revised Plans and engineering analysis and calculations shall be submitted for review and acceptance by IFA prior to proceeding with Construction Work.

2.3 Submittal and Electronic Posting Requirements

2.3.1 Overview

Design-Build Contractor will be provided access to the Project's dedicated website or file sharing system. Except as may be required under Section 24.12 of the PPA, all Submittals shall be made electronically in PDF, Microsoft Word, Microsoft Excel, and Primavera format through IFA's designated Project website or file sharing system. Access and use will be described by IFA during the Project Kickoff.

For each Submittal, Design-Build Contractor shall send an e-mail Notice to INDOT's Project Manager, INDOT's consultant document control manager, and carbon copy (CC) the following personnel:

- INDOT's construction manager
- INDOT's construction project engineer/project supervisor
- INDOT's consultant project manager
- INDOT's consultant design manager

Design-Build Contractor shall also send an email Notice to other individual persons as identified by IFA.

The date of a Submittal and timeframe by which it is submitted shall be in accordance with Section 3.4 (Design Submittal Package Requirements) and Section 24.12 of the PPA. Submittals will not be considered complete until all required files are posted to IFA's Project website or file sharing system.

All Submittals shall include a transmittal letter signed by the Project Manager or Design-Build Contractor's Authorized Representative. At a minimum, the transmittal letter shall include the date, purpose, contents, and any special handling requirements.

Design-Build Contractor shall respond to all comments and questions from reviews of Witness Point and Hold Point Submittals. IFA will provide all review comments in a comment tracking form and Design-Build Contractor shall respond to the comments in this form. This shall be part of the process by which comments are resolved.

Witness Point and Hold Point Submittals are subject to all Submittal and electronic posting requirements of this Section 2.

Design-Build Contractor shall maintain a complete and conformed set of current Released for Construction Documents on the designated IFA Project website or file sharing system at all times. The Plans shall be updated in accordance with the approved Quality Management Plan

procedures as revisions are made. In addition, a file containing only the revised plan sheets shall be posted to the Project website or file-sharing system when revisions are made. Current copies of all supporting Design Documents, correspondence, and other related materials shall be maintained on the designated IFA Project website or file sharing system in a similar fashion.

Design-Build Contractor shall provide two full-size and twenty 11-by-17-inch bound hardcopy RFC Plan sets at IFA's field office for IFA's use. Design-Build Contractor shall update the hardcopies when revisions are made and shall replace and insert the new revised sheets.

2.3.2 Working Drawings

Working Drawing development, review, and approval shall be in accordance with the Standard Specifications and other Project Standards and shall be the responsibility of Design-Build Contractor and Lead Engineering Firm. IFA will review the Design-Build Contractor-approved Working Drawings and design calculations for conformance with standard INDOT practice.

2.3.3 Items List

Design-Build Contractor shall submit a complete list of items representative of the Work to be performed under the Contract Price. The list shall be from the pay item list on INDOT's website (<https://www.in.gov/dot/div/contracts/pay/index.html>), shall include any unique items as necessary, and shall be the current list as of the Setting Date. The list shall include the item code, the item description, and the unit of measure for each item. Each item shall include a quantity and a unit price of \$0.00. Contract line numbers shall not be assigned to items on the list.

An initial items list shall be submitted according to instructions provided by IFA at the Project Kickoff, broken out by each designation number or "Des. No.". Design-Build Contractor shall submit an updated items list throughout the term of the PPA as new items of Work are added and previous items of Work are revised. Updated items lists shall be submitted according to instructions provided by IFA at the Project Kickoff and shall highlight those items added and revised since the previous Submittal.

Design Plans shall include the list of pay items and quantities throughout each Plan set in accordance with the IDM requirements. Reducing redundancy of quantities and tables within a Plan set may be proposed by Design-Build Contractor for consideration, review, and approval at IFA's sole discretion.

2.3.4 Record Drawings

Design-Build Contractor shall prepare complete, conformed, full-size sets of Record Drawings based on the submittal packages developed in accordance with Section 3.4 (Design Submittal Package Requirements). The drawings shall conform to INDOT plan development and preparation guidelines for a Final Tracings Submission, including incorporation of construction changes (e.g. NDCs and FDCs). Record Drawings shall be signed and stamped by a Registered Professional Engineer. Design-Build Contractor must include a transmittal letter with a comprehensive list of what is included with every Submittal. File naming convention must follow INDOT requirements unless approved by IFA. Record Drawings and design calculations shall be submitted to IFA in electronic PDF files. Record Drawings and design calculations shall

be posted to the Project website or file sharing system for IFA review and comment. Accepted Record Drawings and design calculations shall be submitted on ERMS by Design-Build Contractor and Lead Engineering Firm.

2.3.5 Final Documents

Design-Build Contractor shall furnish IFA final electronic copy documentation in PDF, which shall include Record Drawings, engineering reports, design calculations, and Working Drawings. The final documentation shall include a final items list with final as-built quantities. The final items list shall be submitted according to instructions provided by IFA at the Project Kickoff, by designation number, with quantity calculations for each item.

Design-Build Contractor shall submit final documentation for completed Work to IFA for review and acceptance as the Work progresses. The final electronic copy documentation shall be submitted as one complete package and shall be signed and stamped by a Registered Professional Engineer. All information requested shall be submitted on flash drives or hard drives to INDOT Central Office and both the INDOT Greenfield and Seymour Districts.

IFA will prepare the final construction record, which will incorporate the above information along with inspection and test results collected by IFA.

2.4 Deliverables

Deliverables under this Section 2, a non-exhaustive list of which is set forth in Table 2-1, shall be submitted in electronic format in accordance with the schedule set forth below. Acceptable electronic formats include PDF and current versions of Microsoft Word and Microsoft Excel, unless otherwise indicated.

Table 2-1: Deliverables

Deliverable	Deliverables Schedule	TP Section
Items list	Prior to the start of Work, but in no case later than 30 days after NTP	2.3.3
Updated items list	Monthly, as needed for items list updates	2.3.3
Record Drawings	On or before Final Acceptance	2.3.4
Final documents	Within 60 days after Final Acceptance	2.3.5

3 DESIGN REQUIREMENTS

3.1 General Design Requirements

Design-Build Contractor shall perform the Design Work in accordance with the PPA Documents, including Project Standards, this Section 3 and its attachments; Governmental Approvals; and Governmental Rules.

Only design firms that are prequalified with INDOT for the Work types specified, and that are sufficiently staffed and capable of performing the required Work, shall provide Professional Services for each related Work type on the Project's Design-Build Contractor team. Multiple design firms may work on Design-Build Contractor team; however, one design firm shall be designated as the prime design firm (Lead Engineering Firm). Design-Build Contractor shall assign Registered Professional Engineers and Registered Professional Land Surveyors to be in direct responsible charge of all engineering and surveying Work, respectively. If services are required that are predominantly oriented toward other disciplines, such as environmental, landscaping, transportation planning, or architectural applications, Design-Build Contractor shall assign other professionally competent personnel registered or licensed in the State of Indiana to be in charge of the applicable Work. Design-Build Contractor, in the aggregate (including Subcontractors), shall be prequalified in the following Prequalification Work Type Certification:

- 5.1 Environmental Document Preparation – EA/EIS
- 5.2 Environmental Document Preparation – CE
- 5.4 Ecological Surveys
- 5.6 Waterway Permits
- 5.8 Noise Analysis and Abatement Design
- 5.9 Archaeological Investigations
- 5.10 Historical/Architectural Investigations
- 5.14 Phase II ESA and Further Site Investigation/Corrective Action
- 6.1 Topographic Survey Data Collection
- 7.1 Geotechnical Engineering Services
- 8.2 Complex Roadway Design
- 8.3 Roundabout Design
- 9.2 Level 2 Bridge Design
- 10.1 Traffic Signal Design
- 10.2 Traffic Signal System Design
- 10.3 Complex Roadway Sign Design

- 10.4 Lighting Design
- 10.5 Intelligent Transportation System Design
- 10.6 Intelligent Transportation System Integration
- 16.1 Utility Coordination
- 17.2 Small Structure and Pipe Hydraulic Design
- 17.3 Storm Sewer and Detention Design
- 17.4 Bridge Hydraulic Design
- 18.1 Pavement Analysis and Design

Plans shall be developed in accordance with Chapter 14 of the IDM. Except as expressly stated otherwise in these Technical Provisions, only Stage 1 Review Submission, Stage 3 Review Submission, and Released for Construction Documents will be required for submission to IFA. Preliminary Plans for bridge preservation and traffic Work will be considered synonymous with Stage 1 Review Submission. Final Plans for bridge preservation Work will be considered synonymous with Stage 3 Review Submission. Design-Build Contractor's file naming convention must follow INDOT requirements (<https://www.in.gov/dot/div/contracts/design/dmforms/EdDoc103-02-02NamingConventions.pdf>) or as modified and approved by IFA.

In addition to the Submittal requirements of Section 2 (Quality Management) and this Section 3, Design-Build Contractor shall submit Released for Construction Document packages developed in accordance with Section 3.4 (Design Submittal Package Requirements), conforming to INDOT plan development and preparation guidelines for a Final Tracings Submission, on ERMS in electronic PDF format files after review and resolution of all comments from IFA. Design-Build Contractor shall send ERMS confirmation e-mails to the appropriate INDOT coordinator in accordance with Chapter 14-1.02(02) of the IDM, carbon copying the IFA personnel listed in Section 2.3 (Submittal and Electronic Posting Requirements).

3.2 Specific Design Requirements

Design-Build Contractor shall:

1. Consult with IFA to understand IFA's requirements for the Project and review all available data.
2. Use English units for preparation of Plans and Submittals.
3. Prepare full-size plan sheets in 22-inch-by-34-inch format.
4. Provide investigations, analyses and design, necessary permits or permit revisions, and any other necessary items to design and construct the Project complete and in place.
5. Maintain and make available to IFA, upon request, a Project record that includes a history of significant events, decisions, and correspondence, including changes and comments that influenced the development of the Project.
6. Perform additional surveys required for the Project and provide any design updates related to the changes in the topographic survey related to the Project.

7. Perform additional exploratory field Work, laboratory testing, and appropriate analyses and engineering calculations to produce the proposed design.
8. Provide video documentation of the existing condition of all routes being used for signed detours or haul routes.

3.3 Design Criteria

The Project shall comply with the Project Standards shown in Attachment 3-1 (Applicable Standards), unless otherwise noted in the PPA Documents. Some USPs have been provided as attachments to the Technical Provisions. Other USPs required to complete the Work shall be the responsibility of the Design-Build Contractor, subject to IFA review and approval in its good faith discretion.

For erosion control measures, the *IDEM Indiana Stormwater Quality Manual* shall control in case of conflict.

3.4 Design Submittal Package Requirements

All Design Documents and other related documents for the Design Work shall be assembled into separate, single packages based on logical groupings and constructible units per designation number (“Des. No.”), as shown in Section 1 (General Scope of Work). Unless otherwise approved by IFA, for the purposes as expressed under Section 3.2.2.4 of the PPA, Submittals must be separated into packages by designation number for I-465, I-69, each interchange, each local road, and by design discipline. Each design Submittal package shall consist of similar and coherent parts of the Project that can be checked and reviewed as a self-contained package with due consideration for accommodating interfaces with other Project components, including maintenance of traffic phasing or staged construction. At the Project Kickoff, Design-Build Contractor shall submit to IFA for review and comment a design Submittal report identifying each package for the whole Project.

1. The design Submittal report shall include: Package descriptions, including the scope of the Design Work within each package, including limits and interface points
2. Anticipated Submittal schedule for packages by discipline
3. Lead Engineering Firm’s engineer of record for each package

The monthly Progress Report described in Section 1 (General Scope of Work) shall include any revisions to the design Submittal report previously submitted at the Project Kickoff and in the previous month’s Progress Report.

3.5 Project Kickoff

Design-Build Contractor shall plan, schedule, and hold a Project Kickoff with IFA before Design Work commences. An agenda shall be submitted to IFA for review and comment three days prior to the Project Kickoff. The goal of the Project Kickoff shall be to familiarize the Design-Build Contractor’s design personnel and IFA review personnel with the design concepts, issues, status, and review procedures, with the intent of making the subsequent design review more effective and efficient for all Parties.

The agenda shall include time for a discussion of the necessary Governmental Approvals, permitting processes, review times, and strategy for the mitigation of potential delays. These issues and specified review times shall be consistent with the Project Baseline Schedule.

All agreements, schedules, and understandings reached during the Project Kickoff shall be documented and submitted for approval by IFA.

3.6 Design Exceptions

Except for Design Exceptions in Sections 8.3.3 (IFA-Provided Design Exceptions) and 14.3.6 (Level One Design Exceptions), Design-Build Contractor may propose Design Exceptions and follow INDOT's Design Exception process described in Chapter 40 of the IDM; however, IFA reserves the right to reject, in its sole discretion, any proposed change that requires a Design Exception or does not otherwise conform to the requirements of the PPA Documents. All adjustments to the Project shall conform to Governmental Rules and Governmental Approvals. Delays due to approvals for Design Exceptions will not be considered eligible for a Change Order. All Level Two Design Exceptions, except for the Design Exceptions set forth in Section 8.3.3.2 (Level Two Design Exceptions), must be approved in advance by IFA in writing.

3.7 Deliverables

Deliverables under this Section 3, a non-exhaustive list of which is set forth in Table 3-1, shall be submitted in electronic format in accordance with the schedule set forth below. Acceptable electronic formats include PDF and current versions of Microsoft Word and Microsoft Excel, unless otherwise indicated.

Table 3-1: Deliverables

Deliverable	Deliverable Schedule	TP Section
Stage 1 Review Submission	As required	3.1
Stage 3 Review Submission	As required	3.1
Released for Construction Documents	As required	3.1
Design Submittal report	At Project Kickoff and revisions with the Progress Report	3.4
Project Kickoff schedule and agenda	Three days prior to Project Kickoff	3.5
Design Exception documentation	As needed	3.6

4 CONSTRUCTION REQUIREMENTS

4.1 General Construction Requirements

Design-Build Contractor shall perform the Construction Work in accordance with the PPA Documents, including Project Standards, this Section 4 and its attachments; Governmental Approvals; and Governmental Rules.

4.2 Qualification and Prequalification

Design-Build Contractor (or its Equity Members) shall have INDOT Certificates of Qualification and INDOT Prequalification Work Type Certifications as set forth below (<https://www.in.gov/indot/2740.htm>):

1. Design-Build Contractor (or its Equity Members) shall have an INDOT Certificate of Qualification for at least \$650 million in the aggregate by INDOT. Subcontractors will not be counted toward this qualification requirement.
2. Design-Build Contractor (or its Equity Members or Major Subcontractors) shall have INDOT Prequalification Work Type Certification for Unlimited in one of the following INDOT construction prequalification Work types:
 - A (a) Concrete Pavement – General; or,
 - D (b) Highway or Railroad Bridge over Highway
3. Design-Build Contractor, in the aggregate (including Subcontractors), shall have INDOT Prequalification Work Type Certification in the following INDOT contractor prequalification categories:
 - B (a) Asphalt Pavement – with INDOT Certified Hot Mix Asphalt (HMA) Plant
 - C (a) Heavy Grading
 - D (a) Highway or Railroad Bridges over Water
 - D (c) Bridge Involving Protection of Railroad Tracks
 - E (a) Traffic Control: Signal Installation
 - E (d) Traffic Control: Sign Installation
 - E (g) Traffic Control: Pavement Markings
 - E (i) Permanent Seeding, Sodding, and Top Soil
 - E (k) Guardrail, Cable Barrier, Crash Attenuators, and Fence

For any Utility Adjustments that Design-Build Contractor shall undertake in connection with the Project, Design-Build Contractor shall use Subcontractors that are approved by the applicable Utility Owner to perform the Work.

4.3 Specific Construction Requirements

Design-Build Contractor shall comply with the following requirements:

1. Design-Build Contractor will be permitted to work 24 hours per day, seven days per week, except for Holidays, as per Attachments 12-3 (IHCP Exception Request) and 12-4 (Interstate Closure Request Draft), or as otherwise restricted in the PPA Documents. Design-Build Contractor shall not work during the following Holiday periods unless prior written approval is received from IFA. All deliveries and traffic coming from Suppliers shall cease during the IFA-ordered suspensions of Work listed below. No time extensions to closure periods or Completion Milestones will be granted for suspending Work during these Holiday periods:
 - a. New Year's Day: If New Year's Day falls on a Sunday, Work shall be suspended from noon December 31 until sunrise January 3. If New Year's Day falls on a Monday through Saturday, Work shall be suspended from noon December 31 until sunrise January 2.
 - b. Good Friday: Work shall be suspended from noon on Good Friday until sunrise Monday.
 - c. Memorial Day: Work shall be suspended from noon the Friday before Memorial Day until sunrise Tuesday, the day after Memorial Day.
 - d. Independence Day if it falls on a:
 - 1) Sunday - Work shall be suspended from noon Friday, July 2, until sunrise Tuesday, July 6.
 - 2) Monday - Work shall be suspended from noon Friday, July 1, until sunrise Tuesday, July 5.
 - 3) Tuesday - Work shall be suspended from noon Friday, June 30, until sunrise Wednesday, July 5.
 - 4) Wednesday - Work shall be suspended from sunset on Tuesday, July 3, until sunrise Thursday, July 5.
 - 5) Thursday - Work shall be suspended from noon Wednesday, July 3, until sunrise Monday, July 8.
 - 6) Friday - Work shall be suspended from noon Thursday, July 3, until sunrise Monday, July 7.
 - 7) Saturday - Work shall be suspended from noon Thursday, July 2, until sunrise Monday, July 6.
 - e. Labor Day: Work shall be suspended from noon the Friday before Labor Day until sunrise Tuesday, the day after Labor Day.
 - f. Thanksgiving Day: Work shall be suspended from noon the Wednesday before Thanksgiving Day until sunrise the Monday after Thanksgiving Day.

- g. Christmas Day: Work shall be suspended from noon December 24 until sunrise December 27.
2. Pavement quality will be assessed on a cost basis for potential penalty pay adjustments in accordance with Attachment 3-1 (Applicable Standards), Section 9.2.1 (Testing), and the Standard Specifications. This quality adjustment will be applicable to QC/QA HMA and QC/QA PCCP, CRCP, and JPCP pavement types.
3. Prior to shifting traffic during each construction phase, Design-Build Contractor shall verify to the satisfaction of IFA that existing pavement drainage is adequately functioning. Design-Build Contractor shall be responsible for cleaning existing storm sewer inlets and pipes of sediment and debris so that they provide positive drainage.
4. Design-Build Contractor shall perform all maintenance within the Project ROW during construction of the Project, including maintaining IFA's field office and laboratory area(s). Required maintenance shall include four equally spaced cycles of mowing per year, Pothole repair, roadway debris clean-up (dead animals, litter, motor vehicle crashes, Incidents, hazards that disrupt normal traffic condition and flow), signing repair, lighting repair, guardrail repair, and other items required to maintain safe driving conditions. Any deviations to these requirements for maintenance require IFA approval prior to implementation.
5. Construction Memorandum 09-02, Potholes in Work Zones, does not apply. Design-Build Contractor shall assess and document existing pavement condition prior to NTP and repair any Potholes or pavement failures that develop during Construction Work after receiving commencement of construction, as defined in Section 4.5 of the PPA. Design-Build Contractor shall submit the documentation to IFA. At any point during the Project, IFA, in its sole discretion, may require Design-Build Contractor to take action for Potholes or other pavement failures to be repaired within 24 hours of notification, subject to Section 12.1.3.2 of the PPA.
6. INDOT and the Local Agencies are responsible for snow removal of active travel lanes within the Project limits during winter months. Design-Build Contractor shall perform snow removal in areas of the field office(s), laboratory areas, and other construction access points.
7. An IMSA certified Level II technician shall be available 24 hours per day to respond within two hours for any maintenance of traffic signal equipment issue within the Project limits.
8. Attachment 4-1 (QC/QA, Soil Embankment and Subgrade) shall be applied in conjunction with Attachment 13-2 (Embankment) and Attachment 13-3 (Strength, Stiffness, and Density Tests). The quality control plan shall be in accordance with Attachment 4-1 (QC/QA, Soil Embankment and Subgrade) but shall be modified to incorporate the requirements of Attachment 13-2 (Embankment) and Attachment 13-3 (Strength, Stiffness, and Density Tests).

4.4 Clearing Project Right of Way

The Tree Clearing Contract will be completed by others as described in Section 1.2.5 (Coordination with Other Projects). Design-Build Contractor shall clear stumps per Section

201.03 of the Standard Specifications and shall perform all other removals in accordance with PPA Documents.

4.5 Scheduling and Notification

Design-Build Contractor shall submit an updated Construction Work Activity schedule to IFA by noon (Eastern time) on Friday of each week during Construction Work. The Construction Work Activity schedule shall include all planned Construction Work Activities, including fabrication, for the upcoming two weeks. This two-week look-ahead schedule of planned Construction Work Activities shall also be submitted and discussed at weekly Progress Meetings, as described in Section 1.2.3 (Progress Meetings), to allow timely coordination of IFA inspection activities.

Design-Build Contractor shall provide at least a 24-hour notice to IFA for any schedule changes to the planned Construction Work requiring inspection activities.

4.6 Construction Documentation

Design-Build Contractor shall document progress and observed construction performance during performance of the Construction Work. The documentation shall be in a digital format acceptable to IFA and shall include:

1. Spreadsheets and computation books
2. Field Design Change documentation for design and construction changes
3. Any other construction documentation as requested by IFA

Design-Build Contractor shall prepare and submit an unmanned aircraft systems (UAS) photography implementation Plan to IFA for review and approval. In this Plan, Design-Build Contractor shall describe the following at a minimum:

1. Description of UAS planning and operations, including any necessary notice to Project neighbors
2. UAS photography safety plan
3. Details of UAS photography acquisition and delivery schedule
4. Proposed format of flight logs and records to be retained for the term
5. Documentation of FAA Part 107 qualifications for commercial UAS photography companies to be used on the Project
6. Copy of any approved permits as applicable to UAS photography
7. Technical details of proposed ortho-mosaic photography, including proposed scale, resolution, photograph locations/perspectives based on the Project limits, and continuous coverage for the Project limits
8. Process for distributing the data and interfacing with IFA, including the number of photographs for each Project-specific location

Design-Build Contractor shall perform UAS photography on a bi-weekly basis, beginning at the commencement of Construction Work and ending at Final Acceptance. Design-Build Contractor shall submit high resolution, high quality digital UAS photography to IFA on a bi-weekly basis for its review and use on the Project, including for the following purposes:

1. Supporting communications and public involvement coordination efforts
2. Documenting construction progress
3. Estimating quantities
4. Monitoring the location of construction workers and equipment
5. Evaluating and reviewing MOT within the Work zone
6. Assisting in Change Requests, Change Orders, and Dispute Resolution

Design-Build Contractor shall perform and submit high-resolution, high-quality digital UAS photography prior to the commencement of Construction Work and at Final Acceptance for the following:

1. Develop existing asset condition documentation prior to commencement of Construction Work, including LiDAR level 3D imagery and models
2. Document existing pavement conditions on official detour routes
3. Develop as-built asset condition documentation for post-Project retention, including LiDAR level 3D imagery and models

4.6.1 Required Logs

A comprehensive daily log for Construction Work Activities shall be prepared and maintained by the Project Manager or their designee(s) and made available to IFA upon request. The daily log shall include all significant occurrences in a narrative form, including asserted occurrences, events, and conditions causing or threatening to cause any significant delay, disruption, or interference with the progress of any of the Work; significant injuries to person or property; and a listing of each Critical Path Activity depicted on the current monthly schedule update being actively prosecuted. The log shall also include traffic crashes and Movement Closures in effect at the time of the crash. Design-Build Contractor shall submit a copy of the crash report from Indiana State Police (ISP) and a report with locations and setup of the traffic control at the time of the crash to IFA.

For Utility-related Activities, such data shall be maintained separately in a log for each Utility facility.

For Hazardous Materials Management, such data shall be maintained separately in a log for each Site.

4.6.2 Submittal Requirements

Design-Build Contractor shall complete and submit weekly documentation and records that include factual evidence, including progress photographs, that required activities have been performed, including the following:

1. Nonconforming Work status
2. Proposed corrective actions
3. Corrective actions completed

4.7 Material Certifications

Design-Build Contractor shall present information regarding prestressed/precast structural members and the fabricators of any structural steel and other metal structural members to IFA as soon as it is available. Copies of documentation for all sources of supply shall be provided as soon as the sources are known, but no less than 30 days prior to delivery to the Project.

Design-Build Contractor shall use INDOT’s current list of qualified manufacturers, producers, Suppliers, and fabricators for the specified materials (<https://www.in.gov/indot/2736.htm>), unless otherwise approved by IFA in its sole discretion.

When Design-Build Contractor purchases materials from Suppliers shown on INDOT’s approved materials list, Design-Build Contractor will be provided a materials certification, or a certificate of delivery, certificate of analysis, or certificate of compliance, as required, from the Supplier, that covers the materials and the source. All documentary evidence that materials conform to the procurement requirements shall be submitted to IFA or its representative at the same time Design-Build Contractor receives such documentary evidence and prior to incorporation into the Work. If Design-Build Contractor wishes to purchase materials from a Supplier not shown on INDOT’s approved materials list, Design-Build Contractor must submit a request to IFA for approval in its sole discretion. Design-Build Contractor shall obtain approval from IFA prior to use.

Documentary evidence that materials and equipment conform to the procurement requirements shall be available at the Site no less than 24 hours prior to incorporation into the Work or the use of such materials. This documentary evidence shall be retained at the Site and be sufficient to identify that the specific requirements, such as Construction Documents, Project Standards, and Governmental Rules, are fulfilled by the purchased materials and equipment. The substitution of specified materials is not to occur without prior approval by Design-Build Contractor’s Design Manager and IFA. Failure to acquire prior substitution approval prior to use constitutes as Nonconforming Work and is cause for rejection or rework.

4.8 Deliverables

Deliverables under this Section 4, a non-exhaustive list of which is set forth in Table 4-1, shall be submitted in both hardcopy and electronic format in accordance with the schedule set forth below. Acceptable electronic formats include PDF and current versions of Microsoft Word and Microsoft Excel, unless otherwise indicated.

Table 4-1: Deliverables

Deliverable	Deliverable Schedule	TP Section
Construction Work Activity schedule	By noon on Friday of each week during Construction Work	4.5

TECHNICAL PROVISIONS – Section 4
Construction Requirements

Construction documentation	Weekly, monthly, and Final Acceptance	4.6
UAS photography	Bi-weekly	4.6
Sources of supply of fabricated structural steel and prestressed/precast structural members and copies of documentation	As soon as known, but no less than 30 days prior to delivery	4.7
Material certifications	Upon receipt from Suppliers, but no less than 24 hours prior to incorporation into the Work	4.7

5 PUBLIC INVOLVEMENT

5.1 General

Design-Build Contractor shall perform the public involvement Work in accordance with the PPA Documents, including Project Standards and this Section 5; Governmental Approvals; and Governmental Rules.

5.2 IFA Public Involvement Responsibilities

Except for the items expressly referenced in this Section 5 and elsewhere in the PPA Documents as being the responsibility of the Design-Build Contractor, IFA will have primary responsibility of maintaining and operating a corridor-wide Public Involvement Plan (PIP) for I-69 construction contracts between Martinsville and Indianapolis.

IFA's responsibilities will include the following activities:

1. Designate an IFA communication manager to function as a single point of contact for Design-Build Contractor regarding PIP activities.
2. Maintain oversight of any public communication efforts by Design-Build Contractor.
3. Serve as the official spokesperson for the Project.
4. Coordinate media activities, such as interviews, including those with Design-Build Contractor staff; press releases; and media events.
5. Maintain the Project website and applicable social media accounts.
6. Perform customer services activities, including:
 - a. Manage and maintain a public project office separate from Design-Build Contractor's responsibility to provide and maintain a field office as described in Section 1.3.5 (Facilities).
 - b. Respond to questions and concerns of property owners and the public.
 - c. Maintain a customer service database.
7. Prepare meeting agendas and prepare and distribute meeting minutes for bi-weekly meetings as described in Section 5.3.1.

5.3 Design-Build Contractor Public Information Responsibilities and Requirements

5.3.1 General Requirements

Design-Build Contractor shall support IFA in administering its PIP, including public involvement tasks defined in this Section 5 and elsewhere in the PPA Documents.

At IFA's request, Design-Build Contractor shall provide information and graphics to support IFA public involvement activities.

Design-Build Contractor shall, upon request from IFA, assist IFA with producing written materials regarding construction issues specific to the Project, which may include schedule, noise, lights, and fugitive dust. IFA will be responsible for final approval and making these materials available to the public, as requested, through U.S. mail, email, Project web site, social media, and at individual and group meetings. Printing of materials shall be the responsibility of Design-Build Contractor. IFA will determine when materials shall be distributed to businesses and neighborhoods, the size of the distribution area, and the content of the materials.

Design-Build Contractor shall participate in the following INDOT-organized public meetings:

1. Sound barriers: Meetings as required to coordinate the aesthetic design of sound barriers with affected communities, in conjunction with Section 7.3.5.1 (Sound Barrier and Noise Attenuation). Design-Build Contractor shall propose approach and selection process for patterns and color options for the neighborhood side of sound barriers. IFA will schedule the meetings and secure the venues. Design-Build Contractor shall prepare exhibits, meeting materials, and prepare a meeting summary.
2. Annual Project update meetings: IFA will schedule annual Project update meetings. Meetings may take place in multiple locations each year. The purpose of the meetings will be to update stakeholders on construction activities. Meetings are likely to occur in the spring of 2021, 2022, 2023 and 2024. Meeting content will include construction progress, construction schedules and other information relevant to the public. IFA will secure the meeting venues and advertise the meetings.

IFA will forward email, letters, and other forms of correspondence from the public regarding design and construction issues to Design-Build Contractor for response. Design-Build Contractor shall assist IFA in preparing responses to correspondence within one Business Day; however, IFA will be responsible for responding directly to all correspondence.

Design-Build Contractor shall participate with IFA and others in bi-weekly communications coordination meetings or teleconferences. At a minimum, the Public Information Coordinator or designee shall participate in the bi-weekly communication meetings and the monthly TMP Team meetings as described in Section 12.2.2.2 (Monthly Meetings). The Public Information Coordinator shall provide an update of public involvement activities at the meetings.

5.3.2 Public Information Coordinator

Design-Build Contractor shall provide a Public Information Coordinator to lead Design-Build Contractor public information tasks and to work and coordinate with IFA to disseminate information as part of INDOT's corridor-wide PIP. The Public Information Coordinator shall be responsible for identifying public information issues related to the Design-Build Contractor's Work, and for formulating and implementing strategies to address those issues with IFA. The Public Information Coordinator shall work with IFA to maintain public satisfaction, with an emphasis on communication of restrictions and impacts. The Public Information Coordinator shall also participate in the TMP team meetings.

The Public Information Coordinator shall designate a deputy Public Information Coordinator to serve as a back-up if the Public Information Coordinator is unavailable and to assist in the performance of the functions described in this Section 5.

The Public Information Coordinator shall have full access to all Design-Build Contractor's Project details and schedules that may be relevant to the public, public agencies, emergency service providers, businesses, media, schools, and other interested parties. The Public Information Coordinator shall share information with the IFA communication manager continually throughout the Project.

Design-Build Contractor shall provide IFA with a prioritized after-hours call list within 30 days after NTP. The call list shall include the contact information for Design-Build Contractor's Public Information Coordinator and deputy Public Information Coordinator, including mobile phone numbers and email addresses.

5.3.2.1 Construction Change Notification

At least 14 days prior to implementation of a construction phase change, the Public Information Coordinator shall notify IFA in writing and provide full details of the phase change. The Public Information Coordinator shall provide additional updates if construction and traffic impacts change, or as requested by IFA. These updates shall include the upcoming week's planned closures, detours, Project status, and other information relevant to the public.

Design-Build Contractor shall provide IFA information related to changes in construction phasing, MOT, and access that impacts commuters, residents, and businesses. The information shall be provided to IFA at least 14 days prior to implementation of any change. Information shall include the following:

1. Purpose of the change
2. Area affected and dates of impact
3. Alternate routes and detours
4. A contact person for further information

5.3.3 Response to Inquiries and Comments

Questions or comments received by Design-Build Contractor from residents, businesses, or other members of the public shall be forwarded to the IFA communication manager within four hours. The IFA communication manager will work with Design-Build Contractor to develop a response. Design-Build Contractor shall take the necessary steps to facilitate a response within one Business Day.

If Design-Build Contractor receives a public complaint regarding the Work, Design-Build Contractor shall notify the IFA communication manager within four hours. Design-Build Contractor shall provide the necessary information, staff support, and representation to assist in resolving the issue.

On occasions specified by IFA, Design-Build Contractor shall commit its Project Manager or IFA-approved designee, to serve as a spokesperson for the Project for technical and safety issues with certain designated audiences.

5.3.4 Media Relations

Media relations will be led by IFA unless otherwise specified in this Section 5.

Although media relations are the responsibility of IFA, Design-Build Contractor shall participate in media interviews or other media information support activities at IFA’s request. When participating in media inquiries and interviews, Design-Build Contractor shall provide information that complies with IFA messaging and other standards, including requirements for advance Project information, Project progress and accountability, and timely response to media inquiries.

If contacted by media, Design-Build Contractor shall direct such contacts to the IFA communication manager within two hours. Any request for media interviews shall be coordinated with IFA prior to interviews. IFA will be the media spokesperson. Design-Build Contractor shall provide IFA with information and access to Project staff for press interviews, as requested.

If requested by IFA, Design-Build Contractor shall provide information and materials to the IFA communication manager that meets local broadcast and print media requirements and deadlines. All Project information released to the news media will be reviewed and released by the IFA communication manager. IFA is the only Party that may release information to the media.

Design-Build Contractor shall not interface with the media without the expressed consent of IFA, and as specifically directed by IFA. Design-Build Contractor shall immediately notify IFA of any situations, including Incidents and emergencies, that may attract media attention.

At IFA’s request, Design-Build Contractor shall conduct tours of the Project Site for media, local, state, or federal government officials, or IFA management. Design-Build Contractor shall provide required safety equipment for tour participants.

5.3.5 Public Notifications

Design-Build Contractor shall notify IFA of any public, residential, or business contacts. As directed by IFA, this shall include direct contact with affected parties for updates on upcoming events.

Design-Build Contractor shall provide the specific notifications listed in Table 5-1 to the IFA communication manager and the Public Information Coordinator.

Table 5-1: Notifications

Notice	Requirement
Road and Lane Restrictions	In accordance with notification requirements in Table 12-4 (Movement Closure Notification Requirements).
Critical Utility Shut-off/Diversion	Notice at least 48 hours, or as agreed to in Utility Agreements, in advance of shut-off and, as applicable, diversions. Copy of Notice to the IFA communication manager.

Notice	Requirement
Business/Commercial Utility Shutdown	Written notification of Utility shutdown or diversion for businesses and commercial property at least 48 hours, or as agreed to in Utility Agreements, in advance of shutdown. Copy of Notice to the IFA communication manager. Notice shall be coordinated in advance with IFA.
Residential Utility Shutdown	Written notification of Utility shutdown or diversion for residential property 48 hours, or as agreed to in Utility Agreements, in advance of shutdown. Copy of Notice to the IFA communication manager. Notice shall be coordinated in advance with IFA.
Weekly Construction Updates	Construction updates shall be provided weekly and shall identify all planned traffic shifts, Movement Closures, and Utility shut-downs and activities. Updates shall cover, at a minimum, the prior week and be projected out for the next four weeks.
Property Access Notification	Non-emergency and emergency access may be required on private properties outside the Project Right of Way. Contact information for some private properties is available through the IFA communication manager. Design-Build Contractor shall be responsible for securing permission to access private property from property owner. Design-Build Contractor shall supply information to the IFA communication manager documenting access approval from the property owner prior to accessing the property.
Road and Driveway Closures	Notice and personal contact in advance of closure, as specified in <u>Section 12.3.10 (Public Notification)</u> . Copy of Notice to the IFA communication manager.
Road Closures impacting School Access	Changes in roads used by school bus routes will be discussed with the school systems a minimum of 28 days prior to when they are planned to take place so the school systems can adjust routes in a timely manner. Where roads are severed, provisions for turnarounds will be included during the final design phase of the Project.
Road Closures impacting transit system operations	For routes with transit system operations, written notice shall be sent to the transit system operator 14 days prior to when a route will be affected.

5.3.6 Public Forums and Meetings

At the request of IFA, Design-Build Contractor shall participate in IFA-organized public forums and meetings.

5.3.6.1 Coordination with Traffic Management Plans

The Public Information Coordinator shall coordinate with the MOT Manager, Incident Management Liaison, and other Project staff and assist IFA to communicate construction traffic information to the public and other affected parties. In addition, Design-Build Contractor shall assist IFA in coordinating traffic communications with adjacent construction projects. The Public Information Coordinator shall coordinate with IFA prior to communicating with existing TMP groups and other Project stakeholder groups for development of the Project TMP.

5.3.6.2 Traffic Conditions

Design-Build Contractor shall inform the IFA communication manager of any Incidents or unexpected traffic conditions, such as road obstructions, within 15 minutes of detection.

5.3.6.3 Commercial Vehicle Access and Restriction Information

Thirty days prior to any activity taking place that may restrict or impede the movement of commercial vehicles due to reduced lane widths, reduced height clearances, or lower weight limits, Design-Build Contractor shall coordinate with IFA and shall assist IFA in providing the following agencies with a description, start date, and end date of the event:

1. Indiana State Police
2. Emergency Responders
3. Indiana Department of Revenue and INDOT Overweight/Oversize Section
4. Indianapolis Police Department
5. Indianapolis DPW
6. Johnson County
7. INDOT Greenfield, Crawfordsville, and Seymour Districts
8. Other – Indianapolis Fire Department, hospitals, school transportation offices, Indiana Motor Truck Association (IMTA), IndyGo, or others as deemed by IFA to be appropriate

5.3.7 Summary of Roles and Responsibilities

Table 5-2 summarizes the responsibilities of Design-Build Contractor and IFA on major Project information tasks and describes the general timeframe for these activities.

Table 5-2: Roles and Responsibilities

Task	TP Section	Timeframe	Responsibility
Respond to public information requests, correspondence, and email	5.2 5.3.1	NTP to Final Acceptance	IFA communication manager with support from Design-Build Contractor
Function as official Project spokesperson	5.2	NTP to Final Acceptance	IFA communication manager with support from Design-Build Contractor
Respond to property owner and public questions and concerns	5.2	NTP to Final Acceptance	IFA communication manager with support from Design-Build Contractor
Maintain customer service database	5.2	NTP to Final Acceptance	IFA communication manager with support from Design-Build Contractor
Participate in bi-weekly communications coordination meetings or teleconferences	5.3.1	NTP to Final Acceptance	Design-Build Contractor Public Information Coordinator

Prepare written materials regarding construction issues	5.3.1	NTP to Final Acceptance	IFA communication manager with participation from Design-Build Contractor, including appropriate technical staff
Print collateral information materials	5.3.1	NTP to Final Acceptance	Design-Build Contractor with oversight from IFA communication manager
Forward general information requests via telephone, email, and letters to IFA	5.3.3	Within one Business Day of request	Design-Build Contractor to provide to IFA communication manager
Forward public questions and complaints	5.3.3	Within four hours of receipt	Design-Build Contractor to provide to IFA communication manager
Coordinate News Media Inquiries	5.3.4	NTP to Final Acceptance	IFA communication manager with support from Design-Build Contractor
Participate in media interviews	5.3.4	As requested by IFA communication manager	IFA communication manager, with assistance from Design-Build Contractor, if needed
Participate in public forums and meetings	5.3.6	NTP to Final Acceptance	IFA communication manager with participation from Design-Build Contractor, including appropriate technical staff

5.4 Deliverables

Deliverables under this Section 5, a non-exhaustive list of which is set forth in Table 5-3, shall be submitted in electronic format in accordance with the schedule set forth below. Acceptable electronic formats include PDF and current versions of Microsoft Word and Microsoft Excel, unless otherwise indicated.

Table 5-3: Deliverables

Deliverable	Deliverable Schedule	TP Section
After-hours call list	Within 30 days after NTP	5.3.2
General construction schedule	One month prior to construction in any area of Project	5.3.2.1
Updates to general construction schedule	Weekly	5.3.2.1
Maintenance of traffic and access change notifications	At least 14 days prior to such change	5.3.2.1
Notice to IFA of Incidents or unexpected traffic conditions	Within 15 minutes of detection	5.3.6.2
Notice to IFA of restrictions to movement of commercial vehicles	30 days prior to restrictions	5.3.6.3

6 AESTHETICS AND LANDSCAPING

6.1 General

Design-Build Contractor shall perform the aesthetics, landscaping elements, and plantings Work in accordance with the PPA Documents, including Project Standards, this Section 6 and its attachments; Governmental Approvals; and Governmental Rules.

6.2 Administrative Requirements

6.2.1 Landscape Architect Requirements

Design-Build Contractor shall have a Registered Landscape Architect with a minimum of 10 years of landscape architectural design experience related to highway corridor design and construction perform the landscape architectural design for the Project. The Registered Landscape Architect shall have a working knowledge of and experience with the implementation process of context-sensitive designs/solutions and native vegetation planting.

6.3 Design Requirements

6.3.1 Aesthetic and Enhancement Implementation Plan

Design-Build Contractor shall submit an Aesthetics and Enhancement Implementation Plan (AEIP) for IFA review and approval. Design-Build Contractor shall obtain AEIP approval prior to preparing landscape Plans.

The AEIP shall address the aesthetics and landscape architecture Work to be included in the following Project elements, at a minimum:

1. Corridor elements, including walls (abutments, wing walls, retaining walls, and sound barriers), bridge elements (piers, barriers, railings, and beams/girders), and other improvements.
2. Vegetation elements, including tree plantings, other vegetation, and required seeding and sodding to be installed within the Project limits.

Design-Build Contractor shall apply aesthetic treatments summarized in Attachment 6-1 (Conceptual Aesthetics and Landscape Plans) as a basis for development of the AEIP. The quantities and types of tree plantings shall be as shown. The AEIP shall include consideration of adjacent natural and man-made features, conceptual design elements, limits of construction phasing, appropriate labels, and a legend to identify these elements. The AEIP shall be submitted as a roll Plan in PDF at a minimum scale of 1 inch = 100 feet.

6.3.2 Corridor Elements

Design-Build Contractor shall apply aesthetic treatments summarized in Attachment 6-1 (Conceptual Aesthetics and Landscape Plans) to the following corridor design elements:

1. Bridge elements, including piers, barriers, railings, abutments, walls, and beams. All concrete fascia beams and bottom flanges of concrete beams shall be painted dark brown (SAE-AMS-STD-595, color No. 30045).
2. Retaining wall treatments, including texture and finishes as shown in Attachment 6-1 (Conceptual Aesthetics and Landscape Plans) and as follows:
 - a. Retaining walls within the Project limits from Fairview Road to and including the Epler Avenue interchange shall use the I-69, 3-panel, smooth geometric wall design.
 - b. Retaining walls within the Project limits north of the Epler Avenue Interchange and along I-465 shall use the I-465, 3-panel, split-face geometric wall design.
3. Sound barriers shall meet the following aesthetic requirements:
 - a. Sound barrier panel texture requirements:
 - 1) Roadway and non-roadway side top panel – 12-inch-high smooth band.
 - 2) Roadway side – split-face random ashlar texture. Face shall be cast and not stamped or impressed.
 - 3) Non-roadway side – textures shall be determined in accordance with Attachment 14-1 (USP: Sound Barrier Systems).
 - b. Sound barrier color requirements:
 - 1) Roadway side panels (including top of top panel) – light tan (SAE-AMS-STD-595, color No. 37769).
 - 2) Roadway side galvanized steel posts – light tan (SAE-AMS-STD-595, color No. 37769).
 - 3) Non-roadway side panels – colors shall be determined in accordance with Attachment 14-1 (USP: Sound Barrier Systems).
 - 4) Non-roadway side galvanized steel posts – color shall match selected panel color as determined in accordance with Attachment 14-1 (USP: Sound Barrier Systems).

6.3.2.1 Landscape and Aesthetics Plans

Design-Build Contractor shall prepare landscape Plans for the aesthetics and landscape enhancements, based on the AEIP, and include these landscape Plans in the Design Documents. The landscape Plans shall be developed to reflect the use of native trees and to revegetate disturbed areas within the Project limits. Design-Build Contractor shall coordinate the landscape Plans with all other elements of Work performed under the Project, including final grading; turf establishment; detention pond locations; roadway clear zones and sight distances; storm drains and culvert outfalls; permanent erosion control features; Utilities; signing/lighting; and earth reinforcement.

If Design-Build Contractor determines the existence of a conflict from one or more of these elements, Design-Build Contractor shall be responsible for modifying the landscape Plans while retaining the intent of the approved AEIP.

Design-Build Contractor shall use the seed mixes and sod listed in Table 6-1 for all bare and disturbed areas and comply with Attachment 6-2 (USP: Aesthetics and Landscaping).

Table 6-1 Seed & Sod Table

Seed Name	Location
Seed Mixture R	All clear zones and medians
Seed Mixture U	For areas that will be mowed on a regular basis
Ditch and Detention Basin Seed Mix	For ditch bottoms and detention basins
Prairie Mix (Native 1)	For all infield areas with slopes less than 3%, use 7-10 pounds per acre. For all infield areas with slopes 3% or greater, use 20 pounds per acre. For reinforced earth slopes with slopes 3:1 or greater, use 20 pounds of seed per acre, with straw mat for slope stabilization and seed establishment. Netting shall be made of natural fibre.
Sod	Per <u>Attachment 6-2</u> (USP: Aesthetics and Landscaping)

6.3.2.2 Approved Plant List

Design-Build Contractor shall use plants from the approved plant species, minimum acceptable sizes, and maximum spacing listed in Table 6-2. Planting shall be designed in a naturalized manner with a minimum of seven species, including reasonable quantity distribution per interchange and at the Southside German Market Gardeners Historic District. Requests for substitution of other plant species shall be submitted in writing for approval by IFA. Design-Build Contractor shall not plant non-native, invasive species.

Table 6-2 Approved Plant List

Botanical Name	Common Name	Minimum Size	Maximum Spacing
Deciduous Trees			
Acer rubrum	Red maple	2.5-ft cal. B&B/CG	25-ft OC
Acer saccharum	Sugar maple	2.5-in cal. B&B/CG	30-ft OC
Amelanchier arborea	Serviceberry	8-ft ht. B&B/CG	15-ft OC
Betula nigra	River birch	6-ft ht. B&B/CG	30-ft OC
Carpinus caroliniana	American hornbeam	2-in cal. B&B/CG	20-ft OC
Carya cordiformis	Swamp hickory	2-in cal. B&B/CG	40-ft OC
Carya glabra	Pignut hickory	2-in cal. B&B/CG	30-ft OC
Carya ovata	Shagbark hickory	2-in cal. B&B/CG	40-ft OC
Celtis occidentalis	Hackberry	2-in cal. B&B/CG	30-ft OC
Cercis canadensis	Redbud	2.5-in Cal. B&B/CG	15-ft OC
Cornus alternifolia	Alternate-leaf dogwood	2-in cal. B&B/CG	20-ft OC
Cornus florida	Flowering dogwood	2-in cal. B&B/CG	25-ft OC

Botanical Name	Common Name	Minimum Size	Maximum Spacing
<i>Crateagus viridis</i>	Hawthorn	2.5-in cal. B&B/CG	20-ft OC
<i>Fagus grandifolia</i>	American beech	2.5-in cal. B&B/CG	25-ft OC
<i>Liriodendron tulipifera</i>	Tulip poplar tree	2.5-in cal. B&B/CG	25-ft OC
<i>Nyssa sylvatica</i>	Black gum	2-in cal. B&B/CG	25-ft OC
<i>Quercus alba</i>	White oak	2-in cal. B&B/CG	25-ft OC
<i>Quercus bicolor</i>	Swamp white oak	2-in cal. B&B/CG	20-ft OC
<i>Quercus coccinea</i>	Scarlet oak	2-in cal. B&B/CG	25-ft OC
<i>Quercus imbricaria</i>	Shingle oak	2-in cal. B&B/CG	40-ft OC
<i>Quercus macrocarpa</i>	Bur oak	2-in cal. B&B/CG	40-ft OC
<i>Quercus muehlenbergii</i>	Chestnut oak	2-in cal. B&B/CG	25-ft OC
<i>Quercus palustris</i>	Pin oak	2-in cal. B&B/CG	40-ft OC
<i>Quercus rubra</i>	Red oak	2-in cal. B&B/CG	30-ft OC
<i>Sassafras albidum</i>	Sassafras	6-ft ht. B&B/CG	30-ft OC
<i>Tilia americana</i>	American linden	2-in cal. B&B/CG	25-ft OC
Evergreen Trees			
<i>Juniperus virginiana</i>	Eastern red cedar	6-ft ht. B&B/CG	15-ft OC
<i>Picea abies</i>	Norway spruce	5-ft ht. B&B/CG	15-ft OC
<i>Thuja occidentalis</i>	Eastern arborvitae	5-ft ht. B&B/CG	15-ft OC

6.3.2.3 Landscape Maintenance

Design-Build Contractor shall design the landscape treatments to facilitate and minimize future maintenance.

6.3.2.4 Landscape Treatments

Design-Build Contractor shall address the treatment of the following elements in the landscape Plans:

1. Permanent erosion control features shall be integrated into the design.
2. Contour grading and slope rounding shall be employed to integrate the Project into the natural landscape.
3. Drainage features, including channels and basins, shall have natural, curvilinear designs.
4. The application of fertilizer, pesticide, or herbicide shall follow applicable restrictions within the wellhead protection areas.

6.3.2.5 Sound Barrier Areas

Design-Build Contractor shall not plant trees within 30 feet of sound barriers.

6.4 Construction Requirements

6.4.1 General Requirements

Design-Build Contractor shall install all plantings in a timely manner in relation to the other Work to minimize unsightly bare earth. All plant material shall be planted within 48 hours of delivery to the Site.

6.4.2 Plant Growth Layer

Design-Build Contractor shall provide soil conditions that are capable of establishing and sustaining permanent vegetation in accordance with RSP 629-R-630 (Plant Growth Layer).

6.4.3 Soil Sampling and Testing Procedures

Plant Growth Layer soil samples shall be pulled at a minimum every half-mile along mainline roadway in each direction and within each quadrant of each interchange.

Design-Build Contractor shall pull soil samples for testing by hand auger in accordance with Geotechnical Manual Sections 3.6.6 (Topsoil/Plant Growth Layer Sampling) and 3.6.8 (Hand Augers). Samples shall be bagged, logged, and labeled by location, in clean non-contaminating zip-lock material. Bag samples shall be a minimum of 1.0 pounds. Design-Build Contractor shall have the samples tested using testing methods that comply with Geotechnical Manual Section 5.21 (Topsoil and Plant Growth Layer Testing). Plant Growth Layer tests shall be performed by an INDOT-approved geotechnical laboratory, and test results shall be used to determine necessary soil amendments for plant material establishment.

Design-Build Contractor shall submit all soil testing reports to IFA for review and comment prior to installation of planting materials. The soil testing reports shall be completed and submitted to IFA as a component of the nutrient management plan and coordinated with its requirements.

6.4.4 Nutrient Management Plan

Design-Build Contractor shall prepare and submit a nutrient management plan, including topsoil test results, map showing sample locations, and amendment plan to IFA for review and comment prior to installation of planting materials.

6.4.5 Herbicide

Design-Build Contractor shall treat all areas to receive planting, other than seeded areas, with a pre-emergent herbicide prior to planting. Pre-emergent herbicide treatments used shall not be detrimental to the intended replacement plantings. The application of herbicide shall follow RSP 624-M-024 (Herbicide Treatment) and the manufacturer's recommendations.

Design-Build Contractor shall mulch all landscape areas and tree plantings, other than seeded areas, to reduce erosion, lessen weed germination and growth, and inhibit water loss from the soil. Mulch shall be wood chips or chopped bark in accordance with the Project Standards.

6.4.6 Plant Establishment Period

Design-Build Contractor shall be responsible for Plant Establishment Work, including initial installation of landscape plantings and maintenance and replacement of landscape plantings until receipt of a Certificate of Plant Establishment from IFA. The Plant Establishment Work shall include verification that all plant materials have been planted, staked, pruned, are true to species and minimum size, are in a healthy and thriving condition, and each plant pit is properly filled and mulched. Design-Build Contractor shall notify IFA when all landscape plantings have been installed so IFA can perform an initial inspection of the Plant Establishment Work. Once the Work has been inspected and found to be consistent with applicable Project Standards, IFA will provide its initial approval of the Work to initiate the minimum one-year Plant Establishment Period.

Design-Build Contractor shall maintain all landscape plantings within the Project limits until expiration of the Plant Establishment Period.

During this Plant Establishment Period, Design-Build Contractor shall replace any plant materials that have (i) died, or (ii) failed to establish a root system reasonably expected for plant materials of similar type, size, nature, and maturity.

6.4.7 End of the Plant Establishment Period

A minimum of one year after initial inspection and approval of the Plant Establishment Work, Design-Build Contractor shall request that IFA perform the final inspection of the Plant Establishment Work. Design-Build Contractor shall provide a minimum of three weeks advance notice for IFA to perform the final inspection. Concurrent with Design-Build Contractor's request for a final inspection, Design-Build Contractor shall submit plant certification package to IFA. The certification package shall include results of Design-Build Contractor's inspections of plants at the end of the Plant Establishment Period, including field photographs, completed planting checklists, and Project landscape Plans and details.

Design-Build Contractor shall inspect plants at the end of the Plant Establishment Period for verification that all plant materials are in a healthy and thriving condition. Design-Build Contractor shall replace any dead plantings prior to requesting IFA's final inspection of the Plant Establishment Work.

IFA will issue a Certificate of Plant Establishment after final inspections are performed to verify that the Plant Establishment Work is complete.

6.5 Deliverables

Deliverables under this Section 6, a non-exhaustive list of which is set forth in Table 6-4, shall be submitted in both hardcopy and electronic format in accordance with the schedule set forth below. Acceptable electronic formats include PDF and current versions of Microsoft Word and Microsoft Excel, unless otherwise indicated.

Table 6-4: Deliverables

Deliverable	Deliverable Schedule	TP Section
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TECHNICAL PROVISIONS – Section 6
Aesthetics and Landscape Architecture

Deliverable	Deliverable Schedule	TP Section
AEIP	Approval required prior to preparing landscape plans	6.3.1
Nutrient management plan	Approval required prior to any soil preparation seeding or planting	6.4.4
Plant certification package	A minimum of one year after initial inspection and approval of the Plant Establishment Work	6.4.7

7 ENVIRONMENTAL

7.1 General

Design-Build Contractor shall perform the environmental Work in accordance with the PPA Documents, including Project Standards, this Section 7 and its attachments; Governmental Approvals; and Governmental Rules.

Design-Build Contractor shall comply with all conditions of the NEPA Documents and all Governmental Approvals and Other Approvals, whether obtained by IFA or by Design-Build Contractor, for this Project.

7.2 Administrative Requirements

7.2.1 *Environmental Personnel*

Design-Build Contractor shall designate an on-Site Environmental Compliance Manager (ECM) in accordance with Section 1 (General Scope of Work). Design-Build Contractor shall designate an on-staff Level 2 Stormwater Quality Manager (SWQM). The SWQM can also be the ECM. The SWQM must be one of the following: Certified Erosion Sediment and Storm Water Inspector (CESSWI), Certified Inspector of Sediment and Erosion Control (CISEC), or Certified Professional in Erosion and Sediment Control (CPESC).

7.3 Design and Construction Requirements

7.3.1 *Permits and Approvals*

Design-Build Contractor shall be responsible for compliance with all approved NEPA Documents as described in this Section 7 and in accordance with Section 6.11 of the PPA. Design-Build Contractor shall be responsible for providing documentation to IFA for conducting environmental studies and re-evaluations caused by actions not identified in the Environmental Determination.

In accordance with Section 6.11.3.3 of the PPA, Design-Build Contractor is responsible for Environmental Approvals and any modifications, renewals and extensions of the IFA-Provided Approvals required in connection with Design-Build Contractor's design of the Project.

7.3.1.1 Governmental Approvals

Table 7-1 lists the IFA-Provided Approvals and the associated approval dates or anticipated approval dates. The IFA-Provided Approvals may have expiration dates. In accordance with Section 6.11.3.3 of the PPA, the Design-Build Contractor shall submit request for time extension(s), as appropriate, to IFA at least six months in advance of the expiration dates. Table 7-2 lists the Governmental Approvals the Design-Build Contractor is expected to obtain in order to complete the Work. These lists are not exhaustive, and there may be other Governmental Approvals required based on Design-Build Contractor's final design.

For all Governmental Approvals and/or modifications of Governmental Approvals that are Design-Build Contractor's responsibility, Design-Build Contractor shall submit complete draft

applications to IFA for review and approval prior to submittal to the appropriate Governmental Entity. IFA will provide comments on the completed and submitted draft applications within the review time periods specified in Section 3.2.2.2 of the PPA. Design-Build Contractor shall refer to Section 3.6.5 of the PPA for requirements regarding any Governmental Approvals that are the responsibility of Design-Build Contractor to obtain but which must formally be issued in the name of IFA.

Table 7-1: IFA-Provided Approvals

Agency	Permit/Approval	Approval Date / Anticipated Approval Date
U.S. Army Corps of Engineers (USACE)	Section 404 of the Clean Water Act Regional General Permit for Segments B, D, E	Approved by USACE on August 29, 2019 (Attachment 7-1A)
USACE	Section 404 of the Clean Water Act Individual Permit for Segments B, D, E	Approved by USACE on September 9, 2019 (Attachment 7-1B)
USACE	Section 404 of the Clean Water Act for Segments A and C	May 2020
Indiana Department of Environmental Management (IDEM)	Section 401 Water Quality Certification for Segments B, D, E	Approved by IDEM on July 5, 2019 (Attachment 7-1C)
IDEM	Section 401 Water Quality Certification for Segments A and C	May 2020
IDEM	Isolated Wetland General Permit for Segments B, D, E	Approved by IDEM on March 7, 2019 (Attachment 7-1D)
IDEM	Isolated Wetland Permit for Segments A and C	June 2020
Indiana Department of Natural Resources (IDNR)	Construction in a Floodway for Segment B – White River	June 2020
Indiana Department of Natural Resources (IDNR)	Construction in a Floodway for Segment D – Orme Ditch	June 2020

Agency	Permit/Approval	Approval Date / Anticipated Approval Date
Indiana Department of Natural Resources (IDNR)	Construction in a Floodway for Segment D– Little Buck Creek	June 2020
Indiana Department of Natural Resources (IDNR)	Construction in a Floodway for Segment B – Harmon Creek	June 2020
Indiana Department of Natural Resources (IDNR)	Construction in a Floodway for Segment B – Lick Creek	Approved by IDNR on December 20, 2019 (Attachment 7-1E)
Indiana Department of Natural Resources (IDNR)	Construction in a Floodway for Segment B – Hau Eisen Ditch	June 2020
Indiana Department of Natural Resources (IDNR)	Construction in a Floodway Segment C – McFarland Creek	October 2020
Indiana Department of Natural Resources (IDNR)	Construction in a Floodway for Segment C – Lick Creek	October 2020
Indiana Department of Natural Resources (IDNR)	Construction in a Floodway – Pleasant Run Creek	July 2020

Notes: IFA filed Section 404/401, State Isolated, and Construction in Floodway permit application packages to the regulatory agencies. Design-Build Contractor shall comply with these preconstruction permit requirements. Design-Build Contractor shall be responsible for securing any required permit modifications, time extensions, and performing the additional mitigation.

Table 7-2: Governmental Approvals – Design-Build Contractor Responsibility

Agency	Permit/Approval	Required Date
IDEM	Rule 5 – Erosion Control	Prior to Construction Work

Agency	Permit/Approval	Required Date
Federal Aviation Administration (FAA)	Notice of Proposed Construction or Alteration (if required) FAA Form 7460	Prior to Construction Work
INDOT Office of Aviation	Indiana Tall Structure Permit (if required)	Prior to Construction Work
City of Indianapolis Right-of-way Permit	City of Indianapolis Right-of-way Permit	Prior to Construction Work
City of Indianapolis Flora Permit	City of Indianapolis Flora Permit	Prior to Construction Work

7.3.1.2 Permit Specifics

1. IDEM Rule 5 Permit

Design-Build Contractor shall obtain and maintain the Rule 5 Permit before the start of any land-disturbing activities. Obtaining multiple Rule 5 Permits for distinct phases of the Work is acceptable. Erosion control measures shall be in accordance with Chapter 205 of the IDM, the Standard Specifications, and Environmental Approvals. Design-Build Contractor shall coordinate with IFA and develop and submit the Rule 5 Permit package(s) to IFA for review and approval for each permit package. IFA will coordinate permitting as prepared and requested by the Design-Build Contractor with INDOT Environmental Services Division. IFA will be responsible for submittal of any permit package to IDEM.

Design-Build Contractor shall be responsible for inspection of erosion and sediment control measures in accordance with the Rule 5 Permit. Design-Build Contractor shall submit the completed and signed stormwater, erosion, and sediment control inspection forms to IFA within 48 hours of completing the inspection.

Design-Build Contractor shall furnish, install, maintain, and remove three data-logging, tipping-bucket, rain gauges for the purpose of measuring rainfall intensity and total rainfall amounts while temporary erosion and sediment control measures are in place. The data-logging rain gauges shall be in accordance with the minimum requirements listed below:

- Maximum rainfall rate: 5 inches per hour
- Calibration accuracy: 0.01 inch
- Accuracy: ± one percent for rainfall rates of 1 inch per hour

- Environmental rating: weatherproof
- Memory capacity: up to 160 inches of rainfall data
- Operating temperature range: +32 degrees F to +110 degrees F

Design-Build Contractor shall obtain all software and cable connections to process and download rainfall data from the data-logging rain gauges. Design-Build Contractor shall also furnish an electronic copy of the manufacturer's manual to IFA. The data-logging rain gauges submitted by the Design-Build Contractor shall be subject to approval by IFA.

The data-logging rain gauges shall be installed on the Site in open and protected locations as mutually agreed by IFA and Design-Build Contractor prior to beginning construction activities. The data-logging rain gauges shall be installed, maintained, and calibrated per the manufacturer's recommendations.

Design-Build Contractor shall maintain the data-logging rain gauges and replace any rain gages that are stolen, damaged, or do not function properly.

Design-Build Contractor shall submit to IFA the timestamp data logs within 72 hours of a storm event that causes damage to temporary erosion and sediment control measures beyond normal maintenance. Design-Build Contractor shall submit additional data logs to IFA upon request.

The data-logging rain gauge devices shall be removed by Design-Build Contractor once temporary erosion and sediment control features are removed from the Project. Design-Build Contractor shall retain possession of the devices.

2. FAA Form 7460

Design-Build Contractor shall obtain and maintain FAA Form 7460 (Notice of Proposed Construction or Alteration) for any permanent structures or equipment used for the Project that penetrate the conditions that require FAA Form 7460. Design-Build Contractor shall submit the completed FAA Form 7460 to IFA for review and approval. Upon approval by IFA, the Design-Build Contractor shall be responsible for submittal of any application to the FAA.

3. Indiana Tall Structure Permit

Design-Build Contractor shall obtain and maintain an Indiana Tall Structure Permit if any temporary or permanent structure or equipment used for the Project requires that Design-Build Contractor obtain such Governmental Approval from IFA. IFA will coordinate permitting as prepared and requested by the Design-Build Contractor with the INDOT Office of Aviation.

4. City of Indianapolis Right-of-Way Permit

Design-Build Contractor shall obtain and maintain a ROW permit if there will be any Construction Work, use, restriction, or excavation of City of Indianapolis public ROW.

5. City of Indianapolis Flora Permit

Design-Build Contractor shall obtain and maintain a flora permit for any tree planting, landscaping, spraying, bracing, removal, or pruning Work in the City of Indianapolis public right-of-way.

6. Mitigation

Design-Build Contractor shall prepare and submit wetland and stream impact documentation to IFA for review and approval in order to obtain the necessary Governmental Approvals for any additional wetland or stream impacts as a result of Design-Build Contractor's design.

7.3.2 Groundwater Protection

The portion of the Project between the southern limit of Segment E and approximately 650 feet north of Banta Road are located within multiple wellhead protection areas (WHPAs). Design-Build Contractor shall develop and maintain a Spill Prevention, Control, and Counter-Measure Plan (SPCCP) to address the Work within the WHPA. Design-Build Contractor shall coordinate with Marion County Public Health Department, Citizens Energy Group, Indiana American Water, IDEM, and Johnson County, and develop and submit the SPCCP to IFA for review and approval.

The SPCCP shall, at a minimum, comply with the requirements of the Standard Specifications and the Marion County Wellhead Protection Standards. In addition to standard spill protection practices required as part of the Standard Specifications, the SPCCP shall also include protocols for:

1. Daily inspection of chemical tanks within the WHPA
2. No overnight storage of large equipment within the WHPA
3. No refueling of any equipment in the WHPA
4. No dumpsters in the WHPA
5. No concrete wash-out areas in the WHPA
6. No fertilizer, pesticide, or herbicide application within the WHPA

Design-Build Contractor shall include SPCCP protocols in the stormwater pollution prevention plan (SWPPP).

Design-Build Contractor shall also coordinate with Citizens Energy Group, Indiana American Water, Johnson County Health Department, and Marion County Public Health Department during the Design Work and Construction Work regarding all borrow or disposal areas, as well as the storage of construction materials generated by clearing or grubbing or demolition within the WHPA.

7.3.3 Hazardous Materials

Design-Build Contractor shall adhere to the requirements of Section 6.10.1 of the PPA related to Hazardous Materials. Design-Build Contractor shall develop final documentation and obtain required Governmental Approvals for Hazardous Materials Management Work performed on the Site. Applicable deed restrictions required shall be drafted by the Design-Build Contractor for review and approval by IFA as needed. IFA will secure the required internal signatures and file deed restrictions and/or environmental covenants in the land records as required by Governmental Rules.

Design-Build Contractor shall develop and submit to IFA and appropriate Governmental Entities all required reports and documentation for Hazardous Materials Management, underground storage tanks (UST), and aboveground storage tanks (AST) encountered during performance of the Work. Design-Build Contractor shall make assessments of the soil and groundwater conditions as soon as practicable, and in no case later than as may be required under Governmental Rules or Governmental Approvals (or both) and submit the Hazardous Materials Management Plan (HMMP) to IFA for review and approval.

7.3.3.1 Hazardous Materials Releases

Design-Build Contractor shall comply with the following provisions regarding Release of Hazardous Materials on the Site:

1. Release of Hazardous Materials on the Site, whether by Design-Build Contractor or third-parties, shall be reported to IFA and the IDEM Office of Emergency Response (OER) Spill Line at (888) 233-7745. For Release of Hazardous Materials by third-parties, the contact shall occur as soon as action has been taken to either contain/control the extent of the release, or protect persons, animals, or fish from harm or further harm. For Release of Hazardous Materials by Design-Build Contractor, the contact must be made within 12 hours of a release from a UST and within two hours of discovery of a spill.
2. Design-Build Contractor shall take appropriate response actions for Design-Build Contractor Releases of Hazardous Materials occurring on the Site as follows:
 - a. Identify the spilled material from a safe distance.
 - b. Contain the spilled material or block/restrict its flow using absorbent booms/pillows, dirt, sand, or by other available means.
 - c. Cordon off the area of the spill.
 - d. Deny entry to the cordoned off area to all but response personnel.
 - e. Contact IFA and IDEM OER Spill Line.
 - f. Contact INDOT Operations Support.

7.3.3.2 Lead-Based Paint

Design-Build Contractor shall evaluate paint on bridges, regardless of surface (i.e., metal, concrete, etc.), to determine if lead is present. Design-Build Contractor shall collect paint samples using qualified environmental professionals licensed by the Indiana State Department of Health as a Risk Assessor or a Lead Inspector. Design-Build Contractor shall analyze paint samples for both total lead and toxicity characteristic leaching procedure (TCLP) lead using United States Environmental Protective Agency (U.S. EPA) SW Method 6010 to determine proper removal and disposal methods. In general, a TCLP lead result less than 5 ppm (mg/L) indicates the material can be disposed at a RCRA Subtitle C solid waste landfill and a TCLP lead result at or above 5 ppm (mg/L) is considered a hazardous waste. Design-Build Contractor shall submit copies of the laboratory analytical results to IFA to confirm handling, transport, and disposal methods. If the paint must be disposed of as a hazardous waste, coordination for handling, transportation and disposal of the waste shall be incorporated into the HMMP.

Design-Build Contractor shall make all efforts to minimize human and environmental exposure to lead-based and lead containing paint chips and dust.

7.3.3.3 Hazardous Materials Management Plan

Design-Build Contractor shall prepare a HMMP for the handling, storage, management, transportation, and/or disposal of Hazardous Materials or Recognized Environmental Condition (REC), and the closure and removal of USTs or ASTs, whether encountered on or brought onto the Site by the Design-Build Contractor, encountered or brought onto the Site by a third-party, or otherwise, during the term of the PPA. Design-Build Contractor shall submit the final HMMP to IFA no later than 60 days after NTP for review and approval in its good faith discretion. The HMMP shall contain specific provisions to undertake Hazardous Materials Management as appropriate, in accordance with applicable Governmental Rules, Governmental Approvals, and all applicable provisions of the PPA Documents.

The HMMP shall, at a minimum, consider the identified soil and groundwater contaminants at the following locations:

1. Ricker's 876/Amoco – 2025 West Southport Road, Indianapolis, IN 46217
2. Kopetsky's/Martin Marietta/IMI/Tri-Ax Inc. – 5320 Belmont Avenue, Indianapolis, IN 46217
3. RH Marlin – 2202 West Thompson Road, Indianapolis, IN 46217
4. Shell Bigfoot – 1229 N. Bluff Road, Greenwood, IN 46204
5. Pilot Travel Center – 4607 Harding Street, Indianapolis, IN 46217
6. WR Beach/Affordable Auto & Towing – 4402 Bluff Road, Indianapolis, IN 46217

Design-Build Contractor shall supplement the existing Hazardous Materials information, as appropriate, based on changes to the Project that increase the potential to encounter Hazardous Materials and RECs. Design-Build Contractor shall use this supplemental information to develop the HMMP. If excavation to the depth of the static water level and dewatering of the excavation will be necessary, the Design-Build Contractor shall make arrangements for the characterization, on-Site treatment, and/or off-Site disposal of impacted groundwater.

The HMMP shall include provisions for notifying all on-Site workers, including Subcontractors, of the potential exposure to Hazardous Materials or RECs on the Project, and for exposure to Hazardous Materials or RECs by personnel who enter the Site, regardless of their affiliation, all in accordance with State and federal laws. The HMMP shall require that all personnel handling Hazardous Materials or RECs be trained and certified at least to the minimum requirements established in accordance with Governmental Rules.

Further, the HMMP shall include procedures for ensuring that all applicable certifications, licenses, authorizations, and Governmental Approvals for Design-Build Contractor personnel handling Hazardous Materials or RECs are current and valid through the duration of the Work.

The HMMP shall include the following contents at a minimum:

1. Responsible personnel
2. Site information
3. Site map
4. Procedures for handling any Hazardous Materials or RECs encountered on Site
5. Spill Prevention, Control, and Counter-Measure Plan, including:
 - a. Potential spill sources
 - b. Spill reporting protocol, including emergency contact telephone numbers
 - c. Spill prevention and response training
 - d. Spill containment
 - e. Spill prevention
 - f. Spill response report form(s)
 - g. Bulk storage containment
 - h. Safety data sheets
 - i. Copies of agreements with any agencies which are part of the spill response effort
6. Procedural plan for unanticipated Hazardous Materials or REC discoveries
7. Procedural plan for the excavation and disposal of any Hazardous Materials and RECs disturbed by the Project

7.3.3.4 Hazardous Materials Spill Containment Traps

Design-Build Contractor shall provide Hazardous Materials spill containment traps to divert highway and bridge runoff from direct discharge into Pleasant Run Creek. Discharge from the bridge and roadway shall be directed to the roadside ditch which shall include a sluice gate closure. The sluice gate shall be constructed as an emergency barricade if any Hazardous Materials were to flow into the median or side ditches. Design-Build Contractor shall design and construct Hazardous Materials spill containment traps and associated ditches to detain Hazardous Materials releases in the side ditch until such time that appropriate emergency remedial action can be taken.

The Hazardous Materials spill containment trap shall accommodate Hazardous Materials release from at least one 11,000-gallon tanker truck. Sluice gates shall comply with requirements in Attachment 7-2 (Hazardous Materials Spill Containment Traps).

7.3.4 Environmental Compliance

Design-Build Contractor shall comply with and track the fulfillment of all environmental commitments in accordance with Attachment 7-3 (Environmental Commitments Summary).

7.3.4.1 Environmental Compliance and Mitigation Plan

Pursuant to Section 1.3.3.3 (Environmental Management Plan), Design-Build Contractor shall develop and maintain an Environmental Compliance and Mitigation Plan (ECMP). The ECMP shall be submitted to IFA for review and approval as part of the PMP. The ECMP shall include all environmental commitments and required mitigation listed in the PPA Documents, Environmental Approvals, and Governmental Approvals.

Design-Build Contractor shall prepare quarterly updates to the ECMP, which shall include a checklist that documents all impacts and anticipated impacts to environmental resources identified in the PPA Documents, Environmental Approvals, and Governmental Approvals. Design-Build Contractor shall also update the ECMP in accordance with Section 6.11.2 to incorporate additional and revised requirements. The checklist shall be submitted with the ECMP for IFA approval. Design-Build Contractor shall submit an updated checklist to IFA for approval within one week after the end of each quarter of the year.

The ECMP shall describe the appropriate controls applicable during the management, design, construction/installation, and documentation of environmental compliance and mitigation efforts. The ECMP shall include procedures designed to ensure that requirements of Environmental Law and Environmental Approvals are satisfied.

The ECMP shall include:

1. A description of how full compliance is achieved with regard to Project environmental commitments, conditions of Environmental Approvals, Environmental Law, and procedures to interface with IFA during Design Work and Construction Work.
2. A plan of how environmental commitments shall be incorporated into the Project and addressed.
3. Design-Build Contractor's environmental compliance process, structure, organization location, level of documentation, forms of communication, and QA/QC processes and procedures.
4. A response plan that includes procedures to follow if unanticipated discoveries are encountered during Project development, such as threatened or endangered species or historical and archaeological sites. The response plan shall be developed to keep the Project in compliance with Environmental Approvals, Environmental Law, and Governmental Approvals at all times.
5. A corrective action plan that includes procedures to follow if it is discovered the Project is not in compliance with Environmental Approvals, Environmental Law, and Governmental Approvals.

7.3.4.2 Environmental Compliance and Mitigation Training Program

Design-Build Contractor shall develop and implement a mandatory environmental compliance and mitigation training program and present the training program to Design-Build Contractor's supervisory personnel, equipment operators, construction personnel, and any Subcontractor personnel who will perform Work within the Planned ROW Limits. The training shall provide an understanding of the necessary environmental compliance requirements and any environmentally sensitive areas of the Project.

The training program shall be focused on the specific environmental concerns for laborers and contractors who are working in a specific location. Concerns for one location may differ from those in another location. The training program shall be submitted to IFA for review and approval and cover, at a minimum, the following elements:

1. Erosion and sediment control measures – sequencing, implementation, installation, and maintenance
2. Maintaining approved limits of disturbance
3. Tree and shrub protection
4. Avoidance and minimization of impacts to environmentally sensitive locations, including trees, wetland areas, and activities that would require modifications to waterway permits
5. Identification and locations of “do not disturb” zones in accordance with Section 7.3.13
6. Wildlife education and reporting, including habitat protection for Indiana bats, northern long eared bats, and bald eagles, and what to do if any of these species is found
7. IFA-provided endangered, threatened, and rare species training video shown to all personnel prior to entry within the Project Right of Way
8. Seasonal Work restrictions, including trees and waterways
9. Pumping and dewatering operations
10. Aquatic invasive species decontamination and removal
11. Accidental discovery of archaeological sites, archaeological material, or human remains
12. Impacts and consequences for departure from approved operating procedures
13. Encountering Unknown Hazardous Materials
14. Historic properties and structures

The environmental compliance and mitigation training program shall be a component part of the PMP. Design-Build Contractor shall not allow personnel to enter the Planned ROW Limits without completing the required training. Design-Build Contractor shall provide updates to this training program to IFA as necessary to meet current requirements and new commitments and to ensure the training is implemented by the appropriate personnel. Project bulletins shall be posted on-Site to inform previously trained employees of updates and/or changes to environmental conditions. Design-Build Contractor shall maintain a list of trained individuals including name, company, type and date of training, and make the information available for IFA review.

7.3.5 Noise Analysis and Mitigation

7.3.5.1 Sound Barrier and Noise Attenuation

Sound barriers are required at 14 locations within the Planned ROW Limits. Approximate sound barrier locations are shown in Attachment 7-9 (Approximate Sound Barrier Locations). Design-Build Contractor shall be responsible for noise analysis, final design, and construction of sound

barriers with the goal of maximizing noise attenuation in accordance with INDOT's Traffic Noise Analysis Procedure. Sound Barrier 9W shall not block the line of sight from the roadway to the commercial business property located at 6430 Belmont Avenue. Sound Barrier 8W shall not block the line of sight from the roadway to the undeveloped commercial property located at 2201 W. Southport Road/7125 Wellingshire Boulevard, which is located north of Southern Dunes Apartments. Design-Build Contractor shall submit documentation that the noise analysis and final design of the sound barriers complies with INDOT's Traffic Noise Analysis Procedure.

The applicable requirements for coordination of sound barriers with affected communities shall conform to Section 5 (Public Involvement). The aesthetics of noise barriers shall conform to Section 6 (Aesthetics and Landscape Architecture). The sound transmission performance criteria and structural design of sound barriers shall conform to Section 14 (Structures). The Design-Build Contractor shall provide only Type 1 or Type 2 sound barriers.

7.3.5.2 Construction Noise

Design-Build Contractor shall design and construct the Project in accordance with local, State, and federal noise regulations, policies, and guidelines.

Activities that produce unreasonable noise as defined by the City of Indianapolis Ordinance Section 391-302 (Unlawful noises) are prohibited between 10:00 p.m. and 7:00 a.m. each day including weekends. Prohibited activities include:

1. Pile driving
2. Drilling
3. Jackhammering
4. Vibratory hammering
5. Blasting
6. Use of pneumatic hammers or hoe ram attachments
7. Crushing operations
8. Slamming of truck tailgates
9. Demolition (excluding milling)

Design-Build Contractor shall proactively monitor noise levels associated with Construction Work to assure compliance with the City of Indianapolis Ordinance Section 391-302. Design-Build Contractor shall cease operation of construction equipment if IFA, in its sole discretion, determines that the operation of such equipment is attended by unreasonable noise that prohibits, disrupts, injures, or endangers the health, safety, welfare, prosperity, comfort, or response of reasonable persons residing in the city during the hours of 10:00 p.m. to 7:00 a.m. on any day. Any such direction shall not be the basis for any Claim under the PPA Documents.

Design-Build Contractor shall document how it will address construction noise mitigation in a Construction Noise Abatement Plan. The Construction Noise Abatement Plan shall be submitted to IFA for review and approval as a condition to commencement of construction, as defined in Section 4.5 of the PPA.

Outside of the restrictions stated above, and to the extent permitted by Governmental Rules, Design-Build Contractor will be allowed to operate all other construction equipment at all times during performance of Construction Work.

7.3.6 Construction Vibration and Monitoring

Design-Build Contractor shall develop, implement, and maintain a Vibration Monitoring and Control Plan. The Vibration Monitoring and Control Plan shall be submitted to IFA for review and approval as a condition to commencement of construction, as defined in Section 4.5 of the PPA.

The principal components of the Vibration Monitoring and Control Plan shall include the following:

1. Vibration susceptibility study per Attachment 7-5 (Susceptibility Study) to include an assessment of the potential for damage to buildings and impacts to sensitive operations and equipment near the Project due to vibration-producing activities.
2. Pre-Construction Survey per Attachment 7-6 (Pre-Construction Survey) to include a pre-construction condition survey of buildings and structures within a distance at which vibrations of 0.1 inch per second or greater will occur to document such buildings' or structures' conditions prior to Construction Work in the vicinity.
3. Sewer condition reports.
4. Structures and pavement reports.
5. Building condition reports.
6. Vibration monitoring approach, to include locations of vibration monitors, number of monitors, maximum vibration limits, and communication and reporting processes to control excessive vibration levels and to respond to community complaints. Design-Build Contractor shall comply with Attachment 7-4 (Vibration Monitoring Criteria).

Design-Build Contractor shall use the results of the susceptibility study, Pre-Construction Survey, sewer condition reports, and structures and pavement reports and other applicable studies to develop the vibration monitoring approach.

Design-Build Contractor shall address the potential impacts to nearby receptors due to construction or demolition activities associated with this Project in the Vibration Monitoring and Control Plan. The term "receptor" as used in this document includes buildings, structures, Utilities, Utility service connections, sensitive operations/processes, and occupants. The Vibration Monitoring and Control Plan shall, at a minimum, include the following historic properties as receptors:

1. John Sutton House
2. Marion County Bridge No. 4513F
3. Glenn's Valley Nature Park Retreat House
4. Cleary-Barnett House
5. Le Ciel (Charles Laughner House)

6. Glenwood Homes Association Historic District
 - a. Shepard House
 - b. Enright House
 - c. Rice House
 - d. Baecke House
7. Southside German Market Gardeners Historic District
 - a. Wegehof House & Nursery
 - b. Brehob House

Design-Build Contractor shall include plans to phase construction activities that create vibration so that multiple sources of vibration do not occur at the same time, to prohibit or limit certain activities that create higher levels of vibration during specific night-time hours (10:00 p.m. to 7:00 a.m.) adjacent to residential areas, and to keep the public informed of proposed construction schedules in accordance with Section 5 (Public Involvement).

Vibration-producing activities on the Project shall not commence until monitoring equipment is successfully installed per the approved Vibration Monitoring and Control Plan and the pre-construction building condition report(s), sewer condition report(s), and structures and pavement report(s) are reviewed and approved by IFA. Design-Build Contractor shall submit the Vibration Monitoring and Control Plan, an electronic copy of each notification letter issued, and vibration monitoring records to IFA. Design-Build Contractor shall immediately report any violation of vibration limits to IFA.

7.3.6.1 Vibration Susceptibility Study

Design-Build Contractor shall develop a list of all anticipated vibration-producing activities and where the activities are expected to occur. Design-Build Contractor shall develop a list and map all potentially impacted receptors per Attachment 7-5 (Susceptibility Study) and make structure determinations and submit to IFA for review prior to the occurrence of any vibration-causing activities.

7.3.6.2 Pre-Construction Survey

Design-Build Contractor shall perform a Preconstruction Survey to document the existing condition of each receptor defined in Attachment 7-5 (Susceptibility Study) per the requirements of Attachment 7-6 (Pre-Construction Survey).

Design-Build Contractor shall engage a qualified professional from the Indiana State Historic Preservation Office's (SHPO) Qualified Professional Roster in architecture (QP) as a Subcontractor (QP is for historic structures only) in addition to a structural Registered Professional Engineer to evaluate the condition of all structures prior to the occurrence of any vibration-causing activities. Design-Build Contractor shall request permission from the property owner to access the interior of the structure.

7.3.6.3 Monitoring During Construction

Design-Build Contractor shall control vibrations due to the Construction Work in accordance with Table 1 in Attachment 7-5 (Susceptibility Study) to avoid damage to structures or other property, including historic structures, Utilities, Railroads, roadways, structures, and monitoring systems for Hazardous Materials and RECs.

Design-Build Contractor shall not damage adjacent infrastructure or property; show no damage has occurred from Design-Build Contractor operations, such as dewatering operations, temporary excavations, temporary sheeting or shoring, or use of vibratory equipment, by providing Pre-Construction and Post-Construction Survey reports.

Design-Build Contractor shall monitor vibration levels at structures within the Project Right of Way and within 1,000 feet of the Hanson Aggregates real property. Monitoring shall occur throughout the term of the PPA. Design-Build Contractor shall maintain monitoring logs and make them available to IFA as requested. Design-Build Contractor shall report to IFA incidences of vibration levels exceeding the threshold listed for modern industrial/commercial buildings as indicated in Table 1 in Attachment 7-5 (Susceptibility Study).

7.3.6.4 Post-Construction Survey

Design-Build Contractor shall produce a Post-Construction Survey for the properties and receptors included in the Pre-Construction Survey and shall submit to IFA for review and comment.

Design-Build Contractor's structural engineer and QP (QP is for historic structures only) shall make the determination whether damage has occurred to structures or other property as a result of vibrations caused by the Work. Design-Build Contractor shall submit a written report based on its structural engineer and QP's recommendations and submit to IFA for review and comment. IFA will coordinate the report as prepared and requested by the Design-Build Contractor with INDOT. The report shall provide information on whether the specific structures and properties have been damaged due to construction activities and it shall detail the extent of the damage to each impacted structure.

Design-Build Contractor shall be responsible for the cost and repair of any damage to structures, or other property caused by the Work. Design-Build Contractor shall repair any damaged historic structure in accordance with the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings. Design-Build Contractor shall be responsible for coordinating with the owner of the structure for any needed surveys or repair Work.

Damage, other than to structures, identified in the Post-Construction Survey report that was not present in the Pre-Construction report shall be repaired by the Design-Build Contractor to a condition approved by IFA.

7.3.7 Cultural Resources

If Design-Build Contractor encounters any Differing Site Condition in a previously unknown (or constructively unknown) archaeological, paleontological, biological, or cultural resource or artifact, Construction Work within 100 feet around the area shall cease and reasonable

measures shall be implemented to avoid harm to the affected portion of the Site. Design-Build Contractor shall proceed in accordance with Section 5.3 of the PPA, INDOT Construction Memorandum 13-14, and the Standard Specifications. Design-Build Contractor shall provide Notice to IFA within 24 hours after encounter of the Differing Site Condition. Design-Build Contractor shall ensure an on-Site evaluation is conducted and treatment plan(s) is developed, as needed. If the Differing Site Condition is determined not to be eligible for inclusion on the National Register of Historic Places (NRHP), ground-disturbing Work may continue.

Design-Build Contractor shall have a qualified professional archaeologist on-call who can respond and report to the Site within four hours in case of discovery of any Differing Site Conditions. The qualified professional archaeologist shall have experience with documentation, excavation, and mitigation of historic urban archaeological sites.

Design-Build Contractor shall comply with the conditions defined in the approved Cemetery Development Plan for Bell Cemetery in Attachment 7-7 (Bell Cemetery Plan). If human remains, or other indications of burials are discovered during construction, Design-Build Contractor shall immediately cease all ground-disturbing activities in and within 100 feet of the area where such conditions are discovered. Design-Build Contractor shall use fencing or flagging to block off the area. Design-Build Contractor shall provide Notice to IFA of the discovery within 24 hours. Design-Build Contractor shall provide further Notice in accordance with the approved Cemetery Development Plan.

Design-Build Contractor shall be responsible for any archaeology and aboveground historic property surveys and any associated additional mitigation for Construction Work outside the Planned ROW Limits.

The Design-Build Contractor shall provide technical support to IFA for a meeting with the Southside German Market Gardeners Historic District Advisory Team after Stage 1 Review Submission and before Stage 3 Review Submission to present the advanced design for review and comment. IFA, in coordination with INDOT Environmental Services, will be responsible for outreach to and scheduling of the meeting, venue procurement, as well as for coordinating the review comments received from the Southside German Market Gardeners Historic District Advisory Team and FHWA with the Design-Build Contractor. Design-Build Contractor shall be responsible for providing meeting materials, appropriate technical staff to attend the meeting, and updating the design Plans based on guidance received from IFA in its good faith discretion following the meeting. Design-Build Contractor shall incorporate the guidance received from IFA prior to Stage 3 Review Submission.

Design-Build Contractor shall submit to IFA the Released for Construction Documents for the aesthetics and landscaping of the side slopes along I-465 within the Historic District and the bridge carrying I-465 over Bluff Road. IFA will coordinate the Released for Construction Documents as prepared and requested by the Design-Build Contractor with INDOT Environmental Services Division, who will distribute to the Indiana SHPO and the Southside German Market Gardeners District Advisory Team for their records.

7.3.8 Water Quality

State Ditch and White River are listed as impaired due to *Escherichia coli* (*E. coli*) bacteria and impaired biotic communities. Design-Build Contractor personnel who are working in or near water with *E. coli* shall take care to wear appropriate personal protective equipment (PPE),

observe proper hygiene procedures, including regular hand washing, and limit personal exposure.

Design-Build Contractor shall ensure that all construction equipment used for the Project shall be free of zebra mussel (*Dreissena polymorpha*) adults and veligers. Any construction equipment that has been used in waters that could have been infested with zebra mussels (within the last two weeks) shall be thoroughly cleaned at an off-Site maintenance, storage, or disposal facility.

Thorough cleaning at an off-site facility shall require removal of all soil, vegetation, rocks, sand, shells, and other debris from the equipment by one of the following methods:

- Option 1: Power spray the entire surface of the equipment with hot water at a minimum temperature of 60 degrees Celsius for a minimum continuous duration of five minutes.
- Option 2: Power spray the entire surface of the equipment with steam at a minimum temperature greater than 100 degrees Celsius for a minimum continuous duration of five minutes.

After cleaning as described above, the equipment shall be disinfected using a sodium hypochlorite (chlorine bleach) solution. The solution shall be mixed at a ratio of 1-part bleach per 50-parts water. All exposed surfaces shall be sprayed with the solution. The solution shall be disposed of in accordance with all applicable State and federal regulations. The equipment shall then be allowed to air dry for a minimum of 14 days prior to entry and use on the Project.

7.3.9 Air Quality

Design-Build Contractor shall maintain construction equipment in proper mechanical condition. Mobile Source Air Toxics (MSAT) and diesel emission reduction strategies shall be utilized to limit diesel and other emissions from construction equipment, such as limiting idling times, or reducing the number of trips. Fugitive dust generated during land clearing and demolition procedures shall be controlled in accordance with the Standard Specifications.

7.3.10 Wetlands and Waters of the United States

The Project includes permanent and temporary impacts to wetlands, wetland areas, and waterways. The impacted wetland areas are summarized in the Environmental Approvals. IFA will provide waterway and wetland mitigation for the impacts contained within the Planned ROW Limits, Governmental Approvals, and Environmental Approvals. Mitigation of additional wetland and waterway impacts due to Design-Build Contractor's design shall be the responsibility of the Design-Build Contractor in accordance with Section 6.11.2 of the PPA and submitted to IFA to obtain the necessary Governmental Approvals. IFA will review additional wetland and waterway impacts as prepared and requested by the Design-Build Contractor with INDOT Environmental Services and will confirm mitigation approach.

After finalizing design and obtaining any needed modifications or amendments to Governmental Approvals with the assistance of IFA, Design-Build Contractor shall be responsible for the installation and continued maintenance of temporary protective fencing and prohibitive signing adjacent to wetland areas and waterways prior to construction. Temporary protective fencing shall consist of high visibility plastic mesh snow fencing. The temporary protective fencing shall be installed along the Planned ROW Limits adjacent to jurisdictional streams, wetlands, and

other water bodies. All Design-Build Contractor personnel shall be made aware of all designated protection areas. Design-Build Contractor shall perform all Work in wetlands, wetland areas, and waterways in compliance with Environmental Approvals, including the Construction in a Floodway and Section 401/404 permits and conditions.

7.3.10.1 Impacts to Wetlands and Waterways

Design-Build Contractor shall avoid and minimize impacts to wetlands and streams in the development of the Design Documents and during Construction Work. The following stipulations shall be adhered to:

1. Design-Build Contractor shall not impact any wetland area or waterway, whether it is permanent or temporary, unless that impact is addressed and approved as an authorized action by the appropriate federal and, as applicable, State regulatory agency in a Governmental Approval or permit modification.
2. Design-Build Contractor shall provide Notice to IFA within 24 hours of inadvertent impacts to wetlands or waterways for which activities are not permitted. Areas shall be immediately restored to the full satisfaction of IFA and the appropriate environmental regulatory agencies.

7.3.10.2 Best Management Practices for Work in Wetlands, Waterways, and 100-Year Floodplains

Design-Build Contractor shall include measures to control and minimize soil erosion and water quality impacts from construction related activities. Design-Build Contractor shall follow the Best Management Practices (BMPs) listed below during construction. The Standard Specifications shall govern construction activities to control erosion and subsequent water pollution.

BMPs shall be used to prevent non-point source pollution, to control stormwater runoff, and to minimize sediment discharge to water quality and aquatic habitats. The following BMPs, among others, shall be implemented:

1. Design-Build Contractor shall not stockpile or store excess fill, construction material, equipment, or debris in wetlands, waterways, or any 100-year floodplains unless authorized by IFA-Provided Approvals and similar Governmental Approvals. Design-Build Contractor shall not place materials in a location or manner that adversely impacts surface or subsurface water flow into or out of wetlands, waterways, or any 100-year floodplains.
2. Design-Build Contractor shall not operate equipment in a manner that will damage wetlands, waterways, or any 100-year floodplains unless authorized by IFA-Provided Approvals and similar Governmental Approvals. Design-Build Contractor shall return in-stream habitats to their original condition upon completion of Construction Work in the area.
3. Design-Build Contractor shall repair and maintain any serviceable structure or fill within the Planned ROW Limits so there is no permanent loss of wetlands, waterways, the 100-year floodplains, or permanent modification to any 100-year floodplains in excess of that allowed under permit unless authorized by IFA-Provided Approvals and similar Governmental Approvals.

4. Design-Build Contractor shall limit the physical disturbance of waterways and vegetation to only that which is necessary and authorized in the permits. Details shall be included in the plans to further minimize the removal of trees and understory vegetation that fall within the Planned ROW Limits but outside the actual limits of construction.
5. Design-Build Contractor shall permanently revegetate all bare and disturbed areas in accordance with Section 6 (Aesthetics and Landscape Architecture).
6. Staging, refueling, concrete washout waste water, and cleanup areas shall not be allowed within a minimum distance of 200 feet from streams, wetlands, and other waterbodies. Equipment cleaning and staging areas shall be located such that runoff from these areas shall not directly enter streams, wetlands, and other waterbodies. Equipment cleaning and staging areas shall be located such that effluent shall be filtered through vegetated areas and proper sediment control structures located between the staging area and receiving water bodies, thereby minimizing the potential impacts such as sedimentation and pollution. Pollutants such as fuels, lubricants, bitumen, raw sewage, and other harmful materials shall not be discharged into or near rivers, streams, and impoundments, or into natural or manmade channels leading thereto. Washwater or waste from concrete mixing operations shall not be allowed to enter any streams, wetlands, or other waterbodies. Washwater disposal shall follow the Standard Specifications.
7. Design-Build Contractor shall seed and protect all disturbed slopes in accordance with Section 6 (Aesthetics and Landscape Architecture) all Project Governmental Approvals.
8. The size, shape, and stability of natural stream channels unavoidably impacted by construction shall be used as the basis for designing replacement channels. Work in the low-water channel of existing streams shall be minimized to the maximum practicable extent by limiting construction to the placement of required drainage structures or structure components such as piers, pilings, footings, cofferdams, the shaping of spill slopes around bridge abutments, and the placement of riprap. Newly created stream channels shall be stabilized prior to water being diverted from the original stream channel (or diversion measure).
9. Fording of streams shall not be allowed unless authorized by the Project Governmental Approvals. Temporary bridges or other structures shall be used in accordance with Project Governmental Approvals. Unless otherwise approved in writing by IFA, and upon the receipt of any required Project Governmental Approvals, mechanical equipment shall not be allowed to enter or operate in streams, wetlands, or other water bodies. Only non-erodible materials shall be permitted to be placed in temporary crossings in accordance with Project Governmental Approvals. Natural channel design features shall be permitted in streams during Construction Work and only in accordance with Project Governmental Approvals. The Design-Build Contractor shall completely remove any temporary construction access built near streams, wetlands, or other water bodies in conjunction with this Project upon the completion of Construction Work.
10. Design-Build Contractor shall prevent downstream siltation during cofferdam dewatering. Pollutants such as fuels, lubricants, bitumen, raw sewage, and other harmful materials shall not be discharged into or near rivers, streams, and impoundments, or into natural or manmade channels leading thereto. The use of artificial bank stabilization such as riprap shall be limited unless otherwise required by final design details. Avoid channel

alternations below the ordinary high-water mark (OHWM) elevation to maintain habitat for aquatic organisms.

11. If piers are placed within the floodplain as required by structural design, impacts to drainage within the floodplain shall be minimized. Installation of riprap shall be limited to areas necessary to protect the integrity of structures being installed. If riprap is required, it shall be installed outside the thalweg and between the toe of slope and the OHWM where possible.

7.3.10.3 Temporary Impacts to Streams, Wetlands, and Floodplains

The Project may have temporary stream impacts during Construction Work. Temporary impacts are defined as regulated activity; typically fill that is intentionally placed within jurisdictional waterways for construction purposes and that is of an impermanent nature. Design-Build Contractor shall restore the temporarily affected area to preconstruction conditions or in accordance with the Released for Construction Documents corresponding to the time when the Design-Build Contractor ceases use of the temporarily impacted area or prior to expiration of the permit authorizing the temporary impact, whichever occurs first. Additional stream stabilization measures may be required by IFA to ensure the stability of the restored section and as required by Governmental Approvals. Design-Build Contractor shall limit temporary stream impacts to those impacts authorized by the Project Governmental Approvals.

The streams with anticipated temporary impacts are provided in the IFA-provided permits. The specific location of the anticipated temporary stream impacts are provided in the tables in the Section 401 and Section 404 IFA-Provided Approvals. Earthen materials shall not be used for temporary stream diversions, stream crossings, or cofferdams due to the potential for washout during storm events and downstream sediment deposition (unauthorized fill) resulting from erosion. All temporary fill material shall be of a non-erosive nature.

Restoration plans for streams, wetlands, and floodplains shall be dictated by waterway IFA-Provided Approvals. Design-Build Contractor shall be responsible for final design and construction of all stream and wetland restoration required by the Project Governmental Approvals and Technical Provisions. The following elements shall be incorporated into restoration for additional Work proposed by Design-Build Contractor:

1. Removal of all construction and temporary fill material
2. Use of timber mats or similar materials when working within wetland areas to prevent soil compaction
3. Deconsolidation and, as applicable, scarification of compacted soils
4. Replacement of topsoil and, as applicable, organic matter lost to erosion and sediment control measures
5. Reestablishment of grades to preconstruction conditions
6. Removal of temporary stream crossings, pump-arounds, and/or causeways
7. Restoration of stream banks with woody vegetation

8. Replant any area within 50 feet of a streambank that was disturbed temporarily and that was vegetated preconstruction with native vegetation similar to preconstruction species composition, with the exception of Utility corridors

Design-Build Contractor shall monitor the restoration of temporary impacts for compliance with requirements and conditions of Project Governmental Approvals. Additional remediation efforts shall be implemented by Design-Build Contractor, if determined necessary by IFA.

7.3.11 Reforestation

7.3.11.1 Forest Impact Avoidance and Minimization

Design-Build Contractor shall keep tree clearing and snag removals within the Planned ROW Limits and within time-of-year restriction requirements. Design-Build Contractor shall comply with the IAC for handling and transporting of cleared trees. Design-Build Contractor shall be responsible for Environmental Approvals and Governmental Approvals necessary for any proposed Work outside the Planned ROW Limits. If any changes to the Project by the Design-Build Contractor result in additional impacts to forests beyond the permitted impacts, then Design-Build Contractor shall submit the required documentation to assist IFA with acquiring any necessary Environmental Approval or modification to existing Environmental Approval.

Design-Build Contractor shall revegetate all disturbed areas within the Planned ROW Limits in accordance with Section 6 (Aesthetics and Landscape Architecture). IFA will be responsible for forest mitigation associated with the IFA-provided Project ROW, excluding Design-Build Contractor impacts to any areas designated as “do not disturb.”

1. IFA will provide for all riparian forest mitigation described in the IFA-Provided Approvals, unless specified elsewhere in this Section 7.
2. Design-Build Contractor shall prepare and submit calculations of forest, wetland, and stream impacts based on the Design Work to IFA.

7.3.12 Terrestrial Wildlife

7.3.12.1 Terrestrial Wildlife Avoidance and Minimization

Design-Build Contractor shall incorporate invasive-free mulches, topsoil and seed mixtures in accordance with Section 6 (Aesthetics and Landscape Architecture). The known invasive species list can be found on the IDNR website (<http://www.in.gov/dnr/3123.htm>).

7.3.12.2 Bat Inspection and Mitigation Measures

The Site is within the range of the federally endangered Indiana bat (*Myotis sodalis*) and the federally threatened northern long-eared bat (*Myotis septentrionalis*). The following mitigation and minimization measures shall be implemented by the Design-Build Contractor as part of the Work:

1. Ensure all operators, employees, and contractors working in areas of known or presumed bat habitat are aware of all INDOT and FHWA environmental commitments, including applicable avoidance and minimization measures (AMMs).

2. Direct temporary lighting shall be directed away from suitable habitat from April 1 through September 30.
3. Use downward facing, full cut-off lens lights with same intensity or less for replacement lighting, and direct lighting away from suitable habitat when installing or replacing existing permanent lights.
4. Ensure tree removal is limited to that specified in the Project Plans. Install bright colored flagging or fencing prior to any tree clearing to ensure Construction Work stays within clearing limits. Ensure all Design-Build Contractor personnel understand clearing limits and how the limits are marked in the field.
5. Perform tree removal between October 1 and March 31.
6. If Construction Work is to be performed during the active bat season, the Design-Build Contractor shall perform an assessment of bridges and culverts to confirm the presence of bats. If the presence of bats is detected during the assessment, the Design-Build Contractor shall coordinate with IFA and develop and submit proposed exclusionary measures for IFA review and approval. IFA will coordinate proposed bat exclusionary measures as prepared and requested by the Design-Build Contractor with INDOT Environmental Services Division.

Design-Build Contractor shall not handle dead or injured bats, regardless of species, and any other federally listed species that are found at the Site in order to preserve biological material in the best possible condition, and to protect personnel from exposure to diseases, such as rabies. Design-Build Contractor personnel shall ensure that any evidence about determining the cause of death or injury is not unnecessarily disturbed. Reporting the discovery of dead or injured listed species shall be required in all cases to enable the U.S. Fish and Wildlife Service to determine whether the level of incidental take exempted by the biological opinion is exceeded, and to ensure that the terms and conditions are appropriate and effective. Design-Build Contractor personnel finding a dead, injured, or sick specimen of any bat, regardless of species, or other endangered or threatened species, shall promptly notify the U.S. Fish and Wildlife Service Bloomington Field Office at (812) 334-4261 and IFA.

7.3.12.3 Migratory Birds

The Project is subject to the Migratory Bird Treaty Act (MBTA). The structures associated with the Project may, or may not, have shown evidence of use, such as nests, by a bird species protected under the MBTA during previous inspections. Every effort shall be made by the Design-Build Contractor not to disturb any nests with eggs or young. Design-Build Contractor shall document these efforts as part of the ECMP.

Intentional taking of migratory birds or nests with eggs or young without a federal permit is prohibited by the Migratory Bird Treaty Act, 16 U.S.C. 703-712. During the period between May 1 and September 7, Work on bridge structures with migratory birds may be allowed, provided the procedures below are implemented.

1. No special action is necessary by the Design-Build Contractor for bridge Work performed entirely on the deck as long as Design-Build Contractor does not require access to areas where birds are nesting and Work will not result in the disturbance of nesting adults, or to their eggs or young. Disturbance is any activity that results in reproductive failures or the killing of eggs or young.

2. For bridge structures that have previous or current evidence of use by bird species protected under MBTA, the Design-Build Contractor shall use exclusionary devices to deter birds from nesting beneath the deck prior to the start of Construction Work. If birds are present, Design-Build Contractor shall determine the status of the birds, their nests, and young and shall take any and all actions necessary to meet the requirements of the MBTA.
3. For bridge Work performed from September 8 to April 30, birds are normally not nesting; therefore, no special actions by the Design-Build Contractor are necessary after an inspection is conducted to determine that no birds are present.
4. Measures designed to avoid and minimize impacts to migratory birds nesting on structures shall be implemented prior to April 30 and be maintained throughout the nesting season. The Design-Build Contractor shall be responsible for developing a Project-specific avoidance and minimization plan that shall be submitted to IFA for review and approval as part of the ECMP. IFA will coordinate plan as prepared and requested by the Design-Build Contractor with INDOT Environmental Services Division.

Avoidance and minimization measures shall include the following:

1. After inspection and confirmation that no active nests with eggs or young are present, the Design-Build Contractor shall remove existing nests and other nesting debris from the bridge girders or other surfaces that will be impacted by the Project.
2. After nest removal, exclusion devices shall be installed on the structure, especially if the start of construction will be delayed after April 30. Exclusion devices may include plastic sheeting, canvas, burlap or other material to block access to the underside of bridges and exterior girders. Ledge protectors, such as coil, pin and wire, can be placed on structures to prevent nest building where appropriate. Design-Build Contractor shall not use weather resistant polypropylene netting with 0.25 inch or smaller openings as it can trap adult birds.
3. After nest removal, hazing or harassment devices using sight or sound to scare the birds away may be installed on the structure. Materials may include mylar flagging and auditory speakers. Other sensory deterrents such as active construction, predator models, scare balloons and sonic devices may also be used.
4. Design-Build Contractor shall inspect the underside of the existing structure on a routine basis to ensure that nests are removed prior to egg laying and that exclusion devices that have been damaged are repaired. If eggs or young are present, construction activity that may impact those nests shall not occur and the Design-Build Contractor shall contact IFA. No additional contract time shall be granted if eggs or young are found.
5. Nests may be screened from construction to prevent impacts. Work may continue if the active nests will not be destroyed and if parent birds will not be precluded from tending their nests to the extent that eggs or young are negatively impacted.
6. If birds penetrate the barrier or nest building has commenced, Design-Build Contractor shall determine how birds are entering the underside of the bridge and adjust or repair the barrier to prevent further access. If nest building or repair of existing nests has

begun, but no eggs or young are present in the nests based upon visual inspection of the nest and activity of the adults, Design-Build Contractor shall remove the nests.

7. Design-Build Contractor shall not disturb any nests with eggs or young. If active nests with eggs or young are found that would be affected by construction activities, Work shall be delayed until an evaluation of nesting status and avoidance and minimization measures implemented or the birds fledge from the nest.

7.3.13 Environmentally Restricted and “Do Not Disturb” Zones

“Do not disturb” zones are areas within the Planned ROW Limits in which Design-Build Contractor shall not be allowed to perform any Work. The “do not disturb” zones shall consist of the following:

1. Segments B, D, and E: Wetlands, streams and waterbodies shall not be impacted above the impact thresholds shown in Tables, 2, 3, 4, and 19 of Attachment 7-8 (IDEM Section 401 Water Quality Certification and USACE Section 404 Permit Application).
2. Segments A and C: No “do not disturb” zones.

The Work restrictions are based upon the assumption that all Governmental Approvals within the Planned ROW Limits have been received. Wetlands, streams, or other water bodies outside the Planned ROW Limits are considered to be restricted areas. Unless restricted by Governmental Approval, Governmental Rule or otherwise under the PPA Documents, wetlands, streams, or other water bodies shown within the Planned ROW Limits and below the impact thresholds shown in Tables, 2, 3, 4, and 19 of Attachment 7-8 (IDEM Section 401 Water Quality Certification and USACE Section 404 Permit Application) were considered impacts, are included in the Governmental Approvals, and are accessible for Construction Work.

Design-Build Contractor shall be responsible for the installation and continued maintenance of temporary construction fencing and “Do Not Disturb” temporary signs adjacent to all “do not disturb” zones. The temporary construction fencing shall be installed along the limits of the disturbance, adjacent to the “do not disturb” zones prior to the start of construction activities. All Design-Build Contractor personnel shall be made aware of all the designated protection areas. Temporary construction fencing, and signage shall be installed along the limits of all wetland areas within the Planned ROW Limits prior to the start of construction.

No Work shall be performed within a jurisdictional stream from April 1 through June 30 without prior written approval of the IDNR Division of Fish and Wildlife.

The Design-Build Contractor shall install “Environmentally Sensitive Area” signs in accordance with the Standard Specifications. The signage shall be 16-gauge aluminum with white background and black lettering. The sign shall not be reflectorized. Paint and primer, as well as sign posts dimensions and spacing shall be in accordance with the Standard Specifications, including Standard Drawing E 622-LSSN-01.

7.3.14 Avoidance and Minimization

Design-Build Contractor shall avoid impacts to wetland, streams, and other water bodies until initiation of Construction Work in the area of the resource. Design-Build Contractor shall use Good Industry Practice to minimize impacts to existing properties, streams, wetlands, open

waters, historic districts, parks, trails, and trees in all areas of the Project. Design-Build Contractor’s final designs shall emphasize the avoidance and minimization of impacts.

Design-Build Contractor shall park, service, and maintain equipment in designated areas as approved by IFA. These areas shall be located a minimum of 5 feet away from all existing streams, wetlands, other “do not disturb” zones, and their immediate watersheds.

Prior to construction, parking and turning areas for heavy equipment outside the construction limits but within the Planned ROW Limits shall be identified and located to minimize soil erosion, tree clearing, and impacts to other identified resources. Stable construction entrances shall be provided at the points where construction traffic shall enter an existing roadway.

Design-Build Contractor shall notify IFA in writing within 24 hours of inadvertent impacts to wetlands or waterways for which activities are not permitted. Inadvertent impacted areas shall be immediately restored to the full satisfaction of IFA and the appropriate Governmental Entities.

7.4 Deliverables

Deliverables under this Section 7, a non-exhaustive list of which is set forth in Table 7-3, shall be submitted in both hardcopy and electronic format in accordance with the schedule set forth below. Acceptable electronic formats include PDF and current versions of Microsoft Word and Microsoft Excel, unless otherwise indicated.

Table 7-3: Deliverables

Deliverable	Responsible Party	Deliverable Schedule	TP Section
Governmental Approvals and Permits, including: Section 404 of the Clean Water Act Regional General Permit(s) Section 404 of the Clean Water Act Individual Permit(s) Section 401 Water Quality Certifications Isolated Wetland Permit(s) Construction in a Floodway Permits	IFA	Prior to Construction Work	7.3.1.1
Governmental Approvals and Permits, including: Rule 5 – Erosion Control Notice of Proposed Construction of Alteration (FAA Form 7460) (if required) Indiana Tall Structure Permit (if required) City of Indianapolis Right-of-way Permit City of Indianapolis Flora Permit	Design-Build Contractor	Prior to Construction Work	7.3.1.1

TECHNICAL PROVISIONS – Section 7
Environmental

Deliverable	Responsible Party	Deliverable Schedule	TP Section
Modifications to Governmental Approvals and Permits (if required)	Design-Build Contractor	Prior to Construction Work	7.3.1.1
Time extension requests for Governmental Approvals and Permits (if required)	Design-Build Contractor	60 days prior to expiration date(s)	7.3.1.1
Spill Prevention, Control, and Counter-measure Plan (SPCCP)	Design-Build Contractor	Within 90 days of NTP	7.3.2
Hazardous Materials Management Plan (HMMP)	Design-Build Contractor	Within 60 days of NTP	7.3.3.3
Environmental resource impacts checklist	Design-Build Contractor	Quarterly	7.3.4.1
Environmental Compliance and Mitigation Plan (ECMP)	Design-Build Contractor	Within 30 days of NTP then quarterly updates	7.3.4.1
Environmental Compliance and Mitigation Training Program	Design-Build Contractor	Within 60 days of NTP	7.3.4.2
Environmental Compliance and Mitigation Training Program materials	Design-Build Contractor	Within 30 days of NTP and annual updates	7.3.4.2
Required documentation for final design noise analysis	Design-Build Contractor	NTP plus 90 days	7.3.5.1
Construction Noise Abatement Plan	Design-Build Contractor	Within 30 days of NTP	7.3.5.2
Vibration Monitoring and Control Plan	Design-Build Contractor	NTP plus 90 days	7.3.6
Notification letters (electronic format)	Design-Build Contractor	NTP plus 90 days	7.3.6
Vibration monitoring records	Design-Build Contractor	Prior to Construction Work	7.3.6
Condition reports	Design-Build Contractor	Prior to Construction Work	7.3.6
Southside German Market Gardeners Historic District Advisory Team Meeting Materials	Design-Build Contractor	After Stage 1 Review Submission and before Stage 3 Review Submission	7.3.7
Forest, wetland, stream impact calculations	Design-Build Contractor	Prior to Construction Work	7.3.11.1

TECHNICAL PROVISIONS – Section 7
Environmental

Deliverable	Responsible Party	Deliverable Schedule	TP Section
Migratory bird avoidance and minimization plan (if required)	Design-Build Contractor	Prior to Construction Work	7.3.12.3

8 ROADWAY

8.1 General

Design-Build Contractor shall perform the roadway Work in accordance with the PPA Documents, including Project Standards, this Section 8 and its attachments; Governmental Approvals; and Governmental Rules.

Design-Build Contractor is advised that Segment A may be referred to as “Project C” and Segment C may be referred to as “Project A and B” in the RID.

8.2 Basic Configuration

The Reference Plans provided in the RID convey the general intent of the Project, but do not provide IFA design requirements, recommendations, or IFA-approved design solutions for the Project. The Basic Configuration includes the following elements depicted on the Reference Plans that may not be changed:

1. Number and approximate location of intersections, access points and ramps, as shown on the Plan sheets and in Table 1-1 (Ramps within the Planned ROW Limits)
2. Minimum number of lanes for each roadway, as shown on the Plan sheets
3. Minimum widths of lanes, shoulders, medians, shared-use paths, sidewalk and buffer widths as shown on the Plan sheets

8.3 Roadway Design Requirements

Attachment 8-1 (Design Criteria – All Segments) and Attachment 8-2 (Additional Design Criteria – All Segments) list the minimum requirements for the design of each roadway. Design-Build Contractor’s design shall not provide for less than the minimum requirements depicted in Attachment 8-1 (Design Criteria – All Segments) and Attachment 8-2 (Additional Design Criteria – All Segments) unless prior written approval is obtained from IFA.

8.3.1 General Design Requirements

For the purposes of this Section 8.3.1, a restrictive condition means a condition that would require Additional Properties or cause an impact to any forest, wetland, stream, “do not disturb” zone identified in Section 7 (Environmental), or other environmentally sensitive area that is not the subject of any existing IFA-Provided Approvals, other existing Governmental Approvals, or of pending applications for IFA-Provided Approvals and would consequently require the Design-Build Contractor to seek a permit modification.

Design-Build Contractor shall comply with the following requirements:

1. Clear Zones – Clear zones shall be provided per Project Standards.
2. Side-Slopes – Design-Build Contractor shall design side-slopes to provide clear zones and to avoid the need for roadside barrier wherever possible. Where a restrictive condition does not permit construction of clear zone or a 6:1 (H:V) or flatter slope,

Design-Build Contractor may use other criteria shown below. Design-Build Contractor shall design all slopes on the Project in the order of precedence shown below, with criterion (a) being the requirement, followed by criterion (b) as the next desirable and other criteria in decreasing levels of desirability. By way of example, Design-Build Contractor shall design a slope to criterion (a) unless it can establish, subject to IFA approval, that criterion (a) is impossible to construct within the Project ROW or otherwise undesirable, in which case, Design-Build Contractor shall design the slope to criterion (b), unless it can establish, subject to IFA approval, that criterion (b) is impossible to construct within the Project ROW or otherwise undesirable, in which case, Design-Build Contractor shall proceed accordingly to criterion (c), etc.

The side slope selection criteria shall be as follows:

- a. Use 6:1 (H:V) or flatter slopes
- b. Use slopes of 6:1 to 4:1
- c. Use a combination of recoverable slopes (between 6:1 and 4:1 within the clear zone) and non-recoverable slopes (between 4:1 and 3:1 outside the clear zone) creating a “barn roof” section
- d. Use non-recoverable slopes (3:1 or steeper) within the clear zone where shielded by roadside barrier
- e. Use reinforced soil slopes where side-slopes steeper than 2:1 (between 2:1 and 1:1) are required
- f. Use retaining walls where reinforced soil slopes cannot be used
- g. Use a combination of reinforced soil slopes and retaining walls

Design-Build Contractor shall provide supporting documentation and obtain IFA approval for variations to the side-slope design criteria order listed above.

3. Roadside ditches shall have a minimum of a 4-foot bottom width. Where a physical constraint does not allow for a 4-foot bottom ditch, the Design-Build Contractor shall provide the locations, limits, and ditch cross sections to obtain IFA approval for variations.
4. Roadside barrier offset –The 2-foot offset shall be paved to the face of guardrail or barrier for all shoulders, except as noted in Design Exceptions for shoulder width in Segments A and C and on Ramp “PR-SWC” and Ramp “PR-SEL” within the US-31 and I-465 interchange.
5. Graded shoulder behind guardrail – For locations where guardrail is required, 2 feet of compacted aggregate shall extend beyond the back of the guardrail post to the hinge point of the side-slope.
6. Roadside barrier calculations – Design-Build Contractor shall determine the final roadside barrier length-of-need and complete all roadside barrier calculations in accordance with the Project Standards. On the outside of horizontal curves with radius of 1,000 feet or less, roadside barriers shall be concrete barrier.

7. Where double-faced guardrail is used in the median, the slopes adjacent to median barriers shall be 10:1 or flatter. Where a high-tension cable-barrier system is used in the median, the slopes adjacent to median barriers shall be 6:1 or flatter.
8. Design-Build Contractor shall not design the roadways to meet less than the minimum requirements of Section 8.3.2 for each roadway unless written approval is received from IFA.
9. Borrow and disposal – Design-Build Contractor shall follow the requirements of Section 203.08 and 203.10 of the Standard Specifications.
10. Design-Build Contractor shall remove all unused and/or abandoned pavements, pavement subgrades, drainage structures, signs and appurtenances within the Project limits. Where abandoned roadways and existing pavement are removed, existing embankments are permitted to remain in place. Ditches shall be constructed in place of drainage structures that are removed. Topsoil shall be placed over disturbed areas, graded smooth, and seeded per Attachment 6-2 (USP: Aesthetics and Landscaping). The treatment of abandoned roadways shall be included in the Plans. Abandoned roadways shall include:
 - a. Existing SR 37 Line “A” from 1,000 feet north of Edgewood Avenue to 200 feet south of Epler Avenue
 - b. Southport Road Line “S-12” from 1,100 feet west to 2,000 east of I-69 Line “PR-A2”
 - c. Fairview Road Line “S-9-A” from 200 feet west to 400 feet east of Line “A”
 - d. County Line Road Line “S-10-A” from intersection with SR 37 to 700 feet east of Line “A”
 - e. Mt. Pleasant West Street Line “S-10-A-2” from 125 feet south of Existing County Line Road Line “S-10-A” to the intersection with Line “S-10-A”
 - f. Glens Valley Lane from intersection with SR 37 Line “A” to 330 feet west of Line “A”

8.3.2 Specific Design Requirements

8.3.2.1 Bicycle and Pedestrian Accommodations

Design-Build Contractor shall provide bicycle and pedestrian accommodations in the form of sidewalks and shared-use paths according to Attachment 8-2 (Additional Design Criteria – All Segments).

8.3.2.2 Long-Term Temporary Traffic Barrier (I-465)

Design-Build Contractor shall provide temporary traffic barrier to provide a 14-foot maximum-width inside shoulder along I-465 eastbound within Segment B by Substantial Completion. The temporary traffic barrier shall be Type 3 barrier as described in the Standard Specifications. The barrier shall be new concrete barrier at the time of installation, not previously used, including on this Project. Design-Build Contractor shall provide a minimum 40:1 taper rate for all long-term temporary traffic barrier transitions. Design Build Contractor shall provide calculations documenting that the rainfall runoff spread caused by the temporary concrete barrier does not encroach onto the travel lanes.

8.3.2.3 Superelevation Runoff Adjustment Factor

For interstate, freeway, and ramps, the superelevation runoff adjustment factor (b_w) shall equal 1.0. For all other roadways, Figure 43-3G of the IDM shall be used for adjustments to runoff length for multi-lane highways. A superelevation runoff adjustment factor (b_w) of 1.0 does not apply to any of the sections of roadway within Segments A and C.

8.3.2.4 Transition Between Project Segments A and B

The eastbound and westbound median shoulder width transitions from 4.75 feet to 14 feet on I-465 shall be a minimum length of 1,500 feet, located within Project Segment A, and end at the match line between Project Segments A and B (Sta. 144+00.00 Line “ZZ”).

The Design-Build Contractor shall provide curved transitions in the pavement markings at all lane shifts, within the Project limits, that occur in a horizontal curve. The following are the locations, direction of flow and minimum radii at the lane shift locations:

1. EB I-465 (Line “PR-I465”), Existing to Segment A, minimum radius of 2302.56 feet
2. EB I-465 (Line “PR-I465”) from Segment A to Segment B, minimum radius of 7731.58 feet
3. WB I-465 (Line “PR-I465”) from Segment A to Segment B, minimum radius of 7628.88 feet

8.3.2.5 Gore Requirements

Design-Build Contractor shall provide the major forks and branch mainline and ramp connections to and from I-69 and I-465 to include a minimum of 500 feet gore length measured from the gore nose to the painted nose.

The gore nose shall be a minimum width of 22 feet at ramp locations where mainline outside shoulder is equal to 12 feet in width.

8.3.2.6 Acceleration and Deceleration Length Requirements

Design-Build Contractor shall provide a minimum 1,260-foot acceleration length at mainline entrance ramp junctions for Ramp “Harding EBEN-C” and Ramp “Harding WBEN-C”. Design-Build Contractor shall extend the acceleration lane for Ramp “County Line – NBEN” to a limit north of the I-69 over Wicker Road Bridge and approaches. Design-Build Contractor shall provide a minimum 800-foot deceleration length for Ramp “County Line – NBEX” and a minimum 355-foot ramp lane between the gore nose and loop ramp point of curvature.

8.3.2.7 I-69 Contract 4 Interface Requirement

The I-69 Contract 4 interface at the southern limit of Segment E shall occur at Station 1457+30.58 Line “PR-A2” with a profile grade elevation of 671.02 and a profile downgrade slope of -0.90 percent.

8.3.2.8 Shoulder Taper Rate

All mainline shoulder width transitions including greater than a 3-foot difference in width shall use a 30:1 taper rate.

8.3.3 IFA-Provided Design Exceptions

The Level One and Level Two Design Exceptions identified in this Section 8 shall apply only to the specific locations stated within the Design Exceptions. Design-Build Contractor shall submit separate Design Exceptions to IFA for review and approval for any variations to the approved Design Exceptions listed below.

IFA has obtained the below Design Exceptions for the Project.

8.3.3.1 Level One Design Exceptions

Segment A – See Attachment 8-3A (Design Exception Requests - Segment A_&_C) for approved values and limits of design exceptions.

Segment B – See Attachment 8-3B (Design Exception Requests - Segment B) for approved values and limits of design exceptions.

Segment C – See Attachment 8-3A (Design Exception Requests - Segment A_&_C) for approved values and limits of design exceptions.

Segment D: None

Segment E: None

8.3.3.2 Level Two Design Exceptions

Segment E

1. Median width – In the I-69 transition from rural to urban typical section, the median transitions from 50 feet to 30.5 feet. (Minimum shall be 36 feet.)
2. Ditch slope – 0.10 percent. (Minimum shall be 0.30 percent.)

8.4 Deliverables

Deliverables under this Section 8, a non-exhaustive list of which is set forth in Table 8-1, shall be submitted in electronic format in accordance with the schedule set forth below. Acceptable electronic formats include PDF and current versions of Microsoft Word and Microsoft Excel, unless otherwise indicated.

Table 8-1: Deliverables

Deliverables	Deliverable Schedule	TP Section
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TECHNICAL PROVISIONS – Section 8
Roadway

Intersection geometrics (including design vehicle turning movements)	Stage 1 Review Submission, Stage 3 Review Submission, and Released for Construction Documents	8.1
Clear zone calculations and curve adjustments	Stage 1 Review Submission, Stage 3 Review Submission, and Released for Construction Documents	8.1
Roll Plots – 1" = 200' scale - including all geometric information, curve data, pavement markings, number of lanes, acceleration/deceleration lengths, bridges, road names, and topographic info	Stage 1 Review Submission, Stage 3 Review Submission, and Released for Construction Documents	8.1
Guardrail length of need including roadside barrier, end treatments, and impact attenuators	Stage 1 Review Submission, Stage 3 Review Submission, and Released for Construction Documents	8.3.1
Design Exception documentation	As needed	8.3.3

9 PAVEMENT

9.1 General

Design-Build Contractor shall perform the pavement Work in accordance with the PPA Documents, including Project Standards, this Section 9 and its attachments; Governmental Approvals; and Governmental Rules.

9.2 Administrative Requirements

9.2.1 Testing

All field and laboratory testing for pavements and associated materials conducted by Design-Build Contractor shall be conducted in an accredited laboratory and performed by certified personnel who are qualified to perform INDOT test methods.

Unit prices to be used for pay factor adjustments, according to Section 401, 410, and 501 of the Standard Specifications, shall be defined by the following:

- 401 QC/QA HMA, non OG items, Pavement Items: \$75/TON
- 401 QC/QA HMA, OG items, Pavement Items: \$60/TON
- 410 QC/QA HMA Pavement Items: \$100/TON
- 501 QC/QA, CRCP, Pavement Items: \$80/SYS
- 501 QC/QA, non-CRCP, Pavement Items: \$45/SYS

9.3 Design Requirements

9.3.1 General Requirements

The permanent proposed pavements for this Project shall be as prescribed below. The minimum paving limits are shown in Attachment 9-2 (Paving Limits).

Segments A and C – Design-Build Contractor shall patch in the existing HMA surfaced travel lanes in accordance with Section 9.4.6, and then resurface these areas. Design-Build Contractor shall patch and repair the joints on the existing concrete surfaced travel lanes. For existing HMA shoulders that remain, following widening, Design-Build Contractor shall patch and resurface. For existing concrete shoulders that remain, Design-Build Contractor shall patch the surface and repair the joints. Pavement widening shall be performed as described in Sections 9.3.2.1 and 9.3.2.3. Concrete surface pavement shall not be overlaid.

Segments B, D, and E – All permanent pavement and shoulders on I-465 mainline, I-69 mainline, ramps and all local roadways within the Project limits shall be new pavement, with the exception of pavement transition areas.

9.3.2 Pavement Designs

For purposes of this Section 9, the word “lanes” shall mean all travel lanes, auxiliary lanes, collector-distributor lanes, ramps, acceleration/deceleration lanes, and any other pavement on which traffic may normally travel. The word “shoulders” shall mean inside and outside shoulders and gore areas. Ramps shall be considered to start at the theoretical back of gore and end at the edge of travel lane pavement for crossing roadways. The pavement designs in this Section 9 are minimum pavement designs that may be included in the Plans and constructed as prescribed without further pavement design approvals by IFA.

For the purpose of this Section 9, the matchline between the end of Segment B and the start of Segment D shall be at the north terminal joints for Bridges Nos. 19 and 20.

All designs shall use the Marion County climate data available on the INDOT Office of Pavement Engineering website (https://www.in.gov/indot/files/Climate_Files_by_County.zip)

The traffic data and design criteria used for pavement design is as follows:

1. Segments A and C traffic data:
 - Initial AADTT = 23,700 trucks/day
 - Growth rate = 0.17 percent
 - Operational speed = 55 mph
 - Lanes in design direction = 4
 - Percent trucks in design direction = 57 percent
 - Percent trucks in design lane = 45 percent
 - Truck weight road group factors = traffic group D
2. Segment B traffic data:
 - Initial AADTT = 23,700 trucks/day
 - Growth rate = 0.59 percent
 - Operational speed = 55 mph
 - Lanes in design direction = 4
 - Percent trucks in design direction = 57 percent
 - Percent trucks in design lane = 45 percent
 - Truck weight road group factors = traffic group D
3. Segments D and E traffic data:
 - Initial AADTT = 8,800 trucks/day

- Growth rate = 4.20 percent
 - Operational speed = 60 mph
 - Lanes in design direction = 3
 - Percent trucks in design direction = 55 percent
 - Percent trucks in design lane = 60 percent
 - Truck weight road group factors = traffic group C
4. Temporary pavement traffic data:
- Temporary pavements shall use the same traffic inputs for the segment in which they will be constructed, except as follows:
 - Operational speed = posted work site speed limit
 - Lanes in design direction = minimum number of lanes proposed by Design-Build Contractor for the maintenance of traffic scheme in the proposed temporary pavement location
 - Percent trucks in design direction = as shown in Chapter 304-14.01 of the IDM for proposed number of lanes
 - Percent trucks in design lane = as shown in Chapter 304-14.01 of the IDM for proposed number of lanes or based on specific lane signage proposed by Design-Build Contractor, subject to a minimum of 20 percent trucks in each lane.
5. Continuously reinforced concrete pavement design criteria:
- Maximum percent reinforcing bar by cross sectional area = 0.70 percent
 - Minimum reinforcing bar depth = 3.5 inches
 - Maximum predicted IRI = 160 inches per mile at 50 years
 - Maximum predicted punchouts per mile per lane = 10 at 50 years
 - Computer prediction model crack spacing shall be between 36 inches and 72 inches
 - Minimum reliability = 90 percent
 - Required pavement base:
 - 440 #/SYS QC/QA-HMA, 3, 64, base, 19.0 mm, on
 - 6 inches of compacted aggregate, No. 53 on
 - Geotextile for subgrade, type 2B
6. Jointed plain concrete pavement design criteria:
- Lanes shall not consider widened slab in the design

- The ratio of standard lab width, expressed in feet, to pavement thickness, expressed in inches, shall not exceed 1.5.
- The outer lane shall be constructed using widened slab, excepting Segment C.
- Maximum predicted mean joint faulting = 0.15 inches at year 35
- Maximum predicted JPCP transverse cracking = 10 percent of slabs cracked at year 50
- Minimum reliability = 90 percent
- Required pavement base:
 - Subbase for PCCP on
 - Geotextile for subgrade, type 2B

7. Hot mix asphalt pavement design criteria:

- Mainline and auxiliary lanes shall use a stone matrix asphalt surface.
- Maximum predicted IRI = 140 inches per mile at year 10
- Maximum predicted AC bottom-up fatigue cracking = 10 percent of lane area at year 30
- Maximum predicted permanent deformation – total pavement = 0.40 inches at year 35
- Minimum reliability = 90 percent
- Required pavement base:
 - 300 #/SYS QC/QA-HMA, 4, 76, intermediate OG, 19.0 mm on
 - 6 inches compacted aggregate, No. 53 on
 - Geotextile for subgrade, type 2B

9.3.2.1 Segment A Pavement Design

The minimum pavement design requirements shall be as follows:

1. Full-depth hot mix asphalt pavement (HMA) for widening, new lanes, and inside shoulders:
 - 220 #/SYS QC/QA-HMA, 4, 76, surface, 9.5 mm - SMA, on
 - 275 #/SYS QC/QA-HMA, 4, 76, intermediate, 19.0 mm, on
 - 1435 #/SYS QC/QA-HMA, 4, 64, base, 25.0 mm (in appropriate lifts), on
 - 300 #/SYS QC/QA-HMA, 4, 76, intermediate, OG, 19.0 mm, on

- 6 inches of compacted aggregate base (separation layer), on
 - Geotextile for subgrade, type 2B
 - Subgrade treatment per Section 9.4.2
2. HMA for new shoulders greater than 4 feet wide:
- 220 #/SYS QC/QA-HMA, 3, 70, surface, 9.5 mm, on
 - 275 #/SYS QC/QA-HMA, 3, 70, intermediate, 19.0 mm, on
 - 1435 #/SYS QC/QA-HMA, 3, 64, base, 25.0 mm (in appropriate lifts), on
 - 300 #/SYS QC/QA-HMA, 4, 76, intermediate, OG, 19.0 mm, on
 - 6 inches of compacted aggregate base (separation layer), on
 - Geotextile for subgrade, type 2B
 - Subgrade treatment per Section 9.4.2
3. HMA overlay for existing lanes:
- Milling, asphalt, 2.0 inches, then
 - 220 #/SYS QC/QA-HMA, 4, 76, surface, 9.5 mm - SMA, on
 - Existing pavement
4. HMA overlay for existing shoulders:
- Milling, asphalt, 2.0 inches, then
 - 220 #/SYS QC/QA-HMA, 3, 70, surface, 9.5 mm, on
 - Existing pavement
5. HMA overlay for incidental wedge and level
- Milling, transition then
 - 220 #/SYS QC/QA-HMA, 4, 76, surface, 9.5 mm - SMA, on
 - Existing pavement

The mainline pavements shall extend 2 feet into the outside shoulder. Where shoulders are less than or equal to 4 feet wide, the mainline pavement shall be used for the entire shoulder.

9.3.2.2 Segment B Pavement Design

The minimum pavement design requirements for I-465, I-69, and the I-465 & I-69 system interchange ramps shall be as follows:

1. Full-depth continuous reinforced concrete pavement (CRCP) shall be constructed for all lanes and shoulders. Design-Build Contractor shall comply with continuously reinforced

concrete pavement and CRCP concrete mix design specification requirements defined in Attachment 9-1 (USP: Pavement – Continuously Reinforced Concrete Pavement and CRCP Concrete Mix Criteria).

- QC/QA-CRCP, 11 inches on
 - Reinforcing bar content = 0.7 percent of cross-sectional area at 3.5 inches of cover between the top of pavement and the top of the reinforcing bars.
 - All reinforcing bars shall be epoxy coated as follows:
 - Longitudinal bar – No. 6 bar, 24 spaces (25 bars) at 5.75 inches for 12-foot-wide slab
 - Transverse bar – No. 4 bar, spaced at 48 inches
 - Tie bar – 30-inch-long No. 4 bar, spaced at 30 inches, placed at mid-depth, centered between longitudinal joint
- 440 #/SYS QC/QA-HMA, 3, 64, base, 19.0 mm, on
- 6 inches of compacted aggregate, No. 53 on
- Geotextile for subgrade, type 2B on
- Subgrade treatment per Section 9.4.2

A 14-foot widened slab (lane striped at a 12-foot width) shall be constructed for the outside driving lane and tied CRCP shoulders. The 4 inches of QC/QA HMA shall extend beyond the CRCP slab edge by 1 foot.

The reinforcing bar layout shall be in accordance with Attachment 9-3 (CRCP Bar Reinforcement)

The minimum pavement design requirements for Mann Road interchange ramps shall be as follows:

1. Full-depth Portland Cement Concrete pavement (PCCP)
 - QC/QA-PCCP, 11 inches on
 - D-1 contraction joint with a maximum spacing of 15 feet and 1.25-inch-diameter dowel bars
 - 300 #/SYS QC/QA-HMA, 4, 76, Intermediate OG, 19.0 mm, on
 - 6 inches of compacted aggregate, No. 53 on
 - Geotextile for subgrade, type 2B on
 - Subgrade treatment per Section 9.4.2
 - A 14-foot widened (minimum width) slab (lane striped at a 12-foot width) shall be constructed for the outside driving lane and tied shoulders.

OR

1. Full-depth hot mix asphalt pavement (HMA)
 - 165 #/SYS QC/QA-HMA, 4, 76, surface, 9.5 mm on
 - 275 #/SYS QC/QA-HMA, 4, 76, intermediate, 19.0 mm on
 - 660 #/SYS QC/QA-HMA, 4, 64, base, 25.0 mm on
 - 300 #/SYS QC/QA-HMA, 4, 76, intermediate OG, 19.0 mm on
 - 6 inches compacted aggregate, No. 53 on
 - Geotextile for subgrade, type 2B on
 - Subgrade treatment per Section 9.4.2
 - The mainline pavements shall extend 2 feet into the adjacent shoulder. Where shoulders are less than or equal to 4 feet wide, the mainline pavement shall be extended for the entire shoulder.
2. Full-depth HMA shoulder for use with HMA mainline
 - 165 #/SYS QC/QA-HMA, 3, 70, surface, 9.5 mm on
 - 275 #/SYS QC/QA-HMA, 3, 70, intermediate, 19.0 mm on
 - 660 #/SYS QC/QA-HMA, 3, 64, base, 25.0 mm on
 - 300 #/SYS QC/QA-HMA, 4, 76, intermediate OG, 19.0 mm on
 - 6 inches compacted aggregate, No. 53 on
 - Geotextile for subgrade, Type 2B on
 - Subgrade treatment per Section 9.4.2

The pavement shall be the same thickness and material type (HMA or PCCP) across the entirety of the ramp width.

9.3.2.3 Segment C Pavement Design

The minimum pavement design requirements shall be as follows:

1. Full-depth PCCP
 - QC/QA-PCCP, 14 inches on
 - D-1 contraction joint with a maximum spacing of 15 feet and 1.5-inch-diameter dowel bars.
 - 300 #/SYS QC/QA-HMA, 4, 76, intermediate OG, 19.0 mm on
 - 6 inches of Compacted Aggregate, No 53, on

- Geotextile for Subgrade, Type 2B on
- Subgrade Treatment per Section 9.4.2

9.3.2.4 Segment D and E Pavement Design

Design-Build Contractor may choose between HMA or PCCP designs described below for Segments D and E mainline and ramp pavements. Design-Build Contractor shall use one consistent pavement type, HMA or PCCP, for the entirety of both Segments D and E mainline and ramp pavements. The minimum pavement design requirements for I-69 shall be as follows:

1. Full-depth PCCP

- QC/QA-PCCP, 11.5 inches on
 - D-1 contraction joint with a maximum spacing of 15 feet and 1.5-inch-diameter dowel bars
- 300 #/SYS QC/QA-HMA, 4, 76, intermediate OG, 19.0 mm on
- 6 inches compacted aggregate, No. 53 on
- Geotextile for subgrade, Type 2B on
- Subgrade treatment per Section 9.4.2
- A 14-foot widened slab (lane striped at a 12-foot width) shall be constructed for the outside driving lane and tied shoulders.

OR

1. Full-depth HMA

- 165 #/SYS QC/QA-HMA, 4, 76, surface, 9.5 mm – SMA on
- 275 #/SYS QC/QA-HMA, 4, 76, intermediate, 19.0 mm on
- 990 #/SYS QC/QA-HMA, 4, 64, base, 25.0 mm on
- 300 #/SYS QC/QA-HMA, 4, 76, intermediate OG, 19.0 mm on
- 6 inches compacted aggregate, No. 53 on
- Geotextile for subgrade, Type 2B on
- Subgrade treatment per Section 9.4.2
- The mainline pavements shall extend 2 feet into the adjacent shoulder. Where shoulders are less than or equal to 4 feet wide, the mainline pavement shall be used for the entire shoulder.

2. Full-depth HMA shoulder for use with HMA mainline

- 165 #/SYS QC/QA-HMA, 3, 70, surface, 9.5 mm on

- 275 #/SYS QC/QA-HMA, 3, 70, intermediate, 19.0 mm on
- 990 #/SYS QC/QA-HMA, 3, 64, base, 25.0 mm on
- 300 #/SYS QC/QA-HMA, 4, 76, intermediate OG, 19.0 mm on
- 6 inches compacted aggregate, No. 53 on
- Geotextile for subgrade, Type 2B on
- Subgrade treatment per Section 9.4.2

The minimum pavement design requirements for interchange ramps shall be as follows:

1. Full-depth PCCP

- QC/QA-PCCP, 11 inches on
 - D-1 contraction joint with a maximum spacing of 15 feet and 1.25-inch-diameter dowel bars
- 300 #/SYS QC/QA-HMA, 4, 76, intermediate OG, 19.0 mm on
- 6 inches compacted aggregate, No. 53 on
- Geotextile for subgrade, type 2B on
- Subgrade treatment per Section 9.4.2
- A 14-foot widened (minimum width) slab (lane striped at a 12-foot width) shall be constructed for the outside driving lane and tied shoulders.

OR

1. Full-depth HMA

- 165 #/SYS QC/QA-HMA, 4, 76, surface, 9.5 mm on
- 275 #/SYS QC/QA-HMA, 4, 76, intermediate, 19.0 mm on
- 660 #/SYS QC/QA-HMA, 4, 64, base, 25.0 mm on
- 300 #/SYS QC/QA-HMA, 4, 76, intermediate OG, 19.0 mm on
- 6 inches of compacted aggregate, No. 53 on
- Geotextile for subgrade, type 2B on
- Subgrade treatment per Section 9.4.2
- The mainline pavements shall extend 2 feet into the adjacent shoulder. Where shoulders are less than or equal to 4 feet wide, the mainline pavement shall be used for the entire shoulder.

2. Full-depth HMA shoulder for use with HMA mainline

- 165 #/SYS QC/QA-HMA, 3, 70, surface, 9.5 mm on
- 275 #/SYS QC/QA-HMA, 3, 70, intermediate, 19.0 mm on
- 660 #/SYS QC/QA-HMA, 3, 64, base, 25.0 mm on
- 300 #/SYS QC/QA-HMA, 4, 76, intermediate OG, 19.0 mm on
- 6 inches compacted aggregate, No. 53 on
- Geotextile for subgrade, type 2B on
- Subgrade treatment per Section 9.4.2

The pavement shall be the same thickness and material type (HMA or PCCP) across the entirety of the pavement width.

9.3.2.5 Local Street Pavement Design

The minimum pavement design requirements for County Line Road, Harding Street Connector to I-69, Epler Avenue (west of existing SR 37), Kopetsky Drive, Harding Court, and Harding Street (except as specified below), shall be for arterial roadways and are as follows:

- 165 #/SYS QC/QA-HMA, 3, 70, surface, 9.5 mm on
- 275 #/SYS QC/QA-HMA, 3, 70, intermediate, 19.0 mm on
- 880 #/SYS QC/QA-HMA, 3, 64, base, 25.0 mm on
- Subgrade treatment type II or type IIA (cement only)

The minimum pavement design requirements for West Connector Road, Wicker Road, Southport Road, Banta Road, Edgewood Avenue, Epler Avenue (east of existing SR 37), Mooresville Road, Mann Road, Madison Avenue, Keystone Avenue and Carson Avenue shall be for collector roadways and are as follows:

- 165 #/SYS QC/QA-HMA, 3, 70, surface, 9.5 mm on
- 275 #/SYS QC/QA-HMA, 3, 70, intermediate, 19.0 mm on
- 440 #/SYS QC/QA-HMA, 3, 64, base, 25.0 mm on
- Subgrade treatment type II or type IIA (cement only)

The minimum pavement design requirements for Belmont Avenue, Bluff Road, Mount Pleasant West Street, Thompson Road, Wellingshire Boulevard, Glens Valley Lane and Winslet Boulevard shall be for local roadways and are as follows:

- 165 #/SYS QC/QA-HMA, 3, 70, surface, 9.5 mm on
- 275 #/SYS QC/QA-HMA, 3, 70, intermediate, 19.0 mm on
- 330 #/SYS QC/QA-HMA, 3, 64, base, 25.0 mm on

- Subgrade treatment type II

The minimum pavement design requirements for Harding Street lanes and shoulders within the I-465 interchange shall be as specified below:

- QC/QA-PCCP, 13 inches on
 - D-1 contraction joint with a maximum spacing of 15 feet and 1.5-inch-diameter dowel bars
- Subbase for PCCP on
- Geotextile for subgrade, type 2B on
- Subgrade treatment per Section 9.4.2
- A 14-foot widened slab (lane striped at a 12-foot width) shall be constructed for the outside driving lane and tied shoulders.

Any local pavements impacted by the Project not listed in this Section 9.3.2.5 shall be constructed to meet the appropriate pavement section listed above for the classification shown on the INDOT Roadway Inventory and Functional Classification Viewer (<https://indot.maps.arcgis.com/apps/webappviewer/index.html?id=df731deea704512923b7732ed3ddad2>).

Underdrains are not required for local streets and roads.

9.3.2.6 Shared-Use Path Pavement Design

The minimum pavement design requirements for shared-use paths shall be as specified below:

- 165 #/SYS HMA surface, type B on
- 275 #/SYS HMA intermediate, type B on
- 6 inches of compacted aggregate, No. 53
- Subgrade treatment type II or type IIA (cement only)

9.4 Construction Requirements

9.4.1 Smoothness Requirements

Concrete pavements shall meet the requirements defined in Attachment 9-5 (USP: Inertial Profiler for PCCP).

For all concrete pavements, the final pavement surface for all lanes shall be in accordance with Attachment 9-1 (USP: Pavement - Next Generation Concrete Surface).

HMA pavements shall meet the requirements defined in Attachment 9-6 (USP: Inertial Profiler for HMA).

For all HMA surfaced roadways, excepting I-465, I-69 and associated ramps, Design-Build Contractor shall construct a transition at the end of the full-depth construction that consist of 1.5 inches of milling followed by 165#/SYS QC/QA-HMA, 3, 70, surface, 9.5 mm for a length of 50 feet onto the existing roadway.

9.4.2 Subgrade Treatment

Except as specified in Section 9.3.2, Design-Build Contractor shall use either subgrade treatment type IB or type IC in accordance with Project Standards or subgrade treatment type ID as defined in RSP 207-R-687.

Where subgrade treatment, Type IIA is used, the chemical modifier shall be applied as a slurry.

9.4.3 Temporary Pavement

Design-Build Contractor shall design, construct, and maintain all temporary pavements within the Project Right of Way in compliance with the PPA Documents and the following performance requirements and according to the applicable Project Standards. Temporary pavement is defined as pavement that is in use by vehicular traffic for 24 months or less, or as shoulders, and portions thereof, that will be used for mainline, auxiliary or ramp lanes. The use of existing shoulders as lanes shall be considered temporary pavement. Design-Build Contractor shall:

1. Provide documentation describing the assumptions used to design the temporary pavement. At a minimum, the documentation shall include design life and anticipated traffic loading for each temporary pavement location within the Project limits.
2. Temporary pavements shall be designed with a 95 percent reliability.
3. Provide a durable, maintainable pavement system that meets the following requirements during its service life:
 - a. Minimum friction number of 37
 - b. IRI of less than 120 inches/mile
 - c. Free of potholes, fatigue areas, duress, and rutting exceeding 0.25 inches
 - d. Provide adequate cross-slope to drain water quickly from pavement surface

Design-Build Contractor shall analyze and prepare separate temporary pavement designs, as applicable, for the following:

1. Mainline pavements
2. Ramp pavements
3. Local street, access roads, and County road pavements

If IFA believes, in its sole discretion, that these requirements are not being met, IFA will direct Design-Build Contractor to conduct pavement testing to measure the pavement properties. Both the testing and corrective actions shall be considered part of the Work.

9.4.3.1 Temporary HMA Pavement Performance Standards

Design-Build Contractor shall construct and maintain temporary HMA pavements according to Project Standards and the following:

1. No occurrence of pavement shoving shall exceed 2 square feet in area at any location.
2. No occurrence of pavement rutting shall exceed 0.4 inches in depth for surface pavement, and no occurrence of pavement rutting shall exceed 0.5 inches in depth for surface pavement and subgrade combined. Further, the average pavement rutting for any continuous 300-foot length of pavement shall not exceed 0.25 inches in depth, as determined by averaging the rut measurements at five locations spaced at least 50 feet apart but not more than 60 feet apart.
3. No depression exceeding 0.5 inches in depth (e.g., Pothole) shall exceed 0.5 square feet in area.
4. No bump exceeding 0.5 inches in height shall exceed 0.5 square feet in area.
5. No location of delamination or raveling shall exceed 0.5 square feet in area. Furthermore, the total delamination or raveling shall not exceed 3 square feet for all such locations.
6. There shall be no occurrences of fatigue cracking at any location on the MOT pavement.

9.4.3.2 Temporary PCC Pavement Performance Standards

Design-Build Contractor shall construct and maintain temporary PCC pavement according to Project Standards and the following:

1. There shall be no occurrences of faulting (0 inches) at any location on the temporary pavement.
2. No pavement crack (transverse, longitudinal, or otherwise) on the temporary pavement shall exceed 0.125 inches in width.
3. There shall be no use of roller-compacted concrete as temporary pavement.

9.4.4 Shoulder Corrugations

Shoulder corrugations are not required for this Project.

9.4.5 Underdrains

Within Segments A and C, Design-Build Contractor shall be responsible for performing video inspection of existing underdrains that will receive flows from new underdrains. Design-Build Contractor shall submit a report to IFA for review and approval, including the video inspection findings. Locations that do not provide a positive drainage conduit shall be restored by the Design-Build Contractor to a condition that provides positive drainage. Prior to restoration, the Design-Build Contractor shall submit a correction plan to IFA for approval.

For pavements within Project limits, except as specified in [Section 9.3.2](#), underdrains shall be installed in accordance with the Project Standards. Design-Build Contractor shall video-inspect

underdrains per Section 718.07 of the Standard Specifications and satisfy quantity thresholds in accordance with Chapter 304 of the IDM.

9.4.6 I-465 Segment A & C Permanent Pavement Patching

In accordance with planned sequence of construction, Design-Build Contractor shall submit requests for patching locations to IFA. Requests shall be made in writing at least four weeks in advance of the Work. IFA will provide locations and patching types that are required. Upon receipt of the patching locations from IFA, Design-Build Contractor shall perform the Work. Six months prior to the planned Substantial Completion Date, Design-Build Contractor shall submit a request for final patching locations to IFA. At that time, IFA will provide final locations and patching types that are required to be constructed prior to the Substantial Completion Date.

The patching shall be constructed in accordance with Attachment 9-4 (Concrete Patching Details).

9.5 Deliverables

Deliverables under this Section 9, a non-exhaustive list of which is set forth in Table 9-1, shall be submitted in electronic format in accordance with the schedule set forth below. Acceptable electronic formats include PDF and current versions of Microsoft Word and Microsoft Excel, unless otherwise indicated.

Table 9-1: Deliverables

Deliverable	Deliverable Schedule	TP Section
Pavement design for sections that are not in accordance with <u>Section 9.3.2.1</u> through <u>Section 9.3.2.6</u>	60 days prior to Stage 3 Review Submission	9.3.2
Pavement design for temporary pavement	With Stage 3 Review Submission	9.4.3
Existing underdrain video logs and inspection report	With Stage 3 Review Submission	9.4.5
Existing underdrain details and tables	With Stage 3 Review Submission	9.4.5
Proposed underdrain video logs and inspection report	Prior to Substantial Completion or as directed by IFA	9.4.5

10 HYDRAULICS AND DRAINAGE

10.1 General

Design-Build Contractor shall design and construct all hydraulics and drainage Work, including culverts, storm sewers, detention facilities, and other drainage facilities.

10.2 Administrative Requirements

Design-Build Contractor shall perform all Work in accordance with the PPA Documents, including Project Standards and this Section 10; Governmental Approvals; and Governmental Rules.

10.3 Design Requirements

10.3.1 General Design Requirements

Design-Build Contractor shall provide the stormwater drainage system improvements and facilities to accommodate flows generated from the Project and runoff that drains to the Project. The stormwater drainage system (including runoff collection systems, conveyance systems, flow control facilities, runoff storage facilities, and outfalls for the Project) shall meet the requirements of this Section 10.

Design-Build Contractor shall prepare a Concept Drainage Report to address applicable storm sewer, culverts, storage facilities, and other drainage designs and requirements. At a minimum, the report shall include the following:

1. Coverage of the Project Right of Way
2. Map/figure(s) including aerial photography and contours, with drainage areas delineated
3. Separate maps for existing and proposed conditions
4. Proposed conceptual storm sewer layout
5. Proposed location of all detention/storage facilities, including points of inlet and outlet
6. Documentation of applied drainage design criteria
7. Drainage design approach and methodology

Design-Build Contractor shall submit the Concept Drainage Report to IFA for review and comment.

10.3.2 Drainage Systems

Design-Build Contractor shall be responsible for maintaining all drainage systems within the Project limits, including culverts, storm sewer systems, and cross-drain pipes, from commencement of construction, as defined in Section 4.5 of the PPA, to Final Acceptance.

10.3.2.1 Culverts

Requirements for treatment of culverts shall be as follows:

1. Design-Build Contractor shall submit hydraulic analyses and recommended improvements for all existing culverts in Segments A and C to IFA for review and approval.
2. Design-Build Contractor shall replace all existing culverts within Segments B, D, and E.
3. For consistency of sump requirements and based on Design-Build Contractor's required detailed soil boring information, if the soil map unit description from the USGS Soil Survey contains the word "sand", the required sump from Figure 203-2E of the IDM shall be determined by the "Sump Required for Stream Bed of Sand" column.
4. The replacement culvert for the existing 6-foot by 3.7-foot culvert approximately 160 feet north of Edgewood Avenue shall have a backwater of 2.5 feet or less.

No new or replacement corrugated metal pipe (CMP) culverts will be allowed within the Project limits. Existing CMP culverts may remain in Segments A and C, subject to hydraulic requirements.

10.3.2.2 Hydraulic Capacity Evaluation

Design-Build Contractor shall evaluate hydraulic parameters for all culverts within the Project limits. Design-Build Contractor shall submit hydraulic reports for all culverts, storm sewers, and detention/storage facilities to IFA for review and approval.

Design-Build Contractor shall use HY-8 version 7.2 for culvert analysis.

Reinforced concrete boxes and three-sided structures with a span of 18 feet or less shall incorporate corner haunches as produced by the manufacturer when modelled in HY-8.

10.3.2.2.1 Pavement and Roadside Drainage

1. Design-Build Contractor shall perform inlet spacing, storm drain capacity, ditch capacity, and slotted drain computations for the 2 percent annual EP storm and submit to IFA for review and approval.
2. Slotted drain shall be required on high side, superelevated shoulder per Chapter 203-4.04(10) of the IDM that is sloped toward the travel lanes. Slotted drains shall not be placed in gore areas.
3. New stormwater lift stations are prohibited.
4. Type E castings are prohibited within the INDOT Limited Access ROW.
5. Detention Requirements: In Segment A, Segment B, Segment C, and Segment D, the Design-Build Contractor shall design water quantity control so that wherever stormwater is leaving the Project, runoff quantity from the post-Project 1-percent annual EP storm event is equal to or less than runoff quantity from the pre-Project 10-percent annual EP storm event. These requirements shall be met on a watershed basis.

6. In Segment E, Design-Build Contractor shall design water quantity control so that wherever stormwater is leaving the Project, runoff quantity from the post-Project 1-percent annual EP storm event is equal to or less than runoff quantity from the pre-Project 1-percent annual EP storm event. These requirements shall be met on a watershed basis.
7. Design-Build Contractor shall submit detention/storage facility hydraulic calculations to IFA for review and approval.
8. The design pool level elevation for a detention basin outside the roadway shall not encroach into the clear zone if the depth is 2 feet or greater, unless it is located behind roadside barrier.
9. All detention locations shall be contained within the INDOT Limited Access ROW.
10. Surface detention is allowed in the median from mile post 2.71 to mile post 2.77 of I-465. No other surface median detention is allowed.

10.3.3 Regulated Drains

Design-Build Contractor shall obtain approval from the Marion County Board of Public Works and the Johnson County Surveyor upon receiving approval from IFA for any Work to regulated drains. The following regulated drains are located within the Project limits:

1. Harmon (State) Ditch
2. Fowler-Hauesien Ditch
3. Hare-Marea Ditch
4. Alcorn Ditch
5. Wishard Ditch
6. Orme Ditch
7. Pleasant Run Creek

10.3.4 Waterway Structures

10.3.4.1 Segment C Waterway Structures

1. Bridge No. 47 shall provide a gross waterway opening at least equal to the existing structure gross waterway opening below 0.2-percent Annual EP WSEL 715.55 for Lick Creek.
2. Bridge No. 53 shall provide a gross waterway opening at least equal to the existing structure gross waterway opening below 0.2-percent Annual EP WSEL 745.01 for Lick Creek.

10.3.4.2 Segment B Waterway Structures

1. Bridge No. 31 shall have a proposed backwater impact of 0.61 feet or less for Haueisen Ditch.

2. Bridge No. 23 shall have a proposed backwater impact of 3.44 feet or less for Harmon (State) Ditch

10.3.4.3 Segment E Waterway Structures

1. Bridge No. 5 shall have a maximum headwater 100-year flood elevation of 667.45 feet or less for Pleasant Run Creek.

10.3.4.4 Segment D Waterway Structures

1. Bridge No. 10 shall have a proposed backwater impact of 0.76 feet or less for Little Buck Creek
2. Bridge No. 11 shall have a proposed backwater impact of 0.23 feet or less for Little Buck Creek.
3. Bridge No. 12 shall have a proposed backwater impact of 0.23 feet or less for Little Buck Creek.
4. Bridge No. 13 shall have a proposed backwater impact of 0.35 feet or less for Little Buck Creek.
5. Bridge No. 14 shall have a proposed backwater impact of 0.14 feet or less for Little Buck Creek.

10.4 Construction Requirements

Design-Build Contractor shall install permanent erosion protection measures at the outlet of drainage structures. New storm sewer drain shall discharge a minimum of 6 inches above the ditch flowline elevation. Design-Build Contractor shall submit any exceptions to the minimum elevation requirement to IFA for review and approval.

Design Build Contractor shall replace all existing storm sewer systems, inlets, manholes, drainage pipes, and culverts within Segments B, D, and E.

Design Build Contractor shall replace all existing storm sewer systems, inlets, manholes, drainage pipes and culverts, that do not meet the requirements of the Technical Provisions, within Segments A and C.

All existing abandoned drainage structures that will not be used in the final drainage system shall be either:

1. Removed and the resulting excavation backfilled with structure backfill, Type 5; or,
2. Filled with structure backfill, Type 5, and left in place.

Longitudinal storm drainage pipe is prohibited within the reinforced backfill zone of an MSE wall.

Design-Build Contractor shall design and construct scour protection for Bridge No. 57 and shall submit those proposed scour protection measures to IFA for review and approval. This shall be performed as part of the Work for Bridge Nos. 23 and 24.

Design Build Contractor shall coordinate with IDEM for detention ponds located in wellhead protection areas prior to submittal to IFA for approval. Documentation of IDEM coordination must be submitted to IFA.

10.5 Deliverables

Deliverables under this Section 10, a non-exhaustive list of which is set forth in Table 10-1, shall be submitted in electronic format in accordance with the schedule set forth below. Acceptable electronic formats include PDF and current versions of Microsoft Word and Microsoft Excel, unless otherwise indicated. The Submittals shall also include all computer modeling software files per IDM requirements.

Table 10-1: Deliverables

Deliverables	Deliverable Schedule	TP Section
Concept Drainage Report	With Stage 1 Review Submission	10.3.1
Culvert hydraulic capacity evaluation report	With Stage 3 Review Submission	10.3.2.2
Detention/storage facility evaluation report	With Stage 3 Review Submission	10.3.2.2.1

11 TRAFFIC AND LIGHTING

11.1 General

Design-Build Contractor shall perform the traffic Work, including signing, pavement markings, traffic signals, and lighting, in accordance with the PPA Documents, including Project Standards, this Section 11 and its attachments; Governmental Approvals; and Governmental Rules.

11.2 Signing

11.2.1 Design and Construction Requirements

Sign design shall include regulatory, warning, recreation, ground-mounted guide signs, and overhead guide signs for all I-465 mainline, I-69 mainline, interchanges, ramp intersections, and local roadways within the Project Right of Way.

Design-Build Contractor shall remove all existing signs, sign structures, and foundations to a minimum depth of 1 foot below finished grade or the portion in conflict with the Work. Design-Build Contractor shall provide and construct new signing in the Project Right of Way as required for the Work.

Design-Build Contractor shall incorporate the following items in the signing design:

1. All signs along the mainline I-465, I-69, and associated ramps shall be “freeway” size.
2. For purposes of sign design, all interchanges shall be classified as major, category A, as defined in IMUTCD Section 2E.
3. Overhead box truss structures shall span the entire width of roadway covering both directions of travel. At locations where the roadway width is greater than 154 feet, each box structure shall span only one direction of travel.
4. Overhead arrow per lane signs (OAPL) shall be used at option-lane situations within the Project limits.
5. For Segment B, OAPL panel signs for eastbound I-465 shall be sized to accommodate messages and arrows for the future 2045 lane configuration.
6. All overhead sign truss structures shall accommodate 1200 square feet sign panel areas and shall be type F, G, or H. All type F, G, and H box truss sign structures, and foundations shall be in accordance with Attachment 11-7 (Sign Box Truss Structure Extended Span).
7. The sheeting material for all overhead signs shall be in accordance with Attachment 11-6 (USP: Type XI Reflective Sheeting).
8. Reference markers shall be included in accordance with the IMUTCD along mainline I-465 and I-69 using the D10-5 sign at one-tenth mile increments.
9. All Work associated with Indiana logo signs shall be in accordance with Attachment 11-8 (USP: Special Signs).

10. All Work associated with Hoosier Helper program sponsorship signs shall be in accordance with Attachment 11-8 (USP: Special Signs).
11. All Work associated with sponsor a highway program signs shall be in accordance with Attachment 11-8 (USP: Special Signs).
12. All Work associated with radio traffic information signs shall be in accordance with Attachment 11-8 (USP: Special Signs).
13. No signs or sign structures shall be mounted on bridge structures, with the exception of mile-markers on structures over waterways.
14. No signs shall be banded or connected to Utility poles, lighting poles, or overhead sign structure uprights.
15. Sign lighting for newly installed overhead panel signs is not required.

The signing locations shall be coordinated with other design disciplines to avoid conflicts with proposed landscaping, Utilities, hydraulics, lighting, ITS, and all other roadside features.

11.2.1.1 Signing Roll Plots

Prior to the Stage 1 Review Submission, Design-Build Contractor shall prepare and submit signing roll plots to IFA for review and comment. The signing roll plots shall include proposed overhead and ground-mounted panel signs. The signing roll plots shall include features such as roadway linework, proposed pavement markings, ROW, Utility information, existing topography, and applicable legends.

11.2.1.2 Sign Supports and Foundations

Design-Build Contractor shall use INDOT standard sign structures and foundations where possible. Any required special sign structures shall be designed per Chapter 502-1.01 of the IDM and applicable Project Standards. The special sign structures, support, and foundation calculations shall be submitted to IFA for review and comment.

For each sign support location, Design-Build Contractor shall indicate on the Plans the sign panel(s) and the sign support on the corresponding completed cross section. The proper vertical and horizontal clearances, sign sizes and offsets, foundations, number of lanes, and lane widths shall be labeled on the sign cross sections. If a non-standard overhead sign support is proposed, Design-Build Contractor shall submit calculations to properly size the sign supports. Calculations shall be provided for IFA review and comment with signing Plan Submittals.

Roadside barrier shall be provided to protect all non-breakaway supports within the clear zone.

11.2.1.3 Sight Distance Requirements

At the Stage 1 Review Submission and Stage 3 Review Submission, Design-Build Contractor shall provide sight distance documentation for review and comment. The sight distance documentation shall demonstrate that sign locations meet sight distance requirements.

11.3 Pavement Markings

11.3.1 General Requirements

Design-Build Contractor shall design, install, and maintain pavement markings and delineation on all routes within the Project Right of Way until Final Acceptance.

11.3.2 Design and Construction Requirements

All retro-reflective pavement marking materials shall be preformed plastic on interstates, ramps, US routes and State roads and installed in accordance with Attachment 11-1 (USP: Preformed Plastic Markings).

Contrast lane lines shall be in accordance with Attachment 11-2 (Contrast Edge Line Detail) and Attachment 11-3 (Contrast Lane Line Detail). Lane indication arrow message markings shall be used at locations depicted by Attachment 11-4 (Lane Reduction Pavement Marking Detail).

Pavement marking shields and cardinal direction message markings shall be installed to delineate lane assignments at locations in advance of any option-lane and multi-lane splits as depicted in the example shown in Attachment 11-5 (Pavement Message Marking Detail).

Raised pavement markers shall be provided on all roadways where design year AADT exceeds 2,500 for a two-lane roadway and 6,000 for a multi-lane roadway. Raised pavement markers shall be provided on I-69, I-465, associated ramps, and sideroads within the Project limits.

Design-Build Contractor shall provide delineators on the outside shoulder of I-465 and I-69 mainline and on one side of each interchange ramp. The delineator color shall match the color of the edge line. Design-Build Contractor shall provide delineators along the outside of each curve on interchange ramps. Design-Build Contractor shall provide double, or vertically-elongated delineators installed along each acceleration or deceleration lane. The installation intervals of delineators shall be in accordance with the Project Standards. Barrier-wall delineators shall be used on each traffic-facing side of all median, roadside, and bridge concrete barrier.

Proposed pavement markings shall be shown in the signing roll plots and included in the Stage 1 Review Submission and Stage 3 Review Submission for IFA review and comment. The roll plots and Plans shall show the color, size, location, and material type for markings. The lanes shall be dimensioned based on the typical sections for the Project. Dimensions shall be included for each change in the roadway typical section.

11.4 Traffic Signals

11.4.1 Design and Construction Requirements

Design-Build Contractor shall design and construct new traffic signals at new intersections and remove and replace existing traffic signals at existing intersections at designated locations provided below. No existing traffic signal equipment shall be incorporated into the Work.

Design-Build Contractor shall submit Synchro files and reports to validate achievement of required LOS at design year (2045). Design-Build Contractor shall develop signal timing Plans

that optimize traffic flows and provide signal coordination with adjacent intersections and arterial roads. Existing interconnect between signals shall be maintained between intersections listed in this Section 11.4.1 and adjacent intersections in each direction.

Each signal installation shall include new foundations, traffic signal poles, cabinet and controller, signal heads, ADA compliant accessible pedestrian push buttons and pedestrian signal heads, Conduit system, circuitry, detection devices, associated signal equipment, and signing. Work shall include coordinating Utility connections with the proper Utility Owner and coordinating the signal cable connections with local jurisdictions.

1. Southport Road & I-69 NB Ramps
2. Southport Road & I-69 SB Ramps
3. Southport Road & Belmont Avenue
4. Southport Road & Winslet Boulevard
5. Epler Avenue & I-69 NB Exit Ramp
6. Epler Avenue & I-69 SB Entrance Ramp
7. Epler Avenue & Epler Connection
8. Mann Road & W. Thompson Road/I-465 EB Entrance Ramp
9. Mann Road & I-465 WB Exit Ramp
10. S. Harding Street & I-465 EB Ramps
11. S. Harding Street & I-465 WB Ramps

11.4.1.1 Traffic Signal Design & Plan Requirements

Design-Build Contractor shall prepare traffic signal Plans for all new installations and replacement traffic signals. Traffic signal Plans shall be provided to IFA for review and comment with the Stage 1 Review Submission and in accordance with Section 3 (Design Requirements). These Plans shall include all proposed signal, interconnect, and emergency vehicle pre-emption equipment for the Project. Emergency vehicle pre-emption equipment shall only be included at signal locations where it already exists within the same roadway corridor. The traffic signal Plans shall also show all sidewalks, crosswalks, and pedestrian signal equipment necessary for the Project. Pedestrian heads shall be of type with countdown display. Design-Build Contractor shall prepare and submit any temporary MOT signal Plans, along with associated MOT phasing. Design-Build Contractor shall coordinate with IFA to obtain traffic signal commission numbers for all new installations and replacement traffic signals. The commission numbers shall be shown on each respective signal plan.

Traffic signal operation and detection shall be maintained during all phases of the roadway construction.

All permanent traffic signals shall use span, catenary, and tether support, unless otherwise approved by IFA. All signal designs shall use in-pavement induction loops rather than wireless vehicle detection systems or video vehicle detection systems. Wireless magnetometer detectors

shall not be used in bridge decks and/or approach slabs unless intersection design constraints dictate otherwise. If needed in bridge decks and/or approach slabs, Design-Build Contractor shall coordinate with bridge designs and implement construction techniques to ensure wireless magnetometers are not in conflict with bridge joints and reinforcing bars, including but not limited to, presetting the detector housing prior to concrete pour. If needed, Design-Build Contractor may adjust individual wireless magnetometer spacing/location from that shown in Recurring Plan Detail E805-T-173d and adjust detector sensitivity, in consultation with vendor and manufacturer. Detection area per lane shall still resemble Recurring Plan Detail E805-T-173d and not generate false calls from adjacent lanes. Each traffic signal Plan shall clearly identify the power service location and power Utility provider based on jurisdiction.

11.4.1.2 Interconnect Plans

Design-Build Contractor shall prepare traffic signal interconnect Plans and include with traffic signal Plan Submittals, as required. Interconnect plans shall be drawn at a scale of 1 inch = 50 feet. Signal locations listed in Section 11.4.1 at ramp intersections with I-69 or I-465 shall be connected directly to the ITS fiber backbone. Other signal locations listed in Section 11.4.1 shall be connected directly to the ITS fiber backbone or with a modem in each controller cabinet as coordinated with INDOT. Design-Build Contractor shall obtain all existing interconnect information from existing Plans and/or field investigation as necessary. Interconnect Plans shall include controller cabinet locations, Conduits, handholes, sampling stations, a wiring diagram, cables, construction details, and an equipment list.

Existing interconnect shall be maintained throughout construction until new interconnect is installed and functional. Design-Build Contractor shall be responsible for the relocation of any existing fiber-optic interconnect cable impacted by construction. Splices shall not be permitted along permanent interconnect runs. Design-Build Contractor shall be responsible for obtaining all Governmental Approvals and third-party agreements required for placing interconnect on Utility poles.

11.4.1.3 Utility Requirements

Design-Build Contractor shall be responsible for locating and marking all underground Utilities prior to any signal installation Work.

Design-Build Contractor shall coordinate with Utility Owner(s) to deliver metered power to all signal equipment installed or modified under this Project. Design-Build Contractor shall be responsible for all Work, materials, and costs required to obtain power to signal equipment, including application and coordination with Utility Owner(s).

Metered service pedestals shall be used to service traffic signal equipment and related intersection lighting unless otherwise approved by IFA.

11.4.1.4 Sight Distance Requirements

At the Stage 1 Review Submission and Stage 3 Review Submission, Design-Build Contractor shall provide sight distance documentation for review and comment. The sight distance documentation shall demonstrate that signal locations meet sight distance requirements.

Design-Build Contractor shall ensure all traffic signal heads for temporary and permanent conditions are in accordance with MUTCD requirements. Design-Build Contractor shall prepare and submit sightline Plans for all traffic approaches for IFA review and comment.

Design-Build Contractor shall prepare and submit to IFA, for review and comment, separate sightline Plans and profiles for each MOT phase that has different sightlines approaching a traffic signal.

11.4.1.5 Materials

All traffic signal equipment installed under the Project shall be new.

All traffic signal equipment installed at intersections within the jurisdiction of the City of Indianapolis Department of Public Works, or interconnected with, shall be compatible with the City's existing traffic management system.

11.4.2 Temporary Traffic Signals

Design-Build Contractor shall see Section 12 (Maintenance of Traffic) for temporary traffic signal requirements.

11.4.3 Traffic Control Device Verification – Signals

Design-Build Contractor shall schedule two meetings per intersection signal installation with IFA to verify traffic control device Work as follows:

1. At the completion of all cabling and wiring and prior to electrical Utility service connection.
2. Prior to traffic control device activation.

These meetings shall be coordinated and scheduled a minimum of 72 hours in advance of each individual meeting date.

11.5 Lighting

11.5.1 Design and Construction Requirements

Design-Build Contractor shall design and construct lighting within the Project Right of Way in accordance with Project Standards and Utility Owner requirements.

11.5.1.1 Design Criteria

Design-Build Contractor shall prepare and submit lighting design photometric model(s) and calculations for review with lighting Plan Submittals. The photometric model(s) shall use either Visual or AGI32 software. The design shall include a combination of high mast lighting structures, mid-level lighting structures, conventional lighting poles, and bridge underpass lighting within the Planned ROW Limits as described herein. Design-Build Contractor shall utilize high-mast lighting structures in preference to mid-level lighting structures, and mid-level

lighting structures in preference to conventional poles to the extent possible while still achieving other design criteria.

The lighting design photometric model(s) shall achieve an average maintained horizontal illuminance of 0.8 fc to 1.2 fc with a calculation point spacing no greater than 5 feet by 5 feet. Calculation point zones shall extend to include adjacent intersections to their radii returns on the far side of the Project alignment. The model(s) shall also achieve an average/minimum uniformity ratio of 4.0:1 or better/less. These criteria shall be achieved for each interchange, which shall be a combined calculation of smaller zones with limits from ramp taper point to ramp taper point, and each section of mainline between interchanges.

For Segments A and C, Design-Build Contractor shall provide all new lighting structures, luminaires, foundations, handholes, Conduits, cables, service points, and other necessary equipment to meet design criteria and provide complete interchange lighting and continuous freeway lighting for the proposed pavement. For Segments B and D, Design-Build Contractor shall provide complete interchange and continuous freeway lighting. The system interchange at I-465 & I-69 shall use high mast lighting and conventional 40-foot mounting height poles will not be allowed. At least one existing pole and luminaire beyond the Project limits shall be included in the photometric model, in each direction. In Segment A, the proposed design shall include continuous lighting from the Kentucky Avenue interchange and northwest of the Mooresville Road Bypass into Segment B and to the Mann Road interchange using conventional poles. Underpass lighting shall be included as needed based on photometric model(s). Appropriate solid object modeling shall be included in photometric model(s) to identify shadow areas under bridges and determine need for underpass lighting. In Segment B, the White River bridge shall utilize as well as the portion of I-465 back to the tie-in with high-mast lighting at the Mann Road interchange shall be illuminated with conventional poles.

Light trespass outside the Project Right of Way shall be limited through the use of shields, lighting distribution selection, mounting heights, pole types, or other means. Design-Build Contractor shall prepare an exhibit identifying all residential areas at outset of photometric modeling process. Calculation point zones shall be included in the photometric model(s) for residential areas to measure light trespass. These light trespass calculation point zones shall be 5 feet in depth behind the Project Right of Way line(s) and of similar longitudinal length to the adjacent travel pavement calculation zone. Illuminance values shall be measured to 0.01 fc accuracy. The average illuminance in these light trespass calculation zones shall not exceed 10 percent of the average illuminance for travel pavement of the adjacent combined interchange calculation zone, section of mainline between interchanges, or cross road calculation zone running parallel to the Project Right of Way. Sound barriers and privacy fences along the ROW that are part of the completed design shall be modeled as solid objects of the appropriate height in photometric model(s) to accurately model the light trespass.

11.5.1.1.1 New Roadway Lighting

High-mast and/or mid-level lighting is required at the following interchanges:

- I-465 & Kentucky Avenue (Segment A)
- I-465 & Mann Road (Segment B)
- I-465 & I-69 (Segment B)
- I-465 & Harding Street (Segment B)

- I-465 & US31/East Street (Segment C)
- I-69 & Epler Avenue (Segment D)
- I-69 & Southport Road (Segment D)
- I-69 & County Line Rd. (Segment E)

Mainline lighting of I-69 and I-465 shall be high-mast towers located within the INDOT Limited Access ROW along the outside shoulders. Median barrier mounting of high-mast towers will not be allowed. Conventional roadway lighting may be used at interchange gore areas and on cross roads. The mounting height for high-mast tower structures at the interchanges shall be from 130 feet to 200 feet and use a maximum of 12 luminaires. The mounting height for high-mast structures outside of the interchange areas shall be from 60 feet to 125 feet and use a maximum of six luminaires. Conventional light poles shall have a mounting height of 40 feet, with either single or twin mast arms and luminaires. Underpass luminaires shall be either wall-mounted on bridge bents or retaining walls or pole-mounted with mounting heights between 15 feet and 20 feet.

Design-Build Contractor shall coordinate the light structure heights with IFA and the FAA, comply with FAA requirements, and apply for permits if necessary.

Power supply for lighting shall be installed in separate Conduits and on independently metered circuits from other non-lighting equipment. Luminaires shall be connected to alternating conductors to balance load along each branch circuit.

All new roadway lighting shall use LED luminaires from manufacturers listed on Attachment 11-9 (INDOT Approved Luminaire List). Design-Build Contractor shall apply light loss factor (LLF) values as shown on the approved luminaire list when computing illuminance in the photometric model(s). High-mast lighting design shall be in accordance with Attachment 11-10 (USP: Design Criteria for High Mast Tower).

Design-Build Contractor shall see Section 13 (Geotechnical) and Section 14 (Structures) for structural design requirements.

11.5.1.1.2 Existing Roadway Lighting

Design-Build Contractor shall not relocate or reuse existing lighting fixtures or equipment within the Project Right of Way.

For locations where luminaires are attached to Utility poles, Design-Build Contractor (as a part of the Utility relocation effort) shall contact the local Utility Owner to coordinate the relocation of the light fixture.

Design-Build Contractor shall remove existing light poles that are no longer required. For light poles as part of the Work, but not owned by INDOT, the Design Build Contractor shall be responsible for coordinating the removal or relocation of the light fixture with the Local Agency or Utility Owner.

Design-Build Contractor shall provide IFA with at least two weeks advanced Notice of any lighting removal.

11.5.1.1.3 Underpass Lighting

Design-Build Contractor shall provide new underpass lighting to maintain roadway lighting continuity. The underpass lighting shall be in accordance with the criteria from AASHTO's *An Informational Guide for Roadway Lighting*.

11.5.2 Lighting Roll Plots

Prior to Stage 1 Review Submission, Design-Build Contractor shall submit lighting roll plots for IFA review and comment. The lighting roll plots shall include proposed locations for all lights and photometric design model files and calculations supporting the light locations.

11.5.3 Performance Requirements

All proposed lighting equipment, including high-mast towers, conventional light poles, and service points, shall be located such that it can be readily maintained and easily accessible. Conventional poles shall have mast arm(s) and luminaire(s) that are accessible from the shoulder and mast arm(s) length shall be limited such that no luminaires extend above vehicular travel lanes.

For the purposes of the Project, there are four categories of high-mast tower accessibility:

1. Category 1 – Accessible via mainline or ramp shoulder with a side slope(s) of 4:1 or flatter
2. Category 2 – Accessible via mainline or ramp shoulder with a side slope(s) of 3:1
3. Category 3 – Inaccessible via mainline or ramp shoulder due to the presence of roadside barrier but can be accessed from a parallel surface road
4. Category 4 – Inaccessible, location requires alternative design measures

Category 1 locations are considered accessible as they can be easily traversed by maintenance crews with the lowering device.

At Category 2 locations, Design-Build Contractor shall design and construct localized grading around the high-mast tower foundation to provide slopes of 4:1 or flatter. If a ditch is located within the area of the localized grading, a storm drainage pipe shall be designed and installed to maintain flow. For Category 2 locations, the distance from the shoulder to the high-mast tower shall be minimized to the extent possible while achieving photometric design criteria.

At Category 3 locations, Design-Build Contractor shall include a field entrance per Standard Drawing E610-DRIV-06 from the edge or travel lane or paved shoulder of a parallel surface street or road. A gate shall be provided within the INDOT Limited Access ROW fence for access to the high-mast tower. The field entrance shall include a storm drainage pipe for any ditches to be traversed for maintenance access. The field entrance shall not include a curb cut.

Category 4 locations are not otherwise accessible as described in Category 1, 2, or 3. Design-Build Contractor shall be responsible for providing alternative solutions or special designs, such as bump-outs in retaining walls, to provide maintenance access. Special designs are subject to IFA review and approval.

At high mast tower locations, Design-Build Contractor shall provide the concrete pad and retaining wall as per Standard Drawings E807-LTHI-11 and E807-LTHI-12.

The above categories for high-mast tower accessibility shall also apply to lighting service points.

Design-Build Contractor shall submit an accessibility plan for all lighting equipment including high-mast towers and service points. This accessibility plan shall be submitted to IFA for review and approval prior to construction of any lighting equipment. The accessibility plan may be divided into segments or stages consistent with Design-Build Contractor design Submittal packaging.

Lighting placed on traffic signal equipment shall be serviced from a metered service pedestal. Each luminaire mounted on a signal structure shall be equipped with a photocell.

Design-Build Contractor shall provide voltage drop calculations for all circuits. The voltage drop shall not exceed 10 percent for each circuit. All lighting circuits shall have balanced lighting loads between red and black line conductors to operate at 240 volts. Electrical cables and conductors for lighting systems only shall enter the foundation of the lighting structures.

Design-Build Contractor shall furnish and install single conductor cables in Conduit under all roadway surfaces. Single conductor cables shall be used wherever cables are to be installed in Conduit. Design-Build Contractor shall provide electrical lighting handholes and connectors to splice the conductors. No in-ground splices of electrical cables are allowed. No electrical lighting handholes shall be placed in drainage ditches. Design-Build Contractor shall abandon existing conductors between poles to be removed. Any existing lighting structure impacted by the Project and outside the Project ROW shall be disconnected and reconnected to its original power supply by Design-Build Contractor.

All conventional light poles owned by INDOT shall be installed on a breakaway transformer base complying with the Project Standards, except where pedestrian facilities are present. Light poles shall not be installed in front of traffic barrier. Luminaire shielding may be provided in residential areas to achieve the light trespass design criteria.

11.5.3.1 Temporary Lighting

Design-Build Contractor shall maintain required highway illumination levels for all open traffic movements and corresponding operational lighting during construction of the Project, whether by maintenance of existing lighting or by installation of temporary lighting, until new lighting fixtures are installed and operational. If required to maintain the existing lighting levels in the Site area, Design-Build Contractor shall install and maintain temporary lighting (luminaires attached to wood poles or other temporary supports). Temporary overhead electrical service is acceptable for non-breakaway poles. Design-Build Contractor shall remove temporary lighting when no longer needed. Design-Build Contractor shall be responsible for the power of any and all temporary lighting that may be required, and it is Design-Build Contractor's responsibility to schedule and coordinate all Utility connections.

11.5.3.2 Electrical Service for Lighting

Design-Build Contractor shall coordinate with Utility Owner(s) to deliver metered power to all lighting equipment installed or modified under this Project. Design-Build Contractor shall be

responsible for all Work required to obtain power to lighting equipment, including application and coordination with Utility Owner(s).

Lighting systems owned by different jurisdictions shall have separate power sources derived from the Utility Owner. Exceptions shall require written approval and the agreement of all jurisdictions involved and shall require separate circuits.

Each lighting system shall clearly identify the power service location and power company provider based on jurisdiction. Lighting system circuitry shall be separated by power company provider jurisdiction where feasible.

11.6 Deliverables

Deliverables under this Section 11, a non-exhaustive list of which is set forth in Table 11-1, shall be submitted in electronic format in accordance with the schedule set forth below. Acceptable electronic formats include PDF and current versions of Microsoft Word and Microsoft Excel, unless otherwise indicated.

Table 11-1: Deliverables

Deliverable	Deliverable Schedule	TP Section
Signing roll plots	Prior to Stage 1 Review Submission	11.2.1.1
Sign structure calculations	With Stage 1 Review Submission, Stage 3 Review Submission, and Released for Construction Documents	11.2.1.2
Signing Plans	With Stage 1 Review Submission, Stage 3 Review Submission, and Released for Construction Documents	11.2.1.2
Pavement marking Plans	With Stage 1 Review Submission, Stage 3 Review Submission, and Released for Construction Documents	11.3.2
Traffic signal Plans	With Stage 1 Review Submission, Stage 3 Review Submission, and Released for Construction Documents	11.4.1.1
Lighting design photometric model(s)	With Stage 1 Review Submission, Stage 3 Review Submission, and Released for Construction Documents	11.5.1.1
Lighting Plans	With Stage 1 Review Submission, Stage 3 Review Submission, and Released for Construction Documents	11.5.1.1
Lighting roll plots	Prior to Stage 1 Review Submission	11.5.2

12 MAINTENANCE OF TRAFFIC

12.1 General

Design-Build Contractor shall perform all MOT Work in accordance with the PPA Documents, including Project Standards, this Section 12 and its attachments; Governmental Approvals; and Governmental Rules.

Design-Build Contractor shall design and construct MOT in a manner that minimizes traffic impacts, vehicular delay, and the exposure to potential hazards for both motorists and personnel in the work zone and vicinity. This Section 12 defines specific requirements, restrictions, and permitted closure durations for lanes, ramps, and local streets.

12.2 Administrative Requirements

12.2.1 Required Personnel

12.2.1.1 MOT Manager

Design-Build Contractor shall provide a MOT Manager who shall be responsible for the following:

1. Coordinate MOT activities with IFA and other Governmental Entities.
2. Implement traffic management strategies and lead development of the Traffic Management Plan (TMP).
3. Prepare and submit a weekly inspection report to IFA for all maintenance of traffic control devices used in MOT activities for the Project.
4. Monitor crashes within and adjacent to the Project, and provide a weekly report summarizing findings.
5. Supervise the activities of the CWTS.
6. Coordinate the MOT Plan design.

12.2.1.2 CWTS

Design-Build Contractor shall provide a CWTS in accordance with Section 801.03 of the Standard Specifications. The CWTS, or designee as approved by IFA, shall be on-Site when Construction Work is occurring until Final Acceptance. The CWTS shall be under the supervision of the MOT Manager.

12.2.1.3 Incident Management Liaison

Design-Build Contractor shall provide an Incident Management Liaison to participate in TMP Team meetings, conduct incident management training, document incidents and responses, and other duties as described in the Traffic Incident Management Plan (TIMP).

12.2.2 TMP Team Meetings

Design-Build Contractor shall engage with IFA and Governmental Entities, including law enforcement agencies, emergency response providers, school systems, and other stakeholders and agencies whose operations affect, or are affected by, the Project construction and/or MOT (collectively, the “TMP Team”). Design-Build Contractor shall be responsible for scheduling and holding meetings with this TMP Team. IFA will identify the required invitees for the TMP Team and provide to the Design-Build Contractor. IFA will be the primary contact for the TMP Team.

The MOT Manager shall maintain a contact list of TMP Team members. This list shall include, at a minimum, the following: name, affiliation, work phone, and email. The list shall be sorted in alphabetical order by affiliation and then last name.

12.2.2.1 Initial Meeting

Design-Build Contractor shall arrange and hold an initial TMP Team meeting at least six weeks prior to initial installation of the traffic control devices for the beginning MOT phase.

12.2.2.2 Monthly Meetings

Design-Build Contractor shall hold monthly TMP Team meetings from commencement of construction, as defined in Section 4.5 of the PPA, to Substantial Completion. The meeting schedule and frequency may be adjusted upon the agreement of the TMP Team members and approval by IFA. Design-Build Contractor shall cover the following objectives at these meetings:

1. Further refine, develop, and discuss the MOT Plans.
2. Review and discuss the Design-Build Contractor’s MOT details, including review of MOT and traffic-related environmental commitments, work zone crash rate and crash rate trend, and work zone queueing.
3. Disseminate Project MOT information to TMP Team, including schedules and details regarding MOT phase shifts, closures, and detours.
4. Obtain MOT input from TMP Team and prepare and distribute meeting minutes.
5. Develop, refine, and review the TIMP and its implementation.
6. Review all Incidents within and adjacent to the Project limits, and discuss mitigation measures, as needed.
7. Review emergency responder access.

The MOT Manager shall notify members of the TMP Team of meetings at least 14 days prior to any scheduled meeting and distribute a meeting agenda at least two days in advance. The MOT Manager shall prepare meeting minutes and distribute to the TMP Team within five days after the meeting.

12.3 Design and Construction Requirements

12.3.1 Transportation Management Plan

Design-Build Contractor shall prepare, implement, and maintain a TMP for the Project. Design-Build Contractor shall obtain IFA approval of the TMP prior to initiation of any Construction Work. Design-Build Contractor shall prepare and submit updates to the TMP to IFA for approval no later than 14 days after the identification of a necessary change to the Work, including the MOT scheme.

The TMP shall be developed in coordination with and be consistent with the PIP and include procedures to communicate TMP information to the Public Involvement Manager for communication of all MOT Work to the public, stakeholders, including affected Governmental Entities' stakeholders, and other affected parties prior to implementation of any MOT phase or phase change.

The TMP shall include:

1. Traffic Operations Plan
2. Temporary Traffic Control Plan (TTCP)
3. Traffic Incident Management Plan (TIMP)
4. Coordination process with the PIP, as described in Section 5 (Public Involvement), including the use of highway advisory radio and variable message signs.
5. Procedures for communication of all MOT phase installations and changes with the affected groups and stakeholders.
6. Procedures defining how MOT Manager will coordinate construction traffic impacts with the IFA communication manager and TMP Team, and with Design-Build Contractor's CWTS, who is responsible for monitoring daily MOT activities.
7. Descriptions of contact methods and response times of the CWTS to address any MOT conditions needing attention during all hours.
8. Coordination with the TIMP, including identification of staging areas where equipment or vehicles needed for Incident clearance response can be stored and have reasonable and safe access to the construction zones.
9. Procedures to identify and incorporate the needs of transit operators, Utility Owners, and business owners in the Project corridor, including Utility Owner maintenance access and business access signing.
10. Identification of measurable limits for the repair and replacement of traffic control devices, including pavement markings.
11. Processes to determine the placement, spacing, messaging, and design of temporary panels signs to provide advance warning of construction zone and closures.
12. Processes to identify, design, and obtain required approval for all necessary temporary traffic signals or modifications to existing traffic signals.

13. Processes to determine the need for revised traffic signal timings, and if revisions are required, detailed procedures for the development, approval, implementation, testing, and maintenance of all signals affected by the MOT; both within the Project limits and on detour routes.
14. Processes to determine the need for temporary traffic signals at existing unsignalized intersections, both within the Project limits and on detour routes.
15. Work zone access management mapping (including ingress/egress locations and details) for each construction phase.
16. Construction haul route mapping for each construction phase.
17. Frequency of inspection and methods of maintenance of all traffic control devices in use by the Project.
18. Provisions to provide continuous access to established truck routes and any Hazardous Material routes.
19. Procedures for modification of the MOT Plans.

12.3.2 Temporary Traffic Control Plan

Design-Build Contractor shall prepare a TTCP, submit for IFA approval, and implement the approved TTCP. An approved TTCP shall be included with each applicable RFC package Submittal. The TTCP shall become part of the appropriate TMP as amendments once the TTCP is approved by IFA.

The TTCP shall define how Design-Build Contractor is to phase construction and detail all the required elements of the physical work zone.

In addition to the requirements in the IDM, the TTCP shall include the following information:

1. A cover page/title sheet signed and sealed by a Registered Professional Engineer.
2. Standard Drawings used for MOT Plans and MOT design.
3. MOT Plans. The MOT Plans shall detail phases and shall identify all long-term lane closures and lane restrictions anticipated during the Work.
4. Detour routes and haul routes required for the purpose of Construction Work.
5. Special Provisions that include a switching procedure between each controlled MOT phase change. The switching procedure shall consist of the methods, actions, and signing necessary to complete the switch and the number and duties of traffic personnel assigned to perform the switch.
6. Special Provisions that describe a process for transitioning from temporary signage and temporary pavement markings to permanent signing and permanent pavement marking.
7. Special Provisions that describe Design-Build Contractor coordination with the construction and maintenance projects of Governmental Entities that are adjacent to or near the Project ROW. The Special Provisions shall include a coordination clause listing

other adjacent or nearby construction projects. At a minimum, this shall include the projects listed in Section 1 (General Scope of Work).

8. Special Provisions that require Design-Build Contractor to maintain existing access to all properties within the Project limits for the duration of the Construction Work, except as provided elsewhere in the PPA Documents. Appropriate information about access modifications shall be made available to the property owners as required in the PIP.

In addition to the requirements in the IDM, the MOT Plans shall include the following information for each phase of construction:

1. Locations and details for traffic shifts and lane closures
2. Use of temporary roadways
3. Temporary traffic signals
4. Access modifications to businesses and residences
5. Proposed mitigation measures for traffic impacts
6. Ingress/egress locations and details for Design-Build Contractor-Related Entities
7. Temporary local road closures and detour routes
8. Temporary pedestrian and bicycle detour routes

12.3.3 Traffic Incident Management

12.3.3.1 Traffic Incident Management Plan

Design-Build Contractor shall prepare and submit the TIMP as part of the TMP for review and approval by IFA. The TIMP shall include procedures for interaction with IFA, INDOT, INDOT's consultants, emergency responders, and other Governmental Entities.

Design-Build Contractor shall coordinate resources on the job and cooperate with all the emergency services providers as necessary for efficient response in emergency situations.

Design-Build Contractor shall establish procedures for the detection, verification, response, management, and clearance of incidents within or adjacent to the work zone. These procedures shall be discussed at TMP Team meetings and are subject to IFA review and approval. Design-Build Contractor shall designate an Incident Management Liaison to participate in the TMP Team. The CWTS may also serve the role of Incident Management Liaison. Prior to the start of Construction Work, the Incident Management Liaison shall arrange and conduct a detailed Incident Management training session for Design-Build Contractor's Key Personnel, superintendents, and lead foremen. Design-Build Contractor shall invite IFA and provide IFA with Notice of the training two weeks prior to the session. This training shall familiarize Design-Build Contractor's personnel with the Incident management procedures developed by the TMP Team that need to be followed throughout the Project. This training shall be conducted at a frequency as agreed upon with IFA for the term of the PPA as personnel are added to the Project. Documentation of this training, including dates performed and a list of all attendees, with signatures, shall be provided to IFA within five days of performing the training.

Design-Build Contractor's Incident Management Liaison shall coordinate all Incident response requirements with INDOT Incident Management Program Director from the Work Zone Safety Section.

12.3.3.2 Meeting and Notification Requirements

The Incident Management Liaison shall be present at TMP Team meetings.

The Incident Management Liaison shall prepare and distribute Incident management maps as approved by IFA to agencies identified by the TMP Team. The Incident Management Liaison shall update maps at a minimum of once per change of phase in maintenance of traffic plan or at the request of IFA. The maps shall be 11 inches by 17 inches, in color, to an engineering scale, and include at a minimum the following:

1. Outline of the roadway geometry
2. Open travel lanes/ramps colored in green
3. Closed travel lanes/ramps with active construction in orange
4. Closed travel lanes/ramps accessible to emergency traffic in red
5. Temporary emergency vehicle access points with identifiers
6. Rally points for emergency vehicle escorts into the Work area with identifiers defined by IFA
7. Control points, such as mile markers and block numbers
8. Emergency road closure, diversion, points with identifiers
9. Diversion equipment and their locations
10. All entrance and exit ramps identified and labeled

The Incident Management Liaison shall meet with local emergency responder representatives at least 14 days prior to a major change in the MOT traffic patterns and coordinate with INDOT TMC.

The Incident Management Liaison shall present reports on Incidents at TMP meetings.

12.3.3.3 Incident Response

The Incident Management Liaison shall coordinate Design-Build Contractor's resources in response to an Incident either in the Project limits, work zone, or portions of the roadways where traffic is in queues approaching the work zone. Design-Build Contractor shall provide to IFA no later than seven days following commencement of construction, as defined in Section 4.5 of the PPA, the phone and email contact information for such designee(s), and Design-Build Contractor shall cause such designees' phone and email contact information to remain current until Final Acceptance. The designee shall be available and on call 24 hours a day, seven days a week. If necessary, in the event of an Incident, the designees shall have a response time of less than 30 minutes to the Incident site to oversee the use of Design-Build Contractor's resources to help resolve the Incident.

In the event of an Incident within or adjacent to the Project limits while Construction Work is underway, Design-Build Contractor's personnel shall assist in establishing road or ramp closures to isolate Incident scenes in an emergency situation (as requested by IFA, emergency responders, or law enforcement). Also, Design-Build Contractor's heavy equipment may be required to assist in moving wreckage or debris from the travel lanes if requested by emergency responders or law enforcement and realigning temporary barriers to facilitate reopening the road to normal traffic (as requested). The Incident Management Liaison shall coordinate these activities with IFA and emergency responders on the scene.

Design-Build Contractor shall contact the appropriate law enforcement agency for disabled vehicles in active lanes and shoulders.

To facilitate with closures and provide current road conditions in an emergency situation, Design-Build Contractor shall supply at a minimum the following pieces of equipment to be located as directed by IFA:

1. Flashing arrow sign for each interstate mainline approach to the work zone including ramps leading to the work zone.
2. Safety drums for every lane on the mainline where the flashing arrow sign is positioned.

12.3.4 Design Criteria

The information listed below shall be incorporated into the MOT Plans and the TMP.

12.3.4.1 General Design Criteria

1. Construction Zone Design Speed
 - a. The construction zone design speed for MOT features on the approaches to the work zone on I-465, SR 37 and ramps shall be the existing posted speed limit (or advisory speeds on ramps).
 - b. For I-465, SR 37, and ramps with no advisory posted speed limit, the construction zone design speed within the work zone shall be the posted speed limit with a 10-mile-per-hour speed reduction.
 - c. For ramps with an advisory posted speed limit, the construction zone design speed within the work zone shall be the advisory posted speed limit with a 5-mile-per-hour speed reduction.
 - d. The construction zone design speed on local streets shall be the posted speed limit.
2. Lane and Shoulder Widths
 - a. The minimum MOT lane width shall be 11 feet on I-465, SR 37, and ramps except as noted in Section 12.3.4.2.
 - b. The minimum MOT shoulder width shall be 2 feet on I-465, SR 37, and ramps, except as noted in Section 12.3.4.2.
 - c. The minimum MOT clear roadway width (including shoulder width) for a single lane crossed over (i.e. "counter-flow") shall be 18 feet.

- d. The minimum MOT lane width on local streets shall match existing lane widths up to 11 feet.
 - e. The minimum MOT lane width within multi-lane shifts on interstate mainline and ramps shall be 13 feet.
3. Separation Between Lane and Barriers
- a. A minimum horizontal clearance of 2 feet between barrier and edge of travel lane shall be provided except as noted in Section 12.3.4.2.
 - b. Temporary traffic barrier (TTB) and approved end treatments shall be used to separate the motoring public from the Work area when Work or equipment, including personal vehicles and trucks used for loading and unloading, would otherwise be located within the construction clear zone. TTB or temporary guardrail shall be provided if the entire construction clear zone is not traversable or if hazards exist within the construction clear zone.
 - c. When TTB is used to channelize traffic through a lane shift taper or merging taper, the horizontal clearance between the barrier and the edge of travel lane shall be increased by using a 100-foot extension of the barrier at the beginning and end of the taper shall be in accordance with Attachment 12-2 (Construction Taper Detail).
 - d. Opposing traffic lanes of I-465 or SR 37 traffic shall be separated by traffic barrier if the existing open median width is reduced or otherwise cannot be provided.
 - e. For TTB used to separate two directions of traffic in a crossover, glare screens shall be used to eliminate headlight glare.
4. Design-Build Contractor shall maintain positive drainage on all active travel lanes during Construction Work and the design shall meet spread requirements for a 50 percent exceedance probability storm. Design-Build Contractor shall verify to the satisfaction of IFA that all existing drainage features are adequately functioning prior to Construction Work.
5. Design-Build Contractor shall install any missing reference markers prior to initiation of MOT and shall maintain reference markers during construction.
6. Existing turn lanes at intersections shall be maintained during MOT operations. The existing turn lane length, including taper, deceleration, and storage length shall be maintained.
7. Existing ramp acceleration/deceleration lane lengths and taper lengths on I-465 shall be provided for entrance and exit ramps during MOT operations.

12.3.4.2 Design Criteria for I-465 during I-65/I-70 North Split Project Detour

During the period in which the I-65/I-70 North Split Project traffic will be officially detoured on I-465 within the Project limits (expected between January 1, 2021 and March 31, 2023), the following design criteria shall apply:

1. Construction Zone Design Speed – the construction zone design speed on I-465 shall be the existing posted speed limit throughout the work zone.

2. Lane Widths – The minimum MOT lane width on I-465 shall be 12 feet.
3. Shoulder Widths (including separation between lane and barrier)
 - a. The minimum left (inside) shoulder width shall be 4 feet.
 - b. The minimum right (outside) shoulder width shall be 12 feet, except it may be reduced to a minimum 4 feet for no more than a 1,700-foot distance, with no more than a single width reduction of any length in any continuous 1-mile distance. The 1,700-foot distance shall include the length of the shoulder width reduction taper and buffer.

12.3.5 Traffic Through the Construction Zone

Access to all businesses and residences shall be maintained at all times. Design-Build Contractor shall maintain existing roads and streets within the Project limits, except during approved closures, in a good, clean, safe condition at all times.

Appropriate MOT and flagging procedures shall be followed during all Construction Work, including mobilization and demobilization activities. Construction vehicles shall be equipped with flashing or rotating amber lights.

12.3.6 Pedestrian and Bicycle Access During Construction

Design-Build Contractor shall maintain existing or detoured pedestrian and/or bicycle access on all sidewalks, trails, transit facilities and at all intersections that are open to traffic. Design-Build Contractor shall also maintain safe access and passage for all pedestrian facilities. Pedestrian sidewalks and paths shall be maintained and shall conform to ADA requirements. Occupational safety regulations that apply to the Project limits shall also be considered the minimum standard for personal safety to pedestrians. If Work is performed over any pedestrian and bicycle routes, temporary lighted covered walkways shall be provided to protect pedestrians and bicyclists from overhead hazards.

If Work areas encroach upon a sidewalk or crosswalk area, and a minimum clear width of 48 inches cannot be maintained for pedestrian use, Design-Build Contractor shall provide an alternative accessible pedestrian route and obtain approval of the alternate route from the applicable agency having jurisdiction prior to implementation.

Design-Build Contractor shall provide protective barricades, fencing, and footbridges, together with warning and guidance devices and signs to protect pedestrians. Design-Build Contractor shall provide suitable handrails whenever pedestrian walkways are provided across excavations. Footbridges shall be safe, strong, and free of bounce and sway; have a slip-resistant coating; and be free of cracks, holes, and irregularities. Design-Build Contractor shall provide ramps at the entrance and exit of all raised footbridges.

When the existing facility is illuminated and/or Work is required during the non-daylight hours, Design-Build Contractor shall address temporary construction lighting needs as well as address any concerns regarding glare. Design-Build Contractor shall provide retro reflective delineation, with or without illumination, during non-daylight hours.

Design-Build Contractor shall provide an alternate accessible pedestrian route that complies with the IMUTCD, PROWAG, and INDOT ADA requirements where accessible pedestrian and/or bicycle routes are allowed to be closed by Design-Build Contractor during construction.

Design-Build Contractor shall provide barricades or channelizing devices where it is necessary to divert pedestrians into the roadway to separate the pedestrian route from the adjacent vehicular traffic lane. At no time shall pedestrians be diverted into a portion of the street used concurrently by moving vehicular traffic.

Design-Build Contractor shall not park construction vehicles, locate construction signs, or place equipment on a pedestrian sidewalk or path open to pedestrian traffic; or use the pedestrian sidewalk or path for loading operations, stockpiling of materials, or allowing demolished or spoil materials to be deposited on the surface of a pedestrian and/or bicycle sidewalk or path. Design-Build Contractor shall restore any surface of a pedestrian sidewalk or path affected by the Work to meet ADA standards prior to re-opening to pedestrian traffic. Sweep or wash the trail or sidewalk surface to be free of debris including, mud, gravel, grease, and excavated, spoiled, or stockpiled materials.

12.3.7 Construction Access and Haul Routes

Design-Build Contractor shall obtain and comply with the conditions of all necessary Governmental Approvals from the appropriate Governmental Entities for temporary roadways, including Construction Work and, as applicable, haul routes.

Design-Build Contractor is not limited in its use of local streets for access to perform Construction Work.

Design-Build Contractor shall maintain construction access roads and haul roads in a good, clean, safe condition at all times while used for the delivery of materials required for the Work.

Design-Build Contractor shall not use local streets through residential neighborhoods for access to the Site without written approval of the local jurisdiction. Deliveries and hauling to and from the Site shall be performed via designated haul routes along the Project.

All ingress and egress locations on I-465 and SR37/I-69 shall comply with Attachment 12-1 (Construction Ingress-Egress Detail). All construction equipment and supplies shall access the Site via a public road unless otherwise approved by IFA.

12.3.8 Local Street Detour Routes

Design-Build Contractor shall maintain pavement on detour routes in a condition that is reasonably smooth and free from holes, ruts, ridges, bumps, dust, and standing water. Prior to implementation of a detour route, Design-Build Contractor shall submit photographic documentation, including high-resolution UAS photography, of the existing condition of the detour route to IFA for its review and use. The photographic documentation shall include sufficient detail to establish the existing condition of roadway features including, but not limited to, pavement, curbs, drainage structures, signs, and pavement markings. Once the detour is removed and traffic is returned to its normal pattern, the detour route shall be restored to a condition that is equal or better than the condition that existed prior to Construction Work.

12.3.9 Portable Changeable Message Signs

Design-Build Contractor shall provide, operate, and maintain a minimum of 20 PCMS where shown on the approved TTCP or when requested by IFA. Along with the PCMS required for the Project as part of the approved TTCP, Design-Build Contractor shall provide a minimum of two additional PCMS on-Site and in good working condition for use in emergencies. These additional PCMS shall be available on-Site until Substantial Completion. Design-Build Contractor shall coordinate the placement, messaging, and operation of PCMS with IFA. PCMS shall be placed seven days in advance to announce changing traffic patterns.

12.3.10 Public Notification

Design-Build Contractor shall furnish and install temporary panel signs that provide advance notification of interstate, ramp, and local road closures. The temporary panel signs shall include information for the closure and detour route. Design-Build Contractor shall use PCMS to supplement the required signs. Design-Build Contractor shall show sign locations, messages, letter sizes, and sign sizes in the TTCP. Design-Build Contractor shall notify all applicable 911 offices, police departments, local fire departments, city engineering departments, public transit agencies, and the affected school districts in writing a minimum of 14 days prior to scheduled closures. Design-Build Contractor shall provide written copies of these notifications to IFA.

12.3.11 Restrictions for Construction Work

The requirements of this Section 12.3.11 apply throughout the term of the PPA.

12.3.11.1 Movement Closures

Design-Build Contractor will be assessed Movement Charges in accordance with Section 17.3.1 of the PPA.

Outside of the single continuous occurrence Movement Closure durations in Tables 10-2-1, 10-3-1, and 10-4-1 of Exhibit 10 to the PPA, Design-Build Contractor will not be assessed Movement Charges for any off-peak Movement Closure for the time periods indicated in Table 12-1, provided that (a) Design-Build Contractor maintains the minimum number of lanes open to traffic during the applicable time period in Table 12-1 and (b) such off-peak Movement Closure is not due in whole or in part to the acts or omissions of any DB-Related Entity or any Design-Build Contractor Fault. Furthermore, any Movement Closure from 11 p.m. to 4 a.m. that meets the temporary traffic stoppage requirements under Section 801.16(c) of the Standard Specifications will not be assessed Movement Charges, provided that Notice to IFA is provided in accordance with Table 12-3.

Notwithstanding the foregoing, a Movement Closure will be deemed a Permitted Closure if IFA declares such closure as an emergency or urgent as described in Appendix A of the IHCP.

Detour routes for Movement Closures shall comply with the routes shown in Attachment 12-5 (Approved Detour Routes).

12.3.11.1.1 Mainline Interstate Movement Closures

Design-Build Contractor shall comply with the requirements and commitments defined in Attachment 12-3 (IHCP Exception Request) and Attachment 12-4 (Interstate Closure Request Draft) if it elects to use the permitted closure(s).

Full closure(s) of I-465 EB or WB are not permitted until the I-65/I-70 North Split Project Official Detour Date.

During the full closure(s) of I-465 EB or WB, Design-Build Contractor shall close the following ramps:

1. For the I-465 EB closure from I-70 to I-65: all EB on and off-ramps at SR 67/Kentucky Avenue, Mann Road, SR 37/Harding Street, and US 31/East Street
2. For the I-465 WB closure from I-65 to I-70: all WB on and off-ramps at SR 67/Kentucky Avenue, Mann Road, SR 37/Harding Street, and US 31/East Street

Design Build Contractor shall maintain the same number of traffic lanes as the existing roadway and ensure these lanes are open to traffic at all times in each direction for the term of the PPA on I-465, SR 37, and I-69, except for the time periods noted in Table 12-1.

Design-Build Contractor may reduce lane(s) on I-465 no more than 180 nights, during the time periods noted in Table 12-1, until the I-65/I-70 North Split Official Detour Date. Multiple lane reductions in a single night, regardless of direction of traffic or location on I-465, shall count as a single night toward this allowance. After the I-65/I-70 North Split Official Detour Date, there is no limit on nighttime lane reductions.

Table 12-1: Permitted Mainline Lane Restrictions

Roadway	From	To	Minimum Number of Lanes Maintained	Restrictions
I-465 EB and WB	MM 0.0	MM 9.5	2 lanes in each direction	Between 9:00 p.m. and 5:00 a.m. Sunday through Saturday
I-465 EB and WB	MM 0.0	MM 9.5	1 lane in each direction	Between 11:00 p.m. and 4:00 a.m. Sunday through Thursday
SR 37/I-69 NB	Bluffdale Drive	Wicker Lane/ Bluff Road	1 lane in each direction	Between 6 p.m. and 6 a.m. Sunday through Saturday
SR 37/I-69 NB	Wicker Lane/ Bluff Road	Epler Avenue	1 lane in each direction	Between 9 p.m. and 5 a.m. Sunday through Saturday
SR 37/I-69 SB	Bluffdale Drive	Wicker Lane/ Bluff Road	1 lane in each direction	Between 9 p.m. and 9 a.m. Sunday through Saturday
SR 37/I-69 SB	Wicker Lane/ Bluff Road	Epler Avenue	1 lane in each direction	Between 9 p.m. and 5 a.m. Sunday through Saturday

Design-Build Contractor shall not exceed the maximum permitted mainline interstate closure days for the movements identified in Table 10-2-1 listed in Exhibit 10 of the PPA.

12.3.11.1.2 Ramp Movement Closures

Design-Build Contractor shall maintain the same number of existing ramp lanes open to traffic at all times during construction for the defined ramp movements, except as noted in Table 10-3-1 in Exhibit 10 of the PPA.

Ramp Movement Closures are not permitted until the I-65/I-70 North Split Project Official Detour Date.

12.3.11.1.3 Local Street Closures

Design-Build Contractor shall maintain the same number of traffic lanes as the existing roadway and be open to traffic at all times during construction for all local streets except as noted in Table 12-2 and Table 10-4-1 in Exhibit 10 of the PPA.

Table 12-2: Permitted Local Street Lane Restrictions

Roadway	From	To	Minimum Number of Lanes Maintained	Restrictions
Harding Street NB	Thompson Road	Harco Way	One through lane, one turn lane to each of: I-465 WB, I-465 EB, Mr. Fuel, and Pilot Travel Center	During construction of Harding Street only
Harding Street SB	Harco Way	Thompson Road	One through lane, one turn lane to each of: I-465 WB, I-465 EB, Thompson Road EB, and Thompson Road WB	During construction of Harding Street only
Meridian Street	Thompson Road	Hanna Avenue	One lane in each direction	During construction of I-465 over Meridian Street only
Southport Road	SR 37	South Harding Street	One lane in each direction and one left turn lane to Harding Street NB	During off-line construction of Southport Road

12.3.12 Queue Protection Strategies and Technologies

[NOTE: Content under development]

12.3.13 Contract 4 Matchline Requirements

Design-Build Contractor shall complete the following list of items as part of the coordination with Contract 4:

1. If used to maintain traffic, remove all portions of the Temporary Crossover, Type B south of Fairview Road.

2. Maintain all movements and a temporary traffic signal at Fairview Road until directed by IFA.
3. Construct a Modified Temporary Crossover, Type B (for two-lanes in each direction) approximately 2,000 feet north of Fairview Road temporary traffic signal. Maintain crossover until directed by IFA for removal.
4. Place temporary markings on the final pavement surface south of the Modified Temporary Crossover. Remove temporary markings and place final pavement markings after removal of the Modified Temporary Crossover. Temporary markings shall not be removed by grinding or milling the final pavement surface.

12.3.14 Notification and Coordination

The MOT Manager shall notify IFA at least 28 days before the start of any Work that would affect traffic operations, including placement or relocation of work zone signs.

Information shall include all construction and maintenance activities that impact or interfere with traffic and shall list the specific location, type of Work, date and time of Movement Closure, duration, number of lanes maintained, detour routes if applicable, and any other information as requested by IFA. A summary of the notification time and requirements for movement closures is provided in Table 12-3.

Table 12-3: Movement Closure Notification Requirements

Item	Duration of Closure	Notification Time Frame
Interstate, ramp and local street Movement Closures	Greater than two weeks	28 Business Days before closure
	Greater than 12 hours and less than two weeks	14 Business Days before closure
	Less than 12 hours	14 Business Days before closure
Interstate, ramp, and local street Movement Closures impacting: school access and/or bus route transit system operations	All closures	28 Business Days before closure

Design-Build Contractor shall schedule and hold a pre-MOT meeting with IFA and the TMP Team a minimum of 14 days before beginning Construction Work or executing any change of MOT staging. This meeting shall include IFA and any Design-Build Contractor Subcontractors involved with temporary traffic control.

12.4 Deliverables

Deliverables under this Section 12, a non-exhaustive list of which is set forth in Table 12-4, shall be submitted in hard copy and electronic format in accordance with the schedule set forth below. Acceptable electronic formats include PDF and current versions of Microsoft Word and Microsoft Excel, unless otherwise indicated.

Table 12-4: Deliverables

Deliverable	Deliverable Schedule	TP Section
Weekly traffic control device inspection report	Weekly after NTP	12.2.1.1
Transportation Management Plan (TMP) for Construction Work	Draft TMP within 30 days after NTP; Final TMP 30 days prior to commencement of Construction Work; updates as needed.	12.3.1
Temporary Traffic Control Plan (TTCP)	Draft TTCP within 30 days after NTP; Final TTCP 30 days prior to commencement of Construction Work for each buildable unit; updates as needed.	12.3.2
Traffic Incident Management Plan (TIMP)	Draft TMP within 30 days after NTP; Final TMP 30 days prior to commencement of Construction Work; updates as needed.	12.3.3.1
Incident management training documentation	Within 72 hours after completion of training for each training session	12.3.3.1

13 GEOTECHNICAL

13.1 General

Design-Build Contractor shall perform, design, and construct all geotechnical Work, including supplemental subsurface explorations, investigations, testing, and analyses. This Section 13 provides the minimum Project requirements for geotechnical Work. Design-Build Contractor shall be responsible for addressing the specific geotechnical needs for the Project.

13.2 Administrative Requirements

13.2.1 Standards

Design-Build Contractor shall perform all geotechnical Work in accordance with the PPA Documents, including Project Standards, this Section 13 and its attachments; Governmental Approvals; and Governmental Rules.

13.2.2 Personnel

Geotechnical Work, including field exploration, shall be performed by a prequalified geotechnical Subcontractor approved by the INDOT Geotechnical Services Division. All laboratory testing shall be performed by an INDOT-approved laboratory with AASHTO Materials Reference Laboratory accreditation for each specific test performed.

Geophysical investigations shall be planned and led by a geophysicist with a minimum of 10 years of experience performing geophysical investigations on transportation projects.

Boring and in-situ testing shall be supervised by field inspectors who have passed the NHI Subsurface Investigation Qualification Course (#132079) or have a minimum of five years of field experience in the inspection and reporting of field sampling and testing of similar type and quantity. The NHI Subsurface Investigation Qualification Course is not required if the inspector is a degreed engineer or geologist.

All field evaluations and laboratory testing, including geophysical investigations, shall be performed under the direct supervision of a Registered Professional Engineer, approved by INDOT Geotechnical Services Division, with a minimum of five years of experience in the performance and supervision of geotechnical engineering projects.

13.3 Design Requirements

13.3.1 Geotechnical Data Report

The Geotechnical Data Report provides preliminary geotechnical data obtained by IFA for the Work. Design-Build Contractor is responsible for reviewing and interpreting the geotechnical data provided by IFA in order to determine if the geotechnical requirements of the Project have been met. Design-Build Contractor is responsible for the geotechnical Work necessary to satisfy Project requirements.

13.3.2 Supplemental Geotechnical Work

Design-Build Contractor shall perform supplemental subsurface exploration and testing necessary to satisfy Project requirements and support its design approach and construction methods. Design-Build Contractor shall be responsible for the sufficiency, reliability, and accuracy of all Work and for determining the form and nature of the subsurface evaluation of the Site. Subsurface information referenced for bridge foundation designs shall be taken from boring(s) located within 30 feet of each planned substructure location.

It is anticipated that overhead electrical transmission lines will restrict access near the Keystone Avenue Bridge No. 51. The provided subsurface information and proposed supplemental exploration from a safe distance of more than 30 feet from this proposed structure may be sufficient for deep foundation design by the Design-Build Contractor.

Design-Build Contractor shall submit a subsurface exploration and testing program identifying all field and laboratory testing to be performed to establish the geotechnical conditions and parameters used for analysis and design. The subsurface exploration and testing program shall be submitted to IFA for review and approval. At a minimum, the Submittal shall include a rationale for the development of the program, parameter selection, and descriptions of the methods of analyses. Supplemental test borings shall be selectively located based on geologic conditions, field observations, design considerations, and the minimum criteria specified in the Project Standards.

Design-Build Contractor shall determine the coordinate location, station, and offset from the alignment in addition to the ground surface elevation for each exploration performed.

13.3.2.1 Boring and Rock Core Logs

Final test boring and rock core logs shall be prepared and presented using gINT software as supplied by Bentley Systems Inc. IFA will provide the electronic template for the current version of gINT.

After collecting soil and rock samples, Design-Build Contractor shall perform laboratory tests to determine material properties and verify design assumptions. Sufficient testing shall be performed to satisfy Design-Build Contractor that results are representative of and characterize in-situ conditions.

13.3.3 Geotechnical Design Reports

Design-Build Contractor shall prepare Geotechnical Design Reports addressing all of the Project's geotechnical Work. A Geotechnical Design Report shall be written for individual Project elements or groups of Project elements. Geotechnical Design Reports shall be submitted to IFA for review and approval.

All design calculations and computer program results shall be checked and initialed by a Registered Professional Engineer and included in the corresponding Geotechnical Design Report.

13.3.3.1 Geotechnical Analysis

Each Geotechnical Design Report shall contain a separate section entitled “Geotechnical Analysis.” The geotechnical analysis shall consider the design requirements of other design disciplines, such as the geometry of side slopes, wall types, construction sequencing, and other items requiring geotechnical information for design and construction. At a minimum, this section shall include the following information:

1. Description of the Project element(s) addressed in the report;
2. Data and descriptions of geotechnical analyses and designs;
3. Values assigned to all applicable soil and rock parameters for design;
4. An assessment of the engineering properties of all soil and rock types, including the expected average and range of soil strengths and deformational properties and the preliminary design parameters for all soil and rock types;
5. Results of laboratory tests;
6. Settlement risks;
7. Stability risks;
8. Risks related to potential groundwater that may be encountered and recommended remedial actions;
9. Seismic site class;
10. Other construction considerations, such as support of excavations and geotechnical instrumentation requirements, noise and vibration requirements described in Section 7 (Environmental);
11. Calculations estimating the maximum settlement within 100 feet of the north bents of Bridge Nos. 19 and 20. Maximum allowable calculated settlement shall be 1 inch during a period of 10 years after the completion of the pavement construction in this area; and,
12. Calculations estimating the settlement in all fill areas of the Project not included in item 11, above. Maximum allowable calculated settlement shall be 2 inches during a period of 20 years after the completion of the pavement construction.

13.3.3.1.1 Foundations

For foundations, at a minimum, the report shall include the following:

1. Design calculations for individual foundation elements and groups of foundation elements, including, at a minimum: maximum factored axial and lateral resistances for the foundation type, size, and/or length (including any effects of downdrag); estimated differential and total settlements; rotations; and any additional design parameters applicable to the performance of the supported structure;
2. Seismic zone and site class; and,

3. Calculations of embankment settlement (magnitude and time rate) and downdrag forces, depths to zero or negligible settlement, and proposed means to mitigate or resist downdrag.

13.3.3.1.2 Retaining Walls and Reinforced Soil Slopes

For retaining walls and reinforced soil slopes, the report shall include, at a minimum, design calculations for bearing resistance, analysis of external stability, and estimates of total, differential, and secondary settlement. Design-Build Contractor shall use Attachment 13-1 (USP: Geotechnical) for requirements specific to reinforced soil slopes.

13.3.3.1.3 Embankments and Slopes

For embankments and slopes, at a minimum, the report shall include the following:

1. Results of the slope stability analyses, including external loading from live and seismic forces;
2. Recommended side slopes. Design-Build Contractor shall follow slope selection criteria in Section 8.3.1 (General Design Requirements);
3. Results of settlement analyses including predictions of the magnitude and duration of primary, secondary, and post-construction settlements;
4. Compaction efforts, embankment fill type, and/or design details necessary to prevent differential settlement and poor performance of rideability at transitions from bridges to embankment fill;
5. Proposed methods of protecting or abandoning Utilities where necessary; and,
6. Recommendations for staged construction design where deemed necessary or to facilitate construction phasing.

13.3.3.2 Geotechnical Recommendations

Each Geotechnical Design Report shall contain a separate section entitled “Geotechnical Recommendations.” At a minimum, this section shall include the following information:

1. A narrative describing the interpretation of the pertinent geotechnical data used as a basis for selection, design, and installation of the proposed elements relative to the anticipated sequence and means and methods of construction;
2. Preparation of subgrade and foundation soil for support of construction activity and permanent construction and actions to be taken during construction to improve the soil as deemed necessary based on Site observations;
3. Requirements for geotechnical instrumentation and monitoring summaries determined to be necessary by the Design-Build Contractor;
4. Geotechnical risk management for design and construction;
5. Fill and backfill material requirements;
6. Ground improvements for support of, stability of, and/or control of settlement for embankment fill and foundation elements; and,

7. For foundations, the method used to field-verify the required resistance; for driven piles, the number and locations of test piles and minimum time period Design-Build Contractor shall wait prior to restrike of test piles.

13.3.3.3 Presentation of Geotechnical Investigations

Each Geotechnical Design Report shall contain final typed boring logs updated with laboratory testing results, and the results of all in-situ testing, geophysical testing, and laboratory testing. An electronic copy of the gINT data used to create the boring logs shall be submitted with each report.

13.3.4 Deep Foundations

Timber piles, precast prestressed concrete piles, auger cast-in-place piles, screw piles, and existing foundations shall not be used for new structures.

13.4 Construction Requirements

13.4.1 Drilled Shafts and Driven Foundations

Design Memorandum No.18-15 and the revision to Chapter 408-3.01 of the IDM does not apply to this Project. Design-Build Contractor will not have to limit R_{nr} to 426 kips.

IFA will perform integrity testing consisting of ASTM D-6760 Crosshole Sonic Logging, ASTM D-5882 Low Strain Pulse Echo Methods, and ASTM D-7949 Thermal Integrity Profiling. Design-Build Contractor shall coordinate with IFA and install appropriate elements to facilitate testing. Each method will be performed on up to 100 percent of drilled shaft bridge foundations.

Based upon the installation and testing data, Design-Build Contractor's geotechnical engineer shall validate that drilled shafts were adequately constructed. If not adequately constructed, Design-Build Contractor's engineer shall recommend solutions for review and approval by IFA. All testing shall be in accordance with the RSP 728-B-203 (Drilled Shaft Foundations).

IFA will perform dynamic pile load testing consisting of ASTM D-4945. The completed pile and driving equipment data form shall be submitted to IFA no less than 30 days prior to driving piles. Design-Build Contractor's geotechnical engineer shall complete a preliminary pre-construction drivability analysis prior to submittal of the pile and driving equipment data form. If the Design-Build Contractor changes the hammer after production piles have started for a bridge, a new pile and driving equipment data form shall be submitted to IFA as described above.

13.4.2 Compaction of Fill

The maximum dry density of all fill will be determined in accordance with AASHTO T 180. Design-Build Contractor shall comply with Attachments 13-2 (USP: Embankment Other Than Rock, With Strength or Density Control) and 13-3 (USP: Method of Making Strength, Stiffness and Density Tests) for requirements specific to strength and density control and for methods of acceptance testing, respectively.

13.4.3 Instrumentation

Design-Build Contractor shall submit an instrumentation program for the area of the Project between Epler Avenue and Thompson Road to IFA for review and approval. The instrumentation shall be installed by Design-Build Contractor and must include no less than five vibrating wire settlement systems and no less than 20 settlement plates installed outside of paved areas to allow for readings to be obtained prior to embankment fill placement and continuing after paving in the area is completed. No less than two of the vibrating wire settlement monitoring locations and no less than eight of the settlement plates shall be installed within 600 feet of Epler Avenue. Design-Build Contractor shall not place pavement in this area until an assessment report of the data is prepared and submitted by the Design-Build Contractor and approved by IFA.

13.5 Deliverables

Deliverables under this Section 13, a non-exhaustive list of which is set forth in Table 13-1, shall be submitted in electronic format in accordance with the schedule set forth below. Acceptable electronic formats include PDF and current versions of Microsoft Word and Microsoft Excel, unless otherwise indicated.

Table 13-1: Deliverables

Deliverable	Deliverable Schedule	TP Section
Subsurface exploration and testing program	30 days prior to performing subsurface exploration and testing	13.3.2
Geotechnical Design Reports	60 days prior to Stage 3 Review Submission	13.3.3
Instrumentation program	Prior to instrumentation installation	13.4.3
Assessment report of instrumentation data	Prior to pavement installation	13.4.3

14 STRUCTURES

14.1 General

Design-Build Contractor shall design and construct all structures Work, including bridges, retaining walls, sound barriers, traffic structures, and sign structures.

14.2 Administrative Requirements

Design-Build Contractor shall perform all structures Work in accordance with the PPA Documents, including Project Standards, this Section 14 and its attachments; Governmental Approvals; and Governmental Rules.

14.3 Design Requirements

14.3.1 Bridge Structure Requirements

Design-Build Contractor shall comply with the following requirements:

1. New bridges, replacement bridges and replacement superstructures shall be composite and continuous over interior supports, except at expansion joint locations where required by design due to bridge length in combination with jointless integral or semi-integral end bents.
2. Side-by-side precast prestressed concrete box beams, steel or concrete combined stringer and floor beams, steel or concrete trusses, timber beams, and concrete voided slabs are prohibited for new and replacement superstructures.
3. Use of self-consolidating, internally cured, and high-performance concrete for permanent bridge structural components shall be subject to IFA review and approval in its good faith discretion, and requirements shall be provided by Design-Build Contractor in a unique special provision. Lightweight and semi-lightweight concrete for permanent bridge structural components are prohibited.
4. Steel beam or girder bridges shall use Grade 50 and/or Grade 70 steel. Hybrid steel girders are permissible. All structural steel superstructure components for Bridges 25 and 26 shall be metallized with a thermally sprayed metallic coating system in accordance with Attachment 14-1 (USP: Metallized Structural Steel). Weathering steel shall be used for all other steel bridges and only painted over walls and substructures in accordance with the Project Standards. Painting for all structural steel superstructure components is prohibited, except for Bridge 46. Hinges or pin and hanger type connections are prohibited. Fracture critical elements and fatigue prone details (AASHTO Category E or E') are prohibited, including for straddle bents.
5. Permanent substructures, including straddle bent caps and columns, shall be reinforced concrete. For grade separation structures, wall piers are prohibited and crash walls, where required, shall be designed and constructed in accordance with the Project Standards in conjunction with the pier aesthetic requirements in accordance with Attachment 6-1 (Conceptual Aesthetics and Landscape Plans).

6. Reinforcing bars meeting the mechanical properties of ASTM A1035 Grade 100 or ASTM A615 Grade 75 are permitted; provided, however, that maximum reinforcing bar spacing shall be in accordance to the Project Standards.
7. Reinforced concrete bridge railing shall be used on all bridge structures. Reinforced concrete bridge railing shall be TL-5 for all structures carrying I-465 and I-69. All barriers shall satisfy the criteria of Design Memo 19-08.
8. Reinforced concrete bridge railing transitions shall be placed at each bridge corner on the approach slabs where required and MGS guardrail transitions shall be placed where guardrail is required.
9. Work shall match the geometry of existing bridges to be modified, except as noted below. New and replacement bridges shall meet design requirements for geometry as required in the Project design criteria in Section 8 (Roadway).
10. Where Work is to be fitted to existing structures, all dimensions and conditions in the field shall be checked and all Errors or discrepancies reported to IFA. Design-Build Contractor shall assume responsibility for correctness and fit of the Work to the existing structures.
11. Epoxy resin adhesive, when used as a bonding agent, shall be used where new concrete abuts existing concrete.
12. Existing elevations shown in the RID existing bridge plans are based on the 1929 National Geodetic Vertical Datum (NGVD29) or the 1988 North American Vertical Datum (NAVD88). Where new Work is to be fitted to the old work, the Design-Build Contractor shall check all dimensions and conditions in the field, incorporate any necessary changes into the Plans, and assume responsibility for fit of new Work to the old.
13. Location of longitudinal bridge deck construction joints between existing and proposed concrete shall be staggered from the location of overlay construction joints by at least 1 foot. Longitudinal bridge deck joints, where required for phased or staged construction, shall be placed at proposed lane lines or mid-lane (e.g., at 6.0 feet, 7.0 feet, or 8.0 feet for 12.0-foot, 14.0-foot, or 16.0-foot lanes, respectively). Longitudinal closure pours shall be provided to account for differential dead load deflection between phases of bridge construction.
14. Concrete barrier joints shall be designed and constructed appropriately to account for expansion and contraction at the following locations:
 - a. Integral or semi-integral end bents with the beginning of approach slabs; and
 - b. The end of approach slabs with moment slabs.

Joints larger than 3.0 inches shall be designed and constructed to prevent snag. Butt joints are prohibited at these locations. Acute corners for barriers at joints shall not be less than 70 degrees and barrier ends shall be designed and constructed square where possible. Exposed concrete barrier edges shall be detailed and constructed with a minimum 0.75-inch chamfer.
15. New bridge concrete shall be surface sealed, except where Alternate Class C is used as required below for new and replacement structures. Existing bridge railings, copings,

and piers to remain shall also be surface sealed. Surface seal shall not be applied to an overlay or to the top of bridge deck prior to the placement of an overlay.

16. New approach slab thicknesses shall be in accordance with the Standard Drawings. New approach slabs for CRCP shall be the same thickness as the adjacent pavement. New approach slabs shall be connected to new and existing pavement ledges using horizontal tie reinforcing bars in accordance with the Project Standards. Approach slabs shall match the width of the bridge superstructure. New approach slabs shall not be poured concurrently with the bridge deck. Approach slabs shall be constructed in accordance with Attachment 9-1 (USP: Pavement - Next Generation Concrete Surface). Approach slabs are prohibited from being stepped in plan view at the terminal joint within the travelway for an individual bridge. Type I-A joints shall be constructed in accordance with the Project Standards. Pavement ledges for widened bridges shall match the existing pavement ledge width but shall not be less than 6.0 inches in width. Pavement ledges for new and replacement bridges shall be no less than 9.0 inches wide for integral end bents, semi-integral end bents and all other end bents and abutments with a mudwall and deck joint.
17. Terminal joints and sleeper slabs for new and replacement bridges shall be designed and constructed in accordance with Attachment 14-1 (USP: Modified Terminal Joints) and Attachment 14-2 (Terminal Joint, Type CRCP). For integral and semi-integral structures with expansion lengths greater than 400.0 feet to the terminal joint, a modular joint is required and shall be constructed in accordance with Attachment 14-5 (Terminal Joint Details - Modular Joint Application). Terminal joints and/or sleeper slabs for preservation bridges shall be designed and constructed in accordance with Attachment 14-1 (USP: Terminal Joint Retrofit, Polymer Modified Asphalt or Modified Terminal Joint).
18. At CRCP or PCCP terminal joints, the width of sleeper slab, precompressed foam joint, and CRCP or PCCP shall match the width of reinforced concrete bridge approach slab. When moment slab is present, sleeper slab and precompressed foam joint shall extend to the outside face of the moment slab. Moment slab to PCCP or CRCP connection details shall be designed and constructed in accordance with Standard Drawing E503-CCPJ and E706-MSRW.
19. Control joints shall be placed in all new approach slabs at lane lines, spaced no greater than 16.0 feet apart laterally. Control joints shall be identical to the upper 1.25-inch portion of the Type I-A joint.
20. Sacrificial embedded galvanic anodes shall be placed per Attachment 14-1 (USP: Embedded Galvanic Anodes) along all interfaces where cleaned and straightened existing reinforcing bars are cast in new concrete.
21. Load rating shall be performed by Design-Build Contractor on all new, replacement, rehabilitated, and preventative maintenance structures. Work shall comply with the INDOT Bridge Inspection Manual, Part 3 Bridge Load Rating. A draft load rating summary and the AASHTOWare BrR model for each bridge shall be submitted directly to the INDOT Central Office Load Rating Engineer and in accordance with the Submittal requirements of Section 2 (Quality Management). AASHTOWare BrR shall be used as applicable within program limitations. Where the structure type is outside the program capabilities, the MIDAS program shall be used. The Smart Bridge Culvert program shall be used for underfill structures. All files to verify the load rating and revise future models

shall be submitted to IFA. Following completion of each bridge's Construction Work, the bridge load rating file shall be updated by Design-Build Contractor in accordance with the *INDOT Bridge Inspection Manual* and submitted to the INDOT Central Office Load Rating Engineer.

22. A minimum of four beams or girders shall be required during phased or staged construction for both existing and proposed bridges.
23. Drainage features shall be designed to eliminate or minimize the need for bridge deck drains. New bridge deck drains, where needed, shall be located in accordance with Chapter 203 of the IDM. Where feasible for grade separation and non-waterway bridges, 10.0-foot by 10.0-foot minimum riprap splash pads shall be constructed below new deck drains discharging directly as shown in Figure 203-4H of the IDM. The type and depth of riprap shall be determined in accordance with the Project Standards. Where the height from bottom of beam or girder to finished grade below exceeds 20 feet or there are roads directly below for grade-separation and non-waterway bridges, drainage shall be collected by a system of pipes, elbows, cleanouts, and downspouts, run down the side face of the piers or end bent MSE walls, and discharged no more than 2 feet above finished grade onto a riprap splash pad or turnout. Bridge deck drainage systems shall include a maximum of two inlets per shoulder and shall only run one span before running down the face of a pier or an end bent MSE wall for grade-separation and non-waterway bridges. Where a bridge crosses a Water of the U.S., except at Pleasant Run Creek, drainage shall be collected by a system of pipes, elbows, cleanouts, and outlet onto a 10.0-foot by 10.0-foot minimum riprap splash pad, not directly into the Water of the U.S. At Bridge Nos. 3, 4 and 5, bridge runoff shall not directly discharge into Pleasant Run Creek, all bridge runoff shall be collected by a Hazardous Materials spill containment trap in accordance with Section 7 (Environmental) and Attachment 7-2 (Hazardous Materials Spill Containment Traps). Sheet flow drainage shall not be turned out above the envelope of the reinforced zone at MSE walls. Modified concrete curb and gutter turnouts shall be used with riprap turnouts at least 8 feet from the end of a flared or angled wall or the reinforced zone, whichever controls.
24. For all existing structures, end bent, and gutter drain pipes, and their inlet and outlet structures shall be cleaned and painted. Outlet protection shall be replaced, revetment riprap shall be installed, and a delineator shall be installed at the outlets.
25. Timber piles are prohibited for permanent bridge structure foundations.
26. If driven pile foundations are used, the number of dynamic pile load tests required and locations where dynamic pile load tests are to be performed shall be in accordance with the recommendations in the Geotechnical Design Reports and the Project Standards.
27. Any Class A and Class C concrete placement with a minimum dimension of 4 feet or more shall be considered mass pour concrete and shall be placed in accordance with Attachment 14-1 (USP: Structural Mass Pour Concrete). Drilled shaft concrete will not be considered mass pour concrete.
28. Seismic design of the structures shall be based on the soil profile type as recommended in the Geotechnical Design Report. At a minimum, the existing substructure units for bridges requiring widening shall be checked for minimum seat length per AASHTO seismic guidelines and retrofitted as required.

29. Existing substructure units and undersides of decks to remain shall be patched as required to repair all concrete delamination and spalling. Areas to be patched shall be determined in accordance with the Project Standards.
30. For modified existing bridges, existing beams shall not be overstressed by more than five percent. This allowance will not apply to load rating.
31. Install lighting Conduits as required by the lighting design for all existing bridges carrying I-465, ramps, I-69, and local roads or streets. Lighting Conduits, when required on existing bridges, shall be on the outside face of bridge railings incorporated into the Work. Install lighting Conduits for all new or replacement bridges carrying I-465, ramps, I-69, and local roads or streets. Lighting Conduits for new or replacement bridges shall be embedded in new bridge concrete railings. The bridge Conduits shall be connected to buried Conduits with expansion connections. ITS Conduit is prohibited from being placed inside new bridge concrete railing and shall be placed in accordance with Section 17 (ITS).
32. Minimum vertical clearance shall be as stated in the Project design criteria for Section 8 (Roadway). Minimum vertical clearance shall be 10.0 feet over the future Little Buck Creek Trail and future White River Greenway Trail. For bridges where the inside or outside shoulder for the roadway below is located immediately adjacent to steel guardrail or concrete barrier, the minimum vertical clearance criteria does not apply within the guardrail/barrier offset zone. If the required shoulder width does not include a guardrail/barrier offset, then minimum vertical clearance requirements are required to the front face of guardrail or barrier.
33. For waterway crossings, the minimum low structure elevation for new and replacement bridges and bridge rehabilitations, including widenings, shall be the Q_{100} elevation plus the minimum required freeboard of 2.0 feet, except the minimum freeboard shall be 3 feet for Bridge Nos. 25 and 26 and except as noted below for Bridge Nos. 3, 4, and 5.
34. Sidewalks and shared-use paths across bridges shall be reinforced concrete. Shared-use paths across bridges shall include a 2.0-foot buffer between the effective path width and the back face of curb. Dimensions for concrete sidewalks and shared-use paths across bridges shall be in accordance with Table 14-1.

Table 14-1: Sidewalk and Shared-Use Path Accommodations

Bridge No.	Location	Sidewalk / Shared-Use Path				
		Location	Min. Curb Height	Type	Width *	Cross Slope**
9	Southport Road over I-69 NB & SB	North Side	8.0 inches	Shared-Use Path	12.67 feet	1.5%
14	Belmont Avenue over Little Buck Creek	West Side	8.0 inches	Sidewalk	6.58 feet	1.5%
47	Madison Avenue over I-465 EB & WB	Both Sides	8.0 inches	Sidewalk	6.58 feet	1.5%

51	Keystone Avenue over I-465 EB & WB	Both Sides	8.0 inches	Sidewalk	8.0 feet	1.5%
<p>* Width includes curb and 2-foot buffer for shared-use path ** Slopes toward shoulder</p>						

35. Raised medians across bridges shall be reinforced concrete. Reinforcing shall be the same size and spacing in accordance with Figure 404-4D of the IDM. Raised medians shall be crowned in the middle and provide 2-percent cross slopes toward the shoulders.
36. Bridges crossing Railroads shall provide the Railroad's required minimum horizontal clearance. A minimum vertical clearance of 23.0 feet shall be provided over the highest top of track elevation.
37. Railroad crashwalls for MSE walls and piers shall be designed and constructed in accordance with the strictest requirements of the Railroad, IDM, AASHTO and AREMA specifications.
38. All drainage from the bridge and roadway crossing over an existing Railroad shall be collected and directed away from the Railroad real property rights.
39. Field drilled holes and chemical epoxy anchors are prohibited where reinforcing bars will be in permanent tension. Prior to fabrication and construction, other means of connecting new and existing reinforcing in tension and concrete shall be designed and constructed subject to IFA review and approval.
40. Shoulder widths shall meet or exceed those shown in the Reference Plans.
41. The 4.0-inch guardrail offset loss shown in Figure 402-6H of the IDM shall not decrease the minimum required shoulder width across a bridge and shall only be used where a 4.0-inch to 2.0-foot guardrail/barrier offset is used on the roadway approaches. The 4.0-inch guardrail offset shall be accommodated off-structure and the approach guardrail transitioned as required when no guardrail/barrier offset is used.
42. New snow-plowable raised pavement markers across approach slabs and bridge decks shall be spaced at 40.0 feet maximum through horizontal curves and 80.0 feet maximum through tangents.
43. Lead based paint may be present on existing steel beams so Design-Build Contractor shall follow all Hazardous Materials requirements in accordance with the PPA and Section 7 (Environmental), including for demolition and disposal.
44. Requirements for new and replacement structures:
 - a. Spans over local streets shall provide room for the required buffer to back face of curb, shared-use path or sidewalk width, and provide a minimum 2.0-foot clear distance to face of wall or pier in accordance with Section 6 (Aesthetics and Landscaping) and Section 8 (Roadway) and shall be no less than the required horizontal clear zone to the face of any obstruction whether wall or pier.
 - b. Spans over I-465 or I-69 for local roads or streets shall be in accordance with the requirements in Section 14.3.2 for those specific bridge structures.

- c. Spans within the system interchange or crossing ramps shall be determined in accordance with the requirements of Section 8 (Roadway) and shall meet horizontal clear zone requirements. Where a restrictive condition does not allow meeting horizontal clear zone requirements or guardrail or concrete barrier is required in accordance with Section 8 (Roadway), walls and substructures shall be placed outside the deflection distance and/or zone of intrusion (ZOI) in accordance with the AASHTO Roadside Design Guide. For the purposes of this Section 14, a “restrictive condition” means a condition where the requirements of Section 8.3.1 (General Design Requirements) and Chapter 49 of the IDM have been followed and there is no other feasible or reasonable alternative to the location of an individual end bent and wall or pier based on its required geometry and structural design.
- d. Spans and openings for waterway crossings shall be established based on hydraulic requirements.
- e. The cross-section of the bridges shall carry the full traveled way width.
- f. Horizontally curved bridges using steel plate girders shall use curved steel plate girders and substructures shall be radial with no skew. Chorded steel plate girders are prohibited on horizontally curved bridges.
- g. Single span horizontally curved bridges using chorded precast, prestressed concrete beams shall use the construction chord (straight line from intersection of alignment with centerline bearing of each end bent) to set the span and skew.
- h. Two span horizontally curved bridges using chorded precast, prestressed concrete beams shall use the short chords (straight lines from intersection of alignment with centerline bearing end bent to centerline pier in first span and centerline pier to centerline bearing end bent in second span) to set spans and the long chord (straight line from intersection of alignment with centerline bearing of each end bent) to set the skew.
- i. New Mainline I-465 and I-69, interchange ramp, and Bridge No. 51 bridge decks shall have a minimum 7.5-inch thickness plus 1.5-inch very early strength LMC overlay with a minimum two percent cross slope and shall use stainless steel reinforcing bars in accordance with Attachment 14-1 (USP: Stainless Steel Reinforcing Bars). Top reinforcing cover for the 7.5-inch deck shall be 2.0 inches. Design of all bridge components shall be based on a 7.5-inch structural depth and no integral wearing surface. Design shall include the weight of the 1.5-inch overlay but shall not include the 35 psf future wearing surface. Deck overlay surfaces shall be constructed in accordance with Attachment 9-1 (USP: Pavement - Next Generation Concrete Surface). Stainless steel reinforcing shall also be used for the end bent and pier diaphragm bars and approach slab tie bars extending into the deck. Epoxy-coated reinforcing bars shall be used in the concrete barriers and barrier transitions in accordance with the Project Standards.
- j. Local road or street overpass bridge decks shall have a minimum 8.0-inch thickness with a minimum two percent cross slope and shall use epoxy-coated reinforcing bars in accordance with the Project Standards. Design of all bridge components shall be in accordance with the Project Standards. Deck surfaces shall be constructed in accordance with Attachment 9-1 (USP: Pavement - Next Generation Concrete Surface).

- k. Alternate Class C concrete shall be used in the deck, barriers, diaphragms, mudwalls, barrier transitions, and approach slabs for mainline I-465 and I-69 bridges, interchange ramp bridges, and Bridge No. 51 in accordance with Attachment 14-1 (USP: Alternate Class C Concrete). Class C concrete shall be used for all other local road or street overpass bridges in accordance with the Project Standards.
- l. Reinforcing bar lap splices shall be calculated and detailed in accordance with the 2017 AASHTO LRFD Bridge Design Specifications, 8th Edition, and subsequent interim specifications
- m. Aesthetics shall be in accordance with Attachment 6-1 (Conceptual Aesthetics and Landscape Plans) and Attachment 14-1 (USP: Structures).
- n. Aesthetic treatments on concrete bridge railings and bridge railing transitions shall be included in excess of the standard barrier shape and shall not reduce the required structural capacity for which the barrier was crash-tested.
- o. Precast prestressed high strength concrete beams shall be in accordance with Attachment 14-1 (USP: Precast Prestressed High Strength Concrete). Release strength, f'_{ci} , shall be limited to a maximum of 8,000 psi and final 28-day strength, f'_c , shall be limited to a maximum of 10,000 psi.
- p. Only the web stirrups of precast prestressed bulb-tee beams shall be designed and constructed to extend into the deck from the top of beam. The web stirrups shall be epoxy-coated in accordance with the Project Standards. The top flange stirrups shall be revised to straight reinforcing bars and are prohibited from extending into the deck. The tops of beam shall be scored transversely at about 3.0 inches on center with a pointed tool to a maximum scoring depth of 0.25 inches.
- q. Post-tensioning for precast beams, straddle bent caps, and any other permanent bridge structural components shall be in accordance with Attachment 14-1 (USP: Post-Tensioning Works).
- r. Safety handrails for inspection shall be provided on all steel plate girders where the web depth is 72 inches or greater. Safety handrails shall be placed a minimum of 5.0 feet from the bottom flange. Safety handrails shall be placed on the inside face of exterior girders and on both faces of the two first interior girders adjacent to the exterior girders.
- s. Bearing type shall be elastomeric in accordance with the Project Standards. Fixed shoe bearing assembly shown in Figure 409-71 of the IDM is prohibited. Fixed elastomeric bearing assemblies for use with steel beams and girders shall be in accordance with Attachment 14-4 (Fixed Elastomeric Bearing Assembly Details).
- t. Disk bearings used for post-tensioned concrete straddle bents and curved steel plate girder bridges shall be in accordance with Attachment 14-1 (USP: Disk Bearings). Pot bearings are prohibited.
- u. End bent type shall be integral or semi-integral and deck joints eliminated, unless required otherwise by design and approved by IFA. If required, deck joints shall be placed close to the vertical curve high point. Semi-integral end bent details shall be in accordance with Attachment 14-3 (Modified Semi-Integral End Bent Details). IFA

- will review all deck joint locations, designs, and details subject to review and approval.
- v. Tinted or modified surface seal shall be applied to the outside face and bottom flange of exterior precast, prestressed concrete beams and the bottom of the bottom flange of interior precast, prestressed concrete beams in accordance with Attachment 14-1 (USP: Modified Surface Seal). The color shall be in accordance with Attachment 6-1 (Conceptual Aesthetics and Landscape Plans).
 - w. Anti-graffiti coating shall be placed on all exposed concrete surfaces of new retaining walls and new bridge structures, excluding top of deck or overlay and interior beams. Anti-graffiti coating shall only be placed on the outside exposed face and bottom of exterior beams or girders. Anti-graffiti coating shall be placed from 1.0 foot below finished ground surface at the base of the wall to the top of wall, including all exposed surfaces of the coping, or substructures to the top of cap but not on the top of cap or bearing surface. Anti-graffiti coating shall be in accordance with Attachment 14-1 (USP: Anti-Graffiti Coat).
 - x. Existing superstructures shall be removed entirely per the Project Standards. Removal of existing substructures shall be the stricter of 3.0 feet below finished grade or to the required excavation limits for proposed construction. Existing substructures, foundations, and piling are prohibited from being incorporated into the Work.
 - y. Reinforcing bar lap splices shall be calculated and detailed in accordance with the 2017 AASHTO LRFD Bridge Design Specifications, 8th Edition, and subsequent interim specifications.
45. Requirements for structures to be widened and receive a deck overlay:
- a. The cross-section of the bridges shall be widened to carry the full traveled way width. Shoulder widths shall meet or exceed the RID bridge Plans.
 - b. The existing overlay shall be removed if present. The existing bridge deck shall be milled and hydrodemolition performed to remove unsound concrete. Full depth and partial depth bridge deck patching shall be performed as required.
 - c. A portion of the existing concrete bridge deck coping shall be sufficiently removed to connect the widened deck and to remove unsound concrete. Sawcutting of the existing deck over an existing beam is prohibited. Damaged existing welded shear studs shall be replaced. Connection of new reinforcing to existing reinforcing shall be through the use of lap splices. Temporary supports and formwork shall be designed and constructed in accordance with the Project Standards.
 - d. The widened concrete bridge deck shall match the milled existing bridge deck thickness, profile, cross slope, and reinforcing bar type. A minimum of the last 5.0 feet of the bridge deck shall be removed and replaced where end bents are converted to semi-integral.
 - e. Reinforcing bar lap splices shall be calculated and detailed in accordance with the IDM.

- f. A 1.75-inch minimum depth very early strength latex-modified concrete overlay shall be placed on the existing and widened bridge deck surface. Minimum cross-slope shall be 1.5 percent.
- g. The superstructure and substructures shall be widened with in-kind materials. Beam depths shall be adjusted as required, including with the use of Grade 50 steel, to meet minimum vertical clearance or freeboard requirements.
- h. New bearings shall match existing bearings.
- i. Riprap drainage turnouts shall be reconstructed at ends of bridge rail transitions on shoulders that receive drainage. Modified concrete curb turnouts shall be constructed to direct water to the turnout.
- j. The ends of steel beams shall be blast cleaned and primed at end bents where concrete is to be poured permanently against steel.
- k. Slopewalls or riprap shall be widened to 2.0 feet outside the widened bridge deck underneath the structures.

46. Requirements for structures to receive only a deck overlay:

- a. The existing bridge deck shall be milled and hydrodemolition performed to remove unsound concrete. Full depth and partial depth bridge deck patching shall be performed as required. Milling depth shall be 1.5 inches maximum to maintain HS-20 load rating and to match the required profile with adjacent pavement. Design-Build Contractor shall place a constant depth very early strength latex-modified concrete overlay on existing bridge deck surface. The net thickness of the new overlay shall be 1.5 inches minimum after removing the thickness of the milled depth from the placed overlay depth. Minimum cross-slope shall be 2 percent.
- b. Riprap drainage turnouts shall be reconstructed at the ends of bridge rail transitions, on shoulders that receive drainage. Modified concrete curb turnouts shall be constructed to direct water to the turnout.

14.3.2 Specific Bridge Requirements

14.3.2.1 Bridge 1 & 2: I-69 NB & SB over County Line Road

Structure Nos.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The new structures shall be in accordance with Section 14.3 except as modified herein:

- 1. The bridge spans shall accommodate the proposed and future lane configuration and shared-use path along County Line Road. The future lane configuration for the westbound direction shall be replacement of the single 16.0-foot lane with two 12.0-foot lanes. The shared-use path along the south side of County Line Road shall be 10 feet with a minimum 5.0-foot clear distance to front face of MSE wall.

14.3.2.2 Bridge 3 & 4: I-69 NB & SB over Pleasant Run Creek

Structure Nos.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The structures shall be replaced in accordance with Section 14.3 except as modified herein:

1. A minimum of 1.0 foot of freeboard shall be provided between the Q_{100} elevation and the low chord of the bridge.

14.3.2.3 Bridge 5: West Connector Road over Pleasant Run Creek

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The new structure shall be in accordance with Section 14.3 except as modified herein:

1. A minimum of 0.45 foot of freeboard shall be provided between the Q_{100} elevation and the low chord of the bridge.

14.3.2.4 Bridge 6 & 7: I-69 NB & SB over Wicker Road

Structure Nos.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The new structures shall be in accordance with Section 14.3.

14.3.2.5 Bridge 8: I-69 NB & SB over Orme Ditch

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The structure shall be replaced in accordance with Section 14.3 except as modified herein:

1. The proposed bridge design shall include a 2.0-foot wide by 8.0-foot high wildlife crossing on both the north and south banks of Orme Ditch, located a minimum 1.0 foot above the OHWM. Bottom of wildlife crossing shall be an extension of the riprap required for scour protection.

14.3.2.6 Bridge 9: Southport Road over I-69 NB & SB

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The new structure shall be in accordance with Section 14.3 except as modified herein:

1. Structure shall include a shared-use path on the north side of the bridge.
2. A minimum 4.0-foot striped median shall be provided across the bridge between EB and WB Southport Road.

14.3.2.7 Bridge 10: Southport NBEN over Little Buck Creek

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The new structure shall be in accordance with Section 14.3 except as modified herein:

1. Proposed bridge design shall not preclude the future construction of the Little Buck Creek Trail. Trail envelope shall be a minimum of 10.0-foot wide by 10.0-foot high. Bottom of trail shall be located a minimum of 1.0 foot above the OHWM of Little Buck Creek.

2. Proposed bridge design shall include an 8.0-foot high by 8.0-foot wide wildlife crossing on both the north and south banks of Little Buck Creek, located a minimum 1.0 foot above the OHWM. Bottom of wildlife crossing shall be free of riprap and mimic the surrounding natural ground.

14.3.2.8 Bridge 11 & 12: I-69 NB & SB over Little Buck Creek

Structure Nos.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The structures shall be replaced in accordance with Section 14.3 except as modified herein:

1. Proposed bridge design shall not preclude the future construction of the Little Buck Creek Trail. Trail envelope shall be a minimum of 10.0-foot wide by 10.0-foot high. Bottom of trail shall be located a minimum of 1.0 foot above the OHWM of Little Buck Creek.
2. Proposed bridge design shall include an 8.0-foot high by 4.0-foot wide wildlife crossing on the south bank of Little Buck Creek, and an 8.0-foot high by 8.0-foot wide wildlife crossing on the north bank of Little Buck Creek, located a minimum 1.0 foot above the OHWM. Bottom of wildlife crossing shall be free of riprap and mimic the surrounding natural ground.

14.3.2.9 Bridge 13: Southport SBEX over Little Buck Creek

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The new structure shall be in accordance with Section 14.3 except as modified herein:

1. Proposed bridge design shall not preclude the future construction of the Little Buck Creek Trail. Trail envelope shall be a minimum of 10.0-foot wide by 10.0-foot high. Bottom of trail shall be located a minimum of 1.0 foot above the OHWM of Little Buck Creek.
2. Proposed bridge design shall include an 8.0-foot high by 8.0-foot wide wildlife crossing on the north bank of Little Buck Creek, located a minimum 1.0 foot above the OHWM. Bottom of wildlife crossing shall be free of riprap and mimic the surrounding natural ground.
3. Proposed bridge design shall include a 2.0-foot wide wildlife shelf as shown on the RID Plans. Shelf shall be located 1.0 foot above the OHWM and be constructed with #53 compacted aggregate overtop of #73 compacted aggregate.

14.3.2.10 Bridge 14: Belmont Avenue over Little Buck Creek

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The new structure shall be in accordance with Section 14.3 except as modified herein:

1. Proposed bridge design shall not preclude the future construction of the Little Buck Creek Trail. Trail envelope shall be a minimum of 10.0-foot wide by 10.0-foot high. Bottom of trail shall be located a minimum of 1.0 foot above the OHWM of Little Buck Creek.

14.3.2.11 Bridge 15 & 16: I-69 NB & SB over Banta Road

Structure Nos.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The new structures shall be in accordance with Section 14.3.

14.3.2.12 Bridge 17 & 18: I-69 NB & SB over Edgewood Avenue

Structure Nos.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The new structures shall be in accordance with Section 14.3.

14.3.2.13 Bridge 19 & 20: I-69 NB & SB over Epler Avenue

Structure Nos.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The new structure shall be in accordance with Section 14.3.

14.3.2.14 Bridge 21: Mooresville Road over I-465

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The structure shall be replaced in accordance with Section 14.3 except as modified herein:

1. Bridge spans shall be set to accommodate a future lane configuration on I-465. The future lane configuration for the eastbound direction shall consist of a 14.0-foot inside shoulder, six 12.0-foot lanes, 14.0-foot outside shoulder (includes a 2.0-foot barrier offset), and a 2.0-foot clear distance to front face of MSE wall. The future lane configuration for the westbound direction shall consist of a 14.0-foot inside shoulder, five 12.0-foot lanes, a 14.0-foot outside shoulder (includes a 2.0-foot barrier offset), and a 2.0-foot clear distance to front face of MSE wall.
2. New MGS guardrail transitions shall be constructed, connect into existing guardrail at SW bridge corner, and replace guardrail to adjacent intersections in other quadrants.

14.3.2.15 Bridge 22: Mann Road over I-465 EB & WB

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The structure shall be replaced in accordance with Section 14.3 except as modified herein:

1. Bridge shall be a constant width, using the south approach roadway to set clear roadway width.
2. Bridge spans shall be set to accommodate the lane configuration on I-465. The lane configuration for the eastbound direction shall consist of a 14.0-foot inside shoulder (includes a 2.0-foot barrier offset), five 12.0-foot lanes, 14.0-foot inside shoulder, and a 2.0-foot clear distance to front face of MSE wall. The lane configuration for the westbound direction shall consist of a 14.0-foot inside shoulder (includes a 2.0-foot barrier offset), five 12.0-foot lanes, 14.0-foot outside shoulder, and a 2.0-foot clear

distance to front face of MSE wall. Any retaining walls or end bents placed within the clear zone shall be protected by reinforced concrete barriers.

14.3.2.16 Bridge 23 & 24: I-465 EB & WB over Harmon (State) Ditch

Structure Nos.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The structures shall be replaced in accordance with Section 14.3 except as modified herein:

1. The existing Thompson Road over Harmon (State) Ditch bridge shall remain in place.
2. Scour and erosion protection shall be placed to prevent erosion and degradation of existing Thompson Road and Bridge No. 57.

14.3.2.17 Bridge 25 & 26: I-465 EB & WB over White River

Structure Nos.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The structures shall be replaced in accordance with Section 14.3 except as modified herein:

1. Proposed bridge design shall not preclude the future construction of the White River Greenway Trail beneath the easternmost span. Trail envelope shall be a minimum of 10.0 feet wide by 10.0 feet high. Bottom of trail shall be located a minimum of 1.0 foot above the OHWM of the White River.
2. Boat access shall be maintained at all times along the White River in accordance with Attachment 14-1 (USP: Waterway Maintenance of Traffic).

14.3.2.18 Bridge 27: I-69 NB to I-465 WB over I-465 EB & WB

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The new structure shall be in accordance with Section 14.3.

14.3.2.19 Bridge 28: I-465 WB to I-69 SB over I-69 NB to I-465 WB

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The new structure shall be in accordance with Section 14.3.

14.3.2.20 Bridge 29: I-465 WB to I-69 SB over I-465 and I-465 EB to Harding

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The new structure shall be in accordance with Section 14.3.

14.3.2.21 Bridge 30: I-69 NB to I-465 EB over I-465 EB to Harding

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The new structure shall be in accordance with Section 14.3.

14.3.2.22 Bridge 31: I-465 and Harding Street Ramps over Haueisen Ditch

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The structure shall be replaced in accordance with Section 14.3 except as modified herein:

1. A 2.0-foot freeboard shall be provided between the Q100 elevation and the low chord of the bridge.
2. The replacement structure shall be on a straight horizontal alignment.
3. Proposed inlet and outlet shall be located vertically and horizontally to intersect with the channel path and slope of the existing flowline (e.g., use the existing inlet and outlet elevations and slope to extrapolate the proposed elevations).

14.3.2.23 Bridge 32: I-465 WB to I-69 SB over Harding to I-465 WB

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The new structure shall be in accordance with Section 14.3.

14.3.2.24 Bridge 33: I-465 WB to I-69 SB over Harding Street

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The new structure shall be in accordance with Section 14.3.

14.3.2.25 Bridge 34 & 35: I-465 EB & WB over Harding Street

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The structures shall be replaced in accordance with Section 14.3.

14.3.2.26 Bridge 36 & 37: I-465 EB & WB over The Indiana Rail Road Company

Structure Nos.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The structures shall be replaced in accordance with Section 14.3 except as modified herein:

1. Railroad protective fencing is prohibited on the outside barriers.
2. The bridge shall be a minimum 108.0-foot single span bridge from centerline of bearing to centerline of bearing for integral end bents.
3. Retaining walls at end bents shall be placed a minimum of 5.0 feet outside of The Indiana Rail Road Company real property interest and The Indiana Rail Road Company easement.

14.3.2.27 Bridge 38 & 39: I-465 EB & WB over Bluff Road

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The structures shall be replaced in accordance with Section 14.3 except as modified herein:

1. The bridge shall be a minimum 93.0-foot single span bridge from centerline of bearing to centerline of bearing for integral end bents. The span shall be centered over the centerline of existing Bluff Road.

14.3.2.28 Bridge 40 & 41: I-465 EB & WB over Meridian Street

Structure Nos.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The structures shall be replaced in accordance with Section 14.3.

14.3.2.29 Bridge 42: I-465 WB over Lick Creek

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The structures shall be replaced in accordance with Section 14.3 except as modified herein:

1. Existing sloped wall shall remain in place and shall be protected during removal of the existing structure.

14.3.2.30 Bridge 43: US 31 EBEN over Lick Creek

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

No Work is required for this structure.

14.3.2.31 Bridge 44: US 31 over I-465 and Lick Creek

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The structure shall be rehabilitated in accordance with Section 14.3 except as modified herein:

1. Sloped wall at Bent No. 8 shall be removed.
2. Retaining wall or cut wall at Bent No. 8 shall be installed and a Type FT reinforced concrete barrier with reinforced concrete moment slab shall be placed in front of the wall. Retaining wall or cut wall at Bent No. 8 may be constructed within the ZOI but shall be structurally designed in accordance with the Project Standards; however, the retaining wall or cut wall shall not be designed and constructed with a blunt end within the ZOI. Cut wall shall be in accordance with Attachment 14-1 (USP: Limiting Movement Criteria for Permanent Earth Retention System for Cut-Wall Application).
3. A minimum clear roadway distance of 23.0 feet shall be provided below the structure on I-465 EB ramp to US 31 NB.
4. Minimum final vertical clearance shall be 16.5 feet where the ramp is placed under Span G.
5. Existing bridge deck drains to remain shall be cleaned out and painted, and bridge drainage shall be directed to off-structure inlets or existing pipe systems.

14.3.2.32 Bridge 45: US 31 NB Ramp over I-465 EB and Lick Creek

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

No Work is required for this structure.

14.3.2.33 Bridge 46: I-465 EB over Lick Creek

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The structure shall receive preventative maintenance in accordance with Section 14.3 except as modified herein:

1. The proposed clear roadway for the structure shall be the same as existing.
2. Existing bridge deck shall be milled to a depth of 0.5 inches and receive hydrodemolition prior to construction of the overlay.
3. HMA material in bridge approach terminal joints shall be removed and replaced in accordance with Attachment 14-1 (USP: Terminal Joint Retrofit, Polymer Modified Asphalt).
4. Reinforced concrete approach slabs shall be removed and replaced.
5. Existing bearings and 5.0 feet of all beam ends shall be cleaned and painted.
6. Barrier transitions shall be removed and replaced.

14.3.2.34 Bridge 47: Madison Ave over I-465 EB & WB

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The structure shall be replaced in accordance with Section 14.3 except as modified herein:

1. Bridge spans shall be set to accommodate a future lane configuration on I-465. The future lane configuration for the eastbound direction shall consist of a 12.0-foot inside shoulder, five 12.0-foot lanes, a 14.0-foot outside shoulder, and a minimum 2.0-foot clear distance to face of pier. The future lane configuration for the westbound direction shall consist of a 12.0-foot inside shoulder, five 12.0-foot lanes, a 14.0-foot outside shoulder, and a 2.0-foot clear distance to front face of MSE wall. Design-Build Contractor shall also comply with Section 10.3.4 (Waterway Structures) for hydraulic requirements in setting spans.
2. A minimum 10.0-inch-high by 10.0-foot-wide raised center median shall be provided.
3. New MGS guardrail transitions shall be constructed and tie into existing guardrail at all bridge corners.

14.3.2.35 Bridge 48: L&I Railroad Company over I-465 EB & WB

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

No Work is required for this structure.

14.3.2.36 Bridge 49 & 50: I-465 EB & WB over Lick Creek

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The structure shall be rehabilitated and widened in accordance with Section 14.3 except as modified herein:

1. The cross-section of the bridges shall be widened to carry the full traveled way width, including applicable shoulders. The clear roadway for the structures shall consist of five 12.0-foot lanes, a 13.6667-foot outside shoulder, and an 11.4583-foot inside shoulder.
2. Approach slabs shall be widened to match full deck width.
3. Existing bridge deck and approach slabs shall be rehabilitated by milling 0.5-inch depth and performing hydrodemolition, prior to overlay. Milling depth may be variable (no less than 0.25 inches) if necessary, to maintain the minimum load rating.
4. New bridge rail and transitions shall be placed at outside shoulders.
5. A variable-depth (1.75-inch minimum) very early strength latex-modified concrete overlay shall be placed on entire deck surface. Minimum cross-slope shall be 1.5 percent. Any construction joints in the overlay shall not correspond with joints in the deck.
6. Where drainage outlets to side-slopes, riprap drainage turnouts shall be placed at ends of railing transitions.
7. Piers, crash walls and undersides of decks shall be patched as necessary to repair all delamination and spalling. Design-Build Contractor shall determine patching quantities in accordance with the Project Standards.
8. Widened end bents shall be designed and constructed as semi-integral or integral.
9. Widened piers shall match the configuration and materials of the existing piers. Replication or re-use of existing hammerheads is not required.
10. HMA material in bridge approach terminal joints shall be removed and replaced in accordance with Attachment 14-1 (USP: Terminal Joint Retrofit, Polymer Modified Asphalt).
11. Slopewalls and riprap slopes shall be widened to 2.0 feet outside of widened bridge deck underneath structure.
12. Along the stream channel, existing panels of concrete slopewalls that contain cracks equal to or greater than 1.0 inch wide or spalls 0.5 inches deep shall be replaced.
13. Channel slopewalls shall be widened with Class 1 riprap and Class 1 riprap scour protection shall be placed around existing and proposed piers as recommended in the scour report. Class 1 riprap scour protection shall be placed along toe of existing concrete channel slopewalls.

14.3.2.37 Bridge 51: Keystone Ave over I-465 EB & WB

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The structure shall be replaced in accordance with Section 14.3 except as modified herein:

1. Bridge spans shall be set to accommodate a future lane configuration on I-465. The future lane configuration for the eastbound direction shall consist of a 14.0-foot inside shoulder, four 12.0-foot lanes, one 16.0-foot ramp lane, a 14.0-foot outside shoulder, and a 2.0-foot clear distance to front face of MSE wall. The future lane configuration for the westbound direction shall consist of a 14.0-foot inside shoulder, four 12.0-foot lanes, one 16.0-foot ramp lane, a 14.0-foot outside shoulder, and a 2.0-foot clear distance to front face of MSE wall.
2. A minimum 8.0-inch-high by maximum 12.0-foot-wide raised concrete median shall be provided. Raised median width may be reduced and tapered to introduce turning lanes where required.

14.3.2.38 Bridge 52: I-465 EB & WB over McFarland Creek

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The structure shall be rehabilitated and widened in accordance with Section 14.3 except as modified herein:

1. Existing wingwalls and headwalls shall be removed at south end of structure and slab structure extended with abutments in-kind.
2. Scour protection shall be placed throughout entire proposed structure in accordance with the scour report.

14.3.2.39 Bridge 53: Carson Ave over I-465 EB & WB

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The structure shall be replaced in accordance with Section 14.3 except as modified herein:

1. The bridge spans shall accommodate the future lane configuration along I-465. Future lane configuration for both eastbound and westbound shall include 14.0-foot inside shoulder, four 12.0-foot lanes one 16.0-foot ramp lane, and a 14.0-foot outside shoulder. All substructures and retaining walls shall be placed outside of the ZOI. Design-Build Contractor shall comply with Section 10.3.4 (Waterway Structures) for hydraulic requirements in setting spans.
2. New MGS guardrail transitions shall be constructed and tie into existing guardrail at all bridge corners.

14.3.2.40 Bridge 54: Hanna Avenue over I-465

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

No Work is required for this structure.

14.3.2.41 Bridge 55 & 56: I-465 NB & SB over SR 67 / Kentucky Avenue and ISRR

Structure Nos.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

The structure shall receive preventative maintenance in accordance with Section 14.3 except as modified herein:

1. Existing bridge deck and bridge approach slabs shall be milled to a depth of 0.5 inches and receive hydrodemolition prior to construction of overlay. All deck drains shall be plugged during this operation and debris shall not be permitted to fall onto Railroad real property rights.
2. Construct a 1.75-inch very early strength LMC overlay on bridge deck and bridge approach slabs, maintaining the existing cross slopes.
3. Remove and replace existing bridge joints with pre-compressed foam joints.
4. HMA material in bridge approach terminal joints shall be removed and replaced in accordance with Attachment 14-1 (USP: Terminal Joint Retrofit, Polymer Modified Asphalt).
5. Existing bridge deck drains shall be cleaned.

14.3.2.42 Bridge 57: Thompson Road over Harmon (State) Ditch

Structure No.: See Table 1-3 (Bridge Structures within Planned ROW Limits).

No Work is required for this structure; however, see the requirements for Bridge Nos. 23 and 24 and the requirements in Section 10.4 (Construction Requirements).

14.3.3 Retaining Wall Structures

Design-Build Contractor shall comply with the following requirements:

1. Aesthetics shall be in accordance with Attachment 6-1 (Conceptual Aesthetics and Landscape Plans) and Attachment 14-1 (USP: Formliner for Piers and MSE Walls).
2. Permanent retaining wall types shall not include timber or gabion walls. Sheet pile or H-pile and precast concrete lagging walls shall include a reinforced concrete facing. Modular block walls are prohibited in applications with traffic loading or influence. Extensible ground reinforcement shall only be used with modular block walls. Acceptable wall types, except those prohibited above, include those listed in Figure 410-2A and 410-2B of the IDM. Other wall types not included in this list shall be subject to approval by IFA in its good faith discretion.
3. Reinforced concrete barrier and moment slabs constructed on top of MSE walls are prohibited.
4. Where exposed heights of retaining walls adjacent to a sidewalk or shared-use trail are unprotected by railing or includes grade differences greater than 2.0 feet, appropriate permanent fall hazard protection shall be installed on retaining wall structures. Railing materials and aesthetics shall be in accordance with Section 6 (Aesthetics and Landscaping) and Attachment 6-1 (Conceptual Aesthetics and Landscape Plans).
5. Design-Build Contractor shall install permanent railings for fall protection along retaining walls where the exposed wall height (distance from top of coping to finished grade) is greater than or equal to 2.5 feet. Where concrete barrier and moment slab are placed

aside retaining wall in accordance with Standard Drawing E706-MSRW, additional fall protection railing shall not be required. Permanent railings for fall protection shall be designed and constructed in accordance with Attachment 6-1 (Conceptual Aesthetics and Landscape Plans).

6. Surface seal, in accordance with the Project Standards, shall be applied to all exposed surfaces of retaining walls to a minimum 1.0 foot below finished ground surface.
7. Removal of existing retaining walls shall be the stricter of 3.0 feet below finished grade or to the required excavation limits for proposed construction.
8. Air-cooled blast furnace (ACBF) slag is prohibited behind and in front of retaining walls as No.8 stone backfill below the Q100 high water elevation.
9. Riprap is prohibited as side slope protection between the edge of shoulder and rear face of retaining wall where angled or flared retaining walls are used. Articulated concrete block mats capable of growing grass seed shall be used in these areas in accordance with Attachment 14-1 (USP: Articulated Concrete Block).
10. Anti-graffiti coating shall be placed on all exposed concrete surfaces of new retaining walls. Anti-graffiti coating shall be placed from 1.0 foot below finished ground surface at the base of the wall to the top of wall, including all exposed surfaces of the coping. Anti-graffiti coating shall be in accordance with Attachment 14-1 (USP: Anti-Graffiti Coat).

14.3.4 Sound Barrier Requirements

Sound barriers shall be designed in accordance with the *2017 AASHTO LRFD Bridge Design Specifications, 8th Edition* and subsequent interim specifications.

Design-Build Contractor shall perform a noise analysis for all sound barriers within the Project limits to demonstrate that Project Standards, as applicable to noise barriers, are achieved within the final Project design. Design-Build Contractor shall submit a report summarizing the final design of sound barriers to IFA for review and approval.

Sound barriers shall be considered roadside hazards. Sound barriers may be located adjacent to the roadway shoulders, the top of cut slopes, on top of or immediately behind retaining walls, and on bridges.

Coordinating the location and design of signing details with the sound barriers shall be the responsibility of Design-Build Contractor.

A fire hydrant access door shall be provided in accordance with Attachment 14-1 (USP: Sound Barrier Fire Hydrant Access Door Feature) wherever a fire hydrant is located within 400.0 feet of the edge of the I-465, I-69, and ramp shoulders.

14.3.5 Traffic Structure Requirements

Design-Build Contractor shall refer to Section 11 (Traffic and Lighting) and Section 17 (ITS) for design and construction requirements.

Standard sign structures shall be in accordance with the Standard Drawings.

Non-standard sign structures shall comply with AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*. Design-Build Contractor shall apply 50-year recurrence interval for wind speed and other adjustment factors in accordance with AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals* for non-standard sign structures.

Design-Build Contractor shall apply sign data (e.g., material, weight, and dimensions) from sign manufacturers approved by INDOT to perform sign structure calculations and shall submit calculations to IFA for approval.

With the exception of lighting, bridge-mounted traffic structures are prohibited.

Bridge-mounted sign structures are prohibited, except as noted in Section 11.3.1 (General Requirements).

14.3.6 Level One Design Exceptions

The following Level One Design Exceptions have been obtained by IFA related to bridges:

Segment A: None

Segment B:

- Shoulder Width – Bridge Nos. 27, 28, and 29

*Required Usable Shoulder Width	*Required Paved Shoulder Width	Provided Shoulder Width with 2'-0" Barrier Offset
11.0 feet right	10.0 feet right	6.0 feet right
5.0 feet left	4.0 feet left	12.0 feet left

* - Required per Level One criteria

- Horizontal Stopping Sight Distance - Bridge Nos. 28, 29, and 30
 - 495.0 feet length required per Level One criteria with 397.0 feet length provided

Segment C:

- Shoulder Width – Bridge No. 44
 - 10.0 feet required per Level One criteria with 3.0 feet provided

Segment D: None

Segment E: None

14.4 Deliverables

Deliverables under this Section 14, a non-exhaustive list of which is set forth in Table 14-2, shall be submitted in electronic format in accordance with the schedule set forth below. Acceptable

electronic formats include PDF and current versions of Microsoft Word and Microsoft Excel, unless otherwise indicated.

Table 14-2: Deliverables

Deliverable	Deliverable Schedule	TP Section
Foundation review form	With Stage 3 Review Submission and Released for Construction Documents	14.2
Level 1 checklist	With Stage 1 Review Submission, Stage 3 Review Submission, and Released for Construction Documents	14.2
Draft load rating summary for widened bridges, for bridges with a new rigid overlay, and for new and replacement bridges	With Stage 3 Review Submission and approved prior to Released for Construction Documents	14.3.1
Final load rating summary for widened bridges, for bridges with a new rigid overlay, and for new and replacement bridges	Within 30 days after completion of Construction Work for each bridge	14.3.1

15 UTILITIES

15.1 General

Design-Build Contractor shall perform Utility coordination and Utility Adjustment Work in accordance with the PPA Documents, including Project Standards, this Section 15 and its attachments; Governmental Approvals; and Governmental Rules.

15.2 Utility Coordination Requirements

IFA has completed early coordination with Utilities, including preliminary conflict analysis associated with the Reference Plans. Design-Build Contractor shall be responsible for Utility coordination necessary to complete Utility Adjustments and other Work as required, including identifying and resolving Utility Adjustments resulting from the Project design and construction. Attachment 15-1 (Existing Utility Matrix) includes a summary of Utility locations, conflicts, and dates by which Type 1 Utility Adjustments will be performed. Design-Build Contractor shall refer to Section 6.3 of the PPA for a description of Utility Adjustment types.

For each Utility Adjustment, Utility Enhancement, or new installation, Design-Build Contractor, in coordination with the Utility Owner, shall be responsible for verifying that the Utility, as designed and constructed, is compatible with and interfaces properly with the Project.

Design-Build Contractor is advised that IFA has entered into Type 1 Utility Agreements with certain Utilities. Type 1 agreements are provided in the RID.

Design-Build Contractor is advised that IFA has entered into Type 2 Utility Agreements with certain Utilities. Type 2 Utility Agreements are provided as Attachments 15-5 (Sanitary Sewer Collection System Work Plan Package) and 15-6 (Southwest Diversion and Twin Sludge Lines 30% plans and Work Plan Package).

Design-Build Contractor shall refer to Section 6.4 of the PPA for requirements related to Design-Build Contractor's Utility Conflict Matrix. Design-Build Contractor shall be responsible to update the Design-Build Contractor's Utility Conflict Matrix as new or revised conflicts are determined. Design-Build Contractor shall submit an updated and current Design-Build Contractor Utility Conflict Matrix to IFA on a monthly basis for review and comment.

Design-Build Contractor shall be responsible for causing construction and connection of New Utility services as applicable for signs, lighting, signals, ITS, and all other New Utility services required for the Project. This Work shall be included in Type 3 Utility Adjustment Agreements.

15.2.1 *Standard of Care Applicable to Utility Work*

Design-Build Contractor shall contact Indiana 811 at 1-800-382-5544 prior to commencing any Construction Work. Design-Build Contractor shall be responsible to request mark-outs for Utilities whose owners are not members of the locate systems.

Design-Build Contractor shall support and secure Utilities so as to avoid damage and keep them fully maintained and functional during construction. Design-Build Contractor shall not move or remove any Utility without the Utility Owner's written consent. At the completion of the Work, the condition of all Utilities shall be safe and permanent.

If any Utilities are damaged by Design-Build Contractor's Work, Design-Build Contractor shall notify the affected Utility Owner within 12 hours of the Incident. See Section 15.5.4 for additional information on Utility damage. The Utility Owner may cause the damage to be repaired at the Design-Build Contractor's expense.

15.2.2 Utility Work Plans, Agreements and Permits

For Type 1 and Type 2 Utility Adjustments as specified in Section 15.3, IFA will provide Design-Build Contractor with Utility Work Plans, Utility Agreements, and Utility permits. For all other Utility Adjustments, Design-Build Contractor shall be responsible for coordinating and causing a Utility Agreement with each of the Utility Owners in accordance with Section 6.3 of the PPA. Design-Build Contractor shall submit signed Utility Work Plans and Utility Agreements to IFA for review and approval using the Utility Agreement template provided in Attachment 15-7 (Utility Work Plan and Agreement Template). IFA will review Utility Work Plans for completeness and compliance with encroachment policies and provide responses within 10 Business Days. Upon approval of a Utility Work Plan, IFA will execute the Utility Agreement and issue a Utility permit.

Design-Build Contractor is advised that Utility Adjustments on county or city roads may require a permit from the jurisdictional local Governmental Entity. Design-Build Contractor is responsible to obtain, or ensure the Utility has obtained, the required permits before the Utility Adjustment Work begins.

Design-Build Contractor is advised that water or sewer Utility Adjustments may require permits from the Indiana Department of Environmental Management. Design-Build Contractor is responsible to obtain, or ensure the Utility has obtained, the required permits before the Utility Adjustment Work begins.

15.2.3 Utility Owner's Right to Inspect

The Utility Owner has the right to inspect the Work that is to be performed by Design-Build Contractor on the Utility Owner's facilities. Inspection and notification requirements shall be included in the Utility Agreement.

15.2.4 Utility Enhancements

Some Utility Owners may request Betterments and other Utility Enhancements as a result of the required Adjustments of the Utility. Any such Utility Enhancements shall be governed by and comply with Section 6.6 of the PPA.

Design-Build Contractor shall inform IFA about requests by Utility Owners for Utility Enhancements. Design-Build Contractor shall keep IFA informed as to the status of any negotiations with Utility Owners concerning Utility Enhancements. Design-Build Contractor shall be responsible for tracking costs of Utility Enhancements and shall provide IFA with information and analyses regarding Utility Enhancements as requested.

15.2.5 Protection of Utilities

Design-Build Contractor shall prepare a protection plan for all Utilities. Utility protection plans shall be submitted to IFA with the design Submittals at the Stage 1 Review Submission and the Stage 3 Review Submission for review and comment. The final Utility protection plan for each

design Submittal shall be included with the Released for Construction Documents. Design-Build Contractor shall be responsible to obtain written approval of the protection plan from each Utility Owner that has a Utility that could potentially be impacted by the Work.

Utility protection plans shall include, at a minimum:

1. Construction requirements for working adjacent to Utilities in place, including Notice requirements;
2. Details required for temporary protection of Utilities during construction;
3. Identification of Utilities impacted by the Work, including horizontal and vertical information;
4. Utility contact information; and,
5. Written approvals by each Utility Owner

15.2.6 Design-Build Contractor's Coordination Requirements

Design-Build Contractor shall act in good faith to continue the positive relationship that IFA has developed with the Utility Owners.

Design-Build Contractor shall, through its Utility Coordination Manager, coordinate, cooperate, and work with those Utility Owner representatives on the Utility contact list (initially, the list set forth in RID, to be updated as new or substitute contacts are identified).

Design-Build Contractor shall coordinate with Utility Owners to include timing of Utility Adjustment Work in the Project Schedules.

Design-Build Contractor shall keep Utility Owners well informed of Project Schedules and notify Utility Owners at least 48 hours in advance of any Work in the vicinity of the Utility. Coordination shall also occur for Utilities designated as Protection in Place, whether by Design-Build Contractor or by the Utility Owner. If a Utility Adjustment by a Utility Owner is contingent on the Work or another Utility Owner's Work, Design-Build Contractor shall keep all parties informed of the status and estimated completion dates for the advance Work.

Design-Build Contractor shall keep Utility Owners well informed of changes to the Project that may affect Utility Adjustment Plans or their facilities.

Design-Build Contractor shall cooperate with the Utility Owners to resolve Adjustment and installation issues to the extent that such Adjustments and installations are part of the Utility Adjustment Work, as otherwise set forth in the PPA Documents, and without causing IFA to incur any unnecessary expense to the Project or causing the Utility Owners to incur unnecessary expense.

Design-Build Contractor shall coordinate with those Utility Owners performing Type 1 Utility Adjustments and monitor the progress of Type 1 Utility Adjustment Work.

15.2.7 Coordination of Design Reviews

Design-Build Contractor shall invite affected Utility Owners to participate in relevant Design-Build Contractor design reviews so affected Utility Owners may provide feedback on the Work, potential conflicts, resolutions, and necessary Adjustments.

15.2.8 Meetings and Coordination

Within 30 Business Days of NTP, Design-Build Contractor shall schedule meetings with each Utility Owner potentially impacted by the Project. These meetings are for the purpose of reviewing all items related to Utility Adjustments, including all items that affect Project Schedules and the initiation of Utility Agreements.

Design-Build Contractor shall schedule at least bi-weekly joint Utility meetings with the Utility Owners to discuss Project progress, issues, and planned Work for all phases of Utility Adjustments, including design and construction. These meetings shall include the Key Personnel of Design-Build Contractor and IFA personnel that are responsible for Utilities. Design-Build Contractor shall be responsible for providing meeting facilities. With input from IFA, Design-Build Contractor shall develop and distribute an agenda for these meetings. Design-Build Contractor shall keep minutes of the meetings and distribute copies of the minutes within five Business Days after the meeting date to all meeting participants and other designated representatives of the Utility Owners, even if not present.

Design-Build Contractor shall notify IFA at least five Business Days in advance of each meeting with a Utility Owner's representative and shall allow IFA or its representative the opportunity to participate. Design-Build Contractor shall also provide to IFA, or its representative, copies of all correspondence between Design-Build Contractor and any Utility Owner within seven days after sending or receiving.

15.2.9 Utility Adjustment Master Plan

Within 30 days after the issuance of NTP, Design-Build Contractor shall submit an initial Utility Adjustment master plan to IFA for its records showing all known existing Utilities and proposed Utility Adjustments. Design-Build Contractor shall update the Utility Adjustment master plan and submit it to IFA monthly to reflect all changed information then known to Design-Build Contractor and shall distribute copies for discussion at scheduled Utility meetings. Updates shall be submitted to IFA for review and comment.

15.3 Utility-Specific Coordination Requirements

15.3.1 AT&T - Distribution (ATT)

ATT is a Type 1 Utility Adjustment.

Design-Build Contractor is advised that there are two critical ATT utility vaults within the Project limits located approximately as follows:

1. In the vicinity of the existing Epler Avenue and Belmont Street intersection
2. In the vicinity of the existing Wellingshire Boulevard and Southport Road intersection

In both locations, Design-Build Contractor shall use Protection in Place. Any necessary Utility Adjustment to the ATT vaults caused by the Design-Build Contractor shall be included in a Type 3 Utility Adjustment Agreement.

ATT Utility Work Plans call for some of their facilities to be relocated onto IPLD poles. The timing of ATT Utility Adjustment Work will be contingent upon the timing of IPLD Utility Adjustment Work.

15.3.2 Century Link – National (CTLN)

CTLN is a Type 1 Utility Adjustment.

A CTLN duct is located in a joint trench with other telecommunications Utilities near the existing west abutment of Bridge Nos. 36 and 37 over the Railroad owned and operated by The Indiana Rail Road Company. Design-Build Contractor shall use Protection in Place. Any necessary Utility Adjustment to the CTLN duct caused by the Design-Build Contractor shall be included in a Type 3 Utility Adjustment Agreement.

15.3.3 Citizens Energy Group – Gas (CEGG)

CEGG is a Type 1 Utility Adjustment.

CEGG operates a 20-inch steel gas transmission line running along and within the Project limits, with a critical transfer station located southwest of the intersection of Southport Road and SR 37. The transmission line and the transfer station will be relocated into an easement parallel to the Planned ROW Limits. Adjustments to any attaching gas mains at the transfer point are included in the Utility Work Plan for the 20-inch line. The existing line will be retired in or removed from the INDOT Limited Access ROW.

The relocation of CEGG facilities is anticipated to overlap with construction of the Project. Design-Build Contractor is advised that CEGG has restrictions on the timing of shutdowns, which must occur between May 1 and October 1. Critical tie-in construction by CEGG will require shutdowns.

15.3.4 Citizens Energy Group – Sewer (CEGS)

CEGS has Type 1 Utility Adjustments and Type 2 Utility Adjustments within the Project limits.

CEGS Type 2 Utility Adjustment Plans are included as Attachment 15-5 (Sanitary Sewer Collection System 90% Work Plan Package) and Attachment 15-6 (Southwest Diversion and Twin Sludge Lines 90% plans and Work Plan Package 11.7.19). All CEGS work called for in Attachment 15-5 (Sanitary Sewer Collection System 90% Work Plan Package) shall comply with the specifications found in Attachment 15-8 (Sanitary Sewer Collection System 90% Work Plan Specs). All CEGS work called for in Attachment 15-6 (Southwest Diversion and Twin Sludge Lines 90% plans and Work Plan Package 11.7.19) shall comply with the specifications found in Attachment 15-9 (Diversion and Twin Sludge Lines 90% plans and Work Plan Specs 3.6.20). Two large CEGS interceptors cross the Project.

1. The southwest diversion interceptor is an 82-inch to 96-inch RCP line that moves 50 million gallons per day at peak flow. Two 18-inch force main sludge lines cross I-465

west of Harding Street and lie within the area of the proposed I-69 and I-465 system interchange. All three of these lines will be relocated to cross I-465 and pass the system interchange in a new location. Design-Build Contractor shall perform this Work as a Type 2 Utility Adjustment.

2. The southwest Marion County regional interceptor is a 102-inch RCP line that moves 100 million gallons per day at peak flow and crosses SR 37 south of Wicker Road. As a Type 1 Utility Adjustment, CEGS will line the interceptor where it will be located under the proposed alignment of I-69. This Type 1 Utility Adjustment Work is anticipated to overlap with construction of the Project. Design-Build Contractor shall coordinate with CEGS to provide CEGS construction access to the Site. Design-Build Contractor shall limit its own Work in the vicinity of the CEGS crossing until CEGS completes the Utility Adjustment Work.

Design-Build Contractor is advised that CEGS has provided a list, included in the RID, of approved Subcontractors that may be used to perform Type 2 Utility Adjustment Work on CEGS facilities. Design-Build Contractor shall be required to use Subcontractors that are approved by CEGS.

[NOTE: As part of the Real Estate effort, some parcels are being identified that have sewer solutions that will be rendered non-usable with the INDOT acquisition. There is an additional work plan being coordinated to address the replacement of these existing solutions. Where schedule allows, some or all of the Work associated with said sewer replacements may be Type 2 Utility Adjustment Work.]

15.3.5 Citizens Energy Group – Water (CEGW)

CEGW is a Type 1 Utility Adjustment.

CEGW has various Adjustments to transmission and distribution water facilities within the Project limits. Transmission line shutdowns need to occur outside of the hot summer months and includes Utility Adjustments to 48-inch and 16-inch transmission lines in Segment D. Distribution lines can be taken out of service as needed to execute the required Utility Adjustment Work and include Work in multiple Segments.

15.3.6 Comcast Communications (COM)

COM is a Type 1 Utility Adjustment.

Comcast Communications Utility Work Plans call for some of their facilities to be relocated onto IPLD poles. The timing of Comcast Utility Adjustment Work will be contingent upon the timing of IPLD Utility Adjustment Work.

15.3.7 Crown Castle – Towers (CCT)

CCT has one tower located in the vicinity of the Project limits near the intersection of Kopetsky Drive and Epler Avenue. It is anticipated that this tower will not require Utility Adjustment to accommodate the Project.

15.3.8 Duke Energy - Transmission (DET)

DET is a Type 1 Utility Adjustment.

Several DET facilities cross the Project:

1. DET has existing 69-kilovolt and 138-kilovolt crossings located east of Mann Road that will be Adjusted to accommodate the Project.
2. DET has existing 69-kilovolt and 138-kilovolt facilities that cross I-465 between Bluff Road and US 31 in several locations, including towers located within the median of I-465. These facilities will be relocated outside of the Project Right of Way.
3. DET has existing 69-kilovolt and 138-kilovolt crossings located at Keystone Avenue. Design-Build Contractor shall use Protection in Place during Design Work and Construction Work at this location.

Design-Build Contractor shall follow the requirements in Attachment 15-2 (Duke Energy Electric Transmission Right-of-Way Guidelines and Restrictions) and Attachment 15-3 (Duke Energy Plan Review Checklist).

Design-Build Contractor shall coordinate with DET regarding requests to de-energize DET lines to allow for safe construction of the Project. Design-Build Contractor is advised that MISO maintains the final approval for any planned outage/de-energizing efforts of all electrical transmission facilities in Indiana. Design-Build Contractor is advised that requests for DET to de-energize lines may not be granted and that any previously-approved outage may not necessarily be changed at DET's discretion to meet the demands on the electrical grid system.

The relocation of DET facilities is anticipated to overlap with construction of the Project. Design-Build Contractor is advised that DET will be requesting temporary overnight lane closures at various locations within the Project limits to allow for the placement of new electric wires. Design-Build Contractor shall coordinate with DET to sequence the Utility Adjustment Work with other lane restrictions required by the Project.

15.3.9 Enterprise Products (ENT)

ENT is a Type 1 Utility Adjustment.

ENT has a natural gas pipeline referred to as the TEPPCO Northern Region, Line P35 that crosses SR 37 to the north of the extension of Stop 11 Road. The pipeline is not currently cased and features thick-walled pipe within the current SR 37 ROW. The expansion of the INDOT Limited Access ROW for I-69 will require the pipeline to be Adjusted.

15.3.10 Indiana American Water (IAW)

IAW is a Type 1 Utility Adjustment.

IAW has two water pipelines crossing SR 37 at Fairview Road:

1. A 20-inch line along the north edge of Fairview Road

2. A 10-inch still line along the south edge of Fairview Road

The pipeline will need to be Adjusted to accommodate modifications to Fairview Road and for the West Connector Road being built as part of Contract 4.

15.3.11 I-Light/Indiana University Fiber (IUF)

IUF is a Type 1 Utility Adjustment.

Design-Build Contractor shall satisfy the requirements of Section 17.3.3.3 (Fiber Optic Backbone) regarding placement of Conduits within the Project Right of Way for future use by IUF. Future Work by IUF to place fiber in the Conduits will be performed as a Type 1 Utility Adjustment after Final Acceptance of the Project.

Design-Build Contractor is advised that the existing IUF data pathway has been temporarily relocated out of the Project Right of Way. Design-Build Contractor shall remove existing IUF facilities located within the INDOT Limited Access ROW.

15.3.12 Indianapolis Power & Light – Transmission (IPLT)

IPLT is a Type 1 Utility Adjustment.

Design-Build Contractor shall coordinate with IPLT regarding requests to de-energize IPLT lines to allow for safe construction of the Project. Design-Build Contractor is advised that MISO maintains the final approval for any planned outage/de-energizing efforts of all electrical transmission facilities in Indiana. Design-Build Contractor is advised that requests for IPLT to de-energize lines may not be granted and that any previously-approved outage may not necessarily be changed at IPLT's discretion to meet the demands on the electrical grid system.

The relocation of IPLT facilities is anticipated to overlap with construction of the Project. Design-Build Contractor is advised that IPLT will be requesting temporary overnight lane closures at various locations within the Project limits to allow for the placement of new electric wires. Design-Build Contractor shall coordinate with IPLT to sequence the Utility Adjustment Work with other lane restrictions required by the Project.

15.3.13 Indianapolis Power & Light – Distribution (IPLD)

IPLD is a Type 1 Utility Adjustment.

Design-Build Contractor is advised of IPLD's preference to cross the mainline underground in all locations, as indicated in their Utility Work Plans.

The relocation of IPLD facilities is anticipated to overlap with construction of the Project. Design-Build Contractor is advised that IPLD will be requesting temporary overnight lane closures at various locations within the Project limits to allow for the placement of new electric wires. Design-Build Contractor shall coordinate with IPLD to sequence the Utility Adjustment Work with other lane restrictions required by the Project.

15.3.14 Johnson County Regional Electric Membership Coalition (JC-REMC)

JC-REMC is a Type 1 Utility Adjustment.

JC-REMC has a pole in the northeast quadrant of the Fairview Road and SR 37 intersection that will need to be Adjusted to accommodate the cul-de-sac being placed on Fairview Road approaching SR-37 from the east. Various other Utilities are attached to the JC-REMC pole line that will also need to be Adjusted so the pole can be removed.

15.3.15 MCI / Verizon Wireless (MCI)

MCI is a Type 1 Utility Adjustment.

An MCI duct is located in a joint trench with other telecommunications Utilities, within The Indiana Rail Road Company's real property rights, near the existing west abutment of Bridge Nos. 36 and 37. Design-Build Contractor shall use Protection in Place. An MCI aerial wire is attached to DET towers crossing over I-465. The wire will be relocated as part of the DET Utility Adjustment.

15.3.16 Metro Fibernet (MFN)

MFN is a Type 1 Utility Adjustment.

MFN has facilities within the Project limits near Southport Road consisting of an aerial cable mounted on IPLD poles as an underbuild. MFN lines will be Adjusted within an underground crossing and reconnected to existing or proposed IPLD poles on either side of mainline I-69. The Metro Fibernet Utility Work Plan calls for some of their facilities to be relocated onto IPLD poles. The timing of COM Utility Adjustment Work will be contingent upon the timing of IPLD Utility Adjustment Work.

15.3.17 Mobilitie (MOB)

MOB has a cell tower in the vicinity of the Project. It is anticipated that this tower will not require Utility Adjustment to accommodate the Project. Design-Build Contractor shall use Protection in Place for any Work performed near the tower.

15.3.18 United States Geological Survey (USGS)

Design-Build Contractor is advised that the USGS has a stream gauge in Little Buck Creek west of Belmont Avenue that is located within the Project limits. Design-Build Contractor shall coordinate with USGS regarding the removal of the stream gauge during the construction of the Project. The USGS will be responsible for replacement of the stream gauge.

15.3.19 Vectren (Centerpoint) Energy (VECT)

VECT is a Type 1 Utility Adjustment.

VECT has several facilities located within the Project limits that will each require Adjustment to accommodate the Project.

1. A 2-inch medium pressure polyethylene line at Fairview Road
2. A 6-inch medium pressure polyethylene line at Bluff Road east of SR-37
3. A 6-inch medium pressure polyethylene line at County Line Road

15.3.20 Windstream

Windstream is a Type 1 Utility Adjustment.

Windstream has facilities located within the Project limits in the form of aerial lines attached to IPLD poles in the vicinity of Epler Avenue and crossing through the interchange area west of Harding Street. The facilities will require relocation to accommodate the Project.

Windstream Utility Work Plans call for some of their facilities to be relocated onto IPLD poles. The timing of Windstream Utility Adjustment Work will be contingent upon the timing of IPLD Utility Adjustment Work.

15.3.21 Zayo Bandwidth (Zayo)

Zayo is a Type 1 Utility Adjustment.

Zayo has facilities in the vicinity of Banta Road and Southport Road that will be Adjusted to accommodate the Project.

15.4 Utility Design Requirements

15.4.1 Responsibility for Design of Utility Work

Except for Type 1 Utility Adjustments and Type 2 Utility Adjustments as specified in [Section 15.3](#), Design-Build Contractor shall be responsible for causing the Utility Adjustment design.

When Utility Owner is preparing Utility Adjustment Plans, Design-Build Contractor shall be responsible to review the Utility Adjustment Plans for consistency with the Project and Project Standards.

When Design-Build Contractor is responsible for the design of the Utility Adjustment Plans, Design-Build Contractor shall ensure the Adjustment design is compatible with and interfaces properly with the Project. The Utility Owner shall be provided time to review and approve the Utility Adjustment Plans for consistency with Utility Owner's standards and specifications.

15.4.2 Changes to Utility Adjustment Design

Design-Build Contractor shall follow and satisfy the requirements in [Section 6.3](#), [6.4](#), and [6.5](#) of the PPA.

15.4.3 Utility-Specific Design Requirements

Design-Build Contractor shall use [Attachment 15-4](#) (Citizens Energy Group – Sanitary Standards Manual) for specific design requirements that pertain to CEGS facilities.

15.5 Utility Construction Requirements

15.5.1 Construction Requirements

Design-Build Contractor shall be required to follow the National Electric Safety Code (NESC) when working in the vicinity of electric Utilities.

15.5.2 As-Built Utility Plans

For Type 2, Type 3, and Type 4 Utility Adjustment Work, Design-Build Contractor shall submit as-built Utility Plans to IFA.

The as-built Utility Plans shall comply with the as-built requirements stipulated in the Utility regulations and shall be part of the Project Record Drawings. The as-built Utility Plans shall include three-dimensional data including surveyed, as-built elevations of buried Utilities.

15.5.3 Construction Record

Design-Build Contractor shall maintain a record of the Utility Adjustment Work performed by the Design-Build Contractor. Individual files shall include a record of the following information:

1. Utility Adjustment Plans that have been reviewed by the Utility Owner and received review and comment by IFA;
2. Notification of construction dates;
3. A record of meetings with the Utility Owner;
4. A signature of the Utility Owner's representative on the Utility Adjustment Plans and Utility Work Plan;
5. A record of the Utility Owner's representation at design and construction meetings;
6. Any approved revisions to the Utility Adjustment Plans;
7. Dates of construction completed;
8. All other as-built requirements stipulated in the applicable Adjustment Standards;
9. Design-Build Contractor Utility Agreements; and,
10. Record Drawings, as they pertain to the Utility Adjustment Work.

Upon completion of the Utility Adjustment Work by the Design-Build Contractor, Design-Build Contractor shall submit a complete copy of the construction record to IFA.

15.5.4 Utility Damage Reports

Design-Build Contractor shall be responsible for developing a standardized Utility damage report form to use in the event a Utility is damaged. The form shall include sufficient information, such as the location; date; time; Utility Owner; Utility locate details; the name of the Construction Manager and witnesses; a description of the damage; and the signatures of the Construction

Superintendent, Utility Owner, and locate service. A blank form shall be submitted to IFA for review and comment prior to the start of Construction Work.

Design-Build Contractor shall complete and submit the Utility damage report form to IFA within two days of the occurrence of the Utility damage.

15.6 Deliverables

Deliverables under this Section 15, a non-exhaustive list of which is set forth in Table 15-1, shall be submitted in electronic format in accordance with the schedule set forth below. Acceptable electronic formats include PDF and current versions of Microsoft Word and Microsoft Excel, unless otherwise indicated.

Table 15-1: Deliverables

Deliverable	Deliverable Schedule	TP Section
Design-Build Contractor Utility Conflict Matrix	See <u>Section 6.4.1</u> of the PPA	15.2
Design-Build Contractor Utility Conflict Matrix updates	Monthly	15.2
Type 2 Utility Adjustment Utility Work Plans (Where Applicable)	As required	15.2.2
Type 2 Utility Adjustment Utility Agreements (Where Applicable)	As required	15.2.2
Type 3 Utility Adjustment Utility Work Plans (If Applicable)	As required	15.2.2
Type 3 Utility Adjustment Utility Agreements (If Applicable)	As required	15.2.2
Utility Adjustment master plan	Within 30 days of NTP	15.2.9
Utility damage reports	As required	15.5.4

16 RAILROAD COORDINATION

16.1 General

Design-Build Contractor shall perform the railroad Work in accordance with the PPA Documents, including Project Standards, this Section 16 and its attachments; Governmental Approvals; and Governmental Rules.

This Section 16 defines the criteria required for the Project to accommodate Railroads crossing the Project ROW. Design-Build Contractor shall be responsible for coordination with all Railroads within the Project limits.

16.2 Administrative Requirements

16.2.1 Standards

Design-Build Contractor shall design the Work affecting Railroad facilities following current Good Industry Practice, using *FHWA Railroad-Highway Grade Crossing Handbook*, AREMA, and IMUTCD, and incorporating the usual and customary design standards and operating requirements of the Railroad(s) that has, or is expected to have, an agreement with IFA. However, for the purposes of Section 1.3.5 of the PPA, wherever a conflict arises between any details in the design standards and operating requirements, the criteria as required by the Railroad shall govern.

Construction details and specifications shall conform to the Standard Specifications and the rules, regulations, and requirements of the Railroads, including those related to safety, fall protection, and protective equipment. Draft copies of the Special Provisions for the Protection of Railway Interest are included in Attachments 16-1 (RSP: The Indiana Rail Road Company), 16-2 (RSP: Louisville & Indiana Railroad Company), and 16-3 (RSP: Indiana Southern Railroad). Note: for the entirety of Attachments 16-1, 16-2, and 16-3 all occurrences of "Contractor" shall mean Design-Build Contractor; "Engineer" shall mean IFA, as context may require; "Department" shall mean IFA; and "Agency" shall mean IFA. Design-Build Contractor shall coordinate with Railroads to finalize the Recurring Special Provisions and comply with the finalized special provisions.

16.2.2 Insurance Requirements

Design-Build Contractor shall procure and maintain any insurance coverage required by any Railroad as a condition of the Railroad's consent for entry onto Railroad facilities or property. Design-Build Contractor shall comply with all insurance requirements set forth in the Railroad Special Provisions, Railroad Agreement(s), rights of entry, or other agreements or approvals required for performing Work on or near the ROW of any Railroad.

All insurance policies shall be in a form acceptable to the Railroad. The original Railroad protective liability insurance policy shall be submitted to the Railroad with the Railroad as the name insured. Copies of all other insurance policies shall be submitted to the Railroad(s), IFA, and be approved by the Railroad prior to any entry by the Design-Build Contractor upon or Construction Work above Railroad real property rights.

16.3 Design Requirements

16.3.1 Design Criteria in Railroad Right of Way

1. The design of any Railroad facilities shall conform to the requirements of the Railroad specifications and the provisions set forth by the Railroad Agreement.
2. All Railroad tracks and other Railroad real property rights shall be protected from damage resulting from the Work.
3. All bridges over Railroad facilities shall provide the required minimum vertical clearance over Railroad facilities, as required in Section 14.3.1 (Bridge Structure Requirements). Design-Build Contractor shall survey existing track elevations and measure the existing minimum vertical clearance over the Railroad facilities prior to commencing Design Work. The measurements shall be provided to IFA.
4. All horizontal clearances shall conform to the operating Railroad specifications; and, crash walls shall be provided as required by the operating Railroad specifications. Design-Build Contractor shall survey existing track elevations and measure the existing minimum horizontal clearances for all Railroad facilities prior to commencing Design Work. The measurements shall be provided to IFA.
5. All substructure elements within 25 feet of the centerline of tracks shall be designed and constructed with a crash wall per AREMA requirements.
6. Design-Build Contractor shall provide track monitoring plans for all foundation construction processes.
7. Construction equipment and material shall not be stored within the Railroad real property rights.
8. If excavation for retaining wall or pier foundations impact the live load influence line, sheeting and shoring will be required. Theoretical live load influence zones shall be detailed on the Stage 3 Review Submission and Released for Construction Documents.
9. All drainage from the bridge and roadway crossing over the existing Railroad shall be collected and directed away from the Railroad real property rights and shall be detailed on the Stage 3 Review Submission and Released for Construction Documents.
10. Design-Build Contractor shall detail culverts located adjacent to the Railroad tracks in the Stage 3 Review Submission and Released for Construction Documents and indicate directional flow.
11. Design-Build Contractor shall indicate on the Stage 3 Review Submission and Released for Construction Documents the distance from the intersection of centerline of roadway and centerline of track to the nearest Railroad milepost.
12. Pedestrian and/or nuisance fencing shall not be installed on bridges.

16.3.2 Design Coordination

Design-Build Contractor shall coordinate the Project design with the Railroads. This coordination shall include meetings, Plan submissions, and resolution of pertinent commentary

provided by the Railroads. IFA has provided each Railroad preliminary plans as part of early coordination. Design-Build Contractor shall complete the Plans and shall fully consult each Railroad in such a manner as necessary to ensure compliance with all standards not in conflict with IFA's requirements and a viable final design. The Railroad has final approval rights for the design of Work affecting its facilities.

The Plans shall contain points labelling the location of the minimum horizontal and vertical clearance between the bridge and the adjacent Railroad tracks. The Plans shall also include details providing the bottom of footing and top of rail elevation and distance from centerline of track to nearest footing.

Indiana Southern Railroad owns the existing tracks that cross the Project ROW under I-465 adjacent to SR 67. Contact for Indiana Southern Railroad is as follows:

Indiana Southern Railroad
c/o Jacob Smith
Director of Public Projects
Genesee & Wyoming Railroad
13901 Sutton Park Drive, Suite 345
Jacksonville, FL 32224
Telephone: (904) 900-6320
Jacob.smith@gwrr.com

The Indiana Rail Road Company owns the existing tracks that cross the Project ROW under I-465 between Harding Street and Bluff Road. Contact for The Indiana Rail Road Company is as follows:

The Indiana Rail Road Company
Peter Ray
The Indiana Rail Road Company
1500 S. Senate St.
Indianapolis, IN 46225
Telephone: (317) 616-3443
peter.ray@INRD.com

Louisville & Indiana Railroad Company owns the existing tracks that cross the Project ROW over I-465 east of Madison Avenue. Contact for Louisville & Indiana Railroad Company is as follows:

Louisville & Indiana Railroad Company
James Connolly
Louisville & Indiana Railroad Company
500 Willinger Lane
Jeffersonville, IN 47130
Telephone: 502-297-7320
jconnolly@anacostia.com

16.3.3 Design Costs

IFA has completed early coordination with The Indiana Rail Road Company. During final design coordination, Design-Build Contractor shall secure an updated estimate of all anticipated costs from The Indiana Rail Road Company. The costs shall be reviewed by the Design-Build Contractor for compliance with federal and state standards and will be the basis of the Railroad Agreement. Design-Build Contractor shall submit the cost estimate to IFA for review and comment.

16.3.4 Records

Design-Build Contractor shall maintain Books and Records of all coordination and Construction Work with the Railroad. Copies of these Books and Records shall be provided to IFA as they are completed. Specific documents required include correspondence, meeting minutes, force account estimates from the Railroad for its Work, design comments, agreements, inspection records, invoices, and Change Orders.

16.3.5 Project Work Affecting Railroad Operations

Where the Project crosses or affects Railroad real property rights, operations, or facilities, Design-Build Contractor shall coordinate the Work with the Railroad(s), and IFA, as appropriate.

16.3.5.1 Schedule

Design-Build Contractor shall be responsible for obtaining all required approvals, permits, petitions, required for any Railroad-related Work not already in place. All costs, fees, and Work associated with Railroad matters shall be the responsibility of Design-Build Contractor. Design-Build Contractor shall be responsible for including and incorporating all Railroad-related items into the Project Schedule. No time extensions will be granted to Design-Build Contractor for Railroad-related Work.

Design-Build Contractor shall enter into other agreements with and obtain any permits from Governmental Entities or others that are necessary to perform the Work described herein or that otherwise apply to Work hereunder, except for those items expressly described in this Section 16.3.5 as being the responsibility of IFA.

16.3.5.2 Operation Safety

Design-Build Contractor shall arrange with the Railroad for Railroad flagging as required. These flagging costs shall be included in the Railroad Agreement and all flagging costs, including those in excess of the estimate provided in the Railroad Agreement and Section 6.2.4 of the PPA, are included in the Work. Design-Build Contractor shall comply with the Railroad's requirements for contractor safety training prior to performing Construction Work or other activities on the Railroad's real property rights.

16.3.5.3 Railroad Right of Entry Agreement

In order to enter the operating Railroad's real property rights to perform the Work, Design-Build Contractor shall secure its right of entry from the Railroad and shall coordinate the arrangements of the necessary agreements directly with the operating Railroad.

16.3.5.4 Design-Build Contractor Right of Entry Agreement

Design-Build Contractor shall cooperate and coordinate with all Railroads for access by the Railroad and, as applicable, each Railroad's agents to the Railroad real property rights as necessary for rail maintenance and operations activities performed by the Railroad or its agents.

16.4 Construction Requirements

16.4.1 Cost of Reimbursements

Design-Build Contractor shall be responsible for all reimbursement of costs to Railroads and shall be responsible for reimbursing all costs that Railroads incur in adjusting their facilities or operations, as applicable, to accommodate the Work.

16.4.2 Monitoring Construction Management Costs

Design-Build Contractor shall monitor the daily costs associated with the Construction Work of the Project as it relates to Railroad coordination. Design-Build Contractor shall provide, at a minimum, monthly reports to IFA on the usage of Railroad flaggers. Design-Build Contractor shall be responsible for all flagging costs in accordance with Section 6.2.4 of the PPA.

16.5 Deliverables

Deliverables under this Section 16, a non-exhaustive list of which is set forth in Table 16-1 below, shall be submitted in electronic format in accordance with the schedule set forth below. Acceptable electronic formats include PDF and current versions of Microsoft Word and Microsoft Excel, unless otherwise indicated.

Table 16-1: Deliverables

Deliverable	Deliverable Schedule	TP Section
Insurance policies	Prior to entry upon Railroad real property rights	16.2.2
Track monitoring plan	As completed	16.3.1
Stage 3 Review Submission	As completed	16.3.1
Released for Construction Documents	As completed	16.3.1
Estimate	As completed	16.3.3
Records of Railroad involvement	As completed	16.3.4
Railroad flagman reports	Monthly	16.4.2

17 INTELLIGENT TRANSPORTATION SYSTEM (ITS)

17.1 General

Design-Build Contractor shall perform the ITS Work in accordance with the PPA Documents, including Project Standards, this Section 17 and its attachments; Governmental Approvals; and Governmental Rules.

The purpose of ITS is to improve traveler safety, improve traffic efficiency by minimizing congestion, mitigate the impact of incidents, and minimize traffic-related environmental impacts.

17.2 Administrative Requirements

Design-Build Contractor shall provide Warranties for all installed ITS equipment for at least one year or in accordance with the Standard Specifications, whichever is greater. The Warranties shall begin in accordance with Section 11.1.2 of the PPA.

17.3 Design and Construction Requirements

The Project shall include all communications, electrical power, and supporting infrastructure to provide a complete, fully operational ITS that is ready to be integrated and controlled by INDOT TMC. All components of the system will be controlled and operated by the INDOT TMC.

Design-Build Contractor shall be responsible for providing continuous ITS functionality at all times during construction of the Project.

Prior to starting any Work on I-465, Design-Build Contractor shall submit a maintenance of ITS plan to IFA for review and approval. The plan shall describe and detail how the Design-Build Contractor intends to maintain ITS functionality during construction of the Project. The Plan shall describe the timing of the removal of existing equipment and placement of proposed equipment. Methods to maintain ITS functionality may include but are not limited to the use of existing, temporary, and new proposed ITS equipment.

Design-Build Contractor shall be responsible for providing complete video coverage at all times of all traffic movements along mainline I-465 and at I-465 interchanges. Any necessary temporary cameras shall be fully operational with communications to the INDOT TMC. Design-Build Contractor shall provide remote video and control for temporary cameras at the two TMCs to enable monitoring of traffic conditions in the construction zone.

All existing cameras, switches, modems and contents of cabinets shall be salvaged and returned to the INDOT TMC.

17.3.1 Material and Equipment Requirements

All material and equipment provided shall be compatible with existing INDOT ITS deployments and Design-Build Contractor shall ensure a seamless integration with existing systems. The system shall be consistent with published State and federal ITS architectures, as well as the National Transportation Communications for ITS Protocol (NTCIP). Design-Build Contractor shall furnish all materials for ITS Work elements. Design-Build Contractor shall submit material specifications and details to IFA for approval prior to ordering.

17.3.2 Power Requirements

Design-Build Contractor shall coordinate with Utility Owner(s) to deliver metered power to all ITS equipment installed or modified under this Project. Design-Build Contractor shall be responsible for all Work, materials, and costs required to obtain power to ITS equipment, including application and coordination with Utility Owner(s).

17.3.3 ITS Components

The components of the ITS shall consists of, but not be limited to, vehicle detectors, closed-circuit TV cameras (CCTV), fiber optic cable and Conduit, dynamic message signs (DMS), travel time signs (TTS), shelter, virtual weigh-in-motion (VWIM) and automatic traffic recorders (ATR).

17.3.3.1 Wireless Vehicle Detection System

Design-Build Contractor shall design, furnish, and install vehicle detectors along I-465 and I-69 prior to and shortly after each exit/entrance ramp and at all CCTV camera locations. The detector pole locations may be combined with CCTV camera locations. The detectors shall be either wireless in-pavement sensor detection system or microwave radar. Design-Build Contractor shall include the field equipment and control center equipment necessary to maintain the wireless vehicle detection system. The detection system shall meet the requirements as described in Attachment 17-1 (USP: ITS). Design-Build Contractor shall coordinate with IFA to confirm the detector type at each location during preliminary design of the ITS system. The detectors shall provide vehicle volumes, speeds, user-defined classes, and occupancies by lane in user-defined intervals.

17.3.3.2 CCTV Cameras

Design-Build Contractor shall design, furnish, and install permanent CCTV cameras along I-465 and I-69 every 1 mile, at a minimum, and at all interchanges. CCTV cameras shall be installed on towers at an elevation to be determined based on the location of the towers but no less than 40 feet. Design-Build Contractor shall include the field equipment and control center equipment necessary to maintain the cameras. CCTV camera locations along horizontal roadway curves shall be installed on the outer side of the horizontal curve to maximize viewing distance. Two pan-tilt-zoom cameras shall be installed on the support tower at each CCTV camera location.

17.3.3.3 Fiber Optic Backbone

Design-Build Contractor shall design, furnish, and install a permanent fiber optic backbone within the Project limits along I-465 and I-69. The new fiber shall be 192-strand, single-mode fiber-optic cable. Fiber communications shall provide redundant communication paths. Design-Build Contractor shall provide fiber communications redundancy via separate cables in separate Conduits. Design-Build Contractor shall provide new vaults to store, splice, and terminate the new fiber at the east, west and south termini. There shall be 20 feet of extra fiber in the handholes and 300 feet (150 feet each side) for the vaults.

The fiber optic backbone shall include a total of ten Conduits. Conduits within the fiber optic backbone shall be 2-inch diameter Conduits. Three 2-inch diameter conduits shall be for use by

INDOT ITS. Three 2-inch diameter empty Conduits shall be for use by Indiana University Fiber. Four 2-inch diameter empty Conduits shall be for use for the INDOT Broadband Corridor.

Design-Build Contractor shall arrange the Conduits as follows: INDOT ITS Conduits shall be located on the bottom (deepest) portion of the trench; Indiana University Fiber shall be placed above INDOT ITS Conduits and broadband corridor Conduits near the top of the trench.

Design-Build Contractor shall install Indiana University Fiber Conduits along I-69. Indiana University Fiber Conduits will not be required along I-465.

The INDOT ITS Conduits, the Indiana University Fiber Conduits and INDOT Broadband Corridor Conduits shall have separate handholes and vaults. For INDOT ITS Conduits, maximum spacing between handholes shall be 500 feet. For Indiana University Fiber conduits, maximum spacing between handholes shall be 1,000 feet. For INDOT Broadband Corridor conduits, maximum spacing between handholes shall be 2,000 feet. No splices are allowed in the handholes.

Design-Build Contractor shall coordinate with IFA and Indiana University Fiber to determine the location of the fiber optic backbone, handholes, and vaults. Design-Build Contractor shall be responsible for testing as-built fiber optic backbone Conduits to demonstrate viability for future installation of fiber by others.

Any existing Conduits and fiber optic cables in Segment A and Segment C may remain in place if they are not disturbed or damaged during Construction Work. Verification documentation to ensure that the existing fiber is in working condition shall be provided to IFA for review.

At the White River Bridge crossing, the Design-Build Contractor shall bore the fiber optic Conduit and cable below the river scour depth within the INDOT Limited Access ROW on I-465 in Segment B.

Design-Build Contractor shall be responsible for producing a fiber optic installation plan. The fiber optic installation plan shall include a description of the method of installing Conduit and cable. Specifically, the Design-Build Contractor shall address the method of installing fiber at bridge crossings in the fiber optic installation plan. The installation method shall incorporate a means of maintaining communications continuously during Project Work. Mounting ITS Conduit or equipment on bridge structures is prohibited.

17.3.3.4 ITS Shelter

Design-Build Contractor shall design, furnish, and install an ITS shelter within the system interchange of I-465 and I-69. The ITS shelter shall include integrated electrical networking and back-up power equipment, HVAC, cable ladder, square hole equipment rack, white board, drop-down desk and wall mounted storage unit. The ITS shelter shall include a back-up generator for power. Design-Build Contractor shall coordinate and confirm the shelter location with IFA during preliminary design. All contents of the existing shelter located at the I-465 and Harding Street interchange shall be salvaged and returned to the INDOT TMC. The existing shelter shall be removed.

Design-Build Contractor shall provide an access driveway to the shelter as described in [Section 17.3.3.5](#). Design-Build Contractor shall install an 8-foot tall chain-link barbed-wire fence around the shelter site with a lockable gate for access into the fenced area.

17.3.3.5 Safety and Maintenance Access

The design shall provide safe maintenance access to ITS equipment for use by INDOT ITS maintenance personnel. Safe maintenance access shall be achieved by installing access driveways, level maintenance platforms, railings, and guardrails or barriers within clear zones. Design-Build Contractor shall provide access driveways at all camera, detector, and shelter locations, subject to review and approval by IFA. Access driveways shall be designed for access by a single-unit truck. Access driveways shall provide turnaround for the maintenance vehicle to make three-point turn. Maximum grade for access driveway shall be 6 percent. The access driveway locations shall meet adequate sight distance requirement to enable maintenance vehicles to enter and exit without creating a hazardous situation. Access drives shall be constructed of crushed or recycled aggregate.

17.3.3.6 Dynamic Message Signs (DMS) and Travel Time Signs (TTS)

Design-Build Contractor shall design the placement of the DMS and TTS in accordance with the IDM.

Design-Build Contractor shall install DMS at the following approximate locations:

1. On I-465 WB between I-465/I-69 and Mann Road interchange
2. On I-465 EB between Mann Road and I-465/69 interchange
3. On I-69 SB between I-465/69 and Epler Avenue interchange
4. On I-69 NB between County Line Road and Southport Road interchange

Design-Build Contractor shall install TTS at the following approximate locations:

1. On I-465 EB between the Kentucky Avenue and Mann Road interchange
2. On I-465 WB between East Street interchange and I-465/69 interchange

17.3.4 ITS Plan Documents

Prior to the Stage 1 Review Submission, Design-Build Contractor shall submit ITS roll Plans to IFA for review and comment. The ITS roll Plans shall include the location and details of the ITS components.

The Stage 1 Review Submission shall include Plans depicting location and details of ITS components. The Plans shall identify driveway locations for maintenance access.

The Stage 3 Review Submission shall include Plans depicting additional details such as communication network diagrams, sign cross-section sheets for DMS and TTS structures, and any applicable design details. The Plans shall include lay out sheets illustrating driveway design for maintenance access, grading Plans and any associated design elements such as drainage, fencing, and gates.

17.4 Integration and Testing Requirements

Design-Build Contractor shall conduct installation testing during construction to ensure the devices perform per the manufacturer's specifications. Design-Build Contractor shall provide test plans and test results for IFA review and comment. Test plans shall be provided 30 days prior to installation and test results within 10 days after installation. Vendor-unique software or hardware used to verify proper operation of the ITS or used to troubleshoot the ITS may be used by Design-Build Contractor. Design-Build Contractor shall provide this vendor-unique software or hardware to IFA with the Construction Documents. Design-Build Contractor shall provide 72-hour advance Notice to IFA for testing.

Design-Build Contractor shall provide 72-hour advanced Notice to IFA for the anticipated disruption of any services. Any planned disruption of services shall be coordinated with IFA. Concealed Work (including underground) shall be tested by Design-Build Contractor and witnessed by IFA prior to covering.

Instruments used by Design-Build Contractor shall be regularly and accurately calibrated and maintained in good working condition. Test reports shall include copies of documentation (calibration reports or tags) demonstrating calibration within six months of the start of testing. Design-Build Contractor shall provide all test instruments.

Design-Build Contractor shall test the installation of each component/subsystem to ensure the component/subsystem is properly installed and is operational. The component/subsystem test procedure may be vendor-supplied acceptance test procedures. Design-Build Contractor shall use the component test plan to verify the component has been correctly installed and is operational.

Each subsystem and communication path shall be operated without any failures for a period of no less than 30 days prior to Final Acceptance. Any failures during the 30-day period shall be repaired by Design-Build Contractor and restart the 30-day period for the system. Design-Build Contractor shall be responsible for configuring field equipment. The field equipment shall be configured using parameters which will be supplied by IFA. Design-Build Contractor shall work with the INDOT ITS staff for final configuration of equipment and physical connection to the existing equipment.

Design-Build Contractor's ITS obligations as a condition to Final Acceptance will occur when testing concludes, and all components and subsystems perform as an integrated system. At the good faith discretion of IFA, pre-installation testing may be repeated as part of the Final Acceptance by IFA.

Design-Build Contractor shall develop and submit test plans and test procedures for each component and each subsystem for IFA review and comment. At a minimum, the test plans shall define Design-Build Contractor's planned approach, the desired results of each test, and steps for resolving out-of-spec conditions. At a minimum, the test procedures shall specify the step-by-step process for connecting to test equipment, reading the test equipment, and recording the results. Further, the test procedures shall contain forms to be used in recording results during actual testing. Test plans and test procedures shall be submitted no later than 120 days after the Design Documents are approved. Testing shall not commence without IFA's approval of the test plans and procedures.

Design-Build Contractor shall accurately record and report the methods of testing, times, and dates of the test; the calibration dates of test equipment; witnesses to the test; and the results of the test. When systems are tested in segments, a separate and complete report is required for each segment. Test results shall be in CSV format.

17.5 Deliverables

Deliverables under this Section 17, a non-exhaustive list of which is set forth in Table 17-1, shall be submitted in electronic format in accordance with the schedule set forth below. Acceptable electronic formats include PDF and current versions of Microsoft Word and Microsoft Excel, unless otherwise indicated.

Table 17-1: Deliverables

Deliverable	Deliverables Schedule	TP Section
Fiber optic installation plan	With Stage 1 Review Submission, Stage 3 Review Submission, and Released for Construction Documents	17.3.3.3
ITS roll Plans	Prior to Stage 1 Review Submission	17.3.4
ITS Plans	With Stage 1 Review Submission, Stage 3 Review Submission, and Released for Construction Documents	17.3.4
Special or unique test equipment	Prior to Final Acceptance	17.4
Test plans	120 days after Design Document approval	17.4
Testing date, time, and location	Three days before performing test	17.4
Test results	Within 10 days of performing the test	17.4
As-built drawings (PDF and Microstation)	Final Acceptance	<u>Attachment 17-1</u>
Manufacturers documentation for all equipment used in the Project	Final Acceptance	<u>Attachment 17-1</u>

18 RIGHT OF WAY

Design-Build Contractor shall perform all right of way Work in accordance with the PPA Documents, including the Project Standards, this Section 18 and its attachments; Governmental Approvals; and Governmental Rules.

18.1 Project ROW

18.1.1 Planned ROW Limits

The Planned ROW Limits shall have the meaning set forth in Exhibit 1 of the PPA, further described in Section 1.2.2 (Project Description), and shown in Attachment 1-2 (Planned ROW Limits).

The Temporary ROW Limits shall have the meaning set forth in Exhibit 1 of the PPA, further described in Section 1.2.2 (Project Description), and shown in Attachment 1-4 (Temporary ROW Limits).

INDOT will acquire and provide the properties within the Planned ROW Limits and Temporary ROW Limits, including permanent ROW, temporary ROW for drive construction, and other instruments under which INDOT has received or will receive title, rights of entry, or rights of access.

INDOT will be responsible for structure demolitions, removal of demolition debris, and environmental remediation or asbestos removal for parcels as identified in Attachment 18-1 (Structure Demolition).

18.1.2 Additional Properties

Should Design-Build Contractor require Additional Properties or additional property for temporary interests necessary to complete the Work, Design-Build Contractor shall comply with the requirements of Sections 3.6.3, 6.1.3 and 6.1.4 of the PPA.

18.1.3 ROW Acquisition Status

Attachment 18-2 (ROW Acquisition Status) provides the status of ROW acquisition including the dates when parcels will be available to Design-Build Contractor for Construction Work. The dates provided consider the schedule of structure demolition and tree clearing activities. The dates provided do not consider the schedule of utility relocations.

IFA will provide Design-Build Contractor with quarterly updates on the status of the acquisition and relocation of the parcels within the Project ROW.

18.2 Monument and Fence Construction

Design-Build Contractor shall remove all existing ROW fence within the Project ROW. Design-Build Contractor shall design and construct new ROW fence within the Project ROW. ROW fence shall consist of 48-inch chain link type fence installed along the INDOT Limited Access ROW. Design-Build Contractor shall provide ROW monuments along all ROW other than the

INDOT Limited Access ROW. Monuments for local ROW shall be constructed flush with the ground. Exceptions to these criteria are noted below:

1. At locations where sound barriers are constructed within 10 feet of the INDOT Limited Access ROW and proposed infrastructure such as light poles, drainage pipes, signs, or other appurtenances are not planned to be located between the sound barriers and INDOT Limited Access ROW, the sound barriers shall function as the access-control line. At such locations, ROW fencing is not required along the INDOT Limited Access ROW, but ROW monuments shall be installed along the INDOT Limited Access ROW in accordance with applicable Project Standards.
2. Design-Build Contractor shall coordinate with IFA to determine the location, size, and locking requirements for any proposed gates in the INDOT Limited Access ROW fencing. Gates in the INDOT Limited Access ROW fencing may be required for maintenance access by INDOT, subject to the final design of Design-Build Contractor.
3. Design-Build Contractor shall design and construct wildlife fence at the following designated wildlife crossing locations:
 - a. Bridge Nos. 25 and 26 at White River
 - b. Bridge Nos. 10 thru 14 at Little Buck Creek

Wildlife fence shall consist of 96-inch chain link fence and shall be provided on both sides of the interstate in place of the ROW fence along the INDOT Limited Access ROW. Wildlife fence shall be installed up-station and down-station of designated wildlife crossing locations.

Design-Build Contractor shall submit fencing Plans illustrating types and locations of proposed fencing, gates, and monumentation to IFA for review and approval. Design-Build Contractor shall provide IFA with written justification for the design of the wildlife fencing. Design-Build Contractor shall provide IFA with written justification for proposed gate locations, including a full listing of gates and their intended maintenance purpose.

18.3 Deliverables

Deliverables under this Section 18, a non-exhaustive list of which is set forth in Table 18-1, shall be submitted in electronic format in accordance with the schedule set forth below. Acceptable electronic formats include PDF and current versions of Microsoft Word and Microsoft Excel, unless otherwise indicated. The following are required in the event of Additional Property acquisition.

Table 18-1: Deliverables

Deliverable	Deliverable Schedule	TP Section
Fencing Plans	Submit with Stage 3 Review Submission and Released for Construction Documents	18.2