REQUEST FOR PROPOSALS

To Design and Construct

I-65 Northwest Indiana Major Moves 2020 Expansion Project

Through a Public Private Agreement

VOLUME II

TECHNICAL PROVISIONS

A Project of the

INDIANA DEPARTMENT OF TRANSPORTATION

ISSUED MAY26, 2016

Indiana Department of Transportation
100 North Senate Avenue, IGCN 755
Indianapolis, Indiana 46204

Technical Provisions Sections

1. General Scope of Work
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List of Attachments

1 GENERAL SCOPE OF WORK

1.1 General

Design-Build Contractor shall perform the Work in accordance with the applicable requirements in the PPA Documents, including Project Standards, this Section 1 and its Attachment 1-1 (Unique Special Provisions: General Scope of Work); Governmental Approvals; and applicable laws.

1.2 Project Identification

Contract No.: R-37450
Project No.: 1172430
Roadway Des. No.: 1172430: I-65 Added Travel Lanes from US 231 to US 30
1400349: I-65 Added Travel Lanes from SR 2 to US 231
1600318: I-65 Added Travel Lanes from SR10 to SR 2
1006741: Pipe Liner 2.64 miles N of SR 10
Structure Des. No.: See table below. Specific Work is described in Section 13 (Structures).
Route No.: Interstate 65
Counties: Lake and Newton
District: LaPorte
Federal Oversight: Yes
Segment Limits: The Project limits are generally as described below.

Bridges in the Project limits include the following:

Bridge No.	Des. No.	Existing Structure Number	Proposed Structure Number	Description
1		I65-259-08308	I65-259-08308 A	93rd Avenue over I-65
2	1296986	I65-258-04902	NO WORK	101st Avenue over I-65 (Separate LPA Project)
3	1600332	I65-257-04901 CNBL	I65-257-04901 DNBL	I-65 NB over Beaver Dam Ditch
4	1600331	I65-257-04901 JCSBL	I65-257-04901 JDSBL	I-65 SB over Beaver Dam Ditch
5	1600329	I65-257-04900 ANBL	I65-257-04900 BNBL	I-65 NB over 109th Avenue
6	1600330	I65-257-04900 ASBL	I65-257-04900 BSBL	I-65 SB over 109th Avenue
7		I65-256-04899 A	I65-256-04899 B	113th Avenue over I-65
8	1600327	I65-255-02320 JBNB	I65-255-02320 JCNB	I-65 NB over US 231
9	1600328	I65-255-02320 BSBL	I65-255-02320 CSBL	I-65 SB over US 231
10		I65-254-04898 A	I65-254-04898 B	137th Avenue over I-65
11	1382203	I65-253-05119 BNBL	I65-253-05119 CNBL	I-65 NB over Wirtz Ditch
12	1382204	I65-253-05119 BSBL	I65-253-05119 CSBL	I-65 SB over Wirtz Ditch
13		I65-252-04897 A	I65-252-04897 B	153rd Avenue over I-65
14	1382207	I65-249-04896 BNBL	I65-249-04896 CNBL	I-65 NB over SR 2
15	1382208	I65-249-04896 BSBL	I65-249-04896 CSBL	I-65 SB over SR 2

Bridge No.	Des. No.	Existing Structure Number	Proposed Structure Number	Description
16	0101469	I65-244-04891 CNBL	I-65-234-09807 NBL	I-65 NB over Kankakee River
17	0200140	I65-244-04891 CSBL	I-65-234-09807 SBL	I-65 SB over Kankakee River

1.2.1 Segment A - Added Travel Lanes on I-65 from US 231 to US 30

1. This segment begins at the US 231 interchange with I-65 at approximately RP 247+50 and ends approximately 0.80 miles south of the US 30 bridge over I-65, approximately RP 251+108, for a segment length of approximately 4.6 miles, in Lake County, Indiana. The segment scope includes adding a new outside shoulder in each direction and converting the existing outside shoulder to a third travel lane in each direction.
2. The segment also includes Work on bridges 1, 3, 4, 5, 6, 7, 8, and 9 as described in Section 13 (Structures).
3. The ramps at the existing 109th Avenue interchange shall be revised as necessary to accept the new third lanes and to match proposed geometry and profile. The new third lanes shall be continuous through the interchange.
4. The segment also includes an ITS per Section 16 (Intelligent Transportation System).
5. The segment also includes the replacement or lining of culverts between SR 2 and US 30 per Section 9 (Drainage).

1.2.1.1 Pipe Liner 2.64 miles N of SR 10

Lining structure number 65-56-232.20, an existing 84-by-54-inch pipe arch, with a 79-by-49-inch HDPE liner at 2.64 miles north of SR 10 is included in segment A.

1.2.2 Segment B – Reconstruction of the I-65 NB and SB Bridges Over Kankakee River and Associated Work

This segment includes Work on bridges 16 and 17, as described in Section 13 (Structures), and concrete pavement repair as described in Section 7 (Roadway), immediately adjacent to the bridges. Pavement repair begins at approximately RP 234+39 and ends at RP 234+59 for a section length of approximately 0.20 miles, in Lake and Newton Counties, Indiana. The bridges shall be reconstructed to accommodate travel lanes and full shoulders as described in Section 7 and Section 13. The segment scope shall include the addition of a third lane in the median and inside shoulder in each direction and associated Work. Guardrail shall be replaced within the range of concrete pavement. Adjacent cable barrier shall be modified accordingly.

1.2.3 Segment C1 – I-65 Mainline and Overhead Bridges from SR 2 to US 231

This segment includes Work on bridges 10, 11, 12, 13, 14, 15 as described in Section 13 (Structures).

1.2.4 Segment C2 - Added Travel Lanes on I-65 from SR 2 to US 231

This segment begins just south of the SR 2 interchange with I-65 at approximately RP 239+00 and ends at the US 231 interchange with I-65, approximately RP 247+50 for a segment length of approximately 8.5 miles, in Lake County, Indiana. The segment scope shall include the

addition of a third lane in the median and inside and outside shoulder in each direction and associated Work.

1.3 Project Management

1.3.1 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: Design-Build Contractor's designated individual as its single point of contact for purposes of overall administration of the project, and who is authorized to act on its behalf with respect to contractual matters and for resolving any and all issues that may arise between Design-Build Contractor and INDOT during progress of the Work.

2. Construction Manager: Design-Build Contractor's designated individual who is responsible for oversight and management of all construction and other field activities related to the project. The Construction Manager shall be different from and report to Design-Build Contractor's Project Manager.

3. Construction Superintendent: Design-Build Contractor's designated individual who is responsible for supervision of all field activities. The Construction Superintendent may be the Construction Manager or an individual who reports directly to the Construction Manager. If the Construction Superintendent is also the Construction Manager, then the Construction Superintendent may not serve in any other additional role. If the Construction Superintendent does not also serve as the Construction Manager, then the Construction Superintendent may fill one other Key Personnel Role if qualified.

4. Lead Engineer: The Designer's Engineer who will manage all Work performed by Design-Build Contractor's Designer including management of any Design Work support during construction, such as design changes and the completion of Record Drawings. The Lead Engineer is responsible for releasing Design Documents for construction, reviewing all construction documents, and certifying that all Released for Construction Documents, conform to the requirements of the Technical Provisions and the PPA. The Lead Engineer must be a Registered Professional Engineer in Indiana.

5. Erosion and Sediment Control Manager: Design-Build Contractor's designated individual who is responsible for the installation, inspection, maintenance and removal of all required storm water management measures and implementation of the Contractor's Storm Water Quality Control Plan. The SWQM shall meet the requirements of 205.03(b)1, and hold a current certification as a CESSWI, or a CESSWI In-Training, or a CISEC, or a CISEC In-Training, or a CPESC, or a CPESC In-Training, or an approved equivalent. For additional requirements, refer to the Department Standard Specifications and Recurring Special Provision 205-R-636.

6. Design Quality Manager: The Designer's Engineer who is responsible for Design QA/QC for all Design Work that is performed for the project, including any design changes during construction and the production of Record 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.

7. Maintenance of Traffic (MOT) Manager: See Section 11.3.6 for roles and responsibilities. The MOT Manager shall be certified by the American Traffic Safety Service Association, ATSSA, or approved equal certifying organization in accordance with Standard Specification 801.03. The MOT Manager shall be different from and report to the Construction Superintendent.

8. Certified INDOT Utility Coordinator: Design-Build Contractor's designated individual who is certified through INDOT's Utility Coordinator Certification Training, and who is responsible for completing the utility coordination process as defined in the Indiana Design Manual Chapter 104, 105 IAC 13, and the INDOT Utility Accommodation Policy.

9. Kankakee River Bridge Design Lead Engineer: The individual who will manage all Work related to structural elements related to the Kankakee River Bridge. This individual will manage the Work performed by Design-Build Contractor's Designer, including any Design Work support for said bridge during construction, such as design changes and the completion of Record Drawings. This engineer is responsible for releasing Design Documents for construction, reviewing all Construction Documents and for certifying that all Released-for-Construction Documents, including both Design Documents and Construction Documents, conform to the requirements of the Technical Provisions and the PPA.

1.3.2 Project Administration

1.3.2.1 Project Baseline Schedule

Design-Build Contractor shall provide the Project Baseline Schedule and the Preliminary Project Baseline Schedule which shall conform to the "Baseline CPM Schedule" in Recurring Special Provision 108-C-215. Design-Build Contractor shall submit the Project Baseline Schedule for approval by INDOT in its sole discretion. INDOT will review the Project Baseline Schedule in accordance with Recurring Special Provision 108-C-215.

Each activity on the Project Baseline Schedule shall be assigned a cost by Design-Build Contractor for the purposes of calculating and tracking earned value. The cost loading of the schedule will be reviewed by INDOT as described in preceding paragraph.

1.3.2.2 Project Status Schedule

Design-Build Contractor shall submit to INDOT Project Status Schedule updates to reflect the current status of the Project including recovery schedules, schedule revisions due to Change Requests, and approved Change Orders.

The Project Status Schedule shall conform to the "Monthly Update CPM Schedule" in Recurring Special Provision 108-C-215. The Project Status Schedule shall be submitted to INDOT in accordance with Recurring Special Provision 108-C-215 for approval. If the Project Status Schedule is not submitted by the required date INDOT may withhold or adjust Progress Payments.

1.3.2.3 As-Built Schedule

Design-Build Contractor shall submit an "as-built schedule" in conformance with the "Final CPM Schedule" in Recurring Special Provision 108-C-215. The "as-built schedule" shall be submitted to INDOT in accordance with Recurring Special Provision 108-C-215 for approval.

1.3.2.4 Revisions

If it becomes necessary to add, combine, eliminate, or modify schedule Activities to reflect modifications to the Work, such changes shall be made through a Change Order that has been issued by INDOT, and therefore reflected in the 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 Section13 of the PPA Design-Build Contractor shall submit to INDOT a written time impact analysis illustrating the influence of each claimed delay. 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 INDOT the need for any modification to its time impact analysis.
3. Design-Build Contractor shall submit one printed Gantt chart 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 provide 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 Request from INDOT into the Project Status Schedule for the next Progress Report.

1.3.2.6 Recovery Schedule

If the Work is delayed on any Controlling Work Item for a period which exceeds the greater of either thirty days in the aggregate or that number of days in the aggregate equal to five percent of the days remaining until Substantial Completion, the next Project Status Schedule shall include a Recovery Schedule demonstrating the proposed plan to regain lost Project Schedule progress and to achieve Substantial Completion by the specified date.

1.3.3 Project Management Plan

Design-Build Contractor shall prepare a Project Management Plan (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.

INDOT 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 INDOT approval in accordance with Section 2.1.1 of the PPA. The general outline and minimum content of the PMP shall be as follows:

1.3.3.1 Project Administration

1. Organizational diagram
2. Personnel names and contact details, titles, and job roles
3. Design-Build Contractor's Contracting Plan
4. Project Baseline Schedule
5. Quality Control procedures to establish and encourage continuous improvement
6. Audit
7. Procedures to facilitate review and audit by INDOT
8. Auditing and management review of Design-Build Contractor's own activities under the PMP
9. PMP Update - Procedures for preparation of amendments and submission of amendments to any part of the PMP
10. 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.

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 INDOT 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
5. Names and contact details, titles, job roles of principal personnel for Design-Build Contractors and any third party with which Design-Build Contractor will coordinate activities
6. Design QA/QC Plan
    a. Arrangements for coordinating and managing staff interaction with INDOT 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 Suppliers meet the obligations imposed by their respective Contracts
    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 in Section 2 (Quality Management).

h. Procedures to establish Design-Build Contractor's Hold Points in design process where checking and review will take place

i. Procedures to ensure accuracy, completion, and quality in Submittals to INDOT and Governmental Entities

j. Procedures to establish and encourage continuous improvement, including corrective and preventive action

7. Construction Quality Management Plan

Complete procedures for preparing for and complying with Construction Hold Points in Section 2 (Quality Management).

1.3.3.3 Environmental Management

1. Organization - Design-Build Contractor's main contractual arrangements
2. Organizational structure covering the activities to be performed in accordance with the PPA Documents
3. Environmental Contact Tree
4. Personnel - Resource plan for Design-Build Contractor and its Subcontractors
   a. Arrangements for coordinating and managing staff interaction with INDOT and its consultants, including Key Personnel and description of approach to coordinating Work of off-site personnel
   b. Names and contact details, titles, job roles and specific experience required for Key Personnel and for other environmental personnel
5. Subcontractors - Overall control procedures for subcontractors, including consultants and subconsultants
6. Environmental Compliance and Mitigation Plan
7. Spill Prevention Plan

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 INDOT of all incidents arising out of or in connection with the performance of the Work

1.3.3.5 Communications Plan

1. The manner in which Design-Build Contractor's organization will respond to unexpected requests for information, communicate changes or revisions to necessary Design-Build Contractor personnel, and notify affected stakeholders before and after changes are made
2. Processes and procedures for communication of Project information between Design-Build Contractor's organization, INDOT, the Department, permitting agencies, utilities, other third parties and the public.

1.3.3.6 Updates to the PMP

Design-Build Contractor shall provide a revised PMP to INDOT for approval in its sole discretion.

Propose updates to the PMP and, as applicable, affected components in the event of the following:

- The occurrence of any changes to Key Personnel, Quality Plan, Safety Plan, Project Schedule, project administration policies and procedures
- The occurrence of other changes necessitating revision to the PMP
- As otherwise directed by INDOT

1.3.4 Document Management

In the provision of a document management system, Design-Build Contractor shall:

1. Use data protocols, standards, and procedures compatible with those employed by INDOT and implement any new operating practices required as a result of INDOT's amendments to any such systems, standards, and procedures.
2. Provide a secure location for any interface as may be provided by INDOT, such that only authorized users have access and that it is protected from loss, theft, damage, unauthorized or malicious use.
3. Employ appropriate standards and procedures, and train Design-Build Contractor personnel to operate any INDOT data management system which INDOT may require in connection with the Project.
4. Design-Build Contractor shall train INDOT personnel to operate any Design-Build Contractor data management system approved by INDOT for Design-Build Contractor use in connection with the Project.
5. Provide a mechanism for the electronic transfer of meta-data along with the associated portable document format (PDF) images for uploading into an Electronic Document Management System (EDMS).
6. Provide INDOT 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.

All Project-related documents shall be provided to INDOT in a searchable electronic format and legible.

In the Project Management Plan, Design-Build Contractor shall provide a detailed description of:

1. Methods by which all Project-related 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 data elements shall include, as a minimum: document class, document type/subtype, document name, form number, INDOT records series item number, INDOT agency item number, INDOT records series title, INDOT 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.

1.3.5 Facilities

1.3.5.1 Field Office

Design-Build Contractor shall provide for INDOT's use, one modified Type C Field Office meeting the following requirements immediately adjacent to Design-Build Contractor's Field Offices and within one mile of the project Site. The modified Type C Field Office shall meet all of the requirements of Standard Specification 628.02, except:

- The minimum size shall be 2,500 sq ft, with a minimum width of 20 ft.
- The Field Office shall have a room suitable for conducting meetings with up to 20 participants.
- All of the Field Office equipment and supplies listed in the Standard Specifications for a Type C Field Office are required, except the requirements for the following items shall be modified as follows:
  - Calculators (4)
  - Chairs (20)
  - Drafting stools (2)
  - Drafting tables (2)
  - File cabinet drawers (20)
  - Folding office tables (8)
  - Office desks and office chairs (8)
  - Shelving (48 linear feet)
  - Wastepaper baskets (8)
  - Dry erase board 3 ft x 5 ft, with eraser (1)

- Multiple colored dry erase markers (required for the duration of the contract)

1.3.5.2 Field Laboratory

Design-Build Contractor shall provide for INDOT's use, one Type C field laboratory as specified in Department Standard Specifications 628.02(f). In addition to the provisions of Section 628.02(f) Design-Build Contractor shall provide hot and cold running water (potable), and a portable cook stove for drying samples and with propane in containers of suitable size to be transported to the jobsite.

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

1.3.5.3 Cellular Telephones

Design-Build Contractor shall provide eight (8) Cellular phones for INDOT field staff meeting the requirements of Standard Specifications 628.04, Type A. A minimum of 600 anytime minutes per month per cellular phone shall be provided.

1.3.6 INDOT Contacts

Design-Build Project Manager:

Indiana Department of Transportation LaPorte District
315 East Boyd Blvd.
LaPorte, Indiana 46350
Attention: Michael Ready
Telephone: (219) 325-7535
E-mail: MReady@indot.in.gov

Existing Plans and As-Built Plans:

Mr. David Schilling
INDOT Contract and Construction Div. IGCN, Room N725
100 N. Senate Avenue Indianapolis, IN 46204
Phone: (317) 233-8805
E-mail: dschilling@indot.in.gov

1.4 Deliverables

Deliverables, a non-exhaustive list of which is set forth in the table 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.

Deliverable	Submittal Schedule	TP Section
Project Baseline Schedule	No later than 90 Days following NTP	1.3.2.1

Deliverable	Submittal Schedule	TP Section
Project Status Schedule	Initial and periodic Submittal schedule per RSP 108-C-215	1.3.2.2
As-Built Schedule	Initial and periodic Submittal schedule per RSP 108-C-215	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	Included with next Project Status Schedule following Occurrence	1.3.2.6
Project Management Plan	No later than 30 Days following NTP	1.3.3
Updates to the PMP	No later than 14 days after the occurrence of the change or direction triggering the need for the revisions to the PMP.	1.3.3.6
Field Offices	No later than 90 Days following NTP	1.3.5.1
Field Laboratory	No later than 30 Days prior to the start of embankment, structural concrete or pavement construction activities.	1.3.5.2
Cellular Telephones	No later than 90 Days following NTP	1.3.5.3

2 QUALITY MANAGEMENT

Design-Build Contractor shall conduct all Work necessary to meet the quality requirements for the Project in accordance with the applicable requirements in the PPA Documents, including Project Standards and this Section 2; Governmental Approvals; and applicable laws.

2.1 Schedule Management

Design-Build Contractor is responsible for scheduling its Work with sufficient time to satisfy the requirements for Witness Points and Hold Points.

2.1.1 Witness Points

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

Anticipated Witness Points for design include, but are not limited to, the following:

1. Plan sheets not defined as Hold Points
2. Preliminary layout, typical sections and design computations
3. Finalized cross sections
4. Transportation Management Plan
5. Level 1 and 2 FDCs

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

INDOT will maintain the right to review and comment if it is determined that revisions and Level 1 and 2 FDCs are not in conformance with the PPA, TPs, and applicable Project Standards.

2.1.2 Hold Points

At each Hold Point, Design-Build Contractor shall submit the information required to INDOT for review. No Work relating to a Hold Point shall proceed beyond that Hold Point until written release is given by INDOT.

Hold Points shall occur for all construction activities that require inspection by INDOT as described in the INDOT Standard Specifications, Recurring Special Provisions, or Technical Provisions.

Anticipated Hold Points for construction include, but are not limited to, the following:

QC plan approval for grading

1. QC plan approval for PCCP and HMA paving
2. QC plan approval for erosion and sediment control
3. QC plan approval for structural steel painting
4. Pre-paving conference for roadway

5. Pre-pour conference for bridge decks
6. Fabrication plant inspections
7. After reinforcing bar placement and prior to structural concrete placement
8. Structural concrete placement
9. Falsework Plan approvals
10. Post tensioning technical data and details
11. Erection plan approval for overhead structural members
12. Removal plan approval for existing structures
13. Work area access plan approval
14. ITS Submittals

Anticipated Hold Points for design include, but are not limited to, the following:

1. Pipe structure, small culvert, and large culvert design
2. Detention design
3. Lake County Drainage Board permits
4. Newton County Drainage Board permits
5. Jasper County Drainage Board permits
6. Approval of Rule 5 NOI
7. Construction sequencing, MOT, and temporary traffic control Plans
8. MOT Level 1 design criteria checklist
9. MOT operations analysis
10. Level 1 design criteria checklist for design items
11. Level 2 design criteria for design items
12. Final geometric layout
13. Pavement design
14. Finalized typical cross sections
15. Finalized plan and profile grade
16. Clearances and geometrics for structures
17. Foundation review
18. Foundation design of overhead sign structures
19. Roadside barrier design
20. Load ratings for bridges
21. Geotechnical evaluation report
22. Retaining wall design and details
23. Signing Plans

24. Lighting Plans
25. ITS Plans
26. Unique Special Provisions
27. Environmental permit revisions
28. Approval of preliminary Plans for bridge rehabilitation with calculations
29. Approval of final Plans for bridge rehabilitation with calculations
30. Approval of Stage 1 Plans with calculations
31. Approval of Stage 3 Plans with calculations
32. Approval of RFC Plans with calculations
33. Bridge scour reports
34. Approved working drawings as defined in the INDOT Standard Specifications
35. Erosion and sediment control Plans
36. Noise barrier Plans
37. NDCs
38. Level 3 FDCs

In its reasonable discretion, INDOT 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 INDOT prior to construction Work proceeding.

2.2 Submittal and Electronic Posting Requirements

Design-Build Contractor will be provided access to the Project's dedicated website. All Submittals shall be made electronically in PDF format through INDOT's Project website. Access and use of this website will be described during the pre-construction meeting.

Design-Build Contractor shall send an e-mail notification of all Submittals to the following personnel:

1. INDOT's Project Engineer/Project Supervisor
2. INDOT's Area Engineer
3. INDOT's Design-Build Project Manager
4. INDOT's Consultant Project Manager
5. INDOT's Consultant Design Manager
6. INDOT's Document Control Manager

Email notification shall also be sent to other persons as identified by INDOT.

The date of a Submittal will be considered to be the date of the e-mail notification to the specified INDOT personnel. Submittals will not be considered complete until the required e-mail notification is sent.

Design-Build Contractor shall respond to all comments and questions from reviews of Witness Point and Hold Point Submittals.

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 set of current Released for Construction Documents on the Project website at all times. The Plans shall be updated as revisions are made. In addition, a file containing only the revised plan sheets shall be posted to the Project website when revisions are made. Current copies of all supporting Design Documents shall be maintained on the Project website in a similar fashion.

For each Segment and the Kankakee River bridge, Design-Build Contractor shall provide two full-size and ten 11-by-17-inch bound hardcopy RFC Plan sets at the field office for the Department's use. Design-Build Contractor shall update the hard copies when revisions are made.

2.3 Working Drawings

Working drawing development, review, and approval shall be in accordance with the INDOT Standard Specifications and Project Standards and shall be the responsibility of Design-Build Contractor. INDOT will review the working drawing approvals for conformance with standard INDOT practice.

2.4 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 the Department's website, any unique items as necessary, and shall be the list current for the letting date of the contract. 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 INDOT at the Design Workshop meeting, broken out by each Des. No. within a Segment. Design-Build Contractor shall submit an updated items list throughout the life of the Project as new items of Work are added and previous items of Work are revised. Updated items list shall be submitted according to instructions provided by INDOT at the Design Workshop meeting and shall highlight those items added and revised since the previous submittal.

Design Plans shall include the bid items and quantities throughout the 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 INDOT's sole discretion.

2.5 Correspondence

All correspondence shall be routed through the Project website and addressed to INDOT's Project Engineer/Project Supervisor with copies to INDOT's Area Engineer, INDOT's Design-Build Project Manager, INDOT's Consultant Project Manager, INDOT's Consultant Design Manager, and INDOT's Document Control Manager.

2.6 As-Built Drawing Requirements

Design-Build Contractor shall prepare a complete full-size set of As-Built Drawings. The drawings shall conform to INDOT plan development and preparation guidelines for a Final Tracing Submittal. The As-Built Drawings shall be submitted to INDOT in electronic PDF format files. As-Built Drawings shall be posted to the Project website and provided on a CD, DVD, or flash drive.

2.7 Final Documents

Design-Build Contractor shall furnish INDOT final electronic copy documentation which shall include, but not be limited to: As-Built 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 INDOT at the [placeholder] meeting, by Designation Number, with quantity calculations for each item.

Design-Build Contractor shall submit final documentation for completed Work to INDOT for review and concurrence as the Work progresses. The final electronic copy documentation shall be submitted as one complete package and shall be certified by a Registered Professional Engineer. All information requested shall be submitted on a CD, DVD, or flash drive to both INDOT Central Office and INDOT LaPorte District.

INDOT will prepare the Final Construction Record which will incorporate the above information along with inspection and test results collected by INDOT.

2.8 Deliverables

Deliverables, a non-exhaustive list of which is set forth in the table 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.

Deliverable	Submittal Schedule	TP Section
Witness Points	Prior to submittal of associated RFC Documents for design related Witness Points.	2.1.1; 2.2
Hold Points	A minimum of two weeks prior to construction for construction related Hold Points. Prior to submittal of associated RFC Documents for design related Hold Points.	2.1.2; 2.2
Items List	Prior to the start of Work, but in no case later than 30 days after NTP.	2.4
Updated Items List	Monthly, unless no new items have been added during the month.	2.4
As-Built Drawings	Before or by Substantial Completion	2.6
Final Documents	Within 60 days after Final Acceptance.	2.7

3 DESIGN REQUIREMENTS

3.1 General Design Requirements

Design-Build Contractor shall provide all necessary services to design all permanent and temporary portions of the Project. All Work shall conform to current INDOT and AASHTO standards, practices, policies, guidelines, and specifications.

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 be used on the Project's Design-Build Contractor team. The required capabilities include successful completion of designs for major road and bridge projects. Design-Build Contractor's design firms will be considered as Subcontractors responsible for the design and engineering of the Project. Multiple design firms may work on Design-Build Contractor team; however, one design firm shall be designated as the prime design firm. Design-Build Contractor shall assign professional engineers and surveyors licensed in the State of Indiana to be in direct responsible charge of all engineering and surveying Work. 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.

Plans shall be developed in accordance with INDOT's plan preparation guidelines, with the exception that only Stage 1, Stage 3, and Released for Construction Documents will be required for submission. Release for Construction Documents 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. Electronic files in Portable Document Format (PDF) shall be submitted on the INDOT Project website.

3.2 Specific Design Requirements

Design-Build Contractor shall:

1. Consult with INDOT to understand INDOT's requirements for the Project and review all available data.
2. Use English Units for preparation of Plans and Submittals.
3. Provide remaining Utility coordination, geotechnical investigation, engineering, design, Rule 5 NOI, necessary permits or permit revisions, as-built plans, and necessary items to construct the Project complete and in place.
4. Maintain and make available to INDOT, upon request, a project record that includes a history of significant events including changes and comments that influenced the development of the Project.
5. Perform additional surveys required for the Project. Design-Build Contractor shall be responsible for additional survey required and any updates to the design related to the changes to the topographic survey related to these projects.
6. Perform additional test borings, geotechnical investigations, and appropriate analysis, including global stability, to produce the proposed design. Submit a Geotechnical Design

Report, prepared by Design-Build Contractor's Geotechnical Registered Professional Engineer, presenting the results of all additional investigations, and modifications or additions to the Geotechnical Data Report provided by INDOT. The geotechnical investigation shall be in accordance with the current version of the INDOT Geotechnical Manual. The review shall be documented in the Geotechnical Design Report and shall be submitted to the Office of Geotechnical Services for review and approval.

7. Provide video documentation of the existing condition of all routes being utilized as a result of the Maintenance of Traffic plan.

3.3 Design Criteria

The Project shall comply with the Project Standards shown in Attachment 3-1 (Applicable Standards), unless otherwise noted in the Technical Provisions. INDOT's standards, practices, policies, guidelines and specifications shall control in case of a conflict among Project Standards, except for erosion control measures in which the IDEM Indiana Stormwater Quality Manual shall control in case of conflict.

3.4 Design Workshop

A Design Workshop shall be planned and scheduled before Design Work commences. A draft schedule and agenda shall be submitted to INDOT for review and comment prior to the Design Workshop. The goal of the Design Workshop is to familiarize the Designer's personnel and INDOT review personnel with the design concepts, issues, status, and review procedures, with the intent of making the subsequent Design Reviews more effective and efficient for all parties. The agenda of the Design Workshop and how it is organized (e.g., by Submittals and engineering discipline) shall be jointly developed by INDOT and Design Build Contractor.

At the Design Workshop, an agreement regarding time provided in the schedule for Design Reviews shall be established. The duration of Design Reviews, particularly the duration of Phase 2, may vary depending on items such as the stage of the design development, the size of the review package, the complexity of the subject for review, potential environmental implications, public safety concerns, and the need for third-party review. The agenda shall include time for a discussion of the necessary Environmental Approvals, permitting processes, review times, and strategy for the mitigation of potential delays. These issues and specified review times shall be considered within the Project Baseline Schedule.

All agreements, schedules, and understandings reached during the Design Workshop shall be documented and submitted for approval by Design-Build Contractor's Project Manager and INDOT.

3.5 Deliverables

Deliverables, a non-exhaustive list of which is set forth in the table 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.

Deliverable	Submittal Schedule	TP Section
Stage 1 Plans	As required	3.1
Stage 3 Plans	As required	3.1
Released for Construction Plans	As required	3.1

4 CONSTRUCTION REQUIREMENTS

4.1 General

1. Design-Build Contractor shall construct the Work in accordance with the applicable requirements in the PPA Documents, including Project Standards, this Section 4 and its Attachment 4-1 (Unique Special Provisions: Construction); Governmental Approvals; and applicable laws.

2. Design-Build Contractor may work 24 hours per day, 7 days per week, except for the requirements in INDOT's Standard Specifications Section 108.08, local ordinances, and as follows: Perform no Construction Work from noon the day before a holiday until sunrise the day after the holiday.

3. Design-Build Contractor shall use a profilograph in accordance with Sections 401 and 501 of INDOT's Standard Specifications, as applicable. Smoothness will also be assessed on a cost basis for potential bonus or penalty pay adjustments in accordance with the Standard Specifications.

4. Design-Build Contractor shall install monuments in accordance with Chapter 17-4.09 of the Indiana Design Manual, the Standard Specifications, and Standard Drawings.

5. Design-Build Contractor shall maintain drainage at all times during all phases of construction.

6. Design-Build Contractor shall perform all required maintenance during construction for the Project, including maintaining the Field Office area(s). Required maintenance shall include mowing, pothole repair, roadway debris clean-up (dead animals, litter, motor vehicle accidents/incidents, hazards that disrupt normal traffic condition and flow), and other items required to maintain safe conditions. Any deviations to Standard Specification requirements for maintenance require INDOT approval prior to implementation. Note that Construction Memorandum 09-02, Potholes in Work Zones, does not apply. Design-Build Contractor shall assess and document pavement condition prior to NTP and repair existing potholes and any other potholes that develop during construction. A pothole can be defined as a roadway surface condition greater than 0.5 square feet in area and 1 inch in depth. At any point during the Project INDOT may, in its sole discretion, identify potholes to be repaired by Design-Build Contractor within 24 hours of notification, without additional compensation. INDOT is responsible for snow removal of active travel lanes within the Project area. Snow removal in areas of the Field Office(s) and other construction access points shall be performed by Design-Build Contractor.

7. An IMSA certified Level II technician shall be available 24 hours per day to respond within two hours for the maintenance of traffic signal equipment.

8. Design-Build Contractor shall be responsible for removing trash and debris including but not limited to tires, garbage, and animal remains from Site as required for highway operations and traffic maintenance during construction.

4.2 Clearing Right of Way

No tree clearing shall be performed from April 1 through September 30 on trees suitable for Indiana Bat and Northern Long-eared Bat roosting (greater than 3 inches diameter at breast height) unless approved in writing by U.S. Fish and Wildlife Service.

Tree clearing shall be limited to the construction limits, and include no more than is necessary to construct the proposed Work.

Work that involves impeding a stream channel during fish spawning season, April 1 through June 30, shall abide by and be restricted per the environmental commitments set forth within Attachment 6-1.

4.3 Scheduling and Notification

A Construction Work activity schedule shall be submitted to INDOT by 12:00 noon (Central time) on Friday of each week. The Construction Work activity schedule shall include all planned Construction Work activities, including fabrication, for the upcoming two weeks. This two-week schedule of planned Construction Work activities shall also be discussed at the weekly coordination meeting in order to allow timely coordination of inspection activities.

4.4 Documentation

Documentation of progress and observed performance shall be prepared, collected, and preserved during Design-Build Contractor's performance of the Construction Work. The documentation shall be in a digital format acceptable to INDOT and shall include:

1. Critical Path Method (CPM) Construction Schedule
2. Final Record Drawings
3. Secure databases, such as spreadsheets, and computation books
4. Progress photographs
5. Field change sheets for scope changes

A daily log for Construction Work activities shall be prepared and maintained by Design-Build Contractor's Project Manager or their designee(s). The daily log shall include all significant occurrences in a narrative form, including unusual weather, 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 plan update being actively prosecuted. The log shall also include traffic accidents and Lane Closures in effect at the time of the accident.

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.

Documentation shall be completed and submitted at the following times and frequencies:

1. Monthly: Summary report of progress and updated CPM schedule
2. Weekly: Submit records that include factual evidence that required activities have been performed, including the following:
    a. Nonconforming Work status
    b. Proposed corrective actions
    c. Corrective actions completed

4.5 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 INDOT as soon as it is available. Copies of documentation for all sources of supply shall be provided as soon as they are known, but no less than 30 days prior to delivery to the Project.

Design-Build Contractor shall use the Department's current list of qualified manufacturers, producers, and fabricators for the specified materials, unless otherwise approved by INDOT at its sole discretion.

When Design-Build Contractor purchases materials from Suppliers shown on the Department's approved materials list, Design-Build Contractor shall 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 and equipment conform to the procurement requirements shall be submitted to INDOT or its representative at the same time Design-Build Contractor receives such documentary evidence. If Design-Build Contractor wishes to purchase materials from a Supplier not shown on the Department's approved materials list, Design-Build Contractor must submit a request to INDOT for its sole discretionary approval.

Documentary evidence that materials and equipment conform to the procurement requirements are to be available at the Site no less than 24 hours prior to installation or the use of such materials and equipment. 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 applicable Laws, 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 Lead Engineer and INDOT. Failure to acquire prior substitution approval will result in the assignment of a Nonconforming Work and cause for possible rejection or rework.

4.6 Deliverables

Deliverables, a non-exhaustive list of which is set forth in the table below, 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.

Deliverable	Schedule	TP Section
Construction Work activity schedule	By 12:00 noon on Friday of each week during Construction Work	4.3
Construction documentation	See Section 4.4	4.4
Sources of supply of fabricated and prestressed/precast structural members and copies of documentation	As soon as known, but no less than 30 days prior to delivery	4.5
Material certifications	Upon receipt from Suppliers	4.5

5 PUBLIC INVOLVEMENT

5.1 Administrative

5.1.1 General

Design-Build Contractor shall provide timely information and other support to INDOT's public involvement efforts. Tasks include providing INDOT regular updates on road closures and restrictions, providing notification of emergency events, coordinating and staffing public meetings, and providing informational maps or displays, as needed.

5.1.2 Staff and Coordination

Design Build Contractor shall appoint a Public Information Coordinator to serve as the direct point of contact for INDOT regarding events during construction that affect the public, including:

- Lane Closures
- Detours or alternate routes
- Emergency events
- Schedule changes

Design-Build Contractor shall coordinate all media requests and public involvement activities with the INDOT LaPorte District Information Director, (219) 325-7526. Public Information Coordinator or deputy shall be available 24 hours a day, seven day a week.

5.1.3 Public Information Plan

Design-Build Contractor shall prepare, implement, and maintain a Public Information Plan (PIP) to include the following elements, at minimum:

- Design-Build Contractor's role and responsibilities as a liaison and support provider to INDOT
- Information dissemination procedures for routine and emergency events
- Contact list including Public Information Coordinator and deputies
- Process for ensuring timely coordination with changes to the TMP

A minimum of two weeks' notice is required for any road closure or restriction.

The PIP is intended to be a living document, updated as circumstances change and communication needs or processes require revision.

5.1.4 Meetings

Design-Build Contractor shall be responsible for conducting and coordinating with INDOT up to three public information meetings regarding Lane Closures, alternate routes, detours, and other information of interest to the public. Meetings shall be held as necessary per the direction of INDOT.

Design-Build Contractor shall secure meeting venue in close proximity to the Project and shall provide appropriate visual displays, including maps of the Project area that show detours or other traffic changes. The meeting times shall be evening hours, at date(s) and time(s) approved by INDOT.

5.2 Deliverables

Deliverables, a non-exhaustive list of which is set forth in the table 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.

Deliverable	Schedule	TP Section
Public Information Plan	Prior to NTP1	5.1.3

6 ENVIRONMENTAL

6.1 General

Design-Build Contractor shall design and conduct the Work in accordance with the applicable requirements in the PPA Documents, including Project Standards, this Section 6 and its Attachments 6-1 (Environmental Commitments) and 6-2 (Non-Permitted Wetland Areas); Governmental Approvals; and applicable laws. Design-Build Contractor shall comply with all conditions of all permit approvals, whether obtained by INDOT or by Design-Build Contractor, for this Project.

6.2 Permits and Approvals

Any changes to the Project that result in additional impacts to streams, lakes, rivers, wetlands, or other waters shall require Design-Build Contractor to amend the USACE Section 404 Permit, IDEM 401 Water Quality Certification, and the IDNR Construction in a Floodway permits. Design Build Contractor shall obtain approval for each permit from INDOT prior to submitting for approval by the corresponding regulatory agency.

6.2.1 Governmental Approvals

Table 6-1 lists the Governmental Approvals that are anticipated to complete the Work. This list is not exhaustive and there may be other Governmental Approvals that are required based on Design- Build Contractor's final design. Design-Build Contractor shall be responsible for identifying all Governmental Approvals and permits necessary to complete the Work, and shall secure all necessary Governmental Approvals unless Table 6-1 and the PPA Documents expressly state that INDOT shall be responsible for that Governmental Approval.

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 INDOT for review and approval prior to submission to the permitting agency. INDOT will provide comments on the completed draft applications within 14 days.

Table 6.1 – Governmental Approvals

Agency	Permit/Approval	Responsible Party
Federal Highway Administration (FHWA)	Categorical Exclusion, Level 4 (SR 2 to US 30)	INDOT
FHWA	Categorical Exclusion, Level 1 (Kankakee River crossing)	INDOT
FHWA	Categorical Exclusion, Level 4 (SR 10 to SR 2)	INDOT
FHWA	Revision to Interstate Access (if required)	Design-Build Contractor
Indiana Department of Environmental Management (IDEM)	Section 401 Water Quality Certification	INDOT[1]
US Army Corps of Engineers	Section 404 of the Clean Water Act	INDOT[1]

Agency	Permit/Approval	Responsible Party
Indiana Department of Natural Resources (IDNR)	Construction in a Floodway (CIF)	Design-Build Contractor
Indiana Department of Environmental Management (IDEM)	Rule 5 – Erosion Control	Design-Build Contractor
Indiana Department of Environmental Management (IDEM)	Isolated Wetland Permit (if required)	INDOT
Federal Aviation Administration (FAA) Form 7460-1	Notice of Proposed Construction or Alternation	Design-Build Contractor

Note:
1. INDOT will file Section 401/404 permit application packages with the permitting agencies. Design-Build Contractor shall comply with these preconstruction permit requirements and be responsible for securing any required permit modifications and performing the additional mitigation.

6.2.2 Permit Specifics

IDEM Rule 5 Permit
Design-Build Contractor shall be required to obtain the Rule 5 permit before any land disturbing activities commence. Obtaining multiple Rule 5 permits for distinct elements/segments of the work is acceptable. Erosion control measures shall be in accordance with Chapter 205 of the Indiana Design Manual and the IDEM Indiana Stormwater Quality Manual, all environmental permit requirements, and applicable INDOT specifications.

FAA Permit
Design-Build Contractor shall apply for a FAA Form 7460 (Notice of Proposed Construction or Alteration) if any permanent structures or equipment utilized for the projects penetrates the 100:1 slope from an airport.

Non-Permitted Wetland Areas
Design-Build Contractor is responsible for acquiring modifications of Governmental Approvals for any impacts, permanent and/or temporary, to the wetland areas shown in Attachment 6-2 (Non-Permitted Wetland Areas)

6.3 Hazardous Materials

There are no Known or Suspected Hazardous Materials identified within the Project Limits.

6.3.1 Hazardous Materials Releases

The following provisions shall apply to the spillage or release of Hazardous Materials during the construction of the Project:

- Hazardous Material releases, oil spills, fish/animal kills, and radiological incidents shall be reported to the Indiana Department of Environmental Management (IDEM) Office of Emergency Response (OER), at (888) 233-7745. This 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.
- Appropriate response actions for spills occurring on Site, in order, are as follows:

- Identify the spilled material from a safe distance.
- Contain the spilled material or block/restrict its flow using absorbent booms/pillows, dirt, sand, or by other available means.
- Cordon off the area of the spill.
- Deny entry to the cordoned off area to all but response personnel.
- Contact IDEM OER.

6.3.2 Hazardous Materials Management Plan

Design-Build Contractor shall prepare a Hazardous Materials Management Plan, which is a component part of the PMP, and submit it to INDOT, for review and approval. The Hazardous Materials Management Plan shall include the following contents at a minimum:

- Responsible personnel
- Site information
- Site map
- Procedures for handling any Hazardous Materials encountered on Site
- Spill Prevention Plan, including:
  - Potential spill sources
  - Spill reporting
  - Spill prevention and response training
  - Spill containment
  - Spill prevention
  - Spill response report form(s)

6.4 Environmental Compliance

Design-Build Contractor shall comply with the commitments established during the preparation of the NEPA Documents associated with this project, as set forth in Attachment 6-1 (Environmental Commitments).

6.4.1 Environmental Compliance and Mitigation Plan

Design-Build Contractor shall provide an Environmental Compliance and Mitigation Plan (ECMP) while partnering with INDOT. The ECMP shall include all environmental commitments and required mitigation listed in the Technical Provisions.

Design-Build Contractor shall prepare a checklist that documents all impacts and anticipated impacts to environmental resources identified in the PPA Documents, Environmental Approvals, and any Governmental Approval. The checklist shall be submitted with the ECMP for INDOT approval. Design-Build Contractor shall submit an updated checklist to INDOT for approval within one week after the end of each quarter of the year. The checklist is to stipulate those requirements for approval by the Department and those requirements expected to be used in the subsequent quarter.

Design-Build Contractor's ECMP is a component of Design-Build Contractor's PMP.

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 the ROD, FEIS, other Environmental Approvals, and Environmental Laws are identified and fulfilled.

The ECMP shall include:

- A description of how full compliance is achieved with regard to defined commitments, conditions of Environmental Approvals, Environmental Laws, and INDOT review and comment during Design Work and Construction Work.
- A description of how and where impacts to woodlands, 4(f) resources, parklands, historical properties, threatened or endangered Species, wetlands, and waters of the United States are avoided or minimized.
- Design-Build Contractor's environmental compliance process, structure, organization location, level of documentation, forms of communication, and QA/QC processes and procedures.
- The corrective action process to keep the Indiana Project in compliance with Environmental Approvals, Environmental Laws, and Governmental Approvals at all times.

6.4.2 Environmental Compliance and Mitigation Training Program

Design-Build Contractor shall develop and implement a mandatory environmental compliance and mitigation training program that will be presented to Design-Build Contractor's supervisory personnel, equipment operators, and all other Contractor construction personnel who will perform Work within the Project ROW boundaries. The training shall provide an understanding of the necessary environmental compliance requirements and any environmentally sensitive areas for the Indiana Project.

The training program shall be submitted to INDOT for review and approval and cover at a minimum the following elements:

- Erosion and sediment control measures – sequencing, implementation, installation, and maintenance
- Maintaining approved limits of disturbance
- Tree and shrub protection
- Avoidance and minimization of impact to environmentally sensitive locations, including wetland areas, streams, sinkholes, or other water bodies and activities that would require modifications to waterway permits
- Identification and locations of "Do Not Disturb" zones
- Wildlife education, including habitat protection for Northern long-eared bats, and any other State endangered, threatened, or rare species
- INDOT-provided endangered, threatened, and rare species training video shown to all personnel prior to entry within the Project ROW
- Seasonal work restrictions – trees and waterways

- Pumping and dewatering operations
- Zebra mussel and other aquatic invasive species decontamination and removal
- Accidental discovery of archaeological sites, archaeological material, or human remains
- Impacts and consequences for departure from approved operating procedures
- Hazardous materials

The environmental compliance and mitigation training program is a component part of the PMP. Design-Build Contractor shall not allow personnel to enter the Project ROW without completing the required training and documenting the training for INDOT. Design-Build Contractor shall provide annual updates to this training program to meet current requirements and implement the training to the appropriate personnel.

6.5 Deliverables

Deliverables, a non-exhaustive list of which is set forth in the table below, 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.

Deliverable	Submittal Schedule	TP Section
Governmental Approvals and permit modifications	Prior to construction	6.2
Hazardous Materials Management Plan	Within 30 days of NTP1	6.3.2
Environmental Compliance and Mitigation Plan (ECMP)	Within 30 days of NTP1	6.4.1
Environmental resource impacts checklist	Quarterly	6.4.1
Environmental Compliance Training Program materials	Within 30 days of NTP1 and annual updates	6.4.2

7 ROADWAY

7.1 Standards and References

Design-Build Contractor shall design and construct the roadway Work in accordance with the applicable requirements in the PPA Documents, including the Project Standards, this Section 7 and its Attachment 7-1 (Unique Special Provisions: Roadway); Governmental Approvals; and applicable laws.

7.2 Design Requirements

The specific design requirements listed for I-65 are the minimum requirements for the design of the roadway. The design shall not provide for less than the minimum requirement unless written approval is obtained from INDOT.

7.2.1 General Design Requirements

1. Construct one additional travel lane in each direction. The resulting typical section for each direction of I-65 shall consist of a total of three 12-foot lanes; one added travel lane, two existing travel lanes.
2. The minimum usable median shoulder width shall be 10 feet. The minimum paved median shoulder width shall be 8 feet, except where concrete median barrier or guardrail is present, in which case a minimum 10-foot paved shoulder is required.
3. The new inside added travel lane shall be dropped on the median side and not at ramp termini. The southbound added travel lane on the median side shall terminate south of SR 2 interchange in accordance with AASHTO Policy on Geometric Design of Highways and Streets, Chapter 10 – Lane Reductions. The northbound added travel lane on the median side shall start opposite the terminus of the southbound full added travel lane in the median. The outside paved shoulder width shall be 12 feet.
4. Provide a two foot offset from the edge of the paved shoulder to the face of barrier or guardrail for shoulders less than 12 feet. The offset for a 12-foot or wider shoulder shall be zero.
5. All existing guardrail, guardrail transitions, guardrail end treatment, and impact attenuators shall be replaced if the adjacent pavement elevation is changed or if it does not meet any other requirements described in this Section 7. The Design-Build Contractor shall ensure that all guardrail within the Project Limits complies with Chapter 49 of the IDM unless noted otherwise in this Section 7.
6. The top of guardrail height at the face of the rail shall be a minimum of 30 inches.
7. One stage 1 spare parts package and one stage 2 spare parts package shall be supplied for each type of guardrail end treatment installed. The spare parts packages shall be in accordance with the replacement parts list shown in INDOT Recurring Plan Detail 601-R-237d, current edition. One stage 1 spare parts packages and one stage 2 spare parts packages shall be supplied for each type of impact attenuator being installed. The spare parts packages shall be in accordance with the replacement parts list shown in INDOT Recurring Plan Detail 601-R-497d, current edition. The spare parts packages shall be delivered to the following address:

John Claussen
1130 East Maple Street, Rensselaer, IN 47978
(219)-866-5820
jclaussen@indot.in.gov

7.2.2 Specific Design Requirements

The following Specific Design Requirements are the minimum design requirements for the Project and were developed for purposes of setting design requirements for the Project and not to be the basis or expectation of use of the Project. The specific design requirements apply only to the design of the roadways and as otherwise set forth in these Technical Provisions. INDOT does not warrant the accuracy or completeness of the information in the specific design requirements, including any information, data, extrapolations, or interpretations of current or future traffic or composition of traffic, and specifically disclaims the Specific Design Requirements for any purpose other than the design of the roadways or such other purposes expressly set forth in the Technical Provisions. INDOT shall not be responsible or liable in any respect for any causes of action, Claims, or Losses whatsoever suffered by any Design-Build Contractor entity by reason of any use of information contained in, any conclusions the Design-Build Contractor may draw from, or any action or forbearance in reliance on the Special Design Requirements except with regard to the design of the roadway. Design-Build Contractor's use of the specific design requirements for any purpose other than roadway design shall be at the Design-Build Contractor's sole risk.

Table 7-1: I-65 (Rural) Design Data
From South Project Limits to US 231 Interchange

Jurisdictional System	INDOT
Project Design Criteria	IDM Fig. 54-2A / AASHTO Policy on Design Standards Interstate Systems - 2005
Design Functional Classification	Interstate
Rural/Urban	Rural
Access Control	Full Access Control
Terrain	Level
Median Type	Depressed
Traffic Data	
Current Year A.A.D.T. (2015)	SR 10 Interchange to SR 2 Interchange – 42,981 SR 2 Interchange to US 231 Interchange – 45,597
Opening Year A.A.D.T. (2016)	SR 10 Interchange to SR 2 Interchange – 42,848 SR 2 Interchange to US 231 Interchange – 45,697
Design Year A.A.D.T. (2035)	SR 10 Interchange to SR 2 Interchange – 59,000 SR 2 Interchange to US 231 Interchange – 55,200
Design Hourly Volume (D.H.V.) (2035)	SR 10 Interchange to SR 2 Interchange – 5,310 SR 2 Interchange to US 231 Interchange – 3,868
2035 Percent Trucks (A.A.D.T.)	SR 10 Interchange to SR 2 Interchange – 49% SR 2 Interchange to US 231 Interchange – 44%
2035 Percent Trucks (D.H.V.)	SR 10 Interchange to SR 2 Interchange – 49% SR 2 Interchange to US 231 Interchange – 44%
Proposed Design Speed	70
Proposed Posted Speed	70
Special Features	
None specified	

Table 7-2: I-65 (Urban) Design Data
From US 231 Interchange to North Project Limits

Jurisdictional System	INDOT
Project Design Criteria	IDM Fig. 54-2A / AASHTO Policy on Design Standards Interstate Systems - 2005
Design Functional Classification	Interstate
Rural/Urban	Urban
Access Control	Full Access Control
Terrain	Level
Median Type	CMB
Traffic Data	
Current Year A.A.D.T. (2015)	US 231 Interchange to 109th Avenue Interchange – 50,837 109th Avenue Interchange to US 30 Interchange – 62,890
Opening Year A.A.D.T. (2016)	US 231 Interchange to 109th Avenue Interchange – 50,949 109th Avenue Interchange to US 30 Interchange – 62,978
Design Year A.A.D.T. (2035)	US 231 Interchange to 109th Avenue Interchange – 51,800 109th Avenue Interchange to US 30 Interchange – 67,400
Design Hourly Volume (D.H.V.) (2035)	US 231 Interchange to 109th Avenue Interchange – 4,144 109th Avenue Interchange to US 30 Interchange – 5,392
2035 Percent Trucks (A.A.D.T.)	US 231 Interchange to 109th Avenue Interchange – 34% 109th Avenue Interchange to US 30 Interchange – 28%
2035 Percent Trucks (D.H.V.)	US 231 Interchange to 109th Avenue Interchange – 34% 109th Avenue Interchange to US 30 Interchange – 28%
Proposed Design Speed	70
Proposed Posted Speed	70
Special Features	
None specified	

7.2.3 Interstate-Route Crossovers

Interstate-route crossover locations for I-65 are listed in IDM Figure 54-6B(65). Median crossings included within the Project Limits shall be in accordance with the IDM, except as noted in Table 7-3.

Table 7-3: Interstate Crossovers

Reference Marker	I-65 Location Description	Action
247.8[(1)]	0.4 mi. N. of US 231	Do not construct new crossover

1. The actual location of the existing crossover is Reference Marker 247.6. It is currently blocked-off with sand-filled barrels.

7.3 Limited Construction Area

No permanent features shall be constructed within the limits of the footprint along I-65 from RP 241+50 to RP 243+14 except for the following items:

1. Elements of the roadway typical section including: travel lanes; shoulders; drainage ditches and cross culverts; and required traffic barriers
2. ITS wiring and conduits
3. Roadside signing

Design-Build Contractor shall obtain approval by INDOT for construction of all other items, including ITS surface features, any utility relocations, and any overhead signing.

7.4 Design Exceptions

Design-Build Contractor may propose Design Exceptions and follow the Department's Design Exception process; however, INDOT 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 applicable Laws and Governmental Approvals. Design-Build Contractor is responsible for time delays in obtaining Design Exceptions. Delays due to approvals for Design Exceptions shall not be considered eligible for a Change Order. All Level Two Design Exceptions shall be approved by INDOT in writing.

INDOT is in the process of obtaining the following Design Exceptions on the Project:

7.4.1 Level One Design Exceptions

Shoulder Widths: From the South End of Project Limits to US 231 – Rural Typical Cross Section. With the addition of the third travel lane, the median shoulder will be 8'-0" paved with 2'-0" of aggregate for a total usable shoulder width of 10'-0"

7.5 Deliverables

Deliverables, a non-exhaustive list of which is set forth in the table 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.

Deliverable	Schedule	TP Section
Design Exception documentation	As needed	7.4

8 PAVEMENT

8.1 General

Design-Build Contractor shall design and construct the pavement Work in accordance with the applicable requirements in the PPA Documents, including Project Standards and this Section 8 and its Attachment 8-1 (Unique Special Provisions: Pavement); Governmental Approvals; and applicable Laws.

INDOT's Authorized Representative will assist in the coordination and resolution of roadway pavement issues with affected interests and regulatory agencies. Design-Build Contractor shall document the resolutions of issues, including meeting minutes and memoranda for the record.

8.2 Design Requirements

Design Build Contractor shall design, analyze, and provide all permanent pavements required. Prepare separate pavement designs for mainline, ramps, and shoulders.

AASHTO PavementME software, version 2.0, shall be used on the Project.

Materials for roadway pavement surfaces may be hot-mixed asphalt (HMA) or Portland cement concrete (PCC). The pavement design shall provide for positive drainage of subgrade and subbase materials from under all portions the pavement.

Resurfacing, where required, will be designed for a functional design life of not less than13 years, as shown on the output from the PavementME software.

8.2.1 Subgrade Treatment

Design Build Contractor shall provide subgrade treatment according to Table 8-1 and Project Standards.

Table 8-1 Subgrade Treatment

Location	Treatment
Newton County, Newton/Jasper County Line to Kankakee River	Type IB – cement
Kankakee River	Type IB – cement
South of SR 2 to US 231	Type IB – lime

Note:
1. Removal of overlaying material shall be removed in such a way that the permeability of the existing No. 8 stone is not contaminated.

8.2.2 Pavement Design Reports

Design-Build Contractor shall prepare and submit preliminary pavement design reports for all the pavements, permanent and temporary, required on the project, for review and comment by INDOT. Final pavement design reports shall be signed and sealed by a Registered Professional Engineer and submitted for review and approval by INDOT.

Pavement design reports shall include, at a minimum, the following:

- All design inputs, including design method, design life, analysis parameters, performance criteria, traffic load spectra, climate, pavement structural cross section, subgrade and subbase drainage, materials characteristics, and input parameters, including soil subgrade
- Design subgrade strength, resilient modulus (Mr) values, planned subgrade improvements, and as-needed subgrade improvements
- Discussion of the input parameters, rationale, and assumptions used
- Site plan showing the limits of the roadway element covered by the report
- Typical cross-section drawings for the recommended pavement design strategy, including the overlay of existing pavements
- Pavement ME input file

8.3 Construction

Construction of the permanent pavement shall be according to Project Standards and the following:

- Positive drainage along all existing pavement layers shall be maintained.
- Safety edge shall be provided in accordance with INDOT Design Memorandum 15-02.
- HMA open-graded drainage layers shall be placed at a minimum thickness of 250 lb/yd² (2½-inch thickness).
- Remove all existing inside shoulder pavement prior to construction of added travel lane.
- Reconstructed shoulders shall be the same pavement thickness as the adjacent travel lane. Existing shoulders shall be milled and resurfaced with same thickness as the mainline pavement. Stone Matrix Asphalt (SMA) surface is not required for shoulders. Shoulder corrugation milling is required for all permanent pavements. Shoulder corrugation milling is not required for existing shoulder pavements to remain in place.
- For outside shoulder HMA pavement a maximum four feet of existing shoulder shall remain in place prior to construction of new shoulder pavement.

8.3.1 Pavement Patching

Attachment 8-5 (Patching Locations) lists the locations for partial depth and full depth patching to be completed prior to any pavement milling.

8.3.2 Milling, Sealing and Overlay

Design-Build Contractor shall mill all existing HMA pavement within the project limits to a nominal depth of 0.5 inches. After milling the existing pavement surface, any visible crack which is one-fourth inch wide or wider shall be cleaned and sealed. Cracks shall be cleaned by blowing with compressed air or by other suitable means. Asphalt material shall be placed utilizing a wand tip that allows fills the opening without penetration into the cracks. The opening of the cracks shall be filled or overbanded slightly but not to exceed the space created by the milling. All excess asphalt material shall be removed from the pavement. The sealed cracks shall be covered with sufficient fine aggregate or other suitable material to prevent tracking of the asphalt materials. All excess

cover material shall be removed from the pavement within 24 hours. The material used to fill the crack shall be Asphalt Binder PG 64-22 in accordance with Project Standards. Design-Build Contractor shall overlay the existing pavement after milling and sealing.

8.3.3 Underdrains

Underdrains shall be constructed for all new pavement. All underdrains to remain in place shall be maintained during construction in equal or better condition as compared to the beginning of construction. Design-Build Contractor shall inspect underdrains before construction and identify any underdrains failing condition rating. These sections are to be replaced in kind. Contractor shall also inspect underdrains post construction to verify the conditions of the underdrains are maintained.

Required underdrain work:

Segment A

- Concrete section (North of US 231)
  - Inspect underdrains along the outside and inside lanes. Retrofit if not functional. No retrofit is anticipated in this section.
- South of US 231
  - Construct new inside shoulder and underdrains.
  - Inspect underdrains along the outside lane. Retrofit if not functional.

Segment C2

- Construct new inside shoulder and underdrains.
- Inspect Underdrains along the outside lane. Retrofit if not functional.

Design-Build Contractor shall submit underdrain details as part of the Stage 1 and Stage 3 Plans and Released for Construction Documents.

8.3.4 Temporary Pavement

Design-Build Contractor shall design, construct, and maintain all temporary pavements within the Project limits as required to maintain traffic during construction. Temporary pavement is defined as pavement that is in use by vehicular traffic for 24 months or less. Temporary pavement shall comply with the requirements of the PPA Documents and the following:

- Design temporary pavements to accommodate the anticipated traffic loading that the pavement will experience during the construction period.
- Temporary pavement shall comply with the same standards and procedures as for new construction, unless noted otherwise in this Section 8.

The performance standards defined herein shall apply to all temporary HMA or PCC pavement constructed by Design-Build Contractor for maintenance of traffic operations and to existing shoulders used for MOT operations. Any occurrence of noncompliance with the performance standards shall be corrected as soon as possible but no longer than 24 hours after noncompliance

is reported in writing by INDOT to Design-Build Contractor. Any areas not meeting these performance requirements are subject to liquidated damages per PPA Exhibit 10.

Temporary pavement shall meet the following requirements:

- Minimum friction number of 37
- IRI of less than 120 inches/mile
- Free of potholes, fatigue areas, duress, and rutting exceeding 0.25 inches
- Provide adequate cross slope to drain water quickly from pavement surface

Pavement distresses are identified in Federal Highway Administration publication FHWA-RD-03-031.

Construct MOT pavements according to the applicable Project Standards.

Design-Build Contractor shall provide all traffic control, templates, straight edges and measuring devices required by INDOT to monitor compliance with requirements of this section.

If INDOT believes, in its sole discretion, that these requirements are not being met, INDOT 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 Design-Build Contractor's Work.

8.3.4.1 Temporary HMA Pavement Performance Standards

Construct and maintain temporary HMA pavements for MOT according to Project Standards and the following:

1. No occurrence of pavement shoving shall exceed 2.0 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 edge drop-off shall exceed 0.5 inches in depth for a continuous length of 15 feet or more.
4. No depression exceeding 0.5 inches in depth (e.g., pothole) shall exceed 0.5 square feet in area.
5. No bump exceeding 0.5 inches in height shall exceed 0.5 square feet in area.
6. No location of delamination or raveling shall exceed 0.5 square feet in area. Furthermore, the total delamination or raveling shall not exceed 3.0 square feet for all such locations.
7. There shall be no occurrences of fatigue cracking at any location on the MOT pavement.

8.3.4.2 Temporary PCC Pavement Performance Standards

Construct and maintain temporary PCC pavement according to Project Standards and the following:

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

8.3.4.3 Existing HMA Shoulder Performance

If the existing shoulder pavement is to be used as MOT pavement, comply with the following requirements:

1. Mill the shoulder used for MOT including any existing shoulder corrugations, and the portion of the shoulder used for MOT shall be resurfaced prior to MOT operations.
2. No occurrence of pavement shoving shall exceed 2.0 square feet in area at any location.
3. 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.
4. No edge drop-off shall exceed 0.5 inches in depth for a continuous length of 15 feet or more.
5. No depression exceeding 0.5 inches in depth (e.g., pothole) shall exceed 0.5 square feet in area.
6. No bump exceeding 0.5 inches in height shall exceed 0.5 square feet in area.
7. No location of delamination or raveling shall exceed 0.5 square feet in area. Furthermore, the total delamination or raveling shall not exceed 3.0 square feet for all such locations.
8. There shall be no occurrences of fatigue cracking at any location on the MOT pavement.

8.4 Certification

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.

8.5 Deliverables

Deliverables, a non-exhaustive list of which is set forth in the table 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.

Deliverable	Schedule	TP Section
Preliminary pavement design report	With Stage 1 Plans	8.2.2
Final pavement design report	Prior to Released for Construction Documents	8.2.2
Underdrain details	With Stage 1 and Stage 3 Plans	8.3.3

9 DRAINAGE

9.1 General

Design-Build Contractor shall design and construct the drainage Work in accordance with the applicable requirements in the PPA Documents, including Project Standards, this Section 9 and its Attachment 9-1 (Unique Special Provisions: Drainage), Attachment 9-2 (Recurring Special Provision Storm Water Management), and Attachment 9-3 (Pipe Ratings); Governmental Approvals; and applicable laws.

9.2 Culverts

9.2.1 Replacement Determination

Replace or line existing culverts based on the structural capacity determination from Attachment 9-3 (Pipe Ratings) and the criteria below. Requirements for culverts are as follows:

1. Unlined Culverts
    a. Overall Condition Rating less than or equal to 5, culvert shall be replaced
    b. Overall Condition Rating greater than 5 and less than 8, culvert may be lined provided that the lined culvert meets hydraulic requirements. If lining the culvert does not meet hydraulic requirements, the culvert shall be replaced or other improvements to meet hydraulic requirements shall be implemented.
    c. Overall Condition Rating greater than or equal to 8, culvert may remain in place if the culvert and any required extension meet hydraulic requirements. If the culvert does not meet hydraulic requirements, the culvert shall be replaced or other improvements to meet hydraulic requirements shall be implemented.
2. Lined Culverts
    a. Overall Condition Rating less than or equal to 5, culvert shall be replaced
    b. Overall Condition Rating greater than 5, culvert may remain in place

9.2.2 Culvert Lining

Line all culverts that are larger than or equal to 36-inch diameter (or hydraulic equivalent) and less than 48-inch diameter (or hydraulic equivalent).

9.2.3 Hydraulic Capacity Evaluation

Evaluate hydraulic capacity for all culverts within the project limits. Evaluate all lined culverts for both the pre-lined and lined conditions. Proposed hydraulic capacity shall be in accordance with Indiana Design Manual In-Kind Replacement or Pipe Lining design requirements. Submit hydraulic capacity evaluation report for all culverts and storm sewers to INDOT for approval. Obtain approval from INDOT prior to construction.

The minimum waterway opening for all culverts shall be equivalent to a 36-inch diameter pipe even if a smaller pipe satisfies hydraulic requirements. Replace existing culverts with a

waterway opening diameter less than 36 inches with a minimum 36-inch diameter culvert or equivalent.

9.3 Technical Requirements

1. New storm sewer drain shall discharge a minimum of 6 inches above the ditch flowline elevation.
2. Underdrains shall be designed and installed along all roadways. All underdrains shall outlet a minimum of 6 inches above the ditch flowline.
3. Existing field tile drainage shall be maintained at all times.
4. All existing drainage structures that will not be used in the final drainage system shall either (a) be removed and backfilled with structure backfill, Type 5 or (b) be filled with structure backfill, Type 5.
5. Inlet spacing, storm drain capacity, and slotted drain computations shall be performed by the Design-Build Contractor. Slotted drain is required on high side, superelevated shoulder that is sloped toward the travel lanes where guardrail, barrier or rail is present.
6. Median ditches, median inlet spacing, and median drain capacity computations shall be performed by the Design-Build Contractor for the one percent annual EP storm. The hydraulic grade line shall not encroach onto the travel lanes. All existing median drain pipes shall be replaced or lined. Additional median drain pipes and inlets shall be added as required to meet capacity and encroachment requirements.
7. No stormwater detention storage is allowed in median ditches.
8. For cast-in-place pipe lining, follow the requirements of Attachment 9-1 (Unique Special Provisions: Drainage).
9. Water quantity control shall be designed by the Design-Build contractor so that wherever stormwater is leaving the project site, runoff quantity from the post-project one-percent exceedance probability storm event is equal to or less than runoff quantity from the pre-project 10-percent exceedance probability storm event.
10. The Design-Build Contractor shall notify the Lake County surveyor of any Work impacting legal drains in Lake County prior to commencement of any construction activity.

9.4 Deliverables

Deliverables, a non-exhaustive list of which is set forth in the table below, 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.

Deliverable	Submittal Schedule	TP Section
CIPP field-cured sample report	Within 7 days of receipt	Attachment 9-1
Hydraulic capacity evaluation report	Prior to construction	9.2.3

10 TRAFFIC

10.1 General

Design-Build Contractor shall design and construct the pavement markings, signing, and lighting Work in accordance with the applicable requirements in the PPA Documents, including Project Standards, this Section 10 and its Attachment 10-1 (Unique Special Provisions: Traffic); Governmental Approvals; and applicable laws.

10.2 Technical Requirements

10.2.1 Pavement Markings

Extended warranty preformed plastic shall be used for longitudinal pavement markings. This includes edge lines, lane lines, dotted lines, broken lines, and longitudinal gore lines. Design and installation of high durability pavement markings shall be as set forth in INDOT Design Memorandum 15-19.

New snow-plowable raised pavement markers (RPMs) shall be designed and installed along I-65 mainline and all interchange ramps where existing RPMs are disturbed or do not currently exist, in accordance with the Indiana Design Manual and Standard Drawings. RPMs shall not be installed on bridge decks.

10.2.2 Signing

Design-Build Contractor shall develop the signing plans in accordance with the Indiana Design Manual and Indiana MUTCD.

Design-Build Contractor shall replace all existing regulatory, warning, and guide signs that are impacted by the widening of the mainline that do not meet current standards. All existing signs that are not impacted by the widening shall remain in existing condition.

Signs and sign structures that are impacted by the widening may be reset on new foundations if they meet current standards.

1. The appropriate standard highway font shall be used for all signs. All signs along the mainline freeway and associated ramps shall be “freeway” size.
2. Design-Build Contractor shall use INDOT standard sign structures and foundations where possible. All required special sign structures shall be designed per IDM Section 502-1.01(11) and 502-1.01(12).
3. Existing reference marker signs shall be removed and enhanced reference marker signs shall be placed every 0.2 miles south of existing mile marker 247.8 within the project limits for both the northbound and southbound directions of I-65 mainline. Existing enhanced reference marker signs north of and including mile 247.8 shall remain in place.
4. Design-Build Contractor shall coordinate with Indiana Business Logo for all existing Logo signs, in accordance with Attachment 10-1 (Unique Special Provisions: Traffic).
5. No signs or sign structures shall be mounted on the bridge overpass structures.

6. No signs shall be banded/installed to utility poles, lighting poles, or overhead or cantilever sign structure uprights.
7. Sign lighting for newly installed panel signs is not required.
8. All existing signage shall be evaluated for relevance. If a sign is determined to be no longer relevant, it shall be removed or replaced, as appropriate.
9. "Trucks Use Right Two Lanes" signs shall be installed in both directions between US 231 and south project termini wherever the median paved shoulder width will be 8 feet, in accordance with Indiana MUTCD. These signs shall be properly covered or not installed until all three travel lanes in each direction are open to traffic.

10.2.3 Lighting

Design-Build Contractor shall design and install lighting per the Indiana Design Manual where Work impacts existing lighting or other modifications are necessary to meet the requirements of the Technical Provisions.

Design-Build Contractor shall coordinate the heights of new or relocated high-mast structures with INDOT and the FAA to comply with FAA requirements. Design-Build Contractor shall apply for and obtain permits as necessary.

All existing light structures, such as high-mast towers, conventional light poles, and underpass lights that require relocation or replacement shall be removed with no outages. Design-Build Contractor shall maintain proper illumination levels at all times.

All existing light poles that are replaced and not relocated shall be salvaged and delivered to the INDOT Wanatah Maintenance Unit, 10621 US 30, Wanatah, IN.

10.3 Deliverables

Not used.

11 MAINTENANCE OF TRAFFIC, HAUL ROUTES AND ACCESS

11.1 General

Maintenance of Traffic (MOT) shall be performed in a manner that minimizes construction, rehabilitation, maintenance duration, and impact to the traveling public. This Section 11 defines specific requirements, restrictions, and allowable closure durations for both travel lanes and ramps.

Design-Build Contractor shall design and construct the MOT, haul routes, and access in accordance with the applicable requirements of the PPA Documents, including Project Standards, this Section 11 and its Attachment 11-1 (Unique Special Provisions: Maintenance of Traffic); Governmental Approvals; and applicable laws.

11.2 Performance Requirements

11.2.1 Project-Wide Transportation Management Plan

Design-Build Contractor shall prepare, implement, and maintain a Transportation Management Plan (TMP). The TMP shall include a Traffic Operations Plan (TOP), a Temporary Traffic Control Plan (TTCP), and a coordination process with the Public Involvement Plan (PIP), described in Section 5 (Public Involvement), and must be approved before initiation of any Construction Work. INDOT will provide Design-Build Contractor with a list of INDOT representatives for the Project traffic management team to be included in Design-Build Contractor's TMP. The TMP shall be developed in coordination with, and include procedures to communicate, all MOT phase installations and changes with emergency service providers, school transportation officials, and all affected local public agencies.

The TMP shall be developed in coordination with and be consistent with the PIP and include procedures to communicate TMP information to the Public Information Coordinator for communication of all MOT work to the public prior to implementation of any MOT phase or phase change.

The Traffic Operations Plan (TOP) shall include:

1. Design-Build Contractor identification of an MOT Manager to coordinate all construction traffic impacts with INDOT's PIP Manager and TMP team, and with Design-Build Contractor's Certified Worksite Traffic Supervisor (CWTS), who is responsible to monitor daily MOT activities.
2. Descriptions of contact methods and response times of the CWTS to address any conditions needing attention during all hours.
3. Coordination with the Emergency Plan, 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. Design-Build Contractor shall have the necessary equipment on-Site to repair temporary barrier and/or to set up temporary traffic control until the barrier can be repaired.
4. Procedures to identify and incorporate the needs of transit operators, Utility Owners, and business owners in the Project corridor, including Utility Owner access and business access signing.

5. Identification of measurable limits for the repair and replacement of traffic control devices, including pavement markings, as called out in the Standard Specifications.
6. A process to identify, design, and receive approval for all necessary temporary traffic signals.
7. A process 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 affected signals.
8. A work zone access management map and a construction haul route map for each construction phase.
9. Methods and frequency of inspection and maintenance of all traffic control throughout the Project limits.
10. Provisions to provide continuous access to established truck routes and any hazardous material routes.
11. Procedures for modification of the MOT Plans as needed to adapt to current Project circumstances.

11.2.2 Temporary Traffic Control Plan

Design-Build Contractor shall prepare, submit, and implement a Temporary Traffic Control Plan (TTCP). Approved TTCP shall be included with each applicable RFC package. TTCP shall become part of the appropriate TMP as amendments once the TTCP is approved by INDOT.

The TTCP defines how Design-Build Contractor is to phase construction and detail all the required elements of the physical work zone. The TTCP for the Project includes queuing/delay analysis. No queuing analysis for a given travel direction is needed if two lanes of travel are maintained. Upon completion of queuing/delay analysis, MOT Plans and MOT Special Provisions shall be developed and included with the RFC Design Documents. The MOT Plans shall include all major traffic shifts, Lane Closures, use of temporary roadways, temporary traffic signals, and access modifications to businesses and residences. The anticipated duration of each phase shall also be noted on the plan.

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

1. A cover page/title sheet sealed by a Registered Professional Engineer.
2. Standard Drawings
3. MOT Plans, with a traffic and mobility analysis performed for each phase of construction. Refer to Section 11.2.4 for analysis requirements. The MOT Plans shall detail phases and durations and shall identify all long-term Lane Closures and lane restrictions anticipated during the Work.
4. Descriptions of the design methods to be used for temporary roadways.
5. Detour and haul routes required for the purpose of Construction Work. Design-Build Contractor shall obtain approval from local agencies for all proposed detour and haul routes and shall obtain, pay for, and comply with requirements of all necessary Governmental Approvals and agreements required for said routes.
6. 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.

7. Special Provisions that describe a process for transitioning from temporary signage and temporary pavement marking to permanent signing and permanent pavement marking.
8. Special Provisions that specify Design-Build Contractor coordination work 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).
9. 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.
10. All information required in Section 11.3.8.

The MOT Plans shall be prepared at an appropriate scale to facilitate INDOT review, according to the IDM and include the following components for each phase of construction:

1. Plan insert sheets, including ingress/egress locations for Design-Build Contractor-Related Entities
2. Haul routes

11.2.3 Approved Analysis Techniques and Software for the TMP

Until Substantial Completion, the criteria used to determine the impact of proposed work zones shall be queue length and minimum delay times. Design-Build Contractor may utilize Quewz-98 or similar programs to model the expected queue lengths and delay times that will be generated.

11.2.4 Work Zone Mobility Impact Analysis

Using no-build traffic data or, if not available, existing traffic counts supplemented by additional traffic counts by Design-Build Contractor, and analysis techniques described in Section 11.2.3, Design-Build Contractor shall test all MOT phases proposed on the Project to ensure compliance with Project Standards. The traffic alternative analysis shall be submitted to INDOT LaPorte District Traffic Engineer Alan Holderread, (219) 325-7426, with the MOT Plans and be subject to the same review requirements. The traffic analysis shall be summarized in report format, and all supporting documentation shall also be submitted to INDOT. The requirements of this Section 11.2.4 apply through Substantial Completion.

The following thresholds for mainline and arterials shall be used by Design-Build Contractor in the evaluation of the work zone mobility impacts:

11.2.4.1 I-65 and Ramps

Design-Build Contractor shall maintain two lanes in each direction at all times during construction except as described in Section 11.3.8. Design-Build Contractor shall evaluate work zone mobility impacts associated with each MOT phase to ensure compliance with the INDOT Interstate Highways Congestion Policy.

Ramps shall be evaluated as arterial roadways, except areas at ramp terminals, where Sections 11.2.4.2 or 11.2.4.3 apply. No queue from any ramp shall back up onto I-65 as a result of MOT phasing.

11.2.4.2 Signalized Intersections

If the existing LOS on each approach to a signalized intersection is between A and C, then the LOS during MOT operations on each approach shall not be reduced below a D with a control delay of up to 45 seconds. If the 45-second control delay is exceeded, Design-Build Contractor shall submit alternative strategies to INDOT for approval. If the existing LOS on each approach is D or worse, then the control delay during MOT operations on each approach shall not increase more than 30 percent. If the 30 percent threshold is exceeded, Design-Build Contractor shall submit alternative strategies to INDOT for approval. Traffic analysis shall not assume more than 25% volume diversion due to drivers avoiding the work zone.

11.2.4.3 Unsignalized Intersections

If the LOS on each approach under stop or yield control is between A and C, then the LOS during MOT operations on each approach shall not be reduced below a D with an average control delay per vehicle of up to 30 s/veh. If the 30 s/veh control delay is exceeded, alternative strategies shall be submitted to INDOT for approval. If the existing LOS on each approach is D or worse, then the control delay during MOT operations on each approach shall not increase more than 30 percent. If the 30 percent threshold is exceeded, alternative strategies shall be submitted to INDOT for approval. Traffic analysis shall not assume more than 25% volume diversion due to drivers avoiding the work zone.

11.2.4.4 Local and other State Route Arterial Roadway Segments

If flagging operations are performed on a local or other state route arterial roadway segment, maximum delay shall be no greater than 10 minutes for any vehicle. In addition, maximum queue lengths as described in the IDM shall not be exceeded. At signalized intersections, an LOS on each approach shall be maintained at or above an LOS D with a control delay of up to 45 seconds.

If specific work activities and time periods preclude compliance with the threshold levels listed in this Section 11.2.4, Design-Build Contractor shall submit a request for Deviation to INDOT for approval in accordance with Section 13 of the PPA. All Deviations from the threshold levels shall be submitted as early in the design process as possible. The request for Deviations from the threshold levels shall include the following:

1. Description:
    a. Specific location and work required
    b. Existing condition
    c. Purpose for the threshold exception request, along with how long and what hours the Lane Closures will be in effect
    d. Recommendations to minimize impacts

2. MOT Alternatives – All potential options for MOT with descriptions and discussions of each, including the following:

a. Advantages/disadvantages

b. Estimated time frame

c. User and construction cost

d. Potential economic impact to communities and businesses

e. Ability to gain public buy-in and awareness of the impacts and means to mitigate those impacts

3. Traffic Analysis:

a. Queue/delay analysis

b. Percent diversion that is reasonable to expect for the location and conditions

c. Queues with expected percentage of traffic diverting

4. Summary and Recommendations:

a. List alternatives in order of preference and explain why the alternative is or is not preferred.

b. Summarize alternatives in table format, including important comparison items such as maximum queue lengths, the number and width of open lanes, the length, dates and duration of construction period, incremental construction cost associated with each option, etc.

Design-Build Contractor shall monitor queues and delays during MOT operations. If the thresholds listed in Section 11.2.4 are being exceeded, Design-Build Contractor shall modify the MOT Plans to mitigate the queues and keep delays below the threshold levels. All proposed changes to the MOT Plans shall be submitted to INDOT for review and comment.

11.3 Design and Construction Requirements

11.3.1 Design Criteria

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

1. Design Speed

a. The design speed and posted speed on state highways shall be the existing posted speed limit on approaches to the work zone, with a maximum 10-mile-per-hour speed reduction within the work zone; all worksite speed limit signs must conform to the provisions found in INDOT Construction memo 14-06.

b. The design speed on non-state highway facilities shall be the existing posted speed limit on approaches to the work zone, with a maximum 10-mile-per-hour reduction of posted speed within the work zone. The posted speed can be reduced an additional 10 miles per hour in the work zone using flashing worksite speed limit assemblies as shown in the Department Standard Drawings 801-TCDV-10 and 801-TCDV-1 and “When Workers Are Present” signing.

2. Lane Widths. The minimum MOT lane width shall be 11 feet on State, city, and county routes.

3. Uncurbed Edge of Pavement Widths. All pavement edges shall be a minimum of 2 feet away from the edge of a travel lane.

4. Separation

   a. A minimum clearance of 2 feet between barrier and edge of travel lane is required. One foot shoulder widths on or under bridges may be allowed upon approval of a Level One Design Exception(s). Design-Build Contractor is responsible for preparing and submitting any MOT Design Exceptions to INDOT for review. Design-Build Contractor shall obtain INDOT's written approval of Design Exceptions prior to inclusion in the plans.

   b. Temporary concrete barrier and approved end treatments shall be used to protect the motoring public from the work area within the Project limits when work or equipment, including personal vehicles and trucks used for loading and unloading, are within an 8-foot offset of the travel lane. Portable concrete barrier or temporary guardrail shall be provided if the entire clear zone is not traversable or if hazards exist within the clear zone.

   c. Portable concrete barrier on bridge decks shall be installed per the Department Standard Drawings.

   d. On State highways, tubular delineators shall be used between opposite bounds to separate two-way traffic when opposing traffic is maintained on the same roadbed, in accordance the Department Standard Drawings.

5. Crash Compliance. All work zone traffic control devices shall be compliant with National Cooperative Highway Research Program (NCHRP) 350 requirements.

6. Signing/Lane Shifts/Closures. All MOT procedures shall be in accordance with the MUTCD.

7. Pavement Edge Drop-Offs

   a. Drop-off conditions 3 inches or less shall be delineated by barrels, vertical panels, or tubular markers spaced every 40 feet or a distance in feet equivalent to two times the speed limit in miles per hour, whichever is less.

   b. Drop-offs greater than 3 inches shall comply with the following restrictions:

      1) When drop-off is a result of excavations adjacent to traffic with a horizontal separation of 0 to 2 feet, the drop-off shall be limited to 500 feet in continuous length per location unless positive protection is provided before excavation commences. Locations of drop-offs shall be separated by at least 1.0 mile.

      2) Shall be wedged with dense graded aggregate or HMA on a 3:1 (H:V) or flatter slope if horizontal separation is less than 8 feet between traffic and the drop-off and no positive protection is provided. If a horizontal separation of 8 feet or greater can be achieved between traffic and the drop-off, no wedging is required. Design-Build Contractor shall provide the wedge prior to the stoppage of work at that location.

      3) Shall be delineated by barrels spaced every 40 feet or at an interval in feet equivalent to two times the speed limit in miles per hour, whichever is less.

   c. Temporary drop-offs during working hours in which construction operations are taking place shall be kept to a minimum, and are restricted to off-peak hours.

8. Channelizing Devices

   a. Channelizing devices approved for use are detailed in the Project Standards. Design-Build Contractor shall comply with Recurring Special Provision 107-C-208 regarding the utilization of drums or other channelizing devices for traffic control.

   b. Temporary channelizing device spacing in tapers shall be a maximum of 40 feet center-to-center or a distance in feet equivalent to the speed limit in miles per hour, whichever is less. Device spacing in tangent sections of mainline and ramps (including curves) shall be a maximum of 80 feet center-to-center or a distance in feet equivalent to two times the speed limit in miles per hour, whichever is less. On local roadways, device spacing shall be a maximum of 20 feet center-to-center in tapers, 40 feet center-to center in tangent sections, and 6 feet center-to-center in radii.

   c. Design-Build Contractor shall provide, erect, and maintain channelizing devices, signs, barriers, and other traffic control devices used for MOT in acceptable condition, in accordance with the Project Standards.

9. Flashing Arrows and Variable Message Boards. Design-Build Contractor shall supply all flashing arrows and variable message boards necessary to maintain traffic. Upon completion of the Project, the flashing arrows and variable message boards shall remain the property of Design-Build Contractor.

10. Drainage shall be maintained at all times during all phases of Construction Work.

11. Traffic signals, either temporary or permanent, shall remain operational from beginning of implementation to end of implementation.

12. Temporary crossovers shall be per INDOT standard drawings. Final location of the crossovers shall have prior approval of INDOT.

13. A paved shoulder, free from shoulder corrugations, must be provided where the shoulders are used for maintaining traffic.

14. Mile markers shall be maintained during construction.

15. Access to all INDOT Intelligent Transportation System (ITS) and Automatic Traffic Recorder (ATR) equipment shall be maintained at all times.

16. If traffic lanes in one direction are split using a temporary or permanent crossover, construction signing shall direct trucks to utilize the right most lanes.

17. Crossover protection for opposing traffic shall be in place throughout the duration of the project and the limits shall not be any less than is currently provided by the existing median protection.

18. Barriers shall not impede snow removal operations. To facilitate snow removal operations by INDOT, from December 1 through March 31 each year Design-Build Contractor shall maintain open areas along I-65 with a minimum 4 feet inside shoulder and 8 feet outside shoulder. Shoulders adjacent to temporary barriers on bridges are exempt from width requirements in this Item 12. Based on conditions and weather forecast at the time the December 1 date may be extended until December 15 and the March 31 date may be extended back to March 1. INDOT has sole discretion to approve any extension.

19. All pedestrian facilities shall remain open for pedestrian use during all phases of construction.

11.3.2 Traffic through the Construction Zone

Design-Build Contractor shall provide a CWTS on-Site whose responsibility is to supervise and continuously monitor the installation and maintenance of all traffic control devices, under the supervision of the MOT Manager. Design-Build Contractor shall authorize the CWTS to direct traffic changes to ensure safe and continuous traffic flow and to direct traffic operations after a traffic incident has occurred. The CWTS shall inspect all traffic control devices at least once daily and shall provide for the repair or replacement of defective devices. The CWTS shall submit a weekly written report of the daily traffic control device inspections to INDOT for review and comment. The report shall include comments on all MOT setups, including temporary signals, maximum queue lengths/delays, work zone modifications, MOT phase changes, incidents, repairs and replacements made and suggested improvements.

The CWTS shall be available at all times and be on-site within a half-hour of notification throughout the duration of the Construction Work. The minimum qualifications of the CWTS shall include certification as a certified worksite traffic supervisor by the American Traffic Safety Services Association (ATSSA), or an approved equal certifying organization.

Access to all businesses and residences shall be maintained at all times.

Design-Build Contractor shall design, place, and maintain all approved construction detour routes and shall obtain all necessary Governmental Approvals for detours from the appropriate Governmental Entities.

Design-Build Contractor shall be responsible for all needed construction and haul roads required for the delivery of materials required for the Work and shall obtain, pay for, 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 shall arrange and hold an initial MOT meeting with INDOT and all affected Governmental Entities at least four weeks prior to initial installation of traffic control devices for any MOT phase and shall hold a MOT phase switch meeting with INDOT and all affected Governmental Entities at least two weeks before any MOT phase switch.

Design-Build Contractor shall design all geometric aspects of temporary roadways, except for single lane temporary crossovers, for the accepted work zone design speed.

Design-Build Contractor shall coordinate the operation of portable changeable message signs with INDOT. Changeable message signs shall be used four weeks in advance to denote changes to traffic patterns.

Design-Build Contractor shall not use local streets through residential neighborhoods for access to the Site without approval of the local jurisdiction. Appropriate MOT and flagging procedures shall be followed during all Construction Work, including mobilization and demobilization activities. Deliveries and hauling to and from the construction Site shall be confined to the Project ROW and performed via designated haul routes along the mainline.

11.3.3 Construction Access and Haul Routes

Design-Build Contractor shall develop a Work Vehicle Traffic Control Plan 90 days after NTP1 and submit to INDOT for approval in its good faith discretion. The Work Vehicle Traffic Control Plan shall depict how deliveries and hauling to and from the Site shall be performed via haul routes as permitted by INDOT and the entity owning the haul route. Movement of materials from one location to another within the Project ROW shall be confined to the Project ROW and performed via haul routes, as permitted by INDOT and the entity owning the haul route. Design-Build Contractor shall comply with the local agency's bonding and other requirements for haul roads.

Design-Build Contractor may use local streets for the following activities after obtaining all required approvals from the local jurisdiction:

- Local roadway improvements
- Utility Adjustments
- Construction Work and implementation of roadway detours

Construction vehicles used by Design-Build Contractor shall comply with any and all load restrictions and vehicle delineation requirements when used on roads open to the public.

Construction equipment shall be stored in locations that do not pose a safety risk to the traveling public. Construction equipment shall be stored either behind barriers or outside of the construction clear zone. Construction equipment shall be stored outside sidewalks and bike lanes/paths that are open to traffic.

Construction traffic will be allowed to cross roadways that intersect with the mainline alignment as long as the crossing is maintained within the Project ROW. With INDOT approval, proper flagging procedures and, as applicable, temporary traffic signals can be used to facilitate construction traffic crossing local roadways. At-grade roadway crossings are not allowed during the times identified in Table 11-1 unless prior written approval is granted by INDOT.

Table 11-1: Construction Traffic Roadway Crossing Restrictions

Roadway	Day of Week	Prohibited Crossing Times
All crossing roadways along I-65	Monday through Friday	5 a.m. – 9 a.m. & 4 p.m. – 7 p.m.

11.3.4 Detour Routes

Design-Build Contractor shall maintain detour routes in a condition that is reasonably smooth and free from holes, ruts, ridges, bumps, dust, and standing water. Once the detour is removed and traffic is returned to its normal pattern, the detour route shall be restored to a condition that is equivalent or better than the condition that existed before its use as a detour. All required pavement markings shall meet IMUTCD standards and local requirements.

11.3.5 Improvements to Existing Roadway Network

Design-Build Contractor shall videotape haul routes and detour routes before construction operations. Design-Build Contractor shall maintain these routes in a condition that is reasonably smooth and free from holes, ruts, ridges, bumps, dust, and standing water. Once the haul route

and detour route is removed and traffic returned to its normal pattern, or construction operations are completed, the route shall be restored to a condition that is equivalent or better than the condition which existed before its use for this purpose. Design-Build Contractor shall include in the MOT Plans a schedule for restoring any damaged route to its preconstruction condition. All required pavement markings shall meet IMUTCD standards and applicable laws and requirements.

11.3.6 MOT Manager

Design-Build Contractor shall identify an MOT Manager to perform the following:

- Coordinate MOT activities with INDOT
- Implement traffic management strategies
- Provide an MOT report to INDOT with each change in traffic phasing, including expected queue lengths/delays, a summary of expected operations, and MOT durations
- Be continuously available during construction until Final Acceptance and the elimination of all temporary traffic control and after Final Acceptance whenever temporary traffic control is required
- Supervise the activities of the CWTS

11.3.7 Restrictions for Construction Work

Design-Build Contractor's attention is directed to the provisions of PPA Exhibit 10 related to Construction Closures that failure to comply with the restrictions in this Section 11.3.7 may result in deductions from the Final Payment.

Design-Build Contractor shall comply with Standard Specification 108.08 regarding working restrictions during holiday periods, except as modified herewith. Design-Build Contractor will be permitted to work during holiday periods and Days with local events, if desired, in accordance with road Lane Closure restrictions as listed in Table 11-2; however, Design-Build Contractor shall be required to suspend work associated with deliveries and off-Site hauling operations during holiday periods and Days with local events. Design-Build Contractor shall not change traffic patterns, and shall suspend deliveries and off-Site hauling operations during local events. Design-Build shall identify local events that could affect traffic patterns Design-Build Contractor shall coordinate with INDOT and stakeholders regarding all restriction dates.

Construction operations using shoulder closures will be allowed (except Holidays), provided any resulting temporary drop-off conditions and signing requirements shall be addressed in the TMP.

11.3.8 Mainline/Ramp/Roadway Closures and Restrictions

The requirements of this Section 11.3.8 apply through Substantial Completion. Design-Build Contractor shall maintain all ramp movements at all interchanges during construction. Design-Build Contractor shall maintain two travel lanes in each direction on I-65 from the US 231 interchange north to the north project limits. Design-Build Contractor shall maintain two travel lanes in each direction on I-65 from the US 231 interchange south to the south project limit subject to the Interstate Highways Congestion Policy.

Table 11-2 summarizes the allowable closures and restrictions for specified roadways in the Project area.

Table 11-2: Allowable Construction Closures

	A	B	C	D	E
No.	**Facility**	**Allowable Construction Closures**	**Additional Allowable Lane Closures with Approval**	**Subject to Lane Charges[2]**	**Remarks**
1	I-65 North of US 231[1] Interchange	None	No	No	
2	I-65 South of US 231[1]	Nighttime only	No	Yes	

Notes
1. North of US 231 is defined as north of the gore areas for the ramps on the south side of the interchange. South of US 231 is defined as south of the gore areas for the ramps on the south side of the interchange.
2. Per PPA Exhibit 10 Table 10-2

For all other roads within the Project limits not itemized on Table 11-2 above, a Construction Closure is not allowed without prior INDOT approval.

Lane closures at times other than those allowed in Table 11-2 and/or lane closures without INDOT approval are subject to Liquidated Damages per Table 10-1 of Exhibit 10 of the PPA.

11.3.9 Notification and Coordination

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

The MOT Manager shall notify INDOT and the others listed in the TMP and this Section 11 in writing of all traffic restrictions and upcoming MOT changes. Design-Build Contractor shall ensure the written notification is submitted in accordance with Table 11-3. This notification shall be received by INDOT before the physical setup of any applicable signs or message boards.

Information shall include all construction and maintenance activities that impact or interfere with traffic and shall list the specific location, type of work, road status, date and time of restriction, duration of restriction, number of lanes maintained, detour routes if applicable, and any other information requested by INDOT. A summary of the notification time and requirements for closures and restrictions is provided in Table 11-3.

Table 11-3: Road and Lane Restriction Notification Requirements

Item	Duration of Closure	Notification Time Frame
Ramp and Road Closures	Greater than 2 weeks	28 Business Days before closure
	Greater than 12 hours and less than 2 weeks	7 Business Days before closure
	Less than 12 hours	2 Business Days before closure

Item	Duration of Closure	Notification Time Frame
Ramp and Road Closures impacting: • school access and/or bus route • transit system operations	All closures	28 Business Days before closure
Lane Closure/Restrictions	Greater or equal to 2 weeks	7 Business Days before closure
	Less than 2 weeks	2 Business Days before closure

Any unforeseen conditions not specified in the MOT Plans or TTCPs requiring traffic restrictions shall also be reported to INDOT using the above table.

A pre-MOT meeting between INDOT and Design-Build Contractor shall be held a minimum of 10 Business Days before beginning Construction Work or executing any change of MOT staging. This meeting shall include INDOT and any Design-Build Contractor subconsultants involved with temporary traffic control.

11.3.10 Incident Management Plans

Design-Build Contractor is advised that the Department will be implementing Incident management initiatives on this project. This concept requires coordination between key Project personnel and the various agencies responding to crashes and incidents within the limits of the project. This system makes the best use of the assets available to obtain access to the incident scene for emergency vehicles as quickly as possible and return traffic flows to normal with the least inconvenience to the motoring public. This system will also better facilitate responses to injured workers within the project area.

Coordination of resources on the job and between all the emergency services providers is required for efficient response in emergency situations. Prior to the award of this contract, the Department will establish an Incident Management Task Force comprised of many of the agencies that will likely be involved in the event of an emergency within or adjacent to the work zone.

The Incident Management Task Force facilitated by the Department is responsible for establishing policies and procedures that specifically address the detection, verification, response, management, and clearance of incidents within or adjacent to the work zone. Design-Build Contractor shall assign at a minimum the designated CWTS to participate in the task force as Design-Build Contractor's Incident Management Liaison. Prior to the start of construction the Incident Management Liaison shall arrange for a brief, 1 to 2 hour, Incident Management training session for Design-Build Contractor's Key Personnel, superintendents and lead foremen, to be conducted by the Department. This training will help to familiarize Design-Build Contractor's personnel to the incident management procedures developed by the task force that will need to be followed throughout the project. It will be the responsibility of the Incident Management Liaison to update these personnel when changes to the incident management plan are implemented.

Design-Build Contractor's Incident Management Liaison shall coordinate all incident response requirements per the Indiana Design Manual, Chapter 81, Traffic Incident Management Plan with:

Mr. Guy Boruff
Director, Public Safety Operations Indianapolis Traffic Management Business Unit 8620 East 21st Street Indianapolis, Indiana 46219
Telephone: 317-899-8605
Email: gboruff@indot.in.gov

The Incident Management Liaison shall prepare and distribute Incident Management Maps as approved by INDOT to agencies identified by the Incident Management Task Force. Maps shall be updated at a minimum of once per change of phase in maintenance of traffic plan or at the discretion of the Incident Management Task Force. The maps shall be no larger than 11 inches by 17 inches, in color, to 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 defined by the INDOT
6. Rally points for emergency vehicle escorts into the work area with identifiers defined by the INDOT
7. Control points as designated by the INDOT, such as mile markers and block numbers.
8. Emergency road closure, diversion, points with identifiers defined by the INDOT
9. Diversion equipment locations with quantities
10. All entrance and exit ramps shall be uniquely identified and labeled

The Incident Management Liaison shall meet with local fire department representatives no later than 10 days prior to a change in the maintenance of traffic pattern to coordinate computer aided dispatch response plans.

The Incident Management Liaison shall coordinate with the Department Incident Management Task Force meetings as follows:

1. A minimum of 14 days before a phase change in the maintenance of traffic pattern.
2. A supplementary meeting a minimum of seven days before a change in the maintenance of traffic pattern.
3. A minimum of one meeting per month during any maintenance of traffic phase with a duration of more than 30 days.

The Incident Management Liaison shall maintain the list of Incident Management Task Force members. This list shall include at a minimum the following: name, department, work phone, fax, email, pager, unit/car number. The list shall be sorted in alphabetical order by department and then last name. The Incident Management Liaison shall notify members of the Incident Management Task Force of meetings at least 14 days prior to the meeting.

The Incident Management Liaison shall hold regularly scheduled meetings each month with the Incident Management Task Force members and present project status photos in a presentation.

Design-Build Contractor shall designate a person or persons capable of coordinating Design-Build Contractor's resources who shall be available and on call by the freeway service patrol 24 hours a day, 7 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 site to oversee the use of Design-Build Contractor's resources to help resolve an incident. The designees shall also be prepared to contact any necessary Design-Build Contractor's personnel outside normal working hours.

In the event of a major incident while construction operations are underway, Design-Build Contractor's personnel may be required to assist in urgently establishing road or ramp closures to isolate incident scenes. Also, Design-Build Contractor's heavy equipment may be required to assist in moving wreckage or debris from the travel lanes and realigning temporary barriers to facilitate reopening the road to normal traffic. The Incident Management Liaison shall coordinate these activities with the law enforcement or fire department officials on the scene and the Department's Gary Traffic Management Center as needed.

Design-Build Contractor shall remove disabled vehicles from the within the project limits at the request of the INDOT and shall respond within 45 minutes of the request. Design-Build Contractor shall provide a suitable location off of the project to store disabled vehicles until the owner can retrieve the vehicle.

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 the Department Traffic Management Business Unit:

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.

The Incident Management Liaison will not be required to meet the 30 minute response time during the winter months when all lanes and ramps are open to normal traffic.

11.3.11 Incident Response Requirements

Design-Build Contractor shall coordinate all incident response requirements in accordance with the Indiana Design Manual, Chapter 81, Traffic Management Plan, with:

Ms. Kimberly Peters
Incident Management Operations Director Indianapolis Traffic Management Business Unit 8620 East 21st Street Indianapolis, Indiana 46219
Telephone: 317-899-8619
E-mail: kpeters@indot.in.gov

11.4 Deliverables

Deliverables, a non-exhaustive list of which is set forth in the table 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.

Deliverable	Submittal Schedule	TP Section
Transportation Management Plan (TMP) for Construction Work	Draft TMP within 30 Days after NTP1; Final TMP 30 days prior to Commencement of Construction; Updates as needed.	11.2.1
Temporary Traffic Control Plan (TTCP)	Draft TTCP within 30 Days after NTP1; Final TTCP 30 days prior to Commencement of Construction; Updates as needed.	11.2.2
Alternative strategies for control delay at signalized intersections	60 days prior to signal plans inclusion into the RFCs	11.2.4.2
Work Vehicle Traffic Control Plan	90 days after NTP1	11.3.3

12 GEOTECHNICAL

12.1 General

This Section 12 provides the minimum Project requirements for geotechnical Work adjacent to existing infrastructure within existing ROW. Design-Build Contractor is responsible for addressing the specific geotechnical needs associated with the Project.

Design-Build Contractor shall perform the geotechnical Work, including subsurface explorations, investigations, testing, and analyses, in accordance with the applicable requirements in the PPA Documents, including Project Standards and this Section 12; Governmental Approvals; and applicable Laws.

12.2 Design Requirements

12.2.1 Geotechnical Subsurface Exploration

The Geotechnical Data Reports provide preliminary geotechnical data obtained by INDOT for the Work. Design-Build Contractor is responsible for reviewing and interpreting the geotechnical data provided and satisfying itself as to the suitability and sufficiency of the geotechnical data for meeting the geotechnical requirements of the Project and for determining what additional data is necessary to satisfy Project requirements.

12.2.2 Supplemental Subsurface Exploration

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 is responsible for the sufficiency, reliability, and accuracy of all Work and for determining the form and nature of the subsurface conditions of the Site.

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 design and analysis. The subsurface exploration and testing program shall be submitted to INDOT for review and comment. 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 and ground surface elevation for each exploration performed.

12.2.2.1 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. INDOT will provide the electronic template for the current version of gINT. Boring and rock core logs shall show the coordinate location, station, and offset from the alignment and ground surface elevation on each individual log.

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 and characterize in-situ conditions.

12.2.2.2 Personnel

Geotechnical investigations (including test drilling) shall be performed by an INDOT Office of Geotechnical Services-approved geotechnical consultant. All laboratory testing shall be performed by an INDOT-approved laboratory with AASHTO Materials Reference Laboratory certification for each specific test performed.

Geophysical investigations shall be planned and performed under the direct supervision of a geophysicist with a minimum of 10 years of experience performing geophysical investigations on transportation projects.

Boring and in-situ testing shall be performed by field inspectors who have passed the NHI Subsurface Investigation Qualification Course (#132079) and are either a degreed engineer or geologist; or have a minimum of two years of field experience in the inspection and reporting of field sampling and testing of similar size and content.

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

12.2.3 Geotechnical Design Reports

Design-Build Contractor shall prepare Geotechnical Design Reports addressing all of the Project's geotechnical Work. A Geotechnical Design Report may be written for individual Project elements, groups of Project elements, or all Project elements. Geotechnical Design Reports shall be submitted to INDOT for review and comment. No construction Work shall begin until the corresponding Geotechnical Design Report is approved.

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.

12.2.3.1 Geotechnical Analysis

Each Geotechnical Design Report shall contain a separate section entitled "Geotechnical Analysis." 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 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 deformation properties and the preliminary design parameters for all soil and rock types
5. Results of laboratory tests

6. Potential settlement problems
7. Potential stability problems
8. Potential groundwater problems that may be encountered and recommended solutions
9. Seismic zone Information
10. Construction considerations, such as support of excavations, vibration monitoring, and instrumentation requirements

12.2.3.1.1 Foundations

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

1. Individual pile and pile group design calculations, including maximum factored axial and lateral resistances for the pile type, size, and length (including any effects of liquefaction and downdrag)
2. Estimated pile and pile group settlement
3. Shallow foundations calculations, including maximum factored bearing resistance, estimated differential and total settlements, and rotations
4. Calculations of embankment settlement (magnitude and time rate) and downdrag forces on piles, depths to zero or negligible settlement, and proposed means to mitigate downdrag

12.2.3.1.2 Retaining Walls

For retaining walls the report shall include, at a minimum, design calculations and analysis of external stability and total, differential, and secondary settlement.

12.2.3.1.3 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 loading
2. Recommended side slopes
3. Results of settlement analyses including predictions of the magnitude and duration of primary, secondary, and post-construction settlements
4. Results of liquefaction analyses and proposed methods of mitigation for any location deemed necessary
5. Proposed methods of protecting and abandoning Utilities where necessary
6. Recommendations for staged construction design where deemed necessary

12.2.3.2 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
2. Values assigned to soil parameters for design
3. Conclusions and recommendations for the specific Elements
4. Requirements for submitting results of instrumentation and monitoring summaries
5. Backfill material requirements
6. Recommendations for any necessary ground improvements
7. For deep foundations, the number and location of dynamic pile load tests is required

12.2.3.3 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.

12.2.4 Deep Foundations

Deep foundations shall be used where the soil and/or bedrock is not suitable for use of shallow foundations or where scour or erosion is anticipated. Deep foundations are limited to driven steel piles and drilled shafts. Timber piles, precast prestressed concrete piles, auger cast in place piles, rammed aggregate piers, screw piles, and existing foundations shall not be used for new structures.

12.3 Construction Requirements

INDOT 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 install appropriate elements to facilitate testing. Each method will be performed on 100 percent of drilled shaft bridge foundations. Thermal Integrity Profiling using infrared probes is prohibited.

Based upon the installation and testing data, Design-Build Contractor's geotechnical engineer shall validate that the drilled shafts were adequately constructed. If not adequately constructed, Design-Build Contractor's Engineer shall recommend an appropriate resolution for review and comment by INDOT.

12.4 Deliverables

Deliverables, a non-exhaustive list of which is set forth in the table below, 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.

Deliverable	Submittal Schedule	TP Section
Subsurface exploration and testing program	Prior to performing subsurface exploration and testing	12.2.2
Geotechnical Design Reports	30 days prior to Released for Construction Documents	12.2.3

13 STRUCTURES

13.1 General

Design-Build Contractor shall design and construct the structures Work in accordance with the applicable requirements in the PPA Documents, including Project Standards, this Section 13 and its Attachment 13-1 (Unique Special Provisions); Governmental Approvals; and applicable laws.

13.2 Bridge Structure Requirements

1. All rehabilitated structures shall be designed for HS20-44 loading in accordance with the 2002 AASHTO Standard Specifications for Highway Bridges, 17th Edition, and subsequent interim specifications.
2. All replacement structures shall be designed for HL-93 loading in accordance with 2014 AASHTO LRFD Bridge Design Specifications, 7th Edition, and subsequent interim specifications. Superstructure designs shall not include side-by-side box beams.
3. New and replacement bridges shall be composite and continuous over interior supports.
4. Steel bridges shall utilize grade 50 or 70 painted or weathering steel. If weathering steel is utilized, details shall be provided to minimize staining of MSE walls, abutments and/or piers. Hinges or pin and hanger type connections are not allowed. Fracture critical elements and fatigue prone details (AASHTO Category "E" or "F") are not permissible.
5. Concrete bridge railing shall be used on all bridge structures. Concrete bridge railing shall be TL-5 for all structures carrying I-65. Barrier warrants shall satisfy IDM Chapter 49.
6. Concrete bridge railing transitions shall be placed at each bridge corner and guardrail transitions shall be placed where guardrail is warranted.
7. New Work shall match the geometry of existing bridges to be modified. Replacement bridges shall meet design requirements for geometry.
8. The location of construction joints between existing and proposed concrete bridge decks shall be staggered from the location of overlay construction joints by at least one foot.
9. New approach slab and bridge concrete shall be surface sealed in accordance with the Indiana Design Manual. Existing bridge railings and copings to remain shall also be surface sealed.
10. New approach slabs shall be connected to new and existing pavement ledges using horizontal tie bars. New approach slabs shall be detailed and constructed such that they may not be poured concurrently with the bridge deck. Type 1A joints shall be placed as required. New pavement ledges shall be no less than 9 inches wide.
11. Control joints shall be placed in all new approach slabs at lane lines, spaced no greater than 15 feet apart laterally. Control joints shall be similar to type 1A joints.
12. Place sacrificial embedded galvanic anodes per Attachment 13-1 (USP, Embedded Galvanic Anodes) along all interfaces where cleaned and straightened steel reinforcing bars are cast in new concrete.
13. Load Rating shall be performed by Design-Build Contractor. Work shall comply with the INDOT Bridge Inspection Manual, Part 3 Bridge Load Rating. The Load Rating summary for each bridge shall be submitted to the INDOT Central Office Load Rating Engineer for review and approval prior to construction.

14. The structures shall be constructed in phases to accommodate the MOT Plans and the maintenance of traffic requirements. Level One Design Criteria shall be met unless an approved Design Exception is obtained.

15. Drainage features shall be designed to eliminate or minimize the need for bridge deck drains. Wherever possible, existing bridge deck drains should be preserved and bridge drainage shall be directed to riprap drainage turnouts. New bridge deck drains shall be located in accordance with IDM Chapter 203. If riprap turnouts are installed at the end of a barrier transitions, construct modified concrete curb turnouts to direct water to the turnout.

16. At all bridge water crossings, a scour report with scour countermeasure recommendations shall be developed and submitted to INDOT for review and approval. Design and construct scour countermeasures as required.

17. Hydraulic analysis for superstructure or bridge replacements shall be performed by Design-Build Contractor and shall be submitted to INDOT for review and approval. Recommended and provided bridge waterway openings shall meet or exceed the requirements developed by hydraulic analysis.

18. Foundation design shall be in accordance with the Geotechnical Design Report.

19. 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.

20. Any concrete placement with a minimum dimension of 5.0 feet or more shall be considered mass pour concrete and shall be placed in accordance with Attachment 13-1 (USP, Structural Mass Pour Concrete). Drilled shaft concrete shall not be considered mass pour concrete.

21. Design and construct foundations and structures to meet the following performance criteria:

    a. Post-construction settlement of bridge piers and abutments: Less than 1.0-inch total settlement and less than 0.5-inch differential between adjacent piers or abutments.

    b. Lateral deflection at top of foundations for non-seismic loading: As required for serviceability of Design-Build Contractor's design, but not to exceed 1.0-inch.

22. Seismic design of the structure shall be based on the soil profile type as recommended in the Geotechnical Design Report.

23. Patch piers, crash walls, and undersides of decks as required to repair all concrete delamination and spalling.

24. For modified existing bridges, existing beams shall not be overstressed by more than 5 percent. This allowance does not apply to Load Rating.

25. For all bridges carrying I-65, install ITS conduits in new bridge railings or on the outside face of existing bridge railings not requiring replacement. Connect the bridge conduits to buried conduits with expansion connections.

26. For all existing structures, clean end bent and gutter drain pipes and their inlet and outlet structures. Replace outlet protection, install revetment riprap, and install a delineator at the outlets.

27. Provide 16.0 feet minimum vertical clearance at bridges over I-65.

28. Requirements for structures to be widened:

    a. The cross-section of the bridges shall be widened to carry the full traveled way width.

b. Mill the existing bridge deck and perform hydrodemolition to remove unsound concrete. Perform full depth bridge deck patching as needed. Prior to milling, remove existing overlay if present. Milling depth may be a maximum of ½ inch, but no less than ¼ inch, to maintain HS-20 Load Rating.

c. Remove a portion of the existing concrete bridge deck coping sufficient to connect the widened deck and to remove unsound concrete.

d. Widen the concrete bridge deck, matching the milled existing bridge deck thickness, profile, and cross slope.

e. Place a variable depth (1¾ inch minimum) latex-modified concrete overlay on existing and widened bridge deck surface. Minimum cross-slope shall be 1.5 percent.

f. Widen the superstructure and piers in kind.

g. Replace existing bridge rails, bridge rail transitions and approach slabs for structures carrying I-65.

h. Place riprap drainage turnouts at ends of bridge rail transitions, on shoulders that receive drainage. Construct modified concrete curb turnouts to direct water to the turnout. Drainage shall not be turned out above the envelope of structure backfill if MSE walls are present.

i. End bents shall be semi-integral or integral.

j. Blast clean and prime the ends of steel beams at end bents where concrete is to be poured permanently against steel.

k. New structural steel shall be painted to match the color of existing structural steel.

l. Extend riprap spillslopes entirely across median.

m. Slopewalls and riprap spillslopes shall be widened to 2 feet outside the bridge deck, underneath structure.

29. Requirements for structures to be widened and to receive deck replacement:

a. The cross-section of the bridges shall be widened to carry the full traveled way width.

b. Remove concrete deck, bridge rails, bridge rail transitions, approach slabs and guardrail at outside bridge corners.

c. Remove mudwalls down to bridge seat.

d. Place new 8 inch minimum thick concrete deck, bridge rails, bridge rail transitions and approach slabs, and tie new guardrail into existing guardrail at outside.

e. Widen the superstructure and piers in kind.

f. Place riprap drainage turnouts at ends of bridge rail transitions, on shoulders that receive drainage. Construct modified concrete curb turnouts to direct water to the turnout. Drainage shall not be turned out above the envelope of structure backfill if MSE walls are present.

g. End bents shall be poured semi-integral.

h. Blast clean and prime the ends of steel beams at end bents where concrete is to be poured permanently against steel.

i. New structural steel shall be painted to match the color of existing structural steel.

j. Extend concrete slopewalls entirely across median.

k. Slopewalls and riprap spillslopes shall be widened to 2 feet outside the bridge deck, underneath structure.

30. Requirements for structures to be widened and to receive superstructure replacement:

a. The cross-section of the bridges shall be widened to carry the full traveled way width.

b. Remove superstructure including concrete bridge slab, bridge rails, bridge rail transitions, approach slabs and guardrail at outside bridge corners. Remove portions of substructure as needed. Place new widened superstructure, bridge rails, bridge rail transitions, and approach slabs, and tie new guardrail into existing guardrail at outside shoulder.

c. End bents shall be poured semi-integral or integral.

d. Place riprap drainage turnouts at ends of railing transitions on shoulders that receive drainage. Construct modified concrete curb turnouts to direct water to the turnout. Drainage shall not be turned out above the envelope of structure backfill if MSE walls are present.

e. Extend riprap spillslopes entirely across median.

f. Slopewalls and riprap spillslopes shall be widened to 2 feet outside the bridge deck, underneath structure.

g. Piers shall be widened in-kind, matching existing piers.

31. No Work is required on the following structure:

Structure No. I65-258-04902 (101st Avenue over I-65)

13.3 Specific Bridge Requirements

13.3.1 Bridge No. 1: 93rd Avenue over I-65

File Structure No. I65-259-08308 A

The existing structure shall be rehabilitated in accordance with Section 13.2 except as modified herein:

1. Place a polymeric concrete bridge deck overlay on the bridge deck and approach slabs in accordance with the RSPs.
2. Mill and resurface 15 feet of the approach roadway pavement at each approach.
3. On the north side of the bridge, replace the first panel of concrete sidewalk on the approach roadway, approximately 5 feet long each. Place compression joint material between the existing bridge sidewalk on the approach slab and new sidewalk.
4. Pedestrian traffic shall be maintained across the bridge during all stages of construction.

13.3.2 Bridge No. 2: 101st Avenue over I-65

File Structure No. I65-258-04902

No Work shall be done to the existing structure.

13.3.3 Bridge Structure No. 3 & 4: I-65 NB & SB over Beaver Dam Ditch

File Structure No. I65-257-04901 DNBL and I65-257-04901 JDSBL

The existing structures shall be rehabilitated in accordance with Section 13.2 except as modified herein:

1. Place a polymeric concrete bridge deck overlay on the bridge deck and approach slabs in accordance with the RSPs.
2. In the southwest quadrant, fill the existing erosion hole located at the overhead light foundation.

13.3.4 Bridge No. 5 & 6: I-65 NB & SB over 109th Avenue

File Structure No. I65-257-04900 BNBL and I65-257-04900 BSBL

The existing structures shall be rehabilitated in accordance with Section 13.2 except as modified herein:

1. Place a polymeric concrete bridge deck overlay on the bridge deck and approach slabs in accordance with the RSPs.
2. Replace HMA portion of terminal joints. Widen terminal joints to match the bridge clear roadway width.

13.3.5 Bridge No. 7: 113th Avenue over I-65

File Structure No. I65-256-04899 B

The existing structure shall be rehabilitated in accordance with Section 13.2 except as modified herein:

Replace existing expansion joints with expansion joint sealing system.

13.3.6 Bridge No. 8 & 9: I-65 NB & SB over US 231

File Structure No. I65-255-02320 JCNB and I65-255-02320 CSBL

The existing structures shall be rehabilitated and widened with a deck replacement in accordance with Section 13.2 except as modified herein:

1. Replace all existing steel bearing assemblies with elastomeric bearing pad assemblies.
2. Tighten all bolts on bolted diaphragms between the original beams and the previous outside widening beams. Replace damaged or heavily-corroded bolts, nuts and hardware.

13.3.7 Bridge No. 10: 137th Avenue over I-65

File Structure No. I65-254-04898 B

The existing structure shall be rehabilitated in accordance with Section 13.2 except as modified herein:

1. Mill the existing bridge deck ½ inch depth, perform hydrodemolition to remove unsound concrete, and perform full depth patching as needed.
2. Place a variable depth (1¾ inch minimum) latex-modified concrete overlay on entire bridge deck surface. Minimum cross-slope shall be 1.5 percent.
3. Replace existing reinforced concrete approach slabs.
4. Fill voids at the top of the east and west slopewalls.
5. Patch concrete beam spalls in Span A.
6. Replace the rubber strip-seal gasket in existing S-S expansion joints.

13.3.8 Bridge No. 11 & 12: I-65 NB & SB over Wirtz Ditch (Stony Run)

File Structure No. I65-253-05119 CNBL and I65-253-05119 CSBL

The existing structures shall be rehabilitated and widened in accordance with Section 13.2 except as modified herein:

1. Remove mudwalls down to the bridge seat and a minimum of 5.0 feet of the bridge deck at end bents. Reconstruct existing end bents as semi-integral.
2. Mill and resurface 30 feet of the approach roadway pavement at each end.

13.3.9 Bridge No. 13: 153rd Avenue over I-65

File Structure No. I65-252-04897 B

The existing structure shall be rehabilitated in accordance with Section 13.2 except as modified herein:

1. Remove existing concrete overlay, mill the existing bridge deck ½ inch depth and perform hydrodemolition to remove unsound concrete. Perform full depth patching as needed.
2. Place a variable depth (2¼ inch minimum to match existing profile) latex-modified concrete overlay on entire deck surface. Minimum cross slope shall be 1.5 percent.
3. Place surface seal on existing reinforced concrete approach slabs.
4. Perform pier patching and wrap the I-65 outside shoulder piers with a fiber wrap concrete encasement system. The fiber wrap shall extend vertically from 6 inch below ground to the bottom of the hammerhead pier cap and shall encase the traffic face and both edges of the pier.
5. Patch concrete beam spalls in Span A.
6. Replace expansion joints with precompressed foam joints per Attachment 13-1 (USP, Precompressed Foam Joints).
7. Construct riprap turnouts at the bridge ends.

13.3.10 Bridge No. 14 & 15: I-65 NB & SB over SR 2

File Structure No. I65-249-04896 CNBL and I65-249-04896 CSBL

The existing structures shall be rehabilitated and widened in accordance with Section 13.2 except as modified herein:

Do not disturb existing highway lighting and conduit attached to the existing bridge components.

13.3.11 Bridge No. 16 & 17: I-65 NB & SB over Kankakee River

Existing File Structure No. I65-244-04891 CNBL and I65-244-04891 CSBL

Proposed File Structure No. I65-234-09807 NBL and I65-234-09807 SBL

The existing structures shall be replaced and widened in accordance with Section 13.2 and as follows:

1. Remove the existing superstructure including structural steel, concrete bridge slab, bridge rails, bridge rail transitions, approach slabs and guardrails. Remove the existing substructure as needed to construct the new bridge and appurtenances.
2. The cross-section of the replacement bridges shall carry the full traveled way width. Construct the new widened replacement bridges, including superstructure, bridge rails, bridge rail transitions, approach slabs, guardrails and substructure.
3. End bents shall be designed and poured semi-integral or integral.
4. Place riprap drainage turnouts at ends of railing transitions on shoulders that receive drainage. Construct modified concrete curb turnouts to direct water to the turnout. Drainage shall not be turned out above the envelope of structure backfill if MSE walls are present.
5. Extend slopewalls or riprap entirely across median.
6. Slopewalls or riprap shall extend 2 feet outside the bridge deck, underneath structure.
7. The replacement bridges shall be sized to provide sufficient space under the bridge for future construction of an access road along the south bank of the Kankakee River. The window for the access road will be 12 feet wide and 8 feet high below the bridge. The access road shall be located no less than 12 feet horizontally from the Kankakee River ordinary high water mark and shall be graded flat horizontally.
8. The existing access road along the north bank of the Kankakee River shall not be disturbed. If disturbed, the access road shall be regraded to original condition and location.

13.4 Retaining Wall Structures

1. All walls shall be designed in accordance with the applicable Project Standards.
2. Retaining wall types shall not include modular block, bin walls, gabion walls, or prefabricated modular walls. Extensible ground reinforcement shall not be used. Wall types shall be subject to approval by INDOT.
3. Proposed MSE walls shall be in accordance with the applicable Project Standards. Material specifications for wall types other than MSE walls shall be in accordance with the applicable Project Standards. All retaining wall components shall be designed in accordance with the applicable Project Standards.

4. Where exposed heights of retaining walls adjacent to a sidewalk are unprotected by railing, appropriate permanent fall hazard protection shall be installed on retaining wall structures.

13.5 Noise Barriers

Noise barriers, if required, shall be in accordance with the RSPs, with the exception that they shall be designed in accordance with 6th Edition AASHTO LRFD Bridge Design Specifications and subsequent interim specifications.

1. Design-Build Contractor shall perform a noise analysis and determine if noise barriers are required in accordance with the applicable Project Standards. The noise analysis and noise barrier locations shall be submitted to INDOT and FHWA for review and approval. Following approval, noise barriers shall be designed and constructed by the Design-Build Contractor.
2. The geotechnical evaluation required to design and construct the noise barrier shall be the responsibility of Design-Build Contractor.
3. Signing details for the noise barriers shall be the responsibility of Design-Build Contractor.
4. Provide fire hydrant access doors in accordance with Attachment 13-1 (USP, Noise Barrier Fire Hydrant Access Door Features) wherever fire hydrants are located within 400 feet of the edge of the I-65 shoulder.

13.6 Deliverables

Deliverables, a non-exhaustive list of which is set forth in the table 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.

Deliverable	Schedule	TP Section
Foundation Review Form	With Stage 3 and Released for Construction Documents	NA
Level 1 Checklist	With Stage 1, Stage 3, and Released for Construction Documents	NA
Asbestos Certification	With Released for Construction Documents	NA
Bridge Search Data Form	With Released for Construction Documents	NA
Load Rating summary for widened bridges	With Released for Construction Documents and approved prior to superstructure shop drawings submission	13.2
Load Rating summary for bridges with a new overlay	With Released for Construction Documents and approved at least 30 days prior to construction	13.2
Scour report	Minimum 60 days prior to Stage 1	13.2
Hydraulic analysis	Minimum 60 days prior to Stage 1	13.2
Noise analysis and noise barrier locations	With Stage 1	13.5

14 UTILITIES

14.1 General

Design-Build Contractor shall initiate and complete all utility coordination and other Work as required.

Design-Build Contractor shall conduct utilities Work in accordance with the applicable requirements in the PPA Documents, including Project Standards and this Section 14 and its Attachment 14-1 (Certified S.U.E. Data); Governmental Approvals; and applicable laws.

14.2 Technical Requirements

Design-Build Contractor shall designate a Utility Coordinator who is certified through INDOT's Utility Coordinator Certification Training. The certified Utility Coordinator shall complete the tasks assigned to that role in the Project Standards.

Certified SUE Utility Information is provided in Attachments 14-1A through 14-1D.

Design-Build Contractor shall identify all utility conflicts remaining on the project at the time of contract award and resolve them. Design-Build Contractor shall create a Utility conflict matrix for approval. The matrix shall include the utility name, facility (size and type), location and whether a conflict is anticipated. The plans and details prepared by Design-Build Contractor shall reflect all final and accepted resolutions.

Design-Build Contractor shall be responsible for construction and connection of New Utility services as applicable for signs, lighting, signals, and all other New Utility services required for the Project.

Design-Build Contractor shall make diligent efforts to ensure utility conflicts do not unduly delay the completion of the work, including scheduling, facilitating utility meetings and other actions as necessary. Design-Build Contractor shall notify INDOT at least two working days in advance of a utility meeting. Utility meetings shall not be held without the presence of an INDOT Authorized Representative.

Design-Builder Contractor shall submit documentation of conflicts to INDOT for review and concurrence.

Conflict analysis and utility design review will take no more than five working days after all requested documents are submitted. INDOT's review of the conflict analysis and utility design will commence after the other required design reviews have been satisfactorily completed and approved. Once the utility design is approved Design-Build Contractor shall coordinate work plans with affected utilities.

Design-Build Contractor shall be responsible for working with utilities to ensure that all utility concerns are addressed. Design-Build Contractor shall negotiate with the utilities all necessary Utility Agreements, relocation plans and permits, and shall review all utility work plans before they submit all such related documents to INDOT for approval.

14.3 Utility Specific Coordination and Construction Requirements

14.3.1 American Electric Power (AEP)

Construction equipment and personnel must maintain appropriate OSHA Safe Work Zone clearances from energized lines during construction. Base clearance for AEP facilities is a minimum of 66 feet for two-lane roadways and 69.8 feet for all other roadways and ramps.

Submit plans for any proposed work within AEP's easement or under AEP's transmission line to AEP for review and comment sufficiently prior to work commencing to allow for review and comment cycle. No work within AEP's easement or under AEP's transmission line can commence without written approval of AEP.

AEP will not require transmission line to be raised to meet electrostatic clearance requirements of the National Electric Safety Code if all of the following conditions apply:

- The Functional Classification of the road does not change due to the Work.
- At Substantial Completion, the elevation of the road under the transmission line remains the same or is lower than existing.

14.3.2 ANR Pipeline

Design-Build Contractor shall perform work within and around the ANR Pipeline in accordance with the requirements stated in the ANR General Construction Requirements in Attachment 14-2 (Utility-Specific Requirements).

14.3.3 AT&T Distribution

Provide a minimum of 36 inches of cover for all facilities.

Provide a minimum of 12-inch separation from gas lines. If an electrical facility is contained within a conduit, no separation will be required.

14.3.4 BP Pipelines

Design-Build Contractor shall submit any plans to BP in accordance with the BP Design Plan Submittal document included in Attachment 14-2 (Utility-Specific Requirements).

Design-Build Contractor shall perform Work within the existing BP easement in accordance with the requirements stated in the BP General Construction Requirements included in Attachment 14-2.

14.3.5 Buckeye Pipelines

Design-Build Contractor shall perform work around the Buckeye pipeline in accordance with the requirements of the Buckeye Right-of-Way Use Restrictions included in Attachment 14-2 (Utility-Specific Requirements).

14.3.6 Enbridge

See Attachment 14-2 (Utility Specific Requirements) for requirements for Enbridge's facilities.

14.3.7 NIPSCO Electric

Proposed design shall comply with the National Electric Safety Code and OSHA crane requirements.

Design-Build Contractor shall meet the clearance requirements for any existing, new, or adjusted crossings under NIPSCO Electric facilities. Design-Build Contractor shall meet clearance requirement for a 345-kV facility over a highway is 28 feet, which is measured at a sag low point of wire at 266 degrees F.

The earth surrounding any pole foundation shall not be disturbed within 20 feet of the edge of the base of any overhead facilities. Any work within 20 feet of any pole foundation shall be approved by NIPSCO Electric.

14.3.8 NIPSCO Gas

Design-Builder Contractor shall provide a one-foot clearance in all directions of facilities. Provide a 3-foot buried depth for non-transmission facilities and a four-foot buried depth for transmission facilities.

14.4 Deliverables

Deliverables, a non-exhaustive list of which is set forth in the table 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.

Deliverable	Schedule	TP Section
Utility conflict matrix	Within 60 days of NTP1	14.2
Utility work plans		14.2

15 NOT USED

16 INTELLIGENT TRANSPORTATION SYSTEM (ITS)

16.1 General

The purpose of the ITS is to improve traveler safety, improve traffic efficiency by minimizing congestion, mitigate the impact of Incidents, and minimize traffic-related environmental impacts.

The elements of the ITS shall include detection for traffic management, roadway weather information systems (RWISs), closed-circuit television (CCTV) cameras for Incident verification and monitoring, and dynamic message signs (DMSs).

The ITS 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 Traffic Management Center (TMC).

All components of the system will be controlled and operated by INDOT TMCs in Gary and Indianapolis.

Design-Build Contractor shall provide a warranty for all installed equipment for at least one year or in accordance with INDOT's Standard Specifications, whichever is greater. The warranty periods shall begin on the date of Final Acceptance.

Design-Build Contractor shall design and construct the ITS components in accordance with the applicable requirements of the PPA Documents, including Project Standards, this Section 16 and its Attachment 16-1 (Unique Special Provisions); Governmental Approvals; and applicable laws.

Design-Build Contractor shall meet with INDOT to confirm details on ITS work elements. Meetings shall be held at the Gary TMC, 7701 East Melton Road, Gary, Indiana 46403. The contact person is Jessica Kruger, (219) 938-2019.

16.2 Performance Requirements

All material and equipment provided shall be compatible with existing Department ITS deployments to 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).

System design and construction shall maintain the operation of the existing ITS within the Project limits throughout the duration of the Work unless otherwise noted in these requirements.

The ITS shall provide accommodation for routine system maintenance with no impact to normal traffic operations. The ITS shall provide adequate features for the safety of maintenance personnel, including widened access shoulders, level maintenance platforms, and safety guide railings or traffic barriers if within clear zones.

16.3 Design and Construction Requirements

16.3.1 Design Consultant Pre-qualification for ITS Work

Design-Build Contractor shall have an INDOT pre-qualified consultant perform the design work for the following work type:

10.5 Intelligent Transportation System Design

16.3.2 Power Requirements

Design-Build Contractor shall coordinate with Utility providers to deliver metered alternating current (AC) power to all ITS and communications equipment installed or modified under this Project. Design-Build Contractor shall be responsible for all Work, materials, and costs required to obtain and maintain power, including application and coordination with the Utility provider.

16.3.3 ITS Equipment

Design-Build Contractor shall submit to INDOT for approval a preliminary and final ITS layout, including the quantity and location of the ITS elements, communication network diagrams, ITS location plan sheets, and dimensioned layout sheets illustrating horizontal and vertical plan locations, ITS elements, support structures, and construction materials. Design-Build Contractor shall in advance submit material cut sheets to INDOT for approval prior to ordering.

Clearances between ITS devices and other non-ITS infrastructure shall comply with all applicable requirements, and the location of ITS equipment shall accommodate safe access for routine maintenance activities.

16.3.4 ITS Operations

All ITS elements with the potential to be in the public view shall be under the control of INDOT TMC. Design-Build Contractor shall not activate any display, broadcast, or other message without prior coordination with the TMC.

16.3.5 ITS Work Elements

16.3.5.1 Materials

Design-Builder shall furnish all materials for ITS work elements.

16.3.5.2 Detectors

Design-Build Contractor shall design, furnish, and install vehicle detectors at CCTV camera locations. Detector installations along I-65 shall include the new CCTV camera installations and three existing CCTV camera locations:

1. At 101st Avenue
2. At US 231
3. At SR 2

The detectors shall be wireless in-pavement sensor detection system, microwave radar, or microloop technology. Design-Build Contractor shall confirm the detector type at each location with INDOT prior to beginning work. The detectors shall provide vehicle volumes, speeds, user-defined classes, and occupancies by lane in user-defined intervals (typically 2 minutes to 15 minutes). All traffic data shall be transmitted continuously to INDOT TMC. Detectors shall connect to an Aries Field Processor (AFP) provided by Design-Build Contractor in INDOT field cabinet for communications back to the TMC, where the detector field data will be integrated into the existing vehicle detection system for traffic monitoring and management.

An existing Automatic Traffic Recorder (ATR) detector installation is located just north of the 93rd Avenue overpass. Design-Build Contractor shall replace this existing installation with a new installation with all new materials. The new installation shall include new loops and piezo sensors for all existing and additional lanes. A new equipment cabinet shall be provided beyond the outside shoulder in the vicinity of the existing cabinet to be removed. The existing cabinet and equipment shall be delivered to INDOT.

16.3.5.3 Roadway Weather Information System

Design-Build Contractor shall provide a roadway weather information station to provide weather and roadway condition monitoring. The anticipated location of the RWIS station is the I-65/US 231 interchange. Design-Build Contractor shall coordinate the final location with INDOT. Design-Build Contractor shall design, furnish, install, and test the new roadway weather information station to provide a complete and operational RWIS.

16.3.5.4 CCTV Cameras

Design-Build Contractor shall design, furnish, install, and test permanent CCTV cameras, field equipment and control center equipment necessary to integrate cameras and detectors into the existing system. CCTV cameras and support towers shall be installed along I-65 at four locations. CCTV cameras shall be installed on towers at a minimum height of 60 feet above the roadway surface. 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 location. The anticipated locations are listed below. Design-Build Contractor shall confirm these locations with INDOT prior to beginning work.

1. At 113th Avenue
2. At 137th Avenue
3. At 163rd Avenue
4. At 217th Avenue

Design-Build Contractor shall install the CCTV camera sites as advance work prior to any roadwork that involves lane closures. The CCTV cameras shall be fully operational with communications to the INDOT Traffic Management Centers (TMCs) in Gary and Indianapolis. Remote video and control for these CCTV cameras shall be provided at the two TMCs to enable monitoring of traffic conditions in the construction zone and to serve as permanent CCTV camera sites after construction is completed.

16.3.5.5 Dynamic Message Signs (DMSs)

Design-Build Contractor shall design, furnish, install, and test permanent DMSs to provide traffic information on I-65. The overhead DMSs and support structures shall be located at critical approaching and departure locations along I-65. The anticipated locations are listed below. Design-Build Contractor shall confirm these locations with INDOT prior to beginning work.

1. SB I-65 near 101st Avenue (Mile 250.4)
2. NB I-65 north of 217th Avenue (Mile 235.7)

Design-Build Contractor shall install the DMS as advance work prior to any roadwork that involves lane closures. The DMS shall be fully operational with communications to the INDOT Traffic Management Centers (TMCs) in Gary and Indianapolis. Remote monitoring and control for these DMS shall be provided at the two TMCs to enable disseminating travel information to motorists about the construction activities and to serve as permanent DMS after construction is completed.

16.3.5.6 Travel Time Signs (TTS)

Design-Build Contractor shall design, furnish, install, and test permanent TTSs to provide travel time to downstream destinations along I-65. The TTS and support structures shall be located at two locations along I-65. The anticipated locations are listed below. Design-Build Contractor shall confirm these locations with INDOT prior to beginning Work on the TTSs.

1. SB I-65 near 53rd Avenue (Mile 256.4). Downstream Destinations: US 231, 9 miles and SR 2, 16 miles.
2. NB I-65 near 137th Avenue (Mile 245.6). Downstream Destinations: US 30, 7 miles and I-80/94, 14 miles.

Design-Build Contractor shall install the TTS prior to any roadwork that involves lane closures. The TTS shall be fully operational with communications to the INDOT Traffic Management Centers (TMCs) in Gary and Indianapolis. Remote monitoring and control for these DMS shall be provided at the two TMCs to enable disseminating travel time information to motorists during construction activities and to serve as permanent TTS after construction is completed.

16.3.6 Communication System

All permanent, final backbone communications shall be via fiber optic connections. The new fiber shall be 192-strand, single-mode fiber-optic cable. The new fiber shall extend to the new ITS field device locations and shall be fusion spliced to existing INDOT fiber cable. All added permanent devices (e.g., CCTV towers, DMS, TTS) shall be connected to the backbone communications cable in the final condition. Design-Build Contractor shall provide temporary communications in advance to enable the operation of the ITS field devices during construction. ITS field devices shall be operational prior to any roadway that involves lane closures. Communications shall be maintained throughout construction and remain in a permanent installation condition after construction is complete.

Fiber-optic communications cable exists from approximately US 231 (Mile 247.5) to SR 2 (Mile 240). Design-Build Contractor shall install a fiber optic cable extension to the south for the final condition to accommodate communications for the new DMS and CCTV tower near 217th

Avenue (Mile 235.7). Fiber communications shall be provide redundant communications paths. Fiber communications redundancy via separate cables in separate conduits is preferred; redundancy via separate fiber strands within the same fiber cable shall be provided at a minimum. The fiber tie-in location is the communications shelter in the northeast quadrant of the I-65/SR 2 interchange. The new final conduit and fiber shall be installed near the right-of-way line to minimize risk from damage due to roadway construction. Design-Build Contractor shall assess the existing conditions and propose, with supporting reasons, the side of I-65 for conduit/cable installation. Bridge crossings shall be specifically addressed in the proposal, which shall include a description of the method of installing conduit and cable passed such crossings. The proposed method shall incorporate a means of maintaining communications connectivity through roadway and bridge construction work.

Design-Build Contractor shall coordinate the design with INDOT to tie in new ITS devices to the permanent fiber along I-65. The final design must include redundant communications to each device using two pairs of fibers in the existing trunk cables along I-65. Design-Build Contractor shall be responsible for all design, furnishing, and installation of all fiber-optic cabling and infrastructure, including splicing and interconnection to existing facilities. All ITS communications shall be aggregated at one or more existing field communication hubs. Design-Build Contractor shall furnish and install additional communications equipment at the existing field communication hubs to accommodate the additional ITS equipment installed in this Project.

16.3.7 Existing Fiber

Design-Build Contractor shall locate all existing fiber optic cables, and shall determine any conflicts prior to construction. Existing record plans are available in the Reference Information Documents (RID). Design-Build Contractor shall propose an initial solution to identified conflicts and work with INDOT to develop a final solution. The Design-Build Contractor shall discuss this with INDOT ITS representatives at the initial project kick-off meeting.

16.4 Integration and Testing Requirements

Design-Build Contractor shall conduct installation testing during construction to ensure that the devices perform per the manufacturer's specifications. Design-Build Contractor shall provide to INDOT for review and comment test plans and test results. 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 INDOT with the Construction Documents.

Design-Build Contractor shall also furnish INDOT with any special or unique test equipment that is required to maintain and/or test the system within 30 days of installation. All spare equipment shall meet the requirements set forth in the applicable sections of the Technical Provisions.

Tests shall be scheduled to allow a representative from INDOT to witness the test. INDOT shall be notified a minimum of 72 hours prior to the commencement of each test.

Additionally, Design-Build Contractor shall provide INDOT 72 hours of advance notification for the anticipated disruption of any services. Concealed work (including underground) shall be tested by Design-Build Contractor and witnessed by INDOT 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 calendar days prior to Final Acceptance. Any failures during the 30-calendar-day period shall be repaired by Design-Build Contractor and restart the 30-calendar-day period for the system. Design-Build Contractor shall be responsible for configuring the equipment. INDOT will provide the configuration parameters required to interface with existing systems. These parameters include multilink trunks, split multilink trunking groups, inter switch trunk links, virtual local area network creation and associated IP addressing, open shortest path first routing protocol, protocol independent multicast routing protocol, and Internet group management protocol snooping. INDOT will provision the network equipment with the unique system network parameters. At the good faith discretion of INDOT, pre-installation testing may be repeated as part of the Final Acceptance by INDOT. Final Acceptance by INDOT will occur when testing concludes and all components and subsystems perform as an integrated system.

Design-Build Contractor shall develop and submit for review and comment test plans and test procedures for each component and each subsystem. As 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. As 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 may not commence without INDOT'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. INDOT shall have a minimum of five days to review the test report. Final Acceptance shall not occur until a satisfactory review of the test report has been completed and all other requirements of the PPA Documents have been satisfied.

16.5 Deliverables

Deliverables, a non-exhaustive list of which is set forth in the table below, shall be submitted in accordance with the schedule set forth below, in both electronic format and as hardcopies. Acceptable electronic formats include current versions of Microsoft Word, Microsoft Excel, and Adobe Acrobat (PDF), unless otherwise indicated.

Drawings shall be submitted in PDF format on 3 CDs or DVDs. These Submittals shall also include drawings in the current version of MicroStation.

Deliverable	Submittal Schedule	TP Section
Draft ITS layout	Design Review	16.3.3
Final ITS layout	Design Review	16.3.3
Camera locations layout	Design Review	16.3.5
Drill shaft installation plan	Design Review	Attachment 16-1 (USP, CCTV)
Special or unique test equipment	Prior to Final Acceptance	16.4
Proof of training for fiber-optic testing	Prior to fiber testing	Attachment 16-1 (USP, ITS Communications System)
Cable pulling plan	10 Business Days prior to installation	Attachment 16-1 USP, ITS Communications System)
Fiber-optic operation and maintenance documentation	Prior to Final Acceptance	Attachment 16-1 (USP, ITS Communications System)
Test plans	120 days after Design Document approval	16.4
Testing date, time, and location	Three days before performing test	16.4
Test results	Within 10 days of performing the test	16.4

17 RIGHT OF WAY

17.1 General

Design-Build Contractor shall conduct the Work in accordance with the applicable requirements in the PPA Documents, including Project Standards and this Section 17; Governmental Approvals; and applicable laws.

All Work is to be done within existing right of way.

Should Contractor require Additional Properties, it shall comply with the requirements of Section 6.1.3 of the PPA. In addition to complying with the requirements of the PPA, Design-Build Contractor shall be responsible for:

1. obtaining a concurring opinion from INDOT as to the necessity for said Additional Properties;
2. performing all necessary environmental studies, reports, and public involvement activities to comply with the National Environmental Policy Act (NEPA) requirements;
3. preparing and obtaining approval for final ROW Plans for Additional Properties;
4. coordinating with Utility Owners all adverse impacts to Utilities caused by Design-Build Contractor's proposed Additional Properties, including acquiring any Replacement Utility Property Interests and Adjusting the impacted Utility; and
5. all costs associated with this Work, as well as any costs and expenses incurred by INDOT in acquiring the property, as provided in Section 6.1.3.4 of the PPA.

Acquisition of Additional Properties shall comply with INDOT ROW and real estate manuals.

17.2 Design and Construction Requirements

Design-Build Contractor shall be responsible for repairing or replacing in kind any limited access right of way fence that is damaged due to construction. Should Design-Build Contractor require Additional Properties, it shall be responsible for limited access right of way fence, survey monumentation assemblies, reference monuments, and any other items associated with monuments in accordance with Project Standards, including fence design and construction adjacent to residential or commercial properties with maintained lawns. Fence shall be continuous along all limited access right of way throughout the Project.

17.3 Deliverables

Deliverables, a non-exhaustive list of which is set forth in the table 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. The following are required only in the event of Additional Property acquisition.

Deliverable	Schedule	TP Section
Environmental documents required by NEPA, if required	Prior to beginning appraising	17.1
Final ROW Plans for Additional Properties		17.1