



# **REQUEST FOR PROPOSAL**

**FOR**

**DESIGN/BUILD Services for the  
Replacement of  
Route 146 Bridges over Route 104 (Farnum Pike)  
(044101 & 044121),  
Project No. 2018-DB-008**

**North Smithfield, Rhode Island**

**Part B: Project Technical Requirements**

**Rhode Island Department of Transportation**

**February 20, 2018**

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## **PART B**

### **PROJECT TECHNICAL REQUIREMENTS**

#### **1.0 DESIGN-BUILDER’S SCOPE OF WORK**

The Scope of Work at the 044101/044121 bridges consists of completely replacing the existing structures in their entirety. RIDOT is proposing to replace these structures with new single span steel plate girder bridges supported on stub abutments founded on micropiles as shown in the Base Technical Concept (BTC) Plans. Accelerated Construction Methods are encouraged to the extent possible. The proposed final roadway width over the new bridge shall be no less than the existing Route 146 approach roadway width of 39 feet curb to curb.

The approach roadway work to each bridge will consist of repaving to the limits shown in the BTC Plans. Only minor adjustments to the Route 146 profile are proposed in the BTC. The local roadway below bridges 044101/044121 (Farnum Pike) will also be repaved under the bridges to the limits shown in the BTC Plans. No widening of Route 146 or the local roads is proposed. Other highway work required will include, but not be limited to: replacement of existing guardrail, installation of stormwater treatments, placement of new pavement markings and maintenance and protection of traffic.

The Design-Build Team (D/B Team) shall have full responsibility to complete the final design of all Project elements, regardless of the fact that RIDOT has supplied certain preliminary design work for certain portions of the project to the D/B Team. All plans, specifications, reports and other information provided by RIDOT are for reference only. The BTC was developed to represent RIDOT’s minimum baseline requirements that shall be equaled or exceeded by the D/B Team. In the event that the D/B Team, through its final design development, proposes changes to their Technical Proposal or the BTC requirements, the D/B Team shall include written justification for RIDOT’s review and concurrence before incorporating such a change into a Design Submission. Any proposed changes to the BTC that are not demonstrated to be equal or better than the BTC, as determined by RIDOT, will be rejected by RIDOT. The D/B Team shall be required to provide a final, complete Project design that is stamped, sealed and certified by their own Professional Engineer of Record for review and approval by RIDOT and possibly third parties. The Professional Engineer shall be licensed to practice Engineering in the State of Rhode Island.

The D/B Team is responsible for diligently reviewing and verifying the BTC design for errors, omissions, inconsistencies or other defects and shall incorporate into their Cost Proposal all costs associated with correction of such errors, omissions, inconsistencies or other defects. RIDOT shall have no liability for errors, omissions or defects in the RIDOT supplied BTC design documentation.

The following requirements shall apply during construction:

- No long term closure of travel lanes on RI-146 will be allowed. Refer to Section 2.11 below for more detailed temporary traffic control requirements. A long-term closure shall be defined as any closure greater than the closure periods set out in Section 2.11.
- Pedestrian access shall be maintained along Farnum Pike/RI-104 throughout construction. Short term restrictions may be allowed with prior approval from RIDOT and the Town of North Smithfield. Two week advance notice for any short term closures is required.
- RIDOT reserves the right to require the D/B Team to modify the traffic control setup in the field to improve traffic conditions.
- Restore all existing areas disturbed by construction activities within the project limits to pre-construction conditions or better and to the satisfaction of the Engineer.

The Respondent should note that the minimum pavement sections required by RIDOT are provided herein. The intent is to match the existing pavement section at a minimum. All paving work shall be in accordance with the RIDOT Standard Specifications.

The D/B Team will be responsible for providing Construction Quality Control (QC) at the Construction Contractor level including QC testing of all materials, and for providing a complete Quality Control program for all Engineering and design. The Construction Quality Control function is to assess and adjust design, production and construction so as to control the level of quality being produced in the Project. The purpose of QC is to measure those quality characteristics and to inspect those activities that affect the production at a time when corrective action can be taken to substantially decrease the likelihood that appreciable non-conforming material will be incorporated in the Project.

The D/B Team is responsible for all coordination with utilities and will be responsible for furnishing and installing certain elements necessary for the relocation of utilities such as conduit, manholes, etc. The respective utility companies will perform the actual relocation of their lines (temporary and/or permanent relocations.) The Contractor shall coordinate with the utility companies as required throughout construction. The Contractor shall ensure that the existing and proposed utility lines are protected from damage throughout construction. Refer to Section 2.14 for additional information regarding the protection and relocation of utilities.

RIDOT will not obtain any environmental permits prior to award. The D/B Team will be responsible for preparing all environmental permit applications required as part of their design and construction activities. This includes submitting plans and design documentation and coordinating with the permitting agencies and RIDOT as required. RIDOT will review/request revisions as appropriate and, as owner, is required to officially submit all complete applications to the respective regulatory agencies. RIDOT has prepared and submitted a Categorical Exclusion (CE) Checklist to satisfy the NEPA requirements for this project. The Categorical Exclusion will be issued for this project prior to the issuance of the Notice to Proceed for the DB Entity. Any changes in scope or footprint proposed by the D/B Team that are acceptable to RIDOT, may require additional environmental technical

studies and analysis. The D/B Team shall advise RIDOT of any changes in the proposed construction scope of work based on the D/B Team's design at each change in design phase (i.e. at the onset of final design, 75/90% and PS&E) so that RIDOT can review the NEPA documentation (CE Checklist) provided for this project and determine if any resubmission of NEPA documentation is required.

The D/B Team shall be responsible for compliance with pre-construction and construction-related environmental permit conditions. The D/B Team shall assume all obligations and costs incurred in the course of complying with the terms and conditions of the permits and certifications. Any fines associated with environmental permit or regulatory violations shall be the responsibility of the D/B Team. The D/B Team will be responsible for any additional environmental studies or analysis, design revisions and/or right-of-way to support any changes in scope they propose, and will be responsible for any resulting increase in costs or impacts to the schedule.

## **2.0 PROJECT TECHNICAL REQUIREMENTS**

### **2.1 Design Criteria, Standards and Reference Documents**

The design and construction work for the Project shall be performed in accordance with the applicable federal and state laws and RIDOT Standard Specifications for Road and Bridge Construction and Reference Documents which include, but are not limited to the documents listed herein. The D/B Team must verify and use the latest version of the documents listed herein. The successful D/B Team must meet or exceed the minimum design standards and criteria. The Successful D/B Team must comply with the RIDOT Consent Decree (dated 10/15/2015 and 12/22/2015) to the maximum extent practicable.

If during the course of the design, the Successful D/B Team determines specific Standard Specifications or Reference Documents required are not listed herein, it is the responsibility of the D/B Team to identify the pertinent Standard Specifications or Reference Document and submit to RIDOT for review and approval prior to inclusion in the Contract Documents.

#### Project Design, Construction, and Administration:

- AASHTO A Policy on Geometric Design of Highways and Streets, 2011, 6th Edition
- Highway Capacity Manual, 2016 Edition
- Manual On Uniform Traffic Control Devices (MUTCD), 2009 Edition
- Rhode Island Department of Transportation (RIDOT) Standard Specifications for Road and Bridge Construction, 2004, Amended May 2016, with all revisions
- Rhode Island Standard Details, 1998, with all revisions
- RIDOT Bridge Design Standard Details, 2015 Edition with all revisions
- The Division of Purchases Procurement Regulations Adopted December 2010
- RIDOT Design Policy Memos (RI DPM), with latest revisions from the following website:  
<http://www.pmp.dot.ri.gov>

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- RIDOT “To All Consultants” Memos (RI TAC), with latest revisions from the following website:  
<http://www.pmp.dot.ri.gov>
- Rhode Island LRFD Bridge Design Manual, 2007 Edition.
- AASHTO LRFD Bridge Design Specifications, 2014, 7th Edition w/ latest interims
- AASHTO Guide Specifications for LRFD Seismic Bridge Design, 2<sup>nd</sup> Edition, 2011 w/latest interims
- RIDOT Guidelines for Load and Resistance Factor Rating (LRFR) – August 2017
- Federal-Aid Policy Guide (FAPG) 625, Design Standards for Highways, 10/14/97
- Federal-Aid Policy Guide (FAPG) 626, Pavement Policy, 4/8/99
- Rhode Island Department of Transportation Design Procedures for Pavement Design
- Bridge Welding Code AASHTO/AWS-D1.5m/D1.5:2015, 6<sup>th</sup> Edition w/ latest interims
- AASHTO Manual for Bridge Evaluation 2010, 2nd Edition w/ latest interims
- AASHTO Roadside Design Guide, 2011, 4th Edition
- FHWA Hydraulic Engineering Circular No. 23, Latest Edition
- AASHTO Guide Specifications for Seismic Isolation Design 2014, 4<sup>th</sup> Edition
- NCHRP Report 350 Recommended Procedures for Safety Performance Evaluation of Highway Features, 1993
- AASHTO Manual for Assessing Safety Hardware (MASH), 2016, 2<sup>nd</sup> Edition
- RIDOT Traffic Design Manual
- RIDOT Highway Design Manual
- RIDOT CAD Standards Manual, 2007 from the following website: <http://www.pmp.dot.ri.gov>
- RIDOT Approved Materials List from the following website:  
<http://www.dot.ri.gov/documents/doingbusiness/materials/RIDOTApprovedProducts.pdf>  
[http://www.dot.ri.gov/business/approved\\_materials.php](http://www.dot.ri.gov/business/approved_materials.php)
- Rhode Island Stormwater Design and Installation Standards Manual dated March 2015
- AASHTO Guide Design Specifications for Bridge Temporary Works, 2<sup>nd</sup> Edition
- AASHTO Guide Specifications for Distribution of Loads for Highway Bridges
- AASHTO Guide Specifications for Strength Evaluation of Existing Steel and Concrete Bridges
- AASHTO Guide Specifications for Thermal Effects on Concrete Bridge Superstructures
- AASHTO Guide Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals
- AASHTO Maintenance Manual for Roadways and Bridges
- AASHTO Policy on Design Standards Interstate System, 5<sup>th</sup> Edition
- “Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation’s Bridges,” FHWA-PD-96-001, 1995
- Bridge Inspector’s Reference Manual (BIRM), FHWA NHI 12-049, December 2012
- AASHTO/FHWA Research Report RD-87-014, Bridge Deck Drainage Guidelines
- NSBA/AASHTO Collaboration Standard Steel Details/Guidelines from the following website:  
<https://www.aisc.org/globalassets/nsba/aashto-nsba-collab-docs/g-1.4-2006-guidelines-for-design-details.pdf>
- USDA, NRCS, Title 210, National Engineering Handbook, Section 6

- USDA, NRCS, Title 210, National Engineering Handbook, Section 11
- PCINER-11-FDDP “Full Depth Deck Panel Guidelines for Accelerated Bridge Deck Replacement or Construction” 2<sup>nd</sup> edition, April 26, 2011,

Construction Work in accordance with the following standards:

- AASHTO LRFD Bridge Construction Specifications, latest edition.
- AASHTO Construction Handbook for Bridge Temporary Works, 2<sup>nd</sup> Edition, 2017
- Rhode Island Department of Transportation (RIDOT) Standard Specifications for Road and Bridge Construction, 2004, Amended May 2016, with all revisions
- Rhode Island Standard Details, 1998, with all revisions
- PCI MNL-116 Manual for Quality Control for Plant and Production of Precast and Prestressed Concrete Products
- Rhode Island Soil Erosion and Sediment Control Handbook, 1989 (revised 2014)

In the event of a discrepancy between the RIDOT and non-RIDOT Standards and References listed herein, the RIDOT specifications, design standards and manuals shall take precedence. Requirements specified within the text of this RFP shall govern over the RIDOT specifications, design standards and manuals.

## **2.2 Order of Precedence**

In the event of a conflict among the Contract Documents, the order of precedence shall be as set forth below:

1. Contract amendments and approved Change Orders.
2. The Plans and specifications prepared by the D/B Team, approved by RIDOT.
3. The design criteria, standards and reference documents referenced through the entire RFP.
4. The entire RFP.

## **2.3 Roadway Improvements**

The D/B Team shall design the project in accordance with the latest RIDOT, MUTCD, and AASHTO design standards and in accordance with the BTC and guidelines specified in this RFP. The D/B Team shall prepare all documentation required to apply for and obtain any necessary design exceptions. Several design exceptions are anticipated as the existing Route 146 geometry does not satisfy current design standard criteria. The following criteria, at a minimum, are expected to require a Design Exception:

- High-speed shoulder width on each bridge.



### **2.3.1 Scope of Work for Roadway Improvements**

The Scope of the Roadway Improvements required for this Project includes all components identified in accordance with the RFP requirements provided. The D/B Team shall determine the full scope of the Project by a thorough examination of the entire RFP, BTC Plans and visits to the Project site.

It is anticipated that the roadway work required shall consist of, at a minimum, the following:

- Mill and overlay the existing roadway pavement structure to the required limits of work on Route 146 and Route 104.
- Maintain the existing roadway curb to curb widths on Route 146 and Route 104.
- Installation of conduit and manholes in Route 104 below the Route 146 bridges (044101/044121) in support of aerial utility relocations.
- Adjustment of drainage structure frames and grates to meet the proposed grade.
- Cleaning/removal of sediment from existing drainage structures and pipes.
- Repair of existing drainage structures that are currently deteriorated and/or damaged during construction activities.
- Removal and replacement of sections of fencing that surround the bridge abutments at each bridge end.
- Replacement of existing guardrail and installation of new guardrail to the required limits based upon the RIDOT Highway Design Manual and the AASHTO Roadside Design Guide.
- Installation of new pavement markings and reflectorized pavement markers.
- Installation of new Rumble strips.
- Installation of stormwater BMP's (check dams/water quality swales) within the median of Route 146.
- Restoration of areas adjacent to the roadways and bridge disturbed by the construction (loam and seed).
- Provide Maintenance and Protection of Traffic in conjunction with the proposed stage construction scheme (See Section 2.11)
- Installation, maintenance, and removal of temporary median crossover roadways to convey travel lane shifts required by construction staging.
- Any changes to the existing drainage patterns, system or existing impervious area will require analysis and approval through application to RIDEM. Stormwater design shall be in accordance with the March 2015 Rhode Island Stormwater Design and Installation Standards Manual.
- Milling and overlay of existing pavement surfaces where pavement markings are altered for lane shifts and other operations outlined in the Maintenance and Protection of Traffic plans.
- Installation of all necessary lane markings, delineators, reflectors, etc. as required by the latest RIDOT and AASHTO standards.

### 2.3.2 Required Limits of Roadway Work

The limits of roadway work required along each direction of the Route 146 mainline shall be established based upon the limit of work required to tie in the required temporary lane shifts per the final design of the maintenance and protection of traffic scheme. Milling and overlay along Route 146 shall begin at these limits and end at the limits of full depth construction required to complete the required bridge replacement work on each approach to the bridge. The approximate limits required are shown on the BTC Plans.

The limits of roadway work along Route 104 shall be based upon the limits of pavement trenching required for the proposed utility relocations, as well as areas disturbed by bridge construction. The minimum required limits along Route 104 are shown on the BTC Plans.

## 2.4 Structures Improvements

The new structures shall be designed and detailed in accordance with the RIDOT LRFD Bridge Design Manual, the latest RIDOT Bridge Standard Details, the RIDOT Standard Specifications for Road and Bridge Construction and the latest AASHTO LRFD Bridge Design Specifications as defined in Section 2.1 above.

The scope of work for the bridge structures consists of full bridge structure replacement. The BTC includes a new single span, steel girder superstructures supported on stub abutments founded on micropiles. The new bridge structures shall be designed and detailed to provide at least a 75 year design life. Portions of the existing bridge structures may remain in place provided that they are removed to 3 feet minimum below finished grade.

### 2.4.1 Requirements

- a. **Corrosion Protection** – All reinforcing steel used on this project shall conform to AASHTO M31, Grade 60 and be galvanized. The galvanized coating shall conform to ASTM A767 Class 1. All structural steel shall conform to AASHTO M270, Grade 50 and shall be metalized in conformance with Section 827 (as amended by the Job Specific Specifications) and then painted in accordance with Section 825 of the RIDOT Standard Specifications for Road and Bridge Construction. The Finish Coat Color shall be blue (semi-gloss) to match Munsell Color 2.5PB 5/10.
- b. **Concrete Protective Sealer** – The entire exposed surface area of the completed abutments and wingwalls shall receive a protective coating conforming to Section 820 of the RIDOT Standard Specifications
- c. **Bridge Deck Membrane** – Membrane waterproofing (Cold Spray-applied Liquid Membrane) is required for all bridge decks conforming to Section 813 of the RIDOT Standard Specifications for Road and Bridge Construction.

- d. **Materials** – Any RIDOT required materials shall conform to RIDOT Standards and any specific requirements outlined in this RFP.
- e. **Buy America Provision** – The D/B Team agrees to comply with 23 CFR 635.410 which provides that Federal funds may not be obligated unless all steel, iron and manufactured products used in FHWA funded projects are produced in the United States, unless a waiver has been granted by FHWA or the product is subject to a general waiver.

#### 2.4.2 Scope of Work and Guidelines

The Scope of the Improvements to the bridge structures for this Project includes all components identified in accordance with the RFP documents provided. The D/B Team shall determine the full scope of the Project by a thorough examination of the entire RFP, BTC Plans and visits to the Project site.

The D/B Team shall be responsible for designing, furnishing, constructing, and installing all components of the Project, as stipulated herein. All bridge components shall be designed in accordance with AASHTO's Load and Resistance Factor Design (LRFD) method. All work performed on this Project shall be completed using English units.

The D/B Team is solely responsible for assessing existing conditions, presenting design and/or engineering solutions, and defining the means and methods for complying with the requirements outlined in this RFP.

A geotechnical data report (GDR) has been prepared which defines the existing conditions at the site. Geotechnical reports are for informational purposes only. The D/B Team will be responsible for preparing a Final Geotechnical Interpretation Report for this bridge location based upon their final design. The D/B Team will also be responsible for identifying and performing any supplemental subsurface investigation, testing, analysis, etc., as required by their proposed design. Existing information and the GDR may be used as reference material.

The D/B Team shall furnish all Design and Construction Services, Quality Management, Quality Control (QC) program, materials, equipment, labor, transportation, and incidentals required to complete the design and construction work according to the terms of the Contract.

The BTC does not require obtaining additional Right-of-Way or easements to construct this Project. However, the D/B Team will be responsible for securing any right-of-way modifications resulting from either design modifications or construction issues.

The D/B Team's obligations shall include, without limitation, the following:

## 1. Proposed Bridge Structure Requirements

- a. General** – Complete replacement of the bridge structure of two (2) bridges carrying Route 146 over Route 104 (Farnum Pike) as described herein and as shown on the BTC Plans.

The bridges shall be designed and constructed for a minimum 75-year service life.

Prestressed concrete butted box beams will not be allowed.

- b. Geometry** – The existing horizontal and vertical alignment shall match the existing bridges to the extent practical. The curb-to-curb roadway width on all bridges shall match the existing widths. Bridge cross slopes shall follow the requirements of the RIDOT LRFD Bridge Design Manual.

The D/B Team shall provide final bridge geometry including all elevations, plan dimensions, girder framing, top of deck elevations, beam seat elevations, girder cambers, etc.

- c. Live Load** – The D/B Team’s attention is directed to the following minimum live load design requirements of the Bridge Design Manual:

Bridge Design Loading: 110% AASHTO HL-93 (In accordance with TAC 0298)

Live Load deflection criteria: L/800

- d. Seismic Analysis** – Seismic analysis shall conform to the Rhode Island LRFD Bridge Design Manual. The bridges are designated as “critical” bridges.

The Seismic design parameters for this project shall be determined by the D/B team.

- e. Load Rating** – The D/B Team will be responsible for producing load rating reports for the new bridges. The load rating reports shall be in accordance with the RIDOT Bridge Load Rating Guidelines dated August 2017.

**f. Vertical Clearance -**

The minimum vertical clearance under the new superstructures shall be no less than 14'-3". Additional increase in the vertical under clearance is desirable and will be a consideration in the review of Technical Proposals.

- g. Accelerated Bridge Construction (ABC)** – The D/B Team shall utilize Accelerated Bridge Construction Techniques as much as possible. Alternate methods than those shown in the BTC or the use of ABC methods for other components not designated as precast or

prefabricated within the BTC, should be considered to the greatest extent practical. Reduction of the required construction schedule is considered by RIDOT to be a very important goal for this Project. The D/B Team is responsible for designing and detailing all ABC systems in the Contract Plans. Any precast manufacturing plant furnishing precast concrete or prestressed concrete bridge members or components shall be a certified PCI facility for the type of precast element(s) proposed. The manufacturer shall submit proof of certification prior to the start of production. Deviation from the use of ABC techniques must show sufficient time within the construction schedule and demonstrate the overall benefit to the project quality and schedule.

**h. Support of Excavation** – Any temporary or permanent support of excavation that is necessary to maintain the safety of the traveling public, the structural integrity of nearby structures or utilities, shall be considered critical and shall be designed and detailed in the plans. The D/B Team is responsible for designing and detailing the support of excavation in the set of Contract Plans. Excavation support systems may require approval from the RIDEM Wetlands Program, Water Quality Program or other third parties. Any temporary excavation support that is placed within the zone of influence of walls and footings for in-service structures as depicted on the BTC Plans shall be cut off at the appropriate elevation (as approved by RIDOT) and remain in place.

**i. Bridge Inspection**

- **Notification for Inspection** – Prior to shifting traffic onto new portion(s) of any new or temporary bridge structures, the D/B Team shall notify RIDOT at least 10 days in advance of completion that the phase of bridge construction is nearing completion and ready for RIDOT inspection.

For inspection of a completed bridge, the D/B Team shall notify RIDOT at least 45 days in advance of the anticipated completion of the bridge. As part of such inspection notices, the D/B Team must submit As-Built Plans and Specifications for the bridge(s) to be inspected.

- **RIDOT Inspection** – After notification by the D/B Team and prior to opening the new section of the bridge superstructure for public use, RIDOT will perform a safety inspection of the new section of the bridge. Only upon RIDOT approval of the inspection findings shall the new section of the bridge be opened to vehicular traffic. The D/B Team is responsible for having the temporary bridge inspected by NBIS qualified inspectors to certify that the bridge is safe to open to traffic.
- **RIDOT Punch List Inspection** – After notification by the D/B Team and prior to acceptance of the project as complete, RIDOT will perform an inspection of the completed bridge. A “punch list” will be developed based on the findings of the inspection and submitted to the D/B Team for completion.

**j. Damage To Existing Utilities and Utility Structures**

The locations of all utilities as shown on the base survey/BTC plans are approximate. The D/B Team shall check and verify the location of all existing utilities and service connections both underground and overhead prior to construction, in accordance with the “Dig Safe Program Law” enacted by Rhode Island Legislation Bill No. 79S-291, which became effective July 1, 1979. Also, the D/B Team should be aware that not all utility companies subscribe to the Dig Safe Program. It is the D/B Team’s responsibility to ensure that all utility companies have been notified and all utilities are shown on the Plans and have been marked prior to commencing their work. Any damages to the utilities which are shown on the plans or detailed by Dig Safe shall be the D/B Team’s responsibility.

The D/B Team will be responsible for:

- Damage to any existing structures or equipment.
- Damage to existing walls, fences, etc.

The D/B Team shall make every effort to prevent debris from falling into catch basins. Inlet Sediment Control Devices shall be installed in every catch basin within the project limits during construction. Should any debris fall inside a structure, it shall be removed immediately.

**k. Storage of Construction Material and/or Equipment**

The D/B Team shall place all equipment and material in his/her yard or on site in a location approved by the RIDOT.

Storage of materials on State or Municipal property will require the approval of the property owner.

Stockpiles shall be covered and must be located outside any areas of RIDEM jurisdiction including but not limited to wetlands and their associated buffers. Stockpile locations as shown on the approved RIDEM permit will be allowed. Any storage or stockpile of construction material and/or equipment on private property will be the D/B Team’s responsibility.

**l. Work Schedule**

Work hours shall be in accordance with the RIDOT Standard Specifications for Road and Bridge Construction and any Town of North Smithfield ordinances. Deviation from the standard work hours may be requested in writing at least 2 weeks in advance of the start date required.

## 2. Geotechnical Investigations and Analysis

The provided Geotechnical Data Report (GDR) documents the existing subsurface conditions at the locations of the borings taken. Any further interpretations of subsurface conditions beyond or in addition to that information are the D/B Team's sole responsibility. This GDR is provided for informational purposes only, and RIDOT assumes no responsibility for its accuracy. No claim will be considered if the D/B Team relies on the GDR for bidding or construction operations.

The D/B Team shall determine the need and extent for any additional Subsurface Investigations and field and laboratory testing required for the design of the new bridge structure and its foundations. All investigations shall be performed in accordance with RIDOT standards and accepted geotechnical practice. If additional subsurface investigations are required, the D/B Team shall prepare a Geotechnical Investigation Plan in accordance with Section 10.2 of the RIDOT LRFD Bridge Manual and submit it to RIDOT within 15 Calendar Days of NTP. The plan shall include the criteria or rationale used in developing the plan, and shall identify the locations of all field investigation sites, in-situ testing sites, and borings, together with their depths, sampling intervals, and a description of both the field and laboratory testing programs utilized. The plan shall also include a traffic control plan, a safety/hazard analysis plan, and a list of all permits required to perform the geotechnical investigation.

The D/B team shall prepare a Final Geotechnical Interpretive Report (GIR) that documents all geotechnical data and findings, geotechnical/foundation calculations and analysis and recommended considerations for construction. The Report shall be prepared in accordance with Section 10.2.5 of the RIDOT LRFD Bridge Manual. All design calculations, plans and the GIR shall be prepared, checked, signed and stamped by a registered, licensed, Professional Engineer in the State of Rhode Island.

The D/B Team shall use the findings and recommendations shown in the GIR to develop the foundation design for this structure.

### Temporary Bridge:

The provisions outlined above shall apply. Preliminary geotechnical information has been provided for informational purposes only. The D/B Team will be responsible for any required subsurface investigations and the final geotechnical design/report for the temporary bridge at this location.

### 2.4.3 Description of Structural Elements

This Section covers the specific design and construction elements for the new bridge structures. The goal of the design and construction of all structural systems and components is to provide

functionality, durability, constructability, ease of maintenance, safety, and aesthetics consistent with the context of the Project Site.

## **1. Bridge Elements**

### **a. Structural Steel**

As designated on the BTC Plans and in this RFP.

### **b. Decks**

- The bridge deck shall be comprised of high performance (HP) concrete with a minimum bridge deck thickness of 7.5 inches.
- The bridge decks shall be protected with a Cold Spray-Applied Liquid Membrane Waterproofing system.
- The deck and membrane shall be overlaid by a 3” minimum thickness Modified Class 9.5 HMA wearing surface in conformance with current RIDOT pavement standards.
- For deck construction, stay-in-place (SIP) forms will be allowed.
- Alternative methods of deck construction (such as precast deck panels, prefabricated bridge units/PBUs, and traditional cast-in-place deck construction) are permitted, provided there are not explicitly prohibited elsewhere in this RFP.

### **c. Abutments**

Abutments shall be of the semi-integral type as shown in the RIDOT Bridge Standard Design Details. The standard details shall be modified as shown in the BTC plans to accommodate the maximum one way movement anticipated for these bridges.

### **d. Deck Joints**

Deck joints shall be eliminated from the superstructure, and all superstructure movements shall be accommodated by joints off the bridge (semi-integral abutment, joints at ends of approach slabs, etc.)

### **e. Deck Drainage**

Deck drains on the bridges shall not be allowed.

### **f. Bridge Railing System**

The proposed bridge railing shall satisfy AASHTO LRFD criteria for a Test Level 5 system or better. The RIDOT standard TL-5 barrier is preferred. A solid, entirely concrete TL-5 barrier will not be allowed.

### **g. Utilities Carried on Bridges**

No utilities will be carried on or over the proposed bridge structures. All existing aerial utilities currently passing over or under the existing bridge superstructures must be relocated underground along Route 104 prior to commencement of any bridge construction activities.



#### **h. Bridge Demolition and Removal**

The existing bridge superstructures shall be removed and disposed of in their entirety. The demolition and removal of the superstructures shall be in accordance with the following:

- 1) The existing bridge superstructure shall be removed in its entirety.
- 2) The existing substructure elements only require removal to the extent required to construct and install the new bridge structure. No existing element within 3 feet of the finished grade shall remain in place.
- 3) All demolition and removal shall conform to the requirements of the RIDOT Standard Specifications for Road and Bridge Construction.
- 4) The D/B Team shall note that the existing structures are concrete rigid frame structures, and special care must be taken to ensure stability during demolition. The D/B Team shall prepare a Bridge Demolition Plan which shall include his/her proposed methods of demolition for each stage of construction including equipment, tools, devices, temporary shoring, etc. The demolition procedure and any necessary calculations and drawings shall bear the stamp of a Professional Engineer Registered in the State of Rhode Island certifying that all existing structural members and soil retained by said members are suitably braced and supported throughout the demolition process. The Demolition Plan shall be submitted to RIDOT for review and comment at least 21 calendar days prior to commencement of bridge demolition activities. Work shall not commence until RIDOT has given written approval of the Bridge Demolition Plan.
- 5) Demolition activities shall be performed in accordance with, but not limited to, the RIDEM Freshwater Wetlands Regulations and RIDEM Hazardous Waste and/or Solid Waste Regulations and or approvals.
- 6) The existing roadways below the bridges shall be protected with the use of temporary shielding and/or with temporary traffic detours. No debris shall be allowed to fall onto the roadways below. Temporary traffic detours must be requested by the D/B Team at least 2 weeks in advance. Temporary traffic detours must be approved by RIDOT and the Town of North Smithfield.

#### **2. Seismic Analysis**

Keeper blocks and/or curtain walls shall be used to provide longitudinal and transverse seismic restraint of the superstructure. The design of these seismic restraints shall be in accordance with the 2011 edition of the AASHTO Guide Specifications for LRFD Seismic Bridge Design.

### 3. Plans and Calculations

The D/B Team shall provide Plans in accordance with RIDOT Standards including DPM 450.02. Design calculations for all structural elements including, but not limited to: the steel girders, concrete deck, bridge bearings, concrete footings, micropiles and prefabricated structural system shall be prepared using the AASHTO LRFD Bridge Design Specifications and the RIDOT LRFD Bridge Design Manual and submitted for review and acceptance. All calculations must be checked, stamped, signed and dated by a registered, licensed, Professional Engineer in the State of Rhode Island.

### 4. Miscellaneous Construction Considerations

- a. Temporary Excavation Support** - Temporary excavation support will be required to support the Route 146 roadway and temporary bridge as part of the stage construction for the replacement of the bridges during construction. Temporary excavation support shall be designed to withstand short-term loading due to earth pressures, groundwater pressures, surcharge pressures, traffic live load, vehicular collision force (as applicable) and construction equipment loading. Working plans required for temporary sheeting, soldier piles and lagging, and bracing or other structural systems proposed shall be stamped, signed and dated by a Professional Engineer Registered in the State of Rhode Island.

Any element required that impacts the existing motoring public or could affect public safety shall require RIDOT's review and approval before implementation.

Materials used for the temporary excavation support system shall be left in place if their removal may disturb the zone of influence of existing adjacent foundations. Such materials shall be cut off at an appropriate elevation (as approved by RIDOT).

Surcharge pressures due to construction materials and equipment, structures, and point, line and area loads, shall be included in lateral earth pressure diagrams. Construction materials and equipment loads shall be determined by the D/B Team, but a 400 psf distributed area load shall be used as a minimum.

- b. Dewatering and Groundwater Control** - Excavations that are left open to precipitation, that extend below groundwater levels, that encounter water seepage, or that are made in existing bodies of water, will require some form of dewatering or groundwater control. The D/B Team shall evaluate the potential need for dewatering and groundwater control when designing a structure. Dewatering of un-contaminated or contaminated surface/groundwater shall be performed in accordance with, but not limited to, the RIDEM Water Quality Regulations, RIDEM Wetland Regulations, RIDEM RIPDES Remedial Permit, and RIDEM Office of Waste Management.
- c. Temporary Bridges** – The D/B Team will be responsible for designing, fabricating,

erecting, maintaining and removing all temporary bridges or structures required to support the chosen maintenance and protection of traffic scheme. Temporary bridges shall be designed in accordance with the AASHTO LRFD Bridge Design Specifications for HL-93 Live Load and in accordance with RIDOT TAC 0298. The limiting live load deflection criteria shall be  $L/800$ . All temporary bridges shall provide a minimum vertical clearance at or above the existing minimum vertical clearance of the existing bridges. The design shall be prepared, stamped, signed and dated by a Professional Engineer registered in the State of Rhode Island. The D/B Team Member responsible for erecting and removing the temporary bridge superstructure shall be an Advanced Certified Steel Erector in accordance with the AISC Quality Certification Program.

## **5. Construction Monitoring Program**

The D/B Team shall ensure that their operations required for the reconstruction and rehabilitation of the bridges does not cause damage to any existing bridge elements currently supporting traffic during staged construction.

## **6. Roadway Approach/Backfill Compaction**

The D/B Team shall achieve the density of backfills and approach roadways per the RIDOT Standard Specifications for Road and Bridge Construction, and shall choose construction techniques and lift depths accordingly to achieve the specified densities.

When conventional compacted structural fill cannot be placed, Controlled Low Strength Material (CLSM) shall be utilized in accordance with the requirements of Section 603 of the Standard Specifications. It is expected that this material will be required under precast elements placed directly against earth, such as precast approach slabs.

### **2.4.4 Design Submittal Requirements**

All submittals are subject to review and acceptance by RIDOT or its designated agent. RIDOT maintains the right to refuse and reject any submittal that does not comply with RIDOT requirements related to the preparation and submittal of Contract Documents and the requirements of this RFP. Rejection of submittals will not constitute grounds for delays in schedule.

All design submittals shall be in accordance with, but not limited to, the RIDOT LRFD Bridge Manual, the RIDOT Highway Design Manual, the RIDOT Traffic Design Manual, the provisions of this RFP and the latest Design Policy Memos (DPM) including, but not limited to, DPM 450.02.

For all design plan review submissions, the D/B Team shall coordinate with RIDOT regarding the number of copies required for review at least seven (7) days prior to submission. All design plan review submissions, shop drawing review submissions, and all permit application review

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submissions, shall be made simultaneously to the Resident Engineer’s field office, and to RIDOT headquarters at the following address:

Attention: Robens Innocent, Project Manager 1  
Two Capitol Hill, 2<sup>nd</sup> Floor  
Division of Project Management  
Providence, RI 02903

Design reviews by RIDOT will consist of an oversight review to ensure that the design plans, calculations, specifications or other data have been developed in accordance with the requirements and design criteria presented in the RFP. The reviews will also consist of checking that the Quality Control procedures established in the Quality Control Plan are being followed. “Over the Shoulder” reviews may be used to facilitate the resolution of comments on the design submission. This type of review is a joint examination of the design documents by RIDOT and the D/B Team.

The RIDOT review time for design submission reviews and permit application reviews shall be twenty-one (21) calendar days from the date of receipt.

For scheduling purposes, the D/B Team shall assume a six week review period for the Rhode Island Department of Environmental Management (RIDEM) to review all permit applications submitted by RIDOT.

Three (3) full size copies of the final approved plans (Stamped and signed) shall be delivered to the Resident Engineer and five (5) copies to RIDOT headquarters (same attention as above.)

In addition, the D/B Team shall provide PDF copies of all submissions and shall provide CADD and WORD files of the final, Issued for Construction, submission.

**The following Design Submittals are required:**

1. **75% Highway/90% Bridge Design Submission** – As part of the project requirements, the D/B Team must provide a complete submittal package for the new bridges to RIDOT for review and approval. This submission shall include the following:
  - 75% Highway Plans/90% Bridge Plans
  - Utility Plan Submittal (for utility companies)
  - Job Specific Construction Specifications
  - Bridge Design Calculations
  - Environmental Permit Applications
  
2. **PS&E Design Submission** – After receiving all comments made on the 75%/90% Submission, the D/B Team shall prepare responses to the comments, revise all plans,

specifications and calculations as required and submit a final design submission of all Plans, Calculations and Specifications for final review and approval.

3. **IFC (Issued for Construction) Submission**– Upon resolution of all comments, the D/B Team shall submit a stamped and signed set of final construction plans to RIDOT labeled as “Issued for Construction.” The final plans shall conform to the requirements for PS&E level plans for all elements in accordance with the RIDOT DPM requirements.

## 2.5 Lump Sum Breakdown/Major Items List

The following is a list of major work items for this project to be used as a starting point for developing a breakdown of the Lump Sum for payment purposes. This list is by no means exhaustive, and is based upon the Base Technical Concept.

### Design:

- Final Bridge Design
- Final Highway/MP&T Design
- Stormwater Design & Environmental Coordination
- Utility Coordination

### Construction:

- Mobilization
- Field Office
- Demolition of Existing Bridge Br. 044101
- Demolition of Existing Bridge Br. 044121
- Utility Relocations
- Temporary Bridge and Roadway Construction
- Proposed Bridge Substructure – Br. 044101
- Proposed Bridge Substructure – Br. 044121
- Proposed Bridge Superstructure – Br. 044101
- Proposed Bridge Superstructure – Br. 044121
- Roadway approaches Bridges 044101/21
- Roadway approaches and local road work at Route 104 (Farnum Pike)
- Maintenance and Protection of Traffic on Route 146 and Route 104.
- Median & drainage restoration
- Stormwater BMPs (water quality swales, drainage repair and cleaning)

## 2.6 Environmental

### 2.6.1 NEPA Compliance/Environmental Documentation

RIDOT has prepared and submitted a Categorical Exclusion (CE) Checklist to FHWA for this project to satisfy NEPA requirements. The CE will be issued prior to the issuance of the Notice to Proceed for the D/B Team. (See Part A Section 2.3 for Schedule Milestones). Final design activities may commence upon the issuance of the Notice to Proceed.

The D/B Team shall be responsible for carrying out any environmental commitments required by the NEPA process during design and construction, as applicable.

Changes to the scope of the Project (as expressed in this RFP) proposed by the D/B Team shall require coordination with RIDOT to determine if additional documentation must be provided as part of the NEPA review process. Such changes may necessitate additional environmental studies or coordination with regulatory agencies to be carried out by the D/B Team. The D/B Team shall carry out any additional environmental commitments as a result of any re-evaluation and will be responsible for any schedule delays and associated costs.

### **2.6.2 Wetland and Water Quality Permits**

Wetland and water quality permits will be required including: a Freshwater Wetlands Permit from the Rhode Island Department of Environmental Management (RIDEM) for work within a 50-foot Perimeter Wetland and 100- and 200-foot Riverbank Wetlands; a General Permit for Stormwater Discharge Associated with Construction Activity from the RIDEM (inclusive of preparing and complying with the requirements of a Stormwater Pollution Prevention Plan (SWPPP). The D/B Team shall utilize the March 2015 Rhode Island Stormwater Design and Installation Standards Manual in the design of this project.

The DB-Contractor will be responsible to coordinate with RIDEM to determine the type of RIDEM application (Request for a Preliminary Determination or Formal Wetland Application) depending on the nature and extent of wetland impacts, and complete a permitting checklist.

It is suggested that the DB-Contractor file a Request for a Preliminary Determination with the RIDEM under Rule 9.00 of the RI Freshwater Rules and Regulations. A Request for Preliminary Determination application may be submitted to the RIDEM to receive a determination as to whether or not a proposed project represents a significant alteration to freshwater wetlands. RIDEM review of a Request for Preliminary Determination may result in one of the following outcomes:

1. Issuance of a permit, with conditions, for an insignificant alteration of freshwater wetlands.
2. Issuance of a determination, in accordance with Section 2-1-22(a) of the RI Freshwater Wetlands Act, that a significant alteration has been proposed and that a permit may be sought only by filing an Application to Alter a Freshwater Wetland (Rule 10.00).

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3. Issuance of a determination that a permit is not required, along with conditions deemed necessary to ensure that this remains the case in the future.

The DB-Contractor’s objective would be to obtain a determination that the project results in an insignificant alteration, which would result in the issuance of a freshwater wetlands permit with conditions. RIDEM will evaluate the Request for Preliminary Determination to ascertain whether the project will result in “significant alterations of freshwater wetlands”. RIDEM will make a determination as to whether an alteration may be considered significant whenever:

1. A project does not satisfactorily avoid, minimize or mitigate impacts to freshwater wetlands;
2. A project appears to propose a random, unnecessary, or undesirable alteration to freshwater wetlands and;
3. A project appears to alter the character, functions, or values of any freshwater wetland.

Depending on the initial review, the follow agencies/applications may need to be consulted/submitted by the DB-Contractor:

1. RI Department of Environmental Management (RIDEM) – Freshwater Wetlands Program
  - a. If it is determined that jurisdiction lies with RIDEM, the Consultant will be responsible for determining the type of RIDEM application that will be prepared, based on the scope of work and RIDEM Regulations. These types include:
    - i. Request for a Preliminary Determination
    - ii. Application to Alter
    - iii. Wetlands Edge Verification
2. RI Department of Environmental Management (RIDEM) – Water Quality Certification Program
  - a. All surface waterbodies within 200 feet of any portion of the project area should be identified. RIDEM Water Quality Regulations should be consulted to determine the Waterbody ID number and current Water Quality Classifications for each surface water body identified above. It should be noted which, if any, of the waterbodies has any special classifications (i.e.: ONRW, SRPW), is identified as a degraded waterbody in the current 303d list, is the subject of an approved or proposed TMDL (if proposed, the Group number should be identified), is tributary to a public drinking water supply. All of the above information should be summarized in table form and be submitted to OEP for review. Any special permitting requirements (i.e.: measures to comply with anti-degradation criteria, such as a Pollutant Loading Analysis), that are anticipated in order to comply with RIDEM Water Quality Regulations should be identified in this submission.

The D/B Team is responsible for reviewing and understanding the performance standards and commitments made in all permits and approvals for the Project, as well as the standards and prohibitions of the respective regulations of these programs. The D/B Team shall be responsible for the preparation of all permit applications and supporting documentation, based on the D/B Team's final design. RIDOT, as owner, will be the Permittee. Upon RIDOT review and approval of the necessary permit applications, RIDOT will submit them to the regulatory agencies. Should the D/B Team propose design changes acceptable to RIDOT, permitting requirements may also change. The D/B Team also remains responsible for obtaining any and all necessary amended permits required by the regulatory agencies.

One of the goals of this project is to improve stormwater treatment at the site. The BTC Plans illustrate a concept to provide water quality infiltration swales along the Route 146 approaches. The Respondent shall design and detail all proposed Stormwater BMP's. The stormwater BMP's shall satisfy the standards required for a redevelopment project and shall, at a minimum, be capable of treating at least 50% of the first flush water quality volume for the impervious area within the project's paving limits. Providing more stormwater treatment than the minimum required will be considered as part of the Technical Proposal Evaluation.

The existing drainage structures and pipes within the limits of paving shall be cleaned and flushed of all sediment. All sediment removed shall be disposed of in accordance with State and Federal regulations.

The D/B Team shall utilize the March 2015 Rhode Island Stormwater Design and Installation Standards Manual and the Rhode Island Soil Erosion and Sediment Control Handbook, 1989 (revised 2014) in the design of this project. The D/B Team shall prepare and submit, as soon as practicable prior to the 75/90% Design, a Preliminary Environmental Design Submission that conforms to the following:

- March 2015 Rhode Island Stormwater Design and Installation Standards Manual, Appendix A Checklist (as complete as possible at this design stage).
- Preliminary design strategy for environmental permitting (i.e. anticipated permit submissions based on the D/B Team's design concept).

The purpose of this preliminary submission is to assist in streamlining the environmental permitting process for this project. This preliminary submission will allow for early coordination between the D/B Team and the RIDOT Natural Resources Unit (NRU). This submission will also allow for a preliminary meeting with the RIDEM's Permitting Staff. Early coordination between the D/B Team and the RIDOT NRU is encouraged, and meetings may be coordinated with the NRU prior to this submission. A meeting between the D/B Team and the RIDOT NRU is required upon the submission of the Preliminary Environmental Design submission.



The D/B Team shall be responsible for compliance with pre-construction, construction-related permit conditions, as well as post-construction monitoring if required by regulatory agencies.

All efforts and costs necessary for additional permit acquisition or modification, compensation or mitigation costs shall be included in the D/B Team's Price Proposal. Any fines associated with environmental permit or regulatory violations/enforcement actions shall be the responsibility of the D/B Team. The Project will not be deemed complete or acceptable until all involved regulatory agencies have, in writing, determined that permit requirements, conditions and regulations are satisfactory.

The DB-Contractor shall fulfill the terms and conditions of the Section 401 Water Quality Certification, RIDEM Freshwater Wetland permit, and any other applicable environmental permit conditions as required by the U.S. Army Corps of Engineers, RIDEM, and any other applicable agency. The DB-Contractor shall be responsible for any mitigation (if required) to fulfill the permitting requirements.

### **Regulatory Compliance**

The DB-Contractor shall be responsible for all fines and penalties that may be assessed by an agency with jurisdiction in connection with the DB-Contractor's failure to comply with applicable Environmental Laws or Environmental Approvals. Further, it shall be the DB-Contractor's responsibility to correct, at its own expense, any violations caused by the DB-Contractor. Immediately upon receiving a written notice of violation or similar notification, the DB-Contractor shall notify RIDOT and provide all correspondence and details of the resolution of these warnings and/or violations.

### **Deliverables**

The DB-Contractor shall provide the following list of deliverable items:

1. Copy of Permit Applications
2. Copy of Approved Permits

### **2.6.3 Environmental Site Assessment Investigation**

A Phase I Environmental Site Assessment (ESA) has been conducted for the project site, and is included in Appendix D of these RFP documents. The D/B Team shall use this ESA as reference material, and is responsible for verifying the conclusions therein. Should the D/B Team's proposed scope of work exceed the project limits assumed in the ESA, the D/B Team will be responsible for preparing a Corridor Land Use Evaluation (CLUE) report and/or Phase I ESA as necessary for the expanded project area. The CLUE report shall be prepared in accordance with RIDOT Design Policy Memo 450.23, and shall be completed and submitted prior to the preparation of the 75%/90% design.

#### 2.6.4 Historic Properties

RIDOT has completed resource identification for the project, and is in the process of finalizing documentation regarding the historic status of the subject bridges. The Farnum Pike Bridges are considered eligible for listing in the National Register of Historic Places (NRHP) and their planned replacement represents an adverse effect under Section 106 of the National Historic Preservation Act (NHPA). RIDOT is completing mitigation for the anticipated adverse effect in part by preparing Rhode Island Historic Resource Archive (RIHRA) documentation for the bridges. Consultation with relevant Consulting Parties is underway, and will culminate in the preparation of a Memorandum of Agreement (MOA) document approving the RIHRA mitigation strategy. This work is being completed as a separate task order and is not part of the current scope of work for the D-B Contractor. Completion of this process is anticipated in the Spring of 2018, prior to award of this Contract.

Additionally, RIDOT has performed a due diligence review to identify known historic architectural properties and archaeological sites and to assess the potential for unidentified archaeological sites for this Project. This review determined that the archaeological sensitivity within the Area of Potential Effects (APE) is low or none. No archaeological survey is required. The proposed bridge work as shown in the BTC will have no direct or indirect impact on above-ground historic properties as there are no above ground resources within or immediately adjacent to the APE. However, four historic features have been identified within the vicinity of the APE and must be avoided during all stages of work. These properties are:

- Two stone walls
- Stone foundation remains
- Historic culvert (Greenville Avenue)

Background research indicated a stone wall and outbuilding foundations marked on Sheet 20 of Map #6178 and Sheet 11 of Plat #1033. Field survey confirmed that the stone wall is extant, located on the north side of Route 146. The wall is made of dry-laid stone runs roughly northeast/southwest and is located within the ROW but outside of the LOD for the current project, approximately 1000 feet west of the center of the twin bridges. A second wall was identified east of the LOD within the southeast quadrant and south of Route 146. The outbuilding remains located on the south side of Route 146 measure approximately eight feet wide by ten feet long. Only a small section (approximately three feet long and two feet high) remains in situ. The possible structure is located approximately 90 feet south of the centerline of Route 146, and approximately 600 feet west of the center of the twin bridges. The field visit also revealed a large historic stone culvert carrying Old Greenville Road adjacent to the ROW near 42 Old Greenville Road. The culvert is approximately 75 feet in length, with a small arched culvert spanning an emergent wetland on either side. The culvert is located approximately 100 feet south of the Route 146 roadway and 1300 feet east of the center of the twin bridges.

The D-B Contractor is responsible for avoiding the identified landscape features (two stone walls, stone foundation remains, historic culvert) and maintaining the locations of these features on all construction drawings. The DB-Contractor will inspect the locations of the landscape features to

ensure that all site activities are in compliance with avoidance instructions. D-B Contractor is also responsible for working within the LOD defined in the BTC. Ground disturbance outside of the current LOD and/or failure to avoid the identified resources may jeopardize the Section 106 and NEPA compliance of the project and require supplemental permit applications and/or work to examine cultural resources. “Ground disturbance” includes any permanent and temporary impacts to the ground, including equipment storage, staging, traffic/parking (vehicle and heavy machinery), or hand/machinery excavation. Any such additional work resulting from non-compliance with avoidance instructions or ground-disturbance outside of the BTC LOD will be the sole responsibility of the D-B Contractor. In addition, D-B Contractor will be responsible for the following during construction:

**Unanticipated Discoveries** - In the event that previously unidentified historic or archaeological resources are discovered which may be affected by the Project in accordance with the criteria of Adverse Effect under 36 CFR Part 800, the D-B Contractor shall cease work and promptly notify the RIDOT Project Manager. RIDOT, FHWA, RISHPO, and NITHPO (if appropriate) will consult promptly on the eligibility of the resources and the FHWA, will promptly determine whether such resources are historic properties under 36 CFR Part 800.

**Human Remains** - In the event that any human remains or unmarked human burials are identified during construction activities associated with the undertaking, work will cease immediately and the D-B Contractor will notify the RIDOT Resident Engineer. FHWA/RIDOT will follow procedures under Rhode Island General Law (R.I.G.L.) 23-18-11 et. seq.

### 2.6.5 Environmental Monitoring

The DB-Contractor shall review the completed ESA checklist provided in Part D and check the database, which identifies hazardous waste sites and leaking USTs, to identify the likelihood that impacted soil or groundwater would be encountered based on the BTC design. If there is a potential for impacted soil or groundwater to be encountered during excavation the DB-Contractor will need to develop a Soil Management Plan to determine the likelihood of impacted soil or groundwater, the approximate locations, and how to handle/dispose appropriately.

If the DB-Contractor encounters impacted soil and/or groundwater, or lead-based paint/asbestos, the environmental monitor would assist with the oversight of the subcontractor or oversee stockpile soils accordingly (Type I, II etc.), sample for disposal parameters, and obtain the necessary approvals from the disposal facility.

The D/B Team is responsible for daily monitoring for compliance with all applicable state and federal environmental laws, regulations, and permits. Should any non-compliant item(s) be identified during construction, the D/B Team will take immediate and continuous corrective action to bring the item(s) into compliance. The D/B Team’s Environmental Monitor shall be appropriately qualified and must

be approved by RIDOT. The Environmental Monitor shall be responsible for RIPDES SWPPP inspections and required reporting and coordination with the RIDOT NRU.

The Department will perform environmental monitoring during construction on a periodic basis. The D/B Team shall provide an Environmental Compliance Report (“ECR”) to the RIDOT Project Manager on a weekly basis that will include a listing of items of non-compliance, deviations from approved work, and actions taken or recommendations for appropriate action. The D/B Team shall be responsible for any schedule delays and associated costs as a result of any delays and/or shut downs associated with non-compliance. Any monetary fines associated with violations shall be the responsibility of the D/B Team.

It is assumed that the Environmental Monitor would be on-site prior to a significant storm event to review erosion control, construction activities, and stormwater mitigation during storm events. It is assumed that the Environmental Monitor would be on-site after a storm event to review the impacts of the storm. It is assumed that the Environmental Monitor would conduct site visits at a minimum of once per week during construction to review erosion control, stormwater mitigation, and construction activities.

## **2.7 Survey**

RIDOT performed a project survey in Winter/Spring of 2017 to support the BTC. This base survey mapping will be made available to all prospective bidders. The selected D/B Team will be responsible for obtaining any additional survey needed to support their final design concept and to verify the accuracy of the survey information provided. Right-of-way and boundaries affecting property ownership, horizontal and vertical controls for bridges, and horizontal and vertical controls for additional centerlines or baselines for roadways shall be performed by, or under direct control and personal supervision of, a surveyor who is licensed in the State of Rhode Island as a land surveyor and is experienced in highway and bridge construction. RIDOT reserves the right to QC all surveying work completed by the D/B Team or the licensed professional.

The D/B Team will be responsible to reset, replace and/or relocate any of the Survey control damaged or destroyed within the footprint of the final design construction limits. The control will be reestablished by a land surveyor licensed in the State of Rhode Island.

The D/B Team shall perform survey responsibilities and record data in field survey books. The Field Survey Books shall be in accordance with DPM 420.01; Field Survey Books Material Specification and Format.

## **2.8 Design of Pavement Structure**

The minimum required pavement structure is depicted within the BTC Plans. The intent of the pavement design is to provide, at a minimum, equivalent structural thickness as the existing pavement structure.

The DB-Contractor shall perform pavement cores and analysis to determine the existing pavement depth and makeup. The DB-Contractor shall perform a sieve analysis on the gravel samples received from the pavement cores to determine if the existing gravel base meets the requirements of the RIDOT Standard Specifications. The DB-Contractor shall prepare a pavement design in accordance with RIDOT procedures. The RIDOT Materials Section will review, and if acceptable, approve the pavement design. The DB-Contractor shall be responsible for the final design and construction of the pavements for this Project in accordance with the Contract Documents and RIDOT Standard Specifications.

The DB-Contractor is responsible for Pavement Design Calculations, loading estimates, and future traffic projections subject to verification and approval by RIDOT. The minimum Design Structural Number (SN) for a 40-year design period shall be 5.4, provided the SN is supportable by calculations acceptable to RIDOT.

The D/B Team shall prepare a pavement design for the required temporary roadways required as part of the staged construction at each location. The design will be subject to the review and approval of the RIDOT Materials Section.

Any utility excavations or excavations for drainage structures/pipes within pavement areas must be backfilled with compacted structural fill in accordance with applicable sections of the Road and Bridge specifications and applicable special provisions.

## **2.9 Drainage**

The D/B Team shall inventory (and locate using GPS) the existing drainage structures within the project limits to confirm the type, size, condition, connections, inverts, etc. The BTC proposes limited changes to the existing drainage system as required to provide for the treatment of stormwater. In addition, existing drainage structures and pipes may require modification and/or protection in conjunction with the construction of temporary roadways as part of the required temporary traffic control plan. Finish grading shall be designed to direct surface runoff away from roadway and structures, to the extent possible.

The D/B Team shall be responsible for the adjustment of all drainage structures (catch basins, manholes, curb inlets, etc.) within the limits of work, as necessary based upon the paving limits along Route 146 and Route 104. All structures shall be adjusted to temporary grades as required during construction and adjusted to final grade prior to the completion of each phase of construction and opening to traffic. The D/B Team shall submit an inspection report to RIDOT that provide inspection findings recommendations for corrective actions (repairs, rebuilding of corbels and vertical walls, replacement of frames and grates, etc.). Upon concurrence of the Engineer, the D/B Team shall execute all recommended drainage repairs. For estimating purposes, the D/B team may assume 40% of all drainage structures will require repairs, including rebuilding of corbels and installation of new frames and grates. Any repairs over this assumption will be paid for by RIDOT under force account.

The D/B Team shall also be responsible for the flushing and cleaning of all pipes and drainage structures within the limits of work, and the proper disposal of all debris associated with the cleaning and flushing. Cleaning and flushing of pipes and drainage structures shall be in accordance with RIDOT Standard Specification Section 708.

The proposed design of the dry swale as shown on the BTC assumes a 6.0 ft offset from the edge of shoulder pavement to the slope break in the swale, thus allowing a maximum top width of 8.0 ft. The swale will be 1.0 ft deep with a bottom width of 2.0 ft, and 3:1 side slopes.

### **2.9.1 Stormwater Management Plan**

The D/B Team shall prepare a Stormwater Management Plan (SWMP) in accordance with the Rhode Island Pollutant Discharge Elimination System General Permit for Storm Water Discharge Associated with Construction Activity, September 26, 2013 (or latest revised and approved edition). RIDOT has developed a SWMP template which is included with this RFP (Part D). The D/B Team will be required to develop and sign the SWMP as the Operator; RIDOT is the Owner.

The D/B Team shall be responsible for performing all inspections and amendments, and satisfying all reporting requirements in compliance with the General Permit and RIPDES Regulations. The D/B Team shall provide to RIDOT the name and contact information, as well the qualifications, of the individual responsible for completing the required SWMP inspections and reporting requirements.

Before any earth-moving work on the project begins, the DB-Contractor shall prepare for approval their own means and methods construction stormwater management/erosion and sediment control plan, based on the “Rhode Island Soil Erosion and Sediment Control Handbook” (Revised 2014).

The D/B Team shall be responsible for compliance with construction-related permit conditions and shall assume all obligations and costs incurred by complying with the terms and conditions of the SWMP. Any fines associated with permit or regulatory violations shall be the responsibility of the D/B Team.

### **2.10 Traffic Control Devices**

The Project scope of work includes the installation of traffic control devices. The devices required include, but are not necessarily limited to, all signs (permanent and construction), pavement markings (temporary and permanent), channelizing traffic devices (barriers, barricades, drums, etc.) and guardrail. A Signing and Striping Plan is required from the D/B Team for final approval by the RIDOT Traffic Section and shall be included as part of the final design plans. The D/B Team shall provide typical sections of Route 146 and Route 104 including cross slopes. The D/B Team shall ensure that the existing and proposed guardrail is located at the proper height above the final

pavement elevation. Guardrail limits shall be as required by RIDOT Standards and the AASHTO Roadside Design Guide. All guardrail terminal ends shall conform to the latest RIDOT and FHWA Standards and shall satisfy the AASHTO Roadside Design Guide. All temporary and permanent roadside elements shall satisfy MASH criteria. The D/B Team shall provide a copy of the manufacturer's recommendations for installation of all guardrail terminals and impact attenuators.

Temporary anchored barrier on bridge decks shall conform to TAC 0296 and Section 926 of the RIDOT Standard Specifications for Road and Bridge Construction and the following: The barrier system used shall be crash tested and approved for use on the National Highway System by FHWA. The designer shall determine the appropriate Test Level for the required application and ensure it satisfies the required dynamic deflection limits needed at the locations installed. Installation of the system shall be in accordance with the manufacturer's requirements. When anchoring barrier to the new bridge decks, the D/B Team shall position the barrier anchorage locations to avoid deck reinforcement. If temporary barrier is to be installed on precast deck panels, the method of attachment shall be coordinated with the deck panel design to ensure the panels are not damaged during temporary barrier installation and removal.

### **2.10.1 Signs**

The Project scope of work shall include all required modifications to existing signs and sign structures and all required new signs and structures. Any signs on adjacent roadways that require relocation/ replacement due to construction activities shall be the responsibility of the D/B Team. The D/B Team shall prepare an existing sign inventory that shall be completed prior to starting work on site. This existing information shall be submitted at the same time as the first plan submittal for proposed signing. The D/B Team shall design all proposed sign panels in accordance with the latest edition of the MUTCD.

### **2.10.2 Pavement Markings**

The D/B Team shall provide, install and remove all required pavement markings. All temporary pavement markings shall be waterborne pavement markings. All permanent edge lines, lane lines and centerlines shall be Epoxy Resin. The D/B Team shall furnish, apply, and maintain temporary pavement markings within the project limits and approaches to work zones. All pavement markings (temporary and permanent) are to be eradicated by the D/B Team when they conflict with other pavement markings or are no longer applicable.

## **2.11 Maintenance and Protection of Traffic Plan**

The BTC Plans provide preliminary Maintenance and Protection of Traffic (M&PT) concepts for the proposed stage construction at both bridge locations. The D/B Team shall design, develop and incorporate a final design M&PT in accordance with RIDOT requirements. The M&PT documents shall clearly show how traffic will be managed during the various phases of construction of the Project and will include Temporary Traffic Control (TTC) plans and TTC strategies. The D/B Team

shall coordinate all work in accordance with the M&PT. The M&PT shall incorporate and address all of the requirements of DPM 450.05 – Work Zone Safety and Mobility including the following:

The D/B Team shall design the TTC Plans in accordance with RIDOT, the MUTCD, and AASHTO design standards and in accordance with guidelines specified in this RFP and shown on the BTC Plans. These plans shall be in accordance with current RIDOT policies including, but not limited to, DPM 450.05 – Work Zone Safety and Mobility and the RIDOT Traffic Design Manual. The D/B Team will be responsible for any changes to the M&PT resulting from any D/B Team changes to the sequence of construction or scope of work and shall coordinate with RIDOT to ensure that the changes are acceptable.

The D/B Team shall be responsible for coordinating, cooperating and scheduling this work and all segments thereof with RIDOT, other contractors on adjacent construction projects, utility owners, and applicable local authorities, so as to minimize impacts to the construction schedule.

Throughout construction, RIDOT will review the traffic control setups in the field. RIDOT reserves the right to require the D/B Team to modify the traffic control setups in the field and/or mandate additional traffic control devices or strategies (including, but not limited to additional signs, barriers, drums, and public outreach) to improve traffic conditions. The D/B Team will also be responsible for adjusting the M&PT accordingly. The D/B Team shall be prepared to furnish and install additional traffic control devices as may be requested by RIDOT after the setup is implemented in the field. A 15% contingency shall be included when determining the quantity of temporary traffic control devices required.

The D/B Team will also be required to implement and maintain the proposed detour plans for ramp closures, by providing proper public notices, maintaining all required traffic control devices, and informing RIDOT of any issues or conflicts resulting from implementing the proposed detours.

Construction signs shall be installed, maintained, adjusted, and removed by the D/B Team throughout the duration of the project. Existing signs that conflict with construction signs or permanent signs shall be covered and/or removed. Guardrail within the limits of the TTC plans shall also be maintained, adjusted, and/or removed and replaced by the D/B Team throughout the duration of the Project.

### **2.11.1 Temporary Traffic Control**

The bridges shall be replaced while providing two lanes of traffic in each direction on Route 146 at all times except for short term lane closures during off peak periods. All Route 146 on/off ramps and acceleration lanes shall be maintained except for short term closures during off peak periods, and except as noted in the BTC plans. The BTC Plans depict the use of a temporary bridge in the median to accomplish two lanes of traffic in each direction. The existing lane configuration on Route 104 shall also be maintained throughout construction except for short term closures during off peak periods.



The D/B Team shall maintain the pedestrian walkway at all times. The D/B Team shall provide temporary access routes/ramps through construction areas to ensure this access if required. The D/B Team must provide for ADA compliant routes to the satisfaction of RIDOT and the Town of North Smithfield Department of Public Works for pedestrians to safely guide them away from broken and uneven pavement, open excavations, drop-offs, construction operations, and hazards at all times.

The Design Speed used for the TTC Plans shall be a minimum of 55 mph for Route 146 and 30 mph for Route 104.

The following travel lane restrictions, at a minimum, are allowed:

Route 146 Northbound and Southbound

- Maintain a minimum of two travel lanes in each direction 6:00AM – 9:00PM, Monday through Friday;
- Maintain a minimum of two travel lanes in each direction from 9:00PM Friday through 9:00PM Sunday;
- Maintain a minimum of one travel lane in each direction 9:00PM – 6:00AM, Sunday through Thursday

More extensive lane restrictions may be allowed in combination with alternate ABC methods that occur over a shorter duration. RIDOT approval will be required.

A proposed one-way alternating signal is proposed for Route 104 during construction. The BTC plans depict the use of barrier, temporary traffic control signal, and pavement markings to allow the control of traffic safely while the bridge abutment and substructure are being demolished, constructed and maintained during the project. The D/B Team shall provide timing plans and any additional information required for the signal operation and maintenance. The D/B Team will coordinate with RIDOT on approved equipment and signal location and shall notify RIDOT of any issues or conflicts due to installation and operation of the temporary traffic signal.

Also refer to the Job Specific Specifications for Maintenance and Movement of Traffic Protective Devices, Maintenance of Travel Lanes and Shoulders and Holiday Restrictions.

## **2.12 Right-of-Way**

The BTC does not require any land or easements outside the existing State Right-of-Way. If the D/B Team's design requires additional land rights such as temporary easements, permanent easements, and permanent takings, the D/B Team will be responsible for preparing all necessary plans and documentation needed for RIDOT to acquire the additional land rights. All right-of-way activities must be completed in compliance with RIDOT and FHWA standard procedures.

DPM 320.11; Access to Private Property does not apply to this project. The D/B Team shall be responsible for assuming all risks associated with the acquisition of additional right-of-way (to accommodate their unique solution), including any public hearings that may be required, and no modifications to the Contract Price or Contract Time will be granted or considered.

### **2.13 Planting**

All areas adjacent to the bridge and roadways disturbed by any activities necessitated by the Project shall be completely restored to pre-construction conditions, and shall be re-seeded for grass. All grass seeding shall be done in accordance with Part L of the RIDOT Standard Specifications.

### **2.14 Utilities**

DPM 450.14; Advanced Utility Work does not apply to this project.

RIDOT has performed utility research and preliminary coordination with the known utilities within the project areas. All information obtained is depicted on the BTC Plans. However, the D/B Team is required to perform its own research and due diligence in an effort to identify all active utilities prior to commencement of construction activities.

The conceptual utility relocation scheme shown on the BTC Plans has been developed with input and coordination from the utility owners. The overhead wires that pass over and under the bridges will be relocated into new conduits installed in the local roadway. This scheme has been preliminarily coordinated with the utility companies, but is not fully accepted by the utility owners as shown. The D/B Team must complete the coordination with the utility owners to confirm the final required Scope of Work.

#### **2.14.1 D/B Team Responsibilities**

The anticipated services to be provided by the D/B Team include, but are not limited to: identification of utilities requiring relocation, notification to utility owners and coordination of design and construction efforts for the utility work. Final utility coordination shall be the responsibility of the D/B Team. The D/B Team shall expect to devote resources to utility investigation, coordination, monitoring, protection and construction as required to complete the Project. The D/B Team bears full responsibility at its own expense for ascertaining the existence and exact location and size of any utility to be relocated or otherwise impacted on either a temporary or permanent basis.

The D/B Team shall be solely responsible for planning and coordination of the utility relocations required for the completion of the Project. The D/B Team shall be responsible for coordinating the work of the D/B Team, its subcontractors and the various utilities. The resolution of any conflicts between utilities and the construction of the Project shall be the responsibility of the D/B Team. No additional compensation or time will be granted for any delays, inconveniences, or damage sustained

by the D/B Team or its subcontractors due to interference from utilities or the operation of relocating utilities.

Unless otherwise directed by the Utility Owner, the D/B Team shall not move or remove any utility without the utility owner's written consent. The D/B Team shall give ample notice to any utility owner whose infrastructure will require relocation. It will be at the discretion of the utility owner if such work will be completed by the D/B Team or by the utility owner's own forces. If utility assets are damaged by the D/B Team, it shall notify the affected utility owners, and assume any costs for the repair.

Special permits may be required to perform work in the vicinity of existing utilities. It will be the responsibility of the D/B Team to obtain any permits sufficiently in advance of the work. Any costs related to permits will be borne by the D/B Team.

The D/B Team shall make all reasonable efforts to design the Project to avoid conflicts with utilities, and minimize impacts where conflicts cannot be avoided.

The D/B Team shall initiate early coordination with all utilities located within the Project limits. The D/B Team shall identify and acquire any replacement utility easements needed for all utilities necessary for relocation due to conflicts with the Project. (The conceptual utility relocations shown in the BTC do not require additional right-of-way or easements.)

The D/B Team shall provide all utilities with 75%/90% design plans at the time of submission to RIDOT so that the preliminary utility relocation schemes can be confirmed by the utility owners.

The D/B Team shall accurately show the final location of all utilities on the as-built drawings for the Project.

The D/B Team shall comply with all applicable Environmental Laws in the performance of the Utility Work.

The D/B Team shall not enter into any agreement with any utility owner that purports to bind RIDOT in any way, nor shall any agreement be deemed to modify the terms of the Contract Documents.

The D/B Team specifically assumes all cost risks and risk of schedule delays associated with the utility work.

The D/B Team shall permit utility owners to inspect the utility work, and shall make any necessary corrections to the satisfaction of the respective utility owners.

### **2.14.2 Anticipated Utility Relocations and Payment**

Utility reimbursement for this project for all work performed or contracted by the private utilities will be made through RIDOT utilizing conventional force account agreements.

Utility efforts paid through force accounts with RIDOT are anticipated to be limited to the relocation of overhead power (National Grid), telephone (Verizon), and cable TV (Cox Communications) wires. The overhead power wires are pole supported and span over/above Route 146 at the Route 104 bridges. The overhead telephone and cable wires are pole supported and span under the Route 146 bridges at Route 104. The preliminary design proposes to relocate all lines underground into conduit duct banks as shown on the BTC Plans.

The D/B Team will be responsible for certain aspects of the utility work which will be paid for under the Utility Relocation and Coordination pay items noted in Section 2.5 including:

- Furnishing and installing conduit, manholes and risers for the relocation of the overhead power and communications lines.
- Furnishing and installing all necessary equipment to maintain and/or relocate existing utility connections for the tolling gantry facility.
- Excavation, backfill and pavement required for the installation of conduit and manholes.
- All costs associated with locating utilities, utility coordination and other incidentals.

The D/B Team shall ensure that there are no conflicts with the proposed construction scope of work, and ensure that there are no conflicts between each of the utility's relocation plans. The D/B Team shall prepare and submit to RIDOT all relocation plans. The D/B Team shall assemble the information included in the relocation plans in a final and complete form and in such a manner that RIDOT may approve the submittals with minimal review. The D/B Team shall meet with RIDOT's Utilities Engineer within 20 days of the Notice to Proceed to gain a full understanding of what is required with each submittal. The D/B Team shall receive written approvals from RIDOT prior to authorizing utilities to commence relocation construction. The utilities shall not begin their relocation work until authorized by RIDOT. Each relocation plan submitted shall be accompanied by a certification from the D/B Team stating that the proposed relocation will not conflict with the proposed roadway improvement and will not conflict with another utility's relocation plan.

### **2.14.3 Utility Owner Contact Information**

Known utility owners and their respective contact numbers include but are not limited to the following:

Mr. Peter Decosta (508) 944-6701  
State Highway Coordinator  
Verizon Communications, Inc.  
85 High Street  
Pawtucket, Rhode Island 02865

Mr. Thomas Capobianco (401) 784-7248  
Senior Operations Engineer  
National Grid Electric Company  
280 Melrose Street  
Providence, Rhode Island 02907-2152

Mr. David Velilla (401) 615-1284  
Capitol/Utilities Coordinator  
Cox Communications, Inc.  
9 J.P. Murphy Highway  
Warwick, Rhode Island 02893

Mr. Joel D. Jillson  
Fire Chief  
North Smithfield Fire Department  
Main (401) 762-1135  
1470 Providence Pike  
North Smithfield, RI 02896

Mr. Steven E. Reynolds  
Chief of Police  
North Smithfield Police Department  
Main (401) 762-1212  
575 Smithfield Road  
North Smithfield, RI 02896

Mr. Raymond J. Pendergast, Jr.  
Director of Public Works  
North Smithfield Department of Public Works  
Main (401) 767-2200  
281 Quaker Highway  
North Smithfield, RI 02896

## **2.15 Coordination with RIDOT Tolling System**

### **2.15.1 Cooperation with RIDOT's Toll Systems Contractor**

The Contractor will be required from time to time to work with RIDOT's toll system contractor to support the continuity of toll operations throughout the project. The Contractor shall cooperate with the toll system contractor or representatives of RIDOT in order to ensure that the toll system and other functional elements do not conflict or cause any deterrent in operation.

### **2.15.2 Damages for Disruption of Service**

In the event the Contractor causes any unscheduled disruption or adverse impact to the toll collection equipment resulting in the loss of revenue, the Contractor shall be subject to Liquidated Damages in the amount of \$4,000 per day. An ‘unscheduled disruption’ shall mean any event which was not planned, scheduled or approved prior by RIDOT. In addition, the Contractor shall be responsible for any cost associated with the repair (to be performed by RIDOT’s toll systems contractor) of the toll collection system and or associated equipment.

### **2.16 Quality Assurance (QA)**

Quality Assurance (QA) is an umbrella term that includes all activities performed to ensure that the quality of a product is as it should be. QA is the responsibility of both the D/B Team and the Owner (RIDOT). To ensure that the goals for overall quality will be met, RIDOT has established the following QA requirements for this Project:

- Design QA: The design quality assurance will consist of an established Design Quality Control system established by the D/B Team and approved by RIDOT. RIDOT will also perform review of design submittals and will approve the Construction Plans prior to the start of any construction or materials fabrication.
- Construction QA: The components of the construction quality assurance system include: an approved Quality Control Plan by the D/B Team; Construction Acceptance and Independent Assurance Testing by RIDOT; Dispute Resolution System; Qualified/Accredited Laboratories and Inspection and Testing Personnel.

### **2.17 Quality Control (QC)**

The D/B Team shall establish and implement a Quality Control (QC) Plan to ensure that the work performed fulfills the design and construction requirements of the Contract. The QC Plan shall outline the D/B Team’s QC organization and roles, document design and construction management procedures, Design QC activities, Construction QC activities, qualified/accredited QC laboratories and qualified/certified QC inspection and testing personnel.

The D/B Team shall submit its QC Plan for both design and construction to the Department for review and approval within 30 days following Notice to Proceed. Along with the QC Plan submittal, the Design Manager and Construction Quality Control Manager shall provide a formal presentation of the QC Plan for both design and construction utilizing Project related scenarios. The formal presentation shall provide a detailed description of how the D/B Team’s QC program will operate for the design and construction including development of necessary design and construction quality management documentation.

### **2.17.1 Design Management**

The D/B Team shall be responsible for design quality. The Design Quality Control Manager, assigned by the D/B Team, shall be responsible for overall management of the QC programs for design. This individual, shall report directly to the D/B Team’s Quality Control Administrator, and is responsible for all of the design QC activities. The Design QC Manager shall maintain close communication with the D/B Team’s Design Manager and Project Manager to ensure that the Project is completed in accordance with the requirements of the Contract Documents.

The Design QC Manager shall be responsible for all of the design oversight reviews. Design personnel independent from those personnel that performed the actual design shall be used to perform QC reviews. RIDOT will perform reviews of all design submittals.

The Design QC Manager shall certify in writing to the Department, prior to submitting Design submissions, that the submittal has undergone the QC procedures outlined in the QC Plan. Use of Department design review checklists is encouraged. Failure to provide the certification, or if it is apparent that the QC is incomplete may cause the Department to reject the submittal.

RIDOT shall have the right to review and comment on all Plans and Specifications for compliance with the requirements of the Contract Documents and Reference Documents. The D/B Team shall be responsible to satisfy all such requirements and acknowledge that RIDOT will have the right to disapprove any design approach that is not in compliance with the requirements of the Contract Documents and Referenced Documents unless said approach was previously approved in writing by RIDOT.

The D/B Team shall revise and modify all design plans so as to fully reflect all comments and shall deliver the revised submittal to RIDOT, who will distribute plans to the appropriate RIDOT staff for review and comments.

### **2.17.2 Construction Management**

The D/B Team shall have the overall responsibility for Quality Control (“QC”) activities. The D/B Team is responsible for providing quality control testing for all materials manufactured off-site, excluding the items listed below:

- Pipe (concrete, steel, aluminum and high density polyethylene) for culverts, storm drains and underdrains.
- Precast Concrete Drainage Structures.
- Asphalt Concrete Mixtures.
- Aggregate (dense and open graded mixes)

RIDOT will provide plant quality assurance and plant testing of these items.

The D/B Team shall prepare a Construction Quality Control Plan, as part of the overall project QC Plan described in Section 2.16, detailing the type and frequency of inspection, sampling and testing deemed necessary to measure and control the various properties of materials and construction governed by the Specifications. At a minimum, the sampling and testing plan shall detail sampling locations, tests to be performed and techniques, and test frequency to be utilized. The Construction QC Plan shall also document the inspection attributes, standard QC forms and reporting, all proposed fabricators, all standard manufactured materials, all laboratories performing QC testing and a listing of all QC personnel. The Quality Control Plans shall use the NETTCP “Model Quality Control Plan” as a standard template and shall address all aspects of the work needed to complete the subject Work Item.

The minimum QC requirements for all materials, including Hot Mix Asphalt and Portland Cement Concrete, shall be those as stated in the latest RIDOT Specifications. Deviation from the RIDOT Standard Specifications will not be allowed.

The D/B Team shall prepare a Materials Test Book for all materials and items required within the construction scope of work. This Materials Test Book must be prepared in accordance with the latest RIDOT Master Schedule for Sampling, Testing, and Certification of Materials, the latest RIDOT Standard Specifications for Road and Bridge Construction, and the RIDOT Procedures for Uniform Record Keeping.

### **2.17.3 Non-Conforming Work**

Completed work that does not conform to the contract requirements for the quality of materials or workmanship shall be documented through a Non-Conformance Report (NCR). The NCR shall be prepared and submitted to the Engineer within 24 hours after identifying the non-conformance.

The NCR shall clearly describe the element of D/B Work that is non-conforming and the nature of the non-conformance. The NCR shall further address the steps that are to be taken to ensure that the particular non-conformance will not be repeated.

The D/B Team’s Engineer of Record for the Work shall evaluate the effect(s) of the non-conformance on the performance, safety and service life of the Project and its elements. The proposed resolution of the non-conformance, including remedial actions if necessary, shall be fully designed and documented and shall bear the stamp of a Professional Engineer registered in the State of Rhode Island. The D/B Team’s Construction QC Manager and the Quality Control Administrator shall also sign the NCR that the resolution of the non-conformance has undergone the same level of QC as the design.

RIDOT shall review and accept the proposed resolution of the NCR prior to the D/B Team implementing any corrective action. RIDOT shall ultimately have the authority to call for removal of any non-conforming work should RIDOT not agree that the remedial actions set forth by the D/B



Team are sufficient. RIDOT also reserves the right to make cost adjustments for any work that, although not in conformance with the specifications, is nevertheless satisfactory to remain in place.

The D/B Team shall determine the need for, design, install, and maintain temporary safety measures required until the non-conforming work is rectified, then remove and dispose of such measures at no additional cost to the State.

The D/B Team shall maintain a log of all NCR's and submit this log to RIDOT on a bi-weekly basis. Each NCR shall be numbered sequentially with a brief description, the status and an expected date for resolution.

## **2.18 Field Office**

The D/B Team shall provide office space, equipment, and services consistent with requirements of the Standard Specifications for the Resident Engineer. This field office should be configured and equipped for the Department staff per the RI Standard Specifications. The configuration and equipping of the field office shall be coordinated between the D/B Team and RIDOT's Resident Engineer. The field office will be operational from 1 month prior to the start of construction operations and shall be removed 3 months after all items on the punch list have been addressed to the satisfaction of the Engineer.

## **2.19 Plan Preparation**

### **2.19.1 Project Tracking System (PTS) Number**

The RIDOT has assigned **0114J** as the PTS Number for this project. The D/B Team shall include this PTS number in Plans and Contract Specific Documents in accordance with the RIDOT Design Policy and Procedures Manual (DPM).

### **2.19.2 Plans Content Requirements**

The D/B Team shall prepare the Plans in accordance with DPM 450.02; Plans Content Requirements and the RIDOT CAD Standards Manual 2007. The Plans shall be named in accordance with DPM 450.06; Plan Sheet File Name.

The D/B Team shall furnish the Final Plans with the appropriate signature blocks and Professional Engineer seals on the title sheets for approval of RIDOT and FHWA.

### **2.19.3 Design Backup Finalization Submission**

The D/B Team shall provide backup components in accordance with DPM 450.03; Design Backup Finalization. These components shall include at a minimum Field Survey, Highway Computations, Bridge Computations, Drainage Computations and Grade Sheets.

### **2.19.4 Construction Plans**

Construction Plans shall be the Final Plans approved for construction by the RIDOT Administrator, Project Management, the Chief Engineer of Infrastructure and the Federal Highway Administration Division Administrator.

### **2.19.5 Shop and Working Drawings**

Shop Drawings required for the new bridge components shall be reviewed and approved by the D/B Team's design engineers that prepared the design documents. All shop drawings shall be prepared in accordance with the latest RIDOT Standard Specifications. The following list of Shop Drawings, at a minimum, will be required:

- Structural Steel (including metalizing and painting procedures)
- Reinforcing Steel
- Prefabricated Bridge Components (Design and Fabrication Drawings)
- Bridge Railing Components
- Elastomeric Bridge Bearing Pads
- Micropile foundations

The following list of Working Drawings (Construction Procedures), at a minimum, will be required:

- Bridge Demolition Plans
- Girder Erection Plans
- Temporary Protective Shielding
- Prefabricated Bridge Components Installation Plans
- Temporary Bridge Design and Drawings
- Temporary Bridge Installation Plan
- Temporary Bridge Removal Plan
- Temporary Earth Support

All Working Drawings (Construction Procedures) shall be prepared, checked, signed and stamped by a Professional Engineer registered in the State of Rhode Island. The D/B Team shall have an independent Engineer that was not involved in the development of the submission review and approve Working Drawings.

The D/B Team shall submit an electronic record copy (PDF Format) of Shop Drawings to RIDOT for all Shop Drawings that do not deviate from the approved design plans. For all Shop Drawings that deviate in any way from the approved design plans, an electronic copy (PDF Format) of the Shop Drawing shall be submitted to the RIDOT Project Manager for review. No work detailed by the Shop or Working Drawings shall begin until the approved Drawings have been submitted to RIDOT. No changes shall be made by the D/B Team to any Shop or Working Drawings after they have been approved.

RIDOT may request to review certain Shop Drawings and/or Working Drawings at their discretion. If requested, an electronic copy (PDF Format) of the Shop Drawing or Working Drawing shall be submitted to the RIDOT Project Manager for review, approval and distribution as needed.

The RIDOT review time, if required, for shop and working drawing reviews shall be twenty one (21) calendar days from the date of receipt.

#### **2.19.6 As-Built Load Rating Reports**

The D/B Team shall submit to RIDOT a load-rating report for each of the two (2) bridges after the completion of construction. The Load Ratings shall be prepared and submitted in accordance with RIDOT's Bridge Load Rating Guidelines dated August 2017. AASHTOWare BrR software is required for the load rating of the bridges if compatible with the structure type.

The Load Rating Reports shall be formatted, organized and submitted with the requirements of Section 13 of the RIDOT Bridge Load Rating Guidelines.

Load Rating Reports shall constitute Project Records and shall be prepared by, signed by, and stamped with the seal of a Professional Engineer registered in the State of Rhode Island.

#### **2.19.7 Record (As-Built) Plans & Calculations**

The D/B Team shall prepare and submit to RIDOT Record (As-Built) Plans and Design Calculations for the project records. The plans shall include all field modifications and changes undertaken during construction serving as a permanent record of the actual location of all constructed elements, including all utilities affected by bridge construction activities. The calculations will be modified to reflect any changes to the project during construction. The D/B Team shall submit the Record (As-Built) Plans and Calculations in both hard copy and electronic (PDF) formats. The calculations shall be stamped by a Professional Engineer registered in the State of Rhode Island.

#### **2.20 Bi-Weekly Progress Meetings**

The D/B Team shall participate in progress meetings beginning two weeks after the issuance of the Notice to Proceed. These meetings shall be held bi-weekly or at the discretion of the Resident Engineer and/or RIDOT Project Manager. During such meetings, progress occurring since the previous meeting shall be reviewed. The D/B Team shall collect information from any key

PART B – PROJECT TECHNICAL REQUIREMENTS

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subcontractors/sub-consultants responsible for work completed during the specified duration and work scheduled during the upcoming reporting duration. These meetings shall be attended by the Design-Build Project Manager, the Construction Manager, the Quality Control Administrator and the Design Manager, as well as other key personnel from the design and construction firms defined within the D/B Team’s proposal and Department representatives designated by the RIDOT Project Manager. The D/B Team shall be responsible for preparing, maintaining and distributing minutes of the meetings to all attendees for review. The meeting minutes shall be provided to the Department within two calendar days of the progress meeting.

**2.21 Prohibited Alternative Technical Concepts and Substitutions**

The following Alternative Technical Concepts and/or Substitutions are prohibited and will not be accepted by RIDOT:

- Prestressed butted box beam superstructures.
- Sheet applied deck waterproofing membranes.
- Solid Concrete TL-5 bridge barrier systems.
- Bare concrete decks.
- Partial-depth precast concrete deck panels with a reinforced concrete topping.
- Bridge expansion joints within the length of the bridge deck.

END OF PART B

PROJECT TECHNICAL REQUIREMENTS