



REQUEST FOR PROPOSAL

FOR

**Design - Build Services for the
Rehabilitation of Wood River Valley Br. No. 404,
I-95 North and South**

Hopkinton and Richmond, Rhode Island

Volume 2, Project Technical Requirements

**Rhode Island Department of Transportation
April 26, 2017**

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VOLUME 2

PROJECT TECHNICAL REQUIREMENTS

1.0 DB-CONTRACTOR'S SCOPE OF WORK

The Project will consist of rehabilitating the existing Wood River Valley Bridge #040401 by improving the structural integrity and strengthening the structure to meet current AASHTO HL-93 Design Loading. The strengthening shall be accomplished thru a combination of lowering the profile of Interstate I-95 and various structural modifications to the superstructure.

The existing asphalt wearing surface, concrete pavements, gravel fill, and waterproofing membrane shall be removed to expose the top of the existing bridge deck. The existing bridge parapets, median barriers, deck joints, and approach slabs shall be removed and replaced. A modified version of the RIDOT standard "Deck over back wall" detail shall be installed. The top of the existing bridge deck shall be scarified to ¼" amplitude and a 5" minimum reinforced concrete overlay slab and exposed concrete wearing surface shall be placed and made composite with the existing deck via drilled and grouted dowels. The existing bridge bearings shall be removed and replaced with new elastomeric bearings. The existing backwalls and upper portions of the beam seats at the abutments and the tops of the pier caps shall be demolished and replaced in order to accommodate the new elastomeric bearings. The existing tee beams shall be strengthened using FRP wrap or other acceptable materials/methods to increase the live load carrying capacity of the structure to a target design/rating ratio of 1.0 for AASHTO HL-93 loading. In addition to strengthening the superstructure, general concrete repairs and patching shall be made throughout the super and substructures. The Contractor shall be responsible for determining the extents of concrete repair based on the latest available NBIS Biennial bridge inspection and other historic documents available thru RIDOT. The DB-Contractor shall perform repairs of any structural element(s) that exhibit section loss from the as-built dimensions. The DB-Contractor shall review the latest load rating analysis and report from RIDOT in order to investigate and verify the areas requiring repair and strengthening. Any work performed on the superstructure shall not reduce the current minimum vertical clearance of 15'-6" beneath the bridge.

On the approaches to the bridge there will be up-to full-depth roadway excavation and reconstruction in order to re-profile I-95 to match the bridge deck improvements. Modifications to the existing drainage structure(s) / drainage system will be required based on the re-profiling of I-95. The drainage system and stormwater impairment treatments shall be upgraded as necessary to meet the RIDOT Consent Decree (included in Appendix A) and the latest edition of the RI Stormwater Design and Installation Standards Manual (RISDISM). The existing guardrail shall be removed across the limits of the bridge and removed and replaced on the approaches to the bridge.

A portion of the concrete median barrier will have to be removed, and later replaced, in order to provide for temporary traffic crossovers. Construction is anticipated to take place over four (4) phases as shown in the Base Technical Concept (BTC) Plans. For long-term construction phases, two (2) lanes of I-95 traffic in each direction shall be maintained at all time except as allowed for short term

temporary closures. The DB-Contractor shall be responsible for developing Maintenance and Protection of Traffic (MPT) plans, in accordance with the latest version of the AASHTO MUTCD as well as the development of a RIDOT TMP. The TMP and MPT Plans shall be submitted to RIDOT for review and approval.

Additionally the DB-Contractor shall be responsible for any and all related tasks as necessary to complete the Scope of Work (see the BTC Plans for further details).

The following requirements shall apply:

- Two lanes of I-95 traffic in each direction shall be maintained at all times except as indicated in Sections 2.10 & 2.11.
- The RIDOT reserves the right to require the DB-Contractor to modify the traffic control setup in the field to improve traffic conditions; at no additional cost to the State.
- The bridge is not eligible for listing in the National Register of Historic Places however the design and construction of this project must be reviewed and coordinated in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended and Section 4(f) of the Department of Transportation Act. The DB-Contractor shall provide all necessary information to the RIDOT Cultural Resources Unit (CRU) for the purpose of carrying out the required coordination.
- The project design shall be developed by the DB-Contractor in a manner to meet the criteria to be classified as a categorical exclusion to the maximum extent practicable. It shall be advanced in accordance with 23 CFR 771.111 and shall be coordinated with other Federal Agencies with review authority in order to meet the requirements for adoption of RIDOT's NEPA document.
- The DB-Contractor shall provide the required design work and documents to RIDOT in support of RIDOT preparing the Environmental Assessment for the associated "Rhode Works Toll Facilities – Design, Build, Operate and Maintain" Project near the bridge site. The work associated with the rehabilitation of Bridge #40401 will be included in that document.
- The DB-Contractor shall note that this project is located within a GAA groundwater recharge zone and Sole Source Aquifer and also within the Wood Pawcatuck Wild & Scenic River Study Area. Scupper drainage and other direct discharge into the Wood River shall be eliminated as part of this project. See the BTC plans for further details.
- The DB-Contractor shall note that the project area includes high quality potential habitat for the Northern Long Eared Bat, a federally threatened species. As an early item of action the DB-Contractor shall conduct an acoustic survey to reduce the potential for time of year restrictions on the project.
- As the project will require the removal of pavement and subbase a formal application will be required and 100% of the paved area must be treated.
- The new bridge parapets, endposts and median barrier shall be designed to meet TL-4 criteria.
- The DB-Contractor shall restore all existing grass areas, land and vegetation within the limits of construction and within the temporary easement areas to pre-construction conditions and to the satisfaction of the RIDOT Engineer.
- No equipment or storage of materials shall be allowed within 60 feet of the river.

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- The DB-Contractor shall design the project so as to limit access to the substructure on the western side of the Wood River. The use of a temporary platform or “Murphy” type bridge is preferable to construction of a haul road on the eastern side of the river. No temporary fill or temporary work platforms are to be placed in the river (i.e. for crane platform, etc.).

The DB-Contractor should note that the minimum pavement sections required by the RIDOT are provided herein. The DB-Contractor shall be responsible for final design and construction of the pavements for this Project in accordance with the Contract Documents and the RIDOT Standard Specifications. Reference should be made to the Contract Documents, including the RI Standard Specifications, for provisions regarding required investigations and the identification, resolution and responsibility for differing site conditions.

The DB-Contractor shall be responsible for providing quality assurance and a quality control plan for design, inspection, sampling and testing for all materials manufactured off-site.

The DB-Contractor will be responsible for providing Construction Quality Control at the Construction Contractor level and for providing a complete Quality Control and Quality Assurance 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.

RIDOT will not obtain any environmental permits prior to award. The DB-Contractor shall be responsible for preparing all environmental permit applications required as part of their design and construction activities. The RIDOT will review/request revisions as appropriate, and as owner, is required to officially submit all completed applications to their respective regulatory agencies. The RIDOT has identified this project as a NEPA Categorical Exclusion (CE) under the current anticipated scope of work. As previously noted, the NEPA process for this project is being completed as part of the associated “Rhode Works Toll Facilities – Design, Build, Operate and Maintain” Project and the DB-Contractor shall be responsible for providing the required and requested documents to RIDOT in support of the NEPA process. Any changes in scope or footprint from those proposed herein, that are acceptable to the RIDOT, may require additional environmental technical studies and analysis. The CE will be re-examined by RIDOT at each change in design phase (i.e. at the onset of preliminary design, 25% and 90%) based on the DB-Contractors design. The DB-Contractor will be responsible for any additional environmental studies or analysis and/or right-of-way to support the proposed changes in scope.

The DB-Contractor shall be responsible for submitting plans and obtaining all necessary environmental approvals and permits required to accomplish the work as noted in this RFP. The DB-Contractor shall be responsible for compliance with pre-construction and construction-related CE permit conditions. The DB-Contractor 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 sole responsibility of the DB-Contractor. The DB-Contractor will be responsible for any increase in costs or impacts to the schedule as a result of noncompliance with the environmental permits or regulatory requirements.

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 and Reference Documents to include, but not be limited to the documents listed herein. The DB-Contractor must verify and use the latest version of the documents listed herein. The Successful DB-Contractor must meet or exceed the minimum design standards and criteria.

If during the course of the design, the DB-Contractor determines specific Standard Specifications or Reference Documents required are not listed herein, it is the responsibility of the DB-Contractor to identify the pertinent Standard Specifications or Reference Document and submit to the 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, 5th Edition, 2010
- Manual On Uniform Traffic Control Devices (MUTCD), 2009 Edition with current revisions
- Rhode Island Department of Transportation (RIDOT) Standard Specifications for Road and Bridge Construction Amended 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>
- 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
- RIDOT Bridge Load Rating Guidelines, Revision No. 2, March 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: 7th Edition, 2015 with latest revisions
- AASHTO Manual for Bridge Evaluation 2nd Edition with latest revisions
- AASHTO Roadside Design Guide, 4th Edition, 2011
- Guide Design & Construction Specifications For Bridge Temporary Works 1995, with latest revisions
- FHWA Hydraulic Engineering Circular No. 23, Latest Edition
- Guide Specifications for Seismic Isolation Design 4th Edition
- NCHRP Report 350 Recommended Procedures for Safety Performance Evaluation of Highway Features, 1993

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- RIDOT Traffic Design Manual
 - RIDOT Highway Design Manual
 - RIDOT CAD Standards Manual, latest edition from the following website: <https://www.pmp.dot.ri.gov/PMP/DesktopDefault.aspx?appid=0&podid=-1&appindex=0>
 - RIDOT Approved Materials List from the following website: http://www.dot.ri.gov/business/approved_materials.php
 - Rhode Island Stormwater Design and Installation Standards Manual, March 2015
 - AASHTO Guide Design Specifications for Bridge Temporary Works
 - 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 LRFD Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals
 - Guide Specifications for Design of Bonded FRP Systems for Repair and Strengthening of Concrete Bridge Elements
 - ANSI/AASHTO/AWS D1.1 Welding Code
 - AASHTO Maintenance Manual for Roadways and Bridges
 - “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” FHWA NHI Publication No. 12-049
 - 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/nsba/nsba-publications/aashto-nsba-collaboration/>
 - USDA, NRCS, Title 210, National Engineering Handbook, Section 6
 - USDA, NRCS, Title 210, National Engineering Handbook, Section 11

Construction Work in accordance with the following standards:

- AASHTO LRFD Bridge Construction Specifications, 3rd Edition with latest revisions
- AASHTO Construction Handbook for Bridge Temporary Works, 1st Edition with latest revisions
- Manual on Uniform Traffic Control Devices (MUTCD), 2009 Edition with current revisions
- Rhode Island Department of Transportation (RIDOT) Standard Specifications for Road and Bridge Construction, Amended 2016, with all revisions
- Rhode Island Standard Details, 1998, with all revisions
- Rhode Island Bridge Design Standard Details, 2015, with all revisions

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 approved by the RIDOT and specified within the text of this RFP shall govern over the RIDOT specifications, design standards and manuals.

2.1.1 Plan Set Development

The development of the construction drawings for the Project shall follow RIDOT's standard format for construction plans. The Released for Construction drawings each shall be prepared so that the Released for Construction drawings will form a portion of the overall Project set of drawings. The Released for Construction drawings shall be signed and sealed by a Professional Engineer registered in the State of Rhode Island. The construction drawings shall be developed in AutoCAD Civil 3D 2015 or as agreed to by RIDOT.

2.1.2 Design Review

The DB-Contractor shall submit to RIDOT the number of copies shown in Table 2.1-1 for all design submissions. Each submittal by the DB-Contractor shall also contain a PDF file of all drawings, PDF copies of all Reports and other submittal items. PDF drawings shall be full size (22" x 36") black and white and at least 300dpi.

Table 2.1-1
Required Construction Plan Sets

| Commission Use | Number of Plan Sets |
|---|---------------------|
| Full Size (22" x 36") Plans | 10 |
| ½ Scale (11"x18") Plans | 10 |
| Project Special Provisions (Specifications) | 10 |
| Reports | 3 |
| Backup Calculations | 3 |
| CD (containing all of the above, in PDF format) | 5 |

The DB-Contractor is to submit the following submissions:

1. Twenty-Five Percent (25%)
2. Ninety Percent (90%)
3. Issued for Construction (IFC)

RIDOT will require twenty-one (21) calendar days to perform the review of each submission. Written responses to RIDOT comments shall be returned within 14 calendar days after the comments have been provided to the DB-Contractor.

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:

4. Contract Amendments and approved Change Orders.
5. The Plans and Specifications prepared by the DB-Contractor and approved by RIDOT.
6. The design criteria, standards and reference documents referenced through the entire RFP.
7. The entire RFP.

2.3 Roadway Improvements

The DB-Contractor shall design the project in accordance with the RIDOT design standards, the MUTCD, and AASHTO design standards and in accordance with guidelines specified in this RFP. The DB-Contractor shall prepare any documentation required to apply for and obtain any design exceptions if required.

2.4 Structures Improvements

The following sections outline the general requirements associated with the repair, rehabilitation, and strengthening of the bridge structure.

2.4.1 Requirements

- a. Corrosion Protection** - Galvanized reinforcing steel shall be used at all locations and shall conform to the requirements of RIDOT Standard Specification Sections 810 and M.05.

The minimum yield stress shall be 60ksi.

Any existing reinforcement that is exposed during construction shall be field coated with an epoxy coating prior to placing any new galvanized reinforcement.

- b. Materials** – Any RIDOT required Materials will be set forth in the **RIDOT Standards and in this RFP** and shall be included on the RIDOT Approved Materials List.

2.4.2 Scope of Work and Guidelines

The Scope of the Project includes all Project components identified in accordance with the Contract requirements. The DB-Contractor shall determine the full scope of the Project through thorough examination of all of the entire RFP and the Project site.

The DB-Contractor shall furnish all Design and Construction Services, Quality Management, Quality Assurance/Quality Control (QA/QC) program, Materials, Equipment, Labor, Transportation, and Incidentals required to complete the design and construction Work according the terms of the Contract. The DB-Contractor shall be responsible for designing, furnishing, fabricating, constructing, installing, and erecting 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 DB-Contractor is solely responsible for assessing existing conditions, presenting design or engineering solutions, and defining means and methods for complying with the requirements of this project.

The latest NBIS bridge inspection reports and load rating report are being provided to the DB-Contractor. The reports are for informational purposes and bidding only. For the top of existing reinforced concrete deck, where no inspection information is available, the DB-Contractor shall assume two percent (2%) of the deck area will require repair. No claim will be considered if the DB-Contractor underestimates the required repair quantities.

Based on the current scope of work a geotechnical / subsurface investigation is anticipated for the proposed BMP location(s) for this project. The RIDOT does not anticipate the need to obtain any required Right-of-Way based on the Scope in this RFP; however, the DB-Contractor will be responsible for any right-of-way modifications resulting from either design modifications or construction issues. The RIDOT anticipates processing this project as a NEPA Categorical Exclusion (CE) as part of the process being completed for the associated “Rhode Works Toll Facilities – Design, Build, Operate and Maintain” Project.

The DB-Contractors obligations shall include without limitation at least the following:

1. Bridge Rehabilitation/Strengthening

- a. **General** – Bridge rehabilitation/strengthening as described above and in Volume 1 of this RFP.

The bridge shall be rehabilitated and strengthened such that it shall achieve a design/rating factor of 1.0 under AASHTO HL-93 loading criteria.

- b. **Geometry** – The horizontal alignment of I-95 is not to be modified, with the exception of minor changes to the final lane striping. The vertical profile of I-95 is proposed to be lowered as shown in the BTC Plans on the RFP CD. The proposed roadway shall have a crown line between the two travel lanes with 2% cross slope on the travel lanes and 3% cross slope on the shoulders. Across the bridge the proposed roadway shall have a crown line between the two travel lanes with 2% cross slope on the travel lanes and 2% cross slope on the shoulders. The proposed curb-to-curb roadway width on each barrel of the bridge shall be increased to 42.5 feet based on the reduced width of the new bridge parapets. The DB-Contractor shall provide final bridge geometry including all elevations, plan dimensions, top of deck elevations, etc. All survey shall be provided by the DB-Contractor as necessary to complete the Project.
- c. **Live Load**- The DB-Contractor’s attention is directed to the following minimum live load design requirements of the RIDOT Bridge Design Manual:

Bridge Design Loading: AASHTO HL-93

Live Load deflection criteria: L/1100

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- d. Seismic Loading** – The DB-Contractor shall be aware that this structure is classified as a **Critical Bridge** per Section 3.6.4 of the RIDOT LRFD Bridge Design Manual. Seismic analysis shall conform to Section 3.6 of the RIDOT LRFD Bridge Design Manual and the latest edition of the AASHTO LRFD Bridge Design Specification, including all interims. The DB-Contractor shall design the replacement bearings and substructure modifications to meet those requirements as well. A multi-mode spectral method of analysis is required in accordance with Section 4.5 of the RIDOT LRFD Bridge Design Manual.

Site Classification shall be assumed as “D” however the DB-Contractor can perform a subsurface investigation and analysis to confirm an alternative Site Classification if desired.

In general, seismic retrofit work is limited to bearing design, superstructure to substructure connections, providing adequate longitudinal and lateral restraint for seismic forces at bearings and correcting deficiencies in support length. The intent is to not retrofit pier columns, pier foundations, and abutment foundations for seismic forces.

- e. Load Rating** – Following the completion of the rehabilitation the DB-Contractor will be responsible for producing a load rating report for the bridge. The load rating analysis and report shall be in accordance with the RIDOT Guidelines for Load and Resistance Factor Rating (LRFR) – DRAFT January 2017.
- f. Hydraulic & Vertical Clearance** – The rehabilitation of the structure shall not reduce the current minimum vertical clearance beneath the bridge.
- g. Accelerated Bridge Construction (ABC)** – Upon RIDOT's approval, the DB-Contractor has the option of using ABC methods such as prefabricated components, etc. The DB-Contractor is responsible for designing and detailing the ABC system in the contract plans.
- 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 including utilities, shall be considered critical and shall be designed and detailed in the plans. The DB-Contractor is responsible for designing and detailing the support of excavation in the set of contract plans. Excavation support systems may require approval from but not limited to RIDEM Wetlands Program, Water Quality Program, Dams Program and or ACOE. Consideration should be given to the excavation support systems with regards to the above regulations.
- i. Temporary Support and Jacking** – The DB-Contractor is responsible for designing and detailing the temporary support and jacking system, as necessary for the replacement of all the bridge bearings.

j. Temporary Deck Underside, Side Protective Shielding, and Work Platforms – The DB-Contractor is responsible for designing and detailing the necessary temporary deck underside, side protective shielding and work platforms. The design and details shall be submitted to RIDOT for review and approval prior to being installed. Any work that may result in debris falling onto the roadway or into the river below the structure will require temporary shielding to be installed.

k. Bridge Inspection

- **Notification for Inspection** – Before the project is accepted as “Substantially Complete” the DB-Contractor shall notify the RIDOT that the bridge rehabilitation is complete and ready for RIDOT inspection. As part of such inspection notice the DB-Contractor must submit “As-built” Plans and Specifications for the bridge.
- **RIDOT Bridge Inspection** – Just prior to the completion of each phase of construction the DB-Contractor shall notify RIDOT of the pending phase completion. After notification by the DB-Contractor and prior to the opening of any phase of construction to vehicular traffic, the RIDOT will perform a safety inspection of the section of construction slated to open to traffic. Only upon RIDOT approval of the inspection findings shall the phase be open to vehicular traffic.
- **RIDOT Punchlist Inspection** – After notification by the DB-Contractor and prior to acceptance of the project as Complete, the RIDOT will perform an inspection of the bridge. A “punchlist” will be developed based on the findings of the inspection and submitted to the DB-Contractor for completion.

l. Damage To Existing Utilities and Utility Structures

The locations of all utilities as shown on the Concept Level Plans are approximate. The DB-Contractor shall check and verify the location of all existing utilities and service connections both underground and overhead in accordance with the “Dig Safe Program Law” enacted by Rhode Island Legislation Bill No. 79S-291, which became effective July 1, 1979. The DB-Contractor should be aware that not all utility companies subscribe to the Dig Safe Program. It is the DB-Contractors responsibility to ensure that all utility companies have been notified and all utilities 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 DB-Contractors responsibility.

The DB-Contractor will be responsible for:

- Damage to any existing utility structures and/or utility equipment within the limits of construction.
- Damage to existing walls, fences, etc.

The DB-Contractor shall make every effort to prevent debris from falling into catch basins. Should any debris fall inside a structure, it shall be removed immediately.

m. Storage of Construction Material and/or Equipment

The DB-Contractor shall place all equipment and materials in his yard or on site in a location approved by the RIDOT.

Storage of materials on State or City/Town property will require the prior approval of the RIDOT. No storage of equipment or materials will be allowed within 60 feet of the Wood River.

Stockpiles shall be covered and must be located outside any areas of RIDEM jurisdiction including but not limited to wetlands and their associated buffers. Any storage or stockpile of construction material and/or equipment on private property will be the DB-Contractor's responsibility.

n. Adjustment and Cleaning of Drainage Pipes and Structures

The DB-Contractor shall be responsible for the adjustment of all drainage structures (catch basins, manholes, curb inlets, scuppers, etc.), within the limits of work, as necessary based upon the approved re-profiling of I-95 and the mill and overlay of Mechanic St. 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 DB-Contractor shall 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.

2.4.3 Description of Elements

This Section covers the specific design and construction elements of the bridge rehabilitation. 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

The following are structural elements requiring repair under this bridge rehabilitation Project:

a. Deck & Reinforced Concrete Overlay

- Based on the results of a concrete testing program undertaken in January 2017 the existing bridge deck was found to be in good condition and will not require replacement at this time. The existing fill (bituminous, gravel, and concrete) shall be removed exposing the top of the existing deck. The exposed top of the deck shall be fully sounded and any deteriorated concrete removed and repaired to the satisfaction of the RIDOT Engineer. Deteriorated deck concrete shall be removed by means of light chipping equipment. Maximum weight of chipping hammers shall be 15 lbs.
- A 5” minimum reinforced concrete overlay is proposed in the BTC Plans. The top of the existing deck shall be roughened to a minimum of ¼” amplitude before casting the overlay slab. The overlay concrete shall be Class HP in accordance with the RIDOT Standard Specifications. The thickness of the overlay will vary to accommodate the proposed roadway cross slopes. The concrete overlay shall be reinforced with galvanized reinforcement with size and spacing according to the design required to reach HL-93 loading. The 5” minimum reinforced concrete overlay shall have a mechanical connection (i.e. not relying on friction) to the existing beams using drilled and grouted reinforcement dowels. The exposed concrete riding surface shall be finished in accordance with RIDOT Standard Specifications. See the BTC plans for lane and roadway cross slope configurations as well as preliminary overlay slab details.
- There is an existing longitudinal deck joint in the bridge between the I-95 northbound and southbound barrels. The joint material and surrounding deteriorated concrete are to be removed. The joint shall be closed with a reinforced concrete closure pour. The concrete overlay shall be poured continuously over the joint. A deck drain shall be installed at the low point of the bridge to remove any trapped moisture in the void between median barriers.

b. Backwalls & Beam Seats

- The entirety of the backwalls at both abutments shall be removed. The upper portions of the beam seats shall be demolished to sound concrete and to a suitable elevation for any proposed reinforcement and dowels. The beam seats and pedestals shall be raised to accommodate bearing replacement. The backwalls shall also be rebuilt and shall accommodate the RIDOT “Deck-over-backwall” detail shown in the RIDOT Bridge Design Standard Details.
- The upper portions of the pier caps shall be removed to a suitable elevation for raising the beam seats for bearing replacement.
- The beams shall be jacked and temporarily supported as required to reconstruct the beam seats at the piers and abutments and replace the bearings.

- The BTC Plans show proposed details and limits for replacement of the beam seats, backwalls, and bearings. The DB-Contractor shall submit final design calculations, plans and details to RIDOT for review and approval.
- The D-B Contractor shall be responsible for the design of all temporary supports, excavation support, and jacking operations. The DB-Contractor shall submit final design calculations, plans, details and procedures to RIDOT for review and approval.

c. Beam Strengthening System

- The existing Tee-Beams require shear strengthening in order to meet HL-93 load rating requirements. Fiber Reinforced Polymer (FRP) Wrap shall be used for all shear strengthening. The BTC Plans show estimated limits of FRP wrapping of the Tee-Beams.
- The FRP shall be fully designed and detailed by the DB-Contractor and approved by RIDOT.
- The FRP shall meet all requirements of the FRP Specification provided in Appendix B.

d. Bridge Bearings

- All of the existing steel bridge bearings (both expansion and fixed) are in poor condition and shall be replaced with elastomeric bearings. The existing sole plates are anchored into the concrete Tee-Beams and are to be removed by cutting the anchors. Upon removal of the sole plates and prior to installation of the elastomeric bearings, the beam ends and bearing mating surfaces shall be repaired. If required by design, new sole plates and masonry plates shall be provided. The DB-Contractor shall design the elastomeric bearings in accordance with the RIDOT LRFD Bridge Design Manual.
- The replacement bearings shall be steel-reinforced elastomeric type bearings. A longitudinal and transverse seismic restraining system using anchor bolts and/or keeper blocks shall be designed and installed.
- The beam ends are to be jacked and temporarily supported as required for the bearing replacements.
- The beam seats shall be raised or lowered, as required to accommodate the new bearings. See section “b. Backwalls & Beam Seats” above for additional details.

e. Approach Slabs & Deck Joints

- The existing approach slabs and deck joints at each abutment shall be removed, disposed of and replaced. The new strip seal expansion joints shall be placed behind the new backwalls and secured to the new approach slabs per the RIDOT Bridge Design Standard Details.
- The new strip seal expansion joints shall accommodate a total design movement range of 1.25” at the abutments. This range of movement assumes Pier #2 as the center of expansion for the superstructure. The range of movement shall be adjusted if a different center of expansion is used in the DB-Contractors design.
- The DB-Contractor shall be responsible for the design and detailing of the approach slabs and strip seal expansion joints and shall submit each to RIDOT for review and approval.

f. Bridge Parapets & Median Barrier

- The existing bridge parapets and median barriers shall be removed, disposed of and replaced with new reinforced concrete barriers meeting TL-4 requirements, per the RIDOT Bridge Design Standard Details. The barrier reinforcement shall be anchored into the proposed concrete overlay and/or the existing concrete deck.
- The TL-4 median barriers shall be designed to include a concrete panel/slab to span the void between the northbound and southbound barriers as shown in the BTC plans.
- The existing bridge end posts shall be removed, disposed of and replaced with new endposts meeting the requirements of the RIDOT Bridge Design Standard Details for High Volume – High Speed roadways.
- The DB-Contractor shall be responsible for the design and detailing of the barriers and their attachment to the overlay slab and shall submit such to RIDOT for review and approval.

g. Deck Drainage

- The four (4) existing deck drains near the east abutment are to be removed, including the associated downspouts. With the removal of the gravel fill on top of the existing deck slab these drains will no longer be required. The concrete deck around the drain locations shall be repaired and the drain holes shall be filled with non-shrink grout.

- The eight (8) existing scuppers located in spans 1 & 2 shall be removed, disposed of and replaced along with the associated piping and downspouts. The proposed scupper flow rate shall be equal to or greater than the existing scupper flow rate. The proposed scuppers shall be cast into the proposed concrete overlay. If the proposed scuppers are deeper than the proposed overlay and penetrate into the existing reinforced concrete deck, no existing rebar shall be cut or terminated without prior approval of RIDOT.
- Reference the BTC plans for preliminary drainage piping layout. The DB-Contractor is responsible for final drainage design. **The drain pipes are not permitted to penetrate any of the bridge girders. Cored holes or other openings for drainage will be allowed through the bridge diaphragms. The proposed deck drainage system shall not impose upon the existing minimum vertical clearance. The DB-Contractor is responsible for design and detailing of all structural modifications associated with the drainage.**
- Any changes to the existing drainage patterns, system or existing impervious areas shall 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 and shall meet the requirements set forth in the Stormwater Consent Decree included in Appendix A.

h. Utilities

- Preliminary investigations indicate that there is potentially one (1) utility within the limits of the bridge. An underground Verizon line has been noted under the west side of the bridge, potentially along Mechanic Street. The DB-Contractor shall be responsible for coordinating with the applicable utility companies to determine the exact location(s) of utility within the limits of construction.
- The utility information gathered is included in Volume 4-Appendices, Appendix A, Section 6. Also included is a Verizon Memorandum and Non-Disclosure Agreement to be entered into by the DB-Contractor in order for Verizon to release the information related to the underground utility.
- The DB-Contractor shall be aware that there is the potential for additional utilities within the limits of work for this Project as a result of the “Rhode Works Toll Facilities – Design, Build, Operate and Maintain” Project. The DB-Contractor shall closely coordinate all work with that project.

i. Superstructure and Substructure Cleaning, Repair, and Coating

- All exposed concrete surfaces of the bridge superstructure and substructure shall be cleaned in accordance with RIDOT Standard Specification Sections 820.0200 & 820.0300. Cleaning shall occur prior to any concrete repairs.
- The DB-Contractor shall repair all deteriorated concrete areas of the superstructure and substructure prior to installing the FRP wrap. All repaired areas shall be approved by the RIDOT Engineer prior to application of the FRP.
- All exposed concrete surfaces, except for the underside and topside of the concrete deck, shall be coated with a film forming sealer, white in color, in accordance with RIDOT Standard Specification Section 820.
- The DB-Contractor shall be responsible for coordinating with the FRP manufacturer to determine a suitable and compatible film forming sealer for use over the areas of the superstructure receiving FRP wrap.
- The abutments and pier columns shall be coated above the existing ground line/waterline only.

2. Construction Requirements:

a. Demolition

For any demolition required to facilitate the Scope of Work, the DB-Contractor shall use bridge removal techniques conforming to the requirements of the RIDOT Standard Specifications. In addition, bridge removal shall comply with the following:

- Disposal of rubble from any demolition activities in the river bed or on the banks of the Wood River or in any Wetlands is strictly prohibited. Demolition activities shall be performed in accordance with, but not limited to, the RIDEM Freshwater Wetlands Regulations, ACOE, RIDEM Hazardous Waste and/or Solid Waste Regulations and or other required approvals.
- The DB-Contractor shall submit a Demolition Plan to the RIDOT for Review and Comment at least 15 Calendar Days prior to commencement of any demolition activities.

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- The DB-Contractor shall be responsible for the design and installation of Temporary Deck Underside and Side Protective Shielding in accordance with the RIDOT Standard Specifications. At a minimum, shielding shall be installed over all roadways and waterways and/or as directed by the Engineer. The use of the protective shielding is to insure that no debris falls to the roadway or river environment below the structure.

b. Staged Construction

- Longitudinal phased construction joints shall be allowed in the concrete overlay slab and exposed concrete wearing surface, as shown in the BTC Plans. The DB-Contractor shall limit the number of longitudinal construction joints to the absolute minimum required to complete the Scope of Work. The construction joints shall contain shear keys and the reinforcement shall be continuous across the construction joints.
- The BTC Plans show the maximum number of construction phases allowed.
- Two 11 foot wide travel lanes, in both travel directions, are required to be maintained throughout the duration of construction. One foot minimum from the edge of the temporary travel lane to the edge of the temporary or permanent barrier or curb is required.
- There are brief periods where one lane of traffic in each direction will be allowed for lane and barrier shifts and other short-duration construction activities. See Section 2.11 for additional details.

c. Concrete Repair

There are areas of deteriorated concrete throughout the structure in need of repair including spalled, hollow sounding, and/or cracked concrete. These areas include but are not limited to:

- The underside of the deck
- The sides and underside of the Tee-Beams
- The pier caps
- The pier columns
- The abutment breast walls (stems)
- The topside of the deck once the fill has been removed.

The DB-Contractor shall review the most recent routine and special bridge inspection reports to determine the anticipated locations and extents of deteriorated concrete. There may be other areas of deterioration not listed above and/or deterioration may have progressed since the latest inspection. It shall be the responsibility of the DB-Contractor to repair **all areas of the structure that exhibit section loss from the as-built dimensions.**

The process for performing the concrete repairs is as follows:

- The DB-Contractor is to fully inspect and document the extent of all deteriorated concrete areas.
- The DB-Contractor is to develop details in the final design plans for repair of all deteriorated areas.
- The DB-Contractor is to fully sound and mark out all deteriorated areas that are to be repaired.
- Prior to beginning the concrete repairs the RIDOT Engineer shall approve all marked out areas to be repaired.
- The DB-Contractor shall repair the approved areas to the satisfaction of RIDOT.
- The concrete Tee-Beam repairs shall be performed before installing the FRP. The repairs should be fully cured in accordance with the FRP specifications.
- Concrete substructure repairs shall be coordinated with the beam seat and backwall replacements. The areas of the substructure to be replaced shall be clearly defined from the areas to be repaired so as to have no overlap.

3. Superstructure Strengthening Requirements:

a. Load Rating Requirements

- The concrete Tee-Beams currently rate below 1.0 (statutory) for shear and flexure at several locations. The scope of strengthening for this Project is to increase all rating factors for Design, Legal, and Permit vehicles above 1.0. This includes the current AASHTO HL-93 loading. The DB-Contractor shall submit their strengthening scheme and a preliminary load rating report that proves the structure will rate above 1.0 for all vehicles upon completion of all repairs and strengthening. The DB-Contractor shall perform an as-built load rating when rehabilitation and strengthening is complete and all load rating factors shall be above 1.0.

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- All rating analyses shall be performed using LRFD methodology and shall be in accordance with the RIDOT Bridge Load Rating Guidelines, Revision No. 2, March 2017.
 - Only the methods listed in this section shall be allowed for increasing the live load carrying capacity of the bridge. If the DB-Contractor feels other methods are applicable they shall get the prior approval of RIDOT before exploring those options.

b. Removal of Dead Load

- The removal of the existing bituminous roadway pavement, reinforced concrete pavement, and gravel fill on top of the existing concrete deck and replacement with a thinner reinforced concrete overlay slab will reduce the dead load weight on the structure and increase the live load carrying capacity of the bridge. The DB-Contractor shall remove all existing fill and pavements above the existing deck.
- The DB-Contractor shall not remove any other existing structural component of the bridge superstructure (beams, diaphragms, deck, etc.) in an effort to reduce dead load weight.

c. Composite Overlay Slab Strengthening

- The minimum thickness of the concrete overlay slab shall be 5". The BTC Plans show a 5" to 7.75" +/- thick concrete overlay slab on top of the existing deck.
- The DB-Contractor is responsible for confirming the thickness of reinforced concrete overlay slab required in their strengthening design that will result in satisfactory load ratings.
- The concrete overlay is required to be mechanically connected via drilled and grouted dowels (i.e. not relying on shear friction) to the existing beams. The strengthening design may take advantage of the composite action of the concrete overlay to increase the flexural capacity of the bridge, if necessary, after dead load removal. The concrete overlay may not be considered in increasing the shear capacity of the bridge.
- Any reinforcement used in the composite deck may be considered for the strengthening. The DB-Contractor may add additional reinforcement (from what is shown in the BTC Plans) as part of their strengthening design.
- Only HP Concrete is allowed in the reinforced concrete overlay slab.
- No lightweight concrete shall be allowed.

d. Fiber Reinforced Polymer (FRP) Wrap

- The existing beams will require shear strengthening to achieve a minimum 1.0 rating factor for HL-93 Design Loading. FRP Wrap shall be used for all required shear strengthening. The BTC Plans show estimated limits of FRP wrapping of the beams based on a preliminary design.
- The DB-Contractor shall be responsible for determining the actual limits of FRP required based on their strengthening design. The DB-Contractor may increase or decrease the limits of FRP shown in the BTC Plans provided their proposed design results in rating factors above 1.0 for all vehicles.
- All repairs to the concrete Tee-Beams shall be made prior to FRP wrapping and allowed to fully cure according to the FRP Special Provision.
- The FRP shall be fully designed and detailed by the DB-Contractor in accordance with the FRP Special Provision and submitted to RIDOT for review and approval.

e. Rating and Factors

- The structure shall be rated according to the RIDOT Bridge Load Rating Guidelines, Revision No. 2, March 2017. The condition factor for the final rating may be taken as 1.0 (based on good condition of the rehabilitated structure). The dynamic load allowance for rating (IM) may be taken as 10% for all Legal and Permit vehicles based on a Riding Surface Rating of 3. IM shall be taken as 33% for all Design vehicles.

4. Plans and Calculations:

DB-Contractor shall provide Plans and design calculations meeting AASHTO LRFD Bridge Design Specifications. See section 2.4.4 for details of submission requirements.

5. Pre and post construction Survey

The DB-Contractor shall conduct a pre and post construction survey of the Project Site for purposes of generating photographic and video documentation of existing damage, leaks and cracks, and a river bottom survey. This survey shall form the basis against which all new cracks, existing progressive cracks, or damage will be measured. DB-Contractor shall submit to RIDOT at the beginning of construction the records and photo/video documentation of the pre-construction survey, which have been signed and stamped by a Design Professional Engineer registered in the State of Rhode Island, and the same at the end of construction of the post-construction survey.

6. Roadway Approach/Backfill Compaction

The DB-Contractor shall achieve the density of backfills and approach roadways per the RI Standard Specifications for Road and Bridge Construction, and shall choose construction techniques and lift depths accordingly to achieve the specified densities.

2.4.4 Submittal Requirements

For all design plan review submissions, the DB-Contractor shall coordinate with the RIDOT Engineer regarding the number of copies required for review at least one day prior to submission. All design plan review submissions, shop drawing review submissions, and all permit application review submissions, shall be made simultaneously to the Resident Engineer's field office, and to RIDOT headquarters at the following address:

Attention: Esam Eid
Acting Project Manager II
Rhode Island Department of Transportation
2 Capitol Hill
Providence, RI 02903

For shop drawing review submissions, four (4) copies shall be delivered to the Resident Engineer's field office, and three (3) copies to RIDOT headquarters as specified above. In addition to the above number of hard copies, one (1) electronic PDF copy of all design plan review submissions and all shop drawing review submissions shall be delivered to the Resident Engineer's office on CD.

The RIDOT review time for design plan reviews, shop drawing reviews, and permit application reviews shall be twenty-one (21) days from date of receipt. See Section 2.17.5 Shop Drawings for additional information.

For scheduling purposes, the DB-Contractor shall assume a six (6) week review period for the Rhode Island Department of Environmental Management (RIDEM) to review all permit applications submitted by RIDOT.

For scheduling purposes, the DB-Contractor shall assume a six (6) week review period for the Rhode Island Historical Preservation & Heritage Commission to review all permit applications submitted by RIDOT.

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

In addition the DB-Contractor shall provide PDF copies of all submissions and shall provide CADD and Word files of the final submission.

1. Bridge Rehabilitation– As part of the project requirements, the DB-Contractor must submit a complete submittal package for the bridge rehabilitation to the RIDOT for review and approval. The DB-Contractor shall be responsible for submitting the following bridge submittals:

- Twenty-five percent (25%) Plans and Special Provisions.
 - Ninety percent (90%) Plans and Special Provisions.
 - IFC (Issued for Construction) Plans and Special Provisions
 - Shop Drawings and Working Drawings.
 - As-Constructed Plans submittal (which includes electronic files in AutoCAD format placed on CD). Files shall be named per the RIDOT CAD Standards.
 - Final bridge calculations book submitted with the As-Constructed submittal.
 - As-Constructed load-rating report.
- a. 25% Submission:** Due to the on-going NEPA process (under separate contract) the DB-Contractor shall only progress the design to a 25% level. While there is no official submission requirements for a 25% design submission the DB-Contractor shall reference RIDOT Design Policy Memo (DPM) 450.02 and adjust the 30% submission requirements as necessary to complete the 25% package.
- b. PS&E Submission:** DB-Contractor shall submit PS&E Plans and Specifications for all structural elements in accordance with the RIDOT DPM requirements for plans, specifications and estimate (PS&E) submissions.
- c. IFC (Issued for Construction) Submission:** Upon approval by RIDOT of the PS&E Submission(s) the DB-Contractor shall make an IFC submission to RIDOT of the approved Plans and Specifications for the Project records. The IFC plans shall constitute Project Records and shall be signed by, and stamped with the seal of a Design Professional Engineer registered in the State of Rhode Island.
- d. Shop Drawings and Working Drawings:** The DB-Contractor's construction team shall generate shop and working drawings as necessary to clearly define, control, construct, and inspect the Work. These working drawings shall be sent back to the DB-Contractor's engineering team for review and internal approval. All such drawings shall be prepared by a Professional Engineer registered in the state of Rhode Island, and shall be stamped Approved For Construction and signed by the DB-Contractor's engineering team prior to them being considered approved.

The DB-Contractor shall consult with RIDOT as necessary, in the review of shop and working drawings, and shall coordinate the preparation, submittal and review of all such shop and working drawings. Where permits are required from Utilities, shop and

working drawings shall be submitted to the Utilities for review and approval in accordance with their requirements.

Shop and working drawings for the permanent Work shall include but not be limited to, FRP materials, limits and details, bearing details, overlay slab details, TL-4 barrier, equipment lists and any other information specifically required by the QA Manager, Contract Documents, or Utilities. The shop and working drawings shall be reviewed and approved by DB-Contractor's design engineers who prepared the Design Documents.

Shop, working drawings and calculations for falsework, temporary support systems, formwork and other temporary work that describe the methods of construction proposed to be used for the Work shall be prepared by the DB-Contractor and reviewed by DB-Contractor's design engineer in accordance with the QC/QAP. RIDOT will not review or regularly receive copies of these submittals unless it specifically requests such documents. Receipt of submittals for temporary work by RIDOT shall in no way constitute approval of the planned work or acceptance of any liability by RIDOT.

The DB-Contractor shall obtain all necessary approvals for shop and working drawings. Said approvals, along with copies of all approved drawings, shall be provided to RIDOT one (1) Business Day prior to the start of any Work detailed by those drawings. No changes shall be made by the DB-Contractor in any approved shop or working drawing after it has been approved.

- e. As-Constructed Plans Submission:** At the completion of the Project the DB-Contractor shall submit As-Constructed or As-Built Plans and Specifications to RIDOT for the Project records. The Plans and Specifications shall include all field modifications and changes undertaken during construction. Included in this submission package shall be the Final Bridge Calculation Book.
- f. As-Constructed Load Rating Report:** The DB-Contractor shall submit to the RIDOT a load-rating analysis and report incorporating the final rehabilitation repairs. The load-rating shall be completed in accordance with the RIDOT Bridge Load Rating Guidelines, Revision No. 2, March 2017.

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

2.5 Lump Sum Breakdown/Major Items List

Refer to Volume 3 – Price Proposal for a listing of Major Items associated with the Lump Sum payment items.

2.6 Environmental

2.6.1 NEPA Compliance/Environmental Documentation

The DB-Contractor shall be aware that RIDOT is currently in the process of obtaining the required NEPA approvals under the “Rhode Works Toll Facilities – Design, Build, Operate and Maintain” Project for each separate Toll Point and that these are not complete at this time. Tolling point number 1 is associated with this Project. RIDOT must follow the design-build regulations as they pertain to NEPA at CFR 636.109. No commitment can be made to any alternative under consideration\evaluation in the NEPA process, including the no-build option, until the process is complete. Prior to completion of NEPA the Contractor may complete preliminary design but cannot proceed with any activity that is classified as final design. Please reference FHWA Order 6640.1A FHWA Policy on Permissible Project-Related Design Activities during the NEPA Process.

Changes in the footprint or scope of the project (as expressed in this RFP) proposed by the DB-Contractor shall require coordination with the RIDOT to determine if a re-evaluation of the Environmental Approvals by the RIDOT is necessary. Such changes may necessitate additional environmental studies or coordination with regulatory agencies to be carried out by the DB-Contractor. The DB-Contractor 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

Freshwater wetlands are present within the general vicinity of the Wood River Valley Bridge Rehabilitation Project area. Wood River is a perennial river that flows southward underneath the Wood River Valley Bridge. The width and depth of the river in the general vicinity of the bridge varies somewhat, but is approximately 50 feet wide and several feet deep. According to the National Wetland Inventory and Rhode Island wetland data-layers available at the Rhode Island Geographic Information System (RIGIS) website, several wetlands are present in the general vicinity of the project area. These include forested wetlands located near the northeast and southeast corners of the of the bridge crossing over Wood River. Further from the project area, forested wetland is also shown to the southwest of the bridge crossing.

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. The RIDEM’s 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).
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 freshwater wetlands permit with conditions. The RIDEM will evaluate the Request for Preliminary Determination to ascertain whether the project will result in "significant alterations of freshwater wetlands". The 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 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. Army Corp of Engineers (ACOE)
 - a. Determine the type of ACOE application is needed on the project based on the impact area of biological wetlands and CWA Section 404 Impacts. These include:
 - i. Category I PGP (Programmatic General Permit)
 - ii. Category II PGP
 - iii. Individual Permit
3. RI Department of Environmental Management (RIDEM) – Water Quality Certification Program

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- a. All surface waterbodies within 200 feet of any portion of the project area should be identified. The 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 the RIDEM Water Quality Regulations should be identified in this submission.

2.6.3 Compliance with Environmental Commitments

The DB-Contractor shall comply with all environmental commitments and requirements in the NEPA Approval including, but not limited to, the following:

1. The provisions of all environmental permits applicable to the Project, including any Restrictions and agreements specifically agreed to or entered into by RIDOT in obtaining Permits for the Project.
2. Those stipulations and conditions under which the RIDOT received the NEPA Approval and any modifications resulting from the re-evaluation of the design documents.
3. Applicable Laws and regulations relating to potential or actual Hazardous Material that may be encountered in the course of carrying out the Contract.
4. Carrying out all necessary social, economic and environmental studies required by regulatory authorities in the course of the construction.
5. Updating or extending approved permits obtained by the DB-Contractor.

2.6.3.1 Design Phase

All plans and designs are to be prepared in accordance with all of the environmental commitments/requirements outlined in the Special Provisions and Notice to Bidders of this Contract and all environmental commitments in the NEPA Approval. The DB-Contractor shall confirm with RIDOT that all plans and designs have been prepared in accordance with all of the environmental commitments/requirements by the Issued For Construction (IFC) submittal.

2.6.3.2 Preconstruction Conference(s)

The DB-Contractor shall conduct one (or more, if appropriate) pre-construction conference(s) prior to any construction activity to discuss environmental and permitting issues, which conference shall include all subcontractors, and to the extent feasible, representatives from the U.S. Army Corp of Engineers, RIDEM, the DB-Contractor, RIDOT, and others as deemed necessary.

2.6.3.3 Construction Phase(s)

The DB-Contractor shall be responsible for compliance with all of the environmental commitments/requirements outlined in the Special Provisions and Notice to Proposers as provided in environmental commitments contained within the NEPA Approval. The commitments/requirements shall be complied with during all phases of the construction activities. Upon completion of the Construction Work, the DB-Contractor shall certify that all construction activities have complied with all of the environmental commitments/requirements. RIDEM or RIDOT will have the authority to suspend all Work for noncompliance with the environmental commitments/requirements.

2.6.3.4 Wetlands and Water Quality Mitigation

The DB-Contractor shall fulfill the terms and conditions of the Clean Water Act Section 404 permit, 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 all river and/or wetland mitigation required to fulfill the permitting requirements.

The DB-Contractor shall maintain the natural low flow characteristics of Wood River, including temporary crossings as required in the approved permits.

On March 28th and 29th, 2017, AECOM wetland scientists (PWS) conducted an onsite wetland delineation in accordance with Section 404 of the Clean Water Act (33 CFR 328), the Corps of Engineers Wetlands Delineation Manual (Technical Report Y-87-1; ACOE 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (USACE 2012), and the State of Rhode Island and Providence Plantations Department of Environmental Management's *Rules and Regulations Governing the Administration and Enforcement of the Freshwater Wetlands Act*.

Reference Volume 4, Appendix A, Section 10 for a narrative of the wetland delineations.

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.

2.6.3.5 Deliverables

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

1. Wetland and stream mitigation engineering drawings to be submitted during final design
2. Copy of Permit Applications
3. Copy of Approved Permits

2.6.4 Cultural Resources

As mentioned above, the NEPA process, including an assessment of cultural resources, is proceeding under the "Rhode Works Toll Facilities – Design, Build, Operate and Maintain" Project. Toll Point #1 of that project corresponds with the current Project, and the NEPA process is not complete at this time.

AECOM, on behalf of RIDOT/FHWA, has performed a preliminary cultural resource due diligence assessment. AECOM's Scope of Work has been limited to the identification of documented historic properties, including a File Review, background research, and preparation of a draft technical memo in order to present RIDOT OCHR with an assessment of the 10% complete project APE. It is expected that additional due diligence may be required by RIDOT in order to satisfy Section 106 and NEPA requirements, including out-of-scope items such as tribal consultation and a field view. The DB-Contractor may need to coordinate with RIDOT and/or additional consultants in order to complete NEPA and Section 106 efforts relating to cultural resources.

Further requirements under Section 106 will rely upon the results of a field view and consultation with the Narragansett Tribal Historic Preservation Office (THPO) undertaken by RIDOT and FHWA as part of the overall NEPA efforts. If no historic properties are identified within the APE, the undertaking may be covered in Stipulation V7 of the Programmatic Agreement for Minor Transportation Projects in Rhode Island (2001). The bridge is over 50 years old (construction ca. 1953), but as part of the Interstate Highway System, it is not considered a historic resource under the Advisory Council on Historic Preservation's 2005 *Exemption Regarding Historic Preservation Review Process for Effects to the Interstate Highway System*.

It is anticipated that RIDOT will make a determination of effect regarding the proposed undertaking prior to Final Design. However, the DB-Contractor, during their design effort, should avoid changes likely to result in the undertaking no longer covered by the effect determination. Should design elements be developed or activities undertaken that fall outside of the previously determined APE, the DB-Contractor is responsible for notifying the RIDOT Project Manager. RIDOT will determine whether the RI State Historic Preservation Office (SHPO) must be consulted, or additional work must be completed. Regardless of the effects determination, DB-Contractors will be expected to adhere to the following contingencies:

1. Construction

- a. 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 DB-Contractor shall cease work and promptly notify the RIDOT Project Manager. RIDOT, FHWA, RI SHPO, 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.
- b. 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 DB-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 Appendix C and check the database which identifies hazardous waste sites, leaking USTs to identify if it is likely that impacted soil or groundwater would be encountered based on the BTC design. If there was 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. Based on the BTC design and initial research, there are no on or off-site impacts anticipated for this project. Mechanic Street used to be a railroad track between the late 1800s through the early 1940s.

The DB-Contractor is also 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 DB-Contractor will take immediate and continuous corrective

action to bring the item(s) back into compliance. The DB-Contractor's environmental monitor or designee shall be qualified as described in RFP part 1, section 4.2a. The environmental monitor shall be responsible for RIPDES inspections and required reporting and coordination with the RIDOT Natural Resources Unit.

The RIDOT will perform environmental monitoring during construction on a periodic basis. The DB-Contractor 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 DB-Contractor 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 DB-Contractor.

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 complete site visits at a minimum of once per week during construction to review erosion control, stormwater mitigation, and construction activities.

2.7 Survey

2.7.1 Project Survey Coordination

The DB-Contractor shall designate a Rhode Island Licensed Professional Land Surveyor as the responsible person in charge of all DB-Contractor related survey activities on the Project. The DB-Contractor shall comply with the most recent and applicable laws.

2.7.2 Contractor Supplied Survey

Available LiDAR and Survey information will be provided to the selected DB-Contractor upon award of the Contract. The provided LiDAR data shall be used for general information only and shall not be relied upon for specific survey data. The provided data is for information only and the DB-Contractor will be responsible for verifying the validity of the supplied information and for obtaining any survey and right of entries needed to verify and monument right-of-way, to relocate utilities, to locate and/ or designate underground utilities, to support the design and engineering, and to construct the project. The DB-Contractor survey shall utilize the same survey baseline as the original bridge plans. 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. The RIDOT reserves the right to QC all surveying work completed by the DB-Contractor or the licensed professional.

The DB-Contractor 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.

2.7.3 Preservation of Survey Control Monuments

The DB-Contractor shall preserve all survey control monuments and any governmental defined land corners located on or within RIDOT right-of-way and shall be responsible for resetting, replacing and/or relocating any survey control monuments damaged, destroyed or 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.

2.7.4 Permission to Enter Property

The DB-Contractor shall notify property owners before entering any private property and each property owner shall be contacted by the DB-Contractor and asked to sign a Survey Notification Form. An explanation of the purpose, nature, and approximate duration of the proposed work may be given to the property owner, but personnel should refrain from outlining any plans or policies that may be misconstrued. If the land owner lives out of state or cannot be physically contacted, the notification form shall be mailed to the owner. The DB-Contractor shall record all contacts carefully and accurately for future use. At a minimum the record shall include the names of persons contacted, identifying them as owners or tenants, the date and time of communication, telephone numbers, and a summary of the conversation.

2.7.5 Right-Of-Way Markers

The DB-Contractor shall locate and preserve all Right-Of-Way markers within the limits of Construction.

2.8 Roadway and Pavement Design Criteria

The following subsections specify the roadway design criteria to be used for this project.

2.8.1 Alignment Criteria

The horizontal and vertical alignment of Interstate 95 shall meet or exceed the following:

- Design Speed: 70 mph (horizontal and vertical alignment)
- Configuration: 2 travel lanes, 1 low speed shoulder, and 1 high speed shoulder in each direction
- Travel Lane Width: 12 feet (and as shown in the BTC Plans)
- Shoulder Width: Low speed 10 feet minimum + 2 foot offset to vertical obstruction > 6"
High speed 4 feet minimum + 2 foot offset to vertical obstruction > 6"
- Vertical Grade: 0.3% minimum

Exceeding the widths shown in the BTC Plans may require revisions to the Environmental and/or Cultural/Historical Approvals, and shall be done solely at the convenience and expense of the DB-Contractor.

Changes to the horizontal alignment of I-95 are not anticipated and shall not be allowed. No alignment modifications (horizontal or vertical) to Mechanic Street below the structure are anticipated or shall be allowed.

2.8.2 Pavement Design

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.

Proposed Minimum Full Depth Pavement (applicable to I-95):

- 2" Dense Friction Course with Material Transfer Vehicle
- 3" Modified Class 12.5 HMA
- 8" Class 19.0 HMA
- 12" Gravel Borrow SubBase Course

Proposed Minimum Pavement Milling & Overlay (applicable to I-95 & Mechanic St.):

- 2" Micro-Mill
- 2" Dense Friction Course with Material Transfer Vehicle
- Variable Depth Modified Class 12.5 HMA to achieve desired cross section and profile change.

2.8.3 Roadway Clear Zone

The project shall include clear zones that are clear of obstructions. The clear zones shall be in conformance with the RIOT Highway Design Guide, AASHTO's Roadside Design Guide, and AAHSTO's A Policy on Geometric Design of Highways and Streets. The DB-Contractor shall construct roadside barriers that meet the requirements of MASH where clear zone requirements cannot be met.

All roadway pavement sections shall incorporate rumble strips along the inside and outside shoulders.

The existing guardrail along I-95 shall be removed, disposed of, and replaced as indicated on the BTC plans. Replacement guardrail shall meet the latest requirements of the MUTCD and RIDOT.

2.8.4 Mechanic St. Work

With the minimum limits of intrusion possible, the DB-Contractor shall perform work on Mechanic St. as necessary to complete the Project. Prior to the completion of the PROJECT the DB-Contractor shall mill and overlay approximately 400 linear feet of Mechanic St and remove, dispose of, and replace the guardrail within those same limits. The existing minimum vertical clearance under the bridge shall not be reduced. In addition, the DB-Contractor shall perform any other work necessary to restore Mechanic St. and the adjacent embankment areas to their pre-construction condition.

2.9 Drainage and Stormwater

2.9.1 Introduction

The following conceptual stormwater management plan for the rehabilitation of the Wood River Valley Bridge is based on available as-built drawings, a site visit conducted in February 2017, and GIS mapping.

2.9.2 Existing Conditions

During the recent inspection of the Wood River Valley Bridge, stormwater was observed to be discharging from the bridge to the Wood River in two locations. For photos referenced in the paragraphs below please see Volume 4, Appendix A, Section 8.

- Runoff from the eastern abutment expansion joint (Span 1), discharges via a single drain pipe on either side of the bridge to a concrete trough running transversely under the bridge at the top of slope in front of the abutment breast wall. Water from the trough flows directly to the Wood River (Span 2) by way of two concrete swales (Photo 1 - 4). The runoff observed in these channels was most likely snowmelt. However, evidence of previous stormwater runoff from the bridge was present in the form of frozen water at the drainage pipe outlets (Photo 1 and 3).

- A series of four drain pipes located adjacent to Pier No. 2 in the central portion of the bridge (Span 3) discharge surface water runoff directly to the stone-lined western bank of the Wood River (Photo 5 and 6). Concrete-lined swales are located on either side of the western-most portion of the bridge (Span 4). These structures presumably are intended to collect and discharge runoff from the west abutment expansion joint to an existing gravel/grassed swale adjacent to Switch Road. However, based on the debris observed in the concrete channels, these structures do not appear to collect/transport any significant flow (Photo 7 and 8).

2.9.3 Proposed Stormwater Management Plan

Based on a review of available information, and the February 2017 site inspection, the opportunities to capture and treat stormwater from the Wood River Valley Bridge are quite limited. The project area is characterized by steep slopes, bordering wetlands and forested areas, and potential private property issues (Figure 2.9.3-1).

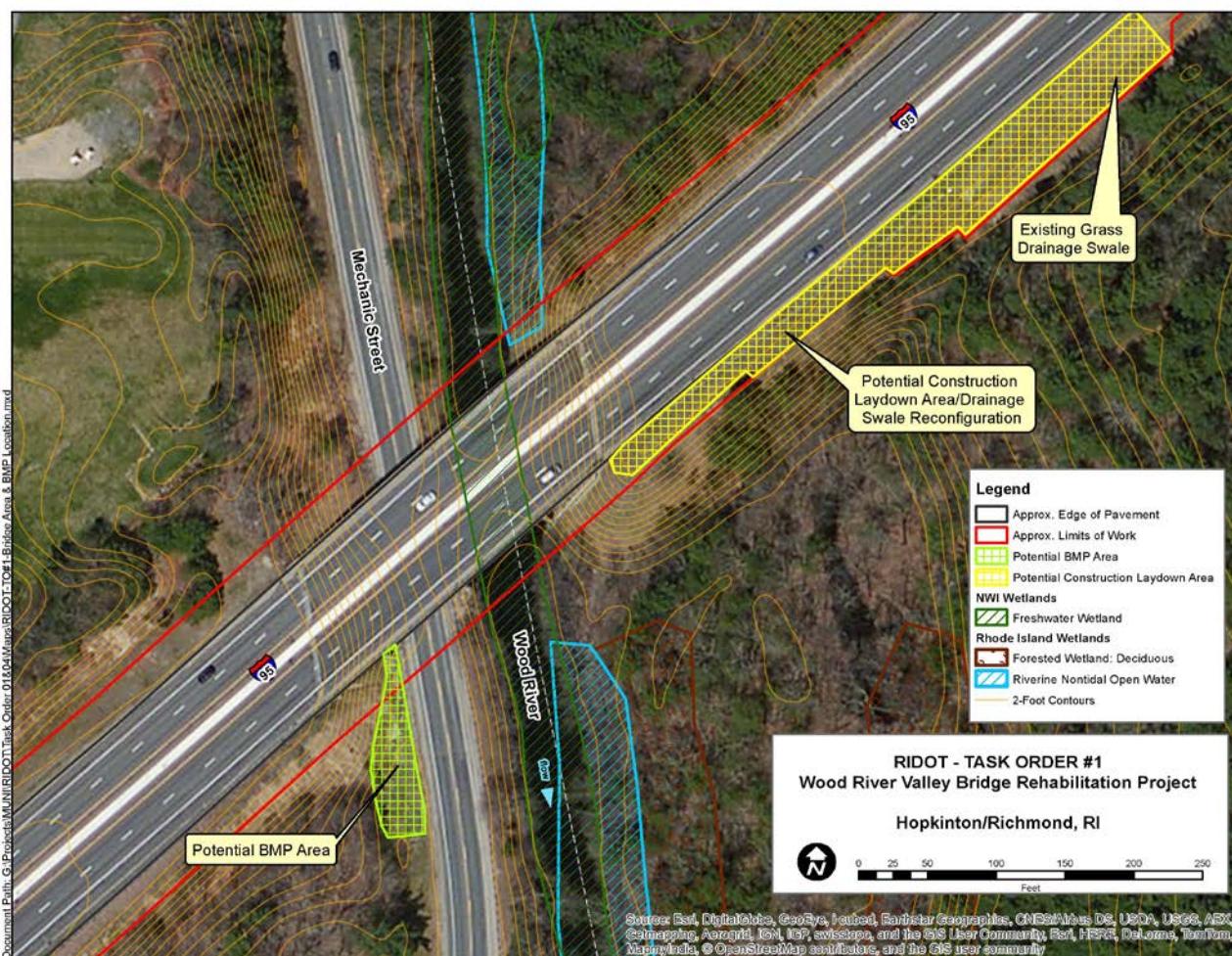


Figure 2.9.3-1

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

Bioretention Basin. Under the proposed plan, the existing scupper / drainage system would be reconfigured to direct flow, currently discharging directly to the Wood River, through relocated drain pipes adjacent to Pier No.3 and to a Bioretention Basin (approximately 2,700 SF, including sediment forebay). The proposed BMP would extend from the existing concrete channel located adjacent to southwest corner of Pier No. 3 (Photo 8, 9 and 10), to the existing 18-inch (approx) culvert under Switch Road. Photos 11 through 14 show the area proposed for the Bioretention Basin.

A second BMP location, adjacent to the eastern bank of the Wood River (across the river from the proposed Bioretention Basin), was also investigated during the February 2017 field visit. The intent was to direct runoff from the eastern abutment expansion joint to this BMP. However, based a number of factors, including proximity to wetlands and location within the 100-year floodplain, this site was dropped from further consideration.

The primary objective of the stormwater management plan would be to capture and treat all bridge runoff within the proposed Bioretention Basin. In the event it is not possible to redirect all flow to the Bioretention Basin (due to capacity/size constraints); the secondary goal would be to capture the runoff currently discharging from the drains located in Span 3.

I-95 Drainage. Based on preliminary review of available plans, road drainage from I-95 appears to discharge to a grassed swale adjacent to the north-bound lane (Photo 15 and 16). The DB-Contractor shall need to confirm that the existing grassed swale complies with current RIDEM criteria (*Rhode Island Stormwater Design and Installation Standards Manual, 2015*) for water quality swales. If necessary, the DB-Contractor shall modify the existing grassed swale as required to meet current water quality swale criteria as specified in the manual.

2.9.4 DB-Contractor Responsibilities

2.9.4.1 Drainage Criteria

The Project shall include all Work for the design and construction of drainage facilities including temporary and permanent erosion control measures. Project design will be in compliance with the latest revisions to the *Rhode Island Department of Transportation Standard Specifications for Road and Bridge Construction, Part 200*. All pipe culverts and drainage design shall meet the requirements of Rhode Island Department of Transportation Standard Details (2015).

2.9.4.2 Geotechnical Investigation

The DB-Contractor shall perform a geotechnical investigation for the proposed BMP location(s) to determine the suitability of the underlying soils for infiltration. Data collected during this investigation will be used to:

- Determine the infiltration rate of the soil
- Estimate groundwater levels
- Assess the potential for any large debris, boulders, or ledge (within the test area) that may influence excavation of the BMP areas
- Design the basin

It is assumed that the geotechnical investigation will include three (3) test pits for each of the proposed BMP sites. Test pits will be logged by a Competent Soils Professional using the visual-manual procedure (ASTM D2488) and USDA Textural Classification. One (1) soil sample will be collected from the site and will be sent to a geotechnical laboratory to be analyzed for classification of soils for engineering purposes (ASTM D2487) including grain size distribution and Atterberg limits. Depth to ground water will be recorded for each test pit, if applicable. GPS will be used to determine the location of each test pit. All geotechnical investigation will be confined within RIDOT right-of-way.

The DB-Contractor shall work with RIDOT to obtain the necessary access permits to complete the work, and will work with RIDOT personnel who will provide site access support for traffic management if necessary. The DB-Contractor shall be responsible for completing all required Transportation Management Plans associated with the geotechnical investigations and shall be responsible for providing required traffic control in accordance with the MUTCD.

1. Geotechnical Investigation Plan

All geotechnical work shall be prepared in accordance with the criteria set forth in this Subsection by a Design Professional with a minimum of ten (10) years of geotechnical engineering experience in the State of Rhode Island. All design calculations and plans shall be prepared, checked, signed and stamped by a Professional Engineer registered in the State of Rhode Island. Design-Builder shall prepare a Geotechnical Investigation Plan and submit it to the 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 plans, and a list of all permits required to perform the geotechnical investigation.

2. Subsurface Investigation and Data Analysis

- a. General** – Design-Builder shall be familiar with available geotechnical, geologic, seismic, hydrogeology, and soils literature, shall be familiar with the existing site conditions, both native and man-made, shall interpret the existing geotechnical data pertaining to the Project Site, and shall perform all additional subsurface investigations and field and laboratory testing as may be necessary to satisfy itself as to (a) the nature of the soil, rock, groundwater, and subsurface conditions across the Project Site and all variations in groundwater and subsurface conditions; (b) the geological formations within, and attributes of, the Project Site; (c) the nature of the Work to be performed; (d) appropriate methods of construction; (e) critical combinations of loading; (f) seismic liquefaction potential of site, and (g) all other factors impacting evaluation.

Laboratories shall be certified and shall have documentation of calibration within the last year for all Equipment used for testing.

Information obtained using a pocket penetrometer or field torvane shall not be the primary means for development of geotechnical parameters.

- b. Requirements** – Design-Builder must comply with the following in performing field and laboratory investigations:
- 1) **Supervision** – All boring and in-situ testing and inspection, and all laboratory classification and testing, shall be performed by geologists or geotechnical engineers under the direct supervision of a Design Professional with a minimum of 10 years experience in the performance and supervision of geotechnical investigations.
 - 2) **Location and Ground Surface Elevation** – Design-Builder shall determine the coordinate location and ground surface elevation for each boring and field investigation site, and shall show the coordinates, station and offset, and elevation for each individual boring log or investigation record. Coordinates, station and offset shall be referenced to the Project survey control. Elevations shall be referenced to the Project datum and horizontal control system.
 - 3) **Logs** – Final boring and rock core logs shall be prepared using geotechnical software by gINT software.

Design-Builder shall classify Soil in accordance with the “Standard Classification of Soils for Engineering Properties” (Unified Soil Classification System) ASTM D2487-00, and “Standard Practice for Description and Identification of Soils” (Visual-Manual Procedure) ASTM D2488-00.

3. Geotechnical Design Report

- a. Final Geotechnical Interpretive Report / Final Geotechnical Data Report** – Design-Builder shall document all geotechnical data and findings, including without limitation a summary of existing information, results of the field subsurface investigations and mapping, results from the laboratory tests, and geotechnical and foundation analyses and design. The documentation shall be consolidated in the form of a Final Geotechnical Interpretive Report (FGIR) and Final Geotechnical Data Report signed and stamped by a Design Professional Engineer registered in the State of Rhode Island. Design-Builder shall prepare the FGIR and Final Geotechnical Data Report in accordance with the RIDOT standards and RIDOT Bridge Design Manual, and shall ensure that the ircommendations shown in the FGIR meet all Contract requirements.
- b. Geotechnical Recommendations** – Design-Builder shall use the findings and recommendations shown in the FGIR to develop the foundation design for the Structures.

2.9.4.3 Coordination with Other Agencies

The DB-Contractor shall coordinate all drainage issues with affected regulatory agencies that have interest or jurisdiction over the Project. The DB-Contractor shall copy RIDOT on all correspondence, promptly advise of any direct contact and give advance notice of any meetings and/or hearings with affected regulatory agencies.

2.9.4.4 Hydraulic Design of Structures

Hydraulic design and analysis is required for all structures that span over waterways and shall be in conformance with any applicable Laws.

Freeboard for all bridges shall set a minimum of two (2) ft. above the Design High Water (DHW) elevation for a 50 year flood event and a minimum of one (1) ft. for the 100-year flood event. The determination of riprap requirements shall be based on the FHWA Publication, Bridge Scour and Stream Instability Countermeasures, Hydraulic Engineering Circular No. 23 (HEC-23). Further requirement shall be the FHWA Publication, Design of Riprap Revetment, and Hydraulic Engineering Circular No. 11 (HEC-11).

1. Bridge deck drainage shall be provided as necessary to keep the ten (10) year event for a five (5) minute interval from spreading into the travel lanes.
2. Bridge deck drainage shall be contained on the bridge deck prior to passing through the bridge deck scuppers to a downspout drainage system. Bridge deck drainage shall not be allowed to pass through the bridge parapets or median barriers. Where drainage scuppers and drain pipes are used, pipes shall be located inside of the exterior girder.

3. No bridge deck drainage shall drain onto a roadway, sidewalk, and shoulder.
4. The design shall include one of the following manufactured scuppers:

<http://www.acoinfrastructure.us/scupper.html>

<http://www.nfco.com/nfco/NeenahCatalog.pdf>.

http://americas.ejco.com/webapp/wcs/stores/servlet/Category?grid=&page=0&langId=-1&storeId=10054&catalogId=13051&categoryId=32554&facet=ads_f99203_ntk_cs%253A%2522Bridge%2BDrain%2522

Stormwater Report: The stormwater report shall include as a minimum a narrative that describes the project scope; statements defining any additional source of information including cross sections, topographic data, and other supporting information; design alternatives; analysis considerations; supporting documentation stating analysis procedures including unconstructed conditions, existing conditions, and proposed conditions; documentation of all modifications made to models to correctly represent the existing conditions as well as proposed conditions; recommendations and details; tables comparing water surface elevations between the models demonstrating that the proposed project meets current local, state, and federal regulations; tables comparing velocities between the models demonstrating the effects to the natural floodplain values; documentation of stream stability and lateral migration tendencies of affected channel reaches; and photographs. Hydraulic model output, bridge layout drawings, no-rise certifications, and any other pertinent information shall be included. The hydraulic report shall be signed and sealed by a Design Professional Engineer registered in the State of Rhode Island. The Stormwater report shall meet the RIDOT/RIDEM standards (*Rhode Island Stormwater Design and Installation Standards Manual, 2015; Rhode Island Department of Transportation Standard Specifications for Road and Bridge Construction*) and will include the geotechnical data collected, and the design of the stormwater bioretention basin described above per the RI design manual to meet Water Quality Standards. The identified existing swales along I-95 will need to be documented that the swales as currently configured meet the water quality standards. If the existing swales do not meet water quality standards, the DB-Contractor shall modify the swale design to the maximum extent practical to meet water quality standards.

Bridge Deck Drainage: Bridge deck drainage shall be based on the FHWA Publication Design of Bridge Deck Drainage, Hydraulic Engineering Circular No. 21 (HEC-21). The DB-Contractor shall be responsible for designing the bridge deck drainage in accordance with these guidelines and any other federal, state, or local requirements.

2.9.4.5 RIDEM General Permit

The DB-Contractor is responsible for obtaining a RIDEM CGP (General Permit Rhode Island Pollutant Discharge Elimination System Stormwater Discharge Associated with Construction Activity - <http://www.dem.ri.gov/pubs/regs/regs/water/ripdesca.pdf>)

Permits requirements include:

1. Submittal of a NOI (only required for construction activities that disturb greater than one (1) acre) (ref: CGP Section I.D)
2. Preparation of a Stormwater Management Plan – SWMP (prior to submitting NOI) (ref: CGP Section II.)
3. Preparation of a Soil Erosion and Sediment Control (SESC) Plan (ref: CGP Section III.)

SWMP must include the following major elements (refer to CGP for details):

1. Stormwater Site Planning, Analysis, and Design
2. Soil Erosion, Runoff, and Sediment Control
3. Post Construction Operation and Maintenance

SESC plan required contents include (refer to CGP for details):

1. Erosion, Runoff, and Sediment Control Requirements
2. Construction Activity Pollution Prevention Requirements
3. Control Practice Installation, Inspection, and Maintenance Requirements
4. Site Plan Requirements

2.9.4.6 Deliverables

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

1. Stormwater Report
2. Computations and Supporting Data for the bridge
3. FEMA Regulated Floodway Studies
4. Bridge Deck Drainage Calculations
5. RIDEM Construction General Permit
6. Geotechnical Boring and Soil Data

2.10 Traffic Control Devices

The Project shall include all signs (permanent and construction), temporary signals equipment, pavement markings, guard rail and barrier. A Signing and Striping Plan is required from the DB-Contractor for final approval by the RIDOT and shall be included as a planned work package. The DB-Contractor shall provide a typical section of I-95 and approach sections including cross slope.

2.10.1 Signs

The Project 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 DB-Contractor. The DB-Contractor shall design all proposed sign panels in accordance with the MUTCD.

2.10.2 Pavement Markings

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

2.10.3 Temporary Median Crossovers

The DB-Contractor shall be responsible for the design and construction of temporary median crossovers per AASHTO specifications and MUTCD guidelines. Additionally, the following guidelines are suggested for designing the crossover.

- The design speed for median crossovers should be based on the posted speed limit prior to the construction area unless there are design constraints.
- Temporary median crossovers should be located to provide the maximum advance warning to the driver based on the vertical and horizontal alignment of the site. The driver should have adequate sight distance in advance of the crossover.
- Desirably, temporary median crossovers should not be located within horizontal curves.
- The crossover shall be designed to allow for proper run off, satisfy drainage requirements and allow smooth transition from the roadway to the median crossover.
- Advance signing, pavement markings and other traffic control devices shall be utilized to guide drivers to the crossovers.
- The temporary median crossovers shall not be used for transporting materials for the project.

The DB-Contractor shall be responsible for the design, submission, construction, maintenance, removal and restoration work related to the crossovers. All traffic control devices shall be removed from the crossover when no longer required.

2.10.4 Temporary Traffic Signals

The DB-Contractor shall be responsible for maintaining two-way access on Mechanic Street by providing one-way alternating traffic control through temporary traffic signals. The DB-Contractor shall be responsible for installing and maintaining the temporary traffic signal and related equipment throughout the construction period. The temporary traffic control signal shall be in operation during the appropriate construction stages. Work shall also include furnishing and installing all incidental materials and labor necessary for operating and controlling the temporary traffic control signal at this location, as shown on the plans in accordance with the applicable RIDOT specifications for Traffic Control Systems (Part T), NEMA specifications and the Manual of Uniform Traffic Control Devices (2009 Edition). The DB-Contractor shall also be responsible for removal of the traffic signals and all related equipment when they are no longer required. Any existing surfaces disturbed, damaged or removed in performing this work are the responsibility of the contractor and shall be replaced to the satisfaction of the Engineer.

2.11 Transportation Management Plan

The DB-Contractor shall develop and incorporate a Transportation Management Plan (“TMP”) in accordance with the RIDOT requirements. The TMP 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 DB-Contractor shall be responsible for finalizing the lane closure restriction durations and getting them approved by RIDOT. The DB-Contractor shall coordinate all work in accordance with the TMP. In accordance with the traffic data available at the time of this RFP development (see Volume 4, Appendix A, Section 5), the lane closure restrictions will be as follows:

I-95 NB and SB Summer Weekday Restrictions (Monday – Thursday)

- Lane closures will be implemented from 8:00 PM to 10:00 AM. Maintain 2 lanes in each direction at all other times.

I-95 NB and SB Summer Weekend Restrictions (Sunday)

- Lane closures will be implemented from 8:00 PM to 9:00 AM. Maintain two (2) lanes in each direction at all other times.

I-95 NB and SB School Year Weekday Restrictions (Monday-Thursday)

- Maintain two (2) lanes in each direction from 3:00 PM to 6:00 PM Lane closures can be implemented outside of these hours.

I-95 NB and SB School Year Weekend Restrictions (Sunday)

- Lane closures will be implemented from 8:00 PM to 9:00 AM. Maintain two (2) lanes in each direction at all other times.

I-95 NB and SB - Other Restrictions

- No lane closures shall be allowed on Friday and Saturday nights between 7:00 PM and 6:00 AM the next morning.
- Full roadway closures are not permitted at any time.
- Maintain two (2) lanes in each direction from 6:00 AM to 11:00 PM on all Holidays and the day prior to Holidays.

Mechanic Street

- Maintain bi-directional access on Mechanic Street by providing one-way alternating traffic control through the work zone.
- Full roadway closure is not permitted unless it is of short duration and occurs off-peak.
 - Short duration is a period of 20 minutes or less.
 - Off peak is considered:
 - From 9:00 AM to 2:00 PM
 - From 8:00 PM to 6:00 AM

The DB-Contractor shall be responsible for verification of the above restrictions. If an alternate traffic control method is desired, RIDOT written approval is required prior to the submission of the Proposal. Similarly, if the Contractor intends on using Accelerated Bridge Construction (ABC) methods that may be more restrictive to traffic but for a much shorter time period, prior written approval is required.

The TMP shall incorporate and address all of the requirements of DPM 450.05 – Work Zone Safety and Mobility including the following:

2.11.1 Temporary Traffic Control Plans

The DB-Contractor shall design the TTC Plans in accordance with the RIDOT, the MUTCD, and AASHTO design standards and in accordance with guidelines specified in this RFP. This plan 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 TTC plans and a TMP shall also incorporate all restrictions described in Section 2.11 of this RFP Part 2. The DB-Contractor will be responsible for any changes to the TMP resulting from any DB-Contractor changes to the sequence of construction or scope of work and shall coordinate with the RIDOT to ensure that the changes are acceptable.

The DB-Contractor shall be responsible for coordinating, cooperating and scheduling his work and all segments thereof with the RIDOT, other contractors on adjacent construction projects, utility owners, and applicable local authorities, so as to minimize impacts to the construction schedule.

Throughout construction, the RIDOT will review the traffic control setups in the field. The RIDOT reserves the right to require the Design-Builder 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 DB-Contractor will also be responsible for adjusting the TMP accordingly.

Construction signs shall be installed, maintained, adjusted, and removed by the DB-Contractor throughout the duration of the project. Existing signs that conflict with construction signs or permanent signs shall be covered and/or removed. Barrier within the limits of the TTC plans shall also be maintained, adjusted, and/or removed and replaced by the DB-Contractor throughout the duration of the project.

In addition to the bridge work, the DB-Contractor shall also be responsible for providing new profiles for the bridge approaches on I-95 to match the proposed deck improvements, possible drainage system adjustments due to new profile and replacement of the existing median barrier with double faced TL-4 Jersey barrier up to the limits of the construction.

The DB-Contractor shall maintain bi-directional access on Mechanic Street by providing one-way alternating traffic control through temporary traffic signals. The DB-Contractor shall be responsible for obtaining the approval of the State Traffic Commission for the installation of the temporary traffic signal in coordination with RIDOT.

2.12 Right-of-Way

The DB-Contractor shall design and build the Project completely within the limits of the existing Right-Of-Way. Any temporary easements shall be the responsibility of the DB-Contractor to obtain and release at the close of the Project. The DB-Contractor shall be responsible for assuming all risks and costs associated with the acquisition of additional right-of-way (to accommodate its 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.

All Right-Of-Way related work shall be coordinated with the RIDOT Survey & ROW Department.

2.13 Planting

All areas adjacent to the bridge 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 Standards Specifications.

2.14 Utilities

2.14.1 Contractors Responsibilities

RIDOT DPM 450.13; Utility Submissions and Coordination and DPM 450.14; Advanced Utility Work apply to this project.

The DB-Contractor shall be responsible for coordination of the Project construction with all utilities that may be affected. The DB-Contractor shall be responsible for identifying all potentially affected utilities, coordinating any appropriate relocation, and shall use either the utilities own forces to complete the work or shall complete the work utilizing a contractor approved by the utility company. The DB-Contractor shall be responsible for coordinating the work of the DB-Contractor, its subcontractors and the various utilities. The DB-Contractor is hereby advised that utility companies will require upfront payment for utility work. The DB-Contractor shall be responsible for any new or revised permit application(s) and shall include the cost of utility management in their Lump Sum Contract Price. The DB-Contractor shall be responsible for utility designations, utility location (test holes), conflict evaluations, cost responsibility determinations, utility relocation designs, utility relocations and adjustments, utility reimbursement, replacement land rights acquisition and utility coordination required for the Project. DB-Contractor shall be responsible for all necessary utility relocations and adjustments to occur in accordance with the accepted Baseline Schedule. All efforts and cost necessary for utility designations, utility locations (test holes), conflict evaluations, cost responsibility determination, utility relocation designs, utility relocations and adjustments, utility reimbursements, replacement land rights acquisition and utility coordination shall be included in the DB-Contractor's Price Proposal.

Upon receipt of acceptance of the work by each respective utility, and/or in accordance with the agreements between the DB-Contractor and each respective utility, the DB-Contractor will reimburse the utility. RIDOT will then reimburse the DB-Contractor for all utility work. If the DB-Contractor fails to reimburse the utility within 30 days of receipt of acceptance of the work from the utility, the RIDOT will pay the utility directly, and will withhold an equivalent amount from monies owed the DB-Contractor or from retainage. RIDOT will not reimburse the DB-Contractor for utility work that is betterment above and beyond what existed on, over or under the bridge at the time of commencement of construction. RIDOT also will reimburse the DB-Contractor for the movement of a utility, but only for one movement per utility; RIDOT will not reimburse the DB-Contractor for multiple movements of a utility.

2.14.2 Resolution of Conflicts

The resolution of any conflicts between utilities and the construction of the Project shall be the responsibility of the DB-Contractor. No additional monetary compensation or time will be granted for any delays, inconveniences, or damage sustained by the DB-Contractor or its subcontractors due to interference from utilities or the operation of relocating utilities.

2.14.3 Utility Avoidance and Losses

The DB-Contractor shall make all reasonable efforts to design the Project to avoid conflicts with utilities, and minimize impacts where conflicts cannot be avoided.

2.14.4 Parallel Service

The DB-Contractor will maintain parallel service throughout any utility relocation construction. The DB-Contractor will ensure that major service interruptions are avoided.

2.14.5 Coordination

The DB-Contractor shall initiate early coordination with all utilities located within the Project limits and also with the Town of Hopkinton. The DB-Contractor shall identify and acquire any replacement utility easements needed for all utilities necessary for relocation due to conflicts with the Project.

The DB-Contractor shall provide all utilities with roadway design plans as soon as the plans have reached a level of completeness adequate to allow them to fully understand the Project impacts. The utility will use the DB-Contractors design plan for preparing relocation plans and estimates. If a party other than the utility prepares relocation plans, there shall be a concurrence box on the plans where the utility signs and accepts the relocation plans as shown.

The DB-Contractor shall coordinate and conduct a preliminary review meeting with all affected utilities and the Town of Hopkinton to assess and explain the impact of the Project. The RIDOT's Project Manager, Resident Engineer and Utilities Engineer (or designee) shall be included in this meeting.

The DB-Contractor shall verify the prior rights of each utility's facilities if claimed by a Utility owner. If there is a dispute over prior rights with a utility, the DB-Contractor shall be responsible for resolving the dispute. The DB-Contractor shall prepare and submit to The RIDOT a Preliminary Utility Status Report within 30 days of the Notice To Proceed that includes a listing of all utilities located within the Project limits and a conflict evaluation and cost responsibility determination for each Utility. This report shall include copies of easements, plans, or other supporting documentation that substantiates any compensable rights of the utilities. The DB-Contractor shall obtain the following from each utility that is located within the Project limits:

- Relocation plans including letter of "no cost" where the utility does not have a compensable right
- Utility agreements including cost estimate and relocation plans where the utility has a compensable right
- Letters of "no conflict" where the utility's facilities will not be impacted by the Project.

The DB-Contractor shall ensure that there are no conflicts with the proposed roadway improvements, and ensure that there are no conflicts between each of the utility's relocation plans. The DB-Contractor shall prepare and submit to the RIDOT all utility relocation plans. The DB-Contractor

shall assemble the information included in the relocation plans in a final and complete form and in such a manner that the RIDOT may approve the submittals with minimal review. The DB-Contractor shall meet with the 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 DB-Contractor shall receive written approvals from the RIDOT prior to authorizing utilities to commence relocation construction. The utilities shall not begin their relocation work until authorized by the DB-Contractor. Each relocation plan submitted shall be accompanied by a certification from the DB-Contractor stating that the proposed relocation will not conflict with the proposed roadway improvement and will not conflict with another utility's relocation plan.

At the time that the DB-Contractor notifies the RIDOT that the DB-Contractor deems the Project to have reached Final Completion, the DB-Contractor shall certify to the RIDOT that all utilities have been identified and conflicts have been resolved and that those utilities with compensable rights or other claims related to relocation or coordination with the Project have been relocated and their claims and compensable rights satisfied or shall be satisfied by the DB-Contractor.

2.14.6 Utility As-Builts

The DB-Contractor shall accurately show the final location of all utilities (existing and relocated) on the as-built drawings for the Project.

2.14.7 Utility Contact Information

The DB-Contractor shall be responsible for coordination with affected utilities and is directed to RIDOT TAC 0291 for the latest Utility Contact List. A copy of this list has also been provided in Appendix A.

2.15 Quality Assurance/Quality Control (QA/QC)

The DB-Contractor shall submit its QA/QC Plan for both design and construction to the RIDOT for review and approval. Along with the QA/QC Plan submittal, the Design Manager and Construction Quality Control Manager shall provide a formal presentation to the RIDOT of the QA/QC Plan for both design and construction utilizing Project related scenarios. The formal presentation shall provide a detailed description of how the DB-Contractor's QA/QC program will operate for the design and construction including development of necessary design and construction quality management documentation.

2.15.1 Design Management

The DB-Contractor shall be responsible for design quality and shall submit for RIDOT's review and approval a Design Quality Control Plan (DQCP) for the Project. The DQCP shall be submitted to the RIDOT within seven (7) days from issuance of Notice to Proceed (NTP). The DQCP shall contain complete procedures for the implementation of the DQCP and shall include the requirements specified below. No submittals for design approval or requests for information (RFI's) shall be made

to the RIDOT until the applicable sections of the DQCP have been reviewed and approved by the RIDOT.

1. Design Quality Control Manager: Assigned by the DB-Contractor and shall be responsible for overall management of the QA/QC program(s) for design. This individual, shall report directly to the DB-Contractor's Project Manager, and is responsible for all of the design QA/QC activities. The Design Quality Control Manager shall maintain close communication with the DB-Contractor's Project Manager and shall ensure the Project is completed in accordance with the requirements of the Contract Documents. The Design Quality Control Managers responsibilities shall include performing all of the design oversight reviews, administering contracts with the independent design firms, managing and ensuring the DB-Contractor's compliance with the DQCP, resolution of quality related issues and certifying that submittals comply with the DQCP and with the requirements of the Contract Documents. Note: These responsibilities cannot be delegated to another person without prior written approval from the RIDOT.
2. The Design Manager shall certify in writing to the Department, prior to submitting Design Plans for the RIDOT review, that the submittal has undergone QC checking and QA review by the DB-Contractor and/or their Designer. The QA review shall mirror a similar review if undertaken by the RIDOT. The QA for design will replace those efforts normally undertaken by the Department. Use of Department design review checklists is encouraged. The Department will however perform spot checking and complete an audit of the design QC and QA process and documentation. Failure to provide the certification, or if the QC and QA is incomplete may cause the Department to reject the submittal.
3. Documentation: The DB-Contractor shall maintain records of all independent checking of calculations and independent plan check reviews performed. These records shall be under the physical control of the Design Quality Control Manager in a form acceptable to the RIDOT.
4. Reporting Functions: The Design Quality Control Manager shall furnish the RIDOT Project Manager a monthly quality report. This monthly quality report shall include, as a minimum:
 - A summary of QC activities during the month; and
 - Quality problems and their resolutions.

2.15.1.1 Design Submissions

1. Preliminary:

Preliminary Design calculations (if requested) and Plans to be reviewed shall be submitted to the RIDOT Project Manager who will distribute plans to the appropriate RIDOT and FHWA staff for review and/or approval. The RIDOT and FHWA 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 DB-Contractor shall be responsible to satisfy all

such requirements and acknowledge that the RIDOT and FHWA will have the right to disapprove any design approach that it is not in compliance with the requirements of the Contract Documents and Referenced Documents unless said approach was previously approved in writing by the RIDOT and FHWA.

The written approval of the modifications shall be attached with the draft/preliminary plans submitted for review. The DB-Contractor shall revise and modify all design plans so as to fully reflect all comments and shall deliver the revised submittal to the Engineer, who will distribute plans to the appropriate RIDOT and FHWA staff for review and comments.

2. Construction Plans (25%, 90%, (IFC) Issued for Construction):

The DB-Contractor shall be responsible for making three (3) levels of submissions during the Project. The submissions shall be at 25% level of design, 90% level of design, and documents Issued For Construction (IFC).

Design calculations, Plans, and Specifications shall be submitted to the RIDOT Project Manager and FHWA for review and approval by the RIDOT Chief Engineer prior to construction of that element. The time frame for plan review and approval shall be as specified above in Section 2.4.4. The DB-Contractor shall be responsible for the design details and ensuring that the design and construction work are properly coordinated.

The DB-Contractor is reminded that **they cannot proceed with any activities that are classified as “final design” prior to the completion and approval of the NEPA Process. Please reference FHWA Order 6640.1A FHWA Policy on Permissible Project-Related Design Activities during the NEPA Process.**

2.15.2 Construction Management

The Construction Quality Control Plan (CQCP) requires that the DB-Contractor shall have the overall responsibility for Quality Control (“QC”) activities. The CQCP shall be submitted to the RIDOT within twenty (20) days from issuance of the Notice to Proceed (NTP). The DB-Contractor shall also be responsible for providing quality assurance and 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 Structures.
- Asphalt Concrete Mixtures.
- Aggregate (dense and open graded mixes)

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

The DB-Contractor shall prepare a Quality Control Plan 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 location, tests to be performed and techniques, and test frequency to be utilized.

All test results shall be provided to the RIDOT in accordance with the Standard Specifications for Road and Bridge Construction. The cost of these activities shall be borne by the DB-Contractor.

2.15.3 RIDOT's Construction Job Acceptance

RIDOT will perform, or cause to be performed, Job Acceptance Testing and Inspection.

All materials and every part of the Project shall be subject to RIDOT's Job Acceptance inspection and testing, as well as independent assurance testing by RIDOT. RIDOT, FHWA and all duly Authorized Representatives shall be allowed access to all parts of the Project and shall be furnished with information and assistance by the DB-Contractor, as required, to make complete and detailed inspections and to do any testing that such representatives deem appropriate.

All sampling and testing shall be in accordance with existing AASHTO, ASTM, or test methods used by RIDOT. The DB-Contractor shall cooperate with RIDOT to allow the necessary testing to be conducted prior to proceeding to the next operations.

In addition, RIDOT may perform additional tests to ensure that proper sampling and testing procedures are being followed and that testing equipment is functioning properly. This testing may consist of observing the DB-Contractor and RIDOT personnel, as well as taking split samples for the purposes of comparison testing.

2.16 Field Office

The DB-Contractor shall provide office space, equipment, and services consistent with requirements of the RIDOT Standard Specifications for the RIDOT Engineer. This field office should be configured and equipped for Department staff per the RIDOT Standard Specifications. The configuration and equipping of the field office shall be coordinated between the DB-Contractor and the RIDOT Engineer. The field office will be operational throughout the duration of the project and shall be removed upon final project acceptance.

2.17 Plan Preparation

2.17.1 Project Tracking System (PTS) Number

The RIDOT has assigned 0014K as the PTS Number for this project. The DB-Contractor shall include this PTS number on all Plans and Contract Specific Documents in accordance with the RIDOT Design Policy and Procedures Manual (DPM).

2.17.2 Plans Content Requirements

The DB-Contractor shall prepare the Plans in accordance with DPM's 450.01 Project Submission Identification and 450.02 Plans Content Requirements as well as the RIDOT CAD Standards Manual 2007. The Plans shall be named in accordance with DPM 450.06; Plan Sheet File Name.

The DB-Contractor shall furnish the Final Plans with the appropriate signature blocks and Professional Engineer seals on the title sheets for approval of the RIDOT and FHWA.

2.17.3 Design Backup Finalization Submission

The DB-Contractor shall provide backup components in accordance with DPM 450.03; Design Backup Finalization Submission. These components shall include at a minimum Field Survey, Highway Computations, Bridge Computations, Drainage Computations and Grade Sheets.

2.17.4 Construction Plans

Construction Plans shall be the Final Plans approved for construction by the RIDOT Deputy Chief Engineer, Chief Engineer, Director and Federal Highway Administration Division Administrator.

2.17.5 Shop Drawings

The DB-Contractor shall submit a record copy 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, seven (7) copies of the shop drawings and one (1) electronic PDF copy shall be submitted to RIDOT for review as specified above in Section 2.4.4 Submittal Requirements.

2.17.6 Record (As-Built) Plans

The DB-Contractor shall prepare Record (As-Built) Plans. These plans will show all adjustments and revisions to the Construction Plans made during construction and serve as a permanent record of the actual location of all constructed elements. The DB-Contractor shall submit the Record (As-Built) Plans in both hard copy and electronic (TIFF) formats to RIDOT upon completion of the Project.

2.18 Bi-Weekly Progress Meetings

DB-Contractor shall participate in bi-weekly progress meetings with RIDOT. During such meetings, progress during the prior two weeks shall be reviewed. The DB-Contractor shall collect information from any key subcontractors/sub-consultant 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, construction manager, QAM and design manager, as well as other key personnel from the design and construction firms defined within the DB-

Contractor's proposal and Department representative's designated by the RIDOT Project Manager. Meetings will occur bi-weekly beginning two weeks after the issuance of the Notice to Proceed. DB-Contractor 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 bi-weekly progress meeting.

END OF VOLUME 2

PROJECT TECHNICAL REQUIREMENTS