



REQUEST FOR PROPOSAL

FOR

**DESIGN/BUILD Services for the Superstructure
Replacement of I-295 North & South Bridges at
Future Ramp N-E - No. 736,
U.S. Route 6 - No. 737 and
U.S. Route 6/6A (Hartford Ave.) - No. 757**

Johnston, Rhode Island

Part B: Technical Requirements

Rhode Island Department of Transportation

September 2017

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PART B

PROJECT TECHNICAL REQUIREMENTS

1.0 DESIGN-BUILDER'S SCOPE OF WORK

The Project will consist of a superstructure replacement of four bridges that carry I-295 over U.S. Route 6 and U.S. Routes 6/6A (Hartford Ave.) in Johnston. It is proposed to replace these superstructures with new steel beam superstructures using Accelerated Bridge Construction (ABC) Methods as shown in the Base Technical Concept (BTC) Plans. The new steel girders and diaphragms shall be metalized and painted. The superstructure width will be reduced slightly while maintaining the existing curb-to-curb width and modifying the parapet/bridge railing width.

The Project will also include performing repairs and modifications to the reinforced concrete abutments, wingwalls and piers in order to repair existing deficiencies as well as to accommodate the new superstructure.

The project also includes the removal of the bridge superstructures, abutment backwalls and approach slabs of the bridges that carry I-295 over future Ramp E-N, which is currently an unimproved gravel access road. The span shall be filled in with borrow and the roadway shall be established on the filled embankment.

The approach roadway work to each bridge will consist of repaving to the limits shown in the BTC Plans. Only minor adjustments to the I-295 profile are proposed. The roadways below (U.S. Route 6 and U.S. Route 6/6A (Hartford Ave.)) will also be repaved under the bridge locations to the limits shown in the BTC Plans. U.S. Route 6/6A reconstruction limits are extended beyond the immediate area below the bridges. Other highway work required includes, but is not limited to, replacement of existing guardrail, installation of stormwater treatments, placement of new pavement markings and maintenance and protection of traffic.

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

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

The following requirements shall apply during construction:

- A long-term closure of the following ramps will be allowed:
 - Route 6/6A (Hartford Ave.) Westbound to I-295 Southbound
 - I-295 Northbound to I-295 SouthboundRefer to Section 2.11 below for more detailed temporary traffic control requirements.
- Work on Bridge No. 73621 which requires lane closures on I-295 shall be completed during weekend periods only. Ramp and mainline traffic must be maintained during all weekday periods. The Route 6 Westbound ramp to I-295 Southbound
- Pedestrian access shall be maintained along U.S. Route 6/6A (Hartford Ave.) throughout construction. Short term restrictions may be allowed with prior approval from RIDOT and the Town of Johnston. Two-week advance notice for any short term closures is required.
- RIDOT reserves the right to require the D/B Team to modify the traffic control setup in the field to improve traffic conditions.
- Restore all existing areas disturbed by construction activities within the project limits to pre-construction conditions or better and to the satisfaction of the Engineer.

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

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

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

RIDOT will not obtain any environmental permits prior to award. The D/B Team will be responsible for preparing all environmental permit applications required as part of their design and construction activities. RIDOT will review/request revisions as appropriate, and as owner, is required to officially submit all complete applications to the respective regulatory agencies.

RIDOT has prepared and submitted a CE Checklist to satisfy the NEPA requirements for this project. The Categorical Exclusion will be issued for this project prior to the issuance of the Notice to Proceed for the DB Entity.

Any changes in scope or footprint proposed by the D/B Team, which are acceptable to RIDOT, may require additional environmental technical studies and analysis. The NEPA documentation (CE Checklist) provided for this project will be re-examined by RIDOT at each change in design phase (i.e. at the onset of final design, 75/90% and PS&E) based on the D/B Team's design.

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

2.0 PROJECT TECHNICAL REQUIREMENTS

2.1 Design Criteria, Standards and Reference Documents

The design and construction work for the Project shall be performed in accordance with the applicable federal and state laws and RIDOT Standard Specifications for Road and Bridge Construction and Reference Documents which include, but are not limited to, the documents listed herein. The D/B Team must verify and use the latest version of the documents listed herein. The Successful D/B Team must meet or exceed the minimum design standards and criteria.

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

Project Design, Construction, and Administration:

- AASHTO A Policy on Geometric Design of Highways and Streets, 2011, 6th Edition
- Highway Capacity Manual, 2016 Edition
- Manual on Uniform Traffic Control Devices (MUTCD), 2009 Edition
- Rhode Island Department of Transportation (RIDOT) Standard Specifications for Road and Bridge Construction, 2004, Amended 2013, 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 w/ latest interims
- AASHTO Guide Specifications for LRFD Seismic Bridge Design, 2nd Edition, 2011 w/latest interims
- RIDOT Guidelines for Load and Resistance Factor Rating (LRFR) -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/D1.5:2015, 6th Edition w/ latest interims
- AASHTO Manual for Bridge Evaluation 2010, 2nd Edition w/ latest interims
- AASHTO Roadside Design Guide, 2011, 4th Edition
- FHWA Hydraulic Engineering Circular No. 23, Latest Edition

- Guide Specifications for Seismic Isolation Design 2014, 4th Edition
- NCHRP Report 350 Recommended Procedures for Safety Performance Evaluation of Highway Features, 1993
- AASHTO Manual for Assessing Safety Hardware (MASH), 2016, 2nd Edition
- RIDOT Traffic Design Manual
- RIDOT Highway Design Manual
- RIDOT CAD Standards Manual, 2007 from the following website: <http://www.pmp.dot.ri.gov>
- RIDOT Approved Materials List from the following website:
http://www.dot.state.ri.us/documents/engineering/research/approvals/RIDOT_ApprovedProducts.pdf
http://www.dot.ri.gov/business/approved_materials.php
- Rhode Island Stormwater Design and Installation Standards Manual dated March 2015
- AASHTO Guide Design Specifications for Bridge Temporary Works, 2nd Edition
- AASHTO Guide Specifications for Distribution of Loads for Highway Bridges
- AASHTO Guide Specifications for Strength Evaluation of Existing Steel and Concrete Bridges
- AASHTO Guide Specifications for Thermal Effects on Concrete Bridge Superstructures
- AASHTO Guide Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals
- AASHTO Maintenance Manual for Roadways and Bridges
- AASHTO Policy on Design Standards Interstate System, 5th Edition
- "Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges," FHWA-PD-96-001, 1995
- "Bridge Inspector's Training Manual 90," FHWA-PD-91-015 (1991; rev.1995)
- AASHTO/FHWA Research Report RD-87-014, Bridge Deck Drainage Guidelines
- NSBA/AASHTO Collaboration Standard Steel Details/Guidelines from the following website:
<http://www.aisc.org/content/NSBA.aspx?id=20130>
- 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, latest edition.
- AASHTO Construction Handbook for Bridge Temporary Works, 2nd Edition
- Rhode Island Department of Transportation (RIDOT) Standard Specifications for Road and Bridge Construction, 2004, Amended 2013, with all revisions
- Rhode Island Standard Details, 1998, with all revisions
- PCI MNL-116 Manual for Quality Control for Plant and Production of Precast and Prestressed Concrete Products

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

2.2 Order of Precedence

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

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

2.3 Roadway Improvements

The D/B Team shall design the project in accordance with the latest RIDOT, MUTCD, and AASHTO design standards and in accordance with the BTC and guidelines specified in this RFP. The D/B Team shall prepare all documentation required to apply for and obtain any necessary design exceptions. No design exceptions are anticipated as the existing I-295 geometry satisfies current design standard criteria.

2.3.1 Scope of Work for Roadway Improvements

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

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

- Mill and overlay the existing roadway pavement structure to the required limits of work on I- 295, U.S. Route 6 and U.S. Route 6/6A (Hartford Ave.).
- Maintain the existing roadway curb to curb widths on I-295, U.S. Route 6 and U.S. Route 6/6A (Hartford Ave.).
- Installation of conduit and manholes in the local roadways below the bridges in support of utility relocations.
- Adjustment of drainage structure frames and grates to meet the proposed grade.
- Cleaning/removal of sediment from existing drainage structures and pipes.
- Installation of new paved waterways.
- Replacement of existing guardrail and installation of new guardrail to the required limits based upon the RIDOT Highway Design Manual and the AASHTO Roadside Design Guide.
- Installation of new overhead sign supports adjacent to the bridges.
- Installation of new pavement markings and reflectorized pavement markers.
- Installation of new Rumble strips.
- Installation of stormwater BMP' s (check dams/water quality swales) within the I-295 right-of-way.
- Restoration of areas adjacent to the roadways and bridge disturbed by the construction (loam and seed).
- Provide Maintenance and Protection of Traffic in conjunction with the proposed stage construction scheme (See Section 2.11).
- Any changes to the existing drainage patterns, system or existing impervious area will require analysis and approval through application to RIDEM. Stormwater design shall be in accordance with the March 2015 Rhode Island Stormwater Design and Installation Standards Manual.

2.3.2 Required Limits of Roadway Work

The limits of roadway work required along I-295 shall be the milling and overlay limits needed within the

segments of I-295 at each bridge location where the existing pavement markings are altered for shifting of traffic in accordance with the stage construction scheme and Maintenance and Protection of Traffic Plans or to accommodate adjustments of the roadway profile. The approximate limits required are shown on the BTC Plans.

The limits of roadway work along U.S. Route 6 and U.S. Route 6/6A (Hartford Ave.) shall be as shown on the BTC Plans.

2.4 Structures Improvements

For Bridge Nos. 73701/21 and 75701/21, the scope of work for the bridge structures consists of replacing the existing bridge superstructures in their entirety and modifying/rehabilitating the existing abutments, wingwalls and piers in order to provide structures that provide at least a 75-year design life. The new structures shall be designed and detailed in accordance with the RIDOT LRFD Design Manual, the latest RIDOT Bridge Standard Details, the RIDOT Standard Specifications for Road and Bridge Construction and the latest AASHTO LRFD Bridge Design Specifications.

For Bridge Nos. 73601/21, the scope of work consists of removing the existing bridge superstructure, abutment backwalls, approach slabs and portions of wingwalls. The span shall be filled with borrow material and the roadway shall be reconstructed in accordance with current design criteria within the limits delineated on the BTC drawings.

2.4.3 Requirements

Corrosion Protection - All reinforcing steel used on this project shall conform to AASHTO M31, Grade 60 and be galvanized. The galvanized coating shall conform to ASTM A767 Class 1. All structural steel shall conform to AASHTO M270, Grade 50 and shall be metalized and painted in accordance with Section 825 of the RIDOT Standard Specifications for Road and Bridge Construction. The Finish Coat Color shall be blue (semi-gloss) to match Munsell Color 2.5PB 5/10.

- a. **Concrete Protective Sealer** – The entire exposed surface area of the completed abutments, wingwalls and piers shall receive a protective coating conforming to Section 820 of the RIDOT Standard Specifications. The coating shall be placed at the same time after all foundation work is complete so that there is a uniform appearance of the completed structure.
- b. **Bridge Deck Membrane** - A cold spray applied membrane waterproofing is required for all bridge decks conforming to Section 813 of the RIDOT Standard Specifications for Road and Bridge Construction.
- c. **Materials** - Any RIDOT required materials shall conform to RIDOT Standards and any specific requirements outlined in this RFP.
- d. **Buy America Provision** - The D/B Team agrees to comply with 23 CFR 635.410 which provides that Federal funds may not be obligated unless all steel, iron and manufactured products used in FHWA funded projects are produced in the United States, unless a waiver has been granted by FHWA or the product is subject to a general waiver.

2.4.4 Scope of Work and Guidelines

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

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

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

Geotechnical Reports have been prepared which define the existing conditions at the site and verify the adequacy of the existing foundations based upon the BTC.

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

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

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

2.4.4.1 Bridge Superstructure Replacement Requirements

- a. General** – For Bridge Nos. 73701/21 and 75701/21, replacement of the bridge superstructure of four (4) bridges carrying I-295 as described above and in Part A of this RFP and as shown in the BTC Plans. The bridge superstructures shall be designed and constructed for a minimum 75-year service life. For Bridge Nos. 73601/21, removal of the bridge superstructure of two (2) bridges carrying I-295 and backfilling the span as described above and in Part A of this RFP and as shown in the BTC Plans.
- b. Geometry** - Since the existing abutments and piers are to be retained and reused, the overall bridge geometry will generally match the existing geometry. The horizontal alignment, span lengths and roadway cross slope shall match the existing bridges as much as practical. The curb-to-curb roadway width on the bridge shall match the existing bridges. The roadway vertical profile shall be adjusted (raised) or the superstructure depth shall be reduced at Bridge Nos. 73701 and 75701, as needed, in order to provide the minimum required vertical clearance (16'-3") under the bridges. The existing clearances at Bridge Nos. 73721 and 75721 shall be maintained. The D/B Team shall provide final bridge geometry including all elevations, plan dimensions, girder framing, top of deck elevations, beam seat elevations, girder cambers, etc. Additional survey shall be provided by the D/B Team if required for construction and operation of the completed Project.
- c. Live Load** – The D/B Team's attention is directed to the following minimum live load design requirements of the Bridge Design Manual:
Bridge Design Loading: AASHTO HL-93 (1.10 minimum rating factor)
Live Load deflection criteria: L/800
- d. Seismic Analysis** – Seismic analysis shall conform to Articles 3.6 of the Rhode Island LRFD Bridge

Design Manual. The bridges are all designated as "critical" bridges. The Seismic design parameters for this project are as follows:

U.S. Route 6 (Bridges 073701 & 073721)

- Site Class = C

U.S. Route 6/6A, Hartford Ave. (Bridges 075701 & 075721)

- Site Class = C

- e. Load Rating** – The D/B Team will be responsible for producing load rating reports for the new bridges. The load rating reports shall be in accordance with the RIDOT Guidelines for Load and Resistance Factor Rating (LRFR) – March 2017.
- f. Vertical Clearance** – The vertical clearance under all four (4) bridges shall be increased to the minimum value indicated for each bridge shown on the BTC Plans. See description under “**b. Geometry**” above.
- g. Accelerated Bridge Construction (ABC)** - The BTC for the bridge superstructures include the option to use a precast concrete bridge deck system. Alternate methods than those shown in the BTC or the use of ABC methods for other components not designated as precast or prefabricated within the BTC, should be considered to the greatest extent practical. Reduction of the required construction schedule is considered by RIDOT to be a very important goal for this Project. The D/B Team is responsible for designing and detailing the precast deck panels in the Contract Plans if this alternate is selected by the D/B Team. Any precast manufacturing plant furnishing precast concrete bridge members or components shall be a certified PCI facility. The manufacturer shall submit proof of certification prior to the start of production.
- h. Support of Excavation** - Any temporary or permanent support of excavation that is necessary to maintain the safety of the traveling public, the structural integrity of nearby structures or utilities, shall be considered critical and shall be designed and detailed in the plans. The D/B Team is responsible for designing and detailing the support of excavation in the set of Contract Plans. Excavation support systems may require approval from the RIDEM Wetlands Program, Water Quality Program or other third parties.
- i. Bridge Inspection**
- **Notification for Inspection** – Prior to shifting traffic onto the new portion of any of the new bridge superstructures, the D/B Team shall notify RIDOT at least 45 days in advance of completion, that the bridge is complete and ready for RIDOT inspection. As part of such inspection notice, the D/B Team must submit As-Built Plans and Specifications for the bridges to be inspected.
 - **RIDOT Inspection** – After notification by the D/B Team and prior to opening the new section of the bridge superstructure for public use, RIDOT will perform an NBIS inspection of the bridge and also provide information for the Resident Engineer's Punch List.
- j. Damage To Existing Utilities and Utility Structures**
- The locations of all utilities as shown on the base survey plans are approximate. The D/B Team 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 D/B Team should be aware that not all utility companies subscribe to the Dig Safe Program. It is the D/B Team's responsibility to ensure that all utility companies have been notified and all utilities have been marked prior to commencing their work. Any damages to the utilities which are shown on the plans or detailed by Dig Safe shall be the D/B Team's responsibility.

The D/B Team will be responsible for:

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

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

k. Storage of Construction Material and/or Equipment

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

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

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

l. Work Schedule

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

2.4.4.2 Geotechnical Investigations and Analysis

A subsurface investigation and analysis has been conducted for these locations and the results are available for the use of the D/B team. The Geotechnical Data Report, dated April 11, 2017, provides a summary of the boring logs completed under the original bridge construction project and provides information on supplemental subsurface exploration completed for this project. The geotechnical reports identify the existing subsurface conditions at the locations of the borings taken. Any further interpretations of subsurface conditions beyond or in addition to that information are the D/B Team's sole responsibility.

As part of the D/B Team's design calculations, the total dead load and live load reactions on the abutments and piers shall be determined. If the computed bearing pressures for the AASHTO LRFD Strength I Load Combination exceed the recommended bearing capacities depicted in the Geotechnical Interpretive Report, dated May, 2017, by 10% or more, then the D/B Team shall perform analysis to verify the adequacy of the geotechnical capacity at the abutments and piers.

The D/B Team shall determine if additional geotechnical investigations are required to support their proposed design. If required, the D/B Team shall prepare a Geotechnical Investigation Plan in accordance with Section 10.2 of the RI LRFD Bridge Design Manual and submit it to RIDOT within 15 Calendar Days of NTP. The plan shall include the criteria or rationale used in developing the plan, and shall identify the locations of all field investigation sites, in-situ testing sites, and borings, together with their depths, sampling intervals, and a description of both the field and laboratory testing programs utilized. The plan shall also include a traffic control plan, a safety/hazard analysis plan, and a list of all permits required to perform the geotechnical investigation.

If additional geotechnical investigations are performed, a Final Geotechnical Report shall be developed by the D/B Team in accordance with Section 10.2.5 of the RI LRFD Bridge Design Manual.

2.4.5 Description of Structural Elements

This Section covers the specific design and construction elements for the new bridge superstructures. 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.

2.4.5.1 Bridge Elements

a. Decks (Precast & Cast-In-Place)

- Minimum bridge deck thickness shall be 8 inches, and must be high-performance concrete (HP).
- The bridge decks shall be protected with a Cold Spray Applied Membrane Waterproofing system.
- The deck and membrane shall be overlaid by a 3" minimum thickness asphalt overlay in conformance with current RIDOT pavement standards.
- For deck construction, stay-in-place (SIP) forms will be allowed.

b. Deck Joints

- Bridge Deck Closure Pours: The bridge deck closure pours shall be detailed in accordance with the RIDOT Bridge Standard Details. Differential deflection with live traffic on one side of the pour shall be considered.
- Piers: Regardless of the superstructure type, the bridge deck shall be jointless over the piers.
- Abutments: At the deck ends at the abutments, the new slab shall extend over the new backwalls per the "Fixed Joints at Abutments" details for backwall Type I shown in the RIDOT Bridge Design Standard Details. The standard details shall be modified as shown in the BTC plans to accommodate the maximum one way movement anticipated for these bridges.

c. Deck Drainage

- Deck drains on the bridge shall not be allowed.

d. Bridge Railing System

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

e. Utilities Carried on Bridges

- The new bridge superstructures for I-295 NB & SB shall be able to accommodate the utilities currently carried by the existing bridges. There are multiple conduits owned and maintained by RIDOT located on each bridge. As of the date of this RFP, a project for installation of tolling facilities is anticipated to be constructed in 2018 and will include installation of conduits on Bridge Nos. 73621, 73721 and 73701. No other utilities shall be placed on the new superstructures without written authorization from RIDOT.
- The D/B Team shall coordinate with RIDOT and their tolling contractor regarding the temporary and permanent accommodation of their facilities on the new bridge superstructures. The D/B Team will be responsible for designing, furnishing and installing all utility support components on the new superstructures. It is expected that the tolling contractor shall handle the disconnection, pulling of cables to handholes, reinstallation in new conduits and reconnection to the tolling components. The D/B contractor shall be responsible for installation of underground conduit and structure mounted conduit for the final condition.

- The D/B Team will be responsible for the temporary relocation of the RIDOT line(s) and the relocation of the line(s) onto the new superstructures including furnishing and installing all new conduit.
- The D/B Team will be required to design, furnish, install and subsequently remove temporary support poles/structures required for the temporary support of the tolling and RIDOT lines during construction as shown in the BTC Plans.

f. Bridge Demolition and Removal

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

1. All demolition and removal shall conform to the requirements of the RIDOT Standard Specifications for Road and Bridge Construction.
2. The D/B Team shall prepare a Bridge Demolition Plan which shall include his/her proposed methods of demolition for each stage of construction including equipment, tools, devices, etc. The demolition procedure and any necessary calculations and drawings shall bear the stamp of a Professional Engineer Registered in the State of Rhode Island certifying that all existing structural members are suitably braced and supported throughout the demolition process. It is anticipated that the bridge deck overhang at the stage construction line on Bridge 73721 will require a temporary support. The Demolition Plan shall be submitted to RIDOT for Review and Comment at least 21 calendar days prior to commencement of bridge demolition activities. Work shall not commence until RIDOT has given written approval of the Bridge Demolition Plan.
3. Demolition activities shall be performed in accordance with, but not limited to, the RIDEM Freshwater Wetlands Regulations and RIDEM Hazardous Waste and/or Solid Waste Regulations and or approvals. It is presumed that the existing steel beams may be coated with lead paint. The Contractor shall follow all federal and state regulations for the removal and disposal of the steel beams coated with lead paint.
4. The existing roadways below the bridges shall be protected with the use of temporary shielding and/or with temporary traffic detours. No debris shall be allowed to fall onto the roadways below. Temporary traffic detours must be requested by the D/B Team at least 2 weeks in advance. Temporary traffic detours must be approved by RIDOT and the Town of Johnston.

g. Reuse of Existing Bridge Substructures

The existing bridge piers will require modifications to accommodate the proposed superstructure. These modifications include either strengthening by providing an in-fill wall between the existing pier columns or by replacing the pier. The strengthening shall be analyzed for all applicable loads from the AASHTO LRFD Bridge Design Specifications including the Extreme Event I load combination.

The existing abutments to remain have been analyzed for the applicable AASHTO LRFD load combinations for reuse with the proposed Base Technical Concept. The existing abutments are deemed satisfactory for reuse with the BTC. No additional analysis or evaluation of the existing abutments is required unless changes are made to the BTC. Examples of changes to the BTC that will require analysis and evaluation of the existing abutments by the D/B Team are as follows:

- Changes to the proposed beam framing plan (bearing locations).
- Change in superstructure type (i.e. - Concrete superstructure).
- Increase in proposed deck thickness.
- Increase in proposed overlay thickness.

- Change to the Bridge Railing Type.
- The total girder reactions for the AASHTO LRFD Strength I Load Combination exceed the reactions depicted in the Geotechnical Reports by 10% or more.

h. Concrete Repairs

The D/B Team shall perform concrete repairs for the existing abutments, wingwalls and piers that are to remain and be reused. All repairs shall be in accordance with the requirements provided on the BTC Plans and the RIDOT Standard Specifications.

2.4.5.2 Seismic Analysis

Keuper blocks and/or curtain walls shall be used to provide transverse seismic restraint of the superstructure. The design of these seismic restraints shall be in accordance with the Section 3.6 of the RIDOT LRFD Bridge Design Manual.

2.4.5.3 Plans and Calculations

The D/B Team shall provide Plans in accordance with RIDOT Standards including DPM450.02. Design calculations for the steel girders, concrete deck and bridge bearings shall be prepared using the AASHTO LRFD Bridge Design Specifications and the RIDOT LRFD Bridge Design Manual and submitted for review and acceptance. All calculations must be checked by a Registered Professional Engineer in the State of Rhode Island. The calculations shall be stamped, signed and dated.

2.4.5.4 Miscellaneous Construction Considerations

a. Temporary Excavation Support

Temporary excavation support will be required to support the I-295 Roadway as part of the stage construction for the replacement of the bridge backwalls and approach slabs as well as for the modifications to the wingwalls during construction. Temporary excavation support shall be designed to withstand short-term loading due to earth pressures, groundwater pressures, surcharge pressures, traffic live load, vehicular collision force and construction equipment loading. Working plans required for temporary sheeting, soldier piles and lagging, and bracing or other structural systems proposed shall be signed and stamped by a Professional Engineer Registered in the State of Rhode Island.

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

Materials used for the temporary excavation support system shall be left in place if their removal may disturb existing adjacent foundations or adjacent roadway pavement structures.

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

b. Dewatering and Groundwater Control

Excavations that are left open to precipitation, that extend below groundwater levels, that encounter

water seepage, or that are made in existing bodies of water, will require some form of dewatering or groundwater control. The D/B Team shall evaluate the potential need for dewatering and groundwater control when designing a structure. Dewatering of un-contaminated or contaminated surface/groundwater shall be performed in accordance with, but not limited to the RIDEM Water quality Regulations, RIDEM Wetland Regulations, RIDEM RIPDES Remedial Permit, and RIDEM Office of Waste Management.

c. Temporary Deck Overhang Support

The deck overhang at the stage construction cut line on Bridge 73721 will likely require a temporary support. The D/B Team will be responsible for designing, fabricating and installing the temporary support system. The design shall be in accordance with the AASHTO LRFD Bridge Design Specifications. The working plans shall be signed and stamped by a Professional Engineer Registered in the State of Rhode Island.

2.4.5.5 Construction Monitoring Program

The D/B Team shall ensure that their operations required for the reconstruction and rehabilitation of the bridges does not cause damage to the existing bridge abutments, wingwalls and piers which are to remain and be reused.

2.4.5.6 Roadway Approach/Backfill Compaction

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

2.4.6 Design Submittal Requirements

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

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

For all design plan review submissions, the D/B Team shall coordinate with RIDOT regarding the number of copies required for review at least 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: Steven Soderlund, P.E., Acting Project Manager 2
Division of Project Management
Two Capitol Hill, 2nd Floor
Providence, RI 02903

Design reviews by RIDOT will consist of an oversight review to ensure that the design plans, calculations,

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

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

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

Three (3) full size copies of the final approved plans (Stamped and signed) shall be delivered to the Resident Engineer and one (1) copy to RIDOT headquarters (same attention as above.)

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

The following Design Submittals are required:

1. **75% Highway/90% Bridge Design Submission** – As part of the project requirements, the D/B Team must provide a complete submittal package for the new bridges to RIDOT for review and approval. This submission shall include the following:
 - 75% Highway Plans/90% Bridge Plans
 - Utility Plan Submittal (for utility companies)
 - Job Specific Construction Specifications
 - Bridge Design Calculations
 - Environmental Permit Applications
2. **PS&E Design Submission** – After receiving all comments made on the 75%/90% Submission, the D/B Team shall prepare responses to the comments, revise all plans, specifications and calculations as required and submit a final design submission of all Plans, Calculations and Specifications for final review and approval.
3. **IFC (Issued for Construction) Submission** – Upon resolution of all comments, the D/B Team shall submit a stamped and signed set of final construction plans to RIDOT labeled as "Issued for Construction." The final plans shall conform to the requirements for PS&E level plans for all elements in accordance with the RIDOT DPM requirements.

2.5 Lump Sum Breakdown/Major Items List

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

Design:

PART B – PROJECT TECHNICAL REQUIREMENTS

- Preliminary Engineering
- Historical/Environmental Coordination
- Substructure Repair & Modification Design
- Superstructure Design
- Highway Design (I-295 and Local Roads)
- Utility Coordination

Construction:

- Mobilization
- Field Office
- Overhead Sign Support & Signs – U.S. Route 6
- Overhead Sign Support & Signs – U.S. Route 6/6A (Hartford Ave.)
- Demolition of Superstructure & Partial Substructure Br. 073601
- Demolition of Superstructure & Partial Substructure Br. 073621
- Demolition of Superstructure & Partial Substructure Br. 073701
- Demolition of Superstructure & Partial Substructure Br. 073721
- Demolition of Superstructure & Partial Substructure Br. 075701
- Demolition of Superstructure & Partial Substructure Br. 075721
- Utility Relocations – Hartford Avenue
- Bridge Substructure Modifications & Concrete Repairs – Br. 073701
- Bridge Substructure Modifications & Concrete Repairs – Br. 073721
- Bridge Substructure Modifications & Concrete Repairs – Br. 075701
- Bridge Substructure Modifications & Concrete Repairs – Br. 075721
- Roadway Fill and Grading at Br. 073601
- Roadway Fill and Grading at Br. 073621
- Bridge Superstructure – Br. 073701
- Bridge Superstructure – Br. 073721
- Bridge Superstructure – Br. 075701
- Bridge Superstructure – Br. 075721
- Roadway approaches and U.S. Route 6 road work at Br. Nos. 073701/21
- Roadway approaches and U.S. Route 6/6A (Hartford Ave.) road work at Br. Nos. 075701/21
- Maintenance and Protection of Traffic on I-295 at U.S. Route 6
- Maintenance and Protection of Traffic on I-295 at U.S. Route 6/6A (Hartford Ave.) including C-D Road median crossovers
- Maintenance and Protection of Traffic on U.S. Route 6/6A (Hartford Ave.) including temporary signalization

2.6 Environmental

2.6.1 NEPA Compliance/Environmental Documentation

RIDOT must follow the design-build regulations as they pertain to NEPA found under CFR 636.109. This project qualifies as a Categorical Exclusion (CatEx) under the NEPA requirements. Approval of the CatEx is pending, but, is expected to be approved prior to issuance of a notice to proceed with this project.

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

2.6.2 Wetland and Water Quality Permits

The D/B team will be responsible for identifying and preparing all environmental permit applications required as part of their design and construction activities. The Department's coordination with regulatory agencies to date has determined that several wetland and water quality permits will be required including a Freshwater Wetlands Permit from the Rhode Island Department of Environmental Management (RIDEM) and Authorization under the Rhode Island Pollutant Discharge Elimination System (RIPDES) General Permit for Stormwater Discharge Associated with Construction Activity from the RIDEM; inclusive of preparing and complying with the requirements of a Stormwater Pollution Prevention Plan (SWPPP) (sample form attached).

The D/B Team shall utilize the March 2015 Rhode Island Stormwater Design and Installation Standards Manual in the design of this project. The D/B Team is responsible for reviewing and understanding the performance standards and commitments made in all permits and approvals for the Project, as well as the standards and prohibitions of the respective regulations of these programs. The D/B Team shall be responsible for the preparation of all permit applications and supporting documentation, based on the D/B Team's final design. RIDOT as owner, will be the Permittee. Upon RIDOT review and approval of the necessary permit applications, RIDOT will submit them to the regulatory agencies. Should the D/B Team propose design changes acceptable to RIDOT, then permitting requirements may also change. The D/B Team also remains responsible for obtaining any and all necessary amended permits required by the regulatory agencies.

One of the goals of this project is to improve stormwater treatment at the site. The BTC Plans illustrate a concept to provide water quality infiltration swales along the I-295 approaches and in the shoulder as well as in the center median at select locations. The Respondent shall design and detail all proposed Stormwater BMP's. The stormwater BMP's shall satisfy the standards required for a redevelopment project and shall, at a minimum, be capable of treating at least 50% of the first flush water quality volume. Providing more stormwater treatment than the minimum required will be considered as part of the Technical Proposal Evaluation.

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

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

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

The purpose of this preliminary submission is to assist in streamlining the environmental permitting process for

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

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

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

2.6.3 Environmental Site Assessment Investigation

A Phase I Environmental Site Assessment has been conducted for each bridge and the results are compiled in reports dated March, 2017, which are included with the project documents. In addition, a Limited Hazardous Building Materials Survey has been conducted at each bridge and the results are compiled in reports dated May, 2017, which are included with the project documents.

2.6.4 Historic Properties

RIDOT has performed a due diligence review to identify known historic architectural properties and archaeological sites and to assess the potential for unidentified archaeological sites for this Project. This review determined that the archaeological sensitivity at each location is low or none. The proposed bridge work as shown in the BTC will have no direct or indirect impact on above-ground historic properties as there are no aboveground resources within or immediately adjacent to the Area of Potential Effects.

RIDOT's Office of Historical and Cultural Review (OHCR) has determined that the Section 106 process can be completed with a PA Form 1 unless the proposed Scope of Work changes.

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 D/B Team shall cease work and promptly notify the RIDOT Project Manager. RIDOT, FHWA, RISHPO, and NITHPO (if appropriate) will consult promptly on the eligibility of the resources and the FHWA, will promptly determine whether such resources are historic properties under 36 CFR Part 800.
- 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 D/B Team 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 D/B Team is responsible for daily monitoring for compliance with all applicable state and federal environmental laws, regulations, and permits. Should any non-compliant item(s) be identified during construction, the D/B Team will take immediate and continuous corrective action to bring the item(s) back into compliance. The D/B Team's Environmental Monitor shall be appropriately qualified and must be approved by RIDOT. The Environmental Monitor shall be responsible for RIPDES SWPPP inspections and required reporting and coordination with the RIDOT Natural Resources Unit.

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

2.7 Survey

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

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

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

2.8 Design of Pavement Structure

The minimum required pavement structure is depicted within the BTC Plans. The intent of the pavement design is to, at a minimum, provide equivalent structural thickness as the existing pavement structure. If the D/B Team finds that the existing pavement structure varies from that depicted, they shall notify the Engineer. The RIDOT Materials Section will then provide any adjustments, if necessary, to the proposed pavement structure.

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

2.9 Drainage

The D/B Team shall inventory the existing drainage structures within the project limits to confirm the type, size, condition, connections, inverts, etc. The BTC plans propose stormwater BMPs to improve water quality and additional drainage structures to meet the requirements of Division 8 – Drainage and Erosion Control of the RIDOT Highway Design Manual. Finish grading shall be designed to direct surface runoff away from roadway and structures to the extent possible. The D/B Team shall investigate if any existing BMPs are located on the project site and notify the RIDOT project manager if any discrepancies are found.

2.10 Stormwater Pollution Prevention Plan

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

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

The D/B Team shall be responsible for compliance with construction-related permit conditions, including but not limited to design and implementation of erosion controls and good housekeeping BMPs, and shall assume all obligations and costs incurred by complying with the terms and conditions of the SWPPP. Any fines associated with permit or regulatory violations shall be the responsibility of the D/B Team.

2.11 Traffic Control Devices

The Project scope of work includes the installation of traffic control devices. The devices required include, but are not necessarily limited to, all signs (permanent and construction), pavement markings, and a temporary traffic control signal. A Signing and Striping Plan is required from the D/B Team for final approval by the RIDOT Traffic Section and shall be included as part of the final design plans. The D/B Team shall provide typical sections of I-295, U.S. Route 6 and U.S. Route 6/6A (Hartford Ave.) including cross slope. The D/B Team shall ensure that the existing and proposed guardrail is located at the proper height above the final pavement elevation. Guardrail limits shall be as required by RIDOT Standards and the AASHTO Roadside Design Guide. All guardrail terminal ends shall conform to the latest RIDOT and FHWA Standards and shall satisfy the AASHTO Roadside Design Guide. All temporary and permanent roadside elements shall satisfy MASH criteria. The D/B Team shall provide a copy of the manufacturer's recommendations for installation of all guardrail terminals and impact attenuators.

Temporary anchored barrier on bridge decks shall conform to Section 926 of the RIDOT Standard Specifications for Road and Bridge Construction and the following: The barrier system used shall be crash tested and approved for use on the National Highway System by FHWA. The system shall meet the appropriate Test Level and satisfy the required dynamic deflection limits needed at the locations installed. Installation of the system shall be in accordance with the manufacturer's requirements. When anchoring barrier to the new bridge decks, the D/B Team shall position the barrier anchorage locations to avoid deck reinforcement.

2.11.6 Signs

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

2.11.7 Pavement Markings

The D/B Team shall provide, install and remove all required pavement markings. All permanent edge lines, and centerlines shall be Epoxy Resin. All temporary pavement markings shall be temporary waterborne pavement markings. The D/B Team shall furnish, apply, and maintain temporary waterborne pavement markings within the project limits and approaches to work zones. If temporary pavement markings will remain in place through a winter shutdown or winter months, the waterborne pavement markings are to be replaced with epoxy markings. All pavement markings (temporary and permanent) are to be eradicated by the D/B Team when they conflict with other pavement markings or are no longer applicable.

2.12 Maintenance and Protection of Traffic Plan

The bridge superstructures are to be replaced in two (2) stages as depicted on the BTC Plans, except that Bridge No. 73721 shall be replaced in three (3) stages. Two through lanes of traffic shall be maintained on I-295 in each direction except for short term lane closures during off peak periods. A travel lane in each direction shall be maintained along U.S. Route 6. Two travel lanes in each direction shall be maintained along U.S. Route 6/6A (Hartford Ave.) except for short term closures with approval from RIDOT and in coordination with the Town of Johnston.

The following travel lane restrictions, at a minimum, are allowed (More extensive lane restrictions may be allowed in combination with alternate ABC methods that occur over a shorter duration. RIDOT approval will be required.):

I-295 Northbound and I-295 Southbound

- Maintain a minimum of three travel lanes on I-295 southbound south of the ramp from I-295 NB / U.S. Route 6 WB to I-295 SB from 6:00AM – 9:00PM, Monday through Friday;
- Maintain a minimum of two travel lanes in each direction 6:00AM - 9:00PM, Monday through Friday;
- Maintain a minimum of two travel lanes in each direction from 9:00PM Friday through 9:00PM Sunday;
- Maintain a minimum of one travel lane in each direction 9:00PM - 6:00AM, Sunday through Thursday
- Long term closure of the ramp from I-295 NB to I-295 SB

U.S. Route 6

- Maintain one lane of traffic in each direction at all times.
- The ramp for U.S. Route 6 Westbound to I-295 Southbound may be closed for two weekend periods, from 9:00PM Friday through 6:00AM Monday, for removal and reconstruction of the I-295

Southbound roadway at Bridge No. 073621.

- The shoulders may be closed at any time.

U.S. Route 6/6A (Hartford Ave.) (Coordination required with the Town of Johnston)

- Maintain a minimum of one travel lane in the eastbound direction and two travel lanes in the westbound direction at all times;
- Long term closure of the ramp from Route 6 WB to I-295 SB
- The shoulders may be closed at any time.

The BTC Plans provide preliminary Maintenance and Protection of Traffic (M&PT) concepts for the proposed stage construction. The D/B Team shall design, develop and incorporate a final design M&PT in accordance with RIDOT requirements. The M&PT documents shall clearly show how traffic will be managed during the various phases of construction of the Project and will include Temporary Traffic Control (TTC) plans and TTC strategies. The D/B Team shall coordinate all work in accordance with the M&PT. The M&PT shall incorporate and address all of the requirements of DPM 450.05 - Work Zone Safety and Mobility including the following:

- The D/B Team shall design the TTC Plans in accordance with RIDOT, the MUTCD, and AASHTO design standards and in accordance with guidelines specified in this RFP and shown on the BTC Plans. These plans shall be in accordance with current RIDOT policies including, but not limited to, DPM 450.05 - Work Zone Safety and Mobility and the RIDOT Traffic Design Manual. The Design Speed used for the TTC Plans shall be 65 mph for I-295, 55 mph for U.S. Route 6, and 35 mph for U.S. Route 6/6A (Hartford Ave.). The D/B Team will be responsible for any changes to the M&PT resulting from any D/B Team changes to the sequence of construction or scope of work and shall coordinate with RIDOT to ensure that the changes are acceptable.
- The D/B Team shall be responsible for coordinating, cooperating and scheduling this work and all segments thereof with RIDOT, other contractors on adjacent construction projects, utility owners, and applicable local authorities, so as to minimize impacts to the construction schedule.
- Throughout construction, RIDOT will review the traffic control setups in the field. RIDOT reserves the right to require the D/B Team to modify the traffic control setups in the field and/or mandate additional traffic control devices or strategies (including, but not limited to additional signs, barriers, drums, and public outreach) to improve traffic conditions. The D/B Team will also be responsible for adjusting the M&PT accordingly.
- Construction signs shall be installed, maintained, adjusted, and removed by the D/B Team throughout the duration of the project. Existing signs that conflict with construction signs or permanent signs shall be covered and/or removed. Guardrail within the limits of the TTC plans shall also be maintained, adjusted, and/or removed and replaced by the D/B Team throughout the duration of the Project.
- The D/B Team shall maintain pedestrian access along of U.S. Route 6/6A (Hartford Ave.) at all times. The D/B Team shall provide temporary access routes/ramps through construction areas to ensure this access and to safely guide them away from broken and uneven pavement, open excavations, drop-offs, construction operations, and hazards at all times.

2.13 Right-of-Way

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

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

2.14 Planting

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

2.15 Utilities

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

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

The conceptual utility relocation scheme shown on the BTC Plans has been developed with input and coordination from the utility owners. At the Hartford Ave bridge location, the overhead wires (that pass under the bridge) will be relocated into new conduits installed in the local roadways. The utilities carried within the existing conduits carried on the I-295 SB bridges will be temporarily relocated onto temporary supports. These utility lines will then be permanently relocated onto the new I-295 SB superstructures in a new conduit duct bank. The D/B Team must coordinate with the utility owners to confirm the final required Scope of Work.

2.15.1 D/B Team Responsibilities

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

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

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

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

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

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

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

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

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

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

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

The D/B Team shall permit utility owners to inspect the utility work.

2.15.2 Anticipated Utility Relocations and Payment

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

Utility efforts paid through force accounts with RIDOT are anticipated to be limited to the relocation of overhead telephone (Verizon) and cable TV (Cox Communications) wires. The overhead telephone and cable wires are pole supported and span under the I-295 bridge at Hartford Ave. The preliminary design proposes to relocate these facilities underground into conduit duct banks as shown on the BTC Plans. The overhead power wires (National Grid) are pole supported and span over/above I-295 at Hartford Ave. These power wires are to remain in place during construction and be temporarily shielded. If the wires need to be moved, the contractor shall be responsible for all associated costs.

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

- Furnishing and installing conduit, manholes and risers for the relocation of the overhead telephone and cable TV wires.
- Installing overhead line covers for power wires.
- All relocation work required for the existing RIDOT owned conduit that contains traffic related wires.
- All costs associated with locating utilities, utility coordination and other incidentals.

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

2.15.3 Utility Owner Contact Information

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

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

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

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

Mr. Mike Wiemer (617) 551-1310 Senior Outside Plant Engineer
New England Division Level 3 Communications 300 Bent Street
Cambridge, Massachusetts 02141

Johnston Fire Department Headquarters Main (401) 351-1600
1500 Atwood Avenue
Johnston, RI 02919

Chief Richard S. Tamburini Chief of Police
Main (401) 231-4210 x3116
1651 Atwood Avenue
Johnston, RI 02919

Mr. Thomas Vecchione (401) 231-4000 Director of Public Works Johnston, RI
100 Irons Avenue
Johnston, RI 02919

May Zhen (981) 907-3463 Lead Engineer, NE Public Works, National Grid Gas
40 Sylvan Road
Waltham, Ma 02451

2.16 Quality Assurance (QA)

Quality Assurance (QA) is an umbrella term that includes all activities performed to ensure that the quality of a product is as it should be. QA is the responsibility of both the D/B Team and the Owner

(RIDOT). To ensure that the goals for overall quality will be met, RIDOT has established the following QA requirements for this Project:

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

2.17 Quality Control (QC)

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

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

2.17.1 Design Quality Management

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

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

RIDOT will perform reviews of all design submittals.

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

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

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

2.17.2 Construction Quality Management

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

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

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

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

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

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

2.17.3 Non-Conforming Work

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

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

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

RIDOT shall review and accept the proposed resolution of the NCR prior to the D/B Team implementing any corrective action. RIDOT shall ultimately have the authority to call for removal of any non-conforming work should RIDOT not agree that the remedial actions set forth by the D/B Team are sufficient. RIDOT also reserves the right to make cost adjustments for any work that, although not in conformance with the specifications, is nevertheless satisfactory to remain in place.

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

2.18 Field Office

The D/B Team shall provide office space, equipment, and services consistent with requirements of the Standard Specifications for the Resident Engineer. This field office should be configured and equipped for the Department staff per the RI Standard Specifications. The configuration and equipping of the field office shall be coordinated between the D/B Team and RIDOT's Resident Engineer. The field office will be operational throughout the duration of the project, including one (1) month prior to start of construction and extending to three (3) months after completion of the final punch list, and shall be removed upon final project acceptance.

2.19 Plan Preparation

2.19.1 Project Tracking System (PTS) Number

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

2.19.2 Plans Content Requirements

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

File Name.

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

2.19.3 Design Backup Finalization Submission

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

2.19.4 Construction Plans

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

2.19.5 Shop and Working Drawings

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

- Structural Steel (including metalizing and painting procedures)
- Reinforcing Steel
- Prefabricated Bridge Units
- Bridge Railing Components
- Elastomeric Bridge Bearing Pads

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

- Bridge Demolition Plan
- Concrete Repair Procedures
- Prefabricated Bridge Unit Erection Plan
- Temporary Utility Support Plan
- Temporary Deck Overhang Supports

All Working Drawings (Construction Procedures) shall be prepared, checked, signed and stamped by a Professional Engineer registered in the State of Rhode Island.

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

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

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

2.19.6 As-Built Load Rating Reports

The D/B Team shall submit to RIDOT a load-rating report for each of the four (4) bridges after the completion of construction. The Load Ratings shall be prepared and submitted in accordance with RIDOT's Bridge Load Rating Guidelines, Revision 2, dated March 2017. AASHTOWare BrR software is required for the load rating of the bridges.

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

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

2.19.7 Record (As-Built) Plans

The D/B Team shall prepare and submit to RIDOT Record (As-Built) Plans and Specifications for the project records. These plans and specifications shall include all field modifications and changes undertaken during construction serving as a permanent record of the actual location of all constructed elements. Included in this submission package shall be the Final Bridge Calculation Book. The D/B Team shall submit the Record (As-Built) Plans in both hard copy and electronic (TIFF) formats.

2.20 Bi-Weekly Progress Meetings

The D/B Team shall participate in progress meetings beginning two weeks after the issuance of the Notice to Proceed. These meetings shall be held bi-weekly or at the discretion of the Resident Engineer and/or RIDOT Project Manager. During such meetings, progress occurring since the previous meeting shall be reviewed. The D/B Team shall collect information from any key subcontractors/sub-consultants responsible for work completed during the specified duration and work scheduled during the upcoming reporting duration. These meetings shall be attended by the design-build project manager, the construction manager, the QC Administrator and the design manager, as well as other key personnel from the design and construction firms defined within the D/B Team's proposal and Department representative's designated by the RIDOT Project Manager. The D/B Team shall be responsible for preparing, maintaining and distributing minutes of the meetings to all attendees for review. The meeting minutes shall be provided to the Department within two calendar days of the progress meeting.

END OF PART B

PROJECT TECHNICAL REQUIREMENTS