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# PART 2

# TECHNICAL INFORMATION & REQUIREMENTS

## 1.0 DESIGN-BUILDER'S SCOPE OF WORK

### 1.1 Project Description

The Project is located in Bland County, Virginia, and involves replacement of the northbound I-77 bridge over Route 606. The project is located at Exit 62 on Interstate 77 near Rocky Gap, Virginia. The total length of the project is approximately 0.303 miles including bridge length. It is noted that the description and length are approximate only and are based on the RFP Conceptual Plans shown in the RFP Information Package.

A conceptual design has been developed. An Exception from the Public Hearing Process was approved on 02-17- 2022. The major design features of the Project were approved on October 19, 2022. The conceptual design contained in the RFP Information Package reflects a basic line, grade, typical sections, minimum pavement structures, minimum vertical clearance for Route 606, major cross-drainage pipes, and conceptual bridge plans. These elements are considered to be the basic Project configuration. The Design-Builder is responsible for final design in accordance with the Contract Documents. The PDF copy of the RFP Conceptual Plans shall supersede the electronic drawing files (DGN) contained in the RFP Information Package. The portion of I-77 within the Project limits established through Design-Builder's unique design shall meet the VDOT Road and Bridge Standard TC-5.11.

### 1.2 Anticipated Scope of Work

The anticipated scope of work to be undertaken by the Design-Builder under the Design-Build contract for this Project will include, but is not limited to:

- Survey
- Developing and completing the design
- Acquiring the necessary environmental permits
- Conducting geotechnical studies
- Coordinating and performing, or causing to be performed, required utility relocations, additions, and adjustments
- Right of way functions as required to enter properties
- Environmental
- Roadway construction
- Demo, mill, overlay and/or build up existing pavement
- Bridge demolition and bridge construction
- Guardrail/barrier
- Retaining walls
- Signs, sign structures, and foundations

- Traffic control measures
- Traffic maintenance and management during all phases of construction
- Pavement markers and markings
- Storm drainage
- Erosion and sediment control
- Quality Assurance and Quality Control for design and construction
- Stakeholder coordination, Project Communications, and public outreach
- Overall Project management and coordination with other active construction projects in the vicinity.

Descriptions and technical requirements of the anticipated work are set forth in Part 2, Section 2.

## 1.3 Anticipated Design Services

Design services shall address all items necessary for construction and operation of the completed facility. Design services are anticipated to include, but are not limited to, those services necessary to produce roadway and bridge construction plans relative to the technical disciplines listed in Part 2, Section 1.2 above. Other data collection and technical studies anticipated include, but are not necessarily limited to geotechnical investigation, borings and analysis, materials analysis, pavement design, foundation design, traffic counts and analyses, additional environmental studies and noise analyses (if warranted as described in Part 2, Section 2.4.6), and hydraulic and hydrologic analysis. Offerors should note that all work performed on this Project shall be completed using English Units.

## 1.4 Anticipated Environmental Services

The Design-Builder shall carry out environmental commitments during design and construction, as applicable, as identified in the Programmatic Categorical Exclusion (PCE) dated April 30, 2021; the final Plans, the Specifications, and Estimates (PS&E) Re-evaluation Authorization (EQ-200); and the final Environmental Certification/Commitments Checklist (EQ-103). All commitment compliance shall be supported by the appropriate documentation, to be provided by the Design-Builder to the VDOT Project Manager. Further details are provided in Part 2, Section 2.4.

The Design Builder shall acquire all water quality permits for the Project in the Design-Builder's name (i.e., the Design-Builder shall be the "Permittee") and shall provide for any necessary stream and/or wetland compensation required by permits to accomplish the work.

No additional cultural resource studies are anticipated provided all work is conducted within existing VDOT right-of-way. Structure #2023 (Northbound) is designated as a Type A, structure. The structure was inspected for asbestos containing material (ACM). No positive ACM was identified on the structure.

Preliminary coordination with the U.S. Fish and Wildlife Service (USFWS), Virginia Department of Wildlife Resources (VDWR), and the Virginia Department of Conservation and Recreation – Division of Natural Heritage (DCR – NH) was conducted as a component of the

NEPA document development process for the project. Continued coordination with these agencies will be required as plans are developed.

The Design-Builder shall be responsible for compliance with pre-construction and construction-related environmental commitments and shall be responsible for compliance with pre-construction, construction-related permit conditions, as well as post-construction monitoring if required by regulatory agencies. The Design-Builder shall assume all obligations and costs incurred by complying with the terms and conditions of the permits and environmental certifications. Any fines associated with environmental permit or regulatory violations shall be the responsibility of the Design-Builder.

Any changes in scope or project footprint proposed by the Design-Builder from that contained in the Contract Documents, which are acceptable to VDOT, may require additional environmental technical studies and analysis to be performed by the Design-Builder at their cost. These technical studies and analyses are to be conducted in accordance with the professional standards and guidelines of each NEPA-related discipline, as well as the criteria described in Part 2, Section 2.4. VDOT shall be responsible for the coordination of any revised environmental documentation with FHWA. The Design-Builder shall then carry out any additional environmental commitments that result from such coordination at its sole expense and at no additional cost and/or time delays to the Project.

## 1.5 Anticipated Right of Way and Utilities

The Offeror's conceptual design included in its Proposal shall be wholly contained within the right of way limits shown on the RFP Conceptual Plans. Utility easements have not yet been identified or shown on the RFP Conceptual Plans. Deviations from the proposed right of way limits shown on the RFP Conceptual Plans will be subject to VDOT approval in accordance with Part 1, Sections 2.7 and 2.8.

The Design-Builder's final design shall also be contained within the right of way limits shown on the RFP Conceptual Plans, with the exception of temporary construction, permanent drainage, and utility easements (other than permanent drainage easements for stormwater management facilities) and where minor adjustments may be required during the final design process, and only after approval by VDOT. If the Design-Builder proposes significant change to the right of way limits shown on the RFP Conceptual Plans, then this shall be considered a deviation of the Contract Documents and shall be addressed as described in Part 2, Section 2.0.

The Design-Builder's services shall include all work necessary for right-of-way acquisitions and to perform utility coordination, relocations, and/or adjustments as required by the Project. All right-of-way acquisition costs (compensation paid to landowners for right-of-way or permanent easement) will be paid by VDOT and shall not be included in the Offeror's Price Proposal. All costs for utility relocations, excluding betterments, shall be included in the Offeror's Price Proposal. Utility betterments shall not be included in the Offeror's Price Proposal but shall be reimbursed to the Design-Builder through agreement with the requesting utility owner.

## 1.6 Anticipated Construction Services

The construction services to be undertaken by the Design-Builder for this Project are anticipated to include, but are not limited to: earthwork, roadway, bridge and structures (including demolition and removal of existing bridge, all necessary excavation, foundation work, substructure work, superstructure work); retaining walls; the demolition and removal of portions of the existing pavements, milling and overlaying or building up or strengthening of existing pavement; demolition and removal of existing structures, drainage, utility relocations/adjustments and coordination; transportation management plan, traffic control devices; erosion and sediment control; compliance with all environmental requirements, commitments and permit conditions as described in Part 2, Section 2.0 of this RFP. The Design-Builder shall provide construction engineering inspection and management, quality assurance and quality control, including plant quality assurance inspection and testing, but excluding items listed under Part 2, Section 2.14.2.

## 1.7 Coordination with Active Construction Projects

The Design-Builder shall be responsible for coordinating with contractors of other active construction projects in the vicinity of the Replacement of I-77 Bridge over Route 606 Project in accordance with Section 3.6 of Part 4. In addition, the Design-Builder shall organize and conduct joint meetings (to which VDOT shall be invited) with other Contractors on a quarterly basis at a minimum, or as requested by VDOT. The Department will conduct yearly pavement maintenance that may include work on Route 606 and Interstate 77. The Design-Builder shall cooperate with these projects during the March to November paving season. Furthermore, the Department will conduct regular and emergency bridge inspections of structures on I-77 and Route 606.

The Design-Builder shall coordinate its activities with VDOT maintenance activities. For all questions regarding VDOT maintenance project activities, and VDOT routine and emergency maintenance operations, VDOT point of contact shall be:

VDOT Contact: Matthew Lewis (Interstate Maintenance Manager)
Ph. No. (276) 525-6484
Email: Matthew.Lewis@VDOT.Virginia.gov

mailto:Matthew.Lewis@vdot.virginia.govmailto:???.???@VDOT.Virginia.govThe Offeror will be provided a routine maintenance plan monthly for coordination of activities within the Lane Coordination and Management System (LCAMS). Only emergency operations will take precedence over the Offeror's planned operation.

In all cases, the existing projects that have been awarded for construction and any emergency maintenance projects and their respective contractors shall have the priority in scheduling activities and the Offeror's should take this into consideration in their Price Proposal.

## 1.8 Scope Validation

The scope validation process is described in Part 4, Section 2. The purpose of the scope validation clause is to give the Design-Builder an opportunity to notify VDOT of issues that are discovered during the post-award review period that materially differ from what the Department

provided in the RFP Documents during the procurement process. If it is not reasonable for the Design-Builder to have discovered these issues prior to the Agreement Date, and the issues materially impact the price or time to perform the work, then VDOT is willing to consider relief in accordance with Article 9 of Part 4.

The clause is not intended to serve as a vehicle for the Design-Builder to raise issues that would ordinarily arise during the final design iteration process. The RFP Documents on the Project are never represented to be complete. Consequently, Offerors are expected to make a variety of assumptions as to what they view as necessary to finalize the design and provide VDOT with a firm contract price and schedule. In fact, the RFP Documents contain numerous general depictions of existing conditions that the Design-Builder is obliged to verify through field investigations and surveys before completing its final design of the Project and then integrating such design into its construction means and methods. It is the Offeror's responsibility to consider all of this during the proposal process in developing its price and schedule. The scope validation process does not envision that the final design development and related construction services (e.g., surveying and MOT transitions) would, on their own, create Scope Issues.

## 2.0 PROJECT TECHNICAL INFORMATION & REQUIREMENTS

The Offerors' proposed conceptual design shall meet all requirements of the RFP. Any proposed deviations from the requirements of the RFP Documents by the Offerors shall be in accordance with Part 1, Sections 2.7 and 2.8.

The Design-Builder's final design shall meet or exceed all requirements included in the Contract Documents (which in some cases exceeds the minimum design standards). If the Design-Builder proposes any deviation that results in a modification to the Contract Documents then the Design-Builder shall follow the Value Engineering Proposals (VEP) process as described in Section 104.02 of Division I Amendments to the Standard Specifications (Part 5) (even though the proposed deviations may not qualify as a VEP), unless otherwise directed by VDOT. Ultimately, any modification to the Contract Documents requires VDOT approval.

### 2.1 References and Information

The design and construction work for the Project shall be performed in accordance with the applicable federal and state laws and VDOT Standards, Specifications and Reference Documents to include, but not limited to the documents listed herein. The Design-Builder must verify and use the latest version of the documents listed herein as of the date of the RFP or latest Addenda. The Design-Builder must meet or exceed the minimum roadway design standards and criteria.

#### 2.1.1 Standards and Reference Documents

If during the course of the design, the Design-Builder determines that a specific Standard, Specification or Reference Document is required but is not listed herein, it is the responsibility of the Design-Builder to identify the pertinent Standard, Specification, or Reference Document and submit to VDOT for review and approval prior to inclusion in the Contract Documents.

The 2020 VDOT Road and Bridge Specifications, and its associated Special Provision Copied Notes, contain pricing language under sections entitled "Measurement and Payment" that is not applicable in the Design-Build context of this RFP. Thus, in accordance with the hierarchy of documents, the Design-Builder will refer to Part 3, Articles 6 and 7, Part 4, Article 6, and applicable portions of the Division I Amendments (Part 5) to the Standard Specifications for more information regarding the pricing and payment to the Design-Builder. Similarly, other references below that contain pricing methodologies for the "Contractor" shall likewise not be used. The requirements as described in the text of Part 2 herein take precedence over the referenced documents listed below, unless otherwise indicated.

The standards and references for the Project are listed below in the following order: (a) Standards and Specifications; (b) Reference Manuals; (c) Special Provisions List including Special Provisions, Special Provision Copied Notes and Supplemental Specifications. Items (a) and (b) are published references that are available publicly, for which copies are not provided to the Offerors in the RFP Information Package, but these items are to be used as manuals for design and construction. Items listed in (c) are included in the RFP Information Package.

(a) Standards and Specifications

**General**

1. AASHTO Guide Specifications for Highway Construction, 9th Edition
2. VDOT Materials Approved Lists
3. VDOT Construction Manual (2005, revised May 2016)
4. VDOT Post Construction Manual (December 2016)
5. VDOT Construction Inspection Manual (January 2018)
6. VDOT's Minimum Requirements for Quality Assurance & Quality Control on Design-Build & Public-Private Transportation Act Projects (July 2018)
7. VDOT Traffic Engineering Design Manual (2020)
8. VDOT Right of Way Manual of Instructions, Third Edition (8/18/2020)
9. VDOT Utility Manual of Instructions – Utility Relocation Policies and Procedures, Tenth Edition (Rev 08/14/2017)
10. VDOT Land Use Permit Regulations 24 VAC 30-151 (11/23/2011)
11. VDOT Policy Manual for Public Participation in Transportation Projects (Rev July 2020)
12. VDOT Instructional & Information Memorandums (IIM) – All Divisions (as of date of RFP)
13. VDOT Road and Bridge Standards, Vol. 1 and Vol. 2 (2016), including all revisions as of the date of the RFP
14. 2020 VDOT Road and Bridge Specifications
15. VDOT 2022 Supplement to the 2020 VDOT Road and Bridge Specifications
16. 2011 VDOT Virginia Work Area Protection Manual with Revision Number 2.1 (Revised November 2020)
17. 2010 ADA Standards for Accessible Design
18. Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way, dated July 26, 2011

19. Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities dated July 23, 2004 and amended May 7, 2014
20. VDOT Policy for Integrating Bicycle and Pedestrian Accommodations, adopted March 18, 2004 by the CTB
21. Transportation Research Board Highway Capacity Manual (2010)
22. VDOT CADD Manual
23. VDOT State Noise Abatement Policy (July 13, 2011)
24. ISO 9001 Quality Management Systems September 2015
25. AASHTO Guide for Park-and-Ride Facilities, 2nd Edition
26. Virginia Uniform Statewide Building Code (2009)
27. Uniform Relocation Assistance and Real Property Act of 1970, as amended
28. 1950 Code of Virginia, Titles 25.1 and 33.1, as amended
29. VDOT Survey Manual 2010 Edition, Issued 2009, Rev. August 2021

**Roadway Design**

1. VDOT State Bicycling Policy Plan (September 2011)
2. VDOT Road Design Manual
3. AASHTO A Policy on Geometric Design of Highways and Streets, 7th Edition (2018)
4. AASHTO Roadside Design Guide, Fourth Edition, October 2011 (updated chapter 6)
5. AASHTO: A Policy on Design Standards Interstate System, 6th Edition (2016)
6. AASHTO – Guide for High-Occupancy Vehicle (HOV) Facilities, 3rd Edition (2004)
7. AASHTO Guide for the Development of Bicycle Facilities, 4th Edition (2012)
8. AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities, 2nd Edition, December 2021
9. FHWA 23CFR630 Subpart J Work Zone Safety and Mobility

**Geotechnical and Pavement Design**

1. AASHTO Guide for Design of Pavement Structures (Rigid Pavement and Flexible Pavement) (1993 Edition and subsequent revisions)
2. AASHTO Manual on Subsurface Investigations (1988)
3. VDOT Pavement Design Guide for Subdivision and Secondary Roads, 2014
4. VDOT Manual of Instruction for Material Division including all associated memorandum
5. FHWA 23 CFR626 - Part 626 Pavement Policy – April 1, 2011

**Structures**

1. VDOT Manual of the Structure and Bridge Division
2. VDOT Supplement to the AASHTO Manual for Bridge Element Inspection, January 2016
3. AASHTO Guide Specification for LRFD Seismic Bridge Design, 2nd Edition, 2012, 2014 and 2015 Interim Revisions

4. AASHTO LRFD Bridge Design Specifications, 8th Edition, 2017; and VDOT Modifications
5. AASHTO Standard Specifications for the Design of Highway Bridges, 16th Edition, 1996; 1997 and 1998 Interim Specifications; and VDOT Modifications
6. AASHTO Construction Handbook for Bridge Temporary Works, 2nd Edition, 2017
7. AASHTO Guide Design Specifications for Bridge Temporary Works, 2nd Edition, 2017
8. AASHTO Manual for Bridge Evaluation, 3rd Edition, 2018 and all interim revisions
9. AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals, 6th Edition, 2013 with 2015 Interim Revisions
10. AASHTO Guide Specifications for Structural Design of Sound Barriers, 1989, with 1992 and 2002 Interim Revisions
11. FHWA Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges, December 1995, including Errata sheets and Revisions
12. FHWA 23CFR650 - Subpart C – National Bridge Inspection Standards ("NBIS")
13. AASHTO LRFD Bridge Construction Specifications, 4th Edition, 2017
14. AASHTO Manual for Bridge Element Inspection, 1st Edition, with 2015 Interim Revisions
15. NFPA 14 Standard for the Installation of Standpipe and Hose Systems, 2016 Edition
16. NFPA 25 Standard for the Inspection, Test and Maintenance of Water-Based Fire Protection Systems, 2017 Edition
17. NFPA 70 National Electrical Code, 2017 Edition
18. NFPA 502, Standard for Road Tunnels, Bridges, and other Limited Access Highways, 2017 Edition
19. AASHTO Guide Specifications for Wind Loads on Bridges During Construction, 2017
20. VDOT Traffic and Ancillary Structures Inventory & Inspection Manual, 2021

**Drainage**

1. VDOT 2002 Drainage Manual (including current Errata Sheets) and revisions (Revised 01/2021)
2. Virginia Stormwater Management Handbook, Volume I & Volume II, (First Edition – 1999), Virginia Department of Conservation and Recreation
3. 2013 Virginia Stormwater Management Handbook, Second Edition, (Draft)
4. 2013 BMP Standards and Specifications (Draft)
5. Virginia Erosion and Sediment Control Handbook (Third Edition – 1992), Department of Conservation and Recreation
6. FHWA Hydraulic Design Series Number 5 (HDS-5), Hydraulic Design of Highway Culverts, 2012
7. FHWA Hydraulic Design Series Number 7 (HDS-7), Hydraulic Design of Safe Bridges, 2012
8. FHWA Hydraulic Design Series Number 6 (HDS-6), River Engineering for Highway Encroachments, 2001
9. FHWA Hydraulic Engineering Circular Number 9 (HEC-9), Debris Control Structures Evaluation and Counter Measures, 2005
10. FHWA Hydraulic Engineering Circular Number 15 (HEC-15), Design of Roadside Channels with Flexible linings, Third Edition, 2005

11. FHWA Hydraulic Engineering Circular Number 14 (HEC-14), Hydraulic Design of Energy Dissipaters for Culverts and Channels, 2006
12. FHWA Hydraulic Engineering Circular Number 17 (HEC-17), The Design of Encroachments on Flood Plains Using Risk Analysis, 1981
13. FHWA Hydraulic Engineering Circular Number 18 (HEC-18), Evaluating Scour at Bridges, 2012
14. FHWA Hydraulic Engineering Circular Number 20 (HEC-20) Stream Stability at Highways, 2012
15. FHWA Hydraulic Engineering Circular Number 21 (HEC-21), Design of Bridge Deck Drainage Systems, 1993
16. FHWA Hydraulic Engineering Circular Number 22 (HEC-22), Urban Drainage Design Manual, 2009, Revised August 2013
17. FHWA Hydraulic Engineering Circular Number 23 (HEC-23), Bridge Scour and Stream Instability Countermeasures – Experience, Selection and Design Guidance, Third Edition, Volume 1 (2009) and Volume 2 (2019)~~Volumes 1 and 2, 2009~~
18. FHWA Culvert Design for Aquatic Organism Passage, 2010
19. FHWA Culvert Inspection Manual, 1986
20. US Army COE, Hydrologic Modeling System (HEC HMS) Version 4.~~0~~10
21. Virginia, Erosion and Sediment Control Law and Regulations~~, FY 2009~~
22. FEMA National Flood Insurance Program Regulations
23. US Army COE, River Analysis System (HEC RAS), Version ~~4.1~~6.3
24. The Current Virginia SWM Law ~~dated 2015~~(as listed in the Code of Virginia)
25. The Current Virginia SWM Regulations ~~dated 2015~~ (as listed in the Virginia Administrative Code)

**Traffic Control Devices**

1. USDOT FHWA Standard Highway Signs, 2004 Edition and 2012 Supplement
2. 2009 Manual of Uniform Traffic Control Devices (MUTCD), Revisions 1 and 2 (May 2012) and 2011 Virginia Supplement to MUTCD, Revision 1 (September 2013)
3. National Fire Protection Association NEC Standards, 2008
4. Virginia Standard Highway Signs, 2011 Edition
5. Virginia Standard Highway Signs, Revision 1, January 2015
6. Traffic Operations and Safety Analysis Manual (TOSAM), Version 1.0, February 2020
7. VDOT Guardrail Installation Training Manual (GRIT), Revised August 2019
8. Virginia Work Area Protection Manual 2011 Edition, Revision 2.1 (November 1, 2020)

(b) Reference Manuals

1. American Water Works Associations Standards
2. American Welding Society Standards
3. DCR Stream Channel Erosion Control - Technical Bulletin No. 1
4. DCR Minimum Standard 3.10E Plastic Chamber Systems - Technical Bulletin No. 3
5. DCR Minimum Standard 3.15G Filterra™ Bioretention Filter System - Technical Bulletin No. 6
6. DCR Minimum Standard 3.02: Principal Spillways - Technical Bulletin No. 7

7. DCR Vector Control: Mosquitoes & Stormwater Management - Technical Bulletin No. 8
8. Duncan, J.M. (April 2000) Factors of Safety and Reliability in Geotechnical Engineering, Journal of Geotechnical and Geoenvironmental Engineering, ASCE, Discussions and Closure, August 2001
9. Field Partnering Guide for VDOT Projects, November 2005
10. FHWA Context Sensitive Solutions/Design
11. International Mechanical Code
12. International Telecommunication Union (ITU) Requirements
13. ISEE Blasters Handbook (Current Edition)
14. National Electric Code (NEC)
15. National Electric Safety Code (NESC) Standards
16. National Electrical Manufacturers Association (NEMA) Standards
17. National Transportation Communications for ITS Protocol (NTCIP)
18. Society for Protective Coatings (SSPC) Standards
19. Telecommunications Industry Association (TIA) and Electronic Industries Alliance (EIA) Standards and Specifications
20. U.S. Department of Agriculture Rural Utilities Service (RUS) 7 CFR 1755.900
21. Underwriters Laboratories (UL) Standards
22. VA Statewide Fire Prevention Code
23. VDOT Land Use Permit Regulations Guidance Manual, Revised October 2014
24. Virginia Calibration Methods, January 2014
25. Virginia Test Methods Manual, December 2013
26. VDOT Public Involvement Manual, revised February 2015
27. Virginia Work Zone Pedestrian and Bicycle Guidance Document dated January 2016
28. VDOT's Guidelines for the Installation of Marked Crosswalks dated May 2012
29. VDOT Guidance for Determination and Documentation of Left Turn Phasing Mode, Version 1.0, February 2015.
30. FHWA's Highway Traffic Noise Analysis and Abatement Guidance dated January 2011
31. VDOT Noise Report Development and Guidance Document Version 5
32. AASHTO Guidelines to Design for Constructability, 3rd Edition

(c) Special Provisions List, Special Provision Copied Notes and Supplemental Specifications

**General Provisions**

1. Special Provision for Design Build Tracking Numbers, December 19, 2018
2. Special Provision for Electronic Submittals Management System February 2021.
3. Copied Notes for General Project Requirements, Supplemental Specifications (SSs), Special Provisions (SPs), and Special Provision Coped Notes (SPCNs), April 2022
4. Special Provision for Non-discrimination in Employment and Contracting Practices, November 14, 2018
5. SPCN for Drug Free Workplace, July 2019
6. SPCN Section 518.02(a) for Number of Trainees, July 2016
7. SPCN Section 102.05 - Preparation of Bid (Compliance with the Cargo Preference Act), November 2018
8. Special Provision for Partnering for Design-Build Projects, April 2019

9. Special Provision for Prevailing Wage Rates, November 2021
10. SPCN for Equal Employment Opportunity, May 2022

**Materials**

1. Special Provision for Jack and Bore, December 2018
2. Special Provision for Micro Tunneling, November 2018
3. SPCN for Polishing Aggregate in Asphalt Concrete, July 2016
4. Supplemental Specification for Concrete Curing Materials, August 2020
5. Special Provision for Controlled Blasting, October 2020

**Roadway**

1. Special Provision Copied Note for Section 315.05 (c) Placing and Finishing, January 18, 2017
2. Special Provision for Pipe Replacement - December 17, 2018

**Bridges and Structures / Geotechnical**

1. Special Provision for Elastic Inclusion for Design-Build and PPTA Projects - February 27, 2017
2. Special Provision for Dynamic Pile Testing for End Bearing Piles for LRFD – November 2018
3. Special Provision for Clearing and Grubbing at Bridge Approaches, November 2018

**Traffic**

1. SPCN for Maintaining Traffic (Impact Attenuator Service) July 2016
2. SPCN for Contractor Maintenance of Temporary Markings June 13, 2017
3. Special Provision for Lane Closure Coordination (LCC)/Lane Closure Implementation (LCI) November 2018.
4. Supplemental Specification Section 704 – Pavement Markings and Markers May 6, 2022
5. Special Provision for Inlaid Pavement Markers August 26, 2019
6. SPCN Temporary Contrast Markings February 26, 2019
7. Supplemental Specification Section 246 for Pavement Marking, May 2022
8. Supplemental Specification Section 512 for Maintaining Traffic, July 2022
9. Supplemental Specification Section 235 for Retroreflectors, May 2022
10. Supplemental Specification Section 234 for Glass Beads and Retroreflective Optics, May 2022
11. Special Provision for Employment of Portable Temporary Rumble Strips, January 2019
12. Special Provision for Limitation of Operations (Bristol District), September 2022

**Environmental**

1. Special Provision for Protection of Nesting Migratory Birds During Structure Demolition, July 10, 2019
2. Special Provision Copied Note Protection of Bat Species, January 17, 2018
3. Special Provision for Tree Removal Time of Year Restriction for Roosting Bat Habitat, June 6, 2022

4. Special Provision for Stormwater Pollution Prevention Plan (SWPP) and The Virginia Pollutant Discharge Elimination System (VPDES) General Permit for the Discharge of Stormwater from Construction Activities, November 2018

The above list of Special Provisions is not intended to be an all-inclusive list. The Design-Builder is responsible for achieving the Work in accordance with all current VDOT standards as of the date of the RFP issuance, including any revisions and/or addenda thereof. If a construction element is not adequately addressed within VDOT Standard Specifications or the Special Provisions listed for the purpose of the Design-Builders design, it is the responsibility of the Design-Builder to develop an alternative specification that is acceptable to VDOT for that element of work.

In the event of a discrepancy between VDOT and non-VDOT Standards and References listed herein, the VDOT Road and Bridge Specifications, design standards, and manuals shall take precedence, with the following exception. If AASHTO, MUTCD or AREMA require that a higher or better standard be applied, then AASHTO, MUTCD and AREMA shall take precedence. In accordance with Part 2, Section 2.1.3 below, all deviations from AASHTO minimum specified design values shall be documented, justified, and approved by VDOT and FHWA.

Special Provisions included in this contract document or other Special Provisions approved by VDOT shall govern over the VDOT specifications, design standards and manuals. Special Provision Copied Notes approved by VDOT and requirements specified within the text of this RFP shall govern over both the Special Provisions and VDOT specifications, design standards and manuals.

### 2.1.2 RFP Information Package

The RFP Information Package includes the following:

1. Survey Files
   - Updated Survey Files
2. RFP Conceptual Plans including electronic files
   - Roadway Conceptual Plans
   - Bridge Conceptual Plans
3. Geotechnical Data Report, dated May 27, 2022
4. Environmental
   - Project Programmatic Categorical Exclusion PCE, dated April 30, 2021
   - VDOT Hazardous Materials Summary Report, dated February 26, 2021.
   - Asbestos Inspection Report, dated February 19, 2016.
   - Preliminary Environmental Package, dated October 21, 2022.
   - Preliminary Fish, Plant and Wildlife Resources Clearance, dated March 26, 2021
   - Cultural Resources Summary Report, dated March 26, 2021
   - Preliminary Permit Determination, dated October 20, 2021
   - Noise Form, Type III, dated March 02, 2021
   - Bat Inventory Forms, dated October 13, 2021
5. Design Exceptions/ Design Waivers
   - Roadway

- Concurrence from the State L&D Engineer to utilize 70 mph Design Speed granted via email dated May 17, 2022.
- Roadway Design Waiver to reduce the shoulder width on the bridge and addressed in the Stage 1 bridge report.

6. Special Provisions

A Supplementary Information package, which is not deemed a component of the RFP, can be provided upon request. This package is solely for the information of the Offeror, which each Offeror may use at their own risk and as they deem appropriate. The Department does not represent or warrant that the information contained in the package is suitable for designing the Project. This information shall not be considered for scope validation purposes. The Supplementary Information package includes the following:

1. Existing I-77 Bridge Plans
2. Existing I-77 Roadway Plans
3. Bridge Inspection Reports (This information will be provided upon completion of CII/SSI Non-Disclosure Agreement)
4. Stage-1 Bridge Report, dated May 11, 2022

Offerors interested in obtaining the Supplementary Information Package should contact the Design-Build POC specified in Part 1, Section 2.4.

Requirements described in the Technical Information and Requirements (Part 2 of the RFP) shall supersede the information contained in the RFP Information Package, including the information depicted in the RFP Conceptual Plans. In the event that there is a discrepancy between the RFP Conceptual Plans (or other information contained in the RFP Information Package) and the Technical Information and Requirements (Part 2 of the RFP) herein, the Technical Information and Requirements (Part 2) shall take precedence.

### 2.1.3 Design Exceptions and Design Waivers

Design Exceptions will be required for any element of the design among the eleven controlling criteria that do not meet AASHTO minimum design standards. Design Waivers will be required for any element that meets AASHTO minimum design standards but does not meet VDOT minimum standards or for any element other than the eleven controlling criteria that do not meet AASHTO minimum design standards. The Design-Builder will be required to follow the process as described in the latest version of I&IM LD-227, S&B 70 regarding Design Exceptions and Design Waivers.

VDOT has identified the following design exceptions, with respect to the RFP Conceptual Plans:

- No Design Exceptions Identified.
- One (1) Design Waiver Identified.

VDOT has identified the following design waivers, with respect to the RFP Conceptual Plans:

- Roadway

- Concurrence from the State L&D Engineer to utilize 70 mph Design Speed granted via email dated May 17, 2022.
- Concurrence from Central Office L&D that this project as shown in the RFP Conceptual Plans is considered to be a "Bridge Only" project as per VDOT's Manual of the Structure and Bridge Division, and IIM-227 notes that substandard approach roadway geometrics associated with these "Bridge Only" projects do not require corrections and do not require design exceptions or design waivers unless the existing conditions are made worse.
- A design waiver has been approved for a reduced inside shoulder on the bridge as per the attached document.
- A 50/50 superelevation transition split at PC or PT on horizontal curves is permitted. Should Design-Builder's design utilize a 50/50 transition split at PC or PT on horizontal curves of I-77, the Design-Builder shall be responsible for preparing the Design Waiver and supporting documentation for Department's approval.

## 2.2 Mainline and Other Roadway Improvements

The roadway inventory information and major design criteria are summarized in Attachment 2.2. The information contained in the Attachment shall serve as a basis for the Design-Builder to determine the appropriate criteria to apply to the design of the Interstate. Offerors are on notice that the entirety of the information contained in the Design Criteria Table and Part 2, Section 2.2 of this document including but not limited to the design criteria, and other notes and data, contain the minimum roadway geometric design requirements that the Design-Builder shall meet in its performance of the Work. By submitting the proposal, Offeror certifies that the project concept presented in its proposal is fully compliant with such minimum requirements. Unless otherwise approved by VDOT, no changes to or deviation from the listed criteria shall be allowed. Any schedule delays as a result of changes or deviations are the responsibility of the Design-Builder.

All roadway typical sections shall be designed to incorporate any necessary widening required for the installation of the Midwest Guardrail Systems (MGS) Standard guardrails discussed in Part 2, Section 2.9.3. This widening is not depicted in the RFP Conceptual Plans.

Functional Classification

Interstate 77 is functionally classified as an Interstate. The VDOT geometric design standard that will be utilized for Interstate 77 will be GS-INT in Mountainous terrain with a minimum design speed of 70 mph.

The existing curves on I-77 may not meet the VDOT Road and Bridge Standard TC-5.11 for the design speed and curve radius. However, the superelevation rates for the roadway within the Project limits established through the Design Builder's unique design may meet the VDOT Road and Bridge Standard TC-5.11 for the design speed and curve radius.

Future third lane widening shall meet the above listed criteria Interstate 77 and no work completed by this project shall preclude the expansion of I 77 to 3 lanes.

Route 606 is functionally classified as a Rural Collector. The VDOT geometric design standard that will be utilized for Route 606 will be GS-3 in mountainous terrain with a minimum design speed of 50 MPH. As shown in the concept plans, Route 606 roadway surface shall be milled and overlayed.

## 2.3 Structures and Bridges

### 2.3.1 General

The Project includes construction of a new bridge and demolition of the existing bridge. The minimum vertical clearance to be provided, over Rte. 606 shall be 16'-6". The existing vertical clearance over Rte. 606 shall not be reduced below 16'-6" during construction.

The Design-Builder's concept shall not preclude the future third lane widening of I-77. Realignment of Rte. 606 for the future third lane widening on I-77, if required, is permitted.

The existing bridge structure designated as a Type A in accordance with Section 411 of the current 2020 VDOT Road and Bridge Specifications.

Construction of the proposed bridge and demolition of the existing bridge shall be staged as necessary to comply with Section 2.10 (Transportation Management Plan). The Design-Builder shall submit a demolition and erection plan to VDOT for review and concurrence prior to commencement of any demolition or erection. The demolition and erection plan shall include at a minimum details of protection of underlying bridges, roadway and users, ingress & egress of construction equipment's, means & methods, equipment to be utilized, false work and shoring plan. The Design-Builder shall determine the effect that equipment loads have on the existing bridge structure and develop and submit the procedures for using the loaded equipment without exceeding the structure's design load capacity.

A preliminary type, size and location plan, including all proposed stages of construction, shall be submitted by the Design-Builder to VDOT for review and approval prior to proceeding with final design. Bridge type and layout shall be based on reducing long-term maintenance costs for VDOT. The staged construction plans shall outline expected methods of protecting roadway users during each stage. For phased construction, there shall be at least 12" from the back side of the temporary barrier to the edge of the new portion of the deck to accommodate placement of the deck screed.

The bridge shall be designed using *AASHTO LRFD Bridge Design Specifications*, 8th Edition, 2017; and VDOT Modifications (IIM-S&B-80.6) and the Additional Foundation Criteria (Attachment 2.3).

All details and drawings shall be in accordance with the Manual of the Structure and Bridge Division unless otherwise noted in these Technical Requirements. Details and drawings not specifically included in the VDOT Manual of the Structure and Bridge Division may only be included in structural plans and working drawings after review and approval by VDOT. The bridge plans must use the standard sheets of the VDOT Manual of Structure and Bridge Division (all

parts). Structural elements that have a corresponding standard sheet in any part of the Manual of Structure and Bridge Division must be detailed using the appropriate standard sheet.

The proposed structures shall utilize low permeability concrete in accordance with the 2020 VDOT Road and Bridge Specifications.

All reinforcing steel shall be in accordance with S&B I&IM 80 and 81. Neither epoxy coated nor galvanized reinforcing steel shall be used.

Plan Submittal shall be in accordance with IIM-S&B-19 as a Tier 2 Bridge Project. Details provided in technical proposals are not Preliminary Plans. Preliminary Plans and a Preliminary Stage I Report (and all other subsequent bridge plan submittals) shall be submitted to VDOT after award for approval in accordance with the I&IM. The Stage I Report shall be developed using the latest report template which is available upon request from the Assistant State Structure & Bridge Engineer for Project Delivery.

The distance from face-to-face of curbs/railings shall be in accordance with Chapter 6 of the Manual of the Structure and Bridge Division, which coincides with the conceptual bridge plans.

Bridge parapets on the outside and inside of the structure shall be VDOT Standard BPB-4 Series (as shown on the conceptual bridge plans).

### 2.3.2 Superstructure

The use of continuous span units and jointless bridge design shall be used as outlined in the VDOT Manual of the Structure and Bridge Division, Part 2, Chapter 17. Painting structural steel on a jointless structure is not required.

Joints in bridges may be used only with specific written approval of the VDOT State Structure and Bridge Engineer through a design waiver.

No timber bridge elements of any kind will be acceptable in the proposed structure and no fracture critical bridge elements of any kind will be acceptable in the proposed structure.

Prestressed concrete or structural steel beams/girders (when used) shall be designed as composite with the cast-in-place deck. Maximum beam/girder spacing shall be limited to 12’-0”.

For structural steel alternatives, the material shall be weathering steel. The yield strength of steel shall be 50 ksi. The use of 70 ksi and 100 ksi steels will not be permitted.

Cover plates on continuous rolled beam sections in the negative moment areas and longitudinal stiffeners shall not be used. Other fatigue prone details shall not be used. No field welding to structural steel members, primary or secondary, shall be permitted except as allowed by the current 2020 VDOT Road and Bridge Specifications. A maximum of two bolted field splices per span shall be permitted.

For prestressed concrete alternatives, the precast concrete Bulb-T sections adopted by VDOT shall be used. AASHTO shapes will not be permitted.

Segmental construction of any kind (post tensioned box beams, segmental precast and/or balanced cantilever construction) is prohibited. Post tensioning of concrete is not allowed.

Structural approach slabs will be required at each end of the bridge. A sleeper pad will be required when the bridge abutment is either integral or semi-integral.

The use of asphalt overlays on concrete bridge decks shall not be permitted.

The use of prestressed deck panels as stay-in-place forms shall not be permitted.

The Design-Builder shall be responsible for completing Type B & Type C repairs to bridge deck within 72 hours of notification by VDOT. The Design-Builder shall includes total of 10 square yards of repairs (material and labor) in their lump sum price. Should the Type B & Type C repairs exceed a total of 10 square yards, contract price adjustment will be handled in accordance with Part 4 Article 9. However, no relief will be provided for contract time. Repairs not made within 72 hours will be completed by VDOT and the costs will be assigned to the Design-Builder. The Design-Builder shall, at any given time, keep enough resources (including but not limited to material, equipment, and labor) on hand to be able to perform 5 Square yards of repairs. The obligation for repairs shall begin upon payment request for mobilization or construction initiation whichever is sooner. Any unused material shall be delivered to the Rocky Gap Area Headquarters at the conclusion of the project.

### 2.3.3 Substructure

When spread footings are proposed, the Design-Builder shall conform to Section 401 of the 2020 VDOT Road and Bridge Specifications, Structure Excavation. The Design-Builder shall ensure that all recommendations related to the suitability of foundation material for spread footings at the time of construction are made in the field by the Design-Builder's Geotechnical Engineer registered and licensed in the Commonwealth of Virginia. Foundation recommendations for the proposed bridge shall be submitted for review and approval prior to the submittal of final foundation construction plans.

When drilled shafts are proposed, the Design-Builder shall refer to the Special Provision for Drilled Shafts referenced in Part 2, Section 2.1.1 for design and construction requirements. The Design-Builder shall not use telescopic casing during construction.

The use of steel pile bents shall not be permitted. Pile bent supports shall not be used at any grade separation structure (overpass or underpass). True MSE abutments and Geosynthetic Reinforced Soil (GRS) type abutments shall not be used.

The proposed structure shall meet all applicable hydraulic requirements, including FEMA and VDOT guidelines described in the VDOT Drainage Manual. The Design-Builder shall deliver to VDOT a final Hydrologic and Hydraulic Analysis and a final Scour Analysis for the proposed

bridge design as outlined in Part 2, Section 2.7. These analyses shall be submitted to VDOT for review and approval prior to the commencement of bridge construction.

Areas around bearing seats shall be designed to permit jacking and replacement of bearings. The design forces for jacking shall not be less than 1.3 times the permanent load reaction at the bearing, adjacent to the point of jacking.

All substructure units shall meet the crash-load guidelines of AASHTO LRFD Article 3.6.5 "Vehicular Collision Forces" and the requirements in the VDOT Manual of the Structure and Bridge Division – Part 2, Chapter 15 and the standard details in the VDOT Manual of the Structure and Bridge Division – Part 3. The existing substructure shall not be re-used as part of the proposed structure. The existing footings shall not be encompassed or engulfed by the proposed footings.

### 2.3.4 Miscellaneous

Adequate drainage for the bridge structure shall be provided; in particular, the designed system must be able to control and drain water from the deck. Bridge deck drainage analysis and design shall be performed in accordance with FHWA Publication HEC21- Design of Bridge Deck Drainage, NS Standards and VDOT's Drainage Manual. All hardware components for the deck drainage system shall conform to requirements of Section 226 of the 2020 VDOT Road and Bridge Specifications, shall be galvanized steel, and shall be designed to minimize maintenance activity (min. 8" diameter pipes or pipes of equivalent areas shall be used) as well as avoid interference with aesthetics of the bridge. Provisions shall be made to provide clean-outs in the pipe and downspout systems. To the extent possible, pipes and downspouts should be hidden or coordinated with the design of the bridge and they should be pitched at four (4) percent or greater slope to achieve self-cleansing velocities.

### 2.3.5 Plan Submission

The Design-Builder shall, at a minimum, make two (2) bridge plan submissions for VDOT's review and approval; 1) Preliminary Plan (Stage I) Submission and 2) Final Plan (Stage II) Submission.

- Preliminary Plan (Stage I) Submission
    - The Design-Builder shall submit a preliminary plan for the permanent structure documenting how the structure geometrics were determined.
    - The preliminary plan submittal shall include:
        1. A plan view developed section along bridge centerline/construction baseline and a transverse section. Refer to the VDOT Manual of the Structure and Bridge Division – Part 2;
        2. Completed Stage I Bridge Report Summary Form; The preliminary geotechnical recommendation report is required with the Stage I submission; and

3. Copies of approved design exceptions and waivers that influence the design of the structure or roadway approaches both over and under and will include a write up on how the design exceptions and design waivers affect the bridge.
4. Conceptual bridge demolition and erection plans including construction sequencing and positioning of equipment.

- Preliminary plans must be submitted to and approved by VDOT prior to any final bridge design submittal. VDOT will not review any final design submittals until the preliminary plan has been approved. The commencement of the final design prior to the approval of the preliminary plan submittal by VDOT will be done solely at the risk of the Design-Builder.

- The Stage I bridge submittal will be subject to modifications based upon requirements identified in the detailed hydrologic and hydraulic study and scour analysis of the waterway crossing.

- Final Plan (Stage II) Submission

  - The Design-Builder shall submit final plans for the permanent structure. The final plans will be assembled according to the procedures and guidelines presented in the VDOT Manual of the Structure and Bridge Division – Part 2.

  - Final bridge plans may be submitted as completed bridge plan set(s) or in plan submission packages (i.e., foundation plan package, substructure plan package, superstructure plan package, etc.). The Geotechnical Recommendation Report is required with the Stage II submission. The final plans are to be submitted for review and approval to VDOT prior to construction of that element and should be submitted according to the submission schedule provided by the Design-Builder.

  - For the bridge, the Design-Builder shall submit estimated quantities as outlined in the VDOT Manual of the Structure and Bridge Division - Part 2, Chapter 3.

  - Final design calculations and construction drawings shall be signed and sealed by the Design-Builder's structural engineer in accordance with the VDOT Manual of the Structure and Bridge Division - Part 2, Chapter 1 Section 16.

### 2.3.6 Structure Load Ratings

The following structure load ratings analyses and reports shall be required and shall be performed in accordance with the requirements of the current version of IIM-S&B-86, Load Rating and Posting of Structures (Bridges and Culverts):

- A load rating is required when a newly constructed structure or any phased portion of a newly constructed structure is intended to carry traffic in a temporary configuration.

- Load rating of any partial configuration of the existing structure.

- A load rating of the as-designed structure shall be submitted with the final bridge plans.

- A final, As-Built, load rating analysis of each new structure reflecting traffic in its final configuration. This load rating should incorporate any As-Built changes that may have been made, which in the judgment of the Design-Builder's structural engineer will affect the load rating (e.g., minor changes to stiffener or diaphragm locations may not affect a load rating).

No partial or completed structure shall be placed into service if a Load Restriction (Posting) is required based upon the load rating analyses. The Design-Builder is responsible for all remedial measures/corrective action required to provide VDOT a structure that satisfies the load rating requirements outlined in the current version of I&IM-S&B-86, Load Rating and Posting of Structures (Bridges and Culverts).

### 2.3.7 Working Drawings

The Design-Builder shall review and approve working/shop drawings and submit three (3) approved sets to VDOT for the bridge structure. Reference should be made to Article 105.10 of Part 5 of the RFP. The working/shop drawings shall be approved by a registered, licensed, Professional Engineer in the Commonwealth of Virginia. Details not included in the Approved for Construction (AFC) plans shall be reviewed and approved by VDOT prior to incorporating in working drawings. This shall be required for, but not limited to, all structures such as MSE walls, other specialty retaining structures (tieback, soil nail, etc.) overhead sign structures and other ancillary structures.

### 2.3.8 FHWA Bridge Construction Unit Cost Report

The Design-Builder shall submit Estimated Quantities along with the associated unit costs for all standard and non-standard bridge items in the final bridge plan submittal. The structure unit cost data is required to complete VDOT's annual Bridge Construction Unit Cost Report, which is provided to FHWA. Data shall be submitted to VDOT within ninety (90) days of the VDOT's approval of the construction plan submittal.

### 2.3.9 Safety and Acceptance Inspection for the Proposed Structures

Acceptance of the bridge structure will require the following two (2) independent inspections by VDOT:

- A satisfactory safety/inventory inspection by VDOT as described below is required prior to opening the structure or portion of the structure to public traffic. This safety/inventory inspection by VDOT will serve as the initial inspection of the structure. Data gathered will include location, date completed, alignment, description, horizontal/vertical clearances, structure element description and condition data, and traffic safety features. Such inspections will be required prior to opening any newly constructed portion or phase of the bridge to traffic.

- A satisfactory final construction inspection by VDOT is required prior to Final Acceptance of the structure. To facilitate inspection of the structure by VDOT, the Design-Builder shall ensure that all structural elements are accessible and shall provide adequate resources including:

  - Man-lifts, bucket trucks, under bridge inspection vehicles, or other equipment necessary to inspect the structure as well as properly trained staff of sufficient composition to support the inspections.
  - Plans, procedures, personnel, and equipment to implement traffic control measures.

The Design-Builder shall provide a minimum of thirty (30) days' notice to VDOT whenever it requires VDOT to undertake an inspection. The Design-Builder's notice to VDOT shall include As-Built drawings, traffic control procedures, a description of the items to be inspected and an anticipated schedule for the inspections, all in accordance with the requirements contained in Part 2, Section 2.2.

Unless otherwise approved by VDOT, structures shall be substantially complete (i.e., roadway, and slopes on the approaches and underneath the structure are already in place) before the final construction inspection will be performed.

### 2.3.10 Signs/ITS Structures – Not used

### 2.3.12 Retaining Walls

Retaining wall structures shall be designed in accordance with the following requirements and as specified in Part 2, Section 2.6.3 – Geotechnical Requirements:

- Retaining walls shall be designed in accordance with VDOT and AASHTO LRFD specifications and requirements.
- The minimum design life for retaining walls shall be 100 years.
- Existing or new retaining walls shall be analyzed or designed for all additional loads imposed by sign structures or other structures.
- Only retaining walls for which FHWA has developed guidelines will be permitted.
- Only retaining walls presenting an essentially vertical concrete face shall be used. Walls with vegetated and/or sloping faces shall not be used for the Project.
- All components of the retaining walls shall be contained within VDOT's right of way.
- If mechanically stabilized earth (MSE) walls are used, only MSE walls from VDOT's Approved Retaining Wall System List shall be used, except as noted above and as noted on the list. Segmental block type retaining walls shall not be used, MSE walls that require traffic protection at the top shall utilize barriers or railings on moment slabs.
- Barriers on top of retaining walls shall use Standard BPB-4 concrete parapets on moment slabs.
- Parapets located on top of MSE walls shall utilize low permeability concrete in accordance with the 2020 VDOT Road and Bridge Specifications.

- Retaining walls shall have metal railing except where top of wall is located adjacent to a roadway shoulder in which case the concrete barrier shape shall be used. Metal railing shall conform to VDOT Standard HR-1 and shall be galvanized.
- The District Bridge Engineer has approved the use of MSE wall straps for the semi-integral abutment supported on two rows of piles adjacent to (behind) a MSE wall as shown in the RFP Conceptual plans.

## 2.4 Environmental

### 2.4.1 Environmental Document

FHWA has issued a NEPA decision for the Project. A copy of the Programmatic Categorical Exclusion (PCE) dated April 30, 2021 is included in the RFP Information Package. VDOT has also completed preliminary document re-evaluations for Plans, Specifications and Estimates (PS&E) Authorization (EQ-200) dated 10/21/2022, and a preliminary Environmental Certification/Commitments Checklist (EQ-103) dated 10/21/2022, which are included in the RFP Information Package.

Once the Design-Builder has completed the design, VDOT shall update and finalize the Document Re-evaluation for PS&E Authorization (EQ-200) and update and finalize the Environmental Certification/Commitments Checklist (EQ-103) prior to the VDOT Project Manager releasing the Project for construction. If the Project includes phased work, then final versions of these documents shall be updated and finalized by VDOT prior to construction for each phase. The VDOT Project Manager shall verify that the EQ-200 and EQ-103 forms have been updated and finalized prior to obtaining approval signatures for each title sheet submittal required for RW and Construction. The Central Office Environmental Division Director must approve any deviation from this process and will coordinate any request for deviation with the Chief of Policy.

The Design-Builder shall carry out environmental commitments during design and construction, as applicable, as identified in the PCE, the final Document Re-evaluation for PS&E Authorization, and the final Environmental Certification/Commitments Checklist forms. All commitment compliance shall be supported by appropriate documentation, to be provided by the Design-Builder to the VDOT Project Manager.

Any changes in the scope or footprint of the established basic Project concept, proposed by the Design-Builder and acceptable to VDOT, may require additional environmental technical studies and analysis to be performed by the Design-Builder at their cost. The Design-Builder shall be responsible for notifying VDOT of plan revisions, scope changes, and providing any necessary studies and other necessary information to support VDOT's completion and re-evaluation of the NEPA document. VDOT shall be responsible for the coordination of any NEPA document re-evaluations with FHWA. The Design-Builder shall then carry out any additional environmental commitments that result from such coordination at its sole expense and no additional cost and/or time delays to the Project.

VDOT expects that the results from any additional work needed to support the Design-Builder's final design shall be conveyed to the Department as quality deliverables in accordance

with professional standards and guidelines for each NEPA-related discipline, as well as the criteria described in Part 2, Section 2.4. Moreover, VDOT reserves the right to return any inadequate or substandard deliverables to the Design-Builder for revision prior to coordination.

The Design-Builder is solely responsible for any costs or schedule delays related to the permit acquisition, permit modifications, and NEPA document re-evaluations associated with Design-Builder's design changes, as well as the submission of inadequate or substandard deliverables. No time extensions shall be granted. All costs associated with complying with these requirements shall be included in the Offeror's Price Proposal.

### 2.4.2 Cultural Resources

VDOT, in consultation with the Virginia State Historic Preservation Officer (VA SHPO), has determined that there are no historic properties present or affected by the project as proposed in the RFP Conceptual Plans.

The Design-Builder shall consider historic properties to be design constraints and avoid impacting them beyond what is shown on the RFP Conceptual Plans. In addition, the Design-Builder shall notify the VDOT Project Manager in advance of any other project-related activities, including but not limited to staging, borrow/disposal, and any temporary or permanent easements, proposed to be located on or within the viewshed of historic properties. These activities, any changes to the design, alignment, right of way limits, or easements, shown on the RFP Conceptual Plans, or any additions to the Project such as stormwater management facilities, stream or wetland mitigation sites, or noise barriers, may require review by VDOT and could require additional cultural resources studies and/or coordination with the VA SHPO. The Design-Builder is responsible for conducting all cultural resources studies necessitated by the proposed changes, in accordance with the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* and the Virginia Department of Historic Resources' most current *Guidelines for Conducting Survey in Virginia*, while the VDOT is responsible for coordinating both the studies and the proposed changes with the VA SHPO. The Design-Builder shall then carry out any additional cultural resources commitments that result from such coordination at its sole expense and at no additional cost to VDOT.

### 2.4.3 Section 4(f) Resources

There is no Use of 4(f) Resources on this Project.

### 2.4.4 Water Quality Permits and Compensatory Mitigation

VDOT completed a preliminary Permit Determination, dated October 20, 2022, concluding that water quality permits are required for this Project based on the RFP Conceptual Plans. It is estimated that streams will be impacted. A copy of the preliminary Permit Determination is included in the RFP Information Package. The Offerors should note that the preliminary Permit Determination, stream assessments, and wetland delineations (if applicable) are provided for informational purposes only. The Design-Builder shall be responsible for verifying permit requirements in support of their final design prior to construction. Regulatory agencies will make

the final determination as to which state and/or federal water quality permits will be required during coordination with the Design-Builder.

Should the Design-Builder determine that water quality permits are required for the Project, the Design-Builder shall conduct the preliminary field assessment needed to obtain them including, but not limited to, wetland delineation, stream assessment, and permit impact sketches. The Design-Builder shall also comply with the required sequencing methodology for the avoidance and minimization of impacts to waters of the United States, including wetlands, and demonstrate these measures to the regulatory agencies, if requested.

The Design-Builder is responsible for obtaining all water quality permits required to construct the Project (including utility relocations by the Design-Builder). The Design-Builder shall be the Permittee. Should the Design-Builder propose design changes acceptable to VDOT, permitting requirements may also change; the Design-Builder remains responsible for obtaining any and all necessary water quality permits and permit modifications required by the regulatory Agencies. In coordinating these water quality permits or permit modifications, the Design-Builder is responsible for submitting a complete permit application including all applicable supporting documentation as appropriate based on project funding source and lead federal agency. This could include, but is not limited to, correspondence with FHWA, USFWS, and the VA SHPO. If the Design-Builder determines that wetlands and/or stream mitigation is required to secure the permit authorization, the Design-Builder shall provide the required compensatory mitigation. The Offeror shall account for all costs associated with water quality permit acquisition, as well as compensatory mitigation, in the Price Proposal.

The Design-Builder shall ensure that Project schedules accommodate any Special Provisions, Time of Year Restrictions (TOYR), and the duration of permit acquisition from the regulatory agencies. The Design-Builder shall be responsible for adhering to permit conditions and Special Provisions, as identified in the permit authorizations including but not limited to TOYR, avoidance and minimization recommendations, restoration of temporary impact areas, and countersinking culverts.

The Design-Builder shall be responsible for compliance with pre-construction, construction-related permit conditions, as well as post-construction monitoring if required by regulatory agencies. This shall include costs associated with acquiring water quality permits and additional compensatory mitigation for the Project if needed.

The Design-Builder shall provide to the VDOT Project Manager copies of all permits, documentation, and correspondence with regulatory agencies. Construction activities shall not impact regulated areas within the Project limits until all applicable water quality permits have been issued to the Design-Builder. The Design-Builder shall not proceed with work covered by the water quality permits until the VDOT Project Manager releases the work in writing. The VDOT Project Manager may release a portion or all of such work not in jurisdictional areas, but may order a suspension of the same work after its release. The Design-Builder shall not be allowed to begin work that pre-determines the work required in the jurisdictional areas until the permits are secured.

After receiving the VDOT Project Manager's release of the work, the Design-Builder shall notify the VDOT Project Manager and the regulatory permitting agencies in writing fourteen (14) days prior to beginning work in the jurisdictional areas covered by the water quality permits.

The Design-Builder shall carry out any additional permit conditions/commitments that result from change in footprint and/or scope (assuming it is approved by VDOT) at its sole expense and no additional cost to the Project; additionally, the Design-Builder shall be responsible for any schedule delays and associated costs.

At the conclusion of the Project, the Design-Builder shall notify the VDOT Project Manager and the regulatory permitting agencies in writing of the completion of the work in the jurisdictional areas covered by the water quality permits. At the completion of the Project, the Design-Builder is required to transfer any Virginia Marine Resources Commission (VMRC) permit back to VDOT.

All permitted construction activities shall be identified as hold points in the Design-Builder's Critical Path Method (CPM) Schedule.

### 2.4.5 Threatened and Endangered Species

VDOT has performed preliminary database reviews to determine the Project's potential effects on threatened and endangered (T&E) species, indicating that the Project will have no adverse effect on T&E species. The following state and federally listed T&E species were identified in the required search area: Gray Bat, Indiana Bat, Northern Long-Eared Bat, Virginia Big-Eared Bat, and Candy Darter, A copy of VDOT's preliminary T&E Clearance Form dated October 19, 2022 is included in the RFP Information Package.

VDOT conducted a bat inventory on October 20, 2021 and found no evidence of bats roosting on the bridges. The results of the bat inventory are valid for two (2) years.

If bats are observed roosting on a structure, the Design-Builder shall follow the notification requirements provided in the Special Provision Copied Note. VDOT, at its sole discretion, may permit the Design-Builder to work in other areas of the bridge that are a span away from the location where bats are observed. No additional payment will be made for delays due to any observation of bats and resultant limitation of operations imposed by the regulatory agencies.

If tree removal will be required and based upon review it has been determined the project may affect listed bats, then the Design-Builder shall follow the requirements specified in the Special Provision.

If nesting migratory birds are observed on a structure, the Design-Builder shall follow the notification requirements provided in the Special Provision Copied Note for Protection of Nesting Birds on Bridges. VDOT, at its sole discretion, may permit the Design-Builder to accomplish other work activities on the bridges that do not result in the removal of nests or nest contents. The Design-Builder shall be responsible for all delays and resultant limitation of operations imposed

by the regulatory agencies. The Design-Builder shall coordinate with the regulatory agencies and take necessary measures to avoid and minimize any impact to the Project.

The Offeror shall be advised that new and updated T&E information is continually added to agency databases. The Design-Builder shall be responsible for any subsequent coordination to obtain updated information, requirements, and clearances from environmental regulatory agencies that provide T&E species oversight. Because NOAA and USFWS can only conduct Section 7 consultation with a federal agency or its non-federal designated representative, the Design-Builder shall copy the VDOT District Environmental Manager on any submittals requesting concurrence from the resource agencies on effect determinations of federally-listed species. This additional T&E species coordination is also a standard component of the water quality permit acquisition process and may result in permit conditions for which the Design-Builder shall be responsible.

The Design-Builder is responsible for ensuring that all T&E species are correctly identified and impacts assessed, noting that more or less resources may be present than initially identified. Avoidance and minimization shall be implemented to the greatest extent possible. The Design-Builder shall provide to the VDOT Project Manager copies of all documentation and correspondence with regulatory agencies.

### 2.4.6 Hazardous Materials

VDOT has performed studies to determine the potential for hazardous materials and/or contamination within the Project area, including:

*Asbestos Inspection Report*
*Bridge 2023, Interstate 77*
*Bland County, Virginia*
*VDOT Project #0077-010-834, B644, C501, P101*
*UPC 117110*
*EC Project No. E3-557, EEE Task No. E-BR019*
*Dated February 19, 2016*

Information pertaining to this study is included in the RFP Information Package and constitutes Known Pre-existing Hazardous Materials as defined in Part 4, Article 4.

The Design-Builder shall manage solid waste, hazardous waste, and hazardous materials in accordance with all applicable federal, state, and local environmental regulations and shall implement good housekeeping, waste minimization and pollution prevention practices.

Unless a structure has been otherwise classified, the Design-Builder shall assume all coated structures are Type B and shall adhere to the Environmental and Worker Health and Safety Protection requirements in the Specifications.

### 2.4.7 Air Quality

This project is located in an area that is currently in Attainment with the National Ambient Air Quality Standards (NAAQS). The following VDEQ air pollution regulations must be adhered to during the construction of this project: 9 VAC 5-50-60 et seq., Fugitive Dust precautions.

Construction activities shall be performed in accordance with Part 5 of the RFP. The specifications require compliance with all applicable local, state, and federal air quality regulations.

### 2.4.8 Noise Mitigation

The Noise Scoping Decision for this project was that this is a Type III project and that a Noise study is not required. A copy of the Noise Form dated March 2, 2021, is included in the RFP Information Package.

The Offerors are responsible for evaluating the need to conduct a Noise Study for any changes from the RFP Conceptual Plans, in accordance with Section 2.1 of the VDOT Highway Traffic Noise Impact Analysis Guidance manual. Should a noise study be required, the Offerors shall account for the Noise Study, and the resulting Noise Walls, in their Technical and Price Proposal.

The additional noise analyses shall include a detailed Final Design Noise Analysis Report that follows the most recent VDOT Noise Abatement Guidance Manual (Version 9), dated February 15, 2022, and plans for the proposed design changes. The NADR for which modification is requested shall be submitted with this additional information.

Construction activity may cause intermittent fluctuation in noise levels. During the construction phase of the Project, all reasonable measures shall be taken to minimize noise impacts from these activities. Part 5 of the RFP outlines the construction noise limits. The Design-Builder shall be required to conform to this specification to reduce the impact of construction noise on the surrounding community.

### 2.4.9 Environmental Compliance

The Design-Builder is responsible for compliance with all applicable state and federal environmental laws, regulations, and permits. If, at any time, the Design-Builder is not in compliance with all applicable environmental laws, regulations, Executive Orders, or environmental commitments, the VDOT Project Manager has the authority to suspend work, in whole or in part, until such time as the deficiencies or non-compliant items have been corrected. Should any non-compliant item(s) be identified during construction, immediate and continuous corrective action shall be taken by the Design-Builder to bring the item(s) back into compliance. The Design-Builder shall notify the VDOT Project Manager immediately of all non-compliant item(s) and shall provide to the VDOT Project Manager within 24 hours of the initial notification, copies of all documentation and correspondence with regulatory agencies related to non-compliant item(s), required corrective actions, and final resolution. In instances of disagreement between the Design-Builder and VDOT regarding interpretation of regulatory compliance, VDOT and the Design-Builder shall seek clarification and ruling from the authoritative agency. Such rulings shall be final, barring additional clarifying or mitigating information. Initial rulings by VDOT shall

govern corrective actions until such time that the agency having jurisdiction provides a ruling. Additional conflict resolution protocols may be established in an Environmental Management Plan (EMP); however, these protocols shall not limit or otherwise modify the requirements herein.

2.4.9.1.1 The Design-Builder shall be responsible for any schedule delays and associated costs as a result of any delays and/or shutdowns associated with non-compliance as determined by VDOT or occurring in the course of the aforementioned dispute resolution process. Any monetary fines associated with violations and/or any environmental restoration activities required to resolve violations and other non-compliance issues shall be the responsibility of the Design-Builder. The Design-Builder may be entitled to relief for schedule delays and associated costs to the extent VDOT incorrectly interpreted the aforementioned regulations as identified by the agency having jurisdiction. Any such relief shall be sought in accordance with Article 9 of Part 4. This section shall not pertain to issues stemming from preliminary engineering, permitting included with proposal documents, or conceptual design; such issues shall be resolved via the Scope Validation process as outlined in Article 2 of Part 4 during the applicable Scope Validation Period.

2.4.9.1.2 The Design-Builder shall fulfill all applicable environmental commitments during design and construction, as identified in the PCE; the final Document Re-evaluation for PS&E Authorization (EQ-200); and the final Environmental Certification/Commitments Checklist (EQ-103). All commitment compliance shall be supported by appropriate documentation, to be provided by the Design-Builder to the VDOT Project Manager within contractual or otherwise agreed upon timeframes.

2.4.9.1.3 The Design-Builder shall be responsible for compliance with construction-related environmental commitments provided in the RFP information Package, contract documents, and permit conditions. The Design-Builder shall assume all obligations and costs incurred by complying with the terms and conditions of the environmental permits and certifications. Any fines and/or penalties associated with environmental regulatory violations stemming from pre-construction commitments shall be the responsibility of the Design-Builder unless properly identified and resolved during the Scope Validation process.

2.4.9.2 - Environmental Compliance Manager (ECM)

The Design-Builder (DB) shall assign oversight of environmental compliance to a competent, qualified Environmental Compliance Manager (ECM) who shall be on staff for the duration of the project. This position shall be considered as a Key Personnel and shall meet all requirements of the RFP, including but not limited to, restrictions related to changing or substituting the ECM. Qualifications of the DB ECM shall be commensurate with the environmental risks and impacts of the project but at a minimum shall have documented work experience related to environmental water quality permits and a working knowledge in Water Quality Permitting, Threatened and Endangered Species, Hazmat, Cultural Resources, Air, Noise, NEPA and other environmental disciplines relevant to the project. As needed to accommodate adequate oversight, the ECM may assign oversight work to qualified environmental support staff with demonstrated competencies to oversee the prosecution of work they are assigned. This assignment shall not relieve the ECM of the responsibilities described herein. Responsibilities of the ECM include the following:

● The ECM shall serve as the compliance manager for the Design-Builder's environmental work on the Project and shall be responsible for ensuring that the Design-Builder's construction means, methods and associated activities conform to the applicable environmental permit conditions, contract documents including the environmental commitment requirements and applicable Road and Bridge Specifications. VDOT may remove and request replacement of the ECM, at its sole discretion, if it deems the project is not managed in compliance with a project Environmental Management Plan (EMP), regulatory permits, or other contractual environmental commitments. Potential justifications for removal include, but are not limited to, egregious violations of environmental requirements, a persistent pattern of minor violation, or absenteeism. Any requested removal or replacement will be in accordance with VDOT's authority to remove personnel described herein.

● The ECM shall be available to review designs pertaining to E&S and Environmental Compliance and suggest modifications to the designs as necessary, based on field conditions and construction activities to conform to environmental requirements.

● The ECM shall have the authority to stop work.

● The ECM shall inspect the project for compliance with environmental commitments at a frequency commensurate with permit requirements, industry practice, and the overall environmental risk of the project.

● The ECM shall promptly notify VDOT Project Manager or designated point of contact of any impacts to surface waters or of any other non-compliance with environmental commitment conditions, as well as make all required regulatory notifications within the designated time frame.

● The ECM shall be present during all announced inspections by regulatory authorities, except as otherwise described herein.

● The ECM shall keep accurate and up to date permits and related plans on site for review at all times. Permits, plans, and other documents may be in digital format as permitted by permitting and outlined in a project EMP.

● Before initiating any clearing or construction activities associated with environmental commitments and/or Water Quality Permits, the ECM shall conduct an Environmental Pre-construction Meeting to help ensure that all affected parties fully understand the regulatory permit requirements and environmental commitments. The Environmental Pre-construction Meeting may be combined with an activity specific preparatory meeting.

● Where the ECM is not available to fulfill the described duties due to simultaneous work in jurisdictional areas, vacations, sick-leave, etc., the ECM duties shall be temporarily fulfilled by a qualified environmental support staff meeting the ECM qualifications with VDOT's prior approval.

## 2.5 Survey

The Design-Builder is advised that the preliminary field survey and utility data provided is not represented to be complete for purposes of design and construction of the Project. The Design-Builder's scope of work shall include performing all surveying and utility designation that is necessary to design and construct the Project in accordance with VDOT's Survey Manual.

Preliminary field survey and utility data has been obtained for this Project. The field survey was conducted using conventional surveying methods and aerial photogrammetry methods and data was collected within the tolerances defined in the VDOT Virginia Map Accuracy Standards. Preliminary field survey and utility data have been obtained, including, but not limited to the following:

1. Vertical control (Based on NAVD88 Geoid 2012A)
2. Horizontal control (Based on NAD83-2012A)
3. Field data verified and updated
4. Planimetrics
5. Property data and R/W
6. Utilities as shown on the preliminary SU file
7. Digital Terrain Model

The Virginia Code 33.2-1011 requires that Notice of Intent letter "shall be sent to the owner by mail, at the address recorded in the tax records, **not less than 15 days prior to** the first date of the proposed entry. Notice of intent to enter shall be deemed made on the date of mailing." "The notice shall include the anticipated date such entry is proposed to be made and the purpose of such entry." Advance notification of property owners is required for all data collection efforts related to the development of highway plans. Copies of the letters and address labels shall be provided to the VDOT Project Manager for forwarding to the District Survey Manager as soon as they become available for VDOT approval.

The preliminary field survey and utility data provided in the RFP Information Package contains the general depiction of existing conditions that the Design-Builder is obligated to verify and finalize through survey before completing final design of the Project. The horizontal accuracy of the preliminary survey is at the Class 1 Level at 1" = 50' scale. The vertical accuracy is Class 3 with 1-foot contours. The Design-Builder shall be responsible for obtaining any survey data, including all right-of-entry and land use permits, locating and/or designating underground utilities, digital terrain model (DTM), utility test holes and obtaining other related data necessary for the design, right of way acquisition, limited access revisions, and construction of the Project. Additionally, the Design-Builder will be responsible for any update (property owner changes, subdivisions, etc.) that may occur; updates need to be reflected on the plans in order to acquire right of way and complete the final design. Any survey changes shall be verified, certified and submitted in final documentation.

**Right of Entry notification shall be in accordance with Chapter 4 of VDOT's Survey Manual.**

The Design-Builder shall be responsible for obtaining any survey data, including all right-of-entry and land use permits, locating and/or designating underground utilities, digital terrain

model (DTM), utility test holes and obtaining other related data necessary for the design, right of way acquisition, limited access revisions, and construction of the Project. The Design-Builder will be responsible to reset or relocate any survey control damaged, destroyed or located within the footprint of the final design construction limits. The control will be established by a land surveyor registered, licensed in the Commonwealth of Virginia with LD-200 information and supporting computations submitted to the VDOT Project Manager. Additionally, the Design-Builder will be responsible for any update (property owner changes, subdivisions, etc.) that may occur; updates need to be reflected on the plans in order to acquire right of way and complete the final design.

Prior to Project completion, the Design-Builder shall provide and set final VDOT RM-1 or RM-2 right of way monuments within the Project Limits. The Design-Builder shall depict the monuments on the Right of Way Plans in accordance with VDOT's Survey Manual.

## 2.6 Geotechnical Work

HDR Engineering, Inc. has completed a preliminary geotechnical subsurface investigation for this Project. The results of the investigation are presented in the Geotechnical Data Report dated May 27, 2022 and is included in the RFP Information Package.

The data included in this RFP is being provided for Offeror's information in accordance with Section 102.04 of Division I Amendments (Part 5). The Design-Builder shall perform a design-level geotechnical investigation to validate and augment the geotechnical information included in this RFP. The geotechnical engineering investigation performed by the Design-Builder shall meet or exceed both Chapter 3 of the VDOT Material Division's Manual of Instructions (MOI); the current AASHTO LRFD *Bridge Design Specifications*, 8th Edition, 2017 and VDOT Modifications; and Section 700.05 (c) of the current 2020 VDOT Road and Bridge Specifications.

The Design-Builder shall collect appropriate data to support the design of the following: Soil and rock cuts; slope stability; foundation design; support and stability of wall structures; stormwater management facilities; minor structures, including drainage pipes for geotechnical evaluation of pavements; and, any other earth-supported or earth-retaining structures or elements of highway design and construction required for this Project. The Design-Builder will be responsible for obtaining all necessary permits and utility clearances as required by VDOT, the Commonwealth of Virginia, or any other jurisdictional body or owner prior to accessing public or private property for the purpose of conducting geotechnical field work and shall provide the necessary traffic control in accordance with the Work Area Protection Manual. The Design-Builder shall complete laboratory tests in accordance with pertinent ASTM or AASHTO standards and analyze the data to provide design and construction requirements. Soils, rock, aggregate, asphalt, concrete and other materials tests shall be performed by a laboratory accredited through the AASHTO Accreditation Program (AMRL and CCRL) for each test it conducts for the Project, unless otherwise approved by VDOT. All laboratory test certificates shall conform to the reporting requirements of the applicable test standard.

The Design-Builder shall provide VDOT with all records of subsurface explorations and describe the soils encountered and their depth limits in accordance with the requirements outlined in Chapter 3 of the VDOT Materials Division MOI. The Design-Builder shall provide to VDOT

electronic copies of all subsurface explorations in accordance with the boring log template available on the website included in Chapter 3 of the VDOT Materials Division MOI. The electronic files shall be provided by a certified professional geologist or a suitably qualified registered, licensed professional engineer in the Commonwealth of Virginia, in gINT© software. The gINT© file for the borings contained in Geotechnical Data Report dated May 27, 2022, are provided in the RFP Information Package. While no evidence of karst features were indicated in the exploration performed for GDR, limestone appears to be present; therefore, borings for the foundations shall be evaluated for potential karst features. The use of geophysical studies to supplement borings for these evaluations is encouraged.

Unless otherwise addressed by AASHTO LRFD, the Design-Builder shall incorporate reliability assessments in conjunction with standard analysis methods in accordance with Chapter 3 of the Materials MOI. An acceptable method for evaluation of reliability is given by Duncan, J.M. (April 2000) *Factors of Safety and Reliability in Geotechnical Engineering*, Journal of Geotechnical and Geoenvironmental Engineering, ASCE, Discussions and Closure August 2001. The Design-Builder may propose to identify specific, non-critical features, and alternative methods for evaluating variability of subsurface conditions, reliability and minimum factors of safety, prior to submission of its design calculations and drawings. VDOT may, in its sole discretion, accept or reject such proposed methods.

The Design-Builder shall submit to the VDOT for its review all geotechnical design and construction memoranda and/or reports that summarize pertinent subsurface investigations, tests, and geotechnical engineering evaluations and recommendations utilized in support of their design/construction documents. This submittal shall be made at least ninety (90) days in advance of the submittal of any final design/construction documents that are dependent upon the geotechnical evaluations and recommendations. Technical specifications for construction methods that are not adequately addressed in the Standard Specifications shall be provided by the Design-Builder as part of the final design/construction documentation. Prior to submittal of any final design/construction documentation, the Design-Builder shall review the final design/construction documents to assure that it appropriately incorporated the geotechnical components and shall submit evidence of this review to accompany the final design/construction documentation. The Design-Builder shall reference the drawings that incorporate the pertinent results. The Design-Builder's Quality Assurance and Quality Control (QA/QC) Plan shall document how each specific geotechnical recommendation or requirement will be addressed in the final design/construction documentation. The results of the geotechnical investigation, laboratory results, and reliability assessments shall support design and construction efforts to meet the requirements outlined in this Section.

Depending on the time of year, local rainfall and other factors, perched water tables may be encountered during excavation. Perched water has been observed at the rock-soil interfaces and above low permeability material when overlain by loose sands and other low density materials. The Design-Builder shall consider the potential impact of karst activity on foundations, embankments, stormwater management basins, and other structures. Depending on the conditions encountered at specific locations, mitigation techniques may be required for design and construction, potentially including but not limited to surface water diversion away from such

features, grouting and/or graded backfill of features, impervious liners for basins, and/or joint sealing for utilities. Such design considerations shall be approved by VDOT prior to utilization.

### 2.6.1 Minimum Pavement Sections

Minimum pavement sections shall be utilized for Proposal preparation purposes only. The anticipated locations for new pavement, mill and overlay sections are provided on the RFP Conceptual Plans included in the RFP Information Package. The Design Builder may modify the limits of pavement construction/ modification shown in the RFP Conceptual Plans based on their design for I-77 and Rte. 606. The Design-Builder shall validate the minimum pavement sections in accordance with MEPDG or the AASHTO Guide for the Design of Pavement Structures (1993 edition), as required in Chapter 6 of the VDOT Materials Division MOI, and notify VDOT of its findings. The minimum pavement section noted herein is based on the following:

I-77 Traffic Data
Present ADT NB only (2022) = 15,281
Design Year ADT NB only: 21,461
(2047 - Based on 2025 Ad Date)
(Growth Factor = 0.017)
Design Hourly Volume NB only: 1,610
(K-Factor 0.075)
Heavy Truck Percentage: 24%
DDHV (Trucks) NB only: 194
Design CBR= 5

Route 606 Data (Both Directions)
Present ADT (2022): 1,179
Direction Factor: 0.504
Design Year ADT (2047 – based on 2025 Ad Date): 1,336
(Growth Factor = 0.005)
Design Hourly Volume (K-Factor 0.116): 155
Heavy Truck Percentage: 5%
DDHV (Trucks): 4
Functional Classification: Major Collector

If the Design-Builder's findings require a deviation from the RFP requirements, it shall notify VDOT during the Scope Validation Process consistent with Part 4 Section 2.2. Acceptable changes to the minimum pavement sections are limited to increasing the thickness of the base or subbase layers specified in the RFP. Any changes to the minimum pavement sections provided in this Part 2, Section 2.6.1 require approval by VDOT. The Design-Builder shall be responsible for the final design and construction of the pavements for this Project in accordance with the Contract Documents.

The Design-Builder shall photographically document the existing condition of all pavements from first construction sign to the end construction sign prior to the Design-Builder's submission of final construction plans for VDOT approval and provide all photos to the VDOT Project Manager. Photos shall be color digital images in .jpg format with 4 megapixels

(approximately 2400 pixels wide x 1600 pixels high) or greater resolution. The Design-Builder shall be responsible for full-depth replacement of all pavement damaged resulting from Project construction activities, regardless of the method or location of the pavement damage.

The Design-Builder shall prepare and incorporate into the plans, typical sections, profiles and cross-sections the validated pavement sections in accordance with the applicable manuals noted in Part 2, Section 2.1. This includes drainage and subdrainage requirements to ensure positive drainage both within the pavement structure and on the pavement surface. The minimum pavement sections are as follows:

**New Pavement and Milling for I-77 (Including Shoulders)**
**Surface** – Asphalt Concrete Surface Course, SM-12.5E @ 220 lbs/sy
**Intermediate** – Asphalt Concrete Intermediate Course, IM-19.0E @ 230 lbs/sy
**Base** – 10 Inches Asphalt Concrete Base Course, BM-25.0D
**Subbase –** 12 Inches Aggregate Base Material, Type I, 21-B (Daylight through the Shoulder as Needed)
**Leveling Course:** 2 Inches Type I, 21-B
**Open Graded Aggregate Material:** 12 Inches- Aggregate Material #1

**New Pavement and Milling for Rte. 606 (Including Shoulders)**

**Surface** – Asphalt Concrete Surface Course, SM-12.5E @ 220 lbs/sy
**Intermediate** – Asphalt Concrete Intermediate Course, IM-19.0A @ 230 lbs/sy
**Base** – 8 Inches Asphalt Concrete Base Course, BM-25.0A
**Subbase –** 6 Inches Aggregate Base Material, Type I, 21-B

**Mill and Overlay for I-77 and Rte. 606**

For salvage/build-up areas, no more than 8 inches of build-up will be permitted. The impacted existing pavement shall be milled 2 inches and replaced with the below pavement section. Impacted for this purpose is defined as area of impacted pavement markings:

**Surface –** Asphalt Concrete Surface Course Type SM-12.5 E @ 220 lbs/sy
**Intermediate –** Asphalt Intermediate Course Type IM-19.0E @ 115 lbs/sy per inch of thickness (variable but no more than 8 inches of Intermediate permitted)

For areas where more than 8 inches of build-up is required, the Design Builder shall reconstruct the pavement using the New Pavement and Pavement widening section noted above.

### 2.6.2 Temporary Pavement

The Design-Builder shall be responsible for any temporary pavement design including shoulder strengthening to accommodate MOT. Temporary pavements shall be designed in accordance with the AASHTO Guide for the Design of Pavement Structures (1993 edition) and the VDOT Materials Division's Manual of Instructions. All temporary pavement designs shall be submitted to VDOT for review. All temporary pavement designs for the Project shall have a minimum (8) inches of asphalt concrete and shall meet the following minimum design criteria:

- Design Life – 6 months minimum
- Initial Serviceability – 4.2 minimum
- Terminal Serviceability – 2.8 minimum
- Standard Deviation – 0.49 minimum
- CBR value for subgrade soils determined through laboratory tests

The minimum pavement sections require that proper grading be maintained to direct surface water away from paved areas and to provide for efficient runoff from surrounding areas.

Any utility excavations or excavations for storm drains within pavement areas shall be backfilled with compacted structural fill in accordance with applicable sections of the 2020 VDOT Road and Bridge Specifications and applicable Special Provisions.

VDOT guidelines specify that edgedrains/underdrains be provided for all pavements with daily traffic volumes in excess of one thousand (1,000) vehicles per day. Therefore, standard UD-4 edgedrains will be required for all pavements on this project. Modified UD-1 underdrain shall be provided in lieu of standard UD-4 edgedrain for pavement sub-drainage in areas of high ground water, springs, and cuts in excess of fifteen (15) feet; the modification consists of wrapping the aggregate with geotextile drainage fabric. Standard Combination Underdrain (CD-1) shall be provided at the lower end of cuts. Standard Combination Underdrain (CD-2) shall be provided at grade sags, bridge approaches, and at the lower end of undercut areas.

### 2.6.3 Geotechnical Requirements

#### 2.6.3.1 Settlement

The Design-Builder shall analyze methods to minimize differential settlement of the approach to the bridge for new construction and provide construction recommendations to address soil-structure interaction to accommodate the unique construction methods applied to this Project. All geotechnical work shall be completed to satisfy baseline and post-construction contract performance requirements.

Design and construct pavements, subgrades, and embankments to meet the following post-construction settlement tolerances:

- Total vertical settlement of the finished embankment surface (the side slopes and crest) less than two (2) inches over the initial 20-years, and less than one (1) inch over the initial 20-years within one hundred (100) feet of bridge abutments:

- Settlement that will not impede positive drainage of the pavement surface especially within the travel lanes nor subject the roadway to flooding in area where it is applicable.

- Settlement that does not result in damage to adjacent or underlying structures, including utilities; and

- For pavement sections of approach slabs, bridge decks, and tie-ins to the Project, grade tolerances shall be measured with a 10-foot straightedge. The variation of the surface from the testing edge of the straightedge between any two contacts with the surface shall not be more than plus (+) 0.25-inch to minus (-) 0.125 -inch at structures and (+/-) 0.25-inch at Project tie-ins.

- Humps, depressions, and irregularities exceeding the specified tolerance will be subject to correction by the Design-Builder. The Design-Builder shall notify the Quality Assurance Manager (QAM) and VDOT for any non-conformance items.

The Design-Builder shall consider settlement of design foundations (bridges, retaining walls and other structures) based upon the criteria defined in Attachment 2.3 entitled Additional Foundation Criteria.

In summary, the Additional Foundation Criteria outlined in Attachment 2.3 provides two options for managing settlement of structures; a) limit total settlement to one half (0.5) inch and subsequently limits the need for a refined analysis of the superstructure and substructure or b) allow the Design-Builder to design the structure for their estimates of elastic, consolidation and secondary settlement (total settlement) and subsequently communicate the total and differential settlement in the General Notes. In either case, a General Note shall be included in the plans to communicate the amount of settlement evaluated and accommodated by the structure. Specific General Note language and Notes to Designer are included in Attachment 2.3.

In either case defined in Attachment 2.3, the total vertical and/or differential settlements of the proposed structures shall not exceed the performance tolerance noted above for pavements and for the bridge decking. In addition, angular distortion between adjacent foundations greater than 0.008 radians in simple span and 0.004 radians in continuous span structures is not permitted unless first approved by VDOT.

### 2.6.3.2 Embankments

Embankments and certain aspects of retaining wall design are not addressed by LRFD. Embankments and cut slopes shall be designed in accordance with Section 305 of the VDOT Materials Division's MOI. The maximum slope ratio to be used for cut and/or unreinforced roadway embankment fill slopes shall not be steeper than 2H:1V. The maximum slope ratio for reinforced soil slopes shall be in accordance with VDOT's Reinforced Soil Slope Standard. The Design-Builder is responsible for verifying the stability of all slopes, including those retained by structures.

If the Design-Builder elects to use mechanically stabilized earth (MSE) walls, the fill material used in the reinforced zone shall be a crushed aggregate with properties in accordance with VDOT's Special Provisions for approved proprietary MSE walls. The Design-Builder shall provide both global and external stability analysis utilizing a computer program acceptable to VDOT and submit the results of the analysis, including boring logs, laboratory data, and any other applicable data, to VDOT geotechnical engineers for review. The wall supplier shall provide to

the Design-Builder, for submittal to VDOT, an internal stability analysis that validates the design of the wall. Retaining walls shall be designed to control settlements within tolerances identified by VDOT Guidelines for Preparation of MSE Wall Plans.

Material and Construction requirements shall follow the VDOT Manual of the Structure and Bridge Division – Chapter 18 "Earth Retaining Walls" and applicable special provisions listed in Part 2, Section 2.1.1(c). Where undercutting and material replacement is required to reduce settlement or improve bearing capacity/global stability, areas requiring repair shall be clearly identified on the plans with notes provided to aid plan review, construction, and inspection.

### 2.6.4 Unsuitable Materials

Unsuitable Material is defined as material used as embankment fill, and in cut areas to a depth of at least three (3) feet below subgrade directly beneath pavements and at least two (2) feet beneath the bedding of minor structures and laterally at least two (2) feet beyond the outside edge of the pavement shoulders and bedding limits of the minor structures that meets one or more of the following criteria: classifies as CH, MH, OH and OL in accordance with the Unified Soil Classification System (USCS); contains more than five (5) percent by weight organic matter; exhibits a swell greater than five (5) percent as determined from the California Bearing Ratio (CBR) test using VTM-8; exhibits strength, consolidation, durability of rock or any other characteristics that are deemed unsuitable by the Design-Builders' geotechnical engineer or as denoted in the Contract Documents for use in the Work. All materials within the uppermost three (3) feet of a pavement subgrade that exhibits a CBR value less than five (5) shall be considered unsuitable and replaced. The anticipated locations and methods of treatment for unsuitable materials identified by the Design-Builder's geotechnical engineer shall be shown on the design plans and cross sections. Saturated or very dry and/or loose or very soft coarse- and fine-grained soils that exhibit excessive pumping, weaving or rutting under the weight of construction equipment are also considered unsuitable unless they can be moisture conditioned through either mechanical or chemical means to an acceptable moisture content that allows adequate compaction to meet project specifications, and classification testing indicates they are not otherwise unsuitable. Topsoil, peat, coal and carbonaceous shale shall also be considered unsuitable material. All unsuitable material shall be disposed of and/or treated as discussed in Section 106.04 of the 2020 VDOT Road and Bridge Specifications at no additional cost to VDOT. Topsoil or other organic soils are also considered unsuitable for use in embankment fill other than as a cover for slopes for the purpose of establishing vegetative cover. When used as cover for slopes, the thickness of topsoil shall not exceed twelve (12) inches.

### 2.6.5 Control of Rock Blasting

#### 2.6.5.1 Blasting Control

Blasting may be required for construction of the proposed roadway improvements. All controlled blasting shall be performed in accordance with the Special Provision for Controlled Blasting for Design-Build Projects included in the RFP Information Package.

If blasting is determined to be required, blasting operations shall only be conducted in the daylight hours, during non-peak travel times (as determined by the Department), on Monday through Friday. Blasting operations will not be allowed at nights or on weekends. The Design Builder shall submit a blasting plan, which will include proposed work hours and temporary traffic control plan to the Department for review and approval prior to any blasting operation. The Department will consider additional allowable work hours for 15 minutes total closures, only to support blasting operations, beyond the hours listed in Section 2.10.3 of this document. The Design Builder shall provide advanced notification to the public via PCMS for any approved blasting operation, at least 48 hours in advance of the scheduled start.

### 2.6.5.2 Coordination and Review by Design-Builder's Geotechnical Engineer

The Design-Builder' Geotechnical Engineer of record shall identify the elements of the Project in which the Geotechnical Engineer or their qualified designated representative is required to monitor/inspect during construction to ensure that the completed Project will function in accordance with the design intent over its expected lifetime. This shall include, but not limited to foundation subgrades, installation and load testing of deep foundations, embankment and pavement subgrades, instrumentation and monitoring of settlement, assessment and treatment for potential weak or unsuitable soils, rock excavation and rock slopes, treatment of acid-producing materials, and retaining structures that include tiebacks and anchors. These items shall be included as part of the Design-Builder's inspection plan outlined in the QA/QC Plan.

The Design-Builder's Geotechnical Engineer or their designated representative shall be on-site to monitor/inspect the elements identified by Design-Builder's Engineer of record in the QA/QC Plan as noted above. The Design-Builder's Geotechnical Engineer shall certify whether the Work was subjected to the necessary testing and inspection requirements, whether its representatives were qualified by proper education and certification to conduct the referenced activities, shall note any non-compliant work, and shall certify whether the Work is deemed acceptable or unacceptable in accordance with approved plans. The QAM's summary reports to the Department shall include the Design-Builder's geotechnical engineer's certification of completed work.

### 2.6.5.3 Acid-Producing Materials

Based on the Geotechnical Data Report (GDR) for the Project, acid-producing materials (APM) consisting of pyritic rock and overlying weathered residuum from that rock, are expected to be encountered in cut sections on the project. APM contains sufficient pyrite to produce acidic drainage when exposed to atmospheric conditions and weathering processes. Where exposed in cuts or placed in fills, these materials will require special consideration during both the design and construction phases of the project. The Design-Builder shall properly investigate, identify and assess areas with potential APM (eg. black fissile shale) based on geological formations. The Design-Builder will be responsible for any special design, handling, drainage, disposal, treatment, avoidance and/or mitigation considerations associated with the APM. Mitigation measures may include, but are not limited to, on-site neutralization and treatment of APM and potential acidic runoff, or the removal of APM from the project site and proper disposal in accordance with applicable environmental regulations. If the Design-Builder intends to use APM material on the

project, then their on-site neutralization and treatment plan for that material must be approved by VDOT prior to the placement of this material.

### 2.6.6 Pipe Installation Methods

Culverts or utility pipes shall be installed by either conventional methods in accordance with Section 302.03 of the current 2020 VDOT Road and Bridge Specifications, or Jack and Bore and/or by Micro-tunneling in accordance with the applicable Special Provisions contained in the RFP Information Package. Trenchless technology other than these methods of installation is not permitted unless otherwise approved by VDOT. The existing embankment appears to contain large cobbles and/or boulders. The Design-Builder's engineer shall choose which of the methods of installation is best suited for the ground and site conditions where the work is to be performed and that will meet the design requirements of the proposed culverts or utility pipes. The Design-Builder's engineer shall be responsible to establish both the vertical and horizontal tolerances in support of the design. Such tolerances shall be noted on the Construction Plans. The design tolerance may be more stringent than what is called for in the both the Jack and Bore and Micro-Tunneling Special Provisions; however, under no circumstances shall the design tolerances used in design of either culverts or utility pipes exceed those specified in the current 2020 VDOT Road and Bridge Specifications and the applicable Special Provisions. Performance requirements and tolerances stipulated in the Special Provisions shall also apply to conventional tunneling methods.

Open cut installation for culverts and utility pipes under I-77 mainline, shoulders or ramps shall be performed within the Maintenance of Traffic (MOT) requirements for the Project without interruption of traffic. If trenchless technology is used to complete roadway crossings, surface settlement monitoring must be performed to verify that there is no adverse impact on the stability and performance of the embankment and pavement structure above the pipe alignments in accordance with Section 302.03 of the current 2020 VDOT Road and Bridge Specifications and the Special Provisions for Jack and Bore and/or Micro-Tunneling, as applicable.

## 2.7 Hydraulics

The Design-Builder shall provide and/or perform all investigations, evaluations, analysis, coordination, documentation, and design required to meet all hydrologic and hydraulic, drainage, stormwater management, erosion and sedimentation control, stormwater pollution prevention, and Virginia Storm Water Management Program permitting requirements of the standards and reference documents listed in Part 2, Section 2.1.

### 2.7.1 Hydrologic and Hydraulic Analysis (H&HA)

An H&HA, including scour analysis shall be completed for bridges over waterways and/or major culvert crossings that have a total 100-year design discharge greater than 500 cfs. The Design-Builder shall deliver to VDOT a final H&HA, including scour analysis for proposed major drainage structures. These analyses shall be submitted to VDOT for review and approval prior to the commencement of construction. The H&HA shall include an established level of construction tolerance to allow for the hydraulic performance established in the H&HA to be maintained. The approval of the H&HA represents a hold point in the Design-Builder's CPM Schedule. The ultimate proposed conveyance system (inclusive but not limited to culverts, stream realignment,

and outfall conveyance channels through the project area) shall be designed by the Design-Builder to meet all applicable hydraulic requirements, including current Federal Emergency Management Administration (FEMA), Federal Highway Administration (FHWA), VDOT guidelines as described in VDOT's Drainage Manual, (including current Errata Sheet), Hydraulic Design Advisories and applicable I&IM-LDs, and any applicable local zoning floodplain restrictions.

Natural stream design, bank hardening, and revetments will be considered as part of the hydraulic design to minimize downstream impacts in accordance with state and federal requirements applicable to this Project. Natural stream design, bank hardening and revetments shall be designed in accordance with acceptable FHWA Publications. Acceptable FHWA publications include, but are not limited to, HDS-6, HDS-7, HEC-11, HEC-14, HEC-20, and HEC-23.

The hydrologic and hydraulic analysis shall be documented by the completed VDOT LD-293 forms and as outlined in Chapters 3 and 12 of VDOT's Drainage Manual. The Design-Builder shall provide VDOT two (2) paper and two (2) electronic copies (Adobe PDF format) of the final H&HA, HEC-RAS (or other VDOT approved analysis software for this Project) Files and LD-293. The final H&HA submittal is to include the completed VDOT form LD-293.

Upon completion of the installation of any major drainage structure, the Design-Builder shall prepare a final As-Built survey of the major drainage structure and related upstream and downstream appurtenances and provide such survey to the Design-Builder's hydraulic designer/engineer. The As-Built survey shall include the horizontal location and vertical elevations of the constructed major drainage structure in sufficient detail to confirm pre-construction hydraulic performance. A post construction As-Built Hydrologic and Hydraulic Analysis and report shall be developed based on the As-Built survey and submitted to VDOT for review and acceptance. The post construction H&HA shall demonstrate that the anticipated post construction hydraulic performance of the major drainage structure matches or betters that of the pre-construction H&HA. If the post construction analysis shows an impact greater than the pre-construction H&HA and/or exceeds the construction tolerances established with the pre-construction H&HA, then the Design-Builder shall be responsible for mitigating the adverse impacts of the post construction condition at no additional cost to VDOT.

### 2.7.2 Drainage

The drainage work shall include the design and construction of culverts, open channels, storm sewer systems, underdrains, bridge deck drainage assemblies and structures, downstream channel and flood protection measures, stormwater management facilities, and erosion and sediment control measures in compliance with the standards and reference documents listed in Part 2, Section 2.1 and the VDOT Erosion and Sediment Control and Stormwater Management Programs. All pipe culverts and storm sewer pipe shall be reinforced concrete pipe (RCP) and all joints shall be determined in accordance with IIM-LD-254 and shown in the drainage descriptions. The Design-Builder shall provide VDOT two (2) paper and two (2) electronic copies in compact disc (CD) of a final drainage report incorporating all drainage calculations including pre and post development discharges, capacities, and supporting data such as drainage areas (with maps),

ground cover calculations, etc. in accordance with the documentation requirements as outlined in VDOT's Drainage Manual.

During construction, the maximum spread on the bridge shall be limited to the shoulder width plus 3 feet, using an intensity based on the 10-year design storm. The MOT signs for the bridge shall include signs indicating "Slippery When Wet". After construction, the maximum spread on the bridge shall be in accordance with Chapter 22 of the VDOT Manual of the Structure & Bridge Division.

For the purposes of developing its Price Proposal, the Offeror shall assume that the existing roadway culverts within the Project limits, as defined in Part 2, Section 1.1 and which are a functional element of the proposed drainage design, are structurally deficient and are to be plugged and abandoned in accordance with VDOT Standard PP-1, removed, or replaced with adequate structures designed and constructed in support of the Design-Builder's final drainage design. Offerors should note that VDOT has not assessed the structural condition of the existing culverts within the Project limits. If after award the Design-Builder investigates the structural condition of the affected existing culverts, and as a result proposes use (or repair) of some or all, then it shall be done only with VDOT's approval. The Design-Builder shall credit VDOT, the differential in cost for utilizing the existing or rehabilitated culverts in lieu of removing and replacing the culverts.

The Design-Builder shall assess the structural condition and serviceability of the structure by performing a visual/video inspection of the existing culverts utilizing the assessment criteria for Post Installation Inspections presented in VDOT Road and Bridge Specification 302.03(d). The Design-Builder shall provide VDOT with an inspection report documenting the assessment following the methodology as prescribed in the Road and Bridge Specification 302.03(d). The Design-Builder shall provide VDOT with an inspection report documenting their assessment following the methodology as prescribed in the supplemental specification. The report shall include a certification from the Design-Builder's structural engineer attesting to the structural adequacy of the structures and specific recommendations relative to improvements to the structural condition and serviceability of the structures. The Design-Builder shall provide the report to VDOT for review and approval prior to proceeding to final design. With VDOT's approval, pipe culverts deemed repairable shall be rehabilitated in accordance with VDOT's guidelines including, but not limited to those methods outlined in Chapter 8, Section 8.3.6.7 of VDOT's Drainage Manual and Special Provisions for Pipe Rehabilitation and Pipe Replacement.

Pipes to be rehabilitated using methods that reduce the pipe cross sectional flow area by 10% or more will not be allowed without the written approval of the VDOT District Hydraulic Engineer. Circular pipes 24-inches or less in diameter, and elliptical pipes 30-inches by 19-inches or smaller, are not eligible for a rehabilitation method that reduces the cross-sectional flow area unless approved in writing by the VDOT District Hydraulic Engineer.

### 2.7.3 Stormwater Pollution Prevention Plan (SWPPP)

A SWPPP, including, but not limited to, an Erosion and Sediment Control (ESC) Plan and Narrative, a Pollution Prevention (P2) Plan, and a post construction Stormwater Management

(SWM) Plan shall be prepared and implemented by the Design-Builder in compliance with applicable requirements of the standards and reference documents listed in Part 2, Section 2.1 including the Virginia Erosion and Sediment Control Law and Regulations and the Virginia Stormwater Management Act (VSMA) and the Virginia Stormwater Management Program (VSMP) Regulation.

It shall be the responsibility of the Design-Builder to have a qualified person within their team structure, other than the ESC and post construction SWM Plan designer, who is authorized and/or certified by the Virginia Department of Environmental Quality (VDEQ) to perform plan reviews, independently review and certify that the ESC Plans and Narrative and post construction SWM Plan for the Project are in accordance with VDOT's Approved ESC and SWM Standards and Specifications. Before implementing any ESC or post construction SWM measures not included in VDOT's approved ESC and SWM Standards and Specifications, a variance or exception respectively must be requested through the VDOT District Hydraulic Engineer in accordance with VDOT's Drainage Manual, IIM-LD-195, and IIM-LD-251.

The Design-Builder shall complete and submit the ESC and SWM Plan Certification form (LD-445C) to the VDOT Project Manager. The Design-Builder shall provide VDOT two (2) paper and two (2) electronic copies each on CD of the final ESC Plan and Narrative, P2 Plan and post construction SWM Plan incorporating all calculations, analysis, documentation and evaluations required. The ESC Narrative shall specifically include calculations (with supporting data) documenting that the design meets the water quantity requirements for downstream channel flood protection utilizing the Part IIB technical requirements in the ESC Law and Regulations, and the VSMA and VSMP Regulation, as appropriate, for each location where stormwater is discharged from the Project site.

The Project requires coverage under the General Virginia Pollutant Discharge Elimination System (VPDES) Permit for discharge of stormwater from Construction Activities (VPDES Construction Permit). The Design-Builder is responsible for providing to VDOT the necessary information for VDOT to secure permit coverage for the Project. The permit fee will be paid by VDOT and it shall not be included in the Offeror's Price Proposal. The Design-Builder shall complete the applicable sections of the VPDES Construction Permit Registration form (LD-445), the VPDES Construction Permit Contact Information (LD-445A) along with the completed ESC and SWM Plan Certification form (LD-445C) and submit them to the VDOT Project Manager. The VDOT Project Manager will review the submitted information and, if complete and acceptable, process a request for coverage under the VPDES Construction Permit in accordance with VDOT's guidelines as outlined in IIM-LD-242. If any information submitted by the Design-Builder is found to be incomplete and/or unacceptable, the assembly will be returned to the Design-Builder for corrective action and resubmission.

For a project that is to be constructed in its entirety (not in phases), the application for permit coverage shall include the total proposed Land Disturbance Area and the total Land Development Area, including any off-site facilities in the VDOT right of way, for the overall project. The Design-Builder shall submit a SWPPP (including a complete ESC Plan, SWM Plan, and P2 Plan) for the entire project, for review and approval with the initial application for permit coverage.

Where a project will be constructed in phases, the application for permit coverage shall include the total proposed Land Disturbance Area and the total Land Development Area, including any off-site facilities in the VDOT right of way, for the entire project. The Design-Builder shall submit a SWPPP (including an ESC Plan, a SWM Plan, and P2 Plan) subsequently for each phase that includes the scope and extent of land disturbance proposed for that phase. The SWPPP for the initial phase shall be submitted with the application for permit coverage. It is expected that the individual phase submittals will be self-sustaining and not incur a deficit in post construction SWM design requirements requiring mitigation on successive phases. Subsequent work phase submittals shall include the required modifications to the Land Disturbance Area based upon the proposed scope and extent of land disturbing activities for that phase. However, these modifications, in total, shall not exceed the submitted total Land Development Area for the entire project.

The Design-Builder shall not proceed with work to be covered by the permit until permit coverage is secured and the VDOT Project Manager releases the work in writing. Any request for an exception from the technical criteria of the VSMP regulation shall be coordinated and approved prior to receiving permit coverage. It is noted that permit coverage, and subsequent release of work, can take up to ninety (90) days from the time that the Design-Builder submits a request for coverage that includes all required information. This represents a hold point in the Design-Builder's CPM Schedule. The Design-Builder shall provide a completed SWPPP Certification form (LD-455E) before commencement of any land disturbing activity and shall complete and include the SWPPP General Information Sheets in the plan assembly in accordance with VDOT's Drainage Manual. The SWPPP Certification form (LD-455E) and SWPPP General Information Sheets shall be updated with each work segment submittal as necessary.

The Design-Builder shall be responsible for compliance with construction-related permit conditions and shall assume all obligations and costs incurred by complying with the terms and conditions of the permit. Any fines associated with permit or regulatory violations shall be the responsibility of the Design-Builder. Upon completion of the entire regulated land disturbing activity (including final stabilization of all disturbed areas), the Design-Builder shall provide updated/revised Permanent Best Management Practice (BMP) information in Section VI of the SWPPP General Information Sheets for each post construction BMP placed into service on the Project, complete the VPDES Construction Permit Termination Notice form (LD-445D) and submit both documents (without signature) to the VDOT Project Manager for processing. The Design-Builder shall also have on-site during any land disturbing operations an individual or individuals holding a VDEQ Inspector Certification, a VDEQ Responsible Land Disturber (RLD) Certification and a VDOT Erosion and Sediment Control Contractor Certification (ESCCC) to ensure compliance with all VDEQ and VDOT erosion and sediment control plan implementation requirements. It shall be the responsibility of the Design-Builder's certified ESCCC representative and the Design-Builder's VDEQ certified ESC Inspector to monitor Project compliance with the approved SWPPP and the construction general permit. The Design-Builder's VDEQ certified ESC Inspector must represent the Quality Assurance firm for the Project. The inspections carried out by the Design-Builder's certified ESCCC representative and the Design-Builder's VDEQ certified ESC Inspector shall be in accordance with the *Minimum Requirements for Quality Assurance and Quality Control on Design-Build Projects and Public–Private Transportation Act Projects* manual and Part 5 Section 107.16(e) as amended in Exhibit 1 to Part 3. The inspections shall be

documented and certified by both the Design-Builder's ESCCC representative and the Design-Builder's VDEQ certified ESC Inspector on the Construction Runoff Control Inspection Form (C-107 Part I).

Additional VPDES Requirements

- During the development of the VPDES submittal, coordination and concurrence from VDOT will be required prior to submittal.
- Clearing and grubbing is considered land disturbance. The Design-Builder shall comply with the Department of Agriculture Fire Ant Quarantine requirements.
- BMP facility water table elevations shall be confirmed by the Design-Builder and shown on the plans submitted along with the VPDES permit application.
- The Design-Builder shall obtain permit coverage for all support facilities for the Project per the requirements of the latest version of IIM-LD-242, Section 4.0.

Additional Submittal Requirements

- Work packages for activities defined as routine maintenance in I&IM-195, do not require VPDES permit coverage.
- ESC Plans shall be submitted for VDOT review and approval with the submittal for each phase of Maintenance of Traffic (MOT) shown. Prior to initiating the next phase of MOT, transition of ESC measures shall be submitted to VDOT for review and approval. In addition, if the transition measures are deemed not functioning as intended, these measures shall be corrected by the Design-Builder.

For the VPDES Permit Package, a complete ESC plan is defined as:

- 100% Phase I ESC Plan
- FI Level Phase II ESC Plan (per current LD-436 checklist)
- Supporting computations and materials per 9VAC25-870-55.B.1-9 and VDOT Drainage Manual, which have been reviewed and approved by the VDOT District Hydraulic Engineer.

For the VPDES Permit Package, a substantially complete SWM plan is defined as:

- FI Level designed stormwater management plan (per current LD-436 checklist)
- Supporting computations and materials per 9VAC25-870-55.B.1-9 and VDOT Drainage Manual, which have been reviewed and approved by the VDOT District Hydraulic Engineer.
- A complete P2 plan as defined by the VSMP regulations and the current VDM.

### 2.7.4 Post-Construction Stormwater Management Facilities

The Design-Builder shall be responsible for the design and construction of stormwater management facilities as required for the Project in accordance with IIM-LD-195, and the other standards and reference documents listed in Part 2, Section 2.1 including the Virginia Stormwater

Management Program Act and the Virginia Stormwater Management Program (VSMP) Regulation and shall comply with the minimum geotechnical requirements contained therein.

The Design-Builder is to ensure proper ingress and egress to any stormwater management facility and that any specific proprietary facilities have proper maintenance details included in the Record (As-Built) Plans. When a stormwater management basin is located outside limited access fencing, maintenance access should be provided from a separate public road where economically feasible. When maintenance access can only be provided from a limited access roadway, the right of way line shall encompass the entire stormwater management facility. The Design-Builder shall provide a lockable gate, a cable barricade in accordance with the details provided in VDOT Standard CR-1 for all stormwater management facilities that require an entrance for maintenance access.

The Design-Builder shall provide As-Built drawings of all post-construction storm water management facilities located on the Project. The As-Built drawings shall show the actual finished ground contours, outlet structure dimensions and elevations, entrance grading and all applicable details originally shown in the design plans as they exist at the completion of the Project. These drawings shall be signed and sealed by a registered, licensed Professional Engineer or Land Surveyor in the Commonwealth of Virginia. A minimum of two (2) benchmarks shall be provided for each BMP in the form of a Commonwealth of Virginia Survey Control Mark (3.25" aluminum disc mounted on top of a #5 bar set in concrete).

The Design-Builder may elect to purchase nutrient credits in accordance with IIM-LD-251 to satisfy the post-construction water quality requirements for the Project. It is the responsibility of the Offeror to investigate the feasibility and availability of nutrient credits and as such their purchase shall be at their risk. All costs associated with the purchase of the nutrient credits shall be included in the Offeror's Price Proposal. The use of such nutrient credits shall be identified in the Design-Builder's SWPPP including documentation of the evaluation process as described in IM-LD-251. Where the Design-Builder elects to purchase nutrient credits, the Design-Builder shall complete Attachment 2.7.4, the Nutrient Credit Assignment Agreement and shall submit the agreement to VDOT for execution. The agreement is to be used for the transfer of the ownership of nutrient credits from the purchaser to VDOT. The agreement is to be completed with the appropriate project specific information and a copy of the bill of sale between the Nutrient Credit Bank and the purchaser is to be attached as Exhibit A. A copy of the executed agreement is to be included with the BMP information submitted with the VDPES Construction Permit Termination form LD-445D.

### 2.7.5 Other Drainage Requirements

All drainage facilities (existing and newly constructed) located within the Project limits that are disturbed or extended as a part of the Project and are functional elements of the final design shall be rendered in a serviceable condition, free from debris and physical obstructions. Accumulated debris resulting from Project construction activities shall be removed by the Design-Builder, as such maintaining the original line and grade, hydraulic capacity or construction of the facility prior to the final acceptance of the Project. All permanent culverts shall be concrete that is utilized within the limited access prism or receiving water from the interstate

An assessment of the serviceable condition (cleanness) of the existing drainage structures located within the Project limits should be conducted prior to the commencement of any land disturbing activities by the Design-Builder and provided to the VDOT Project Manager. The Design-Builder shall not be responsible for cleaning out existing debris accumulations in drainage facilities. Preexisting debris will be addressed by VDOT.

The Design-Builder shall remove and replace existing wingwall on the box culvert as shown on Sheet 4 approximate station 1254+50 of the RFP Conceptual Plans.

Storm Sewer Inlets, Storm Sewer Piping, and Culverts

Additional requirements for storm sewer inlets, storm sewer pipes, and culverts, including, but not limited to:

- Storm Sewers and Culverts which cross one or more lanes of the Interstate or ramps shall have a minimum diameter of 24 inches.
- Storm Sewers and Culverts not crossing one or more lanes of the interstate, or ramps, shall have a minimum diameter of 15 inches.
- All proposed pipe rehabilitation plans, specifications, and work packages shall be submitted with the Right of Way submittal
- Rehabilitated pipes that have an existing HW/D less than or equal to 1.5 shall not have a HW/D of more than 1.5 in the rehabilitated condition for the design storm event.
- Existing pipes with a HW/D greater than 1.5 shall not experience an increased headwater elevation in the rehabilitated condition.
- If a rehabilitated pipe increases the headwater, the Design-Builder shall submit a report that includes a detailed map and narrative showing the impacts to the property. If the headwater travels outside the ROW, the Design-Builder shall provide an approval letter from each affected property owner with the Right of Way submittal.
- For proposed drop inlets under guardrail, the following shall apply:
    - If St'd DI-2B Drop Inlets are proposed, a Type A Nose is required; Concrete gutter and grate elevation at curb line shall be one inch below normal shoulder elevation; Structure shall be cast-in-place only. The design shall adhere to VDOT Drainage Manual 9.4.5.1.2. Utilize GR-10 to eliminate any conflicts between the guardrail posts and the inlet.

Additional Submittal Requirements

- Every location where a ditch or pipe discharges flow from the Right-of-Way shall be checked for adequacy. For pipes, or pipe systems, which continue beyond the right-of-way, the pipe and pipe system must be checked for adequacy until the pipe ends. And the ditch or natural channel, to which the pipe or pipe system eventually discharges, shall be photographically documented, and checked for adequacy. All existing pipes and channels that are to be retained and utilized to drain the project's limits of disturbance must be

analyzed and verified as adequate regardless of whether or not the Design Builder will be changing the amount of flow.

- All existing pipes and channels that are to be retained must be analyzed for adequacy regardless of whether or not the Design Builder will be changing the amount of flow.
- Check dams which are permanent stormwater management features shall be constructed out of earth and use a 10:1 slope on sides which face traffic. For example, the check dams of a grass swale shall be constructed out of earth.
- Level spreaders shall not be used unless authorized in writing by the District Hydraulic Engineer.
- Rock check dams are not to be used within stormwater management BMPs as permanent structures unless authorized in writing by the District Hydraulic Engineer. Concrete or gabions are acceptable.
- DI-2 inlets require both IP-A and IP-B inlet protection.
- All proposed inlets or grates shall not encroach into the travel lane.
- For interstate culverts and storm sewer outlets, outlet protection is required if the design storm velocity is greater than 2.3 feet per second.
- The Design-Builder's drainage design should consider VDOT maintenance access and use design elements that limit future maintenance requirements for the Department and comply with the VDOT Drainage Manual.

## 2.8 Landscaping

Topsoil and seeding for soil stabilization and E&S control for the Project shall be performed in accordance with Sections 602 and 603 of the VDOT Road and Bridge Specifications. The roadside development sheet should not include tall fescue. It shall include native and low-growing grasses and groundcovers both for erosion and sediment control and permanent seeding.

- ~~The Design-Builder shall provide a landscape plan at locations for laydown areas, storage yards, and borrow pits within the VDOT right-of-way that will not become stormwater management BMPs in order to convert these areas to forest. The landscape plan shall at a minimum:~~
    - ~~Show the removal of all coarse aggregates.~~
    - ~~Conform to DEQ Specification No. 4, Soil Compost Amendment, for soil restoration, and Appendix 4-A, Section 4-A.1, for site reforestation.~~
    - ~~Include application of a minimum of 4 inches of topsoil class B.~~
    - ~~Provide a mixture of native hardwood trees planted per the requirements for reforestation in Section 2.8.~~
    - ~~Include appropriate erosion and siltation control measures.~~
    - ~~Provide signs indicating "Do Not Mow".~~

## 2.9 Traffic Control Devices

The Project shall include all Traffic Control Devices (TCD), including temporary and permanent installation of the following: traffic signals, signage, guardrail, pavement markings/markers and delineation. All TCD designed and installed under the Project shall be in accordance with standards and references in Part 2, Section 2.1. The Signing and Pavement

Marking Plans, Transportation Management Plan (TMP), including Temporary Traffic Control/ Public Information and Traffic Operations Plans are required from the Design-Builder for final approval by VDOT and shall be included as a planned work package. The Design-Builder shall comply with the Special Provision for Personnel Requirements for Work Zone Traffic Control and the Special Provision for Work Zone Traffic Control Management, Design-Build Projects.

All existing TCD impacted by the Project shall be modified, upgraded, or replaced by the Design-Builder to meet current VDOT standards.

### 2.9.1 Signs

The Design-Builder shall be responsible for replacement of existing signs and sign structures and furnishing and installing all required new temporary and permanent signs and structures. The final lines of sight and sight distances must be considered in the placement of all Project signage.

An existing sign inventory shall be completed prior to site demolition in accordance with the VDOT Traffic Engineering Design Manual. This existing information shall be submitted at the same time as the first plan submittal for proposed signing.

All sign structures and non-salvageable signs removed during the construction of the Project shall be disposed of by the Design-Builder. Salvageable aluminum sign panels (as determined by VDOT) removed during construction shall be delivered to Bristol District lot (2111 Bonham Rd, Bristol, VA 24201). All sign structures and non-salvageable signs removed during construction should be disposed of by the Design-Builder. Temporary relocation of signs may be necessary as part of this Project, and it is the responsibility of the Design-Builder to perform all the required sign relocations.

All proposed overhead signs shall be illuminated. The sign lighting shall be designed and constructed in accordance with VDOT Traffic Engineering Design Manual, Section V – Roadway Lighting, Chapter 4, Section 4.5.1, 2016 VDOT Road and Bridge Standards, 2020 VDOT Road and Bridge Specifications, Section 705, and the MUTCD. All conductor/communication cables shall be in conduit and junction boxes; no direct burial cable allowed. Power cables and communication cables shall be in separate conduit systems.

#### 2.9.1.1 Limits of Project Signing

~~The Design-Builder shall replace all existing ground mounted and overhead mounted signage and install new signing within the Project . Project limits for this purpose shall be area of actual construction. Any signing on adjacent roadways beyond the Cut/Fill limits that require relocation, replacement, or modification due to the proposed design shall be the responsibility of the Design-Builder.~~ The existing ground mounted signs do not require replacement unless located within Cut/Fill limits. Any signing beyond the Cut/Fill limits that require relocation, replacement, or modification due to the proposed design shall be the responsibility of the Design-Builder.

### 2.9.1.2 Signing Plan Requirements

The signing plans shall be prepared at a one (1) inch = fifty (50) foot scale when plotted full size at thirty-five (35) inches by twenty-three (23) inches. The signing plans shall show the proposed sign message, MUTCD or Virginia Supplement sign designation (if applicable), size and location of all signs. The structure type used for mounting sign shall be noted on the signing plans. These signing plans shall show the location and messages of all existing signs. All existing sign removals and relocations shall be shown on the signing plans. The signing plans also shall include the location and type of delineation devices (including pavement markings. pavement messages/arrows, raised and recessed pavement markers, post- and barrier-mounted delineators).

### 2.9.1.3 Design of Sign Panels and Locations

Proposed and replaced sign panels shall be in accordance with the 2020 VDOT Road and Bridge Specifications and other references in Part 2, Section 2.1. Overhead sign structures shall be located, designed, fabricated, and constructed in accordance with applicable standards and specifications. The Design-Builder shall coordinate all sign locations with all proposed and existing signing, landscaping, fencing, signals, utility, drainage, and all other roadside features to assure proper clearances and adequate sight distances. Sign sizes shall adhere to the latest edition of the FHWA Standard Highways Signs Book, the current edition of the MUTCD, the 2011 Virginia Supplement to the 2009 MUTCD, and all applicable Traffic Engineering Division Numbered memoranda. All Advance Guide Signs and Supplemental Guide Signs shall be mounted on overhead sign structures based on the Overhead Sign Structure Determination process included in the latest version of the VDOT Traffic Design Manual. No guide signs shall be mounted on the bridge.

The Design-Builder shall use Standard VDOT sign structures for new and relocated VDOT owned signs. Ground-mounted VDOT sign structures on I-77shall use Standard SSP-VIA or SSP-VA structures, unless otherwise approved by VDOT. For all non-standard signs, the Design-Builder shall use GUIDSIGN software to design the sign panels. The Design-Builder shall utilize the current edition of the MUTCD, 2011 Virginia Supplement to the 2009 MUTCD, the FHWA's Standard Highway Signs including Pavement Markings and Standard Alphabets to design all non-standard signs that do not have a MUTCD or VDOT standard sign designation. The Clearview font shall not be used. Overhead signage shall be illuminated in accordance with VDOT's IIM-TE-380 and shall use a luminaire retrieval system in accordance with the 2016 VDOT Road and Bridge Standards. Use of a LED illumination system is required and shall meet VDOT's approved Special Provision for LED Overhead Sign Luminaires.

The Design-Builder shall coordinate the permanent location of sign structures and all proposed, relocated, or modified with Integrated Directional Signing Program (IDSP) signs such as Supplemental Guide Signs (SGS), Specific Travel Services (Logo) Signs, General Motorist Services Signs (GMSS), Tourist Oriented Directional Signs (TODS), and all other signs approved and maintained as part of the IDSP. All impacts to IDSP signs shall be reviewed and approved by the IDSP Manager before relocation, fabrication, and installation. Whenever possible all proposed, relocated, or modified IDSP signs shall not be installed in sign assemblies with other non-IDSP signs. IDSP signs shall be installed on 2 ½" square tube posts and concrete foundations

in accordance with Standards STP-1, Standards SSP-VA structures and foundations, or Standards SSP-VIA structures and foundation as appropriate and as approved by the IDSP Manager. The Design-Builder is responsible for costs associated with removal and replacement of IDSP signs.

### 2.9.2 Signals – Not Used

### 2.9.3 Guardrail/Barrier

The Design-Builder shall ensure that the clear zone within the Project limits is free from hazards and fixed objects. In the event that removal or relocation of hazard and fixed objects from the clear zone is not feasible, the Design-Builder shall design and install an approved guardrail barrier system and end treatments, where appropriate, for protection in accordance with the AASHTO Manual for Assessing Safety Hardware (MASH), First Edition.

The same clear zone requirement applies to existing conditions affected by this Project where guardrail upgrade will be required. Existing sub-standard guardrail within the Project limits must be upgraded by the Design-Builder to meet current standards per Appendix I of the VDOT Road Design Manual. This may require the upgrade of guardrail to the nearest logical termination point beyond the current Project limits.

All guardrail on this project shall be MASH compliant, Midwest Guardrail Systems (MGS) standard, guardrail as noted in the February 2017 revision to the 2016 VDOT Road and Bridge Standards, Section 500, Pages 506.01 through 506.11 and 507.01 through 507.04 and the March revision to the 2017 VDOT Road Design Manual Appendix J.

Fourteen (14) days prior to installation of guardrail the Design-Builder shall request VDOT field verification of the proposed layout. Accompanied by the Design-Builder, VDOT representative will inspect the locations and advise on any necessary adjustments. Additionally, the Design-Builder shall provide a copy of the manufacturer's recommendations for installation of all guardrail terminals to the VDOT Project Manager before the installation of any guardrail end treatment of terminating device.

### 2.9.4 Pavement Markings/Markers

The Design-Builder shall include all required pavement markings, markers, and delineators. Pavement markings, markers, and delineators shall conform to the requirements of the MUTCD, the 2011 Virginia Supplement to the current MUTCD, and applicable special provisions (included in the RFP Information Package). All pavement marking plans shall be in accordance with VDOT Traffic Engineering Design Manual, dated 2011. All removable pavement marking tape shall be Type D – Class III wet-reflective temporary tape.

All new lane markings and center lines shall be supplemented with in-laid pavement markers. All permanent in-laid pavement markers shall be installed in accordance with VDOT Standard PM-8 and/or PM-9. Existing snow-plowable raised pavement markers within the Project limits shall be removed and replaced in-laid pavement markers in accordance with VDOT Standard PM-8 and/or PM-9.

### 2.9.5 Project Lighting – Not Used

## 2.10 Transportation Management Plan

The Design-Builder shall prepare a Transportation Management Plan (TMP) in accordance with I&IM-241/TE-351 for all proposed work associated with the Project. The TMP shall document how traffic shall be managed during the construction of the Project. This Project is classified as a Type B, Category IV in terms of the TMP. The Design-Builder shall coordinate all work in accordance with the TMP. The phases in the Design-Builder's sequence of construction shall be followed unless the Design-Builder submits and secures VDOT approval for a sequence that will both expedite construction while lessening the effect of such construction upon the traveling public. The TMP shall incorporate and address the elements provided in the following sections of Part 2, Section 2.10.

### 2.10.1 Maintenance of Traffic

The Design-Builder's TMP shall include a Maintenance of Traffic (MOT) Plan detailing all phases of work, proposed lane closures, maintenance of traffic through the work area, and all construction accesses for approval by VDOT's Project Manager. This plan shall also address safe and efficient operation of adjacent public transportation facilities and State Highways. The plan shall also include coordination with local agencies and other contractors performing work in the vicinity of Interstate 77. This plan shall reflect the noted Scope of Work and all applicable VDOT Standards and Specifications regarding time of work. All users must be addressed and accommodated in the TMP, including pedestrians, bicyclists, transit vehicles, and other motorists. The TMP shall also accommodate safe and efficient snow removal operations and ensure proper drainage during all phases of construction. Access must be maintained to all businesses, residential communities, and private entrances at all times. The phases in the Design-Builder's suggested sequence of construction that accompany an approved work package shall be followed unless the Design-Builder submits and secures VDOT approval for a sequence that will both expedite construction while lessening the effect of such construction upon the traveling public.

If additional traffic counts are required, it will be the responsibility of the Design-Builder to collect such data.

All temporary traffic signal plans shall be submitted to VDOT for review and approval prior to construction phase, or traffic shift. Construction signs and pavement markings (temporary) shall be installed, maintained, adjusted, and removed by the Design-Builder throughout the duration of the Project.

All entrances, intersections or pedestrian access points/routes that will be affected by the work zone or by the traffic control devices will be maintained or an acceptable alternate must be provided by the Design-Builder.

If Traffic Barrier Service Concrete (TBSC) is warranted based on the criteria for determining the application of barrier per the 2011 Work Area Protection manual and a completed

Engineering and Traffic Investigation-Work Zone Channelization/Barrier Analysis, the guidelines provided in the Roadway Design Manual and IIM-LD-93 shall be utilized.

The Design-Builder shall provide access as necessary for the District Interstate Maintenance (DIM) contractor to provide snow removal. With the exception of snow removal, the Design-Builder shall be responsible for all typical repairs and maintenance such as guardrails, and pothole repair in accordance with Part 5, Section 105.14 from when construction activities begin, to the acceptance of Final Completion of the Project. Project limits for this purpose shall be considered as the Begin Construction to End Construction sign. The following table shall direct the frequency of these routine maintenance activities:

| Item | Frequency |
|---|---|
| Guardrail and Impact Attenuators | Mitigated immediately upon notification or discovery. Replaced or repaired within 7 days of notification or discovery. |
| Pavement/ Pothole Repairs | Pavement potholes/obstructions/failures/distresses that present a safety hazard shall be repaired immediately upon notification or discovery. All others within 2 days of notification or discovery. |

Should VDOT (or its Contractors) have the need to perform any other routine maintenance activity, the Design Builder shall give VDOT (or its Contractors) priority access for these activities.

### 2.10.2 Incident Management Plan

Any field work that impacts travel lanes or shoulders, including but not limited to construction, geotechnical investigations, and survey, shall have an incident management plan developed and approved by VDOT prior to the start of field work.

As part of the TMP, the Design-Builder shall submit an Incident Management Plan (IMP) for review and approval by VDOT. The intent of the IMP is to be prepared for incidents along the construction corridor. The Design-Builder shall coordinate with appropriate VDOT, EMS, and stakeholders during the development of the plan and hold a stakeholder meeting to brief them on the IMP. The IMP shall address at a minimum the following with respect to incident management:

- 24/7 point of contact for emergency notification of incident by TOC;
- Emergency detour routes and sign layout plans in addition to TMP signage;
- Agency and stakeholder Responsibilities Matrix/Checklist;
- Pre-staged detour equipment and material needs (i.e. barrels, portable message boards, signage, etc.) as defined in the sign layout plans that shall be provided by the Design-Builder;
- Coordination with VDOT Southwest Regional TOC;
- Signage of emergency detour routes;

- Coordination with 1st responders and stakeholders;
- Law Enforcement, Fire, and Rescue access to the road network during incidents;
- Pre-planned Messages for various types of incidents for the portable DMS; and
- Contact list for appropriate stakeholder response personnel.

The Design-Builder shall coordinate with VDOT and localities to determine allowable alternate routes and detours. The Design-Builder shall be responsible for all detour signage and traffic control measures required. As necessary, this work may extend beyond the defined Project limits. Proposed changes to signal timing for any signals on detour routes shall be coordinated with the respective signal owner.

Upon notification from the TOC of an incident requiring a detour, the Design-Builder shall establish the detour within one (1) hour from 5 AM-9 PM daily. The Design-Builder shall establish the detour within two (2) hours during all other times not referenced.

The Design-Builder shall coordinate with the Southwest Regional TOC. Incident times shall be based on those recorded at the Southwest Regional TOC Traffic Management System.

### 2.10.3 Lane and Road Closure Restrictions

VDOT acknowledges that temporary lane closures may occasionally be required; however, temporary lane closures are only allowed at the sole discretion of VDOT when necessary to ensure the safety of the traveling public and no practical alternative exists. Offerors' Technical and Price Proposals shall be developed to meet the required lane, shoulder, or road closure restrictions specified in this section. Any deviations from these allowable lane closures may render an Offeror's Proposal non-responsive. Road closure and detours will not be permitted on I-77 or Rte. 606. Two lanes of travel shall be maintained in each direction on I-77 unless noted below. Route 606 may be restricted to one (1) lane, controlled by signals/flagging for the duration of construction once a TMP is submitted and approved. Reduced shoulders will be permitted for transition sections and over the bridge during construction. A minimum of 11 feet wide lanes with 1 feet shoulder shall be maintained on I-77 during construction.

Lane, shoulder, or road closures shall be detailed in the Design-Builder's Transportation Management Plan. Anticipated and proposed temporary lane and/or shoulder closures shall be reviewed and approved by VDOT. The Design-Builder shall restore all lanes of traffic per the times specified in the Special Provision for Limitations of Operations (Bristol District). Restoration of traffic shall mean the completion of all construction work, the removal of all traffic control devices, signs, workers, materials, and equipment from the roadway.

The Design-Builder shall have all lane and/or shoulder closure requests into the VDOT Lane Closure Advisory Management System (LCAMS) and VA Traffic. For coordination purposes with other projects, for instance) at least seven (7) days in advance of the proposed lane and/or shoulder closure and no later than close of business Wednesday the week prior to closure, stating the location, purpose, date, time, and duration of the closure. The Design-Builder shall confirm at least twenty-four (24) hours before any scheduled lane and/or shoulder closure and shall include a written

reiteration of the proposed tasks and a listing of materials, labor, and equipment to be utilized, in order for TOC to post the information on the VDOT website and VA511 system.

The Design-Builder is responsible for providing advance notification via variable message and required static signing for lane and/or shoulder and complete road closures in accordance with the 2011 Virginia Work Area Protection Manual with Revision Number 2.1 incorporated, dated November 1, 2020. Once a closing is in place, work shall commence immediately and shall progress on a continuous basis to completion or to a designated time.

If the Design-Builder is unable to remove the lane and/or shoulder closure by the stipulated time the Design-Builder will not be allowed further lane closures until the reasons for the failure are evaluated and the Design-Builder can provide assurance that the causes have been corrected. A formal submission as to the reasons for the failure to restore traffic lanes within the contract lane closure restrictions and the proposed corrective measures is to be provided to the VDOT Project Manager within two (2) days of the occurrence. VDOT will respond to the adequacy of the submission within two (2) working days of receipt. No consideration for extension of time and no additional compensation will be granted for these days.

VDOT reserves the right to monitor traffic conditions impacted by the work and to make additional restrictions as may be necessary or as emergency situations dictate. Additional restrictions for other holidays or special local events may be necessary, however, in these situations VDOT will endeavor to inform the Design-Builder at the earliest and in no case less than forty-eight (48) hours prior to the event.

### 2.10.4 Damage Recovery

Damage recovery/user costs will be assessed against the Design-Builder if all lanes are not open to traffic by the time required in the approved request for temporary lane closure. Costs will be assessed as follows and continue until all lanes are opened as determined by the VDOT Project Manager. This assessment will be in the following amounts:

- Such damage recovery/user costs shall not exceed $15,500.00 over a twenty-four (24) hour period.

| Time | Hourly Cost | Cumulative Cost |
|---|---|---|
| 7:01 AM- 8:00 AM | $ 324.00 | $ 324.00 |
| 8:01 AM -9:00 AM | $ 359.00 | $ 683.00 |
| 9:01 AM -10:00 AM | $ 411.00 | $ 1,094.00 |
| 10:01 AM -11:00 AM | $ 586.00 | $ 1,680.00 |
| 11:01 AM -12:00 PM | $ 1,012.00 | $ 2,692.00 |
| 12:01 PM -1:00 PM | $ 1,297.00 | $ 3,989.00 |
| 1:01 PM -2:00 PM | $ 1,546.00 | $ 5,535.00 |
| 2:01 PM -3:00 PM | $ 1,855.00 | $ 7,390.00 |
| 3:01 PM -4:00 PM | $ 1,855.00 | $ 9,245.00 |
| 4:01 PM -5:00 PM | $ 2,239.00 | $ 11,484.00 |

| | | |
|---|---|---|
| 5:01 PM -6:00 PM | $ 1,297.00 | $ 12,781.00 |
| 6:01 PM -7:00 PM | $ 502.00 | $ 13,238.00 |

Note: The total hourly cost will not be prorated for any fraction of an hour.

In addition to the above table, the following will apply on Fridays:

| Time | Hourly Cost | Cumulative Cost |
|---|---|---|
| 7:01 PM- 8:00 PM | $ 333.00 | $ 13,616.00 |
| 8:01 PM -9:00 PM | $ 307.00 | $ 13,923.00 |
| 9:01 PM -10:00 PM | $ 293.00 | $ 14,216.00 |
| 10:01 PM -11:00 PM | $ 284.00 | $ 14,500.00 |
| 11:01 PM -12:00 AM | $ 276.00 | $ 14,776.00 |
| After Midnight | $ 273.00 | $ 15,049.00 |

If the Design-Builder is assessed these damage recovery/user fees for failure to restore traffic lanes, the Design-Builder will not be allowed further lane closures until the reason for the failure are evaluated and the Design-Builder can provide assurance that the causes have been corrected. A formal submission as to the reasons for the failure to restore traffic lanes within the contract lane closure restrictions and the proposed corrective measures is to be provided to the VDOT Project Manager within two (2) days of the occurrence. No modification of the Contract Price or Contract time(s) will be granted or considered for these days.

VDOT may, at its sole discretion, waive damage recovery/user fees for failure to open traffic if such cause is not related to or caused by the Design-Builder's operations. The Design-Builder shall catalog user cost assessments on a daily basis and submit a tabulation along with certification from the QAM that such tabulation is correct to the VDOT Project Manager for concurrence. VDOT will make a deduction in the assessed amount from Progress Payment funds otherwise due to the Design-Builder. After Final Completion, the VDOT Project Manager will initiate an adjustment to the Contract Price in accordance with Article 9 of Part 4 to consider all damage recovery/user cost assessments.

### 2.10.5 Use of Virginia State Police

The Design-Builder shall be responsible for coordinating through VDOT for Virginia State Police (VSP) service during Temporary Traffic Control operations involving lane closures and/or rolling lane closures, and any other operation as covered in Appendix C of the Virginia Work Area Protection Manual. VDOT shall be responsible for all costs incurred by VSP specific to the Project.

All lane and rolling lane closures shall be identified in the TMP and in accordance with Traffic Engineering Memorandum TE-352.

### 2.10.6 Portable Changeable Message Signs

Portable Changeable Message Signs (PCMS's) shall be used in advance of the work zone when closing or shifting lanes within the Project limits. The Design-Builder shall provide at least

two (2) on Rte. 606 and two (2) PCMS along Interstate 77, that are to be placed in advance of the Project in the northbound direction. PCMS shall have the capability to be remotely controlled from the Transportation Operations Center (TOC) to facilitate emergency access during an incident only. PCMS shall also be used to provide en-route travel information about planned construction, delays or other sudden changes in travel conditions throughout the Project's duration. The PCMS shall be placed in a semi-permanent location, protected from traffic but highly visible to the public. The Design-Builder shall coordinate the implementation of PCMS with VDOT. The use of PCMS shall not replace any traffic control device otherwise required per the MUTCD or the Virginia Work Area Protection Manual.

## 2.11 Public Involvement / Public Relations

The Design-Builder shall be responsible for providing a point of contact and phone number for the public to use in calling to request information or express concerns during the Project development and delivery. All information to be released to the public shall be approved by VDOT.

During the design and construction phases, the Design-Builder shall:

- Hold informal meetings with affected stakeholders as necessary and as directed by VDOT. A list of affected stakeholders (including, but not limited to, community associations, churches, business owners, police, fire & rescue, school bus transportation, transit operators) shall be developed by the Design-Builder and submitted to VDOT for acceptance prior to holding any meetings. All stakeholders shall be informed of meetings.

Concurrent with the first plan submittal and at intervals deemed necessary by the VDOT, provide to VDOT's Project Manager written information about the Project suitable for posting by VDOT on its Website, including any significant changes that affect the public. Such information will include a Project overview, plan of work, overall Project schedule and progress, potential impacts to traffic on all roadways within the project limits (i.e., temporary lane closures, shoulder closures, ramp reconstruction, milling operations, etc.), up–to-date Project photos, and contact information.

During the Construction Phase, the Design-Builder shall:

- Coordinate with Bland County, provide regular updates and appropriate notifications to Bland County.

- Provide to the VDOT Project Manager information for Traffic Alerts whenever there are new impacts to motorists. All information for Traffic Alerts must be submitted at least one (1) week in advance of the traffic impact. If the impact is major (changes or additional lane closures that are anticipated to cause traffic delays that exceed existing conditions), VDOT must be notified one month in advance.

- Provide to VDOT's Project Manager an emergency contact list of Project personnel and response plan to respond to any onsite emergency, including any work zone incidents in accordance with IIM-LD-241.

- Maintain a log or database of questions, complaints, and/or comments received from stakeholders and the public either via public outreach efforts or direct contact, along with dates received, responses generated, and how the issues or concerns are addressed. If appropriate, this list of questions and responses will be posted on VDOT's website.

An Exception from the Public Hearing Process was approved on 02-17- 2022.

## 2.12 Right of Way

There are no anticipated right-of-way impacts proposed by this Project as shown on the RFP Conceptual Plans included in the RFP Information Package, with the exception of utility easements that have not yet been identified or shown on the RFP Conceptual Plans. Should right-of-way (whether fee or easements) be required to accommodate Design-Builder's unique solution and/or Design-Builder's means, methods, and resources used during construction above and beyond the right-of-way limits depicted on the RFP Conceptual Plans, then all right-of-way acquisition costs for such additional fee or easements shall be paid by the Design-Builder. These costs would include (but not be limited to) the costs of any public hearings that may be required, actual payments to property owners and all expenses related to the additional acquisitions and associated legal costs, as well as any additional monies paid to the landowners to reach a settlement or pay for court award. In the event additional right-of-way is needed as a result of an approved scope change request by the Design-Builder, the Design-Builder shall follow the procedures indicate in the VDOT's Right of Way Manual of Instructions, 3rd Edition, FHWA Update January 1, 2016, including Chapter 10 Attachment 2; http://www virginiadot.org/business/row-default.asp). Additionally, the Design Builder is solely responsible for any schedule delays due to additional right-of-way acquisition associated with the Design-Builder's design changes; no time extensions shall be granted.

## 2.13 Utilities

All efforts and costs necessary for all utility designations, utility locates (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 Offeror's Price Proposal; provided, however, that the compensation paid to landowners for replacement land rights will be paid by VDOT as a part of the right of way acquisition costs and shall NOT be included in the Offeror's Price Proposal. Costs for any utility betterment(s) shall not be included in the Offeror's Price Proposal but shall be reimbursed to the Design-Builder through agreement with the requesting utility owner.

The Design-Builder may be entitled to non-compensable contract time extension when an adverse impact on the project schedule results in a delay to a contract completion date as specified in Part 5, Section 105.08 as amended in Exhibit 1 to Part 3.

Utility information provided on the RFP Conceptual Plans identifies all known utilities, at the time of plan development, that are located within the Project limits. Aerial utilities are identified on the RFP Conceptual Plans and/or in the Survey files by the structure to which they are attached. However, it is the Offeror's responsibility to verify, to their satisfaction, the owner, type, size, height and number of cables attached to the structure when preparing their Price Proposal. All underground utility data was obtained and is depicted in accordance with CI/ASCE 38-02 SUE Quality Level B designation on the RFP Conceptual Plans and/or Survey files. However, it is the Offeror's responsibility to verify, to their satisfaction, the owner, type, size, number of cable/conduits, pipes, services, and horizontal and vertical (depth) location of underground utilities to include service connections and laterals with the utility owners when preparing their Price Proposal.

The Design-Builder shall be responsible for all utility designations, utility locates (test holes), conflict evaluations, cost responsibility determinations, utility relocation designs, utility relocations and adjustments, utility reimbursement, replacement land rights acquisition, utility coordination, and coordination of utility betterments required for the Project. The Design-Builder shall be responsible for all necessary utility relocations, adjustments, and betterments to occur in accordance with the accepted Baseline Schedule except as specified in Part 5, Section 105.08 as amended in Exhibit 1 to Part 3.

The Design-Builder shall be responsible for coordination of the Project construction with all utility owners that may be affected. The Design-Builder shall be responsible for coordinating the work of the Design-Builder, its subcontractors, and the various utilities. The Design-Builder shall initiate early coordination with all utility owners with facilities located within the Project limits. The resolution of any conflicts between utilities and the construction of the Project shall be the responsibility of the Design-Builder. No additional compensation or time will be granted for any delays, inconveniences, or damage sustained by the Design-Builder or its subcontractors due to interference from utility owners or the operation of relocating utilities or betterments except as specified in Part 5, Section 105.08 as amended in Exhibit 1 to Part 3.
The Design-Builder shall make all reasonable efforts to design the Project to avoid conflicts with utilities and minimize impacts where conflicts cannot be avoided.

The Design-Builder shall identify and acquire any replacement utility easements or required right of way needs of all utilities necessary for relocation due to conflicts with the Project.

Utility owners and their respective contact information that are known to the Department are provided below for reference only. It is the Design-Builder's responsibility to verify whether other utility owners exist within the Project limits and coordinate with them.

**Verizon**
Wes Adams
PO Box 2137
817 Fincastle Rd
Lebanon, VA 24266
(office) 276-889-4654
(cell) 276-870-2408
(fax) 276-889-9919
c.w.adams@verizon.com

**APCO**
David C. Edwards
Customer Design Supervisor NE
2255 Prospect Drive
Christiansburg, Va 24073-0150
D:540-381-2512 | C:540-200-5446
DCEDWARDS@AEP.COM

**Point Broadband**
Randy Hamm
15022 Lee Hwy
Bristol, VA 24202
(276) 780-4529
randy.hamm@point-broadband.com

**Zayo**
Mr. Roger Radcliff
OSP Project Manager VA/MD
21635 Red Rum Dr. Suite 165
Ashburn, VA 20147
(703) 657-7112 (Office)
(571) 220-9646 (Cell)
roger.radcliff@zayo.com

The Design-Builder shall provide all utility owners 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 owners will use the Design-Builder's design plan for preparing relocation plans and estimates. If a party other than the utility owner prepares relocation plans, there shall be a concurrence box on the plans where the utility owner signs and accepts the relocation plans as shown.

The Design-Builder shall coordinate and conduct a preliminary utility review meeting with all affected utility owner to assess and explain the impact of the Project. VDOT's Project Manager and VDOT's Regional Utilities Manager/Design Build Projects Utility Coordinator (or designee) shall be included in this meeting.

The Design-Builder shall obtain access to and use VDOT's Right of Way and Utilities Management System (RUMS) to manage and track the utility relocation process. VDOT standard forms and documents, as found in RUMS, will be used to the extent possible. Training in the use of RUMS and technical assistance will be provided by VDOT.

The Design-Builder shall verify the prior rights of each utility owner's facilities if claimed by a utility owner. If there is a dispute over prior rights with a utility, the Design-Builder shall be responsible for resolving the dispute. The Design-Builder shall prepare and submit to VDOT a Preliminary Utility Status Report within one hundred and twenty (120) days from the Date of 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 existing easements, As-Built plans or other supporting documentation that substantiates any compensable rights of the utility owner. The preliminary utility status report shall be updated every thirty (30) days until utility relocations have been completed.

The Design-Builder shall obtain the following from each utility owner that has a utility located within the Project limits: relocation plans including letter of "no cost" where the utility owner does not have a compensable right; utility agreements including cost estimate and relocation plans where the utility owner has a compensable right; or letters of "no conflict" where the utility owner's facilities will not be impacted by the Project.

The Design-Builder shall review all relocation plans to ensure that relocations comply with the current editions of the VDOT Utilities Manual of Instruction, the Utility Relocation Policies and Procedures and the VDOT Land Use Permit Manual. The Design-Builder shall also ensure that there are no conflicts with the proposed roadway improvements and ensure that there are no conflicts between each of the utility owner's relocation plans. The Design-Builder shall prepare and submit to VDOT all relocation plans. The Design-Builder is expected to assemble the information included in the relocation plans in a final and complete form and in such a manner that VDOT may approve the submittals with minimal review.

The Design-Builder shall meet with VDOT's Regional Utilities Manager/Design Build Projects Utility Coordinator (or designee) within forty-five (45) days from the date of Notice to Proceed to gain a full understanding of what is required with each submittal. The Design-Builder shall receive written approvals from VDOT prior to authorizing utilities to commence relocation construction. The utility owners shall not begin their relocation work until authorized by the Design-Builder. Each relocation plan submitted must be accompanied by a certification from the Design-Builder stating that the proposed relocation will not conflict with the proposed roadway improvement and will not conflict with another utility owner's relocation plan.

The Design-Builder shall be responsible for ensuring that each utility owner that is subject to the requirements of Section 313 of Title 23 United States Code, MAP-21 S.1518 Buy America as described in Part 5, Exhibit 102.05(g.1) provides written certification to the Design-Builder that they are in compliance with this requirement. If the Design-Builder or its subcontractors are installing the utility relocations then the Design-Builder shall provide the certification pre-installation, along with any other Contractor installed items for the Project; if the utility owner/company is installing the utility relocation then the certification shall be provided post-installation. Compliance documentation must be furnished for the Design-Builder to be reimbursed for the Work. For any utility betterments where Project funds are being applied, the Work must meet the Buy America requirements.

The Design-Builder shall provide a utility inspector to monitor all utility relocation construction activities performed for private and public utilities on the Project. The utility inspector shall be responsible for ensuring that all utilities on the Project are relocated according to the approved plan or estimate. The utility inspector shall receive approval for any field changes to the approved plan and estimate from the Design-Builder's Lead Utility Coordinator/Manager. The utility inspector shall maintain daily record of utility work being performed on the Project (VDOT Form UT-7, directional drill bore logs, and open cut trench depth logs as applicable). These records should include start and end dates, start and end times, name of utility contractors, personnel working on the Project, equipment used on the Project, material installed, materials removed, and

a narrative description of Work performed. The inspector shall create a set of red-lined As-Built Drawings that depicts any changes made from the approved plan and estimate.

At the time the Design-Builder notifies VDOT that the Design-Builder deems the Project to have reached Final Completion, the Design-Builder shall certify to VDOT that all utilities have been identified and conflicts have been resolved and that those utility owners with compensable rights or other claims related to relocation or coordination with the Project have had their facilities relocated and their claims and compensable rights satisfied by the Design-Builder.

The Design-Builder shall ensure the utility owners submit As-Built drawings upon completion of their relocation and/or adjustments. VDOT will issue an As-Built permit to the utility owners after receipt of the permit application and the As-Built drawings. The Design-Builder shall accurately show the final location of all utilities on the As-Built drawings for the Project in accordance with Part 2, Section 2.17.9 of the RFP

## 2.14 Quality Assurance / Quality Control (QA/QC)

The Design-Builder shall submit its Quality Assurance/Quality Control (QA/QC) for both design and construction to VDOT at the kick-off meeting held after the Date of Commencement as set forth in RFP Part 4, Section 2.1.2. Along with the QA/QC Plan submittal, the Design Manager and Quality Assurance Manager (QAM) shall provide a presentation of the QA/QC Plan for both design and construction utilizing Project related scenarios. Project scenarios shall include, but not be limited to:

- A walkthrough of the QC and QA process for one design phase submittal, including the names of the individuals that will be performing the design and those providing the reviews. Discuss how the QC and QA process will be documented to confirm that it was completed per the QA/QC Plan and steps that will be taken to ensure that the QC and QA reviews are independent;

- Preparatory Inspection Meeting requirements, including incorporation of at least one each, Witness and Hold Point, as set forth in Sections 5.7 and 5.16 through 5.19 of the Department's guidance document for Minimum Requirements for Quality Assurance and Quality Control on Design Build and Public-Private Transportation Act Projects, July 2018 (July 2018 QA/QC Guide). Clearly identify coordination efforts with VDOT that are necessary to receive timely approvals associated with the Witness Point and Hold Point;

- At least one (1) material which VDOT retains responsibility for testing as identified in Table 5-21 of the July 2018 QA/QC Guide;

- Situation requiring the issuance of a Nonconformance Report and subsequent review of the report, including completion of corrective measures and the issuance of a Notice of Correction of nonconforming Work with proper log entries and proper interface with auditing and recovery requirements as set forth in Sections 5.13 through 5.15 of the July 2018 QA/QC Guide for nonconforming Work resulting from:

- defective equipment
- construction activities/materials which fail to conform as specified.

- Inspection documentation capturing requirements as set forth in Section 5.22 and 5.23 of the July 2018 QA/QC Guide; as well as inspection of geotechnical elements that are to be performed and certified by the Design-Builder's licensed geotechnical engineer as set forth in Section 5.20 of the July 2018 QA/QC Guide;

- Preparation of an application for payment. Discuss the process for identifying an initiated Work Package and a completed Work Package on the application for payment, including the work element and associated documentation that is required and verified by the Quality Assurance Manager. Discuss DBE and EEO documentation that may be required prior to submitting payment applications for approval;

- Measures that will be implemented to ensure compliance with Buy America requirements on the Project.

- Detail two (2) sample entries in Materials Notebook showing completion of Form C-25, including subsequent submission and review by the VDOT Project Manager as set forth in Section 5.23 of the July 2018 QA/QC Guide and Chapter VII of VDOT's Manual of Instruction for the Materials Division. Refer to Section 803.73, Form TL-142S, of the Manual of Instructions for the Materials Division for an example of a completed Materials Notebook.

- Review the Document Management System that will be utilized to track and organize project documentation. Discuss the access that various project team members will have to the system. List the documentation that will be available prior to the submission of each application of payment.

### 2.14.1 Design Management

The Design-Builder is responsible for design quality in accordance with VDOT's Minimum Requirements for Quality Assurance and Quality Control on Design Build and Public-Private Transportation Act Projects, July 2018 (July 2018 QA/QC Guide). The Design-Builder's Design Manager shall be responsible for establishing and overseeing a QA/QC program for all pertinent disciplines involved in the design of the Project, including review of design, working plans, shop drawings, specifications, and constructability of the Project. This individual shall report directly to the Design-Builder's Project Manager, and is responsible for all of the design, inclusive of QA and QC activities. Members of the Design QA and QC team are responsible for review of all design elements to ensure the development of the plans and specifications are in accordance with the requirements of the Contract Documents. Design QA should be performed by one or more member(s) of the lead design team that are independent of the Design QC. The QAM shall verify that all design related Work Packages submitted for payment have been certified by the Design Manager as being in conformance with the Contract Documents and the Design QA/QC Plan.

Chapter 4 of the July 2018 QA/QC Guide provides minimum requirements that shall be met for development of the Design QA/QC Plan.

### 2.14.2 Construction Management

The Design-Builder shall develop, execute, and maintain a Construction QA/QC Plan for the full duration of the Contract in accordance with VDOT's July 2018 QA/QC Guide. The Design-Builder shall have the overall responsibility for both the QA and QC activities and shall be responsible for all QA activities and QA sampling and testing for all materials used and work performed on the Project. These QA functions shall be performed by an independent firm that has no involvement in the construction and QC program/activities. There shall be a clear separation between QA and construction, including separation between QA inspection and testing operations and construction QC inspection and testing operations, including testing laboratories. Two (2) independent, AMRL certified testing laboratories will be required, one for QA testing and one for QC testing.

The Quality Assurance Manager (QAM shall have the authority to enforce the Contract requirements when deficient materials or unsatisfactory finished products fail to conform to Contract requirements. The QAM, in accordance with his/her assignment, shall be responsible to observe the construction in progress and to ensure the QA and QC testing and inspection is being performed in accordance with the Contract requirements. The Design-Builder shall establish and maintain a Quality Assurance Auditing and Nonconformance Recovery Plan (AR Plan) as part of the Construction QA/QC Plan for uniform reporting, controlling, correction and disposition and resolution of nonconforming Work (including disputed nonconforming items) issues that may arise on the Project. Nonconforming Work is any Work performed by the Design-Builder that is not in compliance with contract requirements and may include, but is not limited to, design, R/W, utility relocation, equipment, materials, construction means and methods, quality control, quality assurance, and project management. The Design-Builder's AR Plan shall establish a process for review and disposition of nonconforming Work in accordance with Section 5.13 of the 2018 QA/QC Guide.

Nonconforming Work that is correctable by established means and methods and complies with the contract requirements upon correction shall be considered a Deficiency and documented in a Deficiency Log. Nonconforming Work that is not correctable, such as safety or environmental permit violations, shall be considered a Nonconformance, issued a Nonconformance Report and documented in a Nonconformance Log. Deficiencies that do not have a corrective action plan agreed upon by the Department at the time of the subsequent application for payment shall be considered a Nonconformance, issued a Nonconformance Report, and documented in the Nonconformance Log. Procedures for reporting, documenting and correcting nonconforming Work are outlined in Sections 5.14 and 5.15 of the July 2018 QA/QC Guide.

VDOT will provide QA inspection and/or testing of the items listed below:

- Prestressed Concrete Structural Elements (beams, girders (AASHTO and Bulb-T sections), and piles)
- Metal Traffic Signal and Light Poles and Arms

- Structural Steel Elements (beams and girders)
- Laminated Bridge Bearing Pads
- Precast Concrete Structures
- Pipe (concrete, steel, aluminum, and high-density polyethylene) for culverts, storm drains, and underdrains
- Asphalt Concrete QA Program
- Hydraulic Cement Concrete Plant and Truck Inspections
- Hydraulic Cement Concrete Mix Designs
- Aggregate CMA QA Program

CCPRM, CIR and FDR Mix Designs The Design-Builder will be responsible for providing QA and QC testing of all off-site materials that are not identified above, including materials obtained from off-site soil borrow pits.

The Design-Builder is required to submit documentation of the source of materials, including the source of each material to be incorporated into the Project and the acceptance method that will be used for the material. A VDOT Form C-25 may be used to meet this requirement; however, the Design-Builder is required to submit a VDOT Form C-25, for all materials that VDOT retains responsibility for testing. The source of materials, C-25 is for informational purposes only and will not be approved or rejected by VDOT since it is the Design-Builder's responsibility to obtain materials that meet the contractual requirements.

The Design-Builder's QAM shall report directly to the Design-Builder's Project Manager and be independent of the Design-Builder's physical construction operations. Prior to the start of each work activity, the QAM (in conjunction with the CM) shall identify the QA and QC Inspector(s) and Testing Technician(s) by name and provide a detailed matrix for each type of inspection and testing required illustrating each technician's qualifications/certifications and respective inspections and tests that are to be performed. The QAM shall also identify the Department's testing and inspection requirements that are to be performed for each work activity.

In accordance with Chapter VII of VDOT's Manual of Instruction for Materials Division, the Materials Notebook (Form TL-142DB/LAP) shall be populated during the course of the project based on the actual quantities used during construction. The QAM shall be responsible for the QA inspection and testing of all materials used and work performed on the Project to include observing the Contractor's QC activities, maintaining the Materials Notebook (including adherence to the Special Provision for Design-Build Tracking (DBT) numbers included in the RFP Information Package), documentation of all materials, sources of materials and method of verification used to demonstrate compliance with the Contract requirements. This includes all materials where QA testing is to be performed by VDOT. The QAM shall be vested with the authority and responsibility to stop any work not being performed according to the Contract requirements. The construction QA and QC inspection personnel shall perform all of the construction inspection and sampling and testing work in accordance with the approved Construction QA/QC Plan and Contract requirements. This includes the documentation of construction activities and acceptance of manufactured materials.

The Design-Builder's Quality Assurance firm shall have a presence on-site during any and all construction operations to ensure all construction work and QC activities are being performed in accordance with the Contract requirements. The QAM shall assign a Lead QA Inspector to the Project prior to the start of construction. This individual, who must be on the site full-time for the duration of all construction of the Project, shall be responsible for verifying that all construction activities performed by the Design-Builder were done so in accordance with the Contract requirements and were observed by the quality assurance firm. This includes observation of all QC activities to ensure inspection and testing, and the observation of any approved corrective action for any non-conformities of the Work. The Lead QA Inspector shall be supported by other QA inspectors under his/her direction to ensure at any time all construction operations and QC activities are being observed. The Lead QA Inspector shall report directly to the QAM. The Lead QA Inspector shall be certified as a VDEQ ESC Inspector and shall be responsible for certifying the Project's compliance with the SWPPP and the VPDES Construction Permit on the Construction Runoff Control Inspection Form (C-107 Part 1) as prescribed in Part 2, Section 2.7.3.

All sampling and testing shall be performed by a laboratory that is accredited in the applicable AASHTO procedures by the AASHTO Accreditation Program (AAP). For test methods not accredited by AAP, the laboratory must comply with AASHTO R18 (most current Edition) or ASTM C1077 (for concrete test methods) and must be approved by the Department at its sole discretion. Two independent testing laboratories will be required, one for QA testing and one for QC testing. The entity(ies) performing QA operations, inspections, sampling, and laboratory testing and the entity(ies) performing QC operations, inspections, sampling, and laboratory testing shall be unique and independent from one another.

All construction QA and QC personnel shall hold current VDOT materials certifications for the types of materials testing that they are assigned to perform in accordance with Section 3.6 of the July 2018 QA/QC Guide, and for the safety and use of nuclear testing equipment as required by the Road and Bridge Specifications. The QA programs shall be performed under the direction of the QAM. The QC programs shall be performed under the direction of the Construction Manager. Substitution of Construction Manager and the QAM shall require VDOT approval. In addition, VDOT shall have the right to order the removal of any construction QA and QC personnel, including the QAM and the Construction Manager for poor performance at the sole discretion of the VDOT Project Manager.

## 2.15 Project Documentation

The Design-Builder shall maintain all project documentation electronically in an online location that is accessible to all personnel associated with the Project (to include contractor personnel, QC personnel, QA personnel, design personnel, right of way personnel, and VDOT personnel) at all times for the entire duration of the Project. Project submittals shall be managed with the Department's Submittal Management System. Refer to the Special Provision for Electronic Submittals Management System. Project personnel may have different read and write privileges as deemed appropriate by the VDOT Project Manager. The online document management filing structure for the Project shall follow the structure identified in the Design-Build Project-File Index (Attachment 2.15). The purpose of the online document management system is for maintaining project documents; it does not replace any submission requirements, including

but not limited to providing hard copies of plans, calculations, and reports, and uploading applicable documentation into VDOT's ProjectWise System.

Prior to submitting each monthly Application for Payment, the Design-Builder is responsible for uploading all pertinent project documentation associated with the work performed that month onto the online document management system for this Project. This includes all applicable QC and QA daily work reports, QC and QA test reports, and DBE/EEO Documentation. Work packages will not be considered complete until all required QC and QA reports and materials documentation has been provided.

Prior to submitting the Final Application for Payment, the Design-Builder is responsible for uploading all project documentation identified in Attachment 2.15 onto the online document management system. Final Payment will not be processed until all applicable documentation has been provided.

## 2.16 Field Office

The Design-Builder shall provide office space, equipment, and services consistent with requirements for a Type I Field Office. This field office should be configured and equipped for joint operations by Design-Builder and Department staff. The configuration and equipping of the field office shall be coordinated between the Design-Builder and the VDOT Project Manager prior to on-site placement (within 1 mile of project site) of the field office. The field office will be operational throughout the duration of the Project construction and shall be removed upon final Project acceptance.

## 2.17 Plan Preparation

### 2.17.1 OpenRoads Designer (ORD)

When the Design-Builder is given the Date of Commencement, they will be furnished with the following software and files, which run in current approved settings requirements identified by VDOT CADD Support. OpenRoads Designer, and VDOT Standard Resources Files, and all the design files used to develop the RFP Conceptual Roadway and Bridge Plans including aerial images, if available, and survey files.

### 2.17.2 Software License Requirements

VDOT shall furnish a License Access Key for all the software products VDOT makes available to the Design-Builder. The License Access Key will be supplied upon request by the Design-Builder, based on the data provided on a completed Software License Form, LD-893, and subsequently reviewed and approved by the VDOT Project Manager.

The License Access Key is provided for use on the Project detailed on the request only for the duration specified for that Project. Any adjustment made to the Project schedule will be taken

into consideration in adjusting the time the License Access Key is available. Justification for the number of license(s) requested **MUST** include the estimated number of total computer hours for the task of design, detailing, relating Project management and other computer-based engineering functions requiring the software requested.

The appropriate use of the License Access Key provided to the Design-Builder will become the responsibility of the Design-Builder regardless of who on the team uses the License Access Key. The Design-Builder will be responsible for keeping track of the License Access Key provided to them or a team member and, upon completion of the Project, the prompt notification to the VDOT CADD Support Section of Project Completion and removal of the software from any system used solely for the Project for which it was obtained.

### 2.17.3 Drafting Standards

All plans shall be prepared in U.S. customary units and in accordance with the most recent version of the VDOT's Road Design Manual, Vol. I, VDOT's CADD Manual and VDOT's I&IMs and the VDOT Manual of the Structure and Bridge Division - Part 2.

### 2.17.4 Electronic Files

The Design-Builder shall submit all plans in accordance with VDOT's policies and procedures (Right of Way and/or Construction submittals, Released for Construction, and As-Builts) in electronic format using the provided CADD software. Files shall be submitted in both Microstation DGN and Adobe PDF formats, by way of VDOT's ProjectWise Consultant environment and in coordination with VDOT's CADD Support group. The Design-Builder will complete form LD-900, the ProjectWise System Access Request form, form IT-36E, the VDOT Information Security Agreement form and form LD-900, the ProjectWise Access Request Form, for access to the ProjectWise Consultant environment. VDOT will furnish electronic files of all applicable standard detail sheets upon request by Design-Builder. The files will use standard VDOT cell libraries, level structures, line types, text fonts, and naming conventions as described in the most recent version of the VDOT CADD Manual and the VDOT Manual of the Structure and Bridge Division - Part 2. Files furnished to Design-Builder in electronic format shall be returned to VDOT and removed from Design-Builder and its designer's computer equipment upon completion of this Project.

### 2.17.5 Plan Submittals

VDOT will receive project submissions through VDOT's Project Document Submissions Application. The design builder will identify a document controller to be the lead for submitting and managing the digital process. See the attached special provision "Electronic Submittals Management System" for additional guidance. Prior to notice to proceed access will be granted to the Design-Builder along with training for the management and use of the submittals application.

In addition to the project submissions application the Department will utilize PlanGrid for plans, specifications, daily work reports, and identifying project issues. The Design-builder may

participate in the use of the project site for collaboration and issue resolution if they choose to procure a license.

The Right of Way and/or Construction plans may be submitted for approval in logical subsections (such as from bridge to bridge) or consisting of work packages such as: 1) clearing and grubbing along with erosion and siltation control, 2) grading and drainage, 3) final roadway, and 4) traffic control. Individual bridge plans may be submitted in logical components such as: 1) foundation, 2) remaining substructure, and 3) superstructure. A submittal schedule and planned breakdown of work packages shall be submitted to VDOT for review and approval as part of the planned Project Baseline schedule.

Right of Way and/or Construction Plans shall be accompanied by 1) a VDOT LD-436 checklist filled out as appropriate for the specific submittal, and 2) a written notice signed by the Design-Build Design Manager that includes the following:

- The logical subsections or work packages for which review and approval is being requested.
- Confirmation that the submittal has been checked and reviewed in accordance with the Design-Builder's approved QA/QC plan.
- Confirmation that the submittal either meets all requirements of the Contract Documents and Reference Documents or that any deviations from the Contract Documents and Reference Documents have been identified and previously approved by VDOT.

The Design-Builder shall submit all Right of Way and/or Construction plans to VDOT, for review and approval. VDOT shall receive PDF versions of the plans (see Part 2, Section 2.17.8 below). FHWA shall receive PDF version of each submission. The plan submissions shall be delivered to the following addresses:

Virginia Department of Transportation
Attention – Robert Leonard
Bristol District Office
2111 Bonham Road
Bristol, VA 24201

Federal Highway Administration
Attention – Steven Clausen
400 N. 8th Street, Suite 750
Richmond, VA 23219-4825

VDOT and FHWA shall have the right to review all Right of Way and Construction Plans and provide comments regarding compliance with the requirements of the Contract Documents and Reference Documents. The Design-Builder shall be responsible for satisfying all such

comments. Formal responses to VDOT and FHWA comments shall be provided in subsequent submittals.

VDOT and FHWA have the right to disapprove any design approach that is not in compliance with the requirements of the Contract Documents and Referenced Documents.

VDOT's written approval of any deviations from requirements of the Contract Documents and Reference Documents shall be attached to the plans submitted for review.

### 2.17.6 Right of Way Plans – Not Used

### 2.17.7 Construction Plans

Construction Plans, and any associated Design Calculations, shall be submitted to VDOT and FHWA simultaneously for review. The time frame for plan review and approval shall be in accordance the requirements of the Contract Documents. All VDOT and FHWA comments must be addressed to the satisfaction of the commentator before Construction Plans are recommended for approval to VDOT's Chief Engineer. This plan milestone includes plans that may be submitted as soon as sufficient information is available to develop Construction Plans for certain portions or elements of the Project (or work packages). The Design-Builder shall meet commitments for review and approval by other entities/agencies as specified in other portions of the RFP and its attachments. The Design-Builder shall be responsible for the design details and ensuring that the design and construction work are properly coordinated.

### 2.17.8 Released for Construction Plans

*Released for Construction Plans* are those that are issued for construction after approval by VDOT's Chief Engineer. Notice to Commence Construction will only be issued by the VDOT Project Manager upon approval of the Construction Plans (or Work Packages) by the Chief Engineer.

The Released for Construction Plans shall be distributed simultaneously to VDOT and FHWA**.** VDOT shall receive a PDF format of Released for Construction Plans, along with all electronic files. FHWA shall receive PDF format of the plans, along with all electronic files, of the Released for Construction Plans. The plans shall be delivered to the following addresses:

Virginia Department of Transportation
Attention – Robert Leonard
Bristol District Office
2111 Bonham Road
Bristol, VA 24201

Federal Highway Administration
Attention – Steven Clausen
400 N. 8th Street, Suite 750
Richmond, VA 23219-4825

### 2.17.9 Record (As-Built) Plans

The final plan milestone is Record (As-Built) Plans. As-Built Plans shall be prepared, signed and sealed by a registered, licensed Professional Engineer in the Commonwealth of Virginia, and submitted to VDOT with the final application for payment. 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. All adjustments and revisions to the bridge shall be captured in the final load rating. The Professional Engineer shall sign and affix the certification statement included in Attachment 2.17.9 to the set of plans.

## 2.18 Virginia Occupational Safety and Health Standards

The Project shall comply with Virginia Occupational Safety and Health Standards in accordance with Section 107.17 of the Division I Amendments to the Standard Specifications.

At a minimum, all Design-Builder personnel shall comply with the following, unless otherwise determined unsafe or inappropriate in accordance with OSHA regulations:

- Hard hats shall be worn while participating in or observing all types of field work when outside of a building or outside of the cab of a vehicle, and exposed to, participating in or supervising construction.

- Respiratory protective equipment shall be worn whenever an individual is exposed to any item listed in the OSHA Standards as needing such protection unless it is shown the employee is protected by engineering controls.

- Adequate eye protection shall be worn in the proximity of grinding, breaking of rock and/or concrete, while using brush chippers, striking metal against metal or when working in situations where the eyesight may be in jeopardy.

- Approved high visibility Safety apparel shall be worn by all exposed to vehicular traffic and construction equipment.

- Standards and guidelines of the current Virginia Work Area Protection Manual shall be used when setting, reviewing, maintaining, and removing traffic controls.

- Flaggers shall be certified in accordance with the Virginia Flagger Certification Program.

- No person shall be permitted to position themselves under any raised load or between hinge points of equipment without first taking steps to support the load by the placing of a safety bar or blocking.

- All electrical tools shall be adequately grounded or double insulated. Ground Fault Circuit Interrupter (GFCI) protection must be installed in accordance with the National

Electrical Code (NEC) and current Virginia Occupational Safety and Health agency (VOSH). If extension cords are used, they shall be free of defects and designed for their environment and intended use.

- No person shall enter a confined space without training, permits and authorization.
- Fall protection is required whenever an employee is exposed to a fall six (6) feet or greater.

## 3.0 ATTACHMENTS

The following attachments are specifically made a part of, and incorporated by reference into, these Technical Information & Requirements:

ATTACHMENT 2.2 -- ROADWAY INVENTORY AND MAJOR DESIGN CRITERIA

ATTACHMENT 2.3 -- ADDITIONAL FOUNDATION CRITERIA

ATTACHMENT 2.3.3 -- GUIDELINES FOR USING OF MSE STRAPS

ATTACHMENT 2.7.4 -- NUTRIENT CREDIT ASSIGNMENT AGREEMENT

ATTACHMENT 2.15 -- DESIGN-BUILD PROJECT FILE INDEX

ATTACHMENT 2.17.9 -- AS-BUILT PLANS CERTIFICATION STATEMENT

All additional information is included in the RFP Information Package – referred to in Part 1, Section 2.5 of this RFP.

**END OF PART 2 - TECHNICAL INFORMATION & REQUIREMENTS**