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## **PART 2**

### **TECHNICAL INFORMATION & REQUIREMENTS**

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

Descriptions and technical requirements of the anticipated work are set forth in Part 2, Section 2. The Design-Builder will be expected to bring the necessary resources and expertise to efficiently and effectively execute these projects with the ultimate goal to meet the early and final completion and interim milestone dates and realize the maximum incentives for interim milestones and early and final completion dates for the entire project outlined in Attachment to Part 3 Article 5.

#### **1.1 Project Description**

The Design-Build Project for Route 29 Solutions is located in Albemarle County, Virginia (Project) consists of three distinct projects (elements) that are to be procured under a single design-build contract. The three projects are US 29 & Rio Road Grade Separated Intersection, US 29 Widening, and Berkmar Drive Extension that are described below. It is noted that the descriptions and lengths are approximate only and are based on the RFP Conceptual Plans shown in the RFP Information Package. Final project lengths may vary depending on the Design-Builder’s final design; however, any change to project limits requires approval by VDOT.

Conceptual designs for all three projects have been developed and made available for public review in advance of the planned Design Public Hearing scheduled for October 14, 2014. The major design features of the projects will be approved by the Chief Engineer at the close of the Public Hearing process. The conceptual designs contained in the RFP Information Package reflect basic line, grade, typical sections, minimum pavement structures, major cross drainage pipes, potential locations of stormwater management ponds and sediment traps, conceptual bridge plans, and potential Right of Way. These elements are considered to be the basic Project configuration. A preliminary noise abatement analysis indicates that sound barriers are not anticipated for the Project. However, the Design-Builder will be responsible to provide a final noise abatement determination and design if required. The Design-Builder is responsible for final design in accordance with the Contract Documents.

##### **1.1.1 US 29 & Rio Road Grade Separated Intersection**

This project generally includes construction of a grade separated intersection at the existing intersection of US Route 29 and Rio Road (Rte. 631) that shall carry 4 lanes of US Route 29 through traffic beneath Rio Road without any stops or signal restrictions (with no proposed connections signalized or unsignalized). US Route 29 is classified as an Urban Other Principal Arterial and is part of the National Highway System that is located within a Corridor of Statewide Significance. The length of this project is approximately 1.0 mile and extends between Dominion Drive (Rte 851) and

Woodbrook Drive (Rte 1417). This intersection is one of the major intersections that will be used to accommodate traffic to and from Berkmar Drive, Hillsdale Drive and the John Warner Parkway.

The Design-Builder will be expected to bring the necessary resources and expertise to efficiently and effectively execute these projects with the ultimate goal to meet the early and final completion and interim milestone dates and realize the maximum incentives for interim milestones and early and final completion dates for the entire project outlined in **attachment Attachment** to Part 3 Article 5.

### **1.1.2 US 29 Widening**

This project generally includes widening and improvements to US Route 29 to complete a six-lane roadway section from Polo Grounds Road (Rte. 643) to Towncenter Drive (Rte 1719). The existing configuration of US Route 29 will be required to be upgraded to meet current geometric standards including, but not limited to, stopping sight distance. The length of this project is approximately 1.8 miles.

The Design-Builder will be expected to bring the necessary resources and expertise to efficiently and effectively execute these projects with the ultimate goal to meet the early and final completion and interim milestone dates and realize the maximum incentives for interim milestones and early and final completion dates for the entire project outlined in Attachment to Part 3 Article 5.

### **1.1.3 Berkmar Drive Extension**

This project generally includes construction of an extension to an existing urban collector road (Berkmar Drive) as an urban collector on a new alignment located parallel to US Route 29 and includes a major bridge structure spanning the South Fork of the Rivanna River. The length of this project is approximately 2.3 miles and extends between Hilton Heights Road (Rte 1438) and Towncenter Drive (Rte 1719).

The Design-Builder will be expected to bring the necessary resources and expertise to efficiently and effectively execute these projects with the ultimate goal to meet the early and final completion and interim milestone dates and realize the maximum incentives for interim milestones and early and final completion dates for the entire project outlined in Attachment to Part 3 Article 5.

## **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 and water quality permits
- Acquiring rights of way

- Coordinating and performing, or causing to be performed, utility relocations, additions, and adjustments
- Roadway construction
- Milling and overlaying and/or building up of existing pavement
- Bridge construction
- Guardrail/barrier
- Retaining walls
- Sound barrier walls (if required)
- Signs, sign structures, and foundations
- Traffic Device modifications (including but not limited to traffic signals, red light camera, flashing beacons, communications)
- Overhead signs structures and other traffic control measures
- Intelligent Transportation System (ITS) components including Closed Circuit Television (CCTV) Cameras, and Fiber Optic Communications (COMM) Infrastructure
- System integration, testing, maintenance until final acceptance, and documentation
- Lighting
- Transportation Management Plan to include Communication and Public Outreach, Operations and traffic maintenance and management during all phases of planning, design and construction
- Pavement markers and markings
- Storm drainage
- Storm water management facilities
- Hydraulic and Hydrologic Analysis
- Quality Assurance and Quality Control for design and construction
- Stakeholder coordination and public outreach
- Final noise abatement determination and design (if required)
- Demolition of buildings and associated well & septic work (if required)
- Overall Project management and coordination with other active construction projects in the vicinity

Scope of work applies to all three distinct elements (projects) unless otherwise noted below. 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, slope stability analysis, 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 Categorical Exclusions (CE) for the US 29 & Rio Road Grade Separated Intersection and US 29 Widening projects, dated August 29, 2014 and September 3, 2014 respectively; as well as the Right of Way (RW) Authorization (EQ-201); the Plans, Specifications, and Estimates (PS&E) Re-evaluation Authorization (EQ-200); and the Environmental Certification/Commitments Checklist (EQ-103), dated September 30, 2014 for both projects. For Berkmar Drive Extension, the Design-Builder will comply with all environmental commitments during design and construction, as applicable, as identified in the Preliminary Environmental Inventory (PEI) dated September 15, 2014 and Environmental Certification/Commitments Checklist (EQ-103), dated September 30, 2014. 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 will be the "Permittee") and shall provide for any necessary stream and/or wetland compensation required by permits to accomplish the work.

The Design-Builder shall avoid any impacts, permanent or temporary, to National Register of Historic Places (NRHP) eligible archaeological sites 44AB0428 and 44AB0430 during the design and construction of the Project, and shall be responsible for performing archaeological data recovery (Phase III) investigations for those portions of site 44AB0594 that will be directly impacted by project construction (Berkmar Drive Extension) as described in the draft Treatment Plan **included in the RFP Information Package**. In addition, the Design-Builder shall avoid any additional impacts to the Brook Hill Property (VDHR No. 002-0008) beyond the limits of disturbance depicted on the RFP Conceptual Plans.

The Design-Builder shall be responsible for compliance with pre-construction and construction-related environmental commitments and will 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 will 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 will be the responsibility of the Design-Builder.

Any changes in scope or Project footprint from that contained in the Contract Documents proposed by the Design-Builder, which are acceptable to VDOT, may require additional environmental technical studies and analysis to be performed by the Design-Builder at their cost. VDOT will 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 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, with the exception of temporary construction, permanent drainage, and utility easements ~~(other than permanent drainage easements for stormwater management facilities for all three project elements)~~ or as otherwise stated herein. Permanent easements for stormwater management facilities for all three project elements may be located outside of the RW limits as shown on the RFP ~~Addendum No. 1~~ 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 for all three project elements)~~, or as otherwise stated herein. Permanent easements for stormwater management facilities for all three project elements may be located outside of the RW limits as shown on the RFP ~~Addendum No. 1~~ Conceptual Plans and where minor adjustments are required during the final design process, ~~and only after approval by VDOT~~. If the Design-Builder proposes changes to the right of way limits shown on the RFP Conceptual Plans, 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. Betterments must be requested by and/or approved by the affected utility owner and must meet Buy America requirements as described in Part 5, Exhibit 102.05(g.1) Use of Domestic Material.

For the US 29 & Rio Road Grade Separated Intersection VDOT will be performing preliminary utility field inspection, including determining necessary utility easements and placing these on the project plans to be made available in the early to mid-January 2015 timeframe. VDOT will start acquiring these identified utility easements prior to project NTP and beyond as necessary to assist the Design-Builder in coordinating and relocating the utilities in an expeditious manner. In no event shall VDOT be bound by, or liable for, any obligations with respect to VDOT in determining and acquiring utility easements prior to project NTP and beyond. As such, the Design-Builder will still be responsible for all utility relocation in accordance with the Contract Documents.

## 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 all necessary excavation, foundation work, substructure work, and superstructure work), retaining walls, temporary and/or permanent shoring, the demolition and removal of portions of the existing pavements, milling and overlaying or building up 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, and 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 Design-Build Project for Route 29 Solutions in accordance with Part 24, 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 ultimate purpose of these meetings is to facilitate achievement of the construction program milestones. It is expected that progress milestones will be jointly developed and mutually agreed to by the Design-Builder and Contractors for the projects listed below.

### **SEMINOLE TRAIL - SIGNALS/TRAFFIC SERVICES (Adaptive Signals)**

Location: Along US 29 from Hydraulic Rd to Airport Rd

Project No.: 0029-002-R77, P101, N501 (UPC 104153)

Status:

- Phase I is underway and is anticipated to be completed in June 2015
- Phase II will not begin until after completion of the Design-Build projects

VDOT Contact: Dave Covington, P.E (434) 422-9860

[Dave.Covington@vdot.virginia.gov](mailto:Dave.Covington@vdot.virginia.gov)

### **RTE. 29 (EMMET STREET) / RTE. 250 BYPASS INTERCHANGE**

Location: 2.0 miles south of the intersection of US 29 & Rio Road

Project No.: 0029-104-248, P101, R201, C501 (UPC # 85708)

Status: Anticipated start of construction is Spring 2015. Anticipated completion is May 22, 2016

VDOT Contact: Dave Covington, P.E (434) 422-9860

[Dave.Covington@vdot.virginia.gov](mailto:Dave.Covington@vdot.virginia.gov)

In addition to the VDOT projects listed above, the City of Charlottesville will be administering the following project:

**HILLSDALE DRIVE EXTENDED (3 LANES)**

Location: East of and parallel to US 29 from GREENBRIER DR to HYDRAULIC RD

Project No.: U000-104-119, P101, R201, C501 (UPC # 60233)

Status: In Design. Anticipated start date is currently unknown. Anticipated completion date is October 30, 2017

VDOT Contact: Dave Covington, P.E (434) 422-9860

[Dave.Covington@vdot.virginia.gov](mailto:Dave.Covington@vdot.virginia.gov)

## **2.0 PROJECT TECHNICAL INFORMATION & REQUIREMENTS**

The Offeror's 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 will be expected to bring the necessary resources and expertise to efficiently and effectively execute these projects with the ultimate goal to meet the early and final completion and interim milestone dates and realize the maximum incentives for interim milestones and early and final completion dates for the entire project outlined in Attachment to Part 3 Article 5.

The Design-Builder's final design shall meet or exceed all requirements included in the Contract Documents, ~~including the RFP Conceptual Plans~~ (which in some cases will exceed 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.

A Design Public Hearing was held for this Project on October 14, 2014.

### **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 VDOT 2007 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 which 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

- VDOT Instructional and Informational Memoranda (I&IM), All Divisions, (Latest Revision)
- VDOT 2005 Road Design Manual, Vol I, (Revised July 2014)
- VDOT 2012 CADD Manual
- VDOT 2008 Road and Bridge Standards, Volume I and Volume II (Latest Revision)
- VDOT 2014 Survey Manual
- VDOT 1999 Project Participation Manual (Revised July 2014)
- VDOT 2007 Road and Bridge Specifications (Revised July 2014)
- VDOT 2002 Drainage Manual (Revised July 2014)
- VDOT 2014 Traffic Engineering Design Manual
- 2011 Virginia Work Area Protection Manual
- AASHTO 2011 Roadside Design Guide, 4<sup>th</sup> Edition, (Latest Revision)
- AASHTO 2011 A Policy on Geometric Design of Highways and Streets, 6<sup>th</sup> Edition (Latest Revision)
- VDOT *Highway Traffic Noise Impact Analysis Guidance Manual*, updated August 6, 2013
- VDOT Manual of Structure and Bridge Division, Vol.V Series

- AASHTO LRFD Bridge Design Specifications, 6th Edition, 2012; and Interim Specifications; and VDOT Modifications
- National Fire Protection Association (NFPA) 502: Standard for Road Tunnels, Bridges and Other Limited Access Highways, 2014 Edition
- AASHTO LRFD Bridge Construction Specifications, 3rd Edition, 2010 Interim Revisions, Single User Digital Publication
- AASHTO LRFD Guide Specifications for Design of Pedestrian Bridges, 2<sup>nd</sup> Edition, 2009
- AASHTO's Manual of Bridge Evaluation, 2<sup>nd</sup> Edition, 2010, 2011 and 2013 Interims
- 23CFR650 Subpart C - National Bridge Inspection Standards (NBIS), Subsection 650.301 or the latest revision(s)
- AASHTO Standard Specifications for the Design of Highway Bridges, 16<sup>th</sup> Edition, 1996; 1997 and 1998 Interim Specifications and VDOT Modifications
- AASHTO Guide Specifications for LRFD Seismic Design, 2nd Edition, 2011; 2012 and 2014 Interims
- AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 6th Edition, 2013
- AASHTO Guide Design Specifications for Bridge Temporary Works, 1st Edition 1995, 2008 Interim
- AASHTO Construction Handbook for Bridge Temporary Works, 1st Edition 1995, 2008 Interim
- AASHTO Manual for Assessing Safety Hardware, current edition
- National Cooperative Highway Research Project Report 350, 1993
- Illuminating Engineering Society of North America (IESNA) RP-22
- VDOT Traffic Operations Analysis Guidebook Version 1.1, dated August 2013
- DCR Minimum Standard 3.02: Principal Spillways - Technical Bulletin No. 7
- DCR Minimum Standard 3.10E Plastic Chamber Systems - Technical Bulletin No. 3
- DCR Minimum Standard 3.11C Filterra™ Bioretention Filter System - Technical Bulletin No. 6
- DCR Stream Channel Erosion Control - Technical Bulletin No. 1
- DCR Vector Control: Mosquitoes & Stormwater Management - Technical Bulletin No. 8
- DCR Water Quality Criteria - Technical Bulletin No. 4

#### (b) Reference Manuals

- VDOT *State Noise Abatement Policy*, July 13, 2011
- Bridge Welding Code: AASHTO/AWS-D1.5M/D1.5: 2010, 6<sup>th</sup> Edition, with 2011 and 2012 Interims
- gINT Manual
- Post Construction Manual, May 2011
- Accelerated Bridge Construction, Report No. FHWA-HIF-12-013, 2011

- FHWA Lighting Handbook, 2012
- Technical Manual for Design and Construction of Road Tunnels – Civil Elements, Publication No. FHWA-NHI-10-034, December 2009
- 2011 Virginia Work Area Protection Manual
- 2009 Manual on Uniform Traffic Control Devices and all subsequent revisions
- 2011 Virginia Supplement to the 2009 Manual on Uniform Traffic Control Devices and all subsequent revisions
- VDOT Traffic Engineering Design Manual, current edition
- VDOT Road Design Manual, current edition
- All VDOT Traffic Engineering Division Memoranda
- All VDOT Instruction and Informational Memoranda
- 2007 VDOT Road and Bridge Specifications
- 2008 VDOT Road and Bridge Standards
- 2011 Virginia Standard Highway Signs
- FHWA Standard Highways Signs and Markings, current edition
- VDOT Guardrail Installation Training Manual, March 2012
- VDOT Utility Manual of Instructions (January 2011, including October 2014 revisions)
- VDOT Right of Way Manual of Instructions (January 2011, including July 2013 revisions)
- VDOT Noise Abatement Guidance Manual, August 14, 2014
- Procedures For Inventory and Inspection of Traffic Control Device Structures, current edition
- American National Standard Practice for Roadway Lighting (ANSI/IESNA RP-8-00), current edition
- National Electric Code
- Statewide Lane Closure Coordination Process
- DCR Virginia Erosion and Sediment Control Handbook, Third Edition, 1992
- DCR Virginia Stormwater Management Handbook, Vol. 1 and Vol. 2, First Edition, 1999
- DEQ Draft Virginia Stormwater Management Handbook, July 2013
- DEQ Virginia Stormwater BMP Clearinghouse
- DEQ Runoff Reduction Spreadsheet
- VDOT BMP Design Manual of Practice, April 2013
- VDOT Drainage Manual, Revised July 2014(including current errata sheet)
- VDOT Instructional & Information Memorandums (“I&IM”), All Divisions
- FHWA publications HDS-6, HEC-14, HEC-15, HEC-18, HEC-20, HEC-22, and HEC-23
- NFPA 25 Standard for the Inspection, Test and Maintenance of Water-Based Fire Protection Systems, 2014 Edition
- NFPA 70 National Electrical Code, 2014 Edition

- NFPA 502: Standard for Road Tunnels, Bridges, and Other Limited Access Highways, 2014 Edition.

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

*Federal:*

- c100ai03 General Project Requirements, Supplemental Specifications (SSs), Special Provisions (SPs) and Special Provision Copied Notes (SPCNs), December 1, 2011 (SPCN)
- S100B00 Project Communication and Decision Making for Design-Build Projects, January 3, 2005c, Reissued August 2009
- SS51202 Supplemental Section 512—Maintaining Traffic Design-Build Projects, December 2, 2009

*Roadway:*

- SP02768 - Special Provision for Section 02768 - Hydraulic Cement Concrete Stamped, Colored, Reinforced, September 16, 2013
- Special Provision for Section 244 – Roadside Development Materials, January 29, 2013

*Bridges and Structures:*

- Special Provision Copied Note 504 for Exposed Aggregate Finish, July, 2008
- Special Provision for Sec 107.19 Railway – Highway Provisions, January 14, 2008
- Special Provision for Low Permeability Concretes for Design- Build Projects, September 6, 2009
- Special Provision for MSE Walls (Modular Cantilever Facing) for Design-Build and PPTA Contracts, November 18, 2009
- Special Provision for Mechanically Stabilized Earth Walls (Segmental Block Facing) for Design-Build and PPTA Contracts, November 18, 2008
- Special Provision for Sound Barrier Walls, September 24, 2012
- Special Provision for Permanent Soil Nail Walls, September 18, 2009
- Guidelines for Preparation of Alternate Retaining Wall Plans, dated March 6, 2008
- Special Provision for Mechanically Stabilized Earth Walls (Concrete Panel Facing) for Design-Build and PPTA Contracts, December 10, 2009
- Special Provision for T-Wall Retaining Wall System for Design-Build and PPTA Contracts, December 10, 2009
- Special Provision for Corrosion Resistant Reinforcing Steel, May 18, 2012
- Special Provision for Drilled Shafts Using Self-Consolidating Concrete for Design-Build and PPTA Contracts, April 15, 2013.
- Special Provision for Dynamic Pile Testing for Friction Piles for LRFD for Design-Build and PPTA Projects, July 16, 2012
- Special Provision for Micropiles for Design-Build and PPTA Contracts, January 20, 2010
- Special Provision for Dynamic Pile Testing for End Bearing Piles for LRFD for Design-Build and PPTA Contracts, December 10, 2009

- Special Provision for Wave Equation Analysis for LRFD for Design-Build and PPTA Contracts, December 10, 2009.
- Special Provision for Quality Assurance/Quality Control (QA/QC) for the Construction of Deep Foundation Systems for Design-Build and PPTA Contracts, November 10, 2009
- Special Provision for Concrete Surface Color Coating, July 2008
- Special provision for Gravity Filled Polymer Crack Sealing, July 2008
- Special Provision for Sealing Expansion Joints, July 2008
- Special Provision for Concrete Surface Penetrate Sealer, July 2008
- Special Provision for Filling and Sealing Pattern Cracks in Concrete Decks and Overlays, May 17, 2010
- Special Provision for Sealing Linear Cracks in Concrete Decks and Overlays Using Epoxy and Carbon Fiber Mesh, September 16, 2009
- Special Provision for Tooth Expansion Joint, January 14, 2008
- Special Provision for Metallization of Ferrous Metal Structures, July 2008
- Special Provision for Hydraulic Cement, January 28, 2008
- Special Provision for Hydraulic Cement Concrete Admixtures, January 28, 2008
- Special Provision for Epoxy Concrete Overlay, February 8, 2010
- Special Provision for Elastic Inclusion (EPS), June 24, 2003
- Special Provision for Removal of Asbestos from Bridge Structures, March 18, 2009
- Special Provision for Crack Repair by Epoxy Injection, November 28, 2012
- Special Provision for Epoxy Concrete Overlay, February 8, 2010
- Special Provision for Latex-Modified Concrete Very Early Strength Overlays, August 25, 2010
- Special Provisions for Embedded Galvanic Anodes, February 20, 2013
- SS40603-0313 Supplemental Section 406, Reinforcing Steel, dated January 24, 2012
- SS41201-0609 Supplemental Section 412, Widening, Repairing and Reconstructing Existing Structures, dated August 5, 2008
- SS41301-0609 Supplemental Section 413, Dismantling and Removing Existing Structures or Removing Portions of Existing Structures, dated August 5, 2008
- SS41401-0310 Supplemental Section 414, Riprap, dated January 25, 2010
- SS423 Supplemental Section 423, NBIS Inspection Using Bridge Device, April 16, 2012
- Special Provision for Fiber Reinforced Shear Key Concrete
- Special Provision for Finish, Concrete Form Lines and Color Stain Coating, October 28, 2014
- Special Provision for Powder Coated Galvanized BR-27 Barrier Railings, Handrails, Light Posts, Signal Poles, Overhead Sign and/or Signal Structures and Guardrail, October 28, 2014

*Environmental:*

- Virginia Department Of Transportation Special Provision For Phase I And Phase II Environmental Site Assessments For Design-Build Projects – June 25, 2013
- Virginia Department Of Transportation Special Provision For Inspection Of Structures For Asbestos Containing Materials (Acm) On Design-Build Projects - June 22, 2009
- Virginia Department Of Transportation Special Provision Copied Note-Demolition Notification For Structures Not Requiring Asbestos Removal

- Virginia Department Of Transportation Special Provision For Asbestos Removal And Neshap-Related Demolition Requirements For Structures On Design-Build Projects - June 22, 2009
- Virginia Department of Transportation Asbestos Project Monitoring And Clearance Air Monitoring Procedures
- Virginia Department Of Transportation Asbestos Inspection Procedures

*Survey:*

- Special Provision for Right of Way Monumentation and Final Boundary Stakeout, December 2, 2009a

*Geotechnical/Materials:*

- c200b00 Crushed Glass 1-17-08
- SS20001 General 9-28-12
- SS20702 Select Material 2-19-14
- S208B00 Crushed Hydraulic Cement Concrete January 14, 2008
- SS20802 Subbase and Aggregate Base Mat 2-19-14
- SS21111 SuperPave -Asphalt Concrete 12-18-12
- SS21202 Joint Materials 6-28-11
- SS21402 Hydraulic Cement 1-28-08
- SS21501 Hydraulic Cement Concrete Admixtures 1-28-08
- SS21706 Hydraulic Cement Concrete 7-29-13
- SS22101 Guardrail 1-6-12
- SS22201 Masonry Units 6-28-11
- S223AG2 Corrosion Resistant Reinforcing Steel January 24, 2012
- SS22401 Castings 11-15-07
- SS22601 Structural Steel 12-16-08
- SS23203 Pipe and Pipe Arches 5-17-12
- SS23802 Electronic and Signal Components 3-4-08
- SS24503 Geosynthetics 4-30-13
- SS24701-0611 Supplemental Section 247, Reflective Sheeting, dated February 10, 2011
- SS31508 SuperPave -Asphalt Concrete Placement
- Special Provision for Controlled Blasting May 2014
- Special Provision For Geotechnical Engineering Design Rio Road Intersection with U. S. Route 29, August 2014
- **Special Provision for Micro-Tunneling for Design-Build Projects 9-14-09**
- **Special Provision for Jack and Bore for Design Build Projects 10-13-09**

*Drainage/Hydraulics:*

- SU302001B Pipe Rehabilitation December 11, 2013
- SU302002A Pipe Replacement February 28, 2013
- S107J20 Special Provision for SWPPP General Information Sheets, September 3, 2014
- S107J30 Special Provision for VPDES Construction Activities, September 3, 2014
- c107j10 VPDES Construction Permits

- S302B00 Restore Existing Pavement January 14, 2008c
- S302G02 Flowable Backfill March 11, 2010
- S302H01 Temporary Vehicle Watercourse Crossing March 25, 2009
- SS30204 Drainage Structures March 14, 2013
- S303J00 Turbidity Curtain January 14, 2008c
- S107G01 C-45 SWPPP Contractor-Subcontractor Certification 2-19-09
- SS23203 Pipe and Pipe Arches May 17, 2012
- SS41401 Riprap January 25, 2010
- SS50101 Underdrains January 25, 2010
- Supplemental Specification Section 302 for Drainage Structures, March 14, 2013
- c302h00 Special Provision Copied Note for Precast Drainage Str. (QC-QA), January 14 2008

*Landscaping:*

- Special Provision for Landscape, October 28, 2014
- Special Provision for Section 605- Planting, October 28, 2014

*Traffic Engineering:*

- Special Provision For Emergency Preemption Equipment September 5, 2014
- Special Provision For Intelligent Transportation System – CCTV Video Equipment And General Requirements September 18, 2014
- Special Provision For Intelligent Transportation System – Conduit September 6, 2013
- Special Provision For Intelligent Transportation System – Dynamic Message Signs December 6, 2013
- Special Provision For Intelligent Transportation Systems – Environmental Sensor Stations August 26, 2013
- Special Provision For Intelligent Transportation Systems – Ethernet Terminal Server August 26, 2013
- Special Provision For Intelligent Transportation Systems – Fiber Optic Cable And Interconnect August 26, 2013
- Special Provision For Intelligent Transportation Systems – Infrastructure August 26, 2013
- Special Provision For Intelligent Transportation System – Junction Boxes August 26, 2013
- Special Provision For Intelligent Transportation Systems – Managed Field Ethernet Switch August 26, 2013
- Special Provision For Intelligent Transportation Systems – Primary Network Switch And Layer 3 Field Aggregation Ethernet Switch August 26, 2013
- Special Provision For Intelligent Transportation System – Temporary Portable Camera August 8, 2012
- Special Provision For Intelligent Transportation System - Uninterruptible Power Supply October 7, 2013
- Special Provision For Intelligent Transportation Systems – Vehicle Detection And Data Collection August 26, 2013
- Special Provision For Intelligent Transportation Systems – Wireless Transceivers August 26, 2013
- S302b00-1212 Special Provision For Restoring Existing Pavement January 14, 2008cc

- (C700i00-0313) Section 700.04 Special Provision For Anchor Bolts
- Special Provision For Concrete Foundations Section 700.04(C) Concrete Foundations 4-2-04(SPCN)
- Special Provision Section 703 - Traffic Signals September 18, 2014
- Special Provision For Signal Poles (Mast Arm Poles August 1, 2012)
- Special Provision For Uninterruptible Power Supply September 18, 2014
- Special Provision For Video Detection June 23, 2010

*General Conditions:*

- Special Provision for Personnel Requirements for Work Zone Traffic Control, June 11, 2009
- Special Provision for Section 301 – Clearing and Grubbing, November 15, 2006
- Special Provision for Work Zone Traffic Control Management Design-Build Projects, revised November, 2009
- SS52200-0708 Supplemental Section 522—Partnering Design-Build Projects, revised June 1, 2012
- Special Provision for Project Office / Co-Location, October 28, 2014
- Special Provision for Document Control System

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-Builder's 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 or the MUTCD require that a higher or better standard be applied, then AASHTO and/or the MUTCD 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**

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.

An RFP Information Package will be provided to the point of contact for each short listed firm. The RFP Information Package includes the following:

#### **2.1.2.1 US 29 & Rio Road Grade Separated Intersection**

- Categorical Exclusion (CE) dated August 29, 2014
- Preliminary EQ-201 dated September 30, 2014
- Preliminary EQ-200 dated September 30, 2014
- Preliminary EQ-103 dated September 30, 2014
- VDOT to VDHR coordination letters (eligibility and effect) dated August 13, 2014
- VDHR to VDOT coordination letters (eligibility and effect) dated August 27, 2014
- Preliminary Permit Determination dated August 26, 2014
- FPWR Form dated August 25, 2014
- Preliminary Hazardous Materials Report dated October 9, 2014
- Air Quality Report dated August 25, 2014
- Noise Form dated August 6, 2014
- Geotechnical Data Report, September 23, 2014
- gINT© Project Databases (subsurface data for proposed pavement installations, and subsurface data associated with proposed structures)
- Special Provisions and Special Provision Copied Notes listed in Part 2, Section 2.1.1(c) above
- RFP Conceptual Roadway Plans, including electronic reference files, dated October 2, 2014
- RFP Conceptual Bridge Plans, including electronic reference files, dated October 2, 2014
- Summer 2014 Count Data
- Fall 2014 Count Data
- Survey Data Files, September 2014
- Existing (2014) Synchro files and summary, dated November 13, 2014
- Existing (2014) and projected (2018 & 2040) traffic turning volumes
- VISSIM files (2018 AM Build and 2040 AM Build)

#### **2.1.2.2 US 29 Widening**

- Categorical Exclusion (CE) dated September 3, 2014
- Preliminary EQ-201 dated September 30, 2014
- Preliminary EQ-200 dated September 30, 2014
- Preliminary EQ-103 dated September 30, 2014
- VDOT to VDHR coordination letters (eligibility and effect) dated August 15, 2014
- VDHR to VDOT coordination letters (eligibility and effect) dated August 27, 2014

- VDOT to VDHR coordination letter dated June 18, 2013
- VDHR to VDOT coordination letter dated July 19, 2013
- Cultural Resources Survey and Cemetery Delineation, Including NRHP Evaluation Associated with the Route 29 Widening Project, Albemarle County dated May 21, 2013
- DGN files showing cemetery 44AB0583
- CADD files showing location of trenches and boundaries of site 44AB0594\_
- Preliminary Permit Determination dated August 28, 2014
- Williamsburg Environmental Group, Request for Jurisdictional Determination Report dated February 26, 2013
- Approved Jurisdictional Determination, dated May 22, 2013
- Waters of the U.S. (Including Wetlands) Delineation, Route 29 Charlottesville Bypass, Project No. 0029-002-844, FHWA No. 5104 (195) dated September 9, 2013
- Preliminary Jurisdictional Determination Report date September 18, 2014
- Williamsburg Environmental Group Delineation Survey File
- FPWR Form dated August 26, 2014
- Preliminary Hazardous Materials Report dated September 2, 2014
- Air Quality Analysis for Route 29 Corridor Improvements, Albemarle County, 0029-002-135, D624, P101 (UPC 77383), dated July 2013, updated August 2014
- Air Report dated September 3, 2014
- Preliminary Noise Analysis Technical Report dated August 2013
- Final NADR dated August 2014
- Management Summary for an Architectural Survey of VDOT Project No.: 0029-002-135, D624, P101, UPC: 77383, dated August 11, 2014
- Geotechnical Data Report, September 23, 2014
- gINT© Project Databases for US 29 Widening (subsurface data for proposed pavement installations, and subsurface data associated with proposed structures)
- Special Provisions and Special Provision Copied Notes listed in Part 2, Section 2.1.1(c) above
- RFP Conceptual Roadway Plans, including electronic reference files, dated October 2, 2014
- Summer 2014 Count Data
- Fall 2014 Count Data
- Survey & Mapping Data, October 2012, rev. September 2013
- Inspection report for Powell Creek culvert
- Updated Survey & Mapping Data (included in UPC 106137), dated Nov. 11, 2014

### 2.1.2.3 Berkmar Drive Extension

- Preliminary Environmental Inventory (PEI) dated September 15, 2014
- Preliminary EQ-103 dated September 30, 2014
- Phase I Cultural Resources Addendum and Treatment Plan dated October 29, 2014
- Cultural Resources Mapping for Berkmar
- Berkmar Historic Resources Mapping

- Preliminary Permit Determination dated August 26, 2014
- Preliminary Jurisdictional Determination dated September 25, 2014
- **USACE letter regarding the preliminary Least Environmentally Damaging Practicable Alternative (LEDPA) for the alignment shown in the RFP conceptual plans (Alternative A) dated November 24, 2014.**
- DGN files for the Wetland Delineation conducted for the Original\_Bypass Project
- VDOT Wetland Delineation Data File
- Waters of the U.S. Boundary Delineation for Berkmar Drive Extension and Route 29 Widening, Albemarle County, VA \_
- Waters of the U.S. (Including Wetlands) Delineation, Route 29 Charlottesville Bypass, Project No. 0029-002-844, FHWA No. 5104 (195) dated September 9, 2013
- FPWR Form dated August 26, 2014
- Preliminary Hazardous Materials Report dated September 9, 2014
- Geotechnical Data Report, September 23, 2014
- gINT© Project Databases (subsurface data for proposed pavement installations, and subsurface data associated with proposed structures)
- Special Provisions and Special Provision Copied Notes listed in Part 2, Section 2.1.1(c) above
- RFP Conceptual Roadway Plans, including electronic reference files, dated October 2, 2014
- RFP Conceptual Bridge Plans, including electronic reference files, dated October 2, 2014
- Summer 2014 Count Data
- Fall 2014 Count Data
- Survey Data Files, September 2014
- Correspondence from Rivanna Water & Sewer Authority to VDOT, dated July 25, 2014

### 2.1.3 Design Exceptions and Design Waivers

Design Exceptions will be required for any element of the design among the fourteen 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 fourteen 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 waivers, with respect to the RFP Conceptual Plans for the **US 29 & Rio Rd Grade Separated Intersection project**:

- (1) Design Waiver No. 1: US 29 Left Shoulder 2' Width & Right Shoulder 8' Width for Depressed Thru Lanes
- (2) Design Waiver No. 2: US 29 Left Shoulder 2' Width for the Local Lanes
- (3) Design Waiver No. 3: Elimination of 4' Sidewalk Buffer along US 29 and Rio Road within the limits of the US 29 & Rio Road Grade Separated Intersection

The Design-Builder shall be responsible for documenting and submitting the waivers listed above. VDOT will be responsible for submitting the design waivers to the appropriate authority(-ies) for review and approval. No Design Exceptions or Waivers have been identified or are expected for Berkmar Drive Extension or the US 29 Widening projects.

The costs for preparing and processing the design waivers shall be included in the Offeror's Price Proposal. For the purposes of preparing their Proposals, the Offerors shall assume that the design waivers listed above that are properly justified and mitigated will be approved by VDOT. Any schedule delay as a result of the approval process is the responsibility of the Design-Builder.

Except for the design waivers identified above, there are no additional anticipated substandard features reflected in the conceptual design. However if during further development of the design the Design-Builder identifies substandard features, the Design-Builder is required to either eliminate them through design improvements or apply for the appropriate design exceptions and/or waivers. The costs for preparation of design waivers or exceptions and any information needed to support these documents is the responsibility of the Design-Builder. Any schedule delays as a result of the approval process are the responsibility of the Design-Builder.

## 2.2 Mainline and Other Roadway Improvements

The roadway inventory information and major design criteria are summarized in Attachments 2.2.1 and 2.2.2. The information contained in the Attachments shall serve as a basis for the Design-Builder to determine the appropriate criteria to apply to the design of the grade separated intersection and roadways for the Project. Offerors are on notice that the entirety of the information contained in the Design Criteria Tables 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. Unless otherwise approved by VDOT, no changes to or deviation from the listed criteria shall be allowed. Any cost and schedule delays as a result of changes or deviations are the responsibility of the Design-Builder. All private and commercial entrances and private access roadways shall be designed to conform to Appendix F of the Road Design Manual.

~~The VDOT performed~~ Synchro analyses for existing (2014), opening (2018), and design year (2024) No-Build and Build conditions ~~have been provided as part of Addendum No. 1~~ for the Route 29 Corridor from Hydraulic Road to Airport Road. In addition, ~~the VISSIM simulations for the above stated conditions have been provided~~ were also performed for the US 29 and Rio Road Grade Separated Intersection including the adjacent intersections in each direction. ~~The Synchro analysis and VISSIM simulations are included in the RFP Information Package.~~

As shown in the Comparison of US Arterial Operation for 2040 PM Peak Hour No-Build vs Build ~~included in the RFP Information Package (Attachment 2.2.4)~~, the minimum reduction of combined travel time for the Central and North segments for the network model for PM peak

vehicles travelling on the depressed through lanes shall be no less than the 284.1 second reduction northbound and 81.9 second reduction southbound ~~as designated in Attachment 2.2.4.~~

~~No crosswalk will be provided across US Route 29 on the north side of In the Design Year Analysis (2040 Build), at the US 29 & Rio Road Grade Separated Intersection, the pedestrian movement across US 29 on the north side of the intersection shall be eliminated from the analysis, but the remaining other pedestrians crossings shall be adjusted to accommodate this pedestrian movement and the associated volumes as analyzed in the Opening Year (2018 Build) Analysis. With the inclusion of the three (3) pedestrian crossings in the 2040 Build analysis over the 2040 No-Build analysis (no pedestrian crossings), and not accounting for the free flow in the depressed lanes, the acceptable overall delay for the Design Year Analysis (2040 Build) shall be equal to or better than the as compared to the Design Year Analysis (2040 No Build). † The minimum acceptable overall delay for the intersection shall be equal to or less than 62 seconds with a 5% tolerance/error factor. remain at 62 seconds or shall be reduced.~~

VDOT did not utilize the HCM Multi-lane Weave Methodology since the merge of US 29 Rio depressed roadway with the local lanes is not into a free-flow condition, but instead compared the calculated weave length to the maximum and 95% queues at the intersections (both Opening year (2018) and Design year (2040)) to ensure vehicles are not impeded by the queue and are able to complete the weave. Based on the opening year comparison, the queues are not expected to impede the weave in these locations. VDOT understands that prior to the Design year (2040) further intersection improvements may be needed at both adjacent intersections (Fashion Square Drive and Woodbrook Drive) to reduce vehicle queues as to not impede vehicles from completing the weave.

Pertaining to stopping sight distance in sag vertical curves, the use of the comfort criteria is acceptable and the Design-Builder may mitigate this situation without the need of a design exception. However, the use of mitigation measures outside of the standard design elements for the roadway section are not eligible for use as mitigation. For instance, the Design-Builder cannot install lighting to mitigate stopping sight distance on a sag curve if lighting would not otherwise be provided for this project element. The Department will not provide blanket approval of this condition, it needs to be analyzed on a case-by-case basis.

**Synchro shall be used to calculate 95<sup>th</sup> percentile queues.**

### **2.2.1 US 29 & Rio Road Grade Separated Intersection**

In addition to the US 29 (Seminole Trail) improvements depicted on the RFP Conceptual Plans (contained in the RFP Information Package), the Design-Builder is also responsible for making necessary improvements to Rio Road (SR 631), Fashion Square Drive, and Albemarle Square Court. Roadway Improvements include but are not limited to turn lane improvements, raised medians, curbing, sidewalks, signing, signal modifications, landscaping and entrance aesthetics and improvements to existing entrances as shown. Except where shown in the RFP Conceptual Plans, all intersections with existing left and right turn lanes, shall at a minimum, have the same number and taper length as exists at the date of the ~~RFP or~~ latest RFP Addenda

and shall accommodate the 95<sup>th</sup> percentile queue for the design year. Where left turn movements are proposed to be prohibited or eliminated in the RFP Conceptual Plans, the adjacent downstream signalized intersection shall be improved to accommodate the storage required by the 95<sup>th</sup> percentile queue for the design year for both the prohibited/eliminated left turn along with the 95<sup>th</sup> percentile queue for the design year for existing intersection, including u-turns, as part of the final design. These existing intersections outside the project limits will not be required to be improved to accommodate the proposed u-turn movements of the design through the intersection. Shared through/left or through/right lanes will not be permitted to satisfy the 95<sup>th</sup> percentile queue requirement as part of the final design. Any deletion of an existing turn lane or change in storage length or taper length not shown in the RFP Conceptual Plans shall require VDOT approval. Segments of the existing roadway have substandard design features, including, but not limited to inadequate stopping sight distance, vertical curve lengths, and cross slope. The Design-Builder's final design shall ensure all substandard features are modified to meet current geometric standards. **The existing intersection skew angle at Rio Road has been modified in the RFP Conceptual Plans and does not meet standards as shown but does not require a design exception or waiver. The acceptable skew angle shall not exceed the angle shown in the RFP Conceptual Plans.** The acceptable range for cross slopes on US 29 for the US 29 & Rio Road Grade Separation project shall be between 1.5% and 2.5%. **The depressed roadway shall not be superelevated and all stormwater runoff shall be directed to the shoulder for conveyance and treatment.**

Pedestrian facilities shall be required for the US 29 & Rio Road Grade Separated Intersection project as depicted on the RFP ~~Addendum Number 1~~ Conceptual Plans. Specifically, the Design-Builder shall provide crosswalks in three quadrants of the intersection including: the crossing of Route 29 on the south side of the intersection, the crossing of Rio Road on the west side of the intersection, and the crossing of Rio Road on the east side of the intersection. Crosswalks shall include pedestrian signals.

**The existing utility pole in the northeast quadrant at approximate station 162+30 left will be removed as part of the utility relocation process. Other utility poles potentially in conflict may remain in place if a minimum of 48 inches clear from the back of curb is provided. If this clear distance cannot be provided the utility pole shall be relocated. A design waiver is not required if a minimum of 48 inches clear from the back of the curb is provided.**

### Functional Classification

US 29 (Seminole Trail) is a corridor of statewide significance and part of the National Highway System and is functionally classified as an Urban Other Principal Arterial. The VDOT geometric design standard that will be utilized for US 29 (Seminole Trail) shall be GS-5 in rolling terrain with a minimum design speed of 45 mph. This standard shall apply to both the depressed and local US 29 roadway section at the grade separated Rio Road intersection.

Rio Road (SR 631) is functionally classified as an Urban Minor Arterial. The VDOT geometric design standard that shall be utilized for Rio Road will be GS-6 in rolling terrain with a minimum design speed of 40 mph.

The two (2) interior northbound and two (2) interior southbound thru lanes of US 29 shall be depressed under the existing Rio Road intersection to allow for the free flow of traffic through the intersection as depicted in the RFP Conceptual Plans. The minimum distance from the beginning of the lane shift to the introduction of the impact attenuator for the retaining wall shall be a minimum of 400 feet. The depressed roadway shall be required to meet NFPA 502, and evaluated as depressed roadway per Section 4.3.1 and at minimum a permanent ~~Class III~~ dry standpipe system shall be installed and tested in accordance with NFPA 241, NFPA 14, and NFPA 25. Standpipes shall be sized for water flow and pressure at the outlet based on the predicted fire load and the standpipe classification (III) in accordance with NFPA 14. ~~Two (2) fire hydrants shall be installed at the US 29 & Rio Road Grade Separated Intersection. One hydrant shall be located in the southeast quadrant and one hydrant shall be located in the northwest quadrant. Adjacent to each of these two hydrant locations (minimum six (6) feet separation), a four (4) inch fire department connection (FDC) to the dry standpipe system shall be provided. In the depressed roadway, a 4 inch FDC shall be located on each approach near the end of the retaining wall and an additional 2 ½ inch FDC shall be located along the retaining wall at one half the distance of the 4 inch FDC to the bridge structure. Hose cabinets are not required.~~ ~~connections shall be provided on both the east and west sides of the depressed roadway with a maximum on-center spacing of 200 feet.~~

The depressed roadway profile shall either be designed for positive drainage or the drainage system shall be designed for a 50-year storm. The ~~profile grades for the~~ remaining exterior four (4) local through lanes (two (2) northbound and two (2) southbound) on US 29 and all existing turning or merge lanes ~~shall be adjusted to: a) reduce right-of-way impacts, shall remain at or near the existing elevation to~~ b) maintain the existing connection at Rio Road, c) accommodate all existing turning movements with the same numbers of lanes at the intersection and d) maintain ~~right-right-in-right-right-out~~ access to the existing private and commercial entrances in each intersection quadrant. – In addition, the intersection geometry shall be designed to accommodate both the eastbound and westbound left turn movements from Rio Road onto US 29 to occur in the same signal phase ~~and the northbound and southbound left turn movements from US 29 onto Rio Road to occur in the same signal phase.~~ All dual turning left turn movements shall accommodate two (2) design vehicles (a WB-67 along with a passenger vehicle) turning side by side. AutoTurn or similar simulations shall be performed to show adequate room has been provided for the off-tracking of the design vehicles in all left turn, right turn, and u-turn movements through the intersection. ~~For existing entrances and right turn movements from Route 29 onto Rio Road, the Design-Builder shall design the entrances and turning movements to accommodate the maximum size design vehicle that the entrance currently accommodates.~~

~~For situations where existing commercial entrances cannot meet the requirements of the Road Design Manual for maximum grade, the Design-Builder shall utilize the flattest grade possible which does not require construction beyond the temporary construction easement depicted on the RFP Conceptual Plans. All reasonable efforts shall be made to ensure that the entrances which are steeper than the maximum grades provided in the Road Design Manual are flatter than the existing condition. No design waiver will be required for these situations.~~

All entrances shall meet sight distance requirements. In some cases, minor modifications to parking areas may be required to achieve adequate sight distance. Any modifications that are made to parking areas shall maintain the same number of parking spaces and access.

### 2.2.2 US 29 Widening

In addition to the US 29 (Seminole Trail) improvements depicted on the RFP Conceptual Plans (contained in the RFP Information Package), the Design-Builder is also responsible for making necessary improvements to Rio Mills Road, Polo Grounds Road, Ashwood Boulevard, Ridgewood Drive, Rubin Lane, Hollymead Drive, Towncenter Drive, the existing crossovers along US 29 (excluding the 2 existing crossovers at approximate Station 639+00 and approximate Station 667+00 that will be closed per the RFP Conceptual Plans) and all existing private and commercial entrances. All intersections with existing left and right turn lanes, shall at a minimum, have the same number and current storage and taper length as at the date of the ~~RFP~~ ~~or~~ latest RFP Addenda and shall accommodate the 95<sup>th</sup> percentile back of queue for the design year traffic analysis as part of the final design. Shared through/left or through/right lanes will not be permitted to satisfy 95<sup>th</sup> percentile requirement as part of the final design. Any deletion of an existing turn lane or decrease in storage length or taper length shall require VDOT approval. In addition, on Northbound US 29 a new left turn lane taper and storage shall be provided at the Ashwood Boulevard intersection as shown in the RFP Conceptual Plans. The design of the roadside features including stormwater management facilities shall not preclude the future extension of Ashwood Boulevard and Hollymead Drive to the proposed Berkmar Drive Extension or require a relocation of such facilities.

Segments of the existing US 29 roadway have substandard design features, including, but not limited to inadequate stopping sight distance, vertical curve lengths, and cross slope. The Design-Builder's final design shall ensure all substandard features are modified to meet current geometric standards. A raised median of at least 16 feet in width shall be provided for the US 29 Widening project, except where left turn lanes exist or are proposed, where a raised concrete median at least 4 feet (face-of-curb to face-of-curb) in width shall be provided. A raised median of at least 8 feet wide for a minimum of twenty feet from the median nose shall be provided adjacent to the left turn lanes at the intersection of North Hollymead and US29 in conjunction with a pedestrian crossing for US29. A raised median of at least 8 feet wide for a minimum of twenty feet from the median nose shall be provided adjacent to the left turn lanes at the intersection of Ashwood Boulevard and US29. The acceptable range for cross slopes on US 29 for the US 29 Widening project shall be between 1.5% and 2%. No reversal of the crown line or adverse cross slope (pavement sloping toward median unnecessarily) will be permitted due to snow removal and melting implications.

The ~~conceptual-RFP Conceptual Plans design-offor~~ the widening of this section of US 29 ~~avoids-minimizes~~ impacts to the Dominion Virginia Power Transmission line located along the west side of US 29. ~~Should a Design Builder elect to impact this facility, it shall be at the Design Builder's sole risk including schedule and cost.~~ The Design Builder's final design shall not include impacts the Dominion Virginia Power Transmission line; Offerors shall reflect this

~~are requested not to include impacts to the Dominion Transmission line~~ in their technical and price proposals.

Previous Value Engineering recommendations that were rejected by the Department, including but not limited to re-alignment of Ridgewood Drive to connect with Ashwood Boulevard, should not be included in the Offeror's Technical or Price Proposals. If the successful Design-Builder chooses to **reconsider these recommendations and to** move forward with any of these value engineering recommendations the Design-Builder will bear all risk related to schedule and cost. Additionally, the Design-Builder will be responsible for any public involvement including additional public hearings that may be required.

The existing paved "shoulder" located along the southbound lanes of Route 29 between Towncenter Drive and Towncenter Lane is used as a turning lane for trucks making deliveries to the businesses in the Hollymead commercial development. **To minimize right of way impacts, the Department will allow This cannot be removed, but the Department will entertain ideas about** a shortening ~~the~~ of this lane and **developing construction of** a dedicated turn lane to **facilitate this movement instead**. The turn lane shall not be reduced to below the minimum required per standards. The proposed sidewalk in this vicinity must include a four foot buffer area (green strip) ~~or the sidewalk must be widened per standards~~.

As depicted on the RFP ~~Addendum 1~~ Conceptual Plans, a shared use path shall be provided along the east side of Route 29 from Polo Grounds Road to North Hollymead Drive. At North Hollymead Drive a crosswalk with median refuge area and pedestrian signals shall be provided. A sidewalk shall be provided along the west side of Route 29 from North Hollymead Drive to Towncenter Drive. **A sidewalk shelf (grading for potential future sidewalk construction) shall be constructed along the west side of Route 29 between Rio Mills Road and North Hollymead Drive.**

### Functional Classification

US 29 (Seminole Trail) is a corridor of statewide significance and part of the National Highway System and is functionally classified as an Urban Other Principal Arterial. The VDOT geometric design standard that shall be utilized for US 29 (Seminole Trail) will be GS-5 in rolling terrain with a minimum design speed of 45 mph, however, as noted in Attachment 2.2.2 certain geometric elements are required to meet 50 mph design speed parameters.

### **2.2.3 Berkmar Drive Extension**

In addition to the Berkmar Drive Extension as depicted on the RFP Conceptual Plans (contained in the RFP Information Package), the Design-Builder shall make all necessary improvements to facilitate the connections to the existing intersection of Berkmar Drive and Hilton Heights Road and also to the existing roundabout at Towncenter Drive. A dam break shall be considered an Extreme Event II and shall be included as an LRFD load combination for the design of the Rivanna River Bridge for the Berkmar Drive Extension project (**see Section 2.3.3.2**). The acceptable range for cross slopes on Berkmar Drive Extension and Rio Road shall be between 1.5% and 2%.

Access shall be provided at approximate station 202+00 left and right of alignment on Berkmar Drive Extended to provide access to both residual areas of Parcel 217 ID 04600-00-00-050A0 D.B. 4244, PG. 494 bisected by the new roadway. Entrances (curb cuts) shall conform to current Road & Bridge Standard Entrance Gutter CG-9D. The shared use path and sidewalks shall be designed to accommodate vehicular crossing of those elements at this location to facilitate farm equipment access to both residue parcels.

The Design Builder may, at full risk to the Design Builder with regard to schedule and cost, propose a minor realignment of the roadway (between Station 112+07.65 and Station 149+63.44 as indicated on the RFP Conceptual Plans) for the purposes of providing a tangent alignment for the bridge over the South Fork of the Rivanna River. Potential risks include, but are not limited to the following:

- Additional archaeological survey may be required for Berkmar if the revised alignment extends beyond the 200' wide corridor studied by VDOT **which is located 100 feet on either side of the RFP Conceptual Plan preferred alternative alignment**
- Additional wetland impacts, requiring an Individual Permit from the USACOE
- Additional wetland impacts that could trigger the Section 106 process
- A design that is not considered a LEDPA by the USACOE

### Functional Classification

Berkmar Drive will be functionally classified as an Urban Collector. The VDOT geometric design standard that shall be utilized for Berkmar Drive Extension will be GS-7 **with curb and gutter** in rolling terrain with a minimum design speed of 40 mph.

Berkmar Drive Extension shall be a two (2) lane facility built on a 120' right of way as to not preclude the future widening of Berkmar Drive Extension to four (4) lanes wholly within the purchased right of way corridor.

### **2.2.4 Miscellaneous**

Slopes on all **three** projects adjacent to residential and commercial properties shall be 3:1 or flatter for maintenance purposes and will not require permanent slope easements. For the Berkmar Extended project and the Route 29 Widening Project 2:1 slopes with **permanent** slope easements are allowed. ~~A with a minimum ten foot width from toe of slope to permanent slope easement will be required.~~ Slopes 3:1 or flatter shall be utilized **along the residential property on parcels 209, 213 & 217 as designated on the RFP Conceptual Plans** for the Berkmar Extended project.

## 2.3 Structures and Bridges

### 2.3.1 General

Construction of any superstructures and substructures shall be staged as necessary to maintain travel lanes on US 29 and secondary roads in accordance with the approved Traffic Management Plan to be developed by the Design-Builder.

A grade separation structure is required at Rio Road and a bridge is required on Berkmar Drive over the South Branch of the Rivanna River. The structure for the grade separation at Rio Road shall be of sufficient width to meet the horizontal clearance requirements necessary to provide all lanes as noted in Part 2, Section 2.2 of this RFP and pedestrian accommodations as depicted on the RFP Conceptual Plans (contained in the RFP Information Package).

Structures for the Rio Road grade separation may need to utilize Accelerated Bridge Construction (ABC) delivery approach. The RFP Conceptual Plans (contained in the RFP Information Package) detail a depressed highway/tunnel with precast components suitable for ABC delivery. Design-Builder is responsible for other bridge structures necessary to accommodate H&HA design. Material for pipes or culverts that are greater than 36 square feet in cross sectional area shall be reinforced concrete. Shapes and details shall be in accordance with VDOT Road and Bridge Standards.

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 approved prior to proceeding with final design. Bridge type and layout shall be based on reducing long-term maintenance costs for VDOT. Stage construction plans shall outline expected methods of protecting roadway users (adjacent vehicles, US 29 traffic, and pedestrian traffic) during each stage.

Structures for this Project shall be designed using AASHTO LRFD Bridge Design Specifications, 6<sup>th</sup> Edition, 2012; and Interim Specifications; and VDOT Modifications (IIM-S&B-80) and the Additional Foundation Criteria (Attachment 2.3a).

The Design-Builder is prohibited from any deviation of VDOT's bridge standards without allowance granted in this document or prior written approval from VDOT. VDOT's Standard Details, including VDOT Design Aids, are available from the VDOT Website at <http://www.virginiadot.org/business/bridge-manuals.asp>. These standards, design aids, and typical details shall be used to the maximum extent possible in the development of the plans. Future wearing surface loads and construction tolerance loads shall be utilized in accordance with IIM-S&B-80.

The proposed structures shall utilize low permeability concrete in accordance with the Special Provision for Low Permeability Concretes for Design-Build Projects.

All reinforcing steel shall be deformed and shall conform to ASTM A615, Grade 60 except for reinforcing steels noted as CRR (corrosion resistant reinforcement). The proposed

structure shall utilize CRR in accordance with IIM-S&B-81. Epoxy coated reinforcing steel shall not be used.

Details and drawings not specifically included in the VDOT Manual of Structure and Bridge Division, Volume V Series may only be included in structural plans and working drawings after review and approval by VDOT. Should any such details not be acceptable, the Design-Builder shall make the necessary modifications or shall submit an alternate detail that is acceptable to VDOT.

Either prestressed concrete or structural steel beams/girders may be used and shall be designed as composite with the cast-in-place deck. The proposed bridge shall not be designed as fracture critical. Maximum beam spacing shall be limited to 12 feet - 0 inches. Bridge deck overhang shall not exceed 0.3 times the beam spacing.

For structural steel alternatives, the girders/beams shall be weathering steel if the conditions meet the requirements of the Federal Highway Administration Technical Advisory T5140.22. The use of HPS 75ksi or 100 ksi will not be permitted. Cover plates on continuous rolled beam sections in the negative moment areas and longitudinal stiffeners shall not be used. Fatigue prone details shall not be utilized. No field welding to structural steel members, primary or secondary, shall be permitted except as allowed by the VDOT Manual of Structure and Bridge Division, Volume V.

## 2.3.2 Superstructure

### 2.3.2.1 US 29 & Rio Road Grade Separated Intersection

For the purpose of this RFP, the Transverse direction is defined as the axis that runs along US 29. The longitudinal direction is defined as the axis that runs along Rio Road. ~~A-This proposed structure that measures 300 ft or more along the transverse axis~~ shall be regarded as a Depressed Highway/Minor Tunnel and shall be designed in accordance with the National Fire Protection Association (NFPA) 502 Code and Part 2, Section 2.3.13 of the RFP. Tunnels shall be designed for a 100 year service life and a Peak Fire Heat Release Rate of 100 Mega Watts.

According to the FHWA, ABC is defined as “bridge construction that uses innovative planning, design, materials, and construction methods in a safe and cost-effective manner to reduce the onsite construction time that occurs when building new bridges” (ABC Manual, 2011 pg 22). Superstructure elements shall be based on reducing long-term maintenance costs for VDOT. The Design-Builder should use the ABC Manual as a guide when designing this structure. Only materials that are on the VDOT approved materials list will be considered.

Transverse (axis along US 29) post tensioning of structural elements will be permitted for this structure. Longitudinal (axis along Rio Road) post tensioning will not be permitted. In the case of transverse post tensioning, temporary prestressing of the elements shall ensure a minimum compressive stress of 44 pounds per square inch (psi) in the joints between segments. Transverse tendons shall have the same requirements as Voided Slab Standards in Volume V - Part 3.

Precast Prestressed Concrete Beams shall have an integral bridge deck with a minimum 7 ½ inch<sup>2</sup> thickness. Precast Prestressed Concrete Beams that are intended to have a riding surface as part of the top flange (including, but not limited to Deck Bulb T's, Next Beams, etc.) shall have a 2 inch<sup>2</sup> high strength concrete overlay in accordance with Section 412 of the Road and Bridge Specifications using latex hydraulic cement concrete. Shear keys for adjacent Precast Prestressed Concrete Beams shall be filled in accordance with a Special Provision for Fiber Reinforced Shear Key Concrete. Asphalt overlays will not be permitted.

Superstructure elements may include any of the examples that are documented in the ABC Manual. Any description in the manual that notes the wording of “other” shall be treated as a deviation and managed in accordance with Part 1, Section 2.7 and 2.8 of this RFP. Steel grid (open or filled with concrete) and orthotropic decks are not permitted.

Structures with permanent prestressing shall be based on no tensile stress in the concrete in any Serviceability Limit State combination.

The design of the permanent structure shall account for any effects caused by uplift or ground movement in the temporary and permanent condition. “Temporary Condition” is defined as the state, appearance, quality in regards to its function according to its nature and purpose until a period at Final Acceptance.

Provisions shall be made to prevent groundwater- from entering the pavement subbase materials along the depressed roadway. The Offeror shall take into consideration any increase in hydraulic connectivity which may result from the temporary or permanent works.

~~Superstructure beam elements shall be fire protected in accordance with the NFPA 502. Precast Concrete Institute (PCI) Box Beams that have a flat bottom finish shall have a 4” clear distance to the bottom row of prestressing strands and does not require fireproofing.~~

Jointless bridge design technologies shall be used as outlined in the VDOT Manual of the Structure and Bridge Division, Volume V – Part 2 Chapter 17.

~~Structural approach slabs may be omitted if excavation is limited to 10 feet or less beyond the backwall or seat, and Select Backfill is installed per Section 305 of the 2007 Road and Bridge Specifications and applicable Supplemental Specifications in Part 2, Section 2.1.1.~~

### **2.3.2.2 Berkmar Drive Extension**

The use of continuous span units and jointless bridge design technologies shall be used as outlined in the VDOT Manual of the Structure and Bridge Division, Volume V – Part 2 Chapter 17.

For prestressed concrete alternatives, the precast concrete Bulb-T sections adopted by VDOT shall be used. Spliced Bulb-T beams will not be considered. AASHTO shapes will not be permitted. The use of HPC (high performance concrete) for prestressed concrete beams in excess of 8,000 psi concrete strength will not be considered.

Structural approach slabs will be required at each end of the bridge on this pProject. Approach slabs and sleeper pads, if the latter is required, shall conform to the requirement of the VDOT Manual of the Structure and Bridge Division, Volume V – Parts 2 and 3. A sleeper pad will be required when the bridge abutment is either integral or semi-integral.

Bridge parapet walls shall be BR-27 barrier systems and shall be designed and constructed in accordance with the Special Provision for Architectural Finish, Concrete Form Liners and Color Stain Coating and the Special Provision for Powder Coating Galvanized BR-27 Barrier Railings, Handrails, Light Posts, Signal Poles, Overhead Sign and/or Signal Structures and Guardrail and shall include an architectural form treatment on the concrete walls on both sides (roadway and external). A pedestrian fence may not be used in place of the BR-27 barrier system. **BR-27 barrier wall shall be installed to separate vehicular traffic from the shared use path.**

### **2.3.3 Substructure**

#### **2.3.3.1 US 29 & Rio Road Grade Separated Intersection**

Substructure elements shall be based on reducing long-term maintenance costs for VDOT. Permissible substructure elements exclude Geosynthetic Reinforced Soil (GRS) integrated bridge systems.

Steel piles or sheet piles utilized for earth retaining walls shall be hot dip galvanized in accordance with ASTM A123.

#### **2.3.3.2 Berkmar Drive Extension**

The proposed structure shall be designed to meet all applicable hydraulic requirements, including current FEMA and VDOT guidelines as described in the latest edition of 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 noted in Part 2, Section 2.7. These analyses shall be submitted to VDOT for review and approval prior to the commencement of bridge construction.

In accordance with the Virginia Administrative Code (4-VAC-50-20), the Rivanna Reservoir Dam's Hazard Potential is classified as "High." Accordingly, a dam break shall be considered an Extreme Event II and shall be included as an LRFD load combination for the design of the Rivanna River Bridge. Furthermore, substructure units shall be designed to accommodate a stream pressure resulting from a sunny day breach resulting in a maximum discharge of 103,400 cubic feet per second. The low-chord elevation of the Rivanna River

Bridge superstructure shall not be less than three hundred seventy-eight (378) feet above sea level.

The substructure shall be designed and constructed to limit impacts due to dredging or fills in accordance with Part 2, Section 2.4.4.3.

When spread footings are proposed, the Design-Builder shall conform to Section 401 of the VDOT 2007 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 Lead Geotechnical Engineer. 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.

All foundation elements shall be extended to bear on non-scourable rock. Non-scourable rock is defined as rock with a minimum rock quality designation (RQD) of at least 50%.

For unacceptable locations of temporary and permanent impacts (fills, excavations, substructure footings, etc.), refer to Part 2, Section 2.4.4.3

#### **2.3.4 Miscellaneous**

The US 29 & Rio Road Grade Separated Interchange shall be designed to support the following utilities to include their associated structural supports and/or hangars:

- Lighting on the bridge and under the bridge
- Conduit and cable as may be required in the overall project design and based upon coordination with VDOT utilities.
- See Part 2, Section 2.9.2 for conduit requirements for use by VDOT and Northwest Regional Operations (NWRO).

Adequate drainage for the bridge structure must 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 the latest version of FHWA Publication HEC21-Design of Bridge Deck Drainage and the VDOT Drainage Manual. All hardware components for the deck drainage system shall conform to requirements of Section 226 of the VDOT 2007 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.

The Design-Builder is advised that the allowable construction and fabrication tolerances in the contract are maximums, and are not guaranteed to work with all required dimensions. There may be instances where all of the allowable construction tolerances [in standard spec 406.03(d)] and all of the allowable fabrication tolerances [in standard spec 406.03(c) & ACI-315 by reference] may not be available: application of all combined tolerances may result in conflicts with other contract requirements; these instances may include, but not be limited to, concrete elements which have embedded items (such as anchor bolts for railing on parapet wall). If conflicts between the locations of items within a structure or portion of a structure exist while utilizing the total of all applicable tolerances, then lesser tolerances may be required to prevent conflicts between individual items. The Design-Builder shall be responsible for reviewing the plans and specifications and reducing the tolerances as needed to ensure a finished product that complies with the details shown on the plans.

No timber shall be proposed for any permanent structural element. **Timber elements may be used as temporary lagging for retaining walls as noted in Part 2, Section 2.3.9 below.**

The use of any existing retaining wall to function as a deadman for any tie-back system shall not be permitted by the Department.

### **2.3.5 Structure Load Ratings**

The following structure load rating analyses and reports will be required and shall be performed in accordance with the requirements of I&IM-S&B-86.

1. A load rating is required when a completed structure or any phased portion of a partially completed structure is intended to carry traffic in a temporary configuration.
2. Load rating of any partial configuration of the existing structure.
3. 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 which satisfies the load rating requirements outlined in I&IM-S&B-86.

### **2.3.6 Working Drawings**

The Design-Builder shall review and approve working/shop drawings and submit three approved sets to VDOT for each 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 but not limited for all structures as MSE walls, other specialty retaining structures (tieback, soil nail, etc.) overhead sign structures and other ancillary structures and sound walls.

### **2.3.7 FHWA Bridge Construction Unit Cost Report**

For each bridge, 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 bridge unit cost data is required to complete VDOT's annual Bridge Construction Unit Cost Report which is required by FHWA. This data shall be submitted to VDOT within ninety (90) days of the VDOT's approval of the construction plan submittal.

### **2.3.8 Safety and Acceptance Inspection for the Proposed Structures**

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

1. 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.
2. 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 fourteen (14) 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.

### 2.3.9 Retaining Walls

Retaining wall structures shall be designed in accordance with the following requirements:

- Retaining walls shall be designed in accordance with VDOT and AASHTO specifications and requirements.
- Existing or new retaining walls shall be analyzed or designed for any additional loads imposed by sign structure supports or other structures.
- Only retaining wall systems for which FHWA has developed guidelines will be permitted for this Project.
- Only retaining walls presenting an essentially vertical concrete face shall be used.
- All components of the retaining walls (including tie-backs) shall be contained within VDOT's right-of-way.
- If mechanically stabilized earth (MSE) walls will be used, a retaining wall system on VDOT Approved Retaining Wall Systems List shall be allowed, except as noted above and as noted on the list. MSE walls that require traffic protection at the top shall utilize barriers or railings on moment slabs.
- MSE walls that require traffic protection at the top shall utilize barriers or railings on moment slabs, wherein low permeability concrete shall be used in accordance with current VDOT 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, galvanized and powder-coated in accordance with the Special Provisions for Powder Coating. **For the US 29 & Rio Road Grade Separated Intersection project element, BR-27 barrier shall be used on the top of the retaining wall on the outside of the depressed through lanes. The BR-27 barrier shall conform with the Architectural Treatment as outlined in the Special Provision for Architectural Finish, Concrete Form Liners and Color Stain Coating.**
- **The support system for the BR-27 barrier shall be designed to handle the loading conditions described in Chapter 13 of the AASHTO LRFD Bridge Design Specifications as specified in Part 2, Section 2.1.1 as well as the deflection criteria stipulated in the Special Provision for Geotechnical Engineering Design for Rio Road Intersection with U. S. Route 29, dated August 2014. The Design Builder shall provide design calculations and details of the support system for the BR-27 barrier to the Department for review and approval for the US 29 & Rio Road Grade Separated Intersection project.**
- Refer to Part 2, Section 2.6.2 for additional Geotechnical Requirements.
- Retaining walls and earth retaining systems shall have a concrete facing or finish that is consistent with the Architectural Treatment as outlined in the Special Provision for Architectural Finish, Concrete Form Liners and Color Stain Coating.
- **The use of the bridge superstructure as a compression strut to brace the tops of retaining walls to resist overturning will be permitted. The use of additional struts that are not part of the bridge superstructure to brace the retaining walls shall not be**

~~permitted. Compression struts utilized to connect the tops of retaining walls to resist overturning will not be permitted.~~

- The use of the bridge superstructure as a compression strut to brace the top of retaining walls to resist overturning will not be permitted. The use of additional struts that are not part of the bridge superstructure to brace the retaining walls shall not be permitted.
- No timber lagging shall be permitted for any permanent retaining wall. Timber elements may be used as temporary shoring in soldier pile and similar walls but shall not be utilized for final structural loading. Timber elements used for temporary shoring which are to be left in place shall be hardwood, shall not be visible in the final configuration and shall be treated to postpone decay.
- The use of any existing retaining wall to function as a deadman for any tie-back system is not permitted.

### 2.3.10 Architectural Treatment

Specific architectural treatments the Design-Builder will be required to incorporate as part of their final design are specified in the Special Provision for Architectural Finish, Concrete Form Liners and Color Stain Coating and the Special Provision for Powder Coated Galvanized ~~B#BR-27~~ Barrier Railings, Handrails, Light Posts, Signal Poles, Overhead Sign and/or Signal Structures and Guardrail.

Box planters as detailed in the Special Provision for Landscape shall be a separate item that is not permanently attached to any bridge element.

~~Existing retaining walls and extensions of existing retaining walls shall not have additional architectural treatments applied. Any modification or extension of existing retaining walls shall match the finish of the existing wall.~~

### 2.3.11 Signs/ITS Structures

#### 2.3.11.1 - Bridge Parapet Mounts/Sign Structures Mounted on Bridge Structures

For definitions and illustrations of Overhead Signs and Post Mounted Signs, refer to the Virginia Supplement to 2009 MUTCD.

New bridge parapet sign structures shall not be allowed.

Overhead sign structures (span type only, no cantilevers) shall be supported on bridge deck blisters. The main bridge beams/girders shall be investigated for fatigue loading from the wind loads of the sign structure. The minimum vertical clearance between the bridge deck and sign shall be in accordance with the VDOT Road and Bridge Standards.

#### 2.3.11.2 Acceptance for New or Modified Sign/ITS Structures

Acceptance of New or Modified Sign/ITS Structures will require a safety initial inspection. The purpose of a safety initial inspection is to verify compliance with the requirements of I&IM-S&B-73 – High Mast Light Poles: Inspection and Maintenance; and I&IM-S&B-82 – Traffic Structures and to identify deficiencies, including incomplete work, and variances from approved plans and specifications and which must be rectified before the structure can be accepted.

The safety initial inspection shall be performed by VDOT. The Design-Builder shall provide the VDOT Project Manager with Approved for Construction drawings, including all revisions at least two weeks prior to scheduling the inspections.

During the safety initial inspection, data about location date completed, description, horizontal/vertical clearances, structure element description and condition and traffic safety features will be gathered.

The Design-Builder shall ensure that all structural elements are accessible for inspection of all structures. This requirement may dictate that the Design-Builder provide man-lifts, barges, remote operated vehicles, bucket trucks or other equipment necessary to inspect the structure and plans, personnel, and equipment to implement traffic control.

Upon completion of the safety initial inspection, VDOT will submit an inspection report to the Design-Builder within ten (10) days of the inspection either recommending acceptance of the structure or identifying deficiencies, including incomplete work, which must be rectified before the structure can be accepted. If a structure is not accepted, the Design-Builder shall rectify the deficiencies and notify VDOT in writing, certifying the deficiencies have been corrected. Within five days of receipt of such certification, VDOT may require that a follow-up inspection be performed to verify that the deficiencies have been corrected or recommend in writing to the Design-Builder that the structure is acceptable without a further inspection.

The final acceptance of Sign/ITS Structures will occur when the safety initial inspection is completed and any necessary follow-up (verification) inspections are performed. The safety initial inspection may be scheduled as more than one inspection as long as it is coordinated with VDOT.

### **2.3.12 Plan Submission**

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

#### **1. Preliminary Plan (Stage I) Submission**

a. The Design-Builder shall submit a preliminary plan for each permanent structure (new bridge, bridge replacement, and bridge widening) documenting how the structure geometrics were determined.

b. The preliminary plan submittal shall include:

i. a plan view, developed section along bridge centerline/construction baseline and a transverse section. Refer to the Department's office practices for more complete information;

ii. completed Stage I Bridge Report Summary Form; The preliminary geotechnical recommendation report is required with the Stage I submission; and

iii. copies of **completed and 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.

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

d. 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.

## 2. Final Plan (Stage II) Submission

a. The Design-Builder shall submit final plans for each permanent structure. The final plans shall be assembled according to the procedures and guidelines presented in the Department's office practices.

b. 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 by the Department prior to construction of that element and should be submitted according to the submission schedule provided by the Design-Builder.

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

d. Final design calculations and construction drawings shall be signed and sealed in accordance with VDOT, Manual of the Structure and Bridge Division, Volume V-Part 2, Chapter 1, Section 16: Sealing and Signing of Plans and Documents.

### **2.3.13 Fire Safety Requirements for US 29 & Rio Road Grade Separated Intersection**

The Design-Builder shall consider the structure at the US 29 & Rio Road Grade Separated Intersection as a Roadway Tunnel (along the Centerline of Rte. 29) and the depressed through lanes along the Rte. 29 (from end to end of retaining walls, including Roadway Tunnel) the highway is considered as a Depressed Highway in accordance with NFPA 502 Edition 2014-Section 3.3.31.1. Along the Depressed Highway stand pipe systems shall be installed in accordance with NFPA 502 Edition 2014 and Part 2, Section 2.2.1 of the RFP.

The Chief Engineer is the Authority Having Jurisdiction (AHJ) and is responsible to enforce the requirements of a code or standard based on the Engineering Analysis performed by the Design-Builder.

The Design-Builder shall meet the following requirements for design and construction of a Roadway Tunnel:

1. Roadway Tunnel shall be designed for a Peak Fire Heat Release Rate of 100 Megawatts.
2. Wall panels (architectural) can be designed as sacrificial elements as long as the panels are designed to withstand the provision in NFPA 502, Section 7.3.
3. Protection of structural elements shall in accordance with NFPA 502 Edition 2014 – Section 7.3. Precast Concrete Institute (PCI) Box Beams that have a flat bottom finish shall have a minimum 4 inch clear distance to the bottom row of pre-stressing strands. However, the bottom 2 inch of the cover can be considered as part of the required fireproofing.
4. Emergency electrical systems (including emergency power and emergency lighting) are not required.
5. Engineering Analysis: An analysis that evaluates all factors that affect the fire safety of a Roadway Tunnel or any component of a Roadway Tunnel structure. The following factors shall be fully considered as part of an engineering analysis of the fire protection and life safety requirements for the Roadway Tunnel:
  - a. Users of the facility – vehicular traffic to include passenger cars, buses, heavy good trucks and tanker trucks.
  - b. Restricted vehicle access and egress – no restrictions
  - c. Fire emergencies ranging from minor incidents to major catastrophes
  - d. Fire emergencies occurring at one or more locations inside or in close proximity to the roadway tunnel
  - e. Fire emergencies occurring in remote locations at a long distance from emergency response facilities
  - f. Exposure of CCTV and structures to elevated temperatures
  - g. Traffic congestion and control during emergencies (refer to Part 2, Section 2.9 Road Tunnel Traffic Control Device Systems)
  - h. Built-in fire protection features to include standpipe systems
  - i. Evacuation and rescue requirements – consider local responders

- j. Emergency response time – coordinate with local Fire Department
- k. Emergency vehicle access points- through Depressed Highway, each approach
- l. Emergency communications to appropriate agencies – VDOT NWRO Traffic Operation Center (TOC)
- m. Vehicles and property being transported – see items (a) and (q)
- n. Facility location - urban
- o. Physical dimensions and configuration, including roadway profile
- p. Natural factors, including prevailing wind
- q. Anticipated cargo – no restrictions
- r. Impact to buildings or landmarks near the facility - none
- s. Impacts to facility from external operations and/or incidents
- t. Traffic operating mode - bidirectional

Above mentioned Engineering Analysis factors shall dictate fire safety protection and fire safety requirements, but the minimum fire protection and fire life safety requirements, based on Roadway Tunnel length are listed in the table below:

- a. If the length of the Roadway tunnel (along Rte. 29) is less than 300 feet the Roadway Tunnel is considered as Category X.
- b. If the length of the Roadway tunnel (along Rte. 29) is greater than 300 feet and less than 800 feet the roadway tunnel is considered as Category A.

<b>Minimum Roadway Tunnel Fire Protection Requirements</b>			
	NFPA 502 Sections	Category X	Category A
<b>Engineering Analysis</b>	4.3.1	MR	MR
<b>Fire Protection of Structural Elements</b>	7.3	MR	MR
<b>Fire Detection</b>		CCTV	CCTV
<b>Traffic Control: Stop traffic approaching tunnel portal</b>	7.6.1	MR	MR
<b>Fire Protection</b>			
<b>Fire Standpipe</b>	7.8/10.1	*	MR
<b>Water Supply</b>	7.8/10.2	*	MR
<b>Fire Department Connections</b>	10.3	*	MR
<b>Hose Connections</b>	10.4	*	MR
<b>Fire Pumps</b>	10.5	NR	NR
<b>Tunnel Drainage Systems</b>	7.12	NR	NR
<b>Hydrocarbon Detection</b>	7.12.7	NR	NR
<b>Means of Egress</b>		NR	NR

MR: Mandatory Requirement (A requirement prefaced by the word “shall” within the standard).  
 (\*) - Although not required for Category X Tunnel but required for Depressed Highway  
 NR: Not Required.

## **2.4 Environmental**

### **2.4.1 Environmental Document**

#### **2.4.1.1 US 29 & Rio Road Grade Separated Intersection**

FHWA has issued a NEPA decision for this project. A copy of the Categorical Exclusion (CE) dated August 29, 2014 is included in the RFP Information Package. VDOT has also completed preliminary document re-evaluations for Right of Way (RW) Authorization (EQ-201) dated September 30, 2014; Plans, Specifications and Estimates (PS&E) Authorization (EQ-200) dated September 30, 2014; and a preliminary Environmental Certification/Commitments Checklist (EQ-103) dated September 30, 2014, which are included in the RFP Information Package. VDOT shall complete a final document re-evaluation for RW Authorization (EQ-201) prior to RW authorization; a final document re-evaluation for PS&E Authorization (EQ-200); and a final Environmental Certification/Commitments Checklist (EQ-103) prior to the VDOT Project Manager releasing the project for construction.

The Design-Builder shall carry out environmental commitments during design, right-of-way acquisition, and construction, as applicable, as identified in the CE, the document re-evaluations for RW and PS&E Authorization, and the Environmental Certification 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 will 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 will 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 no additional cost and/or time delays to the project.

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 and no time extensions will be granted. All costs associated with complying with these requirements shall be included in the Offeror's Price Proposal.

#### **2.4.1.2 US 29 Widening**

FHWA has issued a NEPA decision for this project. A copy of the Categorical Exclusion (CE) dated September 3, 2014 is included in the RFP Information Package. VDOT has also completed preliminary document re-evaluations for Right of Way (RW) Authorization (EQ-201) dated September 30, 2014; Plans, Specifications and Estimates (PS&E) Authorization (EQ-200) dated September 30, 2014; and a preliminary Environmental Certification/Commitments Checklist (EQ-103) dated September 30, 2014, which are included in the RFP Information

Package. VDOT shall complete a final document re-evaluation for RW Authorization (EQ-201) prior to RW authorization; a final document re-evaluation for PS&E Authorization (EQ-200); and a final Environmental Certification/Commitments Checklist (EQ-103) prior to the VDOT Project Manager releasing the project for construction.

The Design-Builder shall carry out environmental commitments during design, right-of-way acquisition, and construction, as applicable, as identified in the CE, the document re-evaluations for RW and PS&E Authorization, and the Environmental Certification 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 will 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 will 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 no additional cost and/or time delays to the project.

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 and no time extensions will be granted. All costs associated with complying with these requirements shall be included in the Offeror's Price Proposal.

### **2.4.1.3 Berkmar Drive Extension**

In accordance with the requirements of the Memorandum of Agreement (MOA) for the State Environmental Review Process (SERP), VDOT completed a Preliminary Environmental Inventory (PEI) for the project on September 15, 2014. A preliminary Environmental Certification/Commitments Checklist (EQ-103) dated September 30, 2014 has also been completed by VDOT. These documents are included in the RFP Information Package.

The Design-Builder shall carry out environmental commitments during design and construction, as applicable, as identified in the Environmental Certification form. All commitment compliance shall be supported by appropriate documentation, to be provided by the Design-Builder to VDOT. VDOT shall complete a final Environmental Certification/Commitments Checklist prior to the VDOT Project Manager releasing the project for construction.

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. The Design-Builder will be responsible for notifying VDOT of plan revisions, scope changes, and providing any necessary studies and other necessary information. The Design-Builder shall carry out any additional

environmental commitments that result from VDOT’s final Environmental Certification at its sole expense and no additional cost and/or time delays to the project.

The Design-Builder is solely responsible for any costs or schedule delays related to the permit acquisition and permit modifications associated with Design-Builder’s design changes and no time extensions will be granted. All costs associated with complying with these requirements shall be included in the Offeror’s Price Proposal.

## 2.4.2 Cultural Resources

The Design-Builder is responsible for conducting any additional archaeological studies needed for the project and VDOT will coordinate the studies with the VDHR as required. Please note that VDOT conducted deep testing in the floodplain along the South Fork of the Rivanna River because alluvial soils had accumulated there. The upland areas were subject to standard shovel testing. The Design-Builder should not rely on previous archaeological studies performed during the development of the US Route 29 Bypass project as they are dated and the locational information provided in them is unreliable.

### 2.4.2.1 US 29 & Rio Road Grade Separated Intersection

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.

Please note that any changes to the design, alignment, right-of-way limits, or easements shown on the RFP Conceptual Plans shall require review by VDOT and may 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, 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 and/or time delays to the project.

### 2.4.2.2 US 29 Widening

On August 27, 2014, the VA SHPO determined the project would have No Adverse Effect on historic properties in the Area of Potential Effects (APE). The APE for the project includes: for archaeology, a corridor along either side of US 29 extending 75-ft from the edge of pavement including the construction footprint and all easements for the project; and for architecture, all areas within the immediate viewshed of the project that are not obscured by vegetation and/or modern intrusions on the landscape. Copies of relevant VDOT/VA SHPO correspondence and mapping showing the location of historic properties are included in the RFP Information Package. There is one historic property in the project’s APE:

<u>VDHR No.</u>	<u>Resource Description</u>
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002-0008

Brookhill

The Design-Builder ~~should~~ 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 avoid any other project-related activities on or within the viewshed of these historic properties, including but not limited to staging, borrow/disposal, and any temporary or permanent easements. Please note that any changes to the design, alignment, right-of-way limits, or easements shown on the RFP Conceptual Plans shall require review by VDOT and may 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, 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 ~~and/or time delays~~ to the project.

Given the proximity of the Owens-McCauley cemetery (002-1336/44AB0583) to the proposed ROW limits, the Design-Builder shall erect a temporary construction fence around its perimeter prior to any project construction activities.

#### 2.4.2.3 Berkmar Drive Extension

The VDOT conducted an archaeological survey within a 200-foot wide corridor centered on the alignment shown in the RFP Conceptual Plans. The Design-Builder will be responsible for any additional archaeological studies needed beyond this 200-foot wide corridor, including but not limited to the temporary construction easement provided for access to pier locations and stormwater management basins. The Design-Builder is responsible for carrying out any commitments for avoiding or investigating potentially significant archaeological properties determined by VDOT in consultation with the Virginia Department of Historic Resources (VDHR). Specifically, the Design-Builder shall avoid any impacts, permanent or temporary, to National Register of Historic Places (NRHP) eligible archaeological sites 44AB0428 and 44AB0430 during the design and construction of the project. The Design-Builder shall implement archaeological data recovery (Phase III) investigations at site 44AB0594 in accordance with the draft Treatment Plan developed by VDOT and subject to coordination with VDHR during final design. VDOT anticipates that the investigation will be limited to the construction footprint of proposed bridge pier locations down to an approximate depth of three to six feet. The Treatment Plan, as coordinated with VDHR ~~is included in the RFP Information Package, will be made available in the upcoming RFP Addendum 1.~~

Please note that any changes to the design, alignment, right-of-way limits, or easements shown on the RFP Conceptual Plans shall require review ~~and approval~~ by VDOT and may 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, while 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 ~~and/or time delays~~ to the ~~p~~Project.

The Design-Builder ~~should~~ 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 avoid any other project-related activities on or within the boundaries of these historic properties, including but not limited to staging, borrow/disposal, and any temporary or permanent easements, especially along existing Berkmar Drive south of the project terminus, along the Rivanna River upstream from the proposed crossing where the Rivanna Canal and Locks (44AB0137) is located; at a small cemetery identified as VDHR Resource Number 002-1239; at a small cemetery identified near the northern terminus (44AB0601), and at all known cultural resources that have not been conclusively determined to be not eligible for listing in the NRHP. Given the proximity of cemetery 44AB0601 to the proposed ROW limits, the Design-Builder shall erect a temporary construction fence around its perimeter prior to any project construction activities.

### 2.4.3 Section 4(f) Resources

#### 2.4.3.1 US 29 & Rio Road Grade Separated Intersection

There are no Section 4(f) resources impacted by the project as shown in the RFP Conceptual Plans for the US 29 & Rio Road Grade Separated Intersection.

#### 2.4.3.2 US 29 Widening

On August 27, 2014 a Section 4(f) *De Minimis* Impact Finding was made for the US 29 Widening project. It was determined that the project as shown in the RFP Conceptual Plans would use one (1) Section 4(f) resource:

<u>Section 4(f) Resource</u>	<u>Use</u>
Brookhill (002-0008)	1.5 acres— <i>de minimis</i>

Based on the Section 4(f) *De Minimis* Impact Finding, FHWA has concluded that there is no feasible and prudent alternative to the use of land from Section 4(f) resources, and that the project as currently designed includes all possible planning to minimize harm resulting from the use of these resources. ~~The 1.5 acres upon which the *de minimis* impact finding is based is included within the area 75 feet from the edge of pavement extending east into the Brookhill property, along its western boundary, and running parallel to the roadway for the entire (N/S) length of the parcel. To comply with the *de minimis* impact finding, the Design-Builders' design shall be contained within these limits.~~ The Design-Builder shall ensure that their final design incorporates the specified minimization and mitigation measures, and is consistent with the Section 4(f) *De Minimis* Impact Finding. Mapping showing the location of the 4(f) resource is included in the RFP Information Package.

The Design-Builder ~~should~~ shall consider 4(f) resources to be design constraints and avoid any impacts to them beyond the acres of use identified in this section. In addition, the Design-Builder shall avoid any other project-related activities on these resources, including but not limited to staging, borrow/disposal, and temporary or permanent easements.

Any changes to the right-of-way or easements as shown on the RFP Conceptual Plans, proposed by the Design-Builder and acceptable to VDOT, may require additional technical studies and analysis to be performed by the Design-Builder. The Design-Builder will be responsible for notifying VDOT of plan revisions, right-of-way/easement changes, and providing any necessary studies and other necessary information to support VDOT's completion and re-evaluation of the 4(f) evaluation document. VDOT will be responsible for the coordination of any 4(f) documentation with FHWA. The Design-Builder shall then carry out any additional commitments that result from such coordination at its sole expense and no additional cost and/or time delays to the project.

#### **2.4.4 Water Quality Permits and Compensatory Mitigation**

The Design-Builder will obtain all necessary environmental clearances, permits, and approvals required to accomplish the work as noted in Part 4 (General Conditions of Contract), Article 2.6. The Design-Builder will be responsible for performing necessary design and fieldwork to support the acquisition of necessary water quality permits independently and directly from the regulatory agencies. The Design-Builder will be the Permittee.

The Design-Builder shall determine the applicability of water quality permits for the Project (to include utilities to be relocated by the Design-Builder for the Project). Should it be determined that Water Quality Permits are required, the Design-Builder shall conduct the preliminary field assessment including, but not limited to, wetland delineation, stream assessment, and permit impact sketches. The Design-Builder shall also determine the required sequencing methodology to limit Project impacts to wetland systems. The Design-Builder shall utilize this information to obtain required permits.

If the Design-Builder determines water quality permits are not required based on information generated, the Design-Builder shall notify the VDOT Project Manager in writing, so that VDOT can authorize the Design-Builder to execute the work. Any deviations that the Design-Builder makes to the Project footprint and/or scope may render the permit determination invalid and will require additional consideration.

If the Design-Builder determines that wetlands and/or stream mitigation is required to secure the permit authorization, the Design-Builder will provide the required compensatory mitigation. The Offeror shall account for all costs associated with water quality permit acquisition, as well as compensatory mitigation, in its Price Proposal.

The Design-Builder shall note that avoidance, minimization, and mitigation measures associated with permit acquisition will require close coordination between the Design-Builder and VDOT. If permit issuance is delayed or permits are denied, the Design-Builder will be responsible for any schedule delays and/or associated costs.

Should the Design-Builder propose design changes acceptable to VDOT, permitting requirements may also change; the Design-Builder remains responsible for obtaining all necessary water quality permits and permit modifications required by the regulatory agencies to accommodate the design changes **at their own risk and at no additional cost and/or time delays to the Project. The Design-Builder shall avoid all impacts to the wetland and stream areas designated in Part 2, Section 2.4.4.3 below.**

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 allow environmental compliance inspections by VDOT, and/or regulatory agencies as required by permits and/or to facilitate any interim compliance reviews/assessments.

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.

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-risk~~ and at no additional cost ~~and/or time delays~~ to the Project; additionally the Design-Builder will be responsible for any schedule delays and associated costs.

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

#### **2.4.4.1 US 29 & Rio Road Grade Separated Intersection**

VDOT completed a preliminary Permit Determination, dated August 26, 2014 concluding that water quality permits are required for this project based on the RFP Conceptual Plans. The ~~Offeror-Design-Builder~~ should note that the preliminary Permit Determination is provided for informational purposes only. The Design-Builder will be responsible for verifying permit requirements prior to construction. Regulatory agencies will make the final determination as to which ~~s~~State/~~f~~Federal water quality permits will be required during coordination with the Design-Builder.

#### **2.4.4.2 US 29 Widening**

VDOT completed a preliminary Permit Determination, dated August 28, 2014, concluding that water quality permits are required for this project based on the RFP Conceptual Plans. Additionally, VDOT completed a Preliminary Jurisdictional Determination that was approved by the US Corps of Engineers on September 18, 2014 and Williamsburg Environmental Consultants completed a request for jurisdictional determination dated February 26, 2013. The Offeror should note that the preliminary Permit Determination and wetland/stream delineations/jurisdictional determination are provided for informational purposes only. The Design-Builder will be responsible for verifying permit requirements prior to construction. Regulatory agencies will make the final determination as to which ~~s~~State/~~f~~Federal water quality permits will be required during coordination with the Design-Builder.

#### **2.4.4.3 Berkmar Drive Extension**

VDOT completed a preliminary Permit Determination, dated August 26, 2014, concluding that water quality permits are required for this project based on the RFP Conceptual Plans. Additionally, VDOT completed a Preliminary Jurisdictional Determination that was approved by the US Corps of Engineers on September 25, 2014 and EEE consulting completed a Waters of the U.S. Delineation Report dated September 9, 2013. The ~~Offeror-Design-Builder~~ should note that the preliminary Permit Determination and wetland delineations/jurisdictional determinations are provided for informational purposes only. The Design-Builder will be responsible for verifying permit requirements prior to construction. Regulatory agencies will make the final determination as to which ~~s~~State/~~f~~Federal water quality permits will be required during coordination with the Design-Builder.

The Design-Builder shall avoid all impacts to the wetlands labeled as #40, 41 and 42 and streams labeled 26 and 27 on the EEE Waters of the U.S. Delineations report dated September 9,

2013. The Design-Builder shall design and construct the new bridge over the South Fork of the Rivanna River in such a manner as to avoid any discharges of dredge or fill material or other activities that would result in permanent or temporary impacts to areas under the jurisdiction of the U.S. Army Corps of Engineers or any other federal agency, specifically including the South Fork of the Rivanna River (below ordinary high water) and any wetlands located on the floodplain of that river as shown on the RFP Conceptual Plans. “Fills” include, but are not limited to, soil, excavation, discharges, causeways, staging or access areas, machinery, piers or other bridge/roadway infrastructure, or any other activity that would require permit authorization from the U.S. Army Corps of Engineers or any other federal agency. The Design-Builder may use that portion of the floodplain above ordinary high water and outside of delineated wetlands for construction activities, including the area in which 44AB0594 has been identified, provided that they perform archaeological data recovery (Phase III) investigations for any portion(s) of the site to be impacted by construction. The Design-Builder shall erect a temporary construction fence to physically and visually define the areas on the floodplain to be avoided during project design and construction as shown on the RFP Conceptual Plans.

On November 24, 2014 the USACE issued a letter regarding the preliminary Least Environmentally Damaging Practicable Alternative (LEDPA) for the alignment shown in the RFP Conceptual Plans (Alternative A). The Design-Builder shall ensure that its final design supports the LEDPA and that there is no Section 106 action associated with 44AB0594 or any other known NRHP-eligible site avoided by the LEDPA.

The Berkmar Drive Extension RFP Conceptual Plans have been updated to provide a concept level temporary construction easement for access to the pier locations on the north side of the South Fork of the Rivanna River. The temporary construction easement is depicted in order to provide access without impacting the wetlands located beneath the proposed bridge. The Design-Builder is responsible for conducting any additional studies needed to obtain environmental clearances for the temporary construction easement.

## 2.4.5 Threatened and Endangered Species

The Offeror shall be advised that new and updated T&E information is continually added to agency databases. The Design-Builder will be responsible for any subsequent coordination to obtain updated information, requirements, and clearances from environmental regulatory agencies that provide threatened and endangered species oversight. 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 will 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.

### 2.4.5.1 US 29 & Rio Road Grade Separated Intersection

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. A copy of VDOT’s preliminary Fish, Plant, and Wildlife Resources Form dated August 25, 2014 is included in the RFP Information Package.

### 2.4.5.2 US 29 Widening

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. A copy of VDOT’s preliminary Fish, Plant, and Wildlife Resources Form dated July 30, 2012 is included in the RFP Information Package.

### 2.4.5.3 Berkmar Drive Extension

VDOT has performed preliminary database reviews to determine the project’s potential effects on threatened and endangered (T&E) species, indicating that the following federally listed T&E species was identified in the required search area: James Spiny mussel (*Pleurobema collina*). Additionally, there are hits for anadromous fish, a DCR DNH SL Natural Heritage site, and TE Waters within a search area. A copy of VDOT’s preliminary Fish, Plant, and Wildlife Resources Form dated August 26, 2014 is included in the RFP Information Package.

### 2.4.6 Hazardous Materials

VDOT performed preliminary environmental site reviews to determine the potential for hazardous materials and/or contamination within the Project area. VDOT will conduct Phase I and Phase II Environmental Site Assessments (ESAs) for the US 29 & Rio Road Grade Separated Intersection and Route 29 Widening project elements. The results of the ESAs will be provided to the Design Builder as they are completed. The Design Builder will be responsible for conducting Phase I ESAs for any property within right-of-way or permanent easements for the Berkmar Drive Extension project element and subsequent Phase II ESAs required as a result of Phase I ESA findings.

~~The Design Builder shall perform Phase II Environmental Site Assessments in accordance with the most current ASTM Standard for the following denoted properties:~~

Property Name	Physical Address	PC#s
<del>Rio Rd Gulf/ Rio Rd Superette</del>	<del>1635 Seminole Trail, Charlottesville 22901</del>	<del>1994-0014, 2006-6155, 2007-6067</del>
<del>East Coast #30/Wilco #755/Mapco Express 4030</del>	<del>1600 Seminole Trail, Charlottesville 22901</del>	<del>1992-1563, 2001-6178, 2002-6107, 2002-6095, 2003-6006, 2004-6099, 2005-6019, 2011-6070</del>
<del>Jenkins Automotive Cleaner</del>	<del>1564 Seminole Trail, Charlottesville 22901</del>	<del>2001-6174</del>
<del>Texaco Seminole Trail/ Kohr Brothers</del>	<del>1881 Seminole Trail, Charlottesville 22901</del>	<del>1991-0546, 1999-5014</del>

The Design-Builder shall not acquire property until any required Phase II Environmental Site Assessments are complete, submitted, and approved. This shall represent a hold point in the Design-Builder's CPM Schedule. The Department will conduct the Phase II Environmental Site Assessments for the properties identified in the preceding table. It is anticipated that the site assessments will be completed in March 2015.

Unless a structure has been classified, the Design-Builder shall assume Type B structures are present in the Project rights of way. Disturbance of areas coated with a hazardous material shall require environmental and worker health & safety protection plans. The Design-Builder shall conform to the Special Provision for Dismantling and Removing Existing Structures or Removing Portions of Existing Structures (included in the RFP Information Package CD- ROM).

The Design-Builder shall have asbestos inspections performed on all structures and buildings owned and/or to be acquired. All structures and buildings shall be inspected according to the Special Provision for Inspection of Structures for Asbestos Containing Material (ACM) on Design-Build Projects. Copies of all inspection results shall be provided to VDOT.

Asbestos abatement and monitoring shall be performed as appropriate prior to demolition or renovation and in accordance with the Special Provision for Removal of Asbestos from Structures for Design-Build Projects and with all federal and state regulations. The Design-Builder shall comply with the Special Provision Copied Note for Demolition Notifications for Structures not Requiring Asbestos Removal on all structures where ACM removal is not required.

Asbestos inspection, abatement, and project monitoring shall be performed by an independent Asbestos Inspector, abatement firm, and Project Monitor licensed by the Virginia Department of Professional and Occupational Regulation.

Asbestos abatements shall not be performed by an asbestos contractor who has an employee/employer relationship with, or financial interest in, the laboratory utilized for asbestos sample analysis nor shall the asbestos contractor have an employee/employer relationship with, or financial interest in, the Asbestos Inspector, Project Designer, or Project Monitor working on the Project.

For any non-hazardous waste, the Design-Builder shall have the signatory responsibility for the waste shipping manifest(s) and/or bill(s) of lading.

For hazardous waste the Design-Builder shall be considered the co-generator and shall be responsible for preparing the hazardous waste shipping manifest(s) for the VDOT representative's signature and as otherwise consistent with the signatory requirement under Section 411 of the VDOT Road and Bridge Specifications.

The Design-Builder shall make all appropriate notifications as required by the Special Provision Copied Note regarding demolition notifications for structures not requiring asbestos removal and all Federal and State regulations.

Structures shown to have lead paint shall be removed in accordance with Section 413.02 and Section 411.08 and 411.09 of the VDOT Road and Bridge specifications.

In the event of spills or releases of petroleum products and other hazardous liquids or solid materials, the Design-Builder shall take immediate action to contain and eliminate the spill release, including the deployment of environmental protection measures to prevent the migration of the spill into the waters of the United States and of worker exposure protection measures. The Design-Builder shall also notify the VDOT Project Manager immediately of all instances involving the spill, discharge, dumping or any other releases or discovery of hazardous materials into the environment and shall provide all required notifications and response actions.

All solid waste, hazardous waste, and hazardous materials shall be managed in accordance with all applicable federal, state, and local environmental regulations. The Design-Builder shall be responsible for the development of a Spill Prevention, Control, and Countermeasure Plan as required by regulation and for submission of any required plan to the VDOT Project Manager prior to start of construction.

#### **2.4.6.1 US 29 & Rio Road Grade Separated Intersection**

~~VDOT will conduct Phase I and Phase II Environmental Site Assessments (ESAs) for the US 29 & Rio Road Grade Separated Intersection project element. The results of the ESAs will be provided to the Design Builder as they are completed. VDOT performed studies to determine the potential for hazardous materials and/or contamination within the project area. Information pertaining to these studies is included in the RFP Information Package and constitutes Known Pre-existing Hazardous Materials as defined in Part 4, Article 4.~~

#### **2.4.6.2 US 29 Widening**

~~VDOT will conduct Phase I and Phase II Environmental Site Assessments (ESAs) for the Route 29 Widening project element. The results of the ESAs will be provided to the Design Builder as they are completed. VDOT performed studies to determine the potential for hazardous materials and/or contamination within the project area. Information pertaining to these studies is included in the RFP Information Package and constitutes Known Pre-existing Hazardous Materials as defined in Part 4, Article 4.~~

#### **2.4.6.3 Berkmar Drive Extension**

VDOT performed studies to determine the potential for hazardous materials and/or contamination within the project area. Information pertaining to these studies is included in the RFP Information Package and constitutes Known Pre-existing Hazardous Materials as defined in Part 4, Article 4. ~~The Design Builder will be responsible for conducting Phase I ESAs for any property within right-of-way or permanent easements for the Berkmar Drive Extension project element and subsequent Phase II ESAs required as a result of Phase I ESA findings.~~

#### **2.4.7 Air Quality**

The US 29 & Rio Road Grade Separated Intersection and US 29 Widening projects were assessed for potential air quality impacts and compliance with applicable federal and state air quality regulations and guidance as appropriate. For all projects, emissions may be produced during construction from heavy equipment and vehicle travel to and from the project sites, as well as from fugitive sources. Construction emissions are short term or temporary in nature. In order to mitigate these emissions, all construction activities are to be performed in accordance with applicable VDOT *Road and Bridge Specifications*.

Comments provided by the Virginia Department of Environmental Quality (VDEQ) for projects located in Albemarle County are summarized as follows: This project lies in an area that is currently in attainment with all of 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 5-130, *Open Burning restrictions*; and 9 VAC 5-50, *Article 1, Fugitive Dust precautions*.

#### **2.4.7.1 US 29 & Rio Road Grade Separated Intersection**

The results of the assessment of potential air quality impacts for the **US 29 & Rio Road Grade Separated Intersection** project are summarized in an Air Quality Report dated August 25, 2014, which makes reference to an August 2012 modeling study entitled “*Route 29 Bypass Project (State Project Number: 0029-002-844, P101; UPC#102419), From: Route 250 Bypass To: U.S. Route 29 North of South Fork Rivanna River, Albemarle County and the City of Charlottesville, Final - Air Quality Technical Report*”. Copies of both documents are provided in the RFP Information Package.

#### **2.4.7.2 US 29 Widening**

Potential air quality impacts for the Route 29 **Widening** project were assessed in a July 2013 study titled “*Air Quality Analysis, Route 29 Corridor Improvements, Albemarle County, 0029-002-135, D624, P101 (UPC 77383)*,” which was updated in August 2014 and summarized in an Air Quality Report dated September 3, 2014. Copies of both reports are provided in the RFP Information Package.

### **2.4.8 Noise Mitigation**

#### **2.4.8.1 US 29 & Rio Road Grade Separated Intersection**

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 August 6, 2014, is included in the RFP Information Package.

#### **2.4.8.2 US 29 Widening**

A preliminary noise evaluation and a qualitative final Noise Abatement Design Report (NADR) were performed by the VDOT. Results from both analyses determined that no mitigation measures are required for the project. A copy of the Preliminary Noise Analysis

Technical Report and the final NADR dated August 2013 and August 2014 respectively, are included in the RFP Information Package.

If ‘substantial’ deviations of the roadway alignment (horizontal or vertical) are proposed, then additional noise analyses will be provided to the Department for review and approval prior to construction at the sole cost of the Design-Builder. The word ‘substantial’ is defined below:

- a) Substantial Horizontal Alteration - A project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the future build condition; or,
- b) Substantial Vertical Alteration - A project that removes shielding therefore exposing the line-of-sight between the receptor and the traffic noise source. This is done by either altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and the receptor.

The additional noise analyses will include a detailed NADR that follows the VDOT Noise Abatement Guidance Manual (August 14, 2014), and plans for the proposed design changes. A justification of the deviation will be included with the plan set. The revised NADR for which modification is requested will be submitted with this additional information.

Construction activity may cause intermittent fluctuations in noise levels. During the construction phase of the Project, all reasonable measures will be taken to minimize noise impacts from these activities. VDOT's 2007 Road and Bridge Specifications, Section 107.16(b.3), establishes construction noise limits. The Design-Builder will 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, commitments, etc., 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 be responsible for any schedule delays and associated costs as a result of any delays and/or shut downs associated with non-compliance. Any monetary fines associated with violations and/or any environmental restoration activities required to resolve violations shall be the responsibility of the Design-Builder.

The Design-Builder shall carry out environmental commitments during design and construction, as applicable, as identified in the CEs, the Document Re-evaluations for RW Authorization (EQ-201) and PS&E Authorization (EQ-200), and the Environmental Certification/Commitments Checklist (EQ-103) for the **US 29 & Rio Road Grade Separated**

**Intersection** and Route 29 Widening **P**projects. The Design-Builder shall do the same for the Berkmar Drive Extension project as appropriate. All commitment compliance shall be supported by appropriate documentation, to be provided by the Design-Builder to the VDOT Project Manager.

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

## **2.5 Survey**

The Design-Builder is advised that the preliminary field survey and preliminary 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 2014 Survey Manual.

VDOT has completed a preliminary field and subsurface utility engineering (SUE) survey for the Project. Spatial accuracy for this location survey is at the Class 3 level with 1-foot contours with a limiting error of half the contour interval (.50') as noted in Chapter 1 and Appendix C of the 2014 survey manual. The preliminary subsurface utility engineering (SUE) designation has been provided based on Chapter 13 of the 2014 Survey Manual. Designation quality is noted in the file and may range from Quality Levels B, C & D based on the existing field conditions. The general limits of the survey are as follows:

### **US 29 & Rio Road Grade Separated Intersection**

Along US 29 beginning at the southern return of the intersection with Greenbrier Drive and extending north to the northern return of the intersection with Hilton Heights Road with a mapping corridor width of 400' (200' either side of CL) and a SUE corridor width 50' off the back of the existing R/W. Along Rio Road beginning at the southern return of the intersection with Chapel Hill Road and extending north to the northern return of the intersection with Woodburn Road with a mapping corridor width of 300' (150' either side of CL) and a SUE corridor width 50' off the back of the existing R/W.

### **US 29 Widening**

The survey limits can generally be defined as an 1,100' corridor (600' west and 500' east of centerline) beginning 300' south of the south abutment of the US 29 bridge over the Rivanna River and continuing north along US 29 to the center of the cross over approximately 300' north of the intersection with Towncenter Drive, about 2.2 miles in total length. The survey material provided in the RFP Information Package is dated October 2012 does not cover the extents of the

project, and shall require additional survey and SUE information to complete the survey. **The survey files provided under Berkmar Drive RFP Conceptual Plans UPC 106137 contain partial survey coverage for US 29 Widening UPC 77383 and shall take precedence over survey files provided under US 29 Widening RFP Conceptual Plans in UPC 77383 when overlapping and duplicate survey information exists.**

### **Berkmar Drive Extension**

Beginning at the intersection of Berkmar Drive and Hilton Heights Road, north along a future defined CL to the intersection with Town Center Drive with a mapping corridor width of 1000'. Along Town Center Drive beginning at the northern return of the intersection with US 29 and extending north to 500' past the intersection with an unnamed road at a traffic circle with a mapping corridor width of 400' (200' either side of CL) and a SUE corridor width 25' off the back of the existing R/W. Along Berkmar Drive beginning at the northern return of the intersection with US 29 and extending north to the southern return of the intersection with Rio Rd. Beginning again at the northern return of a private entrance approximately 3,300' north of the northern return with Rio Rd. and extending north to the northern return of the intersection with Hilton Heights Road (to include the private entrance to the north of the intersection). The mapping corridor width is approximately 300' (150' either side of CL) and a SUE corridor width 25' off the back of the existing R/W.

Preliminary field survey and utility data has been obtained, including, but not limited to the following:

- Horizontal control
- Vertical control
- Notification of property owners\*
- Post photography control
- Photogrammetry
- Field data
- Topography
- Property data
- Utilities
- Levels
- Digital Terrain Model

\*The Virginia Code 33.1-94 requires that Notice of Intent letter (RUMS Forms I1, I2, I3, and I4) “shall be sent to the owner at the address recorded in the tax records, or delivered by guaranteed overnight courier or otherwise delivered to the owner in person with proof of delivery **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 earlier of the date of mailing, if mailed, or on the date delivered.” The notice shall include the anticipated date/dates 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.

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 will be verified and certified, and submitted in final documentation.

The Design-Builder will be responsible to reset or relocate and survey control damaged, destroyed or located within the footprint of the final design construction limits. The control will be established by a land surveyor licensed in the Commonwealth of Virginia with LD-200 information and supporting computations submitted to the VDOT Project Manager.

Prior to Project completion, the Design-Builder shall provide and set final VDOT 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 the Department's Survey Manual.

## 2.6 Geotechnical Work

Engineering Consulting Services Mid-Atlantic, LLC (ECS) has completed a preliminary geotechnical subsurface investigation for this Project. The results of the investigation are presented in the Geotechnical Data Report (GDR) dated September 23, 2014, which is included in the RFP Information Package.

The Department will be performing geotechnical exploration along the retaining walls associated with the proposed depressed through lanes for the US 29 & Rio Road Grade Separated Intersection project element to supplement the previously submitted GDR dated September 23, 2014. The resulting geotechnical data is anticipated to be made available to all Offerors by January 3, 2014. The Design-Builder shall be responsible for the final geotechnical engineering report including location, depth, and frequency of geotechnical subsurface exploration. The Department does not and will not guarantee the accuracy of the information provided, that the borings were performed at the specific location required for the Design-Builder's unique design, or that the borings were performed to the required depth based on the Design-Builder's unique design but will follow a standard of care consistent with the Department's MOI and ASTM Standards. Supplemental geotechnical exploration will not be provided for other project elements. The following geotechnical work is currently being performed by the Department:

- Eleven SPT soil borings of varying depths (total soil footage of approximately 700 feet)
  - Four borings will include ten feet of rock coring
  - Install temporary observation wells in four of the borings with flush mounted covers

- Eleven Flat-Plate Dilatometer (DMT) soundings to refusal
- Natural moisture content testing on all SPT samples and bulk soil samples
- Fifteen classification tests (Atterberg limits and sieve Analyses)
- Three Standard Proctor moisture-density relationships (VTM-1)
- Four unconfined compressive strength tests on rock samples
- Development of boring logs in gINT, laboratory test summary, and test report sheets.
- Engineering analysis will not be performed by the Department

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: 1) Chapter 3 of the VDOT Material Division's Manual of Instructions (MOI), 2) the current AASHTO LRFD *Bridge Design Specifications*, 6<sup>th</sup> Edition, 2012 and VDOT Modifications; and 3) Section 700.04 (c) of the VDOT 2007 Road and Bridge Specifications.

The Design-Builder shall collect appropriate data for geotechnical evaluation of pavements, embankments, soil and rock cuts, culverts, bridge and wall structures, sound walls, storm water management facilities, signal pole/high mast/or overhead signs, minor structures including drainage pipes, 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.

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 and any appended special provisions. 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 professional engineer in the Commonwealth of Virginia, in gINT© software. The gINT© file for the borings contained in Geotechnical Data Report dated September 23, 2014 are provided in the RFP Information Package.

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 thirty (30) 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 and laboratory results shall support design and construction efforts to meet the requirements outlined in this Section.

### 2.6.1 Minimum Pavement Sections

Minimum pavement sections and anticipated locations for these sections shall be utilized for Proposal preparation purposes only. Falling Weight Deflectometer (FWD) testing and analysis shall be performed for the existing pavement of primary and high-volume secondary roads that will be left in-place and overlaid or rehabilitated within the project limits, excluding areas, or sections, where existing pavement section is found to be significantly greater than the thickness required by the minimum pavement section provided below, the asphalt cores are generally in solid and in intact condition, and the subgrade soil support value is not significantly lower than the GDR design value. It is the responsibility of the Design Builder to adequately verify the pavement thickness along the project. Use 20-year or 30-year design life for new and existing pavements per the Materials MOI Chapter 6. Areas designated for demolition by the Design-Builder will not require a detailed pavement evaluation. The Design-Builder shall be required to validate the minimum pavement sections and to notify the Department of its findings. If the Design-Builder's findings require a deviation from the RFP requirements, it shall notify VDOT during the Scope Validation Period 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 below. Any changes to the minimum pavement sections provided in this

Part 2, Section 2.6.1 and/or location for the pavement sections shown on the RFP Conceptual Plans 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 that the Design Builder plans to utilize for construction access or temporary detours within and adjacent to the project limits 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 and temporary detours, regardless of the method or location of the pavement damage.

UD-4 edgedrains will be required for all pavements on this Project unless otherwise specified by VDOT's standards. 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 or 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.

Tie-ins to existing roadways and entrances along the mainline roadways shall utilize the mainline pavement section. Exceptions to this requirement may be granted upon detailed design submitted by the Design-Builder subject to approval by VDOT. Mill and overlay transitions to match existing pavement structure surface elevations for existing mainline pavements shall be in accordance with VDOT guidelines and standards in accordance with Part 2, Section 2.1.

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 VDOT 2007 Road and Bridge Specifications and applicable Special Provisions. All temporary pavement structures subjected to traffic, including entrances and subdivision and secondary roads, shall include an asphalt concrete surface. Traffic shall not be serviced by an aggregate surface.

The Design-Builder shall prepare and incorporate into the plans, typical sections, profiles, cross-sections, and 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 Design-Builder is advised that the work described may involve differential depth milling, differential leveling, or both, to achieve the required grades in accordance with Part 2, Sections 2.2. As required in Section 2.2 to address cross-slope correction as well as tie-ins, the Design-Builder shall propose an appropriate leveling course mix for each situation. The minimum pavement sections are as follows:

#### **2.6.1.1 US 29 & Rio Road Grade Separated Intersection**

## Minimum Pavement Section

### **New Pavement Mainline and Shoulder – US 29 Through Lanes & New Pavement Mainline – US 29 Local Lanes**

Surface - 2.0 inches Asphalt Concrete, SM-12.5D

Intermediate – 3.0 inches Asphalt Concrete, IM-19.0A

Base – 4.0 inches Asphalt Concrete, BM-25.0A

Subbase – 21.0 inches Aggregate Base Material, Type I, Size No. 21-B\*

\* 21.0 inches of Aggregate Base Material to match existing mainline pavement structure depth and/or provide cross-sectional drainage. A minimum of 10.0 inches of Aggregate Base Material is required to meet the calculated design structural number. For any sections of existing pavement that are removed and replaced entirely, or new pavement is not adjacent to existing pavement, the minimum required Aggregate Base Material is 10.0 inches if cross-sectional drainage of the structures will be provided or maintained.

#### Sidewalk

Surface - 4" Hydraulic Cement Concrete, Class A3

Base - 4" Aggregate base material, Type I, Size No. 21B extended 4" on either side of the surface.

### **Curbs, and Curb and Gutter (US 29 Local Lanes)**

*Curbs, and Curb and Gutter shall be placed on a minimum 6" thickness of aggregate base material Type I, Size No. 21B extended 12" behind the curb.*

### **Mill and Overlay Existing Pavement Mainline – US 29**

Mill the existing surface a minimum of 2.0 inches and replace with a minimum of 2.0 inches SM-12.5D

Note: buildup of greater than 2 inches may be required to correct for cross slopes

### **New Pavement Mainline - Rio Road**

Surface - 2.0 inches Asphalt Concrete, SM-12.5A

Intermediate – 2.0 inches Asphalt Concrete, IM-19.0A

Base – 4.0 inches Asphalt Concrete, BM-25.0A

Subbase – 6.0 inches Aggregate Base Material, Type I, Size No. 21B

#### Sidewalk

Surface - 4" Hydraulic Cement Concrete, Class A3  
Base - 4" Aggregate base material, Type I, Size No. 21B extended 4" on either side of the surface.

### **Curbs, and Curb and Gutter**

*Curbs, and Curb and Gutter shall be placed on a minimum 6" thickness of aggregate base material Type I, Size No. 21B extended 12" behind the curb.*

### **Mill and Overlay Existing Pavement Mainline - Rio Road**

Mill the existing surface a minimum of 2.0 inches and replace with a minimum of 2.0 inches SM-12.5A

Note: buildup of greater than 2 inches may be required to correct for cross slopes

As required in Section 2.2 to address cross-slope correction as well as tie-ins, the Design-Builder shall propose an appropriate leveling course mix for each situation.

### **2.6.1.2 US 29 Widening**

#### **Minimum Pavement Section**

#### **New Pavement Mainline - US 29**

Surface – 2.0 inches Asphalt Concrete, Type SM-12.5D  
Intermediate – 3.0 inches Asphalt Concrete, Type IM-19.0A  
Base – 4.0 inches Asphalt Concrete, Type BM-25.0A  
Subbase – 21.0 inches Aggregate Base Material, Type I, Size No. 21B\*

\* 21.0 inches of Aggregate Base Material to match existing mainline pavement structure depth and/or provide cross-sectional drainage. A minimum of 10.0 inches of Aggregate Base Material is required to meet the calculated design structural number. For any sections of existing pavement that are removed and replaced entirely, or new pavement is not adjacent to existing pavement, the minimum required Aggregate Base Material is 10.0 inches if cross-sectional drainage of the structures will be provided or maintained.

#### **Sidewalk**

Surface - 4" Hydraulic Cement Concrete, Class A3  
Base - 4" Aggregate base material, Type I, Size No. 21B extended 4" on either side of the surface.

## **Curbs, and Curb and Gutter**

*Curbs, and Curb and Gutter shall be placed on a minimum 6” thickness of aggregate base material Type I, Size No. 21B extended 12” behind the curb.*

## **Mill and Overlay Existing Pavement Mainline - US 29**

Mill the existing surface a minimum of 2.0 inches and replace with a minimum of 2.0 inches SM-12.5D

Note: buildup of greater than 2 inches may be required to correct for cross slopes

## **New Pavement Mainline & Shoulder – Ashwood Boulevard**

Surface - 1.5 inches Asphalt Concrete, Type SM-9.5A

Base – 3.0 inches Asphalt Concrete, Type BM-25.0A

Subbase - 6.0 inches Aggregate Base Material, Type I, Size No. 21B

## **New Pavement Mainline & Shoulder – North & South Hollymead Drive and**

**Ridgewood Drive** Surface - 1.5 inches Asphalt Concrete, Type SM-9.5A

Base – 2.0 inches Asphalt Concrete, Type IM-19.0A

Subbase - 6.0 inches Aggregate Base Material, Type I, Size No. 21B

## **Shared Use Path**

Surface - 2" Asphalt Concrete, Type SM-9.5A estimated at ~~240~~220 lbs/yd<sup>2</sup>

Base - 6" Plain Aggregate, Type I, Size No. 21B extended 6” on either side of the surface.

## **2.6.1.3 Berkmar Drive Extension**

### **Minimum Pavement Section**

#### **New Mainline Pavement**

Surface - 1.5 inches Asphalt Concrete, Type SM-9.5A

Intermediate – 2.0 inches Asphalt Concrete, Type IM-19.0A

Base – 3.5 inches Asphalt Concrete, Type BM-25.0A

Subbase - 7.0 inches Aggregate Base Material, Type I, Size No. 21B

## **Mill and Overlay/Buildup Existing Pavement Mainline**

Mill the existing surface a minimum of 2.0 inches and replace with a minimum of 2.0 inches of IM-19.0A. Overlay/buildup the intermediate course with minimum of 1.5 inches of SM-9.5A.

## **Sidewalk and Shared Use Path**

### **Sidewalk**

Surface - 4" Hydraulic Cement Concrete, Class A3

Base - 4" Aggregate base material, Type I, Size No. 21B extended 4" on either side of the surface.

### **Shared Use Path**

Surface - 2" Asphalt Concrete, Type SM-9.5A estimated at ~~240~~ 220 lbs/yd<sup>2</sup>

Base - 6" Plain Aggregate, Type I, Size No. 21B extended 6" on either side of the surface.

## **Curbs, and Curb and Gutter**

*Curbs, and Curb and Gutter shall be placed on a minimum 6" thickness of aggregate base material Type I, Size No. 21B extended 12" behind the curb.*

As required in Section 2.2 to address cross-slope correction as well as tie-ins, the Design-Builder shall propose an appropriate leveling course mix for each situation for each tie-in section on the Project.

## **Temporary Pavement**

The Design-Builder shall be responsible for any temporary pavement design. 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 shall be completely removed once it is no longer in service. All temporary pavement designs shall meet the following minimum design criteria:

- Design Life – 6 months minimum or more as required by MOT phasing
- Reliability – eighty-five percent (85%) minimum
- Initial Serviceability – 4.2 minimum
- Terminal Serviceability – 2.8 minimum
- Standard Deviation – 0.49 minimum
- CBR value for subgrade soils determined laboratory tests
- Minimum 6.0 inches of asphalt concrete for US 29

## **2.6.2 Geotechnical Requirements**

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, retaining walls and embankments to meet the following post-construction settlement tolerances:

- 1) Total vertical settlement less than two inches over the initial 20-years, and less than one inch over the initial 20-years within one hundred (100) feet of bridge abutments and retaining walls;
- 2) 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;
- 3) Settlement that does not result in damage to adjacent or underlying structures, including utilities; and
- 4) For pavement sections of approach slabs, bridge decks, adjacent to retaining walls 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.
- 5) 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, sound barriers, 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 a 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.

The proposed US 29 & Rio Road Grade Separated Intersection project includes a prominent earth retaining structure. Refer to, the “Special Provision for Geotechnical Engineering Design,” for the requirements for geotechnical exploration, analyses, and design for the earth retaining structures at the US 29 & Rio Road Grade Separated Intersection.

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 using both drained and undrained strength properties. The maximum slope ratio to be used for cut and/or roadway embankment fill slopes shall not be steeper than 2H:1V and in accordance with Part 2, Section 2.2.4 of the RFP. The Design-Builder is responsible for verifying the stability of all slopes, including those retained by structures.

All retaining walls shall be designed in accordance with applicable VDOT and AASHTO requirements. 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 MSE walls (all approved types). 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. Geotechnical design shall include both drained and undrained strength properties. 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 Alternate Retaining Wall Plans.

Material and Construction requirements shall follow VDOT Manual of the Structure and Bridge Division, Volume V – Part 11 “Geotechnical Manual for Structures” and applicable special provisions listed in 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.

Excavation for structures shall comply with the most recent local, state, and federal government regulations, including OSHA 29 CFR Part 1926 and VDOT 2007 Road and Bridge Specifications Section 401. Temporary slopes should be cut to a stable slope per OSHA guidelines or be temporary braced, depending upon the excavation depth and encountered surface conditions. Stockpiles should be placed away from the edges of the excavations and their height should be controlled so they do not surcharge the sides of the excavation. The Design-Builder will be responsible for choosing the site to stockpile excavated soil to meets VDOT Sediment and Erosion, and Environmental protection requirements.

### **2.6.3 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 OH or 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-Builder's 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 exhibit a CBR value less than that stipulated in the pavement design shall also be considered unsuitable. The Design-Builder can stabilize or adapt the pavement section in response to soils with unsuitable CBR values, providing the laboratory CBR value is greater than 5. The anticipated locations and methods of treatment for unsuitable materials identified by the Design-Builder's qualified 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 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 VDOT 2007 Road and Bridge Specifications at no additional cost to the Department. 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.

#### **2.6.4 Control of Rock Blasting**

Rock excavation may be required to construct this Project. Rock blasting is not permitted for the US 29 & Rio Road Grade Separated Intersection ~~and US 29 Widening~~ projects. Blasting will be permitted for construction of the Berkmar Drive Extension ~~and US 29 Widening~~ projects. All controlled blasting shall be performed in accordance with the Special Provision for Controlled Blasting provided in the RFP Information Package.

#### **2.6.5 Pipe Installation Methods**

Culverts or utility pipes shall be installed by either conventional methods in accordance with Section 302.03 of VDOT's 2007 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 Design-Builder's Design Manager 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 Manager 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 VDOT 2007 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. 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 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. The Design-Builder shall be responsible for maintaining positive drainage during all MOT phases to prevent ponding on the roadway in conflict with the traveling public.

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

An H&HA, including scour analysis shall be completed for bridges over waterways and 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), and VDOT guidelines as described in the VDOT Drainage Manual, (including current Errata Sheet), Hydraulic Design Advisories and applicable I&IMs.

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, HEC-11, HEC-14, HEC-20, and HEC-23.

The hydrologic and hydraulic analysis shall be documented by the completed VDOT LD-293 forms. 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-450.

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. See Part 2, Section 2.3 for additional H&HA requirements

### 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, bridge scour countermeasures, 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 & Stormwater Management Programs. The Design-Builder shall provide VDOT two (2) paper and two (2) electronic copies on 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 the VDOT Drainage Manual.

For the purposes of developing the Price Proposal, the Offeror shall assume that the existing drainage pipes and culverts within the project limits 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 Road and Bridge Standard PP-1, removed, or replaced with adequate structures designed and constructed in support of the Design-Builder's final drainage design. **A functional element of the proposed drainage design is a drainage structure that will convey post construction stormwater runoff from offsite and /or onsite contributing drainage areas.** Offerors should note that VDOT has not assessed the structural condition of the existing pipes and culverts within the project limits. If after award the Design-Builder investigates the structural condition of the affected existing pipes and 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 assess the structural condition of the structures by performing a visual/video inspection of the existing pipes and culverts utilizing the assessment criteria for Post Installation Inspections presented in VDOT Supplemental Specification 302. The Design-Builder will provide VDOT with an inspection report documenting their assessment following the methodology as prescribed in the supplemental specification. The report shall include specific recommendations relative to the structural condition and serviceability of the structures. Drainage pipes and box 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 the VDOT Drainage Manual and Special Provisions SU302001B Pipe Rehabilitation and SU302002A Pipe Replacement.

For the purposes of developing the Price Proposal, all crossing pipes under high fills, as defined in Section 8.3.6.6 of the VDOT Drainage Manual, shall be a minimum of 60 inches in diameter. Upon completion of a structural and hydraulics investigation by the Design Builder, the Design Builder may request existing pipes under high fills deemed repairable and hydraulically adequate by VDOT not require replacement solely to meet the minimum pipe size requirements of Section 8.3.6.6 of the VDOT Drainage Manual.

The two existing 3'x3' box culverts in the US 29 Widening project have been determined to be hydraulically and structurally deficient by the Department. These structures shall be abandoned and replaced.

Underdrain outfall locations are not shown in the ~~plan set included~~ RFP Conceptual Plans and it shall be the responsibility of the Design-Builder to develop the underdrain design including adequate outfall locations. The Design-Builder may, at its discretion, utilize access structures (i.e. manholes, cleanouts, etc.) in lieu of EW-12's in order to outfall an underdrain according to the guidelines set forth in the 2008 VDOT Road and Bridge Standards and the VDOT Drainage Manual while maintaining the ability for the underdrain to be accessed in the future for maintenance purposes.

For the purposes of developing the Price Proposal, the Offeror shall assume that the inlet design allowable spread criteria for roadways "with shoulder" in Table 9-1 of the VDOT Drainage Manual shall apply to all roadway sections with shoulders including those where the shoulder widths have been reduced by waivers granted by VDOT.

### 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 Program (VSMP) Law and Regulations.

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 Department of Environmental Quality 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 District Drainage Engineer in accordance with the latest versions of IIM-LD-11, 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, SWPPP 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 and flood protection in the ESC Law and the VSMP Regulations, as appropriate, for each location where stormwater is discharged from the Project site.

The Project requires coverage under the VPDES General Construction Permit For The Discharges From Construction Activities (VPDES Construction Permit). The Design-Builder is responsible for providing to the Department the necessary information and funds for the Department to secure permit coverage for the Project. The Design-Builder shall be responsible for all fees necessary for coverage under the VPDES General Construction Permit. For the purposes of developing the Price Proposal, the Offeror shall assume that the three projects included in this RFP (US 29 and Rio Road Grade Separated Interchange, Berkmar Drive Extension, and the US 29 Widening) are to be considered three separate and individual land disturbing activities to be built concurrently for purposes of applying the VSMP Regulations and obtaining the VPDES Construction Permit coverage and requirements. The Design-Builder shall coordinate and submit the required permit coverage application information to the VDOT Project Manager. The Design-Builder shall complete the applicable sections of the VPDES Construction Permit Registration form (LD-445), VPDES Construction Permit Contact Information (LD-445A), VPDES Construction Permit Fee Registration form (LD-445B). These forms along with the completed ESC and SWM Plan Certification form (LD-445C) and a check in the amount of the permit fee made payable to the Treasury of Virginia shall be submitted 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 the latest version of 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.

A working conceptual SWPPP including an ESC plan, post construction SWM plan, and a pollution prevention (P2) plan for the entire Project must be submitted for review and approval with the initial application for permit coverage. This initial conceptual Plan submittal shall include the proposed total expected Land Disturbance Area and Land Development Area, including any off-site facilities, for the entire Project. Where the Project will be constructed in segments, the Design-Builder shall submit a finalized ESC Plan, a post construction SWM Plan and a P2 Plan, including the expected Land Disturbance Area, for the proposed initial work segment in addition to the conceptual plan for the entire Project. It is expected that the individual work segment submittals will be self-sustaining and not incur a deficit in post construction SWM design requirements requiring mitigation on future work segments. Subsequent work segment submittals shall include required modifications to the Land Disturbance Area value. However, these modifications, in total, shall not exceed the initially submitted Land Development Area value. 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. 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; however, the Department will make every effort to reduce this timeframe to approximately 30 days. This represents a hold point in the Design-Builder's CPM Schedule. 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 per the latest version of IIM-LD-246. 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 RLD for processing. The Design-Builder shall also have on-site during any land disturbing operations an individual or individuals holding a DEQ Inspector Certification, a DEQ Responsible Land Disturber (RLD) Certification and a VDOT Erosion and Sediment Control Contractor Certification (ESCCC) to ensure compliance with all DEQ and VDOT erosion and sediment control plan implementation requirements.

The Design-Builder is responsible to file all federal forms for notice of construction, including FAA 7460-1 Notice of Proposed Construction or Alteration if applicable.

### **2.7.3.1 US 29 & Rio Road Grade Separated Intersection**

This land disturbance activity utilizes Part IIB technical criteria (i.e., Runoff Reduction Method, Energy Balance Equation, etc.) in Section 9VAC25-870-62 et seq. of the VSMP Regulations. The technical criteria for the development of the post construction stormwater management plan for this project is found in The Draft 2013 Virginia Stormwater Management Handbook, The Virginia Stormwater BMP Clearinghouse, and the Runoff Reduction Spreadsheet. These references may be obtained directly from the Department of Environmental Quality (DEQ). VDOT IIM LD-195.8 is applicable to US29 & Rio ~~Grade Separated~~ **Intersection** except for those sections of Technical Criteria which specifically apply to the Part IIC Technical Criteria or MS-19 (ie. Section 5.2 inclusive, Section 5.3 inclusive, Section 5.4 through 5.4.6.2, Table 1, Section 5.4.11 through 5.4.11.8, Section 6.1, Section 6.3, Section 6.5, and Section 6.6). **The Design Builder shall use Re-Development technical criteria and the Virginia Runoff Reduction Method Re-Development Worksheet for the US 29 & Rio Road Grade Separated Intersection project.**

### **2.7.3.2 US 29 Widening**

This land disturbance activity is grandfathered under the Part IIC technical criteria in Section 9VAC25-870-93 et seq. of the VSMP Regulations. The technical criteria for the development of the post construction stormwater management plan for this project is found in Virginia Stormwater Management Handbook (DCR-1999), The VDOT BMP Design Manual of Practice, April 2013, and the latest VDOT IIM LD-195.

### 2.7.3.3 Berkmar Drive Extension

This land disturbance activity utilizes Part IIB technical criteria (i.e., Runoff Reduction Method, Energy Balance Equation, etc.) in Section 9VAC25-870-62 et seq. of the VSMP Regulations. The technical criteria for the development of the post construction stormwater management plan for this project is found in The Draft 2013 Virginia Stormwater Management Handbook, The Virginia Stormwater BMP Clearinghouse, and the Runoff Reduction Spreadsheet. These references may be obtained directly from the DEQ. VDOT IIM LD-195.8 is applicable to Berkmar Drive ~~Extended-Extension~~ except for those sections of Technical Criteria which specifically apply to the Part IIC Technical Criteria or MS-19 (ie. Section 5.2 inclusive, Section 5.3 inclusive, Section 5.4 through 5.4.6.2, Table 1, Section 5.4.11 through 5.4.11.8, Section 6.1, Section 6.3, Section 6.5, and Section 6.6). **The Design Builder shall use New Development technical criteria and the Virginia Runoff Reduction Method New Development Worksheet for the Berkmar Drive Extension project.**

On November 4, 2014 VDOT contacted the Charlottesville Regional Airport to inquire about the use of open stormwater management facilities within the vicinity of the airport. The airport responded that there were no restrictions to open SWM facilities except locations adjacent to the runway on Airport property. There is no requirement restricting the use of open SWM facilities for the Berkmar Drive Extension project.

### 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 Part 2, Section 2.7.2-and the other standards and reference documents listed in Part 2, Section 2.1 including the Virginia Stormwater Management Program Law and Regulations, and shall comply with the minimum geotechnical requirements contained therein. VDOT has identified potential locations for post construction stormwater management facilities as part of the RFP Conceptual Plans. However, these locations are preliminary and have not been fully evaluated to determine if these locations are suitable, feasible or sufficient to address all of the stormwater management requirements of the Project. The Design-Builder, as part of their final design, shall evaluate these locations, and if found acceptable, develop a final post construction stormwater management plan.

If any of the locations are found to be unacceptable, the Design-Builder must identify other acceptable location(s) to meet the post construction stormwater management requirements of the Project. The Design-Builder is to insure proper ingress and egress to any stormwater management facility and that any specific proprietary facilities have proper maintenance details included in the project plans. The use of Filterra (or equivalent tree box) Bioretention Filter Systems shall be excluded from use in clear zone areas or areas where driver sight distance may

potentially be obstructed. The use of Filterra (or equivalent) Bioretention Filter System will be permitted within the clear zone or areas where driver sight distance may potentially be obstructed provided that low vegetation is used for the system in lieu of trees.

The use of Rooftop Disconnects, Vegetated Roofs, Rainwater Harvesting, and Permeable Pavement (Virginia DEQ Stormwater Design Specification Nos. 1, 5, 6 & 7 of the Virginia Stormwater BMP Clearinghouse) shall be excluded from use on this Project.

The Design-Builder shall have on-site during the construction of SWM BMPs an individual or individuals holding a DEQ SWM Inspector Certification.

The Design-Builder may elect to purchase nutrient credits in accordance with IIM-LD-251 to satisfy the post-construction water quality reduction requirements for the Project. It is the responsibility of the Offeror to investigate the 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. 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.

The Department's Stormwater Management criteria does not preclude the diversion of stormwater run-off from one HUC6 to another provided the water quality and channel and flood protection criteria in Part IIB of the VSMP Regulations (9VAC25-870-62) are met. Additional guidance regarding the legal obligations associated with the diversion of flow can be found in Sections 4.8.2, 4.9.4, and 12.2.4.3 of the VDOT Drainage Manual.

### **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.

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 issues will be addressed by VDOT.

## 2.7.6 Scour

Scour models and the design of scour countermeasures shall be performed in accordance with the procedures recognized as appropriate by the FHWA and the Department. Appropriate procedures include, but are not limited to, “Evaluating Scour at Bridges – HEC 18 (current version),” and “Bridge Scour and Stream Instability Countermeasures – HEC 23 (current version).” Other procedures can also be considered during the scour evaluation upon prior approval by the Department. The Department may, in its sole discretion, accept or reject such proposed methods.

Bridge foundation scour evaluations will be required for dam failure (Sunny Day Breach) for the proposed bridge over the Rivanna River. Section 2.3.3.2 of the Part II Technical criteria requires substructure units to be designed to accommodate a stream pressure resulting from a sunny day breach resulting in a maximum discharge of 103,400 cubic feet per second. Bridge foundations are considered substructure units. The sunny day breach maximum discharge shall be used as the scour design check storm with regards to HEC-18 unless a lesser discharge causes more stresses on the bridge.

The Design-Builder will be responsible for the final design and construction of the foundations for this Project, including the final Hydrologic and Hydraulic Analysis and the final Scour Analysis, in accordance with the Contract Documents. See Part 2, Section 2.3 for additional scour requirements.

## 2.8 Landscaping

Landscape requirements are provided in the Special Provision for Landscape, Special Provision for Section 605 - Planting, and Special Provision for Section 244 Roadside Development Materials.

## 2.9 Traffic Control Devices

The Project shall include the design and installation of all Traffic Control Devices (TCDs) required and specified, including but not limited to, temporary and permanent, traffic signals, intersection lighting, signage, guardrail, and pavement markings and markers. All traffic control devices designed and installed under this Project shall be in accordance with Part 2, Section 2.1. The Signing and Pavement Marking Plans, Traffic Signal Plans, Traffic Management Plan (TMP), and Temporary Traffic Control/ Public Information/ Traffic Operations Plans shall be required from the Design-Builder for final approval by VDOT and shall be included as a planned work package.

All existing traffic control devices within the Project limits or impacted by the project outside the Project limits shall be modified, upgraded, or replaced by the Design-Builder to be in accordance with Part 2, Section 2.1. Design-Builder shall ensure that all Traffic Control Devices are installed within VDOT right-of-way or permanent easement. It shall be the responsibility of the Design-Builder to obtain the necessary right-of-way needed to accommodate installation of these devices and for future maintenance needs and access.

The Design-Builder shall maintain uninterrupted communications to all existing traffic signals from VDOT NWRO's existing Traffic Operations Center (TOC) central control software. Any disruptions to existing traffic signal communications that are necessary for construction shall not take place until alternate traffic signal communications are established and tested. Alternate traffic signal communications shall be the equivalent of or better than the existing communications' level of service and network bandwidth. Alternate traffic signal communications shall be tested prior to use by a VDOT Engineer to verify communications with VDOT NWRO's existing TOC traffic signal central control software. Any switching of traffic signal communications to alternate means shall be done in a nearly instantaneous manner. The Design-Builder shall notify VDOT NWRO's TOC of any planned disruptions to communications at least 24 hours in advance of doing so.

The Design-Builder shall immediately notify VDOT NWRO's TOC of any unplanned disruptions to communications. The Design-Builder shall be responsible for the repair of any disruption to communications. In the event of any disruption of traffic signal communications, the Design-Builder shall have fifteen (15) minutes to perform the notification, two (2) hours from notification for the repairmen to arrive on site, and four (4) hours to restore communications to normal operation, for a total time of six (6) hours from notification. If the Design-Builder does not complete the repair within six (6) hours and fifteen (15) minutes, the cost of repair work performed, plus 25 percent for supervisory and administrative personnel shall be deducted from the monies to the Design-Builder for the Project in accordance with Part 4, Section 2.11.1.

The Design-Builder shall assume that all traffic signals in the Project limits and in the surrounding network impacted by the construction activities have existing high speed Ethernet communications back to the VDOT NWRO TOC by means of Ethernet radios or fiber optic lines. The Design-Builder shall connect all traffic signals within the Project limits to the fiber optic interconnect line at the earliest feasible construction phase as determined by VDOT.

As-Built Plans shall be prepared, certified, and submitted to VDOT. These plans shall show all adjustments and revisions to the Construction Plans made during construction and serve as a permanent record of the actual location of all constructed elements. The Design-Builder shall submit the Record (As-Built) Plans in both hard copy and electronic (DGN & PDF) formats.

## **2.9.1 Signs**

### **2.9.1.1 Limits of Project Signing**

The Design-Builder shall replace all existing ground mounted and overhead signs and sign structures and install new signs and sign structures within the Project limits. Any signs or sign structures on roadways beyond the Project limits that requires relocation, replacement, or modification as a result of changes in the roadway design or construction activity shall be the responsibility of the Design-Builder. All existing signs and sign structures to be replaced or removed shall be disposed of by the Design-Builder.

### 2.9.1.2 Signing Plan Requirements

The signing plans shall be prepared at a one (1) inch = fifty (50) feet scale when plotted full size at thirty-five (35) inches by twenty-three (23) inches. The signing plans shall show the proposed sign message, Manual on Uniform Traffic Control Devices (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 shall include the location and type of delineation devices (including but not limited to pavement markings, pavement messages/arrows, raised and recessed pavement markers, and post- and barrier-mounted delineators).

### 2.9.1.3 Design of Sign Panels and Locations

Proposed and replaced sign panels shall be fabricated with Type IX Diamond Grade Prismatic Sheeting and in accordance with the VDOT Road and Bridge 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. Existing signs that are in conflict with, or for which visibility will be impacted by proposed signing or structures, shall be removed and replaced with new signs replicating the existing messages at new locations. The final lines of sight and sight distances shall be considered in the placement of all temporary and permanent Project signage. Sign sizes shall be in accordance with the FHWA Standard Highways Signs Book, the MUTCD, the Virginia Supplement to the MUTCD, and all applicable Traffic Engineering Division Numbered memoranda. ~~All Advance Guide Signs shall be mounted on overhead sign structures where possible; Supplemental Guide Signs may be ground mounted.—One Advance Guide Sign shall be mounted on an overhead structure along Route 29 in advance of each depressed roadway approach (NB and SB) to the US 29 & Rio Road Grade Separated Intersection. All other advance guide signs and supplemental guide signs shall be ground mounted. Additional advance guide signs, beyond what is depicted in the RFP Conceptual Plans, may be required.~~ For requirements related to sign structures mounted on bridge structures, see Part 2, Section 2.3.11.

Ground-mounted sign structures on US 29 shall be VDOT Standard STP-1, SSP-VIA or SSP-VA structures, unless approved by VDOT. The Design-Builder shall use GUIDSIGN software to design the sign panels for all non-standard signs. The Design-Builder shall design all non-standard signs without a MUTCD or VDOT standard sign designation in accordance with the MUTCD, the Virginia Supplement to the MUTCD, and the FHWA's Standard Highway Signs and Markings. The Clearview font shall be used in accordance with the Virginia Supplement to the MUTCD and VDOT Traffic Engineering Division Memorandum TE-337. Overhead signs shall not require lighting.

The Design-Builder shall be responsible for designing and installing all proposed, relocated, and modified Integrated Directional Signing Program (IDSP) signs and sign structures including 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. The Design-Builder shall coordinate the design and installation of the signs with the IDSP Contractor and the IDSP Program Manager at the VDOT Central Office and VDOT's Project Manager. All IDSP signs shall be reviewed and approved by the IDSP Manager before relocation, fabrication, and installation. All proposed, relocated, or modified IDSP signs shall not be installed on 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, Standard SSP-VA structures and foundations, or Standard SSP-VIA structures and foundation as appropriate and as approved by the IDSP Manager. The Design-Builder shall be responsible for all costs associated with removal and replacement of IDSP signs. IDSP signs located within the parameters of the project should be displayed for the duration of the project. IDSP signs should be installed on temporary structures throughout the construction of the project, as necessary. Due to the amount of time between finalized plans for the project and the beginning of necessary work, discrepancies between the plans and the field conditions may occur. IDSP funds may be used in those cases to cover the installation of the permanent structures at the end of the project. The Design-Builder shall notify the VDOT IDSP Program Manager of the plan of operations, identifying affected signs and structures at least 60 (sixty) days prior to the commencement of any construction activities. VDOT IDSP Program Manager Rick Burgess should be initially contacted at (804)225-4903.

All Type V-A and Type VI-A sign post bolts shall be tightened to the appropriate torque values or use appropriate tightening methods in accordance with the VDOT Road and Bridge Specifications and shall be documented and performed in the presence of a Quality Assurance Inspector.

## 2.9.2 Signals

All traffic signal plans for new, modified, or temporary signals shall be reviewed and approved by VDOT. All traffic signals shall be designed in accordance with the MUTCD and the Virginia Supplement to the MUTCD.

An acceptance inspection shall be performed by VDOT upon completion of all new and modified traffic signal and traffic signal component installations. The Design-Builder shall give VDOT two (2) weeks notice to schedule the acceptance inspection. All punch-list items shall be corrected prior to project acceptance by VDOT.

Traffic signals shall include, but not be limited to foundations, traffic signal poles, signal heads, pedestrian signals/pushbuttons, conduit system, junction boxes, circuitry, vehicle detection systems, emergency preemption, signal cabinets, control equipment, uninterruptible power supply (UPS), intersection lighting, communications equipment, wiring, and signal related signing. The Design-Builder shall be responsible for coordination with the appropriate electrical power provider for power service and coordination with VDOT for assumption of responsibility for electrical service accounts. The Design-Builder shall be responsible for ensuring continuous signal operation during any electrical service interruptions.

The Design-Builder shall be responsible for rebuilding one existing traffic signal outside of the Project limits - RT 631 at RT 1403 (Rio Rd. at Berkmar Dr.) in order to accommodate

changing traffic patterns due to this Project. This traffic signal rebuild shall be completed prior to any construction phasing that impacts US 29. The Design-Builder shall be responsible for installing a CCTV camera and controller on a signal pole at the new signalized intersection of RT 631 at RT 1403. The Design-Builder shall be responsible for performing a study of the intersection of RT 1403 at RT 1417 to determine potential phasing improvements prior to initiating construction and shall address any approved phasing changes as part of the construction. Any study shall be reviewed and approved by VDOT prior to rebuilding the intersection and shall perform an analysis to determine if the existing and future traffic volumes justifies changing the phasing for the northbound and southbound approaches from permissive-only to protected-permissive. Table 2.9.A summarizes the signalization work for the existing signals:

**TABLE 2.9.A**

INT ID	Intersection	Work to be Performed
<b>US 29 &amp; Rio Rd. Grade Separated Intersection</b>		
2	Rio Rd. (RT 631) & Berkmar Dr.	Full Replacement
6	US 29 & Rio Rd. (RT 631)	Full Replacement
7	US 29 & Fashion Square Dr./Shoppers World	Full Replacement
<b>US 29 Widening</b>		
8	<del>US 29 &amp; Towncenter Dr.</del>	<del>Pedestrian Accommodations on west side</del>
9	US 29 & Hollymeade Dr.	Full Replacement with US 29 pedestrian crossing <b>on the north side</b>
10	US 29 & Ashwood Blvd.	Full Replacement

All traffic signals within the project limits and the signal outside of the project limits shall be fully reconstructed in accordance with Part 2, Section 2.1. The Design-Builder shall be responsible for conducting and submitting to VDOT a signal warrants analysis for any proposed new permanent signal locations for review and approval. A signal warrants analysis is not required to be provided for replacement signal installations. US 29 is a Corridor of Statewide Significance which shall be addressed as part of any signal warrant analysis.

The Design-Builder shall be responsible for upgrading the traffic signal controller cabinet at US 29 & Fashion Square Dr. North as described below in the Signal Controllers and Cabinet section prior to any construction phasing that impact US 29. The Design-Builder shall be responsible for installing and maintaining preemption on all approaches of any new or existing intersection once its traffic signal controller cabinet is modified by the Design-Builder.

Plan Sheet Requirements – All traffic signal plans prepared by the Design-Builder shall be at one (1) inch = twenty-five (25) feet scale when plotted full size at thirty-five (35) inches by twenty-three (23) inches.

Signal Equipment – All signal equipment and components shall be new and in accordance with Part 2, Section 2.1.

Final Signal Timings – The Design Builder shall develop and implement the final signal timings and phasing plans for any signals within the three sets of Project limits. Any signals within a given Project shall be coordinated with each other and provide a “green band” of continuous vehicle progression through that Project. The timings shall be based on the final geometric configuration and posted speed of the corridor. The Design-Builder shall provide a Synchro 8.0 file and all related documentation for the final signal timings and phasing plan to VDOT NWRO for review and approval. These timings shall be submitted 60 days in advance of the scheduled implementation. Timing information shall be compatible with the controllers being used on the corridor.

Signal timings for the final configuration shall include Yellow and All Red clearance intervals that are based on the final geometric, final lane configurations, and distances as measured in the field, and shall follow the requirements as set forth in VDOT Traffic Engineering Division Memorandum TE-306.1. These Yellow and All Red clearance intervals shall be signed and sealed by a Professional Engineer licensed in the State of Virginia. Clearance interval timings shall be submitted to VDOT fourteen (14) days prior to field implementation for review and approval. Implementation shall not occur prior to VDOT approval.

The Design-Builder’s Engineer in charge of developing the signal timing plans shall be responsible to personally observe traffic in the field during the AM, Noon, and PM peak hours for one weekday (not including Friday) and the Friday immediately following the implementation of the final timing plans and make adjustments where necessary for the safe and efficient flow of traffic.

See Part 2, Section 2.10.1 Maintenance of Traffic, Signal Timings for Construction and Detour Routes for contractual signal requirements for signal timings during construction phases.

Signal Poles - All permanent traffic signals shall use combination luminaire signal poles with mast arms: VDOT Standard Type III & Type IV poles in accordance with the VDOT Special Provision for Signal Poles (Mast Arm Poles), August 1, 2012. VDOT Standard Type I & Type II poles shall not be used unless approved by VDOT. The Design-Builder shall provide pull tape access from the top of the light fixture to the electrical service point. The Design-Builder shall install all luminaires to be mounted on signal poles and the electrical wiring connection to the control center located inside of the traffic controller cabinet. LED luminaires shall be installed on all signal poles. No signal poles shall be placed in the median. No pedestal poles shall be placed in the median unless approved by VDOT.

Mast Arm Lengths - Mast arm lengths and loading requirements shall be as specified in the VDOT Special Provision for Signal Poles (Mast Arm Poles), August 1, 2012. Mast arms shall not extend more than ten (10) feet beyond the far edge of the last mounted device.

Signal Pole Foundations – All signal pole foundations shall be VDOT Standard PF-8 and in accordance with the VDOT Special Provisions for Section 700.04 Anchor Bolts, February 21, 2013 and Section 700.04 Concrete Foundations, April 1, 2012. Test bores shall be performed in accordance with the VDOT Road and Bridge Specifications. Copies of all test bore and soil sample results shall be provided to VDOT by the Design-Builder. Copies of all foundation designs shall be provided to VDOT. Loading shall be in accordance with the VDOT Special Provision for Signal Poles (Mast Arm Poles), August 1, 2012. Signal foundations shall be designed to accommodate the future installation of LED illuminated street name signs.

A structural analysis shall be performed prior to any proposed loading changes to an existing traffic signal pole or mast arm in accordance with VDOT Traffic Engineering Division Memorandum TE-357. The Design-Builder shall be responsible for submitting the signed and sealed structural analysis to VDOT for approval. The Design-Builder shall not perform any loading changes—increase or decrease—to an existing traffic signal pole or mast arm without approval from VDOT.

Electrical Service – All new or modified electrical services shall be in accordance with VDOT Standard SE-5 with the exceptions that the electrical service shall not include an electrical service splice box and the electrical service line shall be brought to the meter base unspliced. All ground rods, including the augmented ground rods, shall be installed in junction boxes for future access. JB-S1 junction boxes shall be used for ground rod installation for electrical service grounding. Conduit between the JB-S1 junction boxes shall be 1¼” rigid metal conduit and shall be grounded. Junction box lids shall have “VDOT – Electrical” formed into them.

Existing Conduit and Cables – Any existing unused signal conduit that remains after construction may be abandoned in place. All unused signal cables shall be removed and disposed of by the Design-Builder. All abandoned junction boxes shall be removed and the area restored in accordance with the VDOT Road and Bridge Specifications.

Spare Wires – All spare wires in the controller cabinets shall be labeled in accordance with the VDOT Road and Bridge Specifications. All unused wires in the signal heads shall be capped individually with crimp type caps.

Signal Controllers and Cabinets – All new controllers and cabinets shall be interconnected to the existing signal system and have an Uninterruptible Power Supply (UPS) installed. All signal cabinet foundations shall be VDOT Standard CF-4. All new controller cabinets shall be standard Type R cabinets. All new controllers and controller cabinets shall be in accordance with the VDOT Special Provision for Section 703 Traffic Signals, September 5, 2014. All new controller cabinets shall not be installed in ditch lines, behind ditch lines, or behind sight obstructions and shall be easily and safely accessible by maintenance personnel. Cabinet locations and orientation shall be approved by VDOT. The UPS equipment shall be installed in a separate cabinet from the traffic signal controller equipment on the CF-4 cabinet foundation. The UPS equipment shall be in accordance with the VDOT Special Provision for Uninterruptible Power Supply, June 18, 2014.

Conduits – The Design-Builder shall use PVC conduit for all underground installations. All exposed conduit shall be constructed of Schedule 80 PVC. The Design-Builder shall use a box conduit run design at all traffic signals, crossing all legs of the intersection. All conduit runs shall include at minimum two (2)-three (3) inch diameter conduits and one (1)-two (2) inch diameter spare conduit. All conduits shall have a fill capacity of less than twenty-five (25) percent. Conduit placed under existing pavement sections shall be directionally bored. The Design-Builder shall provide two (2)-three (3) inch empty conduits on each side of any bridge structure, including but not limited to along US 29 at Rio Rd. and any new bridge along Berkmar Dr. All conduit along bridge structures shall be terminated in an accessible VDOT standard JB-S2. In addition, the Design-Builder shall provide two (2)-three (3) inch diameter empty conduits installed east and west along the Rio Rd. line of travel through the Project limits. One (1) Number 8 (8) Conductor shall be installed in place of pull tape in all empty conduits and connected to ground rods for system bonding. The Design-Builder shall provide two (2) 3 inch diameter conduits from each new cabinet to the nearest telecommunication access point.

Junction Boxes – All traffic signal junction boxes shall be VDOT Standard JB-S2 for all conduit runs. One (1) VDOT Standard JB-S3 shall be installed at the back of the signal controller cabinet or in close proximity to the cabinet. All ground rods—including the augmented ground rods—shall be installed in junction boxes for future access. Arrows shall be marked in the concrete on all junction box collars, indicating the quantity and direction of all conduit runs at that box. All conduit installed for ~~telecommunication~~telecommunications shall use separate junction boxes from traffic signal equipment conduit. All junction boxes housing fiberoptic conduit shall be an accessible VDOT standard JB-S3 and have “VDOT FIBER” identified on the lid.

Signal Related Signing – The Design-Builder shall furnish and install all signal related signing in accordance with the MUTCD and the Virginia Supplement to the MUTCD.

Street Name Signs – The Design-Builder shall design and install street name signs per the Virginia Supplement to the MUTCD. Street name signs shall be required on all traffic signal mast arms.

Removal and Salvage of Existing Equipment – All control cabinets and contents within, preemption equipment including but not limited to detectors and confirmation lights, radios, and video detection equipment no longer necessary as a result of this Project shall be secured from damage and returned to VDOT and delivered by the Design-Builder to 1601 Orange Road, Culpeper Virginia 22701. The Design-Builder shall notify the VDOT NWRO TOC 24 hours in advance of delivering any equipment. All other equipment that is no longer necessary as a result of this Project shall be disposed of by the Design-Builder. VDOT reserves the right to request any portion of the salvaged equipment be returned to VDOT at no cost to VDOT.

Signal Operation – All new traffic signal installation locations shall not be placed into full color operation on Sundays, Mondays, Fridays, Saturdays, holidays, special events, or days preceding or following holidays, unless otherwise directed by VDOT.

Pedestrian Accommodations – All pedestrian accommodations throughout the Project limits shall be in accordance with all Americans with Disability Acts (ADA) requirements and VDOT Traffic Engineering Division Memoranda TE-376 and TE-377.0. VDOT Standard SP-8 pedestrian signal heads with VDOT Standard PA-2 pushbuttons shall be required. Pedestrian signal equipment installed by the Design-Builder shall meet accessible pedestrian signal (APS) requirements. The conduit and junction box system at each intersection shall accommodate fourteen (14) AWG –four (4) conductor wires for each proposed pedestrian signal head and fourteen (14) AWG – two (2) conductor wires for each pedestrian pushbutton located on each applicable corner of the intersection.

Signal Heads – All signal heads shall be cast aluminum and yellow in color. Signal heads shall have solid aluminum backplates, twelve (12) inch LED lenses and cap style visors shall be provided on this Project. All signal head assemblies that contain at least one arrow indication shall have tunnel visors installed on all signal indications. The conduit and junction box system at each intersection shall accommodate fourteen (14) AWG – four (4) conductor wires for three-section signal head assemblies and two (2) fourteen (14) AWG – four (4) conductor wires for five-section head assemblies.

Signal Head Alignment – All signal heads should be aligned by ‘center of lane’ methodology. Five-section heads with shared signal faces shall be aligned on the lane line extended and in accordance with the MUTCD. A dedicated signal head shall be provided for each lane with the exception of dedicated right turn lanes unless under signal control. All red signal indications shall be installed on the same horizontal plane per approach.

Signal Phasing – Any phasing modifications or turn restriction changes at a signal shall be approved by VDOT. All phase numbering conventions shall be in accordance with the existing phasing on the US 29 corridor.

Right Turns – Right turn overlaps may be used when appropriate. All overlaps shall be approved by VDOT.

Vehicle Detection – The Design-Builder shall install six (6) foot by six (6) foot in pavement advance loop detection on each traffic signal through lane on US 29. Advance loop detectors shall be installed at a distance upstream from the stop bar appropriate for the posted speed limit. This distance shall be approved prior to installation by VDOT. Six (6) foot by forty (40) foot stop bar loop detectors shall be installed for each left turn and through lane on the major approaches and on each approach lane for the minor approaches including right turn lanes. All loop detection shall be in accordance with the VDOT Road and Bridge Standards and Specifications. Wireless, video, and aerial detection shall not be used.

System Detection – The Design-Builder shall install six (6) foot by six (6) foot in pavement system loop detection on each traffic signal through lane on US 29 at a distance of fifty (50) feet downstream of the intersection. All loop detection shall be in accordance with the VDOT Road and Bridge Standards and Specifications. Wireless, video, and aerial detection shall not be used.

**Preemption** – The Design-Builder shall install preemption hardware and confirmation lights on all approaches and in accordance with the VDOT Special Provision for Emergency Preemption Equipment, September 5, 2014.

**Communication** – The Design-Builder shall be responsible for connecting all traffic signals impacted by construction or within the Project limits to the Fiberlight resource sharing fiber optics line, utilizing the fiber optics pairs assigned to VDOT. The Design-Builder shall be responsible for any costs associated with Fiberlight performing the fiber splice work. All conduits entering Fiberlight junction boxes shall enter the box from the underside, not through the wall of the junction box. No conduit entry holes shall be drilled into existing Fiberlight junction boxes. All new fiber optics lines connections shall be of the same specification and carrying capacity as VDOT’s existing connections from existing signals to the main fiber optics line currently in place outside the Project limits. All fiber optic cable and interconnect installation, splicing, and equipment shall be in accordance with the VDOT Intelligent Transportation System (ITS) Special Provision for Fiber Optic Cable and Interconnect, August 26, 2013. Ethernet Radio communication may be used at temporary traffic signals. Ethernet radios shall be the same or equivalent as currently in use by VDOT NWRO in order to maintain communication and compatibility. As-Built signal plans are not available. Table 2.9.B includes the existing connection types.

**TABLE 2.9.B**

Intersection	Existing Connection Type
US 29 at Towncenter Drive	Fiber Optic connection; Ethernet Radio to US 29 at Hollymead Drive
US 29 at Hollymead Drive	Ethernet Radio
US 29 at Ashwood Boulevard	Ethernet Radio
US 29 at Polo Grounds Road	Ethernet Radio
Woodbrook Drive at Berkmar Drive	Fiber Optic connection
Woodbrook Drive at Rio Hill Shopping Center	Fiber Optic connection
US 29 at Woodbrook	Fiber Optic connection; Ethernet Radio to US 29 at Albemarle Square Court
US 29 at Albemarle Square Court	Ethernet Radio
Rio Road at Albemarle Square Court	Ethernet Radio
Rio Road at Berkmar Drive	Ethernet Radio

US 29 at Rio Road	Ethernet Radio
US 29 at Fashion Square Drive North	Ethernet Radio
US 29 at Twenty-ninth Place	Fiber Optic; Ethernet Radio to US 29 at Fashion Square Drive North

Red Light Photo Enforcement Camera – Existing Red Light Photo Enforcement Cameras are located at the intersection of US 29 and RT 631 (Rio Rd.) on the southbound lanes of US 29 and the eastbound approach of RT 631; the enforcement camera system is operated by and is the responsibility of Albemarle County. This equipment shall be removed prior to beginning construction. The Design-Builder shall coordinate with Albemarle County prior to removal of the equipment.

Temporary Traffic Signals – The Design-Builder shall provide temporary traffic signalization as required by the sequence of construction and temporary traffic control plans developed by the Design-Builder. The plans shall be submitted to VDOT for review and approval nine (9) days prior to any construction phase temporary signalization is required. The plans shall be included as part of the Maintenance of Traffic/Sequence of Construction work package. Vehicle detection and preemption shall be provided and maintained for all intersection approaches and movements throughout all phases of construction. Side street preemption for US 29 at Ashwood Blvd. and US 29 at Hollymead Dr. shall be provided when the signals are impacted by a phase of construction. Preemption shall be installed on all temporary signal approaches. Final signal timings, phasings, and field implementation for temporary traffic signals shall follow the same requirements as Part 2, Section 2.10.1 Maintenance of Traffic, Signal Timings for Construction, and Detour Routes. The Design-Builder shall be responsible for all work and costs associated with establishing and maintaining electrical service for all temporary traffic signals. The Design-Builder shall be responsible for all work and costs associated with establishing and maintaining communications between all traffic signals—including temporary signals—within the Project limits or outlined in the TMP and the VDOT NWRO TOC central traffic signal control software. The Design-Builder shall be responsible for all work and costs associated with establishing and maintaining remote video monitoring for all temporary traffic signals to the VDOT NWRO TOC. The Design-Builder shall be responsible for ensuring continuous signal operation during any electrical service interruptions to all temporary traffic signals.

~~Existing~~ Closed Circuit Television (CCTV) Cameras – The Design-Builder shall maintain the existing traffic monitoring camera located in the northeast quadrant of the US 29 and RT 631 (Rio Rd.) intersection continuously throughout the duration of the Project. If the camera is relocated, the Design-Builder shall provide the same existing camera view coverage, image quality, bandwidth, and remote control capacity at the new location. Any camera relocation shall be subject to VDOT review and approval. The Design-Builder shall be responsible for maintaining uninterrupted camera operation back to the VDOT NWRO TOC during camera relocation. ~~If the existing CCTV camera is relocated, t~~The Design-Builder shall be responsible for furnishing and installing one (1) or more CCTV cameras at locations necessary to provide

clear, detailed, and usable video images of the northbound and southbound US 29 roadway at Rio Road, including ~~complete coverage of the~~ any depressed section under Rio Road. All new or relocated Intelligent Transportation System devices, including CCTV cameras, shall be installed with an uninterruptible power supply (UPS), conforming to the Special Provision for Intelligent Transportation Systems—Uninterruptible Power Supply. The Design-Builder shall furnish and install one (1) T1 phone circuit and thirteen (13) IP addresses for each permanent camera.

The Design-Builder shall be responsible for designing, furnishing, installing, and maintaining until final acceptance, integration, testing, documentation, and final submission of As-Built plans for the new camera. All CCTV camera design, installation, and materials shall be in accordance with the VDOT Special Provision for CCTV Video Equipment and General Requirements, ~~September 18, 2014~~ December 6, 2013.

The final placement shall be located such as to be directly accessible from US 29 and such that maintenance activities can be performed on the device without requiring the closure of a travel lane. The final placement shall require approval from VDOT prior to construction.

The Design-Builder shall provide VDOT with a sample CCTV camera being installed for VDOT to use for software integration. The Design-Builder shall furnish such equipment to VDOT within twenty-one (21) days of the CCTV camera design being approved for construction.

The new device shall be recorded in the Asset Identification Table, included in the RFP Information Package. The information in the Asset Identification Table will be used to populate the VDOT inventory database prior to the device becoming operational. This data is required to integrate the device into the VDOT NWRO TOC.

The Design-Builder shall be responsible for the maintenance of the existing and/or relocated CCTV Camera installed and/or modified by the Project until final acceptance by VDOT NWRO. In the event the CCTV Camera equipment is damaged or ceases working correctly, the Design-Builder shall have 15 minutes to perform the notification, two hours from notification for the repairmen to arrive on site, and four (4) hours to fix the CCTV Camera, for a total time of six (6) hours and 15 minutes from notification. If the Design-Builder does not complete the repair within six (6) hours, the cost of repair work performed, plus 25 percent for supervisory and administrative personnel will be deducted from the monies to the Design-Builder for the Project in accordance with in accordance with Part 4, Section 2.11.1.

Road Tunnel Traffic Control Device System - The Design-Builder shall provide permanent traffic control device systems to support lane closure operations in the tunnel that may be required for inspections, maintenance, incident management, repairs and rehabilitation. These systems should include but are not limited to devices such as overhead signals and advance permanent or temporary variable message signs. The traffic control devices channeling the traffic are to be placed at the appropriate distance in advance of the tunnel in accordance with the latest revision of *The Manual on Uniform Traffic Control Devices*.

### 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 hazards and fixed objects from the clear zone is not feasible as determined by VDOT, the Design-Builder shall design and install appropriate barrier systems in accordance with the VDOT Guardrail Installation Training Manual, VDOT Road and Bridge Standards, National Cooperative Highway Research Project (NCHRP) Report 350 and the AASHTO Manual for Assessing Safety Hardware (MASH). All existing barrier systems within the Project limits shall be modified, upgraded, or replaced by the Design-Builder in accordance with VDOT I&IM-LD-220, including any barrier system beyond the current Project limits required for termination. The Design-Builder shall be responsible for coordinating with VDOT for the limits of guardrail upgrades for their specific design.

The Design-Builder shall provide a copy of the manufacturer's recommendations for installation of all guardrail terminals to VDOT NWRO before the installation of any guardrail end treatment or terminating device.

### 2.9.4 Pavement Markings/Markers

The Design-Builder shall install all required pavement markings and markers. All pavement markings shall be in accordance with VDOT Road and Bridge Standards and Specifications, and the VDOT Traffic Engineering Design Manual. All edge lines, centerlines, and skip lines shall be VDOT Standard Type B, Class VI with VDOT Standard Type B, Class VI contrast. Pavement messages including but not limited to stop bars and direction arrow markings, shall be VDOT Standard Type B, Class I. Lane guidance messages may be required to enhance driver understanding.

Snow plowable raised pavement markers shall be installed on US 29 in areas where low level lighting exists or can be anticipated. All new lane markings shall be supplemented with snow plowable raised pavement markers.

### 2.9.5 Roadway Lighting

The Design-Builder shall be responsible for designing, furnishing, and installing complete lighting systems at all **roundabouts**, signalized intersections and signal poles. The lighting system shall be LED lighting. The Design-Builder shall also include in his price the cost of all efforts necessary for coordination with local utility companies and the electric service providers.

The lighting systems shall be designed and installed in accordance with the VDOT Traffic Engineering Design Manual, VDOT Road and Bridge Specifications, VDOT I&IM-LD-231, National Electric Code, and American National Standard Practice for Roadway Lighting (RP-8-14), and IESNA RP-22-104 **(American National Standard Practice for Tunnel Lighting for the Roadway Tunnel)**.

The lighting systems shall require Equipment Grounding Conductors in non-metallic conduits. All conductor cables shall be installed in conduit and junction boxes. No direct burial cable shall be permitted. The smallest wire size that shall be allowed in any feeder or branch circuit is Number eight (8) AWG. Lighting system voltage shall be 120/240 V, single phase system or 277/480V, 3 phase system. Provide service **entrance** metering, distribution panels, contactors, ~~phot cell~~**photocell**, and other appurtenances for a complete system.

**Street lighting and traffic signals may be powered off of the same electrical service unless an unnecessarily long power conduit run is required (>250 feet). VDOT standard SE-II shall not be used for this project. No solar powered lighting will be allowed.**

In order to reduce hazards in the clear zone, signal poles shall be designed to accommodate street lights as part of intersection lighting design. Any lighting poles inside the clear zone shall be fixed with a breakaway base. Any conductors carrying voltages higher than 120 volts shall not be installed inside traffic signal poles.

Rio Road and Route 29 intersection: Besides the signalized intersections addressed above, lighting for the following locations are to be evaluated, design, and installed in accordance with the aforementioned standards.

- Pedestrian Lighting: Existing and proposed sidewalks within 100' of the proposed bridge limits and between proposed crosswalks and all pedestrian pathways on bridge at the intersection of Rio Road and Route 29 shall be supplemented with decorative pedestrian lighting to achieve levels of illuminance and uniformity acceptable to Albemarle County, AASHTO and VDOT. Pedestrian lighting will use King Luminaire pole KCH22 with Luminary model ~~K729RSA~~**K829 series LED with full cutoff classification** with a KA32 3' pipe arm <http://www.stresscrete.com/king-luminaire-product/king-luminaire-product.asp> or equal approved by VDOT and Albemarle County. The decorative pedestrian light pole and appurtenances shall be Federal color 595C-27038 or as approved by Engineer.
- Depressed roadway of NB and SB Route 29 depressed thru lanes, such that the retaining walls are illuminated up to and including illumination of the barrier wall **along the bottom of the retaining wall and the barrier wall separating NB and SB Route 29 depressed thru lanes.**
- **All Underbridge/underpass lighting for the depressed NB and SB Route 29 thru lanes at the US 29 & Rio Road Grade Separated Intersection shall be installed with and connected to an uninterruptible power supply capable of fully operating all lighting equipment at full power for a minimum of eight (8) hours in the event that the main power source goes offline.**
- Route 29 Local Lanes: within 100' of the bridge.

The Design-Builder shall submit to VDOT for review and approval point-to-point lighting analysis, AGI32 design files (\*.AGI), and calculations of the illuminated areas using AGI-32 software. Voltage drop calculations for each lighting system shall not exceed 3%. Lighting design shall be by licensed professional engineer experienced **in** lighting design.

## 2.10 Transportation Management Plan

The Design-Builder shall prepare a Transportation Management Plan (TMP) in accordance with the latest versions of I&IM-241.5 and TE-351.3 for all proposed work associated with the Project. This Project is classified as a Type C, Category V in terms of the TMP. The TMP shall document how traffic shall be managed during the construction of the Project. The plan should include a list of possible alternative routes and detours, formalized chosen alternate routes for each audience (school buses, trucks, Emergency Medical Services (EMS), etc), identified infrastructure resources available to assist with Project information (i.e. Portable Changeable Message Signs (PCMSs), Portable Close Circuit Television (PCCTV) Cameras, VDOT 511, etc), and potential Project traffic impacts during construction with methods to mitigate those impacts.

The Design-Builder shall conduct all work in accordance with the TMP. The phases in the Design-Builder's sequence of construction that accompany an approved work package shall be followed unless the Design-Builder submits and secures VDOT approval for a sequence which will both expedite construction while lessening the effect of such construction upon the traveling public. The TMP shall be developed and executed in coordination with the Design-Builder's Maintenance of Traffic Plan and Sequence of Construction Plan. The TMP will set forth the program for traffic management and related activities to ensure safety and mobility for the travelling public throughout the US 29 Corridor for the duration of the Construction Period. The Maintenance of Traffic Plan will be consistent with, and included as part of, the TMP for the Construction Period. In connection with the TMP, the Design-Builder will develop and implement the Maintenance of Traffic Plan, be responsible for the public outreach for the TMP and be responsible for traffic and operational analysis for lane closures, roadway reconfigurations and detours. Lane closures and detour routes shall comply with the Regional Operation's lane closure policies. Lane and road closure restriction information can be found in Part 2, Section 2.10.3 Lane and Road Closure Restrictions. Any additional lane closures and detour routes shall comply with the Work Area Protection Manual with any deviations requiring the approval of the Regional Operations Director. The Design-Builder shall prepare an operational analysis using VISSIM for each scenario (including, but not limited to lane closures and signal modifications) in the sequence of construction plans for both the weekday AM and PM peak traffic hours, in accordance with the VDOT Traffic Operations Analysis Tool Guidebook. Mainline Route 29 through lanes shall operate at LOS D with a control delay at any intersection of 90 seconds or better and all other traffic movements within intersections between public roads within the network shall operate at LOS E with better than a 100 second control delay for any movement. The analysis shall be performed assuming no more than 25% of the peak hour traffic will divert (other than signed detours) to other roadways in the region to avoid construction delays.

The TMP shall include a detailed plan for all phases of construction and final configuration of a temporary and permanent sign plan for business, relocated and /or revised access points, which is consistent with local ordinances and/or approvals from local jurisdiction.

The maximum percentage of parking spaces disrupted at one time shall be no more than 20% of the total spaces for each property.

### 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, turn lane closures, shoulder closures, maintenance of traffic through the work area, hauling routes and all construction accesses for approval by VDOT's Project Manager in compliance with the VDOT Work Area Protection Manual (WAPM) and the MUTCD. The MOT Plans shall extend an appropriate distance beyond the construction tie-in locations to allow for the required length of shift per the Virginia WAPM and the MUTCD. This plan shall also address safe and efficient operation of adjacent public transportation facilities and the regional system of roadways. The plan shall also include coordination with localities and other contractors performing work in the vicinity of US 29. 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, but not limited to pedestrians, bicyclists, transit vehicles and emergency responders. Access must be maintained to all businesses, residential communities, private entrances and all roadway connections at all times. The Design-Builder shall be responsible for maintaining positive drainage during all MOT phases to prevent ponding on the roadway in conflict with the traveling public. The Design-Builder will be permitted to provide a minimum lane width of ten feet along Route 29; however, at least one lane in each direction shall be eleven feet in width to accommodate truck traffic. **The width of the lane stripes shall not be included when calculating the 10 and 11 foot pavement widths.**

If additional traffic counts are required, it shall be the responsibility of the Design-Builder to collect such data. The Design-Builder shall note that any proposed detour utilizing any City of Charlottesville roadways will require the coordination and approval of the City and as appropriate are subject to the terms and conditions of VDOT's approval.

Construction signs and pavement markings (both temporary and permanent) shall be installed, maintained, adjusted, and removed by the Design-Builder throughout the duration of the Project to ensure positive, effective guidance to the motorists, cyclists, and/or pedestrians.

All entrances, intersections, pedestrian access points/routes and/or bus stops that will be affected by the work zone or by the traffic control devices shall be maintained or an acceptable alternate must be provided by the Design-Builder as part of the approved TMP plan.

The use of material wedges to meet clear zone and drop off requirements as found in the WAPM shall not impact entrances or affect access to adjoining properties.

At locations on US 29 where Traffic Barrier Service or Group II Channelizing Devices are used, a minimum width of one (1) foot shall be maintained between the edge of the traffic lane and Traffic Barrier Service, or Group II Channelizing devices. A Traffic Barrier warrant analysis for each location proposed shall be submitted to VDOT for approval before barrier may

be used. Any use of temporary steel barrier shall be with “Anchoring System VAS” or a “Minimum Deflection System” as required by manufacturer NCHRP 350 and MASH approved tests. Steel barrier shall be adequately anchored to not exceed six (6) inches in deflection when hit.

Steel or concrete bridging plate installation details shall be signed and sealed by a Professional Engineer licensed and registered in the Commonwealth of Virginia for submittal and approval by VDOT. Signing and striping for installations shall be as per the WAPM. Steel plates shall not be used to provide access to entrances, subdivision roads or secondary roads. All temporary pavement structures at entrances subjected to traffic shall include an asphalt concrete surface. Entrance traffic shall not be serviced by an aggregate surface.

Adequate US 29 left turn storage lengths shall be maintained so that the queue does not backup into the adjacent through lane.

For the US 29 Widening, pull-off areas meeting TTC-8.0 requirements shall be provided in all long-term stationary work zones on US 29 with activity areas greater than 0.75 mile in length. Maximum spacing between pull-offs shall be 0.5 mile.

Reductions in the posted speed limit within the work zones will be allowed by the Design-Builder in accordance with the procedures called for in TE-350.1 using the Work Zone Speed Analysis form. A Work Zone Speed Analysis prepared by a Professional Engineer licensed and registered in the Commonwealth of Virginia shall be completed and provided to the VDOT Project Manager for forwarding and final approval by the NWRO Regional Traffic Engineer (RTE).

The Department will retain the responsibility for snow removal within the project limits for the US 29 & Rio Road Grade Separated Intersection project and the Route 29 Widening project. Due to the use of barrier wall and construction activities the Department requests assistance from the Design-Builder to help remove snow beyond plowing as part of a partnering effort to ensure a safe work zone and a safe transportation facility. This assistance may include the Design-Builder using equipment on site such as backhoes or loaders to remove piled snow from the shoulders, roadway, and adjacent to barrier walls.

The Department will retain maintenance responsibility but may request assistance from the Design-Builder on occasion to remove debris from the roadway as part of a partnering effort to ensure a safe work zone and a safe transportation facility. The Department requests that the Design-Builder make all reasonable accommodations to VDOT Maintenance personnel and VDOT’s Maintenance contractors to ensure that regular maintenance activities are not interrupted. Such maintenance may include mowing, landscaping, roadway repair, asset repair, debris removal (including animal carcasses), signal adjustment and repair, and other similar maintenance activities.

### **US 29 & Rio Road Grade Separated Intersection Detour Routes**

The Design-Builder shall construct a temporary median crossover and signal complete with left turn lane in the northbound direction at the existing intersection of US Route 29 and Berkmar Drive. The temporary signal shall accommodate through lanes along Route 29, left turn lane along northbound Route 29, left turn movements from Berkmar Drive onto northbound Route 29, and right turn movements from Berkmar Drive onto southbound Route 29. The signal timing plan shall be included within the Design-Builder's overall TMP and construction phase traffic analysis. The temporary signal shall be equipped with signal pre-emption devices compatible with current systems in use by Albemarle County emergency services, specifically the Albemarle County Fire and Rescue. The length of the left turn lane (storage and taper) shall be determined as part of the Design-Builder's construction phase traffic analysis. Any re-striping required along Berkmar Drive to accommodate turning movements from Berkmar Drive onto Route 29 shall be the responsibility of the Design-Builder. Any trees in the median of Route 29 creating a deficient sight distance condition shall be removed. The Design-Builder shall be responsible for complete removal of the temporary crossover and signal following construction activities requiring the detour route and shall restore the existing median to pre-construction condition including planting an equivalent number of trees to match pre-construction conditions.

The Design-Builder shall provide a median break along Rio Road west of the existing intersection with US Route 29 such that vehicular traffic will have the ability to exit the closest existing entrance to the intersection on the south side of Rio Road (the entrance serving Merchant's Tire and Auto Center, Hardee's, and other businesses) during construction activities which prevent traffic from travelling along Rio Road from crossing Route 29. The median break shall accommodate left turn movements from the parking lot onto Rio Road westbound. The median break shall accommodate truck traffic including the WB-67 design vehicle. The Design-Builder shall provide a work zone which enables vehicles turning from southbound Route 29 to merge safely with vehicles exiting the parking lot along Rio Road. Following construction activities which require the median break, the Design-Builder shall be responsible for returning the median to the pre-construction condition.

The Design-Builder shall construct a median crossover complete with left turn lane in the northbound direction and temporary signal at the existing intersection of US Route 29 and Myers Drive to supplement u-turn movements at Woodbrook Road from NB Route 29 to SB Route 29. The temporary signal shall accommodate through lanes along southbound Route 29 and left turn lane along northbound Route 29. The signal timing plan shall be included within the Design-Builder's overall TMP and construction phase traffic analysis. The length of the left turn lane (storage and taper) shall be determined as part of the Design-Builder's construction phase traffic analysis. Any trees in the median of Route 29 creating a deficient sight distance condition shall be removed. The Design-Builder shall be responsible for complete removal of the temporary crossover and signal following construction activities requiring the detour route and shall restore the existing median to pre-construction condition including planting an equivalent number and type of trees to match pre-construction conditions.

No additional temporary median crossovers along Route 29, with the exception of those detailed above, will be allowed.

## Signal Timings for Construction and Detour Routes

In order to maintain safe and efficient traffic flow, the Design-Builder shall develop and implement signal timing adjustments and phasing plans for each phase of construction; within the Project limits, along alternate routes, and along detour routes outside the Project limits (including but not limited to detour routes such as Berkmar Dr., Rio Road, and Hydraulic Road). This information shall be included in the TMP.

During construction, all signal timings for Maintenance of Traffic shall be developed based on the lane configurations and traffic volumes for each phase. This includes but is not limited to every construction phase that has lane shifts, lane additions, lane drops, geometric changes, changes in intersection clearance distances, speed limit adjustments, turning movement volume changes or otherwise affects the traffic flow and/or traffic pattern. The signal timing plan shall be submitted to VDOT for review and approval ~~30-14~~ days in advance of the scheduled implementation.

Forty-eight (48) hours prior to any adjustments or new signal plan implementation, the VDOT NWRO TOC, VDOT NWRO, and VDOT Charlottesville Residency Office of Communications, shall be notified of the nature of the changes and when they are to be implemented. The Design-Builder shall notify the same VDOT contacts previously listed in this paragraph with the same advance notification requirement (48 hours) prior to any planned traffic shifts or signal timing changes associated with the maintenance of traffic during construction.

After implementation of any of the new timing plans, phasing plans, or signal timing adjustments, the Design-Builder's Engineer in charge of developing the signal timing plans shall observe traffic personally and in the field during the morning, noon, and evening peak hours immediately following the implementation, and adjust timings as necessary to ensure safe and efficient traffic flow and vehicle progression. All adjustments shall be approved by VDOT prior to adjustments being made in the field.

Utilizing the corridor analysis ~~to be~~ provided in the ~~Addendum~~ RFP Information Package, signal timings for mainline US 29 signals, during all construction phases, shall be coordinated to include a "green band" of time for vehicle progression through the corridor (the corridor is defined as all signalized intersections on US 29 from Hydraulic Road to Airport Road). ~~The length of the green band shall not be less than 50 percent of the cycle length of the corridor. The proposed cycle length shall not be less than the existing cycle length for each peak period (103 seconds AM peak, 107 seconds mid-day, and 118 seconds PM peak). The proposed travel time and delays for vehicle progression shall be submitted to VDOT prior to implementation and shall be based on criteria to be provided in the Addendum.~~ If the continuous "green band" and maximum delays through the corridor cannot be achieved, then the Design-Builder shall notify and outline the issues to VDOT, including identifying specific elements.

Signal timings for all construction phases and detours shall include Yellow and All Red clearance intervals that are based on the current geometric and lane configurations and clearance

distances and shall follow the requirements as set forth in VDOT TED Memorandum TE-306.1. These Yellow and All Red clearance intervals shall be signed and sealed by a Professional Engineer licensed in the State of Virginia. The clearance intervals shall be submitted to the VDOT for review and approval ~~30-14~~ days in advance of the scheduled implementation.

The Design-Builder shall respond to signal timing or signal control equipment complaints and malfunctions by acknowledging the notification within 15 minutes, arriving on site within two (2) hours from notification, and completing the equipment repair or timing issue within four (4) hours for a total time of six (6) hours and 15 minutes from notification. If the Design-Builder does not complete the repair within six (6) hours, the cost of repair work performed, plus 25 percent for supervisory and administrative personnel will be deducted from the monies to the Design-Builder for the Project in accordance with in accordance with Part 4, Section 2.11.1. The response shall include diagnosing in the field and making subsequent operational adjustments or equipment repair in the field to resolve the complaint and ensure safe and efficient traffic flow.

See Part 2, Section 2.9.2 for contractual requirements for final signal timings and phasings for the final Project configuration.

## 2.10.2 Incident Management Plan

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 Staunton Traffic Operation Center (**NWRO TOC**).
- Signage of emergency detour routes
- Coordination with 1st responders, Martha Jefferson and UVA Hospitals, and stakeholders
- Fire and Rescue access to the road network east of US 29
- Pre-planned Messages for various types of incidents for the portable DMS.
- Contact list for appropriate stakeholder response personnel

As part of the IMP, the Design-Builder shall furnish all labor, equipment, supervision and qualified personnel to perform wrecker service to remove disabled vehicles within the Project limits. The wrecker shall be on site 24 hours a day whenever a long-term stationary work zone is in place, and shall drop the disabled vehicles at the Design-Builder's designated storage location within the Project limits. The medium duty wrecker shall be equipped with overhead emergency

lights, rear floodlights, wheel lift and all other standard safety items required for wreckers. Under no circumstances shall a vehicle involved in a crash be removed or disturbed by the wrecker until the Virginia State Police or other law enforcement agency gives approval.

Available alternate routes for incident management are network roadways adjoining the Project's segments of US 29 include Hillsdale Drive, John Warner Parkway, Rio Road, Hydraulic Road and Berkmar Drive as well as various other roadways. In addition, other regional routes include Proffit Road, Airport Road, Dickerson Road, Earlysville Road and Stony Point Road. These routes vary in speed limit, traffic control and number of lanes. These roads can be used to navigate around lane closures or incidents in the Project. 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 shall extend beyond the defined Project limits. Proposed changes to signal timing for any signals on detour routes shall be submitted by the Design-Builder to VDOT for review and shall follow the requirements of the Signal Timings section above.

Upon notification from the TOC of an incident requiring a detour, the Design-Builder shall establish the detour within one hour from 6 AM-8 PM daily, Monday through Friday. The Design-Builder shall establish the detour within two hours during all other times not referenced.

The Design-Builder shall coordinate with the NWRO TOC. The NWRO TOC will coordinate with the appropriate State and Local authorities. **The TOC email address is: [Stauntrafficmanagementcenter@vdot.virginia.gov](mailto:Stauntrafficmanagementcenter@vdot.virginia.gov) and the Shift Supervisor phone number 540-332-7789.**

Incident times shall be based on those recorded at the NWRO TOC Traffic Management System.

### **2.10.3 Lane and Road Closure Restrictions**

**Offeror's Technical and Price Proposals shall be developed to meet the required Lane and Road Closure Restrictions for the US 29 & Rio Road Grade Separated Intersection outlined herein and as clarified in Attachment 2.10.3. Any deviations from these allowable lane closure hours may render an Offeror's Proposal non-responsive.**

**The Design-Builder's Traffic Management Plan (TMP) shall be reviewed and approved by VDOT. Approval of the TMP shall take into consideration all RFP requirements, including stakeholder coordination. VDOT shall not be bound by, or liable for, any obligations with respect to the acceptance of the Design Builder's TMP.**

Single lane, shoulder, or road closures shall be detailed in the Design-Builder's TMP and shall be in accordance with the allowable lane closure hours tables found later in this section. The Design-Builder shall restore all lanes of traffic per the times specified. Restoration of traffic shall mean the completion of all construction work, the removal of all temporary traffic control devices, signs, workers, materials, and equipment from the roadway.

The Design-Builder shall submit all road, lane, and/or shoulder closures to the VDOT TOC and VDOT Project Manager for coordination purposes (for determination of conflicts 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 the proposed tasks in order for the 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 Virginia WAPM. 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 shall 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 ~~Construction~~-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 including but not limited to terminating a lane closure early or rescinding a previously approved exception to the allowable lane closure hours or as emergency situations dictate (this includes but is not limited to any type of traffic congestion and/or vehicle delay that VDOT deems unacceptable). Additional lane closure restrictions may be enforced by VDOT during local special events including but not limited to UVA events and the City marathon. These additional lane closure restrictions, if enforced, shall not alter the required construction fixed completion date. Offerors shall assume additional lane closure impacts for at least ten (10) special events per year; these events may include, but are not limited to, the events listed above.

For the US 29 & Rio Road Grade Separated Intersection, a 103 day intersection closure period shall be allowed from May 23<sup>rd</sup> through September 2<sup>nd</sup> in 2016. During this US 29 & Rio Road intersection closure period, the Design-Builder is permitted to close all movements at the intersection except the following, which are required to remain open at all times: through movements on US 29, right turn movements from US 29, and right turn movements from Rio Road. The Design-Builder shall be responsible for redirecting these movements (see Section 2.10.3.1 regarding detours). The Rio Road approaches shall be limited to single lane right in and right out movements. -The Design-Builder shall model the area, using Synchro and VISSIM to determine if temporary signalization at US 29 & Rio Road is required during the 103 day intersection closure period. The limits for the modeling shall at a minimum, extend on US 29 from the southern entrance to the Fashion Square Mall to Woodbrook Drive and include the

~~proposed temporary U-turn signal at Myers Drive and the temporary signal at US 29 & Berkmar. The Rio Road limits shall be from the Berkmar intersection to the Fashion Square Mall/Albemarle Square entrance. The Design-Builder shall use the information from the analysis to make timing adjustments to adjacent traffic signals to maximize throughput during the 103 day closure at 29 & Rio. The impact to adjacent traffic signals on Rio Rd. shall be addressed. In order to determine the precise number of lanes to be open for each movement, and for which times, the Design Builder shall provide a traffic analysis to determine the through lane configuration (both number and width) along US 29 both northbound and southbound. This traffic analysis shall be submitted to VDOT at least 30 days prior to implementation for review and approval. The Department will require that a Synchro analysis be submitted which demonstrates acceptable vehicle delays, acceptable level of service, and acceptable 95<sup>th</sup> percentile queues. VDOT will determine if the criteria is deemed acceptable if there is not a substantial degradation of the criteria from existing conditions or vehicle delays are not excessive. In addition, queues resulting from the change in traffic patterns/configuration shall not negatively impact the flow of traffic into or out of existing entrances and/or sideroads. This requirement shall cover all adjacent signals that would be affected by the change in traffic conditions but at a minimum will cover the signals immediately to the north and south of the intersection and the signals immediately to the east and west of the intersection. The Design-Builder shall maintain a minimum of three lanes northbound and two lanes southbound along Route 29 during the 103 day closure period; however during nighttime hours within the 103 day closure period, additional lane closures are allowed as stipulated above and as illustrated in Attachment 2.10.3. outside of the allowable lane closure hours that follow unless the Design Builder can prove that fewer lanes provide acceptable service through a detailed traffic analysis. Lane closures will be permissible during allowable lane closure hours.~~

~~With the exception of the~~ Prior to and following the 103 day intersection closure period detailed above ~~or as otherwise approved as part of the TMP~~, all lane configurations shall be maintained as follows ~~(outside of the allowable lane closure hours that follow)~~:

#### *US 29 & Rio Road Grade Separated Intersection*

##### Daytime:

- US 29 maintain four through lanes in each direction
- Rio Road maintain two through lanes in each directions
- Roadway connections and at intersections – maintain all existing operational movements, capacities, and storage lengths (left , through, and/or right turn movements)
- US 29 maintain all existing operational movements in each direction (left, through, and/or right turn movements)

##### Nighttime:

Rio Road Allowable Lane Closure Period
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Direction	Allowable Lane Closure Hours	Allowable Days of Week
EB/ <del>NB</del> B	9 pm – 6 am	All days of the week
Route 29 Allowable Lane Closure Period		
NB / SB	9 pm – 6 am	Mon night – Fri morning
NB / SB	9 pm – 6 am	Fri night – Sat morning, Sat. night – Sun
NB / SB	8 pm – 6 am	Sun night – Mon morning

See also illustration in Attachment 2.10.3

*US 29 Widening*

**Daytime:**

- US 29 – maintain two through lanes in each direction
  - US 29 – maintain left and right turn lanes
- Roadway connections and at intersections – maintain all existing operational movements, capacities, and storage lengths

**Nighttime:**

Route 29 Allowable Lane Closure Period		
Direction	Allowable Lane Closure Hours	Allowable Days of Week
NB / SB	9 pm – 6 am	Mon night – Fri morning
NB / SB	9 pm – 6 am	Fri night – Sat morning, Sat night- Sun morning
NB / SB	8 pm – 6 am	Sun night – Mon morning

*Berkmar Drive Extension*

**Daytime:**

- Existing Berkmar Drive – maintain one through lane in each direction
- Roadway connections and intersections – maintain all turning movements

**Nighttime:**

Berkmar Drive Extension Allowable Lane Closure Period		
Direction	Allowable Lane Closure Hours	Allowable Days of Week
NB/SB	9 pm – 6 am	All days of the week

These allowable hours shall be applicable to both stationary and mobile lane closures, as well as shoulder closures. VDOT will consider changes to the allowable lane closure hours only if the Design-Builder can demonstrate why the proposed work cannot be completed within the contract allowable lane closure hours. All requests shall include an assessment of the work zone traffic impacts using a sketch planning traffic analysis tool and/or an operational level traffic analysis software program as appropriate for approval by VDOT at least 30 days prior to the operation impacting the lanes.

Total closures, not exceeding 20 minutes, meeting TTC-50.0 requirements are allowed daily between 9 pm and 6 am. Total closures needed for any of the projects for work that includes but is not limited to installation and removal of overhead sign structures, and erection of bridge members shall require the Design-Builder to coordinate with VDOT and all significant stakeholders that include but are not limited to UVA, both major regional hospitals, localities, law enforcement and fire and rescue. In addition, public notice shall be displayed on message boards 72 hours in advance of the closure event. Total closures shall be limited to 10 throughout the life of the projects. Any additional closures shall be requested by the Design-Builder and approved by VDOT.

Work hours are not restricted with the exception of special events and holidays as defined in Part 2 Section 2.10.3.2 and Part 5 Section 108 respectively. The Design-Builder will be required to limit construction noise per Part 2 Section 2.4.8.

Extension of a lane closure time beyond the Allowable Lane Closure Hours, except as approved by VDOT, is not acceptable and bears a User Fee charge. Lane User Fees for failure to restore all lanes to traffic by the designated times are indicated in Table 2.10.A. Violation of these restrictions will incur graduated User Fee's in 15, 30, 45, and 60 minute intervals at the rate detailed for every 15 minutes intervals and will continue until all lanes are restored to traffic as defined herein. The User Fees begin at the point in time in which the violation occurs. In cases

in which special dispensation has been given to restrict lanes beyond the specified times, the lane user fees will apply from the end of the Department approved time. Restoration of traffic shall mean the completion of all construction work, the removal of all traffic control devices and signs and removal of all workers, materials, and equipment from the roadway.

VDOT may, in its sole discretion, waive User Fees for failure to open traffic lanes 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 tabulation along with certification from the QAM that such tabulation is correct to the VDOT Project Manager for concurrence. The Department will make a deduction in the assessed amount from Progress Payment funds otherwise due the Design-Builder. After Final Completion, the VDOT Project Manager will initiate an adjustment to the Contract Price in accordance with Article 9 of the Part 4 to consider all User Fee assessments.

If the Design-Builder invokes the assessment of User Fees for failure to restore traffic lanes, 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 shall be provided to the Department within two (2) days of the occurrence. The Department will respond to the adequacy of the submission within two (2) days of receipt. No modifications to the Contract Price or Contract Time(s) will be granted or considered for these days.

**Table 2.10.A**

<b>TABLE OF USER FEES FOR ROUTE 29 (NB) AND RIO ROAD GRADE SEPARATED INTERSECTION</b>			
<b>Monday - Friday</b>		<b>Saturday</b>	<b>Sunday</b>
<b>Hours</b>	<b>Failure to Remove Lane Closure By:</b>	<b>Failure to Remove Lane Closure By:</b>	<b>Failure to Remove Lane Closure By:</b>
6:01AM – 6:15 AM	\$600	\$600	\$600
6:16 AM – 6:30 AM	\$1,000	\$1,000	\$1,000
6:31 AM – 6:45 AM	\$1,500	\$1,500	\$1,500
6:46 AM – 7:00 AM	\$2,000	\$2,000	\$2,000
7:01 AM – 7:15 AM	\$3,500	\$3,500	\$3,500
7:16 AM – 7:30 AM	\$5,500	\$5,500	\$5,500
7:31 AM – 7:45 AM	\$7,000	\$7,000	\$7,000

7:46 AM – 8:00 AM	\$9,000	\$9,000	\$9,000
8:01 AM – 8:15 AM	\$12,500	\$12,500	\$12,500
And continues until lanes are restored to traffic.	@ the rate of \$12,500 per 15 minute period	@ the rate of \$12,500 per 15 minute period	@ the rate of \$12,500 per 15 minute period

<b>TABLE OF USER FEES FOR ROUTE 29 (SB) AND RIO ROAD GRADE SEPARATED INTERSECTION</b>			
<b>Monday - Friday</b>		<b>Saturday</b>	<b>Sunday</b>
Hours	Failure to Remove Lane Closure By:	Failure to Remove Lane Closure By:	Failure to Remove Lane Closure By:
6:01AM – 6:15 AM	\$15,000	\$15,000	\$15,000
6:16 AM – 6:30 AM	\$15,000	\$15,000	\$15,000
6:31 AM – 6:45 AM	\$15,000	\$15,000	\$15,000
6:46 AM – 7:00 AM	\$15,000	\$15,000	\$15,000
7:01 AM – 7:15 AM	\$15,000	\$15,000	\$15,000
7:16 AM – 7:30 AM	\$15,000	\$15,000	\$15,000
7:31 AM – 7:45 AM	\$15,000	\$15,000	\$15,000
7:46 AM – 8:00 AM	\$15,000	\$15,000	\$15,000
8:01 AM – 8:15 AM	\$15,000	\$15,000	\$15,000
And continues until lanes are restored to traffic.	@ the rate of \$15,000 per 15 minute period	@ the rate of \$15,000 per 15 minute period	@ the rate of \$15,000 per 15 minute period

<b>TABLE OF USER FEES FOR ROUTE 29 (NB) WIDENING</b>			
<b>Monday - Friday</b>		<b>Saturday</b>	<b>Sunday</b>
Hours	Failure to Remove Lane Closure By:	Failure to Remove Lane Closure By:	Failure to Remove Lane Closure By:
6:01AM – 6:15 AM	\$3,000	\$3,000	\$3,000
6:16 AM – 6:30	\$5,500	\$5,000	\$5,000

AM			
6:31 AM – 6:45 AM	\$8,500	\$8,000	\$8,000
6:46 AM – 7:00 AM	\$11,500	\$11,500	\$11,500
7:01 AM – 7:15 AM	\$9,000	\$9,000	\$9,000
7:16 AM – 7:30 AM	\$7,000	\$7,000	\$7,000
7:31 AM – 7:45 AM	\$5,000	\$5,000	\$5,000
7:46 AM – 8:00 AM	\$2,500	\$2,500	\$2,500
8:01 AM – 8:15 AM	\$2,000	\$2,000	\$2,000
And continues until lanes are restored to traffic.	@ the rate of \$2,000 per 15 minute period	@ the rate of \$2,000 per 15 minute period	@ the rate of \$2,000 per 15 minute period

<b>TABLE OF USER FEES FOR ROUTE 29 (SB) WIDENING</b>			
<b>Monday - Friday</b>		<b>Saturday</b>	<b>Sunday</b>
Hours	Failure to Remove Lane Closure By:	Failure to Remove Lane Closure By:	Failure to Remove Lane Closure By:
6:01AM – 6:15 AM	\$15,000	\$15,000	\$15,000
6:16 AM – 6:30 AM	\$15,000	\$15,000	\$15,000
6:31 AM – 6:45 AM	\$15,000	\$15,000	\$15,000
6:46 AM – 7:00 AM	\$15,000	\$15,000	\$15,000
7:01 AM – 7:15 AM	\$15,000	\$15,000	\$15,000
7:16 AM – 7:30 AM	\$15,000	\$15,000	\$15,000
7:31 AM – 7:45 AM	\$15,000	\$15,000	\$15,000
7:46 AM – 8:00 AM	\$15,000	\$15,000	\$15,000
8:01 AM – 8:15 AM	\$15,000	\$15,000	\$15,000
And continues until lanes are restored to traffic.	@ the rate of \$15,000 per 15 minute period	@ the rate of \$15,000 per 15 minute period	@ the rate of \$15,000 per 15 minute period

### 2.10.3.1 Allowance for Additional Lane Closure Restrictions by the Department and/or Design-Builder Requests for Additional Lane Closures

- At the Department’s reasonable discretion and approval, the Design-Builder may submit a request to Work outside the stated lane closure hours by providing adequate justification (including traffic analysis) demonstrating the viability of the request.
- Closures of longer durations than those listed in Section 2.10.3 will require a review of plans, implementation of detours, and public outreach. For detour analysis, the average of five field travel times, using the “floating car” method, for each direction for each morning, evening, and Saturday peak hour shall be performed to evaluate existing conditions for the detour analysis. Software output shall be used for any proposed detour conditions.
- Detour plans shall be required for any proposed total road closures exceeding 20 minutes, and are subject to VDOT review and approval as part of the Design-Builder’s TMP. No residential neighborhood detours shall be allowed. Detour travel times shall not exceed three times the pre-construction travel time, of the route detoured, for the routes that have existing travel times between zero and twenty minutes. Detour travel times shall not exceed two times the pre-construction travel times, of the route detoured, for the routes that have existing travel times greater than twenty minutes. The Design-Builder shall verify preconstruction travel time in the US 29 and Rio Road corridors and shall submit to VDOT for review prior to the commencement of any construction. Pre-construction travel time shall be determined as described in Part 2, Section 2.10.3.1.
- General Requirements:

Notwithstanding anything to the contrary, it is agreed that:

- The Department shall provide the Design-Builder with as much notice as is possible with respect to any lane closure request by the Design-Builder which is not approved by the Department.
- The Design-Builder shall provide the Department with as much notice as is possible with respect to any inability of the Design-Builder to implement lane closures which are otherwise allowed as set forth in Section 2.10.3.
- The Department and the Design-Builder will jointly track any additional lane closure time granted outside of time allowed in the Section 2.10.3.
- Any additional time granted by the Department must comply with the technical requirements set forth in Part 2, Section 2.10.

- The Design-Builder acknowledges that there will be instances where the Design-Builder may not be allowed to implement an approved lane closure during events that are beyond the Department’s control.
- Documentation:
  - Within the first sixty (60) days after the Department has issued Notice to Proceed, the Department and the Design-Builder shall develop and agree on a format of documenting this information. The documentation shall at a minimum consist of the date, hours allowed, hours disallowed, and impacted time.
- Calculating Hours:
  - Additional Time (lane closures) – Any additional time requested by the Design-Builder and granted by the Department beyond the approved hours set forth in the Section 2.10.3 will be added for every instance and every location at fifteen (15) minute intervals.
  - Additional Time (complete closures) – If a full closure of a roadway not specified in the Section 2.10.3 is implemented in lieu of thirty (30) minute total temporary closure, hours will be calculated in the same manner as the hours that were requested/approved for the specific closure.
  - Time Deducted – When the Design-Builder is not allowed to implement a lane closure by the Department during the approved hours set forth in Section 2.10.3, the hours during which such lane closure is not allowed will be deducted from the total hours accumulated.
  - Accumulative Time – By the 10th day of each month, the Department and the Design-Builder shall reconcile and agree on the resultant amount of hours allowed/disallowed each month for which lane closures are implemented. The Department and the Design-Builder will endeavor to maintain a neutral balance of resultant impacted and additional granted time throughout the duration of the Project.
  - Any lane closures affected by inclement weather, snow and snow removal operations, emergency VDOT maintenance repairs, safety shutdowns, and from major accidents are not subject to above allowance and are excluded from the calculations and compensations.
  - After Final Completion, the Department and the Design-Builder will reconcile the cumulative hours of impacted time by subtracting the total additional time granted by the Department from the total time the Design-Builder was disallowed per the technical requirements to implement the lane closures. If the Department did not

approve requests for lane closures from the Design-Builder, or otherwise prevented the Design-Builder from implementing lane closures which were permitted by the Contract Documents, and the impact of such actions by the Department is more than 120 cumulative hours, then such actions shall be addressed through the Work Order process per Part 4, Article 9 (Changes to the Contract Price and Time) or Part 4, Article 10 (Contract Adjustments and Disputes).

### 2.10.3.2 Special Events

The Design-Builder will be cognizant of and compliant to traffic demands during special events. Construction activities and/or lane closures that will affect event traffic may be stopped early or not allowed to implement a closure for special events such as, but not limited to, the following list:

- Presidential motorcades traveling through Project limits
- Special events with regional impacts
- Special sport events with regional impacts
- Major accidents/incidents with regional impacts
- Holiday and/or seasonal traffic patterns in accordance with Part 5, Section 108
- Natural or other disasters requiring regional evacuations

#### Additional Special Event Restrictions

The Design-Builder will be restricted from performing construction activities on the US 29 & Rio Road Grade Separated Intersection project outside of the roadway and on commercial properties (including easements) that would impede the flow of traffic into or out of commercial properties during the timeframe beginning the day before Thanksgiving Day of each year and ending on January 1 of the following year. The Design-Builder will be required to close any open trenches, stabilize any disturbed locations, make any pavement restorations, make any pavement marking restorations, restore lighting and signage, and repair any curbs or entrances to conditions acceptable to VDOT and commercial property owners/managers prior to the day before Thanksgiving Day. Failure to satisfactorily perform these activities on the day before Thanksgiving Day may result in the Engineer stopping other work until these activities are performed to the satisfaction of VDOT and the commercial property owners/managers in accordance with Part 5, Section 105.03(a) of the contract documents.

~~Detours — Detour plans shall be required for any proposed total road closures exceeding 20 minutes, and are subject to VDOT review and approval as part of the Design Builder's TMP. No residential neighborhood detours shall be allowed. Detour travel times shall not exceed two times the preconstruction travel time of the route detoured. The Design Builder shall verify preconstruction travel time in the US 29 and Rio Road corridors and shall submit to VDOT for review prior to the commencement of any construction.~~

## 2.10.4 Use of Virginia State Police

The Design-Builder shall be responsible for coordinating for Virginia State Police (VSP) service during Temporary Traffic Control operations. The Design-Builder shall be responsible for all costs incurred by VSP specific to the Project. State Police shall be used for, but not limited to, all traffic shifts, slow rolling operations, signalized intersections without operating signals (for any reason) and as outlined in the TMP.

## 2.10.5 Portable Changeable Message Signs

Portable Changeable Message Signs (PCMSs) used for MOT per TMP shall be a SolarTech, Wanco, Ver-Mac or equivalent. The Design-Builder shall coordinate the implementation of the PCMSs with VDOT. They are to be used in advance of the individual work zones when closing or shifting lanes within the Project limits and in areas where traffic congestion may occur within the Project limits or along detour routes. In addition, PCMS boards shall be required in various regional locations. The PCMSs shall be placed in a semi-permanent location, protected from traffic but highly visible to the public.

A PCMS placed on the detour routes and at regional locations shall advise traffic of what is taking place ahead or any action the motorist may need to take. PCMSs shall have the capability to be remotely controlled from the VDOT NWRO TOC. The Design-Builder shall be responsible for coordinating and facilitating the link for the remote communication with the VDOT NWRO TOC. PCMS's shall also be used to provide en-route travel information about planned construction, delays or other changes in travel conditions throughout the Project's duration. The use of PCMS's shall not replace any traffic control device otherwise required per the MUTCD or the Virginia WAPM.

The Design-Builder shall install dial – up lines to all PCMSs. The Design-Builder shall turn over to VDOT NWRO all phone numbers.

The PCMS shall have but not be limited to the following specifications:

### **PCMS Specifications**

Display panel: 71 in. x 133 in. (1800 mm x 3383 mm)  
4 LEDs per pixel  
Up to 3 lines of 8 characters per line  
5 x 7 pixels per character  
Display sign rotates 360 degrees for perfect setting  
Plug-and-play display modules for simplified maintenance  
High-speed modem with GPS  
Twelve (12) Gel-Cell batteries  
450W / 510W peak Solar Array  
75 AMP Output Charger

At a minimum, the Design-Builder shall provide PCMSs as outlined below. Additional PCMSs may be needed per the TMP or because of that message that needs to be conveyed.

*US 29 & Rio Road Grade Separated Interchange project*

- 1 PCMS along US 29 NB near southern project limits
- 1 PCMS along US 29 SB near northern project limits
- 1 PCMS along Rio Rd. EB west of the Berkmar intersection
- 1 PCMS along Rio Rd. WB east of the Fashion Square Mall intersection

*US 29 Widening project*

- 1 PCMS along US 29 NB south of the Rivanna River bridge
- 1 PCMS along US 29 SB north of the Town Center intersection
- 1 PCMS at the US 29/Hollymead Dr. Intersection
- 1 PCMS at the US 29/Ashwood Blvd. Intersection
- 1 PCMS at the US 29/Town Center Dr. Intersection

*Berkmar Drive Extension project*

- 2 PCMSs, location to be addressed in the TMP

*Regional Locations*

- 1 PCMS along US 29 SB north of Rt. 33
- 1 PCMS along US 29 SB north of Proffit Rd.
- 1 PCMS along US 29 NB south of I-64
- 2 PCMSs along I-66 both EB and WB before and after Exit 43 on I-66

Locations shall be approved by VDOT as part of the TMP submission. The Design-Builder shall be responsible for the relocation and field adjustments of PCMSs.

## **2.10.6 Portable Closed Circuit Television (PCCTV) Cameras**

PCCTV cameras shall be manufactured by Ver-Mac, Pelco, CohuHD or equivalent and shall be used as outlined in the TMP to provide the VDOT NWRO TOC with a view of intersections or approaches. All PCCTVs shall have the capability to be remotely controlled from the VDOT NWRO TOC to facilitate emergency access during an incident or for use in making signal timing adjustments. The PCCTV cameras shall be secured from damage and delivered by the Design-Builder to 1601 Orange Road, Culpeper Virginia 22701. The Design-Builder shall notify the VDOT NWRO TOC 24 hours in advance of delivering any equipment.

The Design-Builder will give VDOT NWRO TOC all phone numbers, ESN Numbers and IP addresses on all PCCTV cameras used on the Project. The cameras shall include, but not be limited to, the following specifications:

### **PCCTV Camera Specifications**

Camera	Clear-domed day/night, pan-tilt-zoom (PTZ)
Optical zoom	23X standard, 35X optional
Video	Motion JPEG and MPEG-4 streams
Communications	High-speed 4G/3G cellular router, accessible via TCP/IP Internet connection
Tower	Electric-winch operated
Camera height	Up to 29 ft. (8.8 m)
Batteries	Twelve (12) Gel-Cell batteries
Solar Array	450W (nominal) – 510W (peak)
Low-voltage	Disengages power to equipment when battery voltage gets low; system automatically
Charger (AC)	Restarts when batteries are recharged; voltage and temperature settings are adjustable. 75 AMP Output Charger

The following Table 2.10.B summarizes at a minimum where ~~DMS-PCCTV~~ cameras shall be installed as part of the TMP. The TMP shall address additional PCCTV camera locations needed based on the construction sequence and phasing.

**Table 2.10.B**

Num	Location/Description	Latitude	Longitude
1	NB Hydraulic Rd. & Commonwealth Dr.	38.06674	-78.49643
2	NB Hydraulic Rd. & Georgetown Rd.	38.07114	-78.49908
3	NB Hydraulic Rd. & Whitewood Rd.	38.07539	-78.49812
4	NB Hydraulic Rd. & Townwood Dr.	38.08279	-78.49058
5	NB W Rio Rd. & Berkmar Dr.	38.08505	-78.47739
6	EB Rio Rd. E & Meadowcreek Pkwy.	38.06134	-78.46285
7	EB Rio Rd. & Old Brook Rd.	38.07467	-78.46808
8	EB Rio Rd. E & Putt - Putt Pl.	38.06697	-78.46629
9	US 29 & Ashwood Dr.	38.11317	-78.45275
10	US 29 & Hilton Heights Dr.	38.09706	-78.46459
11	US 29 & Woodbrook Dr.	38.08786	-78.47043
12	US 29 & Rio Rd.	TBD	TBD

## 2.11 Public Involvement / Public Relations

The Design-Builder shall be responsible for providing a point of contact and a local or toll free phone number for VDOT to use when gathering information to respond to a citizen or media inquiry regarding this Project during the Project development and through Project delivery

to Project completion. The Design-Builder shall also be responsible for coordinating the preparation and release of any public information (includes flyers to residents) with VDOT's Charlottesville Residency Office of Communications. All information to be released to the public shall be approved by VDOT.

During the design, R/W Acquisition and construction phases, the Design-Builder shall:

- Participate in the Project Delivery Advisory Panel Meetings (PDAP) and 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.
- The Design-Builder shall participate with VDOT in formal and informal meetings with the PDAP and affected local citizen groups and businesses as necessary and as directed by the VDOT Program Manager, including regularly scheduled meetings with the Project Delivery Advisory Panel. Any meetings held will be in accordance with the VDOT Policy Manual for Public Participation in Transportation Projects, updated July 2009.
- The Design-Builder shall provide VDOT's Charlottesville Residency Office of Communications with written information about the Project at least once a week that will be posted on VDOT's external website. This information will include a project overview, plan of work for the coming month, potential traffic impacts, overall project schedule, contact information and updated project photos.
- The Design-Builder shall develop and implement a Public Involvement Strategy to effectively communicate the Project development plans, implementation schedule (design, R/W acquisition, and construction), and construction phasing. Further, the Design-Builder's Public Involvement Strategy will be developed to resolve various technical issues, environmental concerns, and property access issues. This plan must include monthly tours of the Project site to review design, ROW, Utility and construction issues with the PDAP, local elected officials, businesses and local communities. The purpose of these tour meetings is to keep these directly impacted stakeholders informed and engaged in the project development and construction.

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:

- Operate as a liaison between VDOT, Albemarle County, and the Design-Builder's Construction Manager to ensure compliance with applicable local ordinances and provide appropriate notification to affected property owners.
- 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 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 I&IM-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.

## 2.12 Right of Way

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, with the exception of temporary construction, permanent drainage, and utility easements ~~or as otherwise stated herein. 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, Section 2.7 and 2.8.

The Design-Builder's final design shall also be contained with 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 are required during final design process, and only after approval from VDOT. If the Design-Builder proposes significant changes 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. As discussed herein, the Design-Builder shall be responsible for any time and/or cost impacts and any NEPA document re-evaluation associated with Design-Builder's design changes that extend beyond the right of way limits reflected in the RFP Conceptual Plans and approved by VDOT.

The Design-Builder, acting as an agent on behalf of the Commonwealth of Virginia ("Commonwealth"), shall provide all right of way acquisition services for the Project's acquisition of fee right of way and permanent, temporary and utility easements. Right of way acquisition services shall include attorney-certified title reports, appraisal, appraisal review, negotiations, relocation assistance and advisory services and parcel closings, to include an attorney's final certification of title. The Design-Builder's lead right of way acquisition

consultant shall be a member of VDOT’s prequalified right of way contracting consultants (listed on VDOT’s website) and the Design-Builder’s right of way team shall include VDOT prequalified appraisers and review appraisers (also listed on VDOT’s website). VDOT will retain authority for approving the scope of the appraisal and the appraiser, just compensation, relocation benefits, and settlements. VDOT must issue a Notice to Commence Right of Way Acquisition to the Design-Builder prior to any offers being made to acquire the property. This represents a hold point in the Design-Builder’s Baseline Schedule. VDOT must also issue a Notice to Commence Construction to the Design-Builder once the property has been acquired and prior to commencing construction on the property (note, this will satisfy the federal requirement to certify that the ROW is available prior to the start of physical construction). This also represents a hold point in the Design-Builder’s Baseline Schedule. The Design-Builder will **NOT** be responsible for the right of way acquisition costs. As used in this RFP, the term “right of way acquisition costs” means the actual purchase price paid to a landowner for right of way, including fee, any and all easements, and miscellaneous fees associated with closings as part of the Project. All right of way acquisition costs will be paid by VDOT, and shall not be included in the Offeror’s Price Proposal. Notwithstanding the foregoing provision, should additional right of way (whether fee or easements) be required to accommodate Design-Builder’s unique solution and/or Contractor’s means, methods and resources used during construction above and beyond the right of way limits depicted on the RFP Conceptual Plans included in the RFP Information Package, 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 the landowners to reach a settlement or to pay for a 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 indicated in the “Right of Way Acquisition Guidelines” (Chapter 5 of VDOT’s Right of Way Manual of Instructions; <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 and no time extensions shall be granted.

VDOT’s Right of Way and Utility Special Projects Team shall perform a RW300/301 plan review and approval for all parcels prior to the issuance of a Notice to Commence Acquisitions. Any revisions to the Project’s acquisition of fee right of way and/or permanent, temporary and utility easements subsequent to the RW300/301 approval or a Notice to Commence Acquisitions being issued must be reviewed and approved by the Special Projects Team.

The following responsibilities shall be carried out by either the Design-Builder or VDOT as specified in each bulleted item below:

- The Design-Builder shall acquire property in accordance with all Federal and State laws and regulations, including but not limited to the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (the “Uniform Act”) and Titles 25.1 and 33.2 of the 1950 Code of Virginia, as amended. The text of Title 33.2 may be found at this URL: <http://law.lis.virginia.gov/vacode/title33.2/>

- The acquisition of property shall follow the guidelines as established by VDOT and other State and Federal guidelines that are required and the VDOT Right of Way Manual of Instructions (January 2011, including July 2013 revisions) and the VDOT Utility Manual of Instructions (January 2011, including October 2014 revisions), as well as IIM-LD-243 and Chapter 12 of the VDOT Survey Manual. All conveyance documents for the acquisition of any property interest shall be accompanied by properly marked plan sheets and profile sheets.
- The Design-Builder may not employ the use of Rights of Entry until the property owner has been made a bona fide offer to acquire the property.
- If the Design-Builder and/or the Right of Way sub-consultant does not follow the Uniform Act and its implementing regulations found in 49 CFR Part 24, in the performance of the acquisition and/or relocation processes, or fails to obtain or create any mandatory written documentation in their right of way parcel file, the Design-Builder shall be responsible for any and all expenses determined to be ineligible for reimbursement of federal funding.
- VDOT shall designate a hearing officer to hear any Relocation Assistance appeals. VDOT agrees to assist with any out of state relocation by persons displaced within the rights of way by arranging with such other state(s) for verification of the relocation assistance claim.
- VDOT will entertain the use of relocation incentive payments on projects with significant numbers or critical relocations. Such incentive payments shall be presented to VDOT for approval. If VDOT approves the incentive payment, it will seek Federal Highway Administration approval. Any relocation incentive payments shall be uniformly administered so that all landowners and displaces of a similar occupancy receive fair and equitable treatment. Under no circumstances is a relocation incentive to be used without VDOT's prior approvals.
- VDOT will entertain the use of protective leasing to ensure the availability of housing or apartments for relocation purposes. Such protective leasing plans must be presented to VDOT for approval prior to their implementation.
- Section 33. 2-1032 of the Code of Virginia, 1950, as amended, provides that the Commissioner of Highways may acquire lands on which graves are located through either voluntary conveyance or condemnation. In the course of relocating such graves, the Commissioner of Highways, through the Office of the Attorney General, will appoint an attorney to prepare the Order and Petition for the exhumation and re-interment of the graves. The Design-Builder shall be responsible for verifying the number of graves, locating next of kin if possible, acquiring new grave sites and managing the grave relocations as outlined in Chapter 3.4.7 of the Right of Way Manual of Instructions dated January 1, 2011.

- The Design-Builder shall submit a Project specific Acquisition and Relocation Plan to VDOT for VDOT Right of Way approval prior to commencing right of way activities. No offers to acquire property shall be made prior to the Acquisition and Relocation Plan approval and a Notice to Commence Acquisition. This represents a hold point in the Offeror’s CPM Schedule. The Acquisition and Relocation Plan shall describe the Offeror’s methods, including the appropriate steps and workflow required for title examinations, appraisals, review of appraisals, negotiations, acquisition, and relocation, and shall contain the proposed schedule of right of way activities including the specific parcels to be acquired and all relocations. The schedule shall include activities and time associated with VDOT’s review and approval of just compensation, relocation benefits and administrative settlements. The plan shall allow for the orderly relocation of displaced persons based on time frames not less than those provided by the “Uniform Act.” This plan shall be updated as necessary during the life of the Project and all updates must be submitted to VDOT for approval. The plan approval is based on the Plan providing a reasonable and orderly workflow and the plan being provided to the VDOT Representative as completed.
- A VDOT Representative will be available to make timely decisions concerning the review and approval of just compensation, approval of relocation benefits, approval of administrative settlements and approval of closing or condemnation packages on behalf of VDOT. The VDOT Representative is committed to issuing decisions on approval requests within ten (10) days. This commitment is based on the plan providing a reasonable and orderly workflow and the work being provided to the VDOT representative as complete. Submission of documents requiring VDOT approval shall contain the necessary language and certifications as shown on the examples provided in the Appendix to Chapter 10, “Special Projects”, of the Right of Way Manual.
- The Design-Builder shall obtain access to and use VDOT’s Right of Way and Utilities Management System (RUMS) to manage and track the acquisition process. RUMS will be used for Project status reporting; therefore, entries in RUMS shall be made at least weekly to accurately reflect current Project status. 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 provide a current title examination (no older than sixty (60) days) for each parcel at the time of the initial offer to the landowner. Each title examination report shall be prepared by a VDOT approved attorney or Title Company. If any title examination report has an effective date that is older than sixty (60) days, an update is required prior to making an initial offer to the landowner. A Title Insurance Policy in favor of the Commonwealth of Virginia in form and substance satisfactory to the VDOT shall be provided by the Design-Builder, for every parcel acquired by voluntary conveyance.

- The Design-Builder shall submit a scope of work detailing the type of appraisal to be prepared for each parcel and the name of the proposed appraiser for VDOT review and approval in writing prior to commencing the individual parcel appraisal. The proposed appraiser shall be of an appropriate qualification level to match the complexity of the appraisal scope. The Design-Builder shall prepare appraisals in accordance with VDOT's Appraisal Guidelines. The review appraiser shall be on VDOT's approved fee review appraiser list. Alternatively, the Design-Builder may submit an exception request to use a review appraiser who is not on VDOT's approved review appraisal list for VDOT's approval. VDOT shall issue a final approval of all appraisals.
- Payment documentation is to be prepared and submitted to VDOT with the Acquisition Report (RW-24). VDOT will process vouchers and issue State Warrants\checks for all payments and send to the Design-Builder, who will be responsible for disbursement and providing indefeasible title to VDOT. The Design-Builder shall make payments of benefits to property owners for negotiated settlements, relocation benefits, and payments to be deposited with the court.
- The Design-Builder shall prepare, obtain execution of, and record documents conveying title to such properties to the Commonwealth of Virginia and deliver all executed and recorded general warranty deeds to VDOT. Prior to the recordation of any instrument, VDOT shall review and approve the document. For all property purchased in conjunction with the Project, title will be acquired in fee simple (except that VDOT may, in its sole discretion, direct the acquisition of a right of way easement with respect to any portion of the right of way) and shall be conveyed to the "Commonwealth of Virginia, Grantee" by a VDOT-approved general warranty deed, free and clear of all liens and encumbrances, except encumbrances expressly permitted by VDOT in writing in advance of deed recordation. All easements, except for private utility company easements shall be acquired in the name of "Commonwealth of Virginia, Grantee". Private utility company easements will be acquired in the name of each utility company when the private utility company has prior recorded easements.
- Because these acquisitions are being made on behalf of the Commonwealth, VDOT shall make the ultimate determination in each case as to whether settlement is appropriate or whether the filing of an eminent domain action is necessary, taking into consideration the recommendations of the Design-Builder. **If the owner states that: no further offers will be considered; or that no further contacts are wanted; or displays threatening conduct; or if unknown owners, incompetent owners, minors or title problems exist, then the filing of a Certificate is within the discretion of the Regional Manager and may occur in a minimum of ten days. Considering the preceding circumstance, the Design-Builder shall include documentation of all efforts made to negotiate with the owner and the owner's position on the RW-24 form and within RUMS.** When VDOT authorizes the filing of a certificate, the Design-Builder shall prepare a Notice of Filing of Certificate and the certificate assembly. All required documents necessary to file a certificate shall be forwarded along with a prepared certificate to the VDOT Project Manager. Once reviewed, the certificate will be forwarded to Central Office for review and approval. VDOT will execute the certificate, provide the money as appropriate and will return the

assembly to the Design-Builder. The Design-Builder shall update the title examination and shall file the certificate.

- When VDOT determines that it is appropriate, the Design-Builder shall be responsible for continuing further negotiations for a maximum of sixty (60) days after a certificate is filed, in order to reach settlement after the filing of certificate. After that time the case will be assigned to an outside attorney appointed by VDOT and the Office of the Attorney General. When requested, the Design-Builder shall provide the necessary staff and resources to work with VDOT and its attorney throughout the entire condemnation process until the property is acquired by entry of a final non-appealable order, by deed, or by an Agreement After Certificate executed and approved by VDOT and the appropriate court. The Design-Builder will provide updated appraisals (*i.e.*, appraisal reports effective as of the date of taking) and expert testimony supporting condemnation proceedings upon request by VDOT. Services performed by the Design-Builder or its consultants after an eminent domain action is assigned to an outside attorney will be paid, if and when necessary, under a Work Order in accordance with Article 9 of Part 4 (General Conditions of Contract).
- The Design-Builder will be responsible for all contacts with landowners for rights of way or construction items.
- The Design-Builder will be responsible for all contacts with the displaced for relocation assistance.
- The Design-Builder shall maintain access at all times to properties during construction.
- The Design-Builder shall use reasonable care in determining whether there is reason to believe that property to be acquired for rights of way may contain concealed or hidden wastes or other materials or hazards requiring remedial action or treatment. When there is reason to believe that such materials may be present, the Design-Builder shall notify VDOT within three (3) calendar days. The Design-Builder shall not proceed with acquiring such property until they receive written notification from VDOT.
- During the acquisition process and for a period of three years from either (1) the date each owner of a property and each person displaced from the property receives the final payment or (2) from the date the State receives Federal reimbursement of the final payment made to each owner of a property and to each person displaced from a property, whichever is later, and until the Commonwealth of Virginia has indefeasible title to the property, all Project documents and records not previously delivered to VDOT, including but not limited to design and engineering costs, construction costs, costs of acquisition of rights of way, and all documents and records necessary to determine compliance with the laws relating to the acquisition of rights of way and the costs of relocation of utilities, shall be maintained and made available to VDOT for inspection and/or audit. This also would apply to the Federal Highway Administration on projects with federal funding. Throughout the design, acquisition and construction phases of the Project, copies of all

documents/correspondence shall be submitted to both the Central Office and respective Regional Right of Way Office.

- Prior to Project completion the Design-Builder shall provide and set VDOT RW-2 right of way monuments within the Project limits.
- Any existing VDOT fencing impacted by the Design-Builder's design and construction activities shall be restored or replaced in the same configuration relative to the improvements as the existing fencing. Any new VDOT fencing shall be Std. FE-CL.
- The Design-Builder shall notify VDOT of any and all encroachments (temporary or permanent) within the right of way prior to final acceptance.

### 2.13 Utilities

The Design-Builder shall be responsible for coordination of the Project construction with all utilities 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 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. All cost for utility relocations shall be included in the Offeror's Price Proposal. Any 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. The Offeror shall contact each utility owner prior to submitting bids to determine the scope of each utility owner's relocation. The RWSA is interested in providing betterments for: 1) any relocation of the existing twelve inch diameter water main along the Route 29 Widening project be upgraded to a twenty-four inch diameter water main between Polo Grounds Road and Towncenter Drive and 2) casing pipe for future sewer line as outlined in their letter dated July 25, 2014., ~~which is included in the RFP Information Package, and 3) the installation of a new twenty-four inch diameter water main along the proposed Berkmar Extended alignment. Additionally, the RWSA does not desire to have multiple short, successive sections of the water main along the Route 29 Widening project relocated, rather they desire to have logical continuous sections relocated. This will be addressed in the RWSA betterment cost determination.~~ The existing twelve inch RWSA water main shall be relocated outside of the roadway for the entire length of the Route 29 Widening project, from Polo Grounds Road to Towncenter Drive. The water main can be relocated to either the east side of Route 29 or the west side of Route 29. The water main can be relocated beneath the proposed shared use path on the east side of Route 29. The relocated water main shall tie into the existing twelve inch water main at the north and south termini of the project (Towncenter Drive and Polo Grounds Road). The tie-in location on the north side of the project shall be the existing PRV pit and flush hydrant located north of Towncenter Drive and on the west side of Route 29. Appropriate tees, reducers, and roadway crossings will be required to tie to the existing water main at Polo Grounds Road and Towncenter Drive. The Design-Builder shall connect to the existing ACSA water mains located at North Hollymead Drive and Ashwood Boulevard. For the purposes of the Offeror's price proposal, relocation of the existing twelve inch water main shall

be at project cost while any increase in size from a twelve inch water main to a twenty four inch water main or any other associated betterments for the purposes of future connection or extension shall be considered betterments. Water service interruptions must be minimized to all extents practical and coordinate with RWSA.

For the US 29 & Rio Road Grade Separated Intersection project the Department will be performing preliminary utility field inspection including determining necessary utility easements and placing these easements on the project plans to be made available in early to mid-January 2015. The Department will begin acquiring these identified utility easements prior to project Notice to Proceed and beyond as necessary to assist the Design-Builder in coordinating and relocating utilities in an expeditious manner. The Design-Builder will retain the responsibility for all utility relocations in accordance with the Contract Documents.

Requests for telecommunications conduit installation on any bridge components should be treated as a betterment and the price for such an installation shall not be included in the Offeror's 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 is responsible for all necessary utility relocations, adjustments, and betterments to occur in accordance with the accepted Baseline Schedule. All efforts and cost 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.

The ACSA sewer main currently located along the southbound lanes of Route 29 in the vicinity of Rio Road can remain within the travelway as long as sufficient cover is achieved and the manholes are located in the outer-most lanes so access can be achieved with minimal traffic control and disruption to traffic. Cost to relocate ACSA facilities in conflict are project costs.

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 perform contract utility work in a manner that will cause the least inconvenience to the utility owner and those being served by the utility owner.

The Design-Builder shall initiate early coordination with all utilities located within the Project limits. 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.

It is the Design-Builder's responsibility to verify whether other utility owners exist within the Project limits and coordinate with them. Known utility owners and their respective contact numbers are identified below for reference only and may not be limited to the following:

**Dominion Virginia Power - Distribution**

Mr. Daniel Bateman, Supervisor Customer Solutions  
1719 Hydraulic Road  
Charlottesville, Virginia 22901  
O: (434) 972-6734  
C: (434) 996-5514  
E: [daniel.bateman@dom.com](mailto:daniel.bateman@dom.com)

**Dominion Virginia Power – Transmission**

Mr. Jacob G. Keisey, Transmission Line Engineer  
Dominion Technical Solutions  
701 East Cary Street  
Richmond, Virginia 23219  
O: (804) 771-4262  
C: (804) 624-0986  
E: [jacob\\_g\\_Keisey@dom.com](mailto:jacob_g_Keisey@dom.com)

**CenturyLink**

Mr. Jerry Burge, Network Engineer II  
127 East Church Street  
Martinsville, Virginia 24112  
O: (276) 666-4247  
C: (276) 340-9726  
E: [jerry.burge@centurylink.com](mailto:jerry.burge@centurylink.com)

**Verizon Business (Formerly MCI)**

Mr. David Fisher, Project Manager  
12379A Sunrise Valley Drive  
Reston, Virginia 20191  
O: (703) 391-5782  
C: (703) 350-8463  
E: [james.fisher@mci.com](mailto:james.fisher@mci.com)

**Fiberlight**

Mr. Wayne Haithcox, Project Manager  
950 Herndon Parkway, Suite 250  
Herndon, Virginia 20170  
O: (571) 323-7666  
C: (540) 522-3776  
E: [wayne.haithcox@fiberlight.com](mailto:wayne.haithcox@fiberlight.com)

**Lumos Networks**

Mr. Cary R. Bowman, Outside Plant Engineer  
524 West Broad Street, 2<sup>nd</sup> Floor  
Waynesboro, Virginia 22980

O: (540) 946-3179  
C: (540) 292-9916  
E: [bowmanr@lumosnet.com](mailto:bowmanr@lumosnet.com)

**Comcast**

Mr. Wesley W. Parker, Construction Manager  
324 West Main Street  
Charlottesville, Virginia 22903  
O: (434) 951-3725  
C: (434) 531-1830  
E: [wesley\\_parker@comcast.com](mailto:wesley_parker@comcast.com)

**City of Charlottesville Public Utilities Division**

Department of Public Works  
Mr. E.W. “Trip” Stakem, III, P.E. – Utilities Engineer (Water & Sanitary Sewer)  
305 4<sup>th</sup> Street, NW  
Charlottesville, Virginia 22903  
O: (434) 970-3908  
E: [stakeme@charlottesville.org](mailto:stakeme@charlottesville.org)

**City of Charlottesville Public Utilities Division**

Department of Public Works  
Mr. Phil Garber, Chief Gas Engineer  
305 4<sup>th</sup> Street, NW  
Charlottesville, Virginia 22903  
O: (434) 970-3811  
E: [garber@charlottesville.org](mailto:garber@charlottesville.org)

**Rivanna Water & Sewer Authority**

Ms. Jennifer Whitaker, P.E. – Chief Engineer  
695 Moores Creek Lane  
Charlottesville, Virginia 22902  
O: (434) 977-2970, Ext. 104  
E: [jwhitaker@rivanna.org](mailto:jwhitaker@rivanna.org)

**Albemarle County Service Authority**

Mr. Peter Gorham, P.E. – Director of Engineering  
168 Spotnap Road  
Charlottesville, Virginia 22911  
O: (434) 977-4511, Ext. 115  
E: [pgorham@serviceauthority.org](mailto:pgorham@serviceauthority.org)

**QWEST GOVERNMENT (CENTURYLINK GOVERNMENT)**

Mr. Noah Dobbins Engineer  
O: 703-464-7529 C: 703-898-1149  
[Noah.dobbins@centurylink.com](mailto:Noah.dobbins@centurylink.com)  
Mr. Todd Metzger OSP Manager  
703-464-7593

**Albemarle County Public Schools (telecommunications)**

Mr. Robert Rejonis  
2761 Hydraulic Road  
Charlottesville, VA 22901  
O:434-974-4718  
[rrejonis@k12albemarle.org](mailto:rrejonis@k12albemarle.org)

Alexander J. Morrison, E.I.T.  
Civil Engineer  
168 Spotnap Road  
Charlottesville, Virginia 22911  
O: (434) 977-4511, Ext. 116  
E: [amorrison@serviceauthority.org](mailto:amorrison@serviceauthority.org)

Michael H. Vieira, P. E.  
Civil Engineer  
168 Spotnap Road  
Charlottesville, Virginia 22911  
O: (434) 977-4511, Ext. 113  
E: [mvieira@serviceauthority.org](mailto:mvieira@serviceauthority.org)

**VDOT Northwest Regional Operations (NWRO) shall be listed as a utility for Intelligent Transportation System (ITS) and Traffic Signal infrastructure. VDOT NWRO Traffic Operations Center (TOC) is the point of contact for utility marking requests.**

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

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

The Design-Builder shall verify the prior rights of each utility's facilities if claimed by a Utility owner. If there is a dispute over prior rights with a utility, the 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 of the Date of Commencement 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 utilities.

The Design-Builder shall obtain the following from each utility that is located within the Project limits: relocation plans including letter of "no cost" where the utility does not have a

compensable right; utility agreements including cost estimate and relocation plans where the utility has a compensable right; or letters of "no conflict" where the utility's facilities will not be impacted by the Project.

The Design-Builder shall review all relocation plans to ensure that relocations comply with the VDOT Utilities Manual of Instruction, Utility Relocation Policies and Procedures and VDOT's 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'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 is expected to meet with VDOT's Regional Utilities Office within forty-five (45) days of 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 utilities 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's relocation plan.

At the time that 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 utilities with compensable rights or other claims related to relocation or coordination with the Project have been relocated and their claims and compensable rights satisfied or will be satisfied by the Design-Builder.

The Design-Builder shall accurately show the final location of all utilities on the as-built drawings for the Project. The Design-Builder will ensure the utility companies submit as-built drawings upon completion of their relocation and/or adjustments. VDOT shall issue an as-built permit to the utility companies after receipt of permit application and as-built drawings.

Design – The Design-Builder shall develop traffic control device designs that are not in conflict with existing and proposed utilities (both overhead and underground). Signal poles and mast arms shall maintain the minimum distance from all overhead electrical lines in accordance with the Virginia Overhead High Voltage Safety Line Act.

Designation – The Design-Builder shall be responsible for locating and marking all underground utilities prior to any Traffic Control Devices (TCD) installation work. At least seventy-two (72) hours prior to beginning TCD installation work, the Design-Builder shall contact:

- 1) Miss Utility of Virginia at 1-800-552-7001 or 811 in order to determine the extent and location of underground utilities within the Project limits, and
- 2) VDOT NWRO TOC at (540) 332-9500 to determine the extent and location of all VDOT-owned underground electric equipment.

## 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 meeting held after the Date of Commencement as set forth in Part 4 General Conditions under 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:

1. Preparatory Inspection Meeting requirements, including incorporation of at least one each, Witness and Hold Point, as set forth in Sections 5.3 and 5.14 of the Department's guidance document for Minimum Requirements for Quality Assurance and Quality Control on Design Build and Public-Private Transportation Act Projects, January 2012 (January 2012 QA/QC Guide);
2. At least one (1) material which VDOT retains responsibility for testing as identified in Table 5-2, January 2012 QA/QC Guide;
3. Situation arising requiring the issuance of a Non-Conformance Report and subsequent review of the report, including completion of corrective measures and the issuance of a Notice of Correction of non-conformance work with proper log entries and proper interface with auditing and recovery requirements as set forth in Sections 5.10 and 5.11 of the January 2012 QA/QC Guide for non-conforming work resulting from:
  - a. defective equipment
  - b. construction activities/materials which fail to conform as specified;
4. Inspection documentation capturing requirements as set forth in Section 5.20 and 5.21 of the January 2012 QA/QC Guide; as well as inspection of foundation and pavement subgrades that are to be performed and certified by the Design-Builder's licensed geotechnical engineer in accordance with the Contract requirements;
5. Application for payment for Work Package which includes work element, including review and approval by Quality Assurance Manager; and
6. Measures that will be implemented to ensure compliance with Buy America requirements on the Project.
7. Detail two (2) sample entries in Materials Notebook showing completion of Form C-25, including subsequent submission and review by Department Project Manager as set forth in Section 5.21. Refer to Section 803.73 of VDOT's Manual of Instruction for Materials Division, Form TL-142S, for an example of a completed Materials Notebook and VDOT Materials Division Memorandum Number MD299-07 for Materials Acceptance – October 4, 2007.

### 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, January 2012 (January 2012 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 Project design control plan will provide VDOT assurance that the design plans and submittals will meet all contract requirements. 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.

Appendix 2 of the January 2012 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, operate, and maintain a Construction QA/QC Plan in accordance with VDOT's January 2012 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 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) for uniform reporting, controlling, correction and disposition and resolution of nonconformance (including disputed nonconforming items) issues that may arise on the Project. The Design-Builder's AR Plan shall establish a process for review and disposition of nonconforming workmanship, material, equipment or other construction and design elements of the Work including the submittal of the design review process for field changes. All deficiencies (hereinafter referred to as a Non-Conformance), including those pertaining to rules, regulations, and permit requirements, shall be documented by the QAM. A Non-Conformance Report (NCR) referenced by a unique number, shall be forwarded to the Contractor and VDOT within 24 hours of discovery of the Non-Conformance. Non-conformance procedures are provided in Section 5.10.5 of the January 2012 QA/QC Guide.

The Design-Builder also shall be responsible for providing QA and QC testing for all materials manufactured off-site, excluding the items listed below:

- Prestressed Concrete Structural Elements (beams, girders (VDOT adopted Bulb-T sections), and piles)
- Structural Steel Elements (beams, girders, and sign structures)
- Pipe (concrete, steel, aluminum, and high density polyethylene) for culverts, storm drains, and underdrains
- Precast Concrete Structures
- Asphalt Concrete Mixtures
- Aggregate (dense and open graded mixes)
- Metal Traffic Signal and Light Poles and Arms

VDOT will provide plant QA and plant QC inspection and/or testing of these items. In the event that VDOT determines that materials fail to meet the tolerances in the VDOT 2007 Road and Bridge specifications, a NCR will be issued by the VDOT Project Manager and addressed to the Design-Builder's QAM for resolution. 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 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's QAM shall report directly to the Design-Builder's Project Manager and be independent of the Design-Builder's physical construction operations. The QAM shall establish quantities prior to commencing construction, and provide VDOT a total number of QC, QA (Independent Assurance (IA) and Independent Verification Sampling and Testing (IVST)), Owner's (the Department) Independent Assurance (OIA), and Owner's Independent Verification Sampling and Testing (OVST) required as a result of the quantities and the sampling and testing requirements as set forth in Table A-3 and A-4 of the January 2012 QA/QC Guide. VDOT will provide all OIA and OVST tests and, therefore, final determination of the actual number of OIA and OVST tests to be performed will be made by VDOT based on these quantities.

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 is required to be on site full time during the duration of construction operations. 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 Contract requirements. This includes the documentation of construction activities and acceptance of manufactured materials. The QAM shall assign a

minimum of one Lead QA Inspector to each of the three elements of the Project prior to the start of construction. These individuals, who must be on the site full-time for the duration of construction of the Project, shall be responsible to observe construction as it is being performed, to include all QC activities to ensure inspection and testing, and correction of any non-conformities of the Work are being performed in accordance with the Contract requirements. If needed, the Lead QA Inspectors shall be supported by other QA inspectors under his/her direction to ensure all construction work and QC activities are being observed. The Lead QA Inspectors shall report directly to the QAM.

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) 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 January 2012 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. The QA/QC plan shall include rapid reporting of non-compliance to the VDOT Project Manager, and shall include the remedial actions to be taken as discussed in Sections 5.10 and 5.11 of the January 2012 QA/QC Guide.

The Design-Builder shall provide, prior to Final Application for Payment, a complete set of Project records that include, but are not limited to the following:

- Project correspondence
- Project diaries
- Test reports
- Invoices
- Materials books
- Certified survey records
- DBE/EEO records
- Warranties
- As-Built drawings
- Special tools

## 2.15 Field Office

The Design-Builder shall provide office space, equipment, and services in accordance with the Special Provision for Project Office / Co-Location. These field offices 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 of the field office. The field offices will be operational throughout the duration of the Project construction and shall be removed upon final Project acceptance.

## 2.16 Plan Preparation

### 2.16.1 GEOPAK and MicroStation

When the Design-Builder is given the Date of Commencement, they will be furnished with the following software and files which run in WindowsXP or Windows7 only: GEOPAK (current version used by VDOT), MicroStation (current version used by VDOT) 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.

### 2.16.2 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 are 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.

### 2.16.3 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 VDOT's Manual of Structure and Bridge Division, Vol. V, Part 2, Design Aids and Typical Details.

#### 2.16.4 Electronic Files

The Design-Builder shall submit all plans in accordance with the Department'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 Falcon Consultant environment or FTP Server. The Design-Builder will complete form LD-443, the Falcon System Access and Security Agreement and form LD-894, the Falcon Access Request Form, for access to the Falcon 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 VDOT's Manual of the Structure and Bridge Division, Vol. V - Part 2, Design Aids and Typical Details. 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.

#### 2.16.5 Plan Submittals

In addition to electronic files as described in Part 2, Section 2.16.4 above, the Design-Builder shall prepare and distribute hard copy paper plans in the quantities as specified below, for each of the following deliverables (at a minimum, as other submittals and/or work packages may be necessary or desired):

- Right of Way Plans [IF APPLICABLE]
- Released for Construction Plans
- Right of Way and/or Construction Revisions
- Record Plans (As-Built)
- Approved Shop Drawings
- Design Calculations

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

##### 1. Preliminary Plan (Stage I) Submission

- a. The Design-Builder will submit a preliminary plan for each permanent structure (new bridge, bridge replacement, and bridge widening) documenting how the structure geometrics were determined.
- b. The preliminary plan submittal will include:

i. a plan view, developed section along bridge centerline/construction baseline and a transverse section. Refer to the Department's office practices for more complete information;

ii. completed Stage I Bridge Report Summary Form; The preliminary geotechnical recommendation report is required with the Stage I submission; and

iii. copies of 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.

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

d. 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.

## 2. Final Plan (Stage II) Submission

a. The Design-Builder will submit final plans for each permanent structure. The final plans will be assembled according to the procedures and guidelines presented in the Department's office practices.

b. 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 by the Chief Engineer prior to construction of that element and should be submitted according to the submission schedule provided by the Design-Builder.

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

The bridge plans must use the standard sheets in Volume V (all parts) of the VDOT Manual of Structure and Bridge Division. Structural elements that have a corresponding standard sheet in Volume V must be detailed using the appropriate standard sheet. The sequence of concrete deck placement operations for beams or girder construction shall be given for continuous structures, and all erection stresses shall be computed where necessary for design. A summary table of moments, shears, reactions and stresses for primary load carrying members shall be included in the plans.

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 for the US 29 Widening project and the US 29 & Rio Road Grade Separated Intersection project to VDOT and FHWA simultaneously, for review and approval. The Design-Builder shall submit all Right of Way and/or Construction plans for the Berkmar Drive Extension project only to VDOT for review and approval. VDOT shall receive two (2) full-size sets and ten (10) half-size sets of each submission, with the exception of the Released for Construction Plans (see Part 2, Section 2.16.8 below). FHWA shall receive two (2) half-size sets of each submission. The plan submissions shall be delivered to the following addresses:

Virginia Department of Transportation  
Attention - Dave Covington, P.E  
Charlottesville Residency  
701 VDOT Way  
Charlottesville, Virginia 22911

Federal Highway Administration  
Attention – Vanna Patterson Lewis, P.E.  
Virginia Division, FHWA, US DOT  
400 N. 8<sup>th</sup> 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.

### **2.16.6 Right of Way Plans**

Right of Way Plans and any associated Design Calculations for the US 29 Widening project and the US 29 & ~~the~~ Rio Road Grade Separated Intersection project shall be submitted to VDOT and FHWA simultaneously for review. Right of Way plans and any associated Design Calculations for the Berkmar Drive Extension project shall be submitted only to VDOT for review. The time frame for plan review and approval shall be in accordance with the requirements of the Contract Documents. All VDOT and FHWA comments must be adequately addressed before the Right of Way Plans will be approved. Notice to Commence Right of Way Acquisition will be granted in accordance with Part 2, Section 2.12 above. The Design-Builder shall be responsible for the design details and ensuring that the design and right of way acquisition work are properly coordinated.

### **2.16.7 Construction Plans**

Construction Plans, and any associated Design Calculations for the US 29 Widening project and the US 29 & Rio Road Grade Separated Intersection project, shall be submitted to VDOT and FHWA simultaneously for review. Construction Plans, and any associated Design Calculations for the Berkmar Drive Extension project shall be submitted only to VDOT 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 the 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.

### **2.16.8 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 for the US 29 Widening project and the US 29 & Rio Road Grade Separated Intersection project shall be distributed simultaneously to VDOT and FHWA. The Released for Construction Plans for Berkmar Drive Extension project shall be submitted only to VDOT. VDOT shall receive one (1) full-size set and five (5) half-size sets of Released for Construction Plans, along with all electronic files. FHWA shall receive two (2) half-size hard copy sets, 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 - Dave Covington, P.E.  
Charlottesville Residency  
701 VDOT Way  
Charlottesville, Virginia 22911

Federal Highway Administration  
Attention – Vanna Patterson Lewis, P.E.  
Virginia Division, FHWA, US DOT  
400 N. 8<sup>th</sup> Street, Suite 750  
Richmond, VA 23219-4825

### **2.16.9 Record (As-Built) Plans**

The final plan milestone is Record (As-Built) Plans. As-Built Plans shall be prepared, signed and sealed by a Professional Engineer licensed in 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.

### **2.17 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 Contractor 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.
- Explosives shall be purchased, transported, stored, used and disposed of by a Virginia State Certified Blaster in possession of a current criminal history record check and a commercial driver's license with hazardous materials endorsement and a valid medical examiner's certificate. All Federal, State and local regulations pertaining to explosives shall be strictly followed.
- 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 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 2.7.4 --	NUTRIENT CREDIT ASSIGNMENT AGREEMENT
ATTACHMENT 2.10.3 --	CLARIFICATIONS FOR LANE AND ROAD CLOSURE RESTRICTIONS

All additional information is included in the RFP Information Package – referred to in Part 1 (Instructions for Offerors), Section 2.5 and Part 2, Section 2.1.2 of this RFP.

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