

# **Attachment 1.5a**

## **Standards and Specifications**

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The standards, special provisions and reference guides applicable for the Construction Period shall be the version of those documents as noted herein below or those in effect as of final issuance of RFP, including all supplements, errata, revisions and addendums. Following the Work Period, all subsequent design and construction must meet the standards current at the time the Work is performed. Groupings of standards are for ease of reference only and certain reference documents have been included. It is the responsibility of the Design-Builder to ensure that all relevant standards and specifications have been applied.

The Design-Builder must verify and use the latest version of the documents listed herein. The Design-Builder shall meet or exceed the minimum design standards and criteria.

**A. Standards and Reference Documents****General**

1. AASHTO Guide Specifications for Highway Construction, 9<sup>th</sup> Edition
2. VDOT Materials Approved Lists
3. VDOT Construction Manual (May 2016)
4. VDOT Post Construction Manual (December 2016)
5. VDOT Construction Inspection Manual (March 2018)
6. VDOT's Minimum Requirements for Quality Assurance & Quality Control on Design-Build & Public-Private Transportation Act Projects (July 2018)
7. VDOT Traffic Engineering Design Manual (2014)
8. VDOT Right of Way Manual of Instructions, Third Edition (May 11, 2016; Revised August 1, 2019)
9. VDOT Utility Manual of Instructions – Utility Relocation Policies and Procedures, Eleventh Edition (October 1, 2016; Revised August 14, 2017)
10. VDOT Land Use Permit Regulations Guidance Manual (May 20, 2013)
11. VDOT Land Use Permit Regulations 24 VAC 30-151 (March 17, 2010)
12. VDOT Policy Manual for Public Participation in Transportation Projects (October 2019)
13. VDOT Instructional & Information Memorandums (IIM) – All Divisions (as of date of RFP)
14. VDOT Road and Bridge Standards, Vol. 1 and Vol. 2 (2016; Revised May 2020),
15. VDOT Road and Bridge Specifications (2020) (Divisions II – VIII only)
16. VDOT Supplements to the 2020 Road and Bridge Specifications (Divisions II – VIII only)
17. VDOT Virginia Work Area Protection Manual (Revision 2: September 1, 2019)

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18. FHWA 23 CFR 630, Subpart J - Workzone Safety and Mobility
19. 2010 ADA Standards for Accessible Design
20. Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way, dated July 26, 2011
21. Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities dated July 23, 2004 and amended May 7, 2014
22. VDOT Policy for Integrating Bicycle and Pedestrian Accommodations, adopted March 18, 2004 by the CTB
23. VDOT State Bicycle Policy Plan (September 2011)
24. Transportation Research Board Highway Capacity Manual, 6<sup>th</sup> Edition (2016)
25. VDOT Manual of Instruction for Material Divisions (2016), including all associated memoranda
26. VDOT CADD Manual (Issued 2012, Revised August 2018)
27. VDOT Highway Traffic Noise Impact Analysis Guidance Manual – Version 8 (February 20, 2018)
28. ISO 9001 Quality Management Systems (September 2015)
29. AASHTO Guide for Park-and-Ride Facilities, 2<sup>nd</sup> Edition October 2004
30. 2015 Virginia Uniform Statewide Building Code
31. Uniform Relocation Assistance and Real Property Act of 1970, as amended (as of date of RFP)
32. 1950 Code of Virginia, Titles 25.1 and 33.2, as amended (as of date of RFP)
33. VDOT Asbestos Project Monitoring and Clearance Air Monitoring Procedures
34. VDOT Guidelines for Management of Contaminated Soils Associated with Utility Installation And Maintenance Activities
35. VA Statewide Fire Prevention Code
36. Virginia Occupational Safety and Health Standards

**Roadway Design**

1. VDOT Road Design Manual (Issued January 2005, Revised July 2019)
2. AASHTO – A Policy on Geometric Design of Highways and Streets, 6<sup>th</sup> Edition (2011)
3. AASHTO – Roadside Design Guide, Fourth Edition, October 2011 (updated Chapter 6)
4. AASHTO – A Policy on Design Standards Interstate System, 2016
5. AASHTO – Guide for High-Occupancy Vehicle (HOV) Facilities, 3rd Edition (2004)
6. AASHTO – Guide for the Development of Bicycle Facilities, 4th Edition (2012)

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7. AASHTO – Guide for the Planning, Design, and Operation of Pedestrian Facilities, July 2004
8. AASHTO – Update to the Guide for the Planning, Design, and Operation of Pedestrian Facilities, October 2010

**Geotechnical and Pavement Design**

1. VDOT Soil Design Parameters for Sound Barrier Walls, Retaining Walls and Non-Critical Slopes – January 10, 2019
2. AASHTO Guide for Design of Pavement Structures 4<sup>th</sup> Edition with 1998 Supplement (Rigid Pavement and Flexible Pavement) (1993 Edition and subsequent revisions)
3. AASHTO Manual on Subsurface Investigations 1<sup>st</sup> Edition (1998)
4. VDOT Pavement Design Guide for Subdivision and Secondary Roads (Revised August 2018)
5. VDOT Manual of Instruction for Materials Division (as of date of RFP)
6. VDOT Manual of Structure and Bridge Division, Part 11 Geotechnical Manual for Structures (February 2017)
7. FHWA 23CFR626 - Part 626 Pavement Policy – April 7, 2011
8. Development and Implementation of Pavement Condition Indices for the Virginia Department of Transportation: Phase I – Flexible Pavements – September 2002
9. AASHTOWare Pavement ME, Version 2.2.6 and VDOT’s AASHTOWare Pavement ME User Manual, dated September 2017
10. AASTHO LRFD Bridge Design Specifications (8<sup>th</sup> Edition - 2017)
11. ASTM Standards, Soil and Rock, Volumes 04.08 and 04.09
12. ASTM Standards, Concrete and Aggregates, Volume 04.02
13. US Army Corps of Engineers Laboratory Soils Testing EM-1110-2-1906
14. 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
15. Virginia Test Method 106 – Ride Quality Testing on Ride Specifications Projects – (Pavement Design) – May 1, 2001

**Structures**

1. VDOT Manual of Structure and Bridge Division, Parts 1 through 12 (as of date of RFP)
2. AASHTO Guide Specification for LRFD Seismic Bridge Design, 2nd Edition, 2012; 2014 and 2015 Interim Revisions

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3. AASHTO LRFD Bridge Design Specifications, 8<sup>th</sup> Edition, 2017; and VDOT Modifications
4. AASHTO Standard Specifications for the Design of Highway Bridges, 16th Edition, 1996; 1997 and 1998 Interim Specifications; and VDOT Modifications
5. AASHTO Construction Handbook for Bridge Temporary Works, 2nd Edition, 2017
6. AASHTO Guide Design Specifications for Bridge Temporary Works, 2nd Edition, 2017, with 2020 Interim Revisions
7. AASHTO Manual for Bridge Evaluation, 3<sup>rd</sup> Edition, 2018 and 2019 Interim Revisions
8. AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 6<sup>th</sup> Edition, 2013 with 2015, 2019, and 2020 Interim Revisions
9. AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 6th Edition, 2013 with 2015 Interim.
10. AASHTO Guide Specifications for Structural Design of Sound Barriers – current edition
11. FHWA Guidelines for the Installation, Inspection, Maintenance and Repair of Structural Supports for Highway Signs, Luminaires, and Traffic Signals (March 2005), FHWA NHI 05-036
12. FHWA Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation’s Bridges, December 1995, including Errata sheets and Revisions
13. FHWA 23CFR625 – Design Standards for Highways (December 1995, including Errata sheets and Revisions)
14. FHWA 23CFR630 Subpart B – Plans, Specifications, and Estimates
15. FHWA 23CFR650 - Subpart C – National Bridge Inspection Standards (“NBIS”)
16. Stage I - Plan Review Check List – August 2011 Draft
17. VDOT Structure and Bridge Stage I Report Summary Form
18. VDOT Structure and Bridge Division Stage I - Report Template – January 7, 2004 Draft
19. Stage II - Plan Review Check List – July 1, 2011 Draft
20. AASHTO LRFD Guide Specifications for Design of Pedestrian Bridges, 2nd Edition with 2015 Interim Revisions; and VDOT Modifications
21. AASHTO LRFD Bridge Construction Specifications, 4<sup>th</sup> Edition, 2017 with 2020 Interim Revisions
22. AASHTO Guide for Protective Screening of Overpass Structures, 1990
23. AASHTO Guide Specifications for Seismic Isolation Design, 4th Edition
24. AASHTO Guide Specifications for Highway Bridge Fabrication with HPS 70W (HPS 485W) Steel, 3<sup>rd</sup> Edition, 2011.

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25. AASHTO Manual for Bridge Element Inspection, 1st Edition, with 2015 Interim Revisions
26. AASHTO Guide Specifications - Thermal Effects in Concrete Bridge Superstructure, 1st Edition, 1989
27. AASHTO/AWS D1.5M/D1.5: 2010 Bridge Welding Code, 6th Edition, with 2011 and 2012 AASHTO Interim Revisions
28. AASHTO/NSBA Steel Bridge Collaboration Shop Detail Drawing Presentation Guidelines, G1.3 - 2002
29. ANSI/AWS D1.2/D1.2M: Structural Welding Code - Aluminum, current edition
30. ANSI/AWS D1.1/D1.1M: Structural Welding Code - Steel, current edition
31. gINT Manual
32. NCHRP Report 350 Recommended Procedures for the Safety Performance Evaluation of Highway Features
33. AASHTO Manual for Assessing Safety Hardware, 2nd Edition, 2016
34. AASHTO/FHWA Joint Implementation Plan for the AASHTO Manual for Assessing Safety Hardware, 2009
35. NFPA 70 National Electrical Code, 2020 Edition
36. NFPA 502, Standard for Road Tunnels, Bridges, and other Limited Access Highways, 2020 Edition
37. VDOT Supplement to the AASHTO Manual for Bridge Element Inspection, 2016
38. VDOT Memorandum – Asbestos Containing Materials on Bridges – October 23, 2009
39. Virginia Department of Transportation Asbestos Inspection Procedures, dated May 14, 2004
40. PCI Recommended Practice for Lateral Stability of Precast, Prestressed Concrete Bridge Girders, 1<sup>st</sup> Edition, 2016, CB-02-16
41. FHWA Engineering for Structural Stability in Bridge Construction, 2015, FHWA-NHI-15-044
42. AASHTO Guide Specifications for Wind Loads on Bridges During Construction, 1<sup>st</sup> Edition, 2017
43. AASHTO/NSBA Steel Bridge collaboration S10.1-2019 Steel Bridge Erection Guide Specification

**Drainage**

1. VDOT 2002 Drainage Manual (including current Errata Sheets) and revisions (Revised May 2017)

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2. Virginia Stormwater Management Handbook, Volume I & Volume II, (First Edition – 1999), Virginia Department of Conservation and Recreation [now Virginia Department of Environmental Quality]
3. 2013 Virginia Stormwater Management Handbook, Second Edition, Virginia Department of Environmental Quality
4. 2013 BMP Standards and Specifications, Virginia Department of Environmental Quality
5. Virginia Erosion and Sediment Control Handbook (Third Edition – 1992), Department of Conservation and Recreation [now Virginia Department of Environmental Quality]
6. FHWA Hydraulic Design Series Number 5 (HDS-5), Hydraulic Design of Highway Culverts, 2012
7. FHWA Hydraulic Design Series Number 6 (HDS-6), River Engineering for Highway Encroachments, 2001
8. FHWA Hydraulic Design Series Number 7 (HDS-7), Hydraulic Design of Safe Bridges, April 2012
9. FHWA Hydraulic Engineering Circular Number 9 (HEC-9), Debris Control Structures – Evaluation and Counter Measures, 2005
10. FHWA Hydraulic Engineering Circular Number 15 (HEC-15), Design of Roadside Channels with Flexible linings, Third Edition, 2005
11. FHWA Hydraulic Engineering Circular Number 14 (HEC-14), Hydraulic Design of Energy Dissipaters for Culverts and Channels, 2006
12. FHWA Hydraulic Engineering Circular Number 17 (HEC-17), Highways in the River Environment- Floodplains, Extreme Events, Risk, and Resilience, June 2016
13. FHWA Hydraulic Engineering Circular Number 18 (HEC-18), Evaluating Scour at Bridges, 2012
14. FHWA Hydraulic Engineering Circular Number 20 (HEC-20) Stream Stability at Highways, 2012
15. FHWA Hydraulic Engineering Circular Number 21 (HEC-21), Design of Bridge Deck Drainage Systems, 1993
16. FHWA Hydraulic Engineering Circular Number 22 (HEC-22), Urban Drainage Design Manual, 2009, Revised August 2013
17. FHWA Hydraulic Engineering Circular Number 23 (HEC-23), Bridge Scour and Stream Instability Countermeasures – Experience, Selection and Design Guidance, Third Edition, Volumes 1 and 2, 2009
18. FHWA Culvert Design for Aquatic Organism Passage (HEC-26), 2010
19. FHWA Culvert Inspection Manual, 1986
20. US Army COE, Hydrologic Modeling System (HEC HMS) Version 4.6.1
21. Virginia Erosion and Sediment Control Law and Regulations

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22. FEMA National Flood Insurance Program Regulations
23. US Army COE, River Analysis System (HEC RAS), Version 5.0.7
24. Virginia SWM Law (as listed in the Code of Virginia)
25. Virginia SWM Regulations (as listed in the Virginia Administrative Code)
26. VDOT Longitudinal Scour Approach Memorandum – July 23, 2018
27. U.S. Environmental Protection Agency, EPA Stormwater Management Model (EPA SWMM), Version 5.1

**Traffic Control Devices and Lighting**

1. USDOT FHWA Standard Highway Signs
2. 2009 Manual of Uniform Traffic Control Devices (MUTCD), Revisions 1 and 2 (May 2012) and 2011 Virginia Supplement to MUTCD, Revision 1 (September 2013)
3. AASHTO Roadway Lighting Design Guide, 7<sup>th</sup> Edition (October 2018)
4. ANSI/IESNA RP-8-14 Roadway Lighting
5. National Fire Protection Association 70, National Electric Code NEC, 2020 Edition
6. Virginia Standard Highway Signs, Revision 1, March 2015
7. VDOT Traffic and Ancillary Structures Inventory and Inspection Manual 2014
8. VDOT Traffic Operations and Safety Analysis Manual (TOSAM) Version 2.0 (February 2020)
9. VDOT Traffic Operations Analysis Tool Guidebook, Version 1.1 (2013)
10. VDOT Traffic Engineering Division Numbered Memoranda (Traffic Engineering and Mobility Management) including announcements from the Northern Region of the Virginia Department of Transportation

**Miscellaneous**

1. VDOT Survey Manual
2. VDOT Guardrail Installation Training Manual (GRIT), Published August 2017, Revised August 2019
3. VDOT Public Involvement Manual, October 2019

**ITS**

1. Institute of Electrical and Electronics Engineer (IEEE) 802.3 Local and Metropolitan Area Networks
2. National Electric Manufacturers Association (NEMA) TS-4 Hardware Standards for Dynamic Message Signs (DMS) with NTCIP Requirements



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3. IEEE 1512-2006 - IEEE Standard for Common Incident Management Message Sets for Use by Emergency Management Centers, IEEE 1512.1-2006 – IEEE Standard for Common Traffic Incident Management Message Sets for Use by Emergency Management Centers
4. National Transportation Communications for ITS Protocol (NTCIP)
5. VDOT Northern Region Operations ITS Architecture
6. I-95 and I-495 Express Lanes Tolling and Traffic Management System (TTMS) Project TMS Interface Control Document (ICD), Version: 1.5 – December 16, 2015
7. National Electrical Manufacturers Association (NEMA) Standards
8. Telecommunications Industry Association (TIA) and Electronic Industries Alliance (EIA) Standards and Specifications
9. Underwriters Laboratories (UL) Standards

**B. Special Provision Copied Notes, Special Provisions, and Supplemental Sections**

1. VDOT 2020 Road and Bridge Specifications - Special Provision Copied Notes, Special Provisions and Supplemental Specifications
  - a. Division II – Materials
  - b. Division III – Roadway Construction
  - c. Division IV – Bridges and Structures
  - d. Division V – Incidental Construction
  - e. Division VI – Roadside Development
  - f. Division VII – Traffic Control Devices
  - g. Division VIII – Intelligent Transportation Systems
2. VDOT Supplemental Specifications for Section 200 - General - January 27, 2020
3. VDOT Supplemental Specifications for Section 202 - Fine Aggregate - September 23, 2019
4. VDOT Supplemental Specifications for Section 203 Coarse Aggregate – September 19, 2019
5. VDOT Supplemental Specifications for Section 204 - Stone for Masonry, Riprap, Porous Backfill, and Gabions - February 22, 2019
6. VDOT Supplemental Specifications for Section 206 - Lightweight Aggregate - September 23, 2019

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7. VDOT Special Provision for Section 208 - Subbase and Aggregate Base Material, Crushed Hydraulic Cement Concrete (CHCC) – January 10, 2019
8. VDOT SPCN Table II-14 – June 4, 2020
9. VDOT Special Provision for Cold Central Plant Recycling Material – December 12, 2018
10. VDOT Special Provision for Massive Construction Hydraulic Cement Concrete (“Mass Concrete”) Operations Design-Build – April 14, 2020
11. VDOT Supplemental Specifications for Section 217 - Hydraulic Cement Concrete - September 27, 2019
12. VDOT Supplemental Specifications for Section 223 - Steel Reinforcement – July 3, 2019
13. VDOT Supplemental Specifications for Section 226 - Structural Steel - September 27, 2019
14. VDOT Special Provision for Jack and Bore – December 12, 2018
15. VDOT Special Provision for Microtunneling – November 19, 2018
16. VDOT Special Provision for Prefabricated Vertical Drains – December 18, 2018
17. VDOT Special Provision for Pipe Replacement – December 17, 2018
18. VDOT Special Provision for Use of Number 10 Screenings – November 14, 2018
19. VDOT Special Provision for Cement Treated Aggregate (CTA) Base – December 19, 2018
20. VDOT Special Provision for Type OGB (Open Graded Base) With Type I No. 21B Aggregate Material – November 14, 2018
21. VDOT SPCN Section 315.05(c) Placing and Finishing – January 18, 2017
22. VDOT Special Provision for BM-25.0D with Increased Asphalt Content – November 14, 2018
23. VDOT Special Provision for Pavement Shoulder Wedge – March 19, 2020
24. VDOT SPCN Section 317 - Stone Matrix Asphalt Concrete Placement – January 10, 2019
25. VDOT Special Provision for Clearing and Grubbing at Bridge Approaches – November 14, 2018
26. VDOT Supplemental Specifications for Section 401 - Structure Excavation – May 1, 2020

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27. VDOT Special Provision for Dynamic Pile Testing for End Bearing Piles (LRFD) – November 14, 2018
28. VDOT Supplemental Specifications for Section 407 - Steel and Other Metal Structures – August 29, 2019
29. VDOT Supplemental Specifications for Section 412 - Widening, Repairing, and Reconstructing Existing Structures – May 11, 2020
30. VDOT SPCN Impact Attenuator – July 26, 2019
31. VDOT SPCN Section 512 - Maintaining Traffic – July 13, 2016
32. VDOT SPCN Temporary Contrast Markings – February 26, 2019
33. VDOT SPCN Uniformed Flaggers – November 14, 2018
34. VDOT SPCN Section 512—Maintaining Traffic – November 19, 2018
35. VDOT SPCN Contractor Maintenance of Temporary Markings – June 13, 2017
36. VDOT Special Provision for Work Zone Traffic Control Management – November 14, 2018
37. VDOT Special Provision for Installation Of “Work Zone No Handheld Communication Devices” Signs – March 18, 2020
38. VDOT Supplemental Specifications for Section 512 - Maintaining Traffic – September 6, 2019
39. VDOT Special Provision for Modifications to AASHTO’S Sign Structure Specification – November 14, 2018
40. VDOT Special Provision for Mast Arm Hanger Assembly STD SM-3 and SMD-2 – December 19, 2018
41. VDOT Special Provision for Signal Head Module and Signal Head Backplate Replacement – August 20, 2019
42. VDOT Special Provision for Inlaid Pavement Markers – August 26, 2019
43. VDOT Special Provision for Light Emitting Diode (LED) Luminaires – November 14, 2018
44. VDOT Special Provision for SWPPP General Information Sheets – December 19, 2018
45. VDOT Special Provision for Reflection Crack Retardant Material – December 20, 2018
46. VDOT Special Provision for Low Density Cementitious Fill – December 20, 2018

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47. VDOT Special Provision for Densified Aggregate Piers for Foundation Reinforcement – December 20, 2018
48. VDOT Special Provision for Densified Cement-Treated/Grouted Aggregate Pier Foundation Reinforcement – December 20, 2018
49. VDOT Special Provision for Geotechnical Instrumentation – December 20, 2018
50. VDOT Special Provision for Lime Modification of Soils – December 20, 2018
51. VDOT Special Provision for Soldier Pile Retaining Walls – December 20, 2018
52. VDOT Special Provision for Secant Pile Tangent Pile (Drilled Shaft) Walls – December 20, 2018
53. VDOT Special Provision for Permanent Soil Nails – December 20, 2018
54. VDOT Special Provision for Reinforced Earth Walls with Low Density Cementitious Fill (LDCF) – June 2, 2020
55. VDOT Special Provision for Micropiles – December 20, 2018
56. VDOT Special Provision for Vibration Control and Monitoring of Existing Structures & Utilities During Construction – February 12, 2019
57. VDOT Special Provision for Drilled Shafts Using Self-Consolidating Concrete – December 20, 2018
58. VDOT Special Provision for Drilled Shafts – December 20, 2018
59. VDOT Special Provision for Quality Assurance/Quality Control (QA/QC) for the Construction of Deep Foundation Systems – December 20, 2018
60. VDOT Special Provision for Thermal Integrity Profiling of Drilled Shafts – February 20, 2015
61. VDOT Special Provision for Mechanically Stabilized earth Walls (Concrete Panel Facing) – February 2, 2017
62. VDOT Special Provision for Dismantling and Removing Existing Structures or Removing Portions of Existing Structures – December 20, 2018
63. VDOT Special Provision for Sound Barrier Walls – April 29, 2021
64. VDOT General Notes for Alternate Retaining Wall Plans – April 10, 2009
65. VDOT Guidelines for Preparation of Alternate Retaining Wall Plans – March 6, 2008
66. VDOT Special Provision for Architectural Finish, Concrete Form Liners and Color Stain Coating– April 29, 2021

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67. VDOT Special Provision for Traffic Signal Installation – December 19, 2018
68. VDOT Special Provision for Intelligent Transportation System – Junction Boxes – December 20, 2018
69. VDOT Special Provision for Clearing and Grubbing – November 15, 2006
70. VDOT Special Provision for Sealing Cracks in Asphalt Concrete Surfaces or Hydraulic Cement Concrete Pavement – July 12, 2016
71. VDOT Special Provision for Guidelines for Traffic Signal Timing Plan Submission Process – September 4, 2019
72. VDOT Special Provision for Bat Inventory for Bridge Repair or Demolition – December 7, 2018
73. VDOT Special Provision for Tree Removal Time of Year Restriction for Roosting Bat Habitat – November 19, 2018
74. VDOT Special Provision for Protection of Wood Turtle – June 19, 2019
75. VDOT Special Provision for Phase I and II Environmental Site Assessments – December 19, 2018
76. VDOT Special Provision for Asbestos Inspection Procedures – May 14, 2004
77. VDOT Special Provision for Asbestos Monitoring and Clearance Air Monitoring Procedures – May 14, 2004
78. VDOT Special Provision for Inspection of D-B Structures for Asbestos Containing Materials – July 17, 2017
79. VDOT Special Provision for Asbestos Removal and NESHAP-Related Demolition Requirements for Structures – October 5, 2017
80. VDOT Special Provision for Compensatory Mitigation Site Survey Data – April 11, 2017
81. VDOT Special Provision for Construction Record Documentation of Permanent SWM Facilities – November 14, 2018
82. VDOT SPCN for Protection of Bat Species – January 17, 2018
83. VDOT Special Provision for Removal of Asbestos from Bridge Structures – September 12, 2017
84. VDOT Special Provision for Removal or Connection of Asbestos Cement Pipe – July 12, 2016
85. VDOT Special Provision for Patching Hydraulic Cement Concrete Pavement – July 12, 2016

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86. VDOT Special Provision for Sawing and Sealing Joints in Asphalt Overlays Over Jointed Concrete Pavements - July 12, 2016
87. VDOT Special Provision for Articulated Concrete Block – April 30, 2021

**C. Additional Reference Documents**

1. FHWA Geotechnical Engineering Circular No. 2 - Earth Retaining Systems, FHWA-SA-96-038 – Feb 1997
2. FHWA Geotechnical Engineering Circular No. 4 - Ground Anchors and Anchored Systems, FHWA-IF-99-015, 1999
3. FHWA Geotechnical Engineering Circular No. 7 - Soil Nail Walls – Reference Manual, FHWA-NHI-14-007 – February 2015
4. FHWA Permanent Ground Anchors, Volume 1, Final Report, FHWA-DP-90-068 – April 1990
5. FHWA Permanent Ground Anchors, Volume 2, Field Demonstration Project Summaries, FHWA-DP-90-068, April 1990
6. FHWA Geotechnical Engineering Circular No. 6, Shallow Foundations, September 2002, FHWA-SA-02-054
7. FHWA Manual of Subsurface Investigations, May 2002, FHWA NHI-01-031
8. FHWA Design and Construction of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes Volumes I & II, November 2009, FHWA-NHI-10-024 & 024
9. FHWA Geotechnical Engineering Circular No. 10 - Drilled Shafts Construction Procedures and LRFD Design Methods, May 2010, FHWA NHI-10-016
10. FHWA Soil Nailing Field Inspectors Manual-Soil Nail Walls, FHWA-SA-93-068 – April 1994
11. FHWA The Osterberg Cell for Load Testing Drilled Shafts and Driven Piles, FHWA-SA-94-035, 1994
12. Load and Resistance Factor Design (LRFD) For Highway Bridge Superstructures (July 2015), FHWA-NHI-15-047
13. Load and Resistance Factor Design (LRFD) for Highway Bridge Substructures (May 2001), FHWA-NHI-08-036
14. Load and Resistance Factor Design (LRFD) For Highway Bridge Superstructures - Examples (August 2015), FHWA-NHI-15-058
15. LRFD for Highway Bridge Substructures and Earth Retaining Structures (Jan 2007), FHWA-NHI-05-095

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16. Ground Improvements Reference Manual Volume I, FHWA-NHI-06-019 (as of date of RFP)
17. Ground Improvements Reference Manual Volume II, FHWA-NHI-06-020 (as of date of RFP)
18. Earth Retaining Structures (RM), FHWA-NHI-07-071, June 2008
19. Micropile Design and Construction Reference Manual (December 2005), FHWA-NHI-05-039
20. VDOT NRO Change and Clearance Interval Data Collection Processing Best Practices – July 17, 2015
21. VDOT NRO TEP No. 406.2 – Clearance Intervals – July 2015
22. VDOT NRO TEP – Pedestrian Timing at Traffic Signals, December 8, 2011
23. VDOT NRO TEP – Pedestrians Accommodations at Traffic Signals, August 7, 2014
24. VDOT Traffic Calming Guide for Neighborhood Streets, 2002 (Revised September, 2018)
25. VDOT Detector Placement, January 13, 2005
26. VDOT NRO TEP – Pavement Marking at Intersections, July 20, 2012
27. VDOT NRO TEP – Hatch Marks on Non-Limited-Access Roadways, April 17, 2015
28. VDOT NRO TEP – Yellow Change and Red Clearance Intervals, January 7, 2013
29. VDOT NRO – 2015 Bicycle Marking Reference Guide (as of date of RFP)
30. VDOT NRO - Permit Process For Traffic Signal Construction (as of date of RFP)
31. American Water Works Association Standards (as of date of RFP)
32. FHWA Hydrology Design Series No. 2, Highway Hydrology, October 2002
33. FHWA Hydraulic Design Series No. 3, Design Charts for Open Channel Flow, August 1961
34. FHWA Hydraulic Design Series No. 4, Introduction to Highway Hydraulics, June 2008
35. FHWA Hydraulic Design Series No. 5, Hydraulic Design of Highway Culverts June 2012
36. FHWA Hydraulic Engineering Circular No. 11, Design of Riprap Revetment, March 1989
37. USDA, NRCS, Urban Hydrology for Small Watersheds, TR-55, June 1986
38. FHWA - A Guide for HOT Lane Development, March 2003
39. ITE TMDD - Traffic Management Data Dictionary and Message Sets for External TMC Communication (TMDD and MS/ETMCC) (as of date of RFP)
40. VDOT DBE Program, July 2016

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41. Virginia Department of Transportation CII/SSI Policy Guide for Employees, Vendors, Contractor or other Persons Accessing VDOT's CII/SSI – March 2006 (Interim Revision November, 2009)
42. DMS Upgrade and Expansion Program *Concept of Operations*, February 25, 2008
43. VDOT NRO Vehicle Detector Master Plan, June 13, 2008
44. VDOT NRO CCTV Master Plan, June 2008
45. VDOT NRO CCTV Concept of Operations, June 2008
46. VDOT NRO Vehicle Detector Concept of Operations, May 14, 2008
47. FHWA 23 CFR PART 940—Intelligent Transportation System Architecture and Standards – January 8, 2001
48. VDOT ITS Projects – Systems Engineering and Architecture Compliance (Rule 940) Checklist (as of date of RFP)
49. Virginia Megaprojects Program Lane Closure Policy and Procedures, September 21, 2016