ROAD DESIGN MANUAL REVISIONS
July 2023

CHAPTER 2E

- Page 2E-23 – Revised Figure 2E-11 Sample REINFORCED SOIL SLOPE DESIGN to remove guardrail and add the following note: "WHEN THE RSS IS INSTALLED ADJACENT TO A ROADWAY THE RSS SHALL BE SHEILDED WITH A CONCRETE BARRIER IN ACCORDANCE WITH THE CRITERIA IN APPENDIX J."

- Page 2E-23 – Revised to delete the Item Codes and added the following language: "Item Codes can found on the following webpage: https://www.virginiadot.org/business/const/resource.asp"

- Page 2E-41 – Revised the following language **From:** "In cases where permanent and temporary easement requirements overlap, the permanent easement takes precedence over the temporary easement; therefore, a temporary easement is to be tied into the permanent easement, not run through it. In some cases, a temporary construction easement will be necessary to generally run parallel to the permanent easement to provide adequate working and storage space. Where this is necessary, the temporary construction easement shall be shown, in its entirety, as the previously mentioned temporary slope easements and labeled "Prop. Temporary Slope Easement" **To:**

  "*Easement Overlaps:*

  Permanent easements of differing use types may overlap each other.

  Permanent and temporary easements of the ***same use type*** may not overlap into each other. Guidelines for same use type: Temporary construction easements terminate at the perimeter of the permanent easement or at the proposed right of way line depending upon the situation. Temporary construction easements generally run parallel to the permanent easement to provide adequate working space for the type of use. Example: a permanent slope easement may have a temporary construction easement outside of it for grading the slope.

  Permanent and temporary easements of the ***differing use types*** may overlap into each other. Guidelines for differing use types: Example: A Temporary Construction Easement for an entrance will overlap into other permanent easements, tying back into either the right of way or other temporary construction easements as shown in Fig 2E-18.

  Permanent or temporary easement will need to be annotated with the use and areas will need to be provided, either in square feet (SF) or in acres (AC) on the right of way data sheet."

- Page 2E-48 – Revised the following language **From: "**through field inspection stage.." **To:** "starting at preliminary field inspection.."

- Page 2E-50 – Revised to add the following language: "showing the existing and prop. limited access lines with a legend for the line colors and styles", "Only show the stations and offsets

for the beginning and end points of the prop LACCs", "**Note: Breaks in limited access for maintenance or utility access through a "locked gate" shall be shown and labeled on the marked exhibit(s) and the stations and offset for the beginning and end points shall be shown**", "with the Project limits identified", "Project Title Sheet, (Provided by the District)", "Letter requesting FHWA's approval when the prop. LACCs impact the interstate system, (Sent to FHWA by the State L&D Engineer)", "Copy of the Public Involvement Advertisement and the Newspapers and Dates that it was published, (Provided by the District)", "and the total number of comments and the number of comments For, Against and Neutral", "C.O. GALA review and comments on the Draft LACC Package, (Coordinated by C.O. L&D)", and C.O. R/W review and approval of the Draft LACC Package (Coordinated by C.O. L&D).

- Page 2E-50 – Revised to delete the following language: "Plan sheet(s) with existing Limited Access Line shown, (Provided by the District)", "Email of approval from Assistant State L&D Engineer".

- Page 2E-51 - Revised to delete the following language: "Final Resolution of the CTB approval of the proposed LACC (Provided by the District)".

- Page 2E-51 - Revised to add the following language: "Final CTB approval package of the existing (previously approved) LACCs, (Provided by the District)".

- Page 2E-60 – Revised to add the following language: "Population information is available at: http://www.census.gov/quickfacts/table/PST045216/00. Note: Towns are included within the drop-down menu for cities."

CHAPTER 2G

- Page 2G-19 - Revised to delete the Item Codes and added the following language: "Item Codes can found on the following webpage: https://www.virginiadot.org/business/const/resource.asp."

APPENDIX A1

- Page A1-2 – Revised to add "**CONTEXT CLASSES FOR ROADS AND STREETS IN URBAN AREAS".**

- Page A1-32 – Revised to delete the following language: "In view of this, 14'-0" has been accepted as the maximum allowable height to be provided for during construction, reconstruction, or maintenance operations. Every effort must be made to insure that a minimum vertical clearance of 14'-2" is provided on existing grade separation structures during construction, reconstruction, or maintenance.", and "below 14'-2"" and Revised to add the following language: "For bridge vertical clearances, see the Structure and Bridge Manual of Instructions, Chapter 6 Geometrics – Road Classifications *https://www.virginiadot.org/business/resources/bridge/Manuals/Part2/Chapter6.pdf*."

APPENDIX A7

- Page A7-1 – Revised the delete the Following language: "These types of projects are to be accomplished by the "Accelerated Bridge Plan" concept as defined in *IIM-S&B-84*."

APPENDIX B(1)

- Page B(1)-22 – Revised the minimum intersection angle **From:** "60 degrees" **To:** "75 degrees".

- Page B(1)-25 – Revised to add the following language: " (See Figure B(1)-12 CULS-DE-SAC AND TURNAROUNDS)"

- Page B(1)-31 – Revised to add the following language: "and have a 1 foot wide minimum graded area (same cross slope as sidewalk, 2.0% max.) behind the back of the sidewalk".

- Page B(1)-32 – Revised to add the following language: "and have a 1 foot wide minimum graded area (same cross slope as sidewalk, 2.0% max.) between the ditch and the sidewalk as well as a 1 foot wide minimum graded area (same cross slope as sidewalk, 2.0% max.) behind the back of the sidewalk" and Revised to delete the following language: "asphalt concrete sidewalk or" from sidewalks along shoulder and ditch section streets.

- Page B(1)-32 – Revised the following language **From:** "Shared use paths are facilities on exclusive right-of-way and with minimal cross flow by motor vehicles." **To: "**Shared use paths are facilities physically separated from motorized vehicular traffic by an open space (buffer) or barrier and either within the highway right of way or within an independent right of way" and Revised to add the following language: "See Figure A(1)-7 for cross section of two-way shared use path.

- Page B(1)-33 – Revised to delete the following language: "When this is not possible and the distance between the outside edge of the paved shoulder and the shared use path is less than 5 feet, a suitable physical barrier is recommended. A suitable physical barrier is defined as dense shrubbery, railing or chain link fence. Such barriers serve both to prevent path users from making unwanted movements between the path and the highway shoulder and to reinforce the concept that the path is an independent facility." and "Where used, the barrier should be a minimum of 42 inches high (54 inches on structures), to prevent bicyclists from toppling over it. A barrier between a shared use path and adjacent highway should not impair sight distance at intersections, and should be designed to not be a hazard to motorists or bicyclist."

- Page B(1)-33 – Revised the following language **From:** "Under most conditions, the recommended paved width for a two-directional shared use path is 10 feet." **To:** "The minimum paved width for a two-directional shared use path is 10 feet."

- Page B(1)- 33 – Revised to add the following language: "Vertical Clearance, Design Speed, Horizontal Alignment, Grade, Sight Distance, etc."

- Page B(1)-34 – Revised the delete the following language: "Under certain conditions it may be necessary or desirable to increase the width of a shared use path to 12 feet, or even 14 feet, due to substantial use by bicycles, joggers, skaters and pedestrians, use by large maintenance vehicles, and steep grades." , "A minimum 2 foot wide graded area with a maximum 6:1 slope, shall be maintained adjacent to both sides of the path. A minimum 3 foot clearance shall be maintained from the edge of the path to signs, trees, poles, walls, fences, railing, guardrail, or other lateral obstructions. Where the path is adjacent to canals, ditches or slopes 3:1 or steeper, a minimum 5 foot wide separation from the edge of the path pavement to the top of slope is required.", "The vertical clearance to obstructions shall be a minimum of 8 feet. However, vertical clearance may need to be greater to permit passage of maintenance and emergency vehicles. In underpasses and tunnels, 10 feet is required for adequate vertical shy distance.", and "Shared use paths should be designed for a selected speed that is at least as high as the preferred speed of the faster bicyclists. In general a design speed of 20 mph should be used. Long grades should be kept to a minimum. Grades greater than 5 percent are undesirable because the ascents are difficult for many bicyclists to climb and the descents cause some bicyclists to exceed the speeds at which they are competent or comfortable. In locations where grades exceed 5 %, Table B(1)-5 shows recommended maximum grade lengths."

• 5 – 6%	• For up to 800 feet
• 7%	• For up to 400 feet
• 8%	• For up to 300 feet
• 9%	• For up to 200 feet
• 10%	• For up to 100 feet
• 11+%	• For up to 50 feet

Table B(1)-1 Maximum Grade Lengths for Shared Use Paths

- Page B(1)- 34 – This page is intentionally left blank.

APPENDIX C

- Page C-5 – Revised to add the following language: "The Standard shall be steel pin with a cap and locator post Right of Way Monument (St'd. RM-2)", Revised the following language **From:** "District Engineer's Field Inspection Report will indicate" **To:** "District Survey Manager may recommend", Revised the following language **From:** "Right of Way Monuments will be set by State Forces unless otherwise denoted on the plans" **To:** "Right of Way Monuments will be set by State Forces or Consultants, whomever prepared the RW plans".

- Page C-5 – Revised to delete the following language: "unless otherwise denoted on the plans. This should be discussed at the Pre-Advertisement Conference (PAC) meeting", "**ST'D RM-1** The St'd. RM-1 will be used at locations as recommended by the District Survey Manager or responsible charge at the Field Inspection, **ST'D RM-2** The St'd. RM-2 uses a steel pin with a cap and locator post and The St'd. RM-2 monument is not a replacement for the concrete monument (St'd. RM-I), but will be used at locations as recommended by the District Survey Manager or responsible charge at the Field Inspection."

- Page C-71 – Revised the following language **From:** "(2 percent or less)" **To:** "of less than 3%".

- Page C-71 – Revised reference **From:** 'Table 10-3" **To:** "Table 10-4" and **From:** "Table 10-4 **To:** Table 10-5".

- Page C-71 – Revised reference **From:** 'Table 10-5" **To:** "Table 10-6" and **From:** "Table 10-4 **To:** Table 10-5".

- Page C-71 – Revised the following language **From**: "on" **To:** "with".

- Page C-71 – Revised the following language **From**: "must" **To:** "shall".

APPENDIX F

- Page F-47 – Revised to add the year of the AASHTO Green Book and to revise the Figure number.

- Page F-48 – Revised to replace Figure 2-11(revised *The minimum angle of "New" intersections* ***From:*** *60°* ***To:*** *75°*).

- Page F-49 - Revised to replace Figure 2-12 (revised *The minimum angle of "New" intersections* ***From:*** *60°* ***To:*** *75°*).

- Page F-109 – Revised Figure 4-4 to replace "2011" AASHTO Green Book with "2018" AASHTO Green Book

APPENDIX J

- Page J-2 – Revise to add the following language: "Verify if any existing guardrail is still needed or can be eliminated per guidance in **Section J-1**. If existing guardrail is still needed, verify that it meets current standards, has appropriate Length of Need (LON), and is not damaged." and "Existing guardrail within the project limits shall be evaluated per guidance in **Section J-1**".

- Page J-2 – Revise to delete the following language: "and existing".

- Page J-2 – Revised to add the following language: "terminals", "the same requirements as those terminals within the project limits", "an existing" and "existing".

- Page J-2 – Revise to delete the following language: "Verify that the guardrail is still necessary. If it is, verify the LON (Length of Need)."

- Page J-13 – Revised the following language **From:** "45 mph" **To: "**40 mph".

- Page J-16 – Added "and Reinforced Soil Slopes" to number 4 and revised Note (j) to the following: "When a barrier is required on the top of or adjacent to a retaining wall, MSE wall, or Reinforced Soil Slope, a cast-in-place concrete parapet is to be used on top of the wall. Depending on the wall design, the parapet can be integrated into the wall or cast with a moment slab to resist overturning. Do not use guardrail in conjunction with a retaining wall, MSE wall, or Reinforced Soil Slope."

- Page J-17 – Added the following language:

"**Reinforced Soil Slope (RSS) adjacent to roadway**
The Reinforced Soil Slope (RSS) system allows a fill slope to be steepened to reduce impacts to adjacent property. The steepness of these slopes creates a roadside hazard with the slopes starting at 1.5:1 and approaching a near vertical face at a maximum 0.5:1 slope. The following requirements for shielding this roadside hazard shall be used when an RSS is installed adjacent to a roadway.

A concrete barrier shall be provided adjacent to all Reinforced Soil Slopes constructed adjacent to all functional classifications of roadways with a design speed of 35 mph or greater. The back side of the concrete barrier shall be offset a minimum of 4 feet from the hinge point or upper most face of the RSS. The concrete barrier will require the footing extend to a minimum depth of 18 inches. In instances where the offset or depth of the barrier is not possible a parapet and moment slab will be required. Contact the Central Office Standards and Special Design Section for review of the detailed RSS plans and barrier selection, design, and placement. In instances where a parapet and moment slab are necessary, District Structure and Bridge will need to be consulted on the barrier design.

Locations where the RSS is installed adjacent to a roadway with a design speed less than 35 mph a w-beam guardrail may be considered on a project-by-project basis. A minimum offset to the back of the guardrail post will need to be provided. The Central Office Standards and Special Design Section will need to review and approve the guardrail placement in the detailed RSS plans in coordination with District Location and Design, District Traffic Engineering, and District Materials."