

IMPERIAL ROAD DESIGN MANUAL
REVISIONS July, 2011

CHAPTER 1D

- Page 1D-1 – Replaced the following language; “*Concurrent Engineering Process*” with; “*Project Development Process*”.

CHAPTER 2A

- Page 2A-10 – Revised the following language in the first sentence under “PREPARATION OF REPORT” from; “*After alternates have been reviewed and evaluated, a written report to the section supervisor or file is to be prepared stating the conclusions reached, reasons for retaining or eliminating some corridors or alternates and a recommended procedure to follow as the study progresses. Copies are to be sent to the District Administrator and Residency Administrator and any division, which is affected by the project.*”

To;

After alternates have been reviewed and evaluated, a written report to the “*District Location and Design Engineer*” is to be prepared stating the conclusions reached reasons for retaining or eliminating some corridors or alternates and a recommended procedure to follow as the study progresses. Copies are to be sent to the District Administrator “*or District Preliminary Engineering Manager*” and any division, which is affected by the project.

Replaced the following language in the second sentence under “PUBLIC INVOLEMENT PROGRAM” from; “*Contact the Public Involvement Section for advice and assistance in setting up a useful public involvement program*” with; “*See Flow Charts in the Public Involvement Manual for guidance on the Departments Public Involvement Program for both Tier 1 and Tier 2 projects.*”

CHAPTER 2B

- Page 2B-1 Deleted the following language under “SURVEY AUTHORIZATION”; “*There are certain instances in which it is not necessary to hold a Location Public Hearing after the completion of a Location Study. In these instances, surveys will be authorized by the Assistant Location and Design Engineer. All ground surveys are authorized by the State Location and Design Engineer, or a representative, by memorandum to the District Administrator. The Programming Division authorizes funding and notifies the Fiscal Division of this funding. All surveys will be assigned in cooperation with the District Administrator. Assignments are to be made on the basis of available manpower statewide. At this time, a determination is to be made as to the feasibility of utilizing photogrammetric methods for all or selected phases of the survey. Due to the critical timing necessary in securing photography suitable for mapping purposes, the District Administrator should arrange the work schedule to accomplish the ground control work in a timely manner.*”

Added the following language under “SURVEY AUTHORIZATION”; “*See PM-100 Scoping Report*”

- Page 2B-7 – Replaced the following language in the fourth sentence under “DATA TO BE SUBMITTED”; Contact should also be made with the “*Public Involvement Section*”... with; Contact should also be made with the “*Policy and Procedure Section*”...
- Page 2B-9 – Replaced the following language; “*Concurrent Engineering Constructability Review Guidelines*” with; “*Project Development Constructability Review Guidelines*”.
- Page 2B-12 – Replaced the following language in the fourth paragraph under “VALUE ENGINEERING”; “*Concurrent Engineering Process*” with; “*Project Development Process*”.

CHAPTER 2C

- Page 2C-6 – Added the following language in the fourth sentence under “CURVE DATA”; “Remaining curve data (degree; tangent; length; radius; curve stations superelevation rate (E), superelevation runoff (Lr) and design velocity (DV)...”

CHAPTER 2D

- Page 2D-3 – Deleted the following language in the last sentence; “*Informational brochures or study reports must be reviewed by the Public Involvement Section*”.
- Page 2D-7 – Replaced the following language in the first sentence under “PUBLISHING NOTICE OF THE PUBLIC HEARING”; *The Public Involvement Section upon notification that the hearing has been scheduled, will advise the Office of Public Affairs...* with; *The Project Manager upon notification that the hearing has been scheduled, will advise the District Public Affairs Manager to...*
- Page 2D-8 – Replaced the following language in the second sentence under “CONTENTS OF COMMENTARY”; “*Public Involvement Section*” with “*District Public Affairs Manager*”.
- Page 2D-14 – Revised language in the last sentence of the page to replace “*FIGURE 2D-4*” with “*FIGURE 2D-3*”.
- Page 2D-15 – Replace “*FIGURE 2D-4*” LABEL with “*FIGURE 2D-3*”.
- Page 2D-18 – Revised language to replace “*FIGURE 2D-4A*” LABEL with “*FIGURE 2D-4*”.

- Page 2D-29 – Deleted the following language in the first paragraph; *“It is the District Administrator’s responsibility to transcribe the proceedings and post the transcript on IPM (Integrated Project Management, along with his/her comments and recommendations, to the State Location and Design Engineer.”* And added the following language; *“See Approval Process Flow Chart in the Public Involvement Manual for guidance on both Tier 1 and Tier 2 projects.”*

Deleted the following language in the first sentence in the second paragraph; *(design or location and design).*

- Page 2D-30 – Deleted the following language under “REVIEW OF PUBLIC HEARING TRANSCRIPT AND POST-HEARING CORRESPONDENCE”; *“When the transcript of the public hearing is received, it is first reviewed by the Public Involvement Section for their determination of areas of concern which may require further investigation. It is then forwarded to the appropriate Assistant State Location and Design Engineer, the Environmental Engineer, the Local Assistance Director for review, comments and recommendations. The FHWA is furnished a copy of the transcript for informational purposes on all Federal-Aid projects. Appropriate members of the Commonwealth Transportation Board are furnished copies of the transcript on all projects.”* And added the following language; *“See Approval Process Flow Chart in the Public Involvement Manual for guidance on both Tier 1 and Tier 2 projects.”*

Replaced the following language under “RECOMMENDING A SOLUTION” *“Upon reaching a conclusion as to the most feasible solution to an area of concern, the designer or project manager will furnish his/her recommendation to the appropriate Assistant State Location and Design Engineer. Urban Engineer or Secondary Roads Engineer for a decision. If further public involvement programs are necessary, the Public Involvement Section is to be contacted for assistance.”* With;

“Upon reaching a conclusion as to the most feasible solution to an area of concern, the designer or project manager will furnish his/her recommendation to the District Location and Design Engineer.”

Deleted the following language at the end of the page;
PROCESSING DATA TO PUBLIC INVOLVEMENT SECTION
When all areas of concern requiring further investigation have been explored, the designer or project manager will prepare a report for the signature of the State Location and Design Engineer to the Public Involvement Section (with a copy to the Environmental Division) outlining the proposed resolution of the questions. Secondary and Urban Projects are the responsibility of the Local Assistance Division.

- Page 2D-32 – Revised the following language in the third sentence under “ FINAL ENVIRONMENTAL DOCUMENT”; “*If a Combined Location and Design Public Hearing was held, the Public Involvement Section will advise the Environmental Engineer of the Board Action...*” with;

If a Combined Location and Design Public Hearing was held, the *Project Manager* will advise the *District Environmental Manager* of the Board Action...

Revised the following language in the third paragraph under “FHWA APPROVAL”; “*If a Combined Location and Design Hearing was held, the Public Involvement Section will forward the hearing transcript and report (as noted in Section 2D-13- Processing Data to Public Involvement Section) to the FHWA for their review prior...*” with;

“*If a Combined Location and Design Hearing was held, the Assistant State Location and Design Engineer will notify the appropriate FHWA representative for their review prior...*”

Revised the following language in the second paragraph under REQUEST FOR APPROVAL OF MAJOR DESIGN FEATURES (FOR NON-CERTIFICATION ACCEPTANCE PROJECTS WHERE ENVIRONMENTAL DOCUMENT WAS APPROVED AT LOCATION PUBLIC HEARING STAGE): “*Public Hearing Certification the study report and report (as noted in Section 2D-13-Processing Data to Public Involvement Section) are forwarded to the FHWA...*” with;

The Public Hearing Certification shall be forwarded to the FHWA.....

- Page 2D-33 - Added the following language in the first paragraph under “FINAL SCOPING CERTIFICATION”; “Prior to the plans being signed for right of way (or construction when no right of way is needed), the Project Manager fills out a “*Scoping*” Certification “*PM – 131*” form stating...”

Deleted the following language; “*The State Location and Design Engineer will use Form PM –131 for this purpose.*”

CHAPTER 2E

- Page 2E-47 – Revised the “Project Length Tabulation block” on the title sheet to add the “Bridge Project Number”.
- Page 2E-48 – Revised the “Project Length Tabulation block” on the title sheet to add the “Bridge Project Number”.
- Page 2E-49 – Revised the “Project Length Tabulation block” on the title sheet to add the “Bridge Project Number”.
- Page 2E-54 – Revised the “Project Length Tabulation block” example to add the “Bridge Project Number”.

- Page 2E-57 – Added the following language to the first sentence in the second paragraph under “FUNCTIONAL CLASSIFICATION”; “The functional classification, ADT and minimum design speed...”

CHAPTER 2F

- Page 2F-4 – Added new signature blocks examples for title sheet for “Tier 1” projects.
- Page 2F-5 – Revised to add language at the beginning of the sheet as follows; See the example below “*Tier 2 projects.*”
- Page 2F-6 – Revised language under “INTEGRATED PROJECT MANAGER (CERTIFICATION ACCEPTANCE) from”; “*The Integrated Project Manager (iPM) is used to insure that projects are in compliance with federal certification acceptance (CA) requirements and is to be used for all projects. At the Right of Way stage, the iPM should contain entries to show that public hearing requirements have been satisfied (the date of the [PM-104](#) requesting an estimate for the public hearing stage is the beginning date for Activity 44 and the date of the PCES Right of Way and Utilities estimate is the ending date for Activity 44), the environmental document has been approved and that location and design features have been approved. by the Commonwealth Transportation Board and the Chief Engineer. There are numerous other entries, but the aforementioned are some of the more important. All dates are to be recorded within one week of the completion of any Activity. The iPM activities are to reflect the appropriate elements (i.e. element 51 (partial take), 52 and 60).*”

With;

“*The Integrated Project Manager (iPM) is used to insure that projects are in compliance with federal certification acceptance (CA) requirements and is to be used for all projects. At the Right of Way stage, the iPM should contain entries to show that public hearing requirements have been satisfied the environmental document has been approved and that location and design features have been approved. All dates are to be recorded within one week of the completion of any Activity. The iPM activities are to reflect the appropriate elements (i.e. element 51 (partial take), 52 and 60).*”

- Page 2F-8 – Deleted the following language under “DATA REQUIRED”;
“*The plan assembly to be furnished to the Central Office Plan Coordination Section consists of:*
 - *Project title sheet*
 - *Completed Form PM-131 (LD-404) (Scoping Certification)*
 - *PCES Estimate*
 - *Form LD-406 Certification for Plan Correctness*
 - *Completed Form LD-95 (for Limited Access projects)
or Form LD-96 (for all other projects)*

(These are standard form letters used to authorize the State Right of Way Engineer to acquire right of way.)

Forms LD-95, LD-96, and LD-406 show the right of way description. If the Department is to purchase the right of way, the estimated right of way cost is to be shown on the Form LD-406 along with the estimated construction cost. This information is needed by the officials approving the plans.”, and replaced it with the following; “See Electronic Plan Submission Process Flow Chart.”

Deleted the following language under “REQUEST FOR RIGHT OF WAY AUTHORIZATION FROM FHWA”;

1. - *Complete set of R/W plans.*
2. - *Copy of Form RW-238 (Estimate shall not be more than 6 months old).*
3. - *Updated R/W and utility estimate.*
4. - *Right of Way Data Sheet properly filled in with all the acreage. The number of parcels shown must agree with the R/W estimate.*
5. - *Beginning and End R/W termini must be shown on plans. The R/W termini must agree with the full parcels - this means from the beginning of the first parcel to the end of the last parcel.*
6. - *The date that the FHWA approved the Environmental Document and the type of document. If it is an EIS rather than EA or CE then the document number must be provided.*

And replaced it with the following; “See Electronic Plan Submission Process Flow Chart.”

Added the following language in the last paragraph of the sheet; “The purpose of this FHWA R/W Authorization process is to obtain federal authorization as soon as possible so that as soon as the *District Administrator* (Chief of Policy and Environment *for Tier 2*) authorizes R/W authorization...”

- Page 2F-9 – Revised language under “RECOMMENDATION FOR APPROVAL” to add the following; Before the “*District Administrator*” (Chief of Policy and Environment “*for Tier 2*”) signs the plans...

Revised language under “APPROVAL” to add the following; Following the recommendation for approval for acquisition of right of way, the “*District Administrator*” (Chief of Policy and Environment “*for Tier 2*”) will approve...

Deleted the following language under “DISTRIBUTION OF PRINTS OF PLANS”;
Distribution of the approved plans to the Right of Way Division for property acquisition will be made by the Plan Coordination Section or by the district for projects designed in the district. This will be done via email to inform the various parties.

The assembly provided to the Plan Coordination Section shall include:

- *complete original Right of Way plans*
- *original cross sections*
- *Form LD-95 or LD-96 (printed on original letterhead)*

For District projects, Form LD-95 or LD-96 is submitted to the State Right of Way Engineer by the Central Office Plan Coordination Section.

And replaced it with the following; “*See Electronic Plan Submission Process Flow Chart.*”

- Page 2F-10 (Old) – Deleted the following language; *SECTION 2F- 5 - DISTRICT PROJECTS*

RIGHT OF WAY PLANS

A set of .tif files is kept on file. These plans are to be considered as a set of the official right of way plans. During the course of completing the original plans for construction, it is incumbent upon the district designers to process plan revisions for any changes (described in Section 2F-6, FORMAL REVISIONS-MAJOR CHANGES) made to the original plans that affect right of way or utilities so that revised plans can be distributed to the District Right of Way Section. A set of .tif files of the revised sheets is to be furnished to the Central Office Plan Coordination Section via updating Falcon and creating .tif files after the revisions have been made. This will maintain an up-to-date official set of right of way plans on Falcon Web. The proper steps are outlined in this reference guide on the Internet, Electronic Submission of Right of Way Plans. The link to this guide is www.virginiaDOT.org/business/locdes/reference-guides.asp.

- Page 2F-10 (New) – Replaced “SECTION 2F- 6 - RIGHT OF WAY REVISIONS-CENTRAL OFFICE & DISTRICT PROJECTS” with; SECTION 2F- 5 - RIGHT OF WAY REVISIONS
- Page 2F-11 – Deleted the following language from the beginning of the first paragraph; “*Formal plan revisions can be made in the district offices when requests are received from the District Right of Way Manager.*”

Deleted the following language at the end of the first paragraph; “*This will enable the Central Office Plan Coordination Section to send out emails informing the necessary parties of the revision.*”

Deleted the following language at the end of the second paragraph; The inclusion in plans of utility easement information shall be treated as a major change “*and the revision processed through the Plan Coordination Section.*”

Deleted the following language at the end of the first paragraph under “PROCESSING OF PLAN REVISIONS”; “*When a revision is made affecting the computer data of a project, distribute computer listings along with revised plans as detailed in IIM LD- 68 "Distribution of Prints".*

Deleted the following language under “PROCESSING OF PLAN REVISIONS”; “*The Revision Data Form LD-36 is used to transmit the revision to the Plan Coordination Section. After the project has been let to contract, a list of the quantity changes (increases and decreases along with any new items, if applicable) are to be shown on the Revision Data Sheet. Plan summaries are not to be changed.*”

- Page 2F-12 – Deleted the following language; *“Revised tiff files (plan sheets, and Revision Data Sheet) are to be submit with Form LD-36, to the Plan Coordination Section for processing and distribution in accordance with Form LD-405. Title sheet should be turned in only when it is revised (not with each revision).”* and replaced it with the following language; *“See Electronic Plan Submission Process Flow Chart.”*

Deleted the following language at the end of the first paragraph under “INFORMAL REVISIONS-MINOR CHANGES”; Make sure changes are made on all sheets. *“and that any pluses and distances shown for easements are accurate.”*

Revised the language under “PROPOSED CONVEYANCES OF RESIDUE PARCELS” from; *“When the Right of Way Division requests that the Location and Design Division determine the need to retain residue parcels of Right of Way for future highway purposes or to make them available for sale, the appropriate designer will forward Form LD-397.”*

To;
“Right of Way Division will request that Location and Design Division determine the need to retain residue parcels of Right of Way for future highway purposes or to make them available for sale. The process now occurs using an electronic circulation process on line using the “Portal”.”

CHAPTER 2G

- Page 2G-14 – Deleted the following language in the second paragraph; *“If the scope of the project has drastically changed the estimate since the SYIP was updated, the designer must get approval from the Assistant State Location and Design Engineer before furnishing an estimate that differs from the SYIP.”*

Deleted the following language in the third paragraph; *“(by the applicable Assistant State Location and Design Engineer)”*.

- Page 2G-18 – Deleted the following language under “POST-CERTIFICATION PLAN CHANGES”; During the review of the plans by the Scheduling and Contract Division after the Project Manager has certified the plans and prior to Advertisement Submission, "changes" may be made to the plans (with no formal revision) as long as the designer receives concurrence from the Scheduling and Contract Division *“and the State Location and Design Engineer”* and there...
- Page 2G-19 – Deleted the following language under “PROJECT APPROVAL”; *“At this stage, the Plan Coordination Section will coordinate approval of the plan assembly through the office of the State Location and Design Engineer. Before the Chief Engineer signs the plans giving approval to construct the project, signatures recommending approval are required. The signature block should be located in the lower right corner of the title sheet. The Plan Coordination Section will record the date of approval.”* and replaced it with the following; *“See Electronic Plan Submission Process Flow Chart.”*

- Page 2G-23 – Replaced the following language in the second paragraph; The designer “*district/consultant coordinator*” will coordinate... with “The designer or *Project Manager*” will coordinate...

Revised the following language in the last paragraph from;

“*All revisions are submitted to the Plan Coordination Section for processing, accompanied by the Revision Data sheet and Revision Data Form LD-36. The appropriate blanks on Form LD-36 must be marked in the lower left corner to designate who is to receive prints of the revised plans.*”

To;

“*All revisions submitted will be accompanied by the Revision Data sheet and Revision Data Form LD-36. The appropriate blanks on Form LD-36 must be marked in the lower left corner to designate who is to receive notification of the revised plans.*”

- Page 2G-24 – Deleted the following language from the beginning of the second paragraph; “*The Plan Coordination Section will request the Plan Library to print and distribute the necessary copies of the revision.*”

APPENDIX “A”

- Page A-1 – Revised the following language in the last sentence in the second paragraph; “If the designer has determined that Guidelines for RRR Projects do not apply to the project in question, the Geometric Design Standard tables on pages A-4 to A-13 should be...”

with;

If the designer has determined that Guidelines for RRR Projects do not apply to the project in question, the Geometric Design Standard tables on pages “A-8 to A-17” should be...

- Page A-7 – Deleted “TABLE A-1-1 DESIGN SPEEDS FOR VARIOUS FUNCTIONAL CLASSIFICATIONS”.
- Page A-8 (GS-1) – Deleted language in “New and Reconstructed Minimum Bridge Widths and Vertical Clearances” and “FOOTNOTE” #5 and replaced it with the following; “*See Manual of the Structure and Bridge Division – Volume V – Part 2 Design Aids – Chapter 6 Geometrics.*”
- Page A-9 (GS-2) – Deleted the following language from the beginning of “FOOTNOTE” No. 4; “*The Paved widths shown are the widths to be used if the Materials Division recommends the shoulders be paved.*”

Deleted the following language from the next to the last sentence in “FOOTNOTE” No. 4; “*If paved shoulders are not recommended by the Materials Division the mainline pavement structure will be extended 1' at the same slope into the shoulder to eliminate raveling of the pavement edge.*”

Added the following language in the last sentence in “FOOTNOTE” No. 4; For additional guidance on shoulder widths/*reductions*, see the AASHTO Green Book, Chapter 7.

Deleted language in “New and Reconstructed Minimum Bridge Widths and Vertical Clearances” and “FOOTNOTE” #7 and replaced it with the following; “*See Manual of the Structure and Bridge Division – Volume V – Part 2 Design Aids – Chapter 6 Geometrics.*”

- Page A-10 (GS-3) – Deleted language in “New and Reconstructed Minimum Bridge Widths and Vertical Clearances” and “FOOTNOTE” #7 and replaced it with the following; “*See Manual of the Structure and Bridge Division – Volume V – Part 2 Design Aids – Chapter 6 Geometrics.*”
- Page A-11 (GS-4) – Deleted language in “New and Reconstructed Minimum Bridge Widths and Vertical Clearances” and “FOOTNOTE” #8 and replaced it with the following; “*See Manual of the Structure and Bridge Division – Volume V – Part 2 Design Aids – Chapter 6 Geometrics.*”

Added the following FOOTNOTE; “(10) *Provides for a 4’ offset from edge of pavement to face of guardrail in accordance with Roadside Design Guide.*” This applies to the “Min. Width of Graded Shoulders” under “Current ADT Under 400”.

- Page A-12 (GS-5) – Deleted language in “New and Reconstructed Minimum Bridge Widths and Vertical Clearances” and “FOOTNOTE” #7 and replaced it with the following; “*See Manual of the Structure and Bridge Division – Volume V – Part 2 Design Aids – Chapter 6 Geometrics.*”
- Page A-13 (GS-6) – Deleted language in “New and Reconstructed Minimum Bridge Widths and Vertical Clearances” and “FOOTNOTE” #6 and replaced it with the following; “*See Manual of the Structure and Bridge Division – Volume V – Part 2 Design Aids – Chapter 6 Geometrics.*”

Deleted the following language from the beginning of “FOOTNOTE” No. 8; “*The Paved widths shown are the widths to be used if the Materials Division recommends the shoulders be paved.*”

Deleted the following language from the next to the last sentence in “FOOTNOTE” No. 8; “*If paved shoulders are not recommended by the Materials Division the mainline pavement structure will be extended 1’ at the same slope into the shoulder to eliminate raveling of the pavement edge.*”

Added the following language at the end of “FOOTNOTE” No. 8; “*For additional guidance on shoulder widths/*reductions*, see the AASHTO Green Book, Chapter 7.*”

- Page A-14 (GS-7) – Deleted language in “New and Reconstructed Minimum Bridge Widths and Vertical Clearances” and “FOOTNOTE” #8 and replaced it with the following; “*See Manual of the Structure and Bridge Division – Volume V – Part 2 Design Aids – Chapter 6 Geometrics.*”
- Page A-15 (GS-8) – Deleted language in “New and Reconstructed Minimum Bridge Widths and Vertical Clearances” and “FOOTNOTE” #9 and replaced it with the following; “*See Manual of the Structure and Bridge Division – Volume V – Part 2 Design Aids – Chapter 6 Geometrics.*”
- Page A-17 (GS-R) – Deleted language in “New and Reconstructed Minimum Bridge Widths and Vertical Clearances” and “FOOTNOTE” #4 and replaced it with the following; “*See Manual of the Structure and Bridge Division – Volume V – Part 2 Design Aids – Chapter 6 Geometrics.*”
- Page A-33 – Replaced “Note” (J) indicator with (L) indicator in TABLE A-3-2 BARRIER/GUARDRAIL SELECTION AND PLACEMENT, Semi-Rigid (Strong Post).

Added the following language in “Note” (K); “Absolute Minimum Vertical Height for *new and existing* GR-2 after overlay is 27 3/4”.

Added the following “Note”; *(L) Vertical Height Tolerance for new installations, +/- 1”.*

- Page A-34 – Added the following language at the end of the third sentence in the first paragraph under “GUARDRAIL INSTALLATION IN URBAN SETTINGS”; “For design speeds 45 mph or less, use Standard GR-2. For design speeds greater than 45 mph, use Standard GR-2A *or optional stiffening methods which are of nested rail or additional w-beam rail on back of post.*”
- Page A-35 – Revised “FIGURE A-3-1 BARRIER LENGTH OF NEED DETERMINATION” to update details.
- Page A-37 – Revised the following language in the third sentence in the third paragraph under “FIXED OBJECTS WITHIN DEFLECTION AREA” from; “The stiffening method should begin 18’ in advance...” To; “The stiffening method should begin 25’ in advance...”

- Page A-38 – Revised language under “ENTRANCES OR CONNECTIONS ADJACENT TO A BRIDGE” from; “*When entrances or connections cannot be relocated or eliminated and are located adjacent to a bridge on low-volume rural roads or in areas with dense entrance locations, it may be necessary to install radial guardrail around the entrances or connections. Plans fitting this criteria are to be submitted to the Standards/Special Design Section for review, approval and details.*” To;

When entrances or connections cannot be relocated or eliminated and are located adjacent to a bridge in areas with dense entrance locations, it may be necessary to install radial guardrail or an impact attenuator. Plans fitting this criteria are to be submitted to the Standards/Special Design Section for review, approval and details.

Revised the following language in the third sentence in the second paragraph under “GUARDRAIL OVER CULVERT IN FILLS” from; “Type II is adaptable to culverts with a perpendicular width of 16'-9””. To; “Type II is adaptable to culverts with a perpendicular width of 18’”.

- Page A-39 – Revised language in the second paragraph of the page from;
“*When using GR-8 (Weak Post Guardrail), the preferable run-on terminal is St'd. GR-6 terminal which buries the end of the guardrail into a cut slope and anchors the terminal with a post or concrete block. This terminal treatment requires enough right of way to extend the guardrail a minimum of 12'-6" beyond the ditch line. The guardrail should terminate a minimum of 1' below the ground elevation of the backslope. The rail preceding the GR-6 terminal is to maintain a consistent height (30") from the ground elevation to the top of the rail to prevent errant vehicles from impacting at an improper height. A total length of St'd. GR-8 (Weak Post Guardrail) based on the appropriate flare for the design speed shown on the standard drawing should be used adjacent to the St'd. GR-6 terminal. If more than a 200 foot extension of St'd. GR-8 guardrail is necessary to tie into the slope with a Std. GR-6 terminal, it would not be cost effective. If the GR-8, Type II terminal installation is not feasible, a St'd. GR-7 (Breakaway Cable Terminal) or GR-9 (Strong Post Alternate Breakaway Cable Terminal) including appropriate transitions should be used.*”

To;

“When using GR-8 (Weak Post Guardrail), the preferable run-on terminal is St'd. GR-6 terminal which buries the end of the guardrail into a cut slope and anchors the terminal with a post or concrete block. A transition to St'd GR-2 (In accordance with the current Road and Bridge Standards) must be used prior to rail flaring away from roadway. This terminal treatment requires enough right of way to extend the guardrail beyond the ditch line *per the standards*. The guardrail should terminate a minimum of 1' below the ground elevation of the backslope. The rail preceding the GR-6 terminal is to maintain a consistent height *relative to roadway profile grade* to prevent errant vehicles from impacting at an improper height. If more than a 200 foot extension of guardrail is necessary to tie into the slope with a Std. GR-6 terminal, it would not be cost effective.”

Revised language in the last sentence under (2) Semi-Rigid (Strong Post) Guardrail Installations from; “*However, for the run-off terminal on a divided roadway or with one-way traffic, a W-Beam End Section treatment in accordance with St'd. GR-HDW details is sufficient to terminate the St'd. GR-2.*”

To;

However, for the run-off terminal on a divided roadway or with one-way traffic, a *St'd. GR-11 terminal* treatment is sufficient to terminate the St'd. GR-2.

- Page A-41 – Deleted the following language at the end of the first paragraph under (4) GR-9 Alternate Breakaway Cable Terminal Installation; “*The estimated cost of the GR-9 terminal is \$2000.*”

Revised language in the last paragraph under “(4) GR-9 Alternate Breakaway Cable Terminal Installation” from; “*The total length of the terminal is 50 feet. The length of need begins 12.5 feet from the first post. The maximum deflection for the terminal along the length of need is 4 feet. For GR-9 installations used to terminate GR-8 (weak post guardrail), an additional 50-foot transition of St'd. GR-2 (wood posts only) is required.*”

To;

“The total length of the terminal is 50 feet. The length of need *usually* begins 12.5 feet from the first post. For GR-9 installations used to terminate GR-8 (weak post guardrail), an additional 50-foot transition of St'd. GR-2 is required.”

Revised language under “(5) W-Beam End Section Installation” from; “*For run-off treatment on a divided or one-way roadway, St'd. GR-2 (Strong Post) guardrail can be terminated with a W-Beam End Section in accordance with the Standard GR-HDW details as long as the installation is outside the clear zone for opposing traffic. The "flared" or "rounded" treatment may be used if installed outside the clear zone for opposing traffic. Payment is length of St'd. GR-2 guardrail.*”

To;

“For run-off treatment on a divided or one-way roadway, St'd. GR-2 (Strong Post) guardrail can be terminated with a St'd. GR-11.”

- Page A-43 – Replaced “Source” of “FIGURE A-3-3” from; “*The 1988 AASHTO Roadside Design Guide*” to; “The 2006 AASHTO Roadside Design Guide”.

- Page A-44 – Revised the language in the second paragraph under “BRIDGE” from;
“When the use of guardrail on depressed medians is being planned to shield bridge piers, the designer should also consider the use of a Special Design Impact Attenuator Bull Nose Barrier. This design has been used for several years with excellent performance. The design utilizes a 5 foot radius W-beam guardrail and wooden breakaway posts; therefore, a 10 foot wide median would be the minimum. A similar design of the "Bull Nose Barrier" is shown in the AASHTO Roadside Design Guide. (Pay Item - Bull Nose Barrier-Each - Computer Est. No. 13601.) Installation layout details will be furnished by the Standards/Special Design Section for each Bull Nose Barrier location for inclusion in the plans. Bull nose barriers must not be used behind or on top of curbs or raised medians.”

To;

“When the use of guardrail on depressed medians is being planned to shield bridge piers, the designer should also consider the use of an NCHRP 350 Thrie-beam Special Design Bull Nose Barrier. (Pay Item - Bull Nose Barrier-Each - Computer Est. No. 13601.) Installation layout details will be furnished by the Standards/Special Design Section for each Bull Nose Barrier location for inclusion in the plans. Bull nose barriers must not be used behind or on top of curbs or raised medians.”

- Page A-57 – Revised language in the “Minimum Lane and Shoulder Width Values” Table A-4-1 to decrease the pavement from 12’ to 11’ on lane width with shoulders for 2001-4000 ADT and to decrease the pavement from 12’ to 11’ on lane width with curb and gutter and shoulders for 4000-Over ADT.
- Page A-106 & 107 – Added the following language;
 Trails and Trailheads
Trails are defined in Draft Final Accessibility Guidelines for Outdoor Developed Areas F106.5 as a pedestrian route developed primarily for outdoor recreational purposes. A pedestrian route developed primarily to connect elements, spaces, or facilities within a site is not a trail.

The NPRM discussed shared-use paths that are developed for use by pedestrians and other groups such as bicyclists. Shared use paths are also called “hiker-biker trails.” The NPRM indicated that the scoping and technical provisions for trails apply to shared-use paths. The Access Board has further considered this issue and plans to conduct a separate rulemaking in the future to address shared use paths because they are also used for transportation purposes and may be subject to higher design standards.

The scoping provisions for trails are contained in F247. These provisions require trails to comply with the technical provisions for trails in 1017 when all the following conditions are met:

- *The trail is newly constructed or altered so that the original design, function, or purpose of the trail is changed. Routine or periodic maintenance activities that are performed to return an existing trail to the condition to which the trail was originally designed are not alterations.*

- *The trail is designed for pedestrian use.*
- *The trail connects to a trailhead or to another trail that complies with the technical provisions in 1017.*
- *The technical provisions for trails in 1017 address surface in 1017.2; clear tread width in 1017.3; passing spaces in 1017.4; obstacles in 1017.5; openings in 1017.6; slopes in 1017.7; resting intervals in 1017.8; protruding objects in 1017.9; and gates and barriers in 1017.10.*

The technical provisions are the same as in the NPRM, except as follows:

Conditional exceptions apply to each technical provision for newly constructed and altered trails. The conditional exceptions are discussed under Conditional Exceptions.

The exception based on situations where it is impractical to require the entire trail to comply with the technical provisions is revised. The exception is discussed under Exceptions for Trails and Beach Access Routes.

Where concrete, asphalt, or boards are used, obstacles cannot exceed ½ inch in height and the cross slope and resting interval slope cannot exceed 1:48. These provisions are discussed under Concrete, Asphalt, or Board Surfaces.

The NPRM exceptions for openings are included in 302.3 of the ADA-ABA Accessibility Guidelines.

Where resting intervals are provided adjacent to the trail, a turning space is required.

Provisions are added for gates and barriers constructed to control access to trails.

The scoping provisions for trails also address camping facilities, picnic facilities, viewing areas, and outdoor constructed features provided on trails. These facilities are required to comply with the applicable scoping and technical provisions for each facility, regardless of whether the trail complies with the technical provisions in 1017. Individuals with disabilities use trails that do not comply with the technical provisions of 1017 and, therefore, facilities provided on such trails are required to be accessible. Camping facilities, picnic facilities, viewing areas, and outdoor constructed features provided on trails are connected to a trail, and are not required to be connected to an outdoor recreation access route. See 1019 Conditions for Exceptions.

Trailhead

Trailheads are defined in F106.5 as an outdoor space developed to serve as an access point to a trail. The junction of two or more trails, where no other access point is provided to the trails, is not a trailhead.

The scoping provisions for trailheads are contained in F247.4. The provisions require new signs provided at trailheads on newly constructed or altered trails to include information on the length of the trail or trail segment; surface type; typical and minimum tread width; and typical and maximum running slope and cross slope. The U.S. Forest Service currently provides this information on trailhead signs posted on certain trails in national forests.

The scoping provisions require at least 20 percent of each type of outdoor constructed feature provided within a trailhead to be accessible. The scoping provisions also require an outdoor recreation access route to connect accessible parking spaces or other site arrival points to the accessible outdoor constructed features, elements, spaces, and facilities within the trailhead.

Resources:

For guidance on the design of Outdoor Recreation Access Routes, see Section 1017 of the Draft Final Accessibility Guidelines for Outdoor Developed Areas, dated October 19, 2009, which can be accessed at <http://www.access-board.gov/outdoor/draft-final.htm> and the DCR Greenways and Trails Toolbox, which can be accessed at http://www.dcr.virginia.gov/recreational_planning/greentrailtools.shtml

- Page A-118 – Revised language in the last sentence in the second paragraph under “Width” from; “*These passing areas can be provided at driveways with cross slopes no greater than 48:1 (2%), entrances, or street intersections.*” To; “*These passing areas can be provided at driveways and street intersections with cross slopes no greater than 48:1 (2%).*”

APPENDIX “B(1)”

- Page B(1)-14 – Revised detail to correct proposed right shoulder width from 7’ to 6’ to agree with Table 2 on page B(1)-8.
- Page B(1)-15 – Revised detail to correct proposed shoulders width from 7’ to 6’ to agree with Table 2 on page B(1)-8.
- Page B(1)-50 – Revised the following language in the last paragraph to replace; “*Roundabout designs shall be based on Federal Highway Administration Publication Number FHWA-RD-00-067, Roundabouts: An Informational Guide. See the following link: <http://www.tfhr.gov/safety/00068.htm>.*” with; “*Roundabout designs shall be based on NCHRP Report 672, Roundabouts: An Informational Guide, Second Edition. See the following link: http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_672.pdf.*”

APPENDIX “C”

- Page C-14 – Replaced “FIGURE C-3-1 SKETCH SHOWING SURVEY PROPERTY LINE TIE AND PROPOSED R/W BREAK POINT” to removed right of way pluses and other miscellaneous items.
- Page C-55 – Deleted the following language under “Capacity and Level of Service Analyses”; (*Special Report 209*), *Transportation Research Board*

APPENDIX “F”

- Page F-30 & 31 – Revised to reorganize the following sections; “Crossover Location Approval Process”, “Exception to the Spacing Standards” and “Exception/Waivers to the Design Standards” to clarify the proper procedures in this process.
- Page F-30 – Added the following language; “Wavier” to “Exception to the Spacing Standards” to read “Exception/Waivers to the Spacing Standards”.

Added the following language after the first sentence in the first paragraph under “Exception/Waivers to the Spacing Standards”; “*Exceptions to the spacing standards are referenced in sections 24VAC30-72-120 and 73-120 of the Access Management Regulations.*”

Added the following language in the second paragraph under “Exception/Waivers to the Spacing Standards”; “For commercial entrances, *intersections, and crossovers (new or to be relocated)* proposed for *private sector* land development projects the Access Management Regulations specify the documentation to be submitted to justify an exception to the spacing standards. A request for an exception to the spacing standards shall be submitted to the District Administrator or designee using *Exception Form...*”

Added the following language at the end of the first paragraph under “Exception/Waivers to the Design Standards”; “*Intersection sight distance determinations apply both horizontally and vertically, measured in each direction, and are to be based on a height of driver’s eye of 3.5’ and a height of object 3.5’.*”

Added the following language at the end of the third sentence in the second paragraph under “Exception/Waivers to the Design Standards”; “See IIM-LD-227 for information on the exception and waiver review process *for sight distance.*”

- Page F-31 - Deleted the following paragraph at the end under “Crossover Location Approval Process”; “*Intersection sight distance determinations apply both horizontally and vertically, measured in each direction, and are to be based on a height of driver’s eye of 3.5’ and a height of object 3.5’.*”

Added the following language under “Private Sector Crossover Requests”;

The District Transportation and Land Use Director should consult with the Regional Traffic Engineer concerning private sector (developer) requests for a new crossover or to relocate or close an existing crossover on VDOT owned and maintained highways. A crossover request that complies with the spacing standards, the sight distance requirements, and all other engineering standards may be approved by the District Administrator or designee.

For private sector project related crossover requests that do not meet the spacing standards, a spacing exception must be approved by the District Administrator or designee as described in the “Exceptions to the Spacing Standards” section above. Traffic studies as outlined above must accompany the request for a crossover location that does not meet the minimum spacing standards. If an exception to the spacing standards is approved, the Regional Traffic Engineer will determine whether the request complies with the sight distance requirements and other engineering standards in Appendix F. See the “Exceptions/Waivers to the Design Standards” section above for information on the forms and review process.

The approval of the addition or *relocation* of crossovers on an existing VDOT highway *that do not meet the sight distance requirements or other engineering standards* shall be the responsibility of the *Regional Traffic Engineer* with the concurrence of the State Location and Design Engineer. It shall be the responsibility of the *Regional Traffic Engineer* to coordinate such changes with the State Location and Design Engineer in order that these revisions of crossovers may be properly recorded on the original plans.

- Page F-32 – Added the following language at the end of the first sentence in the first paragraph under “Highway Construction Projects”; “As part of a highway construction project, crossover spacing less than shown as minimum in Tables 2-2 through 2-4, will be considered when required by existing intersecting public highways or streets with a current ADT of 100 or greater *and must be submitted for approval to the District Location and Design Engineer using Form AM-3.*”

Added the following language at the last sentence in the first paragraph under “Highway Construction Projects”; “The determination of additional crossover *locations or closing of a crossover* shall be the result of field inspection recommendations of the District Administrator and the *Regional Traffic Engineer.*”

Added the following language in the second paragraph under “Highway Construction Projects”; “The approval of crossovers *that do not meet engineering standards* shall be the responsibility of the *Regional Traffic Engineer* and the State Location and Design Engineer, with the final responsibility for the location of crossover layout on plans resting with the

State Location and Design Engineer. Plans at right-of-way stage are to indicate the crossovers as determined and approved by the above criteria. Any plans that are revised during construction for the addition or deletion of crossovers *where spacing standards or engineering standards are not met* shall be approved by the District Location and Design Engineer, the Regional Traffic Engineer, and/or the State Location and Design Engineer ...”

- Page F-42 – Revised the following language in the sixth paragraph to replace;
“*Roundabout designs shall be based on Federal Highway Administration Publication Number FHWA-RD-00-067, Roundabouts: An Informational Guide at <http://www.tfhrc.gov/safety/00068.htm> and <http://www.tfhrc.gov/safety/00068.pdf>.*”

with;

“*Roundabout designs shall be based on NCHRP Report 672, Roundabouts: An Informational Guide, Second Edition. See the following link: http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_672.pdf.*”

- Page F-44 – Added the following language to the thirteenth bullet under “The submittal should contain and depict the following criteria”; *VISSIM and SIDRA Analysis on all approaches showing peak hour LOS in design year.*
- Page F-82 – Added the following language under “PRIVATE ENTRANCE”;
3. *Private Entrance Sight Distance*
The installation of a private entrance cannot be denied on the basis of sight distance. The Department will review the property owner’s highway frontage and determine a useable location for the private entrance with the best possible sight distance. The property owner’s preferred location can be denied by the Department if the location does not have the best possible sight distance and therefore is less safe for users of the entrance as well as for motorists on the intersecting highway. The Department may require the property owner to grade slopes, clear brush, remove trees, or conduct other similar efforts, or any combination of these, necessary to provide the safest possible means of ingress and egress that can be reasonably achieved.
- Page F-83 – Added the following language in FIGURE 4-1 PRIVATE ENTRANCE DETAIL; “*Entrance width may be increased to meet specific site requirements as directed or approved by the Engineer at the District, when based on sound engineering principles.*”

- Page F-85 – Added the following language under “TABLE 4-2”; *“Inadequate entrance length can also produce hazards to entering traffic on site. Particularly where the on-site parking can back out of and block the entrance and prevent a vehicle from entering. To avoid this problem, a distance of at least 50 feet should be used on entrance length where back out parking may interfere with entry movement.”*

Added the following Figure;

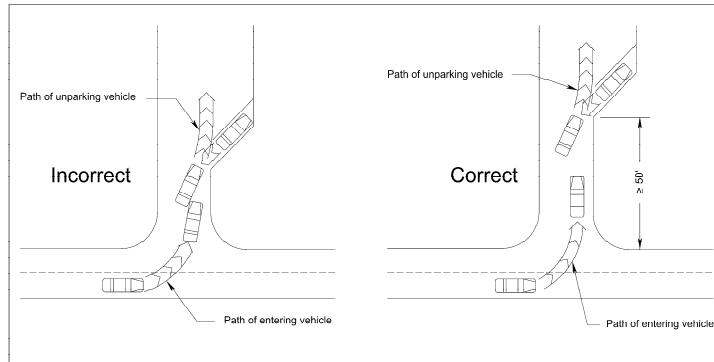


FIGURE 4-1A ENTRANCE THROAT DETAIL