



HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

9250 Bendix Road

Columbia, Maryland 21045

410-313-2414

Thomas E. Butler, P.E., Deputy Director of Public Works
Engineering, Development and Construction
www.howardcountymd.gov

FAX 410-313-6144
TDD 410-313-2323

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To: Holders of Howard County Design Manuals

Subject: DRAFT changes to the Howard County Design Manual Volume III
Roads and Bridges

Below is a list of changes of this DRAFT version of the Howard County Design Manual Volume III, Roads and Bridges, dated March 2017. **Please note that the Office of Transportation is currently working on proposed design criteria for complete streets and those revisions are not part of this draft version.** This draft version will be available online at <https://www.howardcountymd.gov/Departments/Public-Works/Bureau-Of-Engineering> for public review and comments. Please provide your written comments to Thomas Auyeung of the Transportation and Special Projects Division at 9250 Bendix Road, Columbia, MD 21045 or email him at tauyeung@howardcountymd.gov by May 1, 2017.

Once all comments are considered, any resulting revisions will be made, and the DRAFT will be republished at the same internet location as noted above. After the revised draft revisions are republished, the Design Manual will be presented to the Public Works Board requesting their recommendation for approval by County Council. During Howard County Council review and approval the word DRAFT will be removed as well as the March 2017 date and a new date (to be determined) will appear throughout the design manual.

Please note that until the revisions to the Design Manual are signed by the Deputy Director and approved by the County Council, the proposed revisions are not binding.

The proposed Design Manual Volume III changes include approved County Council resolutions (i.e. downtown Columbia guidelines) and various consultations with stakeholders. The resulting 206 page document needs to be studied to understand the changes. Differing parties will have varying perspectives of the changes. The intent of listing changes here is to highlight, for your reference, many of the interesting changes vs. providing an exhaustive catalogue of all the changes. The changes have been distinguished into two categories below: "Volume III Significant Changes" and less significant "Volume III Improvements, Updates and Clarifications."

Volume III Significant Changes:

CHAPTER 1:

- Page 1-12 (PDF 017) 1.8 B 2. j. Under "Items to Include in Topographic Surveys" added "Stormwater Management Facilities" to be included in the topographic surveys to include all structures, pipes, inverts and pipe sizes, cleanouts, observation wells and contours.

CHAPTER 2:

- Page 2-6 (PDF 039) Table 2.02 Minimum Passing Sight Distance. Revised values based on 2011 edition of *A Policy on Geometric Design of Highways and Streets*.

- Page 2-10 (PDF 043) 2.3 A. 3. e. “Permanent Non-Through Streets” has been revised to: clarify the definition of a “Permanent Non-Through Street”, clarify that the 1200’ maximum length of a non through street will start over after any intersection with a public road, clarified that all non-residential roads shall be terminated with a cul-de-sac and added that the head of a tee or y-turnaround will have a 60’ width.
- Page 2-17 (PDF 050) Table 2.05 Design Controls for Crest Vertical Curves Based on Passing Sight Distance. Revised values based on 2011 edition of *A Policy on Geometric Design of Highways and Streets*.
- Page 2-20 (PDF 053) B. Pavement and Right-of-Way Width 2.Pavement Widths and Cross Slope: Delete the specification of requiring a 3’ unpaved shoulder where sidewalks are not present
- Page 2-21 (PDF 054) C. Paving Section second paragraph: Removed the suggestion that the Soils Evaluation and Pavement Design Report be prepared using the DPW “Geotechnical Data required for Water, Sewer, Storm Drain and Road Design and Construction Guideline.”
- Page 2-22 (PDF 055) D. Curb and Gutter: Revised permitted use of Modified Curb and Gutter from cul-de-sac bulb, local streets and minor collectors Street in residential areas to Access Place, Access Street and minor collector in residential areas.
- Page 2-25 (PDF 058) J. Pathways and Bikeways: Added the Office of Transportation in the 5th and 6th paragraphs as offices to be consulted when planning a bikeway.
- Page 2-32 (PDF 065) 7. Median Lanes and Openings: Eliminated the third paragraph saying “Barriers shall not be used to separate the through and left turn lanes.”
- Page 2-34 (PDF 067) 9. Intersection Sight Distance: Revised intersection sight distance to be measured in accordance to AASHTO procedures. In residential areas, stopping sight distance may be used on the Major Street when the Major Street classification is a Minor Collector or below.
- Page 2- 41 (PDF 073) G. Auxiliary Lanes: Added minor arterials as locations where auxiliary lanes may be required and removed the restriction width of 40’ maximum.
- Page 2-41 (PDF 074) 2.7 Alleys: Revised the paragraph to better define Alleys. Raised the minimum width of alleys from 16’ to 20’. Added a restriction for alleys greater than 200’ in length to add a cul-de-sac or tee-turnaround.
- Page 2-41 to 2-42 (PDF 074 to PDF 075) B. Residential Parking: Clarified that On Street Parking shall be treated according to Table 2.11. Removed the second paragraph clarifying information on how zoning requirements for off-street parking can be met. Revised the heading of Table 2.11 from OVERFLOW / GUEST PARKING to ON STREET PARKING. Removed the column in Table 2.11 for Overflow/Unit.
- Page 2-45 to 2-47 (PDF 078 to 080) 2.13 Roadway Lighting: Section revised from relocating Street Lighting from Chapter 5 Traffic Studies and moving to Chapter 2 Design of Roads and has been revised in its entirety.
- Page 2-50 (PDF 082) C. Design Characteristics, 6. Speed Humps: Added new section.
- Page 2-50 to 2-51 (PDF 083 to PDF 084): Added specification Section 2.15 Standard for Maintenance of Scenic Roads.
- Appendix A (PDF 085) Public Roadway Design Criteria: The *Max. Dist. Between Speed Control Devices* column has been noted to apply to “Capital Improvement Project Only”.
- Appendix A (PDF 085) Public Roadway Design Criteria: Under Notes: Added to Note 1.a. Flush curb on inside of all curves with radius of 1000 feet or less.
- Appendix G (PDF 092) Parking Stall Layout Elements- Removed curb notation, line representing curb on plan, and offset to curb from plan and table.
- Appendix H (PDF 093) Intersection Sight Distance in Residential Areas when Major Street Classification is Equal to or Less Than a Minor Collector – New Figure
- TYPICAL SECTIONS: All Typical Sections removed from Chapter 2 Appendix

CHAPTER 3:

- Page 3-17 to 3-18 (PDF 113 to 114) 3.4 A.: Added a paragraph making a distinction between “Fill” Retaining Walls and “Cut” Retaining Walls. Added a Table providing guidelines for fill retaining walls selection.
- Page 3-21 (PDF 117) f. MSE: Revised The MSE wall specification adding detail concerning Overall Stability, Reinforced Soil Mass and Facing Elements.
- Page 3-21 to 3-22 (PDF 117 to PDF 118) f. MSE: Added General design guidelines at end of section.
- Page 3-24 to 3-26 (PDF 120 to PDF 122) Added 3 pages for: 2. Cut Type Retaining Walls specification.
- Page 3-30 (PDF 126) f. Design Calculations / Failure Analysis: Removed the word three in order to not limit the possible modes of failure. Removed the resistance factors and added that the resistance factors meet AASHTO.

CHAPTER 4:

- Page 4-1, 4-2 (PDF 161, PDF 162) Reference is made to the point that Downtown Columbia will have it's own separate set of standards and evaluation requirements as set forth in section 4.9.
- Page 4-2 (PDF 162) 4.3 Traffic Volumes: Reference were added to include the ITE Trip Generation Handbook, ITE Transportation Impact Analysis for Site Development, and ITE Trip Generation.
- Page 4-2 to 4-3 (PDF 162 to PDF 163) B. Project Site-Generated Traffic Volumes: References were added to include ITE and trip generation studies approved by Howard County.
- Page 4-4 (PDF 164) 4.5 Mitigation Requirements: The words “General County” were added to the heading. Reworded the first paragraph from “that the level of service will be below the adopted level of service standard” to “operations will be below the adopted standards of Section 4.2”.
- Page 4-6 (PDF 166) 4.6 Traditional Requirements Added a 4th paragraph exception allowing Downtown Columbia to modify certain FDP traffic studies.
- Page 4-7 (PDF 167) A. Subdivision Approval: Added under 4. This provision does not apply to Downtown Columbia
- Page 4-8 (PDF 168) 4.8 Approval Requirements: Added paragraph exception allowing Downtown Columbia to modify certain FDP traffic studies
- Page 4-8 (PDF 168) B. Site Development Plan: Added “or as stipulated in the exception above” at the end of the paragraph.
- Page 4-8 to 4-26 (PDF 168 to PDF 186) Added Specification Section 4.9 Requirements – Downtown Columbia.

CHAPTER 5:

- Page 5-9 (PDF 197) C. Safety Studies: Added information to clarify how to obtain crash data from SHA and Howard County.
- Page 5-15 (PDF 203) B. Roundabouts: Revised the last paragraph to update the reference from June 2004 to October 2012 for Maryland’s SHA “Roundabout Design Guidelines”. Removed the references to FHA and added a reference to NCHRP Report 672 or latest edition.
- Page 5-17 (PDF 205) 5.5 Street Lighting: Removed the entire section from Chapter 5.

Volume III Improvements, Updates and Clarifications

CHAPTER 1:

- Page I thru ii (PDF 004, PDG 005) Revised Table of Contents
- Page 1-4 (PDF 009) 1.3 Definitions, Standard Specifications: Revised the capitalized letter F in the word For to non-capital, removed a comma.
- Page 1-6 (PDF 011) 1.5 Minor Collector: Changed a semi colon to a comma.

- Page 1- 11 (PDF 016) 1.8 B 2. e. Under “Items to Include in Topographic Surveys” clarified hydrants are “fire” hydrants and added “Sanitary sewer mains” as an item to be included in the topographic surveys.
- Page 1-12 (PDF 017) 1.8 B 2. k. Under “Items to Include in Topographic Surveys” added “Wetland Buffers” to be included in the topographic surveys.
- Page 1-17 (PDF 022) 1.9.C 7.c. Revision Block. Added “and the plan has been signed by the approving authority” to after the designers seal and signature has been affixed to the plan.
- Page 1-19 (PDF 024) 1.9 E, Clarified that the coordinate system is based on Maryland State “Plane Coordinate” System by adding the words “Plane Coordinate”.

CHAPTER 2:

- Page i thru iii (PDF 31 thru 33) Revised Table of Contents
- Page 2-5 (PDF 038) D Sight Distance: Updated the references for Table 2.01 “Stopping Sight Distances” from 2004 to 2011.
- Page 2-6 (PDF 039) D Sight Distance: Updated the references for Table 2.02 “Minimum Passing Sight Distance” from 2004 to 2011
- Page 2-6 (PDF 039) Reference stating that “ E. Permanent Non-Through Streets/Temporary Non-Through Streets” and “ F. Alleys” are discussed in different sections were removed from this heading of “Roadway Design”.
- Page 2-8 (PDF 041) 2.3 A. 1. f. Horizontal Sight Distance: Updated the references from 2004 to 2011.
- Page 2-10 (PDF 043) 2.3 A. 3. d. Updated the references in paragraph 2 from 2004 to 2011.
- Page 2-11 (PDF 044) 2.3 A. 3. F. Temporary Non-Through Streets: Revised the un-capitalized letter n in the word non to Non-capital.
- Page 2-12 (PDF 045) Table 2.03: Revised the reference from Exhibit 3-15 to Table 3-7 and updated from 2004 to 2011.
- Page 2-12 (PDF 045) Second paragraph after Table 2.03 references: Revised the reference from Exhibit 3-32 to Table 3-17 and updated from 2004 to 2011.
- Page 2-13 (PDF 046) B. Vertical Alignment, Grades: Revised numerical heading for “Grades” from 5. To 1.
- Page 2-15 (PDF 048) Crest Vertical Curves, first paragraph after formula definitions: Revised the reference from Exhibit 3-71 to Figure 3-43 and updated from 2004 to 2011.
- Page 2-16 (PDF 049) Table 2.04: Revised the reference title from “Stopping Sight Distance and for Crest Vertical Curves” to “Crest Vertical Curves Based on Stopping Sight Distance”, From Exhibit 3-72 to Table 3-34 and from 2004 to 2011.
- Page 2-17 (PDF 050) Table 2.05 References: Revised the reference from Exhibit 3-73 to Table 3-35 and updated from 2004 to 2011.
- Page 2-18 (PDF 051) Table 2.06 References: Revised the reference from Exhibit 3-75 to Table 3-36 and updated from 2004 to 2011. Next paragraph revised the reference from Exhibit 3-74 to Figure 3-44 and updated from 2004 to 2011.
- Page 2-19 (PDF 052) 3. Critical Length of Grade, third and fourth paragraph: revised references from exhibit 3-59 to Figure 3-28 and updated the reference from 2004 to 2011.
- Page 2-23 (PDF 056) I. Traffic Barrier: Replaced the word needed with required.
- Page 2-27 (PDF 060) 2.5 Intersection Design A.: Revised the heading from “Staged Construction” to “General”.
- Page 2-29 (PDF 062) B. Geometric Design 3.: Updated reference from 2004 to 2011.
- Page 2-29 (PDF 062) B. Geometric Design 4.: Updated two references from 2004 to 2011. Revised the reference from Exhibit 9-19 to Table 9-15 and from Table 9-20 to Table 9-16. Added the words “Simple Curve Radius with Taper” to the “Edge-of-Traveled-Way Design for Turns at Intersections” reference. Added the words “Designs” and “Three-Centered Curves” to the “Edge-of-Traveled-Way for Turns at Intersections” of AASHTO reference.

- Page 2-29 (PDF 062) TABLE 2.08: Corrected the spelling of MIMIMUM to MINIMUM in the title.
- Page 2-30 (PDF 063) Updated the reference from 2004 to 2011. Revised the reference from Exhibit 9-19 to Table 9-15 and revised the reference from Table 9-20 to 9-16.
- Page 2-31 (PDF 064) 5. Auxiliary Lanes, 3rd paragraph after d.: Updated the reference from 2004 to 2011. Revised the reference from Exhibit 10-70 to Table 10-3. Revised the reference from Table 10-73 to Table 10-5.
- Page 2-32 (PDF 065) 6. Turning Roadways: First paragraph revised the reference from Exhibit 3-51 to Table 3-59 and updated the reference from 2004 to 2011. Second paragraph revised the reference from Exhibit 3-51 to Table 3-29 and updated the reference from 2004 to 2011.
- Page 2-33 (PDF 066) 7. Median Lanes and Openings: 5th Paragraph; Revised the reference from Exhibit 9-79 to Table 9-26 and Figure 9-81 to Figure 9-56. Added "(SU-30) Design Vehicle, Control Radius of 50 ft. to the reference. 7th Paragraph; Revised the reference from Exhibit 9-87 to Figure 9-59 and updated the reference from 2004 to 2011.
- Page 2-33 (PDF 066) 8. Traffic Islands: First paragraph changed the word "marked" to "demarcated" and the word "paint" to "pavement markings".
- Page 2-33 (PDF 066) 8. Traffic Islands: Sixth paragraph changed the word "evergreens" to "materials".
- Page 2-44 (PDF 077) E. Design Unit Size and Location: First paragraph removed the reference to a "Private Access Place" requirement for screening a collection area from adjacent properties.
- Page 2-48 (PDF 081) 2.14 Speed Control Devices B. Definitions: Added the term Vertical deflection as a device including speed humps and clarifying what horizontal deflections cover.
- Appendix G (PDF 092) Parking Stall Layout Elements: Under Notes: Revise Note 2 reference from See Section 2.8... to See Section 2.9...

CHAPTER 3:

- Page 3-12 (PDF 108) M. Foundation Reports: Added in the first paragraph that the depth and number of borings should be per AASHTO requirements.
- Page 3-13 (PDF 109) M. Foundation Reports: Added in the second paragraph the words "impact of" prior to settlement. Added construction control considerations as an item to be addressed in the foundation report. Revised the word "Page 5 of 6" to "Page 3-13 (PDF 109)".
- Page 3-31 (PDF 127) g. Construction Drawings – Required Notes: Changed the "pressure" to "resistance" in the second paragraph.

CHAPTER 4:

- Page I thru ii (PDF 159 to PDF 160) Revised Table of Contents
- Page 4-1 (PDF 161) B. Level of Service: Description has been slightly reworded.
- Page 4-2 (PDF 162) C. Study Area: The words "as follows" were changed to "defined below".
- Page 4-7 (PDF 167) B. Exempt Residential Projects: Added to item 6 "previously tested in the subdivision process".

CHAPTER 5:

- Page ii (PDF 188) Revised Table of Contents
- Page 5-2 (PDF 190) 2 Traffic Studies A. 1.: Changed the word from "accident" to "safety".
- Page 5-8 (PDF 196) b. At-Grade Intersection (Interrupted Flow): Changed the word from "assures" to "assumes".
- Page 5-15 (PDF 203) 5.3 A. Traffic Signals: Added the acronym (SHA).
- Page 5-16 (PDF 204) A. General: Added the words "latest edition of" for the MUTCD and removed the 2003 date.
- Page 5-16 (PDF 204) B.: Capitalized the word "The".
- Page 5-17 (PDF 205) Revised the heading number from 5.6 to 5.5 for Maintenance of Traffic During Construction.

- Page 5-18 (PDF 206) Maintenance of Traffic During Construction: Added the words "latest edition of" for the MUTCD and removed the 2003 date in the ninth paragraph.
- Page 5-18 (PDF 206) Revised the heading number from 5.7 to 5.6 for At-Grade Railroad Crossings.
- Page 5-18 (PDF 206) At-Grade Railroad Crossings: Added the words "latest edition of" for the MUTCD and removed the 2003 date in the ninth paragraph.

If you have any question, please contact Thomas Auyeung of the Transportation and Special Projects Division at 410-313-6142.

Very truly yours,



Thomas E. Butler, Deputy Director
Department of Public Works
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