Welcome to A Technical Overview of the Howard County Complete Streets Design Manual

The presentation will begin at 2:00pm

October 21, 2021

THIS PRESENTATION WILL BE RECORDED
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Virtual Workshop Logistics

• Today’s presentation **will be recorded** and made available to the public at [www.howardcountymd.gov/DM-updates](http://www.howardcountymd.gov/DM-updates)

• You can listen via your computer speakers or by calling in on your phone. To listen to the audio via phone, please call:
  – Phone number: 1-650-479-3207
  – Access code: 2314 207 2894
Virtual Workshop Logistics

- Members of the public **cannot** be seen or heard during this workshop
- If you wish to submit a question or comment, please use the chat feature on Webex
- Presenters will do their best to respond to questions and comments during the Q&A session at the end of the event
Welcome
Howard County Complete Streets Policy
Council Resolution 120-2019, Adopted October 7, 2019

Vision:

To ensure that Howard County is a place for individuals of all backgrounds to live and travel freely, safely, and comfortably, public and private roadways in Howard County shall be safe and convenient for residents of all ages and abilities who travel by foot, bicycle, public transportation or automobile, ensuring sustainable communities Countywide.
Today’s Speakers

Amah Binde, PE, PMP, Engineering Bureau Chief
Howard County Department of Public Works

Chris Eatough, Bicycle and Pedestrian Coordinator
Howard County Office of Transportation

Bryan Townsend, PE, Vice President
Whitman, Requardt and Associates

Leah Kacanda, AICP, Senior Project Planner
Whitman, Requardt and Associates
Agenda

- Introduction
- Overview
- Street Types
- Studies Required
- Design Guidance Updates
- Standard Detail Updates
- Q&A
Howard County Complete Streets Policy - Passed by Council Resolution 120-2019 on 10/7/19

What is a complete street?
Complete streets are safe streets for all. They vary in different places and contexts, but they often include some or all the elements below.

**Sidewalks**
Facilitate travel for all users, including people in wheelchairs, with level, unobstructed, and wide walkways.

**Curb ramps**
Accommodate wheelchairs, baby strollers, and bicycles with smooth transitions between sidewalks and roadways.

**Roadway**
Manage travel speed, enhance safety, and provide predictability.

**Crosswalks**
Direct pedestrians to preferred, clearly marked street crossing locations and increase driver awareness.

**Grass buffer**
Separate the street and sidewalk and provide space for trees, light posts, and signs.
Design Manual, Volume III

- Chapter 1, Introduction and General Information
- Chapter 2, Street Design
- Chapter 3, Design of Bridges, Retaining Walls and Small Structures
- Chapter 4, Adequate Public Facilities Test Evaluation Requirements
- Chapter 5, Multimodal Traffic Studies
Design Manual, Volume III

Revisions based on established design guidance and best practices including:

- American Association of State Highway and Transportation Officials (AASHTO)
- Federal Highway Administration (FHWA)
- Maryland State Highway Administration (MDOT SHA)
- National Cooperative Highway Research Program (NCHRP)
- Institute of Transportation Engineers (ITE)
- National Association of City Transportation Officials (NACTO)
Chapter 1: Introduction and General Information
### New Street Types

<table>
<thead>
<tr>
<th>Mixed Use</th>
<th>Suburban</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boulevard</td>
<td>Parkway</td>
</tr>
<tr>
<td>Town Center Connector</td>
<td>Neighborhood Connector</td>
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<tr>
<td>Town Center Street</td>
<td>Neighborhood Street 1</td>
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<td></td>
<td>Neighborhood Street 2</td>
</tr>
</tbody>
</table>

**Local (applies to mixed use and suburban contexts)**

- Neighborhood Yield Street
- Alley

<table>
<thead>
<tr>
<th>Rural</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country Road</td>
<td>Industrial</td>
</tr>
<tr>
<td>Rural Development Street</td>
<td></td>
</tr>
</tbody>
</table>
Mixed Use Streets

Section 1.3.C

- Boulevard
- Town Center Connector
- Town Center Street
Suburban – with Pathways

- Parkway
- Neighborhood Connector
- Neighborhood Street 2
Industrial

Section 1.3.C
Street Types / Functional Classification

If a Functional Classification has not been assigned, use Chapter 1 Appendix E for elements related to Functional Classification:

<table>
<thead>
<tr>
<th>Proposed Street Type</th>
<th>Functional Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boulevard</td>
<td>Minor Arterial</td>
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<tr>
<td>Town Center Connector</td>
<td>Major Collector</td>
</tr>
<tr>
<td>Town Center Street</td>
<td>Minor Collector</td>
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<tr>
<td>Parkway</td>
<td>Intermediate Arterial</td>
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<tr>
<td>Neighborhood Connector</td>
<td>Major Collector</td>
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<td>Neighborhood Street 1</td>
<td>Minor Collector</td>
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<tr>
<td>Neighborhood Street 2</td>
<td>Minor Collector</td>
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<tr>
<td>Neighborhood Yield Street</td>
<td>Local Road</td>
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<td>Alley</td>
<td>Local Road</td>
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<tr>
<td>Industrial Street</td>
<td>Local Road</td>
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<tr>
<td>Country Road</td>
<td>Major Collector</td>
</tr>
<tr>
<td>Rural Development Street</td>
<td>Minor Collector</td>
</tr>
</tbody>
</table>

An existing Functional Classification does NOT mean that a street reconstruction will be a certain Street Type. A roadway with a single Functional Classification may include different several Street Types along its alignment.
Chapter 5: Multimodal Traffic Studies
Studies Required

- Level of Service Studies (growth rate revised)
- Pedestrian Studies
- Bicycle Level of Stress Studies
- Safety Evaluations
- Parking / Access Studies
- Noise Studies
Pedestrian Studies

- Added list of possible pedestrian trip attractors (e.g. schools, libraries, etc.)
- Provided a section on midblock crossing evaluation guidance
Bicycle Level of Stress Studies

- New section
- Designers will provide LTS 1 or LTS 2
- Designers will strive to provide LTS 1 for connections to County schools, parks, and libraries within ½ mile radius of the project

Definitions

a. LTS 1: The level that riders of all ages and abilities can tolerate; this category includes very low-speed and very low-volume neighborhood streets, all separated bike lanes, and all shared use paths.

b. LTS 2: Tolerated by the mainstream adult population; streets with low volume and low speed motor vehicle traffic.

c. LTS 3: Tolerated by riders who are “enthused and confident” but still prefer having their own dedicated space for cycling.

d. LTS 4: Only tolerated by riders who are characterized as “strong and fearless.”

<table>
<thead>
<tr>
<th>Number of Lanes</th>
<th>Effective ADT**</th>
<th>≤ 20 mph</th>
<th>25 mph</th>
<th>30 mph</th>
<th>35 mph</th>
<th>40 mph</th>
<th>45 mph</th>
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<td>0-750</td>
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<td>1,501-3,000</td>
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<td>any ADT</td>
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<td>LTS 3</td>
<td>LTS 3</td>
<td>LTS 3</td>
<td>LTS 3</td>
<td>LTS 3</td>
<td>LTS 3</td>
</tr>
</tbody>
</table>

* Prevailing speed is defined as the target speed of a proposed roadway or 85th percentile speed of an existing roadway. If a speed study is not available, the posted speed of the roadway can be used.

** Effective ADT is ADT for 2-way roads. Effective ADT = 1.5*ADT for 1-way roads.

Source: Level of Traffic Stress Criteria for Road Segments, version 2.0, June 2017, Dr. Peter G. Furth’s Northeastern University webpage (Ref 11).
Safety Evaluations

- Guidance regarding bicycle and pedestrian safety evaluation – a crash may indicate need for a bicycle, pedestrian, or shared use facility
- Includes not only crash data, but “conflicts observed in the field”
- Includes observations of how all user types navigate the project area and presence / condition of existing facilities
- Information gathered shall be considered to identify potential countermeasures
Chapter 2: Street Design
Updated Design Guidance

- **Chapter 2: Street Design**
  - Has been reorganized
  - Refocused to provide guidance for accommodation of all users of the street
    - Pedestrians
    - Bicyclists
    - Transit Users
    - Motor Vehicles
- **Chapter 3: Design of Bridges, Retaining Walls, and Small Structures**
Design Speed & Target Speed

• Design Speed:
  “A selected speed used to determine the various geometric design features of the roadway.”

• Target Speed:
  “The highest speed at which vehicles should operate on a thoroughfare in a specific context, consistent with the level of multimodal activity generate by adjacent land uses, to provide both mobility for motor vehicles and a desirable environment for pedestrians, bicyclists, and public transit users.”

Target Speed = Speed Limit = Desired Operating Speed

Design Speed & Target Speed

- Existing roadways – evaluate operating speed
- Implement transitional elements as needed as contexts change

### Table 2-1
Street Type Target Speeds and Design Speeds

<table>
<thead>
<tr>
<th>Street Type</th>
<th>Target Speed (mph)</th>
<th>Design Speed (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boulevard</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>Town Center Connector</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>Town Center Street</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>Parkway*</td>
<td>varies</td>
<td>varies</td>
</tr>
<tr>
<td>Neighborhood Connector</td>
<td>35</td>
<td>40</td>
</tr>
<tr>
<td>Neighborhood Street 1</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>Neighborhood Street 2</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Neighborhood Yield Street</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Alley</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Industrial Street</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Country Road*</td>
<td>varies</td>
<td>varies</td>
</tr>
<tr>
<td>Rural Development Street</td>
<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>

* Consult with Howard County Department of Public Works to establish target speed and design speed.
Design Vehicle & Control Vehicle

Turning Radii. Accommodate the different turn radii of frequently present Design Vehicle (left) and the occasionally present Control Vehicle (right) at different speeds, using geometric techniques such as advance stop lines, without increasing the turn radius and speed of the Design Vehicle.

Source: Global Designing Cities Initiative
Design Vehicle & Control Vehicle

- Designer must evaluate likely vehicles that will use a facility
- BUS-40 represents the dimensions of a fire truck

<table>
<thead>
<tr>
<th>Street Type</th>
<th>Design Vehicle</th>
<th>Control Vehicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boulevard</td>
<td>SU-40</td>
<td>WB-50</td>
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<td>SU-40</td>
<td>BUS-40</td>
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<tr>
<td>Town Center Street</td>
<td>SU-40</td>
<td>BUS-40</td>
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<tr>
<td>Parkway</td>
<td>WB-62</td>
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<td>Neighborhood Connector</td>
<td>SU-40</td>
<td>BUS-40</td>
</tr>
<tr>
<td>Neighborhood Street 1</td>
<td>SU-40</td>
<td>BUS-40</td>
</tr>
<tr>
<td>Neighborhood Street 2</td>
<td>SU-40</td>
<td>BUS-40</td>
</tr>
<tr>
<td>Neighborhood Yield Street</td>
<td>P</td>
<td>BUS-40</td>
</tr>
<tr>
<td>Alley</td>
<td>P</td>
<td>BUS-40</td>
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<tr>
<td>Industrial Street</td>
<td>WB-62</td>
<td>N/A</td>
</tr>
<tr>
<td>Country Road</td>
<td>SU-40</td>
<td>N/A</td>
</tr>
<tr>
<td>Rural Development Street</td>
<td>P</td>
<td>BUS-40</td>
</tr>
</tbody>
</table>
Sight Distance

- Intersection Sight Distance section moved to 2.1.E
- Sight Distance still based on Design Speed
- Check sightlines of all users

Types of sight distance:
- Intersection
- Stopping
- Horizontal Sight Offset (HSO)
- Vertical Crest
- Vertical Sag (Headlight Sight Distance)
- Passing Sight Distance
2.2 Typical Section Elements

• Sidewalks
• Shared Use Paths
• Bicycle Facilities
• Travel Lanes
  – Including Speed Management Measures
• Street Trees
• Minimum Edge Distance to Obstructions
• Utilities
• Stormwater Management (Chapter 1)
Sidewalks

- Keep consistent distance from the street where possible
- Sidewalk width – 5’-0” minimum (constrained areas require a design exception, 4’-0” minimum sidewalk)
- Adjacent to curb – 6’-0”
- In mixed use areas, additional hardscape outside of right of way may be provided
- Isolated pinch points of 36” clearance are acceptable
- New sidewalk expansion policy (within right of way)
  - Notice to property owners if sidewalk is in the Master Plan; in a school Walk Zone; part of a development; or provides access to a public facility per the Office of Transportation;
  - Otherwise, a 2/3 vote of property owners is required
Shared Use Paths

- New section
- 10’ minimum path required except in rare circumstances where an 8’ path shall be provided
- Grading and clear area information provided
- Alignment and bicycle speed criteria provided
- Maximum 5% grade unless following road grade
Bicycle Facilities

- One-Way Separated Bike Lane
- Two-Way Separated Bike Lane
Bicycle Facilities

- Buffered Bike Lane
- Conventional Bike Lane
- Shoulder

Section 2.2.D

Buffered Bike Lane

Source: Howard County

Conventional Bike Lane

Source: Whitman, Requardt & Associates, LLP

Shoulder

Source: Fairfax Alliance for Better Bicycling
Bicycle Facilities

- Bicycle Boulevard
- Shared Lane (Sharrows)
Bicycle Facilities

- Selection Criteria

Source: FHWA "Bikeway Selection Guide"
Bicycle Facilities

- Transitions between bike lane and shared use path
- Pavement Markings

Diagram:
- Depress sidewalk or shared use path as required, slopes not to exceed 12:1
- Concrete ramp, max. slope 5:1
- Buffer
- Street
- 15' depressed curb
- 10'
- Sidewalk or shared use path
- Required

Section 2.2.D
Travel Lanes: Speed Management

• Speed Management Tools
  – Roundabouts and Mini Roundabouts
  – Traffic Calming Measures
  – Lane Narrowing
  – Road Diet

• Traffic Calming Measures
  – Raised Center Median
  – Intersection Curb Extension
  – Midblock Street Narrowing
  – Chicane
  – Mountable Truck Apron
  – Speed Hump / Raised Crosswalk
  – Raised Intersection
Section 2.1.E.10.c.1

Raised Center Median

- Concrete Barrier
- 15" combination curb and gutter
- No lip at street
- Detectable warning surface truncated domes

PLAN

FACE OF CURB TO FACE OF CURB

15' 10'

15'

SECTION 2.1.E.10.C.1

6" Permanent preformed thermoplastic double yellow pavement markings and single yellow pavement markings along island

Crosswalk

CONCRETE BARRIER CURB (TYP)

RED DECORATIVE PORTLAND CEMENT CONCRETE STAMPED RUNNING BOND BRICK PATTERN

Place 4" PVC sleeves in island for traffic control signs

R-6a(1) (24" x 36")

R-4(7) (24" x 36")

CMH-3 (18" x 18")

CM-4 (18" x 18")

CM-3 (18" x 18")

HOWARD COUNTY DESIGN MANUAL VOLUME III UPDATES
Intersection Curb Extension

Section 2.1.E.10.c.2
Midblock Street Narrowing

Section 2.1.E.10.c.3
Chicane
Mountable Truck Apron

Section 2.1.E.10.c.5

- 8.0" RED DECORATIVE PORTLAND CEMENT CONCRETE - MK #7, STAMPED RUNNING BOND BRICK PATTERN
- 6.0" GRANULAR AGGREGATE BASE
- 7" COMBINATION CURB AND GUTTER (SEE DETAIL 14-01-01)

Diagram:
- 3% OR VARIES
- 2%
- VARIES 1'-6"
- VARIES 1'-6"
Speed Hump / Raised Crosswalk

**Section 2.1.E.10.c.6**

- **NOTES:**
  1. ACCOMMODATE FOR DRAINAGE ON UPHILL SIDES OF RAISED CROSSING BY PLACING DRAINAGE INLETS OR BY OTHER METHODS TO PREVENT FLOODING.

**PROPOSED CURB:**
- Existing Curb for Retrofits
- ADA Ramps
- PCC Coat 2%
- Proposed Pavement (Existing Pavement for Retrofit)
- Milled Notch 2" x 2"

**SHOULDER DETAIL FOR STREETS WITH CURBS AND CROSSWALKS**

- **Center in Lane One:** Pavement Marking for Lane, See Pavement Marking Detail on T-420 (Typ).

- **W11-2**  
  (30" x 30")  
  * W16-7p  
  (24" x 12")

- **W11-2**  
  (30" x 30")  
  * W16-9p  
  (24" x 12")

**HUMP**
- Ref. Detail T-7.03 for Sign Details

**DRAINAGE INLET:**
- See Note 1

**EDGE OF PAVEMENT:**
- Interrupt Pavement Markings

**PER MILEAGE TABLE R-3.4**

**PROPOSED CURB FOR RETROFIT**

* Image of a street scene showing a speed hump and a raised crosswalk.

* Image of the Section 2.1.E.10.c.6 page from the Howard County Design Manual Volume III Updates.
Raised Intersection

Section 2.1.E.10.c.7
2.3 Geometric Design

- Updated to 2018 *Green Book*
- Adjustments to new Street Types
- Additional example items to look for in Sight Distance
- Additional emphasis on non-motorized modes
- Update to where driveways are allowed in a permanent Tee turn around (one on each end)
- **Gates and Bollards**
- Discouraging superelevation less than 45 mph
- Desired 5% maximum grade where possible
- Cul-de-sac grades updated
Gates and Bollards

ROADWAY

30'-60'

Bollard (Typ.)

PATH

8.33% MAX. RAMP

10'

1'

5' Min. 6' Rec.

Safety striping around bollard
2.4 Intersection Design

• Must accommodate all modes of travel
• Geometric Design
• Roundabouts
• Alternative Intersection Types
• Pedestrian Design Elements
• Shared Use Paths at Intersections
• Bicycle Facilities at Intersections
• Transit Facilities at Intersections
• Right of Way
• 4 Sections on Intersection Design Procedures
Geometric Design: Spacing

- Minimum Intersection Spacing table remains, based on functional classification
- Note that a master planning process may identify a different spacing
Geometric Design: Turning

R₁ = Actual Curb Radius
R₂ = Effective Radius

Source: Modified from San Francisco "Better Streets Plan"
Geometric Design: Turning

• Curb radii should be as small as possible
• Minimum radius table provided based on street types
• Use turning templates for design and control vehicles
• Intersections must be designed for all users
• Design Objectives:
  - Optimize sightlines / visibility between all users
  - Reduce conflict areas – minimize crossing distances
  - Provide reduced turning speeds
### Geometric Design: Turning

**TABLE 2-20**

**MINIMUM CURB RADIUS FOR INTERSECTION**

<table>
<thead>
<tr>
<th>Receiving Roadway Street Type*</th>
<th>Radius (feet)</th>
<th>Design Vehicle</th>
<th>Control Vehicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neighborhood Yield Street</td>
<td>15</td>
<td>P</td>
<td>BUS-40</td>
</tr>
<tr>
<td>Rural Development Street</td>
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<tr>
<td>Alley</td>
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</tr>
<tr>
<td>Boulevard with Parking</td>
<td>15</td>
<td>SU-40</td>
<td>Refer to Table 2-2</td>
</tr>
<tr>
<td>Neighborhood Connector with Parking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neighborhood Street 1 with Parking</td>
<td></td>
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<tr>
<td>Country Road</td>
<td></td>
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<tr>
<td>Town Center Connector with Parking</td>
<td></td>
<td></td>
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<tr>
<td>Town Center Street with Parking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neighborhood Street 2 with Parking</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Industrial Street</td>
<td>20</td>
<td>SU-40</td>
<td>Refer to Table 2-2</td>
</tr>
<tr>
<td>Parkway*</td>
<td>50</td>
<td>WB-62</td>
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</tr>
<tr>
<td>Boulevard no Parking</td>
<td>Consult DPW</td>
<td>WB-62</td>
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</tr>
<tr>
<td>Town Center Connector no Parking</td>
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</tr>
<tr>
<td>Town Center Street no Parking</td>
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</tr>
<tr>
<td>Neighborhood Connector no Parking</td>
<td></td>
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</tr>
<tr>
<td>Neighborhood Street 1 no Parking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neighborhood Street 2 no Parking</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

* *Note: Consult DPW for criteria when a Parkway is either the receiving or departing roadway*
- Reduce auxiliary lanes to the extent possible
- In most cases, avoid acceleration lanes
- When do we consider auxiliary lanes?
  - Design speed $\geq 40$ mph
  - Passenger loading / unloading; bus stops
  - When the LOS study indicates a requirement
- Match adjacent through lane width
- Do not interrupt bicycle accommodation through the intersection / driveway
Geometric Design: Channelization

- Channelization discouraged, but sometimes needed (e.g., at acute angle intersections)
- Must consider alternatives and demonstrate why channelization is preferred
- Reduce speeds with geometric design
- Accommodate crosswalks proactively
Roundabouts & Mini-Roundabouts

- Bicycles may traverse the circulatory road OR transition to an off-road facility – both options are to be provided

- Pedestrian facilities must consider visual disabilities
  - Clear routes
  - Ramp orientation
  - Median refuges
Pedestrian Design Elements

- Crosswalk guidance provided
- Intersection curb ramp layout: typically one curb ramp oriented to cross each roadway
- Must consider existing / funded sidewalks and paths
- Layout must accommodate future facilities based on master plans
- Signal design will include:
  - Accessible Pedestrian Signals
- Signal design may include based on analysis:
  - Pedestrian Recall
  - Leading Pedestrian Intervals
  - Right on Red Restrictions
- Midblock Crossing Design
Pedestrian Design Elements

- Geometric Design Strategies
  - Center median islands and curb extensions
  - Raised crosswalks and raised intersections
  - Truck aprons – not overlapping with pedestrian routes
  - Centerline hardening

Source: Modified from the Insurance Institute for Highway Safety
Shared Use Paths at Intersections

- See AASHTO’s *Bike Guide*
Bicycle Facilities at Intersections

Exposure Level:
High
CONVENTIONAL BIKE LANES AND SHARED LANES

Exposure Level:
High to Medium
SEPARATED BIKE LANES WITH MIXING ZONES

Exposure Level:
Medium to Low
SEPARATED BIKE LANES THROUGH ROUNDABOUTS

Exposure Level:
Low
PROTECTED INTERSECTIONS
A protected intersection
Bicycle Facilities at Intersections

- Through bike lanes
- Combined bike lane/turn lane
- Bicycle box
- Two-stage turn queue boxes
- Side Street Crossings
- Conflict zones

Source: NACTO “Urban Bikeway Design Guide” (Ref. 12)

Source: “Small Town and Rural Multimodal Networks,” FHWA (Ref. 27)
Transit Facilities at Intersections

- See MDOT MTA’s *Bus Stop Design Guide*
Right of Way

- Right of way shall be adequate to accommodate all design features.
- The right of way width behind a sidewalk or path should be no less than the width on the approach roadways.
2.5 Driveways

- Updates to Corner Spacing
- Minimization of Auxiliary Lanes
- New guidance on interface with sidewalks and shared use paths, including grade breaks
- New guidance on pavement markings at driveways
Sidewalks/Paths at Driveways

Guidance added to avoid excessive grade breaks in driveways
Pavement Markings at Driveways

Source: FHWA “Separated Bike Lane Planning and Design Guide” (Ref. 13)
2.6 Parking Requirements

• Bicycle Parking Guidance:
  – *Bicycle Parking Guidelines* by the Association of Pedestrian and Bicycle Professionals
  – Bicycle parking should be convenient to destinations
  – Bicycle parking should not block circulation by people walking and bicycling
2.7 Street Lighting

- Consider safety for all users of the street when selecting street lighting types and locations
1. Updated curb types to the new street types
2. Topsoil Depth Provided
3. Traffic Barrier
   - Post Placement / Protection when exposed to pedestrians and bicycles
   - NOTE:
     - MASH standards have been implemented recently
     - MDOT SHA has many changes to traffic barrier standard details
     - An update to the MDOT SHA Guidelines document is forthcoming
4. Phased Construction (consider pedestrians / bikes)
5. Bus Stop Guidance
6. Mailboxes and Sidewalks / Shared Use Paths
Bus Stop Guidance

- See MDOT MTA’s *Bus Stop Design Guide*
Chapter 2 Appendices

- Appendix A will remain for minor retrofit projects and can be used with approval from DPW
- Appendix I is added, with the Sidewalk Expansion Policy
Chapter 3:
Design of Bridges, Retaining Walls, and Small Structures
Chapter 3: Structures

• Updates to Standards
• Guidance on Constructability
• Guidance on pedestrians and bicycle facilities on and under bridges
  – Provide continuity of existing or planned sidewalks or bicycle facilities; if none are planned, provide 10’ shoulders on each side of the bridge
  – Provide an additional foot of clearance under pedestrian bridges
  – Horizontal/Vertical separation guidance (5’ offset or barrier/railing)
  – Expansion joints should be smooth and slip resistant
Chapter 3: Structures

- Guidance on shared use path bridges and underpasses
  - Dimensions, profile and grade
  - Loading, railings, and fencing
  - Lighting and drainage
Chapter 3: Structures

• Bridge Rehabilitation
  – Provide full widths of travel lanes, shoulders, and bicycle and pedestrian facilities to the extent practical
  – If not practical, consider retrofits that provide additional space for pedestrian and bicycle travel
  – If pedestrian and bicycle facilities are inadequate, prioritize narrowing or reconfiguring motor vehicle lanes or medians to provide space for pedestrians and bicyclists
Volume IV
Standard Detail Updates
Updated Details

- Typical Sections updated to new Street Types
- Pavement Sections updated to include Street Types
- Tee Turn Arounds updated to allow driveways on the end of the Tee
- Speed Management Measure Details Added
  - Pedestrian Refuge
  - Intersection Curb Extensions
  - Midblock Street Narrowing
  - Truck Apron
  - Raised Crosswalk
  - Intersection Table
Any questions for us?

If you wish to submit a question or comment, please use the chat feature.
Thank you for participating!

Interested in more details?

Visit [www.howardcountymd.gov/DM-updates](http://www.howardcountymd.gov/DM-updates)

or scan here to:

- Look for future Training Opportunities
- Read the draft Design Manual
- Take the survey

Or search “Howard County Complete Streets Design Manual”