

INSERT TEXT on page 16 before the “Public Transit Components” section.

### **Master Plan Right-of-Way**

All Master Plan Rights-of-Way identified and amended to the MPOHT as defined as the minimum Rights-of-Way identified for the road section indicated. This is based on minimum cross-section design requirements in Chapter 49 of the Montgomery County Code and COMCOR §49.28.01 – Context Sensitive Design Standards. This minimum Right-of-Way does not include intersection Right-of-Way needs which will likely be in addition to this minimum. Also, this minimum standard may be subject to change based on any future changes to Montgomery County Department of Transportation’s design standards.

### **Target Speeds**

Per COMCOR §49.28.01 Standard 020.01, “Target speeds serve as an important factor for determining design speeds, influencing operating speeds, and serving as a reference for establishing speed limits.” It is defined in this regulation as “the speed at which vehicles should operate on a thoroughfare in a specific context, consistent with the level of multimodal activity generated by adjacent land uses, to provide mobility for motor vehicles and a safe environment for pedestrians and bicyclists. The target speed is usually the posted speed limit.” Target speed is the goal or desired ultimate outcome of the road when all of the factors that influence operating speed are in place. Target speeds are not synonymous with posted speeds, but are the speeds toward which planning, engineering, enforcement, and education should be seeking to move toward. A change in speed limit signing is not in itself a method of reducing speeds, but is only one part of a wider approach to comprehensively reducing operating speeds.

In some cases, the level of effort needed may not occur until well beyond the lifetime of an area or sector master plan, particularly along streets expressly planned and designed for arterial purposes which are unlikely to change in design and/or purpose. In many cases, the land development patterns are not urban in nature and may not be so for a long time (zoning may even prevent them from developing in patterns conducive toward 25 MPH streets), and reconstructing a street's design may necessitate substantial funding that may not be realized for a long time.

As part of the commitment to the Complete Streets design philosophy, it is important to move away from traditional traffic engineering paradigms, such as an over-reliance of the use of 85<sup>th</sup> percentile speeds in setting speed limits, and the consideration of more innovative and context-sensitive speed/design philosophies such as that espoused by the National Association of City Transportation Officials (NACTO)<sup>1</sup> that promote a more proactive urban street design paradigm (Target Speed = Design Speed = Posted Speed).

### **Existing and Master Planned Lanes**

Within the MPOHT, only continuous thru travel lanes are indicated for each highway segment. Therefore, a five-lane undivided road section would be noted as four existing lanes, not five.

---

<sup>1</sup> National Association of City Transportation Officials, Urban Street Design Guide, 2013.

## **Master Planned Interchanges**

The MPOHT includes interchanges as recommended in previous master plans and adopted by the County Council. Some of these interchanges have since been constructed (e.g., MD355 at Montrose Parkway), some are currently under or scheduled for construction (e.g., Georgia Avenue at Randolph Road and I-270 at Watkins Mill Road), some have been recommended and studied but remain unbuilt (e.g., I-270 at Little Seneca Parkway, US Route 29 at Industrial Parkway), and some are older recommendations that may be uncertain as to future purpose and need (e.g., MD 355 at Cedar Lane, US Route 29 at Musgrove Lane). The inclusion of these interchanges in the MPOHT is not an endorsement of the technical feasibility or current desire for these improvements. The intent of a Master Plan recommendation is to identify a long-range need which should be refined and assessed by relevant transportation agencies (i.e., MDOT-SHA and/or the Montgomery County Department of Transportation).

There are two planned interchanges that are proposed for HOV/transit access only. One is I-270 at Dorsey Mill Road in Germantown, and the second is I-270 Western Spur at Fernwood Road.

## **Current Master Plan of Highways and Transitways Mapbook and Classification Tables**

The current MPOHT Mapbook, and Classification and Interchange Tables are provided in Appendix A. This is up-to-date effective December 5, 2017 with the inclusion of changes from the Rock Spring Sector Plan, the Grosvenor-Strathmore Minor Area Master Plan, and the White Flint 2 Sector Plan. Transit-related information is shown in this Mapbook.

INSERT page 18 following Table 4

A summary of the transit components of the MPOHT is provided in Figure 2. It should be noted that this includes a heavy rail recommendation for third tracking the MARC Brunswick Line between the Frederick County line and Metropolitan Grove (adopted in the 2013 Countywide Transit Corridors Functional Master Plan). In addition, a Transitway and Bicycle-Pedestrian Priority Areas Mapbook, and transitways and transit stations tables are provided in Technical Appendix B. This Mapbook shows all adopted transitways, transit stations and BPPAs in one Mapbook. The Transitways table provides more detailed information on each Master Planned transit line, and the Transit Stations table provides more detail information on each Master Planned transit station. Technical details and components of Master Plan recommendations are contained in the adopted Master Plans indicated in these two tables and each element is presented in sequential order (typically in the inbound direction – outer suburbs toward the urban core). For each Table, details are provided on the transit mode (BRT or LRT), the Master Plan where the transit element was amended to the MPOHT, and identification of alternate routes and stations for some transitways. The transitway elements are also contained within the highway table Mapbook in Appendix A.

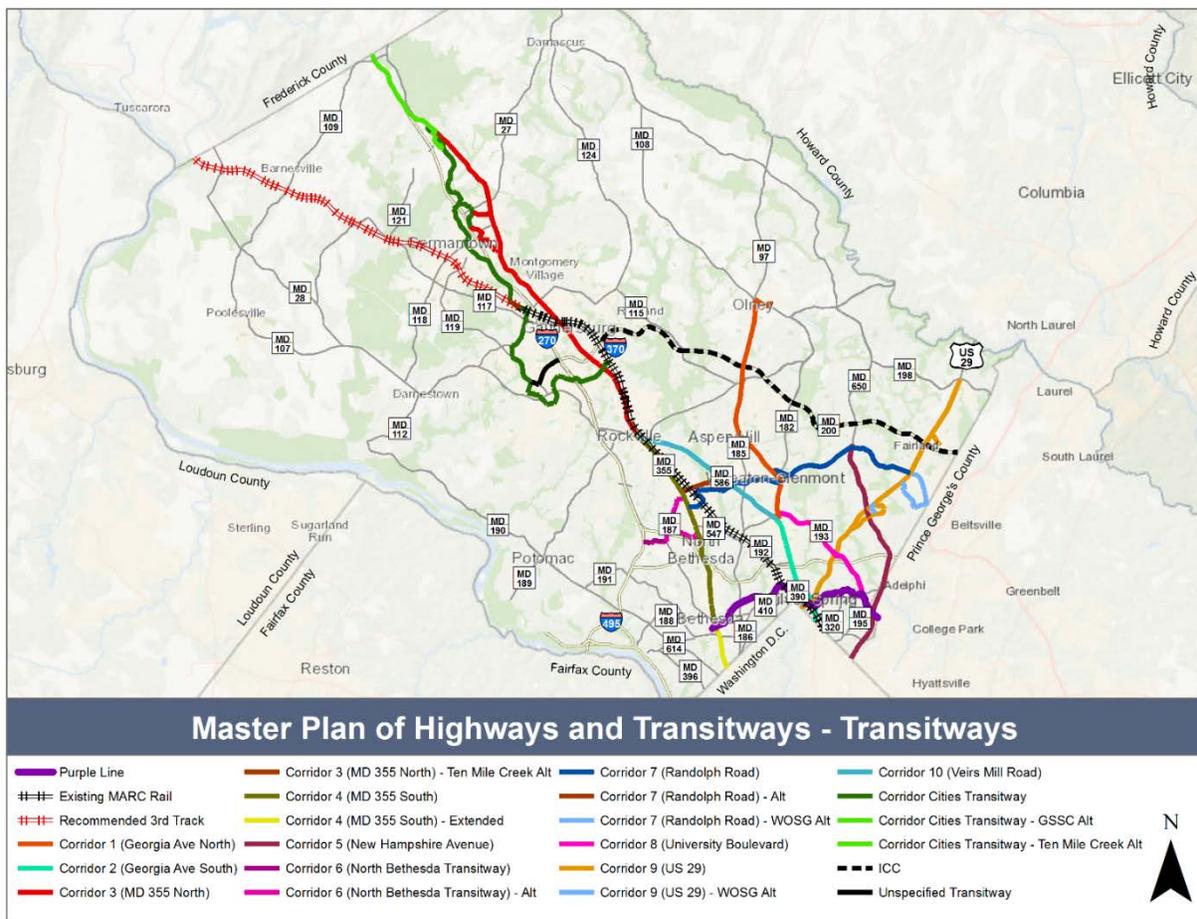


Figure 2 Map of Adopted Planned Transitways

INSERT on page 68 before “Inclusion of HOV Lanes”

### Bicycle Master Plan Right-of-Way Needs

The Technical Update to the MPOHT and the Bicycle Master Plan have been timed to ensure that recommendations between the two functional master plans are consistent. For the MPOHT, the key concern is the ability to provide the Bicycle Master Plan recommendations within the Master Plan rights-of-way. A detailed review was conducted by the MPOHT and Bicycle Master Plan teams to identify road corridors where ROW deficiencies would be experienced with Bicycle Master Plan recommendations. Table 17 below presents ten road segments where additional Right-of-Way will be needed. Both the existing Master Plan ROW and the Proposed ROW are shown. The increases range from two feet on Century Boulevard, to up to ten feet on the other road segments.

**Table 17: Recommendations for ROW increases to accommodate Bicycle Master Plan Recommendations**

ID	Name	From Location	To Location	Classification	Master Plan	Existing Lanes	Planned Lanes	Master Plan ROW (Feet)	Proposed ROW (Feet)
1	East Ave	Upton St	University Blvd (MD 193)	Primary Residential	Wheaton CBD Sector Plan	2	2	50	60
2	Leland St	Wisconsin Ave (MD 355)	46 <sup>th</sup> St	Business	Bethesda Downtown Plan	2	2	60	70
3	Aspen Hill Road	Connecticut Avenue	Georgia Avenue	Arterial	Aspen Hill	4	4	80	90
4	Blackwell Road	Darnestown Road	Great Seneca Highway	Business District Street	Great Seneca Science Corridor	NA	2	70	80
5	Connecticut Avenue	Georgia Avenue	Bel Pre Road	Arterial	Aspen Hill	4	4	80	90
6	Cherry Hill Road	US Route 29	Prince George's County	Arterial	White Oak Science Gateway	4	4	80	90
7	Century Boulevard	Dorsey Mill Road	Aircraft Drive	Business with Planned BRT	Germantown Employment Area Sector Plan	4D	4D+1T	134	136
8	Summit Avenue	Plyers Mill Road	Farragut Avenue	Business (Planned)	Kensington Sector Plan	2	2	60	70
9	Summit Avenue Extended	Connecticut Avenue	Plyers Mill Road	Business (Planned)	Kensington Sector Plan	2	2	60	70
10	Twinbrook Parkway	950' North of Ardennes Avenue	City of Rockville	North Bethesda/ Garrett Park	Twinbrook Sector Plan	4	4	104	110

**INSERT BEFORE MPOHT TOOLS SECTION ON PAGE 72/73.**

### **Greenhouse Gas Emissions Analysis**

Montgomery County enacted a law (Bill 32-07) in 2008 to require the formulation of a plan to stop increasing greenhouse gas (GHG) emissions by the year 2010 and reduce emissions to 20 percent of 2005 levels by the year 2050. A subsequent Montgomery County law (Bill 34-07) requires the Planning Board to estimate the carbon footprint of master plan recommendations and to make recommendations for carbon emissions reductions.

In June 2017, Montgomery County reaffirmed its commitment to meeting the goals of the 2016 Paris Climate Agreement. In addition, the county endorsed the goals of the Under2 Coalition MOU, a memorandum of understanding signed by 12 jurisdictions in 2015. The county's action aims to reduce greenhouse gas emissions 80 to 95 percent below 1990 levels or limit emissions to less than two metric tons per capita by 2050 (Montgomery County Council Resolution 18-846).

In December 2017, Montgomery County adopted Resolution 18-974 to accelerate the county's efforts to decrease greenhouse gas emissions by committing to a reduction of 80 percent by 2027 and reaching 100 percent elimination by 2035. The resolution initiates large-scale efforts to remove excess carbon from the atmosphere. The primary emission of interest is carbon dioxide.

The Montgomery County Planning Department uses a spreadsheet developed by King County, Washington and adapted for use in Montgomery County, Maryland to estimate the carbon footprint of recommendations in the County's master plans. To project total emissions for a master plan, the spreadsheet model considers embodied energy emissions, building energy emissions, and transportation emissions.

The model documentation defines embodied emissions as "emissions that are created through the extraction, processing, transportation, construction and disposal of building materials as well as emissions created through landscape disturbance" (by both soil disturbance and changes in above ground biomass). Building energy emissions are created in the normal operation of a building including lighting, heating cooling and ventilation, operation of computers and appliances, etc. Transportation emissions are released by the operation of cars, trucks, buses, motorcycles, etc. Vehicle Miles Traveled (VMT) is the primary factor driving changes in transportation emissions.

The spreadsheet model is run for existing conditions, then run again to get projected emissions that will result from the development proposed by the master plan. In the Technical Update to the Master Plan of Highways and Transitway, no new facilities are being proposed, so there will be no change in embodied emissions. The MPOH deals with roadways and transitway, not buildings, so there is no emissions contribution from building energy. For determining transportation emissions, the methodology examines the vehicle miles traveled (VMT) reduction estimates generated from the long-range plan forecast. The VMT are then converted to gallons of gasoline burned and carbon dioxide

equivalent amounts (CO<sub>2</sub>e) based on factors used in the King County, Washington Greenhouse Gas Emissions Worksheet version 1.7.

The MPOHT Technical Update was developed based on a composite of transportation recommendations from all active and adopted Master Plans within Montgomery County. The proposed technical changes, including re-classification of streets and designation of new Urban Road Code Areas, are not projected to create either increases or reductions in vehicle miles traveled. (VMT). Therefore, the total greenhouse gas (GHG) emissions change as a result of this technical update is negligible.

INSERT text below on page 75

In addition to the MPOHT Workbook which presents both highways and transitways, a transit-focused Mapbook has also been prepared to highlight the adopted transitways, transit stations, and Bicycle-Pedestrian Priority Areas (BPPAs). This Mapbook and tables summarizing the transitway and transit station elements of the MPOHT are provided in Appendix E. No changes to transitways, transit stations or BPPAs are being recommended in this master plan technical update.

## **Public Hearing Outreach**

A public hearing was held on February 15, 2018 to solicit comments on the Public Hearing Draft of the Technical Update to the Master Plan of Highways and Transitways. At the public hearing, a total of 14 citizens spoke and comments were also received via mail and e-mail. In addition, detailed written comments were provided by the Montgomery County Department of Transportation (MCDOT) and by Maryland Department of Transportation – State Highway Administration (MDOT-SHA).

Summaries of the comments received with Planning Board responses are provided in Tables in Appendix F. The responses have been incorporated into the Planning Board Draft document as appropriate.

Key changes that occurred as part of this process include:

1. Enhancement of discussion and definitions in the Highway Mapbook section to provide more detail on Master Plan Right-of-Way, target speeds, and Master Planned Interchanges. An Interchange table was added to the MPOHT Mapbook and Classification table. These items are now provided in Appendix A.
2. Enhancement of the transitway component of this master plan with the inclusion of a transitways map, a transitways and Bicycle-Pedestrian Priority Areas Mapbook, a transitways table and a transit station table. The Mapbook and tables are now provided in Appendix B.
3. Modification of the discussion on traffic calming to remove the technical detail, which are under the purview of the Montgomery County Department of Transportation. For different road classifications, the discussion will focus on addressing whether speed humps are allowed by MCDOT and whether traffic calming (with or without speed humps/vertical deflection) are allowed by MCDOT.
4. Removal of the following road segments from the list of proposed classification changes:
  - a. Dorset Avenue between River Road and Wisconsin Avenue,
  - b. Father Hurley Boulevard between Crystall Rock Drive and CSX Tracks,
  - c. Gue Road between 5000' East of Ridge Road and Howard Chapel Drive,
5. Addition of the following road segments to the list of proposed classification changes:
  - a. Montrose Parkway from Montrose Road to Hoya Street – change from Arterial to Parkway,
  - b. Kara Road between Cannon Lane and Wolf Street – change from secondary street to Primary Residential Street,
  - c. Wolf Street between Kara Lane and New Hampshire Avenue - change from secondary street to Primary Residential Street,
  - d. Broadmore Road between Cannon Road and Tamarack Road - change from secondary street to Primary Residential Street,
  - e. Tamarack Road between Broadmore Road and East Randolph Road - change from secondary street to Primary Residential Street,
  - f. Springtree Drive between Randolph Road and Springloch Road - change from secondary street to Primary Residential Street,

- g. Springloch Road between Springtree Road and Hammondton Road – change from secondary street to Primary Residential Street,
  - h. Shaw Avenue between Hammondtown Road to New Hampshire Avenue – change from secondary street to Primary Residential Street,
  - i. Wayne Avenue between Manchester Place Purple Line Station and Flower Avenue – change from Primary Residential Street to Minor Arterial,
  - j. Flower Avenue between Wayne Avenue and Arliss Street – change from Primary Residential street to Minor Arterial,
6. Changes in classification of the following road segments:
- a. Warfield Road between Woodfield Road and MD108 – change proposed classification from Country Road to Country Arterial,
  - b. Dorsey Road between Warfield Road and MD108- change proposed classification from Country Road to Country Arterial,
  - c. Cashell Road between Bowie Mill Road and Emory Lane – change proposed classification from Arterial to Minor Arterial,
  - d. Castle Boulevard between Briggs Chaney Road and XXXX feet north of Briggs Chaney Road – change from Industrial Street to Business District street,
7. Removal of 25mph target speeds for the following Urban Road Code street segments:
- a. Cherry Hill Road between US Route 29 and Prince George’s County line,
  - b. Powder Mill Road between Prince George’s County line and New Hampshire Avenue,
  - c. Montrose Parkway – all road sections on this road in the White Flint and White Flint 2 Sector Plans already have a designated target speed of 35 mph,
  - d. Shady Grove Access Road – this road is owned by WMATA and not subject to Road Code standards,
  - e. Bethesda Church Road between Kings Valley Road and MD27 (Ridge Road).
8. Modification of Master Plan Rights-of-Way (ranging from two to ten additional feet) needed to accommodate the Bicycle Master Plan recommendations at ten locations,
9. Minor right-of-way correction and street designation number for Leland Street between Bradley Boulevard and Woodmont Avenue in the Bethesda Downtown Plan (reduction of right-of-way by 10 feet and designation as MA-3),