



Complete Streets Guidance

Case Study: MD 648
Baltimore-Annapolis Boulevard

November, 2013



Office of Planning and Zoning

URS

Executive Summary

The Anne Arundel County Office of Planning and Zoning, with funding support from the Baltimore Metropolitan Council, has developed this Complete Streets Guidance document to allow transportation professionals to better design roadway sections in order to optimize use by all modes.

This document includes a recommended Complete Streets Policy language that that may be incorporated into the County's proposed update to the 2009 General Development Plan (GDP) or Transportation Functional Master Plan (TFMP). The Complete Street Guidance also includes recommendations to modify the County's standard policies, parameters, and procedures; and templates were developed for how to apply Complete Street strategies. It is intended that the Complete Streets Policy and necessary modifications to the County's development and design process foster a long-term approach to incorporating multimodal and context sensitive strategies into future retrofit and new roadway designs elsewhere in the County, region, and State.

To support the planning effort, interviews were held with key staff from other local Maryland and Mid-Atlantic transportation agencies that have adopted and applied Complete Streets policies as guiding principles to their project development and regulatory processes. In addition, a case study in this document builds upon the County's Corridor Growth Management Plan (CGMP), which uses a "tool box" approach to identify ways to increase person throughput by applying strategies that promote transit, walking, biking, and ridesharing. The case study presents specific templates for five segments within the MD 648 (Baltimore-Annapolis Boulevard) corridor:

Segment 1: MD 168 (Nursery Road) to MD 170 (Camp Meade Road)

Segment 2: MD 176 (Dorsey Road) to MD 2 (Business Route)

Segment 3: Marley Neck Blvd to MD 177 (Mountain Road)

Segment 4: Magothy Bridge Road to MD 2 (Ritchie Highway)

Segment 5: Cyprus Creek Road to Jones Station Road.

A workshop was held for state and local transportation agency staff to learn about the advantages and disadvantages, regulatory requirements, and other factors associated with the planning and implementation of Complete Streets strategies. The goal of the workshop was to provide attendees with the tools necessary to advise elected officials and decision makers on the value of Complete Streets Policy adoption.

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Complete Streets Guidance

1. Background

The 2009 General Development Plan (GDP) forecasts show that travel demand in Anne Arundel County and the region will continue to grow. This growth will result in increased levels of congestion and fewer opportunities to provide facilities for transit, pedestrians, and bicyclists. Both the GDP and the Corridor Growth Management Plan (CGMP) include the conclusion that opportunities to physically expand highway capacity are extremely limited and cannot keep pace with demand. Furthermore, building new roads and/or widening existing roads often result in unacceptable fiscal, land use, environmental, and community impacts. Good planning practices must create options to meet existing and anticipated travel demand. There is clear evidence that members of the traveling public are seeking other options for mobility beyond the automobile. Accordingly, it is important for the County to identify, promote, and design better use of available right-of-way and road sections to optimize use by all modes, not merely single occupant autos, which is the predominant mode.



Anne Arundel County, MD

Complete Streets policies and strategies offer a way to effectively focus investments in transportation infrastructure. Experience in other jurisdictions indicates it may be possible to at least partially mitigate traffic congestion, reduce conflicts, and encourage use of alternative modes by implementing Complete Streets strategies. As travel demand grows, it will be important to promote and support more efficient reliance on multiple travel modes such as ridesharing, rail and bus transit, bicycling, and walking.

2. Purpose of the Complete Streets Guidance

Historically, road design was focused almost solely on cars and trucks while giving less attention to pedestrians, bicyclists and the mobility challenged. By implementing a Complete Streets Policy, the road building process (planning through construction and maintenance) would be

expanded to include pedestrian, bicycle, freight, and transit accommodations as core elements of roadway retrofits and improvements that best complement the needs of the communities and the land uses they serve.

This project builds upon the County's Unified Planning Work Program (UPWP) funded CGMP which uses a "tool box" approach to identify ways to increase person throughput for thirteen key regional and connector road corridors in the County.

With that as a basis, it is intended that the lessons learned from the Complete Street Guidance study will be applied elsewhere in the County, region, and State. It is also intended that the Complete Street Guidance will lead to the implementation of standard policies, parameters, and prototypes for how to apply Complete Street strategies.

3. Case Study

Anne Arundel County's Office of Planning and Zoning has identified MD 648 (Baltimore-Annapolis Boulevard) as a case study to support the Complete Streets Guidance. The intent of the case study is to explore the feasibility, affordability, and applicability of applying Complete Streets templates along the following five segments of MD 648, a prototypical arterial (see **Figure 1**):

- Segment 1: MD 168 (Nursery Road) to MD 170 (Camp Meade Road)
- Segment 2: MD 176 (Dorsey Road) to MD 2 (Business Route)
- Segment 3: Marley Neck Blvd to MD 177 (Mountain Road)
- Segment 4: Magothy Bridge Road to MD 2 (Ritchie Highway)
- Segment 5: Cyprus Creek Road to Jones Station Road.

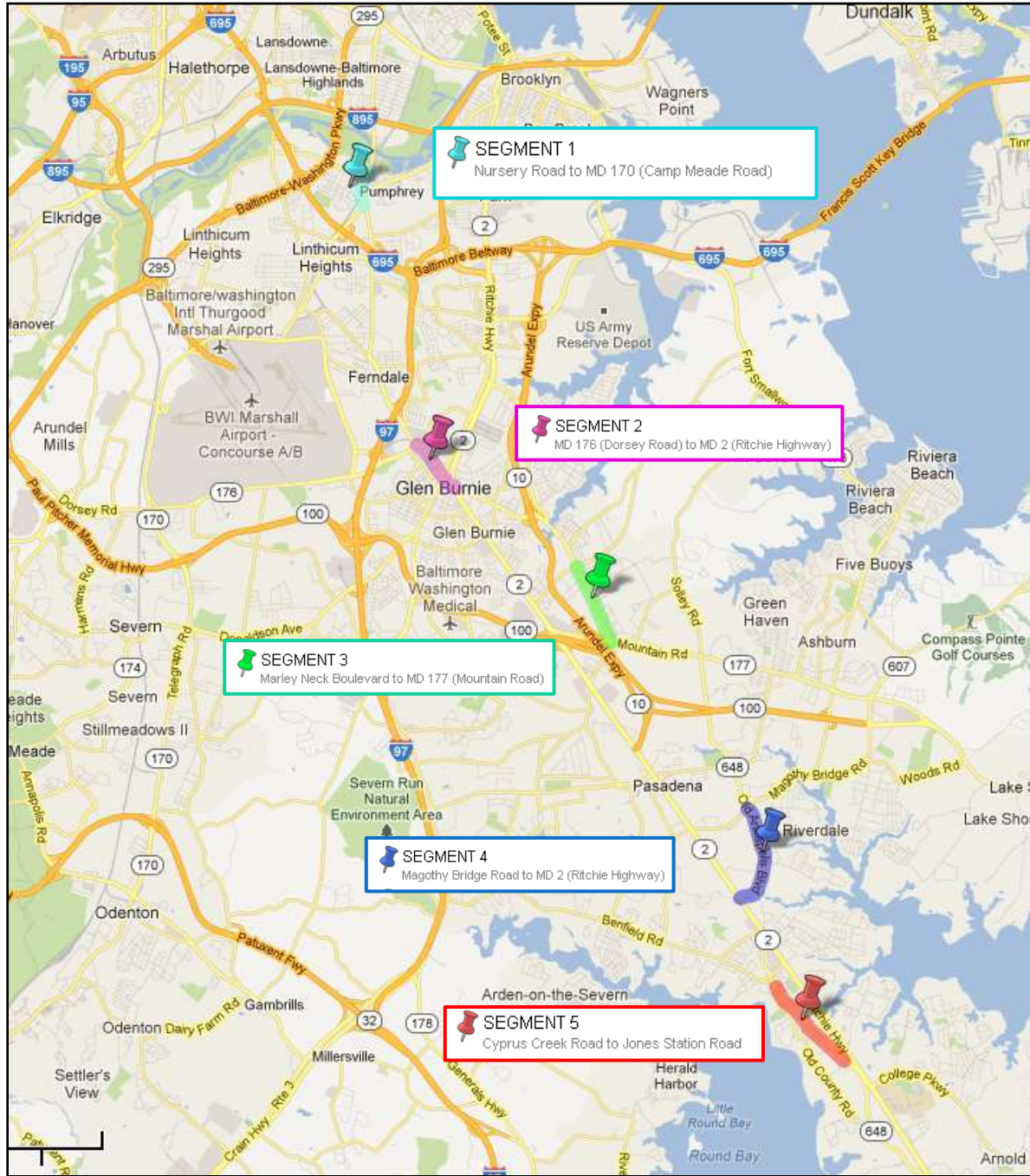


Figure 1- Study Area Map (Source: Google Maps 2013)

a) Existing Features

Technical Memorandum #1 (TM1), found in **Appendix A**, provides an inventory of existing features along the five segments of MD 648 (Baltimore-Annapolis Boulevard). It includes the surrounding land use patterns; existing roadway, bicycle, and pedestrian facilities; as well as traffic, transit, and accident data. It also documents the gaps and deficiencies in the current

transportation network and the transit and transportation amenities. The existing conditions data collected for this study indicates the need for improving and upgrading the existing infrastructure.

The data shows that there are opportunities to apply the principles and objectives of the Complete Streets approach to road building. The information presented in TM1 was also used to assist the County in better understanding the challenges faced in modifying or expanding existing infrastructure.

b) Improvement Options

Technical Memorandum #2 (TM2) which can be found in **Appendix B**, summarizes the assessment of a series of potential roadway improvements (templates) for the five selected segments of MD 648 (Baltimore-Annapolis Boulevard). The roadway improvements stem from a wide range of possible Complete Street strategies identified by the study team. The intent of the template approach is to provide roadway improvement recommendations for the MD 648 corridor that conform with the recommendations outlined in local small area plans and that support the County's goals for optimizing person throughput.

c) Potential Strategies

Technical Memorandum #2 also provides potential strategies for implementation along similar arterial roadways in the region. Using a combination of templates and proposed improvements, agencies and developers can relatively accurately and quickly assess improvement potential and estimate impacts and costs. They can also use the strategies to identify the connectivity needs of the area and apply the appropriate Complete Streets strategies to satisfy compatibility with local small area plans and address travel demand.

The specific Complete Streets design applications and elements that were considered can be grouped into the following four major categories:

- Traffic calming measures to lower speeds of motorized vehicles, including a road/travel lane narrowing, raised medians, shorter curb corner radii, elimination of free-flow right-turn lanes, angled/face-out parking, roundabout/traffic circle, landscaping, and roadway lighting.
- Pedestrian infrastructure include Americans with Disabilities Act (ADA) of 1990 compliant facilities such as sidewalks, traditional and raised crosswalks, refuge median, curb ramps, curb cut consolidation, curb extensions, signals, and driveway modifications.
- Bicycle accommodations, such as protected or dedicated on-road bicycle lanes, sharrows (wider shared travel lanes), wide paved shoulders, and bicycle parking.
- Oversize vehicle (Transit, Emergency, Freight, etc.) accommodations, such as bus stops, bus rapid transit, bus pull-offs, transit signal priority, bus shelters and amenities, dedicated bus lanes, Park and Ride lots, shared center turn lanes for emergency vehicles, and freight stops.

There are other proven measures (such as roundabouts or off-road shared use paths) available for consideration as Complete Street elements. Under the scope of this study, only measures were considered that were found appropriate for a typical arterial roadway at these locations (see **Appendix B**).

Benefits of Potential Strategies

The study team has developed Complete Streets strategies, applications, and specific recommendations for each of the segments of the MD 648 corridor with the intention of providing an optimal combination of safety enhancements, connectivity, and improved throughput for all modes of travel and all members of the traveling public. Efforts were made to ensure that community and commercial business needs were met, while attempting to keep improvements, costs, and related impacts to a minimum. The benefits associated with the proposed strategies along the five segments include the following:

1. Enhanced pedestrian safety and connectivity through improved ADA compatible sidewalk conditions, from new or improved pavement markings and crosswalks, raised curbs, and median refuge areas
2. Improved connectivity and safety for bicycle traffic through the addition of delineated 5-foot bicycle lanes throughout the segment. These bicycle lanes provide network connectivity options for local bicyclists as well as those that use light rail to reach the Baltimore & Annapolis Trail running parallel to this segment
3. Streetscape beautification and traffic calming through vegetated buffers and street trees
4. Improved accessibility and comfort through enhancements to transit facilities
5. Increased mobility for non-drivers through efforts to increase transit service
6. Adding bicycle amenities like lockers and racks would encourage more people to bicycle between destinations
7. Resurfaced roadways provide an improved surface quality for motor vehicles and bicyclists, and potential noise reductions
8. Improved drainage and curb and gutter, reducing road hazards during storm events, and providing a barrier between the sidewalks and travel lanes, therefore enhancing pedestrian safety
9. Overall improved connectivity meeting the local area plan goals of connecting neighborhoods to shopping areas, schools, parks, public transit, and other major destinations and improving the overall access for all modes of travel
10. Implementation efficiency and cost savings by implementing multiple elements at the same time.

Typical Right-of-Way and Cross Sections of Potential Strategies

To account for the varying existing conditions and needs within each segment of the MD 648 corridor, more than one typical section per segment was recommended. To meet driver expectancy, changes to these elements occur at intersections or other visual breaks (such as overpasses). The example MD 648 typical sections shown in **Figures 2, 3, and 4** illustrate how the elements fit within the available typically 80 feet existing right-of-

way wherever possible. The suggested typical minimum right-of-way widths are shown for the roadway and shoulder portions only. Additional right-of-way may be required to accommodate utilities, stormwater management, and other design features where applicable and necessary. Additional details on the typical sections and how elements were selected is available in **Appendix B**.

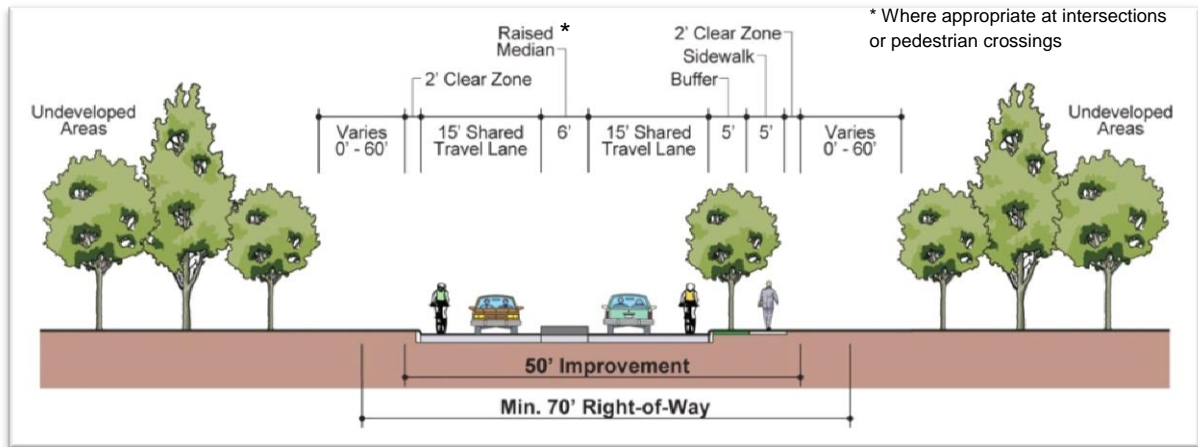


Figure 2 – Typical Section from Magothy Bridge Road to Ritchie Highway (MD 2) – (Segment 4)

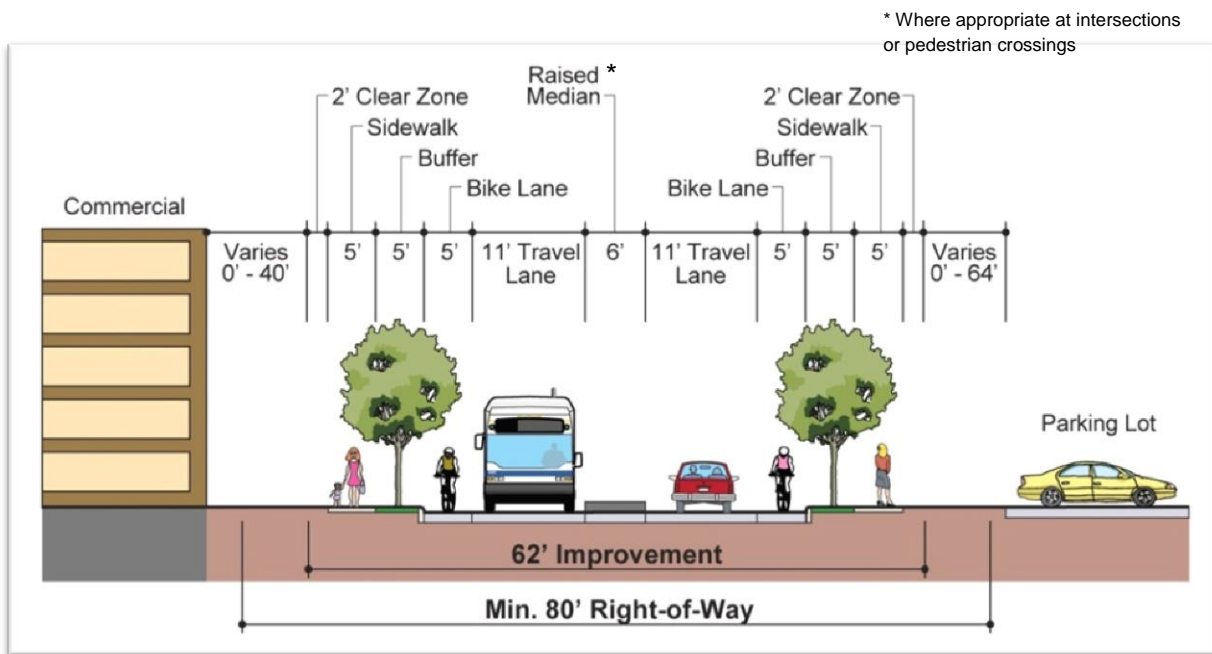


Figure 3 - Typical Section from the rail overpass to Camp Meade Road (MD 170) – (Segment 1)

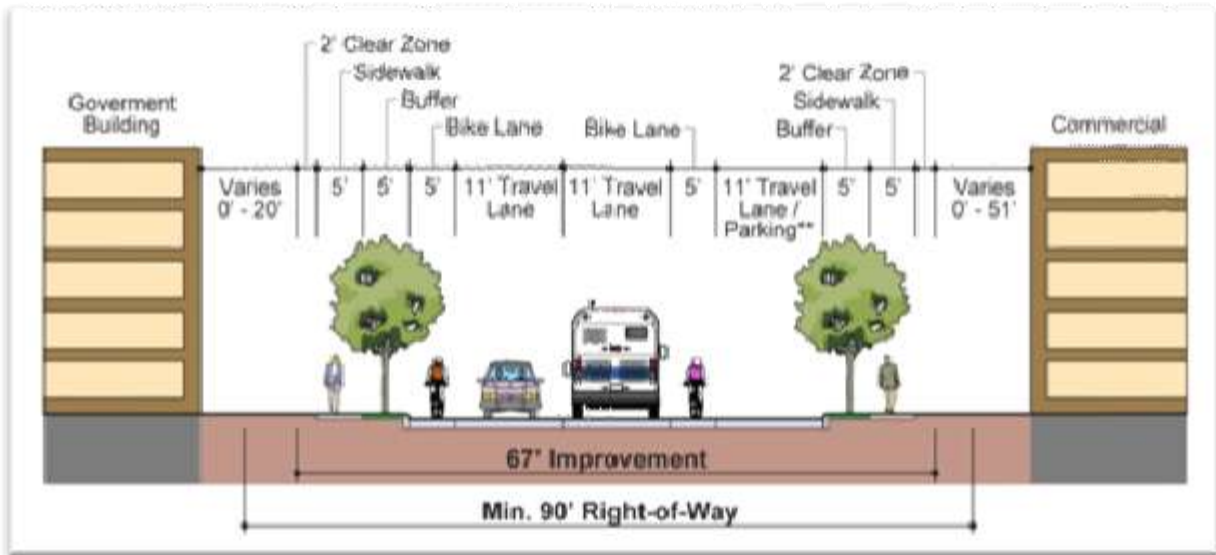


Figure 4 – Typical Section from the Social Services Parking Garage Access to Ritchie Highway (MD 2) (Segment 3)

All of the typical sections include facilities such as:

- Travel lanes, shared lanes, parking lanes, turn lanes, designated bicycle lanes,
- Raised medians (where appropriate at intersections or pedestrian crossings; may vary from 2ft to 30ft), channelizing islands, pedestrian refuge area, ADA compliant sidewalks, and
- Landscape buffers.

The footprint of the improvements vary from 50 feet to 67 feet in width resulting in a recommended minimum right-of-way width of 70 feet to 90 feet. Thus right-of-way impacts are expected along MD 648.

In addition to the typical section, improvements are recommended for several major intersections within each of the five segments. One intersection improvement, MD 648 at MD 177 is shown below:

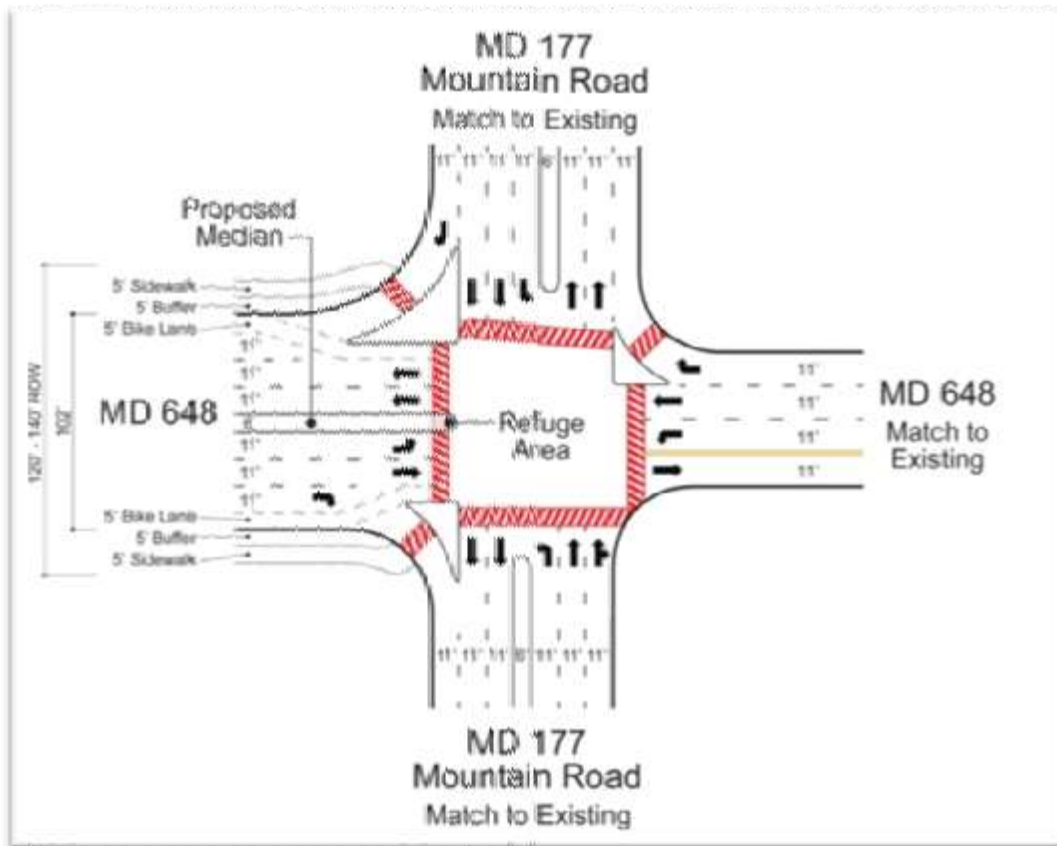


Figure 5 - Intersection Modification – MD 648 at Mountain Road (MD 177)

Preliminary review of the intersection traffic, safety, and geometric data demonstrates that the MD 648 at MD 177 intersection is in need of improvements; the following recommendations were made:

- Raised median, upgrades to channelizing median islands
- Improve turning movement geometrics at the existing free right-turn lanes
- Sidewalks and landscape buffer along both sides of MD 648
- New crosswalks at all legs of the intersection
- Pedestrian actuated signals
- Bike lane striping.

The required right-of-way width at this intersection is anticipated to be 120 feet to 140 feet. This exceeds the anticipated corridor right-of-way width of approximately 80 feet and exceeds the current available right-of-way width. Additional impacts, right-of-way acquisition, utility relocation, and costs can be expected at all major intersections.

Right-of-Way and Impact Minimization

For the five segments of MD 648, typical cross sections as described above were developed and evaluated to consider the following: right-of-way needs; regulatory

requirements; cost effectiveness; compatibility with adjacent land uses and local area plans; and the impacts and benefits to travel modes along the corridor.

The County's current minimum for right-of-way for a minor arterial is 80 feet and some of the recommended typical cross sections can be implemented where the full minimum right-of-way is available. However, implementing the proposed Complete Street strategies may impact adjacent properties and may require the acquisition of right-of-way. In addition, right-of-way needs at the intersections are likely to exceed the right-of-way needs along the main corridor alignment. Impacts to natural resources may be unavoidable in some cases; and impacts should be minimized or mitigated to the extent possible. If resource impacts cannot be avoided, additional coordination with environmental permitting agencies will be required.

Other design and regulatory requirements that may need to be addressed throughout the implementation process include drainage upgrades; stormwater and other water resource regulations; relocation of public and private utilities; structure modifications (culverts, bridges, overpasses, walls, etc.); maintenance of traffic and transit service; and others.

Every reasonable impact avoidance and minimization tool at the designer's disposal should be investigated – retaining walls, narrower pavement sections, steeper grading, alignment shifts, etc. However, there are cases where impacts are unavoidable, especially at intersections, where additional turn lanes and refuge medians are warranted.

In many cases, the safety, connectivity, and operational benefits of the proposed improvements may outweigh the associated impacts. The inclusion of Complete Street strategies in a project is more likely to earn community and decision maker support, if the project avoids or minimizes impacts to sensitive resources and is affordable. Additionally, if the proposed improvements are coordinated with the recommendations outlined in the local small area plans, they can provide supporting documentation for the need to enhance these facilities with Complete Streets design elements.

Unit Costs of Potential Strategies

Construction cost estimates were developed for the proposed improvements for the five segments along MD 648. The construction cost for a segment was developed assuming all proposed Complete Street strategies were constructed as part of a single project.

Cost estimates were developed using the Maryland State Highway Administration's (SHA) cost estimating manual as a guide to apply a combination of cost per mile and major quantities, plus contingencies typical for a planning level cost estimating effort. The construction costs associated with the proposed improvements account for grading, drainage, structures, paving, shoulders, landscaping, traffic, and utilities.

Added to the construction cost are:

- Preliminary engineering costs (15%),
- Administrative overhead costs (15.3%), and
- Contingency factor (30%) to account for feasibility planning level.

The cost estimates do not include any costs associated with potential right-of-way acquisition or detailed utility improvements and upgrades. Specific unit costs and quantities can be found in **Appendix B**.

4. Implementation Consideration

The Case Study described above examined potential strategies, used a tool box approach, and made Complete Streets implementation recommendations for MD 648, a prototypical arterial roadway. To examine other roadways and streets in the County or the region and to identify potential strategies and elements for Complete Streets implementation, Table 1 below lists a matrix of potential factors that may be considered for a project. The matrix can be used as a project initiation form and initial guide to identify the possible need to implement Complete Street elements and to reveal their potential challenges and impacts. Table 1 is populated with data for Segment 1: MD 168 (Nursery Road) to MD 170 (Camp Meade Road).

Table 1 - Implementation Consideration Matrix

| Element & Strategy Implementation Considerations | | Pedestrian Infrastructure | | | | | | | | Traffic Calming Measures | | | | | | Bicycle Accommodations | | | Oversize Vehicle Accommodations | | | | | NOTES: | | |
|---|---|--|------------|--------------------------|-----------------------------|------------|-------------------------------------|------------------------|-----------------|--------------------------|---|---------|---------------------------|--|----------|--|-----------------|-----------------|---------------------------------|---------------------------------------|---------------|-------------------------|-----------------------------|--------|--------------------|---|
| | | Sidewalks | Crosswalks | Pedestrian median refuge | Channelizing median islands | Curb ramps | Advanced pedestrian warning signals | Driveway consolidation | Curb extensions | Travel lane narrowing | Tighter curb corner radii or Free right-turn modification | Parking | Roundabout/traffic circle | Street trees and planter strips and ground cover | Lighting | Protected or dedicated bike lanes | Paved shoulders | Bicycle parking | Bus stops/shuttles | Bus rapid transit/dedicated bus lanes | Bus pull offs | Transit signal priority | Bus shelters and amenities | | Park and Ride lots | |
| Segment 1: MD 168 (Nursery Road) to MD 170 (Camp Meade Road) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Functional Classification: Minor Urban Arterial Posted Speed: 40 mph AADT (year): 14,944 (2011) | | Notes: | | | | | | | | | | | | | | | | | | | | | | | | |
| Existing Inventory and Need | Are Existing Facilities Present? | Y | Y | Y | N | Y | N | N | N | N | N | N | N | N | N | N | N | Y | N | Y | N | N | N/A | N | N | |
| | Are Facilities ADA Compliant? | N | N | N | | N | | | | | | | | | | | | N | | | | | | | | |
| | Are there Apparent Facility Deficiencies? | Y | Y | | | Y | | Y | | | | Y | Y | | Y | | | Y | | | | | | Y | | |
| | Are there Apparent Network Deficiencies? | YES, NO CONSISTENT SIDEWALK OR CROSS WALKS | | | | | | | | | | | | | | YES, NO CONSISTENT SHARED ROADWAY/SHOULDER WIDTH | | | | | | | | | | |
| | Is this Currently part of a Commuter/Bike/Recreation/Transit/Freight Route? (along main facility) | | | | | | | | | | | | | | | | | | TRANSIT CORRIDOR | | | | | | | |
| | Is this Currently part of a Commuter/Bike/Transit/Freight Route? (along side streets) | | | | | | | | | | | | | | | | | | TRANSIT CORRIDOR | | | | | | | |
| | Is Traffic Data Available? Pedestrian Counts, BLOC, Traffic Volumes, Ridership Data? | NO | | | | | | | | AADT (2011) | | | | | | NO | | | TRANSIT RIDERSHIP DATA | | | | | | | |
| | Are there known issues regarding Volume/Congestion? | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| | Are there known issues regarding Access? | Y | N | Y | N | Y | N | Y | N | N | N | Y | N | N | N | N | N | N | N | N | Y | N | N | N | N | N |
| | Is Accident Data Available? | YES, AVAILABLE | | | | | | | | | | | | | | | | | | | | | | | | |
| | Is the Accident Rate higher than normal? | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| | Is Land Use and Density data available? | YES, MOSTLY RESIDENTIAL AND SOME COMMERCIAL | | | | | | | | | | | | | | | | | | | | | | | | |
| | Are there major sites and land marks such as educational/medical/special needs citizens/transit centers/parking/employment centers/recreation sites within close proximity? | PATAPSCO VALLEY STATE PARK, NURSERY ROAD LIGHT RAIL STATION, PROPOSED OFF ROAD TRAIL | | | | | | | | | | | | | | | | | | | | | | | | |
| | Are there historic/tourist/special zoning district within close proximity? | | | | | | | | | | | | | | | | | | | | | | | | | |
| Is Study Area addressed by local, County, or State Plans (Ped/Bike Plan, Small Area Plan, CGMP, Transit Development, Freight Plan, ...) | BROOKLYN PARK SMALL AREA PLAN, PED/BIKE MASTERPLAN | | | | | | | | | | | | | | | | | | | | | | | | | |
| Any known Community Needs and Desires? | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Any known Proposed Developments within close proximity? | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Potential Challenges and Impacts | Are Natural and Environmental Features present? (waters of the US, streams, wetlands, critical area, forest, specimen trees, TRE species, FIDS, ...) | TWO TRIBUTARIES, WOODED AREA | | | | | | | | | | | | | | | | | | | | | | | | |
| | Are Community/Cultural/Socio-Economic Features present? (low income, community centers, military facilities, ...) | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Are Archeological/Historic Features present? | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Are there topographical features present? (grading, ditches, swales,...) | STEEP SLOPES, ROADSIDE DITCHES | | | | | | | | | | | | | | | | | | | | | | | | |
| | Are there major above and underground utilities present? (traffic signals, poles, transmission lines, water mains, fiber optic ...) | APPARENT OVERHEAD LINES AND POLES | | | | | | | | | | | | | | | | | | | | | | | | |
| | Are there major structures present? (bridges, tunnels, culverts, rail lines, ...) | TRAFFIC SIGNALS, LIGHT RAIL OVERPASS, CULVERTS, BUILDING SETBACKS | | | | | | | | | | | | | | | | | | | | | | | | |
| | Are Stormwater Management Regulations affected? | YES, OPEN AND CLOSED ROADWAY SECTION, CULVERTS AND DITCHES PRESENT | | | | | | | | | | | | | | | | | | | | | | | | |
| | Available Property/Right-of-Way width? | 50 ft TYPICAL | | | | | | | | | | | | | | | | | | | | | | | | |
| | Are there any upcoming routine upgrades or maintenance projects expected? | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Is there an opportunity to combine projects (other agencies, private developers, residents, community groups,...)? | | | | | | | | | | | | | | | | | | | | | | | | | |
| Is there community support? | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Is funding secured? | N | | | | | | | | N | | | | | | N | | | N | | | | | UNKNOWN IN CONCEPTUAL STAGE | | | |

5. Policy Recommendations

As part of the County's effort to meet the needs of its traveling population, manage congestion, and also providing a safe and continuous network of facilities for pedestrians, bicyclists, and transit riders – the County developed a Complete Streets Policy to guide roadway retrofits and new construction.

Technical Memorandum #3 (TM3) found in **Appendix C** provides an overview of Anne Arundel County's current roadway development process, a review of Complete Streets definitions, a summary of Complete Streets policies developed by other transportation agencies, and a guidance on policy creation and adoption. Also included in TM3 are summary interviews held with other transportation agencies within the Mid-Atlantic region that currently have or are working towards adopting Complete Streets Policies and Implementation Plans. TM3 provides the recommended Complete Streets Policy language and suggested changes to the County codes and regulations for the County to implement and administer its own Complete Streets Policy.

a) Policy Implementation

The Complete Streets Policy requires actions that should be prioritized and executed by the Law Office, Office of Planning and Zoning, Department of Public Works, and the Department of Recreation and Parks as shown below in Table 2:

Table 2 - Policy Implementation Priority List

| Priority Modifications | |
|--|------------------|
| County Code <ul style="list-style-type: none"> • Article 16 Floodplain Management, Erosion and Sediment Control, and Stormwater Management • Article 17 Subdivision and Development - 17.4.202 Site Development Plans & 17.4.203 Review Process • Article 18 Zoning – 18.1.101 Definitions & 18.2.102 Policy | Law, OPZ and DPW |
| Guidance, Manuals, and Handbooks | |
| County Design Manual – Chapter 3 – Roads and Streets <ul style="list-style-type: none"> • Section I-B (Definitions) – Complete Streets (Add Definition) • Section II-B (Preliminary Considerations), Item 7 – Complete Streets (Add as new item) • Section III-F (Cross-Section Elements), Item 1 – Use of Typical Sections in Standard Details (Include requirements of Complete Streets Policy) • Section III-G (Intersection Design), Item 2 – Layout of Curbs, Pavement Edges and Property Lines at Intersections (Add Complete Streets Elements required for consideration) | OPZ and DPW |
| Landscape Manual | OPZ and DPW |
| Standard Specifications for Construction | DPW |
| Standard Details for Construction | DPW |

| Policy and Plans | |
|---|-------------------|
| General Development Plan (Transportation Master Plan) | OPZ |
| Pedestrian and Bicycle Master Plan | OPZ |
| Local Small Area Plans | OPZ |
| Corridor Growth Management Plan | OPZ |
| Land Use Reports | OPZ |
| Transit Development Plan | OPZ |
| Greenways Master Plan | Rec&Parks/ OPZ |
| Transportation Functional Master Plan | OPZ |
| Funding & Project Selection | |
| TIP Guidance, CIP, CTP | OPZ and DPW |
| Grant Funding | OPZ and DPW |
| Community Involvement | |
| Citizen Advisory Committee | OPZ and DPW |
| Planning Advisory Board | OPZ and DPW |
| Training and Research | |
| Training on ADA – Design Information and Implementation (See Minnesota DOT Example at http://www.dot.state.mn.us/ada/tools.html) | OPZ and DPW |
| Research SHA's Bicycle Policy & Design Guidelines May 2013 | OPZ and DPW |

b) Recommended Complete Streets Policy

This Complete Streets Policy is to ensure that the Anne Arundel County Office of Planning and Zoning and Department of Public Works and their partners routinely plan, design, construct, operate, and maintain new and modified transportation systems in a way that provides all users safe and efficient access to a comprehensive, integrated, and connected multi-modal network of transportation options.

While significant efforts to improve pedestrian, transit, bicycle, and motor vehicle related activities in conjunction with corridor streetscape initiatives have been and will remain at the forefront of the County's on-going scope of community enhancements, the incorporation of this Policy will provide the following:

1. Clearly defined and implementable changes to the overall project development process that will evaluate all applicable transportation modes during the project scoping phases and utilize enhanced design practices established in the County Design Manuals, Guides, and Handbooks.
2. Refined departmental and individual roles and responsibilities through all phases of project implementation to ensure that the maximum number of potential elements

- related to safety, accessibility, and convenience are considered for the transportation and/or community facilities being proposed.
3. A process by which exemptions can be reasonably requested.
 4. Defined performance measures to track success and failures and to establish a system of enforcement if policy requirements are not being appropriately satisfied.

This Policy states that all public street projects, both new and retrofit, in Anne Arundel County shall be designed and constructed in accordance with Complete Streets guiding principles. These include:

- Providing safe access for all users, including the elderly, young, abled, and disabled alike, by designing and operating a comprehensive, integrated, and connected multi-modal network of transportation options. Pedestrians, bicyclists, motorists, transit users, and freight operators should all be accommodated safety and benefit from the facility and its amenities.
- All transportation projects shall be designed and constructed to include accommodations for pedestrians, bicyclists, public transit, and motor vehicles operated by users of all legal ages and abilities. In addition, the County will work with partner agencies at the federal, state, regional and local levels (i.e., Maryland Transit Administration, Maryland State Highway Administration, Maryland Transportation Authority, Maryland Department of the Environment, Department of Natural Resources, Baltimore Regional Transportation Board, and any Federal or local agency involved in the regulatory process of highway development) through standardized planning efforts to ensure Complete Streets principles are incorporated in a context sensitive manner.
- Adhering to accepted or adopted design standards and construction specifications, and using the best and latest standards available.
- Incorporating context sensitivity and public involvement to ensure the needs of the community are properly identified and addressed using a balanced approach that will advocate a comparable level of safety and mobility for all users.
- Approaching every transportation improvement and project phase as an opportunity to create safer, more accessible streets for all users. These phases include, but are not limited to: planning, programming, design, right-of-way acquisition, construction, construction engineering, reconstruction, operation and maintenance. Other changes to transportation facilities on streets and rights-of-way, including capital improvements, re-channelization projects and major maintenance, must also be included.
- Adhering to this policy by any privately constructed streets and development access routes.

c) Recommended Policy Changes

The following section provides the specific recommended approach to incorporating Complete Streets Policy language for the County's existing manuals and guiding documents. This language can be modified as necessary to best reflect the ultimate Policy adopted by the County.

1) Corridor Growth Management Plan (2012)

Because the Corridor Growth Management Plan is considered a high-level planning document, with influence on many transportation related issues, it is imperative that it include a section that outlines the County's commitment to Complete Streets Policy implementation.

The CGMP should be revised to include the adopted Complete Streets Policy, which will in turn also be incorporated into the TFMP. A section dedicated to the Complete Streets Policy should be provided that outlines the objectives of the Policy, how the objectives were established, and ultimately how they should be implemented.

2) General Development Plan (2009)

The General Development Plan should be modified to include an introduction to Complete Streets in the opening paragraphs of the document. Under the section "State Planning Requirements" SHA's Complete Streets Policy should be introduced along with a statement that explains that the County has developed and adopted its own Policy which is included later in the document. Later in the section entitled "The Planning Framework" the Complete Streets Policy should be presented as a standalone tool in the County's comprehensive planning framework.

In addition, sections within the Transportation Plan should also be enhanced with detailed discussions on the inclusion of Complete Streets applications and elements. The sections *Land Use and Transportation Interaction* and *Design of Roadways* should include a few paragraphs that respectively discuss Complete Streets strategies as a context sensitive approach to integrating existing land-uses and community needs as part of a multimodal planning and design effort. It is further recommended that the requirements for Complete Streets Design Exemptions and Performance Measures be included as action items as emphasis on their importance to the overall County Plan.

Further supporting Complete Streets strategies, the 2013 PBMP outlines the following policies and actions from the General Development Plan that are included to "encourage the integration of bicycle and pedestrian facilities into roadway design as well as the subdivision and development review process". These initial policy elements are considered integral to the Complete Streets strategy and can be bolstered by the additional recommended language below:

"Policy 1: Continue implementation of the Bicycle and Pedestrian Master Plan to provide an expanded bikeway and sidewalk network and greater overall support for biking and walking. Actions include:

- *Develop a program for prioritizing the maintenance of existing pedestrian facilities based on pedestrian use and connectivity as well as maintenance need, and secure funding sources for its implementation.*

- *Monitor progress in implementing the pedestrian-related goals and objectives of the Bicycle and Pedestrian Master Plan on an annual basis.*

Policy 2: Ensure an interconnected community that provides multi-modal access to all neighborhoods. Actions include:

- *Establish and/or maintain sidewalks, trails, context-sensitive street design, and community-oriented transit services.*
- *All new streets should connect, wherever possible, to existing streets as well as future potential developments.*
- *Provide safe corridors for pedestrians and bicycles throughout communities.*
- *Include transit shelters in neighborhoods and business developments along designated routes.*
- *Identify publicly owned properties in the vicinity of transit stations that could be used for joint public / private development."*

3) Additional Planning Documents

While the plans reviewed above discuss broader tactics and strategies for the provision of pedestrian and bicycle facilities throughout Anne Arundel County, policy documents prescribe the detailed design and implementation requirements of these facilities. The County's main policy documents were reviewed in order to identify opportunities to update these documents to ensure that Complete Streets strategies and elements are considered throughout all stages of facility planning. The guidance documents reviewed include:

- Anne Arundel County Design Manual
- Anne Arundel County Code (Article 17 Subdivision and Development Guidelines)
- Anne Arundel County Code (Article 18 Zoning)
- Anne Arundel County Landscape Manual
- Anne Arundel County Transit Development Plan

As noted above, these guidance recommendations are included as suggested for the County to follow to finalize and enact the Complete Streets Policy; however, additional coordination between County departments and support professionals will be required to finalize the changes to each individual document.

a. Anne Arundel County Design Manual

The County Design Manual and Standard Details for Construction are two main governing documents for the design and implementation of transportation facilities within the County. The Design Manual, last revised in July 2006, is identified in the General Development Plan, and supported by Article 13 §2-202 of the County Code as the document of record for requirements related to roadway and transportation facility construction means and methods. The Standard Details for Construction provide the design details and plans that supplement the directives in the Design Manual.

The Design Manual is divided into twelve chapters that range from general instructions to right-of-way acquisition, roads and streets, bridges/culverts/retaining walls, stormwater management, landscaping, permitting, and more. The following provides recommendations for changes to a few specific chapters that would introduce and ensure implementation of Complete Streets strategies.

Chapter Three of the County Design Manual includes standards for County transportation facilities. Complete Streets related elements, namely pedestrian and bicycle facilities, are included here. According to the PBMP, The Design Manual states that the minimum sidewalk width shall be 4 feet and that sidewalks shall be five (5) feet wide if constructed contiguous to the curb. It states that in areas with high projected pedestrian volumes, the sidewalk "shall be made sufficiently wide to accommodate anticipated pedestrian demand". County right-of-way details also specify that all unpaved areas within County right-of-way should contain a grass buffer (no minimum requirement for the width of this buffer is provided).

The County Design Manual's sister publication The Standard Details for Construction contain details on typical sections and roadway classifications. Specifically, Section Six discusses typical section elements related to the requirements for the main roadway functional classifications (principal arterial, minor arterial, collector, local), with urban and rural options for several. The following typical sections include allocations for Complete Streets elements like travel lane widths, sidewalks, shoulders, bus stop widening, and bikeways:

- Principal Arterial (Urban) – Minimum 4-foot concrete sidewalk "as required" with buffer (Detail P-1)
- Minor Arterial (Urban) – Minimum 4-foot concrete sidewalk "as required" with buffer (Detail P-2)
- Collector (Urban) – Minimum 4-foot concrete sidewalk with buffer (Detail P-4)
- Local Street & Cul-de-Sac (Urban) – Minimum 4-foot concrete sidewalk with buffer (Detail P-6)
- Stopping Lane for Public Transportation (Detail P-13) – 6-foot concrete sidewalk from face of curb.

Roadway and Site Improvements are discussed in Section Seven of the Standard Details document. Typical sections are provided for Commercial Sidewalk (I-14) and Residential Sidewalk (I-15). In addition, five options for sidewalk ramps are provided (Details I-18 through I-22) to address ADA requirements.

Bicycle facilities are also discussed in Chapter Three of the Design Manual. The Design Manual mentions the following in regards to bicycle facilities:

- "Bikeways shall be constructed where directed by PACE" (Planning and Code Enforcement, now the Office of Planning and Zoning) and that the "Designation

of bikeways within the roadway is the responsibility of the Director of Public Works."

- "Residential areas, school and open space areas and short routes connecting residential and employment centers typically warrant provisions for bicyclists."

These descriptions reflect one of the main themes of the Complete Streets Policy which is to provide bicycle facilities that promote bicycling as a transportation alternative for short home-based work and home-based social and recreational trips.

The PBMP notes that "locations for bikeways include within the roadway pavement, separated from the roadway but within the street right-of-way or within their own right-of-way. Streets which will not normally have dedicated bicycle facilities include Cul-de-Sac streets and local streets "because of the low traffic volumes and speeds." The Manual states that "as a guide to developers and design professionals, such bikeways will not normally be permitted within the roadway when the design speed exceeds 40 mph." The Design Manual further states that "bikeways shall conform to typical sections as shown in the Standard Details," however, specific reference to bicycle facilities is not located in the Paving or Roadway and Site Improvement sections of the Standard Details.

According to the PBMP, it is the current operating practice of the Department of Public Works in cooperation with the Office of Planning and Zoning to determine the need for sidewalk based on several requirements. Sidewalk should be provided unless the following conditions are met:

- The projected Average Daily Traffic (ADT) on the roadway for a 25-year time frame is less than 400
- The average lot size is greater than 30,000 SF
- There are no pedestrian generators (schools, commercial areas, parks, transit, etc.) within 1.5 miles of any entrance to the development.

Unfortunately, the current configuration of the Design Manual identifies pedestrian and bicycle facilities only as supplementary elements, giving the most attention to vehicular facilities. This approach will change as the Complete Streets Policy is adopted. Specifically, and in conjunction with the findings of the PBMP, the wide range of facility types with pedestrian and bicyclist-centric criteria such as sidewalks, curb ramps with detectable warning surfaces, shared-use paths, shared-use roadways, and on-road bicycle lanes should be provided in a new, separate chapter. To achieve this change to the Manual, the following modifications and additions are recommended reflecting those outlined in the PBMP:

- The Design Manual should be revised to incorporate the applications and elements of the Complete Streets Policy according to the latest Adequate Public Facilities portion of the County Code (Article 17 §5-401), preferably as a new chapter, but certainly included at the forefront in Chapter One General Introductions, and in the Preliminary Considerations Section of Chapter Three.

- The Design Manual should be updated to refer to Complete Streets Policy and Design Criteria for guidance designing roadway improvements to be safe, efficient routes for travel by all modes.
- As noted in the PBMP, The Design Manual should reference the US Department of Justice adopted 2010 Standards for Accessible Design (2010 Standards) and the U.S. Access Board's Draft Public Rights-of-Way Accessibility Guidelines 2013 for providing compliant pedestrian facilities for the disabled. At a minimum, the Design Manual and Standard Details should be updated to reflect the need for passing areas no further apart than 200 feet for sidewalks less than five feet wide but at least three-feet wide, per USDOJ 2010 Standards. The width of five feet is required for two-way operations of wheelchairs, walkers and crutches.
- The Design Manual should also reflect the *American Association of State Highway and Transportation Officials (AASHTO) Guide for the Planning, Design and Operation of Pedestrian Facilities (2004)* and the *Guide for the Planning, Design and Operation of Bicycle Facilities (2012)* as additional references for designers and developers. These Guides are specific to pedestrian and bicycle facilities and can offer a wider array of design options and considerations that can effectively be conveyed in the Design Manual. The Design Manual should be updated as future versions of the Guides are released. According to their website, AASHTO anticipates an update to the Guide for the Planning, Design and Operation of Pedestrian Facilities will be released in 2014.
- The Design Manual should reference "Traffic Control for Bicycle Facilities" of the Maryland Manual on Uniform Traffic Control Devices (MdMUTCD) (2011) for required specifications on bicycle facility treatments including pavement markings and signage.
- The Design Manual should reference the SHA Pedestrian and Bicycle Design Guidelines. This document is referenced in the MdMUTCD as a supplementary guide for the design of pedestrian and bicycle facilities.
- The Design Manual should require a minimum clear width sidewalk of five-feet for all County sidewalks.
- The Design Manual should be amended to include a cross-reference to Chapter Five – Storm Drains regarding the installation of storm inlet grates which are bicycle safe on all paving and rehabilitation and new construction projects and not located in pedestrian crosswalks. Some storm inlet grates can be a hazard for pedestrians and bicyclists if the grate openings are parallel to the direction of travel. The County's Standard Details include a bicycle friendly grate option (Detail D-31), but the County may also wish to consider the inclusion of new grate types. The Standard Details should be amended to specifically note which grates are bicycle-friendly.
- The Standard Details for roadway typical sections should be updated to reflect the inclusion of different pedestrian and bicycle facility types (e.g. shared-use roadway, on-road bicycle lane, and shared-use path). Right-of-way requirements for these sections will vary by facility type, traffic volumes, land uses, and existing

geographical conditions and should be considered as the sections are revised.

- The Design Manual should be amended to assign an individual or department to work in cooperation with the Director of Public Works as a reviewer to ensure Complete Street Policy adherence, execute exemption request reviews, and track pedestrian and bicycle facility design.

b. Anne Arundel County Code

The Anne Arundel County Code provides the descriptive legislative language and corresponding regulatory structure for how land development is to occur throughout the County. The adoption of the Complete Streets Policy will specifically influence the sections on Subdivision and Development of properties (Article 17) and Zoning (Article 18). The Subdivision and Development Regulations designate how properties are developed, whereas Zoning regulates how the land is categorized and used within the County. The policies of the County Code will ultimately influence how the policies of the Design Manual are carried out by planners, engineers and land developers.

i. Subdivision and Development Regulations (Article 17)

The Subdivision and Development Regulations of the Code outline the County's process by which land is subdivided and developed. The strategies and elements proposed as part of the Complete Streets Policy will need to be added to the Code to ensure land developers are fully incorporating the adopted safety and connectivity objectives into the projects they submit for review and approval.

The following are general recommended modifications/revisions for Article 17 of the Code that infuse the overview requirements related to the Complete Streets Policy:

1. Update the General Provisions (Article 17 §2-102) to include language that corresponds with the Complete Streets Policy for the consideration of all modes of travel to include accessible pedestrian, bicycle, and transit facilities as viable transportation alternatives. Any and all existing references within Article 17 to pedestrian, bicycle, and/or transit related requirements should be expanded to include a brief discussion of the Complete Street Policy and its goals for providing a comprehensive, integrated, multi-modal transportation network complete with safe and accessible accommodations for existing and future pedestrian, bicycle and transit facilities.
2. Provide language under Modifications (Article 17 §2-108) that explains the Complete Street design and study requirements and gives explicit direction on how the exemption request process will be conducted. This language should identify who within the Office of Planning and Zoning will review the exemptions, what the parameters are for exemption consideration, provide reference to a formal exemptions request form, and give an estimated time-line for how long it will take to reach a decision.
3. Include the establishment of a "Pedestrian/Bicycle Fee in Lieu of Construction" and associate this fee with the request for exemption process discussed above. Funds

generated from this program should be placed into a fund dedicated to pedestrian or bicycle projects.

4. Add language to Adequate Public Facilities - Elements (Article 17 §5-102) that in accordance with the Complete Street Policy states “all transportation projects shall be designed and constructed to include accommodations for pedestrians, bicyclists, public transit, and motor vehicles operated by users of all legal ages and abilities. In addition, the County will work with partner agencies at the federal, state, and local levels through standardized planning efforts to ensure Complete Streets principles are incorporated in a context sensitive manner.”

Corresponding with the recommended changes presented in the PBMP, the following Complete Streets Policy related changes specific to bicycle and pedestrian needs should include:

1. Update the Site Development Plan outlined in Article 17 §4-202 to include a more detailed description of pedestrian, bicycle, and transit connectivity, particularly at the preliminary plan stage.
2. Incorporate pedestrian and bicycle facilities into Title 5 which discusses the need to provide Adequate Public Facilities in accordance with “General Development Plan growth objectives” to ensure connection to the existing pedestrian and bicycle system and to connect the planned facilities in the appropriate width and with the proper grades and cross slopes.
3. Update Article 17 §5-401 to include specific reference to Complete Streets applications. By doing so, this policy will reflect Complete Streets requirements for a comprehensive transportation system.
4. Include a direct discussion regarding the provision of right-of-way for the construction of Complete Streets with accessible pedestrian and bicycle facilities in Article 17 §6-103. It should outline the need for a detailed site development plan that will “provide for the most beneficial relationship between the use of land, buildings, traffic, and pedestrian movements”. This is one of many examples of where a discussion of “pedestrian movements” should be enhanced to include bicycle, transit, right-of-way and ADA compatibility needs.
5. Provide a consistent approach to how the Complete Streets Policy and PBMP elements are cited in Title 7 – Development Requirements of Article 17 to clarify and better entrench the new requirements.
 - a. The following Subtitles include mention of pedestrian and bicycle facilities which should be revised to provide a consistent reference to the Complete Streets Policy:
 - Subtitle 2 – Commercial and Industrial Development
 - Subtitle 6 – Mixed Use Development Under the Optional Method of Development
 - Subtitle 8 – Odenton Growth Management Area District
 - Subtitle 9 – Parole Town Center Growth Management Area
 - Subtitle 10 – Planned Unit Developments

6. According to the PBMP, the language of Subtitle 2 for Commercial and Industrial Development is a general, yet comprehensive description of the County's goal of pedestrian and bicycle connectivity that could be applied to the other types of development not currently covered in their own Subtitle:

“Convenient functional linkages shall be achieved in commercial and industrial development by providing vehicular (freight and motor vehicle), bicycle, and pedestrian connections to promote the circulation and flow of vehicles, bicycles, and pedestrians between the development and existing uses.” (Article 17 §7-201.(b)) The notion of connections “between the development and existing uses” is paramount to meeting Complete Streets Policy goals, such as connecting major pedestrian and bicycle trip generators and attractors from residential areas such as schools, shopping centers and transit.”

7. Also recommended is the amendment of Article 17 §11-209 to explicitly state that Complete Streets elements fall within the eligible capital improvements which can be paid for through the use of impact fees in conjunction with the PBMP:

“All funds collected from development impact fees shall be used solely for capital improvements for expansion of the capacity of public schools, roads, and public safety facilities and not for replacement, maintenance, or operations. Expansion of the capacity of a road includes extensions, widening, intersection improvements, upgrading signalization, improving pavement conditions, and all other road and intersection capacity enhancement including pedestrian and bicycle improvements if the roadway is located on or adjacent to a designated route within the PBMP or other development plan.”

ii. Zoning (Article 18)

Article 18 of the Anne Arundel County Code contains the regulations dealing with Zoning. This section of the Code provides the framework needed to organize the County into specified land use districts aimed at maintaining or improving the vitality of the County's growth and development. Currently, the Zoning-related Articles in the Code include the regulated uses for the specific districts and outline what can or cannot be constructed within those districts. The Subdivision and Site Development Regulations dictate what must be provided within a district's developments. Currently, the requirement to provide Complete Streets related facilities may be more of a priority for certain zoning districts, which is ultimately reflected in site development regulations, not the Zoning Code. Therefore, it is recommended that language related to Complete Streets strategies be added to each zoning district consistent with the aforementioned goals for providing a comprehensive, integrated, multi-modal transportation network complete with safe and accessible accommodations for existing and future pedestrian, bicycle and transit facilities provided in the Policy.

Further, Title 3 of the Code should be amended, according to the PBMP, to include a requirement for bicycle parking including the number of required bicycle parking spaces. (Current bicycle parking regulations are found only within the Landscape Manual.) According to the PBMP:

“§ 18-3 Location: Bicycle Parking Spaces

- (a) Bicycle parking shall be located on the same lot as the use or building for which it is provided.*
- (b) Bicycle parking spaces shall be located in order to provide convenient access to main entrances or well-used areas.*
- (c) A bicycle parking space may be located in any yard.*
- (d) A maximum of 50% of the required bicycle parking space or 15 spaces whichever is greater, may be located in a landscaped area.*

§ 18-3 Specific requirements for bicycle parking. Each bicycle parking space must:

- (a) allow both the bicycle frame and the wheels to be locked using a standard U-lock;*
- (b) be designed so as not to cause damage to the bicycle;*
- (c) facilitate easy locking without interference from or with adjacent bicycles;*
- (d) be at least as conveniently located as the most convenient vehicle parking space not reserved for persons with disabilities;*
- (e) be sited in a well-lit, highly visible, and active area that is accessible to all property users;*
- (f) be positioned so as to minimize interference with pedestrian movements;*
- (g) be clearly labeled as reserved for bicycle parking; and*
- (h) include racks or lockers that are:
 - (1) anchored so that they cannot be easily removed;*
 - (2) solidly constructed;*
 - (3) resistant to rust and corrosion; and*
 - (4) resistant to hammers and saws**
- (i) Bicycle parking spaces must be at least four feet by six feet for an outdoor space and fifteen square feet for an enclosed space.*

§ 18-3 Required number of bicycle parking spaces.

- (a) In general one bicycle parking space must be provided for:
 - (1) every 10 vehicle parking spaces required by this title, for the first 500 vehicle parking spaces; and*
 - (2) every 20 vehicle parking spaces after the first 500 vehicle parking spaces required by this title.**
- (b) Vehicle parking space offset.*

The number of vehicle parking spaces required by this title is reduced by one for every eight, or fraction of 8, bicycle parking spaces provided as required by this section.

A variance may authorize a reduction in the number of bicycle parking spaces that are required by the applicable regulations."

c. Landscape Manual

The Landscape Manual, created by OPZ in accordance with Article 17 §6-201 of the County Code, includes standards which determine how landscaping efforts "should be used for land development in an organized and harmonious fashion that will enhance the physical environment of Anne Arundel County." Whereas the guidelines and regulations discussed above cover where, when, and how development is to occur, the Landscape Manual provides the specifications needed to deliver the strategies and infrastructure components discussed in those documents. The successful inclusion of landscape elements create a hospitable and accessible environment that enhance the attractiveness of Complete Street strategies making them more appealing to users as safe and feasible transportation alternatives. In order to bolster the effect of Landscape Manual initiatives on the appeal of Complete Street Policy strategies, the following modifications are suggested:

1. Add to Chapter II – Goals and Objectives, language that summarizes the Complete Streets Policy and outlines how it will be included in later sections of the Landscape Manual. Emphasis should be placed on how landscape elements such as street furniture, lighting, and the use of green-space and planters can enhance the appeal and safety of Complete Street elements for potential users.
2. Under Chapter III – Application of Standards, Sub-section B – Compliance with Plans, Ordinances, Codes, and Regulations should be amended to include language from the Policy, including, but not limited to: "context sensitivity and public safety shall be incorporated to ensure the needs of the community are properly identified and addressed using a balanced approach that will advocate a comparable level of safety and mobility for all users. Further, every transportation improvement and project phase should be approached as an opportunity to create safer, more accessible streets for all users. These phases include, but are not limited to: planning, programming, design, right-of-way acquisition, construction engineering, construction, reconstruction, operation and maintenance. Other changes to transportation facilities on streets and rights-of-way, including capital improvements, re-channelization projects and major maintenance, must also be included".
3. Include bicycle parking, lighting, and street furniture requirements for additional zoning districts. According to the PBMP, "Current bicycle parking standards are found only within Section A, Street Trees & Streetscapes (sub-section, Urban Streetscape Standards). Not only should bicycle parking be located 'within easy access from the street,' but also in highly visible locations convenient to building entrances".
4. Amend Chapter V, Section A – Street Trees & Streetscapes (sub-section, Urban Streetscape Standards), to include better defined provisions (provide more details on

- where, when, how, and review right-of-way attainment issues) related to Complete Streets strategies associated with lighting for sidewalks and bicycle paths, expanded use of street furniture (particularly near transit stops), and introduce requirements for bicycle parking to make spaces more attractive, safe, and functional.
5. Revise all sections of Chapter V, Sections I through M, related to the guidelines for implementing landscape features associated with residential and roadway fronting developments to include a reference to the Complete Street Policy and include that “all transportation projects shall be designed and constructed to include accommodations for pedestrians, bicyclists, public transit, and motor vehicles operated by users of all legal ages and abilities and incorporated in a context sensitive manner.”
 6. The PBMP also recommends amending Section Q, Recreational Facilities, to include the provision of bicycle parking, and the Inclusion of a list of approved and/or recommended bicycle parking types in the Appendices.

d. Transit Development Plan

The County's Transit Development Plan (TDP) was developed to document the current transportation needs, existing transit systems and infrastructure, and provide a plan for transit system development over the next few years. According to the TDP, “five transit systems provide public bus service within Anne Arundel County: Annapolis Transit, Connect-A-Ride, Howard Transit, the Maryland Transit Administration (MTA), and the Washington Metropolitan Area Transit Authority (WMATA).” Transit-related services include bus, connect-a-ride shuttle, rail, para-transit, van, and park-and-ride facilities. The plan notes that much of Anne Arundel County's transit is provided by the MTA, and therefore any recommended changes to transit services resulting from the Complete Streets Policy will need to be closely coordinated with MTA and other transit service providers. The following modifications/inclusions in the Transit Development Plan are recommended as part of the Complete Streets Policy adoption:

1. Add the Complete Streets Policy to the Introduction section of the TDP, calling special attention to “providing safe access and mobility for all users, including the elderly, young, able-bodied and disabled alike, by designing and operating a comprehensive, integrated, and connected multi-modal network of transportation options. Pedestrians, bicyclists, motorists, transit users, and freight operators should all be accommodated safety and benefit from the facility and its amenities.
2. Under Chapter 5, Transit Plan, provide language that supports the implementation of the Complete Streets Policy in a way that coincides with the Near-Term, Mid-Term, and Long-Term recommendations. Specifically, language regarding the inclusion of pedestrian and bicycle-friendly facilities anytime new stops, service extensions, or transit stations are proposed.
3. Also under Chapter 5, Transit Plan, the section on implementation would benefit from a discussion of how the existing and proposed stops and stations will be made accessible for the forecasted increase in elderly and disabled riders. The TDP mentions that there will be a marked increase in riders over the age of 60, but little is

done to address how these people will reach the stops and stations. Although briefly mentioned, more detail should be provided describing the location, right-of-way needs, and costs associated with to the inclusion of needed pedestrian, bicyclist, and ADA compatible facilities and shelters that will ensure the target members of the community have the safe and convenient access to the proposed transit service enhancements.

6. Workshop

In conjunction with the Baltimore Metropolitan Council, the Anne Arundel County Office of Planning and Zoning and URS Corporation held a workshop with interested regional, State, and local transportation agency staff to educate them about the advantages and disadvantages, regulatory requirements, costs, and other factors associated with the planning and implementation of Complete Streets strategies. The workshop included presentation materials and summary text essential to advise elected officials and other decision makers. Following the presentation, a question and answer session was conducted to foster an open dialog of all the relevant issues discussed in the Complete Street Guidance study. A copy of the presentation, the sign in sheet, and sample questions asked can be found in **Appendix D**.

7. Conclusion

The intent of the Complete Streets Guidance study is to document appropriate strategies that can be implemented throughout the roadway development process, including project scoping, funding, zoning, planning, design, construction, maintenance, and operation of new and reconstructed transportation facilities within publicly-owned right-of-way and developer driven commercial and residential developments that are federally, state, locally, or privately funded.

The Complete Street Guidance includes a case study of segments of MD 648 (Baltimore-Annapolis Boulevard). Technical Memorandum #1 documents the County's roadway development process and the existing varying land uses and transportation related issues along the segments of MD 648. Technical Memorandum #2 provides specific roadway improvement recommendations for MD 648 and a template approach to integrating Complete Streets strategies into future projects on similar arterial highways in the region. Following TM1 and TM2, Technical Memorandum #3 documents the County's current roadway development process and policies, identifies areas that could be modified to enact and enforce Complete Streets strategies, initiatives, and elements, and presents language to implement the Complete Streets Policy.



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