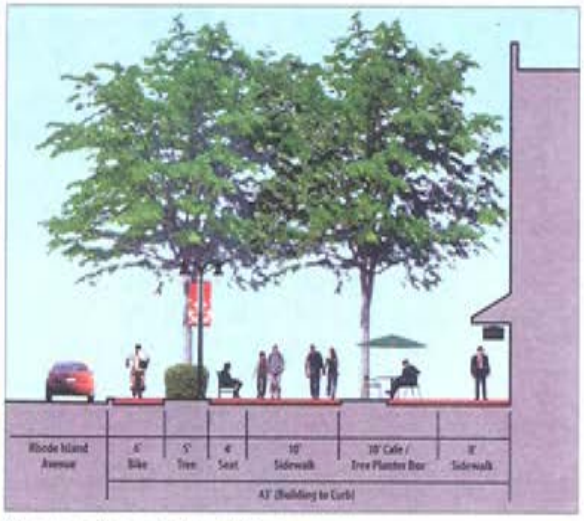
Transportation Review Guidelines – Part 2 – 2013

Draft guidelines for evaluating the adequacy of bicycle and pedestrian facilities in Centers and Corridors consistent with CB-2-2012 and the 2009 *Approved Countywide Master Plan of Transportation*



Transportation Planning Section
Prince George's County Planning Department
The Maryland-National Capital Park and Planning Commission

May 7, 2013

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Appendices:

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Executive Summary:

CB-2-2012, an act concerning adequate public pedestrian and bikeway facilities in centers and corridors, was passed by the County Council on April 24, 2012 for the purpose of ensuring that new subdivisions in centers and corridors include adequate sidewalks and on-road bicycle facilities. Safe, attractive, and accessible accommodations for pedestrians and bicyclists are necessary to ensure that the county's centers and corridors are walkable and to develop a truly multimodal transportation network. As proposed in the 2002 *Prince George's County Approved General Plan*, centers and corridors are areas of higher density with a mix of uses that are centered on transit where walking or bicycling can most effectively be used to make some trips. Recent planning initiatives and approved plans have recognized the importance of accommodating all modes of transportation as road improvements are made. CB-2-2012 was passed to ensure that bicycle and pedestrian facilities are provided where they are needed most in designated centers and corridors.

CB-2-2012 also requires that the Planning Board adopt appropriate guidelines for determining the adequacy of bicycle and pedestrian facilities within centers and corridors at the time of subdivision. The *Transportation Review Guidelines – Part 2* (or *Guidelines – Part 2*) contained in this document were developed in response to CB-2-2012 and are consistent with the policies and recommendations of the 2009 *Approved Countywide Master Plan of Transportation*. The *Guidelines – Part 2* were developed in consultation with the Prince George's County Department of Public Works and Transportation, the Department of Parks and Recreation, and the Maryland State Highway Administration, various municipalities, and the Prince George's County Bicycle and Trails Advisory Group (BTAG). The *Guidelines – Part 2* also reflect a review of current "best practices" for bicycle and pedestrian planning, facility treatments contained in recent pedestrian safety studies, and work done for the Central Avenue-Metro Blue Line Corridor TOD Implementation Project.

The bicycle and pedestrian analysis to be undertaken at the time of subdivision is included in Section 2 of the *Guidelines – Part 2*. Section 2 contains a step-by-step process for development applicants and appropriate reviewing agencies to follow at the time of subdivision in order to ensure that the required findings of Section 24-124.01(b) are met and that conditions of approval are developed to address on- and off-site deficiencies. A key component of the *Guidelines – Part 2* is the development of a Bicycle and Pedestrian Impact Statement (BPIS) by the applicant. The BPIS will include maps and narrative that discuss the bicycle and pedestrian facilities proposed on-site, the existing bicycle, trail, and sidewalk network within one-half mile of the subject site, and the identification of off-site pedestrian destinations (or trip generators) that should guide where off-site improvements are made.

In summary, the bicycle and pedestrian analysis to be completed at the time of subdivision, and contained in Section 2 of the draft guidelines, includes the following steps:

1. Calculate the maximum cost (cost cap) for the required off-site facilities per Section 24-124.01(c).
2. Pre-application meeting and scoping agreement between the applicant and the Transportation Planning Section.
3. Completion of the Bicycle and Pedestrian Impact Statement.
4. M-NCPPC review of the BPIS and submitted subdivision plans for compliance with the *Approved Countywide Master Plan of Transportation*.
5. Required findings per Section 24.124.01(b).
6. Documentation of the demonstrated nexus between the proposed off-site improvements and the subject subdivision.
7. Development of conditions of approval for on- and off-site improvements in order to address any inadequacies and meet the required findings of Section 24.124.01(b)

The *Guidelines – Part 2* also contain a substantial amount of background and supporting information intended to inform the development of the BPIS and any recommendations made to address on- or off-site deficiencies. This background information includes complete streets policies and principles, the specific provisions and clauses of CB-2-2012, a summary of complete streets design treatments and options, the complete streets checklist, and applicable terms and definitions. The information provided within the *Guidelines – Part 2* is intended to ensure that facilities for pedestrians and bicyclists are provided in compliance with CB-2-2012, and that the required findings of Section 24.124.01(b) are made.

Questions concerning *Guidelines – Part 2* can be directed to the Transportation Planning Section of the Planning Department at 301-952-3661 or fred.shaffer@ppd.mncppc.org.

Section 1: Background, Purpose, and Legislative Intent of CB-2-2012

The act establishes criteria intended to ensure the adequacy of public pedestrian and bikeway facilities in county centers and corridors and sets forth requirements for the construction of on-site and off-site pedestrian and bikeway facilities and other public streetscape improvements as part of any development project. It also includes standards and recommended facilities for inclusion in the development of the guidelines that specify the types of facilities that will be evaluated and recommended.

The idea of complete streets involves adequately accommodating all modes of transportation along roadways. It places a priority on ensuring that all users are safely, comfortably, and adequately accommodated along area roads. This concept is evolving through congressional legislation that is gaining support and Maryland legislation that is in the process of being drafted for public review. The principles of complete streets should be incorporated into land use planning and urban design and also utilized during the review of development applications, road frontage improvements, and for more comprehensive multimodal capital improvements for roadways or intersections. It is crucial that all modes of transportation are incorporated into all phases of planning, design, and implementation.

New developments should include roadway improvements that accommodate all users. In Prince George's County, this is important in both the Developed and Developing Tiers where walkable communities and pedestrian safety are commonly cited as a community need and desire. It is most crucial near mass transit within designated centers and along designated corridors where bicycling and walking (which will reduce automobile trips) can most effectively be utilized as modes for some trips.

The Statement of Legislative Intent (Sec. 24-124.01(a)):

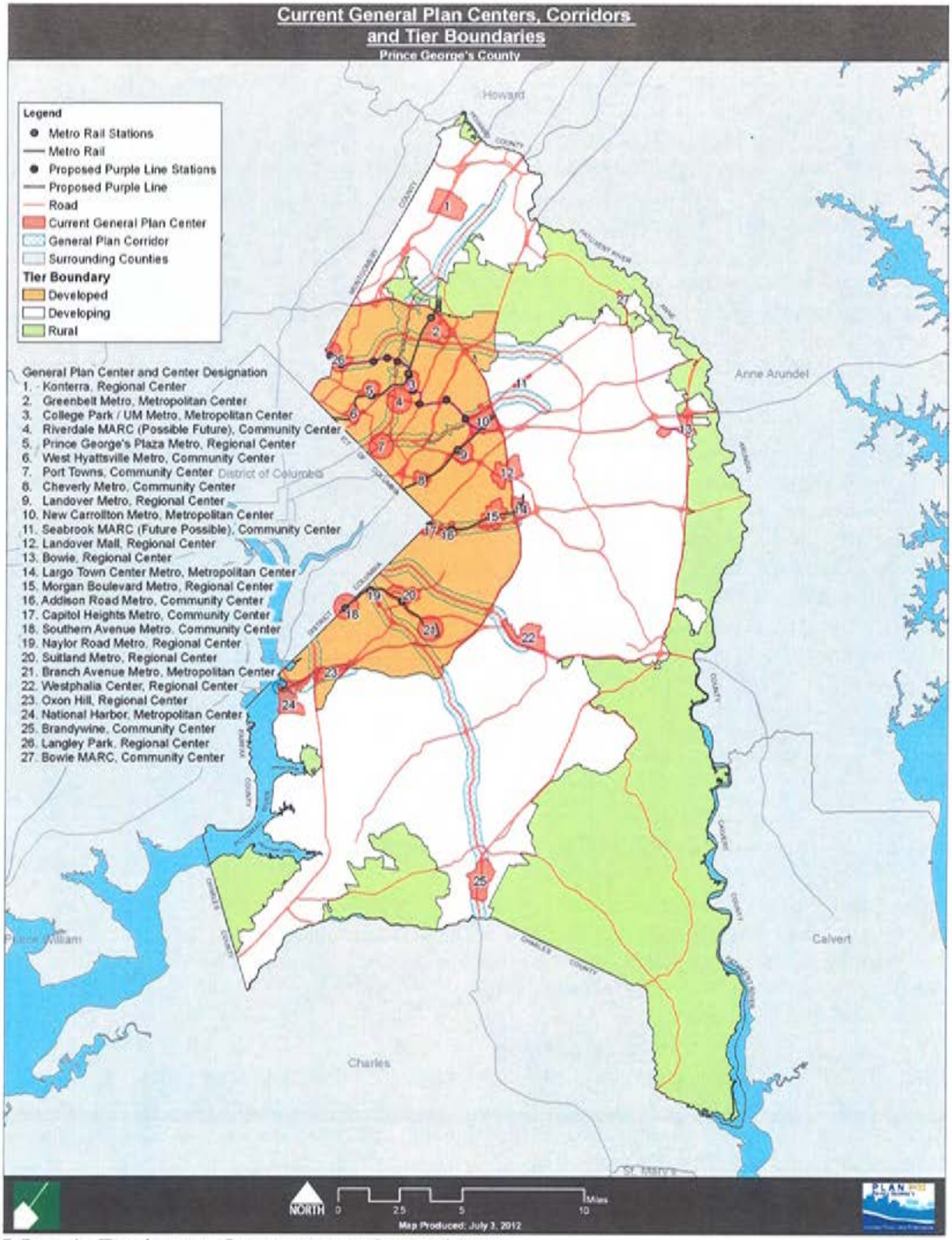
"This Section establishes general criteria by which to ensure the adequacy of public pedestrian and bikeway facilities in County Centers and Corridors as designated by the General Plan (or as designated, defined, or amended by a subsequent master plan or sector plan). It also sets forth the requirements for those who establish subdivisions within Centers and Corridors to construct on-site and off-site pedestrian and bikeway facilities and other public streetscape improvements as part of any development project. The 2002 *Prince George's County Approved General Plan states that the County should provide for a multimodal pedestrian-friendly transportation system at Centers and Corridors that is integrated with the desired development pattern. Accomplishing this requires the incorporation, to the maximum extent possible, of appropriate pedestrian, bicycle, and transit-oriented design (TOD) and transit-supporting design (TSD) features in all new development within Centers and Corridors. Such features include integrated sidewalk, trail, and bikeway networks to divert as many trips as possible from automobile travel and increase the multimodal accessibility and attractiveness of trips to transit stops, schools, parks, libraries, stores, services and other destinations for all users. Pedestrian and bikeway facilities should be designed to increase safety, reduce travel time and offer the most direct routes to destinations for person of all abilities. These concepts are further articulated in the "complete streets" principles and polices included in the* 2009 *Approved Countywide Master Plan of Transportation."*

More specifically, the legislation mandates the following actions to be taken by agencies within the county:

- On or before June 1, 2013, the Planning Board shall include appropriate multimodal pedestrian, bicycle, and transit, quality/level-of-service (Q/LOS) or level-of-comfort (LOC) for inclusion in the guidelines.

- Not later than June 1, 2013, the Director of DPW&T shall adopt and submit for the County Council's approval any necessary amendments and revisions to the Planning Department's "General Specifications and Standards for Highway and Street Construction" for the inclusion of "complete street principles into the design and construction standards.

As noted in the legislative intent and mentioned elsewhere in Section 24-124.01, CB-2-2012 and the subsequent bicycle and pedestrian guidelines will apply only in designated centers and corridors. The latest boundaries for designated centers and corridors are illustrated on Map 1 on the following page. However, the legislation makes it clear that the guidelines will be applicable in all designated centers and corridors as currently approved or as amended in subsequent General Plan or area master plan updates.



Map 1: Designated centers and corridors

The Boundaries for Centers and Corridors

The boundaries of centers and corridors are defined in the 2002 *Prince George's County Approved General Plan* and amended by area master plans, sector plans, and transit district development plans. Applicants should verify whether their property is within a center and corridor by using Map 1 on page 7 of the *Guidelines – Part 2*, and confirm this designation with the appropriate area, sector, or transit plan. The boundaries for designated centers and corridors are also indicated on PGAtlas.com.

Corridors are defined as one-quarter mile or 1,320 linear feet from the centerline of the designated corridor. When a limited access highway is designated as a corridor, nodes extend one-quarter mile from designated interchanges. Corridor boundaries are indicated on Map 1 and included on PGAtlas.com.

Center boundaries are also indicated on Map 1 and included on PGAtlas.com. Four centers do not have well-defined boundaries, but are indicated on Map 1 and PGAtlas.com by a half-mile circle (or 2,640 linear feet from the center of the circle). These centers are Branch Avenue, Southern Avenue, Riverdale MARC, and Port Towns. The half-mile circle for the first three of these centers should be considered for the purposes of these guidelines as being centered on the platform of the transit station associated with the respective centers. For the Port Towns Center, which does not currently have a transit station, the boundary should be defined as the limits of the *Approved Port Towns Sector Plan and Sectional Map Amendment*. These guidelines apply to all preliminary plans for land lying, in whole or part, within a county center or corridor, per Section 24-124.01(a).

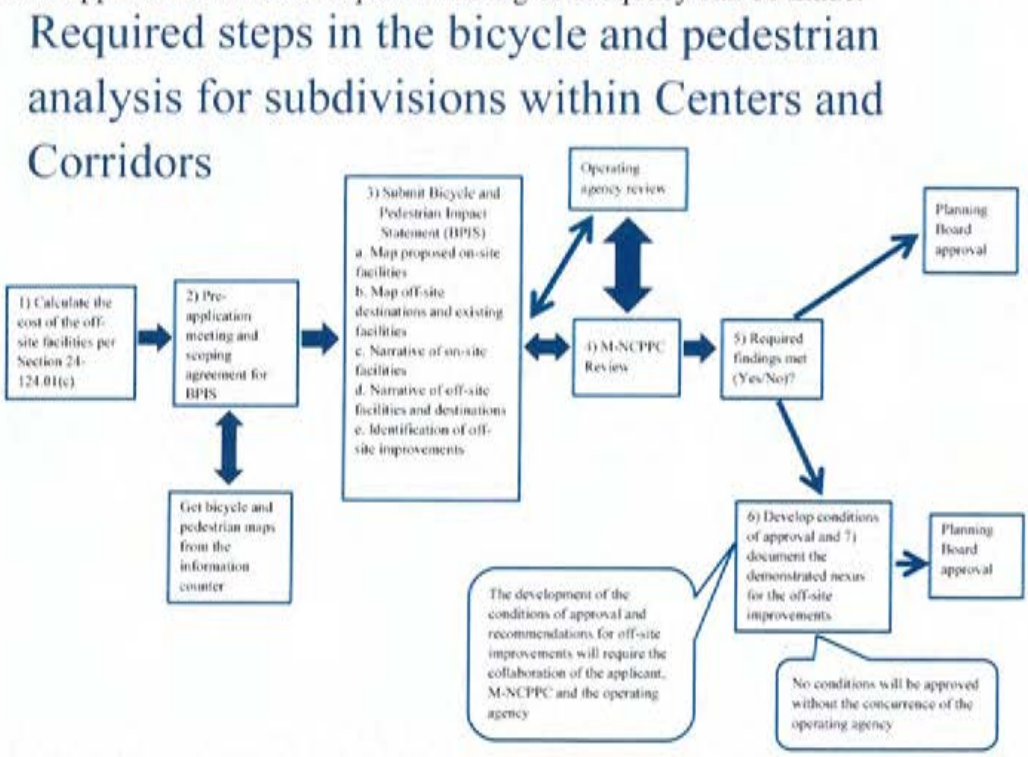
Any questions regarding whether or not an application is located within a designated center or corridor should be directed to the Transportation Planning Section at 301-952-3680.

Section 2: Bicycle and Pedestrian Analysis

At the time of submission of the preliminary plan, a Bicycle and Pedestrian Impact Statement should be submitted by the applicant. Bicycle and Pedestrian Impact Statements (BPIS) should be developed using the same methodology and general approach for all subdivisions within centers and corridors. CB-2-2012 includes specific required findings for both bicycle and pedestrian facilities, and provides guidance regarding the types of facilities that can be required by the Planning Board. Implementing complete streets at the time of subdivision as required by CB-2-2012 will require the close cooperation and work of the Planning Department, various operating agencies, and the development applicant. Accommodating all modes of transportation will have to be considered by applicants as they develop and revise proposed subdivision plans. Planning Department staff will have to work to ensure adherence to complete street principles and the master plan recommendations are adhered to. M-NCPPC and the applicant must work with the operating agencies to develop practical and feasible recommendations to address on-site deficiencies and off-site connections.

The process summarized below outlines seven steps that applicant and/or staff will complete prior to approval of the preliminary plan in order to determine adequacy and comply with the

required findings of CB-2-2012 and Section 24-124.01. This process includes items that must be completed prior to plan acceptance, items that will be reviewed or evaluated through the plan review, and items that will be finalized prior to plan approval. The bulk of this item is comprised of Step 3, which is the required Bicycle and Pedestrian Impact Statement, where the on- and off-site facilities will be proposed by the applicant and evaluated by Planning Department staff and the appropriate implementing agencies. This evaluation will either conclude that the subject subdivision meets the required findings found in Section 24.124.01(b), or may result in conditions of approval so that the required finding of adequacy can be made.



1. **Calculate the cost cap for the off-site facilities**. Based on the development yields proposed for the subject subdivision, the applicant shall calculate the cost cap for the off-site pedestrian or bikeway facilities consistent with Section 24-124.01(c). Section 24-124.01(c) states that *the cost of the additional off-site pedestrian or bikeway facilities shall not exceed thirty-five cents ($0.35) per gross square foot of proposed retail or commercial development proposed in the application and three hundred dollars ($300.00) per unit of residential development proposed in the application, indexed for inflation.* For the purposes of these guidelines, on-site facilities include improvements within the subject subdivision and along the frontage of the subject site on all existing or planned roads, while off-site improvements are any that are not within the subject site or along any of its associated road frontages.

2. **Pre-application meeting and scoping agreement**. The applicant for the subject subdivision within centers or corridors should meet with the Transportation Planning Section prior to submission of the preliminary plan in order to discuss what will be submitted for the bicycle and pedestrian analysis, identify potential off-site pedestrian destinations, and discuss how the off-site dollars will be spent. Applicable recommendations in the MPOT, or the area master plan, should be reviewed, nearby

pedestrian or bicycle trip generators should be identified, and possible off-site improvements should be discussed. As a result of this meeting, a scoping agreement for the bicycle and pedestrian analysis should be signed prior to plan acceptance. A sample scoping agreement is included in the draft guidelines.

3. **Submit the Bicycle and Pedestrian Impact Statement (BPIS).** The applicant shall submit the BPIS at the same time that the Preliminary Plan of Subdivision is submitted. This study will summarize how the subject application implements the complete street policies of the MPOT on-site and addresses how the applicant proposes to utilize the required off-site dollars as calculated in Step 1 and refined in the pre-application meeting. The BPIS will also be the applicant's proposal for how the submitted preliminary plan meets the required findings included in Section 24-124.01(b) (1) and (2). The BPIS will include, at a minimum, four main elements: a) mapping of existing and proposed facilities, b) narrative or summary of the planned on-site facilities, c) narrative or summary of the off-site facilities within one-half mile of the subject property, and d) identification of the necessary off-site improvements. Each of these requirements is described in more detail below. The BPIS will, at a minimum, include the following information:

    a. **Mapping**. Maps for subdivision applications within centers or corridors will be generated by the Planning Department Planning Services for use in the BPIS, the staff report, and the Planning Board presentation. These maps will utilize existing GIS data to identify the existing and planned master plan trails network, the existing sidewalk network, and potential bicycle and pedestrian destinations in the vicinity of the subject site. This map (or series of maps) should show the subject site, on-site sidewalks, trails and bikeways, and the existing bicycle and pedestrian facilities within one-half mile of the subject site. It should also identify all appropriate bicycle or pedestrian destinations within one mile of the subject site. More specifically, this map should include:

        i. **Vicinity map showing the off-site destinations within one mile of the subject site** that should be included on the map and in the BPIS are taken from Section 24-124.01(a) and Section 24-124.01(c), and include the following: public schools, parks, libraries, stores, shopping centers, services, transit stops or line of transit within available rights-of-way, and other destinations for all users (Section 24-124.01 (a) and (c). This can be a page-sized map with the subject site in the center and the various facilities and trip generators around it. This map should identify the potential pedestrian and/or bicycle trip generators within one mile of the subject site.
        ii. **Map the on-site sidewalk, bikeway, and trail facilities**. The map should highlight the major facilities proposed on-site and their relationship to the off-site facilities and destinations.
        iii. **Existing bicycle and pedestrian facilities within one-half mile of the subject site** as outlined in Section 24-124.01(b). The facilities listed in this section include, but are not limited to, street lighting, standard or wide

sidewalks, crossing signals, street trees, pedestrian refuges, marked crosswalks, bus stops, designated bike lanes, bikeways, and trails.

Note: The existing and proposed master plan bicycle and trail facilities, the existing sidewalk network, and the location of existing train stations (MARC and WMATA) can be found at PGAtlas.com. This information should serve as the starting point for the mapping portion of the BPIS. However, this information may need to be verified in the field. PGAtlas.com is intended to provide general planning information only, and before the BPIS is finalized some details may have to be confirmed via field visits or aerial photography. The main focus of additional research or field work should be the primary routes to the off-site destinations and/or the route where the applicant is proposing the off-site improvements.

b. **On-Site Bicycle and Pedestrian Network Evaluation.** The narrative of the BPIS should include an analysis of the on-site bicycle and pedestrian network that explains and expands upon what is depicted in the maps. This is basically a summary provided by the applicant of the bicycle and pedestrian facilities provided on-site. This is the applicant's opportunity to explain how the subject application fulfills the principles, policies, and recommendations of the complete streets element of the MPOT through the provision of on-road bicycle facilities, sidewalks, and trails on the site or along the site's road frontages. This evaluation should include:

   i. **Description of the internal sidewalk network proposed**. Are sidewalks provided along both sides of all internal roads and along all road frontages? Is sidewalk access provided to all pedestrian destinations on the site? Are crosswalks and ADA curb cuts and ramps provided at all appropriate locations?
   ii. **Summary of how bicycles are accommodated on-site**. What type(s) of on-road facilities are provided (bike lanes, paved shoulders, wide outside curb lanes, shared-use roads, sidepath, cycle tracks)? Is bicycle parking provided? Are projected automobile travel speeds compatible with on-road bicycle traffic?
   iii. **Description of on-site transit facilities**. Are there any existing bus stops or transit stations existing or proposed on the subject site? If so, is adequate pedestrian and bicycle access provided?
   iv. **Summary of how applicable master plan bicycle or trail recommendations are accommodated** on-site or along the subject application's associated road frontages.
   v. **Local trail connections.** Are trail connections provided between otherwise isolated development pods? Is connectivity provided to adjacent properties where feasible?
   vi. **Complete streets checklist completed by the applicant**. This checklist will help to identify the facilities being provided on-site and gauge

compliance with the complete principles and policies of the MPOT. The completed checklist should be included as an appendix to the BPIS.

c. **Off-site bicycle and pedestrian network evaluation**. The applicant will also include a narrative of the main pedestrian or bicycle routes within one-half mile of the subject site to the previously identified destinations, consistent with Section 24-124.01(a) and (c). This will inform all stakeholders about where pedestrian trips generated from the subdivision are likely to walk and where on- and off-site connections may be warranted. For each off-site destination identified, the following will be evaluated:

   i. **Are continuous sidewalks provided between the subject site and the off-site destination?** Are sidewalks missing along some or all of the primary routes to the destination? Are crosswalks and ADA curb cuts and ramps provided along the route?
   ii. **Are continuous bicycle facilities provided between the subject site and the off-site destination?** Are there gaps in the bicycle facilities or barriers to bicycle movement to the destination? Is bicycle parking provided at the off-site destination?
   iii. **Does continuous street lighting exist between the subject site and the off-site destination** that meets or exceeds county standards?

d. **Identification of off-site improvements**. The provision of off-site bicycle and pedestrian improvements should be based on the evaluation required in Step 3c and must comply with the cost cap determined under Step 1. The type(s) of off-site improvements should be consistent with Section 24-124.01(a), (c), and (d).

(d) Examples of adequate pedestrian and bikeway facilities that a developer/property owner may be required to construct shall include, but not be limited to (in descending order of preference):

1. *installing or improving sidewalks, including curbs and gutters, and increasing safe pedestrian crossing opportunities at all intersections;*
2. *installing or improving streetlights;*
3. *building multi-use trails, bike paths, and/or pedestrian pathways and crossings;*
4. *providing sidewalks or designated walkways through large expanses of surface parking;*
5. *installing street furniture (benches, trash receptacles, bicycle racks, bus shelters, etc.); and*
6. *installing street trees.*

In order to be included as part of the subdivision approval, the off-site improvement(s) must meet the following criteria:

1. Utilize the funds identified in Step 1 and required by Section 24-124.01(c), and provide a cost estimate for the proposed off-site improvements.

2. Improve connectivity to the subject site with one of the off-site destinations identified in Step 2, Step 3c, and Section 24-124.01(a) and (c).
3. Be within available right-of-way per Section 24-124.01(e).
4. Be deemed feasible and agreed to by the applicable road agency or municipality.
5. A cost estimate for the off-site improvement shall be provided and included in the bonding for the total road improvements required by the appropriate road agency(-ies).

The list of facilities included in Section 24-124.01(d) summarizes the types of improvements that may be required by the Planning Board at the time of subdivision. However, the specific types of complete street treatments and improvements are much more detailed than the six broad categories included in the legislation. The complete streets section of the 2009 *Approved Countywide Master Plan of Transportation* (MPOT) and the complete streets table developed as part of the *Central Avenue-Metro Blue Line Corridor TOD Implementation Project* include an extensive array and diversity of treatments that may be considered depending upon the needs of the site, environmental or right-of-way constraints, and the goals of the operating agency. The treatment or improvement that is appropriate in one subdivision may not be appropriate at another site with different challenges and constraints. The applicant, Planning Department staff, and operating agencies must work together to identify appropriate site-specific and context sensitive improvements.

The complete streets "menu" included in the MPOT, and listed in Table 1, is intended to serve as a guide for planners, developers, and operating agencies as they identify treatments that will be most effective on a case by case basis. If adequate bicycle or pedestrian facilities are lacking within or near a subdivision, the Planning Department, operating agency, and developer/applicant should work from Table 1 to identify appropriate solutions for the subdivision. The facilities recommended in the MPOT and in Table 1 should be considered to address pedestrian and bicycle trips both on-site and off-site.

4. **The Planning Department evaluation.** The evaluation by the Trails Planner of the Transportation Planning Section will focus on implementing the recommendations of the *Approved Countywide Master Plan of Transportation* and/or applicable area master plan. M-NCPPC staff will also evaluate the subdivision proposal for conformance with the complete street policies and strategies of the MPOT. As part of ensuring that the subdivision complies with these policies, staff will also complete the checklist and make appropriate recommendations (if any) to address deficiencies. Planning Department staff will also review the BPIS and associated proposals to ensure compliance with the master plan and the required findings. The BPIS will also be referred to the appropriate road agencies and/or municipalities. The collaboration of the Planning Department and these agencies will include the identification of all off-site pedestrian trip generators, pedestrian safety needs, and sidewalk gaps; the review of facilities proposed by the applicant for compliance with complete street principles and other applicable county standards; and

ensuring that the road agency concurs with the off-site improvements proposed by the applicant. In the event that no off-site improvements are feasible or practical due to environmental constraints, lack of public right-of-way, costs exceeding the cost cap, concerns of the operating agency, or other constraints, this shall be documented in the technical staff report.

5. **Required Findings.** The Planning Department will utilize the submitted BPIS, the review of the subject preliminary plan, and the complete streets checklist to ensure compliance with Section 24.124.01. This section includes required findings for both pedestrian and bicycle facilities. The required findings are included in Section 24.124.01(b):

   (b) Except for applications for development projects proposing five (5) or fewer units or otherwise proposing development of 5,000 or fewer square feet of gross floor area, before any preliminary plan may be approved for land lying, in whole or part, within county centers and corridors, the Planning Board shall find that there will be adequate public pedestrian and bikeway facilities to serve the proposed subdivision and the surrounding area.

   1. ***The finding of adequate public pedestrian facilities shall include, at a minimum, the following criteria:***
      a. *the degree to which the sidewalks, streetlights, street trees, street furniture, and other streetscape features recommended in the Countywide Master Plan of Transportation and applicable area master plans or sector plans have been constructed or implemented in the area; and*
      b. *the presence of elements that make it safer, easier and more inviting for pedestrians to traverse the area (e.g., adequate street lighting, sufficiently wide sidewalks on both sides of the street buffered by planting strips, marked crosswalks, advance stop lines and yield lines, "bulb out" curb extensions, crossing signals, pedestrian refuge medians, street trees, benches, sheltered commuter bus stops, trash receptacles, and signage. (These elements address many of the design features that make for a safer and more inviting streetscape and pedestrian environment. Typically, these are the types of facilities and amenities covered in overlay zones).*

   2. ***The finding of adequate public bikeway facilities shall, at a minimum, include the following criteria:***
      a. *the degree to which bike lanes, bikeways, and trails recommended in the Countywide Master Plan of Transportation and applicable area master plans or sector plans have been constructed or implemented in the area;*
      b. *the presence of specially marked and striped bike lanes or paved shoulders in which bikers can safely travel without unnecessarily conflicting with pedestrians or motorized vehicles;*
      c. *the degree to which protected bike lanes, on-street vehicle parking, medians or other physical buffers exist to make it safer or more inviting for bicyclists to traverse the area; and*

d. *the availability of safe, accessible and adequate bicycle parking at transit stops, commercial areas, employment centers, and other places where vehicle parking, visitors, and/or patrons are normally anticipated.*

Compliance with Section 24.124.01 will either be found, or appropriate conditions of approval will be developed to address any deficiencies identified by the checklist, the BPIS, or the staff review. The subdivision will either meet the requirements of the section, or it will meet the requirements with the placement of appropriate conditions. The technical staff report will summarize how the subject application meets each of the required findings. If one or more of the findings is not met, the memorandum will summarize why the finding was not met and how the conditions of approval will remedy the inadequacy.

CB-2 provides the above guidance regarding the evaluation of adequate bicycle and pedestrian facilities. However, a variety of details, amenities, design features, and facilities need to be considered and evaluated when attempting to determine the overall adequacy of the bicycle and pedestrian environment. These issues and types of questions will guide how the Planning Department evaluates subdivision applications and determines if additional accommodations for bicyclists and pedestrians are needed. As noted in CB-2, compliance with the master plan pedestrian, bicycle, and trail recommendations is a priority. However, the overall network of sidewalks, on-road bicycle accommodations, and the off-site connections to nearby destinations (such as parks and schools) also need to be considered. The questions below illustrate how staff will evaluate future subdivisions for adequate bicycle and pedestrian facilities. These questions are incorporated into the complete streets checklist that will be used at the time of subdivision.

A complete streets checklist was developed as part of the *Central Avenue-Metro Blue Line Corridor TOD Implementation Project*. This checklist was modified to work within the subdivision review process and is included in Appendix B of the guidelines. The checklist contains a series of questions regarding bicycle and pedestrian facilities proposed on-site, the pedestrian destinations in the vicinity of the site, and gaps in the pedestrian network in the vicinity of the subject site. The checklist is designed to ensure that new projects are evaluated and reviewed consistently and that complete street principles are incorporated and implemented. The complete streets checklist has been adapted to be used as a resource or guide for implementing complete streets in subdivisions within centers and corridors. The checklist has been broken down in a series of questions on pedestrian, bicycle, and transit facilities that can be answered with "yes" if the facilities are incorporated, "no" if the facilities are not incorporated, or "NA" if the facility type is not appropriate or applicable on the subject site. Some of the key questions contained in the checklist include:

- Are master plan trails, bikeways, or sidewalks accommodated in the subject subdivision?
- What off-site destinations will be used by residents and/or employees of the proposed subdivision?
- Are there sidewalks along both sides of all internal roads?

- Are sidewalks and/or bike facilities provided as part of road frontage improvements?
- Are ADA ramps and curb cuts provided at appropriate locations?
- Are marked crosswalks provided at appropriate locations?
- Are there opportunities to address or improve any existing pedestrian safety issues?
- Is adequate and continuous street lighting provided?
- Will any repaving provide opportunities for bike lanes?
- Is bicycle parking provided?
- Are there bus stops or other transit services available on or within one-half mile of the subject site?
- Are additional amenities needed at the transit stop (such as shelters, ADA access, or lighting)?

The entire subdivision will be evaluated for master plan compliance, for provision of bicycle and pedestrian accommodations throughout, and for the existence of adequate access and facilities for transit. The checklist is designed to guide the applicant, engineers, and planners through a series of questions that clarify what facilities are provided, identify nearby pedestrian destinations, and ensure that new roads are constructed to accommodate all users. When facilities are lacking or safety issues are identified, the complete streets table is intended to serve as a menu of improvements or enhancements that can be considered to address any existing deficiencies or safety issues. The complete streets checklist will be used to ensure compliance with the criteria for measuring bicycle and pedestrian adequacy included in CB-2-2012 (Section 24-124.01).

6. **Documentation of the Demonstrated Nexus**. The Transportation Planning Section staff will complete the discussion regarding the demonstrated nexus between the site and the related off-site improvement(s). In order to require an off-site connection, the Planning Board must find that there is a direct correlation between the subject subdivision and the recommended off-site improvement per Section 24-124.01(c). This demonstrated nexus will be summarized in the memorandum from the Trails Planner of the Transportation Planning Section, utilized as background information as necessary, and included in the technical staff report and resolution of approval as a finding. Examples where a demonstrated nexus may be found include a connection to a public school, park, shopping center, or transit line. The discussion on the nexus should include how the off-site improvements will directly benefit future residents and/or employees of the subject development. A finding will be included in the resolution of approval that summarizes the nexus between the subject site and the off-site improvement.

> *(c) As part of any development project requiring the subdivision or re-subdivision of land within centers and corridors, the Planning Board shall require the developer/property owner to construct adequate pedestrian and bikeway facilities (to the extent such facilities do not already exist) throughout the subdivision and within one-half mile walking or bike distance of the subdivision if the Board finds that there is a demonstrated nexus to require the applicant to connect a*

pedestrian or bikeway facility to a nearby destination, including a public school, park, shopping center, or line of transit within available rights of way.

7. **Bicycle, Pedestrian, and Trail Conditions of Approval.** Transportation Planning Section staff will work with the operating agencies to develop conditions of approval to address applicable MPOT or area master plan recommendations, ensure compliance with the required findings found in Section 24.124.01(b), and address any deficiencies identified by the complete streets checklist. These conditions of approval will address on-site facilities, facilities along the subject site's road frontages, and the required off-site improvements identified in the BPIS. As noted in Part 1 of the guidelines. *Any improvement or enhancement deemed to be not feasible, or not supported by the appropriate operating agency or entity, will not be conditioned by the Planning Board.*

Section 3: 2009 Approved Countywide Master Plan of Transportation (MPOT) Complete Street Policies and Strategies

The idea of complete streets involves adequately accommodating all modes of transportation along roadways. It places a priority on ensuring that all users are safely, comfortably, and adequately accommodated along area roads. This concept is evolving through congressional legislation–which is gaining support–and Maryland legislation that is in the process of being drafted for public review. The principles of complete streets should be incorporated into land use planning and urban design and should also be utilized during the review of development applications, road frontage improvements, and for more comprehensive multimodal capital improvements for roadways or intersections. It is crucial that all modes of transportation are incorporated into all phases of planning, design, and implementation. The needs of pedestrians and bicyclists should be considered throughout the entire planning process, not only at the final phases of design or implementation after many of the major decisions have been made. Many jurisdictions across the region are deciding what constitutes a "complete" street and how to best ensure that complete street principles are incorporated into the design of new developments and roadway improvements.

New developments should include roadway improvements that accommodate all users. In Prince George's County, this is important in both the Developed and Developing Tiers where walkable communities and pedestrian safety are commonly cited as a community need and desire. It is most crucial near mass transit, within designated centers, and along designated corridors, where bicycling and walking can most effectively be utilized as modes of transportation that reduce automobile trips.

Jurisdictions in the metropolitan region are attempting to identify steps to codify and implement the complete streets policies and principles. To be effective, complete street principles have to be incorporated into new road construction, frontage improvements, and road improvement projects. However, a critical need in the Developed Tier is determining ways to retrofit existing facilities for pedestrians and bicyclists along existing roads through already developed neighborhoods. Neighborhoods in the Developed Tier frequently need pedestrian facilities to provide multimodal access to Metro, safe routes to schools, and more walkable and livable communities. Right-of-way constraints and existing development, however, can be a barrier to providing the needed retrofit improvements for bicyclists and pedestrians.

Prince George's County continues to work toward having roads that accommodate all modes of transportation. Recent plans have recommended extensive on-road bicycle improvements and have identified sidewalk retrofit opportunities. The complete streets section of the MPOT includes the following policies that support the vision of providing roadways that accommodate all modes of transportation. The policies and strategies included in this section are intended to serve as a framework for evaluating development applications for conformance with complete streets standards and to guide appropriate conditions of approval if additional facilities or treatments are warranted.

> **Policy 1:** Provide standard sidewalks along both sides of all new road construction within the Developed and Developing Tiers.

Policy 2: All road frontage improvements and road capital improvement projects within the Developed and Developing Tiers shall be designed to accommodate all modes of transportation. Continuous sidewalks and on-road bicycle facilities should be included to the extent feasible and practical.

Policy 3: Small area plans within the Developed and Developing Tiers should identify sidewalk retrofit opportunities in order to provide safe routes to school, pedestrian access to mass transit, and more walkable communities.

Policy 4: Develop bicycle-friendly roadways in conformance with the latest standards and guidelines, including the 1999 American Association of State Highway and Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities.*

Policy 5: Evaluate new development proposals in the Developed and Developing Tiers for conformance with the complete streets principles.

Policy 6: Work with the State Highway Administration and the Prince George's County Department of Public Works and Transportation to develop a complete streets policy to better accommodate the needs of all users within the right-of-way.

The Trails, Bikeways, and Pedestrian Mobility chapter of the MPOT also includes the following policies that supplement and complement the complete streets portion of the plan. These policies include:

Policy 1: Incorporate appropriate pedestrian-oriented and transit-oriented development (TOD) features, to the extent practical and feasible, in all new development within designated centers and corridors.

Policy 2: Provide adequate pedestrian and bicycle linkages to schools, parks, recreation areas, commercial areas, and employment centers.

Policy 9: Provide trail connections within and between communities as development occurs, to the extent feasible and practical.

Policy 10: Promote the use of walking and bicycling for some transportation trips.

Policy 12: Develop a safe school routes strategy as an integral part of a comprehensive Prince George's County complete streets policy.

STRATEGIES:

1. Coordinate the county complete streets policy with school route analysis and planning by the Prince George's County Planning Department, the Prince George's County Board of Education, and the Prince George's County Department of Public Works and Transportation.

Many of the policies and strategies included in the MPOT are designed to be implemented as new development occurs or road improvements are made. In these instances, it is usually assumed that adequate right-of-way can be dedicated to accommodate all modes. At the time of subdivision, additional right-of-way can be dedicated if needed to accommodate pedestrians or bicyclists, and internal roads can be designed with appropriate multi-modal accommodations. However, many of the areas around existing transit stations in centers and corridors are within established communities with set right-of-ways, existing utilities, and businesses or homes that

may prevent additional right-of-way acquisition. In these instances, it may be necessary or more efficient to utilize the existing space within the right-of-way for all uses.

For example, through the National Capital Region Transportation Planning Board's *Transportation and Land-Use Connections (TLC) Program*, a pedestrian plan for the Prince George's Plaza Transit District was developed. This study was intended to develop appropriate complete streets recommendations for the Prince George's Plaza area and serve as a model for how other existing roads in established communities can be retrofitted to complete street standards. The area around the Prince George's Plaza Metro currently has an extensive stream valley trail network, enhanced streetscapes along several roads, and a pedestrian bridge over MD 410. However, like many other established communities, the sidewalk network remains fragmented and there are many pedestrian facility and safety needs that have to be addressed. Many of the needed improvements are along existing roadways because much of the area has existing development with an established road network.

Although the complete streets principles were developed as part of a pedestrian plan for a specific transit district, the following complete street principles can be utilized around other transit stations and in other designated centers and corridors within Prince George's County. Although these treatments may not be feasible or practical on all sites, these treatments should be considered when attempting to accommodate all modes of transportation within a restricted right-of-way with existing constraints such as utilities or buildings. In instances where subdivision applications are utilizing existing roads within centers or corridors, these principles should be considered as a means to more effectively accommodate all modes of travel within the existing right-of-way.

Ten Complete Street Principles for Existing Roads

1. **Encourage medians as pedestrian refuge islands.** Frequently, the single most important improvement that can be made to increase pedestrian safety is a pedestrian refuge. It is often not possible for pedestrians to cross all lanes of traffic at once, particularly along multilane roads. A median or pedestrian refuge provides pedestrians with a safe and attractive place to stand while waiting to cross the remaining lanes of traffic.
2. **Design turning radii to slow turning vehicles.** Another rather common hazard for pedestrians in urban and suburban environments is relatively fast moving right-turning traffic. Most difficult for pedestrians are merge lanes or "free" right turns, where the motorist does not have to stop. Also problematic are right turns or intersections with wide turning radii that allow motorists to make the turning movement at a high rate of speed. Designing the turning radii to slow turning vehicles can be a very effective means of reducing speed and improving pedestrian safety.
3. **Find wasted space and better utilize it.** In some cases, space can be found within rights-of-way that is not necessary for through traffic or specific turning movements. This can be seen in many intersections with wide turning radii, but may also be present along roads with center turn lanes where no ingress/egress points exist. This "extra" space within the right-of-way can often be utilized to improve the pedestrian environment through the provision of sidewalk connections, pedestrian refuges, or traffic calming. Similarly, wide outside curb lanes can be striped for designated bike lanes.

4. **Time traffic signals to function for all modes.** Traffic signals should allow pedestrians adequate time to comfortably cross all lanes of traffic.
5. **Reduce crossing distances.** Another factor in pedestrian safety is the total distance a pedestrian must cross. Wide roads with multiple turning lanes require the pedestrian to cross a much longer distance with significantly more "exposure" time to oncoming traffic. Crossing distances can be minimized with medians, pedestrian refuges, reduced turning radii, curb extensions, and other measures. These features should be utilized where feasible to minimize the pedestrian's exposure to traffic.
6. **Increase crossing opportunities.** Another sign of a poor pedestrian environment is large block sizes. Large blocks provide few opportunities for pedestrians to safely cross busy roadways. Although pedestrians may prefer to cross at signalized intersections, the total space between intersections and controlled crossings may discourage pedestrians from utilizing these locations. Rather, pedestrians may be indirectly encouraged to make mid-block crossings due to large block sizes and distances between signalized intersections. Smaller block sizes provide additional opportunities for pedestrians to cross roadways at controlled intersections and within a designated crosswalk with appropriate lighting, pavement markings, and signage.
7. **Encourage pedestrian-scaled land use and urban design.** Similarly, pedestrian-scaled development and amenities can be used to enhance the pedestrian environment. In many ways this is related to the block sizes noted above, but also involves a mixture of land uses; the provision of attractive streetscapes, building frontages, and pedestrian amenities such as benches, trash receptacles, and lighting; safe crosswalks; and comprehensive pedestrian facilities and connections.
8. **Acknowledge that pedestrians will take the most direct route.** Similar to motorists, pedestrians will use the most direct, efficient connection or route possible. It is important that connections are made to accommodate pedestrians heading to a variety of destinations. Direct routes should be provided. Long, circuitous pedestrian routes should be avoided. Due to the increased time and effort required to walk the extra distance, pedestrians will frequently attempt the shortest connection or road crossing available, regardless of whether it has safety provisions. Every effort should be made to accommodate these movements during the planning and design of road improvements and development projects.
9. **Ensure universal accessibility.** All ages and user groups should be accommodated along area sidewalks and intersections. This includes the elderly, children, and disabled groups. All street crossings should include American with Disabilities Act (ADA) - compliant curb cuts and ramps, and all pedestrian signal buttons should be handicap accessible. Implementation of accessibility features should also include truncated domes for the visually impaired on access ramps and increased crossing times that are sufficient for elderly, disabled, or slower pedestrians. To the extent feasible and practical, all pedestrian connections should comply with the United States Access Board's proposed Trail Accessibility Guidelines (currently under review), the ADA Accessibility Guidelines (ADAAG), and the Federal Highway Administration's "Guide for Accessible Sidewalks and Trails." In general, these guidelines and standards support the "accessible routes" concept, which involves evaluating different segments and trouble points along a pedestrian route to determine where improvements for ADA compliance may be necessary to increase the overall usability of the facility or route. In summary, the criteria that should be evaluated when providing an accessible route includes the following:

- Grade
- Cross-slope
- Width
- Passing space and passing space interval
- Vertical clearance
- Changes in level
- Grates and gaps
- Obstacles and protruding objects
- Surface
- Signage
- Edge protection (where appropriate)

The entire final report of the Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas can be found on-line at: http://www.access-board.gov/outdoor/status.htm.

The ADAAG can be found online at: http://www.access-board.gov/ adaag/html/adaag.htm.

10. **Pursue targeted education and enforcement efforts to reduce bicycle and motor vehicle crashes.** Many area bicycle clubs and organizations offer safe bicycling courses and seminars. The Washington Area Bicyclist Association (WABA) offers many courses aimed at safe bicycle operation including bicycle rodeos for children and "confident city cycling" courses for adults. Additional information on these and other courses can be found on WABA's web site at: http://www.waba.org/events/education.php#ccc.

The Council of Governments also has an ongoing Street-Smart Pedestrian and Bicycle Safety campaign that promotes safer streets for bicycling and pedestrians. This campaign also includes regionwide education programs regarding safer streets for all user groups.

Additional information on the Street Smart campaign can be found at: http://www.mwcog.org/transportation/activities/planning/safety.asp.

The policies and strategies included in the MPOT should be incorporated into new subdivisions as development occurs in centers and corridors. Table 1 is designed to provide additional guidance and information on the different types of treatments that can be considered to improve pedestrian and bicycle access and safety. It is important that complete street principles be adhered to throughout the design and development process, and that appropriate recommendations to address any facilities needs be based upon these policies and the table of complete street treatments.

Section 4: Specific provisions and clauses of CB-2-2012

Section (e) of CB-2-2012 includes a number of provisions and clarifications regarding the terms and definitions included in the bill, as well as timing and costs of the off-site facilities. In general, these definitions and clauses include the following:

- The definition of "walking and biking distance."
- The inventory and mapping of bicycle, pedestrian, and transit facilities.
- The developer shall not be required to acquire any additional off-site rights-of-way.
- Prior to issuance of building permits, required adequate bike and pedestrian facilities shall have full financial assurances, been permitted for construction, or have an agreed-upon timetable for construction and completion with the appropriate operating agency.
- Nothing in the bill inhibits the authority of the Planning Board to require other complete street facilities, although facilities are limited to the cost cap contained in CB-2-2012.

As the bicycle and pedestrian guidelines need to comply with CB-2-2012 (Section 24-124.01), it is appropriate to reiterate the key provisions, definitions, and clauses included in the legislation.

Definition of Walking or Biking Distance

As defined in CB-2-2012, the walking or biking distance is defined as:

> *(e)(1) "Walking or biking distance" is measured from the outer limits of the circumference of the smallest circle encompassing all the land area of the subdivision and includes the entire lot line of any property partially included within such distance; and "throughout the subdivision" includes all the land area within such circumference.*

Inventory and map of existing bicycle, pedestrian and transit facilities

CB-2-2012 requires that an inventory of bicycle, pedestrian and transit facilities be completed for the area within one-half mile of the subject site. More specifically, Section 24-124.01(f) requires:

> *(f) If a conceptual or detailed site plan approval is required for any development within the subdivision, the developer/property owner shall include, in addition to all other required information in the site plan, a pedestrian and bikeway facilities plan showing the exact location, size, dimensions, type, and description of all existing and proposed easements and rights-of-way and appurtenant existing and proposed pedestrian and bikeway facilities throughout the subdivision and within the designated walking or biking distance specified in Subsection (e), along with the location, types, and description of major improvements, property/lot lines, and owners that are within fifty (50) feet of the subject easements and rights-of-way.*

Part I of the Transportation Review Guidelines included additional details regarding the types of facilities that are to be mapped. Part I requires an inventory of transit, pedestrian, and

bikeway facilities within centers and corridors, and in all cases where the application seeks to take advantage of trip credits associated with these facilities. It is advisable to perform such an inventory in other cases as well.

Transit – An adequate inventory shall include the following:

- Existing transit service that serves the proposed development.
- The location of bus stop(s), and walking distance to the stop(s).
- The bus routes serving the stops.
- The frequency of bus service.
- The bus service hours of operation.
- Metrorail, light rail, or commuter rail stations within one-half mile of the site.
- Walking distance to each identified station, with a map displaying the walking route(s).

Pedestrian and Bikeway Facilities – An adequate inventory shall include the following:

- Identification of nearby trip-generating uses, as described in Section 3, within one-half mile of the proposed development.
- A map to indicate sidewalk, side paths, and bike paths between the site and the above uses, with widths of any such facilities.
- Additional sidewalks, side paths, and bike paths in the vicinity of the site with potential for connection to the site, with widths of any such facilities.
- Master plan trail facilities within one-half mile of the site.
- On-road bicycle facilities within one-half mile of the site, including designated bike lanes, paved shoulders, wide outside curb lanes, and shared lane markings.

Financial Assurances

Full financial assurances are required for any required on- or off-site pedestrian and bikeway improvements prior to the issuance of building permits. Section 24-124.01(g) requires:

> *(g) Prior to issuance of any building permit for development within the subdivision, the developer/property owner shall show that all required adequate pedestrian and bikeway facilities have full financial assurances, have been permitted for construction through the applicable operating agency's access permit process, and have an agreed-upon timetable for construction and completion with the appropriate operating agency.*

Right-of-Way Provision

No developer shall be required to acquire any additional off-site right-of-way to complete off-site pedestrian or bicycle improvements. Section 24-124.01(e) (2) requires:

> *(2) No developer/property owner shall be required to acquire additional land not already owned by that developer/property owner in order to construct adequate*

pedestrian and bikeway facilities. All adequate pedestrian and bikeway facilities required under this section shall be constructed within existing public easements and rights-of-way, or within land dedicated (or to be dedicated) by the applicant to public use.

Cost Cap Calculation and Discussion

CB-2-2012 includes a cost cap provision designed to ensure that an unreasonable burden is not placed on private developers regarding the cost of off-site improvements and to ensure that the scope of the recommended off-site improvements are not out of proportion with the scale and size of the proposed development. More specifically, CB-2-2012 provides the following guidance regarding the cost cap:

(C) The cost of the additional off-site pedestrian or bikeway facilities shall not exceed thirty-five cents ($0.35) per gross square foot of proposed retail or commercial development proposed in the application and Three Hundred Dollars ($300.00) per unit of residential development proposed in the application, indexed for inflation.

Facility Recommendations:

CB-2-2012 also includes specific guidance on the types of bicycle, pedestrian, and transit facilities that can be required by the Planning Board. This list is reiterated in the section below and is supplemented by work done for the *Approved Countywide Master Plan of Transportation* and the *Central Avenue-Metro Blue Line Corridor TOD Implementation Project*. CB-2-2012 is clear that the legislation does not inhibit the ability of the Planning Board to require facilities not specifically mentioned in the legislation. Point (h) is copied below:

(h) Nothing contained within this Section shall be deemed to inhibit in any way the authority of the Planning Board to require a developer/property owner to construct pedestrian and bikeway facilities beyond those required in Subsection (C) of this Section, if such facilities relate to the implementation of "complete streets" principles on roadways required to be improved, constructed, or reconstructed to accommodate motor vehicle traffic that would be generated by proposed subdivisions. Any such pedestrian and bikeway facilities shall be subject to the cost limitations set forth in Subsection (c) of this Section.

Part I of the Transportation Review Guidelines also emphasizes that improvements or enhancements that are not supported by the appropriate operating agency or entity will not be required by the Planning Board. This ensures that all of the required improvements will be vetted by the appropriate road agency and that improvements will be deemed to be feasible and practical from an implementation perspective.

- Any improvement or enhancement deemed to be not feasible, or not supported by the appropriate operating agency or entity, will not be conditioned by the Planning Board.

Future Revisions and Updates to the Part 2 of the Guidelines:

CB-2-2012 amended Section 24-124.01(i) to include specific wording regarding the development of the guidelines and the periodic updating and revision of the guidelines by the Planning Board, in consultation with the Director of the Department of Public Works and Transportation. Section 24-124.01(i) also includes guidance regarding the use of appropriate multimodal level-of-service (MMLOS) or level-of-comfort standards (LOC) in the guidelines. The fifth edition of the *Highway Capacity Manual* (HCM2010) provides an integrated multimodal approach to the analysis and evaluation of urban streets from the points of view of automobile drivers, transit passengers, bicyclists, and pedestrians. HCM2010 also includes a multimodal level of service evaluation for gauging how well roadway segments handle all modes of travel.

The interagency workgroup involved with the development of the draft guidelines received an extensive briefing on the fifth edition of the Highway Capacity Manual and the MMLOS in January 2013. This session reviewed the latest guidance included in the HCM, as well as the use, applicability and limitations of the MMLOS. The MMLOS will undoubtedly be a valuable tool for evaluating how well road projects or development applications accommodate all modes of transportation. As shown in the *Central Avenue-Metro Blue Line Corridor TOD Implementation Project*, the MMLOS can provide valuable information on the operation of existing or planned road improvements for all modes of transportation.

However, there are several limitations that may prohibit its use for development applications at the present time. Currently, the HCM multi-modal level of service is not readily available and perhaps not ready for widespread use until further evaluation and software development takes place. Many departments and engineering firms may lack the experience or software necessary to effectively utilize this tool, particularly within the time constraints of the development review process. However, once the software is more readily available, staff should work with the Department of Public Works and Transportation, the State Highway Administration, the Department of Parks and Recreation, and possibly a consultant to see how the model can most appropriately be incorporated into the guidelines. Depending upon this evaluation, the bike and pedestrian guidelines should be amended to incorporate this analysis. It is recommended that the MMLOS and its associated software be periodically reviewed by M-NCPPC and the operating agencies, and that as software becomes more widespread, readily available, and staff receives the appropriate training, that elements of this model be incorporated into the guidelines.

Appendix A: Summary of Complete Street Treatments

A variety of methods and treatments can be used to accommodate different modes of transportation depending upon the road type, right-of-way constraints, the needs of the surrounding community, or other site specific conditions. When facilities are lacking or safety issues are identified at the time of subdivision, the complete streets table is intended to serve as a menu of improvements or enhancements that can be considered to address any existing deficiencies or safety issues. One treatment or facility type is unlikely to work or be appropriate in all situations. Subdivisions and road projects have varying needs, topography, and environmental constraints. Similarly, the needs of pedestrians and the appropriate pedestrian facilities can vary depending upon the speed of traffic, the amount of cross traffic, and the surrounding land uses or trip generators. This summary or table of complete streets treatments is intended as a "menu" of complete street treatment options that can be considered and utilized as subdivisions are reviewed and safety needs or network gaps are identified.

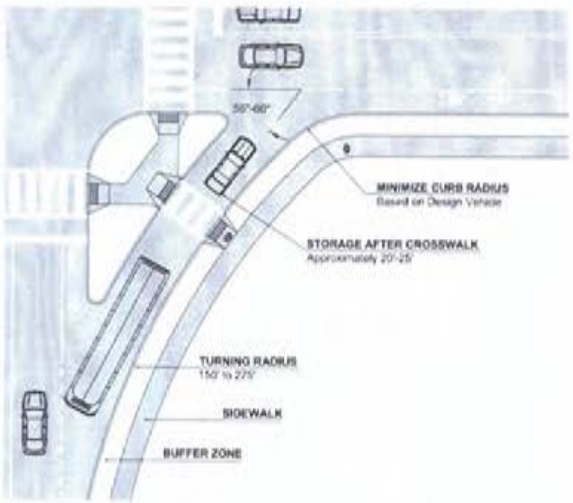
Reduced Curb Radii - Reconstructing a street corner with a smaller radius to reduce vehicle turning speeds. The speed of right turning vehicles can frequently conflict with pedestrian movements. "Free right" turns in slip lanes can make it difficult for pedestrians to cross as right turning vehicles may never stop. However, vehicles may also fail to stop at T-Intersections where the radius is extremely wide. Smaller curb radii can improve the safety for pedestrians by reducing the crossing distance, providing additional space for pedestrians to wait before crossing, and slowing the speed of turning vehicles.

Advantages:

- Forces sharper turn by right-turning motorists.
- Improves safety of pedestrians by reducing crossing width and slowing motorists.
- Reduces speed of right-turning motorists.

Disadvantages:

- Space may not be available.
- Can be expensive.
- Can make access more difficult for buses and large trucks.



Source: Bicycle Policy and Design Guidelines, SHA

Narrow Travel Lanes - Restriping of existing travel lanes to reduce width. This can be done at the time of road resurfacing or, in some cases, by adding a strip on the outside curb lane. This was done along MD 197 in the City of Bowie where the four travel lanes and center turn lane were narrowed and an additional two to three feet was provided in the outside curb lane for bicyclists. While not wide enough for a full bike lane, this extra space provides a buffer for the adjacent sidewalk and space for bicyclists in the road.

Advantages:

- Slows traffic.
- Provides more space for bicyclists and possible bicycle lanes.
- Better utilizes existing space within the right-of-way.

Disadvantages:

- Possible increase in vehicle-vehicle crashes.

Restriping along MD 197 included **narrowing the travel lanes** and center turn lane to provide a wide outside curb lane to accommodate bicyclists and buffer the sidewalk.

On-Street Parking - On-street parking provided adjacent to the curb or just beyond a buffered bicycle zone (protected bicycle lanes) can provide additional traffic calming and buffering of pedestrians from motor vehicle traffic.

Advantages:

- Increases safety by placing a physical barrier between moving vehicles and pedestrians.
- Reduces the speed of traffic traveling adjacent to the parked vehicles.
- Provides parking.

Disadvantages:

- Can be dangerous for bicyclists riding in door zone.
- Ineffective at reducing speeds if travel lane is very wide.
- Reduces sight lines for motorists entering the street from driveways.

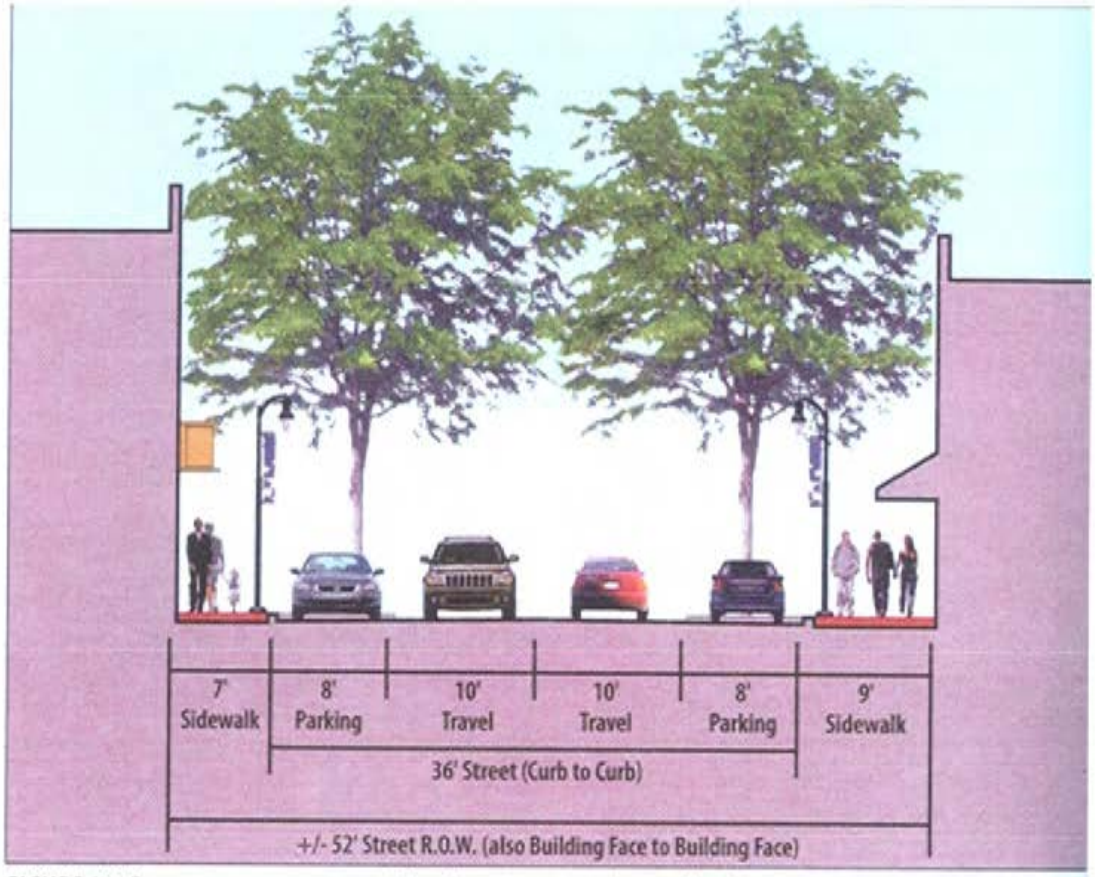


FIGURE 29: PROPOSED STREET SECTION—34TH STREET, SOUTH OF BUNKER HILL ROAD, LOOKING SOUTH.

Proposed cross section with on-street parking for 34th Street in Mt. Rainier (above)

Rumble Strips - Pavement surface treatments intended to cause drivers to experience vehicle vibrations signaling the drivers to slow down. Best used with other traffic calming treatments.

Advantages:

- Reduces speed.
- Low cost.
- Draw the motorist's attention to an approaching crossing or hazard.

Disadvantages:

- Vibration noise created may be inappropriate in residential areas.
- Perceived more as a warning to slow down than a physical measure that forces slower speeds.
- Less effective over time.
- Can create a hazard for cyclists.

Evergreen Parkway, Bowie Town Center

Speed Humps - Speed humps are wide, rounded, mountable obstructions installed on the pavement surface across travel lanes, intended to cause vehicles to slow.

Advantages:

- Inexpensive.
- Very effective in slowing travel speeds.
- Easily navigated by bicyclists.

Disadvantages:

- May be considered loud or noisy to nearby residents.
- Forces emergency vehicles to slow down.
- Inappropriate on streets with bus traffic due to rider comfort and reduced travel speeds.
- Creates a high-speed traffic hazard.

Woodlawn Boulevard, Largo

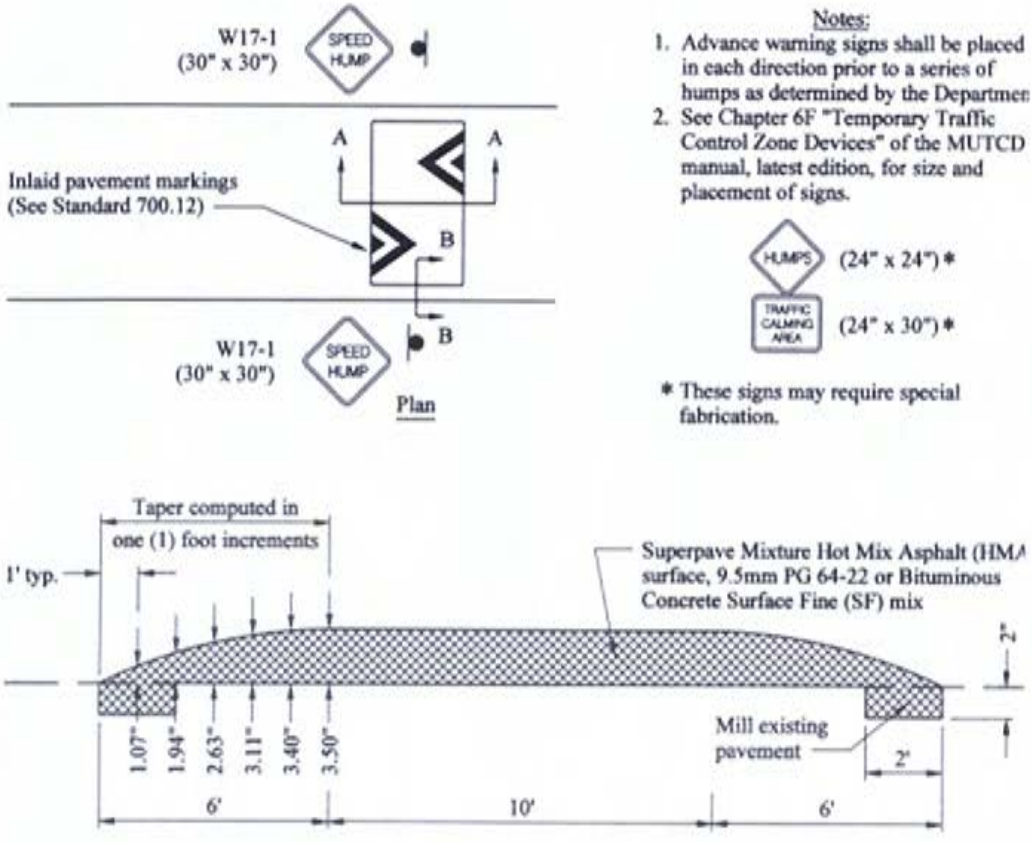
Speed Table - Speed tables are similar to speed humps except they have a flat top. Generally wider than speed humps, gentler on vehicles, and generally used on higher order roads than bumps or humps because they allow a smoother ride and higher speeds. DPW&T Standard 700.02.

Advantages:

- Slows traffic.
- Smoother ride than humps and bumps.
- Not as effective in reducing speeds as humps and bumps.
- More applicable for higher order roads (collectors).
- Compatible with bicycle use, particularly on low- volume streets.

Disadvantages:

- Higher design speed.
- Not allowed on some roads
- Can be expensive if used with textured materials.
- May be considered loud or noisy to nearby residents.



Section A-A - Hump Profile

DPW&T Standard 700.02 (above)

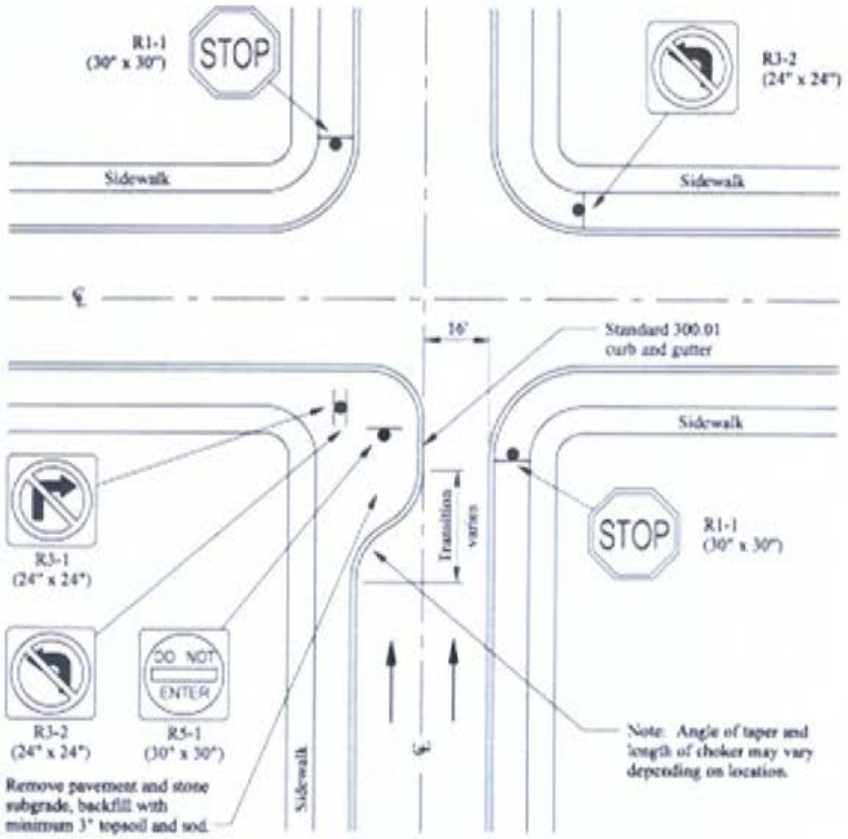
Chicane or Speed Diverter - Speed diverters or chicanes involve a single or a series of fixed objects, usually extensions of the curb, which alter a straight roadway into a zigzag or serpentine path to slow vehicles. This can also be created by alternating on-street parking between sides of street. DPW&T Standard 700.09

Advantages:

- Reduces speed of motorists.
- Noise is not as common as with speed humps or rumble strips.
- Potential to increase trees, landscaping and water runoff treatment.

Disadvantages:

- Reduces on-street space for parking.
- Maneuvering can be difficult for larger vehicles such as buses, trucks, and fire trucks.
- Potential for motorist collision with the physical chicane.
- Needs landscape maintenance.



DPW&T Standard 700.09 (above)

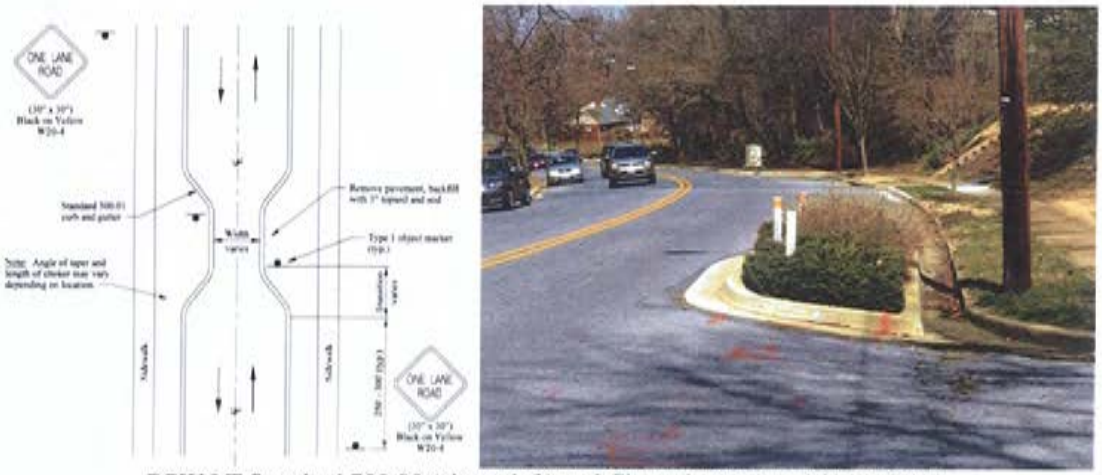
Choker - Narrowing of a street, often mid-block, and sometimes near an intersection. May be created with curb extensions, landscaping, or edge islands in the street. They can form safe crossings if marked as crosswalks. Chokers can leave the street section with two narrow lanes or be taken down to one lane, thus requiring approaching drivers to yield to one another.

Advantages:

- Reduces speed and volume of motorists.
- Shortens crossing distances for pedestrians if used at mid-block crossings.
- Provides pedestrian refuge area.
- Can reduce traffic volumes.

Disadvantages:

- Potential for motorist collision with the physical choker.
- Reduces on-street space for parking.
- Compatible with bicycling only when specified space is provided.
- Design challenges if used on narrow streets without on-street parking.
- May divert traffic to alternate streets.



DPW&T Standard 700.08 (above left) and Cheverly Avenue (above right).

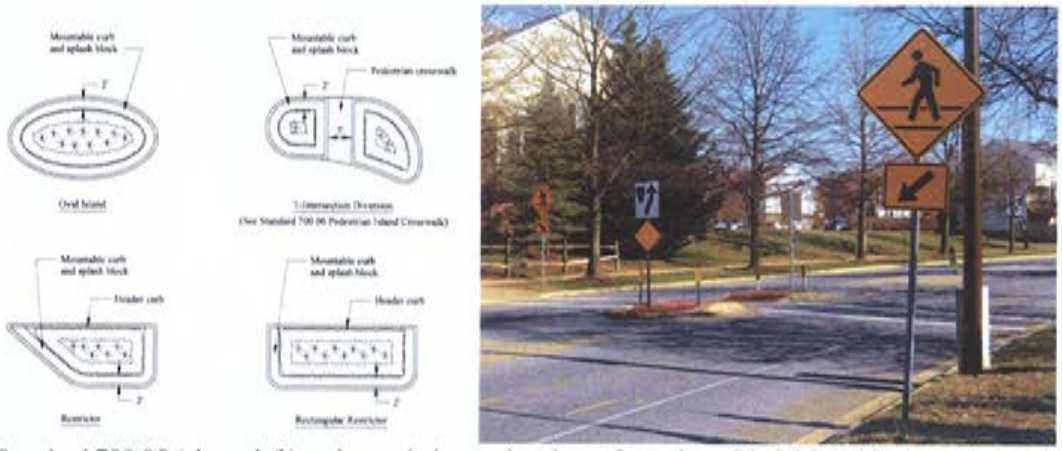
Pedestrian Refuge - A small circular or oblong island used in the middle of intersections and intended to force vehicular traffic to slow and negotiate around it. When used in residential areas, they can be landscaped for aesthetic or barrier purposes, and may have mountable curbs to allow movement of emergency vehicles.

Advantages:

- Reduces speed of motorists.
- Improves safety.
- Reduces need for complete stops by motorists.

Disadvantages:

- Maneuvering can be difficult for larger vehicles such as buses, trucks, and fire trucks.
- Pedestrian crossings are less managed than traditional stop-controlled intersections.
- May require the elimination of some on-street parking.



DPW&T Standard 700.05 (above left) and an existing pedestrian refuge along Riedel Road in Anne Arundel County (above right). A pedestrian refuge can often be the single most important enhancement for improving the safety of a pedestrian crossing when multi-lane roads are involved.

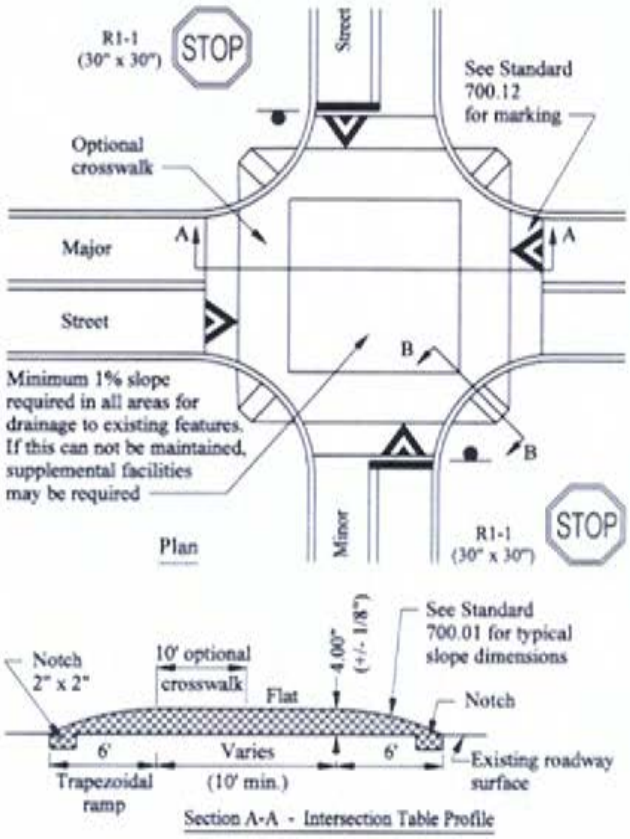
Raised Intersection - The entire area of an intersection is raised above normal pavement surface level to reduce vehicle speed through the intersection and provide a better view of pedestrians and motorists in the intersection.
DPW&T Standard 700.13

Advantages:

- Reduces speed through intersections.
- Reduces red light running at high speeds.
- Calms two streets at once where collisions are most prevalent.

Disadvantages:

- Potential drainage issues.
- Less effective in reducing speeds than humps, tables, or raised crosswalks.
- Expensive.



DPW&T Standard 700.13

No Right Turn on Red Signs (NRTOR) - Mounted sign eliminates the right of motorists to make a right turn at a red light. NRTOR may be used full-time or under restricted time intervals. Electronic NRTOR signs have been shown to decrease pedestrian/vehicle conflicts significantly. According to the AASHTO Safety Manual, NRTOR signs also significantly reduce pedestrian crashes. Restricting right-turns at intersections during the red phase complies with MUTCD standards.

Advantages:

- Reduces conflicts between motorists and pedestrians.

Disadvantages:

- Reduces time motorists have to make a right turn.
- Potential vehicle queuing.

R10-11b

Leading Pedestrian Interval - Providing a leading pedestrian interval involves adjustments of existing signal timings to more readily accommodate all modes. These changes may include reducing the amount of green time to decrease the amount of time pedestrians wait at signals.

Advantages:

- Improves conditions for pedestrians.
- Improves overall safety of intersection.

Disadvantages:

- Improving conditions for one mode is often done at the expense of others (e.g., giving more green time to pedestrians often means motorists receive less green time).

Cycle length Adjustments - Cycle length adjustments involve reducing the amount of green time, and therefore overall cycle length, at intersections to decrease the amount of time pedestrians wait to cross the street. Cycle length adjustments comply with the MUTCD standards as long as the minimum walk and clearance times for the intersection are met.

Advantages:

- Encourages pedestrian trips by reducing the amount of time necessary to wait to make the crossing.
- Improves pedestrian safety by reducing mid-block crossings at uncontrolled locations.

Disadvantages:

- Reduces green time for conflicting vehicle movements.
- Can add to delays at highly congested intersections.
- May reduce capacity for vehicles and require coordination with other signals along the corridor.

Pedestrian Signal Retrofit - Signs above the pedestrian push-button that indicate direction of crossing. "Confirm" press buttons acknowledge activation through a light or sound after called by a pedestrian.

Advantages:

- Confirm press buttons have been shown to increase the number of pedestrians using the push-button.
- Pedestrians more likely to wait for the "Walk" phase signal.

Disadvantages:

- Expense of implementing comprehensively.

Mitchellville Road at Excalibur Road in Bowie (above)

Pedestrian Countdown Signal - Walk/Don't Walk pedestrian signals with countdown signal informing pedestrians of the time remaining to cross the street.

Advantages:

- Fewer pedestrians cross the street late in the countdown as compared to signal heads with only the flashing "Don't Walk" light.

Disadvantages:

- Expensive to implement comprehensively.

Kenilworth Avenue (MD 201) at Pontiac Street (above)

Protected Left-Turn - Allows left-turning vehicles a protected movement (i.e., no conflicting movements), generally involving the installation of a left- turn arrow.

Advantages:

- Removes conflicts between left-turning vehicles and oncoming, through-movement vehicles.
- Improves left-turning operations.

Disadvantages:

- Less green time for through and right-turn movements.
- Less green time for pedestrian crossings.

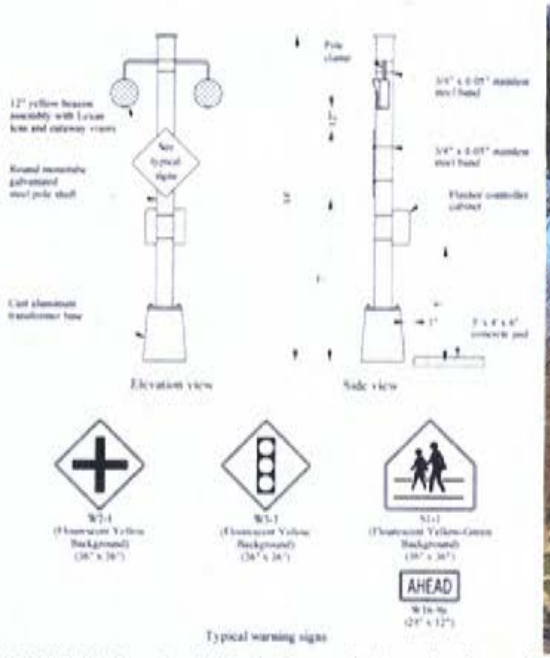
Rapid Flash Beacon (RFB) (or Hazard Identification Beacon (H.I.B)) - Signs with a pedestrian-activated "strobe-light" flashing pattern attract attention and notify the driver that pedestrians are at the crosswalk. RFBs on the side of the road increase driver yielding behavior significantly (to around 80% typically). Additional signs can be included on a center island or median, although these have a lower marginal benefit as compared to roadside signs.
DPW&T Standard TS-6

Advantages:

- Raises awareness of the crossing
- Proven to modify driver behavior at the crossing.
- Appropriate at school crossings, crossings to parks and transit, and other high volume pedestrian areas.

Disadvantages:

- Expensive
- Frequently must be implemented with other safety improvements



DPW&T Standard TS-6 (above left) and a hazard beacon along Cheverly Avenue (above right)

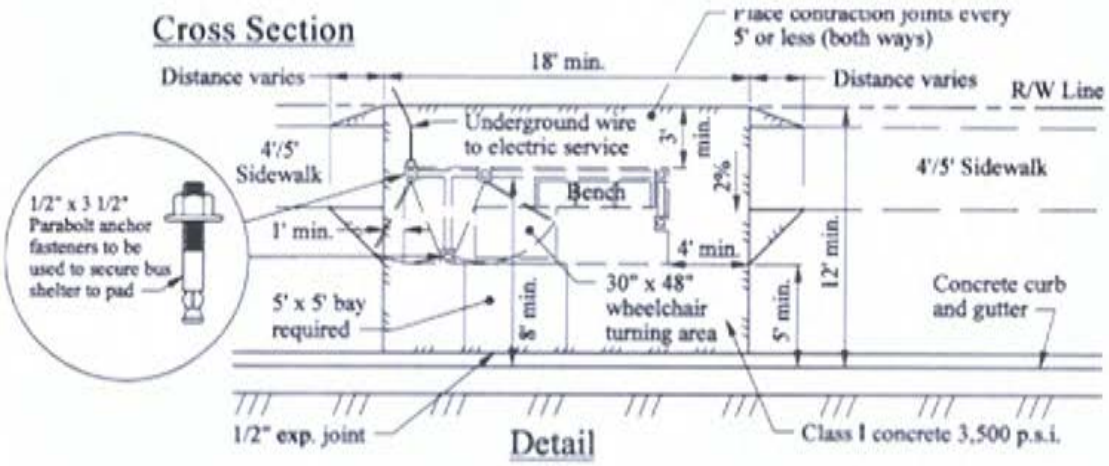
Bus stops – Bus stops need to be sited and designed to incorporate appropriate shelter, ADA access, lighting, and other pedestrian amenities as appropriate. In addition to new bus stops, sometimes it may be appropriate to relocate or consolidate existing bus stops. This can be done to reduce the number of stops along a route, to concentrate boarding at one location, and to improve access to existing sidewalks or destinations.

Advantages:

- Encourages transit use by providing suitable accommodations for pedestrians accessing transit from surrounding communities.
- Provides suitable protection for pedestrians at transit stops during inclement weather.

Disadvantages:

- Can be expensive due to ongoing maintenance and operating costs.



DPW&T Standard 300.24 (above)

Bus stop along Evergreen Parkway at the Bowie Town Center (above)

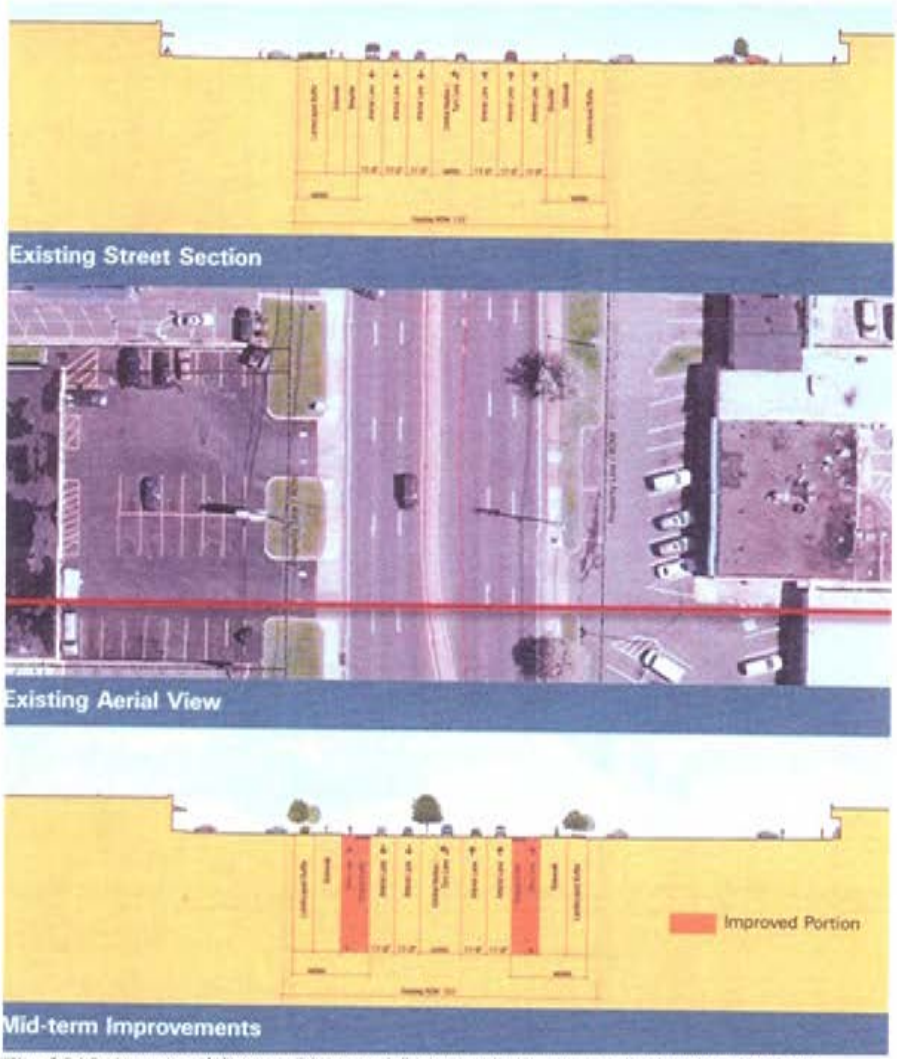
Reduce or Add Lane; Modify Existing Geometry - Modify the existing intersection geometry to respond to conditions including reducing pedestrian crossing exposure to traffic, adding or eliminating a traffic movement, creating space for the type and level of pedestrian activity, or reducing speed of turning vehicles. The complete street element recommends that the space within existing right-of-way be evaluated to identify underutilized space that can serve bicyclists or pedestrians as pedestrian refuge, sidewalk space, or space for on-road bicycle accommodations.

Advantages:

- Improve safety or capacity according to situation.
- Increase or decrease user delay according to situation.

Disadvantages:

- Lack of right-of-way and/or physical space.
- High cost and long timeframe.



The 2010 *Approved Sector Plan and Sectional Map Amendment for Central Annapolis Road* recommends removing one travel lane in each direction for one segment of MD 450 in order to provide a designated bike lane with a striped buffer. This bike lane will also buffer the pedestrians on the sidewalk.

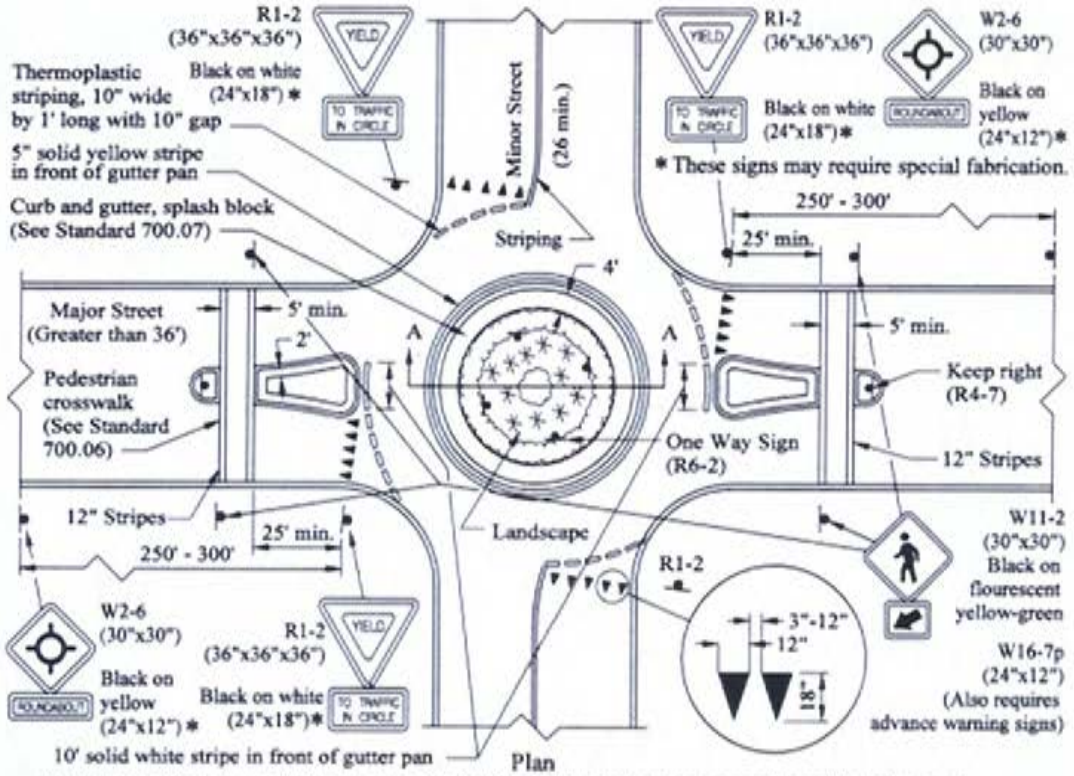
Roundabout - Raised circular island intersection treatment where all entries are yield controlled, circulating vehicles have the right-of-way, and pedestrian access is allowed only across the roundabout legs. DPW&T Standard 700.04

Advantages:

- Yield control reduces wait times, thus getting traffic more steadily through the intersection.
- Reduces the severity of crashes relative to signalized intersections.
- Reduces conflict points compared to a signalized intersection.

Disadvantages:

- Requires substantial right-of-way for construction.
- Pedestrians are not provided with a protected signal phase where all traffic is stopped. Forced to rely on driver courtesy and respect for pedestrian right-of-way in the crosswalk.
- High cost.



Roundabouts calm traffic and provide well marked pedestrian crossing with refuges at intersections. DPW&T Standard 700.04

In-Street "Stop for Pedestrian" Sign - Signs placed in the middle of crosswalks to increase driver awareness of pedestrians and the legal responsibility to yield right-of-way to pedestrians in crosswalk. These signs are a relatively low-cost method of educating both drivers and pedestrians about the laws related to pedestrian safety. They also modify driver behavior at appropriate locations.

Advantages:

- Increases the number of motorists that yield to pedestrians in the crosswalk.
- Reinforces the right of pedestrians in the roadway.

Disadvantages:

- If used too often, motorists have a tendency to ignore the signs.

High-Visibility Crosswalk - Clear, reflective roadway markings and accompanying devices at intersections and priority pedestrian links, located only where motorists should expect pedestrians with sufficient sight distance and reaction time with prevailing travel speeds. High visibility can be achieved with striping, reflective markings, and special pavers on concrete treatments. DPW&T Standards 300.22 and 300.23.

Advantages:

- Warns motorists of potential for pedestrians.
- Designates a preferred location for pedestrians.
- Maryland law requires motorists to yield to pedestrians in or near the vehicle's path in marked crosswalks.
- A variety of contrasting materials and markings can be used to attractively mark the crosswalk.

Disadvantages:

- Most effective with other traffic control (signals, stop signs) or physical treatments (bulb outs) that help to reinforce crosswalks and support reduced vehicle speeds.
- Motorists may ignore.
- The treatment needs to be visible during the day and at night.

Contrasting and high visibility crosswalk along Evergreen Parkway at the Bowie Town Center

Raised Crosswalk - A pedestrian crossing area raised above street grade to give motorists and pedestrians a better view of the crossing area. A raised crosswalk is essentially a speed table marked and signed for pedestrian crossing. Raised crosswalks not only increase the visibility of the pedestrian crossing, but also calms traffic to approximately 25 or 30 mph. Raised Crosswalks typically involve placing a crosswalk on top of a speed table. DPW&T Standard 700.02

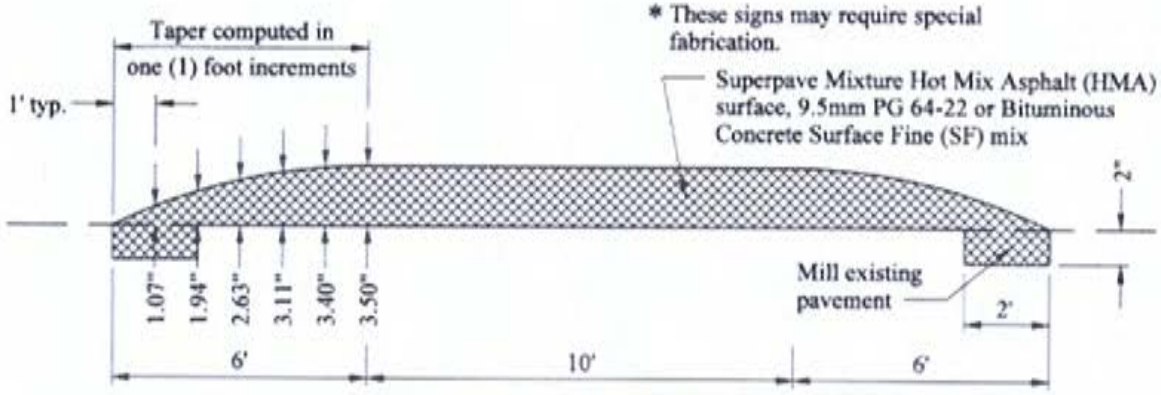
Advantages:

- Provides better view for pedestrians and motorists.
- Increases the visibility of the crosswalk.
- Slows motorist travel speeds.
- Broad application on both arterial and collector streets.

Disadvantages:

- Can be difficult to navigate for large trucks, buses, and snow plows.
- Can only be used on certain road types.

Raised crosswalk with hazard beacon on Cheverly Avenue (above left), Governor Oden Bowie Drive (above right)



Section A-A - Hump Profile
DPW&T Standard 700.02 (above)

Raised Median Island/Pedestrian Refuge Area – Provides a protected area in the middle of a crosswalk for pedestrians to stop while crossing. Especially appropriate along multi-lane roads where some pedestrians may have to wait in the median before making the full crossing. At a minimum, raised median islands should be six-feet wide to accommodate persons in wheelchairs. Wider islands are often preferred, particularly when included on multilane facilities. DPW&T Standards 300.09 and 300.10

Advantages:

- Provides a safe refuge for pedestrians.
- Shortens the total cross distance and breaks the crosswalk into more manageable segments for pedestrians.
- Discussions at the Metropolitan Washington Council of Governments has indicated that providing a pedestrian refuge is the single most important improvement that can be done in many locations to improve the safety of the pedestrian crossing.

Disadvantages:

- Can be difficult to implement at some intersections due to the need for turn lanes.
- Sometimes requires extending the median towards the intersection, which can impact the turning movement of larger vehicles

Pedestrian refuge along Mitchellville Road (above left) and Paint Branch Parkway (above right).

Walkways through surface parking - Large expanses of surface parking can be barriers to pedestrian movement. Adequate walkways and sidewalks need to be provided through large parking lots to provide pedestrian access between buildings, from the public right-of-way to internal destinations.

Advantages:

- Makes a largely auto-centric use more pedestrian friendly.
- Helps make large areas of parking more compliant with complete street principles.
- Provides visible and buffered walkways through areas otherwise dedicated to motor vehicle trips.

Disadvantages:

- May negatively impact the total number of parking spaces available.
- Can sometimes require walkways through or along areas otherwise designated for landscaping or stormwater management.

Pedestrian walkways through the surface parking lot at Woodmore Town Center (both photos above)

Bulb-out/Curb Extension - An extension of the curb or the sidewalk into the street (in the form of a bulb), usually at an intersection, that narrows the vehicle path, inhibits fast turns, and shortens the crossing distance for pedestrians.

Advantages:

- Shortens crossing distances for pedestrians.
- Reduces motorist turning speeds.
- Increases visibility for both motorists and pedestrians.
- Enables permanent parking.
- Enables tree and landscape planting and water runoff treatment.

Disadvantages:

- Can only be used on streets with unrestricted on-street parking.
- Physical barrier can be exposed to traffic.
- Greater cost and time to install than high-visibility crosswalks.

Illustrative curb extension from the Mt. Rainier MUTC Plan (above left) and an existing curb extension along Cheverly Avenue (above right).

Pedestrian Hybrid Signal (HAWK) - Pedestrian-activated signal, unlit when not in use, begins with a yellow light alerting drivers to slow, and then a solid red light requires drivers to stop while pedestrians have the right-of-way to cross the street.

Advantages:

- A very high rate of motorists yielding to pedestrians.
- Drivers experience less delay at hybrid signals compared to other signalized intersections.

Disadvantages:

- Expensive compared to other crossing treatments.
- Requires pedestrian activation

Full pedestrian signal at Paint Branch Parkway and the Rhode Island Avenue Trolley Trail.

Wayfinding - Signs directing pedestrians and bicyclists towards destinations in, and routes through, the area. These typically include distance and average walk/cycle times.

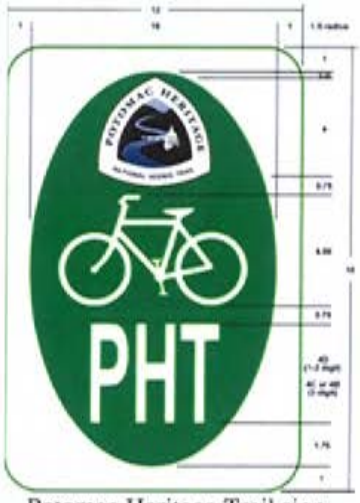
Advantages:

- Eases navigation for residents and visitors by bicycle.
- Provides guidance to destinations from streets and along multi-use trails.
- Offers another indication to motorists of the presence of bicycles.
- Relatively low-cost, visible technique for making trails and bicycle routes more usable as transportation connection.

Disadvantages:

- Maintenance and vandalism.
- Can create visual clutter if not done properly.

Wayfinding signage near National Harbor



Potomac Heritage Trail sign

Bicycle Shared Lane Markings (or "sharrows") - A shared-lane marking, or sharrow, is a pavement marking used where space does not allow for a bike lane typically indicating that bicycles have equal right to the travel lane. Sharrows remind motorists of the presence of bicycles and indicate to cyclists where to safely ride within the roadway.

Advantages:

- Reduces wrong-way and sidewalk riding.
- Improves cyclists positioning in the roadway.
- Informs motorists of presence of bicyclists.
- Marks streets without adequate space for bike lanes.

Disadvantages:

- Pavement marking maintenance.
- Not as protected as a bike lane.

Shared lane marking

R4-11 Signs (Bicycles may use full lane signs) – These signs are typically used in conjunction with shared lane markings and indicate to motorists and bicyclists that the bicyclist may use the full lane. These signs may be appropriate in situations where an existing road does not allow bicyclists to safely share the road due to space limitations in the outside curb lanes.

Bicycles May Use Full Lane Sign along MD 450 in Bladensburg

Advantages:

- An effective way to deal with on-road bicyclists when sufficient right-of-way does not exist to accommodate a full bike lane.
- Included in the 2009 MUTCD Manual. Effectively implemented by SHA along several corridors in the county.
- SHA has approved a modified yellow "warning" sign as well.

Disadvantages:

- Requires extensive education on the part of both drivers and bicyclists.
- May not be suitable on roads exceeding 35 mph.
- Many recreational cyclists will not be comfortable taking the lane regardless of the pavement markings or signs.

Figure 3.6
BICYCLES MAY USE FULL LANE
W16-1(3)

SHA has approved a modified Bicycles May Use Full Lane warning signed

Bike Lanes - The area of roadway designated for non-motorized bicycle use, separated from vehicles by pavement markings. Both AASHTO and the MUTCD include guidance on the pavement markings and signage appropriate along bike lanes.

Advantages:

- Improves safety and comfort by increasing the visibility and awareness of cyclists.
- Designates carriage-way space for bicyclists.

Disadvantages:

- May still conflict with motorists.
- Motorists may illegally park in bike lane.
- Requires additional right-of-way on the outside curb lane.

Bike lanes were provided along several key roads at Woodmore Town Center.

Bike Box - A bike box is a striped area in front of the stop bar at a signalized intersection that allows cyclists to correctly position themselves for turning movements during the red signal phase by pulling ahead of the queue.

Advantages:

- Decreases conflicts and crashes between cars and bicycles.
- Separates bicycles from cars at the intersection.
- Minimizes conflicts with through bicycle traffic and right turning motor vehicles.

Disadvantages:

- Extensive public education required.
- Pavement marking maintenance and costs.
- Potential conflicts with right-turning traffic as it crosses the bike box or pocket lane as it enters the turning lane.

Wide Outside Curb Lane – In circumstances where there is insufficient right-of-way to accommodate a full bike lane, bicycles can still be accommodated with a wide outside curb lane. AASHTO is clear that even if a full bike lane is not feasible, any additional space provided on the outside curb lane is a benefit to bicyclists by providing additional space next to the curb and minimizing potential bicycle and automobile conflicts in the outside lane. In addition to providing a more comfortable and inviting environment for bicyclists, wide outside curb lanes also benefit motorists by improving visibility and ensuring that motorists will not have to change lanes in order to safely pass the bicyclists in most cases. In general, to be considered a wide outside curb lane that is beneficial to bicyclists, 14 feet of usable lane width is recommended. On existing roads, this can often be accommodated by narrowing the existing travel lanes or center turn lanes in order to allocate more space within the outside curb lanes.

This wide outside curb lane along MD 197 was provided through narrowing the existing travel lanes. It provides additional space next to the curb to accommodate bicyclists, while also providing a striped buffer for pedestrians along the sidewalk.

Bicycle Boulevard/Neighborhood Greenway – These are low-volume and low-speed streets that have been optimized for bicycle travel through treatments such as traffic calming, traffic reduction, signage, pavement markings, and intersection crossing treatments. Bicycle Boulevards/Neighborhood Greenways serve travel within primarily residential neighborhoods. As such, the street width is narrower and allows on-street parking. It includes elements such as traffic circles, landscaped buffers, chicanes, curb extensions, and bikeways to discourage through traffic by motor vehicles, resulting in lower speeds and volumes.

Advantages:

- Converts well-connected streets prone to cut-through traffic into streets well-suited for bicycle transportation.
- Allows through movements for cyclists while discouraging similar through trips by non-local motorized traffic.
- Creates a comfortable, low-volume, low-speed space for bicyclists and pedestrians.

Disadvantages:

- Some treatments more expensive than others.
- In areas with few alternative routes, reduces those that can relieve traffic during peak travel times.
- Requires extensive community outreach to determine what treatments work best at the neighborhood level.

Photo 3. Potential improvement: Low-profile traffic circle.

Photo 2. Potential improvement: Street narrowed with pavement marking and center median.

The *Central Avenue-Metro Blue Line Corridor TOD Implementation Plan* discusses several treatment options that can be considered along Maryland Park drive and other road or greenway corridors.

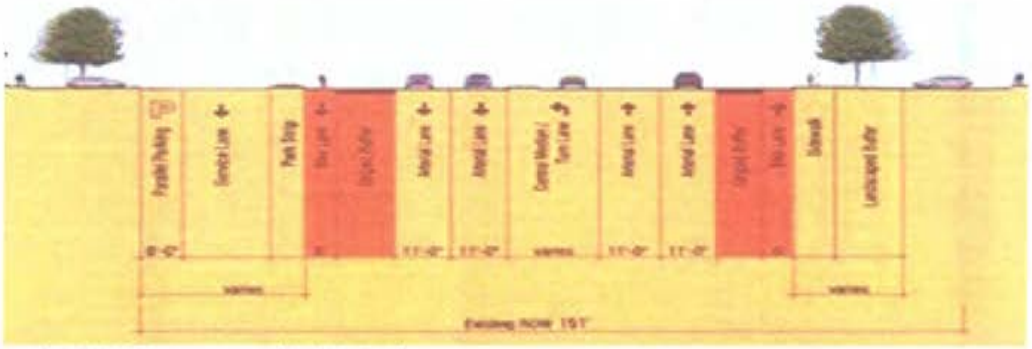
Cycle Track/Protected Bike Lane - An exclusive bike facility physically separated from vehicle travel lanes, parking lanes, and sidewalks. Cycle tracks can be one-way, two-way, at street level, at sidewalk level, or at an intermediate level. Cycle tracks are appropriate along roads with higher travel speeds, higher traffic volumes, and/or a large amount of truck traffic, where additional buffering is required between the bicyclists and the motor vehicles.

Advantages:

- Buffer provides higher level of safety than a standard bike lane.
- The additional buffer between the bicycle facility and automobile traffic may encourage more recreational cyclists to use the facility who otherwise might not be comfortable riding with traffic.
- Reduces risk of "dooring" compared to a regular bike lane.
- Attractive to a wider spectrum of the public than bike lanes and may increase to total mode split for bicycle trips.
- Can be completed on existing roads with a lane reduction and restriping (see below).

Disadvantages:

- Potential conflicts at intersections.
- Can be expensive.
- Requires more space than bike lane
- Difficult to retrofit along existing roadways within established communities.
- As a relatively new treatment, relatively little data gathered on its use and effectiveness.



An example of a cycle track facility similar to that recommended along US 1.
Photo: Cori Sundstrom, PBIC Image Library.

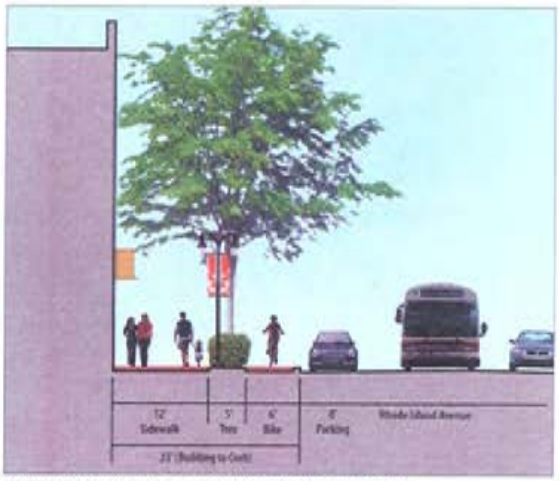


FIGURE 34: PROPOSED CONDITIONS — SOUTH SIDE OF RHODE ISLAND AVENUE, LOOKING WEST.

Shared-Use Pathway/Sidepath - Paved pathways parallel to, but away from the carriage-way and out of the path of turning vehicles designed with space adequate for safe use by both pedestrians and bicyclists. Appropriate for roads parallel to rail track, waterway, or other conditions with infrequent cross traffic.

Advantages:

- Separates bicyclists from vehicle traffic.
- Combination of pedestrians and bicyclists requires less space than separate facilities for each.
- Provides an inviting facility for recreational bicyclists who may be uncomfortable using an on-road bike lane.

Disadvantages:

- Needs adequate space to accommodate buffer from street and width to allow the passage of bicyclists and pedestrians.
- Bicycle and pedestrian conflicts.
- Not appropriate along roads with frequent curb cuts or intersections.
- Can lead to vehicle and cyclist collisions if motorists are not looking for cyclists coming in the opposite direction of traffic.

MD 4 sidepath in Forestville

Bicycle troughs – bicycle troughs enable bicyclists to easily walk their bicycle up or down a set of stairs by providing an area where the wheels of the bicycle can be placed adjacent to the stairway. As the cyclist walks down the steps, the bicycle can be rolled along next to the cyclist.
Advantages:

- This feature makes stairs more accessible to bicyclists and allows them to easily move their bicycle along the obstruction.
- In areas where stairs cannot be avoided, enables trail access for bicyclists to be preserved.

Disadvantages:

- Bicycle troughs are usually only utilized where it is not feasible to provide an ADA accessible trail or sidewalk connection. Although stairs including troughs are more easily negotiated by bicyclists, they are still not ADA accessible.

Bicycle Parking - Devices and/or areas that allow secure bicycle parking, often located at areas of high bicycle and pedestrian traffic such as office and industrial areas, shopping centers, schools, and multi-use trails. Bicycle Parking can be provided on a curb extension or in on-street parking spaces. Racks that allow the frame of the bike (as well as the tires) to be secured are preferred. Bike lockers are also appropriate in some locations, particularly areas requiring longer-term storage.

Advantages:

- Provides a secure location to store and lock bicycles.
- Locations are generally very close to and visible from the point of interest.
- Relatively inexpensive and easy installation.
- Encourages community bicycle use.

Disadvantages:

- Requires space in potentially busy area.
- May remove an on-street parking space.

Both Inverted-U racks (above left) and bicycle lockers (above right) provide secure bicycle parking at the Naylor Road Metro.

Bicycle Pocket Lane – A bicycle pocket lane is a striped area for bicyclists next to the through lanes in order to minimize conflicts with right turning vehicles. They are designed to encourage bicyclists to ride next to the through traffic and minimize conflicts with right turning motorists.

Pocket lane along US 301 in Bowie

Advantages:

- Minimizes conflict of through bicycle traffic with right turning motor vehicles.
- An accepted method of getting bicycle lanes through signalized intersections per AASHTO guidance.

Disadvantages:

- Requires extensive public education on the part of both motorists and bicyclists
- May be uncomfortable for bicyclists to use if motor vehicle speeds are faster than 35 miles per hour.

Shared Roadways – Shared (or shared use) roadways recognize that to some extent, bicycles will utilize all roads were they are permitted. On higher volume or higher speed roads, separate accommodations for bicyclists are appropriate, such as paved shoulders or designated bike lanes. Roads with a higher amount of truck traffic may also warrant special treatments for bicyclists. However, on roadways with low motor vehicle volumes and/or speeds, bicyclists can safely and comfortably share the travelled-way with other traffic and usually do not need special treatments. These lower volume and lower speed roads operate well for shared use. Design features that can make shared use roads more bicycle-compatible include bicycle-safe storm grates and bridge expansion joints, smooth pavement, adequate sight distance, signal timing, and detector systems that recognize bicycle traffic.

Neighborhood Trail Connections – Local trail connections can greatly enhance a neighborhood's walkability by providing pedestrian access at locations where full automobile access is not feasible or desirable. These connections can be used to connect adjoining subdivisions, otherwise isolated nodes of development, or provide more direct access to a key pedestrian destination. While not counted as a complete street improvement along a roadway, neighborhood trail connections can be selectively used to greatly increase the walkability of new developments, increase connectivity between communities, and provide more direct pedestrian connections to transit, parks, and schools.

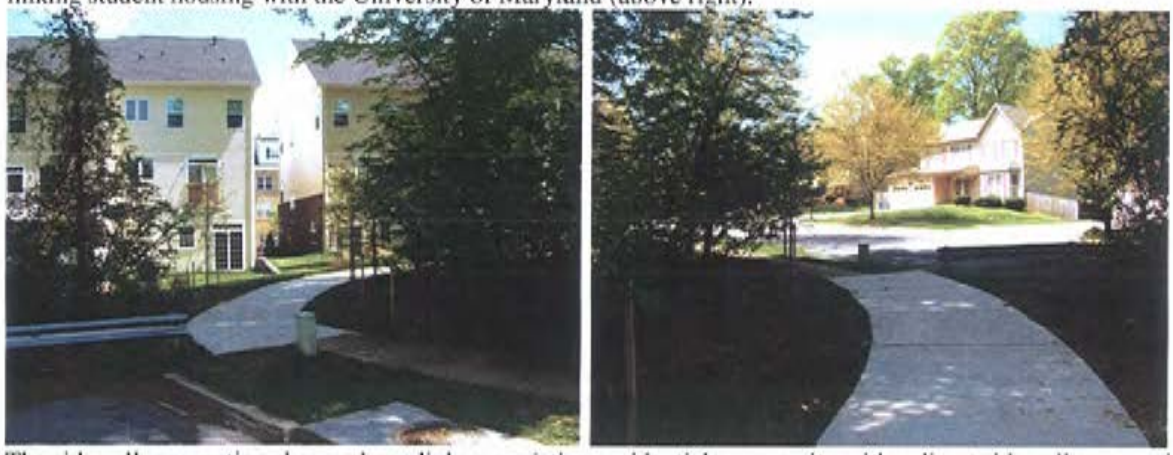
Advantages:

- Can provide local neighborhood connections for use as both transportation and recreation.
- Can accommodate pedestrian access when a full road connection is not feasible or necessary.
- Can link new development with existing, established communities.

Disadvantages:

- May require additional land dedication to accommodate the connection.
- Can involve impacts in environmental buffers.
- Trails on private HOA open space can be utilized only for access within the subject development, not for use by the surrounding communities or general public.

The photos above show a direct trail connection to the West Hyattsville Metro (above left) and a trail connection linking student housing with the University of Maryland (above right).



The sidewalk connection shown above links an existing residential community with a direct sidewalk connection to Metro provided as part of a new development.

Capital Bikeshare Accommodations – Capital Bikeshare has an established and heavily utilized program in Washington D.C. and northern Virginia. Recent efforts have focused on the expansion of Capital Bikeshare into Maryland. Bikeshare has been funded for implementation in Montgomery County, College Park and the University of Maryland through the Maryland Bikeshare Program sponsored by the Maryland Department of Transportation. Prince George's County has also received funding for a bikeshare feasibility study for Greenbelt and the Anacostia Trails Heritage Area inside the Capital Beltway. This study should lay the framework for establishing a successful and sustainable program in the county that builds upon what is being done in surrounding jurisdictions.

Accommodations for Capital Bikeshare can be considered through the development review process. Several recent approvals have included land dedication, facilities, or the commitment of funds to support Capital Bikeshare on site. These include Naylor Station, which required dedication of space for a future bikeshare facility (Condition 1b of DSP-10044), the Cafritz Property, where bikeshare was incorporated as part of the site's Transportation Management Plan (Condition 17 of A-10018), and the M Square development, where funding was required for the installation of a medium bikeshare station (Condition 9 of DSP-09028).

Conditions of approval related to bikeshare accommodations or funding may be considered as part of subdivisions in appropriate locations within centers and corridors. However, the collaboration and concurrence of the operating agency or municipality is required for this type of condition. Any proffered or conditioned bikeshare requirements must have the concurrence of the operating agency to be conditioned by the Planning Board. Conditions for bikeshare facilities are most appropriate on larger sites as part of an overall transportation management plan.

Showers and Changing Facilities – Showers and changing facilities are appropriate at large employment sites where it is anticipated that a significant number of employees will be arriving at work by walking or bicycling. The inclusion of shower facilities was required at M Square (Condition 4q of DSP-09028), consistent with Mandatory Development Requirement S-175 of the *Approved Transit District Development Plan for College Park-Riverdale Transit District Overlay Zone* (TDDP). Showers and changing facilities should be considered for all buildings with 25 or more employees, and may be required if a significant number of bicycle trips to the building is anticipated. The provision of these types of accommodations in nonresidential or mixed-use development can be provided as further incentives for increased bicycle usage.

Appendix B: Complete Street Checklist

A Complete Streets Checklist is a useful tool for evaluating how each travel mode has been considered and accommodated in the process of planning or designing projects within, or impacting, the public right-of-way. The checklist approach also provides a simple means for assuring that the new adequate pedestrian and bicycle facilities requirements are incorporated into the design review process.

Part I of the 2012 *Prince George's County Transportation Review Guidelines* includes checklists for evaluating trip and parking credits for which a proposed development is eligible. The checklist presented below includes additional questions that should be considered when evaluating whether adequate bicycle and pedestrian facilities have been provided.

The complete streets checklist is based on the 2012 *Prince George's County Transportation Review Guidelines*, the Approved Countywide Master Plan of Transportation Complete Streets principles, and the complete streets design and policy recommendations developed for the *Central Avenue-Metro Blue Line Corridor TOD Implementation Project*. The checklist is based on several assumptions about implementing complete streets and TOD:

- Street and trail types are part of a transportation/land use relationship inherent in all development projects, especially TOD. Roadway reconstruction affects existing and prospective land uses, and those land uses influence the roadway cross-section.
- All projects, regardless of scope or owner (public, private), will contribute to creating the complete network. A complete network emerges with each roadway or development project, especially when attention is given to how a project fits into the network vision.
- Over time, a complete network will be established.
- Travel within the corridor can be shifted from primarily motor vehicle to a significant proportion of walking, bicycling, and transit trips. Based somewhat on the "build it and they will come" theory, improvements to walking, biking, and transit transportation makes these modes more attractive and possible to use.

The checklist includes the facilities, features and amenities that should be evaluated at the time of subdivision to determine the adequacy of both bicycle and pedestrian facilities. This checklist is designed to accommodate the requirements of CB-2-2012 and provide an evaluation tool for subdivision application. This checklist will help to ensure that subdivisions are reviewed consistently and are evaluated for conformance with the requirements of CB-2-2012. If the subject application is missing some of the items listed, this may be the basis for conditions of approval for additional bike and pedestrian accommodations. The checklist addresses the following aspects of each project:

- **General Information** includes the type of project, land use, and project scope.
- **Site Context and Opportunities** addresses the surrounding land uses, destinations, and transportation facilities.
- **Complete Streets Assessment** evaluates the project design in relation to bicycle, pedestrian, and transit facilities–and its ability to support TOD and complete streets.

Complete Streets Review Checklist

GENERAL PROJECT INFORMATION

1. Project Name_____

2. Preliminary Plan Number_____

3. Project Area (project location, relation to transit, designated Center and/or Corridor impacted)

_____

_____

4. Project Description

_____

_____

5. Number of Lots_____ **6. Gross Floor Area of Retail or Commercial**_____

SITE CONTEXT AND OPPORTUNITIES

5. Road classifications proposed or impacted by the project.

_____

_____

6. Land Use and Character: Describe the character of the project area, including predominant land uses, densities, and any historic districts or special zoning districts present. Describe the compatibility of the proposed design with these characteristics.

_____

_____

_____

_____

7. Trip Generators and Attractors: List any major sites, destinations, and trip generators within one-half mile of the project area, including: transit stops with service frequency of at least 20 minutes during peak periods; public facilities (e.g., schools, libraries, parks, or post offices); recreational communities; cultural facilities; retail centers greater than 20,000 square feet GFA; employment centers greater than 40,000 square feet GFA; and existing sidewalks, paths, bike lanes, or cycle tracks. Describe how the proposed design provides connections to these sites.

_____

_____

_____

_____

_____

_____

8. Travel Patterns and Conditions: Describe existing and desired future walking, bicycling, transit, motor vehicle, and freight conditions within the project area. Describe how the proposed design addresses these conditions, including volumes, safety, comfort, connectivity, and quality of the street environment.

_____

_____

_____

_____

9. Opportunities: Identify opportunities to address safety, mobility, and access within the larger corridor or center (within one-half mile of the subject site).
Example: Road project will install signal at intersection with companion bus stops.
Example: Restriping project will stripe bike lanes.
Example: Development project will install bus shelter and lighting or project trail access to Metrorail station.

_____

_____

_____

_____

COMPLETE STREETS ASSESSMENT

Pedestrian Facilities - Does the proposed design:

10. Provide adequate clear sidewalk widths along street frontages? (minimum 5 feet of clear sidewalk width required per ADA) .....☐Yes ☐No ☐ NA

11. Provide recommended buffer between pedestrians and traffic?.....☐Yes ☐No ☐ NA

12. Include pedestrian facilities and designated crossings that provide direct connections to destinations identified in Question #7?..... ☐Yes ☐No ☐NA

13. Provide pedestrian facilities for internal site circulation (e.g., walkways along and between buildings, walkways through parking lots to buildings, designated crossings of drive aisles)? ..... ☐Yes ☐ No ☐NA

14. Provide walkway lighting and/or continuous street lighting that meets or exceeds County standards? .....☐Yes ☐No ☐NA

15. Minimize vehicle intrusions into the pedestrian zone (e.g., driveways, lay-by lanes, loading zones)? ..... ☐ Yes ☐ No ☐NA

16. Provide designated pedestrian crossing opportunities every 300-500'?
..... ☐Yes ☐No ☐NA

17. Provide ADA compliant curb ramps where required and/or appropriate?
..... ☐Yes ☐ No ☐NA

18. Provide marked crosswalks and/or other crossing improvements at appropriate locations? ..... ☐Yes ☐ No ☐NA

18. Provide the sidewalk, sidepath, and other streetscape improvements as recommended in the Countywide Master Plan of Transportation and applicable area or sector plan?
..... ☐Yes ☐ No ☐NA

Bicycle Facilities - Does the proposed design:

18. Include bicycle facilities that provide direct connections to destinations identified in Question #7? ..... ☐Yes ☐ No ☐NA

19. Include bicycle facilities identified in adopted plans..... ☐Yes ☐No ☐NA

20. Does the right-of-way dedication along master plan bikeways provide sufficient space for the bicycle facilities recommended in the area plan?..... ☐Yes ☐No ☐NA

20. Provide adequate bicycle parking per County Code requirements?
..... ☐Yes ☐No ☐NA

Transit Facilities - Does the proposed design:

21. Include transit enhancements (e.g. bus shelter, bus or intermodal transfer stop, park-and-ride facility, bus stop pad or pull-out, direct cash contribution to transit service costs, other transit service or system enhancements/amenities that serve the subject property) or propose to defray the cost of transit enhancements on-site or within one half mile of the site? ..... ☐Yes ☐No ☐NA

a. If yes, are proposed transit enhancements connected to the site by adequate pedestrian facilities? ☐ Yes ☐No ☐NA
b. If adequate pedestrian facilities are not available to the transit stop from the subject site, describe the nature of the gap or barrier in the pedestrian network:_____
_____

22. Provide lighting at on-site transit stops that meets or exceeds County standards?
..... ☐ Yes ☐No ☐NA

23. Provide ADA compliant landing pads at on-site transit stops?
..... ☐Yes ☐ No ☐NA

24. Provide a space for passengers to wait for and board transit vehicles that are separate from the walkway at on-site stops? ..... ☐Yes ☐ No ☐NA

Appendix C: Definitions

Bicycle – a pedal-powered vehicle upon which the human operator sits (from MUTCD, Section 1A.13 Definitions of Words and Phrases in This Manual, 6. Bicycle).

Bicycle Facility – a general term denoting improvements and provisions to accommodate or encourage bicycling, including parking and storage facilities and roadway sections specifically designed for bicycle use.

Bicycle Level of Comfort (BLOC) – a mathematical model used to estimate an average bicyclist's perception of the quality of service of a section of roadway between two intersections.

Bicycle Network – A system of bikeways within a specific jurisdiction, which may include bike lanes, bike routes, shared use paths, and other identifiable bicycle facilities.

Bike (or Bicycle) Lane – A portion of roadway that has been designated by signs and pavement markings for preferential or exclusive use by bicyclists (from MUTCD, Section 1A.13.7.Bicycle Lane). The designation of a bike lane has specific legal consequences under Maryland Law.

Bikeway - Bicycle lanes, shared lanes, paved shoulders, wide curb lanes, and shared use paths. These facilities may or may not be marked for preferential or exclusive use for bicyclists.

Bike (or Bicycle) Route – A roadway, bikeway, or combination of both, designated by a jurisdiction with the appropriate authority, along which bicycle guide signs have been posted to provide directional and distance information.

Complete Street – a complete street safely and adequately accommodates motorized and non-motorized users, including pedestrians, bicyclists, motorists, freight vehicles, emergency vehicles, and transit riders of all ages and abilities, in a manner appropriate to the function and context of the relevant facility.

Complete Streets Policy – a directive at the local, state, regional, or federal level that ensures the safe and adequate accommodation, in all phases of project planning, development, and operations, of all users of the transportation network, including pedestrians and transit riders of all ages and abilities, bicyclists, individuals with disabilities, motorists, freight vehicles, and emergency vehicles, in a manner appropriate to the function and context of the relevant facility. The official Complete and Green Streets Policy for Prince George's County was established by CB-83-2012, with many additional policies and recommendations contained in the *Approved Countywide Master Plan of Transportation*.

Complete Streets Principle – a specific component of a complete streets policy.

Cycle Track – A roadway designed for specific use by bicycles. It is physically separated from motorized vehicle traffic by either open space or a barrier that is not open to any other form of non-motorized travel.

Green Street – a street or road that safely and adequately accommodates and incorporates best management practices of environmental site design for addressing stormwater runoff, including using small-scale stormwater management practices, nonstructural techniques, and better site planning to minimize the impact of road and sidewalk development on water resources (CB-83-2012).

Guide (or Wayfinding) Sign – a sign that shows route designations, destinations, directions, distances, services, points of interest, or other geographical, recreational or cultural information (from MUTCD, Section 1A.13.30.Guide Sign).

Island – a defined area between traffic lanes for control of vehicular movements and/or for pedestrian refuge. It includes all end protection and approach treatments. Within an intersection area, a median or an outer separation is considered to be an island (from MUTCD, Section 1A.13, 48.Median).

MUTCD – the current edition of the Manual on Uniform Traffic Control Devices, published by the Federal Highway Administration. As of 2013, the 2009 Edition, as amended, is the latest version and can be found on-line at: http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/pdf_index.htm

MdMUTCD – The Maryland Manual on Uniform Traffic Control Devices is the amended version of the MUTCD that has been officially adopted by the Maryland State Highway Administration.

Right-of-Way – a general term denoting land devoted to transportation purposes. The land may be owned outright by the agency responsible for the roadway or the agency may have a perpetual easement to use it for transportation purposes.

Roadway – that portion of a highway, including shoulders, intended for vehicular use.

Rumble Strip – a series of intermittent, narrow, transverse areas of rough-textured, slightly raised, or depressed road surface that is installed to alert road users to unusual traffic conditions (from MUTCD, Section 1A.13, 69, Rumble Strip).

Shared Lane – a shared travel lane where motorized vehicles can pass bicycles without changing lanes. The lane is the furthest right travel lane. Its minimum width is 13 feet measured from the edge of the gutter pan or the edge of paving. The terms wide curb lane and outside lane are also used for a shared lane.

Shared Lane Marking – a pavement marking symbol that indicates appropriate bicycle positioning in a shared lane. See Section 9C.07 /Shared Lane Marking and Figure 9C-9 of the MUTCD for design and additional information.

Shared Roadway – a roadway that is open to both bicycle and motorized vehicle travel. This may be an existing roadway, a street with wide curb lanes, or a road with paved shoulders.

Shared Use Path – a roadway where motorized vehicle traffic is prohibited, that is physically separated from motorized vehicle traffic by either open space or a barrier. Shared use paths are generally open to any form of non-motorized travel, including but not limited to: pedestrians (walkers, joggers, runners), bicycles, roller skates, wheelchairs, scooters, and horses.

Shoulder – the portion of the roadway contiguous with the travel way, for accommodation of stopped vehicles, emergency use and lateral support of sub-base, base, and surface courses; often used by pedestrians and also by cyclists.

Sidepath – a shared use path located immediately adjacent and parallel to a roadway.

Traffic Control Device – a sign, signal, marking, or other device used to regulate, warn or guide traffic, placed on, over or adjacent to a street, highway, pedestrian facility, or shared-use path by authority of a public agency having jurisdiction (from MUTCD, Section 1A.13,87.Traffic Control Device).

Traveled Way - the portion of the roadway for the movement of vehicles, exclusive of shoulders, berms sidewalks, and parking lanes (from MUTCD, Section 1A.13,91, Traveled Way).

Appendix D: References and Sources of Additional Information

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Complete Streets in California – It's a Safe Decision. National Complete Streets Coalition and the Local Government Commission. February 22, 2012.

Designing Sidewalks and Trails for Access – Review of Existing Guidelines and Practices (Part I of II), US Department of Transportation, Federal Highway Administration, July 1999.

Draft Bicycle Policy and Design Guidelines, Maryland State Highway Administration, October 2012.

Guidebook on Methods to Estimate Non-Motorized Travel: Overview of Methods. US Department of Transportation, Federal Highway Administration, July 1999.

Guide for the Development of Bicycle Facilities, American Association of State Highway and Transportation Officials, 1999.

Multimodal Level of Service (LOS) – Methodology and Findings, Appendix K. Pikes Peak Area Council of Governments, November 2011.

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NCHRP (National Cooperative Highway Research Board) Report 616 – Multimodal Level of Service Analysis for Urban Streets. Transportation Research Board of the National Academies, 2008.

New Carrollton Interim Pedestrian Safety Improvements, Transportation Land-Use Connection (TLC) Program, Kittelson and Associates, June 2010.
http://www.mwcog.org/transportation/activities/tlc/pdf/NewCarrolltonPedSafety.pdf

Prince George's Plaza Metro Area Study, Transportation Land-Use Connection (TLC) Program, Toole Design Group, August 15, 2008.
http://www.mwcog.org/transportation/activities/tlc/pdf/PGPlaza-Final.pdf

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http://www.pgplanning.org/Resources/Publications/Transportation_Review_Guidelines_2012.htm

Walkability Checklist – Guidance for Entitlement Review, City of Los Angeles Department of City Planning. November 2008. http://urbandesignla.com/walkability.htm

Appendix E: CB-2-2012

DR-2

COUNTY COUNCIL OF PRINCE GEORGE'S COUNTY, MARYLAND

2012 Legislative Session

Bill No. CB-2-2012

Chapter No. 5

Proposed and Presented by Council Members Olson and Franklin

Introduced by Council Members Olson, Franklin, Lehman, Davis and Patterson

Co-Sponsors

Date of Introduction April 3, 2012

SUBDIVISION BILL

AN ACT concerning

Adequate Public Pedestrian and Bikeway Facilities in Centers and Corridors

For the purpose of requiring the Planning Board to make a finding of adequacy of public Pedestrian and Bikeway Facilities for development proposals within County Centers and Corridors, to include standards for ensuring the adequacy of non-motorized multimodal transportation facilities including sidewalks, bikeways, and pathways, clarifying requirements for adequate roads by implementing "complete streets" principles and policies in the 2009 Approved Countywide Master Plan of Transportation , and providing that these provisions shall be prospectively applied.

BY adding:

SUBTITLE 24. SUBDIVISIONS.
Section 24-124.01,
The Prince George's County Code
(2011 Edition).

SECTION 1. BE IT ENACTED by the County Council of Prince George's County, Maryland, that Section 24-124.01 of the Prince George's County Code be and the same is hereby added:

SUBTITLE 24. SUBDIVISIONS.

DIVISION 4. REQUIREMENTS: TRANSPORTATION AND CIRCULATION.

Sec. 24-124.01. Adequate Public Pedestrian and Bikeway Facilities Required in County Centers and Corridors.

(a) Statement of Legislative Intent. This Section establishes general criteria by which to ensure the adequacy of public pedestrian and bikeway facilities in County Centers and Corridors as designated by the General Plan (or as designated, defined, or amended by a subsequent master plan or sector plan). It also sets forth the requirements for those who establish subdivisions within Centers and Corridors to construct on-site and off-site pedestrian and bikeway facilities and other public streetscape improvements as part of any development project. The Approved 2002 General Plan states that the County should provide for a multimodal pedestrian-friendly transportation system at Centers and Corridors that is integrated with the desired development pattern. Accomplishing this requires the incorporation, to the maximum extent possible, of appropriate pedestrian, bicycle and transit-oriented design (TOD) and transit-supporting design (TSD) features in all new development within Centers and Corridors. Such features include integrated sidewalk, trail, and bikeway networks to divert as many trips as possible from automobile travel and increase the multimodal accessibility and attractiveness of trips to transit stops, schools, parks, libraries, stores, services and other destinations for all users. Pedestrian and bikeway facilities should be designed to increase safety, reduce travel time and offer the most direct routes to destinations for persons of all abilities. These concepts are further articulated in the "complete streets" principles and policies set forth in the 2009 Approved Countywide Master Plan of Transportation.

(b) Except for applications for development projects proposing five (5) or fewer units or otherwise proposing development of 5,000 or fewer square feet of gross floor area, before any preliminary plan may be approved for land lying, in whole or part, within County Centers and Corridors, the Planning Board shall find that there will be adequate public pedestrian and bikeway facilities to serve the proposed subdivision and the surrounding area.

(1) The finding of adequate public pedestrian facilities shall, at a minimum, include the following criteria:

(A) The degree to which the sidewalks, streetlights, street trees, street furniture, and other streetscape features recommended in the Countywide Master Plan of Transportation and applicable area master plans or sector plans have been constructed or implemented in the area.

(B) The presence of elements that make it safer, easier, and more inviting for pedestrians to traverse the area (e.g., adequate street lighting, sufficiently wide sidewalks on both

sides of the street buffered by planting strips, marked crosswalks, advance stop lines and yield markings, "bulb-out" curb extensions, crossing signals, pedestrian refuge medians, street trees, benches, sheltered commuter bus stops, trash receptacles, and signage).

(2) The finding of adequate public bikeway facilities shall, at a minimum, include the following criteria:

(A) the degree to which the bike lanes, bikeways, and trails recommended in the Countywide Master Plan of Transportation and applicable area master plans or sector plans have been constructed or implemented in the area;

(B) the presence of specially marked and striped bike lanes or paved shoulders in which bikers can safely travel without unnecessarily conflicting with pedestrians or motorized vehicles;

(C) the degree to which protected bicycle lanes, on-street vehicle parking, medians, or other physical buffers exist to make it safer or more inviting for bicyclists to traverse the area; and

(D) the availability of safe, accessible, and adequate bicycle parking at transit stops, commercial areas, employment centers, and other places where vehicle parking, visitors, and/or patrons are normally anticipated.

(c) As part of any development project requiring the subdivision or re-subdivision of land within Centers and Corridors, the Planning Board shall require the developer/property owner to construct adequate pedestrian and bikeway facilities (to the extent such facilities do not already exist) throughout the subdivision and within one-half mile walking or biking distance of the subdivision if the Board finds that there is a demonstrated nexus to require the applicant to connect a pedestrian or bikeway facility to a nearby destination, including a public school, park, shopping center, or line of transit within available public rights of way. The cost of the additional off-site pedestrian or bikeway facilities shall not exceed thirty-five cents ($0.35) per gross square foot of proposed retail or commercial development proposed in the application and Three Hundred Dollars ($300.00) per unit of residential development proposed in the application, indexed for inflation.

(d) Examples of adequate pedestrian and bikeway facilities that a developer/property owner may be required to construct shall include, but not be limited to (in descending order of preference):

(1) installing or improving sidewalks, including curbs and gutters, and increasing safe pedestrian crossing opportunities at all intersections;

(2) installing or improving streetlights;

(3) building multi-use trails, bike paths, and/or pedestrian pathways and crossings;

(4) providing sidewalks or designated walkways through large expanses of surface parking;

(5) installing street furniture (benches, trash receptacles, bicycle racks, bus shelters, etc.); and

(6) installing street trees.

(e) For the purposes of this Section:

(1) "Walking or biking distance" is measured from the outer limits of the circumference of the smallest circle encompassing all the land area of the subdivision and includes the entire lot line of any property partially included within such distance; and "throughout the subdivision" includes all the land area within such circumference.

(2) No developer/property owner shall be required to acquire additional land not already owned by that developer/property owner in order to construct adequate pedestrian and bikeway facilities. All adequate pedestrian and bikeway facilities required under this Section shall be constructed within existing public easements and rights-of-way, or within land dedicated (or to be dedicated) by the applicant to public use.

(f) If a conceptual or detailed site plan approval is required for any development within the subdivision, the developer/property owner shall include, in addition to all other required information in the site plan, a pedestrian and bikeway facilities plan showing the exact location, size, dimensions, type, and description of all existing and proposed easements and rights-of-way and the appurtenant existing and proposed pedestrian and bikeway facilities throughout the subdivision and within the designated walking or biking distance of the subdivision specified in Subsection (c) of this Section, along with the location, types, and description of major improvements, property/lot lines, and owners that are within fifty (50) feet of the subject easements and rights-of-way.

(g) Prior to the issuance of any building permit for development within the subdivision, the developer/property owner shall show that all required adequate pedestrian and bikeway facilities have full financial assurances, have been permitted for construction through the applicable

operating agency's access permit process, and have an agreed-upon timetable for construction and completion with the appropriate operating agency.

(h) Nothing contained within this Section shall be deemed to inhibit in any way the authority of the Planning Board to require a developer/property owner to construct pedestrian and bikeway facilities beyond those required in Subsection (c) of this Section, if such facilities relate to the implementation of "complete streets" principles on roadways required to be improved, constructed, or reconstructed to accommodate motor vehicle traffic that would be generated by proposed subdivisions. Any such pedestrian and bikeway facilities shall be subject to the cost limitations set forth in Subsection (c) of this Section.

(i) On or before June 1, 2013, the Planning Board shall, in consultation with the Director of Public Works and Transportation, amend its *Guidelines for the Analysis of the Traffic Impact of Development Proposals* (hereinafter "Guidelines") to include appropriate multimodal pedestrian, bicycle, and transit quality/level-of-service (Q/LOS) or level-of-comfort (LOC) standards and methodologies by which to identify and assess various design features and facilities affecting pedestrians and bicyclists—at signalized and unsignalized intersections and along the street—to assist all parties with selecting the appropriate combination of design and operational features to satisfy the requisite comfort, safety, and aesthetic needs of pedestrians, bicyclists, and transit users within Centers and Corridors. The Planning Board shall, from time to time and in consultation with the Director of the Department of Public Works and Transportation, reevaluate said "Guidelines" and make any necessary revisions and refinements, as appropriate.

(j) Not later than June 1, 2013, the Director of Public Works and Transportation, in consultation with the Planning Department, shall adopt and submit for the County Council's consideration and approval any necessary amendments and revisions to the Department's "General Specifications and Standards for Highway and Street Construction" and the "Specifications and Standards for Highway Traffic Signals" for purposes of incorporating the "complete streets" principles of the 2009 Approved Countywide Master Plan of Transportation and other appropriate "complete streets" principles into said design and construction standards. The Department's design and construction standards shall, at a minimum, provide:

(1) All new transportation improvement projects shall include appropriate accommodation for pedestrians, bicyclists, transit riders, and persons of all abilities, while

promoting safe operation for all users. The appropriateness of the accommodation will vary depending on the land use context and roadway type.

(2) Bicycle and pedestrian ways (including but not limited to continuous sidewalks on both sides of all streets and appropriate on-road bicycle facilities in each direction of travel on roads other than local and high-speed roads) shall be provided in all new construction and reconstruction projects and all roadway capital improvement projects in Centers and Corridors unless bicyclists and pedestrians are prohibited by law from using the roadway, the cost of constructing the pedestrian or bikeway facilities substantially encumbers the public benefit of the proposed development project, or other topographic or environmental factors would effectively prohibit pedestrian or bicycle travel.

(3) The design of facilities for bicyclists and pedestrians shall be in accordance with generally recognized and commonly used transportation engineering and planning standards and practices, including but not limited to, those found in relevant guidance from the Federal Highway Administration of the U.S. Department of Transportation (FHWA), the Maryland Department of Transportation (MDOT), the American Association of State Highway and Transportation Officials' (AASHTO) *Guide for the Development of Bicycle Facilities*, AASHTO's *A Policy on Geometric Design of Highways and Streets*, the Institute of Transportation Engineers' (ITE) "*Design and Safety of Pedestrian Facilities*," and the American Planning Association's and National Complete Streets Coalition's *Complete Streets: Best Policy and Implementation Practices*.

SECTION 2. BE IT FURTHER ENACTED that the provisions of this Act shall be construed only prospectively and may not be applied or interpreted to have any effect on or application to any preliminary plan application filed and accepted before the effective date of this Act.

SECTION 3. BE IT FURTHER ENACTED that this Act shall take effect June 1, 2013.

Adopted this 24th day of April, 2012.

COUNTY COUNCIL OF PRINCE GEORGE'S COUNTY, MARYLAND

BY: _____
Andrea C. Harrison
Chair

ATTEST:

_____
Redis C. Floyd
Clerk of the Council

APPROVED:

DATE: 5-3-12 BY: _____
Rushern L. Baker, III
County Executive

KEY:
Underscoring indicates language added to existing law.
[Brackets] indicate language deleted from existing law.
Asterisks *** indicate intervening existing Code provisions that remain unchanged.