Version 1.0 – January 2014

CITY OF GREENBELT

PEDESTRIAN & BICYCLIST MASTER PLAN

Table of Contents

Acknowledgements

The genesis of the **Greenbelt Pedestrian and Bicyclist Master Plan** was drafted by Toole Design Group and was funded through the Transportation/Land-Use Connections Program of the National Capital Region Transportation Planning Board at the Metropolitan Washington Council of Governments.

The Pedestrian and Bicyclist Master Plan has been a labor of love for many individuals, both within the Advisory Planning Board (APB) and on city staff, for the last four years. Many APB members contributed their time and talents to the development of the plan but are no longer on the board, including Sandra Lange, Nelson Geleano, Joyce Gladstone, Ann Lombardi, Jim Cohen, Emmett Jordan, and Sheldon Goldberg, who, sadly, passed away in 2010. In addition, city staff members have dedicated significant time and expertise from their already busy schedules to shepherd the plan forward, especially Amy Hofstra, who left the city's Planning office in 2011, and the current community planner, Jaime Fearer, who brought the final plan to completion. We would also like to thank Celia Craze, Director of the Department of Planning and Community Development, for dedicating resources within her department to the completion of the plan. Finally, the process of developing this plan drew heavily on the input of Greenbelt residents. Without their enthusiasm for making Greenbelt an even better place to walk and bicycle, this plan would not have been possible.

Advisory Planning Board

George Branyan, Chair
Brian Gibbons, Vice Chair
Keith Chernikoff
Jeff Lemieux
Matt Johnson
Isabelle Gournay

Greenbelt City Council

Judith F. Davis, Mayor
Emmett V. Jordan, Mayor Pro Tem and Council Liaison to APB
Konrad Herling
Leta Mach
Silke Pope
Edward VJ Putens, former Council Liaison to APB
Rodney M. Roberts

Greenbelt Planning Office

Celia Craze, Director of Planning and Community Development
Terri Hruby, Assistant Director of Planning
Jaime Fearer, Community Planner and Staff Liaison to APB

Introduction

The City of Greenbelt's Advisory Planning Board (APB) is proud to present the **Greenbelt Pedestrian and Bicyclist Master Plan** which intends to guide improvements in the conditions for walking and cycling throughout the city.

The City of Greenbelt was originally established by design as a city that provided its residents a preferential option to walk and bicycle for intra-city transportation. However, design features of a growing Greenbelt following World War II, and through the remainder of the century, mimicked those found across our nation which favored automobile and motorized transportation at the expense of walking and bicycling options. Today the challenge to walk and bike throughout the city is further exacerbated by freeways, parkways, and six- to eight-lane arterial thoroughfares that dissect Greenbelt into more than five distinct and separated districts.

The need for a Pedestrian and Bicyclist Master Plan was recognized for years by Greenbelt residents and city leadership alike. APB previously collected data and made several attempts to create such a plan. The size of this undertaking coupled with more immediate issues and concerns on the Board's agenda consistently tabled the pursuit.

Further desire for a Pedestrian and Bicyclist Master Plan is evidenced by the comments and data compiled through the city's visioning processes, the Greater Greenbelt Initiative, and the University of North Carolina Highway Safety Research Center's Pedestrian Safety Workshop.

APB began anew to establish recommendations for a Pedestrian and Bicyclist Master Plan in the spring of 2008. The effort moved at a modest pace until the city's Department of Planning and Community Development secured a $30,000 competitive grant from the Transportation/Land-Use Connections (TLC) Technical Assistance Program of the National Capital Region Transportation Planning Board (TPB) at the Metropolitan Washington Council of Governments (MWCOG). The grant covered the cost of the services of a planning and engineering firm to assist APB with the identification and prioritization of the issues and elements necessary to draft recommendations for a citywide Pedestrian and Bicyclist Master Plan.

APB reviewed six proposals submitted to MWCOG by leading design and engineering firms. After review, evaluation, and consultation among Board members, the city's Planning Department, and MWCOG/TPB staff, Toole Design Group (TDG) was selected.

TDG is highly regarded in transportation master planning, traffic calming, pedestrian and bicycle research, and related areas. Living and working in the region, its staff is familiar with the pedestrian and cycling issues in and around Greenbelt, and their assistance to the city was invaluable and included accumulating relevant engineering and usage data on existing pedestrian and bicycling conditions and access in Greenbelt, resident input, and field studies to provide recommendations for improving the conditions for walking and bicycling in the city.

The recommendations before you are the result of TDG working with APB, Planning Department staff, and Greenbelt residents to identify access issues and concerns via stakeholder meetings, web-based public input gathering, and by evaluating data collected from past APB efforts to create a master plan.

The City of Greenbelt may best take advantage of the recommendations by reviewing the document and using it to establish priorities to improve, enhance, increase, and encourage opportunities for residents to walk and bike within Greenbelt and to adjacent communities.

The recommendations can be used to provide a framework and priorities for determining capital project budget recommendations in future years, and to have recommendations properly prepared and positioned to take advantage of future state or federal funding opportunities as they arise. It should be noted that this master plan is intended to be a living document; APB, Planning Department staff, City Council, and residents will continue to assess, revise, and add to the recommendations in the coming years.

Finally, these recommendations presented to the Greenbelt City Council re-introduce the preferential option for walking and bicycling in Greenbelt, which is Greenbelt by design.

Existing Conditions

The Existing Conditions section provides an overview of existing conditions for bicycling and walking in the City of Greenbelt with a focus on identifying gaps and barriers to bicycle and pedestrian travel in and around the community. Many obstacles are related to the design and layout of the community and the existing transportation infrastructure. For the purposes of this section, they will be presented in three sections: **Major Barriers**, **Barriers to Walking**, and **Barriers to Bicycling**.

Major Barriers

Greenbelt is dotted with several major trip destinations, including NASA's Goddard Space Flight Center, the Washington Metropolitan Area Transit Authority's (WMATA) Greenbelt Metro station, Eleanor Roosevelt High School, the Greenway Center, Beltway Plaza and Roosevelt shopping centers, as well as several schools and public facilities, and trails and recreational areas. Subsequently, there is significant demand for travel between different neighborhoods in the city. Currently, many people are making these relatively short trips in their cars. One of the major goals of this project is to assess existing challenges to bicycle and pedestrian travel and recommend improvements.

Currently, Greenbelt is a case study on the detrimental impacts major arterials and freeways can have on pedestrian and bicycle circulation. When viewed from a city-wide perspective, the city is effectively divided into distinct pod-like neighborhoods. This is not a new realization as Greenbelt residents often identify themselves by the pod where they live—Greenbelt East, Historic Greenbelt, or Greenbelt West. Within these neighborhoods, bicycle and pedestrian travel is relatively easy, safe, and comfortable. However, travel between the neighborhoods is severely restricted. Consequently, many people have decided to drive, even if they are making a relatively short trip that might otherwise be taken on foot or bicycle.

In some cases, limited access freeways effectively limit cross travel to the few bridges or underpasses that connect the different parts of Greenbelt. Bicyclists and pedestrians are prohibited from traveling on these roadways, so grade separated crossings are the only option for getting across, and there are no options for traveling along the corridor. The Baltimore-Washington Parkway and the Capital Beltway (I-95/495) both officially prohibit non-motorized travel. Kenilworth Avenue (MD 201) does not restrict bicyclists' and pedestrians' access parallel to the roadway; however, the road between Centerway and Good Luck Road effectively functions like a limited access freeway because of the long distances between traffic signals, free-flow on/off ramps for the Beltway and Greenbelt Road, and overall lack of at-grade crossing facilities.

Approach to pedestrian bridge over Baltimore-Washington Parkway

Greenbelt Road abuts each neighborhood and many of the major destinations in the city and conceivably could provide direct connections between 'pods.' However, several APB members and community stakeholders have said that the road width, and volume and

speed of traffic, combined with the perceived lack of bicycle and pedestrian facilities make many feel so unsafe that they routinely seek other alternatives, including driving, taking a bus, or following circuitous routes that take them well out of their way.

Within neighborhoods, bicycle and pedestrian travel is relatively good. Most neighbo0072hood streets have sidewalks, and traffic speeds and volumes are lower than on the major arterials. Nonetheless, there are certainly opportunities for improvement. Many of the challenges are elaborated in the following two sections.

Barriers to Walking

This section addresses the challenges that pedestrians encounter in Greenbelt. It is divided into three sub-sections:

- **Sidewalks and Paths**
- **Crossings**
- **Pedestrian Access to Transit**

Sidewalks and Paths

Sidewalks and paths provide benefits to pedestrians and drivers by separating vehicular and pedestrian traffic. In communities with sidewalks and paths, crashes involving pedestrians and vehicles tend to happen less frequently and people tend to walk more than in comparable communities without sidewalks. According to the American Association of State Highway and transportation Officals' (AASHTO) *Guide for the Planning, Design, and Operation of Pedestrian Facilities*, well-designed sidewalks have the following characteristics:

- **Accessibility** —A network of sidewalks should be accessible to all users and meet Americans with Disabilities Act (ADA) requirements.
- **Adequate width**—Two people should be able to walk side-by-side and pass a third person comfortably and different walking speeds should be possible.
- **Safety**—Design features of a sidewalk should allow pedestrians to have a sense of security and predictability. Sidewalk users should not feel they are at risk due to the presence of adjacent traffic.
- **Continuity**—Walking routes should be obvious and should not require pedestrians to travel out of their way unnecessarily.
- **Landscaping**—Plantings and street trees within the roadside area should contribute to the overall psychological and visual comfort of sidewalk users, without providing hiding places for attackers.
- **Social space**—Sidewalks should be more than areas to travel, they should provide places for people to interact. There should be places for standing, visiting, and sitting. The sidewalk area should be a place where adults and children can safely participate in public life.
- **Quality of place**—Sidewalks should contribute to the character of neighborhoods and businesses districts and strengthen their identity.

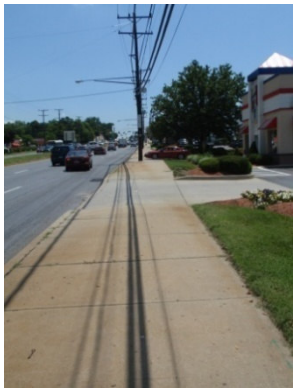
Sidewalks parallel many roads in Greenbelt, and Historic Greenbelt includes an extensive interior pathway system for pedestrians that mitigates the need for sidewalks in the public right-of-way. However, there are several areas that fail to satisfy the characteristics identified by AASHTO. Issues noted as part of the public input process and through targeted field observations include:

Pathway in Historic Greenbelt

- **Missing sidewalks.** Some roads in Greenbelt lack sidewalks entirely or lack sidewalks for long stretches. Greenbelt also contains sidewalks that dead end only to pick up again on the opposite side of the street or after a small interval. These missing sidewalks and sidewalk gaps undermine the continuity of the sidewalk network, discourage walking, and increase the potential for conflicts between pedestrians and motorists. The closer they are to major destinations, the greater the number of people they affect.
- **Inaccessible sidewalks and paths.** Some sidewalks and pathways in Greenbelt are not accessible to all users. In some cases debris, vegetation, parked vehicles, dumpsters, and other objects obstruct the pedestrian travel way. In other cases, the sidewalk or path surface is uneven and unpredictable, such as when a path's asphalt is crumbling or a sidewalk repeatedly dips for curb cuts without sufficient warning.
- **Uncomfortable sidewalks and paths.** Finally, some sidewalks in Greenbelt are continuous and accessible but feel uncomfortable to walk along because of the proximity of high-speed traffic (i.e. lack of a buffer between the sidewalk and road), lack of shade trees, insufficient lighting, lack of pedestrian amenities such as benches, or concerns about personal safety.

Children, senior citizens, and people with impaired mobility and vision are particularly affected when sidewalks and paths are missing, inaccessible, or uncomfortable as they are frequently more impacted by walking conditions.

Key Locations

Location	Issues
Southway from Greenbelt Road to Crescent Road 	**Inaccessible Sidewalks** "The curb cuts along Southway make it difficult for visually impaired residents traveling to Roosevelt Center from Green Ridge House. The city should make it a priority to provide one decent path, free from obstacles, for these residents." "I live in Green Ridge House, and I ride a mobility scooter. The sidewalks from my home to Roosevelt Center are so bad that I have to take the long way around, and even then it's a scary trip (and I'm not easily scared)." **Missing Sidewalks** "Walking from municipal building on west side of Southway, the sidewalk ends before the gas station. Coming from Greenbelt Road the sidewalk on the east side of Southway ends before the turn onto the Baltimore-Washington Parkway. So for pedestrians there is not a complete sidewalk on Southway, not to mention there is no crosswalk to cross Southway. Please provide a safe walk from the city center to Safeway."
Greenbelt Road from Rhode Island Avenue to Hanover Parkway 	**Uncomfortable Sidewalks** Sidewalks parallel the high-speed, high volume roadway. There is no buffer along significant stretches and almost no tree shade.

Location	Issues
Cherrywood Lane from Kenilworth Avenue to Breezewood Drive 	**Missing sidewalks** Sidewalks exist along stretches but are not continuous. Crossings are not provided to allow pedestrians to access sidewalks on the opposite side of the street.
Ridge Road from Laurel Hill Road to Lastner Lane	**Missing sidewalks** Speeding reported along this section, which includes Greenbelt Elementary School.

Crossings

While it is generally desirable to buffer pedestrians from vehicle travel lanes, it is not always possible or advisable at locations where pedestrian and vehicular pathways intersect. As a result, well-designed pedestrian crossings, whether at roadway intersections or mid-block locations, are critical features of walkable communities. Poorly designed crossings may be intimidating to pedestrians and discourage pedestrian traffic. They may also result in more frequent pedestrian/driver crashes. According to the AASHTO *Guide for the Planning, Design, and Operation of Pedestrian Facilities*, well designed intersections have the following characteristics:

- **Clarity**—It should be obvious to motorists that there will be pedestrians present; it should be obvious to pedestrians where best to cross.
- **Predictability**—The placement of crosswalks should be predictable. Additionally, the frequency of crossing should increase where pedestrian volumes are greater.
- **Visibility**—The location and illumination of the crosswalk allows pedestrians to see and be seen by approaching traffic while crossing.

Crescent Road pedestrian underpass

- **Short wait**—The pedestrian does not have to wait unreasonably long for an opportunity to cross.
- **Adequate crossing time**—The time available for crossing accommodates users of all abilities.
- **Limited exposure**—Conflict points with traffic are few, and the distance to cross is short or is divided into shorter segments with crossing islands.
- **Clear crossing**—The crosswalk is free of barriers, obstacles, and hazards and is accessible by all users. Pedestrian crossing information is available in accessible formats.

There are a number of well-designed crossings in Greenbelt, including the grade separated crossings at Crescent Road in front of Roosevelt Center and the pedestrian overpass connecting Gardenway and Hanover Parkway across the Baltimore-Washington Parkway. However, targeted field observations and responses received from participants in the public input process suggest that there are a several crossings in Greenbelt where these characteristics are not being fully satisfied. Issues noted include:

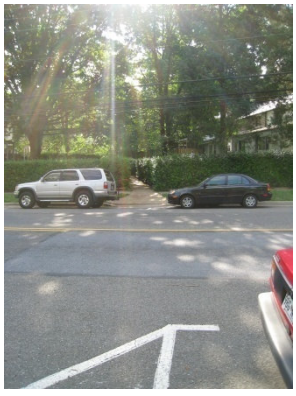
- **Missing crosswalks.** This was the most frequently cited pedestrian crossing issue. Crosswalks enhance the clarity and visibility of pedestrian crossings. Clarity and visibility are important at locations where the pedestrian travel way crosses roads, especially as vehicular speeds and volumes increase, or in circumstances where pedestrian crossings may be difficult for drivers to anticipate or see. In the City of Greenbelt, crosswalks are, in some cases, missing at key intersections along high volume roads. Crosswalks are also lacking at a number of locations where pedestrian paths intersect the street network.
- **Visibility and predictability of crossings.** Even in cases where crosswalks are present, drivers may not be adequately aware of upcoming crossings due to a combination of travel speed and limited sight distance. Factors limiting sight distance in Greenbelt include curves, slopes, vegetation, parked vehicles, and other visual barriers. This is especially true in older parts of the city that are characterized by winding roadways and path/roadway crossings away from road intersections (i.e. mid-block). Providing adequate warning of pedestrian crossings is especially important in the case of mid-block crossings, because drivers least expect pedestrian crossings at mid-block locations.
- **Driver behavior at crossings.** Participants noted that drivers routinely failed to yield to pedestrians at some crossing locations, despite the presence of crosswalks. In some cases, driver behavior is influenced by road geometry, such as when a crosswalk is provided across a channelized right-turn slip lane or highway entrance/exit ramp and the width and the turning radius encourage driving at higher speeds.

Issues not mentioned during the public input process that require further investigation include:

- **Missing and non-compliant curb ramps.** Targeted field observations suggest that curb ramps in the City of Greenbelt may need to be updated to meet ADA guidelines and that there are locations where curb ramps are missing and should be installed. However, these issues were not mentioned during the public input process. A comprehensive accounting of locations where curb ramps should be installed or updated was beyond the scope of TDG's initial study.

- **Signal timing and crossing distances at key intersections.** Insufficient crossing time and long crossing distances at signalized intersections may be barrier to pedestrian travel in Greenbelt, especially for children or those with mobility and visual impairments; however, these issues did not rise to the top of the community's concerns. A comprehensive assessment of signalized intersections in the City of Greenbelt where pedestrian signal phases may need to be adjusted or crossing distances shortened (e.g. through curb extensions or pedestrian refuge islands) was beyond the scope of TDG's initial study.

Key Locations

Location	Issues
Crescent Road in front of Roosevelt Center (intersections with Gardenway, Centerway, and Parkway) 	**Missing crosswalks** Reportedly, pedestrians tend to cross at grade, instead of using the available pedestrian tunnels, in part because they are waling to or from the bus stop there, from which there is no access to the underpass. The pedestrian and vehicle volumes make crosswalks desirable at these locations. *Note: In 2013, the missing crosswalks were installed at this intersection.*
Multiple locations in Historic Greenbelt where the interior pathway system intersects the roadway system 	**Missing crosswalks** These locations are difficult for drivers to see and anticipate. "We need standardized crosswalks wherever the inner pathway crosses a street."

Location	Issues
Intersection of Crescent Road and the path near St. Hugh's Catholic Church 	**Visibility of crossing is impaired by slope and curve of road** Vehicles traveling at speed on Crescent Road find crossings difficult to anticipate. "There are large numbers of people crossing the road or walking by it making it imperative to slow vehicles down. Vehicles go much too fast and often tailgate."
Intersection of Hanover Parkway and Greenbelt Road 	**Crosswalk missing on east side of intersection** Right-turning eastbound traffic fails to yield pedestrians in crosswalk.
Intersection of Greenbelt Road and Greenway Center entrance 	**Lack of crosswalks and high-speed turning traffic make crossing uncomfortable** "Neither of the two entrances to Greenway from 193 have marked crosswalks. Drivers do not stop for pedestrians trying to walk along the sidewalk. The entrances being on-ramp style instead of perpendicular intersections encourages the drivers, especially from the Baltimore-Washington Parkway, to enter the center at speed and ignore pedestrians who theoretically have the right of way."
Intersection of Greenbelt Road and 63rd Avenue	**Long crossing with no pedestrian refuge island.** "Many middle school students cross this street."

Pedestrian Access to Transit

The City of Greenbelt is served by a variety of public transportation services, including the Greenbelt Connection shuttle, MARC, Metrorail, Metrobus, Prince Georges County's "TheBus", and Shuttle-UM. These services provide connections to destinations within the city limits and beyond, to the greater Washington-Baltimore metropolitan area, and are vital to people who either cannot drive because of age, disability, or lack of motor vehicle access, or those who prefer not to. Pedestrian access to stops and stations is, therefore, essential to people who already depend these services, and may also encourage those who currently drive to choose public transit for some trips or reduce the need for paratransit services. Important considerations for accessible public transit stops include:

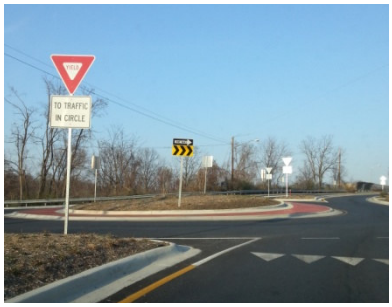
- **Conveniently located transit stops.** Transit stops should be located near pedestrian generators and attractors. Research suggests that the average pedestrian is willing to walk between ¼ mile and ½ mile to a transit stop.
- **Comfortable, convenient, and accessible sidewalks and pathways connecting transit stops to the pedestrian network.** Sidewalks and paths should meet AASHTO and ADA guidelines, and should provide convenient access to transit stops from nearby pedestrian generators and attractors.
- **Comfortable, convenient, and accessible crossings near transit stops.** Crossings should meet AASHTO and ADA guidelines. The location of crossings relative to transit stops is important. It is generally recommended that bus stops be located on the far side of intersections to discourage mid-block crossings and to prevent the multiple-threat condition that occurs when people try to cross in front of a stopped bus and cannot see, or be seen by, oncoming traffic.
- **Adequate space for loading and unloading passengers.** Pedestrians of all abilities must have sufficient room to embark and disembark from the transit vehicle.
- **Comfortable accommodation for waiting transit passengers.** Accommodating waiting transit passengers comfortably is an important part of pedestrian access to transit. Benches, bus shelters, newspaper vending machines, and other amenities can help enhance the comfort of waiting passengers.

While many commented on the recognizable design of Greenbelt's transit stops, access to transit at certain locations was noted as a concern during the public input process. Issues identified include:

- **Uncomfortable or inconvenient crossings near some transit stops;**
- **Missing or inaccessible sidewalks and paths to some transit stops; and**
- **Infrequent transit stops along segments of existing transit routes.**

Key Locations

Location	Issues
Bus stop on Crescent Road in front of Roosevelt Center 	**Missing sidewalks between bus stops on Crescent Road and Roosevelt Center** "There is no easy way to access the bus stop located on Crescent Road closest to Roosevelt Center. That should be fixed." *Note: In 2013, the missing sidewalks were constructed at this intersection.*
Bus stop on Greenbelt Road in front of Greenway Center	**Accessing bus stop on the north side of Greenbelt Road from Greenway Center** Crossing is uncomfortable due to high speed traffic. The stop is located between Baltimore-Washington Parkway access ramps. Identified as top issue at public meeting.

Location	Issues
Intersection of Cherrywood Lane and Greenbelt Metro Drive 	**High speed traffic and poor visibility** High speed traffic and poor visibility at this location make crossing uncomfortable for pedestrians accessing the Greenbelt Metro station. Also, sidewalks are discontinuous on Cherrywood Lane.* **Note: In 2012, a roundabout was constructed at this intersection:* 
Cherrywood Lane between Greenbelt Metro Drive and Breezewood Drive	**Bus stops not provided on west side of Cherrywood Lane despite need** "We need more bus stops on the west side of Cherrywood Lane."
Cherrywood Lane near entrance to Beltway Plaza 	**Crosswalk location is not convenient for pedestrians** Many do not cross at crosswalk, which means they are less visible to oncoming traffic.

Barriers to Bicycling

Many stakeholders have indicated a desire to increase the amount of short trips (under three miles) that are made by bicycle. The city's relatively small size provides several key destinations within this "utilitarian" bicycling range; however, a lack of comfortable bicycling opportunities discourages many from choosing this option. This section addresses the challenges that bicyclists encounter in Greenbelt. It is divided into four sub-sections:

- **Roadways and Multi-Use Paths**
- **Intersections**
- **Lack of Bicycle Parking Facilities at Key Destinations**
- **Bicycle Access to Transit**

Roadways and Multi-Use Paths

By Maryland state law, bicycles are considered vehicles and are therefore allowed on any road where they are not specifically prohibited (i.e. I-95/495 and Baltimore-Washington Parkway). Greenbelt's bicycle network is largely defined by its system of roads and multi-use paths. The bikeability of these roads and paths depends on a variety of factors, including:

- **Convenience to destinations.** Utilitarian bicyclists tend to prefer the shortest or most direct route to a destination, all things being equal. In most cases in Greenbelt the most direct route is along the road.
- **Motor vehicle speeds and volumes.** Roads with high speed or high volume motor vehicle traffic tend to feel unsafe to bicyclists, especially to those who are unfamiliar with riding on them. The volume of large trucks and buses also contributes to bicyclist discomfort. People often express concerns about motor vehicle speeds, volumes, and vehicle mix as a desire for traffic calming, or protected bicycle facilities, such as off road paths and bicycle/pedestrian bridges, and on-road bicycle facilities such as designated bicycle lanes.
- **Riding surface.** Riding surfaces that are not hard and smooth tend to make bicycling more difficult and uncomfortable, especially for people who are on bicycles with narrow tires. This discourages bicycle riding.
- **Obstructions.** Situations where debris, vegetation, parked vehicles, and other objects obstruct the bicycle path of travel, or narrow it to a degree, create uncomfortable riding conditions.
- **Motor vehicle driver behavior.** Drivers are sometimes unaware of bicyclists' right to use the roadway, may fail to acknowledge bicyclists or yield when crossing dedicated bicycle facilities, or may be unsure of how to interact with bicyclists. Road geometry also plays a role. Generous turning radii and wide travel lanes accommodate higher motor vehicle speeds and, consequently, degrade bicyclist comfort.

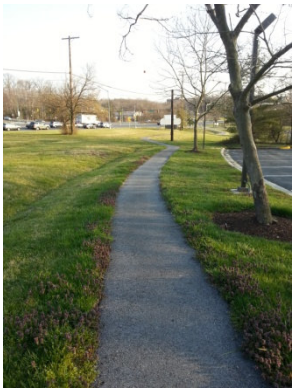
Bike lanes on Crescent Road

The City of Greenbelt has addressed rider comfort on some high-volume, high-speed roads by installing bicycle lanes. Bicycle lanes are present on significant portions of Crescent Road, Ivy Lane, and Cherrywood Lane, and help to define an important connection between Historic Greenbelt and the Greenbelt Metro station. There are also relatively wide shoulders on both sides of Hanover Parkway south of Greenbrook Drive (except at the traffic circles), a side path on the east side of Hanover Parkway in the same general location, and an off-road path from Ora Glen Drive to Schrom Hills Park.

These facilities provide important connections and help encourage bicycling in Greenbelt. Nevertheless, targeted field observations and feedback from the public input process suggest a number of locations where conditions on roadways and paths are less than optimal. The table below highlights several of these observations and comments from the community.

Key Locations

Location	Issues
Greenbelt Road (MD 193) 	Greenbelt Road (MD 193) is extremely uncomfortable for bicyclists along its entire length through the City of Greenbelt due to high motor vehicle speeds and volumes and the lack of dedicated space for bicyclists. Specific locations that are troublesome for bicyclists include: **Bridge over Kenilworth Avenue** "Glass and nails and other debris have a tendency to collect on the shoulders of the bridge over Kenilworth. It'd be nice if the street were cleaned more often here." **North side of Greenbelt Road, east of Mandan Road** "A tree sticks out into the road as the sidewalk ends and bike lane begins; bikers and pedestrians must briefly walk in the turn lane." "This is indeed a dangerous situation for pedestrians and bicyclists."

Location	Issues
Hanover Parkway from Ora Glen Drive to Greenbelt Road 	**Road width** A wide road may be unnecessary considering observed traffic volumes and may encourage speeding.
Trail connecting intersection of Crescent Road and Kenilworth Avenue to Ivy Lane 	**Narrow trail with bumpy riding surface and drainage problems*** "This trail is not wide enough for two bikes to pass side-by-side and it is bumpy and often muddy or covered with standing water." **Note: The trail has since been repaved:* 
Cherrywood Lane from Breezewood Drive to Greenbelt Road 	**Lack of bicycling infrastructure** Uncomfortable for bicyclists due to turning traffic and high traffic volumes and speeds.

Location	Issues
Cipriano Road near intersection with Cipriano Court	**Dangerous drainage grate** Though outside city limits, there may be more in the City of Greenbelt. "There is a nasty [drainage grate] on the right side of Cipriano Rd. It has long slits in the travel-direction of the road, and the tires of a bike could easily get in there. This is the only one of that sort that I know of, but I could imagine there are more. Replacing them with a cap that has a grid rather than slits is much safer for cyclists!"

Intersections

Major road intersections can be intimidating and dangerous for bicyclists, especially when not designed to accommodate them. Attributes of intersections that accommodate bicyclists well include:

- **Conflicts with right-turning traffic are appropriately addressed.** One way to do this is by providing a dedicated right-turn lane and striping a bicycle lane to its left.
- **Adequate space for bicycle storage is provided.** Bicyclists need a place to wait while the signal changes.
- **Bicyclists can easily trigger traffic signals.** This may be accomplished by systems that automatically detect the presence of waiting bicycles or by a push button positioned so bicyclists can easily reach it.
- **Bicyclists are visible to turning traffic.**

Bicycle storage at Ivy Lane and Cherrywood Lane

The City of Greenbelt has attempted to accommodate bicycles at the intersection of Ivy Lane and Cherrywood Lane by providing storage space for left-turning bicyclists. The Spellman Overpass pedestrian bridge over the Baltimore-Washington Parkway also provides an important connection for bicyclists from Historic Greenbelt to Greenbelt East. Targeted field observations and feedback from the public input process, however, suggest that conditions at some intersections are sub-optimal based on these attributes described above.

Key Locations

Location	Issues
Intersection of Greenbelt Road and Baltimore-Washington Parkway onramp	**High-speed onramp traffic crosses bicycle travel way, making riding uncomfortable** "Riding east on 193 in front of the park is dangerous because the entire length has a lane dedicated to the entrance ramp for the Baltimore-Washington Parkway. This encourages drivers to treat this stretch as a runway and they increase speed to launch onto the southbound Parkway. I think removing this entrance to the parkway would slow down traffic, but at least remove the dedicated lane for so much of 193."
Intersection of Greenbelt Road and Hanover Parkway 	**Lack of sufficient space for bicycle storage at intersection for northbound bicycle traffic**

Location	Issues
Hanover Parkway near intersection with Lake Park Drive 	**Roundabouts uncomfortable for bicyclists** Motorists may fail to yield to bicyclists in the roundabout. "Both the traffic calming circles on Hanover Parkway are pretty scary to bicycle. They need bike lanes or some other method to allow bicyclists to safely get on the traffic circles. When you approach the first circle coming from the post office and going to Good Luck Road, you run out of the breakdown lane area abruptly on the right side. This forces you into the traffic lane. I use this road to bike to work, and find that vehicle traffic will often not allow me to get in lane to use the traffic circle (some people will try to pass me and force me to the right). I use hand signals to let motorists know I wish to move into the traffic lane. Reactions vary, sometimes I'm shown great courtesy, at other times I'm ignored."
Intersection of Crescent Road and Kenilworth Avenue 	**Intersection is uncomfortable for bicyclists** Uncomfortable especially for those traveling eastbound. Pavement rutted near intersection on east side. "It seems to be worst crossing from W to E, less so the other way around. When crossing from the W side, the cars on the E side feel they can still make their left turns without yielding to bikes, which makes for a very harrowing experience." "Agreed, this is harder crossing west to east. The braver cyclists cross in the auto lane. More timid cyclists like me use the crosswalk and carefully go up the walkway to the north of Crescent to Ridge, crossing back over there to the South side of Crescent going East. I haven't worked out a better approach that feels safer; I know this is not the best approach." "The pavement here is deeply rutted in exactly the location I'm watching over my right shoulder to make sure that cars turning right off of Kenilworth are yielding to me. It's hard to watch both traffic behind you and to your right, and the pavement in front."

Location	Issues
Multiple locations where driveways intersect roadways	**Driveway aprons not flush with the road, damaging bicycle wheels and posing a tipping hazard*** "The end of this driveway is not flush with the street pavement. This makes it extremely difficult to navigate by bicycle. There are many locations like this throughout Greenbelt. Can the city adopt a policy to make all driveway aprons flush with the street?" **Note: The city follows Prince George's County standards for driveway design. The county standards do not have a lip at the apron, and as older driveways are replaced, they are installed at the current standards.*

Lack of Bicycle Parking Facilities at Key Destinations

Provision of bicycle parking facilities at key destinations is a central concern for those who ride bicycles for utilitarian purposes, such as commuting to work or shopping. If bicycle parking facilities are not provided, bicyclists may avoid riding to a destination for fear of bicycle theft, or may attempt to secure their bicycles in ways that are undesirable, such as by locking bicycles to ramp railings designed to accommodate people with mobility impairments or attaching bicycles in such a way that they block sidewalks.

In general, bicycle parking facilities should be well-lighted, secure, and located as close to destination entryways as possible, while minimizing conflicts between pedestrians and bicyclists and ensuring that pedestrian and emergency access is not obstructed. Bicycle parking facilities should be accessible (i.e. there should be enough space to comfortably maneuver into them), easy to find, and designed to prevent unintended damage to bicycles.

Feedback from the public input process suggests that there are several locations in the city where bicycle parking is needed or where existing facilities need to be upgraded.

Key Locations

Location	Issues
Greenbelt Public Library	**Bicycle racks needed at main entrance** "City tried to install bike racks underneath the prickly holly bushes, in the dirt and mud. Can they be installed back into the original spot, in the middle of the big concrete pad in front of the library doors?" **Racks at parking lot entrance sub-standard** "Proper inverted 'U's needed at this entry."
Greenway Center	**No bicycle racks** "Definitely need bike racks at Greenway Center, as well as outside the "towers" buildings."
Beltway Plaza	**Existing bicycle racks difficult to find; racks needed at additional locations** "If there are bike racks here, I can't find them." "There are bike racks on the 193 side of the mall under the parking garage. They're blue spiral near the entrance that goes near Subway. In the back, on the Three Brothers side, I usually lock to the metal bars near the door."

Bicycle Access to Transit

Research suggests that people are willing to bicycle three to five times the distance they are willing to walk. Consequently, enhancing bicycle access to transit increases transit ridership by expanding transit station catchment areas. It can also reduce the need for land-intensive vehicle parking, as up to five or six bicycles can easily be parked in one vehicle parking space. Enhancing bicycle access to transit can also boost the share of individuals using bicycles for utilitarian purposes by providing a back-up alternative in case of mechanical difficulty, adverse weather, or late night return trips. Important considerations for making public transit stops accessible to bicyclists include:

- **Comfortable and convenient bicycle-accessible pathways to transit stops;**
- **Comfortable and convenient crossings near transit stops;**
- **Convenient and secure bicycle parking at transit stations;**
- **The ability to take bicycles on transit vehicles; and**
- **Sustained outreach to create broad public awareness of all of the above.**

Feedback from the public input process suggests that there are locations in the city where bicycle access to transit could be improved.

Key Locations

Location	Issues
Cherrywood Lane and Greenbelt Metro Drive 	**High-speed through and turning traffic makes intersection uncomfortable for bicyclists** "Coming eastbound out of Metro Drive by bike and turning left on Cherrywood is the most dangerous part of my regular bike commuting trip from Northway to the metro. I am very uncomfortable riding in the auto lane so I usually ride up on the north sidewalk, cross to the north side of the triangle and cross Cherrywood in between turning cars. It would be helpful if the crosswalk on the north side of triangle was painted (as is the south side). A light here might be helpful." **Note: In 2012, a roundabout was constructed at this intersection; see photo on page 18.*
Greenbelt Metro Drive from Cherrywood Lane to Greenbelt Metro station 	**Uncomfortable for bicyclists due to traffic volumes and speeds** Many bicyclists use the sidewalk.
Bridge over the Beltway on Cherrywood Lane	**Concern over future design** There is concern that this bridge may be redesigned or rehabilitated in a way that makes it less accessible to bicyclists (e.g. by narrowing the roadway width).

Recommendations

Introduction

The Recommendations section provides recommendations for improving conditions for bicycling and walking in the City of Greenbelt, and it is divided into five sections: **General Recommendations**, **Location-Specific Recommendations**, **Location-Specific Concepts**, **Pedestrian Recommendations**, and **Bicyclist Recommendations**. It also includes two appendices at the end of this document. **Appendix A** provides an overview of design principles, and **Appendix B** provides the initial drafts of the location-specific pedestrian and bicycling recommendations in both map and table formats.

Although pedestrian recommendations and bicycle recommendations are presented separately, it is important to recognize that recommendations primarily aimed at bicyclists may also have significant benefits for pedestrians and vice versa. For example, installation of a bicycle lane or shared-lane marking may benefit pedestrians by calming traffic. Likewise, curb ramps and crosswalks benefit cyclists by improving accessibility at intersections.

The Pedestrian Recommendations and Bicycling Recommendations sections are subdivided into general recommendations and location-specific recommendations. The location-specific recommendations provided in the Pedestrian Recommendations and Bicycle Recommendations sections are presented in both table and map formats.[1] These formats are linked by the "Map Key" number; that is, the numbers on the map correspond to the numbers in the "Map Key" field on the table. The table format includes fields for criteria that may be used by the city to help prioritize recommendations. The fields include:

- **Priority.** This field represents an outcome from the public/stakeholder meeting held in May 2009, i.e. a list of priority issues for accessibility, bicycling, and walking in the City of Greenbelt. Attendees were asked to develop lists of priority issues and then "vote" for the issues they cared about most as a way of identifying the "highest priority" priorities. If a recommendation relates to an issue identified through this process, the number of votes it received is indicated in the "stakeholder priority" field. If the issue was identified but received zero votes, a "0" was entered in this field.

- **Web comments.** This field represents public input gathered through the CommunityWalk website and is not included in the accompanying tables.[2] Visitors to the site were asked to indicate on CommunityWalk the locations of issues and suggested improvements for both pedestrians and bicyclists, for pedestrians only, or for bicyclists only. The CommunityWalk

[1] Both the Pedestrian Recommendations and the Bicyclist Recommendations appear in two sets each (a set includes the table and map formats). TDG, in cooperation with the APB via the National Capital Region Transportation Planning Board's Transportation/Land-Use Connections Program, compiled the initial draft, labeled in this document as "Initial Drafts" and contained in **Appendix B**. The APB then adapted the first set to finalize their working recommendations in the second set, labeled in this document as "Working Document" and contained within this section of the plan.

[2] http://www.communitywalk.com/gbbikeped

website was viewed more than 400 times before it was transferred over to the city. During that time more than 80 comments, 120 location markers, and 30 paths were added to the map by visitors to the site. If a recommendation relates to an issue identified through this process, the number of comments made on it, including the initial description of the issue or recommended improvement is indicated in the "web comments" field. *This field appears only in the "Initial Drafts" that are in* ***Appendix B****.*

- **Identified by previous study.** If a recommendation included in this study relates to a recommendation or issue identified through a previous planning processes, that planning process is indicated here. (Note: A comprehensive review of planning processes addressing bicycle and pedestrian conditions in the City of Greenbelt was not possible due to the constraints of this study.)

- **Facilitates access to key destination.** This field indicates whether a particular recommendation would improve access to a key destination either by improving an important route to that destination or by improving an immediate access point. Key destinations include:

    - Roosevelt Center
    - Greenway Center/Maryland Trade Center
    - Beltway Plaza/Greenbelt Road Business District
    - Capital Office Park
    - Golden Triangle
    - Post Office
    - NASA Goddard Space Flight Center
    - Beltsville Agricultural Research Center/BARC
    - Schrom Hills Park
    - Greenbelt National Park
    - Doctors Community Hospital
    - Northway Fields
    - Buddy Attick Park/Greenbelt Lake
    - Lake Artemesia
    - University of Maryland

- **Facilitates access to school.** This field indicates whether a particular recommendation would improve access to a school either by improving an important bicycle route to the school or by improving an immediate access point. Schools include:

    - Eleanor Roosevelt High School
    - Greenbelt Middle School and Old Greenbelt Middle School
    - Greenbelt Elementary School
    - Springhill Lake Elementary School
    - Magnolia Elementary School
    - Turning Point Academy

- **Facilitates access to transit stop.** This field indicates whether a particular recommendation would improve access to transit either by improving an important route or by improving an immediate access point. Transit hubs (major transit stops) include:
    - Greenbelt Metro station
    - Roosevelt Center bus stops on Crescent Road
    - Greenway Center bus stops on Greenbelt Road
    - Beltway Plaza bus stops on Cherrywood Lane
- **Jurisdiction.** This field attempts to identify the owner of the property where the recommended improvements would be located based on tax records made available through PGAtlas.[3]
- **Neighborhood.** This field indicates whether a project proposed in a recommendation would be located in Greenbelt East (GBE), Historic Greenbelt (HGB), Greenbelt West (GBW), or not in Greenbelt (NIGB).

Additional criteria the APB and the city considered when compiling the "Working Document" recommendations:

- How well a recommended improvement fits with the city's long-term vision;
- How well a recommended improvement fits with the city's transportation goals; and
- Whether the recommended improvement improves safety and comfort for bicyclists and pedestrians.

The "Working Document" recommendations for both pedestrians and bicyclists comprise the core of this plan. These tables and maps are meant to be living documents which the APB, City Council, and staff will revisit and revise on a regular basis as projects are completed and as new opportunities arise.

Considerations for Proposed Recommendations

The TLC program has an emphasis on providing conceptual approaches that can be replicated region-wide, rather than detailed design improvements for a specific situation. Therefore it should be understood that all proposed changes would require additional detailed design and engineering analysis to develop final plans for each recommendation.

Furthermore, proposed changes may require review and approval agencies outside the City of Greenbelt, including the Maryland State Highway Administration (MdSHA), National Park Service (NPS), Prince George's County Department of Public Works and Transportation (DPW&T), and in certain cases private landowners. Any changes that impact transit stops would require additional coordination with the affected transit agencies, including WMATA, DPW&T (e.g. TheBus), University of Maryland Department of Transportation Services (Shuttle-UM), and the city's own Greenbelt Connection bus service.

[3] http://www.pgatlas.com

General Recommendations

The city should establish a long-range vision that prioritizes pedestrian and bicycle travel and establishes specific goals for improving conditions for bicycling and walking.

It is important that bicycling and walking be integrated into an overall vision for the city with specific goals for improving bicycling and walking conditions. Otherwise pedestrian and bicycle issues may not receive the attention they require to effectuate change over the long-term, and connections between bicycling and walking goals and other city priorities may go unrecognized.

The city should incorporate the following principles as the foundation of plans and projects related to the bicycle and pedestrian environment.

The following principles should be incorporated as the foundation of plans and projects related to the bicycle and pedestrian environment. Many of these principles go beyond the realm of responsibility of the City of Greenbelt, and will require coordination with MdSHA, Prince George's County, WMATA, Maryland-National Capital Park and Planning Commission (M-NCPPC), and private landowners.

- **The street environment should be safe for pedestrians, bicyclists, and drivers.** Sidewalks and street crossings should be free of hazards and should minimize conflicts with vehicular traffic. The need to accommodate vehicular traffic flow should be balanced with the need to provide for other users, including pedestrians and bicyclists. Street design policy should reflect this balance. On-road bicycle facilities and off-road, shared-use paths should be free of debris, poor quality pavement, and other defects that impair safe and comfortable bicycling.

- **The pedestrian and bicycle network should be accessible to all.** Sidewalks and street crossings should provide access for all people, regardless of their physical abilities. Universal design is the foundation for all pedestrian design. Appropriate bicycle facilities should be provided for riders of all skill levels, from daily commuters to novice bicyclists and younger riders. This means a system of on-road bicycle lanes, shared-lane markings (sharrows), side paths and shared-use paths that connect to all parts of the city.

- **The bicycle and pedestrian network should be easy to use, and it should provide direct connections to destinations.** The bicycle and pedestrian network should provide continuous and direct connections between destinations, including homes, schools, shopping areas, public services, work places, recreational opportunities, and transit. Sidewalks and street crossings should be designed so people can easily find a direct route to a destination, and delays are minimized. Bicycle friendly routes should carry riders to destinations throughout Greenbelt and beyond, and encourage more people to travel by bicycle for short trips.

- **The street environment should feel comfortable and inviting to pedestrians and bicyclists.** The streetscape should be active and interesting, and good design should enhance the comfort and appeal of the pedestrian and bicycle environment. Consideration should be given to separating pedestrians from vehicular traffic by the use of street trees and other measures. Street trees

should provide shade, a critical element for walking trips that are made during the warmer months. An ideal pedestrian environment might also offer resting places and visual elements (such as special paving or street furnishings) that provide a sense of place.

The city should conduct a travel survey to collect additional information on citizen travel patterns and priorities.

Although the public input process pursued through this study produced valuable information on desired connections, barriers to bicycle and pedestrian travel, and potential improvements in the City of Greenbelt, additional information is needed to help the city better understand citizen priorities and the effect of planned policy changes and infrastructure investments on citizen travel patterns. Conducting travel surveys at regular intervals could help the city understand such issues better, inform future planning efforts, and help the city evaluate the effects of policy changes and infrastructure investments.

The city should establish a convenient way for citizens to report deficiencies in the bicycle and pedestrian network, for example, through a web page and/or hotline designed to accommodate such reports.

Collecting data on deficiencies in the bicycle and pedestrian network could help guide both long-term planning and routine maintenance and upgrades. Types of data that might be collected include:

- Crashes involving pedestrians and bicyclists
- Locations where the surface quality of pedestrian and bicycle facilities is degraded
- Locations where bicycle and pedestrian facilities are obstructed by debris, vegetation, trash cans, motor vehicles, etc.
- Locations where bicycle parking is needed
- Bicycle thefts

The CommunityWalk website used in the initial phases of this project could readily be adapted to fulfill this function. Other examples of online engagement include the Pittsburgh Bike Map that allows users to report crashes.[4]

The city should ensure that provisions in the Greenbelt Metro Station Development Agreement that would benefit pedestrians and bicyclists are implemented when the North Core and South Core projects around the Greenbelt Metro station are ultimately developed.

There are numerous provisions in the Greenbelt Metro Station Development Agreement that would benefit bicyclists and pedestrians, including those living within the developments themselves and those living without but wishing to access key destinations such as the Greenbelt Metro station, Beltway Plaza, Lake Artemesia, and the University of Maryland. Key provisions include:

- Sidewalks on both sides of all proposed and existing roads
- A wide sidewalk or multi-use trail along the west side of Cherrywood Lane

[4] http://map.bike-pgh.org/#c=trail

- A trail extension from the Cherrywood/Springhill Drive intersection connecting to the North Core and Greenbelt Metro station
- A network of multi-use trails in the South Core connecting to a proposed north-south connector road and to Cherrywood Lane and Breezewood Drive opposite Breezewood Drive
- A pedestrian connection from the proposed north-south connector road to the Greenbelt Metro station
- A pedestrian-only promenade integrated with and connecting commercial buildings in the South Core

The city should commission a wayfinding study to determine where maps, signs, markers, and other wayfinding aids are needed.

With its curvilinear roads and paths, pod-like neighborhoods, limited access roads, and other natural and man-made barriers, Greenbelt's bicycle and pedestrian networks are difficult for users to understand intuitively. To help address this situation, the city should consider undertaking a wayfinding study to determine where maps, signs, markers, kiosks, and other wayfinding aids should be installed. Strategic locations include places where trails come together, bicycle routes cross, or important connections can be made. Wayfinding devices should guide users toward key destinations, such as shopping centers, transit hubs, schools, and parks. A system of named bicycle and pedestrian routes might also assist with wayfinding.

Specific location and treatment recommendations are beyond the scope of this study. However, areas where wayfinding improvements appear to be needed based on public input and targeted fieldwork include:

- Gardenway from Roosevelt Center to Spellman Overpass pedestrian bridge (directions to Roosevelt Center/ Greenway Center)
- Spellman Overpass pedestrian bridge to Hanover Parkway (directions to Roosevelt Center/ Greenway Center/ Eleanor Roosevelt High School/ NASA Goddard Space Flight Center/ Schrom Hills Park)
- Crescent Road from Roosevelt Center to Kenilworth Avenue (directions to Greenbelt Metro station/ Roosevelt Center)
- Intersection of Crescent Road and Kenilworth Avenue at path (directions to Greenbelt Metro station/Roosevelt Center)
- Intersection of Turner Place and Ivy Lane (directions to Greenbelt Metro station/Roosevelt Center)
- Intersection of Ivy Lane and Cherrywood Lane (directions to Greenbelt Metro station/Roosevelt Center)
- Intersection of Hanover Parkway and shared-use path south of intersection with Greenbrook Drive (directions to Schrom Hills Park)
- Intersection of Ora Glen Drive and Greenbrook Drive (directions to Schrom Hills Park)
- Intersection of Greenbrook Drive and Winterwood Place (directions to Schrom Hills Park)

- Intersection of Winterwood Place and shared-use path to Schrom Hills Park (directions to Schrom Hills Park)

Additional guidance on wayfinding is provided in **Appendix A**.

The city should coordinate with Prince George's County and M-NCPPC to amend the county zoning code and other development requirements to ensure safer, more comfortable, and more convenient bicycle and pedestrian access and accommodations for new and renovated commercial and retail establishments. The city also should consider providing incentives to owners of commercial and retail properties for improving bicycle and pedestrian access and accommodations.

Greenway Center and Beltway Plaza are within walking and biking distance for most Greenbelt residents, yet it appears that relatively few choose to bike and walk to these destinations. Those that do report a lack of pedestrian and bicycle facilities along convenient access routes as well as concern about potential conflicts with vehicular traffic. Barriers to bicycle and pedestrian access have also been noted at Roosevelt Center, including missing sidewalks, a lack of secure bicycle parking, and conflicts with motor vehicles.

Greenway Center and Beltway Plaza were built to standards and codes that prioritize motor vehicle access over access by other modes. There are few connections between the internal sidewalk systems and the surrounding pedestrian network, including sidewalks and transit stops. Furthermore, pedestrians walking to and from their cars are generally required to walk in the drive aisle next to moving vehicles or behind parked cars.

Roosevelt Center was built with the idea that pedestrians and bicyclists would access it primarily through grade separated crossings. For many residents, the existing grade separated crossings are sufficient. However, some people, including bus riders, must access the center from Crescent and there are no convenient accessible pathways. Many people simply walk down the grassy slope from the bus stop to Centerway, as is evidenced by worn path in the area. However, those who are unable to use this route must travel down Centerway, often within the vehicle travel lane, to make the connection.

Ensuring that future development results in a pattern that better accommodates bicyclists and pedestrians will require updating standards and codes at both the city and county level, and providing incentives to property owners to make changes prior to redevelopment. Incentives might include tax breaks, full or partial funding for pedestrian and bicycle infrastructure improvements, and reduced parking minimums.

Pedestrian Recommendations

General Recommendations

The city should slow vehicular speeds and improve visibility at locations where paths intersect streets.

The City of Greenbelt is blessed with an abundance of off-street paths; however, locations where paths intersect streets are difficult to see and predict. Visibility and predictability are especially important at mid-block crossing locations, because drivers are unaccustomed to pedestrians crossing at mid-block and are, therefore, less likely to look for and see them or slow in anticipation of their presence. The inconspicuousness of path/street crossings also detracts from awareness of the pathway system. Residents and visitors whose experience of Greenbelt is largely shaped by what they see from the street may not know that paths exist in certain locations, because they are not visible from the road.

To improve the visibility and predictability of path/street crossings:

- **Mark with high-visibility crosswalks, side-of-street pedestrian crossing signs, and in-street pedestrian crossing signs** (where sufficient width is available).

- **Install curb extensions.** Curb extensions would not only enhance the visibility of pedestrians at these crossings but would also slow vehicular speeds, shorten pedestrian crossing distances, and prevent parked vehicles from blocking path entrance and exit points. Where paths intersect sidewalks and streets, and there is no buffer between sidewalk and street, curb extensions could provide enough space for ADA-compliant curb ramps. Otherwise, curb ramps tend to undermine the accessibility of sidewalks by creating vertical discontinuities in the sidewalk that are difficult for visually-impaired pedestrians to predict and for mobility-impaired pedestrians to navigate. An example of this condition occurs on Southway between Ridge Road and Crescent Road.

- **Install raised crosswalks at path/street crossings children frequent, such as near schools and playgrounds, or at other locations where traffic calming is needed.** Raised crosswalks improve pedestrian visibility by elevating pedestrians in motorists' field of view. This is particularly needed in the case of crossing children, because children are shorter than adults and more difficult to see in the road. Raised crosswalks impact vehicular speeds and volumes in ways similar to speed humps, except that the vertical deflection of a raised crosswalk directly corresponds to the crossing itself. Speed humps are generally less effective at improving pedestrian safety at crossings, because drivers tend to increase speeds between humps to make up for lost time. Raised crosswalks also prevent vehicles from encroaching on the crosswalk and eliminate the need for curb ramps at crossings, which improves access for people with mobility impairments and increases the sidewalk area available to pedestrians waiting to cross the street.

Design guidelines for curb extensions and mid-block crossings are provided in **Appendix A**.

The city should conduct a study to determine where parking prohibitions may be needed in order to provide good visibility at street intersections and mid-block crossings.

Parked cars can make it difficult for pedestrians and drivers to see each other at mid-block crossings and street intersections. To improve visibility at these locations, the city should conduct a study to determine where parking prohibitions may be needed. Example guidelines are provided in **Appendix A**.

The city should develop a plan to ensure that new and existing sidewalks, paths, curb ramps, pedestrian crossings, and other pedestrian facilities meet the draft Public Rights-of-Way Accessibility Guidelines (PROWAG).

In the years since the Americans with Disabilities Act was passed, communities have increased mobility and the overall quality of life for people with disabilities through a more accessible pedestrian network. People with mobility impairments include those who use wheelchairs, crutches, canes, walkers, orthotics, and prosthetic limbs. However, there are many people with mobility impairments who do not use assistive devices. Characteristics common to people with mobility limitations include substantially altered space requirements to accommodate assistive device use, difficulty negotiating soft surfaces, and difficulty negotiating surfaces that are not level.

The draft PROWAG was developed by the U.S. Access Board's Public Rights-of-Way Advisory Committee to define how the Americans with Disabilities Act applies to public rights-of-way. The draft guidelines clarify and expand upon the Americans with Disabilities Act Accessibility Guidelines (ADAAG), which focus on the accessibility of buildings and facilities. A notice published by the U.S. Department of Transportation in 2006 notes that the PROWAG guidelines are not standards until formally adopted by the U.S. Department of Transportation and the U.S. Department of Justice; however, they represent "the state of the practice that could be followed for areas not fully addressed by the present ADAAG standards."[5]

PROWAG establishes guidelines for:

- Pedestrian access routes
- Pedestrian crossings
- Curb ramps and blended transitions
- Accessible pedestrian signals
- Protruding objects
- Pedestrian signs
- Detectable warning surfaces

The city should conduct a thorough analysis of existing pedestrian facilities to determine where improvements are needed and then develop a plan for implementing them. Issues identified through the public input process and targeted fieldwork include:

[5] http://www.fhwa.dot.gov/environment/bikeped/prwaa.htm

- Missing or non-compliant curb ramps
- Uneven surfaces on paths and sidewalks
- Vegetation obstructing paths and sidewalks
- Lack of accessible pedestrian signals

The proposed PROWAG is available online at: http://www.access-board.gov/prowac/.

The city should review pedestrian crossings and school areas within city limits for compliance with Maryland Manual for Uniform Traffic Control Devices (MdMUTCD) standards and guidelines, and should develop a plan for achieving compliance in cases where standards and guidelines are not currently being met. The city should also consult the Maryland State Highway Administration's Bicycle and Pedestrian Design Guidelines.

The *MdMUTCD* establishes standards and guidelines for the use, placement, design, and maintenance of signals, pavement markings, and other traffic control devices in Maryland. The *Bicycle and Pedestrian Design Guidelines* provide further detail specifically on the design of bicycle and pedestrian facilities. Targeted fieldwork and public input suggest that in some cases traffic control devices are used in a way that is inconsistent and/or does not comply with *MdMUTCD* standards and guidelines. Where the *MdMUTCD* offers design leeway, the city should adopt its own standards to ensure consistent design and application throughout the city.

Crosswalks are a case in point. The city contains numerous mid-block crossings locations, but only a few of them are marked with striped crosswalks. However, the *MdMUTCD* states that crosswalks *shall* be marked at all mid-block locations. The city also uses several different crosswalk designs. Not only does this make some parts of Greenbelt seem like they belong to a different jurisdiction, it also may confuse drivers. Furthermore, one of the designs, which consists of yellow-painted pavement topped by white crosswalk striping, seems to go against *MdMUTCD* guidance on colored pavements, which advises: "Colors that degrade the contrast of white crosswalk lines, or that might be mistaken by road users as a traffic control application, should not be used for colored pavement located between crosswalk lines."

A thorough review of pedestrian crossings and school areas for compliance with the *MdMUTCD* would help identify similar cases, so that the city could act to ensure that traffic control devices are applied consistently throughout the city and are in compliance with state standards and guidelines.

The *MdMUTCD* is available online at: http://www.roads.maryland.gov/index.aspx?PageId=835.

The *MD SHA Pedestrian and Bicycle Design Guidelines* are available online at: http://www.roads.maryland.gov/Index.aspx?PageId=25.

The city should collaborate with WMATA, commercial property owners, and Prince George's County on the development of a policy for the installation and maintenance of pedestrian accommodations at and near transit stops.[6]

Steps the city can take to improve pedestrian access to transit include:

- Work with WMATA Metrobus, Prince George's County "TheBus", Shuttle-UM, and the Greenbelt Connection service to ensure that all busses serving the City of Greenbelt are accessible. Accessible busses are designed to facilitate access by people with mobility impairments. Accessible busses include ramps, lifts, "kneeling" features, and other enhancements.

- Work with WMATA Metrobus, Prince George's County "TheBus", Shuttle-UM, and the Greenbelt Connection service to ensure bus stops provide sufficient space for waiting, embarking, and disembarking. Bus shelters should be provided at as many stops as possible, with those receiving the highest pedestrian volumes prioritized. Bus shelters and bus stop waiting areas should not impede through pedestrian traffic and should be well-lighted.

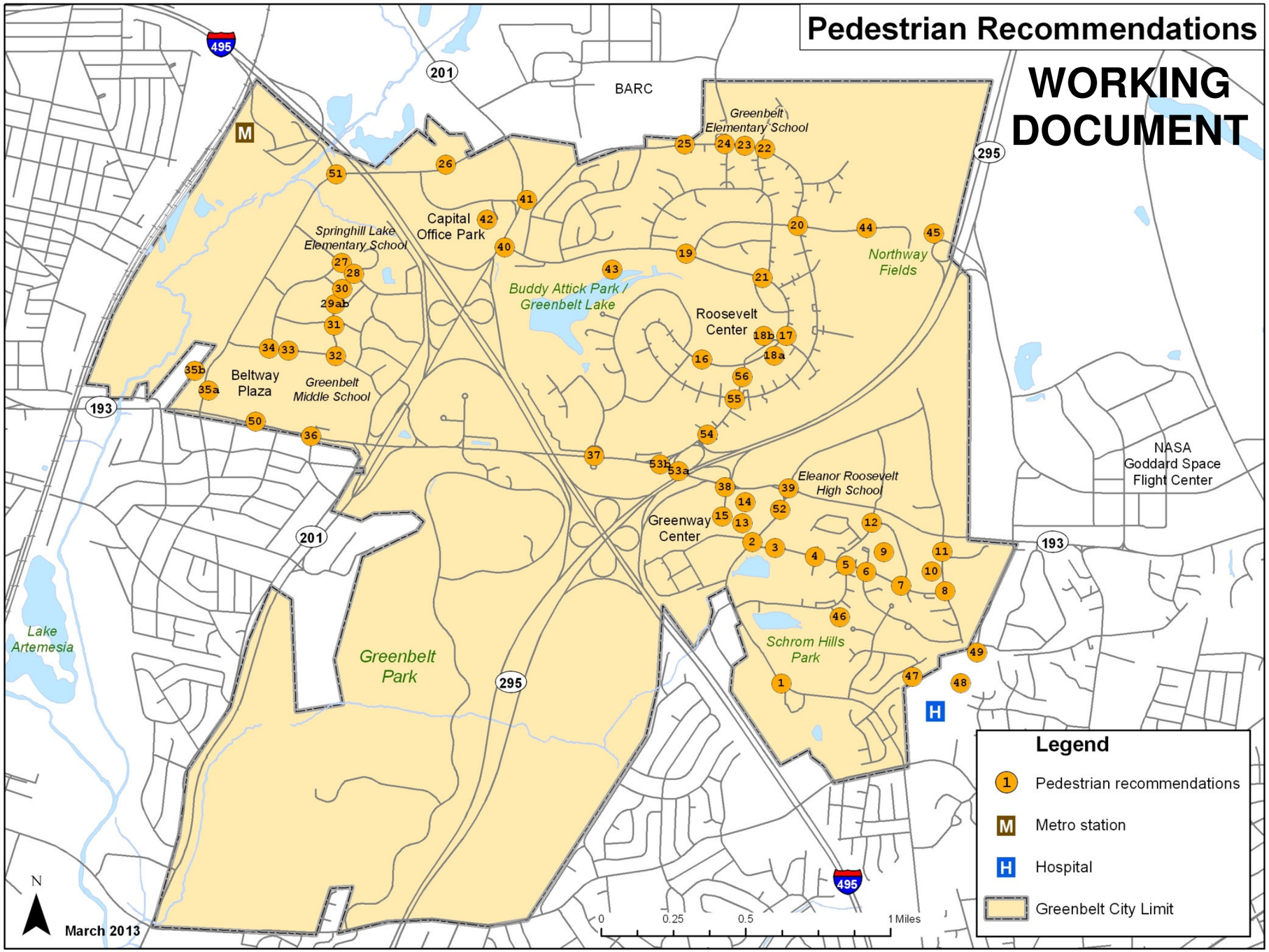
- Review bus stop locations to determine whether adjustments may improve pedestrian access and safety. In general, bus stops should be located on the far side of intersections, so that pedestrians cross behind the bus rather in front. This arrangement improves pedestrian visibility to oncoming traffic and may also improve bus headways, since busses are not compelled to stop before a green light.

- Assess bus stop locations to determine whether curb ramps, crosswalks, signage, and other traffic calming or traffic control measures may need to be implemented in order to provide safe and convenient crossings for pedestrians traveling to and from the stops.

- Work with Metrorail to provide bicycle lanes, traffic calming, on-street lighting and other facilities to enhance bicyclist and pedestrian access along Greenbelt Metro Drive leading from Cherrywood Drive to the Greenbelt Metro station.

Review pathways to transit to ensure accessibility (as defined in the draft PROWAG) and adequate lighting at night. Make changes as necessary.

[6] The city is currently working on the Greenbelt Bus Stop Safety and Accessibility Study through the FY2013 Transportation/Land Use Connections FY2013 Technical Assistance Program from MWCOG/TPB.



Map: Pedestrian Recommendations—Working Document

Table: Location-Specific Pedestrian Recommendations—Working Document—City of Greenbelt's Advisory Planning Board

(Note: The following recommendations are for planning purposes only. Further engineering analysis will be required to develop cost estimates and ensure project feasibility.)

Map Key	Location	Recommendation	Priority	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PGC, SHA, etc.)	Neighborhood	Notes
1	Hanover Parkway from Megan Lane to Greenbrook Drive	Create or improve ADA accessible sidewalks on both sides of street, including accessible connections to bus stop from sidewalk/path	High		Greenway Center, Schrom Hills Park		Bus stops on Hanover Parkway (Metrobus G12 and TheBus 16)	GB	GBE	
2	Intersection of Hanover Parkway and Ora Glen Drive	Install push button pedestrian signal for north crossing on the north side of Hanover Parkway	High		Greenway Center, Post Office		Facilitates access to transit stop	GB	GBE	
3	Intersection of Ora Glen Drive and Post Office/Lockheed Martin access drives	Facilitate pedestrian crossing of Ora Glen Drive with crosswalks, refuge islands, and signage	Low		Post Office			GB	GBE	
4	Intersection of Ora Glen Drive and Ora Glen Court	Install crosswalks on all legs and curb ramps on all corners of the intersection	Medium		Post Office		Bus stops on Ora Glen Drive (Metrobus G12)	GB	GBE	Recommendation of the Windsor Green HOA.
5	Intersection of Ora Glen Drive and Greenbrook Drive	Install crosswalk striping on all legs of the intersection	Medium				Bus stops on Ora Glen Drive and Greenbrook Drive (Metrobus G12; TheBus 11)	GB	GBE	
6	Intersection of Ora Glen Drive and Mathew Street	Install crosswalk striping on all legs of the intersection	Medium					GB	GBE	
7	Intersection of Ora Glen Drive and Morrison Drive	Install crosswalk striping on all legs of the intersection and curb ramps for east crossing	Medium				Bus stops on Ora Glen Drive (Metrobus G12; TheBus 11)		GBE	Recommendation of the Windsor Green HOA.
8	Intersection of Ora Glen Drive and Mandan Road	Install crosswalk striping on west and south legs	Medium	Crosswalk Study - Greenbelt East (2004)			Bus stops on Ora Glen Drive and Mandan Road (Metrobus G12; TheBus 11)	GB	GBE	Recommendation of the Windsor Green HOA. Crosswalk study recommends crosswalks on north and west legs of intersection. Crosswalk on north leg has already been installed. **COMPLETE**

Table: Location-Specific Pedestrian Recommendations—Working Document—City of Greenbelt's Advisory Planning Board

Map Key	Location	Recommendation	Priority	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PGC, SHA, etc.)	Neighborhood	Notes
9	Sidewalk in field between Frankfort Drive and Morrison Drive	Extend sidewalk to Ora Glen Drive	Medium					Windsor Green HOA	GBE	Private property.
10	Mandan Road between Ora Glen Drive and Canning Terrace	Install pedestrian trail between sidewalk on west side of Mandan Road and Windsor Green playground	Medium					GB	GBE	Recommendation of the Windsor Green HOA. Private property.
11	Intersection of Mandan Road and Canning Terrace	Install crosswalk striping on east and south legs and curb ramps on west side of Mandan Road for south crossing	Medium	Crosswalk Study - Greenbelt East (2004)			Bus stops on Mandan Road (Metrobus G12; TheBus 11)	GB	GBE	Recommendation of the Windsor Green HOA. Crosswalk study recommends on north leg of intersection (already installed). Private property.
12	Intersection of Frankfort Road and Morrison Drive	Install crosswalk striping on all legs and curb ramps on west side of Frankfort Road for north and south crossings	Medium					GB	GBE	Recommendation of the Windsor Green HOA.
13	Intersection of Hanover Parkway and Ora Glen Drive to north side of Greenway Center Drive	Define a convenient and accessible pedestrian pathway and a possible cut-through near the Dollar Tree. Create a plaza between the intersection and building pass-through to make pedestrian access more visible.	Medium		Greenway Center			Greenway Plaza LLC	GBE	East Greenbelt Ring and Spine Plan recommends a new pedestrian crossing through the building at southeast corner of Greenway Center to access plaza near corner of Hanover Parkway and Ora Glen Drive. Must be coordinated with property owner.
14	Intersection of Hanover Parkway and Greenbelt Road to Safeway and Greenway Center	Define convenient and accessible pedestrian pathway	High		Greenway Center			Greenway Plaza LLC	GBE/ HGB	Stakeholder votes were for generally improving the connection between old Greenbelt and Greenway Center. Potentially difficult to implement because of private property.
15	Access drive from Greenbelt Road to Greenway Center (across parking lot)	Define accessible pedestrian pathway parallel to Greenway Center access drive	High		Greenway Center		Bus stops on Greenbelt Road (Metrobus G12, G13, G14, G16; TheBus 11, 16). PGCT studying adding a stop for 15X there as well.	Greenway Plaza LLC	GBE/ HGB	Stakeholder votes were for generally improving the connection between Old Greenbelt and Greenway Center. Difficult to implement because of private property (see #14).
16	Crescent Road at Greenbelt Public Library	Install high-visibility crosswalk at parking lot exit and reposition stop bar so vehicles stop in advance of crosswalk	Medium		Roosevelt Center			GB	HGB	

Table: Location-Specific Pedestrian Recommendations—Working Document—City of Greenbelt's Advisory Planning Board

Map Key	Location	Recommendation	Priority	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PGC, SHA, etc.)	Neighborhood	Notes
17	Intersection of Crescent Road and Gardenway/Centerway	Install crosswalks and curb ramps on north and west sides for pedestrians coming to/from Roosevelt Center	High	APB Bike/Ped Trouble Spots; Greenbelt Visioning Sessions (2008)	Roosevelt Center		Greenbelt Center transfer center (Metrobus G12, G13, G14, G16; TheBus 11)	GB	HGB	APB Bike/Ped Trouble Spots identifies approach to Roosevelt Center and Domino's parking lot as problems. Visioning session notes suggest crosswalk on Gardenway. Relatively low cost and feasible; being studied with changes to bus shelters. **COMPLETE**
18a	Centerway between intersection of Crescent Road and Gardenway/Centerway and pedestrian underpass entrance	1) Install sidewalk from southwest corner of the intersection to pedestrian underpass. 2) Install pervious path from new sidewalk to bus stop on Crescent Road to facilitate transit access.	High	APB Bike/Ped Trouble Spots	Roosevelt Center		Greenbelt Center transfer center (Metrobus G12, G13, G14, G16; TheBus 11)	GB	HGB	APB Bike/Ped Trouble Spots identifies approach to Roosevelt Center and Domino's parking lot as problems. Would create an ADA-compliant crosswalk from the bus stop to Roosevelt Center, currently more of a desire path. 1) Opposed by prior City Council as departure from original plan; 2) Being studied. **COMPLETE**
18b	Centerway between intersection of Crescent Road and Gardenway/Centerway and pedestrian underpass entrance	Work with pizza establishment and law enforcement to ensure that sidewalk is not blocked by vehicles	High	APB Bike/Ped Trouble Spots	Roosevelt Center		Greenbelt Center transfer center (Metrobus G12, G13, G14, G16; TheBus 11)	GB	HGB	APB Bike/Ped Trouble Spots identifies approach to Roosevelt Center and pizza establishment parking lot as problems. Work with parking enforcement to ensure sidewalk is not blocked; dumpster has been relocated. **COMPLETE**
19	Intersection of path and Crescent Road west of Crescent/Northway intersection (i.e. the St. Hugh's crossing)	Install raised crosswalk	Low	St. Hugh's Crosswalk memorandum	Roosevelt Center	Greenbelt Elementary School		GB	HGB	Pedestrian triggered flasher installed at this intersection 2011. Raised crosswalk currently inconsistent with city traffic calming guidelines.
20	Intersection of Northway and Ridge Road	Install crosswalk on north and east legs	Medium			Greenbelt Elementary School	Bus stops on Ridge Road (Metrobus G12)	GB	HGB	
21	Crescent Road from Northway to Gardenway	Install sidewalk on north side of street	Medium			Greenbelt Elementary School	Bus stops on Crescent Road between Gardenway and Hillside (TheBus 11)	GB	HGB	Stakeholder votes for missing sidewalks on Crescent generally. Difficult given grade and wooded nature of the area.

Table: Location-Specific Pedestrian Recommendations—Working Document—City of Greenbelt's Advisory Planning Board

Map Key	Location	Recommendation	Priority	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PGC, SHA, etc.)	Neighborhood	Notes
22	Intersection of Ridge Road and Laurel Hill Road	Construct curb extensions with curb ramps into Ridge Road from all northwest and southwest corners	Medium	Greenbelt Vision Sessions (2008); Comprehensive Traffic Calming Study (1998); Traffic Calming Study Reassessment (2003)		Greenbelt Elementary School	Bus stops on Ridge Road (Metrobus G12)	GB	HGB	Stakeholder votes for speeding problems on Ridge Road and lack of sidewalks (Laurel Hill Road to Lastner Lane). Web comment cites bad traffic during drop-off/pick-up. Greenbelt Visioning Sessions identified speeding on Ridge Road as a problem. Comprehensive Traffic Calming Study identified Ridge Road as meeting criteria for active traffic calming measures. 2003 Traffic Calming Study Reassessment found that the street still met criteria for active traffic calming.
23	Crosswalk on Ridge Road at school access path between Research Road and Laurel Hill Road	Construct raised crosswalk with appropriate school zone signs	Medium	Greenbelt Vision Sessions (2008); Comprehensive Traffic Calming Study (1998); Traffic Calming Study Reassessment (2003)		Greenbelt Elementary School		GB	HGB	Stakeholder votes for speeding problems on Ridge Road and lack of sidewalks (Laurel Hill Road to Lastner Lane). Web comment cites bad traffic during drop-off/pick-up. Greenbelt Visioning Sessions identified speeding on Ridge Road as a problem. Consideration of speed humps suggested. Comprehensive Traffic Calming Study identified Ridge Road as meeting criteria for active traffic calming measures. 2003 Traffic Calming Study Reassessment found that the street still met criteria for active traffic calming. Needs to be studied.
24	Intersection of Ridge Road and Research Road	Construct curb extensions with curb ramps into Ridge Road from all four corners. Install crosswalk striping on south, east, and west legs.	Medium	Greenbelt Vision Sessions (2008); Comprehensive Traffic Calming Study (1998); Traffic Calming Study Reassessment (2003)		Greenbelt Elementary School	Bus stops on Ridge Road (Metrobus G12)	GB	HGB	Stakeholder votes for speeding problems on Ridge Road and lack of sidewalks (Laurel Hill Road to Lastner Lane). Web comment cites bad traffic during drop-off/pick-up. Greenbelt Visioning Sessions identified speeding on Ridge Road as a problem. Comprehensive Traffic Calming Study identified Ridge Road as meeting criteria for active traffic calming measures. 2003 Traffic Calming Study Reassessment found that the street still met criteria for active traffic calming.

Table: Location-Specific Pedestrian Recommendations—Working Document—City of Greenbelt's Advisory Planning Board

Map Key	Location	Recommendation	Priority	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PGC, SHA, etc.)	Neighborhood	Notes
25	Ridge Road between Research Road and Lastner Lane	Construct and/or repair sidewalk on both sides of the street	Medium			Greenbelt Elementary School	Bus stops on Ridge Road (Metrobus G12)	GB	HGB	
26	Cherrywood Lane from Ivy Lane to US Courthouse entrance	Ensure continuous sidewalk connection is provided on the north side of Cherrywood Lane	Medium		US Courthouse		Bus stops on Cherrywood Lane (Metrobus G12; TheBus 11)	GB	GBW	Web comment cites bad traffic during drop-off/pick-up.
27	Springhill Drive between Cherrywood Terrace and Springhill Lane (Springhill Lake Elementary School)	Construct chicane with pedestrian refuge islands and raised crosswalks	Medium	Comprehensive Traffic Calming Study (1998)		Springhill Lake Elementary School	Bus stops on Springhill Drive (Metrobus R11, R12; TheBus 16; UMD Shuttle 129)	GB	GBW	Need being addressed by the Springhill Lake Elementary School Safe Routes to School implementation due for 2014 completion. **IN PROGRESS**
28	Intersection of Springhill Drive and Springhill Lane	Install crosswalks and curb ramps for west side crossing	Medium	Comprehensive Traffic Calming Study (1998)		Springhill Lake Elementary School, Greenbelt Middle School	Bus stops on Springhill Drive (Metrobus R11, R12; TheBus 16)	GB	GBW	Traffic calming study recommends traffic circles at major intersections, narrowed travel lanes, and chokers on Breezewood Drive, Edmonston Road, and Springhill Drive. Need being addressed by the Springhill Lake Elementary School Safe Routes to School implementation due for 2014 completion. **IN PROGRESS**
29a	Springhill Lane from Springhill Drive to Breezewood Drive	Install sidewalk on west side	Low		Beltway Plaza	Springhill Lake Elementary School, Greenbelt Middle School	Bus stops on Springhill Lane (Metrobus R11, R12; TheBus 16; UMD Shuttle 129)	GB	GBW	
29b	Springhill Lane from Springhill Drive to Breezewood Drive	Install traffic calming including chicanes, curb extensions, or roundabouts	Medium		Beltway Plaza	Springhill Lake Elementary School, Greenbelt Middle School	Bus stops on Springhill Lane (Metrobus R11, R12; TheBus 16; UMD Shuttle 129)	GB	GBW	Needs to be studied.
30	Intersection of Springhill Lane and Market Lane	Install crosswalks at Springhill Lane and Market Lane (west and south legs)	Medium			Springhill Lake Elementary School, Greenbelt Middle School	Bus stops on Springhill Lane (TheBus 16)	GB	GBW	
31	Intersection of Springhill Lane and Breezewood Court	Install crosswalks, curb extensions, and curb ramps on Springhill Lane and Breezewood Court	Medium			Springhill Lake Elementary School, Greenbelt Middle School	Bus stops on Springhill Lane (TheBus 16)	GB	GBW	

Table: Location-Specific Pedestrian Recommendations—Working Document—City of Greenbelt's Advisory Planning Board

Map Key	Location	Recommendation	Priority	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PGC, SHA, etc.)	Neighborhood	Notes
32	Intersection of Springhill Lane and Breezewood Drive	Install crosswalks on Springhill Lane and Breezewood Drive	Medium	Comprehensive Traffic Calming Study (1998)	Beltway Plaza	Greenbelt Middle School	Bus stops on Springhill Lane and Breezewood Drive (Metrobus R11, R12; TheBus 16; UMD Shuttle 129)	GB	GBW	Traffic calming study recommends traffic circles at major intersections, narrowed travel lanes, and chokers on Breezewood Drive, Edmonston Road, and Springhill Drive. Some of this is being addressed by the new Greenbelt Middle School construction and road improvements.
33	Intersection of parking lot driveway and Breezewood Drive just east of Cherrywood Terrace	Install crosswalks on Breezewood Drive from shopping center parking lot	Medium		Beltway Plaza		Bus stops on Breezewood Drive (Metrobus R11, R12; TheBus 16; UMD Shuttle 129)	GB	GBW	Requires coordination with Beltway Plaza.
34	Intersection of Breezewood Drive and Cherrywood Terrace	Make accessible path to shopping center parking lot at Breezewood Drive and Cherrywood Terrace	High		Beltway Plaza		Bus stops on Breezewood Drive (Metrobus R11, R12; TheBus 16; UMD Shuttle 129)	GB	GBW	Needs to be studied.
35a	Intersection of Cherrywood Lane and Giant parking lot	Rebuild/reconfigure intersection at Cherrywood Lane and Giant parking lot	High		Beltway Plaza		Bus stops on Cherrywood Lane (Metrobus 81, C2, G13, G14, G16, R3, R11, R12; TheBus 16)	GB	GBW	Further study needed in relation to future development plans, and refer to Toole concept recommendations.
35b	Cherrywood Lane southbound at intersection with Giant parking lot	Move bus shelter closer to the crosswalk	High		Beltway Plaza		Bus stop on southbound Cherrywood Lane (Metrobus 81, C2, G13, G14, G16, R3, R11, R12; TheBus 16)	GB	GBW	Short-term fix needed, but must be dealt with in the context of the whole intersection in the long-term.
36	Intersection of 63rd Avenue and Greenbelt Road	Pedestrian improvements at Greenbelt Road and 63rd Street	Medium		Beltway Plaza	Greenbelt Middle School	Bus stop on eastbound Greenbelt Road (Metrobus G13,14,16; TheBus 16)	SHA		Requires coordination with SHA.

Table: Location-Specific Pedestrian Recommendations—Working Document—City of Greenbelt's Advisory Planning Board

Map Key	Location	Recommendation	Priority	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PGC, SHA, etc.)	Neighborhood	Notes
37	Intersection of Lakecrest Drive and Greenbelt Road	Reconfigure Belle Point Drive at Lakecrest Drive and Greenbelt Road	Low		Greenway Center		Bus stops on Lakecrest Drive (Metrobus G13, G14, G16) and Greenbelt Road (TheBus 16)	SHA		
38	Intersection of Greenway Center access drive and Greenbelt Road	Add crosswalks at Greenway Center and Greenbelt Road and add accessible pathways parallel to Greenway Center access drive	Medium		Greenway Center		Westbound bus stop on Greenbelt Road (Metrobus G12, G13, G14, G16; TheBus 11, 16). PGCT studying adding a stop for 15X there as well.	SHA		Requires coordination with property owner and SHA.
39	Intersection of Hanover Parkway and Greenbelt Road	Add crosswalks and pedestrian signals at Hanover Parkway and Greenbelt Road	Medium	Greenbelt East Ring and Spine Plan	Greenway Center	Eleanor Roosevelt High School	Bus stops on Hanover Parkway (Metrobus G12; TheBus 11) and Greenbelt Road (Metrobus G13, G14, G16).	SHA		Segment identified as a bikeway in Greenbelt East Ring and Spine Plan. Requires coordination with SHA.
40	Intersection of Crescent Road and Kenilworth Avenue	Add "Turning Vehicles Yield to Pedestrians" sign; relocate stop bar closer to intersection; (see #51 in the Bicycling Recommendations Table)	High		Capital Office Park		Walking path toward Greenbelt Metro and MARC Station and Capital Office Park	SHA		Includes asking SHA to install a stub pole and actuated button. Requires coordination with SHA.
41	Intersection of Ivy Lane and Kenilworth Avenue	Install pedestrian improvements at Ivy Lane and Kenilworth Avenue including crosswalks, curb ramps, and push button signals	Medium	Bicycle Task Force Recommendations (1995)	Capital Office Park		Bus stop on northbound Kenilworth Avenue (Metrobus G12) and on eastbound Ivy Lane at Turner Place (Metrobus G12). Greenbelt Metro and MARC Station.	SHA		Bicycle Task Force Recommendations included that the city should take steps to ensure intersection is safe for pedestrians and bicyclists if traffic light installed (traffic light has been installed). Work with SHA to install crosswalk and redesign slip lane.
42	Path between Crescent Road (near SHA gate) and Turner Place (Old Line Bank)	Widen and repave path between SHA driveway and Ivy Lane	Medium		Capital Office Park		Walking path toward Greenbelt Metro and MARC Station and Capital Office Park	SHA		Private property.

Table: Location-Specific Pedestrian Recommendations—Working Document—City of Greenbelt's Advisory Planning Board

Map Key	Location	Recommendation	Priority	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PGC, SHA, etc.)	Neighborhood	Notes
43	Historic Greenbelt pathway system	Widen and repave paths within Historic Greenbelt pathway system that are designated for handicapped accessibility	High		Roosevelt Center	Greenbelt Elementary School	Varies based on location	GB	HGB	Improve sidewalk on Southway between Ridge Road and Crescent Road (Green Ridge House Apartments side); need parallel curb ramps (currently perpendicular). High level of community involvement needed given historic nature of the walkway system.
44	Northway Road from Ridge Road to eastern terminus	Improve surface quality	Medium		NASA Goddard			GB	HGB	Has been opposed in the past.
45	Eastern terminus of Northway Road to Explorer Road (NASA Goddard)	Provide bicycle and pedestrian accommodation across the Baltimore-Washington Parkway	Low		NASA Goddard			USA	HGB	Requires coordination with Department of the Interior.
46	Path between Schrom Hills Park and Winterwood Place	Widen and repave connections to Chartwell Place and Kara Court	Medium		Schrom Hills Park			Greenbrook Estates HOA	GBE	Need to check with Greenbelt East Advisory Coalition (GEAC) and Greenbrook Estates HOA about what has been repaved; Planning Department has Schrom Park plan. Private property.
47	Ora Glen Drive, from Spring Manor Drive and Hanover Parkway to Mathew Street and Mandan Road	Install shared-use path (begins in the same place as #50)	Low	Greenbelt East Ring and Spine Plan	NASA Goddard	Magnolia Elementary School		Pepco	GBE	Segment identified as a bikeway in Greenbelt East Ring and Spine Plan.
48	Mandan Road / Mathew Street to Magnolia Elementary School	Install shared-use path	Medium			Magnolia Elementary School		Pepco, Prince George's County Board of Education	GBE	Magnolia ES is not in the city; city has spoken with Pepco and the school board.
49	Brae Brooke Drive to Mandan Road / Mathew Road	Install shared-use path	Low			Magnolia Elementary School		Pepco, PGC	GBE	Pepco property; not in city.
50	Greenbelt Road, Cunningham Drive to 62nd Avenue	Construct sidewalk on north side of Greenbelt Road between Cunningham Drive and 62nd Avenue; install crosswalk across Cunningham Drive on north side of Greenbelt Road	High		Beltway Plaza			SHA	GBW	Requires coordination with Greenbelt Plaza and SHA.

Table: Location-Specific Pedestrian Recommendations—Working Document—City of Greenbelt's Advisory Planning Board

Map Key	Location	Recommendation	Priority	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PGC, SHA, etc.)	Neighborhood	Notes
51	Intersection of Greenbelt Metro Drive and Cherrywood Lane	Construct traffic circle which will enhance pedestrian visibility for southbound right turning vehicles	High	Comprehensive Traffic Calming Study (1998)			Greenbelt Metro and MARC Station; bus stop at Metro Drive and Indian Creek (Metrobus 81, C2, G12, G13, G14, G16, R3, R11, R12; TheBus 11, 16)	GB, WMATA	GBW	Construction completed in summer 2012. **COMPLETE, RETROFITS IN REVIEW**
52	Hanover Parkway and Greenway Center Access Drive	Add mid-block crossing	Medium		Greenway Center			GB	GBE	To get to the Post Office from Greenway Center (in conjunction with #14 and #15) need the sidewalk and refuge - perhaps down the block at the median. Staff would like to encourage intersection crossing.
53a	Greenbelt Road from Southway to bridge over Baltimore-Washington Parkway	Install sidewalk	High		Greenway Center, Roosevelt Center			SHA	HGB/ GBE	Continue to push with SHA.
53b	Greenbelt Road from Southway to bridge over Baltimore-Washington Parkway	Install crosswalks across Greenbelt Road on both legs of intersection	High		Greenway Center, Roosevelt Center			SHA	HGB/ GBE	Requires coordination with SHA. If implemented, coordinate with DPW&T to consider adding a stop on Greenbelt Road at Southway for TheBus 16 - there is currently no stop here because no pedestrian accommodations are in place.
54	Southway between Greenbelt Road and Ridge Road	Complete sidepath on both sides of Southway	High		Greenway Center, Roosevelt Center		Bus stops on Southway (Metrobus G13, G14, G16; TheBus 11)	GB	HGB	Requires coordination with SHA.
55	Intersection of Southway and Ridge Road	Add curb extensions at Southway Road and Ridge Road	Medium		Greenway Center, Roosevelt Center		Bus stops on Southway and Ridge Road (Metrobus G12, G13, G14, G16; TheBus 11)	GB	HGB	Needs to be studied.
56	Southway between Ridge Road and Crescent Road	Add sidepath on the west side of Southway Road between Ridge Road and Crescent Road	Medium		Greenway Center, Roosevelt Center		Bus stop on southbound Southway at Crescent (Metrobus G12, G13, G14, G16; TheBus 11)	GB	HGB	The city has historically avoided sidewalk construction which would compete with inner walkway system.

Bicycling Recommendations

General Recommendations

The city should improve bicyclist comfort and safety on the existing bicycling network, and clarify its location and extent, by adding on-road bicycling facilities and improving paths designated for shared-use.

The existing *City of Greenbelt Trails Map* identifies a bicycling network that is easy to understand and connects key destinations. However, there are locations along the network that may feel uncomfortable or unsafe for bicycling, and the extent of the network and where it may lead are not always discernible to bicyclists. To improve bicyclist comfort and safety, and to make the network easier to understand without a map, the city should:

- **Install additional on-road bicycling facilities.** The *Trails Map* identifies many Greenbelt roads for bicycle use; however, on-road bicycle facilities are currently provided for only three of them: Crescent Road, Ivy Lane, and Cherrywood Lane. On-road facilities include bicycle lanes and shared-lane markings, or "sharrows." Guidelines for bicycle lanes and shared-lane markings are provided in **Appendix A**. Specific recommendations are included later in this chapter and are indicated on the "Draft Bicycle Recommendations" map.

- **Widen and resurface paths designated for shared-use.** The *Trails Map* identifies a number of paths as shared-use "hiker-biker" trails. However, these paths are typically too narrow to accommodate bicyclists and pedestrians comfortably (especially in passing situations), and their surface is often deteriorated, making them uncomfortable for bicycling. These paths are important to the city's bicycling network both for recreational and utilitarian travel purposes. For example, the paths around Greenbelt Lake might be used by both recreational riders wishing to enjoy the beauty of the lake and by utilitarian riders wishing to travel to Roosevelt Center, Greenbelt Elementary School, or Greenbelt Metro station from University Square and other locations within Greenbelt. For utilitarian riding, it is important that shared-use paths provide a hard, smooth surface and be sufficiently wide. Guidelines for shared-use paths are provided in **Appendix A**.

The city should expand the existing bicycle network to provide additional connections to key destinations.

While the existing bicycle network connects most of the city's key destinations, there are locations where new linkages could significantly enhance the network's utility. New linkages that would primarily benefit bicyclists are included in the recommendations tables and maps below. It should be noted that successful completion of some of these desired connections may require coordination with private landowners, the National Park Service, and other parties.

The city should take steps to ensure an adequate supply of well-designed and conveniently-located bicycle parking facilities at shopping centers, office buildings, community facilities, and multi-family residences.

Just as an adequate supply of conveniently-located motor vehicle parking encourages motor vehicle use, so to can an adequate supply of well-designed and conveniently-located bicycle parking encourage bicycle riding. Steps the city can take to ensure adequate bicycle parking throughout the city include:

- Establish standards and guidelines for bicycle parking facilities within the city. These standards should prescribe the appropriate type, design, and location of bicycle parking facilities by land use. Example guidelines are provided in **Appendix A**.

- Install an adequate supply of bicycle racks at all community facilities. The Greenbelt Public Library was noted by stakeholders as a community facility in need of additional bicycle racks. Providing additional bicycle spaces at the library should be a priority in the immediate term.

- Provide incentives to owners of commercial buildings and multi-family dwellings to encourage them to provide bicycle parking facilities according to city standards and guidelines. Stakeholders identified Greenway Center and Beltway Plaza as locations where additional bicycle parking facilities are needed. Working with the owners of those properties should be a priority in the immediate term.

- Require new retail, office, community facility, and multi-family residential construction in the city to provide bicycle parking facilities according to city standards and guidelines. New construction would include significant additions or renovations of existing properties.

The city should take steps to improve bicycle access to transit.

Steps the city can take to improve bicycle access to transit include:

- Install bicycle parking facilities at major transportation hubs within the city. An example would be the main bus stop serving Roosevelt Center.

- Work with WMATA Metrobus and Prince George's County "TheBus" to ensure that all busses serving the city are outfitted with bicycle racks.

- Work with WMATA to ensure that adequate, secure bicycle parking is available at the Greenbelt Metrorail station. Since bicycles are likely to be left for extended periods of time, bicycle parking facilities should be located within view of a WMATA station attendant and ideally should be covered to protect bicycles from rain, bird droppings, and vandalism.

The city should require that driveway aprons be flush with the roadway and work with the appropriate parties to retrofit driveway aprons that fail to meet this requirement.

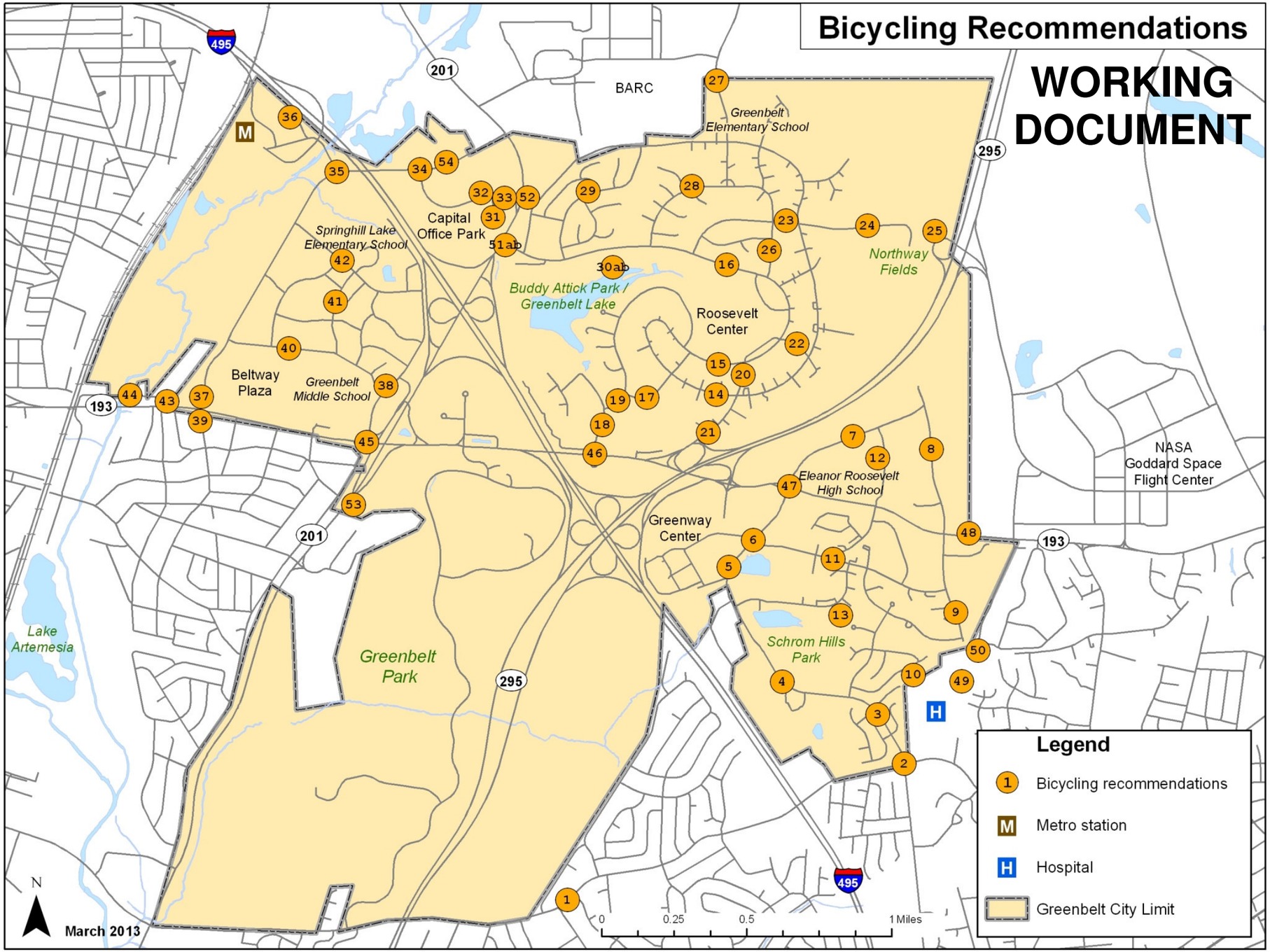
Driveways to public and private properties are an integral part of the city's bicycle network. They serve as access points for trails and commercial and community facilities. Yet, many of them are not designed

to accommodate bicycles. The typical driveway in many parts of the city has a 1– 2" high lip where the apron meets the road. When bicyclists attempt to access a driveway apron that is not flush with the road, they risk crashing or damaging their bicycle wheels.[7]

The city should assess drainage grates throughout the city to determine if they are bicycle-safe and replace those that are not.

The safety of the city's drainage coverage emerged as an issue through the public input process. Greenbelt should conduct an inventory of all drainage grates on all roadways within the city (possibly including private internal circulation routes in larger developments and commercial areas) and replace those that may pose a hazard to bicyclists. Priority should be given to improving drainage grates on roads identified in the city's bicycle network.

[7] The city follows Prince George's County standards for driveway design. The county standards do not have a lip at the apron, and as older driveways are replaced, they are installed at the current standards.



Map: Bicycling Recommendations—Working Document

Table: Location-Specific Bicycling Recommendations—Working Document—City of Greenbelt's Advisory Planning Board

(Note: The following recommendations are for planning purposes only. Further engineering analysis will be required to develop cost estimates and ensure project feasibility.)

Map Key	Location	Recommendation	Priority	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PGC, SHA, etc.)	Neighborhood	Notes
1	Good Luck Road from Paint Branch Parkway / Kenilworth Avenue to Hanover Parkway	Install bicycle lanes where space allows. Otherwise, provide striped shoulder.	High		Greenbelt Park, University of Maryland		Bus stops on Good Luck Road (TheBus 14 and 16, depending on section)	SHA, DPW&T	PGC	Good Luck Road and Paint Branch Parkway are county roads so coordination with/approval of the county is required.
2	Intersection of Good Luck Road and Hanover Parkway	Install bike box (or move stop bars back from crosswalk) to create space for left turns from Good Luck Road onto Hanover Parkway	Medium		Greenway Center	Turning Point Academy		DPW&T	PGC / GBE	Good Luck Road is a county road so coordination with/approval of the county is required. Bike boxes are currently experimental in the MUTCD.[8]
3	Hanover Parkway between Good Luck Road and Megan Lane	Mark existing shoulders as buffered bicycle lanes	Medium		Greenway Center		Bus stops on Hanover Parkway (Metrobus G12; TheBus 16)	GB	GBE	When the city last visited this issue, it was decided that paved shoulders was an adequate accommodation. Are there other operational impacts which would result from implementation of this recommendation?
4	Hanover Parkway between Megan Lane and Greenbrook Drive	Install markings and signage to improve bicycle access and safety on approach to roundabouts	High	Comprehensive Traffic Calming Study (1998)	Greenway Center		Bus stops on Hanover Parkway (Metrobus G12; TheBus 16)	GB	GBE	Web comments addressed roundabouts. Comprehensive Traffic Calming Study recommends narrowing travel lanes on Hanover Parkway south of Greenbelt Road to 11 feet. Will require specific recommendations.
5	Hanover Parkway from Greenbrook Drive to Greenbelt Road	Conduct traffic analysis and geometric study to determine whether vehicle lanes can be narrowed and/or removed to allow installation of bicycle lanes	Medium	Greenbelt East Ring and Spine Plan; Comprehensive Traffic Calming Study (1998)	Greenway Center		Bus stops on Hanover Parkway (Metrobus G12; TheBus 16)	GB	GBE	Segment identified as bikeway in Greenbelt East Ring and Spine Plan. Comprehensive Traffic Calming Study recommends narrowing lanes on Hanover Parkway south of Greenbelt Road to 11 feet.
6	Intersection of Hanover Parkway and Ora Glen Drive	Provide left-turn bicycle lane to facilitate bicycle access to Greenway Center from northbound Hanover Parkway	Low		Greenway Center		Bus stops on Hanover Parkway (TheBus 16) and Ora Glen Drive (Metrobus G12)	GB	GBE	See Hanover Parkway design concept. Issue is greater than just this intersection. Should be considered with #5 above.
7	Hanover Parkway between Greenbelt Road and Mandan Road	Install bicycle lanes on uphill sections and shared-lane markings (sharrows) on downhill sections	Medium	Greenbelt East Ring and Spine Plan	Greenway Center	Eleanor Roosevelt High School	Bus stops on Hanover Parkway (Metrobus G12; TheBus 11)	GB	GBE	Segment identified as bikeway in Greenbelt East Ring and Spine Plan. Needs to be vetted with Greenbriar community, GEAC.

[8] http://www.fhwa.dot.gov/environment/bikeped/mutcd_bike.htm

Table: Location-Specific Bicycling Recommendations—Working Document—City of Greenbelt's Advisory Planning Board

Map Key	Location	Recommendation	Priority	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PGC, SHA, etc.)	Neighborhood	Notes
8	Mandan Road from Hanover Parkway to Greenbelt Road	Install bicycle lanes	Medium	Greenbelt East Ring and Spine Plan; Comprehensive Traffic Calming Study (1998)	NASA	Eleanor Roosevelt High School	Bus stops on Mandan Road (Metrobus G12; TheBus 11) and at Greenbelt Road (Metrobus G13, G14, G16)	GB	GBE	Segment identified as bikeway in Greenbelt East Ring and Spine Plan. Comprehensive Traffic Calming Study recommends narrowing lanes to slow speeds. Needs to be vetted with GEAC.
9	Mandan Road from Greenbelt Road to Mathew Street	Install bicycle lanes	Medium	Greenbelt East Ring and Spine Plan	NASA		Bus stops on Mandan Road (Metrobus G12; TheBus 11) and at Greenbelt Road (Metrobus G13, G14, G16)	GB	GBE	Segment identified as bikeway in Greenbelt East Ring and Spine Plan. Needs to be vetted with GEAC.
10	Intersection of Mandan Road and Mathew Street to Hanover Parkway and Spring Manor Drive	Install shared-use path	Medium		NASA			GB, Pepco	GBE	Segment identified as bikeway in Greenbelt East Ring and Spine Plan. Would require Pepco permission and coordination.
11	Ora Glen Drive between Mandan Road and Hanover Parkway	Install bicycle lanes	Medium	Greenbelt East Ring and Spine Plan; Comprehensive Traffic Calming Study (1998)	Greenway Center		Bus stops on Ora Glen Drive (Metrobus G12; TheBus 11)	GB	GBE	Segment identified as bikeway in Greenbelt East Ring and Spine Plan. Comprehensive Traffic Calming Study suggests narrowing lanes to reduce speeds on this road.
12	Hanover Parkway to Greenbelt Road	Provide connection from Baltimore-Washington Parkway Spellman Overpass trailhead on Hanover Parkway through Eleanor Roosevelt High School property to intersection of Frankfort Drive and Greenbelt Road. Potential routes indicated on initial recommendations map.	Medium			Eleanor Roosevelt High School	Bus stops at trailhead (Metrobus G12; TheBus 11) and at Greenbelt Road and Frankfort Drive (Metrobus G13, G14, G16)	Prince George's County Board of Education	GBE	Board of Education/staff should be consulted regarding promoting public access through school property.
13	Path between Winterwood Place and Schrom Hills Park	Widen and repave. Widen and pave connection to Chartwell Place. Widen and repave connection to Kara Court.	Low		Schrom Hills Park	Eleanor Roosevelt High School		Greenbrook Estates HOA	GBE	Not a city path - belongs to the Greenbrook Estates HOA.
14	Ridge Road from Westway to Lastner Lane	Install shared-lane markings (sharrows)	High		Roosevelt Center	Greenbelt Elementary School	Bus stops on Ridge Road (From Westway to Gardenway: Metrobus G12, G13, G14, G16; From Gardenway to Lastner: Metrobus G12)	GB	HGB	

Table: Location-Specific Bicycling Recommendations—Working Document—City of Greenbelt's Advisory Planning Board

Map Key	Location	Recommendation	Priority	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PGC, SHA, etc.)	Neighborhood	Notes
15	Crescent Road from Westway to Parkway	Install shared-lane markings (sharrows)	High		Roosevelt Center		Greenbelt Metro and MARC Station; bus stops on Crescent Road (Metrobus G12, G13, G14, G16; TheBus 11)	GB	HGB	
16	Crescent Road from Parkway to Northway	Install bicycle lanes and shared-lane markings (sharrows)	High		Roosevelt Center		Greenbelt Metro and MARC Station	GB	HGB	1998 Comprehensive Traffic Calming Study recommends narrowing travel lanes and installing painted median. Lanes are currently 12 feet.
17	Westway from Lakeside Drive to Crescent Road	Install shared-lane markings (sharrows)	High		Roosevelt Center		Bus stops on Westway (Metrobus G12, G13, G14, G16)	GB	HGB	
18	Lakecrest Drive from Greenbelt Road to Lakeside Drive	Install shared-lane markings (sharrows)	High		Roosevelt Center		Bus stops on Lakecrest Drive (Metrobus G12, G13, G14, G16) and at Greenbelt Road (TheBus 16)	GB	HGB	
19	Lakeside Drive from Lakecrest Drive to Westway	Install shared-lane markings (sharrows)	High		Roosevelt Center		Bus stops on Lakeside Drive (Metrobus G12, G13, G14, G16)	GB	HGB	
20	Southway from Crescent Road to Ridge Road	Install shared-lane markings (sharrows)	Medium		Roosevelt Center, Greenway Center		Bus stops on Southway (Metrobus G12, G13, G14, G16; TheBus 11)	GB	HGB	
21	Southway from Ridge Road to Greenbelt Road	Install multi-use path on west side	Medium		Roosevelt Center, Greenway Center		Bus stops on Southway (Metrobus G13, G14, G16; TheBus 11)	GB	HGB	Needs to be studied for available city right-of-way.
22	Gardenway from Crescent Road to eastern terminus	Install shared-lane markings (sharrows)	Medium		Roosevelt Center		Greenbelt Metro and MARC Station; bus stops on Gardenway (Metrobus G12, G13, G14, G16; TheBus 11)	GB	HGB	
23	Northway from Hillside Road to Ridge Road	Install shared-lane markings (sharrows) and signage	Medium		NASA		Bus stops at Hillside Road (TheBus 11) and Ridge Road (Metrobus G12)	GB	HGB	

Table: Location-Specific Bicycling Recommendations—Working Document—City of Greenbelt's Advisory Planning Board

Map Key	Location	Recommendation	Priority	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PGC, SHA, etc.)	Neighborhood	Notes
24	Northway from Ridge Road to eastern terminus	Improve surface quality	Low	GGI Connectivity Workshop (2009); Greenbelt Visioning (2008)	NASA		Bus stops at Ridge Road (Metrobus G12)	GB	HGB	Idea proposed at GGI Connectivity Workshop was to "create a safe pathway to Northway Fields. Narrow the road, if necessary." Note from Greenbelt Visioning Session: "Don't pave Northway; no lights on Northway." Will need public discussion, as there are concerns that the paved road will encourage speeding.
25	Eastern terminus of Northway to NASA Goddard	Provide bicycle and pedestrian accommodation across the Baltimore-Washington Parkway	Medium		NASA			USA	HGB	Subject to approval from the Department of Interior and NASA Goddard.
26	Hillside Road from Crescent Road to Northway	Install shared-lane markings (sharrows)	Medium		Roosevelt Center		Bus stops at Northway (TheBus 11)	GB	HGB	
27	Research Road at BARC fence	Provide paved path through gate for bicycles with saddle bags to pass through	Medium		BARC			USA		Would require coordination/permission from BARC; may or may not be feasible. Limited to city right-of-way.
28	Green Hill Road from Crescent Road to Hillside Road	Install shared-lane markings (sharrows)	Medium		BARC	Greenbelt Elementary School	Bus stops on Green Hill Road (TheBus 11)	GB		
29	Lastner Lane from Ridge Road to Crescent Road	Install shared-lane markings (sharrows)	Medium		Roosevelt Center		Bus stops on Lastner Lane (Metrobus G12)	GB	HGB	
30a	Historic Greenbelt pathway system	Widen and resurface some designated paths	Medium		Roosevelt Center	Greenbelt Elementary School	Greenbelt Metro and MARC Station; various bus stops	GB	HGB	Maintaining the natural appearance of the interior pathway system, especially in the immediate vicinity of Greenbelt Lake, was identified as a priority during the public input process. All-weather surface that might accomplish this goal include decomposed granite, tinted concrete, and ResinPave. Needs community discussion; paths are intended as pedestrian system.
30b	Greenbelt Lake Trail	Widen and resurface some designated paths	Medium							Previous opposition to change in path surface.
31	Path between Crescent Road and Turner Place	Widen and repave	High	APB Ped/Bike Trouble Spots			Greenbelt Metro and MARC Station	GB	HGB	Identified as problem in APB Ped/Bike Trouble Spots document. Private property owner permission required.
32	Intersection of Ivy Lane and Turner Place	Install signage indicating direction to Metro at intersection	Medium				Greenbelt Metro and MARC Station	GB	GBW	
33	Ivy Lane from Kenilworth Avenue to Turner Place	Add bicycle lanes and signage to south side of Ivy Lane between Kenilworth and Turner Place. Eliminate dedicated turn lanes for vehicles and pork chop if necessary.	Medium				Greenbelt Metro and MARC Station	GB	GBW	See #41-42 in the Pedestrian Recommendations Table.

Table: Location-Specific Bicycling Recommendations—Working Document—City of Greenbelt's Advisory Planning Board

Map Key	Location	Recommendation	Priority	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PGC, SHA, etc.)	Neighborhood	Notes
34	Intersection of Ivy Lane and Cherrywood Lane	Restripe Ivy Lane approach to Cherrywood Lane to allow space for bicyclists to move into left turn bicycle lane	High				Greenbelt Metro and MARC Station	GB	GBW	
35	Intersection of Greenbelt Metro Drive and Cherrywood Lane	Construct traffic circle at intersection	High	Comprehensive Traffic Calming Study (1998), Maximizing Transit Access Opportunities (2008)			Greenbelt Metro and MARC Station	GB	GBW	Comprehensive Traffic Calming Study (1998) recommends a traffic circle at this location. Maximizing Transit Access Opportunities (2008) suggest that improving crossing facilities at this intersection would make it safer for residents of Franklin Park to access the Greenbelt Metro station on foot. Completed construction in 2012. **COMPLETE, RETROFITS IN REVIEW**
36	Greenbelt Metro Drive from Metro station to Cherrywood Lane	Install shared-lane markings (sharrows) on Greenbelt Metro Drive from Metro station to Cherrywood Lane	High				Greenbelt Metro and MARC Station; bus stop at Greenbelt Metro Drive and Indian Creek (Metrobus 81, C2, G12, G13, G14, G16, R3, R11, R12; TheBus 11, 16)	WMATA	GBW	Greenbelt Metro Drive is private, so coordination/approval with WMATA is required.
37	Cherrywood Lane from Breezewood Drive to Greenbelt Road	Install bicycle lanes on Cherrywood Lane from Breezewood Lane to Greenbelt Road	High		Beltway Plaza		Greenbelt Metro and MARC Station; bus stops on Cherrywood Lane (Metrobus 81, C2, G13, G14, G16, R3, R11, R12; TheBus 16)	GB, SHA	GBW	Insufficient right-of-way, poor geometrics, and traffic volume make option impractical.
38	Edmonston Road from Greenbelt Road to Springhill Drive	Install shared-lane markings (sharrows) on Edmonston Road between Greenbelt Road and Springhill Drive	Medium			Greenbelt Middle School	Greenbelt Metro and MARC Station; bus stops on Edmonston Road (Metrobus R11, R12; UMD Shuttle 129)	GB	GBW	
39	Intersection of Cherrywood Lane and Greenbelt Road	Install signalized crossings on all legs of the intersection of Cherrywood Lane and Greenbelt Road	Medium					SHA	GBW	SHA approval/implementation required.
40	Breezewood Drive between Cherrywood Lane and Springhill Lane	Install shared-lane markings (sharrows) on Breezewood Drive between Cherrywood Lane and Springhill Lane	Medium		Beltway Plaza	Greenbelt Middle School	Bus stops on Breezewood Drive (Metrobus R11, R12; TheBus 16; UMD Shuttle 129)	GB	GBW	

Table: Location-Specific Bicycling Recommendations—Working Document—City of Greenbelt's Advisory Planning Board

Map Key	Location	Recommendation	Priority	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PGC, SHA, etc.)	Neighborhood	Notes
41	Springhill Lane between Breezewood Drive and Springhill Drive	Install shared-lane markings (sharrows) on Springhill Lane between Breezewood Drive and Springhill Drive	Medium		Beltway Plaza	Springhill Lake Elementary School, Greenbelt Middle School	Greenbelt Metro and MARC Station; bus stops on Springhill Lane (TheBus 16)	GB	GBW	
42	Springhill Drive between Cherrywood Lane and Edmonston Road	Install shared-lane markings (sharrows) on Springhill Drive between Cherrywood Lane and Edmonston Road	Medium			Springhill Lake Elementary School, Greenbelt Middle School	Greenbelt Metro and MARC Station; bus stops on Springhill Drive (Metrobus R11, R12; TheBus 16; UMD 129)	GB	GBW	
43	Path from Siri's Chef's Secret parking lot to Branchville Road	Formalize the curb opening, widen and pave the path for the bicycle connection between Chef's Secret parking lot and Branchville Road	High	APB Ped/Bike Trouble Spots	University of Maryland, Lake Artemesia			Private property owners, GB	GBW	APB Ped/Bike Trouble Spots document identifies path as a problem area. Connection would be outside city limits; requires coordination with/approval of multiple private property owners.
44	Branchville Road from Greenbelt Road to Berwyn Road	Install shared-lane markings (sharrows) on Branchville Road from Greenbelt Road to Berwyn Road	Medium		University of Maryland, Lake Artemesia			PGC	GBW	Not city right-of-way.
45	Intersection of Edmonston Road and Greenbelt Road	Construct grade-separated crossing at intersection of Edmonston Road and Greenbelt Road	Medium	GGI Connectivity Workshop (2009)		Greenbelt Middle School	Greenbelt Metro and MARC Station; bus stops on Greenbelt Road (Metrobus G13, G14, G16)	SHA	GBW	Summary of ideas from the GGI Connectivity workshop includes: "Put pedestrian bridge over Greenbelt Road." A precise location is not specified. State of Maryland right-of-way.
46	Intersection of Lakecrest Drive and Greenbelt Road	Eliminate access by Belle Point Drive close to intersection	Low		Greenway Center		Bus stops on Lakecrest Drive (Metrobus G12, G13, G14, G16) and at Greenbelt Road (TheBus 16)	SHA	HGB	 Would eliminate access to American Legion and Belle Pointe office development. Study opening cul-de-sac as an option.
47	Intersection of Hanover Parkway and Greenbelt Road	Multiple geometric and signal changes to improve cyclist and pedestrian safety	High		Greenway Center	Eleanor Roosevelt High School	Bus stops on Greenbelt Road (Metrobus G12, G13, G14, G16; TheBus 11, 16 and 15X)	SHA	GBE	See Hanover Parkway redesign concept. Need more specificity. Intersection is state right-of-way.

Table: Location-Specific Bicycling Recommendations—Working Document—City of Greenbelt's Advisory Planning Board

Map Key	Location	Recommendation	Priority	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PGC, SHA, etc.)	Neighborhood	Notes
48	Greenbelt Road just east of intersection with Mandan Road	Trim hedge extending into shoulder on westbound approach to Mandan intersection	High	Greenbelt East Ring and Spine Plan	NASA	Eleanor Roosevelt High School		SHA	GBE	Segment identified as bikeway in Greenbelt East Ring and Spine Plan.
49	Intersection of Mandan Road and Mathew Street to Magnolia Elementary School	Install shared-use path	Medium			Magnolia Elementary School		Pepco, Prince George's County Board of Education	GBE	Prince George's County Board of Education property and out of city limits.
50	From Brae Brooke Drive to intersection of Mandan Road and Mathew Street	Install shared-use path	Medium		Greenway Center	Magnolia Elementary School		Pepco, Prince George's County	GBE	Private property, Pepco right-of-way, and out of city limits.
51a	Intersection Kenilworth Avenue and Crescent Road	Provide leading bicyclist interval on eastbound crossing; relocate stop bar closer to intersection; mark a through bike pocket lane (see #40 in the pedestrian table)	High		Capital Office Park		Greenbelt Metro and MARC Station	SHA	GBW/ HGB	Requires coordination with SHA.
51b	Intersection of Kenilworth Avenue and Crescent Road	Rebuild right turn lane from Kenilworth Avenue onto Crescent Road by squaring off the curb line (improve geometry on the slip lane)	High				Greenbelt Metro and MARC Station	SHA	GBE/ HGB	Requires SHA approval/implementation.
52	Intersection of Ivy Lane and Kenilworth Avenue	Retrofit intersection to facilitate safer cyclist and pedestrian access	High	Bicycle Task Force Recommendations (1995)	Capital Office Park		Greenbelt Metro and MARC Station	SHA	GBW/ HGB	Requires coordination with SHA and specific recommendations.
53	Kenilworth Avenue from Crescent Road to Pontiac Street	Construct shared-use path on median/shoulders of Kenilworth Avenue	Low				Greenbelt Metro and MARC Station	SHA	GBW/ HGB	Requires coordination with SHA.
54	Cherrywood Lane from Kenilworth Avenue to Greenbelt Metro Drive	Merge from 2 lanes to 1 (before the hill crest) on Cherrywood to reduce traffic speeds	High				Greenbelt Metro and MARC Station; bus stops on Cherrywood Lane (Metrobus G12, 87, 89, 89M; TheBus 11)		GBW	

Location-Specific Recommendations

A detailed set of recommendations for Roosevelt Center, Greenway Center, and Beltway Plaza is beyond the scope of this study. However, locations where pedestrian and bicycle accessibility improvements appear to be needed based on public input and targeted fieldwork, along with associated recommendations for these locations are included on the following pages. It is important to note that these recommendations are entirely conceptual, and they would require further, thorough study before improvements, if any, could be made.

Roosevelt Center

Intersection of Crescent Road and Gardenway/Centerway

- Install ADA-compliant curb ramps and high-visibility crosswalks for pedestrians crossing to/from Roosevelt Center on the south and west sides of this intersection.

Centerway between intersection of Crescent Road and Gardenway/Centerway and pedestrian underpass entrance

- Install sidewalk from southwest corner of Crescent Road/Gardenway/Centerway intersection to exit of pedestrian underpass. Install pervious surface path from new sidewalk to bus stop on Crescent to facilitate transit access.
- Work with Domino's owners and law enforcement to ensure that the sidewalk in front of Domino's is not blocked by vehicles.
- Work with Domino's and waste management service to relocate dumpster to back side of building.

Greenbelt Public Library vicinity

- Install high-visibility crosswalk at parking lot exit. Reposition stop bar, so exiting vehicles are prompted to stop in advance of crosswalk.
- Install bicycle racks on east side of building at main entrance. Replace bicycle racks on north side of building.

Greenway Center

Greenbelt Road and Greenway Center access drive

- Stripe high-visibility crosswalks across access road and access road ramps at intersection with Greenbelt Road. Install pedestrian signals to guide pedestrians crossing the access road.
- Define accessible pedestrian pathway parallel to access drive at Greenway Center from the internal sidewalk network to sidewalks running along the periphery.

Greenbelt Road and Hanover Parkway

A concept plan for significant modifications to this area includes:

- Converting the outside vehicle travel lanes on Hanover Parkway (Greenbelt Road to Ora Glen Drive) to buffered bicycle lanes.
- Reconfiguring the slip lanes to reduce vehicle speeds and enhance pedestrian safety.
- Installing raised crosswalks to further reduce vehicle speeds and encourage yielding for pedestrians at crosswalk.
- Installing high visibility pedestrian crossings on all legs of the intersection, including the east leg, where a marked crosswalk is currently lacking.

See **Select Location Concepts**, following this subsection, for additional detail.

From intersection of Hanover Parkway and Ora Glen Drive to north side of Greenway Center

- Define accessible pedestrian pathway, possibly through plaza near the Dollar Tree.

Bus stop across Greenbelt Road from Greenway Center

- Work with WMATA and Greenway Plaza LLC to reroute westbound Greenbelt buses, so that they enter Greenway Center and drop passengers off in a safe and accessible location as close as possible to stores.

Multiple locations

- Install additional bicycle racks.

Beltway Plaza

Intersection of Cherrywood Lane and Giant parking lot

A concept plan for significant modifications to this area includes:

- Moving the bus stop crosswalk to the south side of the bus stop to accommodate the pedestrian desire line.
- Signalizing the intersection formed by parking lot exits and Cherrywood Lane to create more predictable traffic movements.
- Providing a bicycle connection (shared-lane markings or bicycle lane) between Breezewood Drive and Greenbelt Road.

See **Select Location Concepts**, following this subsection, for additional detail.

Intersection of Breezewood Drive and Cherrywood Terrace

- Define accessible pathway from marked crosswalk to parking lot on north side of Breezewood Drive. The existing pathway includes stairs.

Intersection of apartment complex parking lot driveway and Breezewood Drive (approximately 300 feet east of intersection of Breezewood Drive and Cherrywood Terrace)

- Stripe high-visibility crosswalk across Breezewood Drive connecting existing curb ramps.

Multiple locations

- Install additional bicycle racks.

These recommendations are also included in the location-specific recommendations tables in the Pedestrian Recommendations section and Bicycling Recommendations section. Design considerations for providing pedestrian and bicycle access to shopping centers are included in **Appendix A**.

The city should work with the Maryland State Highway Administration to transform Greenbelt Road into a "livable street" that accommodates motorists, bicyclists, pedestrians, and transit riders safely and comfortably.

Greenbelt Road is the thread that ties the city together. It is the only road that connects all of Greenbelt's neighborhoods, and it is the fastest and most direct route to many of the city's key destinations. Yet, despite its paramount strategic importance for pedestrian and bicycle travel, Greenbelt Road is extremely uncomfortable to navigate by these modes. As a result, people who might otherwise travel by foot and bike choose instead to travel by motor vehicle, contributing to traffic congestion, air pollution, obesity levels, and other ills. In order to create a safer and more comfortable environment for pedestrians and bicycles on Greenbelt Road, the following are recommended:

- Provide continuous, dedicated pedestrian and bicycle facilities along the entire length of Greenbelt Road through the city.
- Slow vehicular speeds both on Greenbelt Road itself and at points where cross-streets and highway on- and off-ramps intersect Greenbelt Road.
- Minimize conflict points through access management.
- Improve the safety and convenience of pedestrian crossings by shortening crossing distances, improving pedestrian visibility, and providing additional crossing opportunities.
- Adjust pedestrian signal timing to ensure adequate crossing time to pedestrians of all abilities. Consider leading pedestrian intervals to increase pedestrian visibility and reduce conflicts between pedestrians and turning vehicles.
- Pursue streetscape enhancements to improve pedestrian and bicyclist comfort. Create buffers to separate vehicular traffic from pedestrian and bicycle traffic. Install trees to provide shade and additional protection from motor vehicles.

Additional guidelines for creating a "livable street" are provided in **Appendix A**.

Location-Specific Concepts

The Greenbelt Advisory Planning Board selected three locations for further study through the development of conceptual designs. Again, it is important to note that these recommendations are entirely conceptual, and they would require further, thorough study before improvements, if any, could be made. These locations are:

- **Hanover Parkway between Ora Glen Drive and Greenbelt Road**
- **Southway between Greenbelt Road and Ridge Road**
- **Cherrywood Lane between Greenbelt Road and Breezewood Drive**

The existing design of these locations exemplifies the challenges for pedestrians and bicyclists associated with a transportation system that is primarily designed to accommodate motor vehicles. Brief descriptions of the issues observed at each location, along with recommended solutions, are provided below.

Hanover Parkway between Ora Glen Drive and Greenbelt Road

Issues

Intersection of Greenbelt Road and Hanover Parkway

Issues identified at this intersection include:

- There is no crosswalk on the east side of the intersection.
- Existing crosswalks could be more visible.
- Right-turning, eastbound traffic sometimes fails to yield to pedestrians crossing between the southwest corner and the 'pork chop' island.
- Northbound bicycle traffic is provided insufficient storage space.
- Turning left from northbound Hanover onto Greenbelt Road is extremely uncomfortable for bicyclists due to the lane configuration at the intersection (three exclusive left turn lanes and one through-lane), the difficulty for bicyclists of getting out ahead of turning traffic where they are visible, and the high speeds and volumes on Greenbelt Road combined with a lack of bicycle facilities.

Hanover Parkway from Greenbelt Road to Ora Glen Drive

Issues identified along this road segment include:

- Pedestrians traveling between Greenway Center and the Post Office lack a convenient place to cross Hanover Parkway. The signalized crossing at Hanover Parkway and Ora Glen Drive is out of the way, and there is no pedestrian signal or actuator on the north leg of the intersection, so

some pedestrians cross Hanover mid-block; however, these pedestrians are not as visible to oncoming traffic as they would be at a formalized mid-block crossing, and drivers may fail to anticipate or yield to pedestrians crossing at this location.

- There is no convenient, accessible pedestrian pathway for pedestrians wishing to access Greenway Center via the intersection of Hanover Parkway and Greenway Center.
- The amount of roadway space devoted vehicular traffic may be unnecessary considering observed traffic volumes and may encourage speeding.
- The segment lacks bicycle facilities despite its strategic importance in the bicycle network and relatively high motor vehicle speeds and volumes.

Intersection of Hanover Parkway and Ora Glen Drive

Issues identified at this intersection include:

- Existing crosswalks could be more visible.
- Pedestrian signals are not provided on north side of the intersection.
- Northbound bicycle traffic is provided insufficient storage space.
- No direct connection from the intersection to the front of Greenway Center.

Recommendations

Intersection of Greenbelt Road and Hanover Parkway

Highlights of the proposed physical improvements for the Greenbelt Road/Hanover Parkway intersection include:

- Reconfiguring the slip lanes designed to accommodate eastbound, right-turning traffic and northbound, right-turning traffic to reduce vehicle speeds and enhance pedestrian safety.
- Installing raised crosswalks between the southeast corner and 'pork chop' island and southwest corner and 'pork chop' island to further reduce vehicle speeds and reinforce yielding for pedestrians at crosswalk.
- Installing high visibility pedestrian crossings on all legs of the intersection, including the east leg, where a marked crosswalk is currently missing.

Hanover Parkway from Greenbelt Road to Ora Glen Drive

Highlights of the proposed physical improvements for the segment of Hanover Parkway from Greenbelt Road to Ora Glen Drive include:

- Evaluating the potential for a pedestrian access route into Greenway Center from the intersection of Hanover Parkway and Greenway Center access road.
- Evaluating the potential for formalizing the crossing at the intersection of Hanover Parkway and Greenway Center access road.
- Evaluating the potential for converting the outside vehicle travel lanes on Hanover Parkway (Greenbelt Road to Ora Glen Drive) to buffered bicycle lanes.

Intersection of Hanover Parkway and Ora Glen Drive

Highlights of the proposed physical improvements for the intersection of Hanover Parkway and Ora Glen Drive include:

- Installing high visibility pedestrian crossings on all legs of the intersection.
- Installing an advanced stop bar to provide bicycle storage space for northbound, left-turning bicycle traffic. (A bike box would also work in this location, if sufficient width can be acquired, and bicycle lanes rather than shared-lane markings are installed here.)
- Installing pedestrian signals on the north side of the crossing.
- Evaluating the potential for defining an accessible pedestrian pathway from Ora Glen Drive to the front of the plaza, possibly in the corner near the Dollar Tree.

The following concept plan (**Fig. 1**) illustrates the proposed recommendations for improving this corridor.

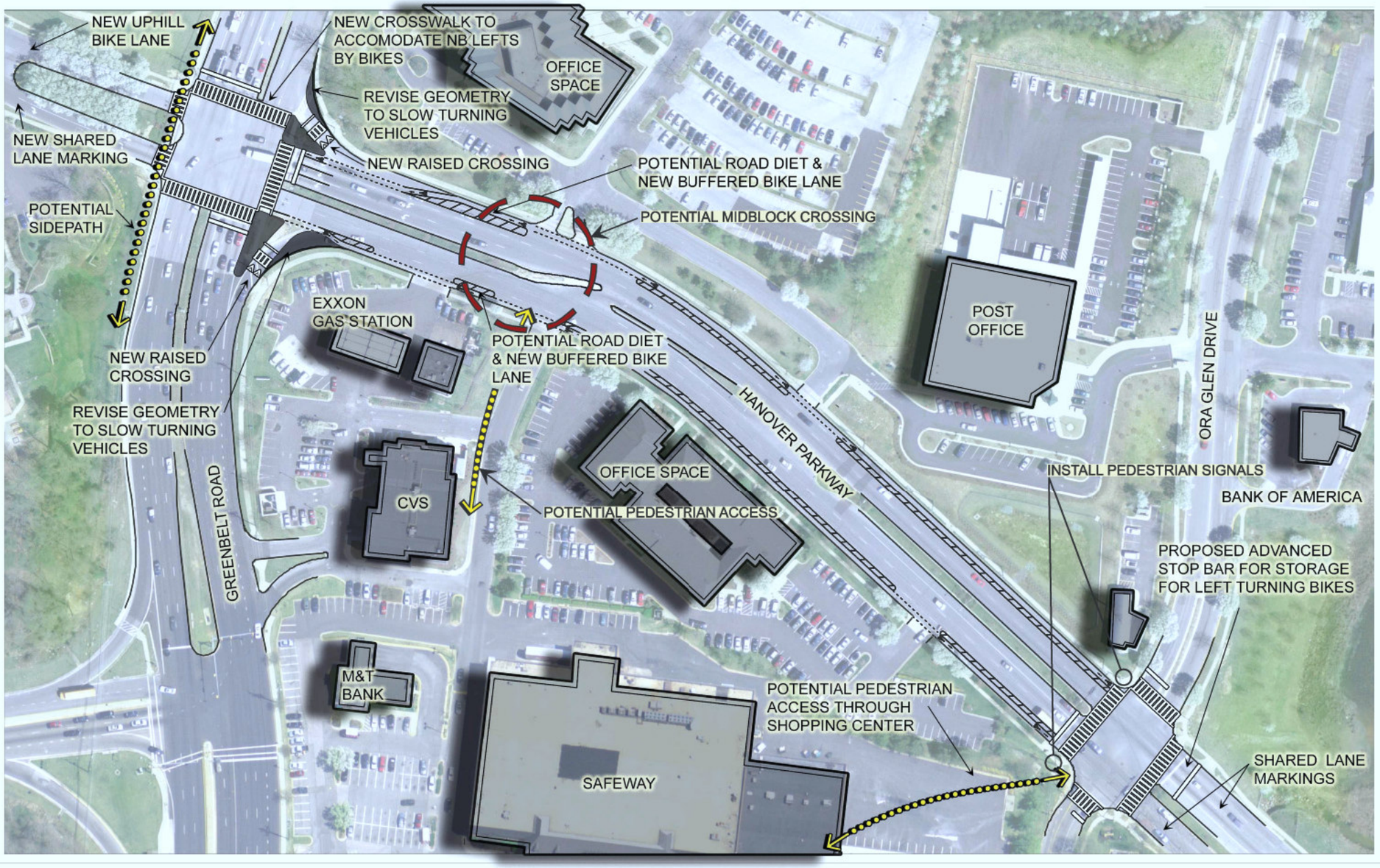


Fig. 1—Hanover Parkway between Ora Glen Drive and Greenbelt Road

Southway between Greenbelt Road and Ridge Road

Issues

Issues identified for this corridor include:

- Lack of continuous, accessible pedestrian pathway from Crescent Road to Greenbelt Road.
- Locations where the interior pathway system intersects Southway are difficult to see and predict. Entrances are sometimes blocked by parked cars.
- Bicycling on Southway between Crescent Road and Greenbelt Road is uncomfortable due to lack of designated space for bicycles segment and relatively high vehicular speeds and volumes.
- Generous turning radii at Ridge Road intersection enable relatively high-speed turns, increasing pedestrian and bicyclist exposure. Long crossing distance, especially for Southway crossings. No median refuge island.
- Geometry of on- and off-ramps encourages drivers to enter and exit Southway at high speed, increasing pedestrian and bicyclist exposure.
- Crossing Greenbelt Road at Southway is difficult and there is no sidewalk connecting the crossing to Greenway Center west of the Baltimore-Washington Parkway bridge.

Recommendations

Recommendation highlights include:

- Evaluating the potential for constructing a shared-use path on the west side of Southway to provide a continuous, accessible, and comfortable pathway for bicyclists and pedestrians between Crescent Road and Greenbelt Road. A portion of the space needed for the path might be acquired by building out into the road and narrowing existing travel lanes on Southway.
- Evaluating the potential for installing a sidewalk on the east side of Southway to provide a pedestrian connection from Ridge Road, and from the bus stop on Southway north of the Baltimore-Washington Parkway off-ramp, to the multi-family dwellings on the east side of Southway. A portion of the space needed for the sidewalk might be acquired by building out into the road and narrowing existing travel lanes on Southway.
- Installing curb extensions and a high-visibility crosswalk where the interior pathway system crosses Southway between Crescent Road and Ridge Road to enhance the visibility of the crossing, prevent cars from blocking pathway entrances/exits, and improve the accessibility of the sidewalk on the west side of Southway.
- Installing curb extensions at Ridge Road intersection to discourage high-speed turns and shorten pedestrian crossing distances.

- Extending median at Ridge Road intersection to provide a pedestrian refuge island.
- Reconfiguring on- and off-ramps to slow vehicular traffic as it enters and exits Southway.
- Evaluating the potential for a roundabout at the intersection of the Southway and the Baltimore-Washington Parkway ramps, also as a traffic calming measure.
- Evaluating the potential for installing crosswalks at the intersection of Southway and Greenbelt Road.
- Evaluating the potential for installing a sidewalk on the south side of Greenbelt Road to connect the intersection of Southway and Greenbelt Road to the existing sidewalk on at the bridge over Baltimore-Washington Parkway.

The following concept plan (**Fig. 2**) illustrates the proposed recommendations for improving this corridor.

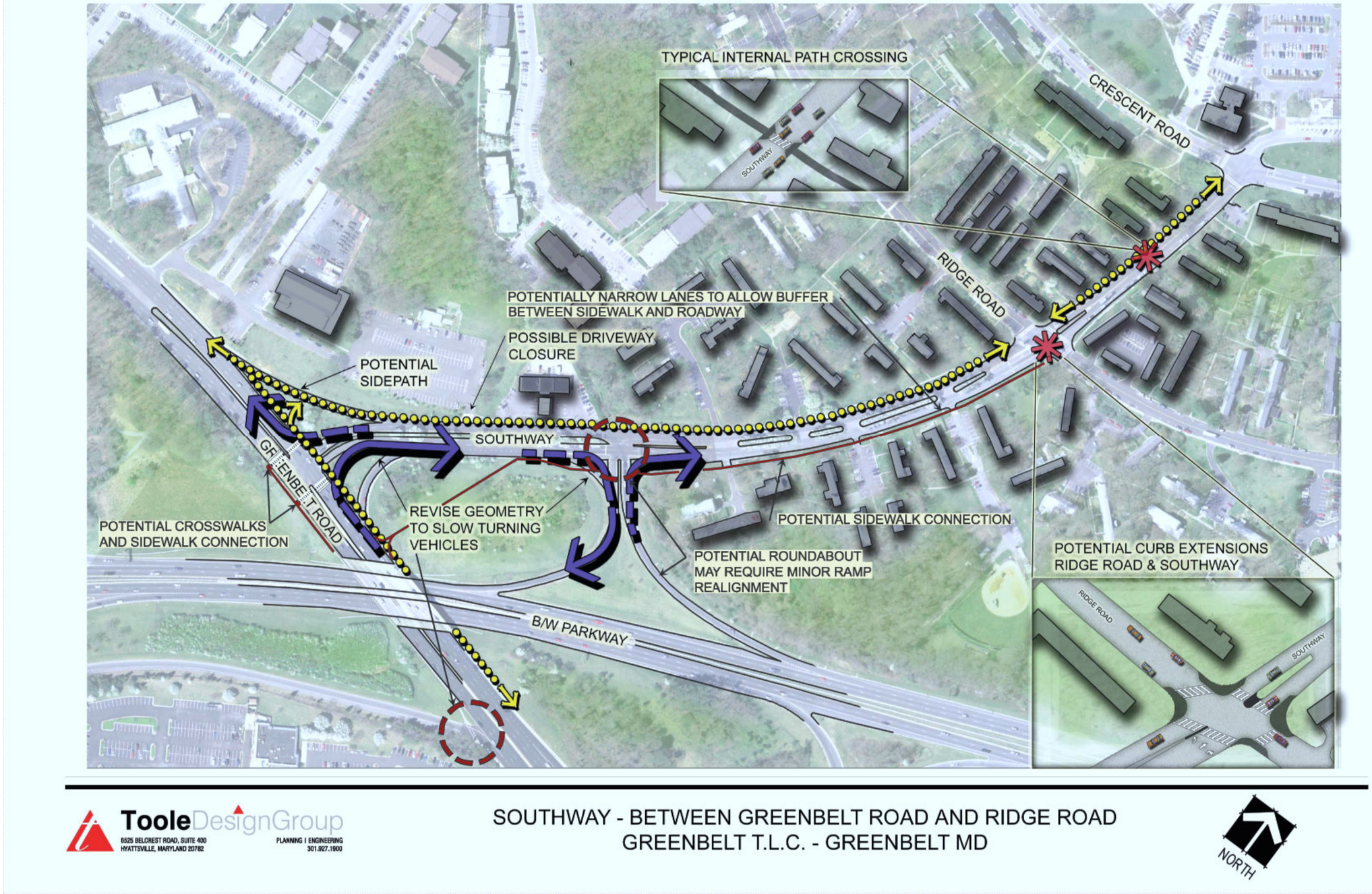


Fig. 2—Southway between Greenbelt Road and Ridge Road

Cherrywood Lane between Greenbelt Road and Breezewood Drive

Issues

Issues identified for this corridor include:

- Crosswalk location is not convenient for pedestrians. Many do not cross at crosswalk, which means they are less visible to oncoming traffic.
- Intersection of Cherrywood Lane and Beltway Plaza parking lot access road is complex and, with the exception of a stop sign for right-turning traffic exiting the Giant parking lot, uncontrolled. Large volumes of turning traffic enter Cherrywood Lane from shopping center driveways. Lack of control makes turning movements difficult to predict.
- Designated space for bicycles is not provided along this roadway segment. Further north on Cherrywood, bicycle lanes end abruptly at Breezewood.
- Lack of sidewalk connection on west side of Cherrywood from bus stop to Breezewood Drive intersection.

Recommendations

The following concept plans (**Fig. 3A** and **Fig. 3B**) illustrate options for improving this corridor. Highlights include:

- Moving bus stop crosswalk to south side of bus stop to accommodate pedestrian desire line.
- Reconfiguring the intersection of Cherrywood Lane and the Beltway Plaza parking lot access drive as either a signalized intersection (**Fig. 3A**) or a roundabout (**Fig. 3B**).
- Provide bicycle connection (shared-lane markings or bicycle lanes) between Breezewood Drive and Greenbelt Road.
- Provide pedestrian connection (shared-use path or wide sidewalk) on the west side of Cherrywood Lane north of the bus stop in accordance with Greenbelt Metro Station Development Agreement.

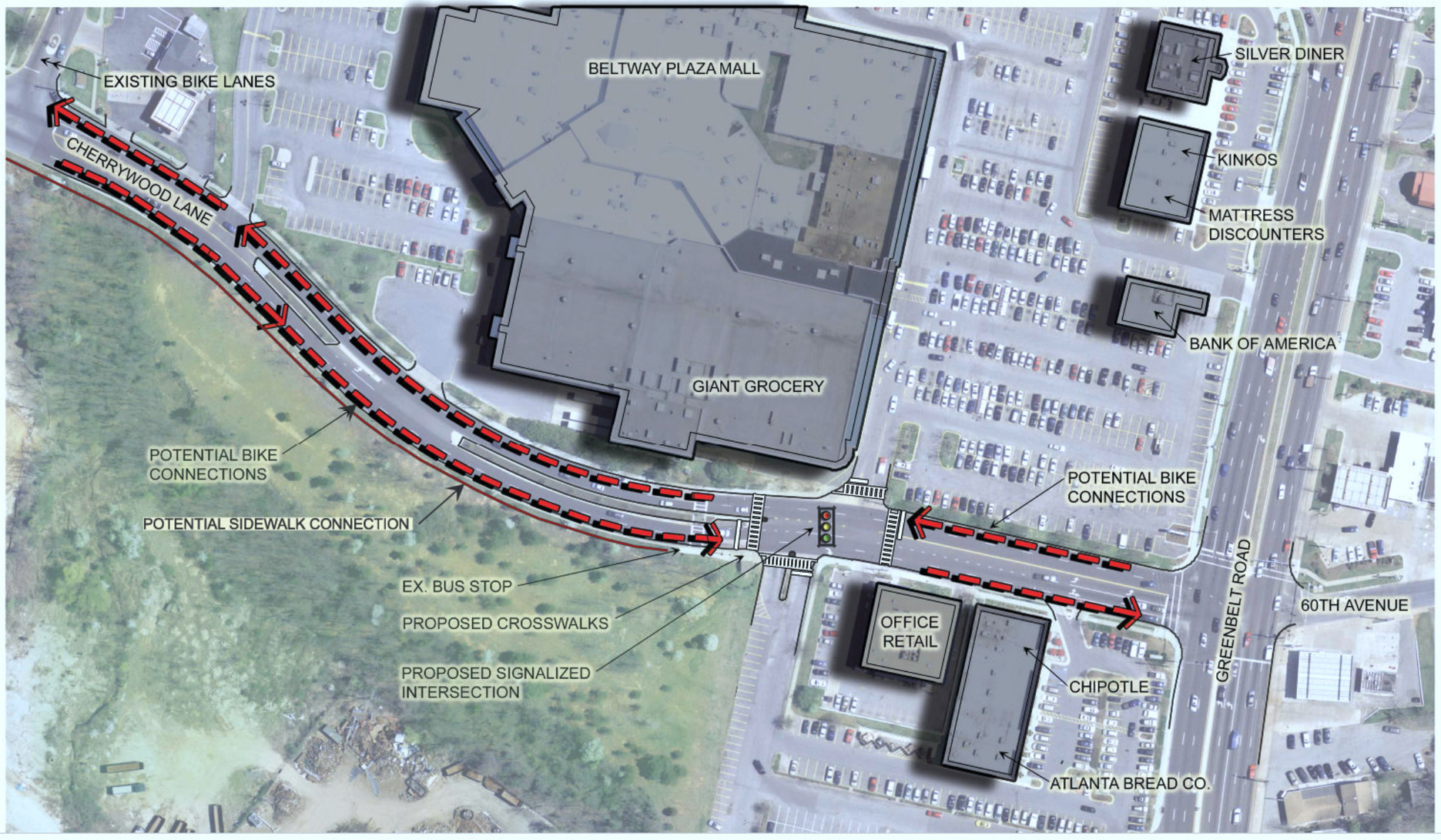


Fig. 3A—Cherrywood Lane between Greenbelt Road and Breezewood Drive

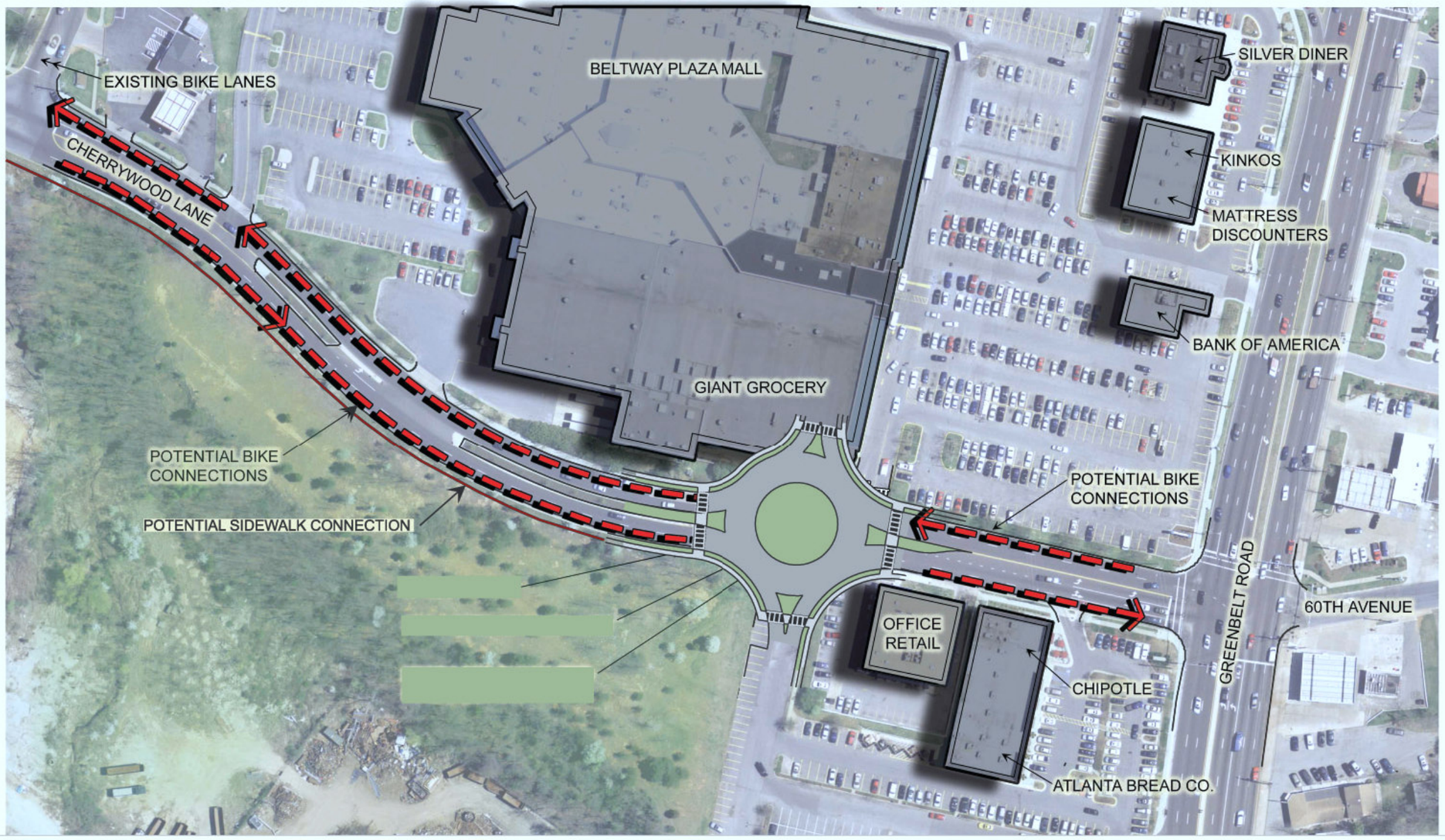


Fig. 3B—Cherrywood Lane between Greenbelt Road and Breezewood Drive

Education, Encouragement, and Enforcement

Planning Outside of Design

To create a successful environment for walking and bicycling it is necessary to venture beyond design solutions. Several other factors must be considered. People need to understand the rules for travel, they need to feel welcome and valued as pedestrians and bicyclists, and they need to be aware of the consequences of breaking the rules. Users' behavior can be influenced by design, but ultimately they need to be taught and encouraged to navigate their environment safely and effectively. To achieve this, several opportunities for programs that support these objectives are listed below.

Education

Everyone at some point is a pedestrian. For some people this is only when they are leaving their cars in the parking lot and walking toward their destinations. Regardless of the distance that people regularly walk, many are not aware of their rights and responsibilities as pedestrians. Therefore, it is important to inform both drivers and pedestrians.

Educating children is an effective strategy for multiple reasons. The first is that children are less likely to develop bad habits if they are taught proper and safe pedestrian behavior early on. Additionally, by teaching children, it is possible to influence their parents to set proper examples; parents generally will behave more cautiously when they know that their children are observing. Another reason to target younger audiences is to bridge the language barriers that frequently exist in households with adults who do not speak English. These adults are less likely to learn from television campaigns, radio commercials, or written media. Adults who do not speak or understand English fluently also may not participate in community meetings unless there is a translator, which for many communities is difficult to provide. To achieve a wider reach, children should be considered a valuable resource.

Safe Routes to School

Recognizing that there was a need to provide safe routes for children to walk to school, the U.S. Department of Transportation's Federal Highway Administration established the national Safe Routes to School program in 2005. The aim of the program is to improve the safety of children who walk and bike to school and to encourage those modes of travel.

Greenbelt recognizes the potential of this program and is working to implement safety improvements. In late 2009, the City of Greenbelt received a reimbursable grant for $136,800 to fund infrastructure improvements including medians, curb extensions, and crosswalk markings, as well as an "Encouragement" program at Springhill Lake Elementary school. The project should be complete in late 2013.

The Safe Routes to School Program promotes consensus planning by encouraging all stakeholders to participate in the process from the beginning. Parents, neighbors, teachers, police officers, and even policy makers are invited to discuss the barriers and challenges children face when walking to school.

Although engineering projects such as extending sidewalks and striping crosswalks tend to get the most visible attention, a successful Safe Routes to School program involves important education, encouragement, and enforcement components. During kick-off meetings, the stakeholders are guided by Safe Routes to School Instructors on a walk to assess the existing conditions students face when they walk to school. During this walk, parents, teachers, and policy makers are instructed on how children can safely navigate their environment. It is important that both students and their adult role models follow the same rules to ensure safety for all.

Children also learn about pedestrian safety in class from their teachers or outside instructors, and they reinforce those lessons at home with their parents. Parents receive a refresher course and their children have the opportunity to practice with their parents and younger siblings. One popular encouragement program is the "walking school bus," an adult-led walk that follows the same route each morning and afternoon so that students can walk to school in larger, supervised groups. This addresses the apprehension parents often have about the safety of children walking to school.

National Highway Traffic Safety Administration's National Safety Curriculum

Until recently, pedestrian safety education was either the responsibility of states, schools, or individual households. The National Highway Traffic Safety Administration (NHTSA) has recognized that this can lead to inconsistent or even nonexistent pedestrian safety education for children. In an attempt to fix this problem, NHTSA is developing a curriculum that will be offered nationwide for all students in kindergarten through fifth grades. The curriculum, released in late 2011, covers topics such as identifying safe places to walk, crossing streets safely, crossing intersections and driveways safely, and bus safety skills. The curriculum includes lesson plans, skill-based activities, as well as homework activities to be practiced with the parents. Essentially, it provides teachers with all the resources necessary to incorporate safety skills and lessons into their syllabi.

Just as with the Safe Routes to School program and the pedestrian safety curriculum, students can influence their parents to model safe behavior. It is recommended that Greenbelt's schools take advantage of the resources and teach the course to their students.

Safe Routes for Seniors

Elderly residents often have concerns about safe travel on foot. In 2008, the Greenbelt Senior Citizens Advisory Board hosted a Walkable Communities Workshop in Greenbelt. The workshop featured presentations by experts in pedestrian planning and design and a walking audit was conducted at two locations in Historic Greenbelt. The workshop participants were encouraged to apply what they had learned and propose solutions to the safety and accessibility problems identified on the walking audit. The recommendations from this workshop were passed on to the city's Department of Planning and Community Development.

Collaboration with the Media

The local media can play a significant role in communicating with the public. The *Greenbelt News Review* is a fixture in the community and could provide coverage on the topic of pedestrian and bicycle safety through regular articles on the subject. The city should capitalize on this opportunity by developing a series of educational pieces that address safe driving, walking, and bicycling behaviors. The city's newest on-line news source, *GreenbeltPatch.com*, is another venue that can promote pedestrian and bicycle safety issues.

The city's information cable television channels, Comcast Channel 71 and Verizon Channel 21, are also vehicles for providing instruction on appropriate walking, driving, and bicycling behaviors. The city could develop an educational series for this medium that is targeted at certain audiences such as children, seniors, or non-English speakers.

Encouragement

Encouragement is not simply casting pedestrian and bicycle travel in a positive light. Encouragement promotes awareness about walking and bicycling as forms of transportation, showing that both are not only achievable but are also enjoyable.

International Walk to School Day

In 1997, the Partnership for a Walkable America sponsored the first National Walk Our Children to School Day in Chicago, modeled after the United Kingdom's lead. Back then, it was simply a day to bring community leaders and children together to create awareness of the need for communities to be more walkable. Now, the National Center for Safe Routes to School organizes a one-time event for schools to encourage walking to school.[9] For one day (or week or month, depending on the school), students walk to school with the encouragement and assistance of their school. The goal is for students and parents to see how fun and easy walking to school can be. Parents can appreciate the healthy benefits of walking, such as creating an outlet for exercise and a way to reduce car emissions and traffic congestion, and the students gain a sense of independence.

To participate, schools from around the world register—free of charge—with the National Center and receive access to resources to help facilitate their event. With the help of the resources, the schools get creative and make the event their own. Some schools station teachers at checkpoints to cheer on the walking students. Other schools that do not have safe routes for walking will instead walk around the track at the school. For many schools, the event stirs up awareness and appreciation for safe routes for walking.

[9] http://www.walktoschool.org/index.cfm

This event helps the broader community better understand how to navigate the environment as a pedestrian. People may only be thinking about how to get children to and from school safely, but in doing so they are also evaluating the pedestrian transportation system throughout the community as a whole. This line of thinking makes for safer pedestrians and safer drivers.

Since 2003, both Springhill Lake Elementary School and Greenbelt Elementary have held Walk to School Day events in the fall, often involving more than 100 participants. More recently the event has received planning assistance from the Greenbelt Get Active program. The event typically uses two or three different meeting places for parents, teachers, students, the Mayor and City Council, and staff to begin their walk to school. Healthy breakfast food is provided for the children before they begin their walk. Greenbelt police officers escort all participants as they head to school. Upon arrival, children are given awards and a photo is taken with police officers and the principal of the school.

Greenbelt police officers and parents accompany students on Walk to School Day

Walking/Running Clubs

People tend to avoid what is unknown and unfamiliar. If a person drives for all of their trips, that person may be hesitant to find ways to walk to the same destinations. The routes are unknown, and it is easier to keep the habit of driving. In a group, however, it is easier and more comfortable to explore the walking environment.

Walking and running clubs are community-organized groups that regularly walk or jog throughout the community. While their basic purpose is for socializing and exercise, they can have more complex intentions of surveying existing conditions to alert the maintenance agencies.

These clubs are helpful for the pedestrian transportation network for several reasons. Even if conditions are not ideal for walking, it is often safer to walk in a group. These groups can get people walking before recommendations from plans are implemented. These groups also make new and untried routes familiar quickly. People can test walking routes with groups that they can later chose to take on their own. Walking in groups also make the pedestrians more visible to drivers. The more often drivers see groups of people walking the more likely it is that the drivers will anticipate pedestrians along the road in the future. Groups of pedestrians create a stronger presence than individuals alone, and these groups can help maintenance and policing agencies by adding eyes on the route. The clubs do not need to participate in the maintenance and policing duties, but if they identify and report problematic conditions on the route that can be very helpful for the agencies that are responsible for those duties.

Greenbelt has a number of such organizations, including the Greenbelt Volksmarchers and the Greenbelt Running Club. A volksmarch is a non-competitive 3.1 mile (5 kilometer) or 6.2 mile (10

kilometer) walk. Volksmarching got its name from its origins in Europe where club members select a trail for safety, scenic interest, historic areas, natural beauty, and walkability. They then invite everyone to come and enjoy the walk on a weekend or a weekday evening.

Bicycling Clubs

Like walking and running clubs, bicycling clubs can be an effective and fun way to get people on their bikes. Riding on unfamiliar routes and in traffic can be stressful for less experienced riders alone, but there is safety in numbers with a group ride, and it is an excellent way to become familiar with biking routes in and around the community. There are several bicycling clubs in the area. The Greenbelt Bicycling Coalition has had a long and productive presence in our community. In fact, the most visible bicycling infrastructure in the city, the bicycle lanes on Crescent Road, exist because of the tireless advocacy of members of the Coalition. The Greenbelt Bicycle Coalition is a member of the College Park Area Bicycle Coalition, which represents many of the communities around Greenbelt. Additionally, the Prince George's County Bicycle and Trail Advisory Group (BTAG) "facilitates discussion between local implementing agencies and trail advocates, residents, and others interested in bicycle and pedestrian access."[10]

Representing the entire Washington, D.C. region is the Washington Area Bicyclist Association (WABA). WABA provides educational resources, advocacy, and special programs for Maryland, D.C., and Virginia. One educational resource that the city should take advantage of is WABA's "Confident City Cycling" course. This free course teaches riders essential skills for riding safely in traffic. This course is currently taught in D.C., Arlington, Alexandria, and Montgomery County. The City of Greenbelt should investigate the possibility of hosting this course in the future as a way to promote and encourage safe bicycling.

Bike to Work Day

Bike to Work Day is an annual event typically held on a Friday in May across the United States and Canada that promotes the bicycle as an option for commuting to work. Leading up to Bike to Work Day, national, regional, and local bicycle advocacy groups encourage people to try bicycle commuting as a healthy and safe alternative to driving by providing route information and tips for new bicycle commuters. On Bike to Work Day, these groups often organize bicycle-related events, and in many areas, "pit stops" along bicycle routes with snacks. Bike to Work Day was originated by the League of American Bicyclists in 1956 and is a part of Bike to Work Week, which is in turn part of National Bike Month.

Greenbelters have participated in Bike to Work Day since at least the 1970s. Some riders join the convoy of cyclists to reach the Metro Station while others travel to College Park or Hyattsville to attend pit stops there. A hardy group often rides all the way to Freedom Plaza in Washington to attend the festivities at the large central pit stop in downtown D.C. One important role for Bike to Work Day in Greenbelt is that it often provides the support and guidance for new cyclists to make the "leap" to try biking to work,

[10] http://www.pgplanning.org/About-Planning/Our_Divisions/Countywide_Planning/Transportation_Planning/Trail_Planning/BTAG.htm

whether it's to College Park, the Metro, or all the way to the District. Greenbelt hosted its first pit stop in 2012 at the Aquatic & Fitness Center, and will do so again in 2013.

Enforcement

Enforcement is a fundamental component of a pedestrian and bicycle safety program. The Greenbelt Police Department (PD) has long taken an active role in addressing pedestrian and bicycle safety in the city. Greenbelt PD began bicycle mounted police patrols in the 1990s, and like police departments everywhere that have "bike cops," the officers become experienced and familiar with many of the same traffic-related safety challenges that are encountered by the average cyclist. This makes them effective ambassadors for bicycle safety within the department.

In the early 2000s, Greenbelt PD took advantage of pedestrian safety enforcement training and an overtime officer program offered by the State of Maryland. Several officers attended a training workshop on effective enforcement techniques, and the state made overtime funds available for outreach and enforcement activities. Officers targeted two un-signalized crossing locations in the city known for complaints about poor driver compliance with Maryland's pedestrian law. Officers set up what is known as a "crosswalk sting" where plain clothes officers use the crosswalk and driver who failed to stop were pulled over and given a warning or ticket. In addition, officers handed out educational brochures—and a few tickets—to pedestrians not using the crosswalk and crossing in a hazardous and illegal manner. Greenbelt PD should continue to expand its education and enforcement efforts for pedestrian and bicyclist safety following the "progressive ticketing" model shown below.

1. **Educating** — Establish community awareness of the problem. The public needs to understand that drivers are speeding and the consequences of this speeding on pedestrian safety. Raising awareness about the problem will change some behaviors and create public support for the enforcement efforts to follow.
2. **Warning** — Announce what action will be taken and why. Give the public time to change behaviors before ticketing starts. Fliers, signs, newspaper stories, and official warnings from officers can all serve as reminders.
3. **Ticketing** — Finally, after the warning time expires, hold a press conference announcing when and where the police operations will occur. If offenders continue their unsafe behaviors, officers issue tickets.

Source: Pedestrian and Bicycle Information Center. www.walkinginfo.org

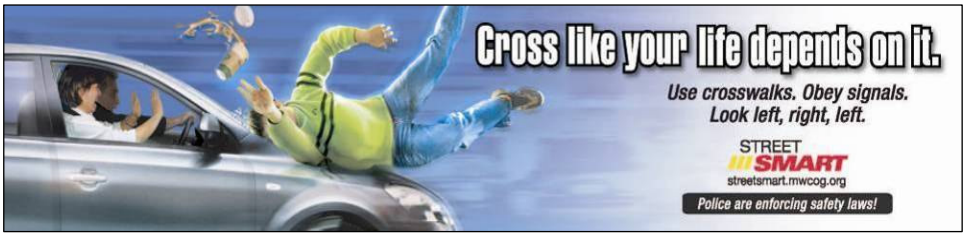
Another important aspect of a successful enforcement program is to recognize the nature of the problem. If the majority of users practice unsafe behavior there may be a problem with the physical design, and it would be ineffective to continually station an officer at the site and issue citations. When the vast majority of users are breaking the law, it may be necessary to change the physical environment first.

Cities throughout the country often require offenders (both drivers and pedestrians) to take a course on specific laws that relate to pedestrian and vehicular safety. It is beneficial for students to learn from people directly involved with enforcement processes. Course Instructors can include emergency trauma and medical staff, police offers, transportation advocates, and even judges. In some communities the citation is removed after the offender take this course. It would be advantageous to create a publicly accessible citywide policy that explains when offenders have the option or are required to enroll in the course. Outreach should be made available in Spanish as well as English.

The National Highway Traffic Safety Administration (NHTSA) recently released a two-hour, self-paced interactive video training for all law enforcement officers on bicycle safety. Completion of the final evaluation prompts a certificate of completion, including the achieved score. In addition, NHTSA provides an on-line law enforcement roll call video: "Enforcing Law for Bicyclists." In 2012, an interactive Pedestrian Safety Training Module was released by NHTSA that provides training for line officers on pedestrian laws and effective enforcement techniques. To order the CD-ROM resources or get more information, contact NHTSA's Safety Countermeasures Division at 202-366-1739.

Pedestrian and Bicyclist Safety Awareness Campaign

An example of an enforcement/education campaign is The Metropolitan Washington Council of Governments' (MWCOG) *Street Smart Campaign* which was launched in 2002. The safety and education components consist of safety pamphlets and advertisements on radio, television, buses, and bus shelters in both English and Spanish. Different messages are directed at drivers, pedestrians, and bicyclists. Drivers are reminded to be aware of, and considerate to, the rights of pedestrian and bicyclists. One way that this was conveyed was during an evening demonstration where officers showcased the lengthy distances required for vehicles to come to a halt at different speeds. This emphasized that higher speeds are more lethal for pedestrians, and that drivers may not fully grasp how much time is actually necessary to stop when driving at fast speeds. Studies have proven that higher speed crashes are more lethal for pedestrians.



MWCOG launched Street Smart, a pedestrian enforcement/education campaign, to improve the safety of all users. In 2008, this image was advertised on transit shelters and Metrobus exteriors to increase pedestrian awareness of their responsibilities.

Pedestrians and bicyclists are reminded of traffic regulations and safety tips. This campaign has been coupled with pedestrian stings where a pedestrian is sent into a crosswalk and drivers are monitored for compliance with the law to yield to pedestrians in a crosswalk.[11]

There is no single approach to improving pedestrian safety. It is important to assess the problem, and to identify the correct palette of tools that adequately address the nature of the problem and result in sustainable solutions.

[11] Rivara, F. P., Booth, C. L., Bergman, A. B., Rogers, L. W. & Weiss, J. Prevention of pedestrian injuries to children: effectiveness of a school training program. *Pediatrics* 88, 770-775 (1991)

Appendix A: Design Guidelines

This appendix is intended to provide an overview of several design principles that facilitate and enhance travel as a pedestrian or a bicyclist. As with many recommendations for facility enhancements in this plan, additional research and evaluation by an engineer familiar with designing bicycle and pedestrian infrastructure must be conducted prior to implementation. Furthermore, many of these recommendations call for improvements to roads or paths that are under the jurisdiction of other entities including the Maryland State Highway Administration, Prince George's County Department of Public Works and Transportation, Washington Metropolitan Area Transit Authority, Maryland-National Capital Park and Planning Commission, and private landowners.

Several documents provide standards and guidelines for facilities that affect bicycle and pedestrian travel, including:[12]

- AASHTO's *Guide for the Planning, Design, and Operation of Pedestrian Facilities*
- AASHTO's *Guide for the Development of Bicycle Facilities, Current Edition*
- *Maryland SHA Bicycle and Pedestrian Design Guidelines*
- *Manual on Uniform Traffic Control Devices, Current Edition* (MUTCD)
- AASHTO's *A Policy on Geometric Design of Highways and Streets, Current Edition* ("Green Book")
- Transportation Research Board's *Highway Capacity Manual, Current Edition*
- NACTO's *Urban Bikeway Design Guide, Current Edition*

Revisions are continually proposed to the current MUTCD standards and the AASHTO *Guide for the Development of Bicycle Facilities* which will be incorporated into new versions of these two guides. Many of the proposed changes provide additional clarity to existing standards (i.e. criteria for marking crosswalks or design of roundabouts) or describe new tools or techniques to accommodate pedestrians and bicyclists (i.e. new crosswalk warning signs and the Pedestrian Hybrid Signals). Standards proposed for the new editions of these guides that were determined to be relevant and useful for improving bicycle and pedestrian facilities within the City of Greenbelt are included and referred to as changes to the current versions.

[12] On August 20, 2013, the Federal Highway Administration (FHWA) expressed support for "taking a flexible approach to bicycle and pedestrian facility design" by formally supporting the use of the American Association of State Highway and Transportation Officials (AASHTO) bicyclist and pedestrian guides as well as the National Association of City Transportation Officials (NACTO) bikeway design guide. For additional information, see http://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/design_guidance/design_flexibility.cfm.

Pedestrian and Bicyclist Access to Key Destinations

Parking lots can have a significant impact on the design and quality of the built environment and the ability of pedestrians to access commercial properties. Conflicts with motor vehicles are a significant concern for bicycles and pedestrians. The following design strategies from the AASHTO *Guide for the Planning, Design, and Operation of Pedestrian Facilities* can help minimize these conflicts:

Location of Parking Spaces

Parking spaces should be located to the side and rear of buildings to allow easy access for pedestrians from adjacent sidewalks.

On-Site Circulation

On-site circulation systems should be designed to reduce conflicts between pedestrians and motor vehicles by clearly defining pedestrian access ways. Striped walkways, raised crosswalks, and walkways within raised parking aisle separator islands are examples of clearly defined pedestrian ways.

Newly constructed pedestrian facilities must be accessible. Using raised crosswalks, speed tables, or other similar traffic calming device in parking areas can reduce vehicle speeds and give priority to pedestrian crossings.

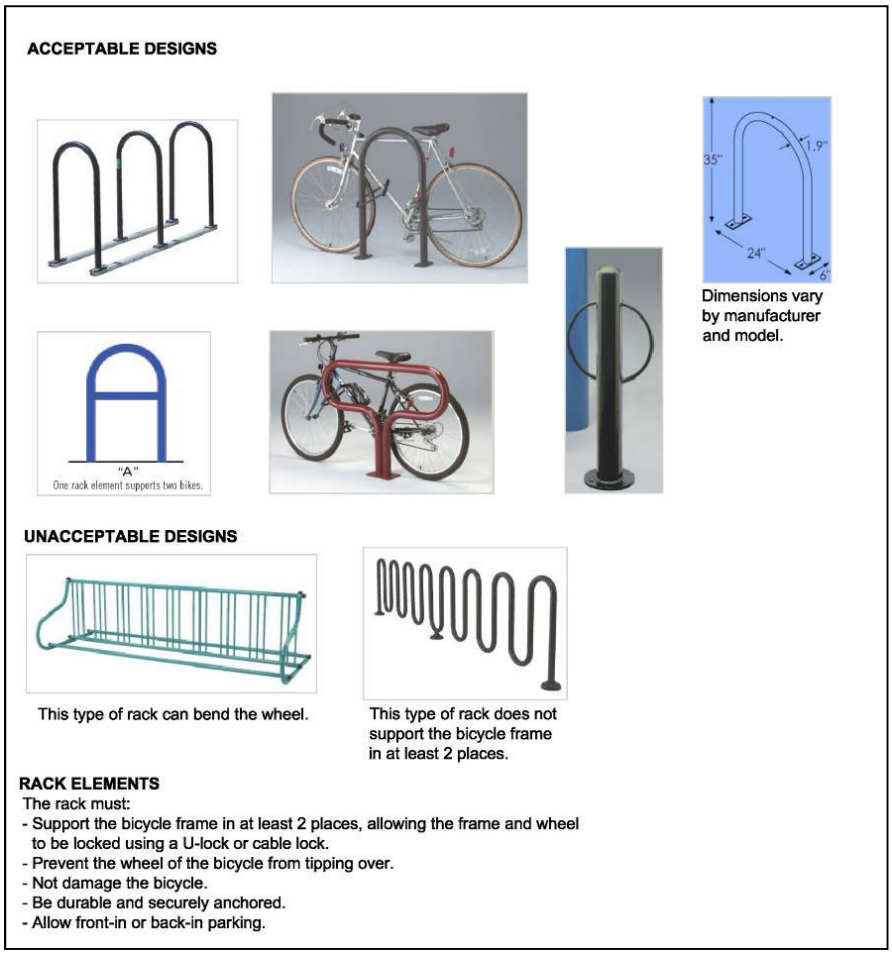
Off-Site Connections

In order to facilitate safe pedestrian travel to off-site destinations, the internal sidewalk system should connect to the surrounding sidewalk and/or pathway network. Emphasis should be placed on providing continuous, direct connections to key points including transit stops, road crossings, and other interim destinations.

Bicycle Parking

Secure, convenient bicycle parking is essential to facilitating bicycle access. Currently, bicycle parking is provided somewhat inconsistently, and is often difficult to find if provided. Several jurisdictions in the region do require bicycle parking as part of most institutional, commercial, or multifamily residential developments. For example, Washington, D.C. currently requires that a project provide bicycle parking in an amount equal to at least 5% of the amount of automobile parking required. The District is revising the approach to link required bicycle parking to the square footage of the development rather than number of parking spaces in hopes of obtaining more bicycle parking and reducing the tie to vehicle parking. Montgomery County is also making the same updates as part of its zoning code rewrite.

Bicycle parking should be located as close as possible to primary entrances, while not blocking accessible access or pedestrian pathways. The parking area should be sheltered from rain and snow, and signage should be placed at key locations in the development to direct bicyclists to the parking area.



Acceptable bicycle rack designs
Source: APBP Bicycle Parking Guidelines

The Association of Pedestrian and Bicycle Professionals (APBP) provides a thorough discussion of bike rack design and placement in the publication *Bicycle Parking Guidelines*.[13]

[13] *Bicycle Parking Guidelines* is available for download at: http://www.apbp.org/resource/resmgr/publications/bicycle_parking_guidelines.pdf

Guidelines for Transforming Greenbelt Road into a "Livable Street"

Improve pedestrian comfort

Heavy traffic volumes, high speeds, and little space between the roads and sidewalks create an inhospitable environment for pedestrians. As the area redevelops over time, pedestrian space should be separated from automobile space with landscape buffers that include street trees (recommended 5' minimum), as well as other design approaches.

In addition, pedestrian space should be clearly articulated through design. As properties redevelop, the relocation of existing curb lines should be examined to maximize the length and width of center medians. Center medians provide pedestrian refuge at crossings, improve traffic flow by allowing left turn pockets, and provide a location for landscaping. Sidewalks should be wide enough to accommodate anticipated pedestrian volumes. A 6' minimum sidewalk width is recommended. Sidewalk surfaces should continue across driveways to clearly delineate the pedestrian space. Curb ramps should be provided for every crosswalk, to ensure safety and accessibility for all.

Automobile travel lanes should be no wider than is necessary to accommodate vehicles at the desired speed limits. Excessively wide lanes encourage drivers to travel at higher speeds and forces pedestrians to cross wider streets, while consuming space that could possibly be used for center medians or bicycle lanes.

In general, design elements should be selected that improve pedestrian safety and naturally calm traffic.

Encourage pedestrian-friendly land use and urban design

Mixed-use development can be more convenient and accessible for people on foot, because it often provides more destinations in close proximity to one another.

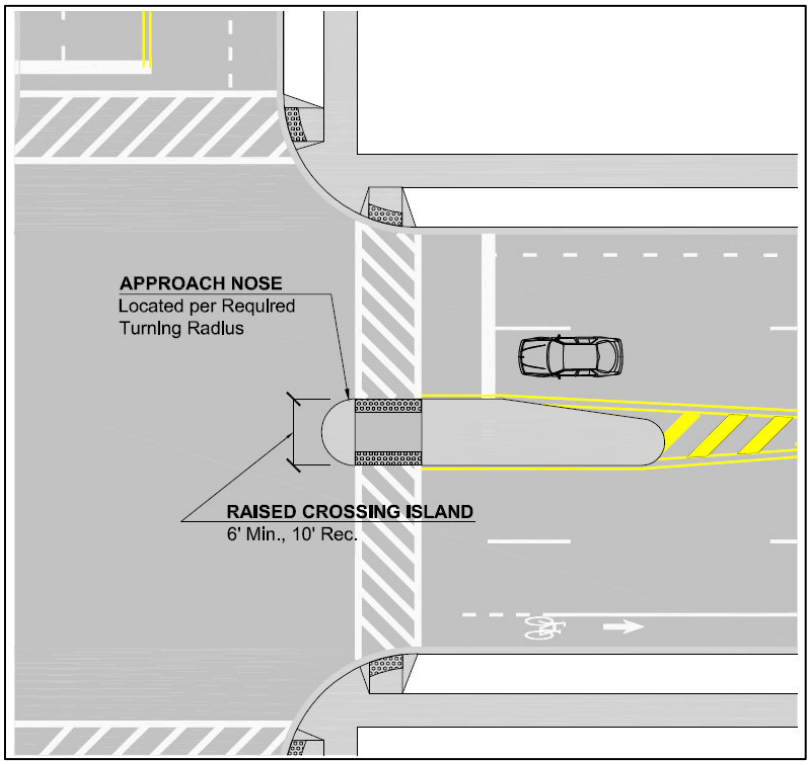
In the long-term, as large properties with limited connectivity redevelop, emphasis should be placed on improving circulation for all modes (walk, bike, car) by integrating a road grid that connects to the surrounding network. Access should be extended through larger properties, providing an opportunity to create traditional main street areas that tie into an urban street grid. Buildings should be brought to the edge of the property and parking, vehicular access and service entrances should be provided either in structures or at the rear of properties. Sidewalks should be provided along both sides of any new streets and added to existing side streets where missing.

Creating a more finely grained pedestrian network that provides pedestrians with choices about how to get to any location should be a critical element of the long-term vision for the area. This would also create opportunities to move buildings closer to the road and provide parking and access from the back. Development of this nature is more pedestrian friendly because it is at a scale comfortable for those on foot.

Reduce pedestrian crossing distances

Pedestrians should not have to cross more than 60 feet of road width at a time. Center medians should be used for pedestrian refuges. Crosswalks should be brought to and through medians so pedestrians are not forced to choose between a median refuge and a crosswalk. The width of the pedestrian curb ramp through the center median should be as wide as possible (6' minimum) to accommodate users with assistive devices such as wheelchairs or multiple users at one time.

Maximizing the length and width of medians should be considered a priority given the key safety function that they serve. Medians are needed not only at mid-block crossings, but at signalized intersections as well. While each signal should be designed to enable pedestrians to clear the entire width of the road, the median provides a refuge for slower moving pedestrians who may become caught in the center.



Source: Maryland SHA Bicycle and Pedestrian Guidelines

The figure above illustrates a typical design for a raised median at a street crossing. According to the AASHTO *Guide for the Planning, Design, and Operation of Pedestrian Facilities*, raised medians, or crossing islands "should be 6 ft. or more to provide space for a wheelchair user or more than one pedestrian to wait." Travel lanes may be narrowed to 10 feet in constrained conditions to provide space for the median. However consideration should be given to traffic volume, speed, vehicle mix, and presence of bicycles when narrowing lanes. While not recommended, raised medians may be narrower than six feet. However the cut-through width should be widened to accommodate waiting pedestrians or cyclists.

Driveway width and access management

A significant impediment to pedestrian travel along Greenbelt Road is the width and number of existing driveways. Pedestrians must contend with numerous potential conflicting movements and face undue exposure on entrances that are excessively wide. To promote pedestrian travel, state-of-the-practice recommendations from other jurisdictions include 10' to 15' for one-way driveways and 22' to 25' for two-way driveways. As properties redevelop driveway widths should be reduced as much as practical.

As properties redevelop, access management techniques should be employed to reduce the number of driveways (i.e. conflicting turning movements). Access management should be thought of as an attempt to balance the need for good mobility for through traffic with the provision of reasonable access to land uses. The use of access management techniques results in better traffic flow, enhanced property access and improved safety for motorists and pedestrians. Techniques include:

- Driveways located on side streets as opposed to the major roadway.
- Driveways on the major roadway that are well offset from intersections, and are spaced as far apart as possible.
- Restricting movements at driveways such as allowing "right in" or "right out" only. This can be accomplished by raised medians on the major roadway, or channelizing medians at the driveway entrance. This can simplify turning movements, potentially reducing conflict and confusion at busy intersections.

Interconnecting parcels so vehicular movements from one property to another do not have to occur on the major roadway. This can be accomplished by service roads or connected parking. These connections should include sidewalks and other pedestrian facilities to encourage and accommodate walking for short trips.

Intersections and interchanges with high traffic speeds and volumes

Section 7.3 of the *Maryland SHA Bicycle* and *Pedestrian Design Guidelines* provides guidance for the design of interchanges in urban areas where bicyclists and pedestrians are likely to be present. Greenbelt Road has three interchanges with high speed roadways: Baltimore-Washington Parkway, Capital Beltway (I-95/495), and Kenilworth Avenue (MD 201). Many stakeholders commented that the design of these intersections results in an uncomfortable environment for bicyclists and pedestrians due to the high speeds with which cars are able to navigate the on- and off-ramps.

The following language is excerpted from the *Maryland SHA Bicycle and Pedestrian Design Guidelines*, Section 7.3, Bicycle and Pedestrian Access at Interchanges:

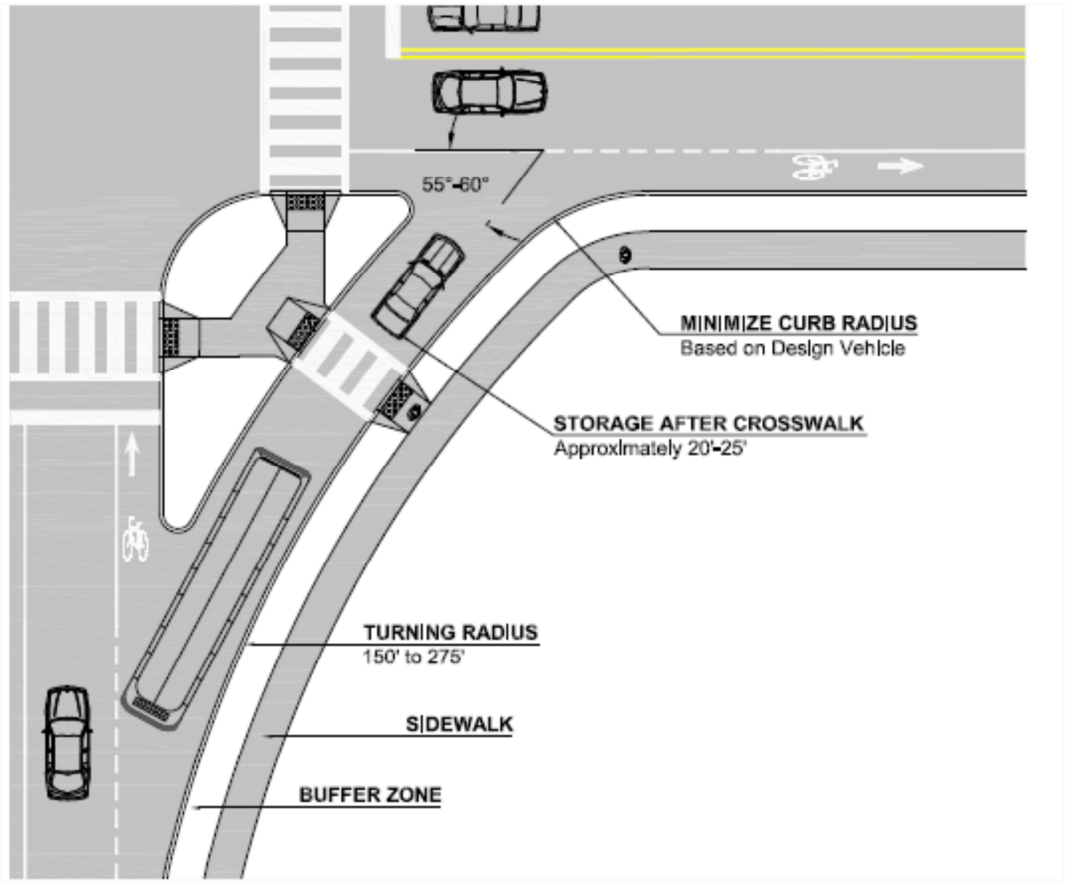
> Interchanges and other locations with on-ramps and off-ramps can be among the most difficult locations for pedestrians and bicycles to navigate. The combination of high speed merging traffic and crossings by pedestrians and bicyclists creates inherent conflicts and can be very uncomfortable for non-motorized users. Particularly in urban and suburban locations where

pedestrian and bicycle traffic can be expected to use the roadway, interchange design should account for their needs.

When an intersection is converted to an interchange, pedestrian and bicycle access should be considered in the design of interchange ramps and all other crossings.

The most important principle in designing interchanges that accommodate pedestrians and bicyclists is to reduce motor vehicle speeds at locations where pedestrians and bicyclists either cross the road, or (as in the case with bicyclists operating on-road) merge with traffic. For this reason, urban interchange design with conventional 90 degree intersections (instead of merge lanes) is preferable for pedestrian and bicycle safety. Interchange designs that enable motor vehicles to maintain speeds above 30 mph without stopping are not conducive to pedestrian and bicycle access and should be avoided.

The following graphic illustrates the recommended design of free flow turning lanes in urban areas where pedestrians and bicycles are likely to encounter high volumes of turning traffic.



BENEFITS:
- Approach angles between 55-60 degrees discourage high speed turns, thus reducing speeds in the ramp area
- Increase sight distances
- Reduce pedestrian crossing distances

SUITABLE LOCATIONS:
- Intersections requiring very large turning radii, or with heavy volumes of right-turning traffic

NOTES:
It may be determined that the slip turn should feed into an acceleration/speed change lane. This is usually based on multiple factors including traffic volume, speed and roadway classification. These movements are often detrimental to pedestrians because they are typically designed for higher turning speeds. Therefore, the level of pedestrian activity and adjacent land use should also be factored when determining the use of acceleration/ speed change lanes at slip turns. If deemed appropriate, a similar design to that shown above can be used to slow turning vehicles at the pedestrian crossing, however this may require additional acceleration lane length on the receiving roadway.

Free flow right turn

Source: Maryland SHA Bicycle and Pedestrian Guidelines

Recommendations to Address Barriers to Walking

Pedestrian countdown signals

Pedestrian countdown signal
Source: Walkinginfo.org

All signalized crossings should include pedestrian countdown signals. Countdown signals are beneficial because they give information to the pedestrians on the time remaining to cross the street.

Traffic signals in the area should not rely entirely on pedestrian actuated systems. A number of studies have shown that pedestrians typically are unaware that they must press the push button in order for the signal to provide adequate time for a pedestrian clearance. If possible, considering traffic implications, all signal phases should be timed so that they accommodate pedestrian crossings. This is especially true in high pedestrian traffic areas such as crossings of Greenbelt Road near Beltway Plaza. If needed, activated signals should be used in locations where pedestrians need to "call" a red phase (such as at the intersection of Ivy Lane and Kenilworth Avenue).

Right turn on red restrictions and leading pedestrian intervals should be considered at locations with heavier volumes of pedestrian crossings with many turning movements. For example, many stakeholders expressed concern that turning vehicles exiting Crescent Road at Kenilworth Avenue do not yield to bicyclists and pedestrians trying to cross the street.

Signals in Greenbelt should include Accessible Pedestrian Signals (APS), especially those located where more accessible crossing guidance is needed by pedestrians with vision impairments or in areas of high crossing volumes. APS include a variety of different features that make traffic signals more accessible, particularly to pedestrians with vision impairments. The most common feature of these signals is the use of audible tones and/or vibration to indicate the "WALK" interval. The signals may include a number of additional features, including but not limited to, tactile arrows, tactile maps, and Braille and raised print information. Pushbuttons should be placed in accessible locations near the appropriate crosswalk/curb ramp.

Rapid flashing beacons

A flashing beacon is a traffic control signal that operates in a flashing mode (flash rate is defined as one flash per second). It is typically a single light, but can be installed in other combinations. A common application is to add a flashing amber signal to the top of a standard pedestrian sign to provide warning of a pedestrian crossing. The flashing signal has also been used on overhead signs at crosswalks (previously at the crossing of Crescent Road near Northway). School zones are sometimes identified with flashing beacons that operate during specific periods of the day. Studies have found inconsistent rates of motorist compliance with laws to stop or yield for pedestrians at uncontrolled crosswalks when only flashing beacons were provided.

A modified version of the flashing beacon—a rapid flashing beacon (LED lights with flash rates of 60 flashes per second)—has undergone evaluation in Washington, D.C., Florida, and Colorado. This sign has shown to result in high rates of motorist compliance with laws to stop or yield for pedestrians at uncontrolled crosswalks when only rapid flashing beacons were provided.

Section 4k of the *Manual on Uniform Traffic Control Devices* (MUTCD) defines flashing beacons. FHWA issued an interim approval for the RFB device on July 16, 2008. Local governments wishing to implement the RFB may apply for the authority to conduct an evaluation of the device.

Rapid flashing beacon

It is recommended that Greenbelt develop a rapid flashing beacon policy and sign standard for use at uncontrolled crossings to better align with current research and best practices. The city should develop warrant criteria to determine when to use the RFB. Factors to consider may include vehicle volume, roadway cross-section, motorist operating speed, and sight distance. The warrant criteria should be adjusted based on the RFB's effectiveness in increasing motorist compliance to stop for pedestrians under various conditions.

Greenbelt should also develop a policy restricting the use of the standard flashing beacon (one flash per second) at uncontrolled pedestrian crossings. To ensure uniformity of application, the rapid flash beacon should be the only device utilized for uncontrolled pedestrian crossings where an enhanced warning device is warranted.

Greenbelt should pilot test the rapid flashing beacon to evaluate its effectiveness at increasing motorist yielding to pedestrian rates at crossings where there are significant conflicts between pedestrians and vehicles. The pedestrian crossing of Crescent Road near Northway that connects the internal pathway system to the recreational fields is a likely candidate as there is already a flashing beacon in this location. The city could perform a baseline evaluation of the current system, and then evaluate changes in motorist behavior after installing the RFB.[14]

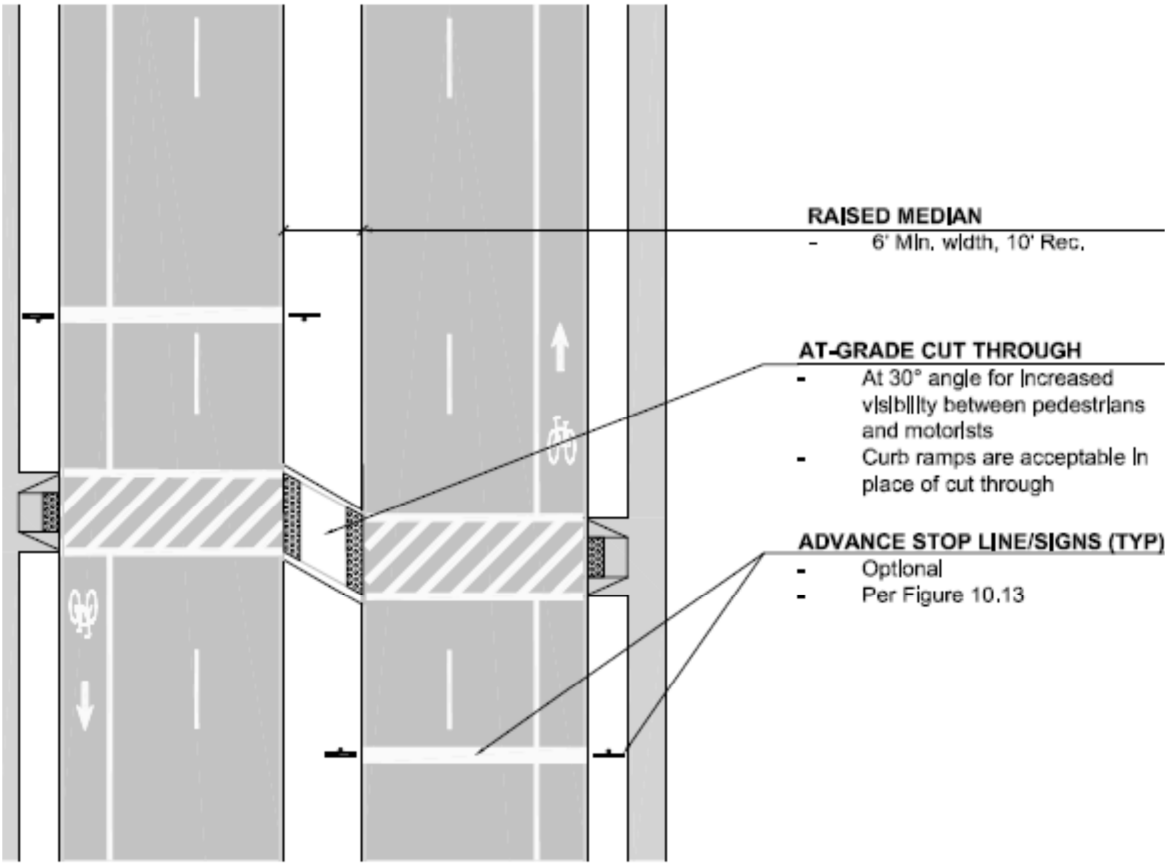
[14] The city installed a RFB at the pedestrian crossing of Crescent Road near Northway (in front of the St. Hugh's parking entrance) in December 2010.

Mid-block crossings

Properly designed mid-block crossings can significantly enhance pedestrian safety and comfort by increasing the predictability of pedestrian movements, providing enhanced protection for pedestrians, and alerting drivers that pedestrians may be crossing the roadway. Section 10.4 of the *Maryland SHA Bicycle and Pedestrian Design Guidelines* provides guidance on the use of mid-block crossings:

> While every attempt should be made to cross pedestrians at intersections, midblock crossings are a necessary pedestrian movement in many urban, suburban and rural locations. Since pedestrian travel speeds are much slower than other modes of transportation, pedestrians have a particularly strong desire to travel the shortest possible distance between two points. For example, when faced with the option to cross an 80-foot wide road at a midblock location versus walk 600 feet to the nearest intersection, cross at the crosswalk and walk back down the street, the majority of pedestrians cross midblock. Assuming a walking speed of four feet per second, the midblock crossing in this example requires 20 seconds to complete, while the alternative route requires more than five minutes.
>
> Provisions for midblock crossings should be carefully considered, because a poorly designed midblock crossing will violate driver expectance and could cause safety problems for pedestrians. In some situations, the flow of traffic created by adjacent timed traffic signals produces highly reliable gaps, one direction at a time, that allow pedestrians to cross the roadway easily. In these locations mid-block crossings may provide a safer alternative to pedestrians that would otherwise have to cross at a busy intersection with conflicting turning movements. In other situations, there may not be enough gaps for pedestrians to cross at the midblock location unless a pedestrian-activated traffic signal is added.
>
> Since no two midblock crossings are alike, there is no single standard design. Engineering judgment must be used, based on the design principles described throughout this design guide. In general, however, midblock crossings should be considered at locations that are already a source of a significant number of midblock crossings, or are anticipated to generate midblock crossings as a result of new development, and/or where the land use is such that a pedestrian is highly unlikely to cross the street at a nearby intersection.

The graphic on the next page, taken from the *Maryland SHA Bicycle and Pedestrian Design Guidelines*, illustrates the elements of a mid-block crossing.



BENEFITS:

- Reduces the width of roadway that pedestrians must cross at one time
- Reduces pedestrian crashes at multi-lane sites
- Medians and channelization islands reduce the rate of motor vehicle crashes and have particular benefits for older drivers

SUITABLE LOCATIONS:

- Particularly beneficial on multi-lane roadways
- Suitable at both controlled and uncontrolled locations
- Suitable at both intersection and midblock locations

DESIGN OF CROSSING ISLANDS:

- Raised medians require at-grade cut throughs or curb ramps to provide an accessible pedestrian path
- Should be aligned directly with marked crosswalks
- Raised approach noses should be included for raised medians at intersections
- Should meet the luminance contrast levels needed to improve detection by older drivers, per the recommendations in FHWA's Highway Design Handbook for Older Drivers and Pedestrians (2001)
- If median is landscaped, the vegetation must not obstruct necessary clear sight triangles
- Must meet SHA's *Accessibility Policy & Guidelines for Pedestrian Facilities along State Highways.*

Mid-block crossing with raised median island

Source: Maryland SHA Bicycle and Pedestrian Guidelines

Curb extensions and corner radii reductions

The intersection of two roadways requires construction of curves (designated by a curb radius) to allow vehicles to maneuver while turning without driving over the curb line or entering into opposing travel lanes. Large curves are utilized to allow larger vehicles (such as trucks) to turn within the roadway and/or to allow smaller vehicles to turn at higher speeds. Larger curves require more land and lengthen pedestrian crossing distances. The required curb radius for a vehicle to make the turn is known as the effective curb radius. Oftentimes, this differs from the actual constructed curb radius. When roadways are constructed without consideration of the actual required turning radius of the vehicles utilizing them, the curb radius may be constructed to be larger than necessary which lengthens pedestrian crossing distances and increases vehicle turning speeds.

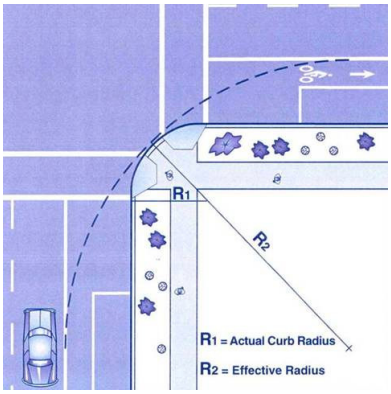


Illustration of actual curb radius vs. effective curb radius
Source: Oregon Pedestrian and Bicycle Design Guide

Curb extensions and corner radius reductions can be used to shorten pedestrian crossing distances, minimize exposure, and improve sight distances. Several of the local streets in Greenbelt appear to have extra pavement width, particularly those with on-street parking that is restricted near the corners. These locations could be retrofitted with curb extensions that essentially push the curb line into the street the width of the parking and leave approximately 24' of width for vehicular passage. Curb extensions may also be used in areas where the interior pathway system intersects with a roadway. This would ensure that cars do not park in front of the pathway entrance, increasing people's awareness of these facilities.

Additionally, some intersections appear to have corner radii larger than necessary. These locations could be retrofitted with smaller radii, which slow turning vehicles, reduce pedestrian crossing distances, and allow curb ramps and crosswalks to be placed closer to the corner, increasing the visibility of pedestrians. The ultimate feasibility of the proposed curb extensions and radius reductions will be dependent on an engineering analysis considering the turning movements of appropriate design vehicles. In addition, curb extension locations may require the relocation of existing storm drainage inlets. All of these considerations should be included in a detailed feasibility analysis prior to actual design and construction.

Wayfinding signage

Wayfinding is very beneficial to pedestrians who are trying to navigate the city's streets and trails. This is especially important in areas where tourists and other people unfamiliar with an area are likely to be walking. At minimum, wayfinding should be utilized to direct travelers to key destinations that are known to the community, such as:

- Greenbelt Metrorail Station
- Buddy Attick Park / Greenbelt Lake
- Schrom Hills Park

- Roosevelt Center
- Eleanor Roosevelt High School, Greenbelt Middle School, Greenbelt Elementary School, and Springhill Lake Elementary School
- Greenbelt Public Library, Community Center, and Municipal Building
- Greenbelt Museum
- Greenbelt recreational facilities

There is anecdotal evidence that more pedestrians do not use the pathway network in Historic Greenbelt because they are not familiar with the system. Map kiosks illustrating the internal pathway system would assist travelers in understanding both where they are and where the paths can take them.

An integrated wayfinding system can also strengthen connections between the various parts of the city by creating signage that illustrates a unified community with threads that tie the various neighborhoods and destinations together.

There are several excellent sources for information on wayfinding signage, trailheads, and other amenities. For more information, refer to the following publications:

- *Signage and Wayfinding Design: A Complete Guide to Creating Environmental Graphic Design Systems*. Published by John Wiley & Sons, Inc, 2007. Author: Chris Calori.

- *Greenways: A Guide to Planning, Design and Development*. Published by Island Press, 1993. Authors: Charles A. Flink and Robert Searns.

- *Trails for the Twenty-First Century*. Published by Island Press, 2001. Authors: Charles A. Flink, Robert Searns, and Kristine Olka.

Lighting

Pedestrians are adversely affected by low-light conditions. Two-thirds of pedestrian fatalities occur between dusk and dawn. Lighting is important along sidewalks and walkways in commercial pedestrian districts such as historic downtown as well as at intersections and midblock crossings, particularly in locations near transit stops.

Preferred pedestrian-scale lighting is characterized by shorter light poles (i.e. 15-foot tall posts), lower wattages (except at crossings), shorter spacing between lamp posts, more even light distribution, and high pressure sodium vapor or metal halide lamps. Sodium vapor and metal halide lamps produce a better color definition and "white light" to areas with higher pedestrian volumes.

Shorter light poles may place the street light fixtures at eye level in the second floor bedroom window of high-density residential developments. The light fixtures should therefore be a full cut-off design with the bulb recessed within the fixture, or otherwise incorporate the appropriate shielding, in order to prevent light trespass.

Pedestrian light poles should be spaced as specified in the city's specifications (not reviewed for this plan). Pedestrian light fixtures should in-fill between street light poles. Distinctive pedestrian scale lamp posts could be used to improve the appearance of the streetscape in pedestrian oriented areas. Additional recommendations:

- Light poles should be placed either in the buffer zone, or on the far side of the sidewalk, and not within the through-pedestrian zone.
- The required clear width must be maintained per the Americans with Disabilities Act Accessibility Guidelines (ADAAG).
- Light fixtures should be placed within reach of a maintenance vehicle parked on the adjacent roadway, to avoid damage to the adjacent sidewalk and landscaped areas.
- Street lampposts, pedestrian lampposts, and landscape plans must be coordinated to assure that the lights are not engulfed in a canopy of trees.
- Crosswalks should be illuminated at each end by a standard street lamp.

Pedestrian access to transit

The location and design of bus stops can significantly impact the safety and comfort of pedestrians accessing transit services. Care should be taken to place bus stops in locations that maximize pedestrian safety and convenience. Determining the best location for bus stops involves choosing among far-side, near-side, and mid-block placement. The table on the following page presents the advantages and disadvantages of each bus stop type.

A level landing pad in Montgomery County, MD

Best practice research indicates that although each site is unique, generally bus stops should be located on the far side of intersections. Far-side bus stops have the safety benefit of encouraging pedestrians to cross the roadway at the intersection behind the bus. This increases the visibility of pedestrians to drivers traveling through or turning at the intersection. In contrast, pedestrians crossing the roadway in front of a near-side bus stop are not as visible to drivers approaching the intersection from behind the bus. The sight lines between pedestrians and these approaching cars are blocked by the stopped bus.

Mid-block stops can reduce the distance pedestrians need to travel, however, they may encourage pedestrians to cross roadways at locations where there are fewer crossing treatments. When possible, bus stops should be located at controlled crossings. Where it is necessary to locate the bus stop mid-block, measures should be taken to improve the safety of the crossing.

Transit stops should be designed to make boarding and alighting easy and safe for all passengers and must follow the ADAAG. Americans with Disabilities Act guidelines require a firm landing pad to be

located at all bus stops to allow pedestrians to enter and exit the bus without entering the street. The landing pad must have a minimum length of eight feet (from the curb or roadway edge) and a minimum width of five feet.

Sidewalks should be constructed from the embarkation point (the landing pad where people enter/exit the bus) to the nearest intersection or to the nearest section of existing sidewalk. Streets within .25 mile of transit stops should have continuous sidewalks on both sides of the street, high-visibility crosswalk markings, and other crosswalk safety features. [15]

Bus Stop Types: Advantages and Disadvantages

	Advantages	Disadvantages
Far-Side Stop	• Minimizes conflicts between right turning vehicles and buses • Provides additional right turn capacity by making curb lane available for traffic • Minimizes sight distance problems on approaches to intersection • Encourages pedestrians to cross behind the bus • Creates shorter deceleration distances for buses since the bus can use the intersection to decelerate • Results in bus drivers being able to take advantage of the gaps in traffic flow that are created at signalized intersections	• May result in the intersections being blocked during peak periods by stopping buses • May obscure sight distance for crossing vehicles • May increase sight distance problems for crossing pedestrians • Can cause a bus to stop far side after stopping for a red light, which interferes with both bus operations and other traffic • May increase number of rear-end accidents since drivers do not expect buses to stop again after stopping at a red light • Could result in traffic queued into intersection when a bus is stopped in travel lane
Near-Side Stop	• Minimizes interferences when traffic is heavy on the far side of the intersection • Allows passengers to access buses closest to the crosswalk • Results in the width of the intersection being available for the driver to pull away from curb • Eliminated the potential of double stopping • Allows passengers to board and alight while the bus is stopped at a red light • Provides driver with the opportunity to look for oncoming traffic, including other buses with potential passengers	• Increases conflicts with right-turning vehicles • May result in stopped buses obscuring curbside traffic control devices and crossing pedestrians • May cause sight distance to be obscured for cross vehicles stopped to the right of the bus • May block the through lane during peak period with queuing buses • Increases sight distance problems for crossing pedestrians
Mid-Block Stop	• Minimizes sight distance problems for vehicles and pedestrians • May result in passenger waiting areas experiencing less pedestrian congestion	• Requires additional distance for no-parking restrictions • Encourages patrons to cross street at mid-block (jaywalking) • Increases walking distance for patrons to cross at intersections

Source: TCRP Report 19. Guidelines for the Location and Design of Bus Stops Transportation Research Board, National Research Council. Sponsored by The Federal Transit Administration. 1996

[15] The city is currently working on the Greenbelt Bus Stop Safety and Accessibility Study through the FY2013 Transportation/Land Use Connections FY2013 Technical Assistance Program from MWCOG/TPB.

Recommendations to Address Barriers to Bicycling

Bicycle lanes

Bicycle lanes are portions of the roadway that have been designated for the preferential or exclusive use of bicyclists through striping, signage, and other pavement markings. On two-way streets, bicycle lanes should be provided on both sides of the road so that bicyclists can ride in the same direction as adjacent motor vehicle traffic. Bicycle lanes should be at least four feet wide on roadways with open shoulders and five feet wide on roadways with curb and gutter. Five foot bicycle lanes are typical, but wider lanes (i.e. 6') are often used on roadways with high motor vehicle traffic volumes. Bicyclists still have the right to use the travel lanes on streets with bicycle lanes.

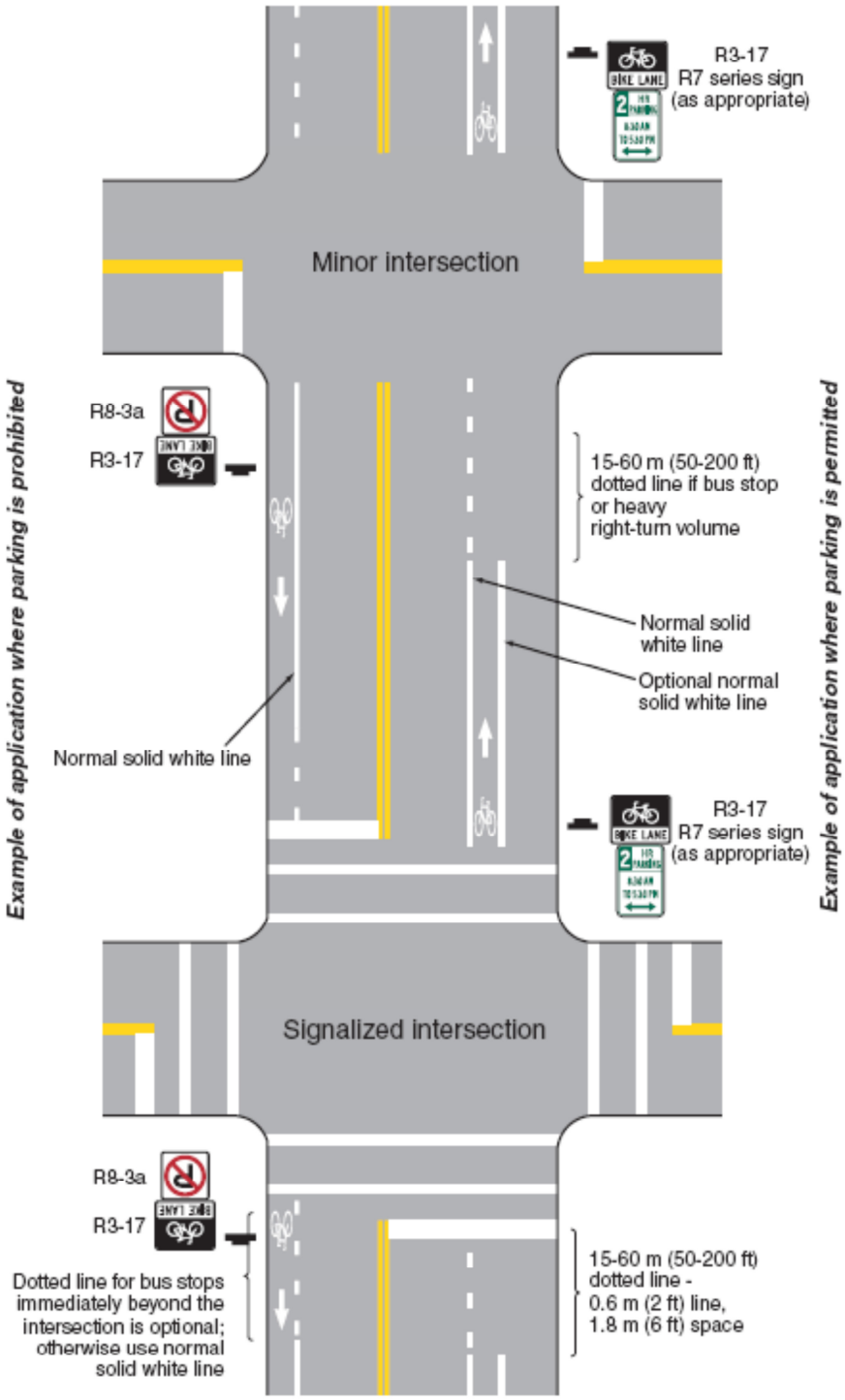
Bicycle lanes can provide the following benefits:

- Increase the comfort of bicyclists on roadways.
- Increase the amount of lateral separation between motor vehicles and bicycles.
- Indicate the appropriate location to ride on the roadway with respect to moving traffic and parked cars, both at mid-block locations and approaching intersections.
- Increase the capacity of roadways that carry mixed bicycle and motor vehicle traffic.
- Increase predictability of bicyclist and motorist movements.
- Increase drivers' awareness of bicyclists while driving and when opening doors from an on-street parking space.
- Pavement markings designate that portion of the roadway for preferential use by bicyclists.
- Markings inform all road users of the restricted nature of the bicycle lane.

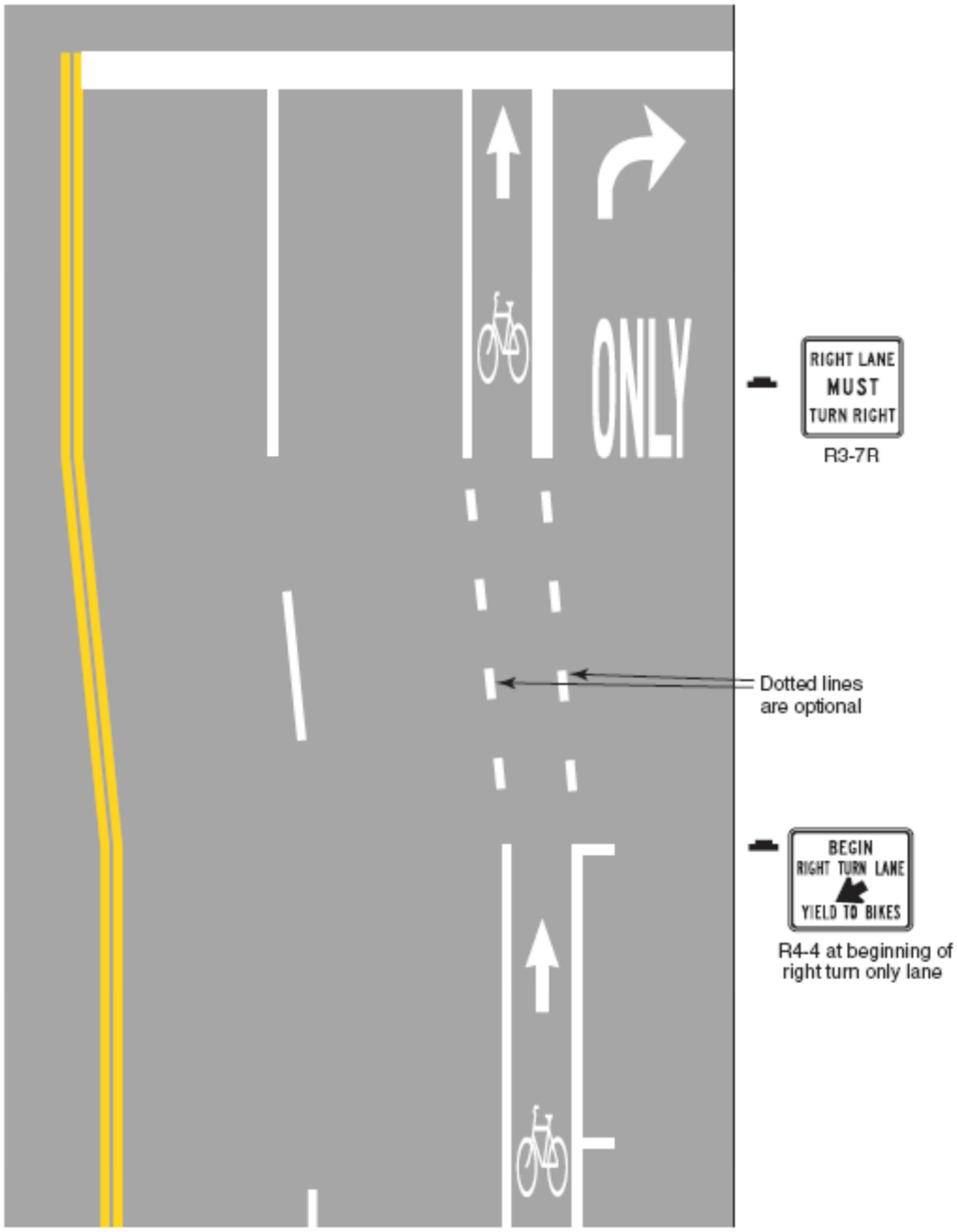
The MUTCD offers the following guidance on making and signing bicycle lanes:

- Longitudinal pavement markings should be used to define bicycle lanes.
- If used, the bicycle lane symbol marking shall be placed immediately after an intersection and at other locations as needed.
- The bicycle lane symbol marking shall be white.
- If the bicycle lane symbol marking is used in conjunction with other word or symbol messages, it shall precede them.
- If the word or symbol pavement markings are used, "Bicycle Lane" signs shall also be used, but the signs need not be adjacent to every symbol to avoid overuse of the signs.
- A through bicycle lane shall not be positioned to the right of a right turn only lane.

- When the right through lane is dropped to become a right turn only lane, the bicycle lane markings should stop at least 100 feet before the beginning of the right turn lane. Through bicycle lane markings should resume to the left of the right turn only lane.
- An optional through-right turn lane next to a right turn only lane should not be used where there is a through bicycle lane. If a capacity analysis indicates the need for an optional through-right turn lane, the bicycle lane should be discontinued at the intersection approach.
- Posts or raised pavement markers should not be used to separate bicycle lanes from adjacent travel lanes.



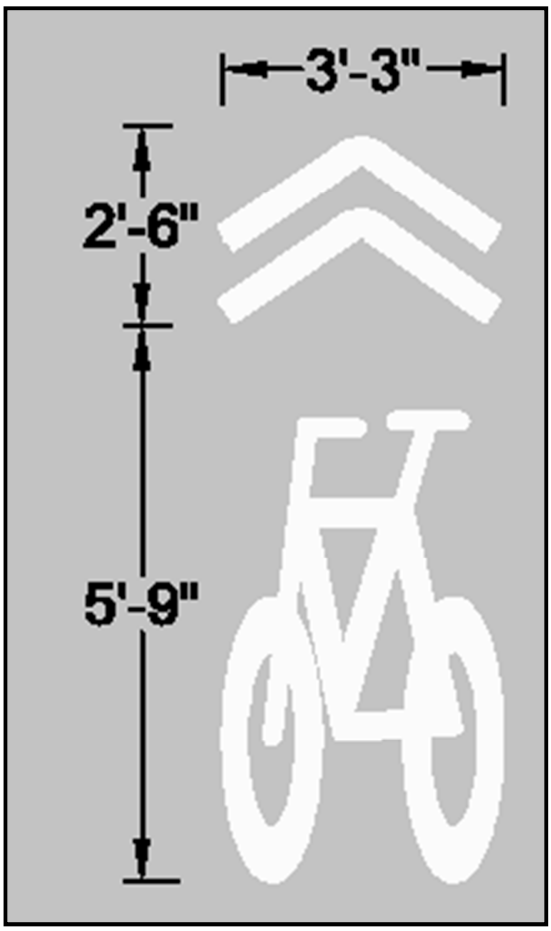
Example of pavement markings for bicycle lanes on a two-way street
Source: Manual of Uniform Traffic Control Devices for Street and Highways, 2003 Edition



Example of bicycle lane treatment at parking lane into a right turn only lane
Source: Manual of Uniform Traffic Control Devices for Street and Highways, 2003 Edition

Shared-lane markings

Shared-lane markings, or "sharrows," are pavement markings placed along selected roads that alert automobile drivers to the presence of bicyclists and encourage bicyclists to ride outside of the "door zone" of parked cars. They reduce wrong-way bicycling and tend to increase the distance between bicyclists and passing cars. Shared-lane markings are generally used where there is not enough space for bicycle lanes. They should not be used on roadways with a speed limit above 35 miles per hour. Marking should be placed immediately after an intersection and spaced at intervals not greater than 250 feet thereafter.



Shared-lane marking
Source: Maryland SHA Bicycle and Pedestrian Design Guidelines

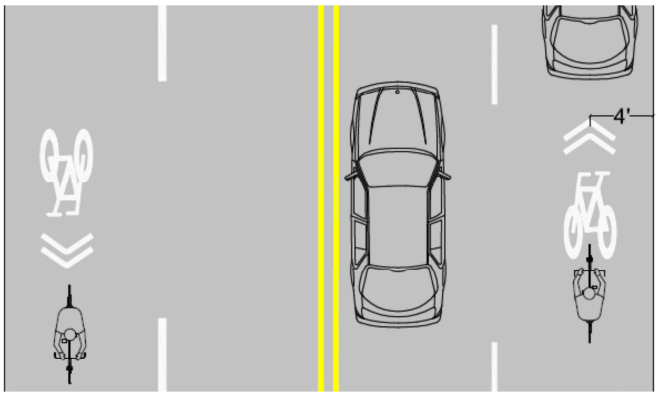
Shared-lane markings have the following benefits:

- Provide a visible cue to bicyclists and motorists that bicycles are expected and welcomed on the roadway;
- Indicate the most appropriate location to ride on the roadway with respect to moving traffic and parked cars;
- Can be used on roadways where there is not enough space for standard width bicycle lanes; and
- Connect gaps between other bicycle facilities, such as a narrow section of roadway between road segments with bicycle lanes.

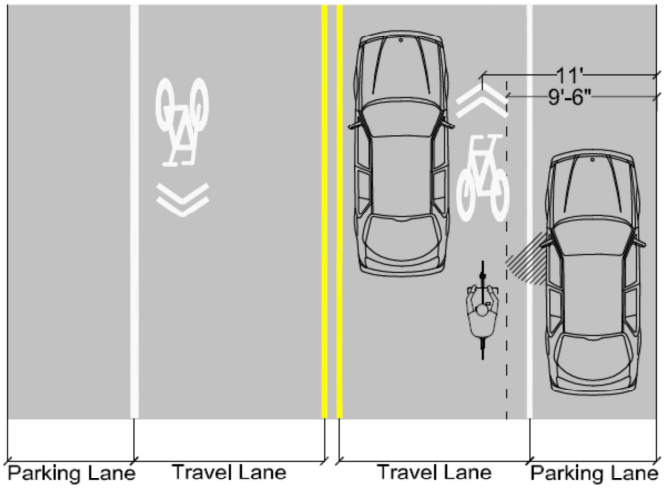
The shared-lane pavement marking should be placed:

- A minimum of 11 feet from the face of the curb when used adjacent to a parking lane;
- A minimum of four feet from the face of curb or roadway edge when not used adjacent to a parking lane;
- Immediately following intersections and spaced at intervals up to 250 feet thereafter; and
- The shared-lane pavement marking shall not be placed in bicycle lanes. The shared-lane pavement marking should not be placed on roadways with speed limits posted above 35 mph.

SYMBOL PLACEMENT - NO PARKING:



SYMBOL PLACEMENT - PARKING:



SUITABLE LOCATIONS FOR SHARED LANE MARKING:

- Symbols may be used on roadways that are too narrow for bicycle lanes.
- Symbols may be used on narrow roadways to connect disconnected bicycle facilities such as bicycle lanes, designated routes, and shared use paths.
- Symbols should only be used on roadways with posted speeds less than 40 mph.

DESIGN OF SHARED LANE MARKINGS:

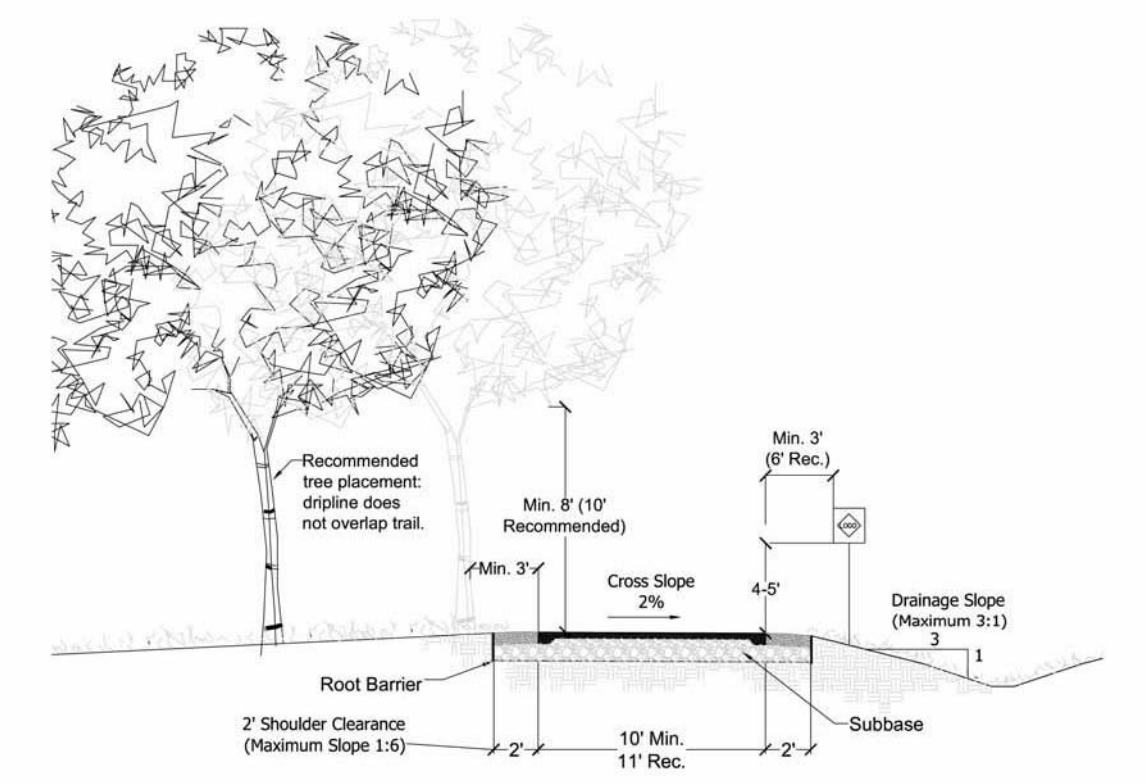
- Symbols shall be placed after each intersection. Symbols shall be placed no closer than every 250' thereafter.
- If used on roadways with on-street parking, symbols shall be placed so that their centers are a minimum of 11' from the adjacent curb face.
- Symbols placed in a shared lane without parking shall be placed so that their centers are a minimum of 4' from the adjacent curbface.
- Do not place symbols on lane lines.

Shared-lane marking on constrained roadway with/without parking

Source: Maryland SHA Bicycle and Pedestrian Design Guidelines

Shared-use paths

The *Maryland SHA Bicycle and Pedestrian Design Guidelines* devotes an entire chapter to the design of off-road bicycle facilities, also called shared-use paths or sidepaths (if adjacent to a road). Generally, paths should be asphalt or other hard, all-weather surface, although alternative treatments may be considered in situations where volumes are anticipated to be light. The minimum recommended width is ten feet with two-foot shoulders for a two-way path, although widths as narrow as eight feet may be used where little pedestrian activity is anticipated or the pathway must be narrowed to squeeze through a constrained area. Wider paths of twelve to fourteen feet or more are recommended if large volumes of bicycle and pedestrian traffic are anticipated. The following graphic illustrates the preferred cross section of a shared-use path.



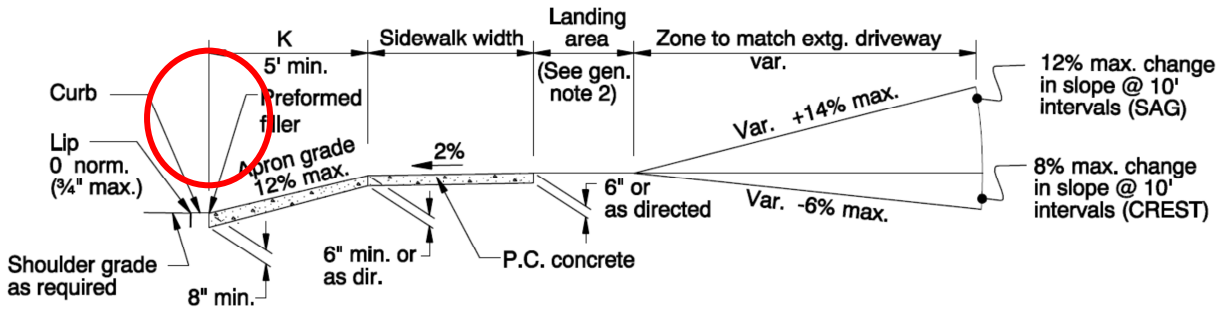
Shared-use path – typical section
Source: Maryland SHA Bicycle and Pedestrian Design Guidelines

The *Maryland SHA Bicycle and Pedestrian Design Guidelines* provide additional recommendations for the design of intersections with roadways, vertical, and horizontal alignment and other elements.

Driveway aprons

Driveways with a raised 1-inch to 2-inch 'lip' where the apron meets the roadway are found throughout Greenbelt. Bicyclists trying to navigate these driveways risk flat tires, bent rims, and falling off their bicycle due to the sudden impact of hitting the raised lip. Greenbelt should consider developing more bicycle-friendly driveway design standards to mitigate this issue. Care should be taken to ensure that the redesigned driveways do not negatively impact stormwater drainage or vehicle navigation.[16]

The design detail below is from the City of Portland, Oregon, and illustrates a more bicycle-friendly design:



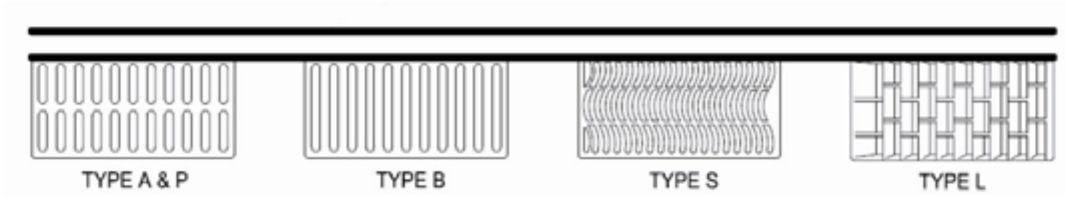
Oregon Standard Drawing, Detail RD740 – Separated Sidewalk Driveways
Source: Oregon Department of Transportation

Storm drain grates

Storm grates pose a hazard for bicyclists when the openings are parallel to the bicyclists' direction of travel. Bicycle tires can get caught between the bars of these grates, and cause bicyclists to crash. Several old style storm grates are still in use around Greenbelt. As the photo illustrates, these have the potential to cause significant harm to a bicyclist and damage to their bicycle.

Bicycle wheel in drain grate
Source: Bicyclinginfo.org

Non-bicycle friendly drain grates should be replaced with one of the types in the image below. The following Maryland Standard drain inlets are of a bicycle friendly design: MD-374.02-374.27 (standard WR/WRM/NR/NRM inlets).



Bicycle-friendly drain grates
Source: Maryland SHA Bicycle and Pedestrian Design Guidelines

[16] The city follows Prince George's County standards for driveway design. The county standards do not have a lip at the apron, and as older driveways are replaced, they are installed at the current standards.

Bicycle accommodation in roundabouts

Several roundabouts currently exist in Greenbelt and others are considered through this or other plans. Single lane roundabouts can provide significant safety benefits for bicyclists when they are designed to meet their needs. At roundabouts, some bicyclists will choose to travel on the roadway, while others will choose to travel on the sidewalk. Roundabouts can be designed to simplify this choice for cyclists. The following discussion is excerpted from the upcoming edition of the AASHTO *Guide for the Development of Bicycle Facilities*. Additional information on roundabout design and marking may be found in the MUTCD. Any new roundabouts or modifications to existing facilities should reference the current editions these two documents.

General roundabout design issues

Since typical on-road bicycle travel speeds are between 10 and 20 mph, roundabouts that are designed to constrain the speeds of motor vehicles to similar values will minimize the relative speeds between bicyclists and motorists, and thereby improve safety and usability for bicyclists. Urban single lane roundabouts should have a maximum design speed of 15 mph or 20 mph (25 km/hr or 30 km/hr), depending on the size of the roundabout. As such, it is critical to ensure that the geometric features of a roundabout (e.g. entry and exit radius, entry and exit width, splitter islands, circulatory roadway width, and inscribed circle diameter) combine to constrain motor vehicle speeds.

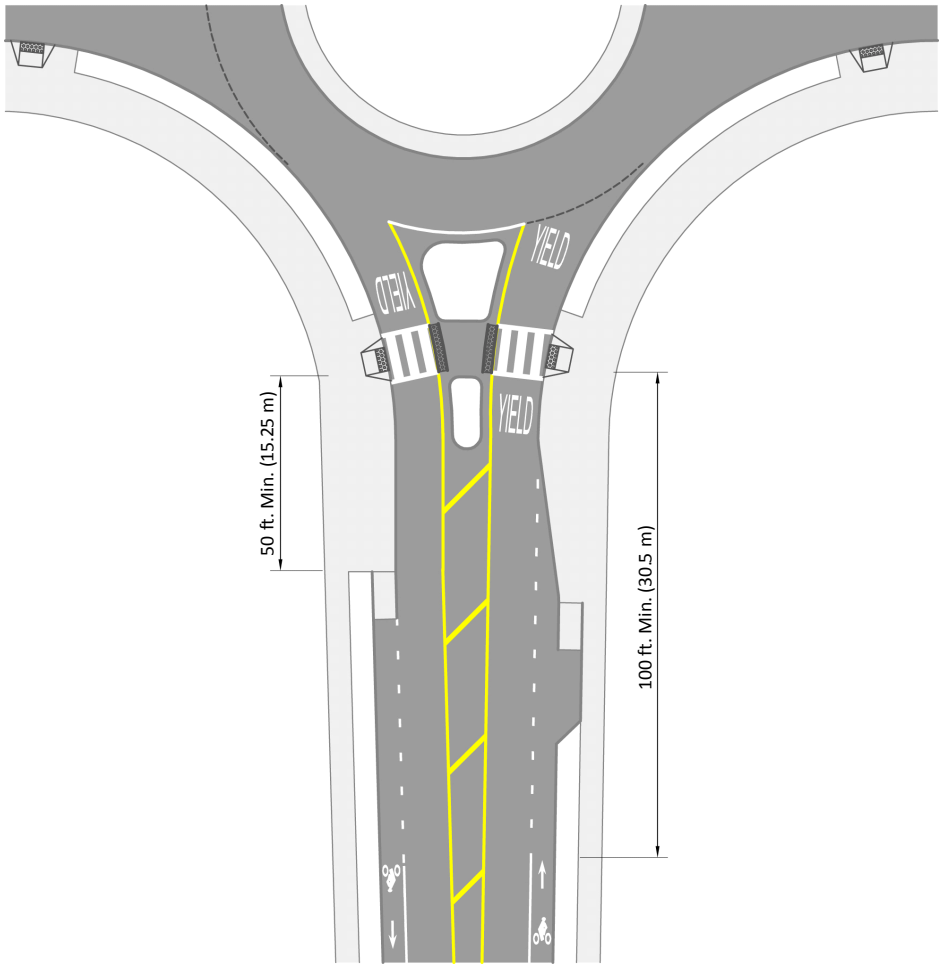
Single-lane roundabouts are much simpler for bicyclists than multi-lane roundabouts since they do not require cyclists to change lanes, and motorists are less likely to cut off cyclists when they exit the roundabout. Therefore, when designing and implementing roundabouts, authorities should avoid implementing multilane roundabouts before their capacity is needed. If “design year” traffic volumes indicate the need for a multi-lane roundabout, but this need isn’t likely for several years, the roundabout can be built as a single lane roundabout, and designed to be easily reconstructed with additional lanes in the future when and if the traffic volumes do increase. In addition, where a roundabout is proposed at an intersection of a major multi-lane street and a minor street, consideration should be given to building a roundabout with two-lane approaches on the major street and one lane approaches on minor streets. When compared to roundabouts with two lanes at all four legs, this design can significantly reduce complexity for all users, including bicyclists.

Designing for bicycle travel within the roundabout

In general, bicyclists who have the skills to ride in urban traffic can manage single-lane roundabouts with little difficulty. Where appropriate design speeds are used—10-15 mph within the roundabout—bicyclists can merge into the lane of traffic with little difficulty. Even at multi-lane roundabouts, many bicyclists will be able to travel through roundabouts in the same manner as other vehicles.

Bicycle lanes should be terminated in advance of roundabouts. The full width bicycle lane should normally end at least 100 feet (30 m) before the edge of the circulatory roadway (see figure below “Typical layout of a roundabout with bike lanes”). Terminating the bicycle lane cues bicyclists to merge into the lane of traffic. An appropriate taper should be provided to narrow the sum of the travel lane

and bike lane widths down to an appropriate entry width for the roundabout. The taper should end prior to the crosswalk at the roundabout, to achieve the shortest feasible pedestrian crossing distance. A taper rate of 7:1 is recommended to accommodate a design speed of 20 mph (25 km/hr). To taper a 5- to 6-foot (1.5 to 1.8 m) wide bicycle lane, a 40-foot (12 m) taper is recommended. The bicycle lane line should be dotted for 50 to 200 feet (15 to 60 m) in advance of the taper. A longer dotted line encourages cyclists to avail themselves of timely gaps to merge into traffic, rather than delay until a point where, if no gap is available at the moment, the only safe alternative is to pause and wait for one. The bike lane line should be terminated at the start of the taper or where normal bicycle lane width is no longer available.



Typical Layout of Roundabout with Bike Lanes[17]

Bicycle lanes should not be located within the circulatory roadway of roundabouts. This design would suggest that bicyclists should ride at the outer edge of the circulatory roadway, which creates turning conflicts at exits and entrances.

[17] Ramps should be shown as diagonal.

At roundabout exits, an appropriate taper should begin after the crosswalk, with a dotted line for the bike lane through the taper. The solid bike lane line should resume as soon as the normal bicycle lane width is available. Currently there are no MUTCD approved signage to alert drivers and other users of merging cyclists. However, some experimental signs have been approve for implementation by the District of Columbia's Department of Transportation (DDOT).

Designing for bicyclists to traverse roundabouts on the sidewalk

At multi-lane roundabouts, some on-road bicyclists may not feel comfortable navigating roundabouts on the roadway. Bicycle ramps can be provided to allow access to the sidewalk or a shared-use path at the roundabout. Bicycle ramps at roundabouts have the potential to be confused as pedestrian ramps, particularly for pedestrians who have visual impairments. Therefore, bicycle ramps should only be used where the roundabout complexity or design speed may result in less comfort for some bicyclists. Ramps should not normally be used at urban single lane roundabouts.

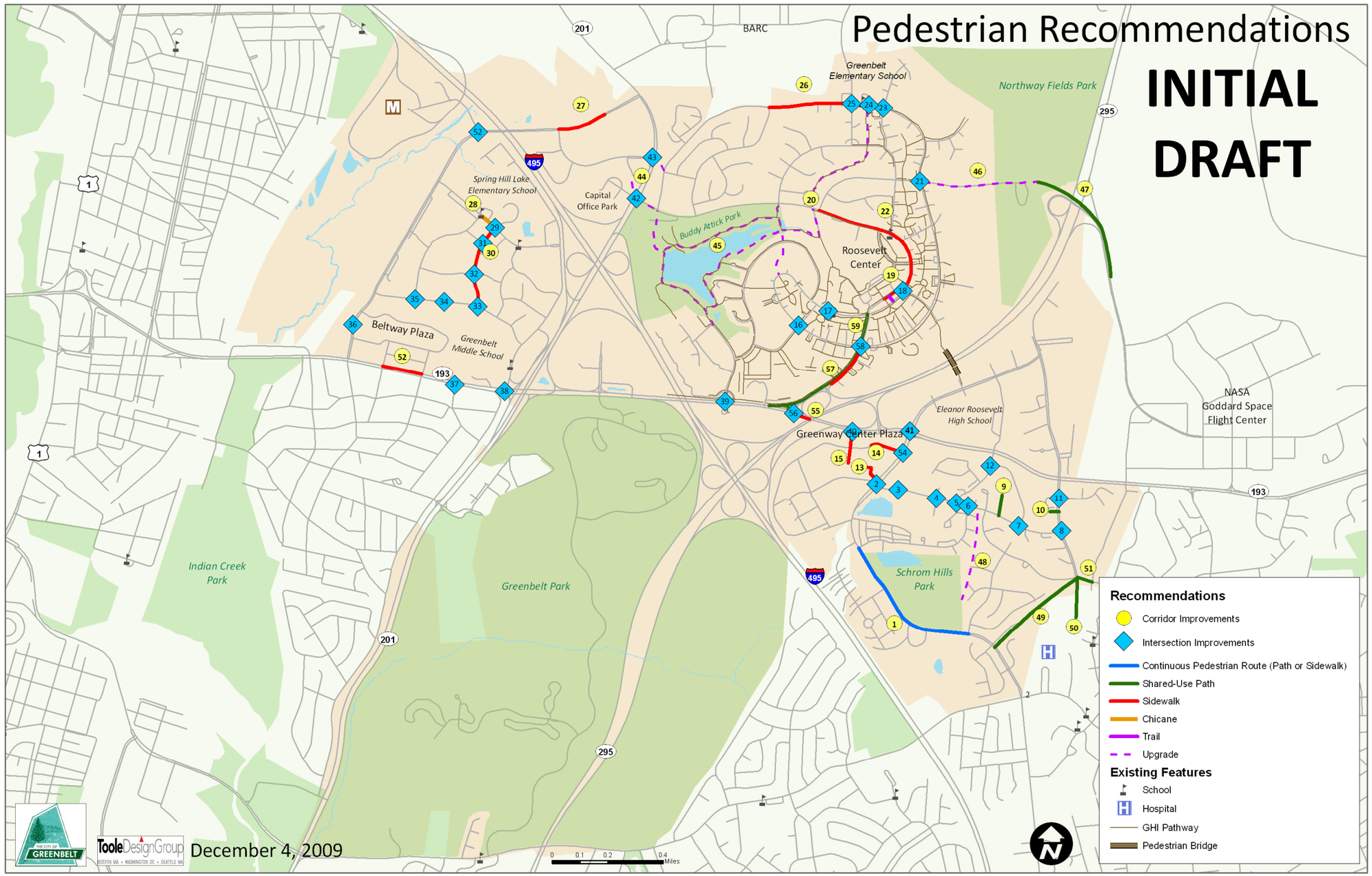
Experimental sign to alert drivers to merging cyclists approved by DDOT

Where bicycle ramps are provided at a roundabout, consideration should be given to providing a widened sidewalk at the roundabout. In areas with relatively low pedestrian usage and where bicycle usage of the sidewalks is expected to be low, the normal sidewalk width may be sufficient. In some jurisdictions, state or local laws may prohibit cyclists from riding on sidewalks. In these areas, bicycle ramps may not be appropriate.

Bicycle ramps should be placed at the end of the full width bicycle lane, just before the beginning of the taper for the bicycle lane. Bicyclists approaching the taper and bike ramp will thus be provided the choice of merging left into the travel lane, or moving to the right onto the sidewalk. Where no bicycle lane is present on the approach to a roundabout, a bicycle ramp, if used, should be placed at least 50 feet (15 m) prior to the crosswalk at the roundabout. Bicycle ramps should be placed at a 35° to 45° angle to the roadway to enable cyclists to use the ramp even if pulling a trailer, but to discourage them from entering the sidewalk at high speed. Ideally, the sidewalk approaching the roundabout is separated from the roadway with a planter strip, allowing the ramp to be placed outside of the normal sidewalk area. In this case, the bike ramp can be fairly steep as it is not intended for pedestrian use (up to 20% slope). If placed within the sidewalk area itself, the ramp slope must be built in a manner so that it is not a tripping hazard. A bicycle ramp should not be placed directly in line with the bicycle lane or otherwise placed in a manner that appears to encourage or require their use.

Since bike ramps can be confusing for pedestrians with visual impairments, detectable warnings should be included on the ramp. Where the ramp is placed in a planter strip, the detectable warnings should be placed at the top of the ramp, as the ramp itself is part of the hazardous vehicular area. If the ramp is in the sidewalk itself, the detectable warning should be placed at the bottom of the ramp. Other aspects of the bike ramp design and placement can help keep pedestrians from misconstruing the bike ramp as a pedestrian crossing location. These aspects include the angle of the ramp, the possible steeper slope of the ramp, and location of the ramp relatively far from the roundabout and marked crosswalk location.

Bicycle ramps at roundabout exits should be built with similar geometry and placement as the ramps at roundabout entries. Bike ramps should be placed at least 50 feet (15 m) beyond the crosswalk at the roundabout exit.



Map: Pedestrian Recommendations—Initial Draft

Table: Location-Specific Pedestrian Recommendations—Initial Draft—Toole Design Group via National Capital Region Transportation Planning Board's TLC Program

(Note: The following recommendations are for planning purposes only. Further engineering analysis will be required to develop cost estimates and ensure project feasibility.)

Map Key	Location	Recommendation	Stakeholder priority	Web Comments	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PG, SHA)	Neighborhood	Comments
1	Hanover Parkway from Megan Lane to Greenbrook Drive	• Ensure that continuous side-walk/path connection is provided on both sides of the street. • Repave existing path segments and fix existing sidewalk segments to ensure compliance with ADA Accessibility Guidelines (ADAAG). • Ensure accessible connection from to Metrobus stops from sidewalk/path.		1		Greenway Center, Schrom Hills Park		Transit stops on Hanover Parkway	GB	GBE	
2	Intersection of Hanover Parkway and Ora Glen Drive	• Install pushbutton-integrated accessible pedestrian signal for north crossing on the north side of Hanover Parkway.		3		Greenway Center, Post Office			GB	GBE	
3	Intersection of Ora Glen Drive and Post Office/ Lockheed Martin access drives	• Assess intersection for improvements to facilitate pedestrian crossing of Ora Glen Drive, including marked crosswalks, pedestrian refuge islands, and appropriate signage.		1		Post Office			GB	GBE	
4	Intersection of Ora Glen Drive and Ora Glen Court	• Install crosswalk striping on all legs (high-visibility for Ora Glen Drive crossings). • Install ADA-compliant curb ramps for Ora Glen Drive crossings.		1		Post Office			GB	GBE	Recommendation of the Windsor Green Home Owner's Association (HOA).
5	Intersection of Ora Glen Drive and Greenbrook Drive	• Install crosswalk striping on all legs (high-visibility for Ora Glen Drive crossings).							GB	GBE	
6	Intersection of Ora Glen Drive and Mathew Street	• Install crosswalk striping on all legs (high-visibility for Ora Glen Drive crossings).							GB	GBE	

Table: Location-Specific Pedestrian Recommendations—Initial Draft—Toole Design Group via National Capital Region Transportation Planning Board's TLC Program

Map Key	Location	Recommendation	Stakeholder priority	Web Comments	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PG, SHA)	Neighborhood	Comments
7	Intersection of Ora Glen Drive and Morrison Drive	• Install crosswalk striping on all legs (high-visibility for Ora Glen Drive crossings). • Install ADA compliant curb ramps for east crossing (pedestrian refuge island and south side of Ora Glen Drive).		1					GB	GBE	Recommendation of the Windsor Green HOA.
8	Intersection of Ora Glen Drive and Mandan Road	• Install crosswalk striping on west and south legs (high-visibility for both).		1	Crosswalk Study—Greenbelt East (2004)				GB	GBE	Recommendation of the Windsor Green HOA. Crosswalk study recommends crosswalks on north and west sides of intersection. Crosswalk on north side has already been installed.
9	Sidewalk in field between Frankfort Drive and Morrison Drive	• Extend to Ora Glen Drive.		1					Windsor Green HOA	GBE	
10	Mandan Road between Ora Glen Drive and Canning Terrace	• Install pedestrian trail between sidewalk on west side of Mandan Road and Windsor Green playground.		2					GB	GBE	Recommendation of the Windsor Green HOA.
11	Intersection of Mandan Road and Canning Terrace	• Install crosswalk striping on east and south legs (high-visibility for Mandan Road Crossing). • Install ADA-compliant curb ramp on west side of Mandan Road for south crossing.		1	Crosswalk Study—Greenbelt East (2004)				GB	GBE	Recommendation of the Windsor Green HOA. Crosswalk study recommends on north side of intersection (already installed).

Table: Location-Specific Pedestrian Recommendations—Initial Draft—Toole Design Group via National Capital Region Transportation Planning Board's TLC Program

Map Key	Location	Recommendation	Stakeholder priority	Web Comments	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PG, SHA)	Neighborhood	Comments
12	Intersection of Frankfort Road and Morrison Drive	• Install crosswalk striping on all legs. • Install ADA-compliant curb ramps on west side of Frankfort Road for north and south crossings.		1					GB	GBE	Recommendation of the Windsor Green HOA.
13	Intersection of Hanover Parkway and Ora Glen Drive to north side of Greenway Center	• Define convenient and accessible pedestrian pathway, possibly by establishing a cut-through near the Dollar Tree. • Create a plaza between the intersection and building pass-through to make pedestrian access more visible.				Greenway Center			Greenway Plaza LLC	GBE	Greenbelt East Ring and Spine Plan recommends a new pedestrian crossing through building at southeast corner of Greenway Center to access plaza near corner of Hanover Parkway and Ora Glen Drive.
14	Intersection of Hanover Parkway and Greenbelt Road to Safeway and other stores in Greenway Center	• Define convenient and accessible pedestrian pathway.	7	1		Greenway Center			Greenway Plaza LLC	HGB	Stakeholder votes were for generally improving the connection between Historic Greenbelt and Greenway Center.
15	Access drive from Greenbelt Road to Greenway Center (across parking lot)	• Define accessible pedestrian pathway parallel to Greenway Center access drive.	7	1		Greenway Center			Greenway Plaza LLC	HGB	Stakeholder votes were for generally improving the connection between Historic Greenbelt and Greenway Center.
16	Intersection of Westway and Ridge Road	• Assess intersection of the possibility of installing a neighborhood roundabout to mitigate reported issues of cars disregarding existing stop signs.		1		Roosevelt Center			GB	HGB	
17	Crescent Road at Greenbelt Public Library	• Install high-visibility crosswalk at parking lot exit. Reposition stop bar so exiting vehicles are prompted to stop in advance of crosswalk.		1		Roosevelt Center			GB	HGB	
18	Intersection of Crescent Road and Gardenway/ Centerway	• Install ADA-compliant curb ramps and high-visibility crosswalks for pedestrians crossing to/from Roosevelt Center on the north and west sides of this intersection.		4	APB Bike/Ped Trouble Spots; Greenbelt Visioning Sessions (2008)	Roosevelt Center			GB	HGB	APB Bike/Ped Trouble Spots document identifies approach to Roosevelt Center, Domino's parking lot, and dumpsters as problems. Visioning session notes suggest crosswalk on Gardenway.

Table: Location-Specific Pedestrian Recommendations—Initial Draft—Toole Design Group via National Capital Region Transportation Planning Board's TLC Program

Map Key	Location	Recommendation	Stakeholder priority	Web Comments	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PG, SHA)	Neighborhood	Comments
19	Centerway between intersection of Crescent Road and Gardenway/ Centerway and pedestrian underpass entrance	• Install sidewalk from southwest corner of Crescent road/Gardenway/Centerway intersection to exit of pedestrian underpass. Install pervious surface path from new sidewalk to bus stop on Crescent to facilitate transit access. • Work with Domino's owners and law enforcement to ensure that the sidewalk in front of Domino's is not blocked by vehicles. • Work with Domino's and waste management service to relocate dumpster to back side of building.		2	APB Bike/Ped Trouble Spots	Roosevelt Center			GB	HGB	APB Bike/Ped Trouble Spots document identifies approach to Roosevelt Center, Domino's parking lot, and dumpsters as problems.
20	Intersection of path and Crescent Road west of Crescent Road/Northway intersection (i.e. the St. Hugh's crossing)	• Install rapid flashing beacons on both approaches. • Consider installing raised crosswalk to address concerns about excessive vehicle speed.	10	2	St. Hugh's Crosswalk memorandum	Roosevelt Center	Greenbelt Elementary School		GB	HGB	
21	Intersection of Northway and Ridge Road	• Install crosswalk striping on north and east crossings (high-visibility for Ridge Road crossing).		1			Greenbelt Elementary School		GB	HGB	
22	Crescent Road from Northway to Gardenway.	• Install sidewalk on north side of street.	0				Greenbelt Elementary School		GB	HGB	Stakeholder votes for missing sidewalks on Crescent Road generally.
23	Intersection of Ridge Road and Laurel Hill Road	• Construct curb extensions with ADA-compliant curb ramps into Ridge Road from all northwest and southwest corners.	14	1	Greenbelt Visioning Session (2008); Comprehensive Traffic Calming Study (1998); Traffic Calming Study Reassessment (2003)		Greenbelt Elementary School		GB	HGB	Stakeholder votes for speeding problems on Ridge Road and lack of sidewalks (Laurel Hill Road to Lastner Lane). Web comment cites bad traffic during drop-off/pick-up. Greenbelt Visioning Sessions identified speeding on Ridge Road as a problem. Comprehensive traffic calming study identified Ridge Road as meeting criteria for active traffic calming measures. 2003 traffic calming reassessment found that the street still met criteria for active traffic calming.

Table: Location-Specific Pedestrian Recommendations—Initial Draft—Toole Design Group via National Capital Region Transportation Planning Board's TLC Program

Map Key	Location	Recommendation	Stakeholder priority	Web Comments	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PG, SHA)	Neighborhood	Comments
24	Crosswalk on Ridge Road at school access path between Research Road and Laurel Hill Road	• Construct raised crosswalk with high-visibility striping, speed hump markings, and school crossing signs with raised-crosswalk subplate. • Work with school to improve student drop-off/pick-up process.	14	1	Greenbelt Visioning Sessions (2008); Comprehensive Traffic Calming Study (1998); Traffic Calming Study Reassessment (2003)				GB	HGB	Stakeholder votes for speeding problems on Ridge Road and lack of sidewalks (Laurel Hill Road to Lastner Lane). Web comment cites bad traffic during drop-off/pick-up. Greenbelt Visioning Sessions identified speeding on Ridge Road as a problem. Consideration of speed humps suggested. Comprehensive traffic calming study identified Ridge Road as meeting criteria for active traffic calming measures. 2003 traffic calming reassessment found that the street still met criteria for active traffic calming.
25	Intersection of Ridge Road and Research Road	• Construct curb extensions with ADA-compliant curb ramps into Ridge Road from all four corners. • Install high-visibility crosswalk striping on south, east, and west crossings.	14	1	Greenbelt Visioning Session (2008); Comprehensive Traffic Calming Study (1998); Traffic Calming Study Reassessment (2003)				GB	HGB	Stakeholder votes for speeding problems on Ridge Road and lack of sidewalks (Laurel Hill Road to Lastner Lane). Web comment cites bad traffic during drop-off/pick-up. Comprehensive traffic calming study identified Ridge Road as meeting criteria for active traffic calming measures. 2003 traffic calming reassessment found that the street still met criteria for active traffic calming. Greenbelt Visioning Sessions identified speeding on Ridge as a problem.
26	Ridge Road between Research Road and Lastner Lane	• Ensure that continuous sidewalk/path connection is provided on both sides of the street. • Repave existing path segments and fix existing sidewalk segments to ensure compliance with ADAAG.	0	1					GB	HGB	
27	Cherrywood Lane from Ivy Lane to US Bankruptcy Court entrance	• Ensure continuous sidewalk connection is provided on the north side of Cherrywood Lane.		1					GB	GBW	Web comment cites bad traffic during drop-off/pick-up.

Table: Location-Specific Pedestrian Recommendations—Initial Draft—Toole Design Group via National Capital Region Transportation Planning Board's TLC Program

Map Key	Location	Recommendation	Stakeholder priority	Web Comments	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PG, SHA)	Neighborhood	Comments
28	Springhill Drive between Cherrywood Terrace and Springhill Lane	• Construct chicane with pedestrian refuge islands, raised crosswalks, and coordinated signage as indicated in comment field at right.		1	Comprehensive Traffic Calming Study (1998)		Springhill Lake Elementary School		GB	GBW	
29	Intersection of Springhill Drive and Springhill Lane	• Install high-visibility crosswalk and ADA-compliant curb ramps for west side crossing.		1	Comprehensive Traffic Calming Study (1998)		Springhill Lake Elementary School, Greenbelt Middle School		GB	GBW	Traffic calming study recommends traffic circles at major intersections, narrowed travel lanes, and chokers on Breezewood Drive, Edmonston Road, and Springhill Drive.
30	Springhill Lane from Springhill Drive to Breezewood Drive	• Install sidewalk on west side. • Consider installing traffic calming measures including chicanes (combined with removing select on-street parking), curb extensions at intersections, or roundabouts at intersections.				Beltway Plaza	Springhill Lake Elementary School, Greenbelt Middle School		GB	GBW	
31	Intersection of Springhill Lane and Market Lane	• Install crosswalk striping on west crossing and south crossing (high-visibility for south crossing). • Install crosswalk striping on south side of parallel driveway access road.					Springhill Lake Elementary School, Greenbelt Middle School		GB	GBW	
32	Intersection of Springhill Lane and Breezewood Court	• Install crosswalk striping on all legs (high-visibility for Springhill Lane crossings). • Install curb extensions into parking lanes on Springhill Lane (all four corners) to shorten crossing distance and calm traffic. • Install ADA-compliant curb ramps for west crossing.					Springhill Lake Elementary School, Greenbelt Middle School		GB	GBW	

Table: Location-Specific Pedestrian Recommendations—Initial Draft—Toole Design Group via National Capital Region Transportation Planning Board's TLC Program

Map Key	Location	Recommendation	Stakeholder priority	Web Comments	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PG, SHA)	Neighborhood	Comments
33	Intersection of Springhill Lane and Breezewood Drive	• Install high-visibility crosswalk on north side.			Comprehensive Traffic Calming Study (1998)	Beltway Plaza	Greenbelt Middle School		GB	GBW	Traffic calming study recommends traffic circles at major intersections, narrowed travel lanes, and chokers on Breezewood Drive, Edmonston Road, and Springhill Drive.
34	Intersection of apartment complex parking lot driveway and Breezewood Drive (approximately 300 feet east of intersection of Breezewood Drive and Cherrywood Terrace)	• Stripe high-visibility crosswalk across Breezewood Drive connecting existing curb ramps.		1		Beltway Plaza			GB	GBW	
35	Intersection of Breezewood Drive and Cherrywood Terrace	• Define accessible pathway from marked crosswalk to parking lot on north side of Breezewood Drive. The existing pathway includes stairs.				Beltway Plaza			GB	GBW	
36	Intersection of Cherrywood Lane and Giant parking lot	• Options for reconfiguring this intersection are presented in **Fig. 3** and **Fig. 4** in **Location-Specific Concepts**.	5	2		Beltway Plaza		Bus stop on Cherrywood lane near parking lot exit	GB	GBW	
37	Intersection of 63rd Avenue and Greenbelt Road	• Conduct targeted assessment of intersection to identify improvements to pedestrian safety.	7	1		Beltway Plaza	Greenbelt Middle School		SHA		
38	Intersection of Edmonston Road and Greenbelt Road	• Construct grade-separated crossing.			GGI Connectivity Workshop		Greenbelt Middle School		SHA		Summary of ideas from GGI Connectivity workshop includes "put pedestrian bridge over Greenbelt Road." A precise location is not specified.
39	Intersection of Lakecrest Drive and Greenbelt Road	• Reconfigure intersection as indicated in comment field at right.		2		Greenway Center			SHA		

Table: Location-Specific Pedestrian Recommendations—Initial Draft—Toole Design Group via National Capital Region Transportation Planning Board's TLC Program

Map Key	Location	Recommendation	Stakeholder priority	Web Comments	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PG, SHA)	Neighborhood	Comments
40	Intersection of Greenway Center access drive and Greenbelt Road	• Stripe high-visibility crosswalks across access road and access road ramps at intersection with Greenbelt Road. • Define accessible pedestrian pathway parallel to access drive Greenway Center.		1		Greenway Center			SHA		
41	Intersection of Hanover Parkway and Greenbelt Road	• Narrow turn lanes and/or narrow slip lane pork chop to provide space for bicycle storage on south side of intersection. • Install crosswalk on east side of intersection. • Reconfigure or remove slip lane on southwest corner of intersection to slow turning traffic. If slip lane is retained, consider pedestrian actuated signal.	0			Greenway Center	Eleanor Roosevelt High School		SHA		Segment identified as bikeway in Greenbelt East Ring and Spine Plan.
42	Intersection of Crescent Road and Kenilworth Avenue	• Provide leading pedestrian interval (LPI) for east-west crossing. • Add "No Right Turn on Red" signage for westbound traffic. • Move stop bar on east side of intersection westward, closer to the intersection. • Repair pavement on westbound approach to intersection (bicyclists report deep ruts in the roadway).		4		Capital Office Park		Greenbelt Metro station	SHA		

Table: Location-Specific Pedestrian Recommendations—Initial Draft—Toole Design Group via National Capital Region Transportation Planning Board's TLC Program

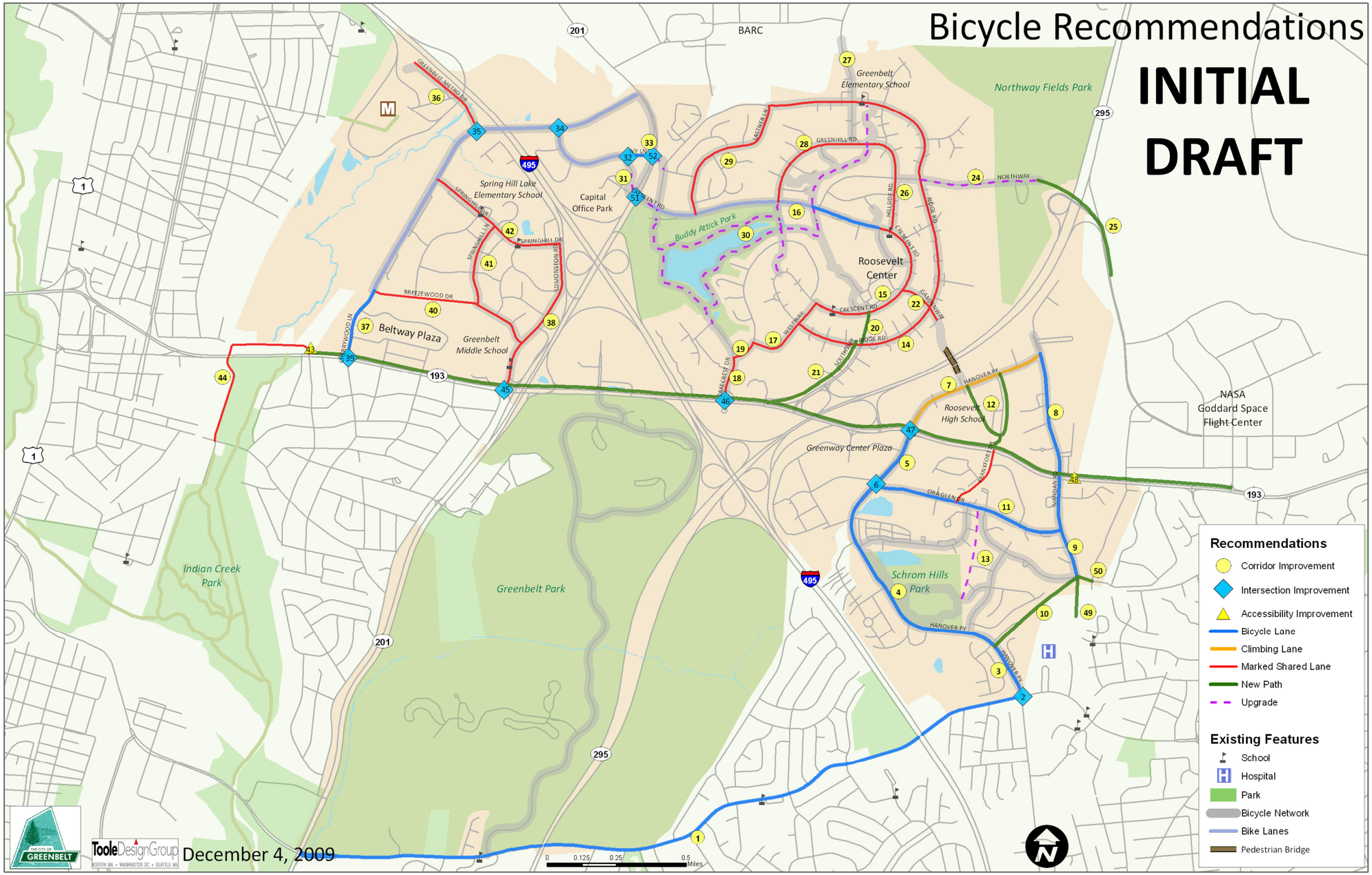
Map Key	Location	Recommendation	Stakeholder priority	Web Comments	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PG, SHA)	Neighborhood	Comments
43	Intersection of Ivy Lane and Kenilworth Avenue	• Install crosswalk and curb ramps on 'pork chop' island to facilitate crossing Kenilworth Avenue on south side of intersection. • Install pushbutton activated pedestrian signals. • Install marked crosswalk and appropriate pedestrian signage on slip lane carrying eastbound Ivy Lane traffic onto southbound Kenilworth Avenue.		1	Bicycle Task Force Recommendations (1995)	Capital Office Park		Greenbelt Metro station	SHA		Bicycle Task Force Recommendations recommend that the city should take steps to ensure intersection is safe for pedestrians and bicyclists if traffic light installed (traffic light has been installed).
44	Path between Crescent Road (near SHA gate) and Turner Place access to Ivy Lane	• Widen and repave.				Capital Office Park		Greenbelt Metro station	SHA		
45	Historic Greenbelt pathway system	• Widen and repave paths designated for shared-use on the Greenbelt Trails Map. See Draft Bicycle Recommendations map for detail.				Roosevelt Center	Greenbelt Elementary School	Greenbelt Metro station	GB	HGB	
46	Northway Road from Ridge Road to eastern terminus	• Improve surface quality				NASA			GB	HGB	
47	Eastern terminus of Northway to Explorer Road (NASA)	• Provide bicycle and pedestrian accommodation across the Baltimore-Washington Parkway.	24			NASA			NASA, SHA	HGB	
48	Path between Winterwood Place and Schrom Hills Park	• Widen and repave. • Widen and pave connection to Chartwell Place. • Widen and repave connection to Kara Court.				Schrom Hills Park			Greenbrook Estates HOA	GBE	
49	Intersection of Mandan Road and Mathew Street to Hanover Parkway and Spring Manor Drive	• Install shared-use path.			Greenbelt East Ring and Spine Plan	NASA	Magnolia Elementary School		Pepco	GBE	Segment identified as bikeway in Greenbelt East Ring and Spine Plan.
50	Intersection of Mandan Road and Mathew Street to Magnolia Elementary School	• Install shared-use path		1			Magnolia Elementary School		Pepco, Prince George's County Board of Education	GBE	

Table: Location-Specific Pedestrian Recommendations—Initial Draft—Toole Design Group via National Capital Region Transportation Planning Board's TLC Program

Map Key	Location	Recommendation	Stakeholder priority	Web Comments	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PG, SHA)	Neighborhood	Comments
51	From Brae Brooke Drive to intersection of Mandan Road and Mathew Street	• Install shared-use path		1			Magnolia Elementary School		PG County	GBE	
52	Greenbelt Road between Cunningham Drive and 62nd Avenue	• Construct sidewalk on the north side of Greenbelt Road between Cunningham Drive and 62nd Avenue.				Beltway Plaza			SHA	GBE	
53	Intersection of Greenbelt Metro Drive and Cherrywood Lane	• Construct traffic circle. Special care should be given to enhancing pedestrian visibility, particularly for southbound, right-turning vehicles. Guidelines for maintaining bicycle accessibility in roundabouts are provided in **Appendix A.**	9		Comprehensive Traffic Calming Study (1998)			Greenbelt Metro station	GB, WMATA	GBW	Comprehensive Traffic Calming Study (1998) recommends a traffic circle at this location.
54	Intersection of Hanover Parkway and Greenway Center access drive	• Assess potential for mid-block crossing. • See **Fig. 1** in **Location-Specific Concepts** for additional detail.				Greenway Center			GB	GBE	
55	Greenbelt Road from Southway to bridge over Baltimore-Washington Parkway	• Assess potential for installing sidewalk. • See **Fig. 2** in **Location-Specific Concepts** for additional detail.				Greenway Center, Roosevelt Center			SHA	HGB	
56	Intersection of Greenbelt Road and Southway	• Assess potential for installing crosswalks across Greenbelt Road on both sides of intersection. • See **Fig. 2** in **Location-Specific Concepts** for additional detail.				Greenway Center, Roosevelt Center			SHA	HGB	
57	Southway between Greenbelt Road and Ridge Road	• Assess potential for sidepath on the west side of Southway. • Assess potential for installing sidewalk on the east side of Southway between the Baltimore-Washington Parkway off ramp and Ridge Road. • See **Fig. 2** in **Location-Specific Concepts** for additional detail.				Greenway Center, Roosevelt Center			GB	HGB	

Table: Location-Specific Pedestrian Recommendations—Initial Draft—Toole Design Group via National Capital Region Transportation Planning Board's TLC Program

Map Key	Location	Recommendation	Stakeholder priority	Web Comments	Identified by Previous Study	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PG, SHA)	Neighborhood	Comments
58	Intersection of Southway and Ridge Road	• Consider installing curb extensions • See **Fig. 2** in **Location-Specific Concepts** for additional detail.				Greenway Center, Roosevelt Center			GB	HGB	
59	Southway between Ridge Road and Crescent Road	• Assess potential for sidepath on the west side of Southway. • See **Fig. 2** in **Location-Specific Concepts** for additional detail.				Greenway Center, Roosevelt Center			GB	HGB	



Map: Bicycling Recommendations—Initial Draft

Table: Location-Specific Bicycling Recommendations—Initial Draft—Toole Design Group via National Capital Region Transportation Planning Board's TLC Program

(Note: The following recommendations are for planning purposes only. Further engineering analysis will be required to develop cost estimates and ensure project feasibility.)

Map Key	Location	Recommendation	Stakeholder priority	Web Comments	Identified in Previous Planning Process	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PG, SHA)	Neighborhood	Comments
1	Good Luck Road from Paint Branch Parkway/ Kenilworth Avenue to Hanover Parkway	• Install bicycle lanes where space allows. Otherwise, provide striped shoulder.				Greenbelt Park, University of Maryland			SHA, DPW&T	NIGB	
2	Intersection of Good Luck Road and Hanover Parkway	• Install bike box (or move stop bars back from crosswalk) to create space for left turns from Good Luck Road onto Hanover Parkway.		1		Greenway Center			DPW&T, GB	NIGB	
3	Hanover Parkway between Good Luck Road and Megan Lane	• Conduct traffic analysis and geometric study to determine whether vehicle lanes can be narrowed and/or removed to allow installation of bicycle lanes.				Greenway Center			GB	GBE	
4	Hanover Parkway between Megan Lane and Greenbrook Drive	• Convert striped shoulders to bicycle lanes. • Use dashing and signage to warn bicyclists that bicycle lanes end at roundabouts. • Install share the road signage on approaches to roundabouts to alert drivers that they must share the road with cyclists. • Consider providing ramps and wide sidewalks at roundabouts to enable inexperienced cyclists to navigate the intersection. • Guidelines for accommodating bicycles in single-lane roundabouts are provided in **Appendix A**.		1	Comprehensive Traffic Calming Study (1998)	Greenway Center			GB	GBE	Web comments addressed roundabouts. Traffic calming study recommends narrowing travel lanes on Hanover Parkway south of Greenbelt Road to 11 feet.
5	Hanover Parkway from Greenbrook Drive to Greenbelt Road	• Conduct traffic analysis and geometric study to determine whether vehicle lanes can be narrowed and/or removed to allow installation of bicycle lanes.			Greenbelt East Ring and Spine Plan; Comprehensive Traffic Calming Study (1998)	Greenway Center			GB	GBE	Segment identified as bikeway in Greenbelt East Ring and Spine Plan. Traffic calming study recommends narrowing travel lanes on Hanover Parkway south of Greenbelt Road to 11 feet.

Table: Location-Specific Bicycling Recommendations—Initial Draft—Toole Design Group via National Capital Region Transportation Planning Board's TLC Program

Map Key	Location	Recommendation	Stakeholder priority	Web Comments	Identified in Previous Planning Process	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PG, SHA)	Neighborhood	Comments
6	Intersection of Hanover Parkway and Ora Glen Drive	• Provide left-turn bicycle lane to facilitate bicycle access to Greenway Center from northbound Hanover Parkway.				Greenway Center			GB	GBE	See Hanover Parkway design concept.
7	Hanover Parkway between Greenbelt Road and Mandan Road	• Install bicycle lanes on uphill sections and shared-lane markings (sharrows) on downhill sections.			Y	Greenway Center	Eleanor Roosevelt High School		GB	GBE	Segment identified as bikeway in Greenbelt East Ring and Spine Plan.
8	Mandan Road from Hanover Parkway to Greenbelt Road	• Install bicycle lanes.			Greenbelt East Ring and Spine Plan; Comprehensive Traffic Calming Study (1998)	NASA	Eleanor Roosevelt High School		GB	GBE	Segment identified as bikeway in Greenbelt East Ring and Spine Plan. Traffic calming study recommends narrowing lanes to slow speeds.
9	Mandan Road from Greenbelt Road to Mathew Street	• Install bicycle lanes.			Greenbelt East Ring and Spine Plan	NASA			GB	GBE	Segment identified as bikeway in Greenbelt East Ring and Spine Plan.
10	Intersection of Mandan Road and Mathew Street to Hanover Parkway and Spring Manor Drive	• Install shared-use path.				NASA			GB, Pepco	GBE	Segment identified as bikeway in Greenbelt East Ring and Spine Plan.
11	Ora Glen Drive between Mandan Road and Hanover Parkway	• Install bicycle lanes.			Greenbelt East Ring and Spine Plan; Comprehensive Traffic Calming Study (1998)	Greenway Center			GB	GBE	Segment identified as bikeway in Greenbelt East Ring and Spine Plan. Comprehensive Traffic Calming Study suggests narrowing lanes to reduce speeds on this road.
12	Hanover Parkway to Greenbelt Road	• Provide connection from Baltimore-Washington Parkway overpass trailhead on Hanover Parkway through Eleanor Roosevelt High School property to intersection of Frankfort Drive and Greenbelt Road. Potential routes indicated on draft map.					Eleanor Roosevelt High School		Prince George's County Board of Education	GBE	
13	Path between Winterwood Place and Schrom Hills Park	• Widen and repave. • Widen and pave connection to Chartwell Place. • Widen and repave connection to Kara Court.				Schrom Hills Park	Eleanor Roosevelt High School		Greenbrook Estates HOA	GBE	

Table: Location-Specific Bicycling Recommendations—Initial Draft—Toole Design Group via National Capital Region Transportation Planning Board's TLC Program

Map Key	Location	Recommendation	Stakeholder priority	Web Comments	Identified in Previous Planning Process	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PG, SHA)	Neighborhood	Comments
14	Ridge Road from Westway to Lastner Lane	• Install shared-lane markings (sharrows).				Roosevelt Center	Greenbelt Elementary School		GB	HGB	
15	Crescent Road from Westway to Parkway	• Install shared-lane markings (sharrows).				Roosevelt Center		Greenbelt Metro station	GB	HGB	
16	Crescent Road from Parkway to Northway	• Install bicycle lanes. Also consider installing shared-lane markings (sharrows) on Parkway. (This stretch currently has a striped shoulder on the north side of the street that is sometimes used for parking.)				Roosevelt Center		Greenbelt Metro station	GB	HGB	1998 Traffic Calming study recommends narrowing travel lanes and installing painted median. Lanes are currently 12 feet.
17	Westway from Lakeside Drive to Crescent Road	• Install shared-lane markings (sharrows).				Roosevelt Center			GB	HGB	
18	Lakecrest Drive from Greenbelt Road to Lakeside Drive	• Install shared-lane markings (sharrows).				Roosevelt Center			GB	HGB	
19	Lakeside Drive from Lakecrest Drive to Westway	• Install shared-lane markings (sharrows).				Roosevelt Center			GB	HGB	
20	Southway from Crescent Road to Ridge Road	• Install shared-lane markings (sharrows).				Roosevelt Center, Greenway Center			GB	HGB	
21	Southway from Ridge Road to Greenbelt Road	• Install multi-use path on west side.				Roosevelt Center, Greenway Center			GB	HGB	
22	Gardenway from Crescent to eastern terminus	• Install shared-lane markings (sharrows).				Roosevelt Center		Greenbelt Metro station	GB	HGB	

Table: Location-Specific Bicycling Recommendations—Initial Draft—Toole Design Group via National Capital Region Transportation Planning Board's TLC Program

Map Key	Location	Recommendation	Stakeholder priority	Web Comments	Identified in Previous Planning Process	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PG, SHA)	Neighborhood	Comments
23	Northway from Hillside Road to Ridge Road	• Install shared-lane markings Install shared-lane markings (sharrows) or possibly "Share the Road with Bicycles" signage.				NASA			GB	HGB	
24	Northway from Ridge Road to eastern terminus	• Improve surface quality to facilitate connection to Northway Fields and ultimately to a proposed bicycle pedestrian bridge across the Baltimore-Washington Parkway to NASA.			GGI Connectivity Workshop (2009); Greenbelt Visioning (2008)	NASA			GB	HGB	Idea proposed at GGI Workshop was to "create a safe pathway to Northway Fields. Narrow the road, if necessary." Note from Greenbelt Visioning Session: "Don't pave Northway; no lights on Northway."
25	Eastern terminus of Northway Road to Explorer Road (NASA)	• Provide bicycle and pedestrian accommodation across the Baltimore-Washington Parkway.	24			NASA			USA	HGB	
26	Hillside Road from Crescent Road to Northway	• Install shared-lane markings sharrows.				Roosevelt Center			GB	HGB	
27	Research Road at BARC gate/fence	• Formalize opening in fence to allow bikes with panniers to pass through. • Pave path through gap to facilitate access.					BARC		USA		Would definitely require coordination/permission from BARC. May or may not be feasible.
28	Greenhill Road from Crescent Road to Hillside Road	• Install shared-lane markings (sharrows).				BARC	Greenbelt Elementary School		GB		
29	Lastner Lane from Ridge Road to Crescent Road	• Install shared-lane markings (sharrows).				Roosevelt Center			GB	HGB	
30	Historic Greenbelt pathway system	• Widen and resurface paths designated for shared-use on the Greenbelt Trails Map. See Draft Bicycle Recommendations map for detail.				Roosevelt Center	Greenbelt Elementary School	Greenbelt Metro station	GB	HGB	Maintaining the natural appearance of the interior pathway system, especially in the immediate vicinity of Greenbelt Lake, was identified as a priority during the public input process. All-weather surfaces that might accomplish this goal include decomposed granite, tinted concrete, and ResinPave.

Table: Location-Specific Bicycling Recommendations—Initial Draft—Toole Design Group via National Capital Region Transportation Planning Board's TLC Program

Map Key	Location	Recommendation	Stakeholder priority	Web Comments	Identified in Previous Planning Process	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PG, SHA)	Neighborhood	Comments
31	Path between Crescent Road (near SHA gate) and Turner Place access to Ivy Lane	• Widen and repave.			APB Ped/Bike Trouble Spots			Greenbelt Metro station	GB	HGB	Identified as problem in APB Bike/Ped Trouble Spots document.
32	Intersection of Ivy Lane and Turner Place	• Install signage indicating direction to Metro.						Greenbelt Metro station	GB	GBW	
33	Ivy Lane from Kenilworth Avenue to Turner Place (entrance to Old Line Bank)	• Stripe bicycle lanes. • Add Bike Lane Ahead signage near Kenilworth Avenue intersection. • To provide sufficient width for bicycle lane on south side of Ivy Lane, move westbound right turns one lane north, reallocate space presently occupied by dedicated westbound turn lane. Consider landscaped median connecting to pork chop island at Kenilworth.						Greenbelt Metro station	GB	GBW	
34	Intersection of Ivy Lane and Cherrywood Lane	• Restripe Ivy Lane approach to Cherrywood Lane to allow space for bicyclists to move into left turn bicycle lane.						Greenbelt Metro station	GB	GBW	
35	Intersection of Greenbelt Metro Drive and Cherrywood Lane	• Explore feasibility of constructing traffic circle to slow motor vehicles in the vicinity of the Metro entrance.	9		Comprehensive Traffic Calming Study (1998); Maximizing Transit Opportunities (2008)			Greenbelt Metro station	GB	GBW	Comprehensive Traffic Calming Study (1998) recommends a traffic circle at this location. Maximizing Transit Opportunities (2008) suggests that improved crossing facilities at this intersection would make it safer for residents of Franklin Park to access the Greenbelt Metro station on foot.
36	Greenbelt Metro Drive from Greenbelt Metro station to Cherrywood Lane	• Install shared-lane markings (sharrows).	0					Greenbelt Metro station	GB	GBW	
37	Cherrywood Lane from Breezewood Drive to Greenbelt Road	• Install bicycle lane when area is redeveloped.				Beltway Plaza		Greenbelt Metro station	GB	GBW	

Table: Location-Specific Bicycling Recommendations—Initial Draft—Toole Design Group via National Capital Region Transportation Planning Board's TLC Program

Map Key	Location	Recommendation	Stakeholder priority	Web Comments	Identified in Previous Planning Process	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PG, SHA)	Neighborhood	Comments
38	Edmonston Road from Greenbelt Road to Springhill Drive	• Install shared-lane markings Install shared-lane markings (sharrows).					Greenbelt Middle School	Greenbelt Metro station	GB	GBW	
39	Intersection of Cherrywood Lane and Greenbelt Road	• Install signalized crossings on all legs of the intersection.							SHA	GBW	
40	Breezewood Drive between Cherrywood Lane and Springhill Lane	• Install shared-lane markings (sharrows).				Beltway Plaza			GB	GBW	
41	Springhill Lane between Breezewood Drive and Springhill Drive	• Install shared-lane markings (sharrows).				Beltway Plaza	Springhill Lake Elementary School, Greenbelt Middle School	Greenbelt Metro station	GB	GBW	
42	Springhill Drive between Cherrywood Lane and Edmonston Road	• Install shared-lane markings (sharrows).					Springhill Lake Elementary School, Greenbelt Middle School	Greenbelt Metro station	GB	GBW	
43	Path from Siri's Chef's Secret parking lot to Branchville Road	• Widen and pave path. • Formalize curb opening to facilitate bicycle connection from parking lot to Branchville Road.			APB Ped/Bike Trouble Spots	University of Maryland, Lake Artemesia			Private property owners, GB	GBW	APB Bike/Ped Trouble Spots document identifies path as problem area.
44	Branchville Road/Ballew Avenue from Greenbelt Road to Berwyn Road	• Install shared-lane markings (sharrows).				University of Maryland, Lake Artemesia			Prince George's County	GBW	
45	Intersection of Edmonston Road and Greenbelt Road	• Construct grade-separated crossing.			GGI Connectivity Workshop (2009)		Greenbelt Middle School	Greenbelt Metro station	SHA	GBW	Summary of ideas from GGI Connectivity workshop includes "put pedestrian bridge over Greenbelt Road." A precise location is not specified.

Table: Location-Specific Bicycling Recommendations—Initial Draft—Toole Design Group via National Capital Region Transportation Planning Board's TLC Program

Map Key	Location	Recommendation	Stakeholder priority	Web Comments	Identified in Previous Planning Process	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PG, SHA)	Neighborhood	Comments
46	Intersection of Lakecrest Drive and Greenbelt Road	• Reconfigure intersection as indicated in comment field at right.		2		Greenway Center			SHA	HGB	
47	Intersection of Hanover Parkway and Greenbelt Road	• Narrow turn lanes and/or narrow slip lane pork chop to provide space for bicycle storage on south side of intersection. • Install crosswalk on east side of intersection. • Reconfigure or remove slip lane on southwest corner of intersection to slow turning traffic. If slip lane is retained, consider pedestrian actuated signal. • See conceptual designs in **Location-Specific Concepts** for details.	0			Greenway Center	Eleanor Roosevelt High School		SHA	GBE	See Hanover Parkway redesign concept in **Location-Specific Concepts**.
48	Greenbelt Road just east of intersection with Mandan Road	• Trim hedge extending into shoulder on westbound approach to Mandan Road intersection.		3	Greenbelt East Ring and Spine Plan	NASA	Eleanor Roosevelt High School		SHA	GBE	Segment identified as bikeway in Greenbelt East Ring and Spine Plan.
49	Intersection of Mandan Road and Mathew Street to Magnolia Elementary School	• Install shared-use path		1			Magnolia Elementary School		Pepco, Prince George's County Board of Education	GBE	
50	From Brae Brooke Drive to intersection of Mandan Road and Mathew Street	• Install shared-use path		1		Greenway Center	Magnolia Elementary School		Prince George's County	GBE	

Table: Location-Specific Bicycling Recommendations—Initial Draft—Toole Design Group via National Capital Region Transportation Planning Board's TLC Program

Map Key	Location	Recommendation	Stakeholder priority	Web Comments	Identified in Previous Planning Process	Facilitates Access to Key Destination	Facilitates Access to School	Facilitates Access to Transit Stop	Jurisdiction (GB, PG, SHA)	Neighborhood	Comments
51	Intersection of Crescent Road and Kenilworth Avenue	• Provide leading pedestrian interval (LPI) for east-west crossing. • Add "No Right Turn on Red" signage for westbound traffic. • Move stop bar on east side of intersection westward, closer to the intersection. • Repair pavement on westbound approach to intersection (bicyclists report deep ruts in the roadway).		4		Capital Office Park		Greenbelt Metro station	SHA	HGB	
52	Intersection of Ivy Lane and Kenilworth Avenue	• Install crosswalk and curb ramps on 'pork chop' island to facilitate crossing Kenilworth Avenue on south side of intersection. • Install pushbutton activated pedestrian signals. • Install marked crosswalk and appropriate pedestrian signage on slip lane carrying eastbound Ivy Lane traffic onto southbound Kenilworth Avenue.		1	Bicycle Task Force Recommendations (1995)	Capital Office Park		Greenbelt Metro station	SHA	HGB	Bicycle Task Force Recommendations recommend that the city should take steps to ensure intersection is safe for pedestrians and bicyclists if traffic light installed (traffic light has been installed).