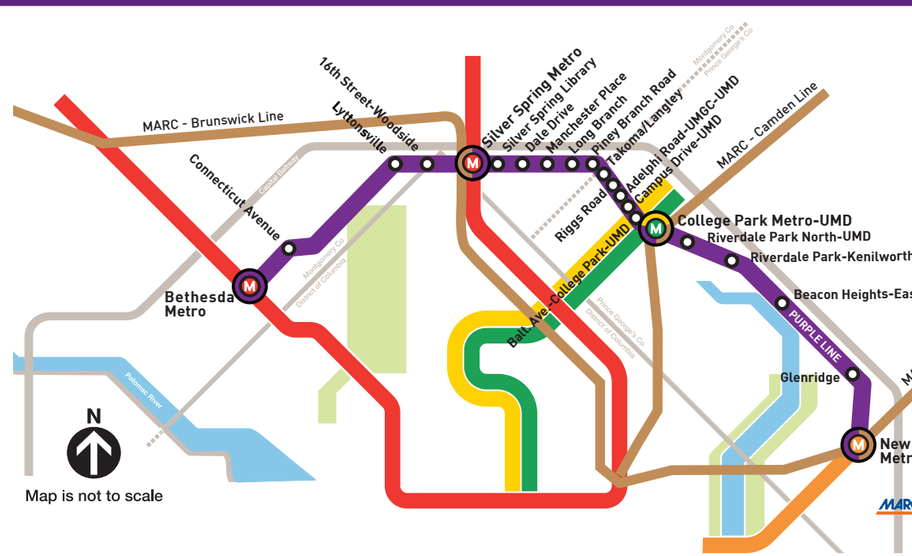


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PURPLE LINE STATIONS
Bicycle and Pedestrian Priority Area







Prepared for: MCDOT | BiPPA Bicycle and Pedestrian Priority Areas

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1 Executive Summary

A Bicycle and Pedestrian Priority Area (BiPPA) is a geographical area where the enhancement of bicycle or pedestrian traffic is a priority. The objective of BiPPA is to enhance safe bicycle and pedestrian access to support cohesive neighborhoods, aging infrastructure, and improve long-range connectivity and circulation.

The purpose and need of the Purple Line Station BiPPA study is to provide recommendations for and prioritization of bicycle and pedestrian improvements within a ½-mile radius of proposed stations located in Montgomery County. It is anticipated that these improvements will be aligned with recommendations in the Montgomery County master plans. The Purple Line corridor includes eleven stations within Montgomery County: Bethesda, Connecticut Avenue, Lyttonsville, Woodside/16th Street, Silver Spring Transit Center, Silver Spring Library, Dale Drive, Manchester Place, Long Branch, Piney Branch Road, and Takoma-Langley Transit Center.

Each section of this report was prepared specifically for each Purple Line Station BiPPA based on the collaboration of agency officials, planners, engineers, and GIS specialists. An initial summary of recommendations was established by the study team based on Maryland National Capital Parks and Planning Commission (M-NCPPC) master plans and sector plans, followed by field investigations, and the development of this report. All state, county, and municipal rights of way were included in the study.

Equity and safety through Vision Zero are top priorities within Montgomery County, so providing positive transportation benefits to areas of concern was a critical goal for this study. All recommendations included in the Purple Line BiPPA are expected to provide equity and safety benefits to the communities they will serve. The County will continue evaluating each solution for compliance with equity and safety goals through the design development and final design phases and prior to implementation. Generally, improvements were evaluated based on several primary factors: connectivity, safety, accessibility, users served, station proximity (¼ mile vs ½ mile radii), equity, right-of-way acquisition, utility relocations, traffic impacts, transit impacts, parking impacts, environmental impacts and cost.

2 Study Overview

2 Study Overview

2.1 Introduction

Montgomery County is the most populous and one of the most diverse counties in Maryland. Its population exceeds one million residents and continues to grow. With such a large population, MCDOT must address the varied transportation needs of all its residents, which is why the BiPPA program was created. MCDOT considers bicycle and pedestrian facilities a critical component in the County's transportation infrastructure network. Cycling and walking facilities provide a wide range of benefits to individuals, their communities, and the surrounding environment.

The construction of Purple Line stations will result in community centers where people will live, eat, shop and work. As traffic to and from these community centers grows, pedestrians and cyclists must be prioritized. Enhancing cycling and walking facilities, while emphasizing safety and accessibility, will allow Purple Line users to be more connected to communities throughout Montgomery County and the DC area at large.

2.2 Purpose and Need

Collectively, the development of improved bicycle and pedestrian facilities can help decrease traffic congestion, air pollution, and enhance quality of life. By providing a variety of transportation modes to County residents to access jobs, public services and social networks, they can promote equity to all residents, and particularly to those who may put a greater share of their budget toward transportation, including low income and senior citizens.

Equity and safety through Vision Zero are top priorities within Montgomery County, so providing positive transportation benefits to areas of concern was a critical goal for this study. This report provides recommendations for the design, construction and repairs of bicycle and pedestrian facilities to enhance and promote accessibility, safety, mobility, and comfort for cyclists and pedestrians within the vicinity of each Purple Line Station.

2.3 Reference Documents

This report obtained information from several documents and reports prepared by the County and State and references Federal guidelines. Previously prepared studies on pedestrian access were incorporated into the recommended improvements in this report.

- Accessibility Policy and Guidelines for Pedestrian Facilities along State Highways, Maryland State Highway Administration, June 2010.
- North and West Silver Spring Master Plan, Approved August 2000 and Adopted September 2000.
- The Montgomery County Bicycle Master Plan, Approved and Adopted December 2018
- Bethesda Downtown Plan, Approved and Adopted May 2017
- Greater Lyttonsville Sector Plan, Approved and Adopted May 2017
- Bethesda Chevy Chase Master Plan approved and adopted April 1990
- Chevy Chase Lake Sector Plan approved and adopted October 2013
- Silver Spring Central Business District and Vicinity Sector Plan approved and adopted March 2001
- East Silver Spring Master Plan approved and adopted December 2000
- Long Branch Sector Plan approved and adopted November 2013
- Takoma/Langley Crossroads Sector Plan approved and adopted June 2012
- Purple Line Pedestrian Connectivity Report, June 2020
- Travel Forecasts Results Technical Report, August 2013
- Master Plan of Highways and Transitways, approved and adopted December 2018

2.4 Study Area

The study area is comprised of eleven Purple Line stations and the geographic areas within a ½-mile radius including:

- Bethesda,
- Connecticut Avenue
- Lyttonsville
- 16th Street-Woodside
- Silver Spring Transit Center
- Silver Spring Library
- Dale Drive
- Manchester Place
- Long Branch
- Piney Branch Road
- Takoma-Langley Transit Center

The ½ mile radius for each station overlap with each other. In order to avoid duplicate recommendations for specific streets and intersections, each station is trimmed by the limits of adjacent station study areas.

The following information describes the data collection and methodology used to develop recommended access improvements for each Purple Line station BiPPA and the prioritization of these improvements.

FIGURE 2-1
PURPLE LINE STATIONS

LEGEND

- STATIONS
- PURPLE LINE
- HALF MILE RADII

LYTTONSVILLE
16TH STREET -WOODSIDE
MANCHESTER PLACE
DALE DRIVE
LONG BRANCH
PINEY BRANCH ROAD
SILVER SPRING METRO
SILVER SPRING LIBRARY
CONNECTICUT AVENUE
BETHESDA
TAKOMA-LANGLEY

Forest Glen
Silver Spring
Bethesda
Chevy Chase
Chevy Chase Village
Takoma Park
Chillum

0 0.25 0.5 1 1.5 2 Miles

NOTE: Many of the BiPPAs overlap or encompass areas that are outside of MCDOT's jurisdiction

2.5 Montgomery County Master Plans

Countywide master plan and sector plan documents for the areas surrounding each station were reviewed to ensure that proposed improvements are consistent with the county's planning goals. The following table is a summary of applicable planning documents:

Table 2-1 Planning Documents by Station

Purple Line Station	Master/Sector Plan
All Stations	Purple Line Functional Master Plan, Countywide Transit Corridors Functional Master Plan, Bicycle Master Plan, Pedestrian Master Plan, Purple Line Pedestrian Connectivity Report
Bethesda	Bethesda Downtown Master Plan
Connecticut Avenue	Bethesda Chevy Chase Master Plan, Chevy Chase Lake Sector Plan
Lyttonsville	North and West Silver Spring Master Plan, Greater Lyttonsville Sector Plan
16th Street / Woodside	North and West Silver Spring Master Plan, Greater Lyttonsville Sector Plan
Silver Spring Transit Center	Silver Spring CBD Master Plan
Silver Spring Library	Silver Spring CBD Master Plan
Dale Drive	North and West Silver Spring Master Plan and East Silver Spring Master Plan
Manchester Place	East Silver Spring Master Plan
Long Branch	East Silver Spring Master Plan, Long Branch Sector Plan
Piney Branch	East Silver Spring Master Plan, Long Branch Sector Plan
Takoma / Langley Transit Center	Takoma Park Master Plan, Takoma Langley Crossroads Sector Plan

2.6 Stakeholder Coordination

Many stakeholders will need to be involved in the implementation of the recommended improvements since they may impact a variety of businesses and residents. Potential stakeholders include:

- Montgomery County Council
- Maryland Department of Transportation State Highway Administration (MDOT SHA)
- MCDOT
- Maryland Transit Administration (MTA)
- Maryland-National Capitol Park and Planning Commission (M-NCPPC)
- Montgomery County Department of Permitting Services (DPS)
- Montgomery County Department of Environmental Protection (DEP)
- Washington Metropolitan Area Transit Authority (WMATA)
- PEPCO
- Verizon
- Washington Gas and Light
- Washington Suburban Sanitary Commission (WSSC)

2.7 Design Criteria

The following design criteria for bicycle and pedestrian improvements pertains to this study:

- AASHTO – Guide for the Development of Bicycle Facilities, 4th Edition (2011)
- AASHTO – A Policy on Geometric Design of Highways and Streets (2018)
- AASHTO – Roadside Design Guide (2006)
- AASHTO – Roadway Lighting Design Guide (2005)
- ADA Standards for Accessible Design (2010)
- MDOT SHA – Access Permits Manual (2016)
- MDOT SHA – Accessibility Policy and Guidelines for Pedestrian Facilities along State Highways (2010)
- MDOT SHA – Bicycle Policy and Pedestrian Guidelines (2015)
- MDOT SHA – MUTCD (2011)
- Montgomery County Road Code, latest version
- Montgomery County Context Sensitive Road Design Standards (2008)
- NACTO – Urban Bikeway Design Guide, 2nd Edition

2.8 Field Investigation Summary

For the Purple Line BiPPA study, a comprehensive field investigation and audit of existing conditions was performed to identify spot and safety improvements to further define how and where master plan improvements could be implemented at street level within the area of each Purple Line station. Mobile geospatial data collection methods were used to gather and compile information from the field. Preparation and execution of field investigations followed these basic steps:

1. Downloaded latest available GIS and aerial imagery from sources such as M-NCPPC and MDOT SHA.
2. Prepared base mapping by compiling and formatting GIS data and aerial imagery.
3. Uploaded base mapping onto mobile iPad/ArcMap platform.
4. Prepared a customized menu with all field investigation categories and loaded onto ArcMap. These categories include roadway/trail facility, lane usage, curb ramps, driveway aprons, sidewalk/paths, stairways/ramps, median refuges, bus stop/shelters, bicycle racks, traffic/pedestrian signals and controls, pavement markings, at-grade railroad crossings, street/pedestrian lighting.
5. Visited study area with field crews consisting of one or two transportation engineers and one GIS technician.
6. Collected locations, photos, and notes on the field investigation categories using iPad/ArcMap platform. Additional field data collected included surface utilities, visible storm drain infrastructure, bicycle-compatible grates/utility covers, bicycle/pedestrian/roadway signs, traffic barriers, fences/gates, mailboxes, parking meters, street furniture, photo enforcement equipment, traffic calming measures, storm water management facilities, landscaping, and social paths. Crews also collected general observations and notes regarding bicycle/pedestrian network connectivity, places of interest and route markers. All raw data was uploaded to a public ArcGIS Online Webmap (https://stantec.maps.arcgis.com/home/webmap/viewer.html?webmap=3bf06f511fbc4ef0b1b2848c506fb113).
7. Uploaded data collected in the field was added to the base mapping as appropriate.

This method was especially useful for locating potential spot improvements such as curb ramps, driveway aprons, Accessible Pedestrian Signal/Countdown Pedestrian Signal (APS/CPS), curb extensions, median refuge, signing and maintenance tasks.

By performing field investigations, crews were also able to note other crucial factors such as site constraints, user behavior, facility operation, safety issues, and adjacent construction.

2.9 Prioritization Methodology

All recommendations included in the Purple Line BiPPA are expected to provide equity and safety benefits to the communities they will serve. The County will continue evaluating each solution for compliance with equity and safety goals through the design development and final design phases and prior to implementation.

To help prioritize improvements, the following factors have been considered for each of the proposed improvements to develop recommendations and create a priority ranking:

1. Benefits (total possible score 20)
    a. Determined based on the net sum of:
        i. Connectivity: 1 – 5 points
        ii. Safety: 1 – 5 points
        iii. Accessibility: 1 – 5 points
        iv. Number of Users Served: 1 – 5 points
2. Impacts and Cost (total possible score 20)
    a. Determined based on the net sum of:
        i. Utility / Right-of-way: 1 – 5 points
        ii. Traffic / Transit / Parking: 1 – 5 points
        iii. Environmental: 1 – 5 points
        iv. Cost: 1 – 5 points
3. Proximity Factor
    a. Multiply the benefits/(impacts and cost) by one of these factors:
        i. ¼-mile: 2x factor
        ii. ½-mile: 1x factor
4. Equity Factor
    a. Multiply the benefits/(impacts and cost) by one of these factors:
        i. 1 – Not in the Equity area
        ii. 2 – In the Equity area

Priority Ranking = Benefits / (Impacts and Cost) x Equity Factor x Proximity Factor

For example, if the total benefits score is 15, the impacts score is 10, the proximity factor is 2 and the equity factor is 1, the priority ranking calculation would be the following:

$$Priority\ Ranking\ = \frac{15}{10}\ x\ 2\ x\ 1 = 3.0$$

For improvements with multiple benefits, few impacts, and in the Equity area, a high priority is the result. Likewise, improvements with few benefits, multiple impacts, and no equity factor, results in a low priority. The Priority ranking will range from 0.20 to 20, with the highest priority having the highest numerical value.

2.9.1 Benefits

The benefits of a given improvement are determined based on connectivity, safety, accessibility, number of users, and proximity to the Purple Line Stations.

Connectivity is a measure of the cohesion of the pedestrian or bicycle network. Improvements that rank high in connectivity may expand the limits of existing sidewalks or bikeways, fix gaps in the existing sidewalk or bicycle network, or provide a means such as a bridge or traffic signal to overcome a natural or man-made barrier such as a stream or railroad. A low connectivity score may be given to improvements that do not expand or improve the way pedestrians and cyclists move through the area, such as signage, signal upgrades, or curb extensions.

Safety addresses how pedestrians, cyclists, and motorists can interact without harming one another. For example, adding signage for bike lanes, speed control, and crosswalks or installing curb extensions at intersections may score high in this category because they improve the safety for pedestrians and cyclists. Constructing or reconstructing sidewalks may score low in this category because they do not actively improve the safety for users. A new sidewalk may score highly in safety when it is constructed where people walk or ride but there is no existing sidewalk (e.g., shoulders).

Accessibility is a measure of how usable pedestrian infrastructure is for those with mobility, vision, or hearing impairments, such as those in wheelchairs and the visually impaired. ADA improvements, such as curb ramp construction or reconstruction and APS/CPS installation, will rank high in this category. A low accessibility score may be given to improvements that do not actively improve features related to the ADA.

The ***Number of Users Served*** is based on a transit ridership study prepared by MTA called the Purple Line Travel Forecasts Results Technical Report from August 2013. It determined the number of users expected to walk to the Purple Line station. The volume of *Total Daily Boardings* was converted to a point value to be used to develop the rankings for each pedestrian improvement at each station study area. No data is available for the number of bicyclists expected to bike to stations. For the purpose of this report, the same points used for Pedestrian Improvement rankings is used for the Bicycle improvement rankings.

Table 2-2 MTA Purple Line Travel Forecast

Table 24: Daily Station Boardings (Rounded) with the Preferred Alternative

Station	Total On*	Total Off*	Total Daily Boardings**
Bethesda	10,210	19,800	15,010
Chevy Chase Lake	1,520	2,940	2,230
Lyttonsville	970	1,700	1,340
Woodside/16th Street	2,220	1,020	1,620
Silver Spring Transit Center	15,700	10,190	12,950
Silver Springs Library	1,750	4,280	3,020
Dale Drive (future)	1,580	350	970
Manchester Place	3,180	650	1,920
Long Branch	1,520	260	890
Piney Branch Road	2,090	380	1,240
Takoma/Langley Transit Center	2,520	1,860	2,190

The ***Proximity Factor*** is based on whether the improvement is within the ¼-mile or ½-mile radius from a proposed Purple Line station.

Examples of scoring for each benefit are provided in the table below.

Table 2-3 Benefit Scoring Legend

Benefit	Score Examples		
	1	→	5
Connectivity	spot improvement only, is not on main route to station, involves reconstruction as opposed to new construction, upgrading existing infrastructure to comply with the ADA, non-intuitive or indirect route	not applicable (ex. street lighting)	continuous linear facility (ex. sidewalk or bikeway), helps to overcome significant geographic barrier (ex. bridge), connects with multiple facilities or destinations, converts existing desire line to new designated path, new crossing to address desire line
Safety	high level of exposure to traffic, excessive crossing conflicts, conflicts between bikes and pedestrians, at grade crossing conflicts, multiple obstacles, conflicts with transit, poor prioritization of rights of way	not applicable (ex. curb ramp, driveway apron), shared use paths or shared use lanes	fully separates traffic from pedestrians and cyclists, grade separated improvements, clear prioritization of rights of way, addresses an existing safety deficiency, addresses Vision Zero goals, prevents accidents in a high crash area
Accessibility	facility that is not ADA compliant	not applicable	provides fully accessible facility for hearing/visually/mobility impaired users
Number of Users Served	low number of users expected to walk to the Purple Line station (<500)	moderate number of users expected to walk to the Purple Line station	high number of users expected to walk to the Purple Line station (>3,000)

2.9.2 Impacts

Impacts of a given improvement are determined based on utility / right-of-way, traffic / transit / parking, and environmental considerations. Costs are determined based on order of magnitude estimates.

Utility / right-of-way impacts are measured based on the likelihood of utility relocation or right-of-way acquisition. Improvements to existing infrastructure located within the right-of-way are likely to be given a low utility / right-of-way impact score.

Traffic / Transit / Parking impacts are measured based on the disruption to the existing road section and vehicular traffic. An improvement with a high traffic / transit / parking impact would be a proposed cycle track that removes an on-street parking lane and decreases the width of travel lanes.

Environmental impacts are assessed based on disruption to natural features, such as streams or wetlands. Removal or trimming of street trees and addition of impervious area may be given a low environmental impact score. Construction of a trail through a wetland area may be given a high environmental impact score.

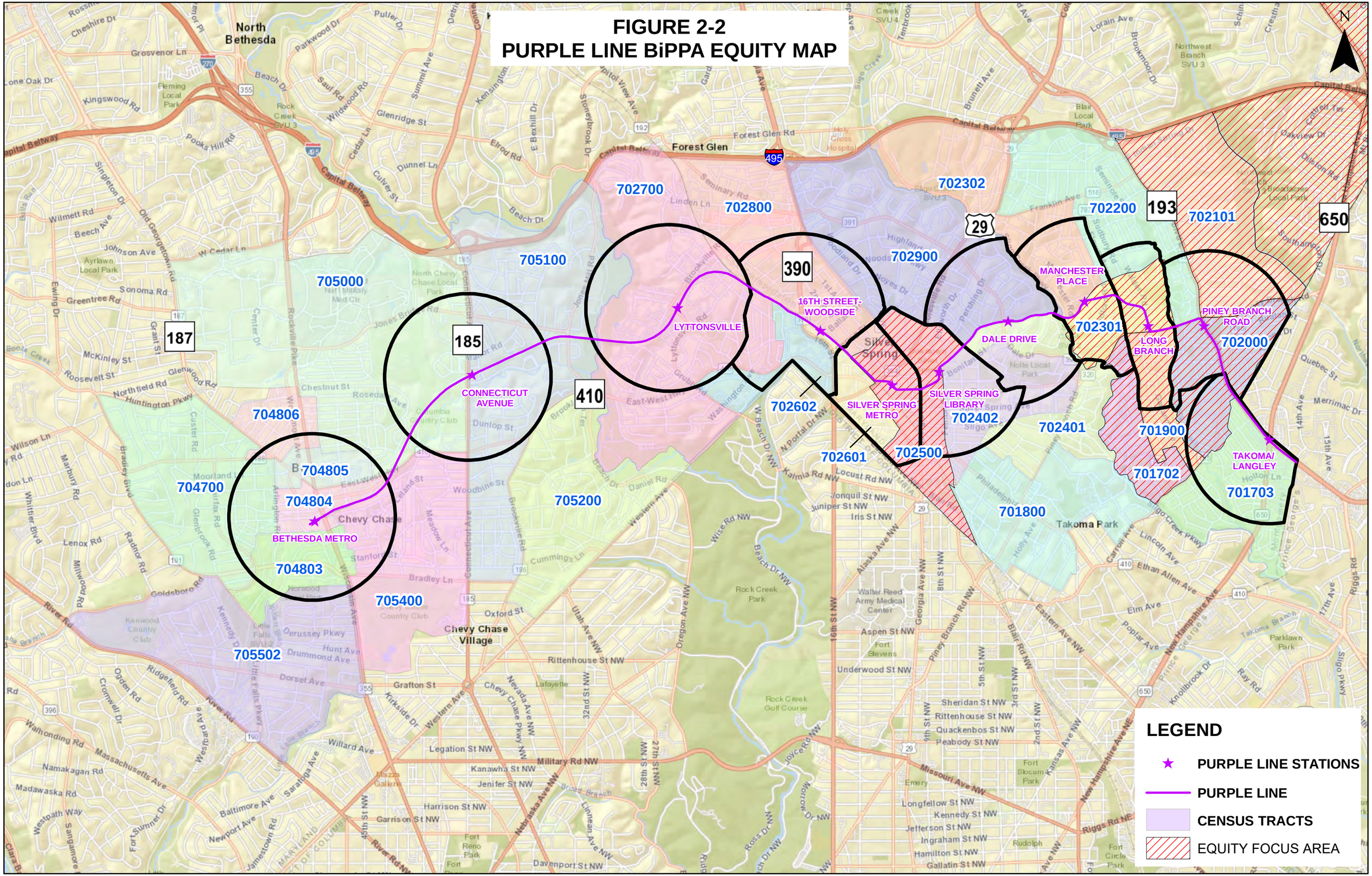
Cost provided is based on an order of magnitude. The cost impact will be broken down into the following point values:

- 1 = < $10,000
- 2 = $10,000 - $100,000
- 3 = $100,000 - $1,000,000
- 4 = $1,000,000 - $5,000,000
- 5 = > $5,000,000

Table 2-4 Impact and Cost Scoring Legend

Impact	Score Examples		
	1	→	5
Utility / Right-of Way	no impacts	utility pole in the vicinity of improvement	multiple above and below ground utility conflicts within the right-of-way, right-of-way acquisition necessary
Traffic / Transit / Parking	no impacts	minor traffic pattern changes	removal of several parking spaces, impacts to transit stops, significant changes to traffic patterns
Environmental	no impacts	impacts to street trees	permanent impacts to waters of the US and wetlands, removal of specimen trees, construction of additional impervious area
Cost	signing and marking only; spot and safety improvements	some reconstruction; moderate impacts	full depth widening/reconstruction structures; heavy impacts

FIGURE 2-2
PURPLE LINE BiPPA EQUITY MAP


N
North Bethesda
Forest Glen
Chevy Chase Village
Takoma Park
Silver Spring
Rock Creek Park
Rock Creek Golf Course
Walter Reed Army Medical Center
Fort Stevens
Fort Slocum Park
Fort Reno Park
Fort Circle Park
Rudolph
Parklawn Park
Broadacres Local Park
Blair Local Park
Fleming Local Park
Rock Creek SVU 3
Northwest Branch SVU 3
Holy Cross Hospital
Nat'l Military Med Ctr
Ayrlawn Local Park
North Chevy Chase Local Park
Kenwood Country Club
Little Falls SVU 2
Columbia Country Club
Nolte Local Park
Sligo Creek SVU 3
Sligo Creek SVU 4
Capital Beltway
Rockville Pike
Connecticut Ave
Georgia Ave
Wisconsin Ave
16th St NW
Eastern Ave NW
New Hampshire Ave NE
Missouri Ave NW
Piney Branch Rd NW
Blair Rd NW
Sligo Creek Pkwy
Takoma Branch
Rock Creek
Mazza Gallerie
Broad Branch
Linnean Ave NW
Oregon Ave NW
Nebraska Ave NW
Western Ave
Chevy Chase Pkwy NW
Utah Ave NW
Wise Rd NW
Besch Dr NW
Alaska Ave NW
Georgia Ave NW
8th St NW
5th St NW
3rd St NW
2nd St NW
9th St NW
32nd St NW
28th St NW
27th St NW
45th St NW
Rittenhouse St NW
Underwood St NW
Aspen St NW
Sheridan St NW
Quackenbos St NW
Peabody St NW
Emery
Longfellow St NW
Kennedy St NW
Jefferson St NW
Ingraham St NW
Hamilton St NW
Gallatin St NW
Jonquil St NW
Juniper St NW
Iris St NW
Locust Rd NW
Kalmia Rd NW
Joyce Rd NW
Ross Dr NW
Morton Dr NW
N Portal Dr NW
W Beach Dr NW
Daniel Rd
Cummings Ln
Oxford St
Grafton St
Legation St NW
Kanawha St NW
Jenifer St NW
Harrison St NW
Garrison St NW
Davenport St NW
Military Rd NW
Willard Ave
Rittenhouse St NW
Lafayette
Woodbine St
Dunlop St
Chestnut St
Roseda Ave
East-West Hwy
Beach Dr
Linden Ln
Seminary Rd
Forest Glen Rd
Capital View Ave
Stoneybrook Dr
Elrod Rd
Dunnel Ln
Culver St
Cedar Ln
Glenridge St
Wildwood Rd
Saul Rd
Parkwood Dr
Puller Dr
Summit Ave
Kensington
Beach Dr
Grosvenor Ln
Cheshire Dr
Kingswood Rd
Pooks Hill Rd
Wilmett Rd
Beech Ave
Johnson Ave
W Cedar Ln
Old Georgetown Rd
Singleton Dr
Bells Rd
Ewing Dr
Greentree Rd
Sonoma Rd
Grant St
McKinley St
Roosevelt St
Northfield Rd
Huntington Pkwy
Glenwood Rd
Custer Rd
Wilson Ln
Marbury Rd
Whittier Blvd
Bradley Blvd
Lenox Rd
Radnor Rd
Millwood Rd
Goldsboro Rd
Kenwood Country Club
Kennedy Dr
Oerussey Pkwy
Hunt Ave
Drummond Ave
Dorset Ave
Ridgefield Rd
River Rd
Ogden Rd
Cromwell Dr
Wathonding Rd
Massachusetts Ave
Namakagan Rd
Madawaska Rd
Westpath Way
Sangamore Rd
Fort Sumner Dr
Baltimore Ave
Newport Ave
Jamestown Rd
Saratoga Ave
Westpark Dr
Arlington Rd
Glenbrook Rd
Moorland Ln
Brookville Rd
Meadow Ln
Stanford St
Bradley Ln
Norwood Rd
Wise Ave
Kirkside Dr
Nevada Ave NW
Jones Bridge Rd
Manor Rd
Center Dr
Woodmont Ave
Arlington Rd
Leland St
Eastwest Hwy
Connecticut Ave
Lyttonsville Rd
Brookville Rd
Gruber Rd
Bonifant St
Dale Dr
Pershing Dr
Woodland Dr
Highland Dr
Noyes Dr
Franklin Ave
Sudbury Rd
Seminary Pl
Dixon Rd
Oakview Dr
Colvin Run Rd
Colvin Ter
Lorain Ave
Brookmoor Dr
Brunett Ave
Capitol View Ave
Garland Ave
Sligo Creek
Tenbrook Dr
Creek
Schindler Dr
Cresthaven Dr
Quebec St
Merrimac Dr
14th Ave
15th Ave
17th Ave
Riggs Rd
Ray Rd
Knollbrook Dr
Elm Ave
Poplar Ave
Ethan Allen Ave
Lincoln Ave
Carroll Ave
Holly Ave
Philadelphia Ave
Piney Branch Rd
Fenton St
Silver Spring Ave
Colesville Rd
Wayne Ave
Dixon Ave
Thayer Ave
Sligo Creek Pkwy
Riggs Rd NE
Holton Ln
Prince Georges
Montgomery
Capitol Beltway
Beltway
Forest Glen Rd
Franklin Ave
Seminary Rd
Linden Ln
Beach Dr
Highland Dr
Woodland Dr
Noyes Dr
Pershing Dr
Dale Dr
Bonifant St
Eastern Ave NW
Blair Rd NW
Piney Branch Rd NW
Georgia Ave NW
Alaska Ave NW
Wise Rd NW
Besch Dr NW
Western Ave
Daniel Rd
Cummings Ln
Oxford St
Grafton St
Legation St NW
Kanawha St NW
Jenifer St NW
Harrison St NW
Garrison St NW
Davenport St NW
Military Rd NW
Willard Ave
Rittenhouse St NW
Underwood St NW
Aspen St NW
Sheridan St NW
Quackenbos St NW
Peabody St NW
Emery
Longfellow St NW
Kennedy St NW
Jefferson St NW
Ingraham St NW
Hamilton St NW
Gallatin St NW
Jonquil St NW
Juniper St NW
Iris St NW
Locust Rd NW
Kalmia Rd NW
Joyce Rd NW
Ross Dr NW
Morton Dr NW
N Portal Dr NW
W Beach Dr NW
Missouri Ave NW
Riggs Rd NE

2.9.3 Equity Factor

An Equity Factor is incorporated into the priority ranking. The Montgomery County Planning Department has developed a map of Equity Focus Areas (EFA). This report overlayed the EFA on the PPL station study areas to determine where the EFA is a factor in the ratings. The areas in the EFA have a factor of 2 applied to the Priority Ranking (Benefit / Impacts and Cost).

2.9.4 Time Frame

Time frame is assessed separately and not included in t the development of the priority of improvements. The time frame noted in the description of each proposed improvement is based on the number of design and construction tasks necessary to implement an improvement. Short-term improvements have an estimated completion time of 1-2 years and would require minimal design, coordination, or permits/approvals. Furthermore, short-term improvements can likely be implemented with established funding sources. Examples of short-term improvements include signing and marking, ADA upgrades, and maintenance tasks. Mid-term improvements have an estimated completion time of 2-5 years and would typically require a combination of advanced design, coordination, programmed funding, and permits/approvals. Typical mid-term improvements include shared-use paths, cycle tracks, and new traffic signals. Lastly, long-term improvements have an estimated completion date that is greater than 5 years. These projects would require an extensive combination of planning, design, coordination, political will, programmed funding, and permits/approvals. The typical scope of long-term improvements would include reconstruction and extensive impacts such as utility relocations and right of way acquisition.

Table 2-5 Timeframe Scoring Legend

Timeframe	Completion Time	Typical Requirements
Short-Term	1-2 Years	minimal design, coordination, or permits/approvals
Mid-Term	2-5 Years	a combination of advanced design, coordination, programmed funding, and permits/approvals
Long Term	>5 Years	extensive combination of planning, design, coordination, political will, programmed funding, and permits/approvals

The implementation for each improvement could follow a different track, depending on the factors listed above, as well as the implementing agency. However, short-term improvements could likely be constructed with a combination of basic design drawings and MCDOT and/or MDOT SHA standard drawings to locate and construct improvements. Mid- and long-term improvements will generally require further project development that includes coordination, survey, design, right-of-way acquisition, permits, and/or approvals.

Funding sources are subject to change throughout the duration of this study. At the present time, all public transportation agencies and funding entities - federal, state, county, and municipal - are considered potential partners for funding of implementation and maintenance of these priority improvements. For county roads, funds are appropriated directly by the Montgomery County Council. For state roads, depending on the type of improvement, different funds can be used to implement improvements. Fund 33, 79 and 88 are funds that MDOT SHA uses for bicycle and pedestrian improvements. Fund 76 and Fund 77 projects, commonly used for signal upgrades, pavement resurfacing, signing and marking, can be used to incorporate bicycle and pedestrian accommodations. A number of state and federal grants are available for bicycle and pedestrian improvements as well.

2.10 Proposed Improvement Types

This report separates accessibility improvements into three categories: pedestrian improvements, bikeway improvements, and maintenance improvements. Pedestrian improvements outline new infrastructure that can be added to enhance or expand the existing system. Bicycle improvements focus on changes to the roadways that would provide safer, accessible bike routes and continuous networks. General maintenance items are those that can be easily completed to improve area aesthetics and pedestrian comfort.

Figure 2-3 Best practices for curb ramp design.

The proposed pedestrian improvements are grouped as Area-wide projects or separated as individual sections of roadway within each study area. Area-wide improvements consist of improvements that require reconstruction of short segments of existing facilities to make them safer and / or to meet ADA requirements. Area-wide improvements can be constructed under one contract for the whole study area and they are separated by type of improvement:

- ADA upgrades to Existing Sidewalks
- ADA upgrades to Existing Driveway Aprons
- ADA upgrades to Existing Intersections
- Upgrades to APS / CPS Pedestrian Signals

Individual sections of roadways were also evaluated to encompass all the pedestrian improvements for each section, including reconstruction or new construction.

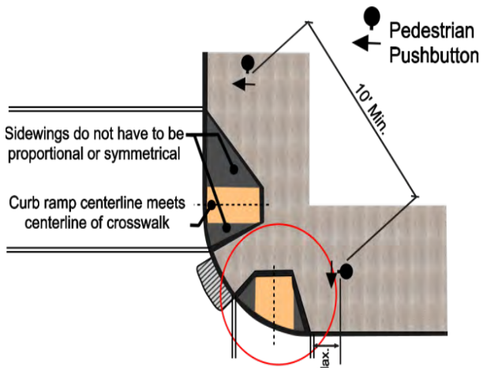
Improvements that were evaluated, for both pedestrian facilities and bike facilities, were based on the guidance provided in the Countywide Transit Corridors Functional Master Plan. They include:

- Sidewalk/shared use path connectivity improvements
- Sidewalk widening, 4 feet minimum (6 feet minimum in transit corridors)
- Shared use path widening, 10 feet minimum
- Median refuge, 6 feet minimum
- Upgrades to meet ADA Best Practices
    - Curb ramp construction/upgrades
    - Curb construction/reconstruction (6” max height at curb ramps)
    - Driveway apron reconstruction
    - Pedestrian APS/CPS upgrades
    - Obstruction relocations/consolidation i.e. utility poles, parking meters, signs
    - Landscape buffers
- Crosswalk striping/upgrades
- Bicycle/pedestrian safety improvements
- Bicycle/pedestrian route and warning sign upgrades
- Intersection evaluations
- Roadway widening/re-striping for bicycle use on highway/arterial roadways

2.10.1 Pedestrian Improvements

Recommended pedestrian improvements included reconstruction of existing facilities, construction of new facilities, and modifications to signing, striping and traffic signals. The specific improvements are described below.

Reconstruction of Curb Ramps: This will include existing curb ramps that require significant maintenance and those not in conformance with ADA standards. Common curb ramp deficiencies include broken or poorly maintained concrete, incorrect ramp alignment, missing or insufficient landing areas, noncompliant slopes, and missing or insufficient detectable warning surface. The average cost for replacing a sidewalk curb ramp is $1,000 per sidewalk curb ramp.



Reconstruction of Existing Sidewalks: Historically, existing sidewalks were constructed for single file pedestrian use and do not meet minimum width requirements for MCDOT (4 ft minimum) and MDOT SHA (5 ft minimum). Older sidewalks with gaps in connectivity and high volumes of traffic are considered higher priority. Sidewalk reconstruction is recommended for portions of existing sidewalks that are in poor condition, which includes severe cracks or breaks in concrete, utility patches, disheveled brick pavers, significant vertical trip hazards (approximately ¼-inch or greater), and gaps in concrete sections.

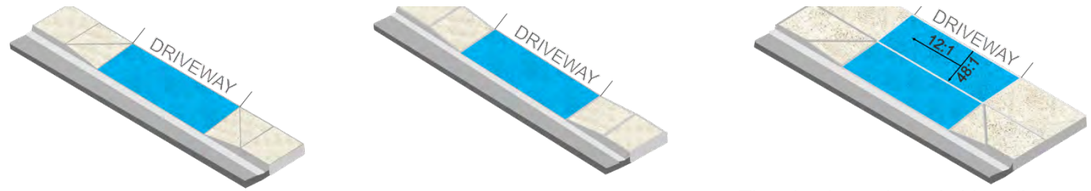


Figure 2-4 Example of a non-compliant sidewalk (less than 4ft width).

Reconstruction of Driveway Aprons: Both commercial and residential driveway aprons that are not in compliance with ADA standards will require reconstruction. Common deficiencies include noncompliant cross-slopes and inadequate width for pedestrian paths. Aprons with considerable damage are included only if the damage impacts pedestrian access.

Reconstructing driveway aprons is an important factor in developing pedestrian access that meets ADA standards. Driveway aprons are typically located within MCDOT or MDOT SHA right-of-way therefore acquisition would not be required. Complexity and cost of construction is dependent on the existing grade, existing cross-slope, and presence of obstructions. To determine the extent of construction and to estimate costs for each driveway apron, additional information will be required. Data will need to be collected for the location of utilities, impacts to property if changes to slopes are required, and affect on adjacent driveway. A simple driveway apron reconstruction project would have no above-grade obstructions and would involve minimal grading. A complex project would involve relocating above-ground obstructions and would require significant grading. Obstructions could include retaining walls, utility poles, trees, and signs. Coordination with business owners and homeowners may be required.

Figure 2-5 Illustrative examples of different driveway aprons encountered by wheelchair users.



Steep cross-slope makes wheelchair travel along the sidewalk difficult

"Dip" sidewalk path OK in areas where this is necessary

The planting strip and sidewalk set back behind driveway apron allows unimpeded wheelchair travel

Running slopes, parallel to the direction of travel should be limited to 12:1, while cross slopes perpendicular to the direction of travel should be limited to 48:1. The average cost for replacing a driveway apron is $1,000 per driveway.

Removal of Sidewalk Obstructions: This involves work to remove vertical obstructions in areas with low overhead clearance, including shrubs, trees and signing.

Widening of Non-Compliant Sidewalk Widths: In locations where obstacles limit the width of a sidewalk, such as the location of a utility pole, the obstacle should be relocated or the sidewalk width should be increased to provide a minimum 3-ft passing width, per ADA standards.



Figure 2-6 A minimum of 36" clear width is required at pinch points.

Reconstruction of Sidewalks with Non-Compliant Slopes: Areas of existing sidewalk that have a cross slope greater than 2% should be reconstructed to meet ADA criteria.

Reconstruction of Mid-Block Crossings: Mid-block crossings that need significant maintenance were identified.

Reconstruction of Non-Compliant Medians: Medians that are less than 6 feet wide in existing high traffic pedestrian crossings should be reconstructed.

Striping of Crosswalks: This is the repair of existing crosswalk striping, replacement of existing striping, or installation of new striping at existing, unmarked crossings. Common issues with existing striping include faded markings, misalignment of crosswalks, and markings that no longer match the current “piano stripe” standard.

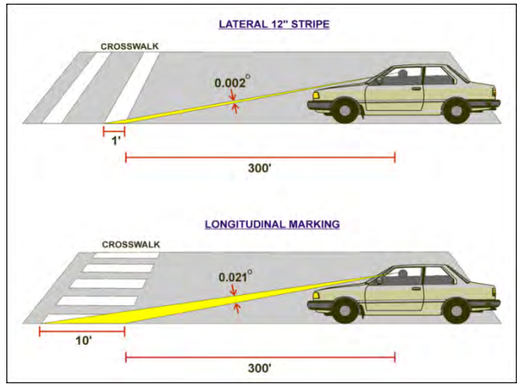


Figure 2-7 Continental or "piano stripe" markings provide better visibility to approaching motorists.

Reviewing the MdMUTCD definition of a crosswalk is insightful:

“(a) that part of a roadway at an intersection included within the connections of the lateral lines of the sidewalks on opposite sides of the highway measured from the curbs or in the absence of curbs, from the edges of the traversable roadway, and in the absence of a sidewalk on one side of the roadway, the part of a roadway included within the extension of the lateral lines of the sidewalk at right angles to the center line; (b) any portion of a roadway at an intersection or elsewhere distinctly indicated as a pedestrian crossing by pavement marking lines on the surface, which might be supplemented by contrasting pavement texture, style, or color.”

Crosswalk markings can be at mid-block locations but are most often at intersections. High-visibility crosswalks have thicker crossbars than the typical “ladder” style, with the most minimal (and commonplace) markings simply consisting of two, 4” parallel lines extending from curb to curb. Higher visibility crosswalks, including colored pavements, should be considered in locations where there is potential or evidence of many vehicle/pedestrian conflicts. Appropriate signage should be installed at all crosswalks.



Figure 2-8 High visibility R1-6a signs are effective for uncontrolled crossings.

Signal Upgrades to APS/CPS: Upgrades to existing APS/CPS traffic signals includes replacements to a non-compliant system (ie, missing or illegible signs, non-functioning audio) and pole relocation.

Generally, intersections will include CPS; however, several intersections have not been upgraded to include ADA-compliant push button assemblies. The MdMUTCD now recommends that push buttons be located within a specific distance of the ramp landing area and installed for each crosswalk. A typical four-legged intersection with four crosswalks would require eight push button assemblies. Ideally, push buttons should be located within the reach of a person seated in a wheelchair waiting within the landing area of the curb ramp.

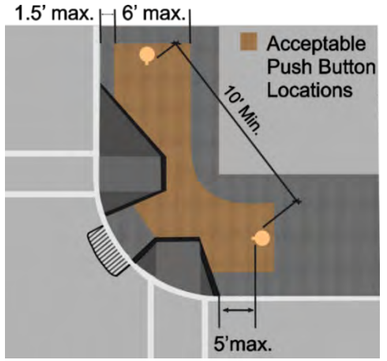


Figure 2-9 APS push button locations per MdMUTCD.



Figure 2-10 APS (left) and CPS (right) examples in Montgomery County.

Construction of New Curb Ramps: This improvement includes areas that do not currently have curb ramps and in which new curb ramps would increase connectivity and pedestrian comfort.

Construction of New Sidewalks: Adding sidewalks would provide pedestrian connectivity. Priority was given to areas that do not currently have a sidewalk on either side of the street. Sidewalks should be constructed with a minimum 4-foot (MCDOT) or 5-foot (MDOT SHA) width and include a buffer zone between the sidewalk and roadway, where space allows.

Installation of Additional Signage: New proposed signing includes pedestrian, safety, and wayfinding signage.

Construction of Curb Extensions: Curb extensions are one tool for increasing pedestrian safety. They increase the visibility of pedestrians prior to their crossing at an intersection, as well as decreasing the amount of time and distance in the travel lanes during a crossing. Curb extensions typically have the added effect of slowing down turning vehicles, since the curb radius of an extension is smaller than a standard return.

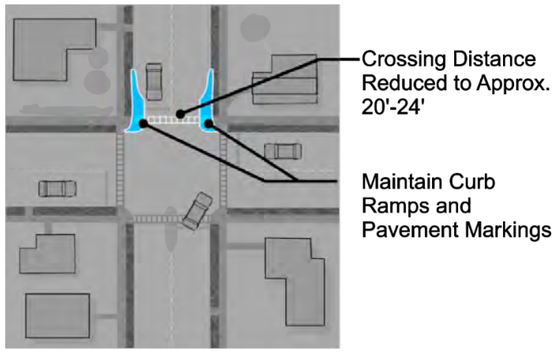


Figure 2-11 Detail showing curb extensions.

Design considerations include right-of-way widths, presence of in-street drainage infrastructure, impacts to on-street parking (although they can also shield on-street parking if the extension is at least seven feet from the edge of curb), and accommodations for landscaping or other amenities (typically minimal or under two feet in height to maintain good sight lines). Pedestrian crossing signs (W11-2 or paired with down-angle arrow W16-7P) are commonly provided in advance of curb extensions, particularly if they are constructed in relatively isolated locations.

Construction of Mid-Block Crossings: Mid-Block crossings are proposed in areas of a desired pedestrian crossing with no existing marked crosswalk.



Figure 2-12 Examples of median refuges at Lockwood Drive (left) and Edison Lane (right). Install with signage to promote driver awareness (R1-16a or R1-6).

Construction of Median Refuges: A median refuge island is proposed in existing high traffic pedestrian crossings, where a refuge would provide safety and comfort.

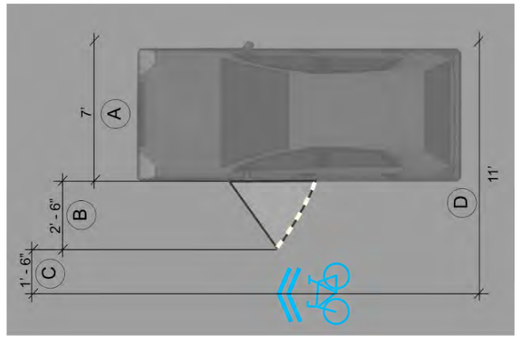
There are typically a number of locations that are suitable for median refuge installation. These can be located at intersections (most common) or used to narrow lane widths and pedestrian crossing distances at popular mid-block crossing points.

Ideally, median refuge areas should be designed with a 40-foot minimum length and a minimum six-foot width to accommodate bicycles and strollers without either one sticking out into the motor way. The curb opening should measure the full width of the crosswalk and may be aligned at an angle to orient pedestrians to look at oncoming traffic prior to crossing. Median refuges should include components such as curbing, curb ramps, detectable warning surfaces, crosswalk signing & marking, object markers, and/or bollards. An advance Limit line should be placed 20 to 50 feet ahead of the crosswalk.

Installation of New APS/CPS: This improvement is for upgrades to existing signals that do not currently have APS/CPS, or installation of a new APS/CPS signal where no signal currently exists. APS/CPS signals comply with current ADA accessibility guidelines.

2.10.2 Bicycle Improvements

Proposed bicycle improvements include providing pathways and pavement markings specifically related to cyclists. Four types of bicycle improvements were recommended: Sharrow Markings, Cycle Track, Separated Bike Lanes and Share Use Paths. Bikeway improvements are proposed based on field data and review of master plan documents. These improvement types are defined below.



A=Distance from Driver Side Door to Face of Curb
B=Door Swing Distance
C=Distance from Open Door To Centerline of Sharrow Pavement Marking
D=Distance from Face of Curb to Centerline of Sharrow Pavement Marking

Figure 2-13: Details for sharrow lane markings when adjacent to on-street parking lanes.

Sharrow Markings: This will provide markings and signage on roads that do not have space for dedicated bicycle lanes. In these instances, the road is shared between vehicles and bicycle traffic, and there is no separation provided between the two.

Sharrows benefit bicyclists by clearly indicating to drivers their responsibility to share the traveled way. Recommendations for shared roadway improvements include the installation of sharrows at the far side of intersections and at regular 250 ft intervals along designated bicycle routes. Sharrow markings should be placed a minimum 4 ft from face of curb. If there is an existing parking lane, sharrows should be placed a minimum 4 ft from the edge of the parking lane, to prevent collisions with opening car doors. For narrow residential roadways, where vehicles alternate right of way, opposing sharrow markings should be staggered and placed with a slight offset from the centerline.

It is also recommended that “Bicycle Route”, “Share the Road”, and “Bicycle May Use Full Lane” sign assemblies be implemented along designated bicycle routes.

Shared-Use Paths: This improvement is for the addition of paved paths that support a variety of recreation and transportation opportunities, such as walking, bicycling, and wheelchairs. These paths are physically separated from vehicular traffic by open space or barrier and designed for two-way travel. Shared-use paths provide a greater level of service and comfort to pedestrians and bicyclists by providing a 10 to 14-foot wide asphalt surface, 1 to 2-foot clear width, lighting, and landscaped grass buffers. An 8-ft width is acceptable where there are low pedestrian volumes and/or physical constraints. An important distinction between shared-use paths and sidewalks is the absence of obstructions, such as utility poles or street furniture.



Figure 2-14 Shared roadway signage. Use W11-1/W16-1P sign assembly where lanes are <13 ft to 15 ft wide;

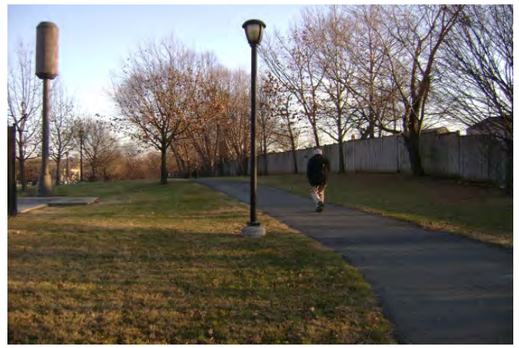


Figure 2-15 Example of a shared-use path (Glenmont Greenway).

Shared-use paths should be planned and implemented along major corridors and would provide connectivity between residential communities, shopping centers, parks, transit stops/stations, and other existing shared-use paths. Special emphasis should be placed on connecting with planned developments.

Striped Bike Lanes: Bicycle lanes create an exclusive space for cyclists; provide a buffer between automobiles and pedestrians; and create a narrower space for cars that may influence slower speeds. Bicycle lanes can also be viewed as safety "clear zones" in the sense that they introduce more space between the motorway and vertical edge elements like curbing, signs, utilities, and street trees. The major benefits accrue to cyclists in that they are able to travel at their preferred speed with minimal interference from automobiles. Bicyclists can choose to use the bicycle lanes or not, particularly when making left-turn maneuvers that may necessitate crossing out of the bike lane and into a left-turn lane.

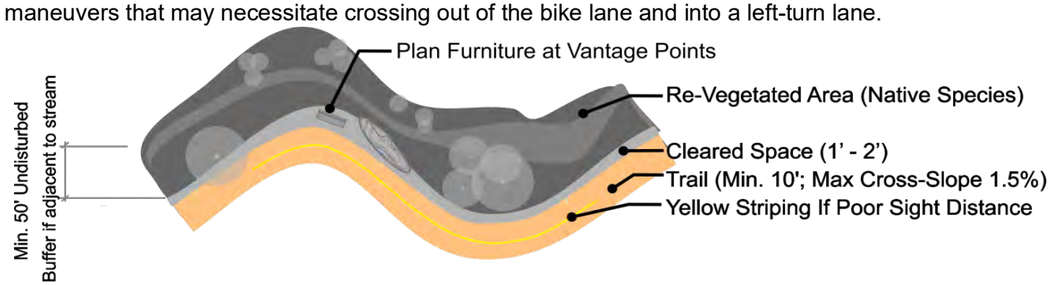


Figure 2-16 Best practices for shared-use path design.

The preferred width of a bicycle lane is six feet, although narrower adaptations to accommodate limited rights-of-way may allow a four-foot bike lane. The MdMUTCD notes that "if used [for marked bicycle lanes only], Bike Lane signs and plaques should be used in advance of the upstream end of the bicycle lane, at the downstream end of the bicycle lane, and at periodic intervals along the bicycle lane as determined by engineering judgment based on the prevailing speed of bicycle and other traffic, block length, distances from adjacent intersections, and other considerations." In some circumstances, colored pavements (green or red) or buffering may be considered to reinforce the presence of bicycle lanes, notably where there are several commercial driveways that intersect perpendicular to the bicycle lane, on-street parking, high truck volumes, or are located on higher-speed facilities. Special attention at intersections is critical, particularly where turning lanes or end-of-bike lane situations exist.

Cycle Track: Cycle Tracks usually support two-way bike traffic They include a buffered area between a bike lane and vehicle traffic, typically with some form of vertical separation created either by the relative height of the bike way itself or using markings and bollards or raised pavement. There are many design considerations inherent with cycle tracks, particularly as they interface with intersection crossings, on-street parking, transit stops, pedestrian crossings, and commercial driveways. Locations with very high right-turning volumes may be at a disadvantage for cycle track applications since it can be difficult to accommodate right-turn-only lanes into the design. The MdMUTCD is relatively silent on design parameters, but the NACTO Urban Bikeway Design Guide is a good resource.



Figure 2-17: A completed two-way protected Cycle Track along Woodglen Drive in Montgomery County.



Figure 2-18: Example of an intersection with separated bike lanes in Montgomery County.

Separated Bike Lanes: This provides an on-road or roadside improvement that provides physical separation between cyclists and motorists. A buffer of pavement markings or bollards is typically provided. Separated bike lanes differ from cycle tracks in that two-way traffic is not supported.

Floating Bus Stop: A floating bus stop may be used when separated bicycle facilities are constructed along transit routes.

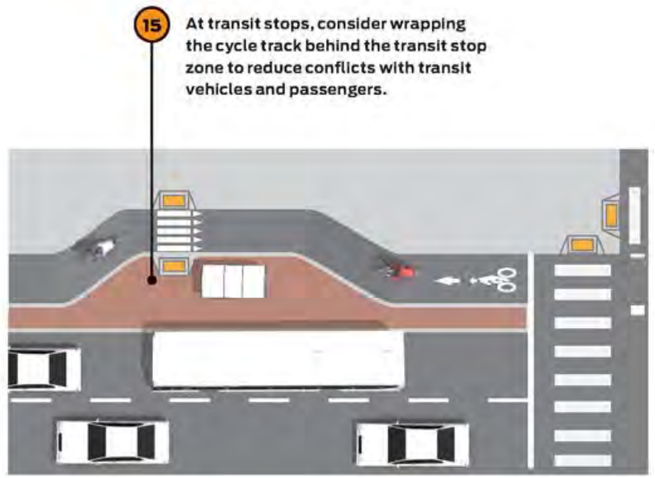


Figure 2-19NACTO suggests wrapping the cycle track behind a bus stop as one option to maintain safe access to transit.

2.10.3 Maintenance

General maintenance items, such as tree, hedge, and grass trimming and minor drainage repairs, were noted during field data collection. These improvements were not included in priority rankings but they are shown in a map for each station. General maintenance items can be completed in an area-wide basis as an inexpensive way to improve aesthetics and pedestrian comfort.



Figure 2 -19: Drainage issues cause sediment buildup.



Figure 2 -20: Grass overgrowth and overgrown hedges decrease existing sidewalk width and create vertical obstructions.

3 Bethesda

3 Bethesda

3.1 Study Area

3.1.1 Existing Area

The Bethesda Station for the Purple Line is proposed near the intersection of Elm Street and Wisconsin Avenue (MD 355) in downtown Bethesda. The area is a bustling urban community with shopping and dining districts, downtown residences, and commercial offices. Outside of the city center are residential neighborhoods with schools and parks. Within the ¼-mile radius, the area is predominantly commercial with shopping, restaurants, office buildings, and mixed-use apartment buildings. A small portion of the residential neighborhoods are located within the ¼-mile radius. The ½-mile radius is comprised of mostly single- and multi-family residential, schools, and parks. Some commercial uses are also present in the ½-mile radius. Major roadways and their respective limits, minimum rights-of-way, and number of lanes can be found in Table 3-1 Street and Highway Classification. A map of study limits can be found in Figure 3-1 Existing Study Area.

Pedestrian and cycle traffic in the Bethesda area is already significant due to the many businesses, retail, and residences present. The existing Bethesda Metro Station provides access to the Metro's Red Line route, allowing users to travel to and from Washington, DC. There are various businesses, agencies, schools, and parks in the area that contribute to the pedestrian and bicycle traffic in the Bethesda area. The main corridors are Wisconsin Avenue (MD 355), Old Georgetown Road, Bradley Boulevard, Woodmont Avenue, Montgomery Avenue, and Arlington Road. Major employers in the area include private businesses, hotels, restaurants, and retail. The National Institutes of Health (NIH) and Walter Reed National Military Medical Center are less than two miles north of the Bethesda Station and are currently accessible via the Metro's Red Line. Bethesda Chevy Chase High School is in the northeast portion of the study area along East-West Highway; smaller elementary schools are in the outer residential areas.

LEGEND

- ★ BETHESDA STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS
- MAJOR CONNECTIONS
- CAPITAL CRESCENT TRAIL
- QUARTER MILE RADIUS
- HALF MILE RADIUS

OLD GEORGETOWN ROAD
WOODMONT AVENUE
EDGEMOOR LANE
EAST WEST HIGHWAY
PEARL STREET
MONTGOMERY AVENUE
ELM STREET
WISCONSIN AVENUE
LELAND STREET
WALSH STREET
STANFORD STREET
BRADLEY BOULEVARD

FIGURE 3-1
BETHESDA STATION STUDY AREA

0 0.05 0.1 0.2 0.3 0.4 Miles

N

3.1.2 Existing Facilities

The existing pedestrian network in Bethesda is an extensive system of sidewalks, signalized and non-signalized intersections, curb ramps, crosswalks, pedestrian refuge islands, mid-block crossings, and pedestrian promenades. Existing infrastructure for cyclists is sparse; cyclists use shared roadways or sidewalks and trails. There is one marked bicycle lane along Woodmont avenue, but the striping is fading. Capital Bikeshare has several docks and there are bike racks in the area. Per site investigation and Maryland National-Capital Park and Planning Commission (MNCPPC) records, multiple development projects are currently under construction and more development projects are planned for Bethesda. See **Error! Reference source not found. Error! Reference source not found.** for further information on these projects.



Figure 3-2 Asphalt utility patching at intersection of Arlington Road and Moorland Lane

Sidewalks are a minimum of 4 feet wide but are wider along many of the main corridors. Grass buffers are common in residential neighborhoods. Along major roadways, such as Wisconsin Avenue (MD 355), sidewalks are 10 to 15 feet wide with street trees. Trip hazards and broken portions of the sidewalk are intermittent. Asphalt utility patching is common in sidewalks in the vicinity of current or recent construction. Patching has kacreated uneven sidewalks that may pose trip hazards for pedestrians and wheelchair users.



Figure 3-3 Street trees are used in downtown areas.

Figure 3-7 is a map showing the existing sidewalks and indicates there are no significant gaps in the existing sidewalk network. Exfair Road, Exeter Road, Denton Road, and Clarendon Road in the west, and Chelton Road, Cheltenham Drive, and Sleaford Road in the northeast are lacking a sidewalk on one or both sides of the road.

Most curb ramps and crosswalks are in moderate condition. Many curb ramps are not compliant with current standards because of one or more condition: not aligned properly, slopes are greater than the maximum allowable, no level landing areas or no detectable warning surfaces. Crosswalks are typically striped, but the markings are faded or not in conformance with current standards.

Signalized intersections in this BiPPA are common; however, some signals are not compliant with current APS/CPS requirements. Site investigation indicated that signalized intersections are noncompliant due to missing APS and/or CPS, incorrect spacing, or broken equipment. Existing mid-block crossings are sufficient; however, they could be widened for increased pedestrian safety and comfort.

Median refuge islands are utilized in the BiPPA to increase safety when crossing conditions warrant. These islands, while in good condition, were found to be too narrow to accommodate a high volume of pedestrian traffic. Standards recommend the median opening match the width of the crosswalk. See the example below along Woodmont Avenue near the intersection of Fairmont Avenue.

Based on existing conditions and field collected data, facilities in the area create a cohesive, safe pedestrian network. With upgrades to existing facilities and expansion of the bicycle network, the area can be an accessible experience for more users.



Figure 3-4 A typical crosswalk with outdated markings



Figure 3-5 Outdated pedestrian crossing signal

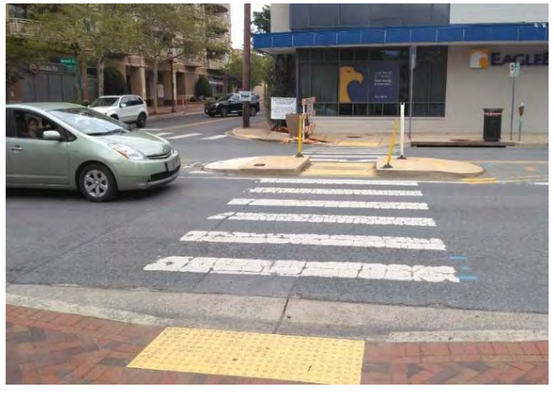


Figure 3-6The median opening is too narrow.

Table 3-1 Street and Highway Classification

Designation	Roadway	Limits	Minimum Right-of-Way	Lanes	Speed Limit
Major Highway					
M-3	Bradley Boulevard (MD 191)	Glenbrook Road to Wisconsin Avenue	120	4	25
M-4	Old Georgetown Road (MD 187)	Wisconsin Avenue to Moorland Lane	80	4	25
M-4	Old Georgetown Road (MD 187)	Moorland Lane to Wilson Lane	82	4	25
M-4	Old Georgetown Road (MD 187)	Wilson Lane to Cordell Avenue	86	4	25
M-6	Wisconsin Avenue (MD 355)	Chase Avenue to Bradley Boulevard	120	6	25
M-6	Wisconsin Avenue (MD 355)	Bradley Boulevard to Norwood Drive	122	6	25
M-20	East-West Highway (MD 140)	Wisconsin Avenue to Edgevale Street	110	4	25
Arterial					
A-68	Woodmont Avenue	Cordell Avenue to 46th Street	80	2	30
A-82	Arlington Road	Little Falls Parkway to Bradley Boulevard	80	4	30
A-83	Wilson Lane (MD 188)	Del Ray Avenue to Old Georgetown Road	80	2	30
Minor Arterial					
MA-7	Hillandale Road	Willette Parkway to Bradley Boulevard	70	2	25
Business					
B-4	Bethesda Avenue	Clarendon Road to Wisconsin Avenue	60	2	25
B-7	Cheltenham Drive	Wisconsin Avenue to Kentucky Avenue	80	2	25
B-9	Cordell Avenue	Norfolk Avenue to Wilson Lane	80	2	25
B-11	East Lane	Montgomery Lane to Hampden Lane	80	2	25
B-12	Edgemoor Lane	Fairfaix Road to Old Georgetown Road	70	2	25
B-13	Elm Street	Exfair Road to Wisconsin Avenue	60	2	25
B-14	Fairmont Avenue	Old Georgetown Road to Woodmont Avenue	60	2	25
B-14	Fairmont Avenue	Woodmont Avenue to Wisconsin Avenue	60	2	25
B-16	Hampden Lane	Fairfax Road to Caroline Freeland Urban Park	60	2	25
B-17	Hampden Lane	Arlington Road to Wisconsin Avenue	60	2	25
B-18	Leland Street	Maple Avenue to Wisconsin Avenue	70	2	25
B-20	Middleton Lane	Pearl Street to Wisconsin Avenue	60	2	25
B-21	Miller Avenue	Woodmont Avenue to Wisconsin Avenue	50	2	25
B-22	Montgomery Avenue	Wisconsin Avenue to East West Highway	80	2	25
B-23	Montgomery Lane	Arlington Road to East West Highway	52	2	25
B-24	Moorland Lane	Exeter Road to Old Georgetown Road	70	2	25
B-25	Norfolk Avenue	Cordell Avenue to Wisconsin Avenue	80	2	25
B-26	North Lane	Woodmont Avenue to East Lane	50	2	25
B-27	Pearl Street	Chase Avenue to end of street	60	2	25
B-30	Saint Elmo Avenue	Old Georgetown Road Norfolk Avenue	70	2	25
B-31	Stanford Street	Oakridge Avenue to Wisconsin Avenue	60	2	25
B-32	Walsh Street	East Avenue to Wisconsin Avenue	60	2	25
Primary Residential					
P-1	Avondale Street	Wisconsin Avenue to end of street	60	2	25
P-2	Chelton Road	Sleaford Road to East West Highway	60	2	25
P-4	Chevy Chase Drive	Hillandale Road to Bradley Boulevard	70	2	25
P-4	Bradley Lane	Bradley Boulevard to East Avenue	70	2	25
P-5	Elm Street	Clarendon Road to Arlington Road	60	2	25
P-8	East Avenue	Bradley Lane to Leland Street	50	2	25

Designation	Roadway	Limits	Minimum Right-of-Way	Lanes	Speed Limit
P-10	Tilbury Street	Chase Avenue to Sleaford Road	60	2	25
Uncategorized*					
	44th Street	Leland Street to Elm Street	44	1	25
	45th Street	Leland Street to Elm Street	44	1	25
	46th Street	Elm Street to Willow Lane	44	1	25
	46th Street	Walsh Street to Willow Lane	44	1	25
	47th Street	Leland Street to Elm Street	44	1	25
	Beverly Road	Hampden Lane to Edgemoor Lane	44	1	25
	Clarden Road	Clarendon Road to Denton Road	44	1	25
	Clarendon Road	Fairfax Road to Hampden Lane	44	1	25
	Clarendon Road	Edgemoor Lane to Wilson Lane	44	2	25
	Curtis Road	Oakridge Avenue to Leland Street	44	1	25
	Denton Road	Fairfax Road to Edgemoor Lane	44	2	25
	East Lane	North Lane to Hampden Lane	44	2	25
	Exeter Road	Moorland Lane to Glenbrook Road	44	2	25
	Exfair Road	Hampden Lane to Clarendon Road	44	1	25
	Fairfax Road	Little Falls Parkway to Bradley Boulevard	44	1	25
	Harling Lane	Kentucky Avenue to Tilbury Street	44	1	25
	Manning Drive	Glenbrook Road to Fairfax Road	44	2	25
	Nottingham Drive	Wisconsin Avenue to end of street	44	2	25
	North Lane	Woodmont Avenue to East Lane	44	2	25
	Norwood Drive	Wisconsin Avenue to end of street	44	1	25
	Oakridge Avenue	Elm Street to Stanford Street	44	2	25
	Oakridge Lane	Elm Street to Lynn Drive	44	1	25
	Offutt Lane	Chevy Chase Drive to Bradley Boulevard	44	2	25
	Ridge Street	East Avenue to Wisconsin Street	44	1	25
	Sleaford Road	Chelton Road to Tilbury Street	44	1	25
	Thornapple Street	Oakridge Avenue to end of street	44	1	25
	Wellington Drive	Bradley Boulevard to Strathmore Street	44	1	25
	Wessling Lane	Glenbrook Road to Fairfax Road	44	1	25
	West Avenue	Bradley Lane to Walsh Street	44	2	25

*Uncategorized roads are not included in the MNCPPC Roadway Functional Classification. ROW widths are based on MC-210.01 Tertiary Residential Street. Speed limits are based on minimum posted speed required by State law.

N

OLD GEORGETOWN ROAD

WOODMONT AVENUE

ARLINGTON ROAD

PEARL STREET

EDGEMOOR LANE

EAST WEST HIGHWAY

MONTGOMERY AVENUE

HAMPDEN LANE

ELM STREET

BETHESDA AVENUE

LELAND STREET

WALSH STREET

STANFORD STREET

WISCONSIN AVENUE

BRADLEY BOULEVARD

LEGEND

- BETHESDA STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- EXISTING SIDEWALKS
- CAPITAL CRESCENT TRAIL
- QUARTER MILE RADIUS
- HALF MILE RADIUS

FIGURE 3-7
BETHESDA STATION
EXISTING PEDESTRIAN FACILITIES

0 0.05 0.1 0.2 0.3 0.4 Miles

N

OLD GEORGETOWN ROAD

ARLINGTON ROAD

WOODMONT AVENUE

PEARL STREET

EDGEMOOR LANE

EAST WEST HIGHWAY

MONTGOMERY AVENUE

HAMPDEN LANE

ELM STREET

BETHESDA AVENUE

LELAND STREET

WALSH STREET

STANFORD STREET

WISCONSIN AVENUE

BRADLEY BOULEVARD

LEGEND

- BETHESDA STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS
- CAPITAL CRESCENT TRAIL

EXISTING BIKEWAYS

- EXISTING BIKE RACK
- SHARROW
- STRIPED BIKE LANES
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 3-8
BETHESDA STATION
EXISTING CYCLIST FACILITIES

0 0.05 0.1 0.2 0.3 0.4 Miles

3.1.3 Proposed Purple Line Improvements

Multiple improvements are proposed within the Bethesda BiPPA in conjunction with the construction of the Purple Line and Capital Crescent Trail. The new Purple Line Bethesda Station and associated sidewalk improvements will be constructed at the intersection of Elm Street and Wisconsin Avenue. A connection to the Capital Crescent Trail will be constructed at Elm Street Park. Another connection is proposed where the Capital Crescent Trail crosses under East-West Highway. This connection, though outside our study limits, is an important path that provides access to users along the eastern portions of the study area at East-West Highway and Montgomery Avenue. Refer to Figure 3-7 for the location of these improvements.

At the Bethesda Station, a 6-foot wide sidewalk will be constructed along Elm Street from the intersection with Wisconsin Avenue to approximately 400 feet west. Two new curb ramps will be installed at the northwest corner of Elm Street and Wisconsin Avenue. At Elm Street Park, the connection will tie into an existing path in the northern portion of the Park. The connection at the southern end of Pearl Street will include a new sidewalk. At East-West Highway, the Capital Crescent Trail and Purple Line cross under the East-West Highway overpass; the trail connection will provide access to East-West Highway via both a ramp and stairs.

3.1.4 Adjacent Projects

MNCPPC records indicate there are several developments planned or currently under construction within the Bethesda BiPPA. Construction activities range from right-of-way or building repairs to multi-story mixed use developments. A summary of these projects and their locations is found in Table 3-2. Adjacent projects were considered when developing proposed localized improvements. If a proposed improvement overlaps with the construction limits of an adjacent project, this report will not propose a localized improvement. In addition, if an improvement proposed in this report will tie into an adjacent project, this is noted.

Table 3-2 Adjacent Projects Summary

Project Title / Location	MNCPPC Plan Number	Project Details
7359 Wisconsin Avenue	820180040	Construct new 250-foot hotel and office building; construct 5' min. ADA path along Wisconsin Avenue, Montgomery Avenue, and Waverly Street; install bike racks; update curb ramps; 10' two-way separated bike lane along Montgomery Avenue
8008 Wisconsin Avenue	820160130	Construct a 14-story mixed-use building; construct 8' sidewalk along Woodmont Avenue, Cordell Avenue, and Wisconsin Avenue; update curb ramps
Air Rights Center (Pearl Street)	82007001D	Construction of a new office building; minor sidewalk upgrades to west side of Pearl Street dead end; upgrades to Elm Street Park
7340 Wisconsin Avenue	820140120	Construction of mixed-use building; minor sidewalk restoration; updates to curb ramps; installation of bike racks
St. Elmo Apartments (St. Elmo Avenue)	82017003A	Construction of a 22-story residential building; sidewalk reconstruction; installation of new bike racks; construction of a new pedestrian promenade connecting St. Elmo Avenue and Fairmont Avenue
The Claiborne (Norfolk Avenue)	82017008A	Construction of multi-story mixed-use building; sidewalk upgrades; installation of tree pits; curb ramp upgrades
7607 Old Georgetown Road	820190030	Construction of a mixed-use building; minor sidewalk upgrades; reconstruction of existing curb ramps
Metro Tower (Wisconsin Avenue between Hampden Lane and Elm Street)	820180110	Construction of residential building with public plaza; restoration of existing sidewalk; installation of new bike racks; upgrades to existing curb ramps and crosswalks
Edgemont at Bethesda II (Edgemoor Lane at Woodmont Avenue)	820180170	Construction of new 15-story residential building; reconfiguration of existing building; upgrades to curb ramps; instsallation of APS/CPS; installation of tree pits; construction of a two-way cycle track per master plan recommendations
ZOM Bethesda (Morland Lane at Arlington Road)	8201880120	Upgrades to existing curb ramps
Marriott International Headquarters (Woodmont Avenue at Norfolk Avenue)	820180030	Updates to existing sidewalks along Woodmont Avenue; new curb ramps
7272 Wisconsin Avenue	820160200	Updates to south side of Elm Street, including sidewalk reconstruction, installation of tree pits and grates, and reconstruction of two curb ramps; restriping of a portion of the crosswalk across southbound Wisconsin Avenue (to center median only)
Montgomery Avenue/Lane Two-Way Cycle Track	N/A	Construct 10’ wide cycle track on the south side of Montgomery Avenue/Lane; to be constructed in three phases: Phase 1 from Woodmont Avenue to MD 355; Phase 2A at the intersection of MD 355 and Montgomery Lane; Phase 2B private developer constructs 10’ wide cycle track east of MD 355; Phase 2C from Waverly St to Pearl Street
Capital Crescent Trail Phase II	N/A	Reconstruction of the intersection of Willow Lane/47th Street; construct shared use path on the east side of 47th Street
Woodmont Avenue Cycle Track	N/A	Construction of a 10’ wide cycle track; to be built in three phases: Phase I is the east side of Woodmont Avenue beginning at Miller Avenue, continuing north to Montgomery Avenue; Phase II extends on the east side of Woodmont Avenue south from Miller Avenue to Wisconsin Avenue, and extends the cycle track on the west side of the road north from Montgomery Avenue to Norfolk Avenue

FIGURE 3–9 PURPLE LINE BETHESDA STATION CONSTRUCTION PLAN

(PREPARED BY ATKINS GLOBAL)

2. PROPOSED STORMDRAIN / UTILITIES SHOWN FOR REFERENCE ONLY. SEE STORMDRAIN PLANS IN THIS PACKAGE FOR DETAILS.

3. STRIPING SHOWN FOR REFERENCE ONLY. SEE S1-021 FOR DETAILS.

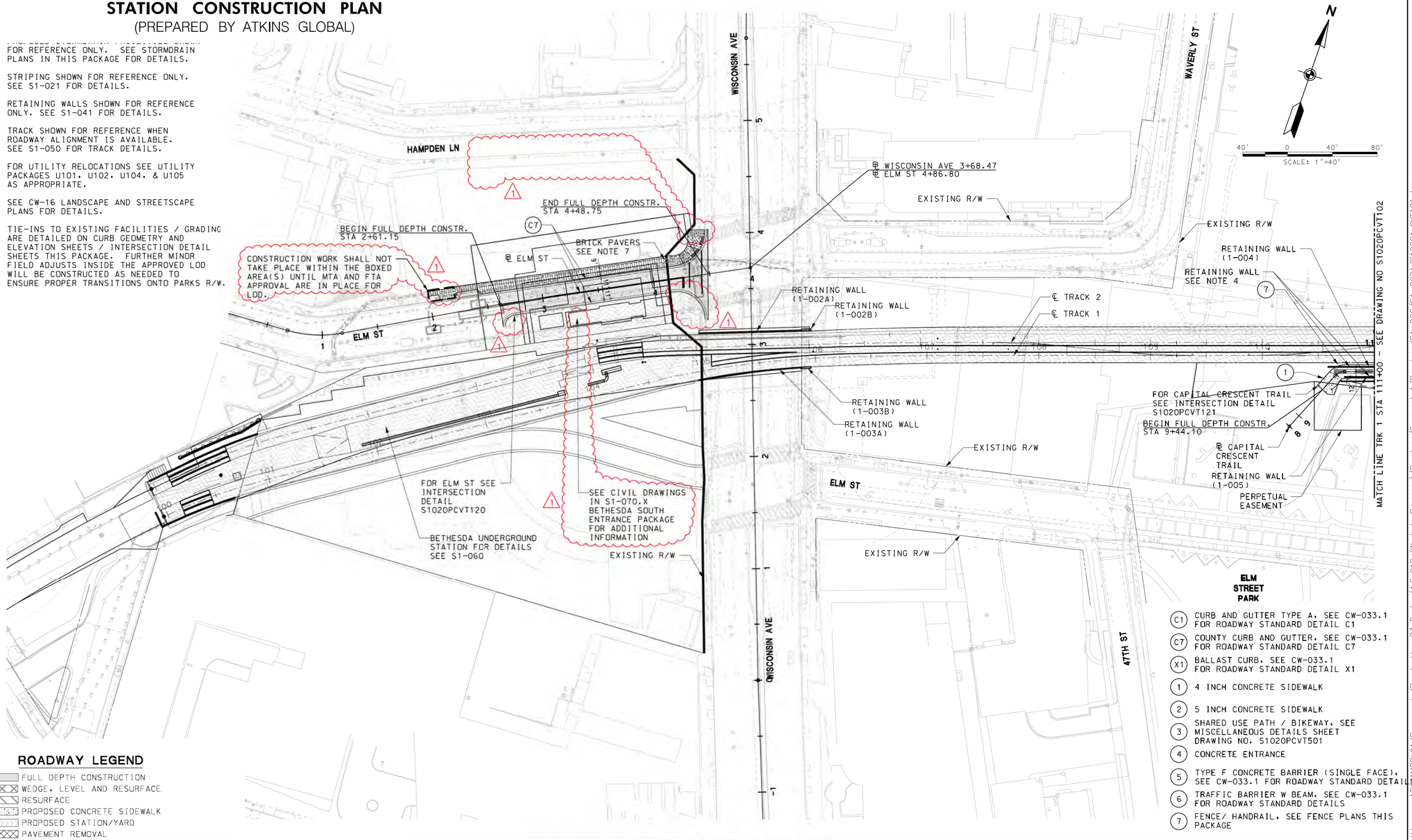
4. RETAINING WALLS SHOWN FOR REFERENCE ONLY. SEE S1-041 FOR DETAILS.

5. TRACK SHOWN FOR REFERENCE WHEN ROADWAY ALIGNMENT IS AVAILABLE. SEE S1-050 FOR TRACK DETAILS.

6. FOR UTILITY RELOCATIONS SEE UTILITY PACKAGES U101, U102, U104, & U105 AS APPROPRIATE.

7. SEE CW-16 LANDSCAPE AND STREETSCAPE PLANS FOR DETAILS.

8. TIE-INS TO EXISTING FACILITIES / GRADING ARE DETAILED ON CURB GEOMETRY AND ELEVATION SHEETS / INTERSECTION DETAIL SHEETS THIS PACKAGE. FURTHER MINOR FIELD ADJUSTS INSIDE THE APPROVED LOD WILL BE CONSTRUCTED AS NEEDED TO ENSURE PROPER TRANSITIONS ONTO PARKS R/W.



ROADWAY LEGEND

- FULL DEPTH CONSTRUCTION
- WEDGE, LEVEL AND RESURFACE
- RESURFACE
- PROPOSED CONCRETE SIDEWALK
- PROPOSED STATION/YARD
- PAVEMENT REMOVAL

(C1) CURB AND GUTTER TYPE A, SEE CW-033.1 FOR ROADWAY STANDARD DETAIL C1

(C7) COUNTY CURB AND GUTTER, SEE CW-033.1 FOR ROADWAY STANDARD DETAIL C7

(X1) BALLAST CURB, SEE CW-033.1 FOR ROADWAY STANDARD DETAIL X1

(1) 4 INCH CONCRETE SIDEWALK

(2) 5 INCH CONCRETE SIDEWALK

(3) SHARED USE PATH / BIKEWAY, SEE MISCELLANEOUS DETAILS SHEET DRAWING NO. S1020PCVT501

(4) CONCRETE ENTRANCE

(5) TYPE F CONCRETE BARRIER (SINGLE FACE), SEE CW-033.1 FOR ROADWAY STANDARD DETAILS

(6) TRAFFIC BARRIER W BEAM, SEE CW-033.1 FOR ROADWAY STANDARD DETAILS

(7) FENCE/ HANDRAIL, SEE FENCE PLANS THIS PACKAGE

MARYLAND DEPARTMENT OF TRANSPORTATION
MARYLAND TRANSIT ADMINISTRATION
MTA Maryland

PURPLE LINE TRANSIT PARTNERS

ATKINS
3901 Calverton Blvd, Suite 400
Calverton, Maryland 20705
Telephone: 301-210-6800
www.atkinsglobal.com

PROFESSIONAL CERTIFICATION

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

50425 License No. 01/04/21 Expiration Date

08/22/2019

NO.	DESCRIPTION	BY	DATE
0	RELEASE FOR CONSTRUCTION	CJC	05/29/18
1	NDC-062 STAIR ALIGNMENT, SWK, & CURBS	CJC	08/08/19

REVISIONS

DESIGN JLB
DRAWN RBR
CHECK JLB
APPR CJC

PURPLE LINE LIGHT RAIL
CIVIL DESIGN
SEGMENT 1A

ROADWAY PLAN

DATE: AUGUST 8, 2019 SCALE: 1" = 40'

CONTRACT NO. 0-0000-0000
DRAWING NO. S1020APCVT101
SHEET NO. 30 OF 457

pw://SUSD03643.wsatkins.com:ATKPWAMDPL01/Documents/Purple Line P3 Design/4.C CAD (Work In Progress)/Roadway/Segment 1/Drawings/S1-020/S1-020A/S1020APCVT101.dgn
8/7/2019 10:37:58 AM

Adjacent projects were considered when developing proposed localized improvements. If a data point overlaps with the construction limits of an adjacent project, this report will not propose a localized improvement. In addition, if an improvement proposed in this report will tie into an adjacent project, this is noted.

3.2 Master Plan Summary

The Bethesda Downtown Master Plan was approved in 2017. See Figure 3-10 Bethesda Station Purple Line Master Plans for the boundary of these plans. The Master Plan encompasses 451 acres and provides recommendations for long-term planning of the downtown Bethesda area. Though the plan discusses all aspects of regional planning, this report focuses on recommendations related to pedestrian and cyclist infrastructure only. The Master Plan emphasizes the idea of “complete streets”, or improvements that provide equal safety and quality for all users and suggests that all future improvements within this area utilize the complete streets methodology. The Purple Line Pedestrian Connectivity Report and the Montgomery County Bicycle Master Plan were also reviewed.

The master plan recommendations align with this report’s goal of outlining infrastructure projects that improvement safety, accessibility, and connectivity in the Bethesda area. The improvements discussed in 3.3 Proposed Improvements have been designed to maintain the integrity of these plans and, where possible, improve upon plan recommendations.

3.2.1 Pedestrian Improvement Recommendations

A high-quality pedestrian network is essential to the success of transit-oriented communities because, unlike most other modes of transportation, pedestrian activity is about experiencing the community between points of origin and destination. Nearly all modes of transportation require that at least a portion of each trip be completed as a pedestrian; therefore, the quality of the pedestrian network is an important issue for most residents and commuters in Downtown Bethesda.

The pedestrian network in Downtown Bethesda is already extensive; according to the Purple Line Pedestrian Connectivity Report by M-NCPPC, the area’s existing connectivity was measured at 77%. Due to the large volume of pedestrian infrastructure already in place, recommendations from the various master plans focus on increasing the safety and accessibility of existing infrastructure. A summary of recommendations from the plans reviewed can be found in Table 3-3 Summary of Area Pedestrian Recommendations, below.

Table 3-3 Summary of Area Pedestrian Recommendations

Roadway/Route	Recommendation	Reference
North Bethesda Trail	Reconstruct existing shared use path	Bethesda Downtown Master Plan
Strathmore Street Extended	Construct shared use path (south of Bradley Boulevard to Chevy Chase Drive)	Bethesda Downtown Master Plan
Bradley Boulevard at Capital Crescent Trail	Replace current staircase with ADA ramp	Bethesda Downtown Master Plan
Strathmore Street at Wellington Drive	All-way stop-controlled intersection; high visibility crosswalks	Purple Line Pedestrian Connectivity Report
Bradley Boulevard at Arlington Rd	High visibility crosswalks	Purple Line Pedestrian Connectivity Report
Bradley Boulevard at Leland Street	High visibility crosswalks	Purple Line Pedestrian Connectivity Report
Old Georgetown Road at St Elmo Avenue	High visibility crosswalks	Purple Line Pedestrian Connectivity Report
Strathmore Street (Bradley Boulevard to Woodmont Avenue)	Increase sidewalk with to at least 5 ft, add 5 ft buffer	Purple Line Pedestrian Connectivity Report
Strathmore Street (Bradley Boulevard to Wellington Drive)	Construct a 5 ft sidewalk with a 5 ft buffer	Purple Line Pedestrian Connectivity Report
Bradley Boulevard (Arlington Road to Wellington Drive)	Increase sidewalk with to 5 ft and add a 5 ft buffer	Purple Line Pedestrian Connectivity Report

3.2.2 New Bikeway Recommendations

Both the Bethesda Downtown Master Plan and the Montgomery County Bicycle Master Plan provide bicycle-specific recommendations for various areas in Montgomery County. The recommendations from these plans are summarized in Table 3-4 Summary of Area Cycling Infrastructure Improvement Recommendations on the next page. In instances where the Bethesda Downtown Master Plan and the Bicycle Master Plan overlap, the Bicycle Master Plan recommendation is prioritized.

Table 3-4 Summary of Area Cycling Infrastructure Improvement Recommendations

Roadway/Route	Limits	Reference	Status
Separated Bike Lane			
Woodmont Avenue	St. Elmo Avenue to Wisconsin Avenue	Bethesda Downtown Master Plan, Montgomery County Bicycle Master Plan	New Recommendation
Bradley Boulevard	Fairfax Road to Wisconsin Avenue	Bethesda Downtown Master Plan, Montgomery County Bicycle Master Plan	New Recommendation
Cheltenham Drive	Wisconsin Avenue to Tilbury Street	Montgomery County Bicycle Master Plan	New Recommendation
Capital Crescent Trail (Surface Route: Bethesda Ave/Willow Ln)	47th Street to Woodmont Avenue	Bethesda Downtown Master Plan, Montgomery County Master Plan	Recommended
Old Georgetown Road/East West Highway	Woodmont Avenue to Montgomery Avenue	Bethesda Downtown Master Plan, Montgomery County Bicycle Master Plan	New Recommendation
Montgomery Avenue	Wisconsin Avenue to East-West Highway	Bethesda Downtown Master Plan, Montgomery County Bicycle Master Plan	New Recommendation
Montgomery Lane	Woodmont Avenue to Wisconsin Avenue	Montgomery County Bicycle Master Plan	New Recommendation
Arlington Road	Old Georgetown Road to Bradley Boulevard	Bethesda Downtown Master Plan, Montgomery County Bicycle Master Plan	New Recommendation
Norfolk Avenue	Woodmont Avenue to Wisconsin Avenue	Montgomery County Bicycle Master Plan	New Recommendation
Pearl Street	Middleton Lane to Montgomery Avenue	Montgomery County Bicycle Master Plan	New Recommendation
Bradley Lane	Wisconsin Avenue to West Street	Montgomery County Bicycle Master Plan	New Recommendation
East-West Highway	Wisconsin Avenue to Montgomery Avenue	Montgomery County Bicycle Master Plan	New Recommendation
Edgemoor Lane	Arlington Road to (existing) Bethesda Metro Station	Montgomery County Bicycle Master Plan	New Recommendation
Leland Street	Wisconsin Avenue to 46th Street	Montgomery County Bicycle Master Plan	New Recommendation
Bike Lane			
Wilson Lane (MD 188)	Clarendon Road to Old Georgetown Road	Bethesda Downtown Master Plan	Recommended
Elm Street	Exeter Road to Wisconsin Avenue	Bethesda Downtown Master Plan, Montgomery County Bicycle Master Plan	Recommended
Norfolk Avenue/Cheltanham Drive	St. Elmo Avenue to Tilbury Street	Bethesda Downtown Master Plan	New Recommendation
Pearl Street	Sleaford Road to Montgomery Avenue	Bethesda Downtown Master Plan	New Recommendation
Waverly Street	East-West Highway to Wisconsin Avenue	Bethesda Downtown Master Plan, Montgomery County Bicycle Master Plan	New Recommendation
Chelton Road	Lynbrook Drive to East-West Highway	Bethesda Downtown Master Plan	New Recommendation
Edgemoor Lane	Arlington Road to Metro Station (Woodmont Avenue)	Bethesda Downtown Master Plan	New Recommendation
St. Elmo Avenue	Norfolk Avenue to Old Georgetown Road	Montgomery County Bicycle Master Plan	New Recommendation
Shared Roadway			
Edgemoor Lane	Exeter Road to Arlington Road	Bethesda Downtown Master Plan, Montgomery County Bicycle Master Plan	New Recommendation
Elm Street	Exfair Road to Arlington road	Montgomery County Bicycle Master Plan	New Recommendation
Commerce Lane	Metro Station (Edgemoor Lane) to Wisconsin Avenue	Bethesda Downtown Master Plan	New Recommendation
Bethesda Avenue	Clarendon Road to Woodmont Avenue	Bethesda Downtown Master Plan	Recommended
Tilbury Street/Sleaford Road	Chase Avenue to Chelton Road	Bethesda Downtown Master Plan, Montgomery County Bicycle Master Plan	New Recommendation
Exeter Road	Edgemoor Lane to Elm Street	Montgomery County Bicycle Master Plan	New Recommendation
Norfolk Avenue	St. Elmo Avenue to Woodmont Avenue	Montgomery County Bicycle Master Plan	New Recommendation
Strathmore Street	Woodmont Avenue to Bradley Boulevard	Bethesda Downtown Master Plan, Montgomery County Bicycle Master Plan	Recommended
Pearl Street	Montgomery Avenue to Capital Crescent Trail	Bethesda Downtown Master Plan	New Recommendation
46th Street	Elm Street to Walsh Street	Montgomery County Bicycle Master Plan	New Recommendation
Walsh Street	46th Street to West Avenue	Montgomery County Bicycle Master Plan	New Recommendation
West Avenue	Walsh Street to Bradley Lane	Montgomery County Bicycle Master Plan	New Recommendation
Maryland Avenue	Highland Avenue to Chase Avenue	Montgomery County Bicycle Master Plan	New Recommendation
Pearl Street	Chase Avenue to Middleton Lane	Montgomery County Bicycle Master Plan	Existing
Pearl Street	Montgomery Avenue to Capital Crescent Trail	Montgomery County Bicycle Master Plan	New Recommendation
Shared Use Path			
Capital Crescent Trail	Little Falls Parkway to East-West Highway	Bethesda Downtown Master Plan	Existing
Capital Crescent Trail (Surface Route)	Elm Street to Willow Lane via 47th Street	Bethesda Downtown Master Plan	On-going
Strathmore Street Extended	Bradley Boulevard to Chevy Chase Drive	Bethesda Downtown Master Plan	New Proposal

FIGURE 3-10
BETHESDA STATION
PURPLE LINE MASTERPLANS

N

0 0.2 0.4 0.8 1.2 1.6 Miles

LEGEND

- BETHESDA STATION
- PURPLE LINE
- QUARTER MILE RADIUS
- HALF MILE RADIUS

MASTERPLANS

- BETHESDA CHEVY CHASE PLAN
- BETHESDA DOWNTOWN PLAN

3.3 Proposed Improvements

The Bethesda BiPPA has been evaluated for several types of pedestrian and bicycle improvements. Proposed improvements have been developed and prioritized based on the ranking criteria outlined in Section 2.8 of this report. A list of proposed improvements was developed to include the recommendations of previously prepared studies and master plans. Information was gathered from a field review of the site and data gathered from other sources. Separate analyses and mapping was developed for pedestrian improvements and for biking improvements.

For each improvement, an analysis of possible barriers to construction and potential project cost was included. This analysis was used to determine the project priority ranking. Each improvement was then ranked in accordance with the Methodology. Please refer to Table 3-5 for a summary of priority rankings of pedestrian improvements.

3.3.1 Proposed Pedestrian Improvements

This study included a thorough review of existing pedestrian facilities (sidewalk ramps, driveway aprons, linear sidewalks, etc.) and determined which facilities did not meet current ADA criteria. The report and figures indicate where spot improvements are required and where linear sidewalk improvements are required. Spot improvements are shown in Figures 13-15 (a) and (b). The maps show the locations and types of existing facilities that need to be reconstructed to meet ADA standards. Proposed linear routes/improvements for pedestrian access are shown in Figure 13-16. The map figures also indicate the improvements that will be constructed by the Purple Line project.

Refer to Table 13-4 for a summary of priority rankings of pedestrian improvements. This report describes the top ranked pedestrian improvements for the Takoma/Langley Transit Center Station.

1. Area-wide Improvements to Existing Sidewalks

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Sidewalk, Removal of Sidewalk Obstructions, Widening of Non-compliant Sidewalk Widths, Reconstruction of Sidewalks with Non-compliant Slopes

Priority Ranking: 2.7 Time Frame: Short-term Cost Category: 3

There is a need for general maintenance of pedestrian pathways and upgrades to those that do not meet current ADA, MCDOT, or MDOT SHA standards throughout the BiPPA. Curb ramps should be upgraded to meet slope requirements as set forth by ADA and must include detectable warning surfaces. Sidewalks should be free from trip hazards and breaks; it is recommended that trip hazards greater than ½-inch and significant breakage be repaired by replacing the affected portion of the sidewalk. In addition, sidewalks that have cross-slopes greater than allowable or pinch points with less than a 36” width should be replaced or reconfigured. Sidewalk obstructions, such as guy wires, should be reconfigured to provide adequate overhead clearance for pedestrians.



Figure 3-11 A noncompliant sidewalk slope on Arlington Road.

Although all area wide sidewalk improvements are a worthwhile investment, those in the vicinity of the Purple Line, Capital Crescent Trail connection at Pearl Street, Bethesda-Chevy Chase High School, Cheltenham Drive Urban Park, Connie Morella (Bethesda) Library, Elm Street Urban Park, Jane E. Lawton Community Recreation Center, Bethesda Elementary School and Bethesda Row Shopping Mall should be prioritized based on current and future use.

2. Area-wide Improvements to Existing Driveway Aprons

Improvement Type: Reconstruct Driveway Aprons

Priority Ranking: 3.7 Time Frame: Short-term Cost Category: 1

Throughout the study area, many of the driveway aprons need to be upgraded to meet ADA slope requirements and be in conformance with current MCDOT and MDOT SHA standards. Existing aprons in both the residential and commercial areas of Bethesda were found to have existing cross slopes greater than 2%.

Reconstruction of driveway aprons is recommended for those roads with sidewalks that provide direct connection to the Purple Line Station or the Capital Crescent Trail. These roadways are Pearl Street, Elm Street, East-West Highway, and Montgomery Avenue. Much like the area wide improvements to existing sidewalks, area wide improvements to existing driveway aprons would improve accessibility throughout the area by providing a continuous ADA-friendly walking path.



Figure 3-12 A non-compliant driveway apron on Montgomery Avenue.

3. Area-wide Improvements to Existing Intersections

Improvement Type: Reconstruction of Mid-block Crossing, Striping of Crosswalks

Priority Ranking: 2.5 Time Frame: Short-term to Mid-term Cost Category: 3

Crosswalk striping throughout the Purple Line BiPPA is fading or does not utilize the continental or "piano stripe" pattern that is the standard. At a minimum, all striping should be updated to ensure there are no faded or broken portions. Crosswalks in high-traffic areas, such as those along major highways (East-West Highway, Wisconsin Avenue, Bradley Boulevard and Old Georgetown Road) or minor arterials (Woodmont Avenue, Montgomery Avenue and Wilson Lane) and those in the vicinity of Bethesda-Chevy Chase High School, Bethesda Elementary School and Cheltenham Drive Urban Park, should be prioritized.



Figure 3-1 Faded crosswalk striping at Bethesda Metro Center.

Upgrades to these existing crosswalks would provide increased safety and comfort for pedestrians. No impacts to existing utilities or rights-of-way are anticipated.

4. Area-wide Upgrades to APS/CPS

Improvement Type: Signal Upgrades to APS/CPS

Priority Ranking: 4.6 Time Frame: Short-term to Mid-term Cost Category: 2

Many intersections throughout the Bethesda area do not have accessible signals. Upgrading these signals to comply with ADA guidelines would create a safer and more inclusive pedestrian experience for everyone. Impacts to existing utilities, rights-of-way or environmental features are not anticipated. Minor traffic pattern changes may be required at high volume intersections during construction.



Figure 3-14 Many crossings have not been updated to APS/CPS.

Although improving accessibility at all intersections is a worthwhile investment, the high traffic areas should be prioritized. These areas include those along major highways (East-West Highway, Wisconsin Avenue, Bradley Boulevard and Old Georgetown Road) or minor arterials (Woodmont Avenue).

5. Edgemoor Lane

From: Woodmont Avenue to Old Georgetown Road (MD 187)

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, Striping of Crosswalks, Installation of Additional Signing

Priority Ranking: 4.0 Time Frame: Mid-term Cost Category: 2

This section of Edgemoor Lane runs between two large parking garages and office buildings. With so much pedestrian traffic and cars entering and exiting the parking garages, safety is critical. Ensuring that signage is clear, and crosswalks are clearly striped would improve this area and allow pedestrians to cross safely.

Work in this area would need to be integrated into the proposed Edgemont at Bethesda II project, which includes upgrades at the corner of Edgemoor Lane and Woodmont Avenue. Impacts to utilities and environmental features are expected to be minimal as this is currently a very urban area. However, because of the high volume of pedestrian and vehicular traffic, traffic pattern changes would be required to make this a safe area and implement safe crossings.

6. Pearl Street

From: CCT to East-West Highway (MD 410)

Improvement Type: Striping of Crosswalk, Construction of New Sidewalks

Priority Ranking: 4.6 Time Frame: Long-term Cost Category: 2

The Capital Crescent Trail, built in conjunction with Purple Line improvements, would have a sidewalk connection at the dead end of Pearl Street. Currently there is an intermittent sidewalk along the south-east side of Pearl Street. To ensure this access gets the most benefit, a new sidewalk should be constructed to establish a continuous, safe, and accessible path. Work in this area would need to be integrated into the proposed Air Rights Center project, which includes upgrades at the southern end of Pearl Street. Care should be taken to minimize impacts to near-by utility poles. No impacts to traffic or environmental features are anticipated.

7. Elm Street at 47th Street

Improvement Type: Reconstruction of Curb Ramps

Priority Ranking: 4.3 Time Frame: Short-term Cost Category: 1

The intersection of Elm Street and 47th Street is located at the entrance of Elm Street Urban Park. This park features a playground and a picnic area. There is also an office building nearby. The current curb ramps are not ADA compliant and replacing them would create a safer and more accessible intersection.

Work in this area would need to be integrated into the proposed Elm Street tunnel project. Impacts to nearby utility poles should be minimized. No impacts to traffic or environmental features are anticipated.

8. Elm Street

From: Woodmont Avenue to Wisconsin Avenue (MD 355)

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Sidewalks with Non-Compliant Slope, Striping of Crosswalk, Signal Upgrades to APS/CPS

Priority Ranking: 4.5 Time Frame: Mid-term Cost Category: 2

This section of Elm street is very urban and provides a connection between parking garages, office buildings and the Bethesda One shopping center. The intersections at Elm Street and Woodmont Avenue and Elm Street and Wisconsin Avenue are both busy with pedestrians and vehicles. Upgrades at these two intersections and the sidewalk connecting them would make a safe and accessible route to the station entrance.

Work in this area would need to be integrated into the proposed Purple Line station entrance and the adjacent project at 7272 Wisconsin Avenue. No impacts to utilities or environmental features are anticipated. Care would need to be taken to avoid a few small street trees. Because the intersections at Wisconsin and Woodmont Avenues have very heavy traffic, minor traffic pattern adjustments should be made during construction.

9. Hampden Lane

From: Arlington Road to Woodmont Avenue (MD 355)

Improvement Type: Reconstruction of Driveway Aprons, Construction of New Sidewalk, Installation of Additional Signing

Priority Ranking: 4.0 Time Frame: Long-term Cost Category: 2

This section of Hampden Lane is an urban area between residential buildings and local businesses. Currently the sidewalks on both sides of the street are intermittent. Ensuring that sidewalks are continuous and driveway aprons comply with ADA would ensure a safe and accessible path through this heavily used corridor.

Impacts to nearby utility poles should be minimized and no impacts to environmental features are anticipated. However, some parking spaces in front of local business would be removed to construct the sidewalk. Discussions should be conducted with affected businesses prior to finalizing the proposed sidewalk.

10. Bethesda Avenue

From: Clarendon Road to Arlington Road

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, Reconstruction of Driveway Aprons, Reconstruction of Sidewalks with Non-Compliant Slope, Construction of New Sidewalks

Priority Ranking: 2.9 Time Frame: Long-term Cost Category: 2

This section of Bethesda Avenue is an urban area between local businesses and a large grocery store. Currently the sidewalks on both sides of the street are intermittent. Ensuring that sidewalks are continuous and comply with ADA guidelines would ensure a safe and accessible path through this heavily used corridor.

Impacts to nearby utility poles should be minimized and no impacts to environmental features are anticipated. However, some parking spaces in front of local business would be removed to construct the sidewalk. Discussions should be conducted with affected businesses prior to finalizing the proposed sidewalk.

11. Ridge Street

From: West Avenue to East Avenue

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, Reconstruction of Driveway Aprons, Construction of New Curb Ramps, Construction of New Sidewalks

Priority Ranking: 2.7 Time Frame: Long-term Cost Category: 2

This section of Ridge Street is a residential road that dead ends near a Montessori school, parking garage, box stores and grocery store. Although there is a sidewalk along both sides of Ridge Street, it is intermittent and not ADA compliant. Ensuring that sidewalks are continuous and comply with ADA guidelines would ensure a safe and accessible path. This path would connect the residential neighborhood with Wisconsin Avenue as well as the local shopping center and school.

Impacts to nearby utility poles and street trees should be minimized. Ridge Street is a narrow residential road, so a maintenance of traffic plan would be required during construction.

12. Tilbury Street at Cheltenham Drive Urban Park

Improvement Type: Reconstruct Driveway Aprons, Construction of Mid-Block Crossings

Priority Ranking: 2.3 Time Frame: Mid-term Cost Category: 2

A mid-block crossing is recommended for construction on Tilbury Street, at Cheltenham Drive Urban Park. Adding a mid-block crossing with a median refuge island with detectable warning surfaces at this location would increase safety and accessibility. Currently, there is no refuge island and pedestrians are forced to cross a non-signalized intersection with low visibility.

A new traffic pattern would be required when the new mid-block crossing is constructed. Also, care should be taken around nearby utility poles. No impacts to environmental features are anticipated, however a DPS sediment erosion control permit may be required and should be investigated at the concept level.

13. Leland Street

From: 44th Street to East Avenue

Improvement Type: Reconstruct of Curb Ramps, Striping of Crosswalks, Construction of New Sidewalks

Priority Ranking: 2.0 Time Frame: Long-term Cost Category: 2

This short section of Leland Street ends in a three-way intersection that has no existing crossing for pedestrians. Adding a sidewalk on the north side of Leland Street and crossing infrastructure at the intersection of Leland Street and East Avenue would make this area safer and more accessible.

Impacts to nearby utility poles and street trees should be minimized. Because these improvements are proposed at a three-way intersection a modification of traffic plan should be implemented during construction.

14. Woodmont Avenue at Elm Street

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, Reconstruction of Sidewalks with Non-Compliant Slopes, Striping of Crosswalks, Installation of New APS/CPS

Priority Ranking: 3.4 Time Frame: Short-term Cost Category: 2

The intersection of Woodmont Avenue and Elm Street is located in downtown Bethesda. This area is surrounded by office buildings and restaurants. The current curb ramps are not ADA compliant and replacing them would create a safer and more accessible intersection. This intersection is also lacking APS/CPS and high visibility crosswalk striping. Adding these will greatly improve pedestrian safety and accessibility.

Work in this area would need to be integrated into the proposed Elm Street tunnel project. Impacts to nearby utility poles should be minimized. No impacts to traffic or environmental features are anticipated.

15. Wellington Drive

From: Bradley Boulevard to Strathmore Drive

Improvement Type: Construction of New Curb Ramps, Construction of New Sidewalks

Priority Ranking: 1.7 Time Frame: Short-term Cost Category: 2

Wellington Drive is a minor corridor in a residential neighborhood near the downtown Bethesda business district. This section of Wellington Drive does not currently have a sidewalk on either side of the street. Adding a sidewalk on the south/east side of Wellington Drive would create a safe and accessible connection to downtown Bethesda.

Impacts to nearby utility poles should be minimized. Some small trees and private resident landscaping would need to be removed as part of this project. Resident outreach should be done before the proposed sidewalk is finalized.

16. Denton Road

From: Hampden Lane to Fairfax Road

Improvement Type: Striping of Crosswalks, Construction of New Curb Ramps, Construction of New Sidewalks

Priority Ranking: 1.6 Time Frame: Short-term Cost Category: 2

Denton Road is a minor corridor in a residential neighborhood near the downtown Bethesda business district. This section of Denton Road does not currently have a sidewalk on either side of the street. Adding a sidewalk on the east side of Denton Road would create a safe and accessible connection to downtown Bethesda.

Impacts to nearby utility poles should be minimized. Some small trees and private resident landscaping would need to be removed as part of this project. Resident outreach should be done before the proposed sidewalk is finalized.

17. Stanford Street

From: West Avenue to East Avenue

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, Reconstruction of Driveway Aprons, Construction of New Sidewalks

Priority Ranking: 1.6 Time Frame: Short-term Cost Category: 2

Stanford Street is a minor corridor that leads directly to Wisconsin Avenue and connects the residential neighborhood to the downtown Bethesda business district. This section of Stanford Streets missing a short segment along the south side of the roadway. Adding this sidewalk would enhance pedestrian safety and accessible connections to downtown Bethesda.

Impacts to nearby utility poles should be minimized. Some small trees and private resident landscaping would need to be removed as part of this project. Resident outreach should be done before the proposed sidewalk is finalized.

LEGEND

- BETHESDA STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- CAPITAL CRESCENT TRAIL
- REPAIR APS/CPS
- CONSTRUCT CURB RAMP
- INSTALL ADDITIONAL SIGING

INTERSECTION

- CONSTRUCT MEDIAN REFUGE
- RECONSTRUCT MEDIAN REFUGE

SIDEWALK

- NON-COMPLIANT DRIVEWAY APRON
- RECONSTRUCT SIDEWALK
- SIDEWALK OBSTRUCTION
- NON-COMPLIANT WIDTH
- NON-COMPLIANT SLOPE
- INSTALL SAFETY RAILING
- QUARTER MILE RADIUS
- HALF MILE RADIUS

OLD GEORGETOWN ROAD
ST ELMO AVENUE
FAIRMONT AVENUE
WOODMONT AVENUE
WISCONSIN AVENUE
TILBURY STREET
HARLING LANE
CHELTENHAM DRIVE
SLEAFORD ROAD
MIDDLETON LANE
PEARL STREET
CHELTON ROAD
WILSON LANE
ARLINGTON ROAD
EDGEMOOR LANE
EAST WEST HIGHWAY
MONTGOMERY AVENUE
HAMPDEN LANE
ELM STREET
46TH STREET
45TH STREET
44TH STREET
WILLOW LANE
OAKRIDGE AVENUE
BETHESDA AVENUE
MILLER AVENUE
LELAND STREET
EAST AVENUE
WALSH STREET
WEST AVENUE
STANFORD STREET
RIDGE STREET
FAIFAX ROAD
BRADLEY BOULEVARD
STRATHMORE STREET

N

0 0.05 0.1 0.2 0.3 0.4 Miles

FIGURE 3-15(a)
BETHESDA STATION
AREA-WIDE IMPROVEMENTS

LEGEND

- BETHESDA STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- CAPITAL CRESCENT TRAIL
- INSTALL APS/CPS
- RECONSTRUCT CURB RAMP
- STRIPE CROSSWALK
- QUARTER MILE RADIUS
- HALF MILE RADIUS

N

OLD GEORGETOWN ROAD
ST ELMO AVENUE
FAIRMONT AVENUE
WOODMONT AVENUE
WISCONSIN AVENUE
TILBURY STREET
HARLING LANE
CHELTENHAM DRIVE
SLEAFORD ROAD
MIDDLETON LANE
PEARL STREET
CHELTON ROAD
WILSON LANE
ARLINGTON ROAD
EDGEMOOR LANE
EAST WEST HIGHWAY
MONTGOMERY AVENUE
HAMPDEN LANE
ELM STREET
47TH STREET
46TH STREET
WILLOW LANE
45TH STREET
44TH STREET
CURTIS ROAD
OAKRIDGE AVENUE
BETHESDA AVENUE
MILLER AVENUE
LELAND STREET
EAST AVENUE
WALSH STREET
WEST AVENUE
STANFORD STREET
STRATHMORE STREET
WELLINGTON DRIVE
FAIFAX ROAD
BRADLEY BOULEVARD
BRADLEY LANE

FIGURE 3-15(b)
BETHESDA STATION
AREA-WIDE IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

LEGEND

- BETHESDA STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- EXISTING SIDEWALKS
- CAPITAL CRESCENT TRAIL

PROPOSED IMPROVEMENTS

- SIDEWALK
- SHARED USE PATH
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

N

OLD GEORGETOWN ROAD
WILSON LANE
WOODMONT AVENUE
SLEAFORD ROAD
PEARL STREET
CHELTON ROAD
ARLINGTON ROAD
EDGEMOOR LANE
EAST WEST HIGHWAY
MONTGOMERY AVENUE
ELM STREET
HAMPDEN LANE
EXETER ROAD
DENTON ROAD
45TH STREET
46TH STREET
47TH STREET
ELM STREET
BETHESDA AVENUE
EXFAIR ROAD
CLARDEN ROAD
CLARENDON ROAD
LELAND STREET
WALSH STREET
STANFORD STREET
RIDGE STREET
WEST AVENUE
STRATHMORE STREET
WISCONSIN AVENUE
WELLINGTON DRIVE
BRADLEY BOULEVARD

FIGURE 3-16
BETHESDA STATION
PROPOSED PEDESTRIAN IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

Table 3-5 - Pedestrian Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE	Reconstruction of Curb Ramps	Reconstruction of Existing Sidewalks	Reconstruction of Driveway Aprons	Removal of Sidewalk Obstructions	Widening of Non-Compliant Sidewalk Widt	Reconstruction of Sidewalks with Non-Compliant Slopes	Reconstruction of Mid-Block Crossings	Striping of Crosswalks	Signal Upgrades to APS/CPS	Construction of New Curb Ramps	Construction of New Sidewalks	Installation of Additional Signing	Construction of Curb Extensions	Construction of Mid-Block Crossings	Construction of Median Refuge	Installation of New APS/CPS	Other	BENEFITS	Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score	IMPACTS	Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
Area-wide Improvements																																		
1	ADA Upgrades to Existing Sidewalks	MCDOT		●	●		●	●	●													2	3	5	5	15		3	3	2	3	11	2	1	2.7
2	ADA Upgrades to Existing Driveway Aprons	MCDOT				●																1	3	4	5	13		2	2	2	1	7	2	1	3.7
3	ADA Upgrades to Existing Intersections	MCDOT								●												2	3	4	5	14		3	3	2	3	11	2	1	2.5
4	Upgrades to APS/CPS	MCDOT									●											2	4	5	5	16		2	2	1	2	7	2	1	4.6
Edgemoor Lane																																		
5	Woodmont Avenue to Old Georgetown Road (MD 187)	MCDOT		●	●						●			●								2	4	5	5	16		1	4	1	2	8	2	1	4.0
Pearl Street																																		
6	CCT to East-West Highway (MD 410)	MCDOT								●			●									4	3	4	5	16		3	1	1	2	7	2	1	4.6
Elm Street																																		
7	at 47th Street	MCDOT		●									●									2	4	4	5	15		3	2	1	1	7	2	1	4.3
8	Woodmont Avenue to Wisconsin Avenue (MD 355)	MCDOT		●					●		●								●			5	4	4	5	18		1	3	2	2	8	2	1	4.5
Hampden Lane																																		
9	Arlington Road to Woodmont Avenue (MD 355)	MCDOT				●							●	●								4	3	4	5	16		1	3	2	2	8	2	1	4.0
Bethesda Avenue																																		
10	Clarendon Road to Arlington Road	MCDOT		●	●	●			●					●								4	3	4	5	16		3	4	2	2	11	2	1	2.9
Ridge Street																																		
11	West Avenue to East Avenue	MCDOT		●	●	●						●	●									5	3	4	5	17		1	2	1	2	6	1	1	2.8
Tilbury Street at Cheltenham Drive Urban Park																																		
12	at Cheltenham Drive Urban Park	MCDOT				●											●					3	4	4	5	16		2	2	1	2	7	1	1	2.3
Leland Street																																		
13	44th Street to East Avenue	MCDOT		●						●			●									4	3	4	5	16		3	1	2	2	8	1	1	2.0
Woodmont Avenue																																		
14	at Elm Street	MCDOT		●	●				●		●									●		2	2	3	5	12		1	3	1	2	7	2	1	3.4
Wellington Drive																																		
15	Bradley Blvd to Strathmore Dr	MCDOT										●	●									4	4	4	5	17		3	2	3	2	10	1	1	1.7
Denton Road																																		
16	Hampden Lane to Fairfax Road	MCDOT								●		●	●									4	3	4	5	16		1	3	4	2	10	1	1	1.6
Stanford Street																																		
17	West Avenue to East Avenue	MCDOT		●	●	●							●									4	3	4	5	16		3	2	3	2	10	1	1	1.6

$$Priority\ Ranking = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

3.3.2 Proposed Bikeway Improvements

As discussed in Section 3.1.2, infrastructure is sparse for cyclists in the Bethesda BiPPA. Unlike pedestrians, who have access to a variety of facilities in a comprehensive network, cyclists are limited in their choices for maneuvering safely through the area's busy streets.

The goal of bikeway improvements is to provide contiguous bike facilities to reach the proposed Purple Line station and other nearby destinations. The Bethesda Station BiPPA has been evaluated for several types of cyclist improvements. The recommended improvements are consistent with the recommendations from the Montgomery County Bikeways Master Plan.

See Figure 3-23 for a map of the proposed bikeway improvements. The benefits, impacts, and equity factor for each improvement were analyzed based on the criteria outlined in Section 2.8 of this report. A summary of improvements by street and their priority rankings can be found in Table 3-6. The County should consider the higher ranked bicycle facilities as more critical than the lower ranked bike facilities.

1. 46th Street

From: Elm Street to Walsh Street

Improvement Type: Sharrow

Priority Ranking: 6.5 Time Frame: Short-term Cost Category: 1

A sharrow marking along 46th Street connects to the Elm Street Park and the Capital Crescent Trail. This path provides access to the trail from the southeastern portion of the BiPPA, which is currently disconnected from the Purple Line and trail.

46th Street is a one-way residential street that runs north to south. Its current configuration includes two 4-foot sidewalks on either side, one parking lane, and one travel lane. The current roadway width is approximately 25 feet; this provides more than adequate clearance for one travel lane, one parking lane with an allowance for door swings, and a bicycle sharrow path. Sharrow markings are ideal for this roadway because they can be installed while maintaining the existing road section. Installation of sharrow markings do not have any impacts to utilities / right-of-way, parking, or the environment.

2. Strathmore Street

From: Woodmont Avenue to Bradley Boulevard

Improvement Type: Sharrow

Priority Ranking: 6.5 Time Frame: Short-term Cost Category: 1

Strathmore Street is a curbed road section with a sidewalk on the east side and parking permitted on both sides. One travel lane is provided in the approximately 35-foot roadway. Along the roadway are apartment complexes and condominium communities. Strathmore Street connects to restaurants and shops to the north and Bradley Boulevard, a main route outside of Bethesda, to the south. The route provides cyclists important access to Bradley Boulevard without the need to travel on the busier Wisconsin Avenue.

The existing roadway width is adequate to provide on-street parking, travel lanes, and a bike travel lane; therefore, sharrow markings are a simple, cost-effective way to provide bikeway improvements along Strathmore Street. Additional signage and pavement markings should be placed at the north of Strathmore Street where the road is open section with condominium parking.

3. East-West Highway

From: Wisconsin Avenue to Montgomery Avenue

Improvement Type: Cycle Track

Priority Ranking: 3.1 Time Frame: Long-term Cost Category: 2

East-West Highway provides a direct access to the Capital Crescent Trail via the proposed connection just outside of the ½-mile station radius. The road is a one-way street toward Wisconsin Avenue with two or three travel lanes and sidewalks on both side of the street. At its intersection with Wisconsin Avenue, four travel lanes with a center median are provided. Street parking is not permitted. The existing roadway width varies from approximately 35 feet at its most narrow to nearly 80 feet at is widest point.

As previously mentioned, the minimum width for a two-way cycle track is 13 feet; therefore, the existing roadway width is adequate to provide a cycle track and two travel lanes. To provide cohesion with the section proposed along Old Georgetown Road, the proposed cycle track should be constructed along the south side or center of the road. Either of these locations would provide seamless transitions to existing crosswalks at the intersection with Wisconsin Avenue. The north side of the road is not recommended because the curb bumps out and would provide an awkward transition path for cyclists. The cycle track would need to be coordinated with multiple intersections and driveways along East-West Highway.

Impacts due to cycle track construction are anticipated to be high. Full construction drawings with permits would be required. At least one travel lane would need to be removed during construction to provide adequate space for the cycle track. Existing utilities and street trees may be impacted by construction equipment, but no removal, replacement, or redesign is expected. No right-of-way acquisition is expected.

4. Edgemoor Lane

From: Arlington Road to Bethesda Metro Station

Improvement Type: Cycle Track

Priority Ranking: 3.1 Time Frame: Long-term Cost Category: 2

Edgemoor Lane from Arlington Road to the northern entrance to the Bethesda Metro is a two-way street with four travel lanes. A sidewalk with grass buffer is provided on both sides of the street. No parking is permitted along the street. At the Metro station, the street is a separated roadway with a narrow center median. Roadway width is approximately 45 feet to 55 feet, with the wider section provided closer to the station entrance.

The minimum required width for the cycle track can be provided on either side the road, although the south side is preferred for direct access to the Metro. A travel lane would need to be repurposed to construct the track and the remaining travel lanes may need to be reconfigured. Design of this cycle track should be coordinated with the cycle track proposed along Woodmont Avenue to allow safe crossing at the intersection.

Impacts due to construction of the cycle track are expected to be high and with the most impact being to traffic / transit / parking. A travel lane would be removed, and traffic would be temporarily impacted due to construction. Existing utilities and street trees may be impacted by construction equipment, although redesign, removal, or replacement is not expected. Right-of-way acquisition is not expected. A full design with construction permits would be required.

5. Edgemoor Lane

From: Exeter Road to Arlington Road

Improvement Type: Sharrow

Priority Ranking: 3.3 Time Frame: Short-term Cost Category: 1

Edgemoor Lane west of Arlington Road is a curbed road section with a sidewalk on both sides. The sidewalks have a grass buffer with street trees. On-street parking is permitted in a few places, however on-street parking is uncommon. The existing roadway width is 20-25 feet.

The existing roadway width is adequate to provide travel lanes and a bike lane; therefore, sharrow markings are appropriate.

6. Norfolk Avenue

From: St. Elmo Avenue to Woodmont Avenue

Improvement Type: Sharrow

Priority Ranking: 3.3 Time Frame: Short-term Cost Category: 1

Much like Strathmore Street, Norfolk Avenue is an existing curbed road section with a sidewalk and on-street parking on both sides. A Capital Bikeshare dock is located at the corner of Norfolk Avenue and Fairmont Avenue, indicating there is already a need for safe bike facilities in the area. Norfolk Avenue connects Woodmont Triangle to Woodmont Avenue, the main thoroughfare for north to south access in the BiPPA.

With an existing roadway width of approximately 50 feet, the road is adequate to provide on-street parking, travel lanes, and bike travel lane; therefore, sharrow markings are a simple, cost-effective way to provide bikeway improvements along Strathmore Street.

7. Sleaford Road

From: Tilbury Street to Middleton Lane

Improvement Type: Sharrow

Priority Ranking: 3.3 Time Frame: Short-term Cost Category: 1

A sharrow marking along Sleaford Road extends the corridor into the northeastern residential community and provides access to the existing sharrow markings along Pearl Street. Sleaford Road is an existing two-way residential street with one parking lane, one travel lane, and a 4-foot sidewalk on one side of the street. The current roadway width ranges from approximately 22 feet to 25 feet. Sharrow markings can be installed here without disrupting the existing parking lane or road section. Installation of sharrow markings do not have any impacts to utilities / right-of-way, parking, or the environment.

8. Woodmont Avenue

From: St. Elmo Avenue to Norfolk Avenue

Improvement Type: Cycle Track

Priority Ranking: 3.1 Time Frame: Long-term Cost Category: 2

Woodmont Avenue is the main pathway for cyclists wishing to travel north / south in the BiPPA. By creating a cycle track along Woodmont Avenue, cyclists are steered away from the busy Wisconsin Avenue. Woodmont Avenue is a curbed section along its entire length with many driveway aprons and intermittent on-street parking. A wide brick sidewalk is provided on both sides for most of its length. Street trees and light poles line both sides of the street. Existing roadway width is variable but is typically 50 to 60 feet.

To construct a cycle track, a minimum of 13 feet is required. This provides two 5-foot bike lanes and 1.5 feet of separation, although 5.5-foot lanes and additional separation is preferred. To construct the cycle track, the parking lane on the west side of the road would be removed and redesigned to provide two bike lanes with a physical separation from traffic. Constructing the cycle track on the west side of the road will provide seamless transition between this recommended project and the Woodmont Avenue Cycle Track project currently in design with MCDOT. Planters are ideal to provide physical separation, as they tie in well with the existing downtown landscape. The width of existing lanes may need to be decreased slightly to accommodate the separation between cyclists and vehicles. The intersection of Woodmont Avenue and Norfolk Avenue will need to be studied and coordinated with the Woodmont Avenue Cycle Track project to determine best practices for cyclist safety.

The impacts from construction of the cycle track are expected to be high. Various utilities would need to be redesigned or relocated and the Norfolk Avenue intersection would need to be redesigned to provide safe passage for cyclists. Traffic would be temporarily disrupted for construction and traffic control plans would be required. Full construction design and permitting is expected. Cost is also anticipated to be high due to cycle track construction.

9. Arlington Road

From: Old Georgetown Road to Bradley Boulevard

Improvement Type: Separated Bike Lanes

Priority Ranking: 3.0 Time Frame: Mid-term Cost Category: 2

Arlington Road is a main north / south pathway for cyclists in the BiPPA. Separated bike lanes would provide safer access for cyclists wishing to travel in the area. Arlington Road is a two-way, four-lane road with sidewalks on both side of the road. Utility poles and power lines run along the west side of the road. Closer to the intersection with Old Georgetown Road, Arlington Road is a five-lane road. Typical roadway width is 50 feet.

To construct two bike lanes with a width of 5 feet and a separation of 1.5 feet, a total width of 13 feet is required; therefore, the existing roadway width is insufficient as configured. A bollard, curb stop, or post delineator is recommended within the separation to provide a physical distinction between bicycle and vehicular traffic. The width of all travel lanes would need to be reduced to provide the width required on either side of the road for single direction, separated bike lanes.



Figure 3-17 Arlington Road at Edgemoor Lane, looking south.

Impacts due to construction are expected to be moderate. The impacts to the traffic / transit / parking

would be most significant because a lane reduction is required. The road would need to be restriped and traffic control plans would be required to install the bike lane.

10. Leland Street

From: Wisconsin Avenue to 46th Street

Improvement Type: Cycle Track

Priority Ranking: 3.6 Time Frame: Long-term Cost Category: 1

Leland Street is a two-way, two-lane roadway with on-street parking along the north. Both sides of the street have sidewalks. The roadway width is 38 to 44 feet. The narrower road width is closer to the intersection with 46th street.

The track should be constructed along the south side of the street to connect with the track proposed along Woodmont Avenue. Both the 38-foot wide and the 44-foot wide sections of the road are conceptually adequate for the construction of a cycle track. A minimum cycle track width of 13 feet would allow two 10-foot lanes and allow existing on-street parking to remain.

The cycle track proposed along Leland Street is a continuation of the track proposed along Woodmont Avenue. The benefits, impacts, and construction challenges would be like those encountered for the Woodmont Avenue portion.

11. Elm Street

From: Arlington Road to Wisconsin Avenue

Improvement Type: Striped Bike Lanes

Priority Ranking: 3.3 Time Frame: Short-term Cost Category: 2

The future Purple Line Station would be constructed at the corner of Elm Street and Wisconsin Avenue. A bikeway in this area provides cyclists with direct access to the Purple Line. Existing Elm Street is a narrow road with two-way traffic, two lanes, and street parking on both sides of the street. Existing roadway with is approximately 38 feet.

Striped bike lanes are appropriate for roadways that are lower speed where a greater separation distance can be achieved. Elm Street is in the heart of downtown Bethesda's restaurant and shopping district where lower speeds are typical. On this street, a 5.5-foot bike lane with 1-foot striping can be installed in place of the existing parking lanes.

The impacts to traffic / transit / parking would be significant. Impacts to existing utilities are expected to be minimal, although replacement of drainage grates may be required to ensure cyclists safety. Environmental impacts are not anticipated.

12. Elm Street

From: Exfair Road to Arlington Road

Improvement Type: Sharrow

Priority Ranking: 3.3 Time Frame: Short-term Cost Category: 1

Elm Street west of Arlington Road is a curbed road section with a sidewalk on one side of the street. The road is open section on the north side west of Clarendon Road. Parking is permitted for a short distance on the north side. A condominium parking lot is on the south side of the road between Clarendon Road and Arlington Road. One travel lane is provided in the approximately 20-25-foot roadway. Along the roadway are apartment complexes, condominium communities, and single-family homes.

The existing roadway width is adequate to provide travel lanes and a bike lane; therefore, sharrow markings are a simple, cost-effective way to provide bikeway improvements along Elm Street. Additional signage and pavement markings should be placed at the south of Elm Street where the road is open section with condominium parking.

13. West Avenue

From: Walsh Street to Bradley Lane

Improvement Type: Sharrow

Priority Ranking: 3.3 Time Frame: Short-term Cost Category: 1

West Avenue is a residential street that runs north to south. Currently, West Avenue includes sidewalks on both sides of the street along with parking on northbound side of the street. The current roadway width is approximately 25 feet. Sharrow markings are proposed along West Avenue from Walsh Street to Bradley Lane. Sharrow markings are appropriate based on low traffic volumes. They can be installed while maintaining the existing road section. The installation of sharrow markings will not impact utilities / right-of-way, parking areas, or environmental features.

14. Pearl Street

From: Harling Lane to Middleton Lane

Improvement Type: Sharrow

Priority Ranking: 3.0 Time Frame: Short-term Cost Category: 1

Pearl Street is a residential street that runs north to south. Currently, Pearl Avenue includes sidewalks on both sides of the street along with parking on souththbound side of the street. The current roadway width is approximately 25 feet. Sharrow markings are proposed along Pearl Street from Harling Lane to Middleton Lane. Sharrow markings are appropriate based on low traffic volumes. They can be installed while maintaining the existing road section. The installation of sharrow markings will not impact utilities / right-of-way, parking areas, or environmental feature

15. Walsh Street

From: 46th Street to West Avenue

Improvement Type: Sharrow

Priority Ranking: 3.3 Time Frame: Short-term Cost Category: 1

Pearl Street is a residential street that runs east to west. Currently, Walsh Street includes sidewalks on both sides of the street along with parking on eastbound side of the street. The current roadway width is approximately 25 feet. Sharrow markings are proposed along Walsh Street from 46th Street to West Avenue. Sharrow markings are appropriate based on low traffic volumes. They can be installed while maintaining the existing road section. The installation of sharrow markings will not impact utilities / right-of-way, parking areas, or environmental feature.

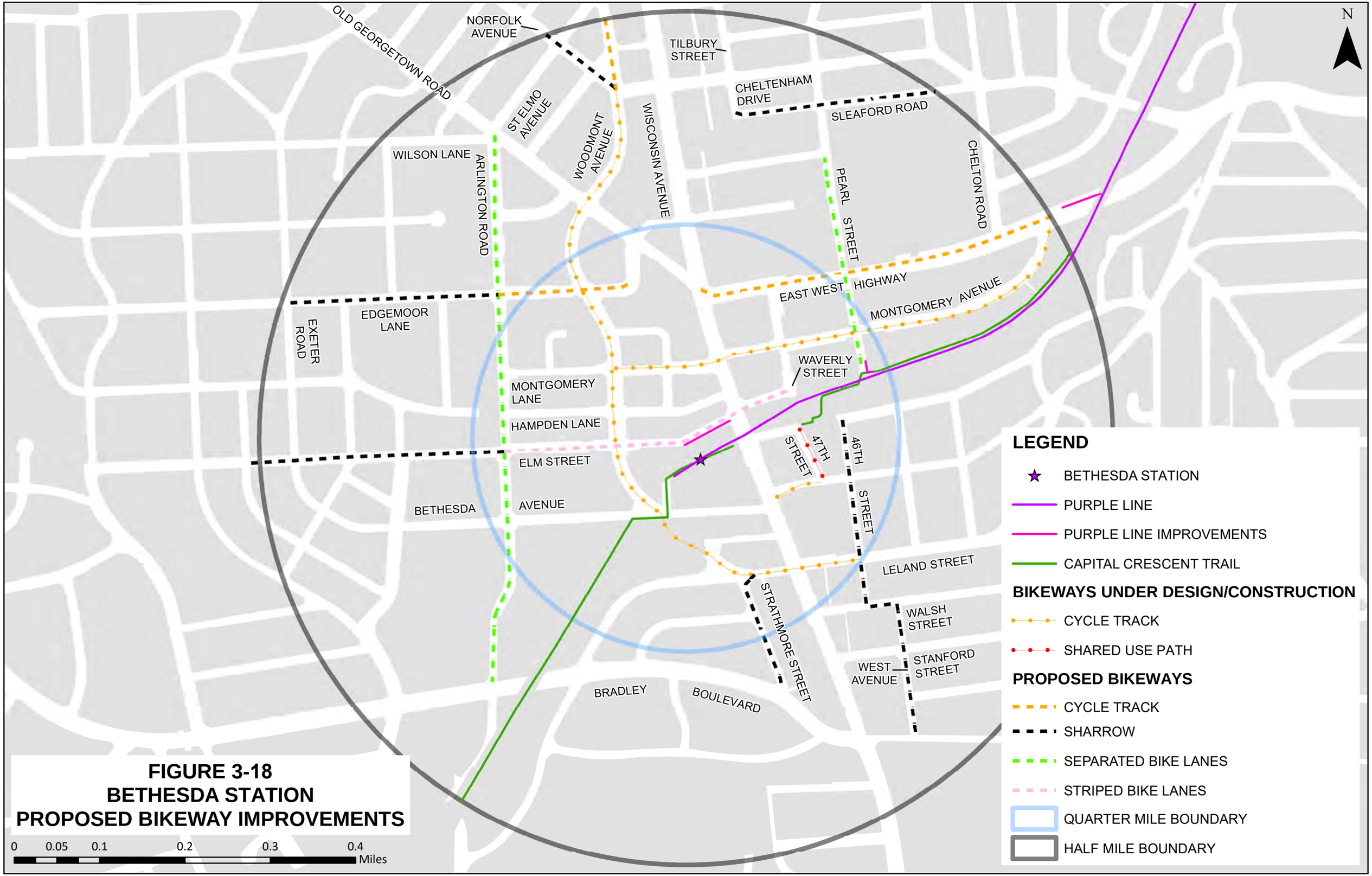


FIGURE 3-18
BETHESDA STATION
PROPOSED BIKEWAY IMPROVEMENTS

Table 3-6 - Bikeways Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE							BENEFITS						IMPACTS								
			Sharrow	Cycle Track	Separated Bike Lanes	Striped Bike Lanes	Shared-Use Paths	Other		Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score		Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
46th Street																								
1	Elm Street to Walsh Street	MCDOT	●							4	2	2	5	13		1	1	1	1	4	2	1	6.5
Strathmore Street																								
2	Woodmont Avenue to Bradley Boulevard (MD 191)	MCDOT	●							4	2	2	5	13		1	1	1	1	4	2	1	6.5
East-West Highway (MD 410)																								
3	Wisconsin Avenue to Montgomery Avenue	MCDOT		●						5	5	2	5	17		2	5	2	2	11	2	1	3.1
Edgemoor Lane																								
4	Arlington Road to Bethesda Metro Station	MCDOT		●						5	5	2	5	17		2	5	2	2	11	2	1	3.1
5	Exeter Road to Arlington Road	MCDOT	●							4	2	2	5	13		1	1	1	1	4	1	1	3.3
Norfolk Avenue																								
6	St. Elmo Avenue to Woodmont Avenue	MCDOT	●							4	2	2	5	13		1	1	1	1	4	1	1	3.3
Sleaford Road																								
7	Tilbury Street to the 1/2-mile radius	MCDOT	●							4	2	2	5	13		1	1	1	1	4	1	1	3.3
Woodmont Avenue																								
8	St. Elmo Avenue to Norfolk Avenue	MCDOT		●						5	5	2	5	17		2	5	2	2	11	2	1	3.1
Arlington Road																								
9	Old Georgetown Road (MD 187) to Bradley Boulevard (MD 191)	MCDOT			●					4	4	2	5	15		2	4	2	2	10	2	1	3.0
Leland Street																								
10	Wisconsin Avenue (MD 355) to 46th Street	MCDOT		●						4	5	2	5	16		2	4	2	1	9	2	1	3.6
Elm Street																								
11	Arlington Road to Wisconsin Avenue (MD 355)	MCDOT				●				5	3	2	5	15		2	4	1	2	9	2	1	3.3
12	Exfair Road to Arlington Road	MCDOT	●							4	2	2	5	13		1	1	1	1	4	1	1	3.3

$$Priority\ Ranking = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

Table 3-6 - Bikeways Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE						BENEFITS					Total Benefits Score	IMPACTS					Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
			Sharrow	Cycle Track	Separated Bike Lanes	Striped Bike Lanes	Shared-Use Paths	Other		Connectivity	Safety	Accessibility	Number of Users Served			Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost				
West Avenue																							
13	Walsh Street to Bradley Lane	MCDOT	●							4	2	2	5	13		1	1	1	1	4	1	1	3.3
Pearl Street																							
14	Harling Lane to Middleton Lane	MCDOT	●							4	2	2	4	12		1	1	1	1	4	1	1	3.0
Walsh Street																							
15	46th Street to West Avenue	MCDOT	●							4	2	2	5	13		1	1	1	1	4	1	1	3.3

$$Priority\ Ranking\ = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

3.3.3 Maintenance

Maintenance improvements are an inexpensive way to increase pedestrian comfort and add aesthetic value. There are many missing and damaged tree grates in this study area. Missing or damaged grates create tripping hazards and create unsafe and inaccessible areas. Other maintenance issues include tree and hedge trimming to clear and open existing sidewalks. A map of these items has been included in Figure 3-21 Bethesda Station Maintenance Improvements.



Figure 3-19 Tree pits without tree grates create tripping hazards.

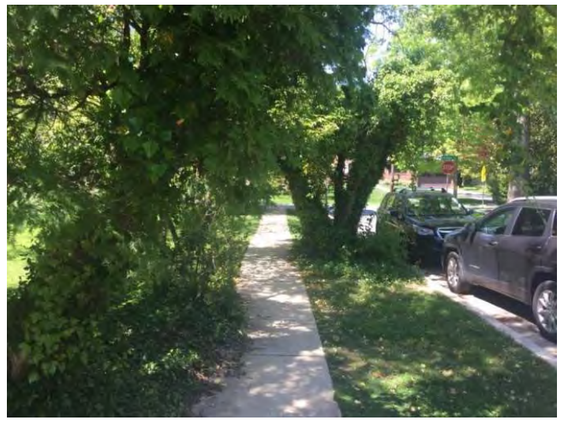
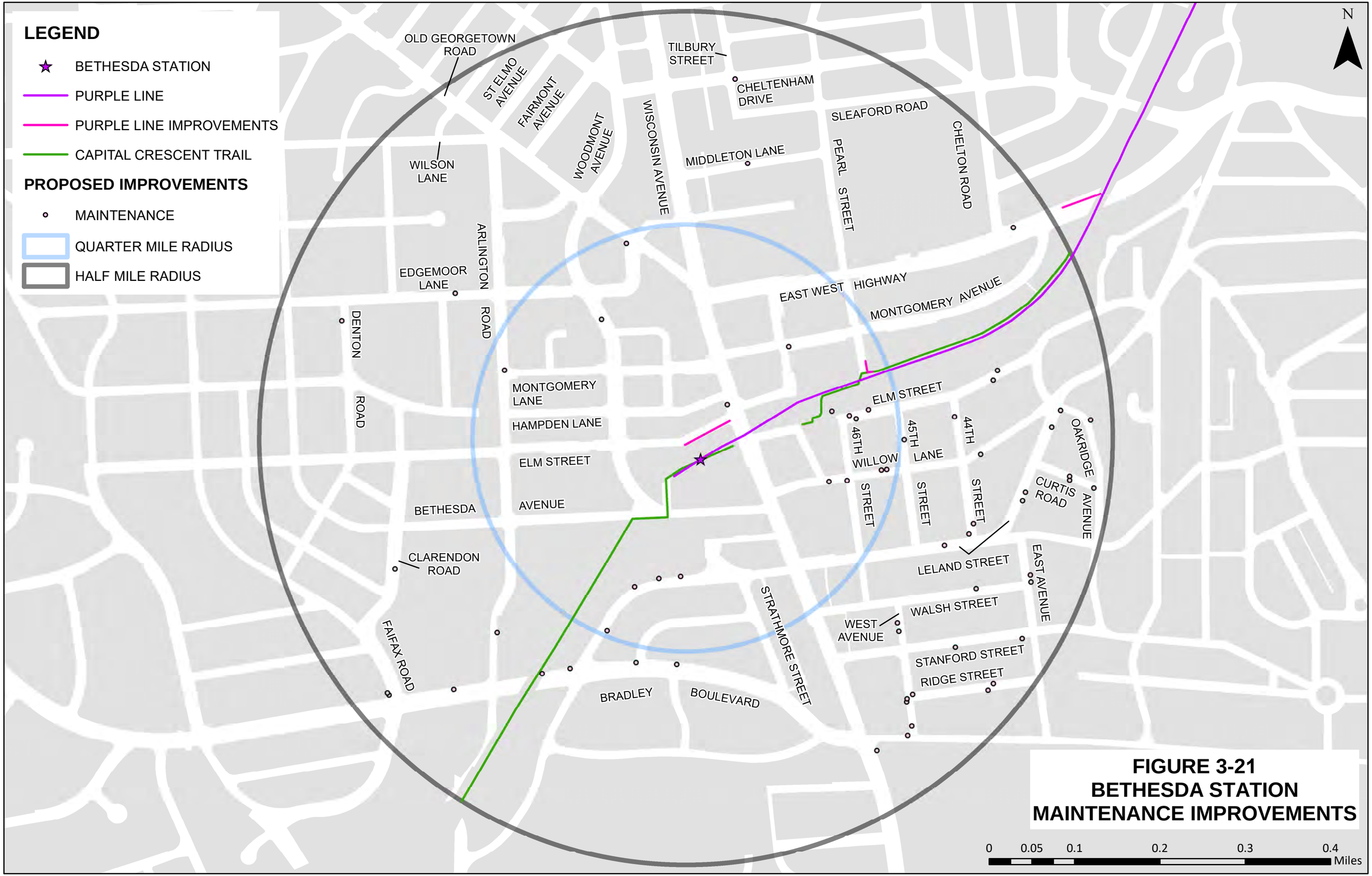


Figure 3-20 Overgrown trees and shrubs provide horizontal and vertical obstructions on Denton Road.


LEGEND
BETHESDA STATION
PURPLE LINE
PURPLE LINE IMPROVEMENTS
CAPITAL CRESCENT TRAIL
PROPOSED IMPROVEMENTS
MAINTENANCE
QUARTER MILE RADIUS
HALF MILE RADIUS
N
OLD GEORGETOWN ROAD
ST ELMO AVENUE
FAIRMONT AVENUE
WOODMONT AVENUE
WISCONSIN AVENUE
TILBURY STREET
CHELTENHAM DRIVE
SLEAFORD ROAD
MIDDLETON LANE
PEARL STREET
CHELTON ROAD
WILSON LANE
ARLINGTON ROAD
EDGEMOOR LANE
DENTON ROAD
EAST WEST HIGHWAY
MONTGOMERY AVENUE
MONTGOMERY LANE
HAMPDEN LANE
ELM STREET
BETHESDA AVENUE
ELM STREET
46TH STREET
WILLOW LANE
45TH STREET
44TH STREET
OAKRIDGE AVENUE
CURTIS ROAD
CLARENDON ROAD
FAIFAX ROAD
BRADLEY BOULEVARD
STRATHMORE STREET
LELAND STREET
EAST AVENUE
WALSH STREET
WEST AVENUE
STANFORD STREET
RIDGE STREET
FIGURE 3-21
BETHESDA STATION
MAINTENANCE IMPROVEMENTS
0 0.05 0.1 0.2 0.3 0.4
Miles

3.4 Final Recommendations

Bethesda has a large downtown commercial district surrounded by residential neighborhoods. It has plenty of existing infrastructure, however pedestrian routes have minor gaps or deficiencies, and some infrastructure is non-compliant with current ADA standards. Existing signalized crossings and crosswalks would also benefit from being updated to current standards.

The present-day condition in this BiPPA has enough existing infrastructure for pedestrians and cyclists to travel through the downtown areas; however, some of the existing infrastructure is aging and out of compliance with current safety and ADA standards. With a heavily used downtown district, anchored by commercial businesses, urban residences and the existing Red Line Metro Station, improving the pedestrian and bicyclist safety and accessibility is essential. Implementing the improvements in this report can benefit the Bethesda area by making the expansive existing pedestrian infrastructure safe and accessible for all users. Minor gaps in connectivity in the outlying neighborhoods will also be improved. Upgrades to the cyclist infrastructure will increase cyclist safety and encourage cycling as a mode of transportation. These improvements will require extensive coordination other agencies.

We recommend ADA compliance to be the primary focus for this area to ensure all pedestrians have a safe, accessible path to their destination. The two highest ranked pedestrian improvements are upgrading APS/CPS crossing signals and improvements along Pearl Street. Improving crossing signals throughout the project area would improve accessibility and remind all pedestrians to cross safely. Upgrading the sidewalk along Pearl Street with clear crosswalks would improve pedestrian safety and accessibility with minimal impacts to existing features and infrastructure.

The two highest ranked bicycle corridors are 46th Street (from Elm Street to Walsh Street) and Strathmore Street (from Woodmont Avenue to Bradley Boulevard). These two bikeways are no impacts and can be easily installed withing the exiting right-of-way fairly quickly.

One of the major overall goals of the Bethesda Downtown Master Plan is to reduce cars and increase pedestrian and cyclist access. The overall strategy of this report is to prioritize improvements in the vicinity of the Purple Line that increase safety, accessibility, and connectivity. Bethesda encourages people to live, work, shop, and entertain themselves in its community. Implementing the pedestrian and bicycle network improvements proposed in this report would bring Bethesda closer to realizing the goals of the master planned community.

4 Connecticut Avenue



4 Connecticut Avenue

4.1 Study Area

4.1.1 Existing Area

The Connecticut Avenue Station is an elevated platform proposed just south of the intersection of Newdale Road and Connecticut Avenue (MD 185). The station will be in the heart of Chevy Chase, an area with strong community character and historic charm. The study area includes neighborhood shopping along Connecticut Avenue (MD 185) and many established residential neighborhoods throughout. Civic uses include the Chevy Chase Library and North Chevy Chase Elementary School. The Columbia Country Club occupies much of the west portion of the study area. Two designated historic sites are in the area: Hayes Manor (now the Howard Hughes Medical Institute campus) and the old Chevy Chase Lake Streetcar Station site (now the home of a local dry-cleaning business). The Capital Crescent Trail will run parallel to the Purple Line through the study area. Overall, tree-lined streets, scenic walking trails, and lower building heights provide more of a neighborhood feel than nearby urban centers.

Coquelin Run bisects the study area and creates two distinct areas of the community, north and south, that are connected only via Connecticut Avenue (MD 185). Jones Bridge Road and East-West Highway (MD 410) are the other main thoroughfares that allow travel in, thru, and around the study area. Neighborhoods are isolated and rely heavily on these major thoroughfares to travel to local shops and schools, or to travel to Bethesda, Silver Spring, and other areas of Montgomery County. Major roadways and their respective limits, minimum rights-of-way, and number of lanes can be found in Table 4-1.

Unlike vehicle users, pedestrians and cyclists can cross easily through the area with local streets and the Capital Crescent Trail (formerly the Georgetown Branch Trail). See Figure 4-1 Major Connections for a map depicting most-used pedestrian pathways.

Per the site investigation and Maryland-National Capital Park and Planning Commission (M-NCPPC) records, multiple development projects are currently under construction and more development projects are planned in Chevy Chase. See Section 4.1.4 for further information on these projects.

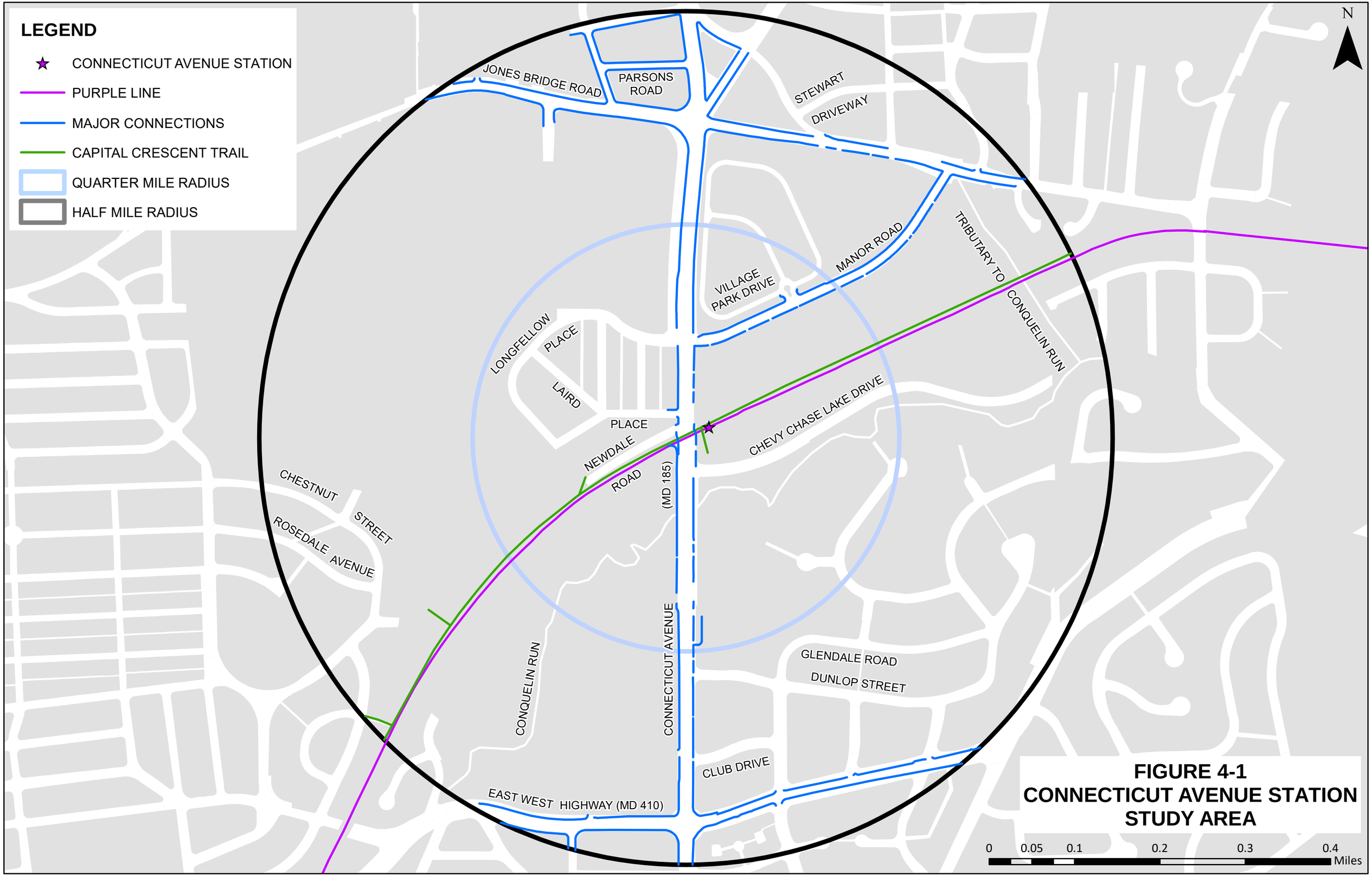


FIGURE 4-1
CONNECTICUT AVENUE STATION
STUDY AREA

4.1.2 Existing Facilities

The existing pedestrian network in Chevy Chase includes sidewalks, signalized and non-signalized crossings, striped crosswalks, shared use paths, and other facilities commonly found in residential areas. Facilities are typically safe, connected, and accessible; however, it is clear some of these facilities are older and have experienced varying degrees of wear and tear. Trip hazards and broken sidewalks are common. In addition, there are some sidewalks that have been patched and do not create a smooth surface for pedestrians. See Figure 4-7 for a map of existing pedestrian facilities.



Figure 4-2 The temporary asphalt sidewalk along Manor Road is not ADA compliant.



Figure 4-3 A sidewalk with no buffer along East-West Highway (MD 410) at Glendale Road.

Sidewalks are present along the main thoroughfares and many residential streets. The exception is the southeast quadrant of the study area – this residential community does not have existing sidewalks. Sidewalks are a minimum of 4 feet in width. Grass buffers are common more in the residential or low-traffic areas.

Curb ramps are in poor condition, with most ramps being out of compliance with current ADA standards due to missing or broken detectable warning surface, slopes greater than the maximum allowable, or insufficient landing areas. In addition, field staff found multiple locations where current ramp configuration is misaligned or a new ramp is needed.

Intersections are in good condition. Most signalized intersections comply with APS/CPS guidelines; however, there are a few facilities with broken, missing, or misaligned APS/CPS components. One signalized intersection was found to be noncompliant with APS/CPS standards. This is the intersection of Jones Bridge Road and Manor Road, which has CPS but is not equipped with APS.

Crosswalks are clearly marked, but many are out of date with current standards. Some median refuge islands, like the one noted below at Jones Bridge Road, are not wide enough to match the width of the crosswalk. Median refuge islands with this configuration may cause bottlenecks for pedestrians trying to cross the street.

Cyclists will be able to utilize shared roads and the Capital Crescent Trail (formerly Georgetown Branch Trail) to travel through the area. Other than these facilities, bicycle infrastructure is sparse. See Figure 4-8 for a map of existing bicycle facilities.

Based on existing conditions, the pedestrian facilities in Chevy Chase are generally compliant but may be out of date or subject to the wear and tear associated with the age of infrastructure. Cyclists can access the Capital Crescent Trail and shared roads; however more facilities are needed to provide safe, connected access for cyclists across the BiPPA and to the Connecticut Avenue Station.



Figure 4-4 Median refuge island at the intersection of Connecticut Avenue and Jones Bridge Road.



Figure 4-5 Typical outdated crosswalk markings at the intersection of Jones Bridge Road and Manor Road.



Figure 4-6 Left: Poorly aligned ramps, Curtis Street at East-West Highway. Right: A new curb ramp at Laird Place a would provide better alignment across Lynwood Drive.

Table 4-1 Street and Highway Classification

Designation	Roadway	Limits	Minimum Right-of-Way	Lanes	Speed Limit
Major Highway					
M-7	Connecticut Avenue (MD 185)	Blackthorn Street to Woodlanw Road	120	6	35
M-20	East-West Highway (MD 410)	Maple Avenue to Glengalen Lane	120	4	35 / 25
Arterial					
A-65	Jones Bridge Raod	Hawkins Lane to Connecticut Avenue (MD 185)	80	4	35
Minor Arterial					
MA-23	Jones Bridge Raod	Connecticut Avenue (MD 185) to Brierly Road	70	2	30
MA-27	Manor Road	Longfellow Place to Jones Bridge Road	70	2	30
Business					
B-1	CCL East - New Street	Chevy Chase Lake Drive to Manor Road	60	2	25
Primary Residential					
P-3	Chestnut Street	Lynbrook Drive to Kentbury Drive	60	2	25
P-6	Kensington Parkway	Jones Bridge Road to Kenilworth Driveway	70	2	25
Uncategorized*					
	Brierly Court	Jones Bridge Road to dead end	40	1	25
	Cardiff Road	Kerry Road to dead end	40	1	25
	Cardiff Court	Cardiff Road to dead end	40	1	25
	Chapin Place	Connecticut Avenue (MD 185) to Chevy Chase Lake Terrace	40	1	25
	Chevy Chase Lake Drive	Connecticut Avenue (MD 185) to Hamlet Place	40	1	25
	Chevy Chase Lake Terrace	Chevy Chase Lake Drive to dead end	60 (per Plat No. 2171)	1	25
	Clifford Avenue	Jones Bridge Road to Stewart Driveway	40	1	25
	Club Drive	Connecticut Avenue (MD 185) to Glendale Road	40	1	25
	Coquelin Run Connector	Manor Road to Chevy Chase Lake Drive	100 (per Plat No. 2171)	1	25
	Coquelin Terrace	Springdell Place to end of street	40	1	25
	Curtis Street	Brookville Road to Dunlop Street	40	1	25
	Cypress Place	East West Highway to Dunlop Street	40	1	25
	Cypress Place	Glendale Road to Cardiff Road	40	1	25
	Dunlop Street	Connecticut Avenue (MD 185) to Kerry Lane	40	1	25
	East West Access Road	to Glengalen Road	40	1	25
	Edgevale Street	East West Highway to end of street	40	1	25
	Gavin Manor Court	Manor Road to end of street	40	1	25
	Glendale Road	Blackthorn Street to Kerry Road	40	1	25
	Glengalen Lane	East West Highway to East West Access Road	40	1	25
	Hamlet Place	Chevy Chase Lake Drive to Chevy Chase Lake Drive	40	1	25
	Kensington Parkway	Connecticut Avenue (MD 185) to Kenilworth Driveway	40	1	25
	Kentbury Drive	Chestnut Street to Sleaford Road	40	1	25
	Kerry Lane	Dunlop Street to end of street	40	1	25
	Kerry Road	Glendale Road to end of street	40	1	25
	Kerry Court	Kerry Road to end of street	40	1	25
	Laird Place	Connecticut Avenue (MD 185) to Longfellow Place	40	1	25
	Longfellow Place	Lynwood Place Manor Road	40	1	25
	Loughborough Place	Laird Place to Manor Road	40	1	25
	Lynwood Place	Longfellow Place to Manor Road	40	1	25
	Montgomery Avenue	Jones Bridge Road to Stewart Driveway	40	1	25

Table 4-2 Street and Highway Classification (Continued)

Designation	Roadway	Limits	Minimum Right-of-Way	Lanes	Speed Limit
	Montgomery Avenue	Stewart Driveway to Dundee Driveway	40	1	25
	Montrose Drive	Spring Valley Road to Connecticut Avenue (MD 185)	40	1	25
	Montrose Drive	Connecticut Avenue (MD 185) to end of street	40	1	25
	Newdale Road	Connecticut Avenue (MD 185) to end of street	40	1	25
	Parsens Road	Spring Valley Road to Connecticut Avenue (MD 185)	40	1	25
	Platt Ridge Drive	Jones Bridge Road to Spring Valley Road	40	1	25
	Preston Court	Preston Place to end of street	40	1	25
	Preston Place	Manor Road to Manor Road	40	1	25
	Rosedale Avenue	Lynbrook Drive to Kentbury Drive	40	1	25
	Spring Valley Road	Jones Bridge Road Woodlawn Road	40	1	25
	Stewart Driveway	Montrose Driveway to Clifford Avenue	40	1	25
	Village Park Drive	Village Park Drive to Village Park Drive	40	1	25
	Village Park Place	Manor Road to Village Park Drive	40	1	25

*Uncategorized roads are not included in the M-NCPPC Roadway Functional Classification. ROW widths are based on MC-210.01 Tertiary Residential Street. Speed limits are based on minimum posted speed required by State law.

LEGEND

- CONNECTICUT AVENUE STATION
- PURPLE LINE
- EXISTING SIDEWALKS
- CAPITAL CRESCENT TRAIL
- QUARTER MILE RADIUS
- HALF MILE RADIUS

N

JONES BRIDGE ROAD
PARSONS ROAD
STEWART
DRIVEWAY
MANOR ROAD
TRIBUTARY TO
CONQUELIN RUN
VILLAGE PARK DRIVE
LONGFELLOW PLACE
LAIRD PLACE
CHEVY CHASE LAKE DRIVE
NEWDALE ROAD
(MD 185)
CHESTNUT STREET
ROSEDALE AVENUE
CONQUELIN RUN
CONNECTICUT AVENUE
GLENDALE ROAD
DUNLOP STREET
CLUB DRIVE
EAST WEST HIGHWAY (MD 410)

FIGURE 4-7
CONNECTICUT AVENUE STATION
EXISTING PEDESTRIAN FACILITIES

0 0.05 0.1 0.2 0.3 0.4 Miles

LEGEND

- CONNECTICUT AVENUE STATION
- PURPLE LINE
- CAPITAL CRESCENT TRAIL
- PURPLE LINE BIKE RACK
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

N

JONES BRIDGE ROAD
PARSONS ROAD
STEWART DRIVEWAY
MANOR ROAD
TRIBUTARY TO CONQUELIN RUN
VILLAGE PARK DRIVE
LONGFELLOW PLACE
LAIRD PLACE
NEWDALE ROAD
CHEVY CHASE LAKE DRIVE
CHESTNUT STREET
ROSEDALE AVENUE
CONQUELIN RUN
CONNECTICUT AVENUE (MD 185)
GLENDALE ROAD
DUNLOP STREET
CLUB DRIVE
EAST WEST HIGHWAY (MD 410)

FIGURE 4-8
CONNECTICUT AVENUE STATION
EXISTING CYCLIST FACILITIES

0 0.05 0.1 0.2 0.3 0.4 Miles

4.1.3 Proposed Purple Line Improvements

The Purple Line Station will be constructed east of Connecticut Avenue (MD 185), just north of Chevy Chase Lake Drive and across from Newdale Road. The station will be on a raised platform with stairs and an elevator providing access between street level and the tracks. A new 5-foot sidewalk along the south of Newdale Road, a new curb ramp, three staircases, an access plaza, and an elevator will be constructed as part of this development. Connections to the Capital Crescent Trail will be provided at the west end of Newdale Road, at Kentbury Drive, and via an elevator at the station. Existing golf cart trails on the Columbia Country Club property will be resurfaced or reconfigured.

4.1.4 Adjacent Projects

Adjacent projects were considered when developing proposed localized improvements. See the list in Table 4-2. If a data point overlaps with the construction limits of an adjacent project, this report will not propose a localized improvement. In addition, if an improvement proposed in this report will tie into an adjacent project, this is noted.

M-NCPPC records indicate there are two developments planned or currently under construction within the Connecticut Avenue BiPPA at the time of writing this report. Construction activities include new sidewalks and bike lanes along Manor Road, Connecticut Avenue (MD 185), and Newdale Road.

Table 4-3 Adjacent Projects Summary

Project Title / Location	M-NCPPC Plan Number	Project Details
Chevy Chase Lake	12002020C	Construct an 11’ cycle track and 14’ sidewalk along Connecticut Avenue (MD 185) northbound, from the Purple Line station to Manor Road; construct 6’-12’ sidewalk on eastbound Manor Road; construct 4’ sidewalk on Manor Road westbound; roof level connection to Capital Crescent Trail
The Crescent at Chevy Chase	820180130	Construct new 5’ sidewalk with parking and landscape buffer along Newdale Road westbound
MD 185 at Jones Bridge Road/Kensington Parkway (MDOT)		Construct new shared-use path along eastbound Jones Bridge Road; reconstruct curb ramps and restripe crosswalks at the intersection of Jones Bridge Road and MD 185; widen crossing medians

4.2 Master Plan Summary

The Chevy Chase area is subject to two Master Plans: The Bethesda Chevy Chase Master Plan (1990) and the Chevy Chase Lake Sector Plan (2013). See Figure 4-10 Connecticut Avenue Station Purple Line Master Plans map for the boundaries of these plans. Given the age and scope of these master plans, it was determined that the Chevy Chase Lake Sector Plan was the most relevant to this project. Therefore, proposed improvements follow these goals closely.

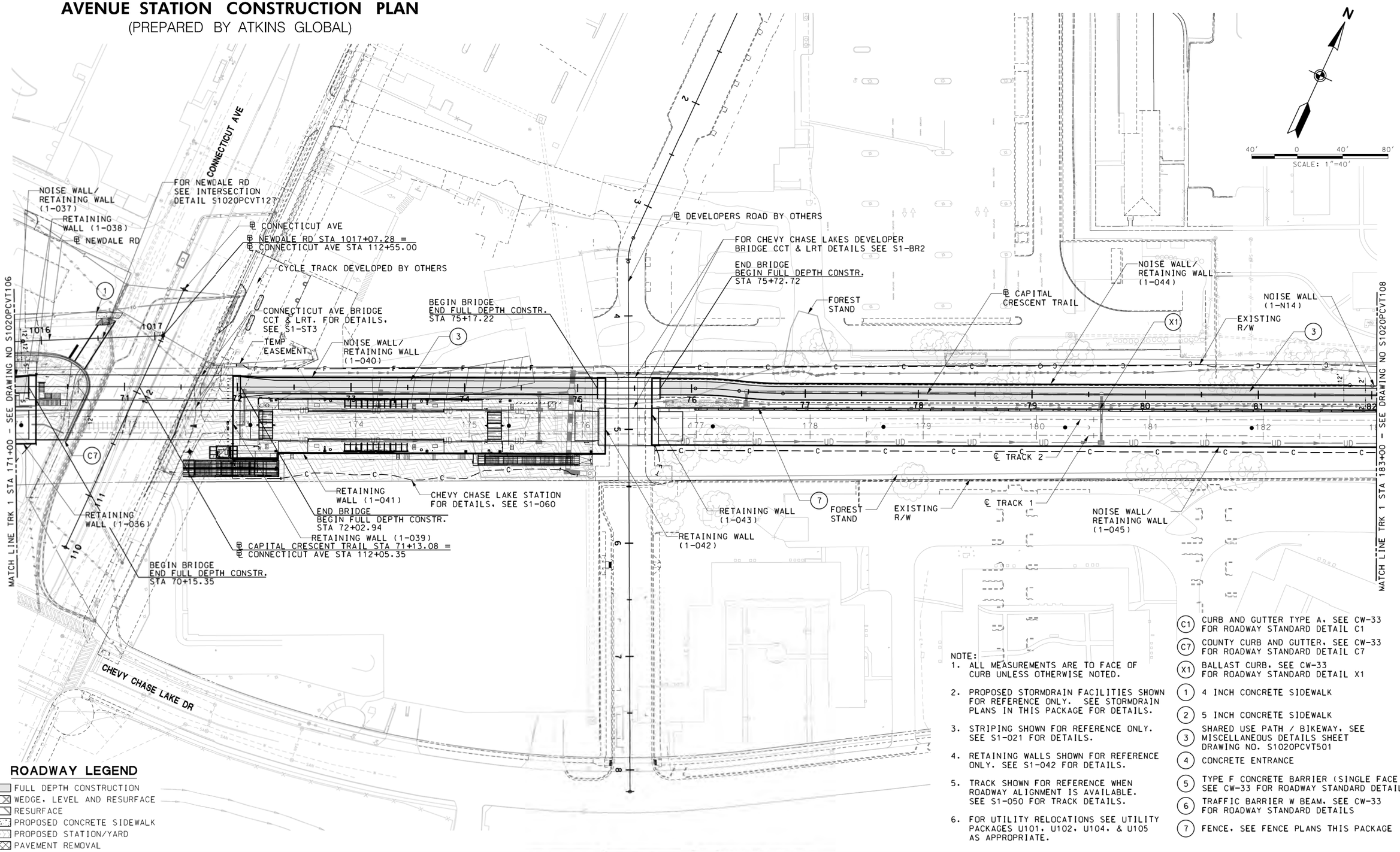
The Chevy Chase Lake Sector Plan describes the need for a cohesive vehicular, pedestrian, and cyclist network. Currently, the area is quite disjointed; Connecticut Avenue (MD 185) bisects the area, creating isolated neighborhoods without north/south or east/west access. Those pedestrians and cyclists wishing to travel through the BiPPA must either cross over or travel along Connecticut Avenue (MD 185). The Chevy Chase Lake Sector Plan recognizes this issue and calls for improvements that provide what the area is lacking.

4.2.1 Existing Pedestrian Improvement Recommendations

For the BiPPA to improve connectivity, pedestrians must have safe and accessible paths along and across Connecticut Avenue (MD 185). Especially for those blocks between Chevy Chase Lake Drive and Manor Road, Connecticut Avenue (MD 185) must be transformed from a main thoroughfare for vehicles to a pedestrian-oriented avenue. Refer to Table 4-4 for pedestrian improvements recommended in these master plans.

FIGURE 4–9 PURPLE LINE CONNECTICUT AVENUE STATION CONSTRUCTION PLAN

(PREPARED BY ATKINS GLOBAL)



ROADWAY LEGEND

- FULL DEPTH CONSTRUCTION
- WEDGE, LEVEL AND RESURFACE
- RESURFACE
- PROPOSED CONCRETE SIDEWALK
- PROPOSED STATION/YARD
- PAVEMENT REMOVAL

NOTE:
1. ALL MEASUREMENTS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
2. PROPOSED STORMDRAIN FACILITIES SHOWN FOR REFERENCE ONLY. SEE STORMDRAIN PLANS IN THIS PACKAGE FOR DETAILS.
3. STRIPING SHOWN FOR REFERENCE ONLY. SEE S1-021 FOR DETAILS.
4. RETAINING WALLS SHOWN FOR REFERENCE ONLY. SEE S1-042 FOR DETAILS.
5. TRACK SHOWN FOR REFERENCE WHEN ROADWAY ALIGNMENT IS AVAILABLE. SEE S1-050 FOR TRACK DETAILS.
6. FOR UTILITY RELOCATIONS SEE UTILITY PACKAGES U101, U102, U104, & U105 AS APPROPRIATE.

- (C1) CURB AND GUTTER TYPE A. SEE CW-33 FOR ROADWAY STANDARD DETAIL C1
- (C7) COUNTY CURB AND GUTTER. SEE CW-33 FOR ROADWAY STANDARD DETAIL C7
- (X1) BALLAST CURB. SEE CW-33 FOR ROADWAY STANDARD DETAIL X1
- (1) 4 INCH CONCRETE SIDEWALK
- (2) 5 INCH CONCRETE SIDEWALK
- (3) SHARED USE PATH / BIKEWAY. SEE MISCELLANEOUS DETAILS SHEET DRAWING NO. S1020PCVT501
- (4) CONCRETE ENTRANCE
- (5) TYPE F CONCRETE BARRIER (SINGLE FACE). SEE CW-33 FOR ROADWAY STANDARD DETAILS
- (6) TRAFFIC BARRIER W BEAM. SEE CW-33 FOR ROADWAY STANDARD DETAILS
- (7) FENCE. SEE FENCE PLANS THIS PACKAGE

MARYLAND DEPARTMENT OF TRANSPORTATION
MARYLAND TRANSIT ADMINISTRATION
MTA Maryland

PURPLE LINE TRANSIT PARTNERS

ATKINS
3901 Calverton Blvd, Suite 400
Calverton, Maryland 20705
Telephone: 301-210-6800
www.atkinsglobal.com

PROFESSIONAL CERTIFICATION
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 50425 Expiration Date 01/04/19

STATE OF MARYLAND — PROFESSIONAL ENGINEER
06/25/2018

NO.	DESCRIPTION	BY	DATE
D	RELEASE FOR CONSTRUCTION	CJC	05/29/18

REVISIONS

DESIGN JLB
DRAWN RBR
CHECK JLB
APPR CJC

PURPLE LINE LIGHT RAIL
CIVIL DESIGN
SEGMENT 1A

ROADWAY PLAN

DATE: MAY 29, 2018 SCALE: 1" = 40'

CONTRACT NO. T-1042-0220
DRAWING NO. S1020APCVT107
SHEET NO. 36 OF 457

pw://CUSD036301.wsatkins.com:ATKNAMDPL01/Documents/Purple Line P3 Design/4.0 CAD (Work In Progress)/Roadway/Segment 1/Drawings/S1-020/S1-020A/S1020ApCVT107.dgn
6/25/2018 1:55:56 PM

Table 4-4 Summary of Area Pedestrian Recommendations

Roadway/Route	Recommendation	Reference
Connecticut Avenue (MD 185)	New signalized crossing at Laird Place	Chevy Chase Lake Sector Plan
Jones Mill Road	Upgrade existing sidewalk between Jones Bridge Road and East-West Highway (MD 410)	Chevy Chase Lake Sector Plan
Connecticut Avenue (MD 185)	Provide connection between Loughborough Place and Connecticut Avenue (MD 185)	Chevy Chase Lake Sector Plan
Chevy Chase Lake Drive	Construct natural surface trail along south side	Chevy Chase Lake Sector Plan
Connecticut Avenue (MD 185)	Install high visibility crosswalk at Manor Road	Purple Line Pedestrian Connectivity Report
Connecticut Avenue (MD 185)	Install high visibility crosswalk at Chevy Chase Drive	Purple Line Pedestrian Connectivity Report
Manor Road	Install high visibility crosswalk at Village Park Drive	Purple Line Pedestrian Connectivity Report
Chevy Chase Lake Drive	Install high visibility crosswalk at 8101 Connecticut Avenue (MD 185) driveway	Purple Line Pedestrian Connectivity Report
Connecticut Avenue (MD 185)	Signalized crossing with high visibility crosswalks at Laird Place or Newdale Road	Purple Line Pedestrian Connectivity Report
Connecticut Avenue (MD 185)	Improve sidewalk (east side) between Chevy Chase Lake Drive and Dunlop Street to be 5’ wide with a 5’ buffer	Purple Line Pedestrian Connectivity Report
Connecticut Avenue (MD 185)	Improve sidewalk (east side) between Jones Bridge Road to be sidepath with 6’ wide buffer	Purple Line Pedestrian Connectivity Report

4.2.2 Existing Bikeway Recommendations

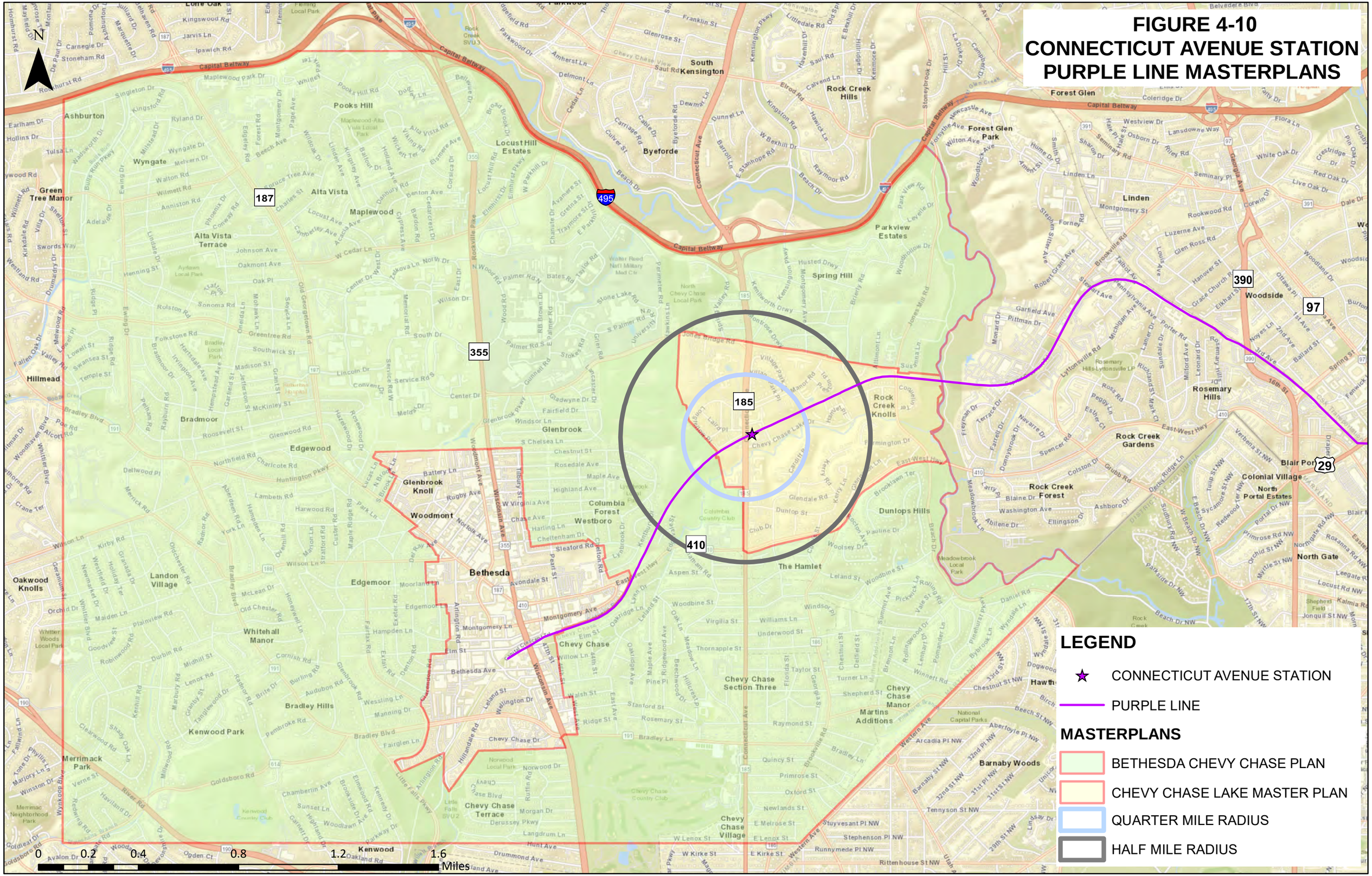
The Bike Master plans for this study area are listed in Table 4-3. Chevy Chase Lake Sector Plan bicycle facility recommendation’s main goal is to create more connections with the Capital Crescent Trail, which closely aligns with the Purple Line plans.

The County’s Bicycle Master Plan provides bicycle-specific recommendations for various areas in Montgomery County. In instances where the Chevy Chase Lake Sector Plan and the Bicycle Master Plan overlap, the Bicycle Master Plan recommendation should govern.

Table 4-5 Summary of Area Cycling Infrastructure Improvement Recommendations

Roadway/Route	Limits	Reference	Status
Dual Bikeway (Shared Use Path and Signed Shared Roadway)			
Manor Road	Connecticut Avenue (MD 185) to Jones Bridge Road	Chevy Chase Lake Sector Plan	New Recommendation
Jones Bridge Road	Hawkins Lane to Manor Road	Chevy Chase Lake Sector Plan	New Recommendation
Capital Crescent Trail	End of Newdale Road to Coquelin Run Trail	Chevy Chase Lake Sector Plan, Montgomery County Bicycle Master Plan	In Construction
Shared Use Path			
Georgetown Branch Interim Trail (Future Capital Crescent Trail)	Entire width of station ½-mile radius	Chevy Chase Lake Sector Plan	In Construction
Coquelin Run Trail	Chevy Chase Lake Drive to Jones Bridge Road	Chevy Chase Lake Sector Plan, Montgomery County Bicycle Master Plan	Recommended
Connecticut Avenue (MD 185)	Manor road to Jones Bridge Road; Blackthorn Street to Chevy Chase Lake Drive	Chevy Chase Lake Sector Plan	New Recommendation
Cycle Track			
Connecticut Avenue (MD 185)	Chevy Chase Lake Drive to Manor Road	Chevy Chase Lake Sector Plan	New Recommendation
Shared Roadway			
Jones Bridge Road	Manor Road to Brierly Court	Chevy Chase Lake Sector Plan	New Recommendation
Chevy Chase Lake Drive	Connecticut Avenue (MD185) to Coquelin Run	Chevy Chase Lake Sector Plan	New Recommendation
Separated Bike Lanes			
Connecticut Avenue (MD 185)	Manor Road to Laird Place	Montgomery County Bicycle Master Plan	New Recommendation
Connecticut Avenue (MD 185)	Laird Place to Newdale Road	Montgomery County Bicycle Master Plan	New Recommendation
Connecticut Avenue (MD 185)	Newdale road to Chevy Chase Lake Drive	Montgomery County Bicycle Master Plan	New Recommendation

FIGURE 4-10
CONNECTICUT AVENUE STATION
PURPLE LINE MASTERPLANS



LEGEND

- CONNECTICUT AVENUE STATION
- PURPLE LINE

MASTERPLANS

- BETHESDA CHEVY CHASE PLAN
- CHEVY CHASE LAKE MASTER PLAN
- QUARTER MILE RADIUS
- HALF MILE RADIUS

4.3 Proposed Improvements

The Connecticut Avenue BiPPA has been evaluated for several types of pedestrian and bicycle improvements. Proposed improvements have been developed and prioritized based on the ranking criteria outlined in Section 2.8 of this report.

For each improvement, an analysis of possible barriers to construction and potential project cost was included. This analysis was used to determine the project priority ranking. Each improvement was then ranked in accordance with the Methodology. Please refer to Table 4-6 for a summary of priority rankings of pedestrian improvements.

4.3.1 Proposed Pedestrian Improvements

The study included a thorough review of existing pedestrian facilities (sidewalk ramps, driveway aprons, linear sidewalks, etc.) and determined which facilities did not meet current ADA criteria. The report and figures indicate where spot improvements are required and where linear sidewalk improvements are required. Spot improvements are shown in Figures 4-16 (a) and (b). The maps show the locations and types of existing facilities that need to be reconstructed to meet ADA standards. Proposed linear routes/improvements for pedestrian access are shown in Figure 4-17. The map figures also indicate the improvements that will be constructed by the Purple Line project.

Refer to Table 4-5 for a summary of priority rankings of pedestrian improvements. This report describes the top ranked pedestrian improvements for the Takoma/Langley Transit Center Station.

1. Area Wide Improvements to Existing Sidewalks

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Sidewalk, Widening of Non-compliant Sidewalk Widths, Reconstruction of Sidewalks with Non-compliant Slopes

Priority Ranking: 2.2 Time Frame: Short-term Cost Category: 3

There is a need for general maintenance of pedestrian pathways and upgrades to those that do not meet current ADA, MCDOT, or MDOT SHA standards throughout the BiPPA. Curb ramps should be upgraded to meet slope requirements as set forth by ADA and must include detectable warning surfaces. Sidewalks should be free from trip hazards and breaks; it is recommended that trip hazards greater than ½-inch and significant breakage be repaired by replacing the affected portion of the sidewalk. In addition, sidewalks that have cross-slopes greater than allowable or pinch points with less than a 36” width should be replaced or reconfigured.

Although all area-wide sidewalk improvements are a worthwhile investment, those in the vicinity of the Purple Line, Capital Crescent Trail connections, North Chevy Chase Elementary School, and the Chevy Chase Library should be prioritized based on current and future use. In addition, area-wide improvements to sidewalks along the major thoroughfares (Connecticut Avenue (MD 185), Jones Bridge Road, and East-West Highway (MD 410)) should be prioritized.

2. Area Wide Improvements to Existing Driveway Aprons

Improvement Type: Reconstruct Driveway Aprons

Priority Ranking: 2.2 Time Frame: Short-term Cost Category: 3

There is a need to upgrade existing driveway aprons to meet ADA slope requirements and be in conformance with current MCDOT and MDOT SHA standards throughout the BiPPA. Existing aprons were found to have existing cross slopes greater than 2%.

Reconstruction of driveway aprons is recommended for those roads with sidewalks that provide direct connection to the Purple Line Station or the Capital Crescent Trail. These roadways are Connecticut Avenue (MD 185) and Newdale Road. Much like the area wide improvements to existing sidewalks, area-wide improvements to existing driveway aprons would improve accessibility throughout the area by providing a continuous ADA-friendly walking path.

3. Area Wide Improvements to Existing Intersections

Improvement Type: Striping of Crosswalks

Priority Ranking: 2.0 Time Frame: Short-term to Mid-term Cost Category: 3

Crosswalk striping throughout this Purple Line BiPPA is fading or does not utilize the continental or “piano stripe” pattern at high-traffic intersections. At a minimum, all striping should be updated to ensure there are no faded or broken portions. Crosswalks in high-traffic areas, such as those along major routes (Connecticut Avenue (MD 185), Jones Bridge Road, and East-West Highway (MD 410)) and those in the vicinity of North Chevy Chase Elementary School, and the Chevy Chase Library should be prioritized.

Upgrades to these existing crosswalks would provide increased safety and comfort for pedestrians. No impacts to existing utilities or rights-of-way are anticipated.

4. Area Wide Upgrades to APS/CPS

Improvement Type: Signal Upgrades to APS/CPS

Priority Ranking: 3.7 Time Frame: Short-term to Mid-term Cost Category: 2

Many intersections throughout the Chevy Chase area do not have accessible signals. Upgrading these signals to comply with ADA guidelines would create a safer and more inclusive pedestrian experience for everyone. No impacts to existing utilities, rights-of-way or environmental features are anticipated. Minor traffic pattern changes may be required at high volume intersections during construction.

Although improving accessibility at all intersections is a worthwhile investment, those high traffic areas should be prioritized. These areas include those along major routes, near schools, and near the Purple Line and Capital Crescent Trail.

5. Connecticut Avenue (MD 185)

From: East-West Highway (MD 410) to Chevy Chase Lake Drive

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, Reconstruction of Driveway Aprons, Reconstruction of Sidewalks with Non-Compliant Slopes, Signal Upgrades to APS/CPS

Priority Ranking: 4.6 Time Frame: Short-term Cost Category: 2

This section of Connecticut Avenue (MD 185) connects the southeastern residential community with the proposed Purple Line station. The Chevy Chase Library, senior living apartments, and a high-rise condominium complex are also located along this route. The disjointed nature of Chevy Chase's roads requires pedestrians to use Connecticut Avenue (MD 185) to traverse this area or access these community features; therefore, upgrades in this high-traffic area are crucial to ensure pedestrian safety. The proximity to a senior living center emphasizes the importance of having safe sidewalks that are free from trip hazards and that have adequate, ADA-compliant curb ramps. All APS/CPS signals along this route should be checked for proper functionality, specifically the crossing at Dunlop Street. These improvements can be considered short-term. A shared-use path discussed in the next section will be considered a long-term improvement.

Improvements along this corridor are not anticipated to have significant impacts to utilities, traffic, or street trees. Care should be taken to construct these improvements without major disruption to the already congested traffic in the area.

6. Connecticut Avenue (MD 185)

From: Chevy Chase Lake Drive to Purple Line Station

Improvement Type: Reconstruction of Existing Sidewalks, Reconstruction of Driveway Aprons, Striping of Crosswalks, Signal Upgrades to APS/CPS, Construction of New Sidewalks

Priority Ranking: 4.0 Time Frame: Short-term Cost Category: 2

Connecticut Avenue (MD 185) is the main corridor for north-south access in Chevy Chase. This area of Connecticut Avenue (MD 185) between Chevy Chase Lake Drive and Manor Road is expected to be a high-traffic pedestrian area as the final leg of the north-south access route to the new Purple Line Station at Newdale Road. In addition to the Purple Line station, this stretch of Connecticut Avenue (MD 185) also provides access to Chevy Chase's small town center and high-rise apartment buildings. The block between the Purple Line station and Manor Road will be reconstructed by developer with a cycle track and sidewalk along Connecticut Avenue (MD 185) northbound.



Figure 4-11 Existing sidewalk along the west side of Connecticut Avenue, looking north to Manor Road.

Recommended improvements in this location include reconstruction and widening of existing sidewalks, reconstruction of driveway aprons, striping of crosswalks, and signal upgrades. Sidewalk reconstruction varies from small spot-improvements to repair of existing utility patching to linear improvements for correction of extensive slope deficiencies. Signal improvements include replacing signage and relocating one push-button pole to within 18 inches of the curb ramp landing.

Improvements along this corridor are not expected to have major impacts to utilities, traffic, or the environment. Small traffic-control operations may be necessary to complete signal upgrades and crosswalk striping. Work should be coordinated with local businesses whose frontage may be impacted.



Figure 4-12 Asphalt utility patching along Connecticut Avenue, at Newdale Road.



Figure 4-13 Sidewalk needed at the intersection of Manor Road and Connecticut Avenue.

Work in this area will need to be coordinated with the Chevy Chase Lake project and the associated improvements proposed along Connecticut Avenue (MD 185) and the intersection with Manor Road.

7. Connecticut Avenue (MD 185)

At Laird Place

Improvement Type: Construction of Mid-Block Crossing, Pedestrian Hybrid Beacon (HAWK Signal)

Priority Ranking: 3.1 Time Frame: Long-term Cost Category: 3

Pedestrians looking to safely cross Connecticut Avenue (MD 185) have few options north of Chevy Chase Lake Drive. In this nearly ½-mile stretch, the only signalized crossings are at Jones Bridge Road, Manor Road, and Chevy Chase Lake Drive. The intersection of Connecticut Avenue (MD 185) and Laird Place is located less than 100 feet north of the new Purple Line Station and is an ideal location for an additional crossing because of its proximity to the new station and other community features. The new crossing will increase safety by providing a safe method of passage across Connecticut Avenue (MD 185), increase accessibility with ADA-compliant APS/CPS signals, and increase connectivity by allowing pedestrians to cross Connecticut Avenue (MD 185). This feature is also a master plan recommendation from the Chevy Chase Lake Sector Plan.

The new mid-block crossing should have a pedestrian hybrid signal beacon (HAWK signal), accompanying signage, and high-visibility crosswalks. Impacts to utilities and traffic/transit are anticipated to be moderate for this project. The new crossing will require constructing a pedestrian pathway through an existing median. Installation of new curb ramps and signal poles will require coordination with existing utility poles.

8. Connecticut Avenue (MD 185)

At East-West Highway (MD 410)

Improvement Type: Reconstruction of Sidewalks with Non-Compliant Slopes, Striping of Crosswalks

Priority Ranking: 1.7 Time Frame: Mid-term Cost Category: 2

The intersection of Connecticut Avenue (MD 185) and East-West Highway (MD 410) has seven total pedestrian crossings: two across Connecticut Avenue (MD 185), two across East-West Highway (MD 410), and three across right-turn lanes. Visible crosswalk striping and ADA-compliant sidewalks are crucial in this high-traffic area.

Six of the seven crosswalks at this intersection have parallel or diagonal pavement markings. These markings should be updated to the continental or “piano stripe” style for high visibility. Impacts due to this project are anticipated to be minimal.

An approximately 250-foot section of existing sidewalk at the northeast of this intersection does not have ADA-compliant slopes. A Metrobus stop (ID Number 2000125) is located at the eastern end of this portion of sidewalk. During field investigation, the running slope was measured to be greater than 5% and the cross slope was measured to be greater than 2%. ADA compliance in this section of sidewalk specifically is essential to allow safe access to the existing Metrobus stop for all users. Impacts to utilities, traffic/transit, right-of-way, and the environment are expected to be minimal, however further study of the area around the bus stop should be completed to determine the extent of design required.

9. Jones Bridge Road

At Manor Road

Improvement Type: Reconstruction of Curb Ramps, Striping of Crosswalks, Signal Upgrades to APS/CPS

Priority Ranking: 2.1 Time Frame: Mid-term Cost Category: 2

The intersection of Jones Bridge Road and Manor Road is a three-way intersection with two pedestrian crossings. To the west of the intersection is North Chevy Chase Elementary School; to the south and east are residential neighborhoods. This intersection is currently equipped only with CPS, existing crosswalk striping is not in compliance with current standards, and one curb ramp does not have a sufficient landing area.



Figure 4-14 Existing curb ramp along Jones Bridge Road does not have an adequate landing area.

All crosswalks should be re-striped per current standards and all crossing should be updated to include APS. This may require moving or adding poles for push buttons. The non-compliant curb ramp should also be reconstructed to comply with all slope requirements. Utility, right-of-way, and environmental impacts are expected to be minimal because repairs will be to existing infrastructure. Traffic patterns may be temporarily impacted due to signal upgrades. Existing pedestrian countdown timing should be investigated to determine if additional time is necessary. Timing of the existing traffic lights may be impacted should the crossing time require changes.

10. Jones Bridge Road

From: Connecticut Avenue (MD 185) to Manor Road

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, Reconstruction of Driveway Aprons, Reconstruction of Sidewalks with Non-Compliant Slopes, Striping of Crosswalks, Construction of New Sidewalks

Priority Ranking: 2.0 Time Frame: Short-term Cost Category: 2

North Chevy Chase Elementary School is located off of Jones Bridge Road, just west of the intersection with Manor Road. The safety of pedestrian facilities in this area is critical for the safety of students. Jones Bridge Road currently has sidewalks on both sides of the street for all of its length, except for a small portion on the north side between Montgomery Avenue and Manor Road. There are multiple crossings along Jones Bridge Road that have outdated crosswalk markings. Construction of a shared-use path here is considered a long-term improvement and is discussed in the next section of this report.

All sidewalks in this corridor should be reconstructed in areas where maximum slopes are exceeded, or trip hazards are present. Crossings of Jones Bridge Road should be striped to comply with current standards of piano stripe or “continental” markings. Crosswalks across minor roads that intersect with Jones Bridge Road that have faded should be re-striped. These improvements are not anticipated to have impacts on utilities, right-of-way, traffic, or the environment.



Figure 4-15 Jones Bridge Road, looking west toward Montgomery Avenue.

A new sidewalk should be constructed along Jones Bridge Road between Montgomery Avenue and Manor Road. The sidewalk would be constructed on the north side of the road and would connect to other existing sidewalks. Environmental, right-of-way, and utility impacts due to sidewalk construction are expected to be minimal. A 5-foot wide sidewalk would be installed within the existing shoulder. However, the existing shoulder provides space for cyclists. If desired, the striped median could be eliminated and the westbound travel lane shifted to continue providing a bicycle compatible shoulder.

Various Residential Streets

Improvement Type: Construction of Sidewalks

Priority Ranking: Varies Time Frame: Mid-Term Cost Category: Varies

	Road	Limits		Cost Category	Priority Ranking
11	Longfellow Place / Manor Road	Lynwood Place	Laird Place	2	2.7
12	Longfellow Place	At Connecticut Avenue (MD 185)		2	2.4
13	Clifford Avenue	Jones Bridge Road	½-mile radius	2	1.2
14	Dunlop Street	Glendale Road	Kerry Lane	2	1.2

As shown in Figure 4-7 Connecticut Avenue Station Existing Pedestrian Facilities, there are no existing sidewalks along streets in the southeastern neighborhood of this BiPPA. Although any additional sidewalks would have some benefit, these streets have a low priority for adding them since the cost and impacts are high, relative to the benefits. The roads have utilities to be relocated, large trees to be removed, and they do not have high volumes of traffic that would require the safety of a sidewalk.

Sidewalk is recommended on Clifford Road to complete the section of sidewalk that exists and close the gap to Jones Bridge Road.

Dunlop Street connect directly to Connecticut Avenue and intersect several side residential Street. For this reason, it may have a higher volume of pedestrians (than the other residential streets in this area) and a higher volume of traffic. The cost of adding a sidewalk could be significant but the connectivity, accessibility and safety it provides would be beneficial to this study are and the access to the Purple Line station.

Manor Road and Longfellow Place is within the ¼ mile radius of the Purple Line Station. It has direct connection to Connecticut Avenue, and it is two-lanes and approximately 30 ft wide. This roadway should have complete and continuous sidewalks on both sides of the roadway. There is sidewalk on at least one side of the road, but the road has a higher volume of traffic and continuous sidewalks connecting pedestrians to the Purple Line station and Connecticut Avenue would provide the required safety and connectivity.

LEGEND

- CONNECTICUT AVENUE STATION
- PURPLE LINE
- CAPITAL CRESCENT TRAIL

PROPOSED IMPROVEMENTS

- INSTALL APS/CPS
- REPAIR APS/CPS
- CONSTRUCT CURB RAMP

SIDEWALK

- NON-COMPLIANT DRIVEWAY APRON
- RECONSTRUCT SIDEWALK
- SIDEWALK OBSTRUCTION
- NON-COMPLIANT WIDTH
- NON-COMPLIANT SLOPE
- INSTALL SAFETY RAILING
- QUARTER MILE RADIUS
- HALF MILE RADIUS

SPRING VALLEY ROAD
MONTROSE DRIVEWAY
JONES BRIDGE ROAD
PARSONS ROAD
KENSINGTON PARKWAY
MONTGOMERY AVENUE
STEWART DRIVEWAY
MANOR ROAD
TRIBUTARY TO CONQUELIN RUN
LOUGHBOROUGH PLACE
VILLAGE PARK DRIVE
LONGFELLOW PLACE
LAIRD PLACE
CHEVY CHASE LAKE DRIVE
NEWDALE ROAD
CONQUELIN RUN
CONNECTICUT AVENUE (MD 185)
GLENDALE ROAD
DUNLOP STREET
CLUB DRIVE
EAST WEST HIGHWAY (MD 410)
N

FIGURE 4-16(a)
CONNECTICUT AVENUE STATION AREA-WIDE IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

LEGEND

- CONNECTICUT AVENUE STATION
- PURPLE LINE
- CAPITAL CRESCENT TRAIL

PROPOSED IMPROVEMENTS

- RECONSTRUCT CURB RAMP
- STRIPE CROSSWALK
- INSTALL PEDESTRIAN HYBRID BEACON (HAWK)
- QUARTER MILE RADIUS
- HALF MILE RADIUS

SPRING VALLEY ROAD
MONTROSE DRIVEWAY
JONES BRIDGE ROAD
PARSONS ROAD
KENSINGTON PARKWAY
MONTGOMERY AVENUE
STEWART DRIVEWAY
MANOR ROAD
VILLAGE PARK DRIVE
TRIBUTARY TO CONQUELIN RUN
LONGFELLOW PLACE
LAIRD PLACE
NEWDALE ROAD
CHEVY CHASE LAKE DRIVE
CHESTNUT STREET
ROSEDALE AVENUE
CONQUELIN RUN
CONNECTICUT AVENUE (MD 185)
GLENDALE ROAD
DUNLOP STREET
CLUB DRIVE
EAST WEST HIGHWAY (MD 410)
N

FIGURE 4-16(b)
CONNECTICUT AVENUE STATION AREA-WIDE IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

LEGEND

- CONNECTICUT AVENUE STATION
- PURPLE LINE
- EXISTING SIDEWALKS
- CAPITAL CRESCENT TRAIL

PROPOSED IMPROVEMENTS

- SHARED USE PATH

SIDEWALK

- PROPOSED
- UNDER CONSTRUCTION
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

N

JONES BRIDGE ROAD
PARSONS ROAD
STEWART
DRIVEWAY
CLIFFORD AVENUE
TRIBUTARY TO CONQUELIN RUN
MANOR ROAD
VILLAGE PARK DRIVE
LONGFELLOW PLACE
LAIRD PLACE
CHEVY CHASE LAKE DRIVE
NEWDALE ROAD
(MD 185)
CHESTNUT STREET
ROSEDALE AVENUE
CARDIFF ROAD
KERRY ROAD
CARDIFF COURT
KERRY LANE
CONQUELIN RUN
CONNECTICUT AVENUE
GLENDALE ROAD
DUNLOP STREET
CYPRESS PLACE
CURTIS STREET
CLUB DRIVE
EAST WEST HIGHWAY (MD 410)

FIGURE 4-17
CONNECTICUT AVENUE STATION
PROPOSED PEDESTRIAN IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

Table 4-5 - Pedestrian Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE: Reconstruction of Curb Ramps	Reconstruction of Existing Sidewalks	Reconstruction of Driveway Aprons	Removal of Sidewalk Obstructions	Widening of Non-Compliant Sidewalk Widths	Reconstruction of Sidewalks with Non-Compliant Slopes	Reconstruction of Mid-Block Crossings	Striping of Crosswalks	Signal Upgrades to APS/CPS	Construction of New Curb Ramps	Construction of New Sidewalks	Installation of Additional Signing	Construction of Curb Extensions	Construction of Mid-Block Crossings	Construction of Median Refuge	Installation of New APS/CPS	Other - See Notes	BENEFITS: Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score	IMPACTS: Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
Area-wide Improvements																																
1	ADA Upgrades to Existing Sidewalks	MCDOT	●	●			●	●													2	3	5	2	12		3	3	2	3	11	2	1	2.2
2	ADA Upgrades to Existing Driveway Aprons	MCDOT			●																1	3	4	2	10		2	2	2	3	9	2	1	2.2
3	ADA Upgrades to Existing Intersections	MCDOT								●											2	3	4	2	11		3	3	2	3	11	2	1	2.0
4	Upgrades to APS/CPS	MCDOT									●										2	4	5	2	13		2	2	1	2	7	2	1	3.7
Connecticut Avenue (MD 185)																																
5	East-West Highway (MD 410) to Chevy Chase Lake Drive	MCDOT	●	●	●			●			●										5	4	5	2	16		1	3	1	2	7	2	1	4.6
6	Chevy Chase Lake Drive to Purple Line Station	MCDOT		●	●					●	●		●								5	4	5	2	16		1	4	1	2	8	2	1	4.0
7	at Laird Place	MCDOT													●				● 1		4	4	4	2	14		3	2	1	3	9	2	1	3.1
8	at East-West Highway (MD 410)	MCDOT						●		●											3	4	3	2	12		1	3	1	2	7	1	1	1.7
Jones Bridge Road																																
9	at Manor Road	MCDOT	●							●	●										3	5	5	2	15		1	3	1	2	7	1	1	2.1
10	Connecticut Avenue (MD 185) to Manor Road	MCDOT	●	●	●			●		●			●								5	4	5	2	16		1	4	1	2	8	1	1	2.0
Longfellow Place / Manor Road																																
11	Lynwood Place to Laird Place	MCDOT											●								4	2	4	2	12		2	3	2	2	9	2	1	2.7
12	at Connecticut Avenue	MCDOT											●								3	2	4	2	11		2	3	2	2	9	2	1	2.4
Clifford Avenue																																
13	Jones Bridge Road to 1/2-mile radius	MCDOT											●								4	2	4	2	12		2	3	3	2	10	1	1	1.2
Dunlop Street																																
14	Glendale Road to Kerry Lane	MCDOT											●								3	2	4	2	11		2	3	2	2	9	1	1	1.2

$$Priority\ Ranking = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

4.3.2 Proposed Bikeway Improvements

As discussed in Section 4.1.2, infrastructure is largely nonexistent in the BiPPA. Cyclists can utilize the Capital Crescent Trail and shared roads to traverse through the area. Due to the lack of existing infrastructure, proposed bikeway improvements are an important part of making the area safe and bikeable.

A total of 9 bikeway improvements were identified on six different streets and one undeveloped right-of-way. The benefits, impacts, and equity factor for each improvement were analyzed based on the criteria outlined in Section 2.8 of this report. A summary of discrete improvements by street and their priority rankings can be found in Table 4-7. For the purposes of this report, only those improvements with the highest priority rankings are discussed.

The goal of bikeway improvements in this BiPPA is to have complete north-south and east-west access for cyclists. This will be achieved by various types of bike paths along the entirety of Connecticut Avenue (MD 185); a shared-use path along Jones Bridge Road; shared-use paths along Manor Road and Chevy Chase Lake Drive; and a shared-use path in undeveloped right-of-way that would connect Jones Bridge Road and Chevy Chase Lake Drive. While all improvements are important, those along Connecticut Avenue (MD 185) should be prioritized.

1. Connecticut Avenue (MD 185)

From: Jones Bridge Road to Manor Road

Improvement Type: Shared-Use Path

Priority Ranking: 2.5 Time Frame: Long-term Cost Category: 3

A shared-use path along Connecticut Avenue (MD 185) from Jones Bridge Road to Manor Road connects cyclists in northern Chevy Chase with the proposed Purple Line station and town center. The path will provide a safe route for cyclists where one does not currently exist. The path can be used by pedestrians as well.

Connecticut Avenue (MD 185) is a divided highway with seven lanes at its widest point. It runs north to south and is the major thoroughfare for the BiPPA. The current right-of-way is 120 feet and the current roadway width in this section is approximately 85 feet with a center grass median. The existing roadway has 5-foot sidewalks on either side with a grass buffer where possible. The grass buffer is more consistent on the northbound side of the road. Street trees and utility poles line both sides of the street.

Construction of this shared-use path should plan to utilize the footprint of the existing sidewalk and widen it to a 10-foot minimum, expanding away from the road further into the grassed right-of-way. Based on field investigation, the southbound side of the road is not ideal. Obstacles include mature trees, utility poles, and steep slopes. The northbound side, however, has flatter slopes and utility poles that are set closer to the road. Although some trees will be impacted, an existing brick wall separates the shared-use path from denser tree cover. Because the path will be constructed within current right-of-way and outside of the existing road footprint, impacts to traffic will be minimal. Impacts to utilities and the environment are expected to be moderate, with utility relocation and tree loss probable.

2. Connecticut Avenue (MD 185)

From: Chevy Chase Lake Drive to Blackthorn Street

Improvement Type: Shared-Use Path

Priority Ranking: 2.2 Time Frame: Long-term Cost Category: 4

A shared-use path along Connecticut Avenue (MD 185) from Chevy Chase Lake Drive to Blackthorn Street (the southernmost portion of the BiPPA) will provide cyclists and pedestrians safe access to the Purple Line station and the small businesses located near the station. The path will be a continuation of other improvements proposed along Connecticut Avenue (MD 185).

This section of Connecticut Avenue (MD 185) is a seven-lane, divided highway at its widest. The highway is divided by a three-foot wide center median for most of its length; where no center median exists, the lanes are divided by a double yellow line. Roadway width is typically just over 70-feet with narrow lanes. Street trees and utility poles line both sides of the highway. There are existing sidewalks with grass buffers on both the northbound and southbound sides, although the grass buffer is significantly wider on the northbound side.

The shared-use path should be constructed in generally the same location as the existing five-foot sidewalk. To create a 10-foot wide path, the existing footprint should be expanded away from the roadway into the grassy area of the right-of-way. In some areas, the existing grass buffer may need to be reduced to accommodate.

There are many obstacles to construct a 10-foot wide shared-use path along this corridor. The existing streetscape is established; there are many mature trees, existing utility poles and lampposts, private landscape, and off-street signage adjacent to the road. These features will need to be removed or relocated to accommodate the new path. A separate bicycle/pedestrian bridge crossing of Coquelin Run parallel to Connecticut Avenue (MD 185) would also need to be constructed. Coordination is also required with the various businesses, residential complexes, and community features that are present along this corridor. Impacts to utilities, traffic, and environment are expected to be moderate. Right-of-way acquisition may be required for the southern portions of Connecticut Avenue (MD 185) that have decreased right-of-way width.

3. Connecticut Avenue (MD 185)

From: Purple Line Station to Chevy Chase Lake Drive

Improvement Type: Cycle Track

Priority Ranking: 2.3 Time Frame: Long-term Cost Category: 2

A cycle track along Connecticut Avenue (MD 185), between the Purple Line station and Chevy Chase Lake Drive, will connect with the two suggested shared-use paths and complete north to south bicycle access in the BiPPA. This stretch of Connecticut Avenue (MD 185) is currently a six-lane road with an additional left-turn lane. The road is approximately 85 feet wide with a center median of variable width. The area currently has 5-foot wide sidewalks on both sides of the road. Each sidewalk has a grass buffer where possible.

To provide continuity with the separated cycle track proposed with the Chevy Chase Lake development noted in

M-NCPPC records indicate there are two developments planned or currently under construction within the Connecticut Avenue BiPPA at the time of writing this report. Construction activities include new sidewalks and bike lanes along Manor Road, Connecticut Avenue (MD 185), and Newdale Road.

Table 4-3, the proposed cycle track should be constructed along the east of Connecticut Avenue (MD 185). Coordination with the Chevy Chase Lake development will be required to ensure a smooth transition between sections of bikeway. Design should be consistent with the bikeway proposed as part of the Chevy Chase Lake development; per M-NCPPC site plan records, that bikeway will be 11 feet wide and provide a 6-foot buffer between cyclists and travel lanes.

Though this improvement ranks highly for connectivity and safety, impacts due to this new bikeway are also expected to be high. M-NCPPC records indicate a right-of-way acquisition of nearly 20 feet was required for the Chevy Chase Lake bikeway. A similar acquisition will be required for construction of this recommended cycle track. The right-of-way acquisition will prevent impacts to the existing travel lanes along Connecticut Avenue (MD 185). An existing Metrobus stop (ID Number 2000169) will need to be temporarily relocated. Design of the recommended cycle track will need to ensure access to this Metrobus stop is maintained and ADA-compliant. At a minimum, a striped pedestrian crossing should be implemented across the cycle track to allow pedestrians to safely access the bus stop.

4. Manor Road

From: Connecticut Avenue (MD 185) to Jones Bridge Road

Improvement Type: Shared-Use Path

Priority Ranking: 2.3 Time Frame: Long-term Cost Category: 2

As has been mentioned previously in this report, access through Chevy Chase moves primarily through Connecticut Avenue (MD 185). Jones Bridge Road and East-West Highway (MD 410) are the only other roads that provide access to/from the BiPPA. With such limited access, Manor Road becomes an important corridor because it connects Connecticut Avenue (MD 185) and Jones Bridge Road and creates an alternate pathway on a low-traffic road. This is an important development that draws cyclists away from busy Connecticut Avenue (MD 185) to a safer pathway.

Manor Road is a minor arterial with a 70-foot right-of-way, two 10-foot travel lanes, and two 7-foot on-street parking. There are sidewalks on both sides of the street, and both have grass buffers. Trees line the westbound side of the road, and utility poles line the east side.

The shared-use path should be constructed on the eastbound side of the road to preserve established tree cover on the westbound side. In addition, slopes on the eastbound side are more favorable and would require less earthwork than the steep slopes encountered on the westbound side. The existing westbound road section includes a typical 5-foot wide sidewalk with 5-foot wide grass buffer. This area should be reconstructed to provide a 10-food wide asphalt shared-use path. Consolidation of parking to the westbound side of the roadway should be evaluated.

Impacts due to construction are expected to be moderate. There are many existing above-ground utilities, utility poles, trees, signs, and other features that may need to be relocated to accommodate construction. To reduce relocation, the proposed shared-use path may wind around these above-ground features where possible. Design and construction should be coordinated with residents and North Chevy Chase Elementary School.

5. Chevy Chase Lake Drive

From: Connecticut Avenue to dead end

Improvement Type: Shared-Use Path

Priority Ranking: 1.8 Time Frame: Long-term Cost Category: 3

Chevy Chase Lake drive is a residential street just south of the proposed Purple Line Station. The road connects to Connecticut Avenue (MD 185) but provides no through access to Jones Mill Road. Because the road does not provide through access, vehicular traffic is limited to those accessing the apartment complexes, townhomes, and condominiums along the street.

The existing right-of-way width is 60 feet, and the existing roadway width varies from 30-35 feet from curb to curb. The road is a two-lane road with parking on the south side of the street. A small portion of parking is available on the north side of the road. Parking permits for this section of road are under review and may be granted in the future. A sidewalk runs continuously along the north side of the road; a sidewalk along the south side begins at the intersection with Connecticut Avenue and stops at the driveway to a condominium complex. Utility poles are predominately on the north side of the road, with a handful of utility poles along the south side near the road's dead end. To the south of the roadway is Coquelin Run, a tributary to Rock Creek. This area is heavily forested and should be avoided to prevent disturbance to the stream.

To preserve the existing Coquelin Run stream valley, the shared-use path should be constructed along the north side of the road. The sidewalk here is a 5-foot wide sidewalk with a grass buffer of variable width: 5 feet at is narrowest and 10 feet at its widest. To create a 10-foot wide shared-use path section, the 5-foot sidewalk and 5 feet of the existing grass buffer should be reconstructed to be an asphalt path. A continuous 5-foot minimum grass buffer should be provided for the extent of the path. This will require the remaining westbound parking lane to be removed and reconstructed as a grass buffer. Additional right-of-way acquisition could be considered in place of removing the parking lane, however this option may be costly and would remove community green space. This path would tie into the proposed Coquelin Run Connector, discussed below.

Impacts due to construction of this shared-use path are expected to be moderate. Utility poles along the north side of the road will need to be relocated to make room for the 10-foot path section and buffer. In addition, other above-ground utilities, such as fire hydrants and storm drain inlets, will need to be relocated or reconfigured with construction. On-street parking that remains along the north side of the road will need to be removed. Street trees will need to be removed and existing green space will be removed. Cost is anticipated to be high due to the length of the shared-use path and the amount of above-ground obstructions that will need to be removed, relocated, or reconfigured. Coordination with M-NCPPC may be required for the portion of shared-use path that passes in front of the Jean Banks Neighborhood Park.

6. Coquelin Run Connector

From: Jones Bridge Road to Chevy Chase Lake Drive

Improvement Type: Shared-Use Path

Priority Ranking: 1.4 Time Frame: Long-term Cost Category: 3

Coquelin Run is a river south of Chevy Chase Lake Drive that runs parallel to the Capital Crescent Trail (formerly Georgetown Branch Trail) and ultimately outfalls to Rock Creek. A small tributary of Coquelin Run extends between Jones Bridge Road and Coquelin Run. The Chevy Chase Lake Sector Plan classifies this area as a "dedicated, unbuilt right-of-way" and recommends future pedestrian and bicycle improvements. Pedestrian and bicycle improvements to this road would provide critical connections to Manor Road, Jones Bridge Road, Chevy Chase Lake Drive, Coquelin Terrace, and the Capital Crescent Trail.

This unbuilt right-of-way is forested with a small tributary to Coquelin Run. The dedicated right-of-way width is 100 feet. Constructing a shared-use path of a minimum of 10 feet is not an issue of adequate space; the vast unbuilt right-of-way is an opportunity for design of a shared-use path that meanders along the tributary to Coquelin Run and weaves around the forest in harmony with the natural landscape. Tree cover should be preserved to the maximum extent possible. Purple Line construction plans indicate an underground crossing is planned underneath the light-rail tracks.

Impacts are expected to be minimal for utilities, right-of-way, traffic, transit, and parking. Right-of-way acquisition is not required because this land is already County-owned right-of-way. Available records indicate several sanitary sewer manholes along this right-of-way. These features should be avoided but are not expected to be impacted by construction. Environmental impacts are expected to be high for this shared-use path. Construction would require the removal of trees, construction of new impervious area, and disturbance to the Coquelin Run and its existing tributary. A crossing of Coquelin Run may be required depending on final shared-use path design.

7. Montgomery Avenue

From: Jones Bridge Road to Dundee Driveway

Improvement Type: Sharrow

Priority Ranking: 2.0 Time Frame: Short-term Cost Category: 1

Montgomery Avenue is a residential street that runs north to south. Currently, Montgomery Avenue includes sidewalks on the northbound side along with parking on both sides of the street. The current roadway width is approximately 25 feet. Sharrow markings are proposed along Montgomery Avenue from Jones Bridge Road to Dundee Driveway. Sharrow markings are appropriate based on low traffic volumes. They can be installed while maintaining the existing road section. The installation of sharrow markings will not impact utilities / right-of-way, parking areas, or environmental features.

LEGEND

- CONNECTICUT AVENUE STATION
- PURPLE LINE
- CAPITAL CRESCENT TRAIL

PROPOSED BIKEWAYS

- CYCLE TRACK
- SHARED USE PATH
- SHARROW
- CYCLE TRACK UNDER CONSTRUCTION
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

N

JONES BRIDGE ROAD
PARSONS ROAD
KENSINGTON PARKWAY
MONTGOMERY AVENUE
STEWART DRIVEWAY
MANOR ROAD
TRIBUTARY TO CONQUELIN RUN
VILLAGE PARK DRIVE
LONGFELLOW PLACE
LAIRD PLACE
NEWDALE ROAD
CHEVY CHASE LAKE DRIVE
CHESTNUT STREET
ROSEDALE AVENUE
CONQUELIN RUN
CONNECTICUT AVENUE (MD 185)
GLENDALE ROAD
DUNLOP STREET
CLUB DRIVE
EAST WEST HIGHWAY (MD 410)

FIGURE 4-18
CONNECTICUT AVENUE STATION
PROPOSED BIKEWAY IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

Table 4-6 - Bikeways Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE							BENEFITS						IMPACTS									
			Sharrow	Cycle Track	Separated Bike Lanes	Striped Bike Lanes	Shared-Use Paths	Other		Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score		Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
Connecticut Avenue																									
1	Jones Bridge Road to Manor Road	MCDOT					●			5	4	3	2	14		3	2	3	3	11	2	1	2.5
2	Chevy Chase Lake Drive to Blackthorn Street	MCDOT					●			5	4	3	2	14		3	3	3	4	13	2	1	2.2
3	Purple Line Station to Chevy Chase Lake Drive	MCDOT		●						5	5	2	2	14		5	3	2	2	12	2	1	2.3
Manor Road																									
4	Connecticut Avenue to Jones Bridge Road	MCDOT					●			5	4	3	2	14		3	3	3	3	12	2	1	2.3
Chevy Chase Lake Drive																									
5	Connecticut Avenue to dead end	MCDOT					●			3	4	3	2	12		4	3	3	3	13	2	1	1.8
Coquelin Run Connector																									
6	Jones Bridge Road to Chevy Chase Lake Drive	MCDOT					●			5	4	3	2	14		1	1	5	3	10	1	1	1.4
Montgomery Avenue																									
7	Jones Bridge Road to Dundee Driveway	MCDOT	●							2	2	2	2	8		1	1	1	1	4	1	1	2.0

$$Priority\ Ranking = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

4.3.3 Maintenance

Maintenance items, such as tree and root pruning or grass trimming, are an inexpensive way to increase pedestrian comfort and aesthetic value. A map of these items has been included in Figure 4-21 Connecticut Avenue Station Maintenance Improvements.



Figure 4-19 Grass encroaching on the sidewalk along Jones Bridge Road.



Figure 4-20 Low-hanging trees along Platt Ridge Drive provide a vertical hazard.

LEGEND

- CONNECTICUT AVENUE STATION
- PURPLE LINE
- CAPITAL CRESCENT TRAIL

PROPOSED IMPROVEMENTS

- MAINTENANCE
- QUARTER MILE RADIUS
- HALF MILE RADIUS

N

MONTROSE DRIVEWAY
KENSINGTON PARKWAY
MONTGOMERY AVENUE
JONES BRIDGE ROAD
PARSONS ROAD
STEWART DRIVEWAY
MANOR ROAD
TRIBUTARY TO CONQUELIN RUN
VILLAGE PARK DRIVE
LONGFELLOW PLACE
LAIRD PLACE
CHEVY CHASE LAKE DRIVE
NEWDALE ROAD
CHESTNUT STREET
ROSEDALE AVENUE
CONQUELIN RUN
CONNECTICUT AVENUE (MD 185)
GLENDALE ROAD
DUNLOP STREET
CLUB DRIVE
EAST WEST HIGHWAY (MD 410)

FIGURE 4-21
CONNECTICUT AVENUE STATION
MAINTENANCE IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

4.4 Final Recommendations

Existing pedestrian infrastructure in the Connecticut Avenue BiPPA is strong. The system of sidewalks, signalized intersections, crosswalks, and other features, though aging, promote safety, accessibility, and connectivity. There are a few gaps in existing pedestrian pathways and they can be fixed in the short-term. Expanding the network to include neighborhoods in the southeast is not an immediate need, although this effort should be included in the long-term planning of the area. Existing bikeway infrastructure, meanwhile, is non-existent. Cyclists can use shared roads, though these are not marked with signage or pavement markings. Cyclists will be able to use the Capital Crescent Trail when it is released for service.

Improvements along Connecticut Avenue (MD 185) ranked highly when reviewing both pedestrian and bikeway needs. The amount of local businesses and residences accessed via Connecticut Avenue (MD 185), and the location of proposed Purple Line station, means this corridor will be traversed by most residents and visitors. As such, this corridor needs to be safe, accessible, and welcoming. A consistent bikeway along the east side of Connecticut Avenue (MD 185) and wide sidewalks with vegetated buffers is crucial.

To achieve this goal, this report recommends implementing the highest-ranked proposed pedestrian and bikeway improvements. These pedestrian improvements include spot improvements to two separate sections of existing sidewalks along Connecticut Avenue (MD 185). These upgrades would greatly improve pedestrian safety and accessibility to the proposed Purple Line Connecticut Avenue station.

Area-wide ADA upgrades, while not highly ranked by themselves, should be coupled with larger improvements, when possible, to ensure the elderly, wheelchair-bound, vision-impaired, and those with limited mobility can still safely enjoy the community.

The two highest ranked bicycle corridors are Connecticut Avenue (from Jones Bridge Road to Manor Road) and Manor Road (from Connecticut Avenue to Jones Bridge Road). These two bikeways are shared use paths and while impacts are fairly high they also produce the most accessible bikeway for cyclists of all comports levels along with pedestrian access.

Improving existing pedestrian and bikeway infrastructure are two separate tasks that work toward the same goal of providing a cohesive, safe, and accessible area for all users. Building upon existing infrastructure and smartly creating new infrastructure where needed will transform the Chevy Chase area from merely a vehicular throughfare to a pedestrian and cyclist friendly community anchored by existing community character and the new Purple Line station.

5 Lyttonsville



5 Lyttonsville

5.1 Study Area

5.1.1 Existing Area

The Lyttonsville Station for the Purple Line is proposed near the intersection of Brookville Road and Lyttonsville Place in Silver Spring. The study area overlaps with the 16th Street / Woodside Purple Line Station to the east. The area includes Rock Creek and its trails to the west, a commercial hub along Brookville Road, and outlying residential areas. Within the ¼-mile radius, the area is predominantly commercial and industrial with distribution centers, construction and auto supply stores, and local agencies. The ½-mile radius consists of mostly residential areas, including apartment complexes, single family homes, and, to a smaller extent, townhomes. Major roadways and their respective limits, minimum rights-of-way, and number of lanes can be found in

Table 5-1. A map of the study limits can be found in Figure 5-1.

Designation	Roadway	Limits	Minimum Right-of-Way	Lanes	Speed Limit
Major Highway					
M-20	East-West Highway (MD 410)	Grubb Road to Sundale Drive	120	4	35
Minor Arterial					
MA-3	Grubb Road	East-West Highway to Lyttonsville Road	80	2	25
MA-3	Lyttonsville Road	Grubb Road to Lyttonsville Place	80	2	25
MA-3	Lyttonsville Place	Lyttonsville Road to Brookville Road	80	4	25
MA-3	Brookville Road	Lyttonsville Place to Warren Street	80	2	25
Primary Residential					
P-1	Terrace Drive	Grubb Road to Freyman Drive	70	2	25
P-2	Grubb Road	Lyttonsville Road to Terrace Drive	70	2	25
P-3	Sundale Drive	East-West Highway to Porter Road	70	2	25
P-5	Lyttonsville Road/Michigan Avenue	Lyttonsville Place to Pennsylvania Avenue	60	2	25
P-6	Pennsylvania Avenue/Porter Road	Michigan Avenue to Sundale Drive	60	2	25
	Albert Stewart Lane	Kansas Avenue to cul-de-sac	60	2	25
	Kansas Avenue	Dead end to Albert Stewart Lane	60	2	25
	Spencer Road	Ross Road to Meadowbrook Lane	60	2	25
	Ross Road	Grubb Road to East-West Highway Access Road	60	2	25
	Luzerne Avenue	Warren Street to Louis Street	60	2	25
	Richland Street	Sundale Drive to Rosemary Hills-Lyttonsville Local Park	60	2	25
	Richland Place	Lanier Drive to Richland Street	60	2	25

There are various businesses, agencies, schools, and parks in the area that contribute to the pedestrian and bicycle traffic in the Lyttonsville area. The commercial corridor along Brookville Road includes agencies that employ skilled and professional workers, such as the Army Fort Detrick Forest Glen Annex, the Forest Glen Police Department, WSSC Lyttonsville Depot, and smaller businesses. The residential portion of Lyttonsville is anchored by the Gwendolyn Coffield Community Center, Rosemary Hills-Lyttonsville Local Park, and Rosemary Hills Elementary School.

Based on publicly available and field collected data, it was determined that pedestrian and bicycle connectivity in the area is incomplete. Existing sidewalks, while present in the northeast commercial zone and some residential areas, do not currently provide continuous pedestrian access between residential and commercial districts. Existing bikeways in the area are minimal and usually include a shared road rather than a separated bike facility.

LEGEND

- LYTTONSVILLE STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS
- CAPITAL CRESCENT TRAIL
- MAJOR CONNECTIONS
- QUARTER MILE RADIUS
- HALF MILE RADIUS

N

0 0.05 0.1 0.2 0.3 0.4 Miles

FIGURE 5-1
LYTTONSVILLE STATION
STUDY AREA

5.1.2 Existing Facilities

Existing pedestrian and bicycle facilities in the Lyttonsville BiPPA are consistent with those commonly found in other commercial, industrial, or residential districts. The existing pedestrian network includes sidewalks, both signalized and non-signalized intersections, curb ramps, crosswalks, and mid-block crossings. See Figure 5-8 and 5-9 for a map showing existing facilities.



Figure 5-2 A typical residential sidewalk.



Figure 5-3 Typical sidewalk without a buffer.

Sidewalks are typically 4 feet wide and in moderate to good condition, although trip hazards and broken or cracked portions of the sidewalk are prevalent. Most sections of sidewalk contain a grass buffer or barrier, while some sections are placed directly adjacent to the road.

There are currently no sidewalks located in the residential area southwest of the station. The sidewalks along Brookville Road are continuous, except for a section between Research Drive and Warren Street. Most curb ramps and crosswalks are in moderate condition. Many curb ramps are not compliant with current ADA standards because they are not aligned properly, have slopes greater than the maximum allowable, do not have level landing areas or do not include detectable warning surfaces. Crossings are typically striped in the commercial areas or in high traffic residential areas, such as by the local park, community center, or elementary school, but these markings may be faded or not in conformance with current standard.



Figure 5-4 Broken portion of existing sidewalk.



Figure 5-5 Typical non-compliant curb ramp.

Signalized intersections were found to be equipped with APS/CPS and to be in good condition. Existing mid-block crossings appear to have been recently upgraded and are in good to moderate condition.

Publicly available GIS data indicates a shared roadway nearby Rosemary Hills Elementary School along Michigan Avenue, parts of Pennsylvania Avenue, and part of Sundale Road. Additionally, parts of East-West Highway are a shared road or have a shared use path available to cyclists.

Based on existing conditions and field collected data, facilities in the area do not provide adequate safety, accessibility, or connectivity for pedestrians and cyclists. In its most-used pedestrian areas, such as the elementary school, community center, and apartment complexes, the sidewalks, curb ramps, and crosswalks are in safe, working condition. With the number of pedestrians and cyclists expected to increase with Purple Line construction, upgrades and new facilities are essential to create a cohesive, safe network for all users.



Figure 5-6 Existing crosswalk with out-of-date pavement markings.



Figure 5-7 Existing mid-block crossing along Lyttonsville Road

Table 5-1 Street and Highway Classification

Designation	Roadway	Limits	Minimum Right-of-Way	Lanes	Speed Limit
Major Highway					
M-20	East-West Highway (MD 410)	Grubb Road to Sundale Drive	120	4	35
Minor Arterial					
MA-3	Grubb Road	East-West Highway to Lyttonsville Road	80	2	25
MA-3	Lyttonsville Road	Grubb Road to Lyttonsville Place	80	2	25
MA-3	Lyttonsville Place	Lyttonsville Road to Brookville Road	80	4	25
MA-3	Brookville Road	Lyttonsville Place to Warren Street	80	2	25
Primary Residential					
P-1	Terrace Drive	Grubb Road to Freyman Drive	70	2	25
P-2	Grubb Road	Lyttonsville Road to Terrace Drive	70	2	25
P-3	Sundale Drive	East-West Highway to Porter Road	70	2	25
P-5	Lyttonsville Road/Michigan Avenue	Lyttonsville Place to Pennsylvania Avenue	60	2	25
P-6	Pennsylvania Avenue/Porter Road	Michigan Avenue to Sundale Drive	60	2	25
	Albert Stewart Lane	Kansas Avenue to cul-de-sac	60	2	25
	Kansas Avenue	Dead end to Albert Stewart Lane	60	2	25
	Spencer Road	Ross Road to Meadowbrook Lane	60	2	25
	Ross Road	Grubb Road to East-West Highway Access Road	60	2	25
	Luzerne Avenue	Warren Street to Louis Street	60	2	25
	Richland Street	Sundale Drive to Rosemary Hills-Lyttonsville Local Park	60	2	25
	Richland Place	Lanier Drive to Richland Street	60	2	25

LEGEND

- LYTTONSVILLE STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- EXISTING SIDEWALKS
- CAPITAL CRESCENT TRAIL
- QUARTER MILE RADIUS
- HALF MILE RADIUS

0 0.05 0.1 0.2 0.3 0.4 Miles

N

FOREST GLEN ANNEX (U.S. ARMY)
BROOKVILLE ROAD
LUZERNE AVENUE
TALBOT AVENUE
STEWART AVENUE
KANSAS AVENUE
MICHIGAN AVENUE
GARFIELD AVENUE
PENNSYLVANIA AVENUE
LANIER DRIVE
DRIVE
LYTTONSVILLE PLACE
QUINTON ROAD
SUNDALE
RICHLAND PLACE
RICHLAND STREET
LYTTONSVILLE ROAD
SPENCER ROAD
ROSS ROAD
PEGGY LANE
GRUBB ROAD
NAVARRE DRIVE
DONNYBROOK DRIVE
FARRELL DRIVE
ARAGON LANE
TERRACE DRIVE
FREYMAN DRIVE
EAST WEST HIGHWAY

FIGURE 5-8
LYTTONSVILLE STATION
EXISTING PEDESTRIAN FACILITIES

LEGEND

- LYTTONSVILLE STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS
- PURPLE LINE BIKE RACK
- CAPITAL CRESCENT TRAIL

EXISTING BIKEWAYS

- SHARED USE PATH
- TRAIL
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

0 0.05 0.1 0.2 0.3 0.4 Miles

N

FOREST GLEN ANNEX (U.S. ARMY)
BROOKVILE ROAD
LUZERNE AVENUE
TALBOT AVENUE
STEWART AVENUE
KANSAS AVENUE
MICHIGAN AVENUE
GARFIELD AVENUE
LANIER DRIVE
DRIVE
PENNSYLVANIA AVENUE
LYTTONSVILLE PLACE
LYTTONSVILLE
QUINTON ROAD
SUNDALE
RICHLAND PLACE
RICHLAND STREET
LYTTONSVILLE ROAD
GRUBB ROAD
SPENCER ROAD
ROSS ROAD
PEGGY LANE
NAVARRE DRIVE
DONNYBROOK DRIVE
FARRELL DRIVE
ARAGON LANE
TERRACE DRIVE
FREYMAN DRIVE
EAST WEST HIGHWAY

FIGURE 5-9
LYTTONSVILLE STATION
EXISTING CYCLIST FACILITIES

5.1.3 Proposed Purple Line Improvements

Multiple improvements are proposed within the Lyttonsville BiPPA in conjunction with the construction of the Purple Line and Capital Crescent Trail. In this area, Purple Line improvements will be constructed at the intersection of Brookville Road and Lyttonsville Place, and along Brookville Road and Lyttonsville Place; at the dead end of Kansas Avenue; at the northeast end of Michigan Avenue; along Talbot Avenue between Michigan Avenue and Lanier Drive; at the northeast end of Lanier Drive; along Stewart Avenue; and at the intersection of Terrace Drive and Grubb Road. Refer to Figure 5-, for the location of these improvements.

At the intersection of Brookville Road and Lyttonsville Place, the new Lyttonsville Station of the Purple Line will be constructed. A portion of Lyttonsville Place will be reconstructed with a 5-foot sidewalk on the southwest side and a 12-foot sidewalk on the northeast side. These sidewalks will connect to a reconstructed 5-foot sidewalk along Brookville Road. This improvement will provide connectivity between the commercial and residential areas of Lyttonsville and the new station.

Other corridors and intersections (Kansas Avenue, Michigan Avenue, Lanier Drive, Talbot Avenue, Stewart Avenue, and the intersection of Terrace Drive and Grubb Street) include sidewalk construction to connect residents to the proposed Capital Crescent Trail and minor safety and ADA upgrades.

5.2 Master Plan Summary

The Greater Lyttonsville Sector Plan was approved in 2017. Its boundary is generally defined as follows: on the north, by the northern boundary of the United States Army Fort Detrick Forest Glen Annex; on the south, by East-West Highway and Grubb Road; on the east, by 16th Street and the CSX railroad tracks; and on the west, by the western boundary line of the Forest Glen Annex and Rock Creek.

The North and West Silver Spring Master Plan was approved in 2000. Its boundary is generally defined as follows: North and West Silver Spring are located inside the Capital Beltway (I-495) in the southeast corner of Montgomery County, adjacent to the Silver Spring Central Business District (CBD) and the Washington, D.C. border. The Silver Spring CBD forms the southern boundary of North Silver Spring and the eastern boundary of West Silver Spring. Washington, D.C., forms the southern boundary of West Silver Spring. North Silver Spring is generally bounded on the north by the Capital Beltway; on the east by Sligo Creek Park; on the south by Wayne Avenue, Bonifant, Cedar, and Spring Streets, the CSX railroad tracks, and the southern property line of the Walter Reed Army Medical Center (WRAMC); and on the west by Rock Creek Park. West Silver Spring is bounded on the north by the CSX railroad tracks and the southern property line of the Walter Reed Army Medical Center; on the east by 16th Street; on the south by the District of Columbia boundary; and on the west by Rock Creek Park.

Based on the age and scope of these master plans, it was determined that the Greater Lyttonsville Sector Plan was the most relevant to this project. Therefore, recommendations follow those goals closely.

Two Purple Line stations are encompassed within the Greater Lyttonsville Sector Plan (Lyttonsville and 16th Street/Woodside). As this section of the report focuses on the Lyttonsville station, only improvements west of Sundale Drive are included. The 16th Street/Woodside station (improvements east of Sundale Drive) is discussed in Section 6 of this report.

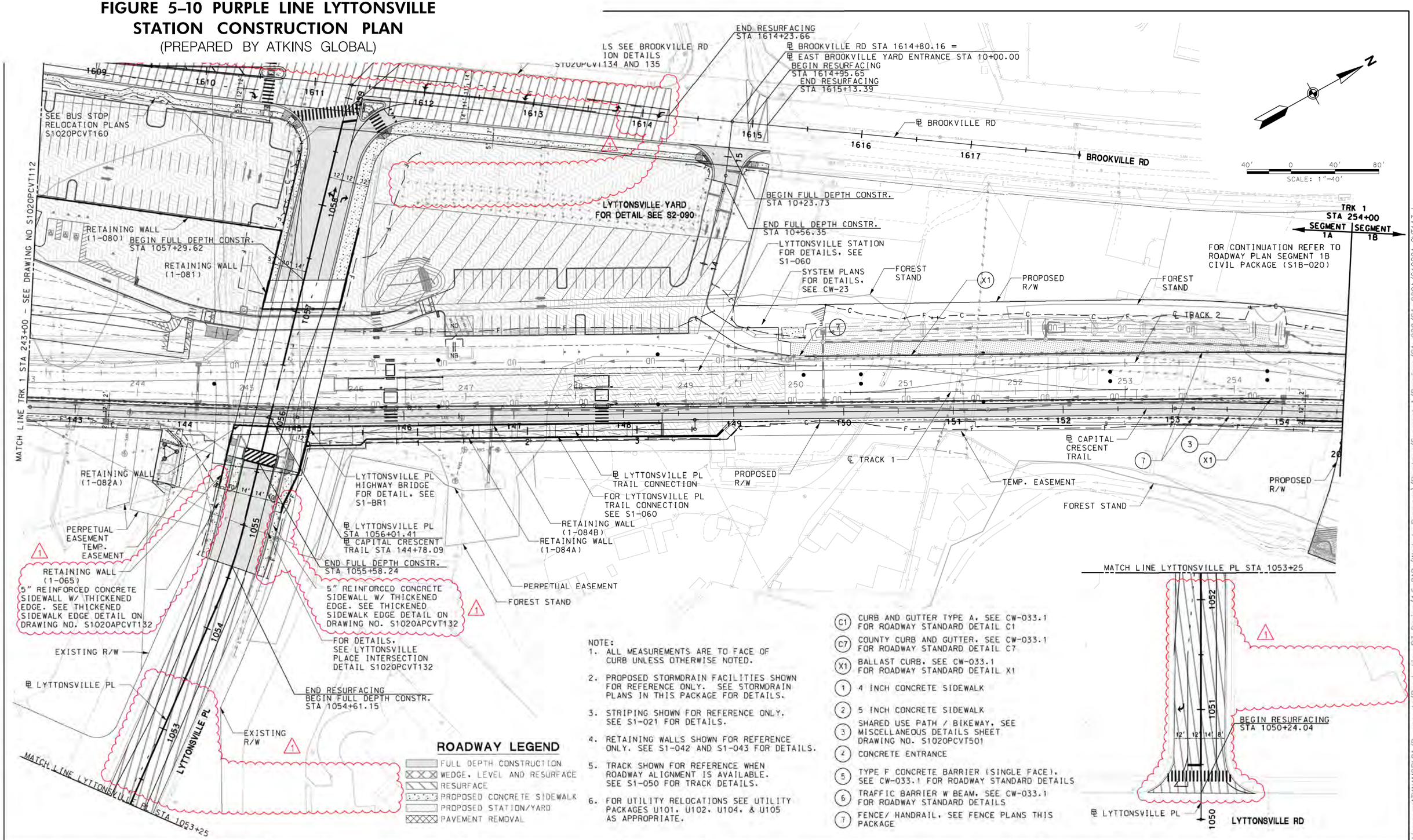
5.2.1 Capital Crescent Trail

The Capital Crescent Trail is a shared-use path that forms a crescent shape as it stretches from Georgetown to Silver Spring via Bethesda in the Georgetown Branch rail line right-of-way. Montgomery County purchased the right-of way between the DC line and the CSX tracks just west of Silver Spring in 1988. The trail is currently paved between Georgetown and Bethesda. Before closing for reconstruction and for the Purple Line project construction, it had a gravel surface between Bethesda and Lyttonsville and extended along local streets between Lyttonsville and Silver Spring. As part of the Purple Line project, the paved portion of the Capital Crescent Trail will be extended from Bethesda to Silver Spring. Extending the paved portion of the trail will serve a recreational and a transportation function, as well as providing direct access to both the Purple Line and the Bethesda and Silver Spring Metrorail stations. Opportunities to enhance the Capital Crescent Trail and improve connections to nearby public streets and bikeways should be pursued. Specific trail access improvements identified in the 2010 Purple Line Functional Master Plan include:

- A pedestrian/ bike bridge over Rock Creek below the Bridge for the Purple Line that moves the trail from the north side to the south side of the Georgetown Branch right of-way
- Trail access from the intersection of Grubb Road and Terrace Drive
- Trail and station access via a pedestrian path, elevator, and stairs on the east side of Lyttonsville Place
- Pedestrian and bicycle access to the Lyttonsville station and Capital Crescent Trail from the Lyttonsville Place bridge
- Trail access from Stewart Avenue
- Trail access from Kansas Avenue
- Trail access from Michigan Avenue

FIGURE 5–10 PURPLE LINE LYTTONSVILLE STATION CONSTRUCTION PLAN

(PREPARED BY ATKINS GLOBAL)



ROADWAY LEGEND

- FULL DEPTH CONSTRUCTION
- WEDGE, LEVEL AND RESURFACE
- RESURFACE
- PROPOSED CONCRETE SIDEWALK
- PROPOSED STATION/YARD
- PAVEMENT REMOVAL

NOTE:

1. ALL MEASUREMENTS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
2. PROPOSED STORMDRAIN FACILITIES SHOWN FOR REFERENCE ONLY. SEE STORMDRAIN PLANS IN THIS PACKAGE FOR DETAILS.
3. STRIPING SHOWN FOR REFERENCE ONLY. SEE S1-021 FOR DETAILS.
4. RETAINING WALLS SHOWN FOR REFERENCE ONLY. SEE S1-042 AND S1-043 FOR DETAILS.
5. TRACK SHOWN FOR REFERENCE WHEN ROADWAY ALIGNMENT IS AVAILABLE. SEE S1-050 FOR TRACK DETAILS.
6. FOR UTILITY RELOCATIONS SEE UTILITY PACKAGES U101, U102, U104, & U105 AS APPROPRIATE.

- (C1) CURB AND GUTTER TYPE A, SEE CW-033.1 FOR ROADWAY STANDARD DETAIL C1
- (C7) COUNTY CURB AND GUTTER, SEE CW-033.1 FOR ROADWAY STANDARD DETAIL C7
- (X1) BALLAST CURB, SEE CW-033.1 FOR ROADWAY STANDARD DETAIL X1
- (1) 4 INCH CONCRETE SIDEWALK
- (2) 5 INCH CONCRETE SIDEWALK
- (3) SHARED USE PATH / BIKEWAY, SEE MISCELLANEOUS DETAILS SHEET DRAWING NO. S1020PCVT501
- (4) CONCRETE ENTRANCE
- (5) TYPE F CONCRETE BARRIER (SINGLE FACE), SEE CW-033.1 FOR ROADWAY STANDARD DETAILS
- (6) TRAFFIC BARRIER W BEAM, SEE CW-033.1 FOR ROADWAY STANDARD DETAILS
- (7) FENCE/ HANDRAIL, SEE FENCE PLANS THIS PACKAGE

MARYLAND DEPARTMENT OF TRANSPORTATION
MARYLAND TRANSIT ADMINISTRATION
MTA Maryland

PURPLE LINE TRANSIT PARTNERS

ATKINS
3901 Calverton Blvd, Suite 400
Calverton, Maryland 20705
Telephone: 301-210-6800
www.atkinsglobal.com

PROFESSIONAL CERTIFICATION

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland

50425 License No. 01/04/21 Expiration Date

08/22/2019

NO.	DESCRIPTION	BY	DATE
0	RELEASE FOR CONSTRUCTION	CJC	05/29/18
1	FDC-105 STAIR ALIGNMENT, SWK, & CURBS	CJC	08/08/19

REVISIONS

DESIGN	JLB
DRAWN	RBR
CHECK	JLB
APPR	CJC

PURPLE LINE LIGHT RAIL
CIVIL DESIGN
SEGMENT 1A

ROADWAY PLAN

DATE: AUGUST 8, 2019 SCALE: 1" = 40'

CONTRACT NO. 0-0000-0000
DRAWING NO. S1020APCVT113
SHEET NO. 42 OF 457

pw:/SUSD03643.wsatkins.com:ATKNAMDPL01/Documents/Purple Line P3 Design/4.C CAD (Work In Progress)/Roadway/Segment 1/Drawings/S1-020/S1-020A/S1020APCVT113.dgn
8/14/2019 11:50:14 AM

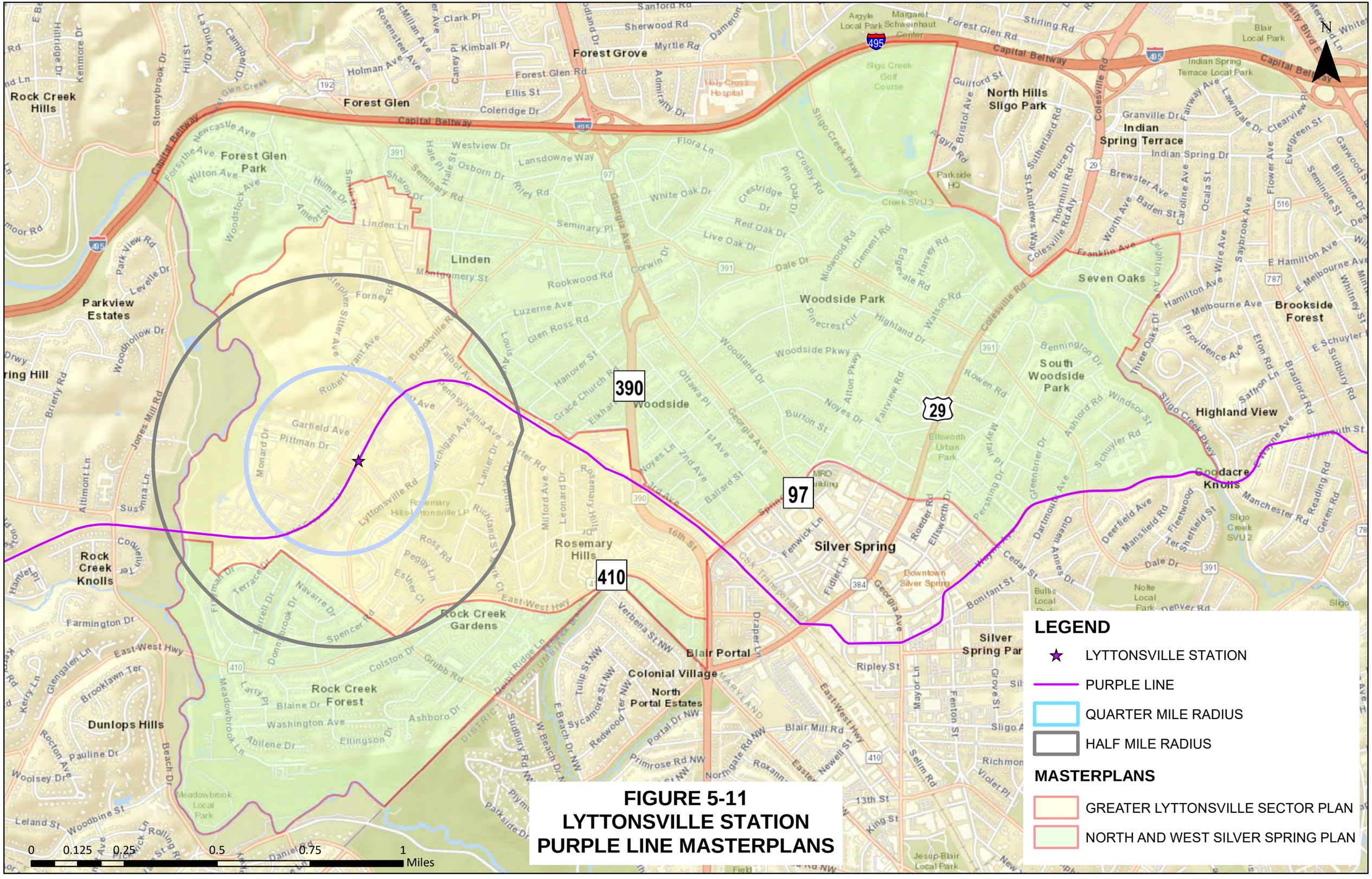


FIGURE 5-11
LYTTONSVILLE STATION
PURPLE LINE MASTERPLANS

5.2.2 Existing Bikeway Improvements

The recommendations from available master plans and studies are summarized in Table 5-2. These improvements include separated bike lanes, shared roadways, cycle tracks and shared-use paths.

Table 5-2 Summary of Area Cycling Infrastructure Improvement Recommendations

Roadway/Route	Limits	Reference	Status
Separated Bike Lane			
Lyttonsville Place	Brookville Road to Lyttonsville Road	Greater Lyttonsville Sector Plan	Recommended
Lyttonsville Road/Grubb Road	East-West Highway to Lyttonsville Place	Greater Lyttonsville Sector Plan	Recommended
Shared Roadway			
Interim Capital Crescent Trail	Stewart Avenue to Lanier Drive	Greater Lyttonsville Sector Plan	Existing
Lyttonsville Road/Michigan Avenue	Lyttonsville Place to Pennsylvania Avenue	Greater Lyttonsville Sector Plan	Recommended
Pennsylvania Avenue/Porter Avenue	Michigan Avenue to Sundale Drive	Greater Lyttonsville Sector Plan	Recommended
Richland Place/Spencer Road	Rosemary Hills-Lyttonsville Park to Sundale Drive	Greater Lyttonsville Sector Plan	Recommended
Sundale Drive	East-West Highway to Porter Avenue	Greater Lyttonsville Sector Plan	Recommended
Grubb Road	Lyttonsville Road to Terrace Drive	Greater Lyttonsville Sector Plan	Recommended
Brookville Road	Lyttonsville Place to Warren Street	Greater Lyttonsville Sector Plan	Recommended
Shared Use Path			
East-West Highway	Sundale Drive to Grubb Road	Greater Lyttonsville Sector Plan	Existing
Capital Crescent Trail	West Sector Plan Boundary to Lanier Drive	Greater Lyttonsville Sector Plan	Existing

5.3 Proposed Improvements

The Lyttonsville BiPPA has been evaluated for various types of pedestrian and bicycle improvements. Proposed improvements have been developed and prioritized based on the ranking criteria outlined in Section 2.8 of this report. A list of proposed improvements was developed to include the recommendations of previously prepared studies and master plans, information gathered from a field review of the site and data gathered from other sources. Separate analyses and mapping were developed for pedestrian improvements and for bicycle improvements.

5.3.1 Proposed Pedestrian Improvements

The study included a thorough review of existing pedestrian facilities (sidewalk ramps, driveway aprons, linear sidewalks, etc.) and determined which facilities did not meet current ADA criteria. The report and figures indicate where spot improvements are required and where linear sidewalk improvements are required. Spot improvements are shown in Figures 5-20 (a) and (b). The maps show the locations and types of existing facilities that need to be reconstructed to meet ADA standards. Proposed linear routes/improvements for pedestrian access are shown in Figures 5-21. The map figures also indicate the improvements that will be constructed by the Purple Line project.

Refer to Table 5-3 for a summary of priority rankings of pedestrian improvements. This report describes the ranked pedestrian improvements for the Piney Branch Station.

1. Area-wide Improvements to Existing Sidewalks

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Sidewalk, Removal of Sidewalk Obstructions, Widening of Non-compliant Sidewalk Widths, Reconstruction of Sidewalks with Non-compliant Slopes

Priority Ranking: 2.2 Time Frame: Short-term Cost Category: 2

There is a need for general maintenance of pedestrian pathways and upgrades to those that do not meet current ADA, MCDOT, or MDOT SHA standards throughout the Lyttonsville BiPPA. Curb ramps should be upgraded to meet slope requirements as set forth by ADA and must include detectable warning surfaces. Sidewalks should be free from trip hazards and breaks; it is recommended that trip hazards greater than ½-inch and significant breakage be repaired by replacing the affected portion of the sidewalk. In addition, sidewalks that have cross-slopes greater than allowable or pinch points with less than a 36” width should be replaced or reconfigured. Sidewalk obstructions, such as guy wires, should be reconfigured to provide adequate overhead clearance for pedestrians.

Although all area-wide sidewalk improvements are a worthwhile investment, those in the vicinity of the Purple Line, Capital Crescent Trail connections, the Forest Glen Annex, Rosemary Hills Elementary, and the Rosemary Hills-Lyttonsville Local Park should be prioritized based on current and future use.

These improvements would provide a safer accessible path for all pedestrians, especially those who may have limited mobility due to wheelchair use or vision impairments. For simple sidewalk and curb ramp improvements, no additional right-of-way acquisition will be required because these facilities are already within MCDOT or MDOT SHA right-of-way. Utility impact or relocation is minimal. Minor traffic controls may be necessary.

2. Area-wide Improvements to Existing Driveway Aprons

Improvement Type: Reconstruction of Driveway Aprons

Priority Ranking: 2.3 Time Frame: Short-term Cost Category: 2

Throughout the Lyttonsville BiPPA there is a need to upgrade existing driveway aprons to meet ADA slope requirements and be in conformance current MCDOT and MDOT SHA standards. Existing aprons in both the residential and commercial areas of Lyttonsville were found to have existing cross slopes greater than 2%.

For the Lyttonsville BiPPA, reconstruction of driveway aprons is recommended for those roads with sidewalks that provide direct connection to the Purple Line Station or the Capital Crescent Trail. These roadways are Brookville Road, Kansas Avenue, Grubb Road, and Terrace Drive. Much like the area-wide improvements to existing sidewalks, area-wide improvements to existing driveway aprons will improve accessibility throughout the area by providing a continuous ADA compliant path.

Driveway aprons are already within MCDOT or MDOT SHA right-of-way so no acquisition will be required. Complexity of construction is dependent on the existing grade, existing cross-slope, and presence of other obstructions. To determine the extent of construction and estimate costs for each driveway apron, additional site visits are needed. Field staff will need to note any existing above-ground utilities and assess feasibility of reconstruction with existing slopes. A simpler driveway apron reconstruction project would have no above-grade obstructions and would involve minimal grading. A complex project would involve above-ground obstructions and would require significant grading. Complex projects may be located along roads with steep cross-slopes or longitudinal slopes, or in the vicinity of above-ground obstructions that are difficult to relocate, such as trees, signs, or walls. Disturbance to existing utilities is expected to be minimal. Coordination with business owners and homeowners may be required.

3. Area-wide Improvements to Existing Intersections

Improvement Type: Reconstruction of Mid-block Crossing, Striping of Crosswalks

Priority Ranking: 2.0 Time Frame: Short-term to Mid-term Cost Category: 2

Crosswalk striping throughout the Lyttonsville BiPPA is fading or does not utilize the “piano stripe” pattern that is currently recognized as standard. At a minimum, all striping should be updated to ensure there are no faded or broken portions. Crosswalks in high-traffic areas, such as those along major highways (East-West Highway) or minor arterials (Brookville Road and Lyttonsville Road) and those in the vicinity of Rosemary Hills Elementary should be prioritized for upgrades to piano stripes.

One mid-block crossing along Grubb Road, near the intersection of Donnybrook Drive, was found to be insufficient for pedestrians. To increase safety and accessibility for this crossing, the mid-block crossing should be reconstructed to have a median refuge island with detectable warning surfaces. Currently, there is no refuge island and pedestrians are forced to cross a busy, non-signalized intersection with simply a crosswalk. The crossing is located at the entrance of the Rock Creek Pool and near a Ride On bus stop.

Upgrades to these existing improvements will provide increased safety and comfort for pedestrians. Traffic control operations will be necessary for both crosswalk striping and mid-block crossing reconstruction; however, traffic control measures will be complex for the mid-block crossing. No impacts to existing utilities or rights-of-way are anticipated. Depending on the extent of the mid-block crossing improvements, a sediment control permit may be required from DPS.

4. Lyttonsville Place
At Lyttonsville Road

Improvement Type: Striping of Crosswalks, Construction of New Curb Ramps, Installation of Additional Signing

Priority Ranking: 3.1 Time Frame: Mid-term Cost Category: 2

Lyttonsville Place connects the residential area of Lyttonsville to the station. This residential area includes several population magnets such as the Gwendolyn Coffield Community Center and Rosemary Hills Elementary School. The intersection at Lyttonsville Road is essential to create connectivity with this area. Improvements to this intersection will make the crossing safer and more accessible for all Purple Line users. However, some utility poles will need to be relocated. There are also many large trees at this intersection that would likely be impacted. To accommodate the increased pedestrian traffic, minor traffic pattern changes will be required.

5. Brookville Road
From: Research Drive to Warren Street

Improvement Type: Construction of New Sidewalk, Construction of Mid-Block Crossing, Construction of Median Refuge

Priority Ranking: 0.8 Time Frame: Mid-term Cost Category: 2

The Greater Lyttonsville Sector Plan calls for general pedestrian improvements along Brookville Road from the WSSC maintenance depot to Warren Street. Field-collected and GIS data indicates Brookville Road has an existing sidewalk for most of its length. The gap in the existing sidewalk is between Research Drive (a currently unused entrance to the Forest Glen Annex) and Warren Street. In addition to a new sidewalk on the west side of the road, a new mid-block crossing and median refuge island should be constructed at the intersection of Research Drive.

Impacts to utilities, right-of-way, traffic/transit, and parking are anticipated to be high for this project. The outer security fence and parking lot for the Annex is along the west side of the road; construction of a sidewalk here would require extensive coordination with the Annex to reconfigure their fence and private parking lot, or would require encroaching on existing travel lanes. Existing utility poles along the west side of the road would impede construction further. A sediment control permit from DPS may be required. Traffic control measures may also be required.

Despite anticipated impacts, the construction of a crosswalk and mid-block crossing at this location would drastically increase pedestrian safety in the area. Currently, pedestrians must travel south to Stephen Sitter Avenue or north to Warren Street to safely cross Brookville Road.

6. Brookville Road
At Garfield Avenue

Improvement Type: Construction of Median Refuge

Priority Ranking: 3.0 Time Frame: Mid-term Cost Category: 1

An existing crosswalk across Brookville Road at Garfield Avenue allows pedestrians to cross Brookville Road and connects pedestrians to the businesses along Garfield Avenue. This crossing is one of only three marked crossings across Brookville Road in the Lyttonsville BiPPA. The existing crosswalk markings are faded and there is no median refuge provided for the nearly 5 lanes of traffic pedestrians are required to cross. On the opposite side of the crossing, an existing tree obscures the line of sight for both pedestrians and vehicular traffic.

The median refuge island should be constructed with a minimum width of 6 feet, should have detectable warning surfaces, and should follow all applicable slope guidelines required by the ADA. Further investigation will be needed to determine if changes in existing lane width are required to accommodate the median refuge island. The crossing location should also be investigated to ensure turning vehicles to / from Garfield Avenue have adequate space to complete their turn movements without impacting the new refuge island.



Figure 5-12 Existing crosswalk, standing on north side of Garfield Avenue looking east.



Figure 5-13 Line of sight is obscured for both pedestrians and motorists.

If not completed with area-wide improvements, curb ramp upgrades can be included in this project. Addition of a median refuge and upgrading the existing crosswalk will improve safety, accessibility, and connectivity for an intersection within close proximity of the new Purple Line station. Impacts to existing utilities and right-of-way are not anticipated. Environmental impacts are minimal, with the removal of one street tree expected as part of this project. Construction may require traffic control or additional impacts on traffic and transit. Depending on the extent of construction required for the mid-block crossing, detailed design may be required.

7. Kansas Avenue

From: Pennsylvania Avenue to Capital Crescent Trail

Improvement Type: Construction of New Sidewalk, Construction of New Curb Ramps

Priority Ranking: 1.9 Time Frame: Mid-term Cost Category: 2

The Capital Crescent Trail, built in conjunction with Purple Line improvements, will have a sidewalk connection at the dead end of Kansas Avenue. Existing Kansas Avenue only has a sidewalk between Maine Avenue and Pennsylvania Avenue. The existing condition lacks connectivity to the proposed Capital Crescent Trail and Purple Line station. A new sidewalk on the west side of the street would complete access along Kansas Avenue and provide a critical connection to the Capital Crescent Trail. New curb ramps would provide accessibility for the area. In addition, many driveway aprons would need to be reconfigured to comply with ADA slope requirements.

Kansas Avenue is a curbed road section with ample open space behind the curb to construct a new sidewalk and new curb ramps. Impacts to utilities and right-of-way are minimal, so no acquisition is required, and all utility poles are on the opposite side of the street. Environmental impacts are limited to the potential for disturbance to or removal of street trees. If the sidewalk is unable to be constructed within existing open space, an on-street parking lane may need to be removed and coordination with the community will be required. Construction permits and traffic control will be required.

8. Spencer Road

From: Peggy Lane to Grubb Road

Improvement Type: Construction of New Curb Ramps, Installation of Additional Signing

Priority Ranking: 1.8 Time Frame: Short-term Cost Category: 2

This section of Spencer Road has an existing sidewalk on both sides of the road. This section connects residents to the Gwendolyn Coffield Community Center and Rosemary-Lyttonsville Local Park. From the trails in the local park, residents can connect to Lyttonsville Road and the future Purple Line station.

The construction of new curb ramps will increase the accessibility of the area. Additional signage is necessary to alert motorists of pedestrian traffic, particularly at intersections and potential crossing locations. Bicycle signage is also recommended.



Figure 5-14 Spencer Road, looking south.

Generally, construction of new curb ramps and signposts are not expected to impact utilities, right-of-way, traffic, transit, or trees. The intersection of Spencer Road and Peggy Lane will have moderate utility impacts, due to the location of a proposed curb ramp in relation to an existing utility pole. Further review is needed to determine if the proposed ramp can be designed to avoid the existing pole, or if utility coordination will be necessary. See picture below; the crosswalk along Spencer Road should be restriped and an additional curb ramp should be constructed at the intersection shown.

9. Ross Road

From: Spencer Road to Peggy Lane

Improvement Type: Construction of New Curb Ramps

Priority Ranking: 1.3 Time Frame: Short-term Cost Category: 2

Ross Road is a residential street in the southeast of the Lyttonsville BiPPA that provides connection to the Gwendolyn Coffield Community Center and the Rosemary Hills-Lyttonsville Local Park via Spencer Road. There are existing sidewalks on both sides of Ross Road, however access to Lanier Drive and Ross Court is incomplete due to missing curb ramps. At these intersections, there is no safe crossing provided across Ross Road. Construction of new curb ramps at these intersections will provide increased accessibility and safety for the area.

Impacts from curb ramp construction are expected to be minimal.

10. Luzerne Avenue

From: Warren Street to Louis Street

Improvement Type: Construction of New Sidewalk, Installation of Additional Signing

Priority Ranking: 1.6 Time Frame: Mid-term Cost Category: 1

To improve safety and accessibility along Luzerne Avenue, near the intersection with Warren Street, it is proposed that new sidewalk and additional signs be installed. The new sidewalk will connect two pieces of existing sidewalk, which will improve accessibility and connectivity in the area. Additional signing is recommended in the school zone to slow traffic and improve safety in the area.

The new sidewalk will likely impact several large trees in the public right-of-way. Resident outreach and tree protection measures should be considering during design.

11. Luzerne Avenue

At: Lanier Drive and Louis Street

Improvement Type: Construction of New Curb Ramps

Priority Ranking: 1.1 Time Frame: Short-term Cost Category: 1

This is a three-way intersection where Luzerne Avenue, Lanier Drive and Louis Street meet. Three-way intersections can be dangerous as they are not a typical traffic pattern. Several of the corners do not currently have curb ramps which makes it difficult to cross safely. Construction of new curb ramps at these intersections will provide increased accessibility and safety for the area.

There are several utility poles and large trees in the public right-of-way. Construction should be planned in such a manner to avoid impacts to these features. Tree protection measures should be considered.

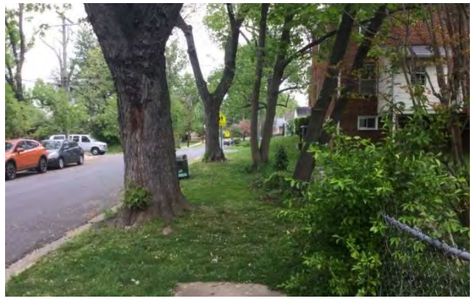


Figure 5-15 Location of proposed sidewalk connection on the east side of Luzerne Avenue.

12. Porter Road at Sundale Drive (Rosemary Hills Elementary School)

Improvement Type: Construction of New Curb Ramps, Construction of New Sidewalk, Installation of Additional Signing, Construction of Curb Extensions, Speed Control

Priority Ranking: 1.3 Time Frame: Long-term Cost Category: 2

Rosemary Hills Elementary is located at the intersection of Porter Road and Sundale Drive. The improvements proposed at this intersection improve accessibility to the school and safety in this high traffic area.

As with all schools, there is a high volume of pedestrian and vehicular traffic twice a day. Safety during these times is extremely important. This is particularly true around an elementary school where many pedestrians are small children. The proposed improvements in this area primarily focus on safety. Curb extensions are a safety focused improvement that should be installed at intersections to allow for shorter crosswalks. Upon completion of the proposed curb extensions, streets should be re-surfaced and restriped.

Construction in high traffic areas also impacts traffic and parking. It is recommended that all improvements are constructed over the summer, while school is not in session. Further traffic studies should be done during peak traffic hours before any proposed improvements are finalized.



Figure 5-16 A view of access to Rosemary Hills Elementary

13. Farrell Drive

From: Navarre Drive to Spencer Road

Improvement Type: Construction of New Sidewalk

Priority Ranking: 1.3 Time Frame: Mid-term Cost Category: 2

Many residential streets in the southwest section of Lyttonsville do not have sidewalks. This includes Farrell Drive. As this area is close to the Capital Crescent Trail, the addition of sidewalks in this area is critical for pedestrian safety and accessibility. To avoid conflicts with existing utility poles, the sidewalk should be constructed along the northwest side of Farrell Drive.

Several driveway aprons will need to be reconstructed to accommodate the new sidewalk. If not completed as part of area-wide improvements, these aprons should be reconstructed as part of the new sidewalk construction. Impacts to utilities, traffic / transit, and trees are expected to be moderate. An on-street parking lane may be impacted to accommodate the proposed sidewalk. Community outreach should be done before the proposed sidewalk is finalized.

LEGEND

- LYTTONSVILLE STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- CAPITAL CRESCENT TRAIL
- INSTALL ADDITIONAL SIGNING
- CONSTRUCT MEDIAN REFUGE
- CONSTRUCT CURB RAMP

SIDEWALK

- NON-COMPLIANT DRIVEWAY APRON
- RECONSTRUCT SIDEWALK
- SIDEWALK OBSTRUCTION
- NON-COMPLIANT WIDTH
- NON-COMPLIANT SLOPE
- INSTALL SAFETY RAILING
- QUARTER MILE RADIUS
- HALF MILE RADIUS

0 0.05 0.1 0.2 0.3 0.4 Miles

N

FOREST GLEN ANNEX (U.S. ARMY)
BROOKVILE ROAD
LUZERNE AVENUE
TALBOT AVENUE
STEWART AVENUE
KANSAS AVENUE
MICHIGAN AVENUE
GARFIELD AVENUE
LYTTONSVILLE PLACE
LYTTONSVILLE ROAD
LANIER DRIVE
PENNSYLVANIA AVENUE
QUINTON ROAD
SUNDALE DRIVE
RICHLAND PLACE
RICHLAND STREET
ROSS ROAD
PEGGY LANE
SPENCER ROAD
GRUBB ROAD
NAVARRE DRIVE
DONNYBROOK DRIVE
FARRELL DRIVE
ARAGON LANE
TERRACE DRIVE
FREYMAN DRIVE
EAST WEST HIGHWAY

FIGURE 5-17(a)
LYTTONSVILLE STATION
AREA-WIDE IMPROVEMENTS

LEGEND

- LYTTONSVILLE STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- CAPITAL CRESCENT TRAIL
- CONSTRUCT CURB EXTENSION
- RECONSTRUCT CURB RAMP
- STRIPE CROSSWALK

MIDBLOCK

- CONSTRUCT MIDBLOCK CROSSING
- RECONSTRUCT MIDBLOCK CROSSING
- QUARTER MILE RADIUS
- HALF MILE RADIUS

0 0.05 0.1 0.2 0.3 0.4 Miles

N

FOREST GLEN ANNEX (U.S. ARMY)
BROOKVILE ROAD
LUZERNE AVENUE
TALBOT AVENUE
STEWART AVENUE
KANSAS AVENUE
MICHIGAN AVENUE
GARFIELD AVENUE
LYTTONSVILLE PLACE
LANIER DRIVE
PENNSYLVANIA AVENUE
QUINTON ROAD
SUNDALE
RICHLAND PLACE
RICHLAND STREET
GRUBB ROAD
LYTTONSVILLE ROAD
SPENCER ROAD
ROSS ROAD
PEGGY LANE
NAVARRE DRIVE
EAST WEST HIGHWAY
FREYMAN DRIVE
TERRACE DRIVE
ARAGON LANE
FARRELL DRIVE
DONNYBROOK DRIVE

FIGURE 5-17(b)
LYTTONSVILLE STATION
AREA-WIDE IMPROVEMENTS

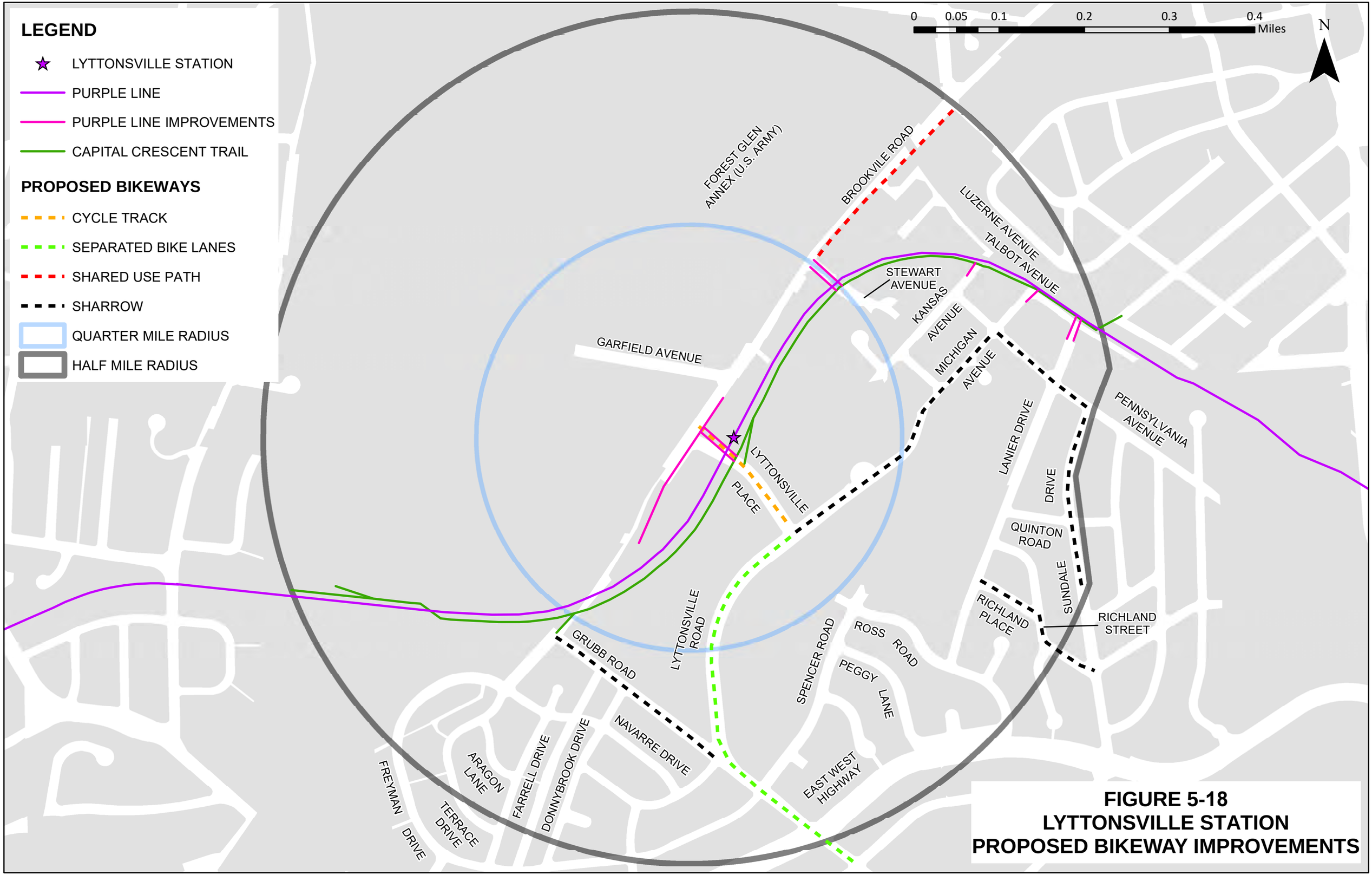


FIGURE 5-18
LYTTONSVILLE STATION
PROPOSED BIKEWAY IMPROVEMENTS

Table 5-3 - Pedestrian Improvements Summary Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE	Reconstruction of Curb Ramps	Reconstruction of Existing Sidewalks	Reconstruction of Driveway Aprons	Removal of Sidewalk Obstructions	Widening of Non-Compliant Sidewalk Widths	Reconstruction of Sidewalks with Non-Compliant Slopes	Reconstruction of Mid-Block Crossings	Striping of Crosswalks	Construction of New Curb Ramps	Construction of New Sidewalks	Installation of Additional Signing	Construction of Curb Extensions	Construction of Mid-Block Crossings	Construction of Median Refuge	Other	BENEFITS	Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score	IMPACTS	Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
Area-wide Improvements																																	
1	ADA Upgrades to Existing Sidewalks	MCDOT		●	●		●	●	●											2	3	5	1	11		3	3	2	2	10	2	1	2.2
2	ADA Upgrades to Existing Driveway Aprons	MCDOT				●														1	3	4	1	9		2	2	2	2	8	2	1	2.3
3	ADA Upgrades to Existing Intersections	MCDOT								●	●									2	3	4	1	10		3	3	2	2	10	2	1	2.0
Lyttonsville Place																																	
4	at Lyttonsville Road	MCDOT									●	●		●						5	4	4	1	14		2	2	3	2	9	2	1	3.1
Brookville Road																																	
5	Research Drive to Warren Street	MCDOT		●							●		●				●	●		4	2	3	1	10		4	4	2	2	12	1	1	0.8
6	at Garfield Avenue	MCDOT		●	●						●							●		2	3	3	1	9		2	2	1	1	6	2	1	3.0
Kansas Avenue																																	
7	Pennsylvania Avenue to CCT	MCDOT								●	●	●								5	3	4	1	13		2	1	2	2	7	1	1	1.9
Spencer Road																																	
8	Peggy Lane to Grubb Road	MCDOT		●	●		●				●	●		●						2	3	3	1	9		1	1	1	2	5	1	1	1.8
Ross Road																																	
9	Spencer Road to Peggy Lane	MCDOT		●	●						●	●								2	3	3	1	9		2	2	1	2	7	1	1	1.3
Luzerne Avenue																																	
10	Warren Street to Louis Street	MCDOT			●						●		●	●						4	3	3	1	11		2	2	2	1	7	1	1	1.6
11	at Lanier Drive and Louis Street	MCDOT		●								●								2	2	3	1	8		2	2	2	1	7	1	1	1.1
Porter Road at Sundale Drive (Rosemary Hills Elementary School)																																	
12	at Sundale Drive (Rosemary Hills Elementary)	MCDOT		●						●	●		●	●			Speed Control			4	5	4	1	14		3	4	2	2	11	1	1	1.3
Farrell Drive																																	
13	Navarre Drive to Spencer Road	MCDOT			●							●								4	2	2	1	9		1	2	2	2	7	1	1	1.3

$$Priority\ Ranking = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

5.3.2 Proposed Bikeway Improvements

The Lyttonsville BiPPA has been evaluated for several types of pedestrian and cyclist improvements. Proposed improvements have been developed and prioritized based on the ranking criteria outline in Section 2.8 of this report.

Bikeway improvements are organized by discrete improvements along each road corridor. Bikeway improvements focus on bicycle specific improvements that will provide safer accessible bike networks and connect the Lyttonsville area with the Capital Crescent Trail.

For each improvement, an analysis of possible barriers to construction and potential project cost was included. This analysis was used to determine the project priority ranking. Each improvement was then ranked in accordance with the Methodology. Please refer to Table 5-5 for a summary of priority rankings.

1. Lyttonsville Road
From: Grubb Road to ¼-mile radius

Improvement Type: Separated Bike Lane

Priority Ranking: 1.2 Time Frame: Mid-term Cost Category: 2

The Greater Lyttonsville Sector Plan suggests a separated bike lane from East-West Highway to Lyttonsville Place. Given the location of the new Lyttonsville Station along Lyttonsville Place and the lack of an existing bicycle network, the construction of separated bike lane connecting East-West Highway to the Lyttonsville Station is crucial. For the purposes of this analysis, the bikeway has been separated into a section within the ¼-mile and the ½-mile radius of the Lyttonsville Station.

This section of Lyttonsville Road is an existing two-lane roadway with street parking on both sides. The travel lanes are approximately 15 feet wide with approximately 10 feet wide parking lanes. To construct separated bike lanes, the road section will need to be redesigned to remove one or both parking lanes and reduce travel lane width. Traffic / transit / parking and utility impacts are anticipated to be moderate to high for this project. Removal of parking lanes and reduction in travel lane width will require extensive community coordination. Design will also require coordination with local utility companies to assess impacts to existing above ground and underground utilities, such as electric, gas, water, and storm drain. The project will require full design and permits.

A separated bike lane will contribute to the overall safety of the area and will create greater connectivity for cyclists.

2. Lyttonsville Road
From: ¼-mile radius to Lyttonsville Place

Improvement Type: Separated Bike Lane

Priority Ranking: 2.4 Time Frame: Mid-term Cost Category: 2

The continuation of the separated bike lane proposed along Lyttonsville Road will have the same benefits, impacts, and construction issues described above for separated bike lanes from Grubb Road to the ¼-mile Lyttonsville Station radius. Environmental concerns may be slightly higher for this segment of the bike lanes because of the increased presence of street trees. An arborist or other licensed tree expert should be consulted during construction.

The design of these separated bike lanes should be coordinated with other improvements recommended herein and in the Master Plans along Lyttonsville Place and at the intersection of Lyttonsville Place and Lyttonsville Road.

3. Lyttonsville Road
From: Lyttonsville Place to Michigan Avenue

Improvement Type: Sharrow

Priority Ranking: 2.4 Time Frame: Mid-term Cost Category: 1

This portion of Lyttonsville Road connects the residential area in the northeast of this BiPPA to the proposed Lyttonsville Station. It also provides bicycle connection to an existing Capital Bikeshare facility located outside of the Claridge House apartment complex. Unlike other sections of Lyttonsville Road, the existing road section here does not have parking lanes or spacious shoulders that can be easily converted to separated bike lanes. In this case, sharrow markings are recommended to provide designated space for cyclists without requiring a complete redesign of the existing roadway.

This improvement will be connected to a sharrow lane proposed along Michigan Avenue, which is discussed in a later section of this report.

4. Lyttonsville Place
From: Lyttonsville Road to Brookville Road

Improvement Type: Cycle Track

Priority Ranking: 3.0 Time Frame: Mid-term Cost Category: 2

Lyttonsville Place will be the site of the new Lyttonsville Station. In conjunction with construction of the Purple Line, a majority of Lyttonsville Place, including the intersection of Lyttonsville Place and Brookville Road, will be reconstructed to have widened sidewalks for increased pedestrian safety. It is recommended that a two-way cycle track be constructed along the north side of the road to provide a safe connection for cyclists, especially coming from the east. This improvement is consistent with recommendations from the Greater Lyttonsville Sector Plan. The Purple Line will reduce Lyttonsville Place from a 4-lane section to two lanes at the bridge. Therefore, the additional width could be re-purposed to include the bikeway connection. It would need to interface with the Kiss-n-ride near the bridge as currently proposed. But the ridership forecast for the Kiss-n-Ride is low and it should be relocated.

Impacts due to construction of the cycle track would be limited otherwise.

5. – 10. Various Residential Streets

Improvement Type: Sharrow Markings

Priority Ranking: As noted Time Frame: Short-term Cost Category: As Noted

It is recommended that “Bicycle Route” signing and sharrow markings be installed on the residential corridors shown in the table below. The sharrow markings would be on both sides of the roadways and run the complete length of the corridor.

Many of these residential streets have wide travel lanes and at least one side of on-street parking. Installation of a sharrow lane on these roads can be completed with minimal disruption to the existing road section and can be accomplished by signing and marking. In addition, these streets are connectors to

important community infrastructure, such as Rosemary Hills Elementary School, Rosemary Hills-Lyttonsville local park, and the Capital Crescent Trail, all of which should be easily and safely accessible to cyclists.

Impacts to utilities and environmental features, and acquisition of right-of-way are not required for sharrow lanes. Sharrow lanes can be considered a short-term improvement.

Table 5-4 Summary of Bikeway Rankings for Various Residential Streets

Road	Limits		Cost Category	Priority Ranking
5. Pennsylvania Avenue	Michigan Avenue	Sundale Drive	1	1.5
6. Richland Street	Richland Place	Sundale Drive	1	1.5
7. Richland Place	Lanier Drive	Richland Street	1	1.5
8. Sundale Drive	Porter Road	¼-mile radius	1	1.5
9. Michigan Avenue	Lyttonsville Road	Pennsylvania Avenue	2	1.2
10. Grubb Road	Lyttonsville Road	Terrace Drive	1	1.2

11. Grubb Road

From: East-West Highway to Lyttonsville Road

Improvement Type: Separated Bike Lane

Priority Ranking: 0.9 Time Frame: Mid-term Cost Category: 2

A separated bike lane along Grubb Road is a continuation of the existing shared use path on East-West Highway and would connect to the recommended separated bike lane along Lyttonsville Road. This bike network, from East-West Highway to Lyttonsville Place, is crucial for bike access to the Lyttonsville Station and the Capital Crescent Trail.

Existing Grubb Road has four lanes of traffic in the vicinity of the intersection with East-West Highway, then transitions to a two-lane road closer to the intersection with Lyttonsville Road. It is recommended that separated bike lanes be constructed on both sides of the road to allow for bicycle traffic in both directions. To accommodate the separated lanes, travel lane and shoulder widths will need to be reviewed. In addition, the intersection with Lyttonsville Road should be coordinated with other proposed improvements to ensure safety for cyclists when crossing the intersections.

12. Brookville Road

From: Warren Street to Stewart Avenue

Improvement Type: Shared Use Path

Priority Ranking: 0.9 Time Frame: Mid-term Cost Category: 3

It is recommended that a shared use path be constructed along the west side of Brookville Road from Stewart Avenue to Warren Street. The shared use path would connect to proposed Purple Line improvements along Stewart Avenue, including a connection to the Capital Crescent Trail. The path's proximity to the Forest Glen Annex is a benefit that allows employees to easily access the surrounding area. In addition, a shared use path would connect residents north of the CSX railroad tracks to the Capital Crescent Trail via the improvements to Stewart Avenue.

Impacts for this project are expected to be moderate to high. While there is an existing sidewalk along this portion of the road, expanding to the width of a shared use path may not be feasible within the current right-of-way.

LEGEND

- LYTTONSVILLE STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- CAPITAL CRESCENT TRAIL
- EXISTING SIDEWALKS

PROPOSED BIKEWAYS

- SIDEWALK
- SHARED USE PATH
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

0 0.05 0.1 0.2 0.3 0.4 Miles

N

FOREST GLEN ANNEX (U.S. ARMY)
BROOKVILE ROAD
LUZERNE AVENUE
TALBOT AVENUE
STEWART AVENUE
KANSAS AVENUE
MICHIGAN AVENUE
GARFIELD AVENUE
LANIER DRIVE
DRIVE
PENNSYLVANIA AVENUE
LYTTONSVILLE PLACE
LYTTONSVILLE
QUINTON ROAD
SUNDALE
RICHLAND PLACE
RICHLAND STREET
SPENCER ROAD
ROSS ROAD
PEGGY LANE
LYTTONSVILLE ROAD
GRUBB ROAD
NAVARRE DRIVE
FARRELL DRIVE
ROCK CREEK
DONNYBROOK DRIVE
ARAGON LANE
FREYMAN DRIVE
TERRACE DRIVE
ROSS ROAD
EAST WEST HIGHWAY

FIGURE 5-19
LYTTONSVILLE STATION
PROPOSED PEDESTRIAN IMPROVEMENTS

Table 5-5 - Bicycle Improvements Summary Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE						BENEFITS						IMPACTS								
			Sharrow	Cycle Track	Separated Bike Lanes	Shared-Use Paths	Other		Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score		Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
Lyttonsville Road																							
1	Grubb Road to 1/4-mile radius	MCDOT			●				5	5	1	1	12		3	3	2	2	10	1	1	1.2
2	1/4-mile radius to Lyttonsville Place	MCDOT			●				5	5	1	1	12		3	3	2	2	10	2	1	2.4
3	Lyttonsville Place to Michigan Avenue	MCDOT	●						2	2	1	1	6		1	2	1	1	5	2	1	2.4
Lyttonsville Place																							
4	Lyttonsville Road to Brookville Road	MCDOT		●					5	5	1	1	12		2	3	1	2	8	2	1	3.0
Various Residential Streets																							
5	Pennsylvania Avenue - Michigan Avenue to Sundale Drive	MCDOT	●						2	2	1	1	6		1	1	1	1	4	1	1	1.5
6	Richland Street - Richland Place to Sundale Drive	MCDOT	●						2	2	1	1	6		1	1	1	1	4	1	1	1.5
7	Richland Place - Lanier Drive to Richland Street	MCDOT	●						2	2	1	1	6		1	1	1	1	4	1	1	1.5
8	Sundale Drive - Porter Road to 1/4-mile radius	MCDOT	●						2	2	1	1	6		1	1	1	1	4	1	1	1.5
9	Michigan Avenue - Lyttonsville Road to Pennsylvania Avenue	MCDOT	●						2	2	1	1	6		1	1	1	2	5	1	1	1.2
10	Grubb Road - Lyttonsville Road to Terrace Drive	MCDOT	●						2	2	1	1	6		1	2	1	1	5	1	1	1.2
Grubb Road																							
11	East-West Highway to Lyttonsville Road	MCDOT			●				3	5	1	1	10		3	4	2	2	11	1	1	0.9
Brookville Road																							
12	Warren Street to Stewart Avenue	MCDOT				●			4	3	3	1	11		4	4	1	3	12	1	1	0.9

$$Priority\ Ranking = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

5.3.3 Maintenance

Maintenance improvements, such as tree and hedge trimming, are an inexpensive way to increase pedestrian comfort and aesthetic value. A map of these items is included as Figure 5-.



Figure 5-20: Overgrown hedges encroach on a curb ramp along Michigan Avenue.



Figure 5-21: Overgrown hedges decrease width of sidewalk along Grubb Road.



Figure 5-22: Overgrown hedges and buildup of sediment and debris along Stewart Avenue.

LEGEND

- LYTTONSVILLE STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS
- CAPITAL CRESCENT TRAIL

PROPOSED IMPROVEMENTS

- MAINTENANCE
- QUARTER MILE RADIUS
- HALF MILE RADIUS

0 0.05 0.1 0.2 0.3 0.4 Miles

N

FOREST GLEN ANNEX (U.S. ARMY)
BROOKVILE ROAD
LUZERNE AVENUE
TALBOT AVENUE
STEWART AVENUE
KANSAS AVENUE
MICHIGAN AVENUE
GARFIELD AVENUE
PENNSYLVANIA AVENUE
LANIER DRIVE
DRIVE
QUINTON ROAD
SUNDALE
RICHLAND PLACE
RICHLAND STREET
LYTTONSVILLE PLACE
LYTTONSVILLE ROAD
GRUBB ROAD
SPENCER ROAD
ROSS ROAD
PEGGY LANE
NAVARRE DRIVE
EAST WEST HIGHWAY
FREYMAN DRIVE
TERRACE DRIVE
ARAGON LANE
FARRELL DRIVE
DONNYBROOK DRIVE

FIGURE 5-23
LYTTONSVILLE STATION
MAINTENANCE IMPROVEMENTS

5.4 Final Recommendations

Lyttonsville is a primarily industrial and commercial area that lacks the infrastructure to connect users to the Purple Line and Capital Crescent Trail. Although existing sidewalks are continuous in residential areas, the area lacks connectivity along, Brookville Road and Lyttonsville Place which represent the main roadways within the area. Existing infrastructure is non-compliant with current ADA standards and crosswalk striping is out-of-date with current guidelines. Existing signalized crossings appear to have been recently updated per current ADA standards.

The present-day condition in this BiPPA has potential for the area to have a strong pedestrian and bicycle network. With a divided industrial area, a US Army complex and a thriving residential area, improvements to the pedestrian and bicyclist safety and accessibility are essential for providing access to the Purple Line Station. Implementing the improvements in this report can also benefit the Lyttonsville area by increasing pedestrian and cyclist use, potentially decreasing traffic congestion and air pollution, and increasing public safety, comfort, and health.

Generally, improvements for this station area score lower because the bicycle and pedestrian volumes are anticipated to be the lowest of all stations in the study corridor. However, the two highest ranked pedestrian improvements are at the intersection of Lyttonsville Place and Lyttonsville Road. Both intersections fall within close proximity to the station. Improving protection of pedestrians at Lyttonsville Place and Lyttonsville Road by eliminating the right-turn ramps should be evaluated. Constructing a median refuge on Brookville Road at the intersection with Garfield Avenue would improve pedestrian safety with minimal impacts to existing features and infrastructure. We also recommend ADA compliance to be a focus for this area to ensure all pedestrians have a safe, accessible path to their destination. Reconstructing existing driveway aprons along major roads would improve accessibility throughout the area as well.

The highest ranked bicycle improvements are along Lyttonsville Place and Lyttonsville Road. Lyttonsville Place provides a critical final link to the ramp that descends to the Purple Line station. A separated bikeway is feasible along Lyttonsville Road from Grubb Road to Lyttonsville Place and would provide an arterial bicycle link with the south area of the BiPPA. Parking impacts would need to be coordinated with the community. While not significantly beneficial, sharrow lanes would encourage bicyclists to use Lyttonsville Road to connect with the station from the north with minimal impacts. The highest priority improvements discussed above should be developed for construction and programmed for completion to coincide with the opening of the Purple Line.

One of the major overall goals of the Purple Line and Greater Lyttonsville Sector Plan is to reconnect the light industrial areas and the residential areas of Lyttonsville with easier pedestrian and cyclist access. The overall strategy for this BiPPA should be to rebalance priorities to include pedestrians and bicycles as an equally important user of the right-of-way. Lyttonsville's current transportation system is heavily geared towards vehicles, especially trucks. Implementing the pedestrian and bicycle network improvements proposed in this report would bring Lyttonsville closer to accomplishing this goal.

6 16th Street - Woodside



6 16th Street - Woodside

6.1 Study Area

6.1.1 Existing Area

The 16th Street - Woodside Station for the Purple Line is proposed at the former Spring Center Shopping Center, near the intersection of 16th Street (MD 390) and Spring Street in Silver Spring, Maryland. The area includes Rock Creek Gardens to the southwest, apartment complexes along East West Highway (MD 410) and residential development to the north and northwest. Within the ¼-mile radius, the area is predominately single family residential, and, to a smaller extent, apartment complexes and condominiums. The ½-mile radius consists of more dense residential areas, mostly apartment complexes and condominiums. Major roadways and their respective limits, minimum right-of-way, and number of lanes can be found in Figure 6-1.

There are a few small businesses, multiple churches, and an urban park that contribute to the pedestrian and bicycle traffic in the 16th Street - Woodside Purple Line station area. Georgia Avenue (MD 97) is mostly a residential corridor but also includes churches of different faiths and their associated schools.

Based on publicly available reports and field collected data, it was determined that pedestrian and bicycle connectivity in the area is incomplete. Existing sidewalks, while present in most residential areas, do not provide continuous pedestrian access and they do not all meet current ADA standards. Existing bikeways in the area are minimal and are typically comprised of shared lane segments rather than separated bike facilities.

N

CEDAR VIEW COURT

GLEN ROSS ROAD

LANIER DRIVE

THIRD AVENUE

HANOVER STREET

CHURCH ROAD

GRACE

ELKHART STREET

HIGHLAND DRIVE

WOODLAND DRIVE

NOYES DRIVE

FIRST AVENUE

SECOND AVENUE

GEORGIA AVENUE (MD 97)

TALBOT AVENUE

LYTTONSVILLE ROAD

16TH STREET

NOYES LANE

SPRINGWOOD DRIVE

BALLARD STREET

SPRING STREET

SUNDALE DRIVE

MAYWOOD AVENUE

MILFORD AVENUE

LEONARD DRIVE

SPENCER ROAD

EAST WEST HIGHWAY (MD 410)

LEGEND

- 16TH STREET - WOODSIDE STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- MAJOR CONNECTIONS
- CAPITAL CRESCENT TRAIL
- QUARTER MILE RADIUS
- HALF MILE RADIUS

FIGURE 6-1
16TH STREET - WOODSIDE STATION STUDY AREA

0 0.05 0.1 0.2 0.3 0.4 Miles

6.1.2 Existing Facilities

Existing pedestrian and bicycle facilities in the 16th Street - Woodside BiPPA are consistent with those commonly found in other commercial or residential districts along the Purple Line corridor. The existing pedestrian network includes sidewalks, both signalized and non-signalized intersections, curb ramps, crosswalks, and mid-block crossings (Figure 6- and Figure 6-3).



Figure 6-2 A typical residential neighborhood with sidewalks.



Figure 6-3 A typical sidewalk and crosswalk on a street with a bike lane.

Sidewalks are typically 4 feet wide and in moderate to good condition, although trip hazards and broken or cracked portions of the sidewalk are prevalent (Figure 6- and Figure 6-). Most sections of sidewalk contain a grass buffer or barrier, while some sections are placed directly adjacent to the road.

There are currently no sidewalks located in the residential areas directly northwest, northeast, and southwest of the proposed station.



Figure 6-4 Broken portion of existing sidewalk.



Figure 6-5 Sunken portion of existing sidewalk.

Most curb ramps and crosswalks are in moderate condition. Many curb ramps are not compliant with current ADA standards because they are not aligned properly, have slopes greater than the maximum allowable, do not have level landing areas or do not include detectable warning surfaces. Marked crosswalks are typically present, but some of these markings are faded and not in conformance with current standards.

Publicly available GIS data indicates separated bike lanes along Spring Street on the eastern most ½-mile site radius, north of 16th Street (MD 390). Additionally, parts of East-West Highway (MD 410) are a shared road or have a shared use path available to cyclists.

Based on existing conditions and field collected data, facilities in the area do not provide adequate safety, accessibility, or connectivity for pedestrians and cyclists. In high traffic pedestrian areas, such as the apartment complexes and residential areas, the sidewalks, curb ramps, and crosswalks are in safe, working condition. With the number of pedestrians and cyclists expected to increase with Purple Line construction, upgrades and new facilities are essential to create a cohesive, safe network for all users.

Table 6-1 Street and Highway Classification

Designation	Roadway	Limits	Minimum Right-of-Way	Lanes	Speed Limit
Major Highway					
M-9	16th Street (MD 390)	Georgia Avenue (MD 97) to Eastern Avenue North West	120	6D	35
M-20	East West Highway	Ellingson Drive to Georgia Avenue (MD 97)	90	4	35
M-8	Georgia Avenue (MD 97)	13th Street to Luzerne Lane	126	6D	35
Arterial					
A-263	Spring Street	16th Street (MD 390) to Ellsworth Drive	80	4D	25
Minor Arterial					
MA-16	Columbia Boulevard	Rookwood Road to 16th Avenue	80	2	25
Business					
B-1	1st Avenue	Fenwick Lane to end of street	70	2	25
B-2	2nd Avenue	Colesville to Luzerne Avenue	80	2	25
B-1	3rd Avenue	Warren Street to end of street	70	2	25
B-2	3rd Avenue	Noyes Lane to South Springwood Drive	70	2	25
B-4	Apple Avenue	2nd Avenue to end of street	60	2	25
B-11	Draper Lane	East West Highway to Colesville Road	60	2	25
B-13	Fenwick Lane	2nd Avenue to Georgia Avenue (MD 97)	80	2	25
B-13	Fenwick Lane	2nd Avenue to end of street	80	2	25

Designation	Roadway	Limits	Minimum Right-of-Way	Lanes	Speed Limit
B-19	Planning Place	Georgia Avenue (MD 97) to end of street	60	2	25
Primary Residential					
P-5	Lyttonsville Road	16th Street (MD 390) to end of street	60	2	25
P-5	Michigan Avenue	Maine Avenue to Talbot Avenue	60	2	25
P-6	Pennsylvania Avenue	Kansas Avenue to Lanier Drive	60	2	25
P-6	Porter Road	Lanier Drive to Rosemary Hills Drive	60	2	25
P-11	Tamarack Street North West	North Portal Drive North West to East Beach Drive North West	70	2	25
P-3	Washington Avenue	Grubb Road to East West Highway	70	2	25
Industrial					
I-1	Warren Street	Luzerne Avenue to Louis Avenue	70	2	25
Uncategorized*					
	4th Avenue	Hanover Street to Talbot Avenue	40	1	25
	Ballard Street	3rd Avenue to Alton Parkway	40	1	25
	Ballard Street	Ballard Street to end of street	40	1	25
	Burton Street	Woodland Drive to Alton Parkway	40	1	25
	Carey Lane	East West Highway to end of street	40	1	25
	Courts Way	Noyes Drive to end of street (two directions)	40	1	25
	East Beach Drive North West	Red Bud Lane North West to Verbena Street North West	40	1	25
	East Falkland Lane	East West Highway to North Falkland Lane	40	1	25
	Elkhart Street	16th Street (MD 390) to end of street	40	1	25
	Glen Ross Road	Louis Avenue to Luzerne Avenue	40	1	25
	Grace Church Road	Talbot Street to Georgia Avenue (MD 97)	40	1	25
	Grace Church Road	Georgia Avenue (MD 97) to Luzerne Avenue	40	1	25
	Hanover Street	Grace Church Road to 16th Street (MD 390)	40	1	25
	Highland Drive	3rd Avenue to Crosby Road	40	1	25
	Lanier Drive	Ross Road to Talbot Avenue	40	1	25
	Lanier Drive	Louis Avenue to end of street	40	1	25
	Leighton Wood Lane	2nd Avenue to end of street	40	1	25
	Milford Avenue	Porter Road to Sundale Drive	40	1	25
	North Springwood Drive	3rd Avenue to 2nd Avenue	40	1	25
	Noyes Drive	2nd Avenue to Alton Parkway	40	1	25
	Noyes Lane	3rd Avenue to 2nd Avenue	40	1	25
	Ottawa Place	Highland Drive to end of Street	40	1	25
	Milford Avenue	Porter Road to Sundale Drive	40	1	25
	Richland Place	Lanier Drive to Richland Street	40	1	25
	Richland Street	Lanier Drive to Sundale Drive	40	1	25
	Quinton Road	Lanier Drive to end of street	40	1	25
	Redwood Terrace North West	Spruce Drive North West to Tamarack St North West	40	1	25
	Richland Place	Lanier Drive to Richland Street	40	1	25
	Rosemary Hills Drive	Porter Road to Porter Road	40	1	25
	Rosemary Hills Drive	East West Highway to Spencer Road	40	1	25
	Ross Court	Ross Road to end of street	40	1	25
	Ross Road	Sundale Road to Milford Avenue	40	1	25

Designation	Roadway	Limits	Minimum Right-of-Way	Lanes	Speed Limit
	South Springwood Drive	3rd Avenue to North Springwood Avenue	40	1	25
	Spencer Road	Sundale Road to Leonard Drive	40	1	25
	Spruce Drive North West	Tulip Street North West to North Portal Drive North West	40	1	25
	Sundale Drive	East West Highway to Porter Road	40	1	25
	Sycamore Street North West	Tulip Street North West to Spruce Drive North West	40	1	25
	Talbot Avenue	Michigan Avenue to end of street	40	1	25
	Tulip Street North West	Red Bud Lane North West to Tamarack Street North West	40	1	25
	Verbena Street North West	Tamarack Street North West to East Beach Drive North West	40	1	25
	Wilson Place	2nd Avenue to 1st Avenue	40	1	25
	Ross Road	Sundale Road to Milford Avenue	40	1	25
	Richland Place	Lanier Drive to Richland Street	40	1	25
	Richland Street	Lanier Drive to Sundale Drive	40	1	25
	Quinton Road	Lanier Drive to end of street	40	1	25
	Redwood Terrace North West	Spruce Drive North West to Tamarack St North West	40	1	25
	Richland Place	Lanier Drive to Richland Street	40	1	25
	Rosemary Hills Drive	Porter Road to Porter Road	40	1	25
	Rosemary Hills Drive	East West Highway to Spencer Road	40	1	25
	Ross Court	Ross Road to end of street	40	1	25
	Ross Road	Sundale Road to Milford Avenue	40	1	25
	South Springwood Drive	3rd Avenue to North Springwood Avenue	40	1	25

Designation	Roadway	Limits	Minimum Right-of-Way	Lanes	Speed Limit
	Spencer Road	Sundale Road to Leonard Drive	40	1	25
	Spruce Drive North West	Tulip Street North West to North Portal Drive North West	40	1	25
	Sundale Drive	East West Highway to Porter Road	40	1	25
	Sycamore Street North West	Tulip Street North West to Spruce Drive North West	40	1	25
	Talbot Avenue	Michigan Avenue to end of street	40	1	25
	Tulip Street North West	Red Bud Lane North West to Tamarack Street North West	40	1	25
	Verbena Street North West	Tamarack Street North West to East Beach Drive North West	40	1	25
	Wilson Place	2nd Avenue to 1st Avenue	40	1	25
	Woodland Drive	Spring Street to Luzerne Avenue	40	1	25
	Woodside Parkway	Georgia Avenue (MD 97) to Crosby Road	40	1	25
	Young American Court	Michigan Avenue to end of street	40	1	25
	West Falkland Lane	East West Highway to North Falkland Lane	40	1	25

*Uncategorized roads are not included in the MNCPPC Roadway Functional Classification. ROW widths are based on MC-210.01 Tertiary Residential Street. Speed limits are based on minimum posted speed required by State law.

N

CEDAR VIEW COURT

GLEN ROSS ROAD

LANIER DRIVE

THIRD AVENUE

HANOVER STREET

CHURCH ROAD

GRACE

ELKHART STREET

TALBOT AVENUE

LYTTONSVILLE ROAD

16TH STREET

HIGHLAND

DRIVE

SECOND AVENUE

FIRST AVENUE

WOODLAND

DRIVE

NOYES

DRIVE

GEORGIA AVENUE (MD 97)

NOYES LANE

NOYES DRIVE

SPRINGWOOD

DRIVE

BALLARD

STREET

STREET

SPRING

STREET

(MD 390)

AVENUE

MAYWOOD

MILFORD AVENUE

LEONARD DRIVE

SUNDALE DRIVE

SPENCER ROAD

EAST WEST HIGHWAY (MD 410)

LEGEND

- 16TH STREET - WOODSIDE STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- EXISTING SIDEWALKS
- CAPITAL CRESCENT TRAIL
- QUARTER MILE RADIUS
- HALF MILE RADIUS

FIGURE 6-6
16TH STREET - WOODSIDE STATION
EXISTING PEDESTRIAN FACILITIES

0 0.05 0.1 0.2 0.3 0.4 Miles

N

CEDAR VIEW COURT

GLEN ROSS ROAD

LANIER DRIVE

THIRD AVENUE

HANOVER STREET

CHURCH ROAD

GRACE

ELKHART STREET

HIGHLAND DRIVE

FIRST AVENUE

WOODLAND DRIVE

NOYES DRIVE

GEORGIA AVENUE (MD 97)

ALTON PARKWAY

TALBOT AVENUE

LYTTONSVILLE ROAD

16TH STREET

SECOND AVENUE

NOYES LANE

SPRINGWOOD DRIVE

BALLARD STREET

SPRING STREET

(MD 390)

SUNDALE DRIVE

MAYWOOD AVENUE

MILFORD AVENUE

LEONARD DRIVE

ROSS ROAD

SPENCER ROAD

EAST WEST HIGHWAY (MD 410)

LEGEND

- 16TH STREET - WOODSIDE STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS
- PURPLE LINE BIKE RACK
- CAPITAL CRESCENT TRAIL

EXISTING BIKEWAYS

- SEPARATED BIKE LANES
- SHARED USE PATH
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 6-7
16TH STREET - WOODSIDE STATION
EXISTING CYCLIST FACILITIES

0 0.05 0.1 0.2 0.3 0.4 Miles

6.1.3 Proposed Purple Line Improvements

Multiple improvements are proposed within the 16th Street - Woodside BiPPA in conjunction with the construction of the Purple Line. In this area, Purple Line will be constructed between Talbot Avenue and Grace Church Road and run southeast to 16th Street (MD 390), then cross under 16th Street (MD 390), run between 16th Street (MD 390) and 3rd Avenue, before intersecting with Spring Street.

The new 16th Street - Woodside Station of the Purple Line will be constructed between 16th Street (MD 390), the existing tracks, and Spring Street. A portion of 16th Street (MD 390) will be reconstructed with a 5-foot sidewalk on the southbound side. This sidewalk will connect to an existing 5-foot sidewalk along 16th Street (MD 390). This improvement will provide connectivity between the residential areas of 16th Street (MD 390) and the new station. The Spring Street bridge running above the Purple Line tracks will also provide separated bike lanes. These lanes, which will be constructed on both sides of the road, will provide a safe connection for cyclists between 16th Street (MD 390) and Georgia Avenue (MD 97). Refer to Figure 6-8, for the location of these improvements.

Other corridors and intersections (Maywood Avenue, Milford Avenue, Ross Road, Spencer Road, Lanier Drive, Noyes Drive, Noyes Lane, North Springwood Drive, South Springwood Drive, Grace Church Road, Elkhart Street, Highland Drive, Woodland Drive, and Woodside Parkway) include sidewalk construction to connect residents to the proposed Capital Crescent Trail and Purple Line station and provide minor safety and ADA upgrades.

6.1.4 Adjacent Projects

Currently, there are no known projects adjacent to the project area.

6.2 Master Plan Summary

Two master plans were developed for the area surrounding the proposed 16th Street - Woodside Station: The Greater Lyttonsville Sector Plan (2017) and the North and West Silver Spring Master Plan (2000). See Figure 6-9 Master Plans Boundary Map, for the boundaries of these plans.

The Greater Lyttonsville Sector Plan was approved in 2017. Its boundary is generally defined as follows: on the north, by the northern boundary of the United States Army Fort Detrick Forest Glen Annex; on the south, by East-West Highway and Grubb Road; on the east, by 16th Street (MD 390) and the CSX railroad tracks; and on the west, by the western boundary line of the Forest Glen Annex and Rock Creek.

The North and West Silver Spring Master Plan was approved in 2000. Its boundary is generally defined as follows: North and West Silver Spring are located inside the Capital Beltway (I-495) in the southeast corner of Montgomery County, adjacent to the Silver Spring Central Business District (CBD) and the Washington, D.C. border. The Silver Spring CBD forms the southern boundary of North Silver Spring and the eastern boundary of West Silver Spring. Washington, D.C., forms the southern boundary of West Silver Spring. North Silver Spring is generally bounded on the north by the Capital Beltway; on the east by Sligo Creek Park; on the south by Wayne Avenue, Bonifant, Cedar, and Spring Streets, the CSX railroad tracks, and the southern property line of the Walter Reed Army Medical Center (WRAMC); and on the west by Rock Creek Park. West Silver Spring is bounded on the north by the CSX railroad tracks and the southern property line of the Walter Reed Army Medical Center; on the east by 16th Street (MD 390); on the south by the District of Columbia boundary; and on the west by Rock Creek Park.

Based on the age and scope of these master plans, it was determined that the Greater Lyttonsville Sector Plan was the most relevant to this project. Therefore, recommendations follow those goals closely.

Two Purple Line stations are encompassed within the Greater Lyttonsville Sector Plan: Lyttonsville and 16th Street - Woodside. As this section of the report focuses on the 16th Street - Woodside station, only improvements east of Sundale Drive will be discussed. Section 5 of this report focuses on the Lyttonsville station and improvements west of Sundale Drive.

6.2.1 Existing Pedestrian Improvement Recommendations

Existing recommendations for pedestrian improvements from the Master Plan and Sector Plans are included in Table 6-2. The table includes following streets to have sidewalks along their entire lengths on at least one side:

- Maywood Avenue
- Spencer Road
- Ross Road
- Lanier Drive
- Springwood Drive
- 3rd Avenue
- Moyes lane
- Woodland Drive
- Highland Drive
- Cedar View Court

The Purple Line Connectivity Report indicates that pedestrians are currently not comfortable (37%) with walking around the 16th Street - Woodside station area. If all the proposed improvements are completed along with the Purple Line project, pedestrians said their comfort level to walk to the area would increase drastically (82%). To improve connectivity between residential areas and the Purple Line, the MCDOT and MDOT should evaluate the designated pedestrian crossing sites as a potential location of traffic signals or another traffic control devices.

6.2.2 Existing Bikeway Improvement Recommendations

The Greater Lyttonsville Sector Plan recommendations are summarized in Table 6-3. A main goal of the Sector Plan is to bring neighborhoods together and make full use of the proposed Purple Line station. The Montgomery County Bicycle Master Plan provides bicycle-specific recommendations for various areas in Montgomery County. In instances where the Greater Lyttonsville Sector Plan and the Bicycle Master Plan overlap, the Bicycle Master Plan recommendation should govern.

Table 6-2 Summary of Area Pedestrian Infrastructure Improvement Recommendations

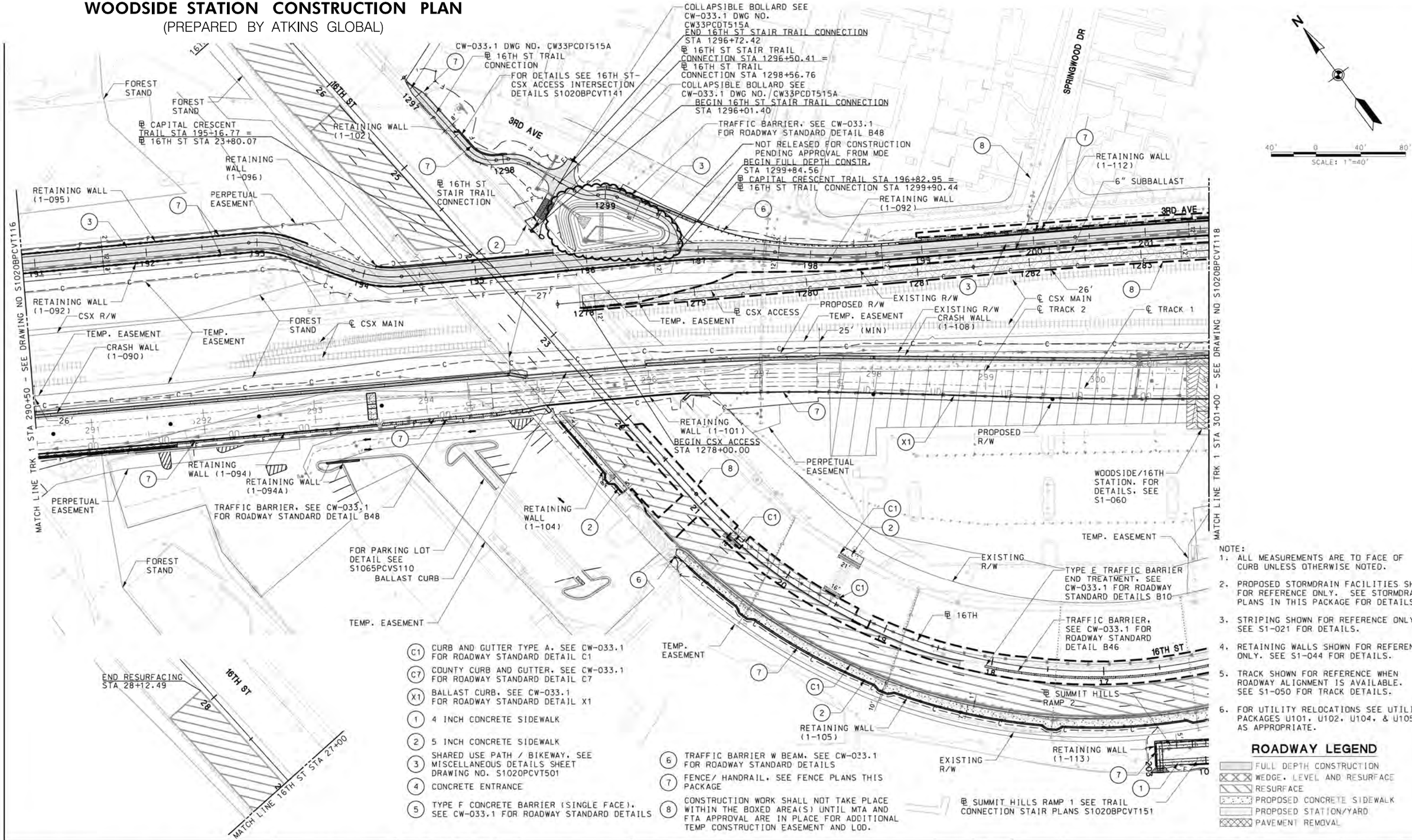
Roadway/Route	Recommendation	Reference
16th Street (MD 390) at Spring Street	Construct high visibility crosswalk	Purple Line Pedestrian Connectivity Report
16th Street (MD 390)	HAWK signal between the Purple Line station and Summit Hills apartments	Purple Line Pedestrian Connectivity Report
16th Street (MD 390) at Lyttonsville Road	Construct new traffic signal	Purple Line Pedestrian Connectivity Report
16th Street (MD 390) at Spring Street	Add pedestrian refuge in existing median	Purple Line Pedestrian Connectivity Report
Maywood Avenue	Construct a 5 ft sidewalk with a 5 ft buffer	Greater Lyttonsville Sector Plan
Milford Avenue	Construct a 5 ft sidewalk with a 5 ft buffer	Greater Lyttonsville Sector Plan
Spencer Road	Construct a 5 ft sidewalk with a 5 ft buffer	Greater Lyttonsville Sector Plan
Ross Road	Construct a 5 ft sidewalk with a 5 ft buffer	Greater Lyttonsville Sector Plan
Lanier Drive	Construct a 5 ft sidewalk with a 5 ft buffer	Greater Lyttonsville Sector Plan
Springwood Drive	Construct a 5 ft sidewalk with a 5 ft buffer	Greater Lyttonsville Sector Plan
3rd Avenue	Construct a 5 ft sidewalk with a 5 ft buffer	Greater Lyttonsville Sector Plan
Noyes Lane	Construct a 5 ft sidewalk with a 5 ft buffer	Greater Lyttonsville Sector Plan
Woodland Drive	Construct a 5 ft sidewalk with a 5 ft buffer	Greater Lyttonsville Sector Plan
Highland Drive	Construct a 5 ft sidewalk with a 5 ft buffer	Greater Lyttonsville Sector Plan
Cedar View Court	Construct a 5 ft sidewalk with a 5 ft buffer	Greater Lyttonsville Sector Plan

Table 6-3 Summary of Area Cycling Infrastructure Improvement Recommendations

Roadway/Route	Limits	Reference	Status
Separated Bike Lane			
16th Street (MD 390)	2nd Avenue to District of Columbia	Greater Lyttonsville Sector Plan	Recommended
16th Street (MD 390)	Georgia Avenue (MD 97) to Spring Street	Montgomery County Bicycle Master Plan	Recommended
16th Street (MD 390)	Colesville Road to Georgia Avenue (MD 97)	Purple Line Pedestrian Connectivity Report	Recommended
Shared Roadway			
Pennsylvania Avenue/Porter Avenue	Michigan Avenue to Sundale Drive	Greater Lyttonsville Sector Plan	Recommended
Sundale Drive	East-West Highway (MD 410) to Porter Avenue	Greater Lyttonsville Sector Plan	Recommended
Woodland Drive	I-495 Bridge (East Side) to Spring Street	Montgomery County Bicycle Master Plan	Recommended
2nd Avenue	16th Street (MD 309) to Spring Street	Montgomery County Bicycle Master Plan	Recommended
Porter Drive	Lanier Drive to Sundale Drive	Montgomery County Bicycle Master Plan	Recommended
Sundale Drive	Porter Drive to East West Highway (MD 410)	Montgomery County Bicycle Master Plan	Recommended
Shared Use Path			
East-West Highway (MD 410)	16th Street (MD 390) to Grubb Road	Greater Lyttonsville Sector Plan	Existing

FIGURE 6–8(a) PURPLE LINE 16TH STREET/ WOODSIDE STATION CONSTRUCTION PLAN

(PREPARED BY ATKINS GLOBAL)



(C1) CURB AND GUTTER TYPE A. SEE CW-033.1 FOR ROADWAY STANDARD DETAIL C1

(C7) COUNTY CURB AND GUTTER. SEE CW-033.1 FOR ROADWAY STANDARD DETAIL C7

(X1) BALLAST CURB. SEE CW-033.1 FOR ROADWAY STANDARD DETAIL X1

(1) 4 INCH CONCRETE SIDEWALK

(2) 5 INCH CONCRETE SIDEWALK

(3) SHARED USE PATH / BIKEWAY. SEE MISCELLANEOUS DETAILS SHEET DRAWING NO. S1020PCVT501

(4) CONCRETE ENTRANCE

(5) TYPE F CONCRETE BARRIER (SINGLE FACE). SEE CW-033.1 FOR ROADWAY STANDARD DETAILS

(6) TRAFFIC BARRIER W BEAM. SEE CW-033.1 FOR ROADWAY STANDARD DETAILS

(7) FENCE/ HANDRAIL. SEE FENCE PLANS THIS PACKAGE

(8) CONSTRUCTION WORK SHALL NOT TAKE PLACE WITHIN THE BOXED AREA(S) UNTIL MTA AND FTA APPROVAL ARE IN PLACE FOR ADDITIONAL TEMP CONSTRUCTION EASEMENT AND LOD.

NOTE:

1. ALL MEASUREMENTS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
2. PROPOSED STORMDRAIN FACILITIES SHOWN FOR REFERENCE ONLY. SEE STORMDRAIN PLANS IN THIS PACKAGE FOR DETAILS.
3. STRIPING SHOWN FOR REFERENCE ONLY. SEE S1-021 FOR DETAILS.
4. RETAINING WALLS SHOWN FOR REFERENCE ONLY. SEE S1-044 FOR DETAILS.
5. TRACK SHOWN FOR REFERENCE WHEN ROADWAY ALIGNMENT IS AVAILABLE. SEE S1-050 FOR TRACK DETAILS.
6. FOR UTILITY RELOCATIONS SEE UTILITY PACKAGES U101, U102, U104, & U105 AS APPROPRIATE.

ROADWAY LEGEND

- FULL DEPTH CONSTRUCTION
- WEDGE, LEVEL AND RESURFACE
- RESURFACE
- PROPOSED CONCRETE SIDEWALK
- PROPOSED STATION/YARD
- PAVEMENT REMOVAL

MARYLAND DEPARTMENT OF TRANSPORTATION
MARYLAND TRANSIT ADMINISTRATION — MTA Maryland

PURPLE LINE TRANSIT PARTNERS

ATKINS
3901 Calverton Blvd, Suite 400
Calverton, Maryland 20705
Telephone: 301-210-6800
www.atkinsglobal.com

PROFESSIONAL CERTIFICATION
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland
50425 — License No.
01/04/2021 — Expiration Date

STATE OF MARYLAND — CHRISTOPHER J. CARLSON — PROFESSIONAL ENGINEER
02/06/2020

NO.	DESCRIPTION	BY	DATE
0	RELEASE FOR CONSTRUCTION	CJC	09/11/19

REVISIONS

DESIGN YK
DRAWN YK
CHECK JNR
APPR CJC

PURPLE LINE LIGHT RAIL
CIVIL DESIGN
SEGMENT 1B

ROADWAY PLAN

DATE: SEPTEMBER 11, 2019 SCALE: 1" = 40'

CONTRACT NO. 0-0000-0000
DRAWING NO. S1020BPCVT117
SHEET NO. 29 OF 290

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FIGURE 6–8(b) PURPLE LINE 16TH STREET/ WOODSIDE STATION CONSTRUCTION PLAN

(PREPARED BY ATKINS GLOBAL)

FOR REFERENCE ONLY. SEE STORMDRAIN PLANS IN THIS PACKAGE FOR DETAILS.

3. STRIPING SHOWN FOR REFERENCE ONLY. SEE S1-021 FOR DETAILS.

4. RETAINING WALLS SHOWN FOR REFERENCE ONLY. SEE S1-044 FOR DETAILS.

5. TRACK SHOWN FOR REFERENCE WHEN ROADWAY ALIGNMENT IS AVAILABLE. SEE S1-050 FOR TRACK DETAILS.

6. FOR UTILITY RELOCATIONS SEE UTILITY PACKAGES U101, U102, U104, & U105 AS APPROPRIATE.

SCALE: 1"=40'

-033.1 (3) SHARED USE PATH / BIKEWAY, SEE MISCELLANEOUS DETAILS SHEET DRAWING NO. S1020PCVT501

-033.1 (4) CONCRETE ENTRANCE

(5) TYPE F CONCRETE BARRIER (SINGLE FACE). SEE CW-033.1 FOR ROADWAY STANDARD DETAILS

(6) TRAFFIC BARRIER W BEAM, SEE CW-033.1 FOR ROADWAY STANDARD DETAILS

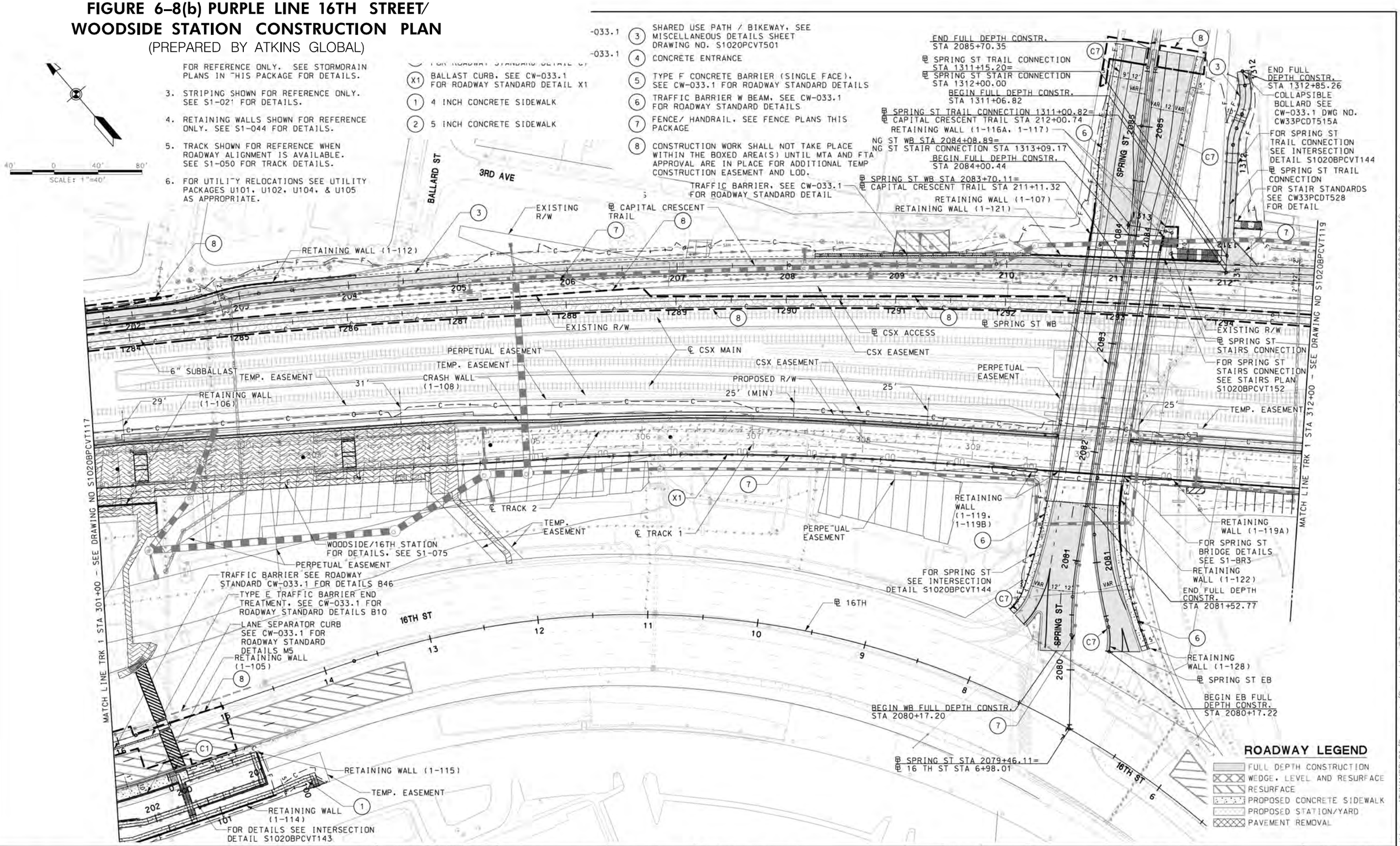
(7) FENCE/ HANDRAIL. SEE FENCE PLANS THIS PACKAGE

(8) CONSTRUCTION WORK SHALL NOT TAKE PLACE WITHIN THE BOXED AREA(S) UNTIL MTA AND FTA APPROVAL ARE IN PLACE FOR ADDITIONAL TEMP CONSTRUCTION EASEMENT AND LOD.

(X1) BALLAST CURB, SEE CW-033.1 FOR ROADWAY STANDARD DETAIL X1

(1) 4 INCH CONCRETE SIDEWALK

(2) 5 INCH CONCRETE SIDEWALK



ROADWAY LEGEND

- FULL DEPTH CONSTRUCTION
- WEDGE, LEVEL AND RESURFACE
- RESURFACE
- PROPOSED CONCRETE SIDEWALK
- PROPOSED STATION/YARD
- PAVEMENT REMOVAL

MARYLAND DEPARTMENT OF TRANSPORTATION
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PROFESSIONAL CERTIFICATION
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland
50425 — License No.
01/04/2021 — Expiration Date

STATE OF MARYLAND — CHRISTOPHER J. CARLSON — PROFESSIONAL ENGINEER
02/06/2020

NO.	DESCRIPTION	BY	DATE
0	RELEASE FOR CONSTRUCTION	CJC	09/11/19

REVISIONS

DESIGN YK · DRAWN YK · CHECK JNR · APPR CJC

PURPLE LINE LIGHT RAIL
CIVIL DESIGN
SEGMENT 1B

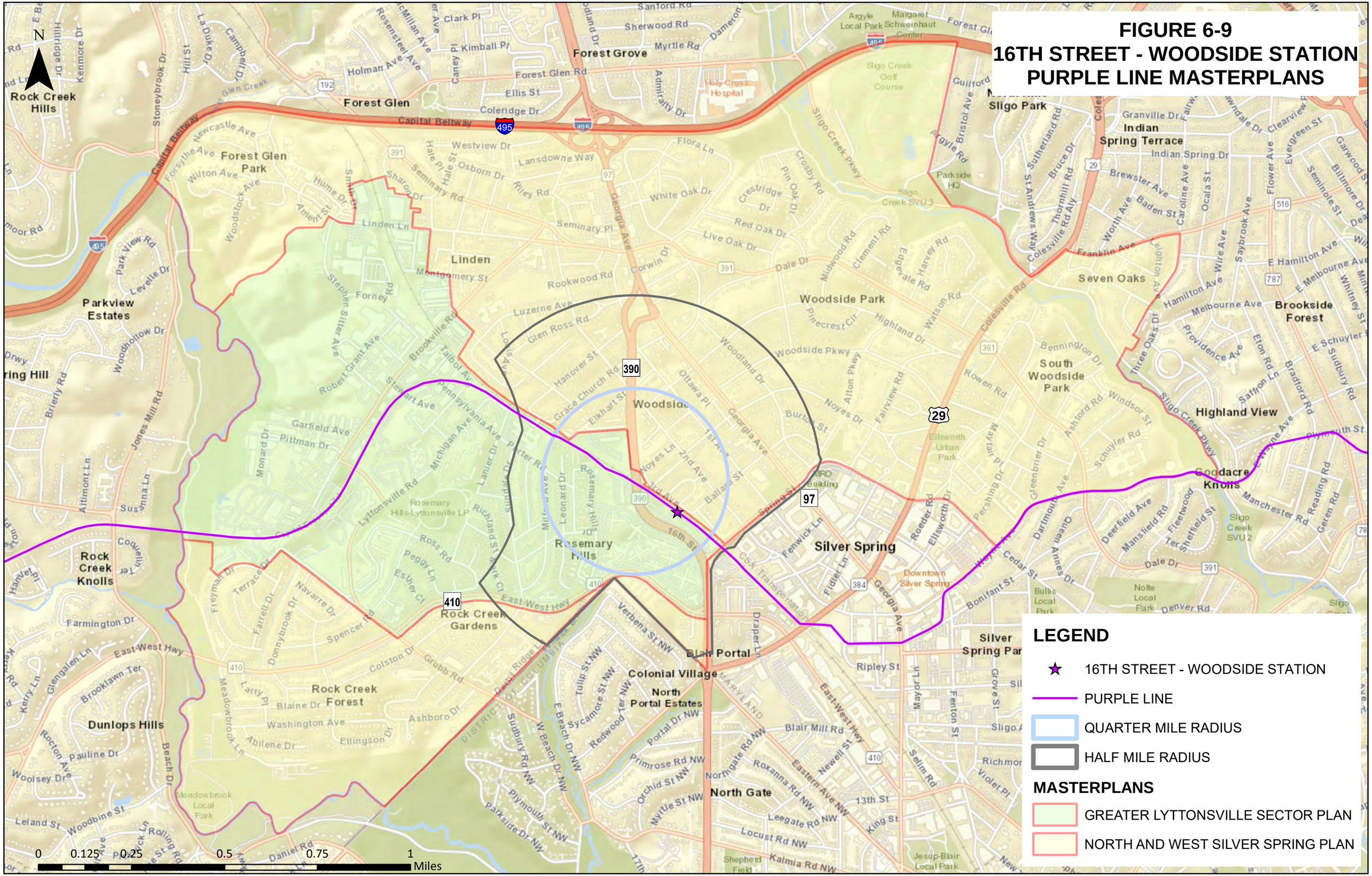
ROADWAY PLAN

DATE: SEPTEMBER 11, 2019 SCALE: 1" = 40'

CONTRACT NO. 0-0000-0000
DRAWING NO. S1020BPCVT118
SHEET NO. 30 OF 290

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FIGURE 6-9
16TH STREET - WOODSIDE STATION
PURPLE LINE MASTERPLANS


N
Rock Creek Hills
Forest Glen
Forest Glen Park
Capital Beltway
495
Linden
Parkview Estates
Woodside Park
Seven Oaks
Indian Spring Terrace
Sligo Park
Brookside Forest
South Woodside Park
Highland View
Goodacre Knolls
Rock Creek Knolls
Rock Creek Gardens
Rock Creek Forest
Dunlops Hills
Rosemary Hills
Colonial Village
North Portal Estates
Blair Portal
Silver Spring
North Gate
Holy Cross Hospital
Sligo Creek Golf Course
Argyle Local Park
Margaret Schweinhaut Center
Parkside HQ
Sligo Creek SVU 3
Sligo Creek SVU 2
Ellsworth Urban Park
Downtown Silver Spring
MRO Building
Meadowbrook Local Park
Bullis Local Park
Nolte Local Park
Jesup-Blair Local Park
Shepherd Field
Forest Grove
Sherwood Rd
Myrtle Rd
Forest Glen Rd
Ellis St
Coleridge Dr
Admiralty Dr
Sligo Creek Pkwy
Flora Ln
Westview Dr
Lansdowne Way
Seminary Rd
Seminary Pl
Riley Rd
White Oak Dr
Red Oak Dr
Live Oak Dr
Dale Dr
Rookwood Rd
Luzerne Ave
Glen Ross Rd
Hanover St
Grace Church Rd
Elkhart St
Woodside Pkwy
Rowen Rd
Colesville Rd
Franklin Ave
Hamilton Ave
Melbourne Ave
E Hamilton Ave
E Melbourne Ave
Three Oaks Dr
Providence Ave
Sligo Creek Pkwy
Granville Dr
Indian Spring Dr
Brewster Ave
Baden St
Worth Ave
Caroline Ave
Ocala St
Flower Ave
Evergreen St
Seminole St
Garwood St
Biltmore Dr
Sutherland Rd
St Andrews Way
Colesville Rd Alt
Thornhill Rd
Bruce Dr
Argyle Bristol Ave
Argyle Rd
Crosby Rd
Pin Oak Dr
Crestridge Dr
Midwood Rd
Clement Rd
Edgevale Rd
Harvey Rd
Watson Rd
Pinecrest Cir
Highland Dr
Alton Pkwy
Fairview Rd
Noyes Dr
Burtis St
Woodland Dr
Georgia Ave
Ottawa Pl
Noyes Ln
2nd Ave
3rd Ave
Ballard St
Spring St
16th St
Fenwick Ln
Fidler Ln
Roeder Rd
Ellsworth Dr
Pershing Dr
Greenbrier Dr
Dartmouth Ave
Annes Dr
Deerfield Ave
Mansfield Rd
Fleetwood Ter
Sheffield St
Dale Dr
Bonifant St
Cedar St
Wayne Ave
Draper Ln
Ripley St
Mayor Ln
Fenton St
Grove St
Sligo Ave
Blair Mill Rd
Newell St
Eastern Ave NW
Roxanna Rd NW
Northgate Rd NW
Primrose Rd NW
Orchid St NW
Myrtle St NW
Leegate Rd NW
Locust Rd NW
Kalmia Rd NW
Parkside Dr NW
Plymouth St NW
Sudbury Rd NW
W Beach Dr NW
E Beach Dr NW
Redwood Ter NW
Sycamore St NW
Tulip St NW
Portal Dr NW
Verbena St NW
East-West Hwy
Selim Rd
Violet Pl
Richmond
Sligo Ave
13th St
King St
Plymouth St
Manchester Rd
Reading Rd
Geren Rd
Saffron Ln
Bradford Rd
Eton Rd
Whitney St
E Sudbury Rd
Schuyler Rd
Ashford Rd
Windsor St
Bennington Dr
Rosemary Hills-Lyttonsville LP
Lyttonsville Rd
Ross Rd
Peggy Ln
Esther Ct
Farmington Dr
Glengalen Ln
Brooklawn Ter
Kerry Ln
Rockton Ave
Pauline Dr
Woolsey Dr
Beach Dr
Leland St
Woodbine St
Rolling Rd
Daniel Rd
Susanna Ln
Altimont Ln
Coquelin Ter
Hartvet Pl
Freyman Dr
Terrace Dr
Farrell Dr
Donnybrook Dr
Navarre Dr
Spencer Rd
Colston Dr
Grubb Rd
Meadowbrook Ln
Larry Pl
Blaine Dr
Washington Ave
Ashboro Dr
Abilene Dr
Ellingson Dr
Jones Mill Rd
Briarly Rd
Woodhollow Dr
Levelle Dr
Park View Rd
Moor Rd
Stoneybrook Dr
Hill St
La Duke Dr
Campbell Dr
Kenmore Dr
Rosensteel Ave
McMillan Ave
Clark Pl
Kimball Pl
Caney Pl
Holman Ave
Forsythe Ave
Newcastle Ave
Wilton Ave
Woodstock Ave
Hale Pl
St Osborn Dr
Sharon Dr
Hume Dr
Amherst St
Linden Ln
Montgomery St
Forney Rd
Stephen Sitter Ave
Robert Grant Ave
Brookville Rd
Talbot Ave
Stewart Ave
Pennsylvania Ave
Michigan Ave
Garfield Ave
Pittman Dr
Monard Dr
Lanier Dr
Porter Rd
Sumner Rd
Leonard Dr
Rosemary Hills Dr
Ridge Rd
Corwin Dr
Stanford Rd
Dameron Dr
Sligo Creek Trail
Capital Beltway
Newcastle Ave
Forsythe

6.3 Proposed Improvements

The 16th Street - Woodside BiPPA has been evaluated for several types of pedestrian and bicycle improvements. Proposed improvements have been developed and prioritized based on the ranking criteria outlined in Section 2.8 of this report.

A list of proposed improvements was developed to include the recommendations of previously prepared studies and master plans, information gathered from a field review of the site and data gathered from other sources. Separate analyses and mapping were developed for pedestrian improvements and for bicycle improvements.

6.3.1 Proposed Pedestrian Improvements

This study included a thorough review of existing pedestrian facilities (sidewalk ramps, driveway aprons, linear sidewalks, etc.) and determined which facilities did not meet current ADA criteria. The report and figures indicate where spot improvements are required and where linear sidewalk improvements are required. Spot improvements are shown in Figures 6-12 (a) and (b). The maps show the locations and types of existing facilities that need to be reconstructed to meet ADA standards. Proposed linear routes/improvements for pedestrian access are shown in Figures 6-13. The map figures also indicate the improvements that will be constructed by the Purple Line project.

Refer to Table 6-4 for a summary of priority rankings of pedestrian improvements. This report describes the ranked pedestrian improvements for the 16th / Woodside Station.

1. Area-wide Improvements to Existing Sidewalks

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Sidewalk, Removal of Sidewalk Obstructions, Widening of Non-compliant Sidewalk Widths, Reconstruction of Sidewalks with Non-compliant Slopes

Priority Ranking: 2.4 Time Frame: Short-term Cost Category: 2

There is a need for general maintenance of pedestrian pathways and upgrades to those that do not meet current ADA, MCDOT, or MDOT SHA standards throughout the BiPPA. Curb ramps should be upgraded to meet slope requirements as set forth by ADA and must include detectable warning surfaces. Sidewalks should be free from trip hazards and breaks; it is recommended that trip hazards greater than ½-inch and significant breakage be repaired by replacing the affected portion of the sidewalk. In addition, sidewalks that have cross-slopes greater than allowable or pinch points with less than a 36” width should be replaced or reconfigured. Sidewalk obstructions, such as guy wires, should be reconfigured to provide adequate overhead clearance for pedestrians.

Although all area-wide sidewalk improvements are a worthwhile investment, those in the vicinity of the Capital Crescent Trail connection, the Purple Line, 16th Street (MD 390), East West Highway (MD 410), and residential neighborhoods should be prioritized based on current and future use.

2. Area-wide Improvements to Existing Driveway Aprons

Improvement Type: Reconstruct Driveway Aprons

Priority Ranking: 2.5 Time Frame: Short-term Cost Category: 2

There is a need to upgrade existing driveway aprons to meet ADA slope requirements and be in conformance with current MCDOT and MDOT SHA standards throughout the BiPPA. Existing aprons in both the residential areas of 16th Street - Woodside BiPPA were found to have existing cross slopes greater than 2%.

Reconstruction of driveway aprons is recommended for those roads with sidewalks that provide direct connection to the Purple Line Station or the Capital Crescent Trail. These roadways are 16th Street (MD 390), 3rd Avenue, Hanover Street, Grace Church Road, Noyes Drive, and Ballard Street. Much like the area-wide improvements to existing sidewalks, area-wide improvements to existing driveway aprons would provide increased safety and accessibility.

3. Area-wide Improvements to Existing Intersections

Improvement Type: Reconstruction of Mid-block Crossing, Striping of Crosswalks

Priority Ranking: 2.2 Time Frame: Short-term to Mid-term Cost Category: 2

Crosswalk striping throughout the Purple Line BiPPA is fading or does not utilize the continental or “piano stripe” at high traffic intersections. At a minimum, all striping should be updated to ensure there are no faded or broken portions. Crosswalks in high-traffic areas, such as those along major roadways, Summit Hills multi-unit residential community, 8600 16th Street apartment building, Park Sutton condominium building, and Woodside Urban Park, should be prioritized.

Upgrades to these existing crosswalks would provide increased safety and comfort for pedestrians. No impacts to existing utilities or rights-of-way are anticipated.

4. Area-wide Upgrades to APS/CPS

Improvement Type: Signal Upgrades to APS/CPS

Priority Ranking: 3.3 Time Frame: Short-term to Mid-term Cost Category: 2

Many intersections throughout the 16th Street - Woodside area do not have accessible signals. Upgrading these signals to comply with ADA guidelines would create a safer and more inclusive pedestrian experience for everyone. No impacts to existing utilities, rights-of-way or environmental features are anticipated. Minor traffic pattern changes may be required at high volume intersections during construction.

Although improving accessibility at all intersections is a worthwhile investment, those high traffic areas should be prioritized. These areas include those along major highways (16th Street (MD 390), East-West Highway (MD 410), and Georgia Avenue (MD 97) or arterials (Spring Street).

5. 16th Street (MD 390)

From: Elkhart Street to Spring Street

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, Reconstruction of Driveway Aprons, Removal of Sidewalk Obstructions, Widening of Non-Compliant Sidewalk Widths, Striping of Crosswalks, Construction of Sidewalks, and Installation of New APS/CPS

Priority Ranking: 3.5 Time Frame: Mid-term Cost Category: 2

This section of 16th Street (MD 390) runs along where the former Spring Center commercial area used to exist and the Summit Hills apartment community. Due to the apartment complex, there is increased pedestrian traffic, as well as cars entering and exiting the apartment complex, which makes safety critical. To ensure this area functions safely, it is proposed to have new sidewalks constructed just south of the intersection with Elkhart Street. Throughout the project area, APS/CPS installation, and reconstruction of curb ramps, driveway aprons, and sidewalks are proposed. These improvements will work to create a continuous, safe, and accessible path for all residents, while increasing sight distance in areas where it was previously insufficient.



Figure 6-10 Sidewalks with noncompliant slopes along 16th Street (MD 390)

Work in this area would need to be integrated into the proposed Purple Line improvements along 16th Street - Woodside. Care should be taken to minimize impacts to nearby utility poles. No impacts to traffic or environmental features are anticipated.

6. 2nd Avenue

From: 16th Street (MD 390) to ¼ Mile Radius

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, Reconstruction of Driveway Aprons, Reconstruction of Sidewalks with Non-Compliant Slopes, Striping of Crosswalks, Construction of New Curb Ramps, Construction of New Sidewalks, Construction of Curb Extensions, and Installation of New APS/CPS

Priority Ranking: 3.5 Time Frame: Mid-term Cost Category: 2

This section of 2nd Avenue runs along densely populated residential areas. Due to the proximity of residential areas and the expected increase in pedestrian traffic due to the proposed Purple Line, safety is critical. The current curb ramps, sidewalks, and driveway aprons have non-compliant slopes and are missing detectable warning surfaces. There are also many intersections without curb ramps. The current facilities are not ADA compliant and reconstructing them or the construction of new ones would create a safer and more accessible area for pedestrians. Striping of crosswalks and installation of APS/CPS is also needed to create a safer and an ADA compliant residential area. Due to the increased residential traffic, curb extensions need to be constructed to reduce traffic speed and create a safer intersection.

Improvements along this corridor are not anticipated to have significant impacts to utilities, traffic, or street trees. Care should be taken to construct these improvements without major disruption to the already congested traffic in the area.

7. Ballard Street

From: Capitol Crescent Trail to First Avenue

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, and Construction of New Sidewalks

Priority Ranking: 3.5 Time Frame: Mid-term Cost Category: 2

This section of Ballard Street runs along residential areas to the proposed Purple Line Station. Due to the proximity of residential areas and the expected increase in pedestrian traffic due to the proposed Purple Line, safety is critical. There are several sections of sidewalk along Ballard Street with trip hazards and a curb ramp without a detectable warning surface at the intersection of 2nd Avenue. There is also no sidewalk on either side of Ballard Street between 2nd Avenue and 3rd Avenue. Reconstructing curb ramps and sidewalks in areas that are not ADA compliant as well as constructing new sidewalks in areas where they are lacking would create a safer and more accessible connection to the Purple Line station. This area is particularly crucial to the station connectivity as Ballard Street will connect to the Capital Crescent Trail.



Figure 6-11 Curb ramp without detectable warning surface.

Impacts to nearby utility poles should be minimized. Some small trees and private resident landscaping would need to be removed as part of this project. Resident outreach should be done before the proposed sidewalk is finalized.

8. Lyttonsville Road

From: Entire length

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, and Construction of New Curb Ramps

Priority Ranking: 3.7 Time Frame: Short-term Cost Category: 1

Lyttonsville Road is a dead-end road off 16th Street (MD 390). It is a residential neighborhood with condominiums, townhomes, and single-family dwellings. Because of the proximity of residential areas and the expected increase in pedestrian traffic because of the proposed Purple Line, safety is critical in this area. There is one curb ramp without a detectable warning surface and three sections of sidewalk with trip hazards. These facilities are not ADA compliant. Fixing these issues as well as constructing new curb ramps in areas where they are lacking would create a safer and more accessible connection to the Purple Line station. Improvements along this corridor are not anticipated to have significant impacts to utilities, traffic, or street trees. Care should be taken to construct these improvements without major disruption to the already congested traffic in the area.

9. 6th Street

From: Hanover Street to Elkhart Street

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, and Construction of New Curb Ramps

Priority Ranking: 1.9 Time Frame: Mid-Term Cost Category: 2

Adding sidewalk to this segment of 16th street is a critical missing link in pedestrian access. It is a 6 lane road with high volumes of traffic and apartment complexes located on both sides of the roadway. There is heavy pedestrian traffic along 16th street since it is direct connection to Georgia Avenue and other commercial shopping centers along 16th street. However, there is a high cost and impacts to constructing along this segment of roadway which lowered the overall ranking.

10. Lanier Drive

From: Connection to Lanier west of 3rd Ave

Improvement Type: Construct sidewalks and Curb Ramps

Priority Ranking: 3.3 Time Frame: Short-term Cost Category: 1

Lanier Drive ends at Third Avenue and a dirt path extends beyond this point to connect to another segment of Lanier Drive. Based on the dirt path and ease of construction, this is ranked highly. The cost would be minimal and the County most likely owns the right of way.

11. Wilson Place

From: Entire length

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, Stripe Crosswalks, and Construction of New Curb Ramps

Priority Ranking: 2.9 Time Frame: Mid-term Cost Category: 2

Wilson Place has sidewalks on both sides of the roadway, however, there are sections of them that need to be reconstructed to meet ADA requirements, along with upgrading the curb ramps and driveway aprons to meet ADA requirements. Right of way would not be required and minimal utility impacts.

12. 2nd Avenue

From: ¼ mile radius to Spring Street

Improvement Type: Reconstruction Driveway Aprons and Remove Obstructions.

Priority Ranking: 1.8 Time Frame: mid-term Cost Category: 1

Minor improvements are required on this segment of existing sidewalk to bring it up to ADA standards. The driveway aprons should be reconstructed, and obstructions removed from sidewalk. Ideally, the sidewalk would be widened to 5 ft. Some and not all the improvements could be completed to provide safer access for pedestrians,

13. 2nd Avenue

From: Luzerne Ave to 16th St

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, and Construction of New Curb Ramps

Priority Ranking: 1.9 Time Frame: Long-term Cost Category: 2

This segment of roadway is 2 lanes with a double yellow line, indicating a high level of traffic. The road has existing sidewalk on both sides. It has several metro bus stops along this corridor. Some segments of the sidewalk need to be reconstructed for repairs. Curb ramps and driveway aprons should be reconstructed to meet ADA requirements.

14. 1st Avenue

From: l¼ mile to Spring Street

Improvement Type: Repair Sidewalk, Reconstruct Curb Ramp

Priority Ranking: 1.7 Time Frame: Long-term Cost Category: 1

Existing sidewalk is located on one side of the road. Minor repairs are required to bring this sidewalk and ramp up to current ADA standards. This area of First Avenue has heavy pedestrian traffic since it is adjacent to a park and a direct connection to Spring Street. This road has a high volume of vehicle traffic.

15. 1st Avenue

From: within ¼ mile of station

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, and Construction of New Curb Ramps

Priority Ranking: 3.1 Time Frame: Mid-term Cost Category: 2

Existing sidewalk is located on one side of the road. Minor repairs are required to bring this sidewalk and ramp up to current ADA standards. Some segments of sidewalk have a steep cross slope and should be reconstructed to a maximum 2% cross slope which will have some impacts to adjacent properties. This area of First Avenue is within ¼ mile of the Purple Line Station. This road will intersect other streets that will have a direct connection to the new station.

16. 1st Avenue

From: 16th street to ¼ mile of station

Improvement Type: Reconstruction of Existing Sidewalks, and Construction of New Curb Ramps, cross walk striping and Construction of Sidewalk.

Priority Ranking: 1.8 Time Frame: Long-term Cost Category: 3

This section of First Avenue varies in width and where sidewalks are located. There are a few blocks of First Avenue with no sidewalks. Other segments of road have sidewalk on one side. This road is a direction connection to Grace Church Road and which is only about 100 ft from 16th Street. Repairs and reconstruction should be completed to create a safe and accessible route for pedestrians. However, the cost will be high since utilities will need to be relocated, trees removed and right of way may be have to be acquired.

17. Sundale Drive

From: Sundale drive and Richland Street

Improvement Type: Reconstruct Curb Ramps and Stripe Crosswalks

Priority Ranking: 1.8 Time Frame: Long-term Cost Category: 1

This is a two-lane road with a double yellow line with higher volumes of traffic. There is a sidewalk on one side of the road in fairly good condition. Minor improvements to curb ramps and cross walks will bring this sidewalk to current ADA standards.

18. Highland Drive

From: 2nd Ave to Georgia Ave

Improvement Type: Construct New Sidewalks, Curb Ramps and Stripe Crosswalks

Priority Ranking: 1.7 Time Frame: Long-term Cost Category: 2

This is a narrow roadway; however, sidewalks would provide a direct connection from Georgia Avenue to Second Avenue. Impacts would be high – most likely requiring Right of Way, utility relocations and tree removal

19. Grace Church Road

From: Woodland Dr to Talbot Ave

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, and Construction of New Curb Ramps

Priority Ranking: 1.6 Time Frame: Long-term Cost Category: 3

West of 16th Street the road is a wide 2-lane curbed roadway. There seems to be right of way available to add a sidewalk and few trees or utilities to be relocated. East of 16th Street the road is a narrow 2-lane road and will require utilities to be relocated and trees removed. Grace Church Road connects directly with 16th Street and continues on to Georgia Avenue. Although there are significant impacts, the sidewalk would provide a safe and accessible route to shopping and other heavily travelled pedestrian routes.

20. Noyes Drive

From: Georgia Ave to Woodland Dr

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, and Construction of New Curb Ramps

Priority Ranking: 1.6 Time Frame: Long-term Cost Category: 2

Noyes Drive between Second Avenue and Georgia Avenue has sidewalks. Noyes from Georgia Avenue to Woodland Drive does not have existing sidewalks. As a corridor with complete sidewalks, pedestrians will be able to safely travel along Noyes Drive directly to the Capital Crescent Trail and to 16th Street. This segment of Noyes is a 2-lane open section road and may require right of way to construct the sidewalk. Small trees and a few utilities would need to be relocated to construct a sidewalk.

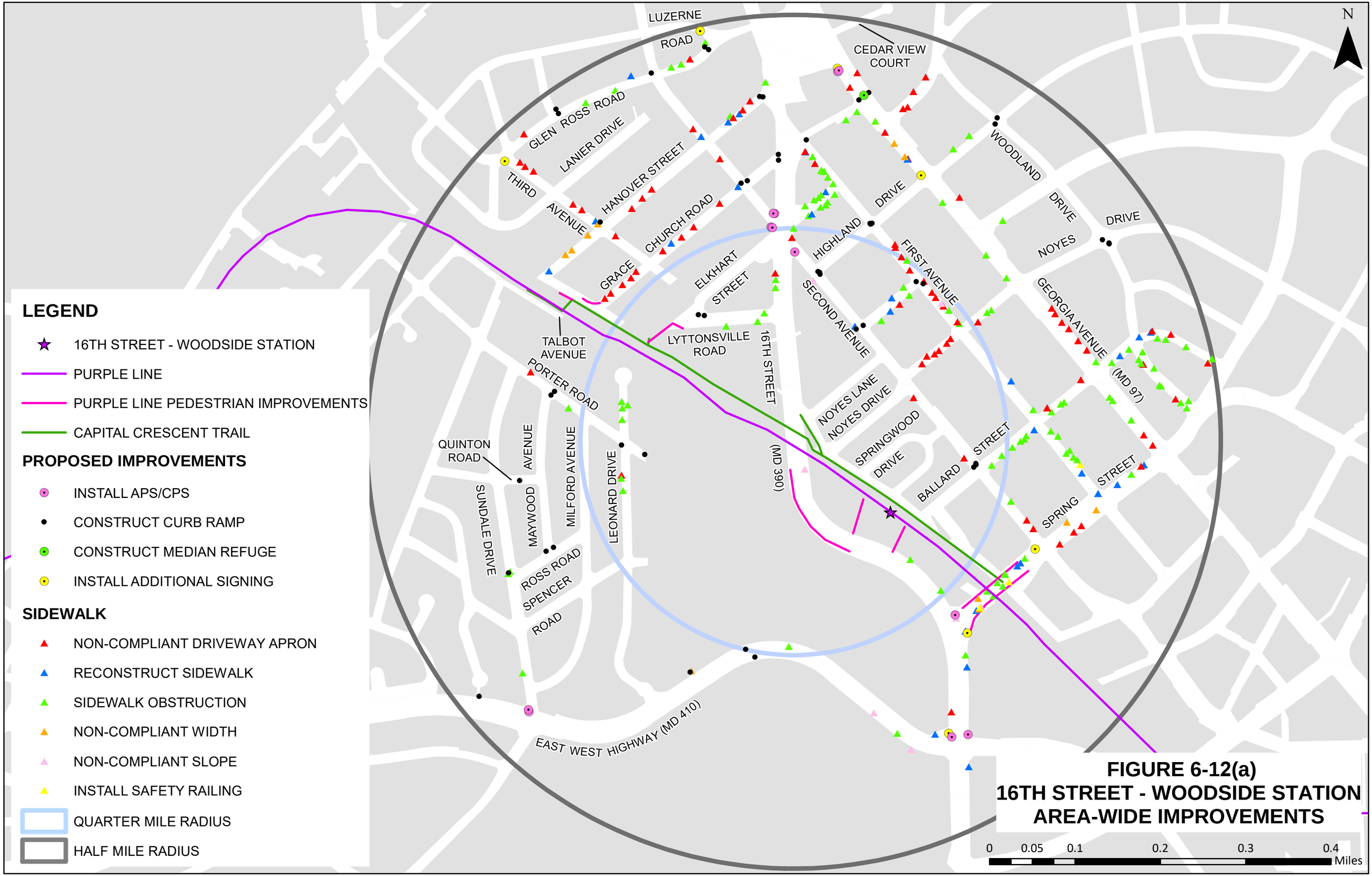


FIGURE 6-12(a)
16TH STREET - WOODSIDE STATION
AREA-WIDE IMPROVEMENTS

N

LUZERNE ROAD
CEDAR VIEW COURT
GLEN ROSS ROAD
LANIER DRIVE
THIRD AVENUE
HANOVER STREET
CHURCH ROAD
GRACE
ELKHART STREET
HIGHLAND
DRIVE
WOODLAND DRIVE
DRIVE
NOYES DRIVE
FIRST AVENUE
SECOND AVENUE
LYTTONSVILLE ROAD
16TH STREET
GEORGIA AVENUE (MD 97)
PORTER ROAD
NOYES LANE
NOYES DRIVE
SPRINGWOOD DRIVE
BALLARD STREET
SPRING STREET
(MD 390)
QUINTON ROAD
AVENUE
SUNDALE DRIVE
MAYWOOD
MILFORD AVENUE
LEONARD DRIVE
ROSS ROAD
SPENCER ROAD
EAST WEST HIGHWAY (MD 410)

LEGEND

- 16TH STREET - WOODSIDE STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- CAPITAL CRESCENT TRAIL

PROPOSED IMPROVEMENTS

- RECONSTRUCT CURB RAMP
- CONSTRUCT CURB EXTENSIONS
- STRIPE CROSSWALK
- CONSTRUCT MIDBLOCK CROSSING
- SAFETY
- QUARTER MILE RADIUS
- HALF MILE RADIUS

FIGURE 6-12(b)
16TH STREET - WOODSIDE STATION AREA-WIDE IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

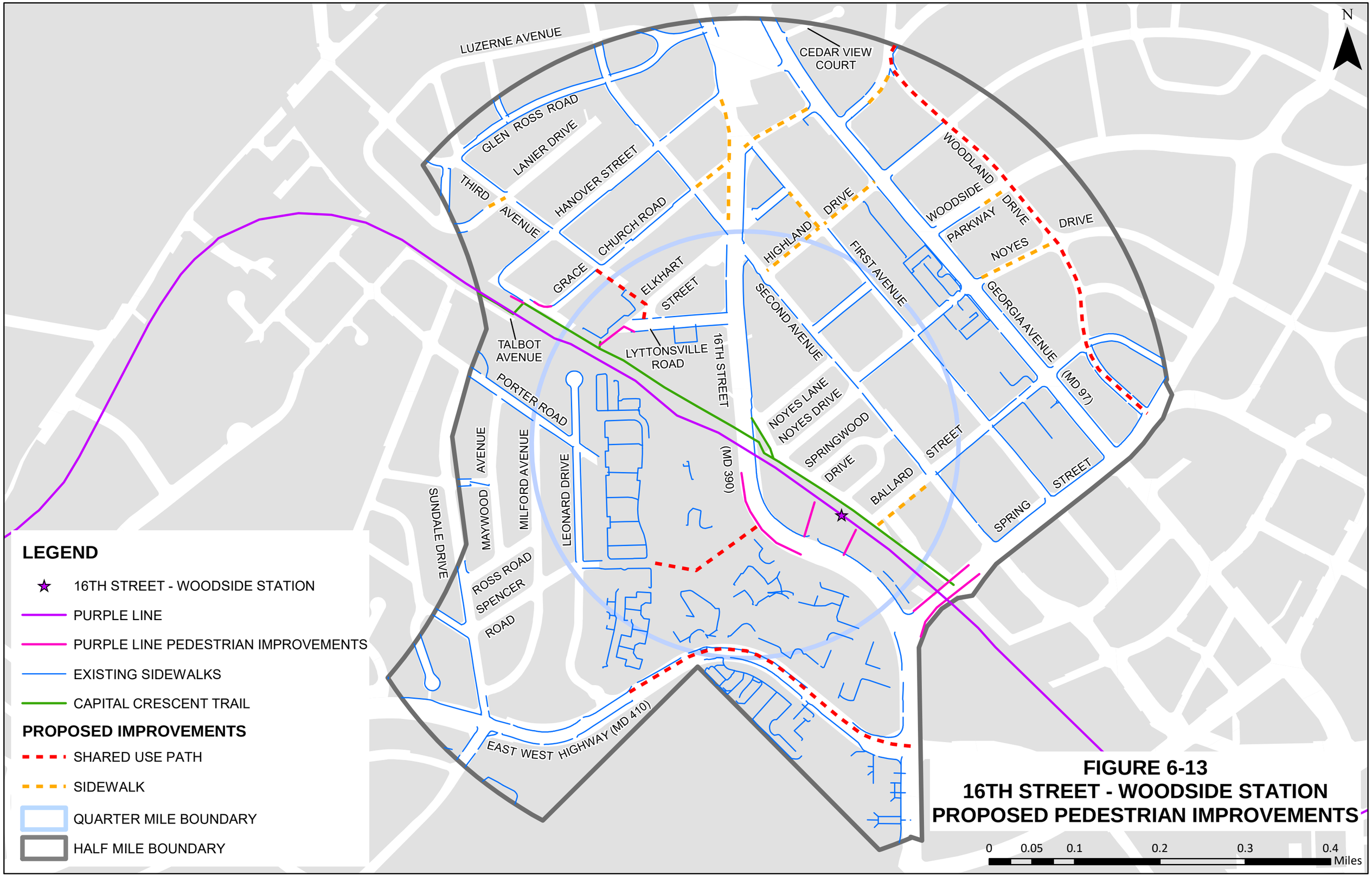


FIGURE 6-13
16TH STREET - WOODSIDE STATION
PROPOSED PEDESTRIAN IMPROVEMENTS

Table 6-4 - Pedestrian Improvements Summary Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE: Reconstruction of Curb Ramps	Reconstruction of Existing Sidewalks	Reconstruction of Driveway Aprons	Removal of Sidewalk Obstructions	Widening of Non-Compliant Sidewalk Widths	Reconstruction of Sidewalks with Non-Compliant Slopes	Reconstruction of Mid-Block Crossings	Striping of Crosswalks	Signal Upgrades to APS/CPS	Construction of New Curb Ramps	Construction of New Sidewalks	Installation of Additional Signing	Construction of Curb Extensions	Construction of Mid-Block Crossings	Construction of Median Refuge	Installation of New APS/CPS	Other	BENEFITS: Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score	IMPACTS: Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
Area-wide Improvements																																
1	ADA Upgrades to Existing Sidewalks	MCDOT	●	●		●	●	●													2	3	5	2	12		3	3	2	2	10	2	1	2.4
2	ADA Upgrades to Existing Driveway Aprons	MCDOT			●																1	3	4	2	10		2	2	2	2	8	2	1	2.5
3	ADA Upgrades to Existing Intersections	MCDOT							●	●											2	3	4	2	11		3	3	2	2	10	2	1	2.2
4	Upgrades to APS/CPS	MCDOT									●							●			2	4	5	2	13		2	2	2	2	8	2	1	3.3
16th Street (MD 390)																																
5	Elkhart Street to Spring Street	MDOT	●	●	●	●	●			●			●					●	Safety		5	3	4	2	14		3	2	1	2	8	2	1	3.5
2nd Avenue																																
6	16th Street to 1/4 mile radius	MCDOT	●	●	●			●		●		●	●		●			●			5	3	4	2	14		3	2	1	2	8	2	1	3.5
Ballard Street																																
7	CC Trail to First Avenue	MCDOT	●	●	●			●		●			●								5	4	3	2	14		2	2	1	3	8	2	1	3.5
Lyttonsville Road																																
8	Entire length	MCDOT	●	●								●									4	3	2	2	11		2	2	1	1	6	2	1	3.7
16th Street (MD 390)																																
9	Hanover Street to Elkhart Street	MDOT	●	●	●								●	●				●	Remove steps		5	5	5	2	17		3	2	2	2	9	1	1	1.9
Lanier Drive																																
10	Connection to Lanier west of 3rd Avenue	MCDOT									●	●									4	3	4	2	13		1	1	1	1	4	1	1	3.3
Wilson Place																																
11	Entire length	MCDOT	●	●	●					●		●									3	3	2	2	10		2	2	1	2	7	2	1	2.9
2nd Avenue																																
12	1/4 mile radius to Spring Street	MCDOT			●	●															4	3	2	2	11		2	2	1	1	6	1	1	1.8
13	Luzerne Avenue to 16th Street	MCDOT	●	●	●					●		●						●			4	3	4	2	13		2	2	1	2	7	1	1	1.9

$$Priority\ Ranking = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

Table 6-4 - Pedestrian Improvements Summary Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE	Reconstruction of Curb Ramps	Reconstruction of Existing Sidewalks	Reconstruction of Driveway Aprons	Removal of Sidewalk Obstructions	Widening of Non-Compliant Sidewalk Widths	Reconstruction of Sidewalks with Non-Compliant Slopes	Reconstruction of Mid-Block Crossings	Striping of Crosswalks	Signal Upgrades to APS/CPS	Construction of New Curb Ramps	Construction of New Sidewalks	Installation of Additional Signing	Construction of Curb Extensions	Construction of Mid-Block Crossings	Construction of Median Refuge	Installation of New APS/CPS	Other	BENEFITS	Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score	IMPACTS	Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
1st Avenue																																		
14	1/4 mile radius to Spring Street	MCDOT		●																Safety		3	3	2	2	10		2	2	1	1	6	1	1	1.7
15	1st Avenue within the 1/4 mile radius	MCDOT		●	●			●			●											4	3	2	2	11		2	2	1	2	7	2	1	3.1
16	16th Street to 1/4 mile radius	MCDOT		●	●					●		●	●									5	4	3	2	14		2	2	1	3	8	1	1	1.8
Sundale Drive																																		
17	Sundale Drive and Richland Street	MCDOT								●		●										3	3	3	2	11		2	2	1	1	6	1	1	1.8
Highland Drive																																		
18	2nd Avenue to Georgia Avenue	MCDOT								●		●	●								Reconstruct Curb		5	4	4	2	15		2	3	2	2	9	1	**1**	1.7
Grace Church Road																																		
19	Woodland Drive to Talbot Avenue	MCDOT		●	●	●						●				●						3	4	2	2	11		1	2	1	3	7	1	**1**	1.6
Noyes Drive																																		
20	Georgia Avenue to Woodland Dr	MCDOT										●	●										5	4	3	2	14		2	3	2	2	9	1	**1**	1.6

$$Priority\ Ranking\ = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

6.3.2 Proposed Bikeway Improvements

The 16th Street - Woodside BiPPA has been evaluated for several types of pedestrian and cyclist improvements. Proposed improvements have been developed and prioritized based on the ranking criteria outlined in Section 2.8 of this report.

Bikeway improvements are organized by discrete improvements along each road corridor. In this study area seven (7) roads were reviewed and ten (10) improvements were ranked. Bikeway improvements focus on bicycle specific improvements that will provide safer accessible bike networks and connect the 16th Street - Woodside area with the Capital Crescent Trail and the proposed Purple Line station.

For each improvement, an analysis of possible barriers to construction and potential project cost was included. This analysis was used to determine the project priority ranking. Each improvement was then ranked in accordance with the Methodology. A summary of bikeway improvements by street and their priority rankings can be found in Table 6-5 and are shown in Figure 6-14. A description of each road, the recommended bicycle improvement and ranking are described below.

1. 2nd Avenue

From: 16th Street (MD 390) to Spring Street

Improvement Type: Sharrow

Priority Ranking: 3.4 Time Frame: Short-term Cost Category: 2

This portion of 2nd Avenue connects the residential area in the northeast of the BiPPA to the proposed 16th Street - Woodside Station. 2nd Avenue runs northwest to southeast. Its current configuration includes 4-foot sidewalks on the south side, one parking lane, and one travel lane in each direction. In this case, sharrow markings are recommended to provide designated space for cyclists without requiring a complete redesign of the existing roadway. Installation of sharrow markings will not have any impacts to utilities / right-of-way, parking, or the environment.

2. 16th Street (MD 390)

From: 2nd Avenue to Spring Street

Improvement Type: Cycle Track

Priority Ranking: 2.9 Time Frame: Short-term Cost Category: 2

It is recommended that a two-way cycle track be constructed along the entire reach of 16th Street (MD 390) within the BiPPA to provide a safe connection for cyclists. The cycle track would be constructed along the north-east side of the road which would add particular safety and connectivity to cyclists coming from the east side of the BiPPA.

To construct a cycle track, a minimum of 13 feet is required. This provides two 5-foot bike lanes and 1.5 feet of separation, although a minimum of 5.5-foot lanes and additional separation is preferred. To construct the cycle track, the grass barrier between the road and sidewalk would be removed and redesigned to provide two bike lanes with a physical separation from traffic. The width of the existing lanes would need to be decreased to accommodate the separation between cyclists and vehicles. With this project a total of four intersections along 16th Street (MD 390) would need to be studied to determine best practices for cyclist safety.

Construction of the cycle track would require some combination of roadway widening, lane and median narrowing and utility pole and tree impacts. Improvements would need to be coordinated with MDOT SHA as 16th Street (MD 390) is a state road.

This improvement is consistent with recommendations from the Greater Lyttonsville Sector Plan.

3. East-West Highway (MD 410)

From: Leonard Drive to 16th Street (MD 390)

Improvement Type: Shared-Use Path

Priority Ranking: 1.0 Time Frame: Long-term Cost Category: 3

A shared-use path along East-West Highway (MD 410) from Leonard Drive to 16th Street (MD 390) (the southernmost portion of the BiPPA) will provide cyclists safe access to the Purple Line station and the residential streets located near the station. The new shared-use path will connect to an existing shared-use path on East-West Highway (MD 410), which will allow for increased connectivity and safety.

This section of East-West Highway (MD 410) has two lanes in either direction and sidewalks on both sides. The western bound lane has a grass buffer between the road and sidewalk and the eastern bound lane does not have a grass buffer.

To create the eight-foot wide shared-use path along the corridor, the grass buffer, existing off-street signage, utility poles, and private landscape may need to be removed, relocated, or altered. Coordination is required with the various residential complexes.

This improvement is consistent with recommendations from the Greater Lyttonsville Sector Plan.

4. Sundale Drive

From: Ross Road to ½ mile radius

Improvement Type: Sharrow

Priority Ranking: 1.4 Time Frame: Short-term Cost Category: 2

This portion of Sundale Drive connects the residential area in the southwest of the BiPPA to the proposed shared-use pathway on East-West Highway (MD 410). Sundale Drive runs north to south. Its current configuration includes 4-foot sidewalks with a grass barrier between the roadway on one side, parking along the curb in each direction, and one travel lane in each direction. In this case, sharrow markings are recommended to provide designated space for cyclists without requiring a complete redesign of the existing roadway. Installation of the sharrow markings will not have any impacts to utilities / right-of-way, parking, or the environment.

The sharrow markings will tie into the sharrow markings recommended as part of the Lyttonsville BiPPA at Sundale Drive and Ross Road.

5. 16th Street (MD 390)

From: Luzerne Avenue to 2nd Avenue

Improvement Type: Cycle Track

Priority Ranking: 1.4 Time Frame: Short-term Cost Category: 2

It is recommended that a two-way cycle track be constructed along the entire reach of 16th Street (MD 390) within the BiPPA to provide a safe connection for cyclists. The cycle track would be constructed along the north-east side of the road which would add particular safety and connectivity to cyclists coming from the east side of the BiPPA.

To construct a cycle track, a minimum of 13 feet is required. This provides two 5-foot bike lanes and 1.5 feet of separation, although a minimum of 5.5-foot lanes and additional separation is preferred. To construct the cycle track, the grass barrier between the road and sidewalk would be removed and redesigned to provide two bike lanes with a physical separation from traffic. The width of the existing lanes would need to be decreased to accommodate the separation between cyclists and vehicles. With this project a total of four intersections along 16th Street (MD 390) would need to be studied to determine best practices for cyclist safety.

6. 16th Street (MD 390)

From: Spring Street to Georgia Avenue

Improvement Type: Cycle Track

Priority Ranking: 1.3 Time Frame: Short-term Cost Category: 2

It is recommended that a two-way cycle track be constructed along the entire reach of 16th Street (MD 390) within the BiPPA to provide a safe connection for cyclists. The cycle track would be constructed along the north-east side of the road which would add particular safety and connectivity to cyclists coming from the east side of the BiPPA.

To construct a cycle track, a minimum of 13 feet is required. This provides two 5-foot bike lanes and 1.5 feet of separation, although a minimum of 5.5-foot lanes and additional separation is preferred. To construct the cycle track, the grass barrier between the road and sidewalk would be removed and redesigned to provide two bike lanes with a physical separation from traffic. The width of the existing lanes would need to be decreased to accommodate the separation between cyclists and vehicles. With this project a total of four intersections along 16th Street (MD 390) would need to be studied to determine best practices for cyclist safety.

N

CEDAR VIEW COURT

GLEN ROSS ROAD

LANIER DRIVE

HANOVER STREET

THIRD AVENUE

CHURCH ROAD

GRACE

ELKHART STREET

TALBOT AVENUE

LYTTONSVILLE ROAD

16TH STREET

HIGHLAND

DRIVE

SECOND AVENUE

FIRST AVENUE

WOODLAND DRIVE

DRIVE

DRIVE

NOYES

GEORGIA AVENUE

(MD 97)

ALTON PARKWAY

NOYES LANE

NOYES DRIVE

SPRINGWOOD DRIVE

BALLARD STREET

SPRING STREET

(MD 390)

SUNDALE DRIVE

AVENUE

MAYWOOD AVENUE

MILFORD AVENUE

LEONARD DRIVE

ROSS ROAD

SPENCER ROAD

EAST WEST HIGHWAY (MD 410)

LEGEND

- 16TH STREET - WOODSIDE STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS
- CAPITAL CRESCENT TRAIL

PROPOSED BIKEWAYS

- CYCLE TRACK
- SHARED USE PATH
- SHARROW
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 6-14
16TH STREET - WOODSIDE STATION
PROPOSED BIKEWAY IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4
Miles

Table 6-5 - Bicycle Improvements Summary Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE							BENEFITS						IMPACTS								
			Sharrow	Cycle Track	Separated Bike Lanes	Striped Bike Lanes	Shared-Use Paths	Other		Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score		Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
2nd Avenue																								
1	16th Street to Spring Street	MCDOT	●							5	2	3	2	12		2	2	1	2	7	2	1	3.4
16th Street (MD 390)																								
2	2nd Avenue to Spring Street	MDOT		●						5	5	1	2	13		3	2	2	2	9	2	1	2.9
East-West Highway (MD 410)																								
3	Leonard Drive to 16th Street	MDOT					●			5	3	1	2	11		3	3	2	3	11	1	1	1.0
Sundale Drive																								
4	Ross Road to 1/2 mile radius	MCDOT	●							4	2	2	2	10		2	2	1	2	7	1	1	1.4
16th Street (MD 390)																								
5	Luzerne Avenue to 2nd Avenue	MDOT		●						5	5	1	2	13		3	2	2	2	9	1	1	1.4
6	Spring Street to Georgia Ave (MD 97)	MDOT		●						5	5	1	2	13		4	2	2	2	10	1	1	1.3

$$Priority\ Ranking = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

6.3.3 Maintenance

Maintenance improvements, such as tree and hedge trimming, are an inexpensive way to increase pedestrian comfort and aesthetic value. A map of locations where maintenance is required is included in Figure 6-17.



Figure 6-15 Overgrown trees and shrubs provide horizontal and vertical obstructions on the road.



Figure 6-16 Overgrown vegetation.

N

CEDAR VIEW COURT

GLEN ROSS ROAD

LANIER DRIVE

THIRD AVENUE

HANOVER STREET

CHURCH ROAD

GRACE

ELKHART STREET

TALBOT AVENUE

LYTTONSVILLE ROAD

PORTER ROAD

SUNDALE DRIVE

MAYWOOD AVENUE

MILFORD AVENUE

LEONARD DRIVE

SPENCER ROAD

EAST WEST HIGHWAY (MD 410)

16TH STREET

(MD 390)

HIGHLAND

SECOND AVENUE

FIRST AVENUE

WILSON PLACE

NOYES LANE

NOYES DRIVE

SPRINGWOOD DRIVE

BALLARD STREET

SPRING STREET

WOODLAND DRIVE

NOYES DRIVE

GEORGIA AVENUE (MD 97)

LEGEND

- 16TH STREET - WOODSIDE STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS
- CAPITAL CRESCENT TRAIL

PROPOSED IMPROVEMENTS

- MAINTENANCE
- QUARTER MILE RADIUS
- HALF MILE RADIUS

FIGURE 6-17
16TH STREET - WOODSIDE STATION
MAINTENANCE IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

6.4 Final Recommendations

16th Street - Woodside is a primarily dense residential area with gaps in the infrastructure to connect users to the Purple Line and Capital Crescent Trail. Although existing sidewalks are relatively continuous in residential areas, the area lacks connectivity along 16th Street (MD 390) and East-West Highway (MD 410) which represent the main roadways within the area. Existing infrastructure is non-compliant with current ADA standards and crosswalk striping is out-of-date with current guidelines.

The present-day condition in this BiPPA has potential for the area to have a strong pedestrian and bicycle network. With a thriving residential area, improvements to the pedestrian and bicyclist safety and accessibility are essential for providing access to the Purple Line station. Implementing the improvements in this report can also benefit the 16th Street - Woodside area by increasing pedestrian and cyclist use, and increasing public safety, comfort, and health.

The highest ranked pedestrian improvements are the entire length of Lyttonsville Road with the study area and 16th from Elkhart Street to Spring Street. Constructing these spot improvements will greatly improve pedestrian safety and accessibility for pedestrians traveling from residential communities to the proposed Purple Line. We also recommend ADA compliance to be a focus for this area to ensure all pedestrians have a safe, accessible path to their destination. Reconstructing existing driveway aprons along major roads would improve accessibility throughout the area as well.

The highest ranked bicycle improvements are 2nd Avenue between 16th Street (MD 390) and Spring Street and 16th Street between 2nd Avenue and Spring Street. A sharrow along 2nd Avenue would provide an arterial bicycle link through the residential neighborhood and would encourage bicyclists to use 2nd Avenue to connect with the station from the north with minimal impacts. While a cycle track along 16th Street would have greater impacts this will provide a direct link for cyclists trying to access the proposed Purple Line 16th Street – Woodside station.

One of the major overall goals of the Purple Line and Greater Lyttonsville Sector Plan is to reconnect the residential areas of the 16th Street - Woodside BiPPA with easier pedestrian and cyclist access. The overall strategy for this BiPPA should be to rebalance priorities to include pedestrians and bicycles as an equally important user of the right-of-way. The 16th Street - Woodside area is heavily geared towards residential traffic and implementing the pedestrian and bicycle network improvements proposed in this report would bring the area closer to accomplishing the goal.

7 Silver Spring Transit Center



7 Silver Spring Transit Center

7.1 Study Area

7.1.1 Existing Area

The Silver Spring Transit Center Station for the Purple Line is proposed near the intersection of Second Avenue/Wayne Avenue and Colesville Road (MD 384) in the downtown Silver Spring Commercial Business District (CBD). The station location and map of the study limits can be found in Figure 7-1. The area is a major transportation crossroads with major converging transportation systems including Colesville Road (MD 384/US 29), Georgia Avenue (MD 97/US 29), 16th Street (MD 390), the WMATA Red Line, the regional MARC commuter train, and the Metropolitan Branch Trail/Capital Crescent Trail. Major roadways and their respective limits, minimum rights-of-way, and number of lanes can be found in Table 7-1 Street and Highway Classification. The epicenter of this crossroads is the existing Silver Spring Transit Center, which serves as a transfer point for WMATA Metrobus, the WMATA Red Line, MARC train, Montgomery County Ride On, and the Purple Line. WMATA's Red Line route allows users to travel to and from Rockville and Washington, DC, as well as Bethesda via the District. However, the Purple Line will provide a direct route between Silver Spring and Bethesda. With an estimated 12,940 daily boardings, this station is expected to be the second busiest of the 21 stations along the Purple Line.

Within the ¼ and ½ -mile boundaries, Silver Spring CBD is a hub of activity including several commercial office buildings, government buildings, retail businesses, restaurants, hotels, banks, grocers, professional practices, auto service stations, parking garages, and medium- to high density residential buildings. Outside of the city center are residential neighborhoods with schools and parks. The area is bisected by the existing railroad corridor, which runs from northwest to southeast. Because the rail corridor includes freight and heavy rail, there are few crossings, and it is a significant man-made barrier to pedestrian and bicycle connectivity. This study area overlaps with the 16th Street-Woodside Station and the Silver Spring Library Station. For this report, the Silver Spring Transit Center Station study area is truncated to avoid duplicate recommendations for pedestrian and bicycle access improvements.

Existing pedestrian and bicycle traffic in the Silver Spring CBD is significant due to the urban setting with a high concentration of businesses, retail, and transit. Figure 7-1 shows the locations of the most heavily traveled sidewalks.

M-NCPPC records indicate there are several developments planned or currently under construction within the Silver Spring Transit Center BiPPA. Construction activities range from right-of-way or building repairs to multi-story mixed use developments. See Section 7.1.4 for further information on these projects.

LEGEND

- SILVER SPRING TRANSIT CENTER STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- MAJOR SIDEWALKS
- CAPITAL CRESCENT TRAIL
- METROPOLITAN BRANCH TRAIL (PLANNED)
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY
- EQUITY FOCUS AREA

N

SPRING STREET
FIRST AVENUE
GEORGIA AVENUE (MD 97)
FENWICK LANE
CAMERON STREET
APPLE AVENUE
SECOND AVENUE
FIDLER LANE
16TH STREET (MD 390)
SILVER SPRING TRANSIT CENTER
RAMSEY STREET
SILVER SPRING LIBRARY STATION
WAYNE AVENUE
DIXON AVENUE
DRAPER LANE
BONIFANT STREET
RIPLEY STREET
COLESVILLE ROAD (MD 384)
EAST WEST HIGHWAY (MD 410)
EASTERN AVENUE
SILVER SPRING AVENUE
BLAIR MILL ROAD
NEWELL STREET
KENNETT STREET
GEORGIA AVENUE (MD 29)
MARYLAND-DC LINE
13TH STREET

FIGURE 7-1
SILVER SPRING TRANSIT CENTER STATION STUDY AREA

0 0.05 0.1 0.2 0.3 0.4 Miles

7.1.2 Existing Facilities

The existing pedestrian network in the Silver Spring CBD is an extensive system of sidewalks, paths, stairs, signalized and non-signalized intersections, curb ramps, crosswalks, median refuge islands, and pedestrian plazas. Nearly all streets have sidewalks on both sides, and there are no significant gaps in the existing sidewalk network. Sidewalks are a minimum of 4 feet wide but are typically wider along the main corridors and include landscape buffers with street trees and pedestrian lighting. See Figure 7-7 for a map of Existing Pedestrian Facilities.

Trip hazards and broken portions of the sidewalk are the most common deficiency. The use of brick paver sidewalks is prevalent in Silver Spring, therefore, in several locations, brick pavers have settled or are missing, which creates uneven surfaces and vertical obstructions for pedestrians.

Most curb ramps and crosswalks are in moderate condition. Several curb ramps are not compliant with current ADA standards. Non-compliant curb ramps are either not aligned properly, have slopes greater than the maximum allowable, do not have level landing areas, or do not include detectable warning surfaces. Crosswalks are typically striped, but the markings are faded or not in conformance with current standard.



Figure 7-2 Street trees are used in downtown areas along Colesville Road in the Silver Spring CBD.



Figure 7-3 Older pavers used for sidewalk in the Silver Spring CBD along Georgia Avenue.



Figure 7-4 A typical crosswalk with worn and outdated markings in the Silver Spring CBD along Bonifant Street at Georgia Avenue (US 29).

Signalized intersections in this BiPPA are common; however, some signals are not compliant with current APS/CPS requirements. Site investigation indicated that some signalized intersections are non-compliant due to missing APS or CPS, missing both APS and CPS, incorrect spacing, or broken equipment. There are uncontrolled crossings along Colesville Road (MD 384), Georgia Avenue (US 29), and East-West Highway (MD 410) that need further study that includes pedestrian counts.



Figure 7-5 Signalized intersection at 16th Street and East-West Highway (MD 410) is missing APS.



Figure 7-6 An unmarked, uncontrolled crossing at Colesville Road (MD 384) and Draper Lane.

Existing infrastructure for cyclists is growing and currently includes Cameron Street bike lanes, Spring Street separated bike lanes, Second Avenue/Wayne Avenue cycle track, Cameron Street to Planning Place bikeway, and the Silver Spring Green Trail. The Capital Crescent Trail is under construction as part of the the Purple Line project and the Metropolitan Branch Trail is in final design. See Figure 7-8 for a map of Existing Cyclist Facilities.

Capital Bikeshare has several docking stations within the study area, and there are several bike racks throughout the CBD. Silver Spring Transit Center has bike racks on the 1st and 3rd floors, as well as bike lockers on the 3rd floor. Additional bike racks are located under the rail bridge over Colesville Road (MD 384). The Purple Line project will not add bike parking beyond what is located on the 3rd floor of the transit center, but a secure bike storage facility is proposed at the southeast corner of Dixon Avenue and Bonifant Street.

Table 7-1 Street and Highway Classification

Designation	Roadway	Limits	Minimum Right-of-Way	Lanes	Speed Limit
Major Highway					
M-8	Georgia Avenue (MD 97)	Spring Street to Colesville Road	126	6	35
M-4	Georgia Avenue (US 29)	Colesville Road to Wayne Avenue	120	6	35
M-4	Georgia Avenue (US 29)	Wayne Avenue to Blair Mill Road	125-140	6	35
M-4	Georgia Avenue (US 29)	Blair Mill Road to East-West Highway	125	6	35
M-9	16th Street (MD 390)	Spring Street to Eastern Avenue	120	6	35
M-10	Colesville Road (MD 384)	Georgia Avenue to Eastern Avenue	125	6	35
M-20	East-West Highway (MD 410)	16th Street to 300' East of 16th Street	118	4	35
M-20	East-West Highway (MD 410)	300' East of 16th Street to Blair Mill Road	110	4	35
M-20	East-West Highway (MD 410)	Blair Mill Road to Georgia Avenue	90	2-4	35
Arterial					
A-76	Wayne Avenue	Colesville Road to Georgia Avenue	120	4	25
A-263	Spring Street	16th Street to Georgia Avenue	100	4	25
Business					
B-1	1st Avenue	Spring Street to Fenwick Lane	70	2	25
B-2	Second Avenue	Spring Street to Cameron Street	80	2	25
B-2	Second Avenue	Cameron Street to Colesville Road	105	4	25
B-3	13th Street	Eastern Avenue to Georgia Avenue	80	2	25
B-4	Apple Avenue	End of Road to Second Avenue	60	2	25
B-5	Blair Mill Road	Eastern Avenue to East-West Highway	70	2	25
B-5	Blair Mill Road	East-West Highway to Georgia Avenue	60	2	25
B-7	Bonifant Street	End of Road to Georgia Avenue	40-70	2	25
B-13	Fenwick Lane	Second Avenue to Georgia Avenue	80	2	25
B-14	Fidler Lane	Second Avenue to Georgia Avenue	Var.	2	25
B-16	Kennett Street	Newell Street to 13th Street	60	2	25
B-18	Newell Street	Eastern Avenue to East-West Highway	70	2	25
B-21	Ramsey Avenue	Cameron Street to Coleville Road	54	2	25
B-21	Ramsey Avenue	Wayne Avenue to Bonifant Street	70	2	25
B-22	Ripley Street	Bonifant Street to Georgia Avenue	70	2	25
B-28	Cameron Street	Second Avenue to Georgia Avenue	74	2	25
B-29	Dixon Avenue	Wayne Avenue to Ripley Street	80	2	25
Uncategorized*					
	Cameron Hill Court	Cameron Hill Court to Ramsey Avenue	44	2	25
	Discovery Place	End of Road to Wayne Avenue (on private property)	N/A	2	25
	Silver Spring Avenue	End of Road to Georgia Avenue	44	2	25
	Blair Mill Way	East-West Highway to Blair Mill Road	44	2	25
	Bottleworks Lane	Kennett Street to East-West Highway	44	2	25
	Spring Garden Lane	End of Road to Newell Street	44	2	25
	Eastern Drive	Eastern Avenue to Blair Mill Road (street maintained by DDOT)	N/A	2	25
	Blair Mill Drive	Eastern Avenue to Blair Mill Road	44	2	25
	High Park Lane	Portal Drive to Blair Mill Road	44	2	25
	Portal Drive	Eastern Avenue to High Park Lane	44	2	25
	Draper Lane	East-West Highway to Colesville Road	44	2	25

Table 7-1 Street and Highway Classification (Continued)

Designation	Roadway	Limits	Minimum Right-of-Way	Lanes	Speed Limit
	West Falkland Lane	North Falkland Lane to East-West Highway (on private property	N/A	2	25
	East Falkland Lane	North Falkland Lane to East-West Highway (on private property)	N/A	2	25
	North Falkland Lane	West Falkland Lane to East Falkland Lane (on private property)	N/A	2	25

***Uncategorized roads are not included in the M-NCPPC Roadway Functional Classification. ROW widths are based on MC-210.01 Tertiary Residential Street. Speed limits are based on minimum posted speed required by State law.**

LEGEND

- SILVER SPRING TRANSIT CENTER STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- EXISTING SIDEWALKS
- CAPITAL CRESCENT TRAIL
- METROPOLITAN BRANCH TRAIL (PLANNED)
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

N

SILVER SPRING TRANSIT CENTER

SILVER SPRING LIBRARY STATION

SPRING STREET

FIRST AVENUE

GEORGIA AVENUE (MD 97)

FENWICK LANE

CAMERON STREET

APPLE AVENUE

SECOND AVENUE

FIDLER LANE

RAMSEY AVENUE

16TH STREET (MD 390)

DRAPER LANE

WAYNE AVENUE

DIXON AVENUE

BONIFANT STREET

RIPLEY STREET

COLESVILLE ROAD (MD 384)

EAST WEST HIGHWAY (MD 410)

GEORGIA AVENUE (MD 29)

SILVER SPRING AVENUE

EASTERN AVENUE

BLAIR MILL ROAD

MARYLAND-DC LINE

NEWELL STREET

KENNETT STREET

13TH STREET

FIGURE 7-7
SILVER SPRING TRANSIT CENTER STATION
EXISTING PEDESTRIAN FACILITIES

0 0.05 0.1 0.2 0.3 0.4 Miles

LEGEND

- SILVER SPRING TRANSIT CENTER STATION
- PURPLE LINE
- CAPITAL CRESCENT TRAIL
- METROPOLITAN BRANCH TRAIL (PLANNED)
- BICYCLE STORAGE FACILITY (PLANNED)

EXISTING BIKEWAYS

- BIKE RACK
- CYCLE TRACK
- SHARED USE PATH
- SHARROW
- STRIPED BIKE LANES
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

N

SPRING STREET
FIRST AVENUE
GEORGIA AVENUE (MD 97)
FENWICK LANE
CAMERON STREET
LANE
APPLE AVENUE
SECOND AVENUE
FIDLER
16TH STREET (MD 390)
SILVER SPRING TRANSIT CENTER
RAMSEY AVENUE
SILVER SPRING LIBRARY STATION
WAYNE AVENUE
DIXON AVENUE
DRAPER LANE
BONIFANT STREET
RIPLEY STREET
COLESVILLE ROAD
(MD 384) EAST WEST HIGHWAY (MD 410)
EASTERN AVENUE
SILVER SPRING AVENUE
BLAIR MILL ROAD
MARYLAND-DC LINE
NEWELL STREET
KENNETT STREET
GEORGIA AVENUE (US 29)
13TH STREET

FIGURE 7-8
SILVER SPRING TRANSIT CENTER STATION
EXISTING CYCLIST FACILITIES

0 0.05 0.1 0.2 0.3 0.4 Miles

7.1.3 Proposed Purple Line Improvements

Construction of the Purple Line station at the Silver Spring Transit Center will include pedestrian improvements that are centered around the intersection of Ramsey Avenue and Bonifant Street. The station itself will be located on the 3rd floor of the transit center and will include an elevator/stair tower that pedestrians will use to access the station from the north side of the transit center. The Capital Crescent Trail will be extended throughout the study area with connections at Fenwick Lane, Apple Avenue, and Ripley Street at the transit center. Refer to Figures 7-9 and 7-10 for a rendering and construction plan, respectively, of the proposed improvements

7.1.4 Adjacent Projects

M-NCPPC records indicate there are several developments planned or currently under construction within the Silver Spring Transit Center BiPPA. Construction activities range from right-of-way or building repairs to multi-story mixed use developments. A summary of these projects and their locations is found in Table 7-2 Adjacent Projects Summary. Adjacent projects were considered when developing proposed improvement recommendations. This report is not proposing improvements in areas that overlap with adjacent project construction limits.



Figure 7-9 Purple Line Silver Spring Transit Center station rendering, looking southeast.

Table 7-2 Adjacent Projects Summary

Project Title / Location	MNCPPC Plan Number	Project Details
Falkland North (NE quadrant of 16th Street and East-West Highway)	120070560	Redevelopment of existing garden-style apartments, Falkland Chase Apartments, into five high-rise mixed-use retail/apartment buildings.
The Blairs (Intersection of Blair Mill Rd and Eastern Avenue)	120130220	Redevelopment a portion of existing garden-style apartments, into high-rise mixed-use retail/apartment buildings. It appears that demolition of the existing structures has occurred.
Metro Plaza (NW quadrant of Colesville Road and East-West Highway)	120090380	Redevelopment of existing retail into two high-rise mixed-use retail/commercial office buildings.
Elizabeth Square (parcels bound by Second Avenue/Fenwick Lane/Apple Avenue)	1201500A	Redevelopment of existing high-rise apartment into four high-rise mixed-use retail apartment buildings.
8600 Georgia Avenue	120170040	Redevelopment existing gas station into high-rise hotel.
Ripley II (parcel at the intersection of Silver Spring Avenue and Dixon Avenue)	120160190	Redevelopment of existing property into a high-rise mixed-use retail apartment building, including construction of a portion of the Metropolitan Branch Trail and separated bike lanes on Dixon Avenue. This project is currently under construction.
Gene Lynch Urban Park		Construction of a new urban park at the northeast corner of Colesville Road (MD 384) and Wayne Avenue. This project is currently under construction.
Purple Line/Capital Crescent Trail		Construction of new on-street light-rail line from Bethesda to New Carrollton; construction of a new shared-use path from Bethesda to Silver Spring (under construction).
Metropolitan Branch Tail		Construction of a new shared-use path along the CSX/WMATA tracks from Silver Spring Transit Center to Washington DC (in design/construction).
Dixon Avenue Separated Bike Lanes		Separated bike lanes along the entire length of Dixon Avenue (in design).

FIGURE 7–10 PURPLE LINE SILVER SPRING TRANSIT CENTER STATION CONSTRUCTION PLAN

(PREPARED BY ATKINS GLOBAL)

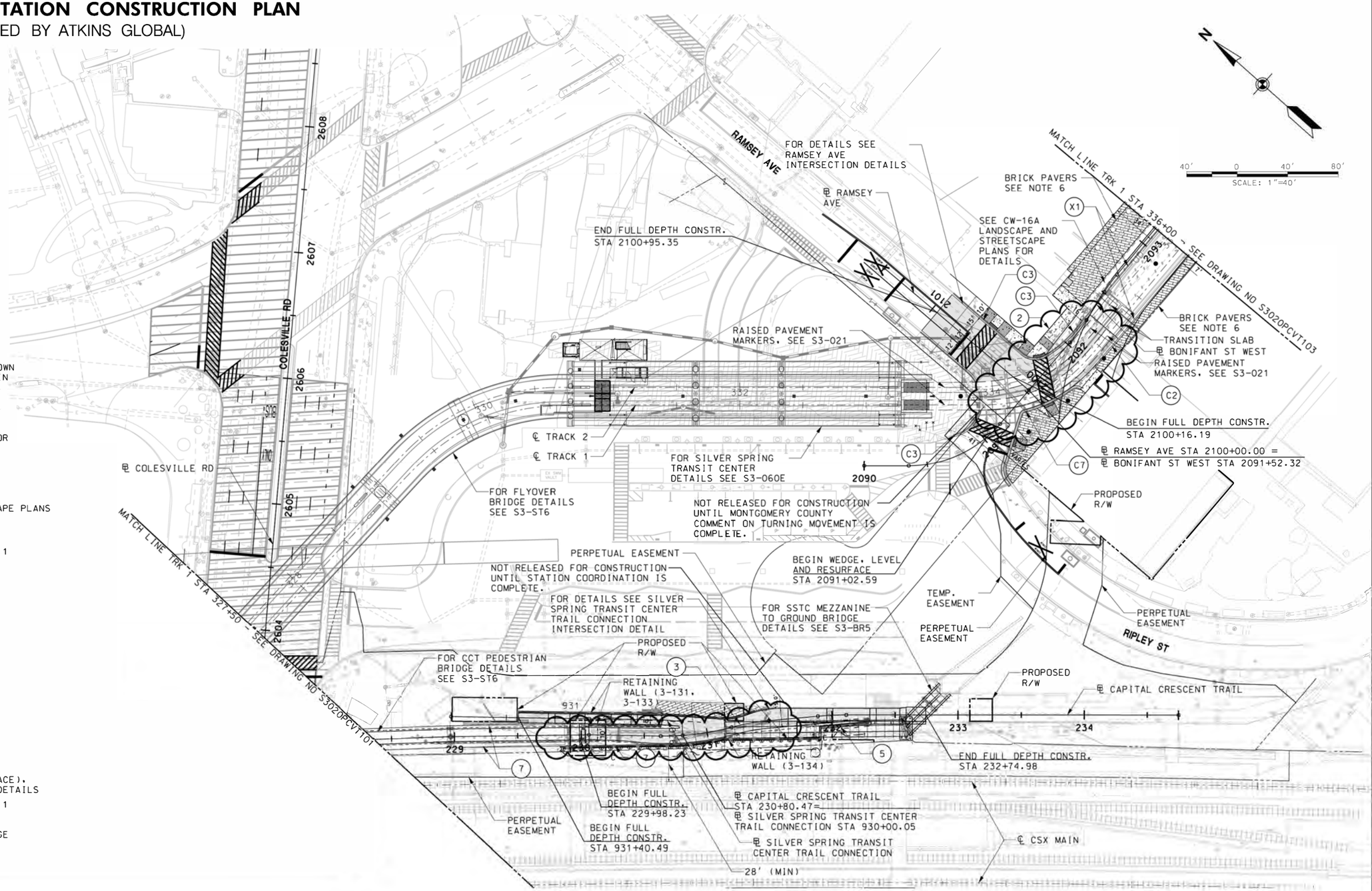


NOTE:
1. ALL MEASUREMENTS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
2. PROPOSED STORMDRAIN FACILITIES SHOWN FOR REFERENCE ONLY. SEE STORMDRAIN PLANS IN THIS PACKAGE FOR DETAILS.
3. STRIPING SHOWN FOR REFERENCE ONLY. SEE S3-021 FOR DETAILS.
4. FOR RETAINING WALLS, SEE S3-040 FOR DETAILS.
5. TRACK SHOWN FOR REFERENCE WHEN ROADWAY ALIGNMENT IS AVAILABLE. SEE S3-050 FOR TRACK DETAILS.
6. SEE CW-16A LANDSCAPE AND STREETSCAPE PLANS FOR DETAILS.

(C1) CURB AND GUTTER TYPE A, SEE CW-33.1 FOR ROADWAY STANDARD DETAIL C1
(C2) CURB AND GUTTER TYPE A, SEE CW-33 FOR ROADWAY STANDARD DETAIL C2
(C3) CURB AND GUTTER TYPE D, SEE CW-33 FOR ROADWAY STANDARD DETAIL C3
(V1) VERTICAL STAIRWAYS, SEE CW-33.1 FOR ROADWAY STANDARD DETAILS
(X1) BALLAST CURB, SEE CW-33.1 FOR ROADWAY STANDARD DETAIL X1
(1) 4 INCH CONCRETE SIDEWALK
(2) 5 INCH CONCRETE SIDEWALK
(3) SHARED USE PATH / BIKEWAY, SEE MISCELLANEOUS DETAILS SHEET THIS PACKAGE
(4) CONCRETE ENTRANCE
(5) TYPE F CONCRETE BARRIER (SINGLE FACE), SEE CW-33.1 FOR ROADWAY STANDARD DETAILS
(6) TRAFFIC BARRIER W BEAM, SEE CW-33.1 FOR ROADWAY STANDARD DETAILS
(7) FENCE, SEE FENCE PLANS THIS PACKAGE

ROADWAY LEGEND

- FULL DEPTH CONSTRUCTION
- WEDGE, LEVEL AND RESURFACE
- RESURFACE
- PROPOSED CONCRETE SIDEWALK
- PROPOSED STATION
- PAVEMENT REMOVAL



MTA NO. 17–PL–0006 MOD #3

MARYLAND DEPARTMENT OF TRANSPORTATION
MARYLAND TRANSIT ADMINISTRATION — MTA Maryland

PURPLE LINE TRANSIT PARTNERS

ATKINS
3901 Calverton Blvd, Suite 400
Calverton, Maryland 20705
Telephone: 301-210-6800
www.atkinsglobal.com

PROFESSIONAL CERTIFICATION
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland
License No. 50425 Expiration Date: 01/04/2021
04/24/2019

NO.	DESCRIPTION	BY	DATE
0	RELEASE FOR CONSTRUCTION	CJC	04/22/19

REVISIONS

DESIGN YK
DRAWN JDJ
CHECK JNR
APPR CJC

PURPLE LINE LIGHT RAIL
CIVIL DESIGN
SEGMENT 3

ROADWAY PLAN

DATE: APRIL 22, 2019 SCALE: 1" = 40'

CONTRACT NO. 0–0000–0000
DRAWING NO. S3020PCVT102
SHEET NO. 31 OF 370

pw://CUSD036301.wsatkins.com:ATKNAMDPL01/Documents/Purple Line P3 Design/40 CAD (Work In Progress)/Roadway/Segment 3/Drawings/S3-020/S3020pCVT102.dgn
4/24/2019 1:28:18 PM

7.2 Master Plan Summary

One local master plan overlaps with the area surrounding the proposed Silver Spring Transit Center Station. The Silver Spring Commercial Business District (CBD) Sector Plan area is shown in Figure 7-11. The master plan encompasses 265 acres and provides recommendations for long-term planning of the downtown Silver Spring area. Though the master plan discusses all aspects of regional planning, this report focuses on the recommendations related to pedestrian and bicyclist infrastructure. The master plan emphasizes the concept of "complete streets", or improvements that provide equal safety and quality for all users and suggests that all future improvements within this area utilize a complete streets approach.

This report also includes recommendations from the Montgomery County Bicycle Master Plan, which provides specific recommendations for bicycle routes and facilities throughout Montgomery County.

In addition to the master plans, the Purple Line Pedestrian Connectivity Report, prepared by M-NCPPC in June 2020, describes recommended pedestrian improvements in the vicinity of each Purple Line station. Connectivity was measured by taking the total comfortable distance of all residential trips and dividing it by the total distance of all residential trips. Please see the Purple Line Connectivity report for a more detailed methodology for the calculation of pedestrian connectivity. The connectivity report states that the area's existing connectivity was measured at 87%. If all the proposed improvements in the connectivity report were to be constructed, pedestrian connectivity would increase slightly to 91%.

7.2.1 Existing Pedestrian Improvement Recommendations

The pedestrian network in downtown Silver Spring is already extensive. Proposed improvements recommended from various master plans and studies focuses on increasing safety and accessibility of existing infrastructure. Table 7-3 lists pedestrian improvements based on the recommendations from previously prepared Master Plans and studies.

Table 7-3 Summary of Area Pedestrian Recommendations

Roadway/Route	Recommendation	Reference
Colesville Road (MD 384) at Draper Lane	High visibility crosswalks	Purple Line Pedestrian Connectivity Report
East-West Highway (MD 410) at Draper Lane	High visibility crosswalks	Purple Line Pedestrian Connectivity Report
Colesville Road (US 29/MD 384)	Increase sidewalk to at least 5 ft, add 5 ft buffer	Purple Line Pedestrian Connectivity Report
Colesville Road (MD 384)	Relocate light pole in sidewalk at the Silver Spring Transit Center	Purple Line Pedestrian Connectivity Report

7.2.2 Existing Bikeway Improvement Recommendations

Both the Silver Spring CBD Sector Plan and the Montgomery County Bicycle Master Plan provide bicycle-specific recommendations for Silver Spring. The recommendations from these plans are summarized in Table 7-4. In locations where the Silver Spring CDB Sector Plan and the Montgomery County Bicycle Master Plan overlap, the latter should govern.

Table 7-4 Summary of Area Cycling Infrastructure Improvement Recommendations

Roadway/Route	Limits	Reference
Separated Bike Lane		
East-West Highway (MD 410)	16th Street (MD 390) to Georgia Avenue (MD 97)	Silver Spring CBD Sector Plan, Montgomery County Bicycle Master Plan
13th Street	Eastern Avenue to Georgia Avenue (US 29)	Silver Spring CBD Sector Plan, Montgomery County Bicycle Master Plan
Silver Spring Avenue	Metro Branch Trail to Georgia Avenue (US 29)	Montgomery County Master Plan
Bike Lanes		
Newell Street	Eastern Avenue to East-West Highway (MD 410)	Montgomery County Bicycle Master Plan
Shared Roadway Markings		
Fenwick Lane	End of Road to Second Avenue	Silver Spring CBD Sector Plan
Cycle Track		
16th Street (MD 390)	Spring Street to Eastern Avenue	Montgomery County Bicycle Master Plan
Colesville Road (MD 384)	East-West Highway (MD 410) to Georgia Avenue (US 29)	Montgomery County Bicycle Master Plan
Shared-Use Path		
Colesville Road (MD 384)	Eastern Avenue to East-West Highway (MD 410)	Silver Spring CBD Sector Plan, Montgomery County Bicycle Master Plan

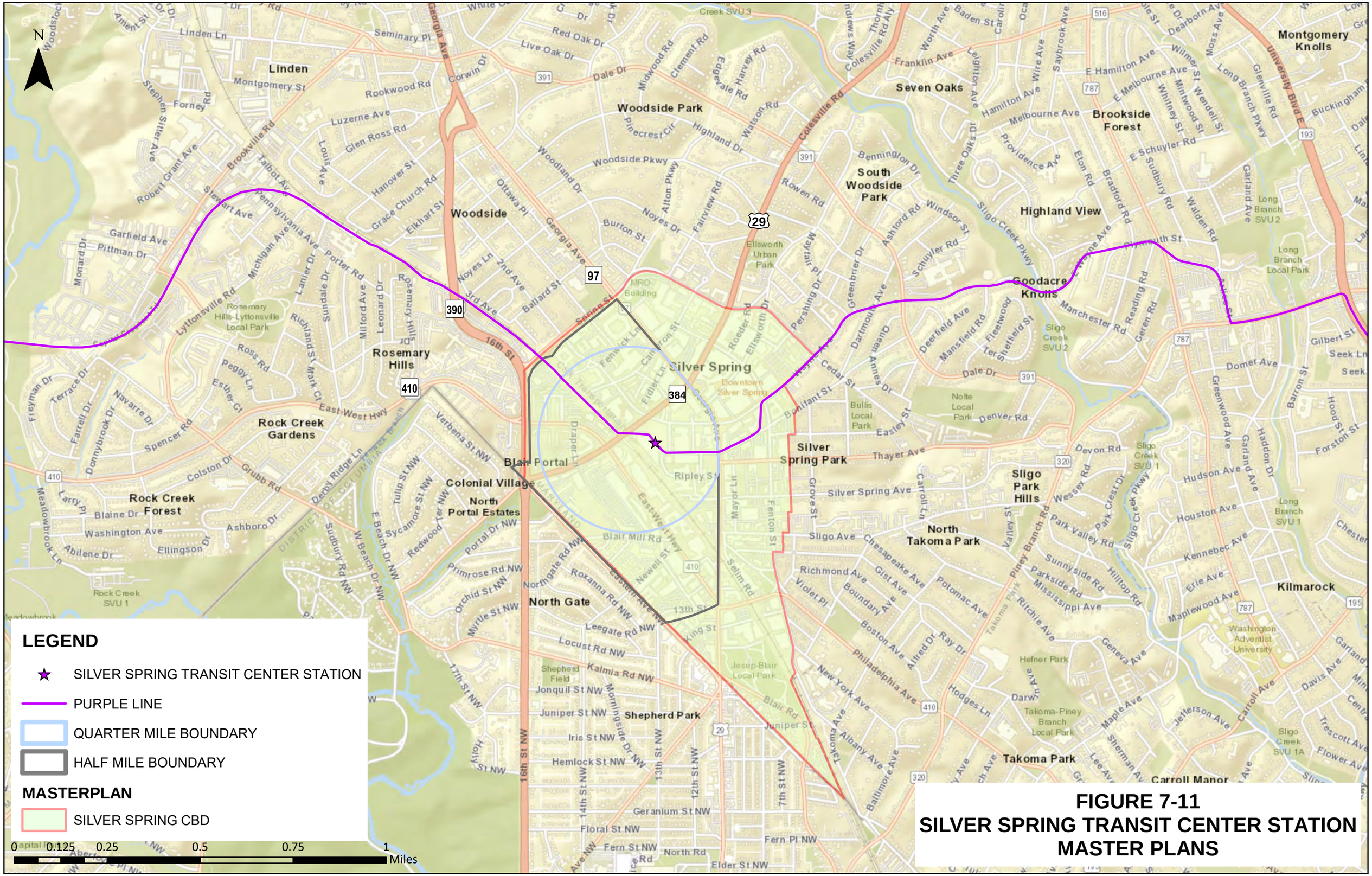


FIGURE 7-11
SILVER SPRING TRANSIT CENTER STATION MASTER PLANS

7.3 Proposed Improvements

The Silver Spring Transit Center Station BiPPA has been evaluated for several types of pedestrian and bicycle improvements. Proposed improvements have been developed and prioritized based on the ranking criteria outlined in Section 2.8 of this report. The list of proposed improvements is based on recommendations of previously prepared studies and master plans, information gathered from a field review of the site, and data from other sources. Separate analyses and mapping were developed for pedestrian improvements and bicycle improvements.

7.3.1 Proposed Pedestrian Improvements

This study included a thorough review of existing pedestrian facilities (sidewalk ramps, driveway aprons, linear sidewalks, etc.) and determined which facilities did not meet current ADA criteria. The report and figures indicate where spot improvements are required and where linear sidewalk improvements are required. Spot improvements are shown in Figures 7-17 (a) and (b). The maps show the locations and types of existing facilities that need to be reconstructed to meet ADA standards. Proposed linear routes/improvements for pedestrian access are shown in Figure 7-18. The maps also indicate the improvements that will be constructed by the Purple Line project.

Refer to Table 7-5 for a summary of priority rankings of pedestrian improvements. This report describes the top ranked pedestrian improvements for the Silver Spring Transit Center Purple Line Station.



Figure 7-12 A sidewalk containing multiple tripping hazards on Wayne Avenue.



Figure 7-13 A non-compliant driveway apron on Second Avenue.



Figure 7-14 Out-of-date crosswalk striping

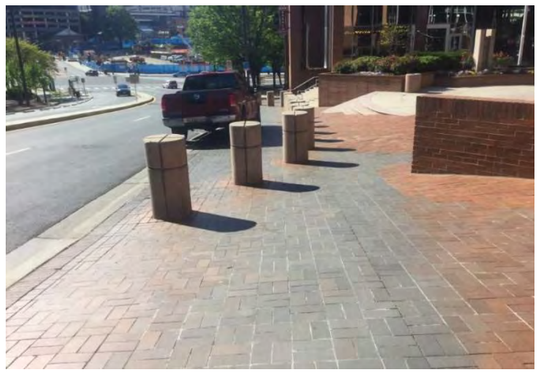


Figure 7-15 Sidewalk along Second Avenue with non-compliant slope.

1. Area-wide Improvements to Existing Sidewalks

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Sidewalk, Removal of Sidewalk Obstructions, Widening of Non-compliant Sidewalk Widths, Reconstruction of Sidewalks with Non-compliant Slopes

Priority Ranking: 3.0 Time Frame: Short-term Cost Category: 3

There is a need for general maintenance of pedestrian pathways and upgrades to pathways that do not meet current ADA, MCDOT, or MDOT SHA standards throughout the BiPPA. Curb ramps should be upgraded to meet slope requirements as set forth by ADA criteria and must include detectable warning surfaces. Sidewalks should be free from trip hazards and breaks; it is recommended that trip hazards greater than ½-inch and significant breakage be repaired by replacing the affected portion of the sidewalk. In addition, sidewalks that have cross-slopes greater than allowable or pinch points with less than a 36" width should be replaced or reconfigured. Sidewalk obstructions, such as guy wires, should be reconfigured to provide adequate overhead clearance for pedestrians.

Although all area-wide sidewalk improvements are a worthwhile investment, those in the vicinity of the Purple Line and Capital Crescent Trail, as well as along Georgia Avenue (MD 97/US 29), Colesville Road (MD 384/US 29), 16th Street (MD 390), East-West Highway (MD 410), Second Avenue, Wayne Avenue, and Spring Street should be prioritized based on current and future use.

2. Areawide Improvements to Existing Driveway Aprons

Improvement Type: Reconstruct Driveway Aprons

Priority Ranking: 3.8 Time Frame: Short- to Mid-term Cost Category: 3

There is a need to upgrade existing driveway aprons throughout the BiPPA to meet ADA slope requirements and be in with conformance current MCDOT and MDOT SHA standards. Existing aprons in the commercial areas of Silver Spring were found to have existing cross slopes greater than 2%.

Driveway aprons are already located within MCDOT or MDOT SHA right-of-way so no acquisition would be required. Complexity of construction is dependent on the existing grade, existing cross-slope, and presence of other obstructions. To determine the extent of construction and estimated costs for each driveway apron, additional site visits are required to determine utility impacts and to assess feasibility of reconstruction with existing slopes. A simpler driveway apron reconstruction project would have no above-grade obstructions and would involve minimal grading. A complex project would involve above-ground obstructions and would require significant grading. Complex projects may be located along roads with steep cross-slopes or longitudinal slopes, or in the vicinity of above-ground obstructions that are difficult to relocate, such as trees, signs, or walls. Disturbance to existing utilities is expected to be minimal. Coordination with business owners and homeowners may be required.

3. Areawide Improvements to Existing Intersections

Improvement Type: Reconstruction of Mid-block Crossings, Striping of Crosswalks

Priority Ranking: 3.2 Time Frame: Short- to Mid-term Cost Category: 3

Crosswalk striping throughout the proposed Purple Line Silver Spring Transit Center station BiPPA is fading or does not utilize the continental or "piano stripe" pattern that is the current standard. At a minimum, all striping should be updated to ensure there are no faded or broken portions. Crosswalks in high-traffic areas, such as those along major highways (East-West Highway, 16th Street, Colesville Road, and Georgia Avenue) or minor arterials (Wayne Avenue and Spring Street) should be prioritized.

There are existing uncontrolled crosswalks along Colesville Road (MD 384) and East-West Highway (MD 410) that should be further studied based on traffic and pedestrian volumes to determine if further safety measures are needed.

No impacts to existing utilities or rights-of-way are anticipated.

4. Areawide Upgrades to APS/CPS

Improvement Type: Signal Upgrades to APS/CPS

Priority Ranking: 4.6 Time Frame: Short- to Mid-term Cost Category: 2

Many intersections throughout the proposed Purple Line Silver Spring Transit Center station area have accessible signals but some are not compliant with current ADA standards. Upgrading these signals to comply with ADA guidelines would create a safer and more inclusive pedestrian experience for everyone. No impacts to existing utilities, rights-of-way or environmental features are anticipated. Minor traffic pattern changes may be required at high volume intersections during construction.

High traffic areas should be prioritized, including intersections along East-West Highway (MD 410), 16th Street (MD 390), Colesville Road (MD 384/US 29), Georgia Avenue (MD 97/US 29), Second Avenue, Wayne Avenue and Spring Street.



Figure 7-16 APS unit does not make an audible sound when activated

5. Colesville Road (MD 384)

From: 16th Street (MD 390) to Georgia Avenue (MD 97)

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, Removal of Sidewalk Obstructions, Signal Upgrades to APS/CPS, Construction of Curb Extensions, Shared Use Path

Priority Ranking: 6.4 Time Frame: Mid-term Cost Category: 3

This segment of Colesville Road (MD 384) is an urban principal arterial with traffic volumes at approximately 14,600 vehicles per day and provides an important connection between 16th Street at the MD-DC line and downtown Silver Spring. The intersection of Colesville Road (MD 384) and 16th Street (MD 390) is unique in that it straddles two jurisdictions. The south half of the intersection is within the District. The north half of the intersection is within Maryland. Until recently the intersection was only partially signalized, however, the remaining legs on the Maryland side were recently retrofitted with traffic signals and APS/CPS. The curbs should be extended to replace the existing hatched areas at northeast and southeast corners of the intersection to permanently provide a higher quality of physical protection for pedestrians and reduce vehicular speeds by creating deflection along the turning movements. However, these upgrades would require relocation of the curb ramps, which would in turn require relocation of the recently installed APS/CPS pedestrian signals. The median on the east side of the intersection should also be extended westward toward 16th Street (MD 390) to provide a more comfortable pedestrian refuge space.

There is an uncontrolled pedestrian crossing on the west side of the Colesville Road (MD 384) and Draper Lane intersection that should be further studied. If pedestrian crossing volumes are low, this crossing should be removed entirely, and shrubs should be planted in the median to discourage uncontrolled crossings. If the pedestrian volumes are high, a high-visibility crosswalk should be installed, as well as a new pedestrian ramp on the southwest corner. The median cut-through and northwest curb ramp should be reconstructed with detectable warning surfaces.

The asphalt shared-use path should be extended from Draper Lane to East-West Highway (MD 410) along south side of roadway. This could be accomplished by some combination of narrowing the median, converting the right-turn lane from a lane drop right-turn to a pocket right-turn, and acquiring right of way along this segment. There are only two lanes coming from the District, so having a third travel lane along this segment of Colesville Road (MD 384) appears to be unnecessary.

6. Wayne Avenue

From: Colesville Road (MD 384) to Georgia Avenue (US 29)

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, Removal of Sidewalk Obstructions, Repair APS/CPS, Construction of New Curb Ramps, Construct APS/CPS, Striping of Crosswalk, Median fencing

Priority Ranking: 7.6 Time Frame: Short- to Mid-term Cost Category: 3

Wayne Avenue will provide access to the Purple Line for pedestrians traveling from the north, northeast, and possibly the northwest. The Green Trail on the north side of the road provides a comfortable pedestrian pathway. Sidewalks are sufficiently wide from Colesville Road (MD 384) and Ramsey Avenue; however, a crosswalk should be added to the west leg of Wayne Avenue and Ramsey Avenue, as well as APS/CPS pedestrian signals and curbs ramps. Depending on pedestrian behavior when the Purple Line opens and with the completion of Gene Lynch Urban Park, it may be necessary to extend the median fence along Wayne Avenue to the intersection with Colesville Road (MD 384) to discourage jaywalking.

Between Ramsey Avenue and Georgia Avenue (US 29), there is an existing hatched shoulder on the south side of Wayne that could be converted to additional sidewalk space. The existing bus shelter on the southwest corner of Wayne Avenue and Dixon Avenue impedes the flow of pedestrians, such that groups of pedestrians walk choose to walk in the roadway. At a minimum, the sidewalk should be widened into the un-used travel lane and the bus shelter should be relocated to provide a 10-ft clear width for pedestrians along the sidewalk. Alternatively, the bus shelter could be removed if daily boardings at this location are low. The existing APS/CPS on the southeast corner of Wayne Avenue and Dixon Avenue also needs to be repaired, as the audible message is not functional.

These improvements would have no significant impacts to traffic, parking, right of way, utilities, or street trees.

7. Ramsey Avenue

From: Bonifant Street to Cameron Street

Improvement Type: Reconstruction of Curb Ramps, Widening of Sidewalk, Reconstruction of Driveway Aprons, Removal of Sidewalk Obstructions

Priority Ranking: 8.5 Time Frame: Mid-term Cost Category: 3

Ramsey Avenue between Wayne Avenue and Bonifant Street is an important roadway segment that will connect directly to the Purple Line station on level 3 of the Silver Spring Transit Center. The existing curb-to-curb width is 39-ft wide, but there is no parking on either side of the road. There is heavy bus activity on the segment as buses also use Ramsey Avenue to access level 2 of the transit center. Ramsey Avenue is also used for kiss 'n' ride drivers and taxis to access level 3 of the transit center. Pedestrians arriving from the north will use the sidewalks to reach the station. Consideration should be given to narrowing this segment of the roadway to two or three lanes so that a 10-to 12-ft wide sidewalk can be provided on the west side of the road. The driveway aprons on the east side of the street should be reconstructed. The roadway is concrete but has various utility cuts and patches, therefore, consideration should be given to full depth reconstruction of the entire road segment. Additional improvements between Wayne Avenue and Cameron Street are minor and shown on figures 7-17a and b.

8. Second Avenue

From: Colesville Road (MD 384) to Spring Street

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, Reconstruction of Driveway Aprons, Removal of Sidewalk Obstructions

Priority Ranking: 7.0 Time Frame: Short-term Cost Category: 2

Second Avenue is a four-lane, median separated roadway with sidewalks on both sides of the roadway. The Green Trail runs along the north side of the road. This segment of road will connect the Purple Line station with points to the northwest, including the District Courthouse and several residential buildings. Sidewalk connectivity is generally sufficient, however, there is an existing vehicular pull-off that constrains the sidewalk width in front of 8401, 8402, 8405 Second Avenue. This pull-off should be eliminated if possible. Vehicles can stand in the roadway if needed as there are two eastbound travel lanes.

9. East-West Highway (MD 410)

From: 16th Street (MD 390) to Georgia Avenue (US 29)

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Sidewalks, Removal of Sidewalk Obstructions, Striping of Crosswalks, Construction of New Sidewalks, Installation of Additional Signing, Pedestrian Switchback, Mid-block Crossings

Priority Ranking: 7.5 Time Frame: Short- to Mid-term Cost Category: 3

East-West Highway (MD 410) is an urban principal arterial with traffic volumes at 25,600 vehicles per day. The typical section is four-lanes with a center striped median and sidewalks with landscape buffers on both sides. It is a major corridor for pedestrians traveling to and from the Colesville Road (MD 384), Georgia Avenue (US 29), and 16th Street (MD 390) and also connects with high-demand pedestrian destinations.

A small segment of East-West Highway (MD 410) is lacking a defined sidewalk along the north side between Blair Mill Road and Georgia Avenue (US 29). Constructing this short segment of sidewalk would make this area safer for pedestrians. The proposed sidewalk will cross a driveway for an adjacent business. Parking for an adjacent business would need to be modified and/or eliminated. Further impacts to right-of-way should be evaluated during design.

Along this segment, there are two marked, uncontrolled crossings across East-West Highway (MD 410): one is located at 1305 East-West Highway and the other is at Blair Mill Way. Both crossings should be evaluated for pedestrian volume. Additional safety enhancements such as rectangular rapid flashing beacons may be warranted.

The southeast corner of East-West Highway (MD 410 and 16th Street (MD 390) is currently not ADA compliant because pedestrians must utilize a staircase to access the intersection. An existing timber retaining wall supports the roadway embankment. This issue could be addressed by installing a switchback along 16th Street. Curb ramps should be installed at the crosswalk. The staircase could be retaining for direct access, but it would need to be reoriented/reconstructed.

LEGEND

- SILVER SPRING TRANSIT CENTER STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- CAPITAL CRESCENT TRAIL

PROPOSED IMPROVEMENTS

- CONSTRUCT CURB EXTENSION
- CONSTRUCT CURB RAMP

APS/CPS

- INSTALL APS/CPS
- REPAIR APS/CPS

SIDEWALK

- NON-COMPLIANT DRIVEWAY APRON
- RECONSTRUCT SIDEWALK
- SIDEWALK OBSTRUCTION
- NON-COMPLIANT WIDTH
- NON-COMPLIANT SLOPE
- INSTALL SAFETY RAILING
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

N

SPRING STREET
FIRST AVENUE
GEORGIA AVENUE (MD 97)
FENWICK LANE
CAMERON STREET
LANE
APPLE AVENUE
SECOND AVENUE
FIDLER
16TH STREET
SILVER SPRING TRANSIT CENTER
RAMSEY AVENUE
SILVER SPRING LIBRARY STATION
WAYNE AVENUE
DIXON AVENUE
BONIFANT STREET
RIPLEY STREET
DRAPER LANE
(MD 384)
EAST WEST HIGHWAY (MD 410)
COLESVILLE ROAD
EASTERN AVENUE
BLAIR MILL ROAD
MARYLAND-DC LINE
NEWELL STREET
KENNETT STREET
GEORGIA AVENUE (MD 29)
SILVER SPRING AVENUE
13TH STREET

FIGURE 7-17a
SILVER SPRING TRANSIT CENTER STATION
AREA-WIDE IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

LEGEND

- SILVER SPRING TRANSIT CENTER STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- CAPITAL CRESCENT TRAIL

PROPOSED IMPROVEMENTS

- RECONSTRUCT CURB RAMP
- INSTALL ADDITIONAL SIGNING

INTERSECTION

- STRIPE CROSSWALK
- CONSTRUCT MEDIAN REFUGE
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

N

SPRING STREET
FIRST AVENUE
GEORGIA AVENUE (MD 97)
FENWICK LANE
CAMERON STREET
LANE
APPLE AVENUE
SECOND AVENUE
FIDLER
16TH STREET (MD 390)
SILVER SPRING TRANSIT CENTER
RAMSEY AVENUE
WAYNE AVENUE
DIXON AVENUE
BONIFANT STREET
RIPLEY STREET
SILVER SPRING LIBRARY STATION
DRAPER LANE
(MD 384) EAST WEST HIGHWAY (MD 410)
COLESVILLE ROAD
EASTERN AVENUE
SILVER SPRING AVENUE
BLAIR MILL ROAD
GEORGIA AVENUE (MD 29)
NEWELL STREET
KENNETT STREET
MARYLAND-DC LINE
13TH STREET

FIGURE 7-17b
SILVER SPRING TRANSIT CENTER STATION AREA-WIDE IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

LEGEND

- SILVER SPRING TRANSIT CENTER STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- EXISTING SIDEWALKS
- CAPITAL CRESCENT TRAIL
- METROPOLITAN BRANCH TRAIL (PLANNED)

PROPOSED IMPROVEMENTS

- SHARED USE PATH
- SIDEWALK
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

N

SILVER SPRING TRANSIT CENTER

SILVER SPRING LIBRARY STATION

FIRST AVENUE

SPRING STREET

GEORGIA AVENUE (MD 97)

FENWICK LANE

CAMERON STREET

APPLE AVENUE

SECOND AVENUE

FIDLER LANE

16TH STREET (MD 390)

RAMSEY AVENUE

WAYNE AVENUE

DIXON AVENUE

BONIFANT RIPLEY STREET

SILVER SPRING AVENUE

GEORGIA AVENUE (MD 29)

COLESVILLE ROAD (MD 384)

EAST WEST HIGHWAY (MD 410)

EASTERN AVENUE

BLAIR MILL ROAD

MARYLAND-DC LINE

NEWELL STREET

KENNETT STREET

13TH STREET

FIGURE 7-18
SILVER SPRING TRANSIT CENTER STATION
PROPOSED PEDESTRIAN IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

Table 7-5 - Pedestrian Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE: Reconstruction of Curb Ramps	Reconstruction of Existing Sidewalks	Reconstruction of Driveway Aprons	Removal of Sidewalk Obstructions	Widening of Non-Compliant Sidewalk Widths	Reconstruction of Sidewalks with Non-Compliant Slopes	Reconstruction of Mid-Block Crossings	Striping of Crosswalks	Signal Upgrades to APS/CPS	Construction of New Curb Ramps	Construction of New Sidewalks	Installation of Additional Signing	Construction of Curb Extensions	Construction of Mid-Block Crossings	Construction of Median Refuge	Installation of New APS/CPS	Other	BENEFITS: Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score	IMPACTS: Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
Area-wide Improvements																																
1	ADA Upgrades to Existing Sidewalks	MDOT SHA/ MCDOT	●	●		●	●	●													2	3	5	5	15		3	3	1	3	10	2	1	3.0
2	ADA Upgrades to Existing Driveway Aprons	MDOT SHA/ MCDOT			●																2	3	5	5	15		2	2	1	3	8	2	1	3.8
3	ADA Upgrades to Existing Intersections	MDOT SHA/ MCDOT							●	●											2	4	5	5	16		3	3	1	3	10	2	1	3.2
4	Upgrades to APS/CPS	MDOT SHA/ MCDOT									●										2	4	5	5	16		2	2	1	2	7	2	1	4.6
Colesville Road (MD 384)																																
5	16th Street (MD 390) to Georgia Avenue (MD 97)	MDOT SHA	●	●		●					●				●					Shared Use Path	5	3	3	5	16		3	2	2	3	10	2	2	6.4
Wayne Avenue																																
6	Colesville Road (MD 384) to Georgia Avenue (US 29)	MCDOT	●	●		●				●	●	●								Repair APS/ CPS; Median fence	4	4	4	5	17		2	3	1	3	9	2	2	7.6
Ramsey Avenue																																
7	Bonifant Street to Cameron Street	MCDOT	●	●	●	●	●														4	4	4	5	17		2	2	1	3	8	2	2	8.5
Second Avenue																																
8	Colesville Road (MD 384) to Spring Street	MCDOT	●	●	●	●															3	2	4	5	14		2	3	1	2	8	2	2	7.0
East-West Highway (MD 410)																																
9	16th Street (MD 390) to Georgia Avenue (US 29)	MDOT SHA	●	●		●			●				●	●						Pedestrian Switchback	3	3	4	5	15		2	2	1	3	8	2	2	7.5

$$Priority\ Ranking = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

7.3.2 Proposed Bikeway Improvements

As discussed in Section 7.1.2, the Silver Spring CBD is an area with high traffic and pedestrian volumes, as well as a growing bicycle network. Currently, bicyclists can utilize the Second Avenue cycle track, the Capital Crescent Trail, and shared roads to traverse the area. Additional bicycle facilities with further increase safety and connectivity.

Several bikeway improvements were identified throughout Silver Spring CBD. See Figure 7-19 for a map of the proposed bikeway improvements. The benefits, impacts, and equity factor for each improvement were analyzed based on the criteria outlined in Section 2.8 of this report. A summary of bicycle improvements by street and their priority rankings can be found in Table 7-6. The County should consider the higher ranked bicycle facilities as more critical than the lower ranked bike facilities.

1. Area-wide Improvements to Signing

Improvement Type: Bicycle Route / Wayfinding Signing

Priority Ranking: 4.8 Time Frame: Short-term Cost Category: 2

The Silver Spring CBD lacks bicycle route and wayfinding signing throughout the area. A new signing system should be planned based on existing and proposed bicycle routes to include directions and distance to the Purple Line station, as well as other destinations and bike routes throughout the area.

2. Fenwick Lane

From: Second Avenue to Georgia Avenue (MD 97)

Improvement Type: Shared roadway markings

Priority Ranking: 8.8 Time Frame: Short-term Cost Category: 1

Fenwick Lane is an urban residential street that runs west to east. Its current configuration includes two 5-foot sidewalks on either side, two travel lanes, and parking on both sides of the street. The current roadway width is approximately 34 feet. Shared roadway markings, or sharrows, along Fenwick Lane would connect the Capital Crescent Trail to the Second Avenue cycle track. Sharrow markings are recommended to reinforce messaging to drivers that the road is shared. They can be installed while maintaining the existing road section, and the roadway does not have heavy volume of traffic. Sharrow markings should be set in the middle of travel lanes (minimum 11-ft from face of curb where adjacent to parking) and 4-ft from face of curb where there is no parking. Installation of the sharrow markings would not have any impacts.

3. Silver Spring Avenue

From: Dixon Avenue to Georgia Avenue (US 29)

Improvement Type: Separated Bike Lanes

Priority Ranking: 4.6 Time Frame: Mid-term Cost Category: 3

Silver Spring Avenue is an undivided urban business road that runs West to East. Its current configuration includes a continuous 5-foot sidewalk on the south side and two travel lanes. The current roadway width is approximately 24 feet.

Separated bike lanes along Silver Spring Avenue would provide an important link from the southeast to the Silver Spring Transit Center station. Currently, a developer is building separated bike lanes along Dixon Avenue as part of the Ripley II project. Separated bike lanes along Silver Spring Avenue would be a natural extension. The existing roadway asphalt surface is in poor condition. To complete this extension, right of way will either need to be acquired or donated in coordination with redevelop of the parcel on the north side. The ultimate planned right of way width is 70-ft. In the meantime, Silver Spring Avenue should continue to be marked with sharrows.

Installation of separated bike lanes will most likely have impacts to parking, utilities, and right-of-way.

4. Colesville Road (MD 384)

From: Eastern Avenue to East-West Highway (MD 410)

Improvement Type: Separated bike lanes

Priority Ranking: 2.7 Time Frame: Long-term Cost Category: 3

Separated bike lanes along Colesville Road (MD 384) would connect the Silver Spring Transit Center and the Purple Line with Eastern Avenue, Washington, D.C., and points from the southwest. This route, which is within the ¼ mile boundary, provides one of the only connections to the northeast side of the Silver Spring CBD, which is bisected by the existing CSXT/WMATA railroad corridor.

Colesville Road (MD 384) is a divided urban principal arterial highway that runs northeast to southwest. Its current configuration includes sidewalks on either side, six travel lanes, and a raised, landscaped median. The current roadway width is approximately 80-ft. There is metered, off-peak 9-hr parking on the westbound outside lane. It is not clear if parking is permitted on the eastbound roadway, however, no parked vehicles were observed using this lane and the outside lane appears to be excess capacity, as only two lanes feed into this segment of roadway from 16th Street across the Maryland-District line. Existing signs indicate that bicycles may use the full lane.

Assuming that the raised, landscaped median remains, installation of separated bike lanes would have impacts to westbound parking. Floating or shared bus stops would need to be installed on both sides. A bicycle signal would be needed at the intersection with East-West Highway (MD 410). Further traffic and parking study would be needed to be further evaluate feasibility of these improvements, however, at a minimum a separated bike lane on the eastbound roadway appears to be a viable improvement. Proposed improvements would need to be approved by MDOT SHA.

5. 13th Street

From: Eastern Avenue to East-West Highway (MD 410)

Improvement Type: Separated Bike Lanes

Priority Ranking: 2.9 Time Frame: Short-term Cost Category: 3

13th Street is an undivided urban residential that runs West to East within the ½ mile boundary. Its current configuration includes two 5-foot sidewalks on either side, two travel lanes, and parking on both sides of the roadway. The current roadway width is approximately 40 feet. There are currently sharrow markings along 13th Street. Separated bike lanes along 13th Street would be a continuation of the planned separated bike lanes along Burlington Avenue (MD 410), providing a continuous bikeway between the Maryland-DC line and the planned Fenton Street bikeway. This bikeway would also help bicyclists connect with the Metropolitan Branch Trail and Montgomery Community College.

Installation of separated bike lanes will most likely have impacts to a combination of parking, utilities / right-of-way, and the street trees, which would need to be further evaluated during design. A bicycle signal would be needed at the Georgia Avenue (US 29) crossing, which would require MDOT SHA approval.

6. Newell Street

From: Eastern Avenue to East-West Highway (MD 410)

Improvement Type: Shared Roadway Markings

Priority Ranking: 4.4 Time Frame: Short-term Cost Category: 1

Newell Street is an undivided urban residential street that runs northeast to southwest within the ½ mile boundary. Its current configuration includes a 5-foot sidewalk on both sides, two travel lanes, and parking on the south side of the roadway for half of its length and parking on both sides of the roadway for the remaining length. The current roadway width is approximately 36 - 48 feet. Shared roadway markings, or sharrows, would provide a connection between Washington, D.C. and East-West Highway (MD 410). Sharrow markings are recommended to reinforce messaging to drivers that the road is shared. They can be installed while maintaining the existing road section, and the roadway does not have heavy volume of traffic. Sharrow markings should be set in the middle of travel lanes (minimum 11-ft from face of curb where adjacent to parking) and 4-ft from face of curb where there is no parking. Installation of the sharrow markings would not have any impacts.

7. East-West Highway (MD 410)

From: 16th Street (MD 390) to Blair Mill Road

Improvement Type: Separated Bike Lanes

Priority Ranking: 4.3 Time Frame: Long-term Cost Category: 4

East-West Highway (MD 410) is a five-lane urban principal arterial with two lanes in either direction and a striped median, located within the ¼ mile boundary. There are landscape buffers and sidewalks on both sides of the road but no bicycle facilities. The existing roadway width varies from approximately 36 - 54 feet. The posted speed is 30 mph. The CSXT/WMATA railway runs parallel to East-West Highway (MD 410) on the north side, creating a man-made barrier to bicycle connectivity. Installation of separated bike lanes along East-West Highway (MD 410) would be a significant improvement to bicycle connectivity in the southern portion of the Silver Spring CBD. Widening the roadway would have significant impacts to mature street trees, lighting, overhead utilities, and right of way, therefore, the only practical alternative would be to work primarily within the existing curb-to-curb width. Eliminating the striped median and turn lanes in favor of adding separated bike lanes on both sides of the roadway would transform East-West Highway (MD 410) into a truly complete street. But this would necessitate a significant paradigm shift away from the prioritization of vehicular traffic. Although there appear to be several segments of roadway with excess capacity, further traffic analysis would be needed to confirm this. There are several driveways, so eliminating the median would likely result in an increase in rear-end crashes involving left-turns. Signalized intersections with conflicting turning movements would need to be retrofitted with bicycle signals. These improvements should only be considered if bicycle demand grows in this corridor and is confirmed by further traffic study. Proposed improvements would require MDOT SHA approval.

8. East-West Highway (MD 410)

From: Blair Mill Road to Georgia Avenue (US 29)

Improvement Type: Separated Bike Lanes / Bike Lanes

Priority Ranking: 2.1 Time Frame: Long-term Cost Category: 3

This segment of East-West Highway (MD 410) within the ½ mile boundary narrows to two eastbound lanes and one westbound lane. Separated bike lanes or bike lanes should only be pursued on this segment as an extension of separated bike lanes from the west. Roadway widening would be needed with impacts to utilities and right of way being likely. A bicycle signal would be needed at the intersection with Georgia Avenue (US 29). Proposed improvements would require MDOT SHA approval.

9. Ramsey Avenue

From: Wayne Avenue to Bonifant Street

Improvement Type: Separated bike lanes

Priority Ranking: 8.0 Time Frame: Short- to Mid-term Cost Category: 3

As discussed in Section 7.3.1, Ramsey Avenue is an important roadway segment that will connect directly from Wayne Avenue to the Purple Line station on level 3 of the Silver Spring Transit Center. The existing curb-to-curb width is 39-ft wide, but there is no parking on either side of the road. There is heavy bus activity on this segment as buses also use Ramsey Avenue to access level 2 of the transit center. Ramsey Avenue is also used for kiss 'n' ride drivers and taxis to access level 3 of the transit center. Bicyclists arriving from the north will use this roadway to reach the station. Consideration should be given to narrowing the roadway to two lanes so that separated bike lanes can be provided on both sides of the road. If the travel lanes were held at 12-ft in each direction, 4-ft bike lanes with 1-ft buffers and flexposts could be installed. The additional 5-ft can be used to widen the sidewalk to 10-ft as discussed in Section 7.3.1.

10. Ripley Street

From: Dixon Avenue to Bonifant Street

Improvement Type: Shared roadway markings

Priority Ranking: 8.8 Time Frame: Short-term Cost Category: 1

This segment of Ripley Street is an urban business street that runs between Dixon Avenue and Bonifant Street within the ¼ mile boundary, connecting directly to the proposed Purple Line station. Its current configuration includes sidewalks with landscaped buffers on either side, two travel lanes, and parking on both sides of the street. Shared roadway markings, or sharrows, along Ripley Street would connect the with the station as well as the Metropolitan Branch Trail and Capital Crescent Trail. Sharrow markings are recommended to reinforce messaging to drivers that the road is shared. They can be installed while maintaining the existing road section, and the roadway does not have heavy volume of traffic. Sharrow markings should be set in the middle of travel lanes (minimum 11-ft from face of curb where adjacent to parking) and 4-ft from face of curb where there is no parking. Installation of the sharrow markings would not have any impacts.

LEGEND

- SILVER SPRING TRANSIT CENTER STATION
- PURPLE LINE
- CAPITAL CRESCENT TRAIL
- METROPOLITAN BRANCH TRAIL (PLANNED)

UNDER DESIGN/CONSTRUCTION

- SEPARATED BIKE LANES

PROPOSED BIKEWAYS

- CYCLE TRACK
- SEPARATED BIKE LANES
- SHARED USE PATH
- SHARROW
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

N

SPRING STREET
FIRST AVENUE
GEORGIA AVENUE (MD 97)
FENWICK LANE
CAMERON STREET
LANE
FIDLER
APPLE AVENUE
SECOND AVENUE
16TH STREET (MD 390)
SILVER SPRING TRANSIT CENTER
RAMSEY AVENUE
WAYNE AVENUE
DIXON AVENUE
BONIFANT STREET
RIPLEY STREET
SILVER SPRING LIBRARY STATION
COLESVILLE ROAD
(MD 384)
EAST WEST HIGHWAY (MD 410)
EASTERN AVENUE
BLAIR MILL ROAD
MARYLAND-DC LINE
NEWELL STREET
KENNETT STREET
GEORGIA AVENUE (US 29)
SILVER SPRING AVENUE
13TH STREET

FIGURE 7-19
SILVER SPRING TRANSIT CENTER STATION
PROPOSED BIKEWAY IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

Table 7-6 - Bikeways Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE							BENEFITS						IMPACTS								
			Sharrow	Cycle Track	Separated Bike Lanes	Striped Bike Lanes	Shared-Use Paths	Other		Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score		Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
Area-wide Improvements to Signing																								
1	Bicycle / Wayfinding signing	MCDOT						Bicycle/ Wayfinding Signing		4	2	1	5	12		1	1	1	2	5	2	1	4.8
Fenwick Lane																								
2	Second Avenue to Georgia Avenue (MD 97)	MCDOT	●							3	2	1	5	11		1	2	1	1	5	2	2	8.8
Silver Spring Avenue																								
3	Metro Branch Trail to Georgia Avenue (US 29)	MCDOT			●					5	5	1	5	16		4	5	2	3	14	2	2	4.6
Colesville Road (MD 384)																								
4	Eastern Avenue to East-West Highway (MD 410)	MDOT SHA			●					5	5	1	5	16		2	5	2	3	12	2	1	2.7
13th Street																								
5	Eastern Avenue to East-West Highway (MD 410)	MCDOT			●					5	5	1	5	16		2	4	2	3	11	1	2	2.9
Newell Street																								
6	Eastern Avenue to East-West Highway (MD 410)	MCDOT	●							3	2	1	5	11		1	2	1	1	5	1	2	4.4
East-West Highway (MD 410)																								
7	16th Street (MD 390) to Blair Mill Road	MDOT SHA			●					5	5	1	5	16		3	5	3	4	15	2	2	4.3
8	Blair Mill Road to Georgia Avenue (US 29)	MDOT SHA			●					5	5	1	5	16		4	5	3	3	15	1	2	2.1
Ramsey Avenue																								
9	Wayne Avenue to Bonifant Street	MCDOT			●					5	5	1	5	16		1	3	1	3	8	2	2	8.0
Ripley Street																								
10	Dixon Avenue to Bonifant Street	MCDOT	●							3	2	1	5	11		1	2	1	1	5	2	2	8.8

$$Priority\ Ranking = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

7.3.3 Maintenance

Landscape maintenance items, such as landscape and grading improvements, are an inexpensive way to increase pedestrian comfort and aesthetic value. A map showing the location of maintenance is included in Figure 7-24.



Figure 7-20 Backfill needed to prevent tripping hazard on edge of sidewalk.



Figure 7-21 Overgrown trees and shrubs provide horizontal and vertical obstructions on Kennett Street.



Figure 7-22 Soil erosion on to shared use path along Colesville Road.



Figure 7-23 Low hanging tree branches over sidewalk along 16th Street


LEGEND
SILVER SPRING TRANSIT CENTER STATION
PURPLE LINE
PURPLE LINE IMPROVEMENTS
CAPITAL CRESCENT TRAIL
PROPOSED IMPROVEMENTS
LANDSCAPE MAINTENANCE
QUARTER MILE BOUNDARY
HALF MILE BOUNDARY
N
SPRING STREET
FIRST AVENUE
GEORGIA AVENUE (MD 97)
FENWICK LANE
CAMERON STREET
LANE
APPLE AVENUE
SECOND AVENUE
FIDLER
16TH STREET
(MD 390)
SILVER SPRING TRANSIT CENTER
RAMSEY AVENUE
SILVER SPRING LIBRARY STATION
WAYNE AVENUE
DRAPER LANE
DIXON AVENUE
BONIFANT STREET
RIPLEY STREET
(MD 384)
EAST WEST HIGHWAY (MD 410)
COLESVILLE ROAD
EASTERN AVENUE
SILVER SPRING AVENUE
BLAIR MILL ROAD
GEORGIA AVENUE (MD 29)
NEWELL STREET
KENNETT STREET
MARYLAND-DC LINE
13TH STREET
FIGURE 7-24
SILVER SPRING TRANSIT CENTER STATION
MAINTENANCE IMPROVEMENTS
0 0.05 0.1 0.2 0.3 0.4
Miles

7.4 Final Recommendations

The Silver Spring CBD has a large downtown commercial district surrounded by residential neighborhoods. As an urban environment, many routes have sidewalks and intersections are designed with pedestrian crossing accommodations. However, typical strategies have been identified for several pedestrian routes to improve the overall quality of the routes and ADA compatibility. Existing signalized crossings and crosswalks would also benefit from being updated to current standards.

The present-day condition in this BiPPA has enough existing infrastructure for pedestrians to travel through the downtown areas; however, some of the existing infrastructure is aging and requires upgrades to comply with current safety and ADA standards. With a heavily used downtown district, anchored by commercial businesses, urban residences and the existing Silver Spring Transit Center, further improvements to pedestrian safety, connectivity, and accessibility will benefit the overall quality of life for those that live and work in the study area. Minor gaps in connectivity in the outlying parts of the study area will also be improved. New and upgraded bicycling infrastructure will increase bicyclist safety and connectivity, encouraging more users to choose bicycling as a mode of transportation; however, these improvements require extensive coordination with MDOT SHA and M-NCPPC. Bicyclist infrastructure should be considered over the long term by working with both agencies to construct incremental changes needed to implement the master planned bicycle network.

The highest ranked pedestrian improvements are area-wide APS/CPS upgrades and sidewalk improvements on Ramsey Avenue, Wayne Ave, and East-West Highway (MD 410). The highest ranked bicycle corridors are Fenwick Lane, Ripley Street, and Ramsey Avenue. Area-wide bicycle route signing ranks the highest. High priority should be assigned to the Silver Spring Transit Center improvements as this station is forecasted to have the second highest number of boardings along the Purple Line.

The overall goals of the Silver Spring CBD Sector Plan are to create a transit-oriented, pedestrian-friendly downtown with civic attractions, entertainment, parks, and tree-lined streets. The overall strategy of this report is to prioritize improvements in the vicinity of the Purple Line station to increase safety, accessibility, and connectivity for pedestrians and bicyclists. Therefore, these improvements should be implemented carefully to align with the sector plan goals.

8 Silver Spring Library

8 Silver Spring Library

8.1 Study Area

8.1.1 Existing Area

The Silver Spring Library Station on the Purple Line is proposed near the intersection of Wayne Avenue and Fenton Street in downtown Silver Spring. The station location and map of the study limits can be found in Figure 8-1. The area is part of the Silver Spring Commercial Business District (CBD) and is a bustling urban community transit hubs, shopping and dining districts, downtown residences, and commercial offices. Outside of the city center are residential neighborhoods with schools and parks. This study area overlaps with the Silver Spring Transit Center Station and the Dale Drive Station. For the purposes of this report, the Silver Spring Library Station study area is truncated in order to avoid duplicate recommendations for pedestrian and bicycle access improvements.

Within the ¼-mile boundary, the area is predominantly commercial, with shopping, restaurants, office buildings, as well as apartment buildings with ground-floor retail. A small portion of the surrounding residential neighborhoods falls within the ¼-mile boundary. The ½-mile boundary to the southeast consists of mostly single- and multi-family residential homes, and parks. Some commercial uses are also found within the ½-mile boundary. Data on major roadways and their respective limits, minimum rights-of-way, and number of lanes are presented in Table 8-1, Street and Highway Classification.

Existing pedestrian and cycle traffic in the study area is significant due to its central location in downtown Silver Spring. Generators of pedestrian and bicycle traffic include the area's businesses, agencies, housing, schools and parks, as well as the existing nearby Silver Spring Metro Station, which provides access to the Metro's Red Line route, allowing users to travel to and from Washington, DC. The main corridors in the study area are Colesville Road (US 29), Georgia Avenue (US 29/MD 97), Burlington Avenue (MD 410), Wayne Avenue (MD 594-A), Fenton Street, and Spring Street. Major employers in the area include private businesses, hotels, restaurants, and retail. East Silver Spring Elementary School is nearby to the east. Figure 8-1 shows the locations of the most heavily traveled sidewalks (labelled "Major Sidewalks"). Georgia Avenue and Fenton Street are the busiest north-south routes, while Colesville Road and Wayne Avenue are the busiest east-west routes.

N

SPRING STREET
CAMERON STREET
ROAD
COLESVILLE
ROEDER
ROAD
FENTON
ELLSWORTH DRIVE
STREET
CEDAR
STREET
WAYNE AVENUE
BONIFANT STREET
HANKIN
STREET
GROVE
STREET
HOUSTON
STREET
BULLIS
LOCAL PARK
EASLEY
STREET
DALE DRIVE
STATION
SILVER SPRING
TRANSIT CENTER
GEORGIA
AVENUE
THAYER AVENUE
SILVER SPRING AVENUE
CARROLL
LANE
SLIGO AVENUE
WOODBURY
DRIVE
GIST AVENUE
CHICAGO
AVENUE
RICHMOND AVENUE
PHILADELPHIA AVENUE
SELIM ROAD
BURLINGTON
AVENUE

LEGEND

- SILVER SPRING LIBRARY STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- MAJOR SIDEWALKS
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY
- EQUITY FOCUS AREA

FIGURE 8-1
SILVER SPRING LIBRARY STATION STUDY AREA

0 0.05 0.1 0.2 0.3 0.4 Miles

8.1.2 Existing Facilities

The existing pedestrian network in Silver Spring is an extensive system of sidewalks, signalized and non-signalized intersections, curb ramps, crosswalks, pedestrian refuge islands, mid-block crossings, and pedestrian promenades. See Figure 8-6 for a map of Existing Pedestrian Facilities. Overall, the coverage and service levels of the existing facilities is fairly high, reflecting the area's location within a mature, pedestrian- and bicycle-friendly urban environment such as downtown Silver Spring. It will generally be easy to connect from the ¼ mile radius and ½ mile radius areas to the new Purple Line station, since most of the streets in the area have sidewalks. The main gap in the system is the lack of sidewalks on Grove Street, an important north-south connector from the residential area in the southern end of the study area and points further south. Hankin Street and Houston Street, which are adjacent to Grove Street and near the Silver Spring Library station, also lack sidewalks. Construction of a walking lane along Grove street is currently underway.

The extensive system notwithstanding, there are gaps in the system, and some of the facilities are either obsolete, substandard, or have experienced a decline in service level as a result of inadequate maintenance.

Sidewalks are a minimum of 4 feet wide but are often wider along the main corridors. Grass buffers are common in residential neighborhoods. Along major roadways, such as Fenton Street, sidewalks are 10 to 15 feet wide with street trees. Trip hazards and pinch points of the sidewalk are intermittent. Asphalt utility patching is common in sidewalks in the vicinity of current or recent construction. Patching has created uneven sidewalks that may pose trip hazards for pedestrians, and people with vision disabilities and on wheelchairs

Most curb ramps and crosswalks are in moderate condition. Many curb ramps are not compliant with current standards because they are not aligned properly, have slopes greater than the allowable maximum, do not have level landing areas, and/or do not include detectable warning surfaces. Crosswalks are typically striped, but often these markings are faded or not in conformance with current standards.



Figure 8-2 - Asphalt utility patching on Fenton Street near the Silver Spring Library



Figure 8-3 - Street trees and brick pavers in downtown areas.

As shown on Figure 8-6, while the sidewalk network is well-developed, there are some significant gaps: Houston Street, Thayer Avenue, Silver Spring Avenue, and Hankin Street to the east are lacking a sidewalk on one or more sides of the road.

Most intersections in this study area are signalized; however, some signals are not compliant with current APS/CPS requirements. Site investigation indicated that signalized intersections are noncompliant due to missing APS or CPS, missing both APS and CPS, incorrect spacing, or broken equipment.

Existing infrastructure for cyclists is sparse but growing through projects that are either under construction or design. Existing bicycle facilities include shared roadway markings on Grove Street, shared roadway markings on Silver Spring Avenue, shared roadway markings on Woodbury Drive, separated bike lanes on Spring Street, and a bicycle lane/sharrow lane couplet on Cedar Street. See Figure 8-7 for a map of Existing Cyclist Facilities.

Based on the field collected data, the area includes a lot of pedestrian facilities. However, there are several areas that need improvement to bring them up to current ADA standards and provide safe accessibility for all users. Although there are bike facilities, additional routes are needed to provide connectivity and safety features.



Figure 8-4 - A typical crosswalk with outdated and faded/missing markings



Figure 8-5 Pedestrian signal that requires separation between the pushbuttons

Table 8-1 Street and Highway Classification

Designation	Roadway	Limits	Minimum Right-of-Way	Lanes	Speed Limit
Major Highway					
M-8	Georgia Avenue (MD 97)	Spring Street to Colesville Road	126	6	35
M-8	Georgia Avenue (US 29)	Colesville Road to 2nd/Wayne Avenue	120	6	35
M-8	Georgia Avenue (US 29)	2nd/Wayne Avenue to Blair Mill Road	125-140	6	35
M-10	Colesville Road (US 29)	Spring Street to Georgia Avenue	120	5-6	35
M-20	Burlington Avenue (MD 410)	Georgia Avenue to Fenton Street	80	3	35
Arterial					
A-76	Wayne Avenue (MD 594-A)	Georgia Avenue to Fenton Street	80-110	4	25
A-76	Wayne Avenue (MD 594-A)	Fenton Street to Cedar Street	70-100	4	25
A-263	Spring Street	Fairview Road to Cameron Street	80	2	25
A-263	Spring Street	Cameron Street to Colesville Road	100	2	25
A-263	Spring Street	Colesville Road to Ellsworth Drive	80	4	25
A-263	Cedar Street	Ellsworth Drive to Wayne Avenue	80	2	25
A-264	Fenton Street	Cameron Street to Burlington/Philadelphia Avenue	80	2	25
Minor Arterial					
MA-35	Sligo Avenue	149’ East of Fenton Street to Carroll Lane	50	2	25
Business					
B-7	Bonifant Street	Georgia Avenue to Fenton Street	40-70	2	25
B-7	Bonifant Street	Fenton Street to Houston Street	80	2	25
B-12	Ellsworth Drive	Fenton Street to Cedar Street	70	2	25
B-15	Gist Avenue	Philadelphia Avenue to Fenton Street	70	2	25
B-20	Philadelphia Avenue	Selim Road to Fenton Street	70	2	25
B-23	Roeder Road	Fenton Street to Cedar Street	60	2	25
B-24	Selim Road	Sligo Avenue to Philadelphia Avenue	70	2	25
B-25	Silver Spring Avenue	Georgia Avenue to Fenton Street	70	2	25
B-26	Sligo Avenue	Georgia Avenue to Fenton Street	70	2	25
B-26	Sligo Avenue	Fenton Street to 149’ East of Fenton Street	80	2	25
B-27	Thayer Avenue	Georgia Avenue to Fenton Street	70	2	25
B-27	Thayer Avenue	Fenton Street to 288’ East of Fenton Street	60	2	25
B-28	Cameron Street	Georgia Avenue to Spring Street	75	2	25
Uncategorized*					
	Planning Place	Georgia Avenue to End of Road (This will be private following the 8787 development)	N/A	2	25
	Ellsworth Drive	Georgia Avenue to Fenton Street (This street is partially private)	44	2	25
	Pershing Drive	Veterans Place to Cedar Street	44	2	25
	Veterans Place	Ellsworth Drive to Pershing Drive	44	2	25
	Easley Street	Fenton Street to Cedar Street	44	2	25
	Hankin Street	Grove Street to Houston Street	44	2	25
	Grove Street	Bonifant Street to Sligo Avenue	30	2	25
	Houston Street	Bonifant Street to Thayer Avenue	44	2	25
	Cedar Street	Wayne Avenue to Easley Street	44	2	25
	Thayer Avenue	288’ East on Fenton Street to Cedar Street	44	2	25
	Silver Spring Avenue	Fenton Street to Carroll Lane	44	2	25

Table 8-1 Street and Highway Classification (Continued)

Designation	Roadway	Limits	Minimum Right-of-Way	Lanes	Speed Limit
	Twin Holly Lane	Grove Street to End of Road	44	2	25
	Carroll Lane	Silver Spring Avenue to Sligo Avenue	44	2	25
	Gist Avenue	Fenton Street to Takoma Avenue	44	2	25
	Chesapeake Avenue	Sligo Avenue to Takoma Avenue	44	2	25
	Chicago Avenue	Boundary Avenue to Sligo Avenue	44	2	25
	Boston Avenue	Richmond Avenue to Chicago Avenue	44	2	25
	Violet Place	Woodbury Drive to Chicago Avenue	44	2	25
	Richmond Avenue	Philadelphia Avenue to Fenton Street	44	2	25
	Richmond Avenue	Woodbury Drive to Chicago Avenue	44	2	25
	Woodbury Drive	Sligo Avenue to Fenton Street	44	2	25
	Mayor Lane	Thayer Avenue to Sligo Avenue (alley)	N/A	N/A	N/A
	Ripley Street	Fenton Street to Grove Street (alley)	N/A	N/A	N/A
	Bonaire Court	End of Road to Sligo Avenue	44	2	25

*Uncategorized roads are not included in the MNCPPC Roadway Functional Classification. ROW widths are based on MC-210.01 Tertiary Residential Street. Speed limits are based on minimum posted speed required by State law.

N

SPRING STREET
CAMERON STREET
ROAD
COLESVILLE
ROEDER
ROAD
FENTON
ELLSWORTH DRIVE
CEDAR
STREET
STREET
WAYNE AVENUE
BONIFANT STREET
HANKIN
STREET
GROVE
STREET
HOUSTON
STREET
BULLIS
LOCAL
PARK
EASLEY
STREET
DALE DRIVE
STATION
SILVER SPRING
TRANSIT CENTER
THAYER AVENUE
GEORGIA
AVENUE
STREET
FENTON
SILVER SPRING AVENUE
CARROLL
LANE
SLIGO AVENUE
WOODBURY
DRIVE
GIST AVENUE
CHESAPEAKE
AVENUE
RICHMOND AVENUE
PHILADELPHIA AVENUE
SELIM ROAD
VIOLET
PLACE
CHICAGO
AVENUE
BOSTON
AVENUE

LEGEND

- SILVER SPRING LIBRARY STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- EXISTING SIDEWALKS

UNDER DESIGN/CONSTRUCTION

- SHARED USE PATH
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 8-6
SILVER SPRING LIBRARY STATION
EXISTING PEDESTRIAN FACILITIES

0 0.05 0.1 0.2 0.3 0.4 Miles

N

SPRING STREET
CAMERON STREET
COLESVILLE ROAD
ROEDER ROAD
ELLSWORTH DRIVE
CEDAR STREET
FENTON STREET
WAYNE AVENUE
BONIFANT STREET
HANKIN STREET
GROVE STREET
HOUSTON STREET
EASLEY STREET
GEORGIA AVENUE
FENTON STREET
DALE DRIVE STATION
BULLIS LOCAL PARK
THAYER AVENUE
SILVER SPRING AVENUE
CARROLL LANE
SLIGO AVENUE
WOODBURY DRIVE
GIST AVENUE
CHESAPEAKE AVENUE
RICHMOND AVENUE
PHILADELPHIA AVENUE
SELIM ROAD
VIOLET PLACE
CHICAGO AVENUE
BOSTON AVENUE
BURLINGTON AVENUE
SILVER SPRING TRANSIT CENTER

LEGEND

- SILVER SPRING LIBRARY STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS
- PURPLE LINE BIKE RACK

EXISTING BIKEWAYS

- BIKE RACK
- CYCLE TRACK
- SEPARATED BIKE LANES
- SHARED USE PATH
- SHARROW
- STRIPED BIKE LANES
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 8-7
SILVER SPRING LIBRARY STATION
EXISTING CYCLIST FACILITIES

0 0.05 0.1 0.2 0.3 0.4 Miles

8.1.3 Proposed Purple Line Improvements

Multiple improvements are proposed within the Silver Spring Library Station study area in conjunction with the construction of the Purple Line. The new Purple Line Silver Spring Library Station and associated sidewalk improvements will be constructed at the intersection of Fenton Street and Wayne Avenue. The Purple Line corridor will be on Wayne Avenue and Bonifant Street and will reconstruct these roadways, incorporating sidewalks. Refer to Figure 8-8 for the construction plan of these improvements.

8.1.4 Adjacent Projects

M-NCPPC records indicate there are several developments planned or currently under construction within the Silver Spring Library station study area. Construction activities range from right-of-way or building repairs to multi-story mixed use developments. A summary of these projects and their locations is found in

Table 8-2 Adjacent Projects Summary. Adjacent projects were considered when developing a list of proposed localized improvements. This report is not proposing improvements in areas that overlap with adjacent project construction limits. In addition, this reports documents where proposed improvements end at adjacent construction project limits.

Table 8-2 Adjacent Projects Summary

Project Title / Location	MNCPPC Plan Number	Project Details
850 Sligo Avenue	82019005A	Re-develop high-rise office building into high-rise mixed-use retail apartment buildings
Quality Time Learning Annex (Georgia Avenue 150’ North of Sligo Avenue)	82020070	Re-develop a parking lot into learning center with roof top play area
Silver Spring Park (Southeast corner of Fenton Street and Silver Spring Avenue)	82010012A	Re-develop high-rise off building into the high-rise office/apartment/ hotel buildings
819 Silver Spring Avenue	820140090	Re-develop a residential house into mixed use office/retail building
Urby Silver Spring (West side of Fenton Street between Silver Spring Avenue and Thayer Avenue)	820200170	Re-develop a parking lot into a high-rise mixed-use office/retail/apartment building, Under Construction
Downtown Silver Spring (Ellsworth Drive, 200’ East of Georgia Avenue)	81999002L	Re-develop existing mixed-use building
City Place	81988046E	Re-develop existing Silver Spring City Place Mall
8621 Georgia Avenue	8201106B	Re-develop parking lot into mixed-use high-rise retail/apartment building
Guardian Building	820170100	Re-develop an office building into a high-rise mixed-use retail/ apartment building
8787 Georgia Avenue	820180100	Re-develop M-NCPPC building into high-rise mixed-use retail/apartment buildings, Under Construction
Fenton Street Bikeway		Install two-way separated bike facility on Fenton Street from Cameron Street to Burlington/Philadelphia Avenue, Under Design
Cameron Street to Planning Place Bikeway		Install two-way bike facility on alley way/parking garage exit from Planning Place to Cameron Street, Under Construction
Metro Branch Trail		Install a shared use path along CSX/Metro tracks, Under design/construction
Grove Street Greenway Pilot Program		Pilot program to install traffic calming devices and a pedestrian walkway on Grove Street, Under design/construction
Purple Line		Install a light rail system going through the Silver Spring Library and continuing on Wayne Avenue. This will include upgrades to pedestrian facilities and a bikeway, Under construction
Green Tail		Extend the existing trail from the Whole Foods parking lot to Sligo Creek Parkway

FIGURE 8–8 PURPLE LINE SILVER SPRING LIBRARY STATION CONSTRUCTION PLAN

(PREPARED BY ATKINS GLOBAL)

FOR REFERENCE ONLY. SEE STORMDRAIN PLANS IN THIS PACKAGE FOR DETAILS.

3. STRIPING SHOWN FOR REFERENCE ONLY. SEE S3-021 FOR DETAILS.

4. FOR RETAINING WALLS, SEE S3-040 FOR DETAILS.

5. TRACK SHOWN FOR REFERENCE WHEN ROADWAY ALIGNMENT IS AVAILABLE. SEE S3-050 FOR TRACK DETAILS.

6. SEE CW-16A LANDSCAPE AND STREETSCAPE PLANS FOR DETAILS.

(C1) CURB AND GUTTER TYPE A, SEE CW-33.1 FOR ROADWAY STANDARD DETAIL C1

(C2) CURB AND GUTTER TYPE A, SEE CW-33.1 FOR ROADWAY STANDARD DETAIL C2

(C3) CURB AND GUTTER TYPE D, SEE CW-33.1 FOR ROADWAY STANDARD DETAIL C3

(C7) COUNTY CURB AND GUTTER, SEE CW-33.1 FOR ROADWAY STANDARD DETAIL C7

(V1) VERTICAL STAIRWAYS, SEE CW-33.1 FOR ROADWAY STANDARD DETAILS

(1) 4 INCH CONCRETE SIDEWALK

(2) 5 INCH CONCRETE SIDEWALK

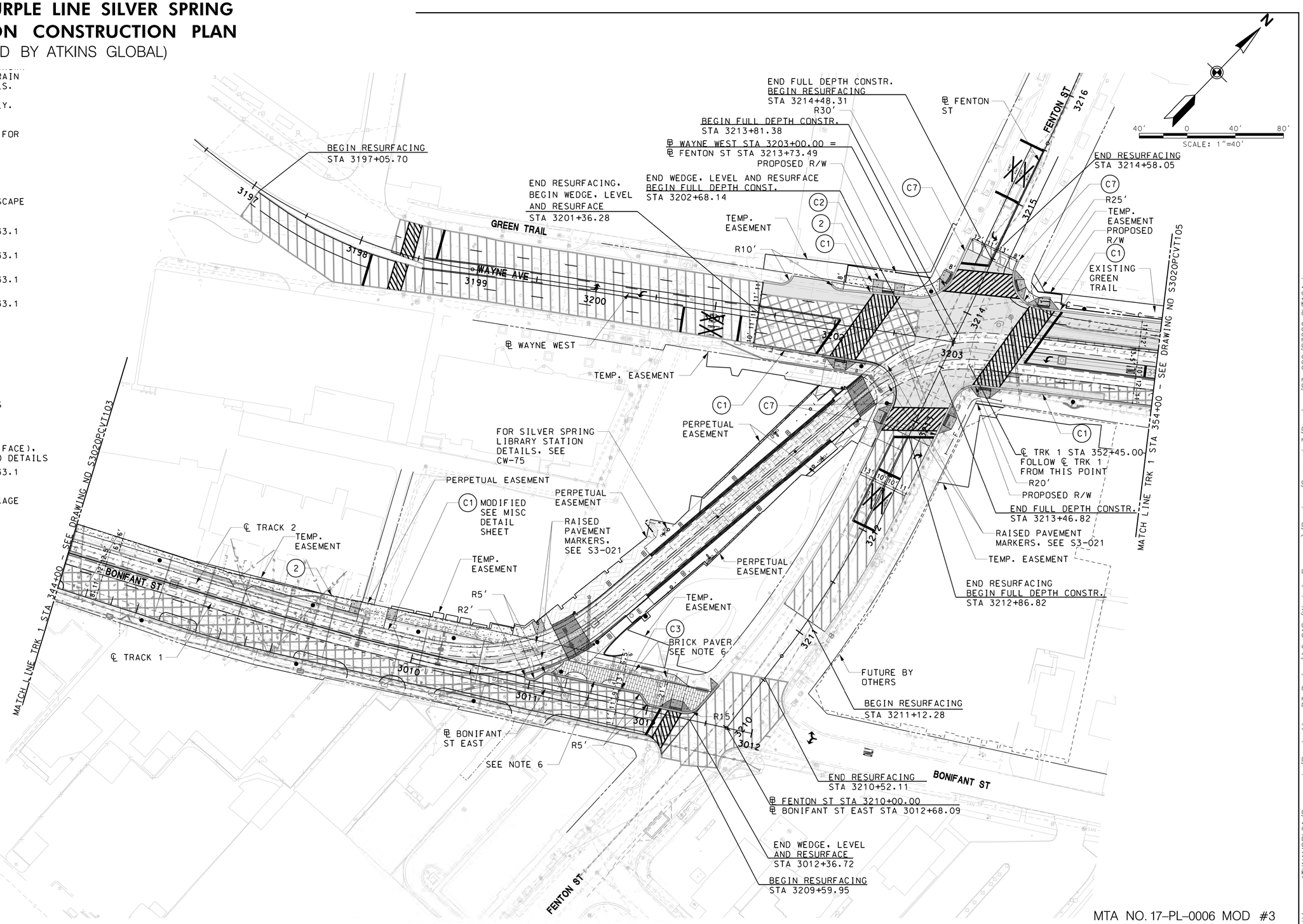
(3) SHARED USE PATH / BIKEWAY, SEE MISCELLANEOUS DETAILS SHEET THIS PACKAGE

(4) CONCRETE ENTRANCE

(5) TYPE F CONCRETE BARRIER (SINGLE FACE), SEE CW-33.1 FOR ROADWAY STANDARD DETAILS

(6) TRAFFIC BARRIER W BEAM, SEE CW-33.1 FOR ROADWAY STANDARD DETAILS

(7) FENCE, SEE FENCE PLANS THIS PACKAGE



ROADWAY LEGEND

- FULL DEPTH CONSTRUCTION
- WEDGE, LEVEL AND RESURFACE
- RESURFACE
- PROPOSED CONCRETE SIDEWALK
- PROPOSED STATION
- PAVEMENT REMOVAL

MTA NO. 17–PL–0006 MOD #3

MARYLAND DEPARTMENT OF TRANSPORTATION
MARYLAND TRANSIT ADMINISTRATION — MTA Maryland

PURPLE LINE TRANSIT PARTNERS

ATKINS
3901 Calverton Blvd, Suite 400
Calverton, Maryland 20705
Telephone: 301-210-6800
www.atkinsglobal.com

PROFESSIONAL CERTIFICATION

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland

50425 — License No.
01/04/2021 — Expiration Date

STATE OF MARYLAND — CHRISTOPHER J. JENSEN — 50425 — PROFESSIONAL ENGINEER
04/24/2019

NO.	DESCRIPTION	BY	DATE
0	RELEASE FOR CONSTRUCTION	CJC	04/22/19

REVISIONS

DESIGN YK
DRAWN JDJ
CHECK JNR
APPR CJC

PURPLE LINE LIGHT RAIL
CIVIL DESIGN
SEGMENT 3

ROADWAY PLAN

DATE: APRIL 22, 2019 SCALE: 1" = 40'

CONTRACT NO. 0–0000–0000
DRAWING NO. S3020PCVT104
SHEET NO. 33 OF 370

pw://CUSD036301.wsatkins.com:ATKNAMDPL01/Documents/Purple Line P3 Design/4.0 CAD (Work In Progress)/Roadway/Segment 3/Drawings/S3-020/S3020pCVT104.dgn
4/19/2019 3:50:57 PM

8.2 Master Plan Summary

The planning area of the Silver Spring Commercial Business District (CBD) Sector Plan overlaps with part of the study limits of the proposed Purple Line Silver Spring Library Station (see Figure 8-9). This sector plan encompasses 265 acres and provides recommendations for long-term planning of the Silver Spring area. While the sector plan discusses many aspects of regional planning, this report focuses only on recommendations related to pedestrian and cyclist infrastructure. The sector plan emphasizes the idea of "Complete Streets," which provide equal safety and quality for all users of the right-of-way, regardless of their mobility mode. The sector plan suggests that all future improvements within this area utilize the complete streets approach.

The East Silver Spring Master Plan, adopted in 2000 and covering a planning period up to 2020, overlaps with the study limits east of Fenton Street and south of Bonifant Street (see Figure 8-9). The master plan calls for "neighborhood-friendly circulation," which includes achieving a balance of facilities for pedestrians, cyclists and motor vehicles. Specific proposals include constructing an off-road bikeway on Wayne Avenue (completed, as a shared use path) and an on-road bikeway on Colchester Road east of Fenton Street. The proposed pedestrian improvements are outside the study limits of the Silver Spring Library Station.

To evaluate planning for cycling facilities, this report reviewed the Montgomery County Bicycle Master Plan, which provides bicycle-specific recommendations for various areas in Montgomery County. In instances where the Silver Spring CDB Sector Plan and the Bicycle Master Plan overlap, the Bicycle Master Plan recommendation should govern.

In addition to the master plans, the Purple Line Pedestrian Connectivity Report, prepared for the M-NCPPC in June of 2020, describes recommended pedestrian improvements in the vicinity of each Purple Line station. Connectivity was measured by taking the total comfortable distance of all residential trips and dividing it by the total distance of all residential trips (please see the Purple Line Connectivity report for a more detailed description of the methodology). The connectivity report states that the area's existing connectivity was measured at 88%. If all the proposed improvements in the connectivity report were to be constructed, then pedestrian connectivity should increase slightly to 90%.

8.2.1 Existing Pedestrian Improvement Recommendations

The pedestrian network in Silver Spring is already extensive. Due to the large volume of pedestrian infrastructure already in place, recommendations from the various master plans focus on improving the safety and accessibility of existing infrastructure. A summary of recommendations from the existing Master Plan and Studies can be found in Table 8-3.

Table 8-3 Summary of Area Pedestrian Recommendations

Roadway/Route	Recommendation	Reference
Fenton Street at Easley Street	Install high visibility crosswalks (under design by Fenton Street bikeway project)	Purple Line Pedestrian Connectivity Report
Grove Street	Support the Greenway program (this is under design by the Grove Street Greenway pilot project)	Purple Line Pedestrian Connectivity Report

8.2.2 Existing Bikeway Improvement Recommendations

Both the Silver Spring CBD Sector Plan and the Montgomery County Bicycle Master Plan provide bicycle-specific recommendations for various areas in Montgomery County. The recommendations from these plans are summarized in Table 8-4 Summary of Area Cycling Infrastructure Improvement Recommendations. Several recommended improvements are now existing facilities within the study area and are not included.

Table 8-4 Summary of Area Cycling Infrastructure Improvement Recommendations

Roadway/Route	Limits	Reference
Separated Bike Lane		
Wayne Avenue	Georgia Avenue to Cedar Street	Silver Spring CBD Sector Plan, Montgomery County Bicycle Master Plan
Sligo Avenue	Woodbury Drive to Grove Street	Montgomery County Bicycle Master Plan
Burlington Avenue	Selim Road to Fenton Street	Silver Spring CBD Sector Plan, Montgomery County Bicycle Master Plan
Shared Roadway		
Silver Spring Avenue	Grove Street to Carroll Lane	Silver Spring CBD Sector Plan, Montgomery County Bicycle Master Plan
Gist Avenue	Philadelphia Road to Chicago Avenue	Montgomery County Bicycle Master Plan
Philadelphia Avenue	Selim Road to Gist Avenue	Montgomery County Bicycle Master Plan
Grove Street (currently pilot program under construction)	Bonifant Street to Sligo Avenue	Montgomery County Bicycle Master Plan
Cycle Track		
Fenton Street (Currently under design)	Cameron Street to Burlington/Philadelphia Avenue	Silver Spring CBD Sector Plan, Montgomery County Bicycle Master Plan
Ellsworth Drive	Fenton Street to Spring/Cedar Street	Montgomery County Bicycle Master Plan
Shared Use Path		
Metro Branch Trail (Currently under design)	Georgia Avenue to Burlington Avenue	Silver Spring CBD Sector Plan, Montgomery County Bicycle Master Plan

LEGEND

- ★ SILVER SPRING LIBRARY STATION
- PURPLE LINE
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

MASTERPLANS

- SILVER SPRING CBD PLAN
- SILVER SPRING EAST PLAN

N

0 0.15 0.3 0.6 0.9 1.2 Miles

FIGURE 8-9
SILVER SPRING LIBRARY STATION MASTERPLANS

8.3 Proposed Improvements

The Silver Spring Library Station BiPPA has been evaluated for several types of pedestrian and bicycle improvements. Proposed improvements have been developed and prioritized based on the ranking criteria outlined in Section 2.8 of this report. The list of proposed improvements is based on recommendations from previous studies and Master Plans, information gathered from a field review of the site, and data from other sources. Separate analyses and maps were developed for Pedestrian Improvements and Biking Improvements.

8.3.1 Proposed Pedestrian Improvements

This study included a thorough review of existing pedestrian facilities (sidewalk ramps, driveway aprons, linear sidewalks, etc.) and determined which facilities did not meet current ADA criteria. The report and figures indicate where spot improvements are required and where linear sidewalk improvements are required. Spot improvements are shown in Figures 8-15 (a) and (b). The maps show the locations and types of existing facilities that need to be reconstructed to meet ADA standards. Proposed linear routes/ improvements for pedestrian access are shown in Figures 8-16. The map figures also indicate the improvements that will be constructed by the Purple Line project.

Refer to Table 8-5 for a summary of priority rankings of pedestrian improvements. This section describes the top ranked pedestrian improvements for the Silver Spring Library Purple Line Station.



Figure 8-10 A curb ramp missing a detectable warning surface on Ellsworth Drive.

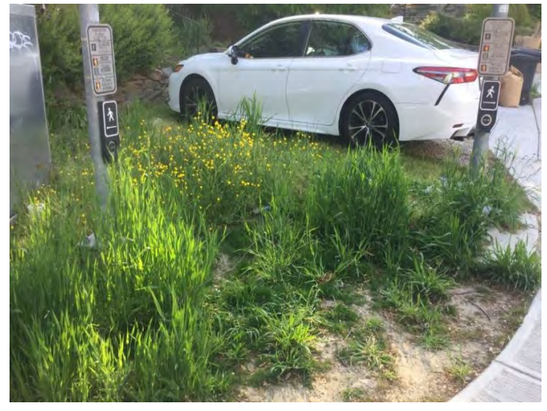


Figure 8-11 This crossing needs to have its pushbutton relocated because it is not near the sidewalk.



Figure 8-12 Sidewalk with multiple trip hazards



Figure 8-13 Sidewalk that requires replacement

1. Area-wide Improvements to Existing Sidewalks

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Sidewalk, Removal of Sidewalk Obstructions, Widening of Non-compliant Sidewalk Widths, Reconstruction of Sidewalks with Non-compliant Slopes

Priority Ranking: 3.0 Time Frame: Short-term Cost Category: 3

There is a need for general maintenance of pedestrian pathways and upgrades to pathways that do not meet current ADA, MCDOT, or MDOT SHA standards throughout the BiPPA. Curb ramps should be upgraded to meet slope requirements as set forth by ADA criteria and must include detectable warning surfaces. Sidewalks should be free from trip hazards and breaks; it is recommended that trip hazards greater than ½-inch and significant breakage be repaired by replacing the affected portion of the sidewalk. In addition, sidewalks that have cross-slopes greater than allowable or pinch points less than 36" wide should be replaced or reconfigured. Sidewalk obstructions, such as guy wires, should be reconfigured to provide adequate overhead clearance for pedestrians.

Although all area-wide sidewalk improvements are a worthwhile investment, those in the vicinity of the Purple Line, Georgia Avenue, Colesville Road, Burlington Avenue, Fenton Street, Wayne Avenue, and Spring Street should be prioritized based on current and future use.

2. Area-wide Improvements to Existing Driveway Aprons

Improvement Type: Reconstruct Driveway Aprons

Priority Ranking: 2.7 Time Frame: Short-term Cost Category: 3

There is a need to upgrade existing driveway aprons throughout the BiPPA to meet ADA slope requirements and be in conformance with current MCDOT and MDOT SHA standards. Many existing aprons in both the residential and commercial areas of Silver Spring were found to have cross-slopes greater than 2%.

Reconstruction of driveway aprons is recommended for the roads with sidewalks that provide direct connection to the Purple Line Station: Wayne Avenue and Fenton Street. Much like the area-wide improvements to existing sidewalks, area-wide improvements to existing driveway aprons would improve accessibility throughout the area by providing a continuous ADA-friendly walking path.

Driveway aprons are already located within MCDOT or MDOT SHA right-of-way, so no acquisition would be required. Complexity of construction is dependent on the existing grade, existing cross-slope, and presence of other obstructions. To determine the extent of construction and estimate costs for each driveway apron, additional site visits are required to determine utility impacts and to assess feasibility of reconstruction with existing slopes. Reconstruction of some of the aprons would be straightforward with no above-grade obstructions and would involve minimal grading. A complex reconstruction would involve above-ground obstructions and would require significant grading. Complex projects may be located along roads with steep cross-slopes or longitudinal slopes, or in the vicinity of above-ground obstructions that are difficult to relocate, such as trees, signs, or walls. Disturbance to existing utilities is expected to be minimal. Coordination with business owners and homeowners may be required.

3. Area-wide Improvements to Existing Intersections

Improvement Type: Reconstruction of Mid-block Crossing, Striping of Crosswalks

Priority Ranking: 2.9 Time Frame: Short-term to Mid-term Cost Category: 3

Crosswalk striping throughout the proposed Purple Line Silver Spring Library station BiPPA is fading or does not utilize the continental or "piano stripe" pattern that is the current standard. At a minimum, all striping should be updated to ensure there are no faded or broken portions. Crosswalks in high-traffic areas, such as those along major highways (Colesville Road, Georgia Avenue, and Burlington Avenue) or arterials (Fenton Street, Wayne Avenue, Spring Street, and Cedar Street) should be prioritized.

Upgrades to these existing crosswalks would provide increased safety and comfort for pedestrians. No impacts to existing utilities or rights-of-way are anticipated.



Figure 8-14 Faded and missing crosswalk striping at the intersection of Fenton Street and Silver Spring Avenue.

4. Area-wide Upgrades to APS/CPS

Improvement Type: Signal Upgrades to APS/CPS

Priority Ranking: 3.7 Time Frame: Short-term to Mid-term Cost Category: 2

Many intersections throughout the Silver Spring area have accessible signals but some are not compliant with ADA standards. Upgrading these signals to comply with ADA guidelines would create a safer pedestrian experience for everyone. No impacts to existing utilities, rights-of-way or environmental features are anticipated. Minor traffic pattern changes may be required at high volume intersections during construction.

Although improving accessibility at all intersections is a worthwhile investment, high traffic areas should be prioritized, including areas major highways (Burlington Avenue, Georgia Avenue, and Colesville Road) or arterials (Wayne Avenue, Fenton Street, Spring Street, and Cedar Street).

5. Colesville Road (US 29)

From: Georgia Avenue (MD 97) to Fenton Street

Improvement Type: Removal of Sidewalk Obstructions, Repair APS/CPS

Priority Ranking: 8.0 Time Frame: Short-term Cost Category: 2

Colesville Road is a major pedestrian corridor in Downtown Silver Spring, providing access to Silver Spring Transit Station, 16th Street NW in Washington DC, Georgia Avenue, and—in the future—the Silver Spring Library Purple Line station. Most of the obstructions along this segment of the road are vertical trip hazards due to settlement of brick pavers or utility cuts. Technically, these improvements are straightforward, but since it is a state road, additional coordination will be required for the County to secure a permit from SHA.

6. Georgia Avenue

From: Silver Spring Avenue to Colesville Road (US 29)

Improvement Type: Reconstruction of Existing Sidewalks, Removal of Sidewalk Obstructions, Repair APS/CPS

Priority Ranking: 6.9 Time Frame: Short-term Cost Category: 2

Georgia Avenue is a major corridor for pedestrians traveling to and from the Purple Line, Colesville Road, and Washington DC. It is also a major commercial corridor traversing Downtown Silver spring, connecting to a number of major pedestrian destinations. For these reasons, the project scores high for connectivity. The sidewalk is in a poor state of repair in some sections, with missing pavers and areas that have been repaved with asphalt, which has settled over time. These obstructions and some tree planters have created trip hazards. The proposed improvements are straightforward.

7. Silver Spring Avenue

From: Georgia Avenue (US 29) to Grove Street

Improvement Type: Reconstruction of Existing Sidewalks, Reconstruction of Driveway Aprons, Removal of Sidewalk Obstructions

Priority Ranking: 3.7 Time Frame: Short-term Cost Category: 2

Silver Spring Avenue is a local commercial street serving vehicular and pedestrian traffic traveling between Georgia Avenue commercial destinations and the adjacent residential neighborhoods, including multifamily and single-family housing. The obstructions along this street include chipped concrete, uneven asphalt paving where repairs have been made, and uneven utility covers. These all constitute trip hazards. Some driveway aprons also require reconstruction. Making these spot improvements would make Silver Spring Avenue safer and more accessible for all users.

8. Cedar Street

From: Ellsworth Drive to Bonifant Street

Improvement Type: Reconstruction of Driveway Aprons, Reconstruction of New Sidewalks

Priority Ranking: 3.5 Time Frame: Short-term Cost Category: 2

Cedar Street is a minor corridor for pedestrians traveling to and from the Purple Line and other destinations to the west. It connects to Wayne Avenue, which is a major pedestrian collector for the housing located east of the future station. There are utility pole obstructions that require sidewalk widening. Some driveway aprons also require reconstruction to provide a more even, safer surface for pedestrians. The impacts were also scored low, because the improvements would be constructed in the existing locations.

9. Colesville Road (US 29)

From: Fenton Street to Spring Street

Improvement Type: Reconstruction of Existing Sidewalks, Removal of Sidewalk Obstructions

Priority Ranking: 4.0 Time Frame: Short-term Cost Category: 2

Colesville Road is a major pedestrian corridor in Downtown Silver Spring, providing access to Silver Spring Transit Station, 16th Street NW in Washington DC, Georgia Avenue, and the Silver Spring Library Purple Line station. It will also provide pedestrian access via Fenton Street to the future Silver Spring Library Station for people living east of Spring Street. Currently the sidewalk is very uneven because of settlement of pavers, which creates an uneven surface as well as trip hazards at transition points to concrete sidewalks. The safety hazard to pedestrians is exacerbated by the high vehicular traffic volume on Colesville Road. Constructing these spot improvements would make Colesville Road safer and more accessible for all users.

10. Georgia Avenue (MD 97)

From: Colesville Road (US 29) to Spring Street

Improvement Type: Reconstruction of Existing Sidewalks, Removal of Sidewalk Obstructions

Priority Ranking: 2.0 Time Frame: Short-term Cost Category: 2

Georgia Avenue is a major corridor for pedestrians traveling to and from the Purple Line, Colesville Road, and Washington DC. It is also a major commercial corridor traversing Downtown Silver spring, connecting to many pedestrian destinations. For these reasons, the project scores high for connectivity. But the condition of the sidewalk is poor in some places, as the pavers have settled unevenly, causing pedestrian trip hazards. In some places, trees have outgrown their boxes and have displaced some pavers, causing additional hazards. While the sidewalks are continuous along this segment of the road, there is also a missing crosswalk at Fidler Lane. The impacts were scored low because these improvements, constructed in the existing locations, would not require land acquisition or relocation of utilities. Constructing these spot improvements would make Georgia Avenue safer and more accessible for all users.

11. Spring Street

From: Alton Parkway to Ellsworth Drive

Improvement Type: Reconstruction of Existing Sidewalks, Reconstruction of Driveway Aprons, Removal of Sidewalk Obstructions

Priority Ranking: 3.1 Time Frame: Short-term Cost Category: 2

This section of Spring Street is characterized by new offices and older apartment buildings, with some residual single-family housing. It is a minor corridor for pedestrians traveling to and from Colesville Road and Georgia Avenue. It does not lead directly to the Silver Spring Library station. There are concrete sidewalks along both sides of the road, but they have been cut for utility line improvements, creating an uneven surface and a trip hazard. There are other trip hazards where ventilation grates are not even with surrounding pavement. The high level of vehicular traffic makes the uneven surfaces potentially dangerous to pedestrians. Constructing these spot improvements would make Spring Street safer and more accessible for all users.

12. Easley Street

From: Fenton Street to Houston Street

Improvement Type: Reconstruction of Existing Sidewalks, Reconstruction of Driveway Aprons

Priority Ranking: 3.3 Time Frame: Short-term Cost Category: 2

Easley Street is a minor corridor for pedestrians traveling between Fenton Street and the residential communities to the east. But it has value for local residents because it leads almost directly to the new Silver Spring Library station. The sidewalk is missing on the north side of the street between Grove Street and Houston Street. The concrete sidewalk is in poor condition in places and requires reconstruction. The level of vehicular traffic is low. Constructing these spot improvements would make Easley Street safer and more accessible for all users.

13. Georgia Avenue (US 29)

From: Stoddard Place to Silver Spring Avenue

Improvement Type: Removal of Sidewalk Obstructions, Install Railing

Priority Ranking: 3.7 Time Frame: Short-term Cost Category: 2

This segment of Georgia Avenue is a major vehicular and pedestrian connector across the railway lines, linking the newer section of Downtown Silver Spring on the west to the core of downtown to the east. It also provides access to many businesses located along this major commercial thoroughfare on both sides of the railway. There is a high volume of vehicular traffic. Obstructions include uneven curb ramps where tiles have settled, trip hazards at ventilation grates, and missing pavers. Parking meter relocations or removal may be required to avoid blocking the sidewalk. Constructing these spot improvements would make Georgia Avenue safer and more accessible for all users.

14. Thayer Avenue

From: Georgia Avenue to Houston Street

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, Reconstruction of Driveway Aprons, Removal of Sidewalk Obstructions, Striping of Crosswalks, Construction of New Curb Ramps, Construction of New Sidewalks

Priority Ranking: 3.0 Time Frame: Short-term Cost Category: 2

Thayer Avenue is a minor corridor for pedestrians traveling to and from Georgia Avenue to residential communities. While pedestrian throughput is low, the street leads quite directly to the Purple Line station. Some curb ramps need reconstruction, sometimes because they have been paved over with asphalt. Utility line cuts in the concrete sidewalk, later filled in with asphalt, create additional trip hazards. The level of vehicular traffic is low, but the safety issues still need to be addressed.

Construction of new sidewalk should be implemented to connect a gap in the exiting sidewalk on the southside of Thayer Avenue. Further design should be done to avoid impacts to street trees and existing utility poles.

N

SPRING STREET
CAMERON STREET
ROAD
ROEDER
ROAD
ELLSWORTH DRIVE
COLESVILLE
FENTON
STREET
PERSHING DRIVE
CEDAR
STREET
DALE DRIVE STATION
WAYNE AVENUE
BONIFANT STREET
HANKIN
STREET
GROVE
STREET
HOUSTON
STREET
BULLIS LOCAL PARK
SILVER SPRING TRANSIT CENTER
EASLEY STREET
THAYER AVENUE
GEORGIA
AVENUE
STREET
FENTON
SILVER SPRING AVENUE
CARROLL LANE
SLIGO AVENUE
WOODBURY DRIVE
GIST AVENUE
CHESAPEAKE AVENUE
RICHMOND AVENUE
PHILADELPHIA AVENUE
SELIM ROAD
VIOLET PLACE
CHICAGO AVENUE
BOSTON AVENUE

LEGEND

- ★ SILVER SPRING LIBRARY STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS

PROPOSED IMPROVEMENTS

- REPAIR/RELOCATE APS/CPS
- INSTALL ADDITIONAL SIGING

SIDEWALK

- NON-COMPLIANT DRIVEWAY APRON
- RECONSTRUCT SIDEWALK
- SIDEWALK OBSTRUCTION
- NON-COMPLIANT WIDTH
- NON-COMPLIANT SLOPE
- INSTALL SAFETY RAILING
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 8-15a
SILVER SPRING LIBRARY STATION
AREA-WIDE IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

N

SPRING STREET
CAMERON STREET
ROAD
ROEDER
ROAD
ELLSWORTH DRIVE
COLESVILLE
FENTON
STREET
CEDAR
STREET
WAYNE AVENUE
BONIFANT STREET
HANKIN
STREET
GROVE
STREET
HOUSTON
STREET
BULLIS
LOCAL PARK
DALE DRIVE
STATION
SILVER SPRING
TRANSIT CENTER
EASLEY
STREET
THAYER AVENUE
GEORGIA
AVENUE
STREET
FENTON
SILVER SPRING AVENUE
CARROLL
LANE
SLIGO AVENUE
WOODBURY
DRIVE
GIST AVENUE
CHESAPEAKE
AVENUE
RICHMOND AVENUE
PHILADELPHIA AVENUE
SELIM ROAD
VIOLET
PLACE
CHICAGO
AVENUE
BOSTON
AVENUE

LEGEND

- SILVER SPRING LIBRARY STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS

PROPOSED IMPROVEMENTS

CURB RAMP

- CONSTRUCT CURB RAMP
- RECONSTRUCT CURB RAMP

INTERSECTION

- STRIPE CROSSWALK
- REPAIR CROSSWALK
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 8-15b
SILVER SPRING LIBRARY STATION
AREA-WIDE IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

N

SPRING STREET
CAMERON STREET
ROAD
COLESVILLE
ROAD
FENTON
ROEDER
ROAD
ELLSWORTH DRIVE
CEDAR
STREET
STREET
WAYNE AVENUE
BONIFANT STREET
HANKIN
STREET
GROVE
STREET
HOUSTON
STREET
BULLIS
LOCAL PARK
EASLEY
STREET
DALE DRIVE
STATION
SILVER SPRING
TRANSIT CENTER
THAYER AVENUE
GEORGIA
AVENUE
STREET
FENTON
SILVER SPRING AVENUE
CARROLL
LANE
SLIGO AVENUE
WOODBURY
DRIVE
GIST AVENUE
CHESAPEAKE
AVENUE
RICHMOND AVENUE
PHILADELPHIA AVENUE
SELIM ROAD
VIOLET
PLACE
CHICAGO
AVENUE
BOSTON
AVENUE

LEGEND

- SILVER SPRING LIBRARY STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- EXISTING SIDEWALKS

PROPOSED IMPROVEMENTS

- SIDEWALK

UNDER DESIGN/CONSTRUCTION

- SHARED USE PATH
- SIDEWALK
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 8-16
SILVER SPRING LIBRARY STATION
PROPOSED PEDESTRIAN IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

Table 8-5 - Pedestrian Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE: Reconstruction of Curb Ramps	Reconstruction of Existing Sidewalks	Reconstruction of Driveway Aprons	Removal of Sidewalk Obstructions	Widening of Non-Compliant Sidewalk Widths	Reconstruction of Sidewalks with Non-Compliant Slopes	Reconstruction of Mid-Block Crossings	Striping of Crosswalks	Signal Upgrades to APS/CPS	Construction of New Curb Ramps	Construction of New Sidewalks	Installation of Additional Signing	Construction of Curb Extensions	Construction of Mid-Block Crossings	Construction of Median Refuge	Installation of New APS/CPS	Other	BENEFITS	Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score	IMPACTS	Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
Area-wide Improvements																																	
1	ADA Upgrades to Existing Sidewalks	MDOT SHA/ MCDOT	●	●		●	●	●													2	3	5	2	12		2	2	1	3	8	2	1	3.0
2	ADA Upgrades to Existing Driveway Aprons	MDOT SHA/ MCDOT			●																2	3	5	2	12		3	2	1	3	9	2	1	2.7
3	ADA Upgrades to Existing Intersections	MDOT SHA/ MCDOT								●											2	4	5	2	13		3	2	1	3	9	2	1	2.9
4	Upgrades to APS/CPS	MDOT SHA/ MCDOT									●										2	4	5	2	13		2	2	1	2	7	2	1	3.7
Colesville Road																																	
5	Georgia Avenue (MD 97) to Fenton Street	MDOT SHA				●													Repair APS/ CPS		3	3	4	2	12		2	1	1	2	6	2	2	8.0
Georgia Avenue																																	
6	Silver Spring Avenue to Colesville Road (US 29)	MDOT SHA		●		●													Repair APS/ CPS		3	3	4	2	12		2	2	1	2	7	2	2	6.9
Silver Spring Avenue																																	
7	Georgia Avenue (US 29) to Grove Street	MCDOT		●	●	●															3	2	4	2	11		2	1	1	2	6	2	1	3.7
Cedar Street																																	
8	Ellsworth Drive to Bonfant Street	MCDOT			●		●						●								3	5	4	2	14		3	2	1	2	8	2	1	3.5
Colesville Road																																	
9	Fenton Street to Spring Street	MDOT SHA		●		●															3	3	4	2	12		2	1	1	2	6	1	2	4.0
Georgia Avenue																																	
10	Colesville Road (US 29) to Spring Street	MDOT SHA		●		●															3	3	4	2	12		2	1	1	2	6	1	2	4.0
Spring Street																																	
11	Alton Parkway to Ellsworth Drive	MCDOT		●	●	●															2	3	4	2	11		3	1	1	2	7	1	2	3.1
Easley Street																																	
12	Fenton Street to Houston Street	MCDOT		●	●																3	1	4	2	10		2	1	1	2	6	2	1	3.3
Georgia Avenue																																	
13	Stoddard Place to Silver Spring Avenue	MDOT SHA				●														Install Railing	2	3	4	2	11		2	1	1	2	6	1	2	3.7
Thayer Avenue																																	
14	Georgia Avenue (US 29) to Houston Street	MCDOT	●	●	●	●				●		●	●								4	4	5	2	15		3	2	3	2	10	2	1	3.0

$$Priority\ Ranking = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

8.3.2 Proposed Bikeway Improvements

As discussed in Section 0, this is an area with a high traffic and pedestrian volumes, but fewer choices for bicycle travel. Bicyclists can utilize the existing cycle track on Spring Street, Cedar Street bike lanes, and several shared roads to traverse through the area. Additional bicycle facilities are necessary to improve connectivity from the area to the new Purple Line station.

Proposed bikeway improvements are discussed below. The locations of bikeway improvements are shown in Figure 8-17. The benefits, impacts, and equity factor for each improvement were analyzed based on the criteria outlined in Section 2.8 of this report. A summary of improvements by street and their priority rankings can be found in Table 8-6. The County should consider the higher ranked bike facilities as more critical than the lower ranked bike facilities.

1. Sligo Avenue

From: Woodbury Drive to Grove Street

Improvement Type: Separated bike lanes

Priority Ranking: 1.3 Time Frame: Short-term Cost Category: 2

Separated bike lanes along Sligo Avenue would connect the Grove Street bikeway to the Woodbury Drive bikeway.

Sligo Avenue is a residential street that runs west to east. Its current configuration includes two 5-foot sidewalks on either side, two travel lanes, and on-street parking on the south side of the roadway. The current roadway width is approximately 38 feet. Separated bike lanes are suitable because the lanes can be installed within the existing road section. Installation of separated bike lanes should not have impact utilities, right-of-way width, parking, or the environment. Separated bike lanes would impact on-street parking and travel lanes would likely need to be narrowed. A traffic impact analysis would need to be conducted to support the installation of the separated bike lanes as the WB left-turn lane along Sligo Avenue will need to be reduced. The transition taper currently extends east past Woodbury Lane. Based on review of the Artspace develop on the north side of the block, it unfortunately appears that no accommodations will be made to install a bicycle facility on this block as part of that project.

This bikeway should be priotized because it would connect the Grove Street and Woodburry Drive greenways which would provide a North-South biking alternative to Fenton Street.

2. Burlington Avenue (MD 410)

From: Selim Road to Fenton Street

Improvement Type: Separated bike lanes

Priority Ranking: 2.0 Time Frame: Mid-term Cost Category: 3

Separated bike lanes along Burlington Avenue would connect Georgia Avenue to Fenton Street. This bikeway would allow cyclists to travel to points to Georgia Avenue and Fenton Street.

Burlington Avenue is an urban highway that runs west to east. Its current configuration includes two 5-foot sidewalks on either side, and four travel lanes. The current roadway width is approximately 52 feet. Separated bike lanes are appropriate for this roadway because they would provide a buffer that protects cyclists from the high volume of traffic on Burlington Avenue. Installation of separated bike lanes would most likely not (i) require moving utilities, (ii) result in changes to the width of the right-of-way, or (iii) impact the environment. A traffic impact study approved by MDOT SHA would be required.

3. Ellsworth Drive

From: Fenton Street to Spring/Cedar Street

Improvement Type: Cycle track

Priority Ranking: 2.2 Time Frame: Mid-term Cost Category: 3

A cycle track along Ellsworth Drive connects Fenton Street and the Silver Spring Civic Center to the separated bike lanes on Spring/Cedar Street. This bikeway will provide access from the Fenton Street bikeway to points to the East.

Ellsworth Drive is an urban street that runs west to east. Its current configuration includes two 5-foot sidewalks on either side, two travel lanes, and on-street parking on both sides of the street. The current roadway width is approximately 40 feet. A cycle track is appropriate for this roadway because it would provide a protected buffer to protect cyclists from the traffic on Ellsworth Drive. Installation of a cycle track will most likely have impacts to travel lanes and/or parking if the existing roadway cross section is maintained.

4. Wayne Avenue (MD 594-A)

From: Georgia Avenue (US 29) to Fenton Street

Improvement Type: Cycle track

Priority Ranking: 4.4 Time Frame: Mid-term Cost Category: 3

Wayne Avenue is an urban arterial roadway that runs west to east. Its current configuration includes two 5-foot sidewalks on either side, and four travel lanes. The current roadway width is approximately 48 feet. A separated cycle track along Wayne Avenue would connect Georgia Avenue to Fenton Street and the Silver Spring Library Purple Line Station. This bikeway would connect the existing cycle track to the west directly with the Silver Spring Library Station, as well as the planned Fenton Street cycle track.

A separated cycle track is appropriate for this roadway because it would provide a protected buffer to protect cyclists from the high volume of traffic. The cycle track should be installed on the north side of the road to meet the existing cycle track west of Georgia Avenue. Installation of the cycle track would most likely have impacts on some combination of travel lanes and on-street parking if the existing roadway cross section is maintained. If the roadway section were widened, impacts would also include street lighting, street trees, and driveway aprons. A traffic impact study approved by MDOT SHA would need to be conducted to support the installation of the cycle track. This would need to be further evaluated prior to detailed design.

5. Gist Avenue

From: Selim Road to Chicago Avenue

Improvement Type: Shared roadway markings (Sharrow)

Priority Ranking: 3.2 Time Frame: Short-term Cost Category: 1

A shared roadway marking along Gist Avenue connects Georgia Avenue and Fenton Street to points east. This bikeway will provide access from the Fenton Street bikeway from points east.

Gist Avenue is a residential street that runs west to east. Its current configuration includes two 5-foot sidewalks on either side, two travel lanes, and on-street parking on the North side of the street. The current roadway width is approximately 30 feet. Shared roadway markings are suitable for this roadway because they can be installed while maintaining the existing road section, and the roadway will not have heavy traffic volume. Installation of shared roadway markings will not have any impacts to utilities, right-of-way, parking, or the environment.

6. Silver Spring Avenue

From: Grove Street to Carroll Lane

Improvement Type: Shared roadway markings (Sharrow)

Priority Ranking: 1.6 Time Frame: Short-term Cost Category: 1

A shared roadway marking along Silver Spring Avenue connects Georgia Avenue and Fenton Street to points to the east. This bikeway would extend the existing shared roadway between Fenton Street Street and Grove Street toward the east.

Silver Spring Avenue is an urban/residential street that runs west to east. Its current configuration includes two 5-foot sidewalks on either side, two travel lanes, and on-street parking on both sides of the street. The current roadway width is approximately 40 feet. Shared roadway markings are suitable for this roadway because they can be installed while maintaining the existing road section, and the roadway will not have heavy volume of traffic. Installation of shared roadway markings do not have any impacts to utilities, right-of-way, parking, or the environment.

N

SPRING STREET
CAMERON STREET
ROAD
COLESVILLE
ROEDER
ROAD
FENTON
ELLSWORTH DRIVE
STREET
CEDAR
STREET
DALE DRIVE STATION
WAYNE AVENUE
BONIFANT STREET
HANKIN
STREET
GROVE
STREET
HOUSTON
STREET
BULLIS LOCAL PARK
EASLEY
STREET
SILV ER SPRING TRANSIT CENTER
THAYER AVENUE
GEORGIA
AVENUE
STREET
FENTON
SILVER SPRING AVENUE
CARROLL LANE
SLIGO AVENUE
WOODBURY DRIVE
GIST AVENUE
CHESAPEAKE AVENUE
RICHMOND AVENUE
PHILADELPHIA AVENUE
SELIM ROAD
VIOLET PLACE
CHICAGO AVENUE
BOSTON AVENUE
BURLINGTON AVENUE

LEGEND

- SILVER SPRING LIBRARY STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS

UNDER DESIGN/CONSTRUCTION

- SHARED USE PATH

PROPOSED BIKEWAYS

- CYCLE TRACK
- SEPARATED BIKE LANES
- SHARROW
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 8-17
SILVER SPRING LIBRARY STATION PROPOSED BIKEWAY IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

Table 8-6 - Bikeways Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE							BENEFITS						IMPACTS								
			Sharrow	Cycle Track	Separated Bike Lanes	Striped Bike Lanes	Shared-Use Paths	Other		Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score		Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
Sligo Avenue																								
1	Woodbury Drive to Grove Street	MCDOT			●					5	4	1	2	12		3	3	1	2	9	1	1	1.3
Burlington Avenue (MD 410)																								
2	Selim Road to Fenton Street	MDOT SHA			●					3	4	1	2	10		3	3	1	3	10	1	2	2.0
Ellsworth Drive																								
3	Fenton Street to Spring/Cedar Street	MCDOT		●						5	4	1	2	12		3	3	2	3	11	2	1	2.2
Wayne Avenue (MD 594-A)																								
4	Georgia Avenue (US 29) to Fenton Street	MCDOT		●						5	4	1	2	12		3	3	2	3	11	2	2	4.4
Gist Avenue																								
5	Selim Road to Chicago Avenue	MCDOT	●							3	2	1	2	8		1	2	1	1	5	1	2	3.2
Silver Spring Avenue																								
6	Grove Street to Carroll Lane	MCDOT	●							3	2	1	2	8		1	2	1	1	5	1	1	1.6

$$Priority\ Ranking = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

8.3.3 Maintenance

Landscape maintenance items, such as landscape and grading improvements, are an inexpensive way to increase pedestrian comfort and aesthetic value. A map showing the location of the required maintenance improvements is included in Figure 8-20 Silver Spring Library Maintenance Improvements.



Figure 8-18 Overgrown shrubs provide horizontal and vertical obstructions on Easley Street.



Figure 8-19 Overgrown grass on Silver Spring Avenue reduces the effective width of the sidewalk.

N

SPRING STREET
CAMERON STREET
ROAD
COLESVILLE
ROEDER
ROAD
FENTON
ELLSWORTH DRIVE
STREET
CEDAR
STREET
DALE DRIVE STATION
WAYNE AVENUE
BONIFANT STREET
HANKIN STREET
GROVE STREET
HOUSTON STREET
BULLIS LOCAL PARK
EASLEY STREET
SILVER SPRING TRANSIT CENTER
THAYER AVENUE
GEORGIA AVENUE
SILVER SPRING AVENUE
CARROLL LANE
FENTON STREET
SLIGO AVENUE
WOODBURY DRIVE
GIST AVENUE
CHESAPEAKE AVENUE
RICHMOND AVENUE
PHILADELPHIA AVENUE
SELIM ROAD
VIOLET PLACE
CHICAGO AVENUE
BOSTON AVENUE

LEGEND

- SILVER SPRING LIBRARY STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS

PROPOSED IMPROVEMENTS

- LANDSCAPE MAINTENANCE
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 8-20
SILVER SPRING LIBRARY STATION MAINTENANCE IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

8.4 Final Recommendations

Silver Spring has a large downtown commercial district surrounded by residential neighborhoods. It has plenty of existing infrastructure, however some pedestrian routes are non-compliant with current ADA standards and can be improved. Existing signalized crossings and crosswalks would also benefit from being updated to current standards.

The present-day condition in this BiPPA has enough existing infrastructure for pedestrians and cyclists to travel through the downtown areas; however, some of the existing infrastructure is aging and out of compliance with current safety and ADA standards. With a heavily used downtown district, anchored by commercial businesses, urban residences the existing Red Line Metro Station, and a multimodal regional center, improving the pedestrian and cyclist safety and accessibility is essential. Implementing the improvements in this report can benefit the Silver Spring area by making the expansive existing pedestrian infrastructure safe and accessible for all users. Minor gaps in connectivity in the outlying neighborhoods will also be improved. Additional bicycle infrastructure will increase public safety, improve connectivity, and further encourage cycling as a mode of transportation; however, these improvements will require coordination with MDOT SHA and M-NCPPC. Cyclist infrastructure should also be implemented over the long term by working with M-NCPPC and the development community to construct incremental changes needed in accordance with the master planned bicycle network.

We recommend ADA compliance to be the primary focus for this area to ensure all pedestrians have a safe, accessible path to their destination. The highest ranked pedestrian improvements are spot improvements along Colesville Road from Georgia Avenue to Fenton Street and Silver Spring Avenue from Georgia Avenue (US 29) to Grove Street, as well as upgrades to APS/CPS throughout the area. Implementing these upgrades would not only make Silver Spring streets easier for people with disabilities but for all users.

The two highest ranked bicycle corridors are Ellsworth Drive from Fenton Street to Spring Street and Wayne Avenue (MD 594-A) from George Avenue (US 29) to Fenton Street. These two bikeways would provide additional connectivity to the Purple Line, Silver Spring Library station, and other high-demand bicycle facilities in the area.

One of the major overall goals of the Silver Spring CBD Sector Plan is to reduce cars and increase pedestrian and cyclist access. The overall strategy of this report is to prioritize improvements in the vicinity of the Purple Line that increase safety, accessibility, and connectivity. Implementing the pedestrian and bicycle network improvements proposed in this report would bring Silver Spring closer to realizing the goals of the master planned community.

9 DALE DRIVE



9 Dale Drive

9.1 Study Area

9.1.1 Existing Area

The Dale Drive Station for the Purple Line is proposed at the intersection of Dale Drive and Wayne Avenue in Silver Spring. Adjacent to the proposed station are Sligo Creek Elementary School and Silver Spring International Middle School. The study area is a residential community of single-family homes with several local parks and walking trails along Sligo Creek. The area includes Ellsworth Urban Park and residential areas to the west, residential areas and Sligo Creek near the north and east, and Nolte Park and residential areas to the south. Within the ¼-mile radius, the area is predominately residential with single family homes and a local senior living center. The ½-mile radius area consists of mostly residential uses, including apartment complexes, single family homes, and local parks. Major roadways and their respective limits, minimum rights-of-way, number of lanes, and posted speed limits can be found in Table 9-1, below. A map of study limits can be found in Figure 9-1. The study area is truncated on the west by the Silver Spring Library station study area and on the east by the Manchester Place station study area.

There are various schools and parks that contribute to pedestrian and bicycle traffic in the study area. The residential portion of Dale Drive is anchored by Sligo Creek Elementary School, Silver Spring International Middle School, Ellsworth Urban Park (with a dog park), Nolte Local Park, and Sligo Creek Parkway. Major corridors within the Dale Drive Station include Wayne Avenue, Dale Drive, Ellsworth Drive, Sligo Creek Parkway, Colesville Road (US 29), Cedar Street, and Bonifant Street.

Based on review of publicly available and field collected data, it was determined that pedestrian and bicycle connectivity in the area is incomplete. Existing sidewalks do not currently provide continuous pedestrian access between residential neighborhoods and proposed station. Existing bikeways in the area are minimal and typically include a shared road rather than a separated bike facility.

N

LEGEND

- DALE DRIVE STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- MAJOR SIDEWALKS
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

KINGSBURY DRIVE
BENNINGTON DRIVE
SLIGO CREEK
DRIVE
DRIVE
DRIVE
ROWEN ROAD
ROAD
WOODSIDE
PARKWAY
ELLSWORTH
PERSHING
GREENBRIER
ASHFORD
ROAD
WINDSOR
STREET
SLIGO CREEK PARKWAY
COLESVILLE
DALE DRIVE
MAYFAIR PLACE
SPRINGVALE ROAD
CEDAR
STREET
WAYNE AVENUE
DARTMOUTH AVENUE
QUEEN ANNES
DRIVE
STREET
BONIFANT
MC NEIL ROAD
DEERFIELD AVENUE
MANSFIELD ROAD
FLEETWOOD
TERRACE
HARTFORD AVENUE
THAYER AVENUE

MANCHESTER PLACE STATION

SILVER SPRING LIBRARY STATION

FIGURE 9-1
DALE DRIVE STATION
STUDY AREA

0 0.05 0.1 0.2 0.3 0.4
Miles

Table 9-1 Street and Highway Classification

Designation	Roadway	Limits	Minimum Right-of-Way	Lanes	Speed Limit
Minor Arterial					
MA-16	Dale Drive	Piney Branch Road to Colesville Road (US 29)	70	2	30
Arterial					
A-263	Cedar Street	Ellsworth Drive to Easley Street	80	2	25
A-76 / MD 594-A	Wayne Avenue	Colesville Road (US 29) to Sligo Creek Parkway	70 - 120	4	25
Business					
B-12	Ellsworth Drive	Boundary to Cedar Street	70	2	25
B-7	Bonifant Street	Cedar Street to Wayne Place	40	2	25
B-27	Thayer Avenue	Boundary to Dale Drive	60	2	25
Uncategorized*					
	Ashford Road	Dale Drive to Windsor Street	44	1	25
	Bennington Drive	Ellsworth to Greenbrier Drive	44	1	25
	Bennington Lane	Bennington Drive to end of street	44	1	25
	Cloverfield Road	Pershing Drive to Wayne Avenue	44	1	25
	Dartmouth Avenue	Cedar Street to end of street	44	1	25
	Deerfield Avenue	Queen Anne's Drive to end of street	44	1	25
	Denver Road	Hartford Avenue to end of street	44	1	25
	Ellsworth Drive	Cedar Street to Bennington Drive	44	1	25
	Fleetwood Street	Dale Drive to Fleetwood Terrace	44	1	25
	Galveston Road	Denver Road to Dale Drive	44	1	25
	Greenbrier Drive	Wayne Avenue to Bennington Drive		1	25
	Greenwich Lane	Dartmouth Avenue to Schuyler Road	44	1	25
	Hartford Avenue	Thayer Avenue to Dale Drive	44	1	25
	Kingsbury Drive	Rowen Road to Ellsworth Drive	44	1	25
	Mansfield Road	Dale Drive to Wayne Avenue	44	1	25
	Mayfair Place	Pershing Drive to Ellsworth Drive	44	1	25
	Mayfair Place	Pershing Drive to Greenbrier Drive	44	1	25
	McNeill Road	Cedar Street Deerfield Avenue	44	1	25
	Pershing Drive	Fenton Street to Bennington Drive	44	1	25
	Queen Anne's Drive	Easley Street to Dale Drive	44	1	25
	Rowen Road	Colesville Road to Ellsworth Drive	44	1	25
	Schuyler Road	Sligo Creek Parkway to Manchester Road	44	1	25
	Schuyler Road	Dartmouth Avenue to Windsor Street	44	1	25
	Schuyler Road	Dartmouth Avenue to Windsor Street	44	1	25
	Sheffield Street	Fleetwood Terrace to end of street	44	1	25
	Springvale Road	Pershing Drive to Wayne Avenue	44	1	25
	Springvale Road	Ellsworth Drive to Wayne Avenue	44	1	25
	Thayer Place	Thayer Avenue to end of street	44	1	25
	Toll House Road	Colesville Road to Kingsbury Drive	44	1	25
	Wayne Place	Boston Street to Deerfield Avenue	44	1	25
	Windsor Street	Greenbrier Drive to Schuyler Road	44	1	25
	Woodside Parkway	Colesville Road to Dartmouth Avenue	44	1	25
	Fleetwood Terrace	Fleetwood Street to Fleetwood Street	44	1	25
	Cloverfield Place	Cloverfield Road to Mayfair Place	44	1	25
	Easley Street	Cedar Street to Queen Anne's Drive	44	1	25
	Springvale Lane	Springvale Road to end of street	44	1	25
	Oakford Place	Greenbrier Drive to Ashford Road	44	1	25
	Ellsworth Heights Street	Ellsworth Drive to Springvale Road	44	1	25
	Ellsworth Court	Ellsworth Drive to end of street	44	1	25

*Uncategorized roads are not included in the MNCPPC Roadway Functional Classification. ROW widths are based on MC-210.01 Tertiary Residential Street. Speed limits are based on minimum posted speed required by State law.

9.1.2 Existing Facilities

Existing pedestrian and bicycle facilities in the Dale Drive BiPPA are consistent with those commonly found in other older residential communities along the Purple Line corridor. The existing pedestrian network includes sidewalks, signalized and non-signalized intersections, curb ramps, crosswalks, and mid-block crossings. A map of existing facilities is shown in Figure 9-8.

Sidewalks are typically 4 feet wide and in moderate to good condition, although trip hazards and broken or cracked portions of the sidewalk are prevalent. Most sections of sidewalk are placed directly adjacent to the road, while some contain a grass buffer or barrier.



Figure 9-2 A typical residential sidewalk, looking west along Queen Annes Drive.



Figure 9-3 A residential sidewalk with a grass buffer.

As shown in Figure 9-8, there are currently no sidewalks located in the residential area near Bennington Drive and the area near Pershing Drive. Dale Drive, Sligo Creek Parkway, Colesville Road (US 29), Cedar Street, and Wayne Avenue have continuous sidewalks along the entire length within the study area. Ellsworth Drive has continuous sidewalks, except between Woodside Parkway and Bennington Drive. Bonifant Street has continuous sidewalks, except between Dale Drive and Wayne Avenue.

Most curb ramps and crosswalks are in moderate condition. Many curb ramps are not compliant with current ADA standards because they are not aligned properly, have slopes greater than the maximum allowable, do not have level landing areas or do not include detectable warning surfaces. Crossings are typically striped in high traffic residential areas, such as by the local park, middle school, and elementary school, but these markings may be faded or not in conformance with current standard.



Figure 9-4 Mismatched and broken portion of existing sidewalk.



Figure 9-5 Typical non-compliant curb ramp.

Signalized intersections were found to be equipped with APS/CPS and to be in good condition. Existing mid-block crossings appear to have been recently upgraded and are in good to moderate condition. Many intersections are lacking crosswalks and/or signage that conforms with current standards.



Figure 9-6 Typical residential roadway with no pedestrian or bicycle facilities, looking northeast along Pershing Drive.



Figure 9-7 Typical unmarked pedestrian crossing at the intersection of Bonifant Street and Dale Drive.

A map of existing Bicycle Facilities in shown in Figure 9-9. There are no bicycle facilities within the study area, aside from the Trail along Sligo Creek and bike lanes on Cedar Street.

Based on existing conditions and field collected data, facilities around Bennington Drive and the area of Deerfield Avenue do not provide adequate safety, accessibility, or connectivity for pedestrians and cyclists. In the busiest pedestrian areas, such as schools, apartment complexes, and local parks, the sidewalks, curb ramps, and crosswalks are in safe, working condition. With the number of pedestrians and cyclists expected to increase with Purple Line construction, existing facilities may not be sufficient.

N

LEGEND

- DALE DRIVE STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- EXISTING SIDEWALKS
- SLIGO CREEK TRAIL
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

KINGSBURY DRIVE
BENNINGTON DRIVE
SLIGO CREEK
DRIVE
ROWEN ROAD
ROAD
WOODSIDE
PARKWAY
ELLSWORTH
DRIVE
GREENBRIER
DRIVE
WINDSOR
STREET
ROAD
ASHFORD
PERSHING
SLIGO CREEK PARKWAY
COLESVILLE
DALE DRIVE
MAYFAIR PLACE
SPRINGVALE ROAD
ELLSWORTH HEIGHTS ST
CEDAR
STREET
MANCHESTER PLACE STATION
WAYNE AVENUE
DARTMOUTH AVENUE
QUEEN ANNES
DRIVE
DEERFIELD AVENUE
MANSFIELD ROAD
FLEETWOOD
TERRACE
BONIFANT
STREET
MC NEIL ROAD
HARTFORD AVENUE
THAYER AVENUE
SILVER SPRING LIBRARY STATION

FIGURE 9-8
DALE DRIVE STATION
EXISTING PEDESTRIAN FACILITIES

0 0.05 0.1 0.2 0.3 0.4 Miles

N

KINGSBURY DRIVE

BENNINGTON DRIVE

SLIGO CREEK

DRIVE

DRIVE

DRIVE

ROWEN ROAD

ROAD

WOODSIDE

PARKWAY

ELLSWORTH

PERSHING

GREENBRIER

ASHFORD

ROAD

WINDSOR

STREET

SLIGO CREEK PARKWAY

COLESVILLE

DALE DRIVE

MAYFAIR PLACE

SPRINGVALE ROAD

ELLSWORTH HEIGHTS ST

CEDAR

STREET

MANCHESTER PLACE STATION

WAYNE AVENUE

DARTMOUTH AVENUE

QUEEN ANNES

DRIVE

DEERFIELD AVENUE

MANSFIELD ROAD

FLEETWOOD

TERRACE

SLIGO CREEK TRAIL

BONIFANT

STREET

MC NEIL ROAD

SILVER SPRING LIBRARY STATION

HARTFORD AVENUE

THAYER AVENUE

LEGEND

- DALE DRIVE STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS
- PURPLE LINE BIKE RACK

EXISTING BIKEWAYS

- SEPARATED BIKE LANES
- SHARED USE PATH
- SHARROW
- STRIPED BIKE LANES
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 9-9
DALE DRIVE STATION
EXISTING CYCLIST FACILITIES

0 0.05 0.1 0.2 0.3 0.4 Miles

9.1.3 Proposed Purple Line Improvements

The Dale Drive Purple Line station will be located along the east leg of the Wayne Avenue (MD 594-A) and Dale Drive intersection. The station will be constructed in the center median of Wayne Avenue (MD 594-A). To accommodate the new station and the light rail tracks within Wayne Avenue (MD 594-A), the roadway will be widened and reconstructed. A shared use path will be constructed along the north side of Wayne Avenue (MD 594-A), connecting to Silver Spring CBD to the west and Sligo Creek Trail to the east. New sidewalk will be constructed along the south side of Wayne Avenue (MD 594-A) for the same limits. The shared use path will be 8-ft wide with a 5-ft buffer along the north side, and the sidewalk on the south side will be 6-ft wide with no buffer to the west and a 5-ft buffer to the east. Driveway aprons along Wayne Avenue (MD 594-A) will also be reconstructed. Crosswalks will be located at Wayne Avenue (MD 594-A) and Dale Drive, as well as Wayne Avenue (MD 594-A) and Mansfield Road. Refer to Figure 9-10 Station Construction Plans, for improvements in the vicinity of the station.

9.1.4 Adjacent Projects

Currently, there are no known projects adjacent to the project area other than the proposed Purple Line.

9.2 Master Plan Summary

Two master plans were developed for the area surrounding the proposed Dale Drive station: The North and West Silver Spring Master Plan (2000) and the East Silver Spring Master Plan (2000). See Figure 9-11 Master Plans Boundary Map, for the boundaries of these plans.

The North and West Silver Spring Master Plan was approved in 2000 and generally covers half of the study area, north of Wayne Avenue (MD 594-A). The East Silver Spring Master Plan was approved in 2000 and generally covers half of the study area, south of Wayne Avenue (MD 594-A).

9.2.2 Existing Pedestrian Improvement

The North and West Silver Spring Plan states that “the character of individual neighborhoods should be preserved and enhanced. Improvements to existing streets, sidewalks, gathering places, streetscape, and landscaping, as well as opportunities for neighborhood open spaces, should be explored and implemented.” The plan also acknowledges that many residential neighborhoods have no sidewalks. The plan goes on to recommend that the County “create a pedestrian-friendly environment by constructing and maintaining continuous, unobstructed, tree-lined sidewalks on neighborhood streets where there are bus stops, excessive non-local traffic, or that lead to major destinations.” The plan recommends constructing sidewalks along primary residential streets and says the sidewalks along secondary residential streets are appropriate. It includes recommendations to connect pedestrians with transit facilities, schools, parks, library, government center, etc. Recommendations also include sidewalks “on streets where traffic volumes or posted speeds are too high for safe walking in the roadway” as well as consideration of “alternatives to the standard concrete sidewalk that could lessen impacts to existing neighborhood character, mature trees, and front yards, including using asphalt for sidewalks or trails or possibly narrowing the roadway or sidewalk width in some instances.”

The East Silver Spring Plan supports “a hierarchy of sidewalks, paths, and bikeways connecting to parks, schools, shops, and other public facilities.” The plan also states that the County should “enhance pedestrian and bicycle access to shops, transit, schools, and other community facilities by providing a safe and attractive continuous system of sidewalks and paths throughout the area.” Furthermore, the plan says that the County should “restore, maintain, and improve the infrastructure of older neighborhoods by providing sidewalks, curbs, lighting, landscaping, and other improvements as needed. Consider both pedestrian access and safety when planning improvements.” Lastly, the plan provides a recommended map of “Major Neighborhood Routes” that includes several roads within the study area (see Table 9-2).

The Purple Line Connectivity Report indicates that pedestrians are currently not comfortable (40%) with walking around the Dale Drive station area. If all the proposed improvements are completed along with the Purple Line project, pedestrians said their comfort level to walk to the area would increase (50%).

Table 9-2 Summary of Area Pedestrian Recommendations

Roadway/Route	Recommendation	Reference
Dale Drive between Colesville Road and Piney Branch Road	Reduce speed limit from 30 mph to 25 mph	Purple Line Pedestrian Connectivity Report
Dale Drive and Bonifant Street Intersection	Add curb extensions, high visibility crosswalks, and pedestrian refuge	Purple Line Pedestrian Connectivity Report
Dale Drive, north of intersection with Wayne Avenue	Improve sidewalk on the east side of Dale Drive (at least 5-foot-wide with a five-foot-wide buffer)	Purple Line Pedestrian Connectivity Report
Colesville Road (US 29)	Wide tree lined sidewalks on both sides	North and West Silver Spring Master Plan
Queen Annes Drive	New sidewalk	North and West Silver Spring Master Plan
Bonifant Street	New sidewalk	North and West Silver Spring Master Plan
Fleetwood Terrace	New sidewalk	North and West Silver Spring Master Plan
Mansfield Road	New sidewalk	North and West Silver Spring Master Plan

9.2.3 Existing Bikeway Improvements

The North and West Silver Spring Plan recommends that the County "improve and expand the inter-connected system of bikeways and trails in Silver Spring and beyond." The plan also recommends construction of the Silver Spring Green Trail "to provide an important east-west linkage between Sligo Creek Park, the Silver Spring Transit Center, and the Capital Crescent Trail". This trail is currently under construction with the Purple Line project.

The East Silver Spring Plan recommends that the County "enhance pedestrian access, bikeways, and connections to transit stops and support transportation and design goals that encourage non-auto trips." The plan supports accommodating bicycles on public roadways and designating neighborhood bikeways (signed on-road routes) based on input from resident participation.

The Bicycle Master Plan provides recommendations for bicycle improvements throughout Montgomery County. The recommendations within the Dale Drive study are summarized in Table 9-3. In instances where the East Silver Spring Plan and/or the North and West Silver Spring Plan overlap with the Montgomery County Bicycle Master Plan, the Bicycle Master Plan recommendation should govern.

Table 9-3 Summary of Area Cycling Infrastructure Improvement Recommendations

Roadway/Route	Limits	Reference	Status
Shared Roadway			
Bennington Lane	Bennington Drive to Off-Street Trail	Montgomery County Bicycle Master Plan	Recommended
Bennington Drive	Ellsworth Drive to Bennington Lane	Montgomery County Bicycle Master Plan	Recommended
Ellsworth Drive	Bennington Drive to Cedar Street	Montgomery County Bicycle Master Plan	Existing NB bike lane from north of Cedar Street to Springvale Road
Cedar Street	Wayne Avenue (MD 594-A) to Bonifant Street	Montgomery County Bicycle Master Plan	Existing, contraflow bike lane in SB direction
Shared Use Path			
Dale Drive	Colesville Road (US 29) to Piney Branch Road (MD 320)	Montgomery County Bicycle Master Plan	Recommended
Silver Spring Green Trail - Wayne Avenue (MD 594-A)	Cedar Street to Sligo Creek Trail	Montgomery County Bicycle Master Plan	Under Construction

FIGURE 9–10 PURPLE LINE DALE DRIVE STATION CONSTRUCTION PLAN

(PREPARED BY ATKINS GLOBAL)

FOR REFERENCE ONLY. SEE STORMDRAIN PLANS IN THIS PACKAGE FOR DETAILS.

3. STRIPING SHOWN FOR REFERENCE ONLY. SEE S3-021 FOR DETAILS.

4. FOR RETAINING WALLS, SEE S3-040 FOR DETAILS.

5. TRACK SHOWN FOR REFERENCE WHEN ROADWAY ALIGNMENT IS AVAILABLE. SEE S3-050 FOR TRACK DETAILS.

(C7) COUNTY CURB AND GUTTER, SEE CW-33.1 FOR ROADWAY STANDARD DETAIL C7

(V1) VERTICAL STAIRWAYS, SEE CW-33.1 FOR ROADWAY STANDARD DETAILS

(X1) BALLAST CURB, SEE CW-33.1 FOR ROADWAY STANDARD DETAIL X1

(1) 4 INCH CONCRETE SIDEWALK

'E SIDEWALK

'H / BIKEWAY, SEE DETAILS SHEET THIS

(4) CONCRETE ENTRANCE

(5) TYPE F CONCRETE BARRIER (SINGLE FACE), SEE CW-33.1 FOR ROADWAY STANDARD DETAILS

(6) TRAFFIC BARRIER W BEAM, SEE CW-33.1 FOR ROADWAY STANDARD DETAILS

(7) FENCE, SEE FENCE PLANS THIS PACKAGE

CONSTRUCTION WORK SHALL NOT TAKE PLACE WITHIN THE BOXED AREA(S) UNTIL MTA AND FTA APPROVAL ARE IN PLACE FOR ADDITIONAL TEMP CONSTRUCTION EASEMENT AND LOD.

END WEDGE, LEVEL AND RESURFACE BEGIN RESURFACING STA 3732+51.40

BEGIN WEDGE, LEVEL AND RESURFACE STA 3731+83.84

℄ TRK 2 STA 373+16.82= ℄ DARTMOUTH AVE STA 3731+78.43

℄ TRK 1 STA 372+99.00 ℄ DARTMOUTH AVE STA 3731+60.88

VERTICAL STAIRWAY (REPLACE IN KIND)

NOT RELEASED FOR CONSTRUCTION UNTIL MCDOT COMMENT IS VERIFIED AND DD217 IS APPROVED.

RETAINING WALL (3-142)

PERPETUAL EASEMENT

TEMP. EASEMENT

MATCH LINE TRK 1 STA 371+50 – SEE DRAWING NO S3020PCVT106

DARTMOUTH AVE

℄ DARTMOUTH AVE

END RESURFACING STA 3732+70.67 GREEN TRAIL

PROPOSED R/W

R20′

R25′

R30′

END WEDGE, LEVEL AND RESURFACE STA 3731+55.48

PERPETUAL EASEMENT

FOR DETAILS SEE DARTMOUTH AVE INTERSECTION DETAILS

BEGIN WEDGE, LEVEL AND RESURFACE STA 3730+50.00

SEE BUS STOP RELOCATION PLANS S3020PCVT162

PERPETUAL EASEMENT

TEMP. EASEMENT

℄ TRK 1 STA 377+30.09 = ℄ DALE DR SOUTH STA 3151+72.62

END WEDGE, LEVEL AND RESURFACE STA 3151+68.62

QUEEN ANNES DR

℄ DALE DRIVE SOUTH

END RESURFACE STA 3052+31.47

FOR DETAILS SEE DALE DRIVE INTERSECTION DETAILS

DALE DR

℄ DALE DRIVE NORTH

END WEDGE, LEVEL AND RESURFACE BEGIN RESURFACE STA 3050+93.50

BEGIN WEDGE, LEVEL AND RESURFACE STA 3050+04.00

℄ TRK 2 STA 377+56.62 = ℄ DALE DR STA 3050+00.00

TEMP. EASEMENT

SILVER SPRING INTERNATIONAL MIDDLE SCHOOL FOR DETAILS, SEE S3-065

TEMP. EASEMENT

PROPOSED R/W

SEE BUS STOP RELOCATION PLANS S3020PCVT163

R5′

R30′

PERPETUAL EASEMENT

TEMP. EASEMENT

FOR DETAILS SEE DALE DRIVE INTERSECTION DETAILS

BEGIN WEDGE, LEVEL AND RESURFACE END RESURFACING STA 3150+96.36

BEGIN RESURFACING STA 3150+02.00

DALE DR STATION FOR DETAILS, SEE CW-75

TEMP. EASEMENT

℄ TRACK 2

℄ TRACK 1

MATCH LINE TRK 1 STA 382+50 – SEE DRAWING NO S2030PCVT108

WAYNE AVE

BONIFANT ST

WAYNE PL

N

40′ 0 40′ 80′

SCALE: 1″=40′

ROADWAY LEGEND

- FULL DEPTH CONSTRUCTION
- WEDGE, LEVEL AND RESURFACE
- RESURFACE
- PROPOSED CONCRETE SIDEWALK
- PROPOSED STATION
- PAVEMENT REMOVAL
- PROPOSED SCHOOL

MTA NO. 17–PL–0006 MOD #3

MARYLAND DEPARTMENT OF TRANSPORTATION

MARYLAND TRANSIT ADMINISTRATION — MTA Maryland

PURPLE LINE TRANSIT PARTNERS

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Calverton, Maryland 20705
Telephone: 301-210-6800
www.atkinsglobal.com

PROFESSIONAL CERTIFICATION

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland

50425 License No. — 01/04/2021 Expiration Date

04/24/2019

NO.	DESCRIPTION	BY	DATE
0	RELEASE FOR CONSTRUCTION	CJC	04/22/19

REVISIONS

DESIGN YK | DRAWN JDJ | CHECK JNR | APPR CJC

PURPLE LINE LIGHT RAIL
CIVIL DESIGN
SEGMENT 3

ROADWAY PLAN

DATE: APRIL 22, 2019 SCALE: 1" = 40'

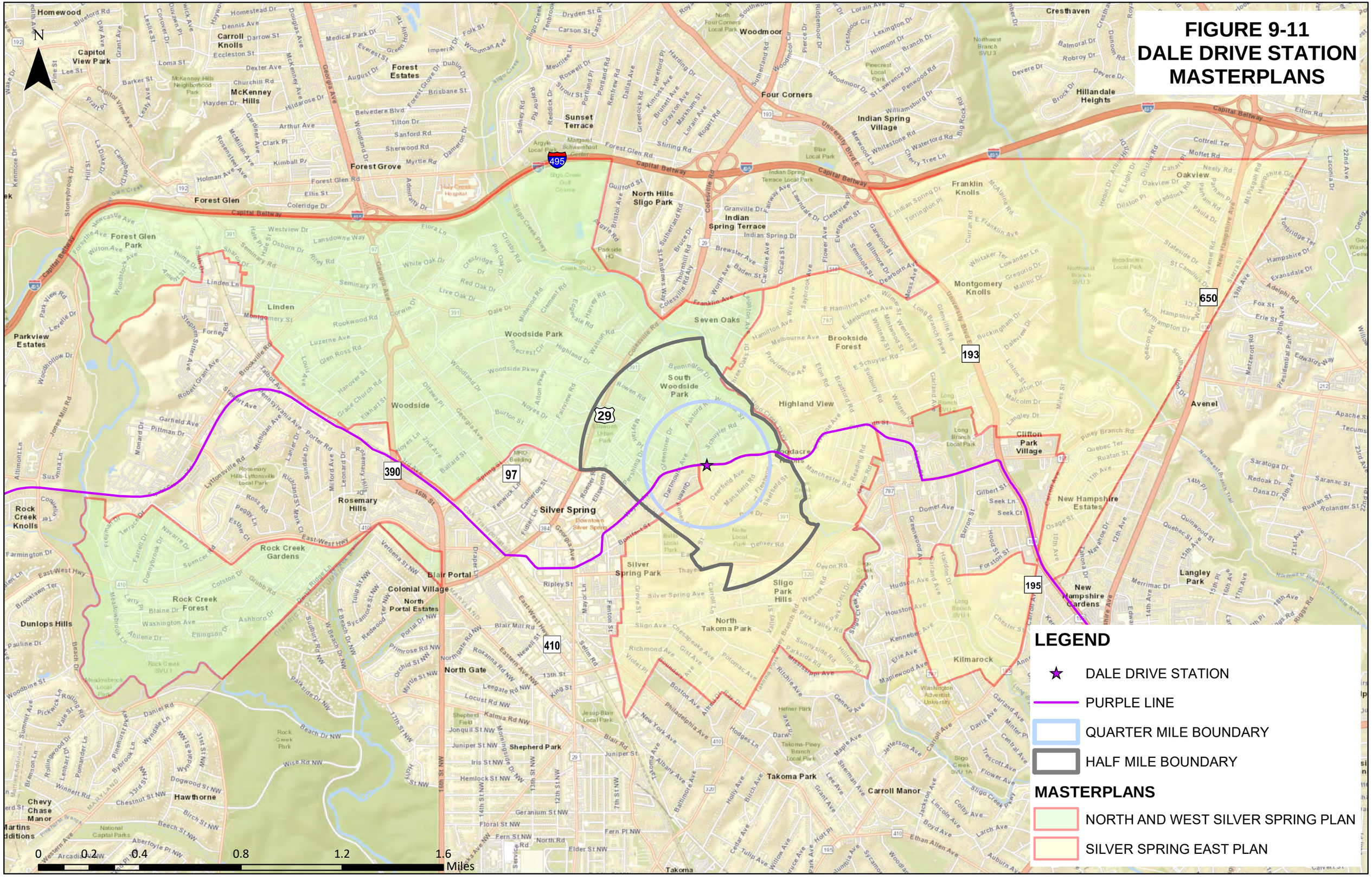
CONTRACT NO. 0–0000–0000

DRAWING NO. S3020PCVT107

SHEET NO. 36 OF 370

pw:/CUSDO36301.wsatkins.com:ATKNAMDPL01/Documents/Purple Line P3 Design/4.0 CAD (Work In Progress)/Roadway/Segment 3/Drawings/S3-020/S3020PCVT107.dgn
4/24/2019 9:11:58 AM

FIGURE 9-11
DALE DRIVE STATION MASTERPLANS



LEGEND

- ★ DALE DRIVE STATION
- PURPLE LINE
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

MASTERPLANS

- NORTH AND WEST SILVER SPRING PLAN
- SILVER SPRING EAST PLAN

9.3 Proposed Improvements

The Dale Drive BiPPA has been evaluated for several types of pedestrian and bicycle improvements. Proposed improvements have been developed and prioritized based on the ranking criteria outlined in Section 2.8 of this report.

For each improvement, an analysis of possible barriers to construction and potential project cost was included. This analysis was used to determine the project priority ranking. Each improvement was then ranked in accordance with the methodology. Please refer to Table 9-5 for a summary of priority rankings of pedestrian improvements.

9.3.3 Proposed Pedestrian Improvements

1. Area-wide Improvements to Existing Sidewalks

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalk, Removal of Sidewalk Obstructions, Widening of Non-compliant Sidewalk Widths, Reconstruction of Sidewalks with Non-compliant Slopes

Priority Ranking: 2.4 Time Frame: Short-term Cost Category: 3

There is a need for general maintenance of pedestrian pathways and upgrades to those that do not meet current ADA, MCDOT, or MDOT SHA standards throughout the BiPPA. Curb ramps should be upgraded to meet slope requirements as set forth by ADA and must include detectable warning surfaces. Sidewalks should be free from trip hazards and breaks; it is recommended that trip hazards greater than ½-inch and significant breakage be repaired by replacing the affected portion of the sidewalk. In addition, sidewalks that have cross-slopes greater than allowable or pinch points with less than a 36” width should be replaced or reconfigured. Sidewalk obstructions, such as guy wires, should be reconfigured to provide adequate overhead clearance for pedestrians.

Although all area-wide sidewalk improvements are a worthwhile investment, those in the vicinity of the Purple Line, Silver Spring International Middle School, Sligo Creek Elementary School, Sligo Creek Neighborhood Park, Nolte Local Park, and Ellsworth Urban Park should be prioritized based on current and future use.

These improvements would provide a safer accessible path for all pedestrians, especially those who may have limited mobility due to wheelchair use or vision impairments. For simple sidewalk and curb ramp improvements, no additional right-of-way acquisition will be required because these facilities are already within MCDOT or MDOT SHA right-of-way. Utility impact or relocation would be minimal. Minor traffic controls may be necessary during construction.

2. Area-wide Improvements to Existing Driveway Aprons

Improvement Type: Reconstruction of Driveway Aprons

Priority Ranking: 2.4 Time Frame: Mid-term Cost Category: 3

There is a need to upgrade existing driveway aprons to meet ADA slope requirements and be in conformance with current MCDOT and MDOT SHA standards throughout the BiPPA. Existing aprons in both the residential and commercial areas were found to have existing cross slopes greater than 2%.

For the Dale Drive BiPPA, reconstruction of driveway aprons is recommended for those roads with sidewalks that provide direct connection to the Purple Line Station. These roadways are Dale Drive, Wayne Avenue (MD 594 A), Bonifant Street, Dartmouth Avenue, and Mansfield Road. Much like the area-wide improvements to existing sidewalks, area-wide improvements to existing driveway aprons will improve accessibility throughout the area by providing a continuous ADA compliant path.

3. Area-wide Improvements to Existing Intersections

Improvement Type: Striping of Crosswalks

Priority Ranking: 4.0 Time Frame: Short-term Cost Category: 2

Crosswalk striping throughout the Purple Line BiPPA is fading or does not utilize the continental or “piano stripe” pattern at high traffic locations. At a minimum, all striping should be updated to ensure there are no faded or broken portions. Crosswalks in high-traffic areas, such as those along minor arterials (Dale Drive) or major arterials (Wayne Avenue (MD 594-A) and those in the vicinity the Purple Line, Silver Spring International Middle School, and Sligo Creek Elementary School, should be prioritized.

Upgrades to these existing crosswalks would provide increased safety and comfort for pedestrians. No impacts to existing utilities or rights-of-way are anticipated.

4. Area-wide Upgrades to APS/CPS

Improvement Type: Signal Upgrades to APS/CPS

Priority Ranking: 3.0 Time Frame: Short-term Cost Category: 1

There are five existing traffic signals within the Dale Drive study area. Three signals are located along Wayne Avenue (MD 594-A) at Cedar Street, at Dale Drive, and at Mansfield Road. All three traffic signals are planned for reconstruction along the Purple Line route and will therefore be upgraded to current ADA standards. There are two signals along Cedar Street located at Pershing Drive and at Ellsworth Drive. At Cedar Street and Ellsworth Drive, the APS push button is not located within reach of the landing on the northeast corner. On the northwest corner, the arrow is oriented in the wrong direction. These deficiencies should be corrected. No impacts to existing utilities, rights-of-way, or environmental features are anticipated.

5. Dale Drive

From: Fleetwood Street to Greenbrier Drive

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, Reconstruction of Driveway Aprons, Reconstruction of Sidewalks with Non-Compliant Slopes, Striping of Crosswalks, Construction of New Curb Ramps, Construction of New Sidewalks, Construction of Curb Extensions, Construction of Median Refuge, Installation of Additional Signing, Intersection Lighting

Priority Ranking: 3.3 Time Frame: Mid -term Cost Category: 3

Dale Drive is an existing two-lane, partially closed section, arterial roadway that bisects the study area and will provide direct pedestrian access to the Purple Line station. The posted speed is 30 mph and is photo enforced. There are existing overhead utilities with roadway lighting along the west side of the road. Along Dale Drive, north and south of Wayne Avenue (MD 594-A), there are continuous existing sidewalks along the east side of the road, however, existing sidewalks along the west side of Dale Drive are discontinuous. There are marked, uncontrolled crosswalks at Mansfield Road, at Dartmouth Avenue, and at Pershing Drive. In the short-term, to minimize the need for pedestrians to cross at marked/uncontrolled and/or unmarked/uncontrolled crosswalks, a continuous sidewalk should be installed along the west side of the roadway for the limits of the ¼ mile radius. Sidewalk gaps between Deerfield Avenue and Queen Annes

Drive, as well as between Dartmouth Avenue and Greenbrier Drive should be completed. Crosswalks should continue to be clearly signed and marked. Additional measures such as median refuge islands, curb extensions, rapid flashing beacons, crosswalk signing and marking, and intersection lighting upgrades should be evaluated at uncontrolled crossings, specifically at Bonifant Street, Deerfield Avenue, and Schuyler Road. Existing sidewalks and curb ramps should be upgraded to meet ADA standards. An ADA compliant switchback ramp should be constructed where the path through the Dartmouth Neighborhood Conservation Area intersects with Dale Drive. There is currently only a staircase at this location.

Impacts associated with construction of new sidewalks would include grading, street trees, residential landscaping, and reconstruction of driveways and lead walks. Impacts to overhead utilities and parking should be avoidable. Other improvements should have minimal impacts. Costs would be moderate for these improvements. Public outreach should be performed before any improvements are implemented.

In the long-term, a shared-use path should be planned for the west side of Dale Drive (see section 9.3.3 for further discussion).

6. Queen Annes Drive

From: Nolte Local Park to Dale Drive

Improvement Type: Construction of New Sidewalks, Construction of New Curb Ramps, Reconstruction of Driveway Aprons, Intersection Lighting

Priority Ranking: 2.5 Time Frame: Mid-term Cost Category: 3

Queen Annes Drive is a two-lane, closed section residential road with permit parking and no existing sidewalk. The segment between McNeil Road and Bonifant Street is an open section. There are existing speed humps along Queen Annes Drive between Bonifant Street and Dale Drive. There are several mature trees growing immediately adjacent to the curb line. The roadway is located within the ¼ mile radius southwest of the station.

New sidewalk, curb ramps, and intersection lighting upgrades would improve overall connectivity, safety, and accessibility of the area. The roadway is narrow, so impacts would include a combination of street trees, utility poles, and/or resident street parking, as well as reconstruction of driveway aprons and lead walks. According to Montgomery County regulations, any changes to residential permit parking must be initiated by the community. Grading, new curb and gutter, and potentially retaining walls and storm drain would be required to provide a minimum 4-ft wide sidewalk. Costs would be relatively high for these improvements due to the impacts. If a new sidewalk is constructed along the west side of Dale Drive from Bonifant Street to Queen Annes Drive, this improvement may not be necessary, as that improvement would provide a safe, continuous alternative route to the station from the southwest. The public should be engaged to determine the best course of action.

7. Bonifant Street

From: Dale Drive to Wayne Place

Improvement Type: Construction of New Sidewalks, Construction of New Curb Ramps, Reconstruction of Driveway Aprons

Priority Ranking: 3.5 Time Frame: Short-term Cost Category: 2

This segment of Bonifant Street is a two-lane, closed section residential street with permit parking and no existing sidewalk. Existing overhead utilities are located on the south side of the street. The roadway is located within the ¼ mile radius, south of the station. There is a paper street with an existing sidewalk connection at the north end of Bonifant Street near Wayne Avenue. This existing sidewalk will end on Wayne Street close to the proposed Purple Line Station. The marked crosswalk that connects with the Station is located further west at the intersection of Wayne Avenue (MD 594-A) and Dale Drive.

New sidewalk and curb ramps are recommended on the north side, which would improve overall connectivity, safety, and accessibility of the street. Impacts would include minor grading, relocation of an existing guardrail and signs, residential landscaping, fences in the public right of way, and reconstruction of driveways and lead walks. Impacts to overhead utilities, street trees, and parking should be avoidable. Costs would be moderate for these improvements. Public outreach should be performed before any improvements are implemented.

8. Wayne Place

From: Bonifant Street to Deerfield Avenue

Improvement Type: Construction of New Sidewalks, Construction of New Curb Ramps, Reconstruction of Driveway Aprons

Priority Ranking: 3.8 Time Frame: Short-term Cost Category: 2

Wayne Place is a narrow, closed section residential street with two-way traffic, parking on both sides, and no existing sidewalk. Existing overhead utilities are located on the east side of the street. The roadway is located within the ¼ mile radius, southeast of the station. There is a paper street with an existing sidewalk connection at the north end where Wayne Place meets Bonifant Street that connects with Wayne Avenue (MD 594-A) very close to the station.

New sidewalk and curb ramps are recommended on the west side of the street, which would improve overall connectivity, safety, and accessibility of the street. Impacts would include minor grading and reconstruction of driveways and lead walks. Impacts to utilities, street trees, and parking should be avoidable. Costs would be low for these improvements. Public outreach should be performed before any improvements are implemented.

9. Deerfield Avenue

From: Queen Annes Drive to Wayne Place

Improvement Type: Construction of New Sidewalks, Construction of New Curb Ramps, Reconstruction of Driveway Aprons, Construction of Curb Extensions

Priority Ranking: 3.3 Time Frame: Mid-term Cost Category: 3

Deerfield Avenue is a residential street located within the ¼ mile radius, south of the station. South of Dale Drive, Deerfield Avenue is an open section, one-way southbound roadway with parking on both sides, no existing sidewalk, and existing overhead utilities on the east side of the street. East of Dale Drive, Deerfield Avenue is a closed section that has two-way traffic with parking on both sides, no existing sidewalk, and existing overhead utilities on the north side of the street.

South of Dale Drive, new sidewalk and curb ramps are recommended on the west side of the street. The one-way traffic configuration allows for flexibility with the sidewalk alignment and should incur minimal impacts. The roadway should be converted to a closed section with drainage infrastructure on the side with new sidewalk. Other impacts would include minor grading and reconstruction of driveways and lead walks. Impacts to utilities, street trees, and parking should be avoidable. Curb extensions should be used where Deerfield Avenue meets McNeil Road to minimize pedestrian exposure. This improvement should be constructed along with sidewalk on the west side of Dale Drive. East of Dale Drive, new sidewalk and curb ramps are recommended on the north side of the street. Impacts would include minor grading, street trees, residential landscaping, and reconstruction of driveway aprons and lead walks. Costs would be low for these improvements. Public outreach should be performed before any improvements are implemented.

10. Mansfield Road

From: Dale Drive to Wayne Avenue (MD 594-A)

Improvement Type: Construction of New Sidewalks, Construction of New Curb Ramps, Reconstruction of Driveway Aprons

Priority Ranking: 3.3 Time Frame: Mid-term Cost Category: 3

Mansfield Road is a closed section, residential street with two-way traffic, parking on both sides, and existing overhead utilities on the west side. At its north end, a 250-ft segment extending south from the signalized intersection at Wayne Avenue (MD 594-A) has existing sidewalks on both sides. This segment meets the existing sidewalk connection through a paper street that connects to Fleetwood Terrace. Mansfield Road is located within the ¼ mile radius, southeast of the station.

New sidewalk and curb ramps are recommended on the east side of the street. Impacts would include minor grading, street trees, residential landscaping, and reconstruction of driveways and lead walks. Impacts to utilities should be avoidable. If impacts to mature trees are to be avoided, curb extensions could be used for short stretches at the expense of minor parking impacts. Costs would be moderate for these improvements. Public outreach should be performed before any improvements are implemented.

11. Fleetwood Street/Fleetwood Terrace

From: Entire loop starting at Dale Drive

Improvement Type: Construction of New Sidewalks, Construction of New Curb Ramps, Reconstruction of Driveway Aprons

Priority Ranking: 2.3 Time Frame: Long-term Cost Category: 4

Fleetwood Terrace is a loop-shaped residential street where the only vehicular ingress/egress is a short segment of roadway named Fleetwood Street. There are no sidewalks along either street but there are two paper streets with sidewalk connections to Mansfield Road. Both Fleetwood Street and Fleetwood Terrace are closed sections with parking on both sides, existing overhead utilities on one side, and several mature trees along the back of curb. Fleetwood Street and the left side of Fleetwood Terrace fall within the ¼ radius.

New sidewalk and curb ramps are recommended on at least one side of the street, in accordance with the Easter Silver Spring Plan. However, there would be significant impacts that would include some combination of grading, street trees, parking, residential landscaping, overhead utilities, and reconstruction of driveways and lead walks. Costs would be extensive for these improvements. Public outreach should be performed to determine if there is any community interest in favor of installing sidewalks. However, because there is no thru traffic the existing condition may be sufficient. If sidewalks are desirable, a long-term plan should be established. When mature trees die, they should be removed. Any new trees should be planted to incorporate a new sidewalk alignment.

12. Dartmouth Avenue

From: Wayne Avenue (MD 594-A) to Dale Drive; Greenwich Lane to Windsor Street

Improvement Type: Construction of New Sidewalks, Construction of New Curb Ramps, Reconstruction of Driveway Aprons, Construction of Median Refuge, Construction of Curb Extensions, Striping of Crosswalks, Intersection Lighting

Priority Ranking: 3.2 Time Frame: Short-term Cost Category: 3

The segment of Dartmouth Avenue from Wayne Avenue (MD 594-A) to Dale Drive is a residential street located within the ¼ mile radius, northwest of the station. This segment is a closed section, two-way roadway with parking on the west side only, no existing sidewalk, and existing overhead utilities on the west side of the street. Dartmouth Avenue connects to the Dartmouth Neighborhood Conservation Area and a path that leads to the Silver Spring International Middle School and Purple Line station. The segment of Dartmouth Avenue from Greenwich Lane to Windsor Street is an open section residential street with two-way traffic, parking on both sides, no existing sidewalk, and existing overhead utilities on the north side of the street. It is also within the ¼ mile radius and connects to an existing sidewalk along Greenwich Lane that leads to Sligo Creek Elementary School.

For the south segment, although not a direct route to the station, new sidewalk and curb ramps should be considered along the east side of the street. A median refuge and crosswalk markings should be constructed along the north leg of the intersection of Wayne Avenue (MD 594-A), as the skew creates a wide crossing and exposes pedestrians to turning traffic from a busy roadway. The intersection of Dartmouth Avenue and Woodside Parkway should be retrofitted with curb extensions, as pedestrian crossings at this intersection will likely increase once the station opens. The paved dead end on the east side of the intersection should be removed and the park path should be reconstructed and extended to

meet Dartmouth Avenue. Intersection lighting upgrades should be evaluated at both Wayne Avenue (MD 594-A) and Woodside Parkway. Impacts would include minor grading and reconstruction of driveways and lead walks. Impacts to utilities, street trees, and parking should be avoidable.

For the north segment, new sidewalk and curb ramps should be considered along the south side of the road. Consideration should be given to converting the south side of the road to a closed section. Intersection lighting upgrades and curb extensions should be considered at the Dartmouth Avenue and Greenwich Lane. Impacts would include grading, street trees, and reconstruction of driveways and lead walks. Impacts to overhead utilities should be avoidable.

Costs would be moderate for these improvements. Public outreach should be performed before any improvements are implemented.

13. Woodside Parkway

From: Ellsworth Drive to Greenbrier Drive

Improvement Type: Construction of New Sidewalks, Construction of New Curb Ramps, Reconstruction of Driveway Aprons, Construction of Curb Extensions, Striping of Crosswalks, Intersection Lighting

Priority Ranking: 3.2 Time Frame: Short-term Cost Category: 3

Woodside Parkway is a closed section, residential street with two-way traffic, permit parking on both sides, and existing overhead utilities on the south side. There is existing sidewalk on the south side of the street between Pershing Drive and Greenbrier Drive. There is no existing sidewalk between Ellsworth Drive and Pershing Drive. The segment between Pershing Drive and Greenbrier Drive is located within the ¼ mile radius, northwest of the station. Woodside Parkway will become an important neighborhood route to the Purple Line station.

New sidewalk and curb ramps are recommended on the north side of the street between Pershing Drive and Greenbrier Drive and both sides between Ellsworth Drive and Pershing Drive. New sidewalk should be extended to meet the existing sidewalk slightly east of Greenbrier Drive. Curb extensions, crosswalks, and intersection lighting upgrades should be considered at the intersections of Woodside Parkway at Greenbrier Drive, at Pershing Drive, and at Ellsworth Drive. Impacts would include grading, street trees, residential landscaping, and reconstruction of driveways and lead walks. Impacts to utilities should be avoidable. Costs would be moderate for these improvements. Public outreach should be performed before any improvements are implemented. Woodside Parkway could also be a good candidate for a neighborhood greenway.

14. Ashford Road

From: Dale Drive to Windsor Street

Improvement Type: Construction of New Sidewalks, Construction of New Curb Ramps, Reconstruction of Driveway Aprons

Priority Ranking: 2.8 Time Frame: Mid-term Cost Category: 3

Ashford Road from Dale Drive to Windsor Street is a residential street located within the ¼ mile radius, north of the station. The roadway is an open section with two-way traffic, parking on both sides, no existing sidewalk, and existing overhead utilities on the south side of the street.

New sidewalk and curb ramps should be considered along the south side of the street. Impacts would include grading, a few small street trees, residential landscaping, and reconstruction of driveways and lead walks. Impacts to overhead utilities and parking should be avoidable. Costs would be moderate for these improvements. Public outreach should be performed before any improvements are implemented.

15. Greenbrier Drive

From: Wayne Avenue (MD 594-A) to Dale Drive

Improvement Type: Construction of New Curb Ramps, Construction of New Sidewalks, Reconstruction of Driveway Aprons

Priority Ranking: 2.5 Time Frame: Mid-term Cost Category: 3

Greenbrier Drive from Wayne Avenue (MD 594-A) to Dale Drive is a residential street located within the ¼ mile radius, northwest of the station. The roadway is a closed section with one-way northbound traffic between Wayne Avenue (MD 594-A) and Mayfair Place, two-way traffic from Mayfair Place to Dale Drive, permit parking on both sides, no existing sidewalk, and existing overhead utilities on the east side of the street.

New sidewalk and curb ramps should be considered along the west side of the street. Impacts would include grading, street trees, residential landscaping, overhead utilities, and reconstruction of driveways and lead walks. Impacts to parking should be avoidable. Costs would be moderate for these improvements. Public outreach should be performed before any improvements are implemented.

16. Pershing Drive

From: Springvale Road to Bennington Drive

Improvement Type: Construction of New Sidewalks, Construction of New Curb Ramps, Reconstruction of Driveway Aprons

Priority Ranking: 1.3 Time Frame: Mid-term Cost Category: 3

Pershing Drive from Springvale Road to Bennington Drive is a residential street located within the ½ mile radius, northwest of the station. The roadway is an open section with some closed section segments. There is two-way traffic, parking on both sides, no existing sidewalk, and existing overhead utilities on the west side of the street.

New sidewalk and curb ramps should be considered along the west side of the street. Impacts would include grading, street trees, residential landscaping, overhead utilities, and reconstruction of driveways and lead walks. Impacts to parking should be avoidable. Costs would be moderate for these improvements. Public outreach should be performed before any improvements are implemented.

17. Dale Drive

From: Harford Avenue to Fleetwood Street; Pershing Drive to Colesville Road (US 29)

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, Reconstruction of Driveway Aprons, Removal of Sidewalk Obstructions, Reconstruction of Sidewalks with Non-Compliant Slopes, Construction of Curb Ramps

Priority Ranking: 1.5 Time Frame: Short-term Cost Category: 2

The segments of Dale Drive located within the ½ mile radius have existing sidewalk on at least one side, and there are marked/uncontrolled crossings Hartford Avenue, Pershing Drive, Ellsworth Drive, and Kingsbury Drive.

In the short-term, minor improvements to these segments include reconstruction of curb ramps, driveway aprons, and sidewalks that are non-compliant, removal of sidewalk obstructions. These improvements will have only minor impacts.

In the long-term, a shared-use path should be planned for the west side of Dale Drive (see section 9.3.3 for further discussion). A shared-use path would likely have several impacts including existing overhead utilities and on-street parking south of Mansfield Road.

18. Cloverfield Road

From: Pershing Drive to Wayne Avenue (MD 594-A)

Improvement Type: Construction of New Sidewalks, Construction of New Curb Ramps, Reconstruction of Driveway Aprons

Priority Ranking: 3.8 Time Frame: Short-term Cost Category: 2

Cloverfield Road from Pershing Drive to Wayne Avenue (MD 594-A) is a residential street located within the ¼ mile radius, west of the station. The roadway is an open section with one-way northbound traffic between Cloverfield Place and Wayne Avenue (MD 594-A), permit parking on the east side, no parking on the west side, no existing sidewalks, and existing overhead utilities on the east side of the street.

New sidewalk and curb ramps should be considered along the west side of the street. Impacts would include grading. Costs would be low for these improvements. Public outreach should be performed before any improvements are implemented.

19. – 21. Various Residential Streets

Improvement Type: Construction of New Sidewalks, Construction of New Curb Ramps, Reconstruction of Driveway Aprons

Priority Ranking: As noted Time Frame: Mid-term Cost Category: As Noted

It is recommended that new sidewalks be installed on the residential streets shown in the table below. Sidewalk on Ellsworth Drive should be installed on the west side. Intersection safety improvements should be evaluated at the intersection of Ellsworth Drive and Mayfair Place. Sidewalk along the north side of Bennington Drive would connect with Sligo-Bennington Neighborhood Park and Sligo Creek Trail. Sidewalk along Hartford Avenue should be installed on the east side.

Typical impacts would include grading, reconstruction of driveway aprons and lead walks. Impacts to parking, utilities, environmental resources, and right-of-way should be avoidable.

Table 9-4 Summary of Pedestrian Rankings for Various Residential Streets

Road	Limits		Cost Category	Priority Ranking
19. Ellsworth Drive	Woodside Parkway	Bennington Drive	3	1.9
20. Bennington Drive	Ellsworth Drive	Greenbrier Drive	2	1.9
21. Hartford Avenue	Thayer Avenue	Dale Drive	2	1.9

N

KINGSBURY DRIVE
BENNINGTON DRIVE
SLIGO CREEK
DRIVE
DRIVE
DRIVE
ROWEN ROAD
ROAD
WOODSIDE
PARKWAY
ELLSWORTH
PERSHING
GREENBRIER
ASHFORD
ROAD
WINDSOR
STREET
SLIGO CREEK PARKWAY
GREENWICH LANE
SCHUYLER ROAD
DALE DRIVE
COLESVILLE
MAYFAIR PLACE
SPRINGVALE ROAD
CEDAR
STREET
WAYNE AVENUE
DARTMOUTH AVENUE
QUEEN ANNES
DRIVE
STREET
MC NEIL ROAD
BONIFANT
DEERFIELD AVENUE
MANSFIELD ROAD
FLEETWOOD
TERRACE
HARTFORD AVENUE
THAYER AVENUE
SILVER SPRING LIBRARY STATION

LEGEND

- DALE DRIVE STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS

PROPOSED IMPROVEMENTS

- REPAIR APS/CPS
- STRIPE CROSSWALK

SIDEWALK

- NON-COMPLIANT DRIVEWAY APRON
- RECONSTRUCT SIDEWALK
- SIDEWALK OBSTRUCTION
- NON-COMPLIANT WIDTH
- NON-COMPLIANT SLOPE
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 9-12a
DALE DRIVE STATION AREA-WIDE IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

N

LEGEND

- DALE DRIVE STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS

PROPOSED IMPROVEMENTS

- RECONSTRUCT SHARED USE PATH
- INSTALL ADDITIONAL SIGNING

CURB RAMP

- CONSTRUCT CURB RAMP
- RECONSTRUCT CURB RAMP
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

KINGSBURY DRIVE
BENNINGTON DRIVE
SLIGO CREEK
DRIVE
DRIVE
DRIVE
ROWEN ROAD
ROAD
WOODSIDE
PARKWAY
ELLSWORTH
PERSHING
GREENBRIER
ASHFORD
ROAD
WINDSOR
STREET
SLIGO CREEK PARKWAY
COLESVILLE
GREENWICH LANE
SCHUYLER ROAD
DALE DRIVE
MAYFAIR PLACE
SPRINGVALE ROAD
CEDAR
STREET
WAYNE AVENUE
DARTMOUTH AVENUE
QUEEN ANNES
DRIVE
STREET
BONIFANT
MC NEIL ROAD
DEERFIELD AVENUE
MANSFIELD ROAD
FLEETWOOD
TERRACE
SHEFFIELD STREET
GALVESTON
ROAD
DENVER ROAD
HARTFORD AVENUE
THAYER AVENUE
SILVER SPRING LIBRARY STATION

FIGURE 9-12b
DALE DRIVE STATION AREA-WIDE IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

N

LEGEND

- DALE DRIVE STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- EXISTING SIDEWALKS
- SLIGO CREEK TRAIL

PROPOSED IMPROVEMENTS

- SIDEWALK
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

KINGSBURY DRIVE
BENNINGTON DRIVE
SLIGO CREEK
ROWEN ROAD
WOODSIDE PARKWAY
ELLSWORTH DRIVE
PERSHING DRIVE
GREENBRIER DRIVE
ASHFORD ROAD
WINDSOR STREET
SLIGO CREEK PARKWAY
COLESVILLE ROAD
MAYFAIR PLACE
SPRINGVALE ROAD
DALE DRIVE
CLOVERFIELD ROAD
CEDAR STREET
WAYNE AVENUE
WAYNE PLACE
DARTMOUTH AVENUE
QUEEN ANNES DRIVE
BONIFANT STREET
MC NEIL ROAD
DEERFIELD AVENUE
MANSFIELD ROAD
FLEETWOOD TERRACE
SHEFFIELD STREET
GALVESTON ROAD
HARTFORD AVENUE
THAYER AVENUE
SILVER SPRING LIBRARY STATION

0 0.05 0.1 0.2 0.3 0.4 Miles

FIGURE 9-13
DALE DRIVE STATION
PROPOSED PEDESTRIAN IMPROVEMENTS

Table 9-5 - Pedestrian Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE: Reconstruction of Curb Ramps	Reconstruction of Existing Sidewalks	Reconstruction of Driveway Aprons	Removal of Sidewalk Obstructions	Widening of Non-Compliant Sidewalk Widths	Reconstruction of Sidewalks with Non-Compliant Slopes	Reconstruction of Mid-Block Crossings	Striping of Crosswalks	Signal Upgrades to APS/CPS	Construction of New Curb Ramps	Construction of New Sidewalks	Installation of Additional Signing	Construction of Curb Extensions	Construction of Mid-Block Crossings	Construction of Median Refuge	Installation of New APS/CPS	Other	BENEFITS: Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score	IMPACTS: Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
Area-wide Improvements																																
1	ADA Upgrades to Existing Sidewalks	MCDOT	●	●		●	●	●													2	3	5	1	11		2	2	2	3	9	2	1	2.4
2	ADA Upgrades to Existing Driveway Aprons	MCDOT			●																2	3	5	1	11		2	2	2	3	9	2	1	2.4
3	ADA Upgrades to Existing Intersections	MCDOT								●											2	4	5	1	12		1	2	1	2	6	2	1	4.0
4	Upgrades to APS/CPS	MCDOT									●										2	4	5	1	12		1	1	1	1	4	1	1	3.0
Dale Drive																																
5	Fleetwood Street to Greenbrier Drive	MCDOT	●	●	●					●		●	●	●	●		●			Lighting	5	4	5	1	15		2	2	2	3	9	2	1	3.3
Queen Annes Drive																																
6	Nolte Local Park to Dale Drive	MCDOT			●							●	●							Lighting	5	4	5	1	15		3	3	3	3	12	2	1	2.5
Bonifant Street																																
7	Dale Drive to Wayne Place	MCDOT			●							●	●								4	4	5	1	14		2	2	2	2	8	2	1	3.5
Wayne Place																																
8	Cedar Street to Sligo Creek Parkway	MCDOT			●							●	●								5	4	5	1	15		2	2	2	2	8	2	1	3.8
Deerfield Avenue																																
9	Queen Annes Drive to Wayne Place	MCDOT			●							●	●		●						5	4	5	1	15		2	2	2	3	9	2	1	3.3
Mansfield Road																																
10	Dale Drive to Wayne Avenue (MD 594-A)	MCDOT			●							●	●		●						5	4	5	1	15		2	2	2	3	9	2	1	3.3
Fleetwood Street/Fleetwood Terrance																																
11	Entire loop starting at Dale Drive	MCDOT			●							●	●								4	4	5	1	14		3	2	3	4	12	2	1	2.3
Dartmouth Avenue																																
12	Wayne Avenue (MD 594-A) to Dale Drive; Greenwich Lane to Windsor Street	MCDOT			●					●		●	●		●		●			Lighting	5	5	5	1	16		2	2	3	3	10	2	1	3.2
Woodside Parkway																																
13	Ellsworth Drive to Greenbrier Drive	MCDOT			●					●		●	●		●					Lighting	5	5	5	1	16		2	2	3	3	10	2	1	3.2
Ashford Road																																
14	Easley Street to Dale Drive	MCDOT			●							●	●								4	4	5	1	14		2	2	3	3	10	2	1	2.8
Greenbrier Drive																																
15	Wayne Avenue (MD 594-A) to Dale Drive	MCDOT			●							●	●								4	4	5	1	14		3	2	3	3	11	2	1	2.5
Pershing Drive																																
16	Springvale Road to Bennington Drive	MCDOT			●							●	●								4	4	5	1	14		3	2	3	3	11	1	1	1.3

$$Priority\ Ranking = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

Table 9-5 - Pedestrian Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE	Reconstruction of Curb Ramps	Reconstruction of Existing Sidewalks	Reconstruction of Driveway Aprons	Removal of Sidewalk Obstructions	Widening of Non-Compliant Sidewalk Widths	Reconstruction of Sidewalks with Non-Compliant Slopes	Reconstruction of Mid-Block Crossings	Striping of Crosswalks	Signal Upgrades to APS/CPS	Construction of New Curb Ramps	Construction of New Sidewalks	Installation of Additional Signing	Construction of Curb Extensions	Construction of Mid-Block Crossings	Construction of Median Refuge	Installation of New APS/CPS	Other	BENEFITS	Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score	IMPACTS	Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
Dale Drive																																		
17	Hartford Avenue to Fleetwood Street; Pershing Drive to Colesville Road (US 29)	MCDOT		●	●	●	●		●				●									3	3	5	1	12		2	2	2	2	8	1	1	1.5
Cloverfield Road																																		
18	Pershing Drive to Wayne Avenue (MD 594-A)	MCDOT				●							●	●								5	4	5	1	15		2	2	2	2	8	2	1	3.8
Ellsworth Drive																																		
19	Woodside Parkway to Bennington Drive	MCDOT				●							●									5	4	5	1	15		2	2	2	2	8	1	1	1.9
Bennington Drive																																		
20	Ellsworth Drive to Greenbrier Drive	MCDOT				●							●	●								5	4	5	1	15		2	2	2	2	8	1	1	1.9
Hartford Avenue																																		
21	Thayer Avenue to Dale Drive	MCDOT				●							●	●								5	4	5	1	15		2	2	2	2	8	1	1	1.9

$$Priority\ Ranking\ = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

9.3.4 Proposed Bikeway Improvements

The Dale Drive BiPPA has been evaluated for several types of pedestrian and cyclist improvements. Proposed improvements have been developed and prioritized based on the ranking criteria outline in Section 2.8 of this report.

Bikeway improvements are organized by discrete improvements along each road corridor. Bikeway improvements focus on bicycle specific improvements that will provide safer accessible bike networks and connection with the Dale Drive BiPPA area.

For each improvement, an analysis of possible barriers to construction and potential project cost was included. This analysis was used to determine the project priority ranking. Each improvement was then ranked in accordance with the methodology. Please refer to Table 9-6 for a summary of priority rankings.

1. Dale Drive

From: Colesville Road (US 29) to Hartford Avenue

Improvement Type: Shared-Use Path

Priority Ranking: 2.1 Time Frame: Long-term Cost Category: 5

Dale Drive is a two-lane arterial roadway with street parking along some sections. It runs northwest to southeast and is a major thoroughfare through the BiPPA. The current right-of-way is 70 feet and the current traveled way width in this section is approximately 22 feet with varying shoulder widths. The existing roadway has sidewalks mostly along the east side with an intermittent grass buffer. There are portions along the west side that have sidewalks, but it is more consistent on the northbound side. Street trees and utility poles line both sides of the street.

Dale Drive is a central path for connection to the Purple Line Station, residential neighborhoods, and schools. It is recommended that a shared-use path be planned and constructed from Colesville Road (US 29) to Hartford Avenue. The shared-use path would create an important connection between many different residential neighborhoods and would allow both pedestrians and bicyclists to easily and safely access the station, schools, and parks.

Construction of a shared-use path on the west side should utilize the footprint of the existing sidewalk and shoulders. The path should be a minimum 10-foot width. Based on field investigation, there would be several impacts including mature trees, on-street parking, and utility poles. Because the path will be constructed within current right-of-way and outside of the existing road footprint, impacts to traffic should be minimal. Impacts to utilities and the environment are expected to be moderate, with utility relocation and tree loss probable. Impacts for this project are expected to be moderate to high.

2. Bennington Drive

From: Ellsworth Drive to Sligo Creek Trail

Improvement Type: Sharrow, Signage

Priority Ranking: 1.4 Time Frame: Short-term Cost Category: 1

Bennington Drive is a residential street that runs north to south. Currently, Bennington Drive does not include sidewalks or a parking lane. The current roadway width is approximately 25 feet. Sharrow markings and bike route signage are proposed along Bennington Drive from Ellsworth Drive to Sligo Creek Trail. Sharrow markings will assist bicyclists with wayfinding and are appropriate based on low traffic volumes. They can be installed while maintaining the existing road section. The installation of sharrow markings will not impact utilities / right-of-way, parking areas, or environmental features.

3. Ellsworth Drive

From: Cedar Street to Bennington Drive

Improvement Type: Sharrow, Striped Bike Lanes, Signage

Priority Ranking: 1.4 Time Frame: Short-term Cost Category: 1

Ellsworth Drive is a two-lane residential street that runs northeast to southwest. There are partial length existing bike lanes from Cedar Street to Springvale Road. The typical section also includes sidewalks on the west side and on-street parking on both sides. The current roadway width is approximately 40 feet. The bike lanes should be completed and sharrow markings are proposed along the rest of the route. There improvements will create a continuous bicycle connection along Ellsworth Drive. Although the route would not connect directly with the Purple Line station, it would connect cyclists with Sligo Creek Trail and the Silver Spring CBD. Bike route signage should be included with this improvement. Installation of the sharrow markings will not impact utilities / right-of-way, parking lanes, or environmental features.

4. Woodside Parkway

From: Colesville Road (US 29) to Dartmouth Avenue

Improvement Type: Sharrow, Neighborhood Greenway

Priority Ranking: 3.3 Time Frame: Short-term Cost Category: 2

Woodside Parkway is a two-lane residential street that will connect neighborhoods from the northwest with the Purple Line station. Sharrow markings and bike route signage should be combined with sidewalks and other traffic calming features to create a neighborhood greenway. There would be no impacts associated with sharrow markings and minimal impacts associated with neighborhood greenway treatments.

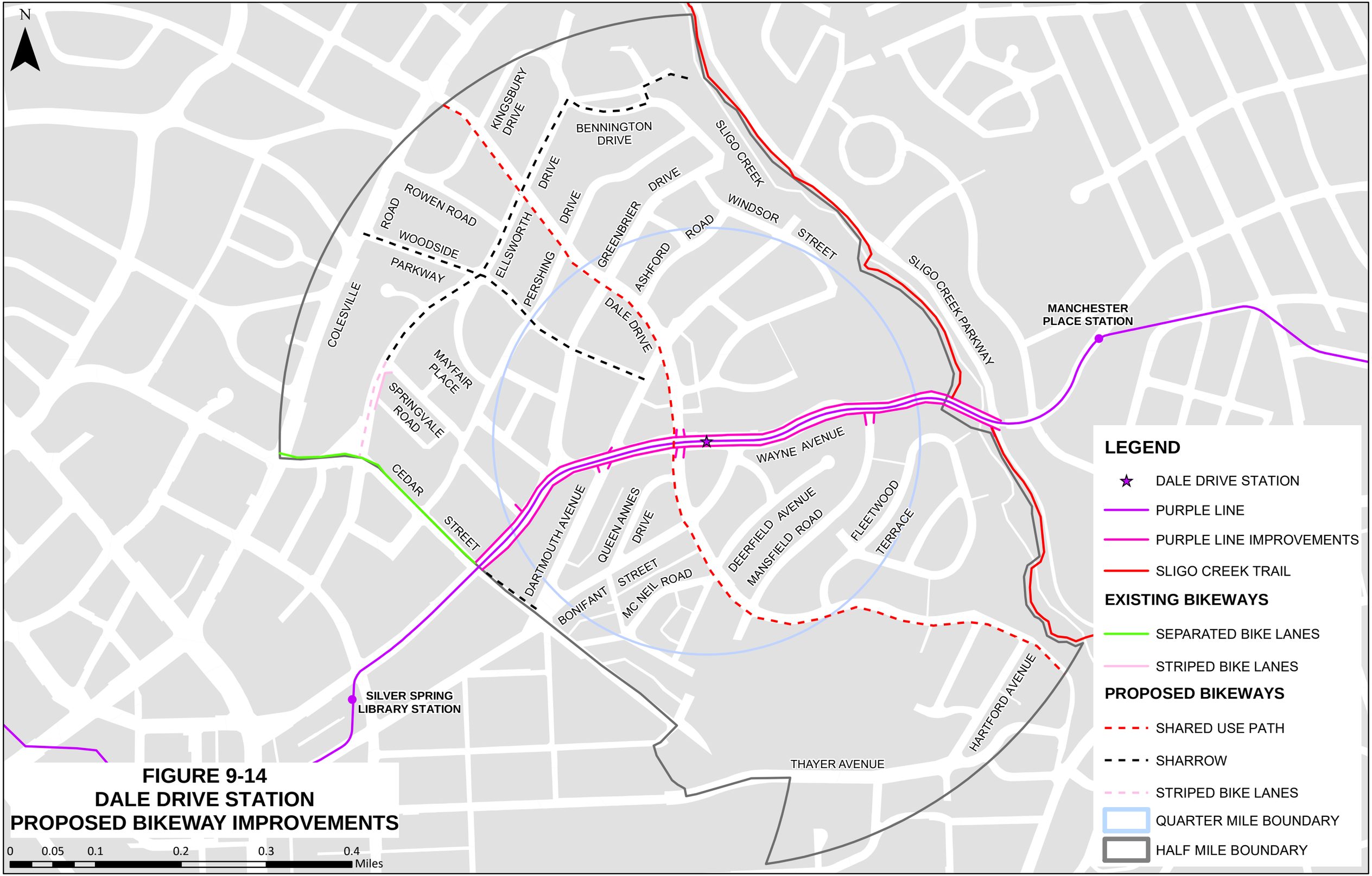


FIGURE 9-14
DALE DRIVE STATION
PROPOSED BIKEWAY IMPROVEMENTS

Table 9-6 - Bikeways Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE							BENEFITS							IMPACTS											
			Sharrow	Cycle Track	Separated Bike Lanes	Striped Bike Lanes	Shared-Use Paths	Other		Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score		Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
Dale Drive																												
1	Colesville Road (US 29) to Hartford Avenue	MCDOT					●			5	5	5	1	16		4	3	3	5	15	2	1	2.1
Bennington Drive																												
2	Ellsworth Drive to Sligo Creek Trail	MCDOT	●					Signage		3	2	1	1	7		1	2	1	1	5	1	1	1.4
Ellsworth Drive																												
3	Cedar Street to Bennington Drive	MCDOT	●			●		Signage		3	2	1	1	7		1	2	1	1	5	1	1	1.4
Woodside Parkway																												
4	Colesville Road (US 29) to Dartmouth Avenue	MCDOT	●					Greenway		4	4	1	1	10		1	2	1	2	6	2	1	3.3

$$Priority\ Ranking\ = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

9.3.5 Maintenance

Maintenance improvements, such as tree and hedge trimming, are an inexpensive way to increase pedestrian comfort and aesthetic value. A map of these items is included as Figure 9-18.



Figure 9-15: Overgrown hedges encroach on a sidewalk along Schuyler Road.



Figure 9-16: Trees growing over sidewalk along Woodside Parkway creating vertical obstruction.



Figure 9-17: Overgrown grass on sidewalk along Mansfield Road.

N

LEGEND

- DALE DRIVE STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS

PROPOSED IMPROVEMENTS

- LANDSCAPE MAINTENANCE
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

KINGSBURY DRIVE
BENNINGTON DRIVE
SLIGO CREEK
ROWEN ROAD
WOODSIDE PARKWAY
ELLSWORTH DRIVE
PERSHING DRIVE
GREENBRIER DRIVE
ASHFORD ROAD
WINDSOR STREET
SLIGO CREEK PARKWAY
COLESVILLE ROAD
DALE DRIVE
SCHUYLER ROAD
MANCHESTER PLACE STATION
MAYFAIR PLACE
SPRINGVALE ROAD
WAYNE AVENUE
CEDAR STREET
DARTMOUTH AVENUE
QUEEN ANNES DRIVE
DEERFIELD AVENUE
MANSFIELD ROAD
FLEETWOOD TERRACE
BONIFANT STREET
MC NEIL ROAD
HARTFORD AVENUE
SILVER SPRING LIBRARY STATION
THAYER AVENUE

FIGURE 9-18
DALE DRIVE STATION
MAINTENANCE IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

9.4 Final Recommendations

Dale Drive is a residential area that lacks the infrastructure to connect users to the Purple Line. Although existing sidewalks are continuous in some areas, generally, the area lacks pedestrian and bicycle connectivity throughout residential areas. Much of the existing pedestrian infrastructure is non-compliant with current ADA standards and crosswalk striping is out-of-date with current guidelines. Existing signalized crossings appear to have been recently updated per current ADA standards.

To address these deficiencies, this report recommends focusing on the implementation of the proposed pedestrian improvements within the ¼ mile radius area by adding sidewalk to at least one side of residential streets that currently have no sidewalk and providing continuous accessible paths to the Purple Line station along routes such as Dale Drive, Bonifant Street, Wayne Place, Deerfield Avenue, Mansfield Road, Dartmouth Avenue, Woodside Parkway, and Cloverfield Road. Area-wide improvements should also focus on ADA upgrades and intersection safety improvements such as crosswalks, curb extensions, median refuge, and lighting.

The number of residential neighborhoods accessed via Dale Drive, and the location of the proposed Purple Line station means this corridor will be traversed frequently by residents and visitors. As such, this corridor must be safe, accessible, and welcoming. Short-term improvements should be complimented by a long-term plan for a shared use path along Dale Drive. Sidewalk improvements will also improve connectivity with the Silver Spring International Middle School and Sligo Creek Elementary School, which are both located near the station.

The bikeway improvement that ranked highest is the recommendation on Woodside Parkway for Sharrow markings and signing. In addition, although at a high cost, would be the addition of a Shared-use path on Dale Drive. Most other roadways in the study area are local residential roads with low traffic volumes, therefore, bicycles can use the roadway safely. Implementation of sidewalk improvements discussed above would be beneficial for children and bicyclists uncomfortable with riding in the street.

Improving pedestrian and bikeway infrastructure in the Dale Drive Station study area as discussed herein and with community support will result in a better connected, safer, and accessible residential community for all users.

10 Manchester Place

10 Manchester Place

10.1 Study Area

10.1.1 Existing Area

The Manchester Place Station for the Purple Line is proposed near the intersection of E. Wayne Avenue and Manchester Place in Silver Spring. This station is unique in that it is located within the west portal of the Purple Line's only tunnel. Due to its proximity with adjacent stations, the ½-mile radius and a portion of the ¼-mile radius are shared with the neighboring Dale Drive and Piney Branch stations. The boundaries for this station's study area are Sligo Creek Parkway and Sligo Creek Trail to the west and Flower Avenue to the east. The study area is primarily residential with both single-family homes and multifamily housing throughout.

Within the ¼-mile radius, the area is predominantly condominiums and apartment complexes including Park-Wayne Apartments, Tanglewood Apartments, Wayne-Manchester Towers Apartments, Top of the Park Condominiums, Sligo Terrace, and Kenwood House. The Timberwood townhome community is also located in the north area of the ¼ mile radius. The ½-mile radius includes single-family neighborhoods, as well as Croyden Manor Apartments, Ken-Mil Apartments, Parkside Plaza Condominiums, and Manchester Manor Apartments. The ½ mile radius also includes Highland View Elementary School, Sligo Cabin Neighborhood Park, Seven Oaks Neighborhood Park, and Flower Avenue Urban Park. Except for the intersection of Piney Branch Road (MD 320) and Flower Avenue, there is very little commercial activity within the study area. Major roadways and their respective limits, minimum rights-of-way, and number of lanes can be found in Table 10-1. A map of study limits can be found in Figure 10-1 Manchester Place Study Area. The major thoroughfares in the study area are E. Wayne Avenue (MD 594-A) and Piney Branch Road (MD 320) for east-west access, and Sligo Creek Parkway and Manchester Road for north-south access. The Purple Line will run along Wayne Avenue (MD 594-A), west of the tunnel portal. Montgomery County Ride On routes operate along Manchester Road, Piney Branch Road (MD 320), and Wayne Avenue (MD 594-A).

Pedestrian and bicyclists walk or bike from and to local parks, schools, trails, or commercial areas in the adjacent Long Branch study area. Based on publicly available and field collected data, sidewalks are prevalent throughout the BiPPA, except in the northeastern single-family neighborhood. Existing sidewalks, where present, are without gaps and connect users to their ultimate destination. Bicycle facilities are not common within the study area, although the existing shared-used path along Sligo Creek is a good resource and provides good regional pedestrian and cyclist connectivity.

N

HAMILTON AVENUE
MELBOURNE AVENUE
SAYBROOK AVENUE
LAUER TERRACE
BRADFORD ROAD
FLOWER AVENUE
SCHUYLER ROAD
WIRE AVENUE
PROVIDENCE AVENUE
OLDHAM ROAD
ETON ROAD
THREE OAKS DRIVE
SAFFRON LANE
SCHUYLER ROAD
MANCHESTER ROAD
MANCHESTER PLACE
(MD 594-A)
WAYNE AVENUE
PLYMOUTH STREET
HARTWELL ROAD
DALE DRIVE STATION
READING ROAD
GEREN ROAD
LONG BRANCH STATION
SLIGO CREEK PARKWAY
SLIGO CREEK
PINEY BRANCH ROAD (MD 320)
DOMER AVENUE

LEGEND

- MANCHESTER PLACE STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- MAJOR SIDEWALKS
- SLIGO CREEK TRAIL
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY
- EQUITY FOCUS AREA

FIGURE 10-1
MANCHESTER PLACE STATION STUDY AREA

0 0.05 0.1 0.2 0.3 0.4 Miles

10.1.2 Existing Facilities

Existing pedestrian and bicycle facilities in the Manchester Place BiPPA are consistent with those commonly found in residential areas in the County. The existing pedestrian network includes sidewalks, both signalized and non-signalized intersections, curb ramps, crosswalks, and mid-block crossings. Major roads, including E. Wayne Avenue (MD 594-A) and Piney Branch Road (MD 320), have sidewalks on both sides. Areas with multi-unit residential buildings generally have existing sidewalks. Single-family home neighborhoods in the northeastern and southeastern parts of the study area, including the area surrounding Highland View Elementary School, do not have sidewalks. Existing sidewalks are typically in good condition. Most sidewalks are 4-ft wide with or without a grass buffer. Cracks and broken portions of the sidewalk are the most common deficiency encountered. Several important segments of sidewalk are located within private property, beyond the County's jurisdiction.



Figure 10-2 Broken portion of an existing sidewalk.

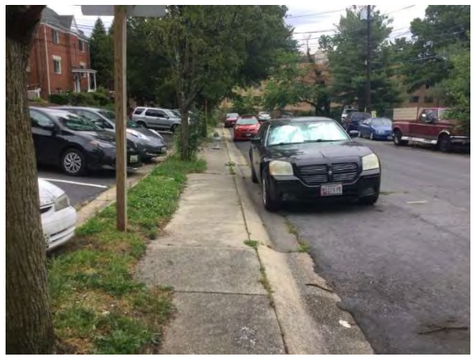


Figure 10-3 Sidewalk on Plymouth Street.

Curb ramps are generally in poor condition. Most clearly show signs of age with cracked pavement, and eroding concrete, as well as non-compliance issues such as missing detectable warning surface or steep slopes. In addition, many were found to be poorly aligned. Crossings are not typically striped in the residential areas. In busier areas that do have striped crossings, markings were faded or paved over (see Figure 10-5 for example). There are two signalized intersections in the study area. One signal is at E. Wayne Avenue (MD 594-A) and Sligo Creek Parkway, which will be reconstructed with the Purple Line project. The other signal is located at Piney Branch Road (MD 320) and Sligo Creek Parkway. This signal does not have APS/CPS installed. Other intersections within the study area are stop controlled.

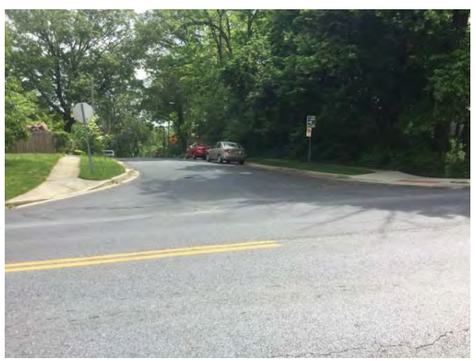


Figure 10-4 E. Schuyler Road lacking a proper crosswalk.



Figure 10-5 Crosswalk marking across Oldham Road is paved over.

Sligo Creek Trail is an existing shared use path that runs along Sligo Creek Parkway and Sligo Creek, in the west of the study area. The asphalt shared-use path is approximately eight feet wide and is in moderate condition. Many areas of the shared-use path have been cracked by root uplift from adjacent trees. Sligo Creek Trail is owned and maintained by M-NCPPC.



Figure 10-6 The shared-use path along Sligo Creek Parkway has some cracked or broken sections.

Table 10-1 Street and Highway Classification

Designation	Roadway	Limits	Minimum Right-of-Way	Lanes	Speed Limit
Major Highway					
M-11	Piney Branch Road (MD 320)	Sligo Creek Parkway to Flower Avenue	120	4D	35
Minor Arterial					
MA-76	E Wayne Avenue (MD 594-A)	Sligo Creek Parkway to Flower Avenue	70	2	25
Primary Residential					
P-5	Manchester Road	Hamilton Avenue to Three Oaks Drive	70	2	25
P-6	Manchester Road	Three Oaks Drive to Piney Branch Road (MD 320)	70	2	25
P-8	Domer Avenue	Sligo Creek Parkway to Flower Avenue	60	2	25
Uncategorized*					
	Bradford Road	Saybrook Avenue to end of street	40	1	25
	Croydon Court	Manchester Road to end of street	40	1	25
	East Schuyler Road	Eton Road to Flower Avenue	40	1	25
	East Wayne Avenue	Sligo Creek Parkway to Flower Avenue	40	1	25
	Eton Road	East Wayne Avenue to Melbourne Avenue	40	1	25
	Geren Road	Hartwell Road to end of street	40	1	25
	Hartwell Road	Geren Road to Plymouth Street	40	1	25
	Melbourne Avenue	Flower Avenue to end of street	40	1	25
	Plymouth Street	Flower Avenue to end of street	40	1	25
	Providence Avenue	Melbourne Avenue to Oldham Road	40	1	25
	Reading Road	Plymouth Street to Manchester Road	40	1	25
	Saffron Lane	Eton Road to end of street	40	1	25
	Schuyler Road	Sligo Creek Parkway to Manchester Road	40	1	25
	Sheffield Street	Fleetwood Terrace to end of street	40	1	25
	Sligo Creek Parkway	Worth Avenue to Hudson Avenue	40	1	25
	Three Oaks Drive	Sligo Creek Parkway to Manchester Road	40	1	25
	Whitney Street	East Melbourne Avenue to East Schuyler Road	40	1	25
	Winding Hill Way	Flower Avenue to Piney Branch Road (MD 320)	40	1	25
	Manchester Place	Manchester Road to East Wayne Avenue	40	1	25
	Hamilton Avenue	Wire Avenue to end of street	40	1	25
	Hamilton Avenue	Bradford Road to Sudbury Road	40	1	25
	Wire Avenue	Providence Avenue to Lauer Terrace	40	1	25
	Lauer Terrace	Wire Avenue to Oldham Road	40	1	25
	Lauer Court	Lauer Terrace to end of street	40	1	25
	Oldham Road	Providence Avenue to Eton Road	40	1	25
	Ocala Street	Hamilton Avenueto Revere Place	40	1	25
	Saybrook Avenue	Melbourne Avenue to Bradford Road	40	1	25

*Uncategorized roads are not included in the MNCPPC Roadway Functional Classification. ROW widths are based on MC-210.01 Tertiary Residential Street. Speed limits are based on minimum posted speed required by State law.

N

HAMILTON AVENUE

MELBOURNE AVENUE

SAYBROOK AVENUE

LAUER TERRACE

BRADFORD ROAD

FLOWER AVENUE

SCHUYLER ROAD

WIRE AVENUE

OLDHAM ROAD

ETON ROAD

PROVIDENCE AVENUE

THREE OAKS DRIVE

SAFFRON LANE

MANCHESTER ROAD

MANCHESTER PLACE

(MD 594-A)

WAYNE AVENUE

PLYMOUTH STREET

HARTWELL ROAD

READING ROAD

GEREN ROAD

LONG BRANCH STATION

DALE DRIVE STATION

SLIGO CREEK PARKWAY

SLIGO CREEK

PINEY BRANCH ROAD (MD 320)

DOMER AVENUE

LEGEND

- MANCHESTER PLACE STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- EXISTING SIDEWALKS
- SLIGO CREEK TRAIL
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 10-7
MANCHESTER PLACE STATION
EXISTING PEDESTRIAN FACILITIES

0 0.05 0.1 0.2 0.3 0.4 Miles

N

HAMILTON AVENUE

MELBOURNE AVENUE

SAYBROOK AVENUE

LAUER TERRACE

BRADFORD ROAD

FLOWER AVENUE

SCHUYLER ROAD

WIRE AVENUE

OLDHAM ROAD

PROVIDENCE AVENUE

THREE OAKS DRIVE

ETON ROAD

SAFFRON LANE

MANCHESTER ROAD

MANCHESTER PLACE

(MD 594-A)

SLIGO CREEK TRAIL

PLYMOUTH STREET

WAYNE AVENUE

HARTWELL ROAD

DALE DRIVE STATION

READING ROAD

GEREN ROAD

LONG BRANCH STATION

SLIGO CREEK PARKWAY

SLIGO CREEK

PINEY BRANCH ROAD (MD 320)

DOMER AVENUE

LEGEND

- MANCHESTER PLACE STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS
- PURPLE LINE BIKE RACK

EXISTING BIKEWAYS

- SHARED USE PATH
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 10-8
MANCHESTER PLACE STATION
EXISTING CYCLIST FACILITIES

0 0.05 0.1 0.2 0.3 0.4 Miles

10.1.3 Proposed Purple Line Improvements

The Manchester Place Purple Line station is proposed at the intersection of E. Wayne Avenue (MD 594-A) and Manchester Place. This station is unique in that it is located within the west portal of the Purple Line's only tunnel. The station has two levels: the first level entrance is on E. Wayne Avenue (Figure 10-9a) and the second level entrance is on Plymouth Street (Figure 10-9b). Multiple improvements are proposed within the Manchester Place BiPPA in conjunction with the construction of the Purple Line and station. In this area, Purple Line improvements will be constructed along E. Wayne Avenue (MD 594-A) and its intersections with Sligo Creek Parkway and Manchester Road. Improvements to Plymouth Street will accompany the construction of the Plymouth Street station entrance. Refer to Figures 10-10a and 10-10b, for the locations of these improvements.



Figure 10-9a - Looking east toward the 1st level of the Manchester Place Station.



Figure 10-9b - Looking west toward the 2nd level of the Manchester Place station.

10.1.4 Adjacent Projects

There are not currently any adjacent projects in development for this area.

10.2 Master Plan Summary

One master plan was developed for the area surrounding the proposed Manchester Place station: The East Silver Spring Master Plan (2000). See Figure 10-11 for the boundaries of these plans.

The East Silver Spring Master Plan was approved in 2000. Its boundary is generally defined as follows: East Silver Spring is located inside the Capital Beltway (I-495) in the southeast corner of Montgomery County, adjacent to the Silver Spring Central Business District (CBD) and the Prince George's County border. The East Silver Spring boundary is formed by I-495 and Four Corners to the north, New Hampshire Avenue (MD 650) and the Prince George's County border to the east, the City of Takoma Park to the south, and the Silver Spring Central Business District and North Silver Spring to the west.

Four Purple Line stations are encompassed within the East Silver Spring Master Plan (Dale Drive, Manchester Place, Long Branch, and Piney Branch Road (MD 320)). As this section of the report focuses on the Manchester Place station, only improvements east of Sligo Creek and west of Flower Avenue are included. See Sections 9, 11, and 12 of this report for discussions of Dale Drive, Long Branch, and Piney Branch Road (MD 320) stations, respectively.

Key recommendations in the East Silver Spring Master Plan include enhancing pedestrian access, bikeways, and connections to transit stops, improving neighborhood friendliness and air quality.

10.2.1 Existing Pedestrian Improvement Recommendations

The Purple Line Connectivity Report indicates that pedestrians are currently only 66% comfortable with walking in the Manchester Place station study area. If improvements are completed along with the Purple Line project, pedestrians said their comfort level to walk to the area would increase to 69%. To improve connectivity between residential areas and the Purple Line, the light rail designated pedestrian crossing sites should be considered for traffic signals or other traffic control devices.

New improvements recommended in the master plans are noted in Table 10-2.

Table 10-2 Summary of Area Pedestrian Recommendations

Roadway/Route	Recommendation	Reference
Geren Road	Construct sidewalk on at least one side of the street	East Silver Spring Master Plan
Plymouth Street	Construct sidewalk on at least one side of the street	East Silver Spring Master Plan
Reading Road	Construct sidewalk on at least one side of the street	East Silver Spring Master Plan
Bradford Road	Construct sidewalk on at least one side of the street	East Silver Spring Master Plan
Eton Road	Construct sidewalk on at least one side of the street	East Silver Spring Master Plan
Providence Avenue	Construct sidewalk on at least one side of the street	East Silver Spring Master Plan
Oldham Road	Construct sidewalk on at least one side of the street	East Silver Spring Master Plan
Saybrook Avenue	Construct sidewalk on at least one side of the street	East Silver Spring Master Plan
Wire Avenue	Construct sidewalk on at least one side of the street	East Silver Spring Master Plan
Bradford Rd and Plymouth St intersection	Provide a four-way stop-controlled crossing with high visibility crosswalk	Purple Line Connectivity Report
Hartwell Rd and Geren Rd	Install high visibility crosswalk	Purple Line Connectivity Report
Plymouth St to Bradford Rd	Extend sidewalk on south side of Plymouth St to Bradford Rd and wrap around to connect with the existing sidewalk on Bradford Rd	Purple Line Connectivity Report
E Wayne Avenue	Investigate providing a tree buffer between the sidewalk and the street on Wayne Ave, immediately northeast of Manchester Place Station	Purple Line Connectivity Report
Saffron Ln	Investigate extending the paved path from Saffron Ln, which turns into an unpaved path just short of connecting with Wayne Ave	Purple Line Connectivity Report
Wayne Ave and Melbourne Ave	Add a sidewalk to the west side of Bradford Rd	Purple Line Connectivity Report
Hartwell Rd (Reading Rd to Geren Rd)	Upgrade existing pathway on south side of Hartwell Rd	Purple Line Connectivity Report

10.2.2 Existing Bikeway Improvement Recommendations

The Montgomery County Bicycle Master Plan recommendations are summarized in Table 10-3. A main goal of the East Silver Spring Master Plan is to create stable neighborhoods with linkages to public facilities and revitalized commercial centers.

The Bicycle Master Plan provides recommendations for bicycle improvements throughout Montgomery County. These recommendations are summarized in Table 10-3. In instances where the East Silver Spring Master Plan and Montgomery County Bicycle Master Plan overlap, the Bicycle Master Plan recommendation should govern.

Table 10-3 Summary of Area Cycling Infrastructure Improvement Recommendations

Roadway/Route	Limits	Reference	Status
Separated Bikeways			
Piney Branch Road (MD 320), south side	Sligo Creek Pkwy to Flower Ave	The Montgomery County Bicycle Master Plan (2018)	Recommended
E. Wayne Avenue (MD 394-A), north side	Sligo Creek Pkwy to Flower Avenue	The Montgomery County Bicycle Master Plan (2018)	Recommended

FIGURE 10–10a PURPLE LINE MANCHESTER PLACE STATION CONSTRUCTION PLAN

(PREPARED BY ATKINS GLOBAL)

2. PROPOSED STORMDRAIN FACILITIES SHOWN FOR REFERENCE ONLY. SEE STORMDRAIN PLANS IN THIS PACKAGE FOR DETAILS.

3. STRIPING SHOWN FOR REFERENCE ONLY. SEE S3-021 FOR DETAILS.

4. FOR RETAINING WALLS, SEE S3-040 FOR DETAILS.

5. TRACK SHOWN FOR REFERENCE WHEN ROADWAY ALIGNMENT IS AVAILABLE . SEE S3-050 FOR TRACK DETAILS.

(C1) CURB AND GUTTER TYPE A, SEE CW-33.1 FOR ROADWAY STANDARD DETAIL C1

(C2) CURB AND GUTTER TYPE A, SEE CW-33.1 FOR ROADWAY STANDARD DETAIL C2

(C7) COUNTY CURB AND GUTTER, SEE CW-33.1 FOR ROADWAY STANDARD DETAIL C7

(V1) VERTICAL STAIRWAYS, SEE CW-33.1 FOR ROADWAY STANDARD DETAILS

(X1) BALLAST CURB, SEE CW-33.1 FOR ROADWAY STANDARD DETAIL X1

(1) 4 INCH CONCRETE SIDEWALK

(2) 5 INCH CONCRETE SIDEWALK

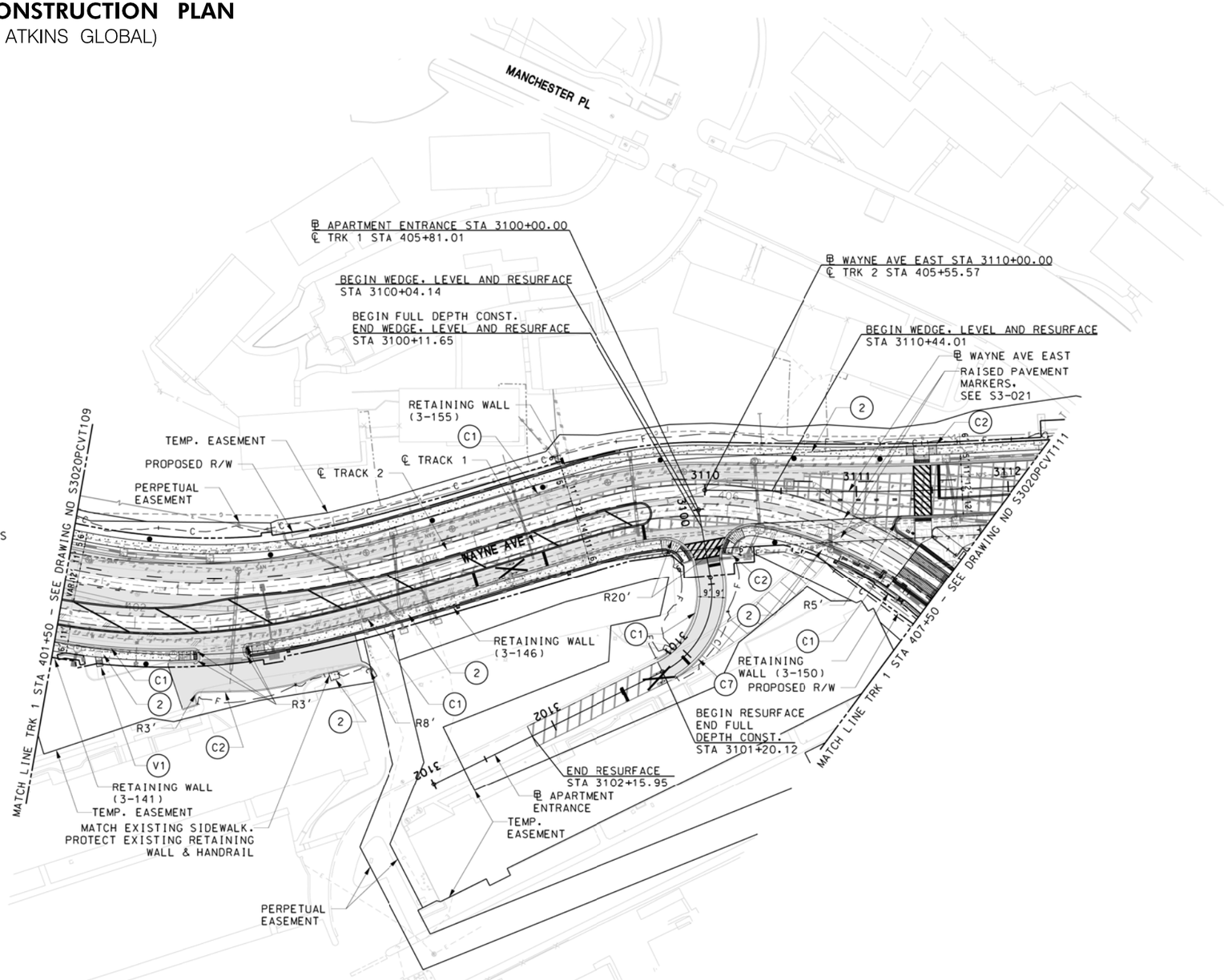
(3) SHARED USE PATH / BIKEWAY, SEE MISCELLANEOUS DETAILS SHEET THIS PACKAGE

(4) CONCRETE ENTRANCE

(5) TYPE F CONCRETE BARRIER (SINGLE FACE), SEE CW-33.1 FOR ROADWAY STANDARD DETAILS

(6) TRAFFIC BARRIER W BEAM, SEE CW-33.1 FOR ROADWAY STANDARD DETAILS

(7) FENCE, SEE FENCE PLANS THIS PACKAGE



ROADWAY LEGEND

- FULL DEPTH CONSTRUCTION
- WEDGE, LEVEL AND RESURFACE
- RESURFACE
- PROPOSED CONCRETE SIDEWALK
- PROPOSED STATION
- PAVEMENT REMOVAL

MTA NO. 17–PL–0006 MOD #3

MARYLAND DEPARTMENT OF TRANSPORTATION
MARYLAND TRANSIT ADMINISTRATION — MTA Maryland

PURPLE LINE TRANSIT PARTNERS

ATKINS
3901 Calverton Blvd, Suite 400
Calverton, Maryland 20705
Telephone: 301-210-6800
www.atkinsglobal.com

PROFESSIONAL CERTIFICATION
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland
50425 License No. 01/04/2021 Expiration Date
04/24/2019

NO.	DESCRIPTION	BY	DATE
0	RELEASE FOR CONSTRUCTION	CJC	04/22/19

REVISIONS

DESIGN YK
DRAWN JDJ
CHECK JNR
APPR CJC

PURPLE LINE LIGHT RAIL
CIVIL DESIGN
SEGMENT 3

ROADWAY PLAN

DATE: APRIL 22, 2019 SCALE: 1" = 40'

CONTRACT NO. 0–0000–0000
DRAWING NO. S3020PCVT110
SHEET NO. 39 OF 370

pw://CUSD036301.wsatkins.com:ATKNAMDPL01/Documents/Purple Line P3 Design/4.0 CAD (Work In Progress)/Roadway/Segment 3/Drawings/S3-020/S3020PCVT110.dgn
4/19/2019 3:51:26 PM

FIGURE 10–10b PURPLE LINE MANCHESTER PLACE STATION CONSTRUCTION PLAN

(PREPARED BY ATKINS GLOBAL)

2. PROPOSED STORMDRAIN FACILITIES SHOWN FOR REFERENCE ONLY. SEE STORMDRAIN PLANS IN THIS PACKAGE FOR DETAILS.

3. STRIPING SHOWN FOR REFERENCE ONLY. SEE S3-021 FOR DETAILS.

4. FOR RETAINING WALLS, SEE S3-040 FOR DETAILS.

5. TRACK SHOWN FOR REFERENCE WHEN ROADWAY ALIGNMENT IS AVAILABLE. SEE S3-050 FOR TRACK DETAILS.

6. SEE CW-16A LANDSCAPE AND STREETSCAPE PLANS FOR DETAIL.

(C1) CURB AND GUTTER TYPE A, SEE CW-33.1 FOR ROADWAY STANDARD DETAIL C1

(C5) CURB AND GUTTER TYPE B, SEE CW-33.1 FOR ROADWAY STANDARD DETAIL C5

(C6) CURB AND GUTTER TYPE B, SEE CW-33.1 FOR ROADWAY STANDARD DETAIL C6

(V1) VERTICAL STAIRWAYS, SEE CW-33.1 FOR ROADWAY STANDARD DETAILS

(X1) BALLAST CURB, SEE CW-33.1 FOR ROADWAY STANDARD DETAIL X1

(1) 4 INCH CONCRETE SIDEWALK

(2) 5 INCH CONCRETE SIDEWALK

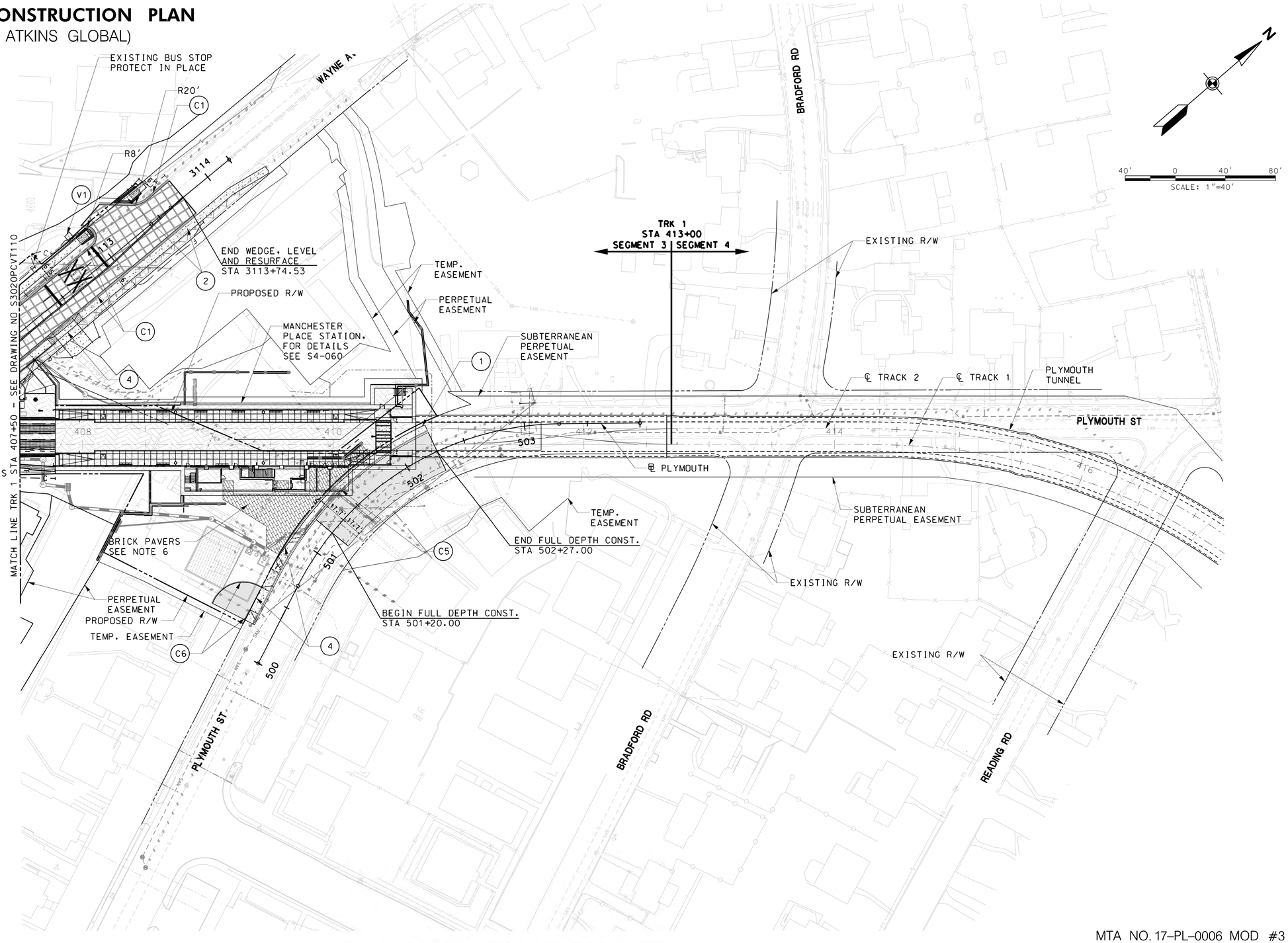
(3) SHARED USE PATH / BIKEWAY, SEE MISCELLANEOUS DETAILS SHEET THIS PACKAGE

(4) CONCRETE ENTRANCE

(5) TYPE F CONCRETE BARRIER (SINGLE FACE), SEE CW-33.1 FOR ROADWAY STANDARD DETAILS

(6) TRAFFIC BARRIER W BEAM, SEE CW-33.1 FOR ROADWAY STANDARD DETAILS

(7) FENCE, SEE FENCE PLANS THIS PACKAGE



ROADWAY LEGEND

- FULL DEPTH CONSTRUCTION
- WEDGE, LEVEL AND RESURFACE
- RESURFACE
- PROPOSED CONCRETE SIDEWALK
- PROPOSED STATION
- PAVEMENT REMOVAL

MTA NO. 17–PL–0006 MOD #3

MARYLAND DEPARTMENT OF TRANSPORTATION
MARYLAND TRANSIT ADMINISTRATION
MTA Maryland

PURPLE LINE TRANSIT PARTNERS

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Calverton, Maryland 20705
Telephone: 301-210-6800
www.atkinsglobal.com

PROFESSIONAL CERTIFICATION

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland

50425 License No. | 01/04/2021 Expiration Date

STATE OF MARYLAND — JAMES C. CHRISTIAN — 50425 — PROFESSIONAL ENGINEER

04/24/2019

NO.	DESCRIPTION	BY	DATE
0	RELEASE FOR CONSTRUCTION	CJC	04/22/19

REVISIONS

DESIGN YK | DRAWN JDJ | CHECK JNR | APPR CJC

PURPLE LINE LIGHT RAIL
CIVIL DESIGN
SEGMENT 3

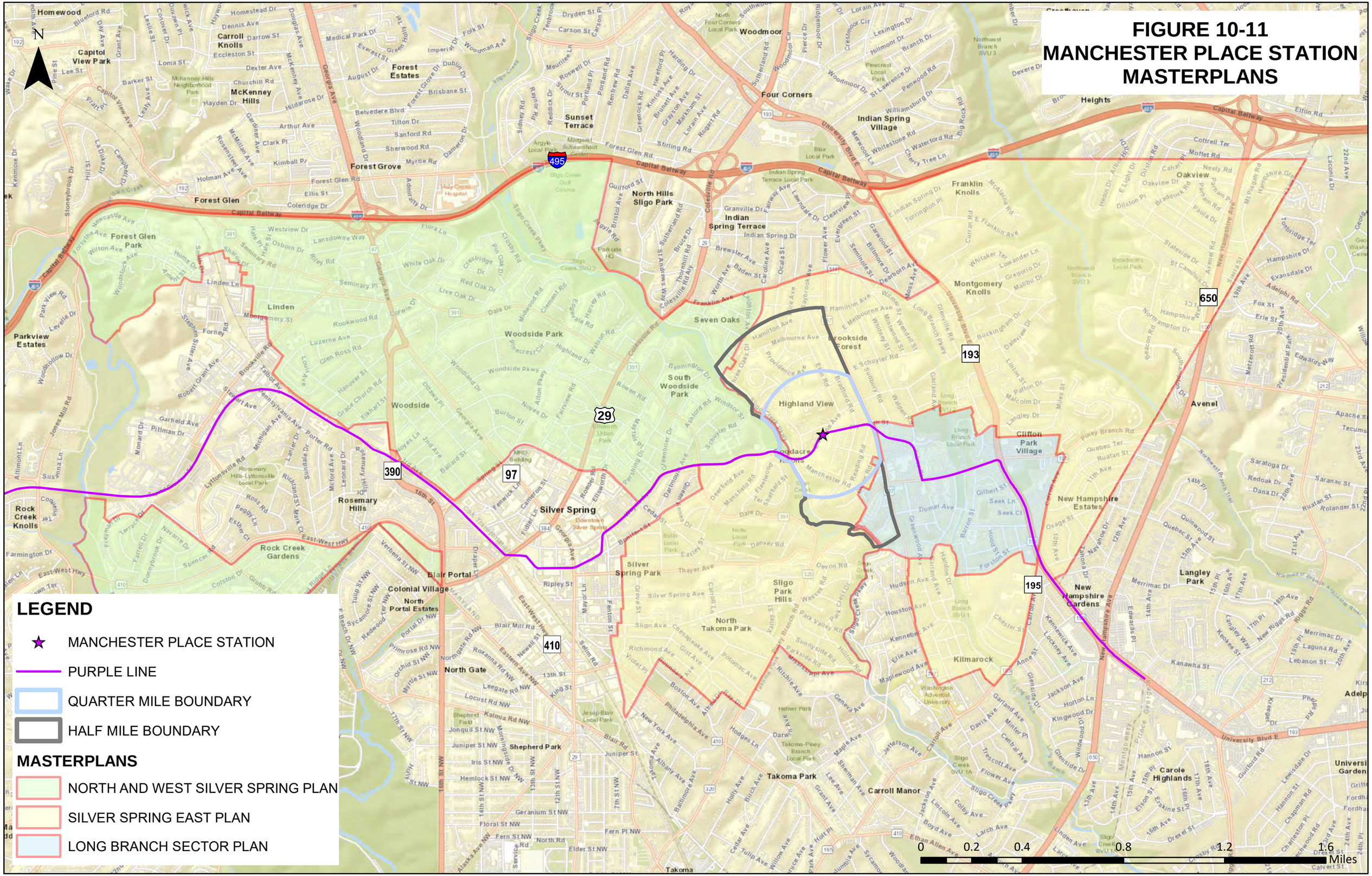
ROADWAY PLAN

DATE: APRIL 22, 2019 SCALE: 1" = 40'

CONTRACT NO. 0–0000–0000
DRAWING NO. S3020PCVT111
SHEET NO. 40 OF 370

pw://CUSDO36301.wsatkins.com:ATKNAMDPL01/Documents/Purple Line P3 Design/4.0 CAD (Work In Progress)/Roadway/Segment 3/Drawings/S3-020/S3020pCVT111.dgn
4/19/2019 3:48:47 PM

FIGURE 10-11
MANCHESTER PLACE STATION MASTERPLANS



LEGEND

- ★ MANCHESTER PLACE STATION
- PURPLE LINE
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

MASTERPLANS

- NORTH AND WEST SILVER SPRING PLAN
- SILVER SPRING EAST PLAN
- LONG BRANCH SECTOR PLAN

10.3 Proposed Improvements

The Manchester Place BiPPA has been evaluated for several types of pedestrian and bicycle improvements. Proposed improvements have been developed and prioritized based on the ranking criteria outlined in Section 2.8 of this report.

For each improvement, an analysis of possible barriers to construction and potential project cost was included. This analysis was used to determine the project priority ranking. Each improvement was then ranked in accordance with the methodology. Please refer to Table 10-4 for a summary of priority rankings of pedestrian improvements.

10.3.1 Proposed Pedestrian Improvements

1. Area-wide Improvements to Existing Sidewalks

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Sidewalk, Removal of Sidewalk Obstructions, Widening of Non-compliant Sidewalk Widths, Reconstruction of Sidewalks with Non-compliant Slopes

Priority Ranking: 4.0 Time Frame: Short-term Cost Category: 3

There is a need for general maintenance of pedestrian pathways and upgrades to those that do not meet current ADA, MCDOT, or MDOT SHA standards throughout the BiPPA. Curb ramps should be upgraded to meet slope requirements as set forth by ADA and must include detectable warning surfaces. Sidewalks should be free from trip hazards and breaks; it is recommended that trip hazards greater than ½-inch and significant breakage be repaired by replacing the affected portion of the sidewalk. In addition, sidewalks that have cross-slopes greater than allowable or pinch points with less than a 36” width should be replaced or reconfigured. Sidewalk obstructions, such as guy wires, should be reconfigured to provide adequate overhead clearance for pedestrians.



Figure 10-12 An existing sidewalk along Hartwell Road has multiple trip hazards and noncompliant slopes.

Although all area-wide sidewalk improvements are a worthwhile investment, those in the vicinity of the Purple Line, Sligo Creek Trail connections, E. Wayne Avenue (MD 594-A), Plymouth Street, Sligo Creek Parkway, and Piney Branch Road (MD 320) should be prioritized.

2. Area-wide Improvements to Existing Driveway Aprons

Improvement Type: Reconstruct Driveway Aprons

Priority Ranking: 4.9 Time Frame: Short-term Cost Category: 3

There is a need to upgrade existing driveway aprons to meet ADA slope requirements and be in conformance current MCDOT and MDOT SHA standards throughout the BiPPA. Existing aprons were found to have existing cross slopes greater than 2%.

Reconstruction of driveway aprons is recommended for those roads with sidewalks that provide direct connection to the Purple Line Station. These roadways are E. Wayne Avenue (MD 594-A), Sligo Creek Parkway, and Plymouth Street. Much like the area-wide improvements to existing sidewalks, area-wide improvements to existing driveway aprons would improve accessibility throughout the area by providing a continuous ADA-friendly walking path.

3. Area-wide Improvements to Existing Intersections

Improvement Type: Striping of Crosswalks

Priority Ranking: 4.8 Time Frame: Short-term to Mid-term Cost Category: 2

Crosswalk striping throughout the Purple Line BiPPA is fading or does not utilize the continental or “piano stripe” pattern at high traffic locations. At a minimum, all striping should be updated to ensure there are no faded or broken portions. Crosswalks in high-traffic areas, such as those along major highways (Piney Branch Road (MD 320)) or minor arterials (E Wayne Avenue) and those in the vicinity of schools and parks should be prioritized.

Upgrades to these existing crosswalks would provide increased safety and comfort for pedestrians. No impacts to existing utilities or rights-of-way are anticipated.

4. Area-wide Upgrades to APS/CPS

Improvement Type: Signal Upgrades to APS/CPS

Priority Ranking: 6.9 Time Frame: Short-term to Mid-term Cost Category: 2

One intersection at Piney Branch Road (MD 320) is lacking APS/CPS. Upgrading this signal to comply with ADA guidelines would create a safer and accessible pedestrian crossing. No impacts to existing utilities, rights-of-way or environmental features are anticipated. Minor traffic impacts may be required during construction.



Figure 10-13 Existing intersection of Sligo Creek Parkway and Piney Branch Road (MD 320) with lacking APS/CPS..

5. Plymouth Street

From: Cul-de-sac to Reading Road

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Driveway Aprons, Striping of Crosswalks, Construction of New Curb Ramps, Construction of New Sidewalks, Reconstruction of Existing Sidewalks, Construction of Mid-block Crossing, Installation of Additional Signing

Priority Ranking: 7.1 Time Frame: Mid-term Cost Category: 3

The new Manchester Place station of the Purple Line will be constructed between E. Wayne Avenue (MD 594-A) and Plymouth Street. The station will have two levels with an entrance at each street. The second level entrance will be on Plymouth Street. Therefore, Plymouth Street will become an important connection for pedestrians walking to and from the new station. An existing sidewalk runs along the east side of the road from the cul-de-sac south of the proposed station. However, it is in poor condition and is not ADA compliant. There is currently no sidewalk between the proposed station location and Flower Avenue. The existing sidewalk from the cul-de-sac should be reconstructed on both sides of the street. A new sidewalk should be installed along the south side of the street that extends from the station to Flower Avenue. The proposed sidewalk should be constructed along the south side of the road in existing grass space to provide continuity with the existing sidewalk. However, the station is on the north side of the street. A raised mid-block crossing should be constructed at the station entrance, so users can safely cross the street. The crossing would be along a curve, so sight lines should be checked, and additional traffic calming measures may be needed. It will provide a critical connection to the businesses along Flower Avenue. Along with sidewalk construction, existing curb ramps will need to be reconstructed, new crosswalks striped, and new curb ramps installed to improve safety and accessibility. A four-way stop with crosswalks should be implemented at the intersection of Plymouth Street and Bradford Road. This intersection is currently stop-controlled on the Bradford Road legs only. Curb radii should be reduced on the south legs of Reading Road and Bradford Road. There are existing speed bumps along Plymouth Street that should help calm traffic.



Figure 10-14 A sidewalk should be constructed along Plymouth Street to connect to the new Purple Line station.

Construction impacts of the improvements along Plymouth Street are expected to be moderate. A small retaining wall would be needed along the back of the sidewalk between the station and Bradford Road. Driveway aprons for several properties would need to be reconstructed. The roadway segment south of the station could be narrowed to avoid significant impacts to trees and utility poles. Parking impacts should be avoided. Public outreach should be done prior to these improvements.

6. Eton Road

From: Melbourne Avenue to E. Wayne Avenue (MD 594-A)

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Driveway Aprons, Construction of New Curb Ramps, Construction of New Sidewalks, Striping of Crosswalks, Installation of Additional Signing, Lighting

Priority Ranking: 3.2 Time Frame: Mid-term Cost Category: 3

Eton Road is a two-way residential street with a 40-foot minimum right-of-way and an approximately 25-ft roadway width, located in the north of the BiPPA. It connects to E. Wayne Avenue (MD 594-A) north of the proposed Purple Line station. The road also provides connection to Saffron Lane, which provides access to a townhome community, and Oldham Road, which connects to Highland View Elementary School. Residents can park by permit on both sides of the road. Existing overhead utilities run along the east side of the street. There are several mature trees on both sides of the street. Sidewalk improvements along this street will contribute to the overall safety and north-south connectivity between the neighborhood and the Purple Line station. Walkability in this area is also important for students and their parents who may walk to the school. Pedestrian lighting is recommended at the intersection with E. Wayne Avenue (MD 594-A) to improve safety and visibility of and for users walking to and from the Purple Line station. Impacts would include some combination of utilities, parking, driveway aprons, and street trees. Some grading may also be needed to construct the sidewalk.

Sidewalk should be constructed on at least one side of the street. There would be impacts on either side, so public outreach should be performed to further determine which side is most suitable. Where there are constraints such as large trees, sidewalk could be constructed within the existing road footprint by eliminating some parking. Curb ramps in the vicinity should be reconstructed and new curb ramps constructed with the addition of the new sidewalk. Crosswalks should be striped at the intersections with Schuyler Road, Oldham Road, and Melbourne Avenue. Consideration should be given to making these intersections all-way stops as they are within the vicinity of a school.

7. Geren Road

From: Manchester Road to Hartwell Road

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Driveway Aprons, Construction of New Curb Ramps, Striping of Crosswalks, Construction of New Sidewalks

Priority Ranking: 6.7 Time Frame: Mid-term Cost Category: 2

This segment of Geren Road is a two-way road with parking on the west side. It is located within the station's ¼ mile radius. At the north end of the road, a pedestrian promenade provides a connection to Flower Avenue and Flower Avenue Park. A new sidewalk constructed on the east side of the street would provide a safe way for residents to connect with the existing sidewalks along Hartwell Avenue, Manchester Road, and Flower Avenue Park. Reconstruction of existing curb ramps at the park and striping of crosswalks at the entrance to the park will improve the safety and accessibility of the area.

Impacts would include grading, residential landscaping, right of way, and driveway aprons. The sidewalk could likely be aligned around existing utility poles. In addition, the road is currently open section; the road would need to be reconstructed to provide a curb and gutter on at least one side. Environmental impacts are not expected to be high because there are no mature street trees in the area.



Figure 10-15 Geren Road, looking south, at the entrance to Flower Avenue Park.

8. Bradford Road

From: E. Schuyler Road to E. Wayne Avenue (MD 594-A)

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Driveway Aprons, Construction of New Curb Ramps, Construction of New Sidewalks, Lighting

Priority Ranking: 2.9 Time Frame: Long-term Cost Category: 3

Bradford Road is a two-lane, open section, residential road with no existing sidewalk. Similar to Eton Road, Bradford Road connects the northern portion of the BiPPA area with E. Wayne Avenue (MD 594-A), providing north-south access through the BiPPA. A sidewalk in this location, upgrades to existing curb ramps, intersection lighting, and construction of new curb ramps would improve overall connectivity, safety, and accessibility of the area.

Impacts due to construction are expected to present a challenge especially on the south end of the segment. Sidewalk construction would impact street trees, utility poles, and/or resident street parking. Extensive grading, curb and gutter, and potentially retaining walls would be required at the south end to provide a minimum 4-ft wide sidewalk. There is an existing storm drain COG inlet at the base of the hill. Costs are expected to be relatively high for these improvements due to the impacts. If a sidewalk is constructed along Eton Road this improvement may not be necessary. The public should be engaged to determine the best course of action.

9. Reading Road

From: Manchester Road to Plymouth Street

Improvement Type: Construction of New Curb Ramps, Reconstruction of Driveway Aprons, Reconstruction of Curb Ramps, Construction of New Sidewalks

Priority Ranking: 5.5 Time Frame: Mid-term Cost Category: 3

Reading Road is a closed section, residential road with parking on both sides and no existing sidewalk. This segment falls within the ¼ mile station radius. Although it does not provide a direct route, it will be a minor north-south corridor for pedestrians traveling to the station from the residential community to the southeast. Sidewalk should be constructed on the west side of the road. New curb ramps will be needed, and existing curb ramps will need to be reconstructed at intersection with Hartwell Road. Although there are existing overhead utilities on the west side, constructing sidewalk on the east side would have extensive grading impacts. Additional impacts include residential landscaping, driveway aprons, street trees, and potentially right of way. The public should be engaged prior to implementing this improvement.

10. Providence Avenue

From: Melbourne Avenue to Highland View Elementary School

Improvement Type: Construction of New Curb Ramps, Reconstruction of Driveway Aprons, Construction of New Sidewalks, Striping of Crosswalks

Priority Ranking: 1.8 Time Frame: Mid-term Cost Category: 3

Providence Avenue is a closed section, residential road with parking on both sides and no continuous existing sidewalk. The roadway has two-way traffic but opposing traffic yields where there are parked vehicles on both sides. This segment falls within the ½ mile station radius. Sidewalk along Providence Avenue would provide a link in a route between the northwest neighborhoods and the station. It would also improve connectivity to the Highland View Elementary School. There are some existing sidewalk segments on both sides of the street. Overhead utilities are located on the west side of the roadway, however, there is slightly more available right of way on the west side as well. Further engagement of the public would help determine which side is most suitable for sidewalk. New curb ramps will be needed at Melbourne Avenue, Oldham Road, and Wire Avenue (depending which side the sidewalk is constructed on). Because intersections are near a school, crosswalks should be striped. Additional impacts include residential landscaping, driveway aprons and street trees.

11. Oldham Road

From: Providence Avenue to Eton Road

Improvement Type: Construction of New Curb Ramps, Reconstruction of Driveway Aprons, Construction of New Sidewalks, Reconstruction of Curb Ramps

Priority Ranking: 2.0 Time Frame: Mid-term Cost Category: 2

Oldham Road is a closed section, residential road with parking on both sides and no continuous existing sidewalk. The roadway has two-way traffic but opposing traffic yields where there are parked vehicles on both sides. This segment falls within the ½ mile station radius. Sidewalk along Oldham Road would provide a link in a route between the northwest neighborhoods and the station. It would also improve connectivity to the Highland View Elementary School. There are some existing sidewalk segments near Wire Avenue. Overhead utilities are located on the north side of the roadway west of Wire Avenue and on

the south side of the roadway east Wire Avenue. Sidewalk is recommended along the north side of the roadway. New curb ramps will be needed at Providence Avenue and Eton Road. An existing curb ramp at the southeast corner of Oldham Road and Wire Avenue is not ADA compliant. Additional impacts include residential landscaping, driveway aprons, a few small street trees, and grading near the Providence Avenue intersection. The large tree on the northwest corner of Oldham Road and Wire Avenue should be protected. Public outreach should be performed prior to implementation of these improvements.

12. Melbourne Avenue

From: Providence Avenue to Flower Avenue

Improvement Type: Construction of New Curb Ramps, Reconstruction of Driveway Aprons, Reconstruction of Curb Ramps, Construction of New Sidewalks, Striping of Crosswalks, Intersection Safety Improvements

Priority Ranking: 1.6 Time Frame: Mid-term Cost Category: 3

Melbourne Avenue is a two-lane, closed section, residential road with parking on both sides and no existing sidewalk. This segment falls within the ½ mile station radius. Sidewalk along Melbourne Avenue would provide east-west connectivity, allowing pedestrians to connect with the existing sidewalk that goes to Three Oaks Drive to the west and existing sidewalk on Flower Avenue to the east. This sidewalk would also connect with the proposed north-south Eton Road sidewalk route to the station. Overhead utilities are located on the north side of the roadway west of Wire Avenue and on the south side of the roadway east Wire Avenue. The new sidewalk is recommended along the north side of the roadway. New curb ramps will be needed at Providence Avenue, Wire Avenue, Eton Road, Bradford Road, and Flower Avenue. The curb ramp at the northwest corner of Melbourne Avenue and Flower Avenue will need to be reconstructed. The large sweeping radius on the northwest corner of Melbourne Avenue and Wire Avenue should be reconstructed with a smaller radius to encourage slower vehicular speeds and reduce the crossing distance for pedestrians. This intersection should be converted to a four-way stop with crosswalks. Additional impacts include residential landscaping, driveway apron reconstruction, and a few small street trees.

13. Schuyler Road

From: Eton Road to Flower Avenue

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Driveway Aprons, Construction of New Curb Ramps, Construction of New Sidewalks

Priority Ranking: 3.1 Time Frame: Mid-term Cost Category: 2

Schulyer Road is a two-lane residential road with parking on both sides and no existing sidewalk. The roadway is a closed section from Eton Road to Bradford Road, and an open section from Bradford Road to Flower Avenue. This segment falls within the ¼ mile station radius. Sidewalk along Schuyler Road would provide east-west connectivity, allowing pedestrians to connect with the proposed north-south Eton Road and Bradford Road sidewalk routes to the station. Overhead utilities are located on the south side of the roadway. Sidewalk is recommended along the north side of the roadway. New curb ramps will be needed at Eton Road and Bradford Road. The curb ramps on the northeast corner of Schuyler Road and Flower Avenue and the southwest/northwest corners of Schuyler Road and Eton Road will need to be reconstructed for ADA compliance. Additional impacts include residential landscaping, driveway apron reconstruction, two street trees, and grading near the Flower Avenue intersection. Curb and gutter and storm drain will be needed between Bradford Road and Eton Road.

14. Saybrook Avenue

From: Melbourne Avenue to Hamilton Avenue

Improvement Type: Construction of New Curb Ramps, Reconstruction of Driveway Aprons, Construction of New Sidewalks

Priority Ranking: 1.8 Time Frame: Mid-term Cost Category: 2

Saybrook Avenue is a two-way, closed section residential street with parking on both sides. This segment is located within the ½ mile radius and would provide north-south connectivity to the north part of the study area. Existing overhead utilities run along the east side of the street. Sidewalk should be constructed on the west side of the street. Impacts would include residential landscaping, driveway apron reconstruction, street trees, and some minor grading. The proposed sidewalk could be extended to Franklin Avenue to connect with existing sidewalks on that street.

15. Wire Avenue

From: Melbourne Avenue to BiPPA boundary

Improvement Type: Construction of New Curb Ramps, Reconstruction of Driveway Aprons, Construction of New Sidewalks

Priority Ranking: 2.0 Time Frame: Mid-term Cost Category: 2

Wire Avenue is a two-way, closed section residential street with parking on both sides. This segment is located within the ½ mile radius and would provide north-south connectivity to the north part of the study area. Existing overhead utilities run along the east side of the street. Sidewalk should be constructed on the west side of the street. New curb ramps would be needed at Hamilton Avenue. Consideration should be given to extending the sidewalk slightly beyond the BiPPA boundary to Revere Place. Impacts would include driveway apron reconstruction and trimming existing trees. The proposed sidewalk could be extended to Franklin Avenue to connect with existing sidewalks on that street.

N

HAMILTON AVENUE
MELBOURNE AVENUE
SAYBROOK AVENUE
LAUER TERRACE
BRADFORD ROAD
FLOWER AVENUE
SCHUYLER ROAD
PROVIDENCE AVENUE
WIRE AVENUE
OLDHAM ROAD
ETON ROAD
THREE OAKS DRIVE
SAFFRON LANE
SCHUYLER ROAD
MANCHESTER ROAD
MANCHESTER PLACE
(MD 594-A)
PLYMOUTH STREET
WAYNE AVENUE
HARTWELL ROAD
READING ROAD
GEREN ROAD
LONG BRANCH STATION
SLIGO CREEK PARKWAY
SLIGO CREEK
PINEY BRANCH ROAD (MD 320)
DOMER AVENUE

LEGEND

- MANCHESTER PLACE STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS

PROPOSED IMPROVEMENTS

- INSTALL APS/CPS
- INSTALL PEDESTRIAN LIGHTING

SIDEWALK

- NON-COMPLIANT DRIVEWAY APRON
- RECONSTRUCT SIDEWALK
- SIDEWALK OBSTRUCTION
- NON-COMPLIANT WIDTH
- NON-COMPLIANT SLOPE
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 10-17a
MANCHESTER PLACE STATION AREA-WIDE IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

N

HAMILTON AVENUE

MELBOURNE AVENUE

SAYBROOK AVENUE

LAUER TERRACE

BRADFORD ROAD

FLOWER AVENUE

SCHUYLER ROAD

WIRE AVENUE

OLDHAM ROAD

PROVIDENCE AVENUE

THREE OAKS DRIVE

ETON ROAD

SAFFRON LANE

SCHUYLER ROAD

MANCHESTER ROAD

MANCHESTER PLACE

(MD 594-A)

PLYMOUTH STREET

WAYNE AVENUE

HARTWELL ROAD

READING ROAD

GEREN ROAD

LONG BRANCH STATION

SLIGO CREEK

SLIGO CREEK PARKWAY

PINEY BRANCH ROAD (MD 320)

DOMER AVENUE

LEGEND

- MANCHESTER PLACE STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS

PROPOSED IMPROVEMENTS

- RECONSTRUCT SHARED USE PATH
- STRIPE CROSSWALK

Curb_Ramp

- CONSTRUCT CURB RAMP
- RECONSTRUCT CURB RAMP
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 10-17b
MANCHESTER PLACE STATION
AREA-WIDE IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

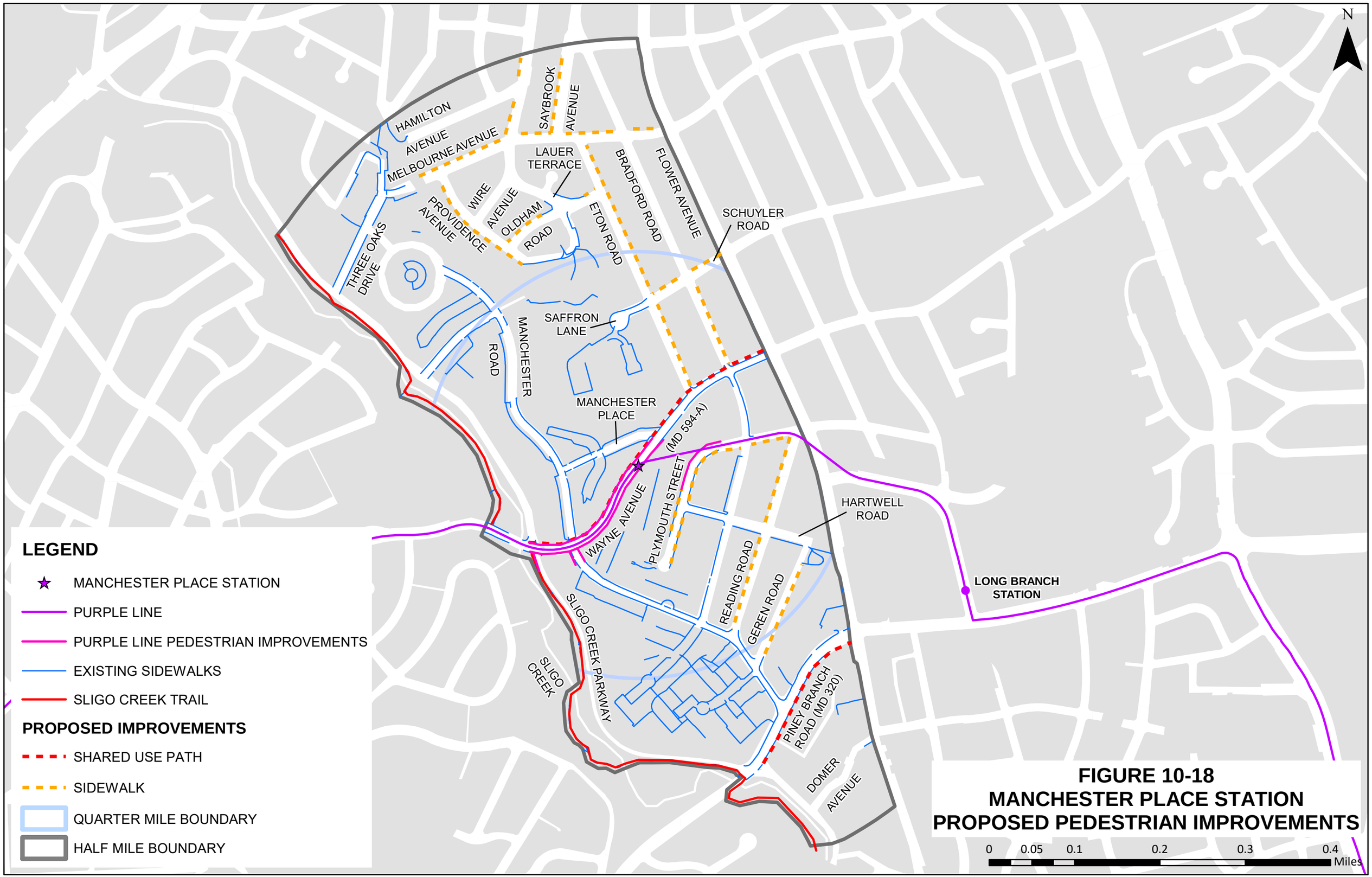

N
HAMILTON AVENUE
MELBOURNE AVENUE
SAYBROOK AVENUE
LAUER TERRACE
BRADFORD ROAD
FLOWER AVENUE
SCHUYLER ROAD
WIRE AVENUE
OLDHAM ROAD
ETON ROAD
PROVIDENCE AVENUE
THREE OAKS DRIVE
SAFFRON LANE
MANCHESTER ROAD
MANCHESTER PLACE
(MD 594-A)
WAYNE AVENUE
PLYMOUTH STREET
READING ROAD
GEREN ROAD
HARTWELL ROAD
LONG BRANCH STATION
SLIGO CREEK PARKWAY
SLIGO CREEK
PINEY BRANCH ROAD (MD 320)
DOMER AVENUE
LEGEND
MANCHESTER PLACE STATION
PURPLE LINE
PURPLE LINE PEDESTRIAN IMPROVEMENTS
EXISTING SIDEWALKS
SLIGO CREEK TRAIL
PROPOSED IMPROVEMENTS
SHARED USE PATH
SIDEWALK
QUARTER MILE BOUNDARY
HALF MILE BOUNDARY
FIGURE 10-18
MANCHESTER PLACE STATION
PROPOSED PEDESTRIAN IMPROVEMENTS
0 0.05 0.1 0.2 0.3 0.4
Miles

Table 10-4 - Pedestrian Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE: Reconstruction of Curb Ramps	Reconstruction of Existing Sidewalks	Reconstruction of Driveway Aprons	Removal of Sidewalk Obstructions	Widening of Non-Compliant Sidewalk Widths	Reconstruction of Sidewalks with Non-Compliant Slopes	Reconstruction of Mid-Block Crossings	Striping of Crosswalks	Signal Upgrades to APS/CPS	Construction of New Curb Ramps	Construction of New Sidewalks	Installation of Additional Signing	Construction of Curb Extensions	Construction of Mid-Block Crossings	Construction of Median Refuge	Installation of New APS/CPS	Other	BENEFITS	Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score	IMPACTS	Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
Area-wide Improvements																																	
1	ADA Upgrades to Existing Sidewalks	MDOT SHA/ MCDOT	●	●		●	●	●													2	3	5	1	11		3	3	2	3	11	2	2	4.0
2	ADA Upgrades to Existing Driveway Aprons	MDOT SHA/ MCDOT			●																2	3	5	1	11		2	2	2	3	9	2	2	4.9
3	ADA Upgrades to Existing Intersections	MDOT SHA/ MCDOT							●												2	4	5	1	12		3	3	2	2	10	2	2	4.8
4	Upgrades to APS/CPS	MDOT SHA								●											2	4	5	1	12		2	2	1	2	7	2	2	6.9
Plymouth Street																																	
5	Purple Line Station to Reading Road	MCDOT	●	●	●					●		●	●	●		●					5	5	5	1	16		4	1	1	3	9	2	2	7.1
Eton Road																																	
6	Melbourne Avenue to E Wayne Avenue	MCDOT	●		●					●		●	●	●						Lighting	5	5	5	1	16		3	2	2	3	10	2	1	3.2
Geren Road																																	
7	Manchester Road to Hartwell Road	MCDOT	●		●					●		●	●								5	4	5	1	15		3	2	2	2	9	2	2	6.7
Bradford Road																																	
8	East Hamilton Avenue to Wayne Avenue	MCDOT	●		●							●	●							Lighting	5	5	5	1	16		4	2	2	3	11	2	1	2.9
Reading Road																																	
9	Manchester Road to Plymouth Street	MCDOT	●		●							●	●								5	4	5	1	15		4	2	2	3	11	2	2	5.5
Providence Avenue																																	
10	Melbourne Avenue to Highland View Elementary School	MCDOT	●		●				●		●	●									5	5	5	1	16		2	2	2	3	9	1	1	1.8
Oldham Road																																	
11	Providence Avenue to Eton Road	MCDOT	●		●							●	●								5	5	5	1	16		2	2	2	2	8	1	1	2.0
Melbourne Avenue																																	
12	Providence Avenue to Flower Avenue	MCDOT	●		●					●		●	●	●						Intersection Safety Improvements	5	5	5	1	16		3	2	2	3	10	1	1	1.6
Schuyler Road																																	
13	Eton Road to Flower Avenue	MCDOT	●		●							●	●								4	4	5	1	14		3	2	2	2	9	2	1	3.1
Saybrook Avenue																																	
14	Melbourne Avenue to BiPPA boundary	MCDOT			●							●	●								4	4	5	1	14		2	2	2	2	8	1	1	1.8
Wire Avenue																																	
15	Dead end to Melbourne Avenue	MCDOT			●							●	●								4	4	5	1	14		2	2	1	2	7	1	1	2.0

$$Priority\ Ranking = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

10.3.2 Proposed Bikeway Improvements

As discussed in Section 10.1.2, bikeway infrastructure is largely nonexistent in the BiPPA. The cyclists can utilize the Sligo Creek Trail but have no access to the station or the rest of the area. Due to the lack of existing infrastructure, proposed bikeway improvements are an important part of making the area safe and bikeable.

Bikeway improvements were identified based on existing bikeway deficiencies and recommendations from the master plans. The benefits, impacts, and equity factor for each improvement were analyzed based on the criteria outlined in Section 2.8 of this report. A summary of improvements by street and their priority rankings can be found in Table 10-6. For the purposes of this report, only the streets with the highest priority rankings are analyzed.

1. E. Wayne Avenue (MD 594-A)

From: Sligo Creek Parkway to Flower Avenue

Improvement Type: Shared-Use Path

Priority Ranking: 4.7 Time Frame: Mid-term Cost Category: 3

E. Wayne Avenue (MD 594-A) is one of few major roads in the BiPPA. It is an undivided minor arterial with a 70-foot existing right-of-way width. There are currently sidewalks along both sides of the street with grass buffers in some areas. The road provides connection to most neighborhood side streets. A shared-use path along this corridor will connect bicyclists to the Purple Line station and other important community features.

From Sligo Creek Parkway to Manchester Place, the shared-use path would run alongside the proposed Purple Line tracks. At Manchester Place, the tracks transition underground. Associated Purple Line work for the at-grade light rail includes reconstruction of E Wayne Avenue (MD 594-A) to accommodate the tracks, increased road width, and new concrete sidewalks on both sides of the street. The sidewalk along the north of E Wayne Avenue will have a 6-foot concrete section and a 5-foot buffer; the south side will have a 6-foot sidewalk without a buffer. To implement a shared-use path along E. Wayne Avenue (MD 594-A), the shared-use path should be constructed along the north (westbound) side. The 6-foot sidewalk proposed by the Purple Line would be widened to 10-ft.

East of Manchester Place, E. Wayne Avenue (MD 594-A) will not be reconstructed via Purple Line improvements. In this section, the existing road width is approximately 36 feet with two travel lanes and sidewalks on both sides of the street. The shared-use path should be constructed on the north side of the road to provide continuity with the portion proposed between Sligo Creek Parkway and Manchester Place. To construct the shared-use path, the existing sidewalk would be expanded to 10-ft wide. The existing lanes would need to be narrowed and the road would need to be restriped.

Impacts from construction of this shared-use path between Sligo Creek Parkway and Manchester Place would include clearing, grading, utility relocation, and additional right-of-way acquisition beyond what was acquired for the Purple Line. Retaining walls may be necessary to limit the extent of grading. East of Manchester Place, no right-of-way acquisition is required if the roadway can be narrowed. No environmental or traffic / transit / parking impacts are expected. Costs are expected to be high due to the length of the shared-use path.

2. Piney Branch Road (MD 320)

From: Sligo Creek Parkway to Flower Avenue

Improvement Type: Shared-Use Path

Priority Ranking: 2.3 Time Frame: Mid-term Cost Category: 3

Piney Branch Road (MD 320) is a major highway in the south of the study area. The road connects to Sligo Creek Parkway and Manchester Road, two roads that provide access to the northern portion of the BiPPA. A shared-use path in this location would also connect to the existing Sligo Creek Trail.

Piney Branch Road (MD 320) is a four-lane highway with sidewalks on both sides of the street. Street trees and utility poles are also present on both sides of the street. The existing road width is approximately 50- to 55-ft and the right-of-way width is 120-ft. The path can be constructed on either side of the street to connect to the existing Sligo Creek Trail. Both sides are constrained by steep slopes, so retaining walls may be needed. There are also stairs and driveway aprons that connect to residential properties on the east side. There are stairs, driveway aprons, and bus shelters on the west side.

Piney Branch Road (MD 320) is a high-traffic area and decreasing road capacity may add to traffic congestion. But eliminating pocket lanes, hatched areas, reducing lane widths, and shifting lanes should be considered. The preferred path section is a 10-foot-wide asphalt path with a 2-foot minimum grass buffer. The path could be narrowed at pinch points with utility poles. Construction should be coordinated with the businessowners at the commercial center at the intersection with Flower Avenue. These proposed improvements should also be coordinated with proposed improvements in the adjacent Long Branch BiPPA.

Impacts due to construction of this shared-use path are expected to be high including impacts to traffic, right of way, driveway aprons, utilities, and trees. Construction would require modifications to the signal at Sligo Creek Parkway and removal or trimming of existing trees. Impacts to existing utilities are anticipated to be high due to potential relocation several utility poles. Costs are expected to be high because of the work required to reconfigure the road section to accommodate the path.

3. – 8. Various Residential Streets

Improvement Type: Sharrow Markings

Priority Ranking: As noted Time Frame: Short-term Cost Category: As Noted

It is recommended that “Bicycle Route” signing and sharrow markings be installed on the residential corridors shown in the table below. The sharrow markings would be on both sides of the roadways and run the complete length of the corridor.

Installation of a sharrow lane on these roads can be completed with no disruption to the existing road section and can be accomplished by signing and marking. These improvements would help with wayfinding and would reinforce the message for motorists to share the road with bicyclists.

Impacts to utilities and environmental features, and acquisition of right-of-way are not required for sharrow lanes.

Table 10-5 Summary of Bikeway Rankings for Various Residential Streets

Road	Limits		Cost Category	Priority Ranking
3. Manchester Road	Parkside Plaza Condominium	E. Wayne Avenue (MD 594-A)	1	2.8
4. Eton Road	Melbourne Avenue	E. Wayne Avenue (MD 594-A)	1	2.8
5. Melbourne Avenue	Providence Avenue	Flower Avenue	1	1.4
6. Bradford Road	Manchester Road	E. Wayne Avenue (MD 594-A)	1	2.8
7. Three Oaks Drive	Manchester Road	Sligo Creek Parkway	1	1.4
8. Plymouth Street	Station	Flower Avenue	1	5.6

N

HAMILTON AVENUE

MELBOURNE AVENUE

SAYBROOK AVENUE

LAUER TERRACE

BRADFORD ROAD

FLOWER AVENUE

SCHUYLER ROAD

WIRE AVENUE

OLDHAM ROAD

ETON ROAD

PROVIDENCE AVENUE

THREE OAKS DRIVE

SAFFRON LANE

MANCHESTER ROAD

MANCHESTER PLACE

(MD 594-A)

PLYMOUTH STREET

WAYNE AVENUE

READING ROAD

GEREN ROAD

HARTWELL ROAD

LONG BRANCH STATION

SLIGO CREEK PARKWAY

SLIGO CREEK

PINEY BRANCH ROAD (MD 320)

DOMER AVENUE

LEGEND

- MANCHESTER PLACE STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS
- SLIGO CREEK TRAIL

PROPOSED IMPROVEMENTS

- SHARED USE PATH
- SHARROW
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 10-19
MANCHESTER PLACE STATION
PROPOSED BIKEWAY IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

Table 10-6 - Bikeways Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE							BENEFITS						IMPACTS								
			Sharrow	Cycle Track	Separated Bike Lanes	Striped Bike Lanes	Shared-Use Paths	Other		Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score		Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
E Wayne Avenue (MD 594-A)																								
1	Sligo Creek Parkway to Flower Avenue	MCDOT					●			5	5	3	1	14		3	4	2	3	12	2	2	4.7
Piney Branch Road (MD 320)																								
2	Sligo Creek Parkway to Flower Avenue	MDOT SHA					●			5	5	3	1	14		4	3	2	3	12	1	2	2.3
Manchester Road																								
3	Parkside Plaza Condominium to E. Wayne Avenue (MD 594-A)	MCDOT	●							3	2	1	1	7		1	2	1	1	5	2	1	2.8
Eton Road																								
4	Melbourne Avenue to E. Wayne Avenue (MD 594-A)	MCDOT	●							3	2	1	1	7		1	2	1	1	5	2	1	2.8
Melbourne Avenue																								
5	Providence Avenue to Flower Avenue	MCDOT	●							3	2	1	1	7		1	2	1	1	5	1	1	1.4
Bradford Road																								
6	Manchester Road to E. Wayne Avenue (MD 594-A)	MCDOT	●							3	2	1	1	7		1	2	1	1	5	2	1	2.8
Three Oaks Drive																								
7	Manchester Road to Sligo Creek Parkway	MCDOT	●							3	2	1	1	7		1	2	1	1	5	1	1	1.4
Plymouth Street																								
8	Station to Flower Avenue	MCDOT	●							3	2	1	1	7		1	2	1	1	5	2	2	5.6

$$Priority\ Ranking = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

10.3.3 Maintenance

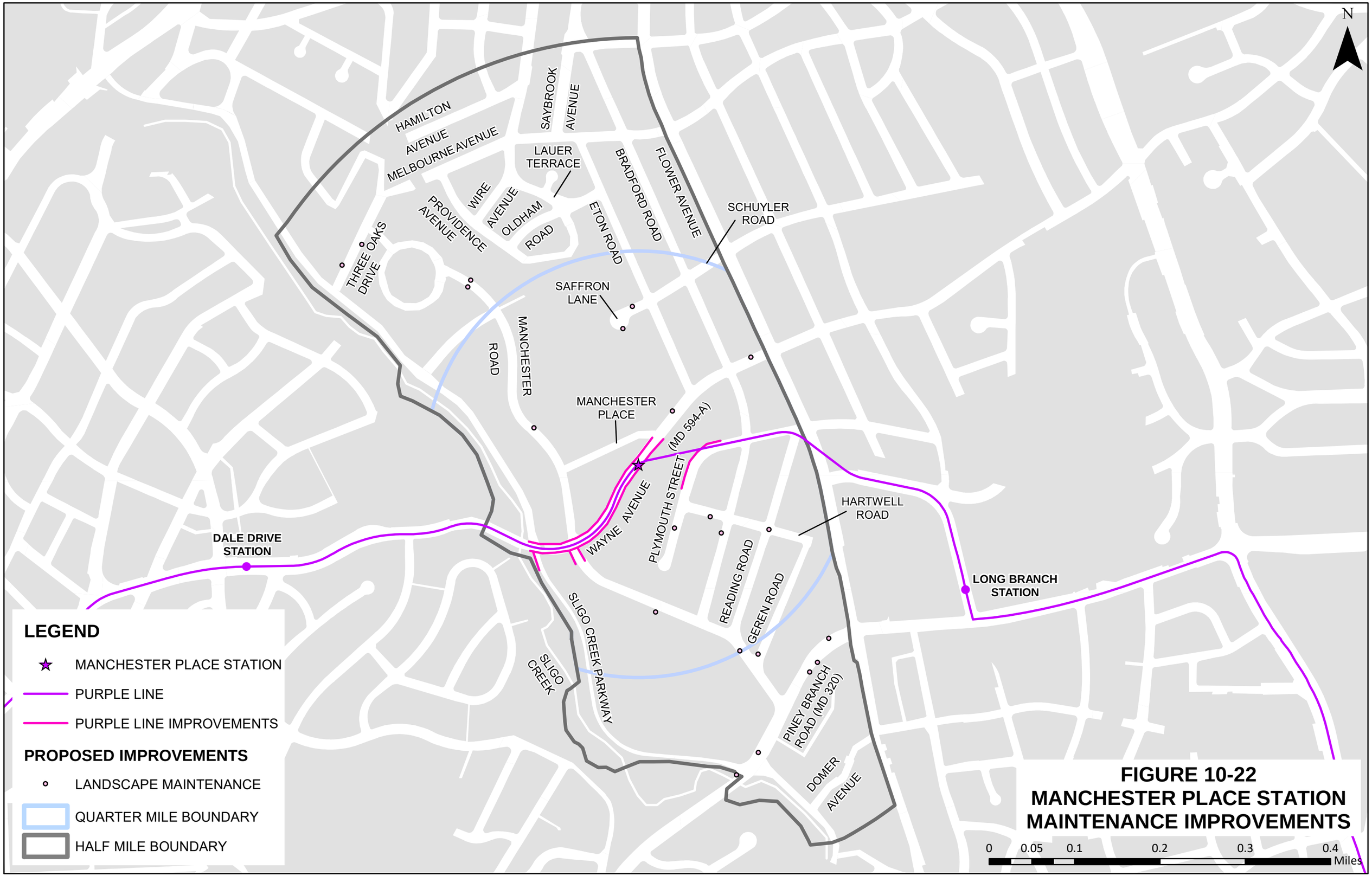
Maintenance improvements, such as tree and hedge trimming, are an inexpensive way to increase pedestrian comfort and aesthetic value. A map of locations for this type of work is included in Figure 10-22.



Figure 10-20 Overgrown hedges encroach on a sidewalk along Manchester Road.



Figure 10-21 Overgrown hedges encroach on a sidewalk along Bradford Road.


N
HAMILTON AVENUE
MELBOURNE AVENUE
SAYBROOK AVENUE
LAUER TERRACE
BRADFORD ROAD
FLOWER AVENUE
SCHUYLER ROAD
WIRE AVENUE
OLDHAM ROAD
PROVIDENCE AVENUE
THREE OAKS DRIVE
ETON ROAD
SAFFRON LANE
MANCHESTER ROAD
MANCHESTER PLACE
(MD 594-A)
PLYMOUTH STREET
WAYNE AVENUE
HARTWELL ROAD
DALE DRIVE STATION
READING ROAD
GEREN ROAD
LONG BRANCH STATION
SLIGO CREEK PARKWAY
SLIGO CREEK
PINEY BRANCH ROAD (MD 320)
DOMER AVENUE
LEGEND
MANCHESTER PLACE STATION
PURPLE LINE
PURPLE LINE IMPROVEMENTS
PROPOSED IMPROVEMENTS
LANDSCAPE MAINTENANCE
QUARTER MILE BOUNDARY
HALF MILE BOUNDARY
FIGURE 10-22
MANCHESTER PLACE STATION
MAINTENANCE IMPROVEMENTS
0 0.05 0.1 0.2 0.3 0.4
Miles

10.4 Final Recommendations

The existing Manchester Place area is a quiet residential community with existing features that support pedestrians and bikes. The existing Sligo Creek Trail provides a scenic route for both pedestrians and cyclists to travel through the BiPPA. Most facilities are in safe, working order, although upgrades and additional facilities will elevate the overall accessibility and safety of the area. Improvements recommended in this report would allow the expand accessibility across the community by building upon the solid network of bicycle and pedestrian infrastructure.

The highest-ranking pedestrian improvement is the Plymouth Street corridor, with much more benefit to impacts, with a direct connection the station and in an Equity area. Closely following and highly ranked are the improvements to Geren road and Area-wide improvements to APS/CPS traffic signals. The highest priority improvements are in the Equity areas. Aside from the highly ranked Reading Road improvements, the next priority should be the Area-wide improvements to fix existing sidewalks, existing driveways and upgrade existing intersections.

The highest-ranking bicycle improvements in the study area are sharrow markings along Plymouth Street. It is close to the new Purple Line Station and within an Equity area. E. Wayne Avenue is also a high priority with a Shared-Use path recommended to be constructed. This path will provide a potential connection directly to the station and Sligo Creek Trail, as well as points to the east in Long Branch. Although not ranked highly, the low cost of adding Sharrows to the roads in this study area will provide additional, safe routes, for bicyclists.

The recommended area-wide improvements can be constructed on their own or in conjunction alongside other recommended linear improvements. Reconstruction of existing facilities to meet current ADA guidelines should be a high priority.

The arrival of the new Purple Line station will encourage residents to consider public transportation when traveling outside of their neighborhood and will require safe, walkable, bikeable facilities. The improvements recommended in this report will expand the pedestrian network in the area and provide more facilities for bicyclists to safely travel throughout the BiPPA.

11 Long Branch



11 Long Branch

11.1 Study Area

11.1.1 Existing Area

The Long Branch Station for the Purple Line is proposed near the intersection of Piney Branch Road (MD 320) and Arliss Street (MD 594-D) in Silver Spring, Maryland. The station location and map of the study limits can be found in Figure 11-1. The area is made up of commercial shopping centers, neighborhood parks, apartment buildings, single family residential houses, an elementary school, a library, and churches. This study area overlaps with the Manchester Place Station to the west and the Piney Branch Road Station to the east. For this report, the Long Branch Station study area is truncated to avoid duplicate recommended pedestrian and bicycle access improvements.

Within the ¼ mile boundary is the Flower Avenue Center, Arliss Shopping Center, Piney Branch Shopping Center, Central Square Shopping Center, several other commercial buildings, the Long Branch Library, Flower Branch Apartments, Goodacre Apartments, Pine Ridge Apartments, Greenwood Terrace Apartments, Long Branch-Arliss Neighborhood Park, and Long Branch-Garland Neighborhood Park. Within the ½ mile boundary, the area is mostly residential multi-unit buildings, apartment buildings, single-family homes, Oak View Elementary School, and Long Branch Stream Valley. Major roadways and their respective limits, minimum right-of-way, and number of lanes can be found in Table 11-1. Montgomery County Ride On routes 12 and 13 operate along Flower Avenue. Ride On routes 15 and 20 operate along Piney Branch Road (MD 320).

Nearby churches, schools, parks, shopping, and a community center to the east contribute to the pedestrian and bicycle traffic in the Long Branch Purple Line station area. Major roads in the area are Flower Avenue which runs north-south on the west side of the study area and Piney Branch Road (MD 320) which runs east-west in the middle of the study area. Both are busy corridors that serve the center of commercial activity in the study area. Long Branch Creek and Long Branch Trail run north-south on the east edge of the study area. Figure 11-1 shows the locations of the most heavily traveled sidewalks

Based on publicly available and field collected data, it was determined that pedestrian and bicycle connectivity in the area is incomplete. Existing sidewalks, while present in most residential areas, do not currently provide continuous pedestrian access and are not ADA compliant. Sidewalks are often interrupted for parking. Existing bikeways in the area are minimal and are typically comprised of shared lane segments rather than a separated bike facility, however, the Purple Line will construct east-west bike lanes along Piney Branch Road (MD 320).

N

E. SCHUYLER ROAD

SUDBURY ROAD

FLOWER AVENUE

E. WAYNE AVENUE

HINSDALE COURT

GARLAND AVENUE

WALDEN ROAD

WHITNEY STREET

HINSDALE LANE

LONG BRANCH CREEK

MANCHESTER PLACE STATION

PLYMOUTH STREET

ARLISS STREET

GARLAND AVENUE

(MD 594-D)

PINEY BRANCH ROAD

(MD 320)

PINEY BRANCH ROAD STATION

GREENWOOD AVENUE

GLENVIEW AVENUE

DOMER AVENUE

BROWNING AVENUE

GARLAND AVENUE

WABASH AVENUE

CLAYBORN AVENUE

HADDON DRIVE

HUDSON AVENUE

LEGEND

- LONG BRANCH STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- MAJOR CONNECTIONS
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY
- EQUITY FOCUS AREA

FIGURE 11-1
LONG BRANCH STATION STUDY AREA

0 0.05 0.1 0.2 0.3 0.4 Miles

11.1.2 Existing Facilities

Existing pedestrian and bicycle facilities in the Long Branch Station BiPPA are consistent with those commonly found in other commercial or residential districts along the Purple Line corridor. The existing pedestrian network includes sidewalks, both signalized and non-signalized intersections, curb ramps, crosswalks, and mid-block crossings. See Figure 11-6 for a map of Existing Pedestrian Facilities.



Figure 11-2 A typical residential neighborhood with sidewalks.

Sidewalks are typically 4 feet wide and in moderate condition, although trip hazards and broken or cracked portions of the sidewalk are prevalent. Several utility cuts were observed along Flower Avenue due to on-going replacement of a water main. Most sidewalks are separated from the roadway by a grass buffer, while others are directly adjacent to the road. There are several sidewalk segments, particularly along parcels with higher density development such as strip malls and apartment buildings, that are interrupted by driveways and frontage parking. There are also large sidewalk networks on private property, which pedestrians will rely on to access the Purple Line. These sidewalks are outside of the scope of this study.



Figure 11-3 Vertical tripping hazard



Figure 11-4 Sidewalk with non-compliant cross slope.

Most curb ramps are in moderate condition but are not compliant with current ADA standards because they are not aligned properly, have non-compliant cross slopes, do not have level landing areas, or do not include detectable warning surfaces. Marked crosswalks are typically present at high traffic intersections but are faded.

As shown in Figure 11-6, there are several roads that do not have sidewalk or have gaps in the sidewalk. This includes residential streets, as well as Plymouth Street and Flower Avenue.

Existing infrastructure for cyclists is shown in Figure 11-7. It is non-existent except for the Long Branch Trail, which runs along the Long Branch Stream Valley. Once the Purple Line is complete, there will be marked bikeways along the Purple Line alignment on Piney Branch Road (MD 320).

Based on existing conditions and field collected data, facilities in the area do not provide adequate safety, accessibility, or connectivity for pedestrians and bicyclists. With the number of pedestrians and bicyclists expected to increase with Purple Line Station, upgrades and new facilities will become essential for users to access the station.

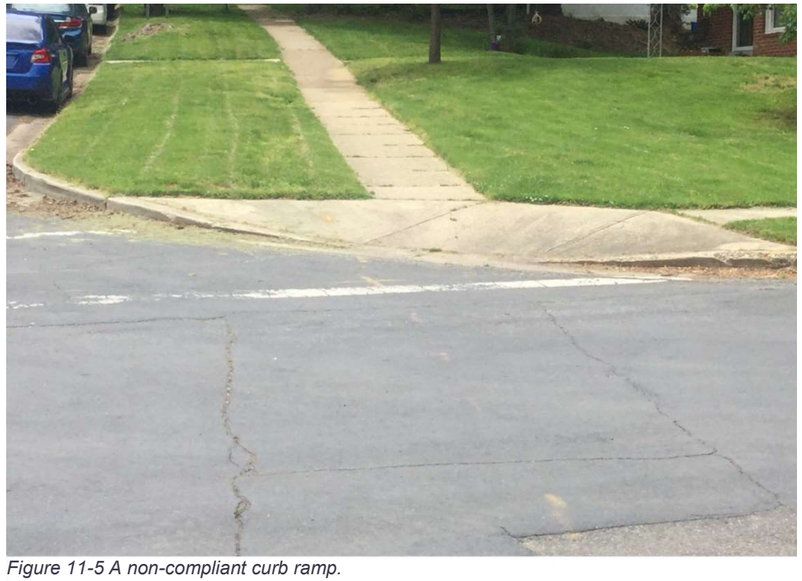


Figure 11-5 A non-compliant curb ramp.

Table 11-1 Street and Highway Classification

Designation	Roadway	Limits	Minimum Right-of-Way	Lanes	Speed Limit
Arterial					
A-301	Piney Branch Road (MD 320)	Flower Avenue to Arliss Street (MD 594-D)	103	4	30
A-301	Piney Branch Road (MD 320)	Arliss Street (MD 594-D) to End of BiPPA	112	4	30
Minor Arterial					
MA-2	Flower Avenue (formerly MD 787)	End of BiPPA to Domer Avenue	70	2	25
MA-19	Flower Avenue	Arliss Street (MD 594-D) to E. Wayne Avenue	70	2	25
Business					
B-1	Flower Avenue	Domer Avenue to Arliss Street	70	2	25
B-4	Greenwood Avenue	Domer Avenue to Piney Branch Road	70	2	25
Primary Residential					
P-4	Garland Avenue	End of BiPPA to Wabash Avenue	60	2	25
P-4a	Garland Avenue	Wabash Avenue to Piney Branch Road (MD 320)	60	2	25
P-4b	Garland Avenue	Arliss Street (MD 594-D) to 600’ East of Arliss Street	60	2	25
P-8	Domer Avenue	Flower Avenue (MD 787) to Garland Avenue	60	2	25
Uncategorized*					
	E. Schuyler Road	Flower Avenue to End of Road	44	2	25
	E. Wayne Avenue	Flower Avenue to End of BiPPA	44	2	25
	Plymouth Street	Flower Avenue to Walden Road	44	2	25
	Browning Avenue	Greenwood Avenue to Glenview Avenue	44	2	25
	Clayborn Avenue	Greenwood Avenue to Long Branch Trail	44	2	25
	Wabash Avenue	Flower Avenue to Garland Avenue	44	2	25
	Hudson Avenue	Flower Avenue to Garland Avenue	44	2	25
	Greenwood Circle	End of Road to Greenwood Avenue	44	2	25
	Sudbury Road	End of Road to E. Schuyler Road	44	2	25
	Walden Road	Arliss Street to E. Schuyler Road	44	2	
	Whitney Street	End of Road to E. Wayne Avenue	44	2	
	Hinsdale Lane	Whitney Street to Garland Avenue	44	2	
	Hinsdale Court	End of Road to Garland Avenue	44	2	
	Garland Avenue	Hinsdale Lane to E. Wayne Avenue	44	2	
	Greenwood Avenue	End of BiPPA to Domer Avenue	44	2	
	Browning Court	End of Road to Browning Avenue	44	2	
	Glenview Avenue	Garland Avenue to End of Road	44	2	
	Haddon Drive	End of BiPPA to Garland Avenue	44	2	

*Uncategorized roads are not included in the MNCPPC Roadway Functional Classification. ROW widths are based on MC-210.01 Tertiary Residential Street. Speed limits are based on minimum posted speed required by State law

N

E. SCHUYLER ROAD

SUDBURY ROAD

FLOWER AVENUE

E. WAYNE AVENUE

HINSDALE COURT

GARLAND AVENUE

WALDEN ROAD

WHITNEY STREET

HINSDALE LANE

MANCHESTER PLACE STATION

PLYMOUTH STREET

GARLAND AVENUE

LONG BRANCH CREEK

ARLISS STREET

(MD 594-D)

PINEY BRANCH ROAD (MD 320)

PINEY BRANCH ROAD STATION

GREENWOOD AVENUE

GLENVIEW AVENUE

DOMER AVENUE

BROWNING AVENUE

GARLAND AVENUE

WABASH AVENUE

CLAYBORN AVENUE

HADDON DRIVE

HUDSON AVENUE

LEGEND

- LONG BRANCH STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- EXISTING SIDEWALKS
- EXISTING SHARED USE PATH
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 11-6
LONG BRANCH STATION
EXISTING PEDESTRIAN FACILITIES

0 0.05 0.1 0.2 0.3 0.4 Miles

N

E. SCHUYLER ROAD

E. WAYNE AVENUE

SUDBURY ROAD

FLOWER AVENUE

HINSDALE LANE

WHITNEY STREET

WALDEN ROAD

HINSDALE LANE

MANCHESTER PLACE STATION

PLYMOUTH STREET

GARLAND AVENUE

LONG BRANCH CREEK

ARLISS STREET

(MD 594-D)

PINEY BRANCH ROAD STATION

PINEY BRANCH ROAD

(MD 320)

GREENWOOD AVENUE

GLENVIEW AVENUE

DOMER AVENUE

BROWNING AVENUE

GARLAND AVENUE

WABASH AVENUE

CLAYBORN AVENUE

HADDON DRIVE

HUDSON AVENUE

LEGEND

- LONG BRANCH STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- PURPLE LINE BIKE RACKS

EXISTING BIKEWAY

- SHARED USE PATH
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 11-7
LONG BRANCH STATION
EXISTING CYCLIST FACILITIES

0 0.05 0.1 0.2 0.3 0.4 Miles

11.1.3 Proposed Purple Line Improvements

Multiple improvements are proposed within the Long Branch Station BiPPA in conjunction with the construction of the Purple Line. The eastern tunnel portal of the Purple Line will be located along Arliss Street (MD 594-D), east of its intersection with Flower Avenue. The station will be constructed near the intersection of Arliss Street (MD 594-D) and Piney Branch Road (MD 320). The track alignment will continue at-grade along the south and west side of Arliss Street (MD 594-D) to the intersection with Piney Branch Road (MD 320). The alignment will then turn east and run along Piney Branch Road (MD 320) to the east end of the study area. Both Arliss Street (MD 594-D) and Piney Branch Road (MD 320) will be widened/reconstructed within the project limits and will include new sidewalks. Signalized crosswalks will be located at the Arliss Shopping Center east entrance (just south of the station), Piney Branch Road (MD 320) and Greenwood Drive, Piney Branch Road (MD 320) and Arliss Street (MD 594-D), and Piney Branch Road (MD 320) and Garland Avenue. Bike lanes will be installed along Piney Branch Road (MD 320) from Greenwood Drive to the east study area boundary. See Figure 11-8(a), (b), and (c) for the construction plans and these improvements.

11.1.4 Adjacent Projects

Flower Avenue from Piney Branch Road (MD 320) to Carroll Avenue is currently under construction. According to County CIP documentation, the project includes “the construction of the sidewalk and the rehabilitation of Flower Avenue (MD 787) between Piney Branch Road and Carroll Avenue. The City of Takoma Park will annex the full width of the right-of-way on the east side of the road and take ownership and maintenance responsibilities from the State. The City will transform the road into a green street, including the construction of an ADA compliant sidewalk on the east side of the road.”

11.2 Master Plan Summary

Two master plans were developed for the area surrounding the proposed Long Branch Station: the Long Branch Sector Plan (2013) and the East Silver Spring Master Plan (2000). See Figure 11-9 Master Plans, for the boundaries of these plans. Based on the age and scope of these master plans, it was determined that the Long Branch Sector Plan was the most relevant to this project. Therefore, recommendations follow those goals closely.

Two Purple Line stations are encompassed within the Long Branch Sector Plan: Long Branch Station and Piney Branch Station. As this section of the report focuses on the Long Branch Station, only improvements west of the Long Branch tributary will be discussed. The overall goal of the Long Branch Sector plan is to improve the connectivity of the residential neighborhoods with commercial businesses of the Long Branch area. This report looks to achieve this through the use of improved crosswalks for safety and creating better links for the pedestrians to the local neighborhoods. This report also makes a broader recommendation to improve the ADA compliance of the existing sidewalks within the Long Branch area. The bikeway recommendations are consistent with those in the Bikeways Master Plan.

In addition to the master plans, the Purple Line Pedestrian Connectivity Report, prepared for the M-NCPPC in June of 2020, describes recommended pedestrian improvements in the vicinity of each Purple Line station. Connectivity was measured by taking the total comfortable distance of all residential trips and dividing it by the total distance of all residential trips. Please see the Purple Line Connectivity report for a more detailed methodology for the calculation of pedestrian connectivity. The connectivity report states that the area’s existing connectivity was measured at 50%. If all the proposed improvements in the connectivity report were to be constructed, pedestrian connectivity would increase slightly to 57%.

To evaluate planning for bicycle facilities, this report reviewed the Montgomery County Bicycle Master Plan, which provides bicycle-specific recommendations for various areas in Montgomery County. In instances where the Long Branch Sector Plan and the Bicycle Master Plan overlap, the Bicycle Master Plan recommendation should govern.

11.2.1 Existing Pedestrian Improvement Recommendations

The recommendations from the various master plans and studies focus on increasing the safety and accessibility of existing infrastructure. These improvements are focused on intersection safety. The listed improvements in Table 11-2 describe the Purple Line Connectivity Report recommendations. The improvements are only along Piney Branch Road (MD 320) and range from intersection improvements to reconstructed sidewalks. The Long Branch Sector Plan recommends traffic signals where Arliss Street (MD 594-D) intersects with the Arliss Shopping Center eastern entrance and at Garland Avenue. As stated previously, the Purple Line will construct a new signal at the shopping center entrance. Geometric improvements are proposed at Garland Avenue; however, the intersection will not be signalized.

Table 11-2 Summary of Area Pedestrian Infrastructure Improvement Recommendations

Roadway/Route	Recommendation	Reference
Piney Branch Road (MD 320) at Flower Avenue	Construct high visibility crosswalk	Purple Line Pedestrian Connectivity Report
Piney Branch Road (MD 320) at Greenwood Avenue	Construct high visibility crosswalk	Purple Line Pedestrian Connectivity Report
Piney Branch Road (MD 320) at Arliss Street (MD 594-D)	Construct high visibility crosswalk	Purple Line Pedestrian Connectivity Report
Piney Branch Road (MD 320) at Garland Avenue	Construct high visibility crosswalk	Purple Line Pedestrian Connectivity Report
Arliss Street (MD 594-D)	Provide a traffic signal at the eastern entrance to the “Super Block” when warranted	Long Branch Sector Plan
Arliss Street (MD 594-D)	Provide a traffic signal at Garland Avenue when warranted	Long Branch Sector Plan

11.2.2 Existing Bikeway Improvement Recommendations

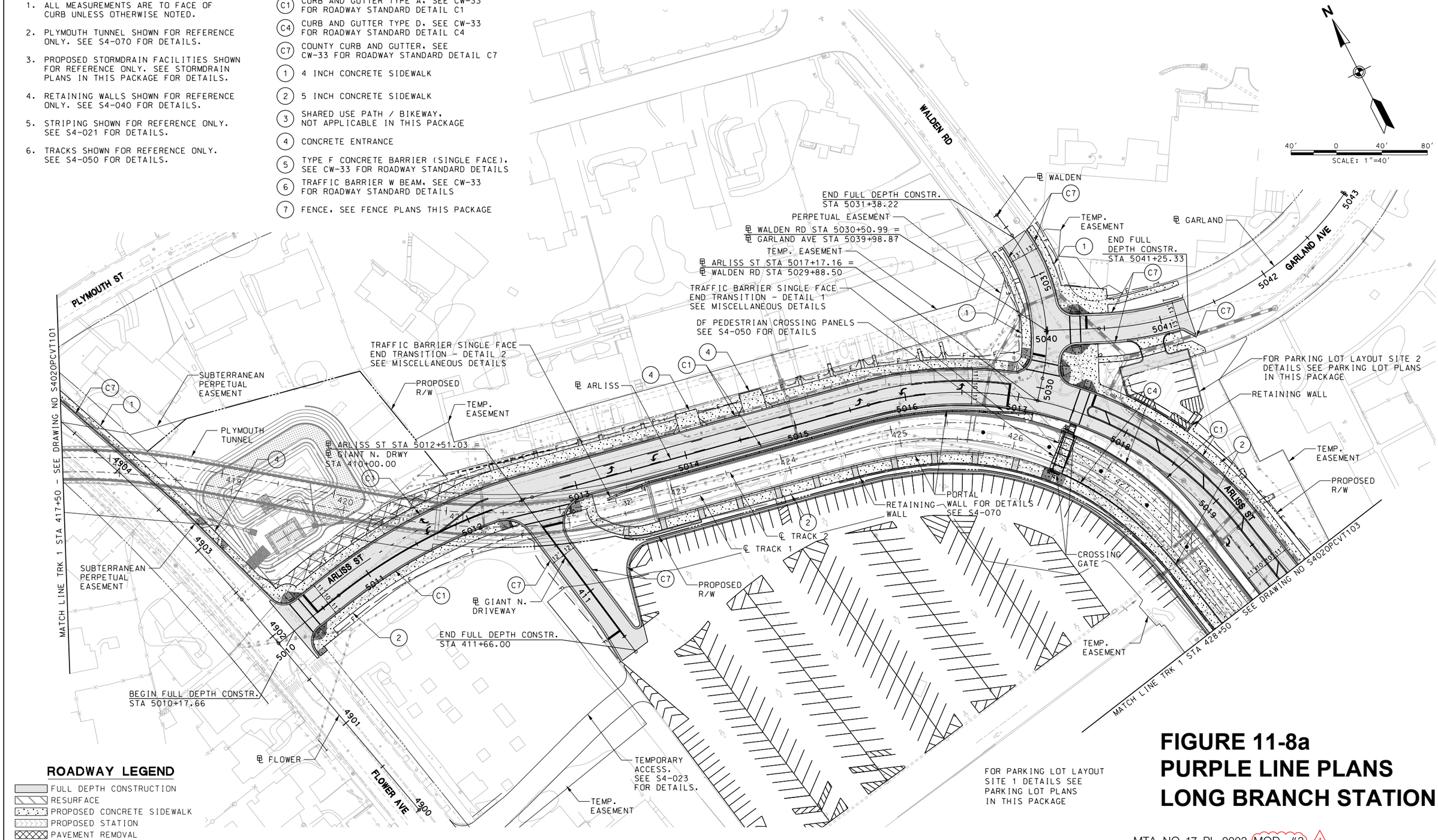
The Montgomery County Bicycle Master Plan provides bicycle recommendations throughout Montgomery County. The recommendations from this master plan for this study area are summarized in Table 11-3 and include separated bike lanes, shared roadways and shared-use paths.

Table 11-3 Summary of Area Cycling Infrastructure Improvement Recommendations

Roadway/Route	Limits	Reference
Separated Bike Lane		
Flower Avenue	Piney Branch Road (MD 320) to Arliss Street (MD 594-D)	Montgomery County Bicycle Master Plan
Arliss Street (MD 594-D)	Flower Avenue to Piney Branch Road (MD 320)	Montgomery County Bicycle Master Plan
Piney Branch Road (MD 320)	Flower Avenue (MD 787) to the BiPPA boundary	Montgomery County Bicycle Master Plan
Shared Roadway		
Walden Road	Arliss Street (MD 594-D) to Plymouth Street	Montgomery County Bicycle Master Plan
Plymouth Street	Sudbury Road to Walden Road	Montgomery County Bicycle Master Plan
Sudbury Road	Plymouth Street to E. Schuyler Road	Montgomery County Bicycle Master Plan
Flower Avenue	Houston Avenue to Piney Branch Road (MD 320)	Montgomery County Bicycle Master Plan
Greenwood Avenue	Houston Avenue to Piney Branch Road (MD 320)	Montgomery County Bicycle Master Plan
Domer Avenue	Flower Avenue (MD 787) to Garland Avenue	Montgomery County Bicycle Master Plan
Garland Avenue	Domer Avenue to Piney Branch Avenue (MD 320)	Montgomery County Bicycle Master Plan
Shared Use Path		
E. Wayne Avenue	Flower Avenue to Whitney Street	Montgomery County Bicycle Master Plan

NOTES:
1. ALL MEASUREMENTS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
2. PLYMOUTH TUNNEL SHOWN FOR REFERENCE ONLY. SEE S4-070 FOR DETAILS.
3. PROPOSED STORMDRAIN FACILITIES SHOWN FOR REFERENCE ONLY. SEE STORMDRAIN PLANS IN THIS PACKAGE FOR DETAILS.
4. RETAINING WALLS SHOWN FOR REFERENCE ONLY. SEE S4-040 FOR DETAILS.
5. STRIPING SHOWN FOR REFERENCE ONLY. SEE S4-021 FOR DETAILS.
6. TRACKS SHOWN FOR REFERENCE ONLY. SEE S4-050 FOR DETAILS.

(C1) CURB AND GUTTER TYPE A, SEE CW-33 FOR ROADWAY STANDARD DETAIL C1
(C4) CURB AND GUTTER TYPE D, SEE CW-33 FOR ROADWAY STANDARD DETAIL C4
(C7) COUNTY CURB AND GUTTER, SEE CW-33 FOR ROADWAY STANDARD DETAIL C7
(1) 4 INCH CONCRETE SIDEWALK
(2) 5 INCH CONCRETE SIDEWALK
(3) SHARED USE PATH / BIKEWAY, NOT APPLICABLE IN THIS PACKAGE
(4) CONCRETE ENTRANCE
(5) TYPE F CONCRETE BARRIER (SINGLE FACE), SEE CW-33 FOR ROADWAY STANDARD DETAILS
(6) TRAFFIC BARRIER W BEAM, SEE CW-33 FOR ROADWAY STANDARD DETAILS
(7) FENCE, SEE FENCE PLANS THIS PACKAGE



ROADWAY LEGEND
- FULL DEPTH CONSTRUCTION
- RESURFACE
- PROPOSED CONCRETE SIDEWALK
- PROPOSED STATION
- PAVEMENT REMOVAL

FIGURE 11-8a
PURPLE LINE PLANS
LONG BRANCH STATION

MTA. NO. 17-PL-0003 MOD #3 1

MARYLAND DEPARTMENT OF TRANSPORTATION
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MTA Maryland

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PROFESSIONAL CERTIFICATION
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland
50425 License No. 01/04/2021 Expiration Date

STATE OF MARYLAND — CHRISTOPHER J. CONKLIN — PROFESSIONAL ENGINEER
08/09/2019

NO.	DESCRIPTION	BY	DATE
0	RELEASE FOR CONSTRUCTION	CJC	03/22/18
1	NDC-228 SWM PERMIT APPROVAL SET; UPDATE BACKGROUND	CJC	07/31/19

REVISIONS

DESIGN JLB
DRAWN RBR
CHECK JLB
APPR CJC

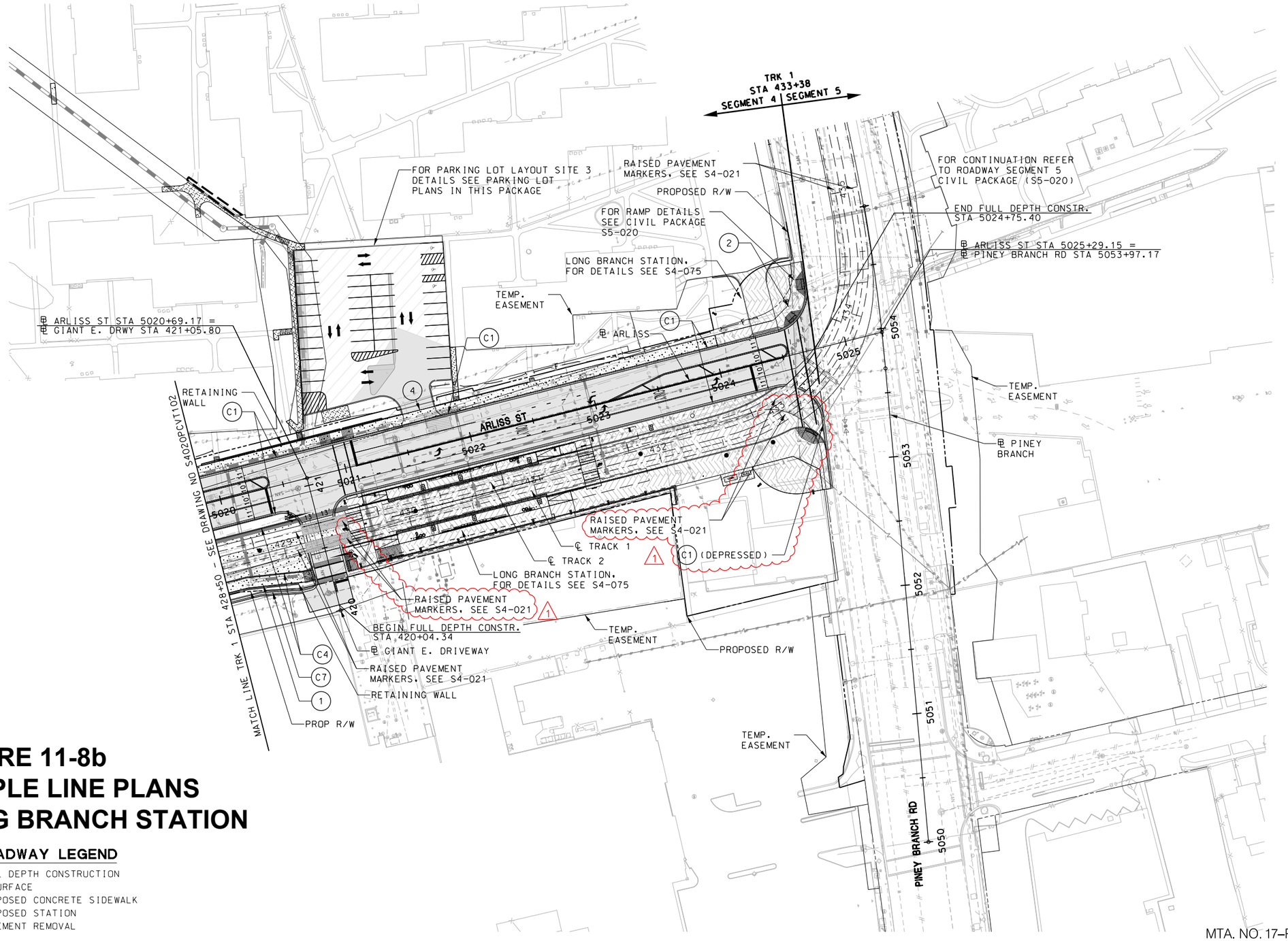
PURPLE LINE LIGHT RAIL
CIVIL DESIGN
SEGMENT 4

ROADWAY PLAN

DATE: JULY 31, 2019 SCALE: 1" = 40'

CONTRACT NO. 0-0000-0000
DRAWING NO. S4020PCVT102
SHEET NO. 19 OF 69

pw://SUSD036343.wsatkins.com:ATKNAMDPL01/Documents/Purple Line P3 Design/4.0 CAD (Work In Progress)/Roadway/Segment 4/Drawings/S4-020/S4020pCVT102.dgn
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NOTES:

1. ALL MEASUREMENTS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
2. PROPOSED STORMDRAIN FACILITIES SHOWN FOR REFERENCE ONLY. SEE STORMDRAIN PLANS IN THIS PACKAGE FOR DETAILS.
3. RETAINING WALLS SHOWN FOR REFERENCE ONLY. SEE S4-040 FOR DETAILS.
4. STRIPING SHOWN FOR REFERENCE ONLY. SEE S4-021 FOR DETAILS.
5. TRACKS SHOWN FOR REFERENCE ONLY. SEE S4-050 FOR DETAILS.
6. SEE PACKAGE S5-020 FOR ADJACENT ROADWAY WORK.

(C1) CURB AND GUTTER TYPE A, SEE CW-33 FOR ROADWAY STANDARD DETAIL C1
(C4) CURB AND GUTTER TYPE D, SEE CW-33 FOR ROADWAY STANDARD DETAIL C4
(C7) COUNTY CURB AND GUTTER, SEE CW-33 FOR ROADWAY STANDARD DETAIL C7
(1) 4 INCH CONCRETE SIDEWALK
(2) 5 INCH CONCRETE SIDEWALK
(3) SHARED USE PATH / BIKEWAY, NOT APPLICABLE IN THIS PACKAGE
(4) CONCRETE ENTRANCE
(5) TYPE F CONCRETE BARRIER (SINGLE FACE), SEE CW-33 FOR ROADWAY STANDARD DETAILS
(6) TRAFFIC BARRIER W BEAM, SEE CW-33 FOR ROADWAY STANDARD DETAILS
(7) FENCE, SEE FENCE PLANS THIS PACKAGE

FIGURE 11-8b
PURPLE LINE PLANS
LONG BRANCH STATION

ROADWAY LEGEND

- FULL DEPTH CONSTRUCTION
- RESURFACE
- PROPOSED CONCRETE SIDEWALK
- PROPOSED STATION
- PAVEMENT REMOVAL

MTA. NO. 17-PL-0003 MOD #3 (1)

MARYLAND DEPARTMENT OF TRANSPORTATION
MARYLAND TRANSIT ADMINISTRATION — MTA Maryland

PURPLE LINE TRANSIT PARTNERS

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PROFESSIONAL CERTIFICATION

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland

50425 License No. — 01/04/2021 Expiration Date

STATE OF MARYLAND — CHRISTOPHER J. CARLSON — PROFESSIONAL ENGINEER

08/09/2019

NO.	DESCRIPTION	BY	DATE
0	RELEASE FOR CONSTRUCTION	CJC	03/22/18
1	NDC-228 SWM PERMIT APPROVAL SET; UPDATE BACKGROUND	CJC	07/31/19

REVISIONS

DESIGN JLB | DRAWN RBR | CHECK JLB | APPR CJC

PURPLE LINE LIGHT RAIL
CIVIL DESIGN
SEGMENT 4

ROADWAY PLAN

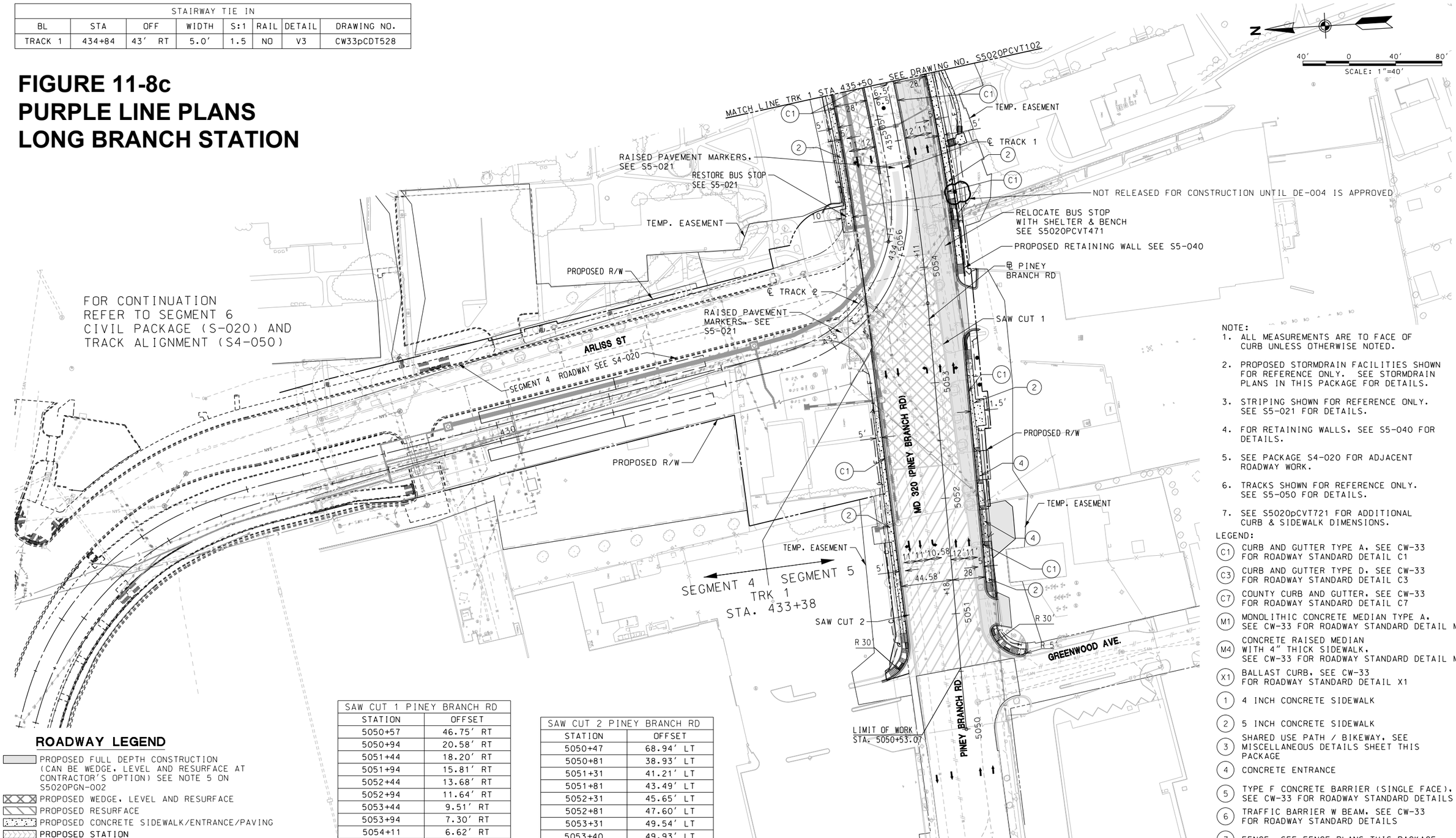
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CONTRACT NO. 0-0000-0000
DRAWING NO. S4020PCVT103
SHEET NO. 20 OF 69

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STAIRWAY TIE IN							
BL	STA	OFF	WIDTH	S:1	RAIL	DETAIL	DRAWING NO.
TRACK 1	434+84	43' RT	5.0'	1.5	NO	V3	CW33pCDT528

FIGURE 11-8c
PURPLE LINE PLANS
LONG BRANCH STATION



FOR CONTINUATION
REFER TO SEGMENT 6
CIVIL PACKAGE (S-020) AND
TRACK ALIGNMENT (S4-050)

ROADWAY LEGEND

- PROPOSED FULL DEPTH CONSTRUCTION (CAN BE WEDGE, LEVEL AND RESURFACE AT CONTRACTOR'S OPTION) SEE NOTE 5 ON S5020PGN-002
- PROPOSED WEDGE, LEVEL AND RESURFACE
- PROPOSED RESURFACE
- PROPOSED CONCRETE SIDEWALK/ENTRANCE/PAVING
- PROPOSED STATION
- PAVEMENT REMOVAL

SAW CUT 1 PINEY BRANCH RD	
STATION	OFFSET
5050+57	46.75' RT
5050+94	20.58' RT
5051+44	18.20' RT
5051+94	15.81' RT
5052+44	13.68' RT
5052+94	11.64' RT
5053+44	9.51' RT
5053+94	7.30' RT
5054+11	6.62' RT

SAW CUT 2 PINEY BRANCH RD	
STATION	OFFSET
5050+47	68.94' LT
5050+81	38.93' LT
5051+31	41.21' LT
5051+81	43.49' LT
5052+31	45.65' LT
5052+81	47.60' LT
5053+31	49.54' LT
5053+40	49.93' LT

NOTE:
1. ALL MEASUREMENTS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
2. PROPOSED STORMDRAIN FACILITIES SHOWN FOR REFERENCE ONLY. SEE STORMDRAIN PLANS IN THIS PACKAGE FOR DETAILS.
3. STRIPING SHOWN FOR REFERENCE ONLY. SEE S5-021 FOR DETAILS.
4. FOR RETAINING WALLS, SEE S5-040 FOR DETAILS.
5. SEE PACKAGE S4-020 FOR ADJACENT ROADWAY WORK.
6. TRACKS SHOWN FOR REFERENCE ONLY. SEE S5-050 FOR DETAILS.
7. SEE S5020pCVT721 FOR ADDITIONAL CURB & SIDEWALK DIMENSIONS.

LEGEND:
- (C1) CURB AND GUTTER TYPE A, SEE CW-33 FOR ROADWAY STANDARD DETAIL C1
- (C3) CURB AND GUTTER TYPE D, SEE CW-33 FOR ROADWAY STANDARD DETAIL C3
- (C7) COUNTY CURB AND GUTTER, SEE CW-33 FOR ROADWAY STANDARD DETAIL C7
- (M1) MONOLITHIC CONCRETE MEDIAN TYPE A, SEE CW-33 FOR ROADWAY STANDARD DETAIL M1
- (M4) CONCRETE RAISED MEDIAN WITH 4" THICK SIDEWALK, SEE CW-33 FOR ROADWAY STANDARD DETAIL M4
- (X1) BALLAST CURB, SEE CW-33 FOR ROADWAY STANDARD DETAIL X1
- (1) 4 INCH CONCRETE SIDEWALK
- (2) 5 INCH CONCRETE SIDEWALK
- (3) SHARED USE PATH / BIKEWAY, SEE MISCELLANEOUS DETAILS SHEET THIS PACKAGE
- (4) CONCRETE ENTRANCE
- (5) TYPE F CONCRETE BARRIER (SINGLE FACE), SEE CW-33 FOR ROADWAY STANDARD DETAILS
- (6) TRAFFIC BARRIER W BEAM, SEE CW-33 FOR ROADWAY STANDARD DETAILS
- (7) FENCE, SEE FENCE PLANS THIS PACKAGE

MTA. NO. 17-PL-0008

MARYLAND DEPARTMENT OF TRANSPORTATION
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PROFESSIONAL CERTIFICATION
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland
50498 License No. 01/24/2019 Expiration Date

STATE OF MARYLAND — JAMES M. HOLLOWAY — PROFESSIONAL ENGINEER
08/21/2018

NO.	DESCRIPTION	BY	DATE
0	RELEASE FOR CONSTRUCTION	JMH	08/10/18

REVISIONS

DESIGN BSL | DRAWN BSL | CHECK TC | APPR JMH

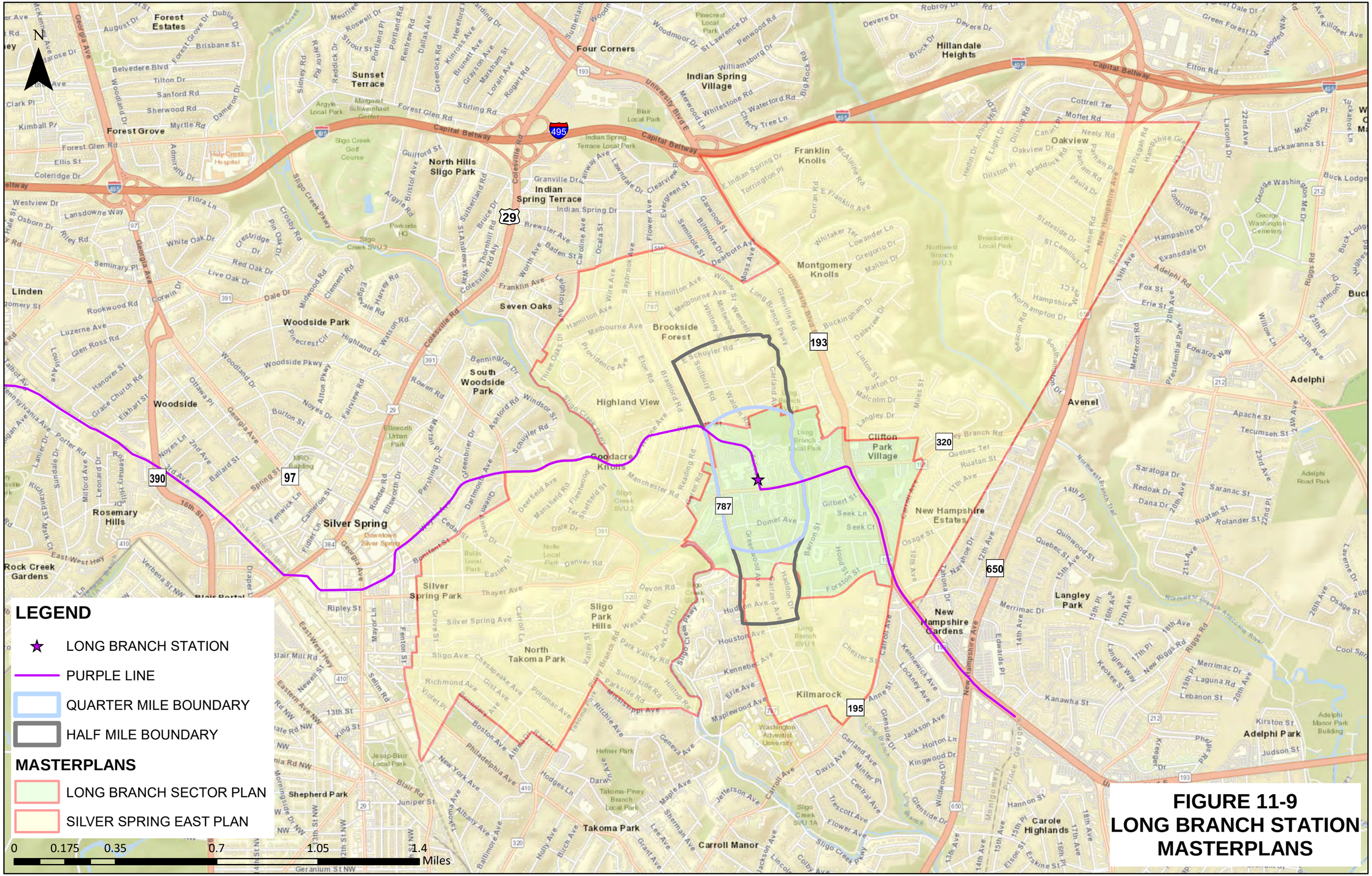
PURPLE LINE LIGHT RAIL
CIVIL DESIGN
SEGMENT 5

ROADWAY PLAN

DATE: AUGUST 10, 2018 SCALE: 1" = 40'

CONTRACT NO. 0-0000-0000
DRAWING NO. S5020PCVT101
SHEET NO. 56 OF 544

pw://CUSD036301.wsatkins.com:ATKNAMDPL01/Documents/Purple Line P3 Design/4.0 CAD (Work In Progress)/Roadway/Segment 5/Drawings/S5-020/S5020pCVT101.dgn
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N
Forest Estates
Sunset Terrace
Four Corners
Indian Spring Village
Hillandale Heights
Forest Grove
Sligo Creek Golf Course
Holy Cross Hospital
North Hills Sligo Park
Indian Spring Terrace
Indian Spring Terrace Local Park
Blair Local Park
Franklin Knolls
Oakview
Montgomery Knolls
Northwest Branch SVU 3
Broadacres Local Park
Linden
Woodside Park
Seven Oaks
Brookside Forest
Highland View
South Woodside Park
Woodside
Goodacre Knolls
Clifton Park Village
Avenel
New Hampshire Estates
Adelphi
Adelphi Road Park
Rosemary Hills
Silver Spring
Downtown Silver Spring
Rock Creek Gardens
Silver Spring Park
Sligo Park Hills
North Takoma Park
Takoma Park
Carroll Manor
Kilmarock
Langley Park
New Hampshire Gardens
Carole Highlands
Adelphi Park
Capital Beltway
Georgia Ave
Colesville Rd
University Blvd E
Sligo Creek Pkwy
Indian Spring Drive
Brewster Ave
Franklin Ave
Hamilton Ave
E Hamilton Ave
E Melbourne Ave
Melbourne Ave
Providence Ave
Eton Rd
Bradford Rd
Schuyler Rd
Long Branch Pkwy
Glenville Rd
Buckingham Dr
Dale Dr
Woodside Pkwy
Highland Dr
Noyes Dr
Burton St
Rowen Rd
Bennington Dr
Ellsworth Urban Park
Manchester Rd
Reading Rd
Deerfield Ave
Mansfield Rd
Fleetwood Dr
Sheffield St
Dale Dr
Domer Ave
Greenwood Ave
Barron St
Gilbert St
Seek Ln
Seek Ct
Hood St
Forston St
Garland Ave
Haddon Dr
Devon Rd
Thayer Ave
Silver Spring Ave
Ripley St
Wessex Rd
Park Crest Dr
Park Valley Rd
Valley St
Houston Ave
Kennebec Ave
Erie Ave
Maplewood Ave
Sligo Ave
Chesapeake Ave
Gist Ave
Potomac Ave
Richmond Ave
Violet Pl
Boundary Ave
Sunnyside Rd
Parkside Rd
Hilltop Rd
Mississippi Ave
Ritchie Ave
Geneva Ave
Boston Ave
Alfred Dr
Philadelphia Ave
New York Ave
Albany Ave
Hodges Ln
Holly Ave
Birch Ave
Maple Ave
Jefferson Ave
Carroll Ave
Sherman Ave
Lee Ave
Grant Ave
Baltimore Ave
Takoma-Piney Branch Local Park
Hefner Park
Jesup-Blair Local Park
Shepherd Park
Blair Rd
Juniper St
Geranium St NW
Blair Mill Rd
Eastern Ave NW
Newell St
Selim Rd
Fenton St
Maryland Ave
Grove St
Easley St
Bullis Local Park
Denver Rd
Nolte Local Park
Cedar St
Bonifant St
Dennis Ave
Dartmouth Ave
Queen St
Fidler Ln
Cameron St
Fenwick Ln
Roeder Rd
Ellsworth Dr
Pershing Dr
Greenbrier Dr
Ashford Rd
Windsor St
Schuyler Rd
Spring St
Ballard St
Leonard Dr
Milford Ave
Porter Rd
Lanier Dr
Sundale Dr
Richland St
Mark Ct
Rosemary Hills Dr
Verbena St NW
Draper Ln
East West Hwy
Georgia Ave
Ripley St
Maryland Ave
Fenton St
Selim Rd
Newell St
Eastern Ave NW
Blair Mill Rd
Jesup-Blair Local Park
Shepherd Park
Blair Rd
Juniper St
Geranium St NW
Sligo Creek SVU 1
Sligo Creek SVU 2
Sligo Creek SVU 1A
Long Branch SVU 1
Long Branch SVU 2
Takoma-Piney Branch Local Park
Long Branch Local Park
Northwest Branch Trail
Northwest Branch Anacostia River
Adelphi Manor Park Building
Washington Adventist University
Prince Georges
Montgomery
Kanawha St
Lebanon St
Kirston St
Judson St
Hannon St
Edwards Way
Presidential Park
Metzerott Rd
Northampton Dr
Hampshire Dr
Evansdale Dr
Adelphi Rd
Fox St
Erie St
Tombridge Ter
Hampshire Pl
Broadacres Local Park
Northwest Branch SVU 3
Slateside Dr
St Camillus Dr
Avenel Rd
New Hampshire Ave
Sierra St
19th Ave
George Washington Cemetery
George Washington Memorial Pkwy
Buck Lodge
Lackawanna St
Laconia Dr
22nd Ave
Mistletoe Pl
Tuckahoe Ln
Elton Rd
Green Forest Dr
Killdeer Ave
Wooded Way
Cottrell Ter
Moffet Rd
Neely Rd
Oakview Dr
Braddock Rd
Parham Rd
Paula Dr
Mt Pisgah Rd
Hampshire Green
Dilston Rd
Dilston Pl
Cahart Pl
E Light Dr
Arbor Hill Dr
Hedin Dr
Devere Dr
Robroy Dr
Brock Dr
Woodmoor Dr
St Lawrence Dr
Penwood Rd
Pinecrest Local Park
Williamsburg Dr
Whitestone Rd
Waterford Rd
Big Rock Rd
Cherry Tree Ln
Merwood Ln
Stirling Rd
Forest Glen Rd
Argyle Local Park
Margaret Schweinhaut Center
Parkside HO
Sligo Creek SVU 3
Guilford St
Argyle Rd
Bristol Ave
Sutherland Rd
St Andrews Way
Thornhill Rd
Bruce Dr
Granville Dr
Fairway Ave
Lawndale Dr
Clearview Pl
Evergreen St
Garwood St
Baden St
Caroline Ave
Ocala St
Worth Ave
Colesville Rd Alt
Seminole St
Biltmore Dr
Dearborn Ave
Moss Ave
Saybrook Ave
Wire Ave
Leighton Ave
Three Oaks Dr
Wilmington Dr
Whitney Dr
Wendell St
Mintwood Pl
Garland Ave
Long Branch Local Park
Miles St
Linton St
Patton Dr
Malcolm Dr
Langley Dr
Quebec Ter
Ruatan St
Saratoga Dr
Redoak Dr
Dana Dr
Saranac St
Rolander St
Quinwood St
Osage St
Navahoe Dr
Cahuna Dr
Merrimac Dr
Laguna Rd
Kanawha St
Kingwood Dr
Holton Ln
Jackson Ave
Anne St
Lockney Ave
Kennewick Ave
Carroll Ave
Chester St
Houston Ave
Hudson Ave
Garland Ave
Haddon Dr
Forston St
Hood St
Seek Ln
Seek Ct
Gilbert St
Domer Ave
Greenwood Ave
Barron St
Sligo Creek SVU 1A
Sligo Creek SVU 2
Long Branch SVU 1
Long Branch SVU 2
Takoma-Piney Branch Local Park
Hefner Park
Jesup-Blair Local Park
Shepherd Park
Blair Rd
Juniper St
Geranium St NW
Sligo Creek SVU 1
Sligo Creek SVU 2
Sligo Creek SVU 1A
Long Branch SVU 1
Long Branch SVU 2
Takoma-Piney Branch Local Park
Long Branch Local Park
Northwest Branch Trail
Northwest Branch Anacostia River
Adelphi Manor Park Building
Washington Adventist University
Prince Georges
Montgomery
Kanawha St
Lebanon St
Kirston St
Judson St
Hannon St
Edwards Way
Presidential Park
Metzerott Rd
Northampton Dr
Hampshire Dr
Evansdale Dr
Adelphi Rd
Fox St
Erie St
Tombridge Ter
Hampshire Pl
Broadacres Local Park
Northwest Branch SVU 3
Slateside Dr
St Camillus Dr
Avenel Rd
New Hampshire Ave
Sierra St
19th Ave
George Washington Cemetery
George Washington Memorial Pkwy
Buck Lodge
Lackawanna St
Laconia Dr
22nd Ave
Mistletoe Pl
Tuckahoe Ln
Elton Rd
Green Forest Dr
Killdeer Ave
Wooded Way
Cottrell Ter
Moffet Rd
Neely Rd
Oakview Dr
Braddock Rd
Parham Rd
Paula Dr
Mt Pisgah Rd
Hampshire Green
Dilston Rd
Dilston Pl
Cahart Pl
E Light Dr
Arbor Hill Dr
Hedin Dr
Devere Dr
Robroy Dr
Brock Dr
Woodmoor Dr
St Lawrence Dr
Penwood Rd
Pinecrest Local Park
Williamsburg Dr
Whitestone Rd
Waterford Rd
Big Rock Rd
Cherry Tree Ln
Merwood Ln
Stirling Rd
Forest Glen Rd
Argyle Local Park
Margaret Schweinhaut Center
Parkside HO
Sligo Creek SVU 3
Guilford St
Argyle Rd
Bristol Ave
Sutherland Rd
St Andrews Way
Thornhill Rd
Bruce Dr
Granville Dr
Fairway Ave
Lawndale Dr
Clearview Pl
Evergreen St
Garwood St
Baden St
Caroline Ave
Ocala St
Worth Ave
Colesville Rd Alt
Seminole St
Biltmore Dr
Dearborn Ave
Moss Ave
Saybrook Ave
Wire Ave
Leighton Ave
Three Oaks Dr
Wilmington Dr
Whitney Dr
Wendell St
Mintwood Pl
Garland Ave
Long Branch Local Park
Miles St
Linton St
Patton Dr
Malcolm Dr
Langley Dr
Quebec Ter
Ruatan St
Saratoga Dr
Redoak Dr
Dana Dr
Saranac St
Rolander St
Quinwood St
Osage St
Navahoe Dr
Cahuna Dr
Merrimac Dr
Laguna Rd
Kanawha St
Kingwood Dr
Holton Ln
Jackson Ave
Anne St
Lockney Ave
Kennewick Ave
Carroll Ave
Chester St
Houston Ave
Hudson Ave
Garland Ave
Haddon Dr
Forston St
Hood St
Seek Ln
Seek Ct
Gilbert St
Domer Ave
Greenwood Ave
Barron St
Sligo Creek SVU 1A
Sligo Creek SVU 2

11.3 Proposed Improvements

The Long Branch Station BiPPA has been evaluated for several types of pedestrian and bicycle improvements. Proposed improvements have been developed and prioritized based on the ranking criteria outlined in Section 2.8 of this report. A list of proposed improvements was developed to include the recommendations of previously prepared studies and master plans. Information was gathered from a field review of the site and data gathered from other sources. Separate analyses and mapping were developed for Pedestrian Improvements and for Biking Improvements.

11.3.1 Proposed Pedestrian Improvements

This study included a thorough review of existing pedestrian facilities (sidewalk ramps, driveway aprons, linear sidewalks, etc.) and determined which facilities did not meet current ADA criteria. The report and figures indicate where spot improvements are required and where linear sidewalk improvements are required. Spot improvements are shown in Figures 11-12 (a) and (b). The maps show the locations and types of existing facilities that need to be reconstructed to meet ADA standards. Proposed linear routes/improvements for pedestrian access are shown in Figure 11-13. The map figures also indicate the improvements that will be constructed by the Purple Line project.

Refer to Table 11-4 for a summary of priority rankings of pedestrian improvements. This report describes the top ranked pedestrian improvements for the Long Branch Station.



Figure 11-10 Sidewalk with non-compliant slope along Flower Avenue.

1. Area-wide Improvements to Existing Sidewalks

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Sidewalk, Removal of Sidewalk Obstructions, Widening of Non-compliant Sidewalk Widths, Reconstruction of Sidewalks with Non-compliant Slopes

Priority Ranking: 4.0 Time Frame: Short-term Cost Category: 3

There is a need for general maintenance of pedestrian pathways and upgrades to those that do not meet current ADA, MCDOT, or MDOT SHA standards throughout the BiPPA. Curb ramps should be upgraded to meet slope requirements as set forth by ADA and must include detectable warning surfaces. Sidewalks should be free from trip hazards and breaks; it is recommended that trip hazards greater than ½-inch and significant breakage be repaired by replacing the affected portion of the sidewalk. In addition, sidewalks that have cross-slopes greater than allowable or pinch points with less than a 36" width should be replaced or reconfigured. Sidewalk obstructions, such as guy wires, should be reconfigured to provide adequate overhead clearance for pedestrians.

Although all area-wide sidewalk improvements are a worthwhile investment, those in the vicinity of the Purple Line, Piney Branch Road (MD 320), Arliss Street (MD 594-D), and Flower Avenue should take priority.

2. Area-wide Improvements to Existing Driveway Aprons

Improvement Type: Reconstruct Driveway Aprons

Priority Ranking: 4.9 Time Frame: Short-term Cost Category: 3

There is a need to upgrade existing driveway aprons to meet ADA slope requirements and be in conformance with current MCDOT and MDOT SHA standards throughout the BiPPA. Existing aprons in the residential areas of Long Branch Station BiPPA were found to have existing cross slopes greater than 2%.

Reconstruction of driveway aprons is recommended for those roads with sidewalks that provide direct connection to the Purple Line Station. These roadways are Piney Branch Road (MD 320), Arliss Street (MD 594-D), and Flower Avenue. Much like the area-wide improvements to existing sidewalks, area-wide improvements to existing driveway aprons would provide increased safety and accessibility.

3. Area-wide Improvements to Existing Intersections

Improvement Type: Reconstruction of Mid-block Crossing, Striping of Crosswalks

Priority Ranking: 6.0 Time Frame: Short-term Cost Category: 2

Crosswalk striping throughout the Long Branch BiPPA is fading or does not utilize the continental or "piano stripe" at high traffic intersections. At a minimum, all striping should be updated to ensure there are no faded or broken portions. Crosswalks in high-traffic areas should be prioritized.

Upgrades to these existing crosswalks would provide increased safety for pedestrians. No impacts to existing utilities or rights-of-way are anticipated.

4. Area-wide Upgrades to APS/CPS

Improvement Type: Signal Upgrades to APS/CPS

Priority Ranking: 6.9 Time Frame: Short-term Cost Category: 2

Some intersections throughout the Long Branch area do not have accessible signals. Upgrading these signals to comply with ADA guidelines would create a safer pedestrian experience for everyone. No impacts to existing utilities, rights-of-way, or environmental features are anticipated. Minor traffic pattern changes may be required at high volume intersections during construction.

The Purple Line project should include APS/CPS improvements at Piney Branch Road (MD 320) at Greenwood Avenue, at Arliss Street (MD 594-D), and at Garland Avenue. The County should plan for APS/CPS upgrades at Piney Branch Road (MD 320) and Flower Avenue, as well as Flower Avenue and E. Wayne Avenue.

5. Flower Avenue

From: Piney Branch Road (MD 320) to Plymouth Street

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, Reconstruction of Driveway Aprons, Removal of Sidewalk Obstructions, Construction of New Curb Ramps, Construction of New Sidewalk, Repair APS/CPS, Lighting

Priority Ranking: 5.1 Time Frame: Mid-term Cost Category: 4

Flower Avenue is a major corridor for pedestrians traveling between residential areas and shopping centers in the vicinity of Piney Branch Road (MD 320). Pedestrian traffic will further increase in the Flower Avenue corridor when the Purple Line opens. There are several businesses in the corridor, which rely on both on-street and off-street parking. There is lighting along both sides of the street in the vicinity of Piney Branch Road (MD 320) and overhead utilities with lighting on the west side of the road further south of Piney Branch Road (MD 320). The posted speed limit is 25 mph. The roadway width varies but generally there is one northbound lane and one southbound lane. Flower Ave between Piney Branch Road (MD 320) and Arliss Street (MD 594-D) is disjointed with sidewalk interrupted by entrances, curb returns, frontage parking, and bifurcations, as well as poorly located streetlights and amenities.

The City of Takoma Park is constructing a streetscape project along Flower Avenue south of Piney Branch Road (MD 320) that extends beyond the BiPPA boundary to Carroll Avenue. A streetscape project should also be planned for Flower Avenue north of Piney Branch Road (MD 320) that reimagines, reallocates, and reconstructs the right of way. Sidewalks should be designed with greater continuity and accessibility in mind. Entrances should be reconstructed with aprons instead of curb returns. Trees, lighting, and amenities should be located in a designated landscape buffer. Right of way acquisition will likely be necessary on the east side of the road, north of Piney Branch Road (MD 320), to provide a sidewalk, landscape buffer, on-street parking, and lighting. The traffic signal at Piney Branch Road (MD 320) was reconstructed recently, however, the APS/CPS audio feedback needs repair. The reconstructed roadway should also include bicycle facilities. The design should be closely coordinated with private stakeholders to consolidate parking to the extent possible.

6. Domer Avenue

From: Flower Avenue to Eastern Terminus

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, Reconstruction of Driveway Aprons, Construction of New Curb Ramps, Construction of Curb Extensions

Priority Ranking: 8.0 Time Frame: Short-term Cost Category: 2

Domer Avenue is a minor corridor for pedestrians traveling between Flower Avenue, Long Branch Trail, and apartment buildings in the area. There is parking on both sides of the roadway and two-way traffic. Traffic calming features include existing speed humps. A continuous existing sidewalk runs along the south side of the roadway, however, there are several ramps, driveway aprons, and sidewalk segments that are not ADA-compliant and should be reconstructed. A new curb ramp is needed at the southeast corner of Domer Avenue and Glenview Avenue. Curb extensions should be considered at the intersection of Domer Avenue and Garland Avenue to further enhance pedestrian safety for pedestrians walking to the adjacent Long Branch-Garland Neighborhood Park on the northeast corner and Long Branch Trail to the immediate east.

Utility and right of way impacts are not anticipated, however, reconstruction of driveway aprons should be coordinated with property owners.

7. Browning Avenue

From: Greenwood Drive to Glenview Avenue

Improvement Type: Construction of New Sidewalks, Construction of New Curb Ramps

Priority Ranking: 5.5 Time Frame: Mid-term Cost Category: 3

Browning Avenue is a short, east-west residential street within the ¼ mile radius that connects Greenwood Drive and Glenview Avenue. There are two apartment buildings that front on the north side. Single family homes are located on the south side, and Browning Court intersects Browning Avenue at mid-block. There is on-street parking and two-way traffic. Browning Avenue has no existing sidewalk, however, the apartment buildings have sidewalks provide internal circulation to off-street parking. New sidewalk should be installed on at least one side of the street to increase connectivity for local residents trying to reach the proposed Purple Line. The north side of the street would serve more residents, but public outreach should be performed to determine which side of the street is more suitable.

Impacts would include some combination of utility poles, parking, street trees, and/or grading.

8. Glenview Avenue

From: Garland Avenue to Piney Branch Road (MD 320)

Improvement Type: Reconstruction of Curb Ramps, Construction of New Sidewalks

Priority Ranking: 6.0 Time Frame: Mid-term Cost Category: 3

Glenview Avenue is a north-south residential street within the ¼ mile boundary. The street has apartment buildings and multi-unit buildings on both sides of the street between Browning Avenue and Piney Branch Road (MD 320). South of Browning Avenue, there are single-family homes on both sides of the street. There is an existing sidewalk along the east side from Garland Avenue to Piney Branch Road (MD 320), however, the sidewalk is entirely within private property. The Glenview Avenue right of way terminates north of Domer Avenue, but the sidewalk and staircase continue through private property between two buildings to connect with Piney Branch Road (MD 320). This sidewalk/staircase connection will likely become heavily used by pedestrians connecting with the station once the Purple Line opens because it lies along the most direct route to the station for users coming from the south. The County should consider meeting with the property owner and purchasing an easement to upgrade and maintain this connection, in the best interest of the public. Curb ramp upgrades are needed at the intersection with Domer Avenue. A new sidewalk should be constructed along the east side of the road from Browning Avenue to Garland Avenue. There is available right of way, but a small retaining wall would be needed along the property at the north corner of Glenview Avenue and Garland Avenue intersection. New curb ramps would be installed at the intersection.

Although not recommended in this report, an alternative for consideration should be to construct a new sidewalk on the west side of the street if pedestrians are observed regularly walking in the road instead of the privately-owned sidewalk on the east side of the street. North of Domer Avenue, existing parking would need to be reconfigured in order to build a sidewalk though. There are few constraints on the block between Browning Avenue and Domer Avenue. Public outreach should be done before the proposed sidewalk is finalized.

9. Plymouth Street

From: Flower Avenue to Walden Road

Improvement Type: Reconstruction of Driveway Aprons, Construction of New Curb Ramps, Construction of New Sidewalks

Priority Ranking: 6.4 Time Frame: Mid-term Cost Category: 3

Plymouth Street is a narrow east-west residential street with parking on both sides and two-way traffic. It is located within the ¼ mile boundary north of the station. Opposing traffic must yield where there are parked vehicles on both sides of the street. There are existing overhead utilities on the north side of the street. There are single-family homes and several mature trees on both sides. The ground slopes upward along the south side of the road. There are no existing sidewalks, but due to its vicinity to the Purple Line station, new sidewalk should be installed on at least one side of the street. Either side would have impacts, however, the north side of the street appears to be slightly more suitable because the grade is flatter. Reconstruction of driveway aprons and new curb ramps at intersections with Flower Avenue, Sudbury Road, and Walden Road would be necessary.

Impacts to utility poles should be minimized by bumping the sidewalk around where needed. Some trees and landscaping planted by residents would need to be removed as part of this project. Public outreach should be done before the proposed sidewalk is finalized.

10. Greenwood Avenue

From: Clayborn Avenue to Houston Avenue

Improvement Type: Reconstruction of Driveway Aprons, Construction of New Sidewalks, Construction of New Curb Ramps, Installation of Additional Signing

Priority Ranking: 3.6 Time Frame: Mid-term Cost Category: 3

This segment of Greenwood is a north-south residential street located within the ½ mile boundary to the south. There are no existing sidewalks, parking on both sides of the road, two-way traffic, and existing overhead utilities with lighting on the west side. The existing ground slopes upward to the west as well. There are single-family homes and several mature trees along both sides of the road. A new sidewalk

should be installed on at least one side of the street to improve connectivity between the neighborhood and the station to the north. Adding a sidewalk to the east side of the street would incur less impacts, as steeper grades and utility poles are located on the west side. The sidewalk should extend to Greenwood Circle or Houston Avenue (which is slightly beyond the BiPPA boundary). New curb ramps and reconstruction of driveway aprons would be needed. New curb and gutter would also be needed on the block south of Clayborn Avenue. The intersection of Greenwood Avenue and Hudson Avenue should be converted from a two-way stop to a four-way stop.

Impacts would include mailboxes, as well as removal of trees and landscaping planted with the right of way. Grading on private property and/or small retaining walls may be needed on the southeast corner at Wabash Avenue, the northeast corner at Hudson Avenue, and the northeast corner at Houston Avenue. Public outreach should be done before the proposed sidewalk is finalized.

11. Hudson Avenue

From: Flower Avenue to Garland Avenue

Improvement Type: Reconstruction of Driveway Aprons, Construction of New Sidewalks, Construction of New Curb Ramps

Priority Ranking: 3.1 Time Frame: Mid-term Cost Category: 3

Hudson Avenue is an east-west residential street within the ½ mile radius to the south that connects Flower Avenue, Greenwood Avenue, and Garland Avenue. Single family homes are located on both sides of the street. There is on-street parking on both sides of the street, two-way traffic, and existing overhead utilities on the south side of the street. This segment of Hudson Avenue has no existing sidewalks, however, there are existing sidewalks on both sides of the street west of Flower Avenue and north-south sidewalks along Garland Avenue at its east terminus. New sidewalks are also currently being constructed in the north-south direction along Flower Avenue. Therefore, new sidewalk should be installed on at least one side of Hudson Avenue to increase connectivity for residents. Adding new sidewalk to the north side of the street would have fewer impacts, but public outreach should be performed to determine which side of the street is more suitable.

Impacts would include street trees, shrubs, right of way (at the corner of Flower Avenue and Hudson Avenue), as well as grading and/or small retaining walls along two or three properties.

12. Haddon Drive

From: Clayborn Avenue to Southern Terminus

Improvement Type: Reconstruction of Driveway Aprons, Construction of New Sidewalks, Construction of New Curb Ramps, Shared Use Path

Priority Ranking: 2.7 Time Frame: Mid-term Cost Category: 3

Haddon Drive is a north-south residential street to the south of the station within the ½ mile radius. There is two-way traffic, parking on both sides, and no existing sidewalks. The roadway is an open section with existing overhead utilities on the east side. The north segment of the road has single-family homes and mature trees on both sides. The south segment of the road runs along Long Branch, which is to the immediate east, and primarily serves as a connection between two segments of the Long Branch Trail. There are no residential homes that front on the south half of the block. Consideration should be given to converting this segment to a shared use path and eliminating all but emergency vehicular access. All residents in the area would still be able to access their homes from the north and west, but there is no apparent need to provide through vehicular access on this segment. New sidewalk should also be added to the east side of the road between the northern connection to Long Branch Trail and Clayborn Avenue. Sidewalk improvements should be accompanied by curb and gutter and storm drain improvements.

The new sidewalk improvements would impact some combination of existing overhead utilities, trees, landscaping within the right-of-way, and/or parking. If public outreach efforts determine the sidewalk improvements are not a high priority for residents on this street, then the conversion of south segment of the road to a shared use path with no vehicular access should be the sole focus, as it would have no other impacts but would provide north-south connectivity. There is also an existing north-south parallel sidewalk route along Garland Avenue, which is one block to the west.

13. Sudbury Road

From: Plymouth Street to E. Schuyler Road

Improvement Type: Reconstruction of Driveway Aprons, Construction of New Sidewalks, Construction of New Curb Ramps, Striping of Crosswalks, Installation of Additional Signing

Priority Ranking: 5.0 Time Frame: Short-term Cost Category: 2

Sudbury Road is a north-south residential street located within the ½ mile boundary to the south. There are no existing sidewalks, parking on both sides of the road, two-way traffic, and existing overhead utilities with lighting on the west side. There are single-family homes along both sides of the road. A new sidewalk should be installed on the east side of the street to improve connectivity between the neighborhood and the station to the south. The sidewalk would form a key link in a north-south route connects to Plymouth Street, Walden Road, and Arliss Street (MD 594-D), where the station is located. It would also improve connectivity with nearby Oakview Elementary School. New curb ramps and reconstruction of driveway aprons would be needed. The intersections with Plymouth Street and E. Wayne Avenue should be converted from two-way stops to a four-way stop with crosswalks. Crosswalks should also be re-striped at E. Schuyler Road, which is already a four-way stop.

Impacts would be fairly minor and would include removal of landscaping planted with the right of way and reconstruction of driveway aprons. Only minor grading would be needed as the grade is relatively flat. Public outreach should be done before the proposed sidewalk is finalized.

14. E. Wayne Avenue

From: Flower Avenue to Oakview Elementary School

Improvement Type: Reconstruction of Driveway Aprons, Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, Construction of New Curb Ramps, Construction of Curb Extensions, Striping of Crosswalks, Signal Upgrades to APS/CPS, Installation of Additional Signing

Priority Ranking: 4.3 Time Frame: Mid-term Cost Category: 3

This segment of E. Wayne Avenue is a residential street north of the station within the ½ mile radius that runs east-west through the study area between Flower Avenue to Oakview Elementary School. There is an existing sidewalk along the north side of the street with a grass buffer. There are existing overhead utilities on the north side of the street, travel lanes in both directions, and on-street parking on both sides. Several segments of existing sidewalk, driveway aprons, and curb ramps need to be reconstructed for ADA compliance. APS/CPS upgrades are needed at the intersection of E. Wayne Avenue and Flower Avenue. Consideration should be given to constructing curb extensions at the intersections of E. Wayne Avenue at Walden Road and at Whitney Street due to their vicinity to the elementary school. Crosswalks at Walden Road are also faded and need to be re-striped. The intersection of E. Wayne Avenue and Walden Road should be evaluated for conversion of a two-way stop to a four-way stop.

Minimal impacts are associated with these improvements.

N

LEGEND

- LONG BRANCH STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS

PROPOSED IMPROVEMENTS

- INSTALL ADDITIONAL SIGNING
- SAFETY
- CONSTRUCT PEDESTRIAN LIGHTING

APS/CPS

- INSTALL APS/CPS
- REPAIR APS/CPS

SIDEWALK

- NON-COMPLIANT DRIVEWAY APRON
- RECONSTRUCT SIDEWALK
- SIDEWALK OBSTRUCTION
- NON-COMPLIANT WIDTH
- NON-COMPLIANT SLOPE
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

E. SCHUYLER ROAD
SUDBURY ROAD
FLOWER AVENUE
E. WAYNE AVENUE
HINSDALE COURT
GARLAND AVENUE
WALDEN ROAD
WHITNEY STREET
HINSDALE LANE
LONG BRANCH CREEK
PLYMOUTH STREET
GARLAND AVENUE
MANCHESTER PLACE STATION
ARLISS STREET
(MD 594-D)
(MD 320)
PINEY BRANCH ROAD
PINEY BRANCH ROAD STATION
GREENWOOD AVENUE
GLENVIEW AVENUE
DOMER AVENUE
BROWNING AVENUE
CLAYBORN AVENUE
GARLAND AVENUE
WABASH AVENUE
HADDON DRIVE
HUDSON AVENUE

FIGURE 11-11a
LONG BRANCH STATION AREA-WIDE IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

N

E. SCHUYLER ROAD

SUDBURY ROAD

FLOWER AVENUE

E. WAYNE AVENUE

HINSDALE COURT

GARLAND AVENUE

WHITNEY STREET

WALDEN ROAD

HINSDALE LANE

MANCHESTER PLACE STATION

PLYMOUTH STREET

GARLAND AVENUE

LONG BRANCH CREEK

ARLISS STREET

(MD 594-D)

PINEY BRANCH ROAD

(MD 320)

PINEY BRANCH ROAD STATION

GREENWOOD AVENUE

GLENVIEW AVENUE

DOMER AVENUE

BROWNING AVENUE

GARLAND AVENUE

WABASH AVENUE

CLAYBORN AVENUE

HADDON DRIVE

HUDSON AVENUE

LEGEND

- LONG BRANCH STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS

PROPOSED IMPROVEMENTS

- CONSTRUCT CURB EXTENSION
- STRIPE CROSSWALK

CURB RAMP

- CONSTRUCT CURB RAMP
- RECONSTRUCT CURB RAMP
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 11-11b
LONG BRANCH STATION AREA-WIDE IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

N

E. SCHUYLER ROAD

SUDBURY ROAD

E. WAYNE AVENUE

HINSDALE COURT

GARLAND AVENUE

WALDEN ROAD

WHITNEY STREET

HINSDALE LANE

MANCHESTER PLACE STATION

PLYMOUTH STREET

GARLAND AVENUE

LONG BRANCH CREEK

ARLISS STREET (MD 594-D)

FLOWER AVENUE

PINEY BRANCH ROAD (MD 320)

PINEY BRANCH ROAD STATION

GREENWOOD AVENUE

GLENVIEW AVENUE

DOMER AVENUE

BROWNING AVENUE

GARLAND AVENUE

WABASH AVENUE

CLAYBORN AVENUE

HADDON DRIVE

HUDSON AVENUE

LEGEND

- LONG BRANCH STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- EXISTING SIDEWALKS
- EXISTING SHARED USE PATH

UNDER DESIGN/CONSTRUCTION

- SIDEWALK

PROPOSED IMPROVEMENTS

- SIDEWALK
- SHARED USE PATH
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 11-12
LONG BRANCH STATION
PROPOSED PEDESTRIAN IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

Table 11-4 - Pedestrian Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE	Reconstruction of Curb Ramps	Reconstruction of Existing Sidewalks	Reconstruction of Driveway Aprons	Removal of Sidewalk Obstructions	Widening of Non-Compliant Sidewalk Widths	Reconstruction of Sidewalks with Non-Compliant Slopes	Reconstruction of Mid-Block Crossings	Striping of Crosswalks	Signal Upgrades to APS/CPS	Construction of New Curb Ramps	Construction of New Sidewalks	Installation of Additional Signing	Construction of Curb Extensions	Construction of Mid-Block Crossings	Construction of Median Refuge	Installation of New APS/CPS	Other	BENEFITS	Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score	IMPACTS	Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
Area-wide Improvements																																		
1	ADA Upgrades to Existing Sidewalks	MDOT SHA/ MCDOT		●	●		●	●	●													2	3	5	1	11		3	3	2	3	11	2	2	4.0
2	ADA Upgrades to Existing Driveway Aprons	MDOT SHA/ MCDOT				●																2	3	5	1	11		2	2	2	3	9	2	2	4.9
3	ADA Upgrades to Existing Intersections	MDOT SHA/ MCDOT								●					●							2	4	5	1	12		2	2	2	2	8	2	2	6.0
4	Upgrades to APS/CPS	MDOT SHA/ MCDOT									●											2	4	5	1	12		2	2	1	2	7	2	2	6.9
Flower Avenue																																		
5	Piney Branch Road (MD 320) to Plymouth Street	MCDOT/ Takoma Park		●	●	●	●						●	●							Repair APS/CPS ; Lighting		4	4	5	1	14		2	3	2	4	11	2	2	5.1
Domer Avenue																																		
6	Flower Avenue to Eastern Terminus	MCDOT		●	●	●							●			●							2	4	5	1	12		2	1	1	2	6	2	2	8.0
Browning Avenue																																		
7	Greenwood Drive to Glenview Avenue	MCDOT										●	●										5	4	5	1	15		3	3	2	3	11	2	2	5.5
Glenview Avenue																																		
8	Garland Avenue to Piney Branch Road (MD 320)	MCDOT										●	●										5	4	5	1	15		4	1	2	3	10	2	2	6.0
Plymouth Street																																		
9	Flower Avenue to Walden Road	MCDOT				●							●	●									5	5	5	1	16		3	2	2	3	10	2	2	6.4
Greenwood Avenue																																		
10	Clayborn Avenue to Houston Avenue	MCDOT				●							●	●									5	5	5	1	16		3	1	2	3	9	1	2	3.6
Hudson Avenue																																		
11	Flower Avenue to Garland Avenue	MCDOT				●							●	●									4	4	5	1	14		3	1	2	3	9	1	2	3.1
Haddon Drive																																		
12	Clayborn Avenue to Southern BiPPA Boundary	MCDOT				●							●	●							Shared Use Path		5	4	5	1	15		3	3	2	3	11	1	2	2.7
Sudbury Road																																		
13	Plymouth Street to E. Schuyler Road	MCDOT				●							●	●	●								5	4	5	1	15		2	1	1	2	6	1	2	5.0
E. Wayne Avenue																																		
14	Flower Avenue to Oakview ES	MCDOT		●	●	●					●	●	●	●	●								4	5	5	1	15		2	1	1	3	7	1	2	4.3

$$Priority\ Ranking = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

11.3.2 Proposed Bikeway Improvements

As discussed in Section 11.1.2, bike facilities are largely nonexistent in this study area. Bicyclists can utilize the Long Branch Trail to travel north south, but the trail ends at Piney Branch Road (MD 320). The goal of bikeway improvements is to provide contiguous bike facilities to reach the proposed Purple Line station and other nearby destinations.

Bikeway improvements were identified on several streets in accordance with the bicycle master plan. See Figure 11-14 for a map of the proposed bikeway improvements. The benefits, impacts, and equity factor for each improvement were analyzed based on the criteria outlined in Section 2.8 of this report. A summary of improvements by street and their priority rankings can be found in Table 11-5. For the purposes of this report, only the streets with the highest priority rankings are described. The County should consider the higher ranked bike facilities as more critical than the lower ranked bike facilities.

In the Long Branch Station study area different types of bike facilities were considered and evaluated on each road, depending on the type of road, volume of traffic, and other safety considerations. A description of each road, the recommended bike improvement and ranking are described below.

1. Flower Avenue

From: Arliss Street (MD 594-D) to Piney Branch Road (MD 320)

Improvement Type: Separated Bike Lanes

Priority Ranking: 4.8 Time Frame: Mid-term Cost Category: 3

Flower Avenue is an important corridor connecting residential areas with shopping centers in the vicinity of Piney Branch Road (MD 320). The roadway width varies, but generally there is one northbound lane and two southbound lanes. The posted speed limit is 25 mph. Bicycle traffic can be expected to increase in the Flower Avenue corridor when the Purple Line opens. There are no existing bicycle facilities within the corridor, however, there would be available width in the roadway if the second southbound lane and striped median/turn lane were reallocated to separated bike lanes. Separated bike lanes would connect with shared roads to the north and south, as well as the proposed shared use path on the north side of Piney Branch Road (MD 320). Bicycle improvements would need to be coordinated with on-street parking in the south half of the block.

Separated bike lanes alone would likely incur impacts to traffic, parking, and transit. However, as discussed in the pedestrian improvements section, the City of Takoma Park is constructing a streetscape project along Flower Avenue south of Piney Branch Road (MD 320) that extends beyond the BiPPA boundary to Carroll Avenue. A streetscape project should also be planned for Flower Avenue north of Piney Branch Road (MD 320) that reimagines, reallocates, and reconstructs the right of way. The streetscape project should include separated bicycle facilities as part of a complete street design. If incorporated with a streetscape project, right of way acquisition will likely be necessary on the east side of the road to provide all elements including separated bike lanes, vehicular travel lanes, sidewalks, landscape buffer, transit stops, and on-street parking. A streetscape project would also include impacts to existing overhead utilities, existing lighting, driveway aprons, and street trees. The design should be closely coordinated with private stakeholders to consolidate parking to the extent possible.

2. Piney Branch Road (MD 320)

From: Flower Avenue to Eastern BiPPA Boundary

Improvement Type: Shared Use Path

Priority Ranking: 4.0 Time Frame: Long-term Cost Category: 4

Piney Branch Road (MD 320) is a major east-west arterial with average daily traffic of 22,800 vehicles through the middle of the study area. Ride On bus transit routes 15 and 20 operate along this corridor. The speed limit is 30 mph. The existing typical section includes five-lanes: two lanes in each direction and a striped center median. There are sidewalks with street trees and landscape buffers on both sides of the street, although the street trees on the north side are located between the sidewalk and property line, instead of between the roadway and sidewalk. Existing overhead utilities are also present on both sides of the street. The existing road width is approximately 60-ft. The road connects to Flower Avenue, Arliss Street, and Garland Avenue. The Purple Line project will widen Piney Branch Road (MD 320) between Greenwood Drive and the eastern BiPPA boundary. The proposed typical section includes bike lanes in both directions. However, the bike lanes are not separated/protected, so it is doubtful that they will be regularly utilized except by the most confident bicyclists.

A shared-use path in this location would connect pedestrians and bicyclists with the station on Arliss Street, the Long Branch Trail via Garland Avenue signalized crossing, and with proposed shared use path segments along Piney Branch Road (MD 320) in the adjacent BiPPAs. To the east (in the Piney Branch BiPPA), a shared use path is recommended along the north side of Piney Branch Road (MD 320) that extends to the Northwest Branch Trail and New Hampshire Avenue (MD 650). To the west, in the Manchester BiPPA, there is a recommendation for a shared use path to extend westward to Sligo Creek Trail. The combined recommendations for all three station BiPPAs would form a continuous 1.4-mile shared use path connecting with three different existing trails.

Design and construction should be coordinated with the business owners at the commercial center of the study area, including Arliss Shopping Center, Flower Avenue Center, Piney Branch Shopping Center, and Central Square Shopping Center.

Impacts due to construction of this shared-use path are expected to be high including impacts to traffic, right of way, driveway aprons, utilities, and trees. Right of way along the north side of the road would need to be acquired. Impacts to existing utilities are anticipated due to potential relocation several utility poles. Costs are expected to be high because of the work required to reconfigure the road section to accommodate the path.

3. E. Wayne Avenue

From: Flower Avenue to Oakview Elementary School

Improvement Type: Shared Use Path

Priority Ranking: 2.5 Time Frame: Long-term Cost Category: 3

This segment of E. Wayne Avenue is a residential street north of the station within the ½ mile radius that runs east-west through the study area between Flower Avenue to Oakview Elementary School. There is an existing sidewalk along the north side of the street with a grass buffer. There are existing overhead utilities on the north side of the street, travel lanes in both directions, and on-street parking on both sides. A shared-use path is proposed on the north side of the street and would connect with the proposed shared use path to the west side of Flower Avenue within the Manchester Place BiPPA. The existing roadway would likely need to be narrowed, eliminating parking on one side of the street. Utility pole relocations would also be necessary. Public outreach should be performed in advance. Costs are expected to be high due to the length of the shared-use path.

4. Haddon Drive

From: Long Branch Trail to Houston Avenue

Improvement Type: Shared Use Path

Priority Ranking: 4.7 Time Frame: Short-term Cost Category: 2

This segment of Haddon Drive is a north-south residential street to the south of the station within the ½ mile radius. There is two-way traffic and no existing sidewalks. The roadway is an open section that runs along Long Branch, which is to the immediate east, and primarily serves as a connection between two segments of the Long Branch Trail. There are no residential homes that front on the south half of the block. Consideration should be given to converting this segment to a shared use path and eliminating all but emergency vehicular access. All residents in the area would still be able to access their homes from the north and west, but there is no apparent need to provide through vehicular access on this segment. Other than changes to vehicular circulation, impacts would be minimal. The existing roadway is wider than necessary for shared use path width, so part of the road could be removed and/or converted to a bioswale. Public outreach should be performed in advance of this improvements.

5. – 14. Various Residential Streets

Improvement Type: Sharrow Markings

Priority Ranking: As noted Time Frame: Short-term Cost Category: As Noted

It is recommended that “Bicycle Route” signing and sharrow markings be installed on the residential corridors shown in the table below. The sharrow markings would be on both sides of the roadways and run the complete length of the corridor. Sharrow markings should be set in the middle of travel lanes (minimum 11-ft from face of curb where adjacent to parking) and 4-ft from face of curb where there is no parking.

Installation of a sharrow lane on these roads can be completed with no disruption to the existing road section and can be accomplished by signing and marking. These improvements would help with wayfinding and would reinforce the message for motorists to share the road with bicyclists.

Impacts to utilities, environmental resources, and acquisition of right-of-way are not required for sharrow markings.

Table 11-5 Summary of Bikeway Rankings for Various Residential Streets

Road	Limits		Cost Category	Priority Ranking
5. Arliss Street (MD 594-D)	Flower Avenue	Piney Branch Road (MD 320)	1	5.6
6. Domer Avenue	Flower Avenue	Long Branch Trail	1	5.6
7. Flower Avenue	Piney Branch Road (MD 320)	Wabash Avenue	1	5.6
8. Garland Avenue	Piney Branch Road (MD 320)	Domer Avenue	1	5.6
9. Greenwood Avenue	Piney Branch Road (MD 320)	Wabash Avenue	1	5.6
10. Plymouth Street	Sudbury Road	Walden Avenue	1	5.6
11. Walden Road	Arliss Street (MD 594-D)	Plymouth Street	1	5.6
12. Sudbury Road	Plymouth Street	E. Schuyler Road	1	2.8
13. Flower Avenue	Wabash Avenue	Houston Avenue	1	2.8
14. Greenwood Avenue	Wabash Avenue	Houston Avenue	1	2.8

N

E. SCHUYLER ROAD

E. WAYNE AVENUE

SUDBURY ROAD

FLOWER AVENUE

HINSDALE COURT

GARLAND AVENUE

WHITNEY STREET

WALDEN ROAD

HINSDALE LANE

MANCHESTER PLACE STATION

PLYMOUTH STREET

GARLAND AVENUE

LONG BRANCH CREEK

ARLISS STREET

(MD 594-D)

PINEY BRANCH ROAD

(MD 320)

PINEY BRANCH ROAD STATION

GREENWOOD AVENUE

GLENVIEW AVENUE

DOMER AVENUE

BROWNING AVENUE

GARLAND AVENUE

WABASH AVENUE

CLAYBORN AVENUE

HADDON DRIVE

HUDSON AVENUE

LEGEND

- LONG BRANCH STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS
- EXISTING SHARED USE PATH

PROPOSED BIKEWAYS

- SEPARATED BIKE LANES
- SHARED USE PATH
- SHARROW
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 11-13
LONG BRANCH STATION
PROPOSED BIKEWAY IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

Table 11-6 - Bikeways Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE							BENEFITS					Total Benefits Score	IMPACTS					Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
			Sharrow	Cycle Track	Separated Bike Lanes	Striped Bike Lanes	Shared-Use Paths	Other		Connectivity	Safety	Accessibility	Number of Users Served			Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost				
Flower Avenue																								
1	Arliss Street (MD 594-D) to Piney Branch Road (MD 320)	MCDOT			●					5	5	1	1		12		3	3	1	3	10	2	2	4.8
Piney Branch Road (MD 320)																								
2	Flower Avenue to Eastern BiPPA Boundary	MDOT SHA					●			5	4	4	1		14		4	4	2	4	14	2	2	4.0
E. Wayne Avenue																								
3	Flower Avenue to Oakview ES	MCDOT					●			5	4	4	1		14		3	3	2	3	11	1	2	2.5
Haddon Drive																								
4	Long Branch Trail to Houston Avenue	MCDOT					●			5	4	4	1		14		1	2	1	2	6	1	2	4.7
Arliss Street (MD 594-D)																								
5	Flower Avenue to Piney Branch Road (MD 320)	MDOT SHA	●							3	2	1	1		7		1	2	1	1	5	2	2	5.6
Domer Avenue																								
6	Flower Avenue to Long Branch Trail	MCDOT	●							3	2	1	1		7		1	2	1	1	5	2	2	5.6
Flower Avenue																								
7	Piney Branch Road (MD 320) to Wabash Avenue	Takoma Park	●							3	2	1	1		7		1	2	1	1	5	2	2	5.6
Garland Avenue																								
8	Piney Branch Road (MD 320) to Domer Avenue	MCDOT	●							3	2	1	1		7		1	2	1	1	5	2	2	5.6
Greenwood Avenue																								
9	Piney Branch Road (MD 320) to Wabash Avenue	MCDOT	●							3	2	1	1		7		1	2	1	1	5	2	2	5.6
Plymouth Street																								
10	Sudbury Road to Walden Avenue	MCDOT	●							3	2	1	1		7		1	2	1	1	5	2	2	5.6
Walden Road																								
11	Arliss Street (MD 594-D) to Plymouth Street	MCDOT	●							3	2	1	1		7		1	2	1	1	5	2	2	5.6

$$Priority\ Ranking = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

Table 11-6 - Bikeways Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE							BENEFITS					Total Benefits Score	IMPACTS					Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
			Sharrow	Cycle Track	Separated Bike Lanes	Striped Bike Lanes	Shared-Use Paths	Other		Connectivity	Safety	Accessibility	Number of Users Served			Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost				
Sudbury Road																								
12	Plymouth Street to E. Schuyler Road	MCDOT	●							3	2	1	1		7		1	2	1	1	5	1	2	2.8
Flower Avenue																								
13	Wabash Avenue to Houston Avenue	MCDOT	●							3	2	1	1		7		1	2	1	1	5	1	2	2.8
Greenwood Avenue																								
14	Wabash Avenue to Houston Avenue	MCDOT	●							3	2	1	1		7		1	2	1	1	5	1	2	2.8

$$Priority\ Ranking\ = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

11.3.3 Maintenance

Landscape maintenance improvements, such as tree and hedge trimming, are an inexpensive way to increase pedestrian comfort and aesthetic value. A map showing the locations of maintenance improvements has been included in Figure 11-17 Long Branch Station Maintenance Improvements.



Figure 11-14 Overgrown trees and shrubs provide horizontal and vertical obstructions along sidewalks.



Figure 11-15 Soil erosion reducing sidewalk width.

N

E. SCHUYLER ROAD

E. WAYNE AVENUE

SUDBURY ROAD

FLOWER AVENUE

HINSDALE LANE

GARLAND AVENUE

WHITNEY STREET

WALDEN ROAD

HINSDALE LANE

MANCHESTER PLACE STATION

PLYMOUTH STREET

GARLAND AVENUE

LONG BRANCH CREEK

ARLISS STREET

(MD 594-D)

PINEY BRANCH ROAD STATION

PINEY BRANCH ROAD

(MD 320)

GREENWOOD AVENUE

GLENVIEW AVENUE

DOMER AVENUE

BROWNING AVENUE

WABASH AVENUE

CLAYBORN AVENUE

GARLAND AVENUE

HADDON DRIVE

HUDSON AVENUE

LEGEND

- LONG BRANCH STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS

PROPOSED IMPROVEMENTS

- LANDSCAPE MAINTENANCE
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 11-16
LONG BRANCH STATION MAINTENANCE IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

11.4 Final Recommendations

Long Branch is a primarily residential area with gaps in the infrastructure to connect users to the Purple Line. Although existing sidewalks are relatively continuous in more urban areas, many of the smaller residential communities lack sidewalk on one side of the roadway.

The present-day condition in this BiPPA has potential for the area to have a strong pedestrian and bicycle network. With a thriving residential area, improvements to the pedestrian and bicyclist safety and accessibility are essential for providing access to the Purple Line station. Implementing the improvements in this report can also benefit the Long Branch area by increasing pedestrian and cyclist use, and increasing public safety, comfort, and health.

The highest ranked pedestrian improvements are sidewalk improvements along Domer Avenue. Glenview Avenue and Plymouth Street also ranked highly for benefit vs cost. Area-wide improvements to include Upgrades for Existing Intersections and Upgrades to APS/CPS were ranked as a high priority. However, several additional improvements should be implemented in the Long Branch BiPPA, as there are many opportunities to significantly improve pedestrian connectivity and safety to access the station.

The highest ranked bicycle improvements are sharrows. Most of the roads within the study area are low volume residential roadways, so separated facilities are not necessary. However, Flower Avenue between Piney Branch Road (MD 320) and Arliss Street (MD 594-D) is a commercial corridor that should be evaluated for streetscape improvements that include a separated bicycle facility. Major trails such as Long Branch Trail and Sligo Creek Trail to the west provide regional bicycle connectivity and should be improved by M-NCPPC as needed. The County should also focus on a mid- to long-term goal of implementing a separated east-west shared-use path along Piney Branch Road (MD 320), connecting with the adjacent Manchester and Piney Branch BiPPAs.

One of the overall goals of the Long Branch Sector Plan is to improve transit access and “create a pedestrian-friendly, transit-oriented area.” The construction of the Purple Line, in combination with walkable and bikeable facilities in the area is the realization of that goal. The improvements discussed within will help to rebalance priorities within Long Branch to include pedestrians and bicycles as an equally important user of the right-of-way.

12 Piney Branch



12 Piney Branch

12.1 Study Area

12.1.1 Existing Area

The Piney Branch Station is proposed near the major intersection of Piney Branch Road (MD 320) and University Boulevard (MD 193) in Silver Spring, Maryland. The station location and map of the BiPPA study area can be found in Figure 12-1. This study area overlaps with the Long Branch Station to the west, the Takoma/Langley Station to the south, and the border of Prince George's County to the east. For the purpose of this report, the Piney Branch Station study area is truncated in order to avoid duplicate recommended pedestrian and bicycle access improvements from the adjacent stations. This report does not extend into Prince George's County.

Within the mile ¼ mile boundary, the area is a mix of commercial properties, single family houses and residential apartment complexes. Within the ½ mile boundary, the area is residential and mostly single-family houses. Major corridors in the study area are Piney Branch Road (MD 320), running east-west, and University Boulevard (MD 193), running north-south, which is a particularly active pedestrian corridor. Roadways and their respective limits, minimum right-of-way, and number of lanes can be found in Table 12-1.

Existing bicycle and pedestrian traffic in the study area is significant due to the high density of commercial and residential properties. Figure 12-1 shows the locations of the most heavily traveled sidewalks. The area includes Foxhall Apartments, University Manor Apartments, Park Montgomery Apartments, Pineway Towers Condominiums, Carroll Apartments, Oak Ridge Apartments, Nob Hill Apartments, Forest Park Apartments, the Clifton Park Village, and New Hampshire Estates neighborhood. New Hampshire Estates Elementary School is located to the immediate east of the station and Rolling Estates is located to the southwest of the station; both are within the ¼ mile boundary. Montgomery Knolls Elementary School is located to the north of the intersection within the ½ mile boundary. There are multiple churches, a public pool and the Carroll Avenue Community Center in the study area as well. Parks include Long Branch stream valley, Long Branch Local Park, Garland Neighborhood Park, Seek Lane Neighborhood Park, and New Hampshire Estates Neighborhood Park. All of these destinations contribute to the bicycle and pedestrian traffic.

Based on publicly available and field collected data, it was determined that existing sidewalks are generally found throughout the study area with some gaps along residential streets. Bikeways in the area are minimal and are typically comprised of shared lanes rather than a separated bike facility. However, Long Branch Trail borders the west side of the study area, running north-south between the study area boundary and Piney Branch Road (MD 320).

N

LINTON STREET
PATTON DRIVE
GLENVILLE ROAD
NEWHALL STREET
MILES STREET
KIMES STREET
MALCOM DRIVE
LANGLEY DRIVE
LONG BRANCH CREEK
HERON DRIVE
QUEBEC TERRACE
PINEY BRANCH ROAD (MD 320)
RUATAN STREET
11TH AVENUE
LONG BRANCH STATION
UNIVERSITY BOULEVARD (MD 193)
TAHONA DRIVE
CARROLL AVENUE
GILBERT STREET
SEEK LANE
BARRON STREET
BAYFIELD STREET
OSAGE STREET
HOOD STREET
HASKINS PLACE
10TH AVENUE
11TH AVENUE
LUDLOW STREET
FORSTON STREET
GLENVILLE ROAD
MONTGOMERY COUNTY-PRINCE GEORGE'S COUNTY BOUNDARY

LEGEND

- PINEY BRANCH STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- MAJOR SIDEWALKS
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY
- EQUITY FOCUS AREA

FIGURE 12-1
PINEY BRANCH STATION
STUDY AREA

0 0.05 0.1 0.2 0.3 0.4 Miles

12.1.2 Existing Facilities

Existing pedestrian and bicycle facilities in the Piney Branch Station BiPPA are consistent with those commonly found in other commercial or residential districts along the Purple Line corridor. The existing pedestrian network includes sidewalks, both signalized and non-signalized intersections, curb ramps, crosswalks, and mid-block crossings. See Figure 12-6 and 12-7 for more information on existing facilities.



Figure 12-2 A typical residential neighborhood with sidewalks.



Figure12-3 A typical residential intersection with curb ramps.



Figure 12-4 Vertical Tripping Hazard

Sidewalks are typically 4 feet wide and in moderate to good condition, although trip hazards and broken or cracked portions of the sidewalk are prevalent. Most sections of sidewalk contain a grass buffer or barrier, while some sections are placed directly adjacent to the road.

Most curb ramps and crosswalks are in moderate condition. Many curb ramps are not compliant with current ADA standards because they are not aligned properly, have slopes greater than the maximum allowable, do not have level landing areas or do not include detectable warning surfaces. Marked crosswalks are typically present, but some of these markings are faded or not in conformance with current standards.

Existing infrastructure for cyclists is non-existent except for the Long Branch Trail. See Figure 12-7 for a map of Existing Cyclist Facilities.

Although the area has an extensive network of sidewalks, many facilities do not meet current ADA standards. The number of pedestrians and bicyclists are expected to increase with the construction of the Purple Line Station so upgrades and new facilities for bicyclists and pedestrians are essential to create a cohesive and safe network for all users.



Figure 12-5 Sidewalk with non-compliant cross slope.

Table 12-1 Street and Highway Classification

Designation	Roadway	Limits	Minimum Right-of-Way	Lanes	Speed Limit
Major Highway					
M-11	Piney Branch Road (MD 320)	University Boulevard (MD 193) to County Line	120	4	35
M-19	University Boulevard (MD 193)	End of BiPPA to Piney Branch Road (MD 320)	124	6	35
M-19	University Boulevard (MD 193)	Piney Branch Road (MD 320) to Gilbert Street	163	6	35
M-19	University Boulevard (MD 193)	Gilbert Street to Seek Lane	150	6	35
M-19	University Boulevard (MD 193)	Seek Lane to Bayfield Street	141	6	35
M-19	University Boulevard (MD 193)	Bayfield Street to Carroll Avenue (MD 195)	142	6	35
Arterial					
A-311	Piney Branch Road (MD 320)	End of BiPPA to University Boulevard (MD 193)	112	4	30
Primary Residential					
P-2	Carrol Avenue	University Boulevard (MD 193) to Piney Branch Road (MD 320)	70	2	25
P-9	Barron Street	Piney Branch Road (MD 320) to Gilbert Street	70	2	25
P-10	Gilbert Street	Barron Street to University Boulevard (MD 193)	70	2	25
The Following are Uncategorized *					
	Gilbert Place	Barron Street to Gilbert Street	44	2	25
	Hood Street	Gilbert Street to Seek Lane	44	2	25
	Seek Lane	Hood Street to University Boulevard (MD 193)	44	2	25
	Seek Court (Private)	Seek Lane to End of Road	44	2	25
	Bayfield Street	Barron Street to University Boulevard (MD 193)	44	2	25
	Ludlow Street	Barron Street Hood Street	44	2	25
	Forston Street	Barron Street to University Boulevard (MD 193)	44	2	25
	Barron Street	Forston Street to Gilbert Street	44	2	25
	Hood Street	Forston Street to Bayfield Street	44	2	25
	Haskins Place	Forston Street to Bayfield Street	44	2	25
	Glenville Road	Forston Street to Bayfield Street	44	2	25
	10th Avenue	Navahoe Drive to Osage Street	44	2	25
	11th Avenue	Navahoe Drive to Osage Street	44	2	25
	Navahoe Drive	University Boulevard (MD 193) to End of BiPPA	44	2	25
	Merrimac Drive	University Boulevard (MD 193) to End of BiPPA	44	2	25
	Tahona Drive	End of BiPPA to End of BiPPA	44	2	25
	Osage Street	Carroll Avenue to Tahona Drive	44	2	25
	11th Avenue	Carroll Avenue to End of BiPPA	44	2	25
	Quebec Terrace	Ruatan Street to End of BiPPA	44	2	25
	Quebec Street	End of BiPPA to Ruatan Street	44	2	25
	Chickasaw Drive	End of BiPPA to 11th Avenue	44	2	25
	Ruatan Street	Chickasaw Drive to End of BiPPA	44	2	25
	Langley Drive	End of Road to Miles Street	44	2	25
	Heron Drive	Langley Drive to Langley Drive	44	2	25
	Heron Court	Heron Drive to End of Road	44	2	25
	Miles Street	Langley Drive to Patton Drive	44	2	25
	Patton Drive	University Boulevard (MD 193) to Miles Street	44	2	25
	Linton Street	Malcom Drive to end of BiPPA	44	2	25
	Newhall Street	Patton Drive to Miles Street	44	2	25

Table 12-1 Street and Highway Classification (Continued)

Designation	Roadway	Limits	Minimum Right-of-Way	Lanes	Speed Limit
	Malcolm Drive	Patton Drive to Miles Street	44	2	25
	Kimes Street	Patton Drive to Langley Drive	44	2	25
	Kimes Street	Patton Drive to End of Road	44	2	25
	Glenville Road	University Boulevard (MD 193) to Langley Drive	44	2	25
	Glenville Road	End of Road to Langley Drive	44	2	25
	Langley Place	End of Road to Glenville Road	44	2	25
	Pickwick Village Terrace (Private)	End of Road to Glenville Road	44	2	25
	Glenville Court	Glenville Road to end of road	44	2	25
*Uncategorized roads are not included in the MNCPPC Roadway Functional Classification. ROW widths are based on MC-210.01 Tertiary Residential Street. Speed limits are based on minimum posted speed required by State law					

N

LINTON STREET
PATTON DRIVE
GLENVILLE ROAD
NEWHALL STREET
MILES STREET
KIMES STREET
MALCOM DRIVE
LANGLEY DRIVE
LONG BRANCH CREEK
HERON DRIVE
QUEBEC TERRACE
PINEY BRANCH ROAD (MD 320)
RUATAN STREET
11TH AVENUE
LONG BRANCH STATION
UNIVERSITY BOULEVARD (MD 193)
CARROLL AVENUE
TAHONA DRIVE
GILBERT STREET
SEEK LANE
MONTGOMERY COUNTY-PRINCE GEORGE'S COUNTY BOUNDARY
BARRON STREET
BAYFIELD STREET
OSAGE STREET
HOOD STREET
HASKINS PLACE
10TH AVENUE
11TH AVENUE
LUDLOW STREET
FORSTON STREET
GLENVILLE ROAD

LEGEND

- PINEY BRANCH STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- EXISTING SIDEWALKS
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 12-6
PINEY BRANCH STATION
EXISTING PEDESTRIAN FACILITIES

0 0.05 0.1 0.2 0.3 0.4 Miles

N

LINTON STREET
PATTON DRIVE
GLENVILLE ROAD
NEWHALL STREET
MILES STREET
KIMES STREET
MALCOM DRIVE
LANGLEY DRIVE
LONG BRANCH CREEK
HERON DRIVE
QUEBEC TERRACE
PINEY BRANCH ROAD (MD 320)
RUATAN STREET
11TH AVENUE
LONG BRANCH STATION
TAHONA DRIVE
UNIVERSITY BOULEVARD (MD 193)
CARROLL AVENUE
GILBERT STREET
SEEK LANE
OSAGE STREET
BAYFIELD STREET
BARRON STREET
HOOD STREET
HASKINS PLACE
10TH AVENUE
11TH AVENUE
LUDLOW STREET
FORSTON STREET
GLENVILLE ROAD
MONTGOMERY COUNTY-PRINCE GEORGE'S COUNTY BOUNDARY

LEGEND

- ★ PINEY BRANCH STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS
- ■ PURPLE LINE BIKE RACK

EXISTING BIKEWAY

- SHARED USE PATH
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 12-7
PINEY BRANCH STATION
EXISTING CYCLIST FACILITIES

0 0.05 0.1 0.2 0.3 0.4 Miles

12.1.3 Proposed Purple Line Improvements

As part of the Purple Line project, extensive improvements are proposed along Piney Branch Road (MD 320) and University Boulevard (MD 193) within the study area. The Purple Line track alignment will be constructed on-street in the median. The station will also be constructed in the median along University Boulevard (MD 193), just south of Piney Branch Road (MD 320). Bicyclists and pedestrians will access the station from the intersection. Both Piney Branch Road (MD 320) and University Boulevard (MD 193) will be widened and reconstructed within the study area limits, including the sidewalks, which will be 5-ft wide except near the station where sidewalks will widen to 8-ft. The intersection will be reconstructed to include a new traffic signal and curb ramps. See Figure 12-8 for the Purple Line construction plans depicting these improvements.

12.1.4 Adjacent Projects

Currently, there are no other known projects within the study area.

12.2 Master Plan Summary

Two master plans were developed for the area surrounding the proposed Piney Branch Station: The Long Branch Sector Plan (2013) and the East Silver Spring Master Plan (2000). See Figure 12-9 Master Plans Boundary Map, for the boundaries of these plans. Based on the age and scope of these master plans, it was determined that the Long Branch Sector Plan was the most relevant to this project. Therefore, recommendations follow those goals closely.

Two Purple Line stations are encompassed within the Long Branch Sector Plan: Long Branch Station and Piney Branch Station. As this section of the report focuses on the Piney Branch station, only improvements east of the Long Branch tributary will be discussed. The Long Branch Sector Plan provides some specific recommendations for improving both bike and pedestrian access. The specific improvements recommended from this plan that fall within the study area have been either constructed or are included as part of the Purple Line project. The more general recommendations to provide better access throughout the community are included in this report and proposed recommendations. The goal of the Long Branch Sector Plan is to provide a more walkable and bikeable environment for both pedestrians and bicyclists.

In addition to the master plans, the Purple Line Pedestrian Connectivity Report, prepared for the M-NCPPC in June of 2020, describes recommended pedestrian improvements in the vicinity of each Purple Line station. Connectivity was measured by taking the total comfortable distance of all residential trips and dividing it by the total distance of all residential trips. Please see the Purple Line Connectivity report for a more detailed methodology for the calculation of pedestrian connectivity. The connectivity report states that the area's existing connectivity was measured at 20%. If all the proposed improvements in the connectivity report were to be constructed, pedestrian connectivity should increase significantly to 56%.

To evaluate planning for cycling facilities, the Montgomery County Bicycle Master Plan was reviewed for bicycle-specific recommendations. In instances where the Long Branch Sector Plan and the Montgomery County Bicycle Master Plan overlap, the recommendation from the latter governed.

12.2.1 Existing Pedestrian Improvement Recommendations

There are many sidewalks and signalized intersections in this study area, so the recommendations from the various master plans and studies focus on increasing the safety and accessibility of existing infrastructure. The listed improvements in Table 12-2 describe the Purple Line Connectivity Report recommendations.

Table 12-2 Summary of Area Pedestrian Infrastructure Improvement Recommendations

Roadway/Route	Recommendation	Reference
Piney Branch Road (MD 320) at Barron Street	Construct high visibility crosswalk	Purple Line Pedestrian Connectivity Report
University Boulevard (MD 193) At Piney Branch Road (MD 320)	Vertical separation between sidewalk and back of curb is greater than 8'	Purple Line Pedestrian Connectivity Report
Piney Branch Road (MD 320)	Upgrade the sidewalk in front of the Long Branch Community Center 5' wide buffer	Purple Line Pedestrian Connectivity Report
Piney Branch Road (MD 320)	Construct high visibility crosswalk	Purple Line Pedestrian Connectivity Report
Piney Branch Road (MD 320)	Upgrade sidewalk in front of Garland Neighborhood Park to have 5' wide buffers	Purple Line Pedestrian Connectivity Report
University Boulevard (MD 193)	Upgrade sidewalk along in front of New Hampshire Estates to be 10' wide with 5' wide buffer	Purple Line Pedestrian Connectivity Report
Piney Branch Road (MD 320	Upgrade sidewalk in front of New Hampshire Estates to include a 5' wide buffer	Purple Line Pedestrian Connectivity Report

12.2.2 Existing Bikeway Improvement Recommendations

The recommendations from available master plans and studies are summarized in Table 12-3. These improvements include separated bike lanes, shared roadways, cycle tracks and shared-use paths.

Table 12-3 Summary of Area Cycling Infrastructure Improvement Recommendations

Roadway/Route	Limits	Reference
Separated Bike Lanes		
Carroll Avenue	University Boulevard (MD 193) to Piney Branch Road (MD 320)	Montgomery County Bicycle Master Plan
University Boulevard (MD 193)	BiPPA Boundary to Carroll Avenue (MD 195)	Montgomery County Bicycle Master Plan
Shared Roadway		
Barron Street	Domer Street to Gilbert Street	Montgomery County Bicycle Master Plan
Gilbert Street	Barron Street to university Boulevard (MD 193)	Montgomery County Bicycle Master Plan
Cycle Track		
Piney Branch Road (MD 320)	BiPPA Boundary to Carroll Avenue	Montgomery County Bicycle Master Plan
Shared Use Path		
Piney Branch Road (MD 320)	Carroll Avenue to BiPPA Boundary	Montgomery County Bicycle Master Plan

FIGURE 12–8 PURPLE LINE PINEY BRANCH STATION CONSTRUCTION PLAN

(PREPARED BY ATKINS GLOBAL)

2. PROPOSED STORMDRAIN FACILITIES SHOWN FOR REFERENCE ONLY. SEE STORMDRAIN PLANS IN THIS PACKAGE FOR DETAILS.
3. STRIPING SHOWN FOR REFERENCE ONLY. SEE S5-021 FOR DETAILS.
4. FOR RETAINING WALLS, SEE S5-040 FOR DETAILS.
5. TRACKS SHOWN FOR REFERENCE ONLY. SEE S5-050 FOR DETAILS.
6. SEE S5020pCVT724 FOR ADDITIONAL CURB & SIDEWALK DIMENSIONS.

SEE CW-33 FOR ROADWAY STANDARD DETAIL C1

SEE CW-33 FOR ROADWAY STANDARD DETAIL C3

(C7) COUNTY CURB AND GUTTER. SEE CW-33 FOR ROADWAY STANDARD DETAIL C7

(M1) MONOLITHIC CONCRETE MEDIAN TYPE A. SEE CW-33 FOR ROADWAY STANDARD DETAIL M1

(M4) CONCRETE RAISED MEDIAN WITH 4" THICK SIDEWALK. SEE CW-33 FOR ROADWAY STANDARD DETAIL M4

(X1) BALLAST CURB. SEE CW-33 FOR ROADWAY STANDARD DETAIL X1

(1) 4 INCH CONCRETE SIDEWALK

(2) 5 INCH CONCRETE SIDEWALK

(3) SHARED USE PATH / BIKEWAY. SEE MISCELLANEOUS DETAILS SHEET THIS PACKAGE

(4) CONCRETE ENTRANCE

(5) TYPE F CONCRETE BARRIER (SINGLE FACE). SEE CW-33 FOR ROADWAY STANDARD DETAILS

(6) TRAFFIC BARRIER W BEAM. SEE CW-33 FOR ROADWAY STANDARD DETAILS

(7) FENCE. SEE FENCE PLANS THIS PACKAGE

(C10) PRE-CAST CONCRETE BOLLARD. SEE CW-33 FOR ROADWAY STANDARD DETAIL C10

SAW CUT 8 TRACK 1	
STATION	OFFSET
450+98	154.04' LT
450+84	112.45' LT
450+87	67.42' LT
451+24	52.25' LT
451+74	47.44' LT
452+24	44.13' LT
452+74	42.39' LT
453+24	42.21' LT
453+74	43.62' LT
454+24	46.53' LT
454+76	50.45' LT
455+32	51.47' LT
455+83	48.55' LT
456+33	45.16' LT
456+83	41.95' LT
457+31	39.76' LT
457+80	39.70' LT
458+29	41.14' LT
458+77	42.76' LT
459+26	44.61' LT
459+74	46.66' LT
460+22	48.87' LT

SAW CUT 10 TRACK 1	
STATION	OFFSET
455+36	45.88' RT
455+79	33.77' RT
456+29	37.22' RT
456+79	40.47' RT
457+30	42.67' RT
457+82	43.17' RT
458+33	41.92' RT
458+85	39.89' RT
459+32	39.97' RT
459+84	37.55' RT
460+32	34.34' RT

N

40' 0 40' 80'

SCALE: 1"=40'

NOT RELEASED FOR CONSTRUCTION UNTIL MONTGOMERY COUNTY PARKS' COMMENTS ARE VERIFIED

NEW HAMPSHIRE ESTATES NEIGHBORHOOD PARK

TEMP. EASEMENT

EXIST. PERP. EASEMENT

RELOCATE BUS STOP WITH SHELTER & BENCH SEE S5020PCVT475

℄ MD 193 WB 5 (UNIVERSITY BLVD)

RELOCATE EXIST. WELCOME SIGN SEE S5020PCVT482

TEMP. EASEMENT

PROPOSED R/W

RELOCATE BUS STOP WITH SHELTER & BENCH SEE S5020PCVT474

℄ MD 193 WB 1 (UNIVERSITY BLVD)

LIMIT OF WORK STA. 6056+01.60

℄ PINEY BRANCH RD EB

℄ PINEY BRANCH RD WB

PINEY BRANCH RD

TEMP. EASEMENT

MATCH LINE MD 193 SB STA 6116+54 – SEE DRAWING NO S5020PCVT117

MATCH LINE TRK 1 STA 448+50 – SEE DRAWING NO. S5020PCVT103

SAW CUT 8

℄ TRACK 1

℄ TRACK 2

MD 193 (UNIVERSITY BLVD)

RESTORE BUS STOP SEE S5020PCVT475

PROPOSED R/W

TEMP. EASEMENT

SAW CUT 10

GILBERT ST STA. 6012+17.88 = TRACK 1 STA. 455+20.92

SEEK LN STA. 6022+34.99 = TRACK 1 STA. 459+75.08

TPSS 008 SEE CW-23

TEMP. EASEMENT

LIMIT OF WORK STA. 6021+15.00

MATCH LINE TRK 1 STA 460+50 – SEE DRAWING NO. S5020PCVT105

SAW CUT 6

PERP. EASEMENT

℄ MD 193 EB 1 (UNIVERSITY BLVD)

RESTORE BUS STOP WITH SHELTER & BENCH SEE S5-021

PINEY BRANCH STATION FOR DETAILS SEE S5-075

SAW CUT 9

TEMP. EASEMENT

℄ GILBERT ST

LIMIT OF WORK STA. 6011+56.98

GILBERT ST

℄ SEEK LN

SEEK LN

PROP. RET. WALL SEE S5-040

ROADWAY LEGEND

- PROPOSED FULL DEPTH CONSTRUCTION (CAN BE WEDGE, LEVEL AND RESURFACE AT CONTRACTOR'S OPTION) SEE NOTE 5 ON S5020PGN-002
- PROPOSED WEDGE, LEVEL AND RESURFACE
- PROPOSED RESURFACE
- PROPOSED CONCRETE SIDEWALK/ENTRANCE/PAVING
- PROPOSED STATION
- PAVEMENT REMOVAL

SAW CUT 9 TRACK 1	
STATION	OFFSET
454+25	36.00' RT
454+73	32.20' RT
455+08	55.53' RT

SAW CUT 6 TRACK 1	
STATION	OFFSET
448+65	19.54' RT
449+36	19.36' RT
449+56	17.97' RT

STAIRWAY TIE IN							
BL	STA	OFF	WIDTH	S:1	RAIL	DETAIL	DRAWING NO.
TRACK 1	455+89	45' LT	2.5'	2	YES	V3	CW33pCDT528
TRACK 1	456+40	47' LT	2.5'	4	YES	V3	CW33pCDT528

MTA. NO. 17–PL–0008

MARYLAND DEPARTMENT OF TRANSPORTATION

MARYLAND TRANSIT ADMINISTRATION — MTA Maryland

PURPLE LINE TRANSIT PARTNERS

ATKINS
3901 Calverton Blvd, Suite 400
Calverton, Maryland 20705
Telephone: 301-210-6800
www.atkinsglobal.com

PROFESSIONAL CERTIFICATION

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

50498 License No. 01/24/2019 Expiration Date

STATE OF MARYLAND — JAMES M. HOLLOWAY — PROFESSIONAL ENGINEER

08/21/2018

NO.	DESCRIPTION	BY	DATE
0	RELEASE FOR CONSTRUCTION	JMH	08/10/18

REVISIONS

DESIGN BSL
DRAWN BSL
CHECK TC
APPR JMH

PURPLE LINE LIGHT RAIL
CIVIL DESIGN
SEGMENT 5

ROADWAY PLAN

DATE: AUGUST 10, 2018 SCALE: 1" = 40'

CONTRACT NO. 0–0000–0000
DRAWING NO. S5020PCVT104
SHEET NO. 59 OF 544

pw://CUSD036301.wsatkins.com:ATKNAMDPL01/Documents/Purple Line P3 Design/4.0 CAD (Work In Progress)/Roadway/Segment 5/Drawings/S5-020/S5020pCVT104.dgn
8/10/2018 5:31:47 PM

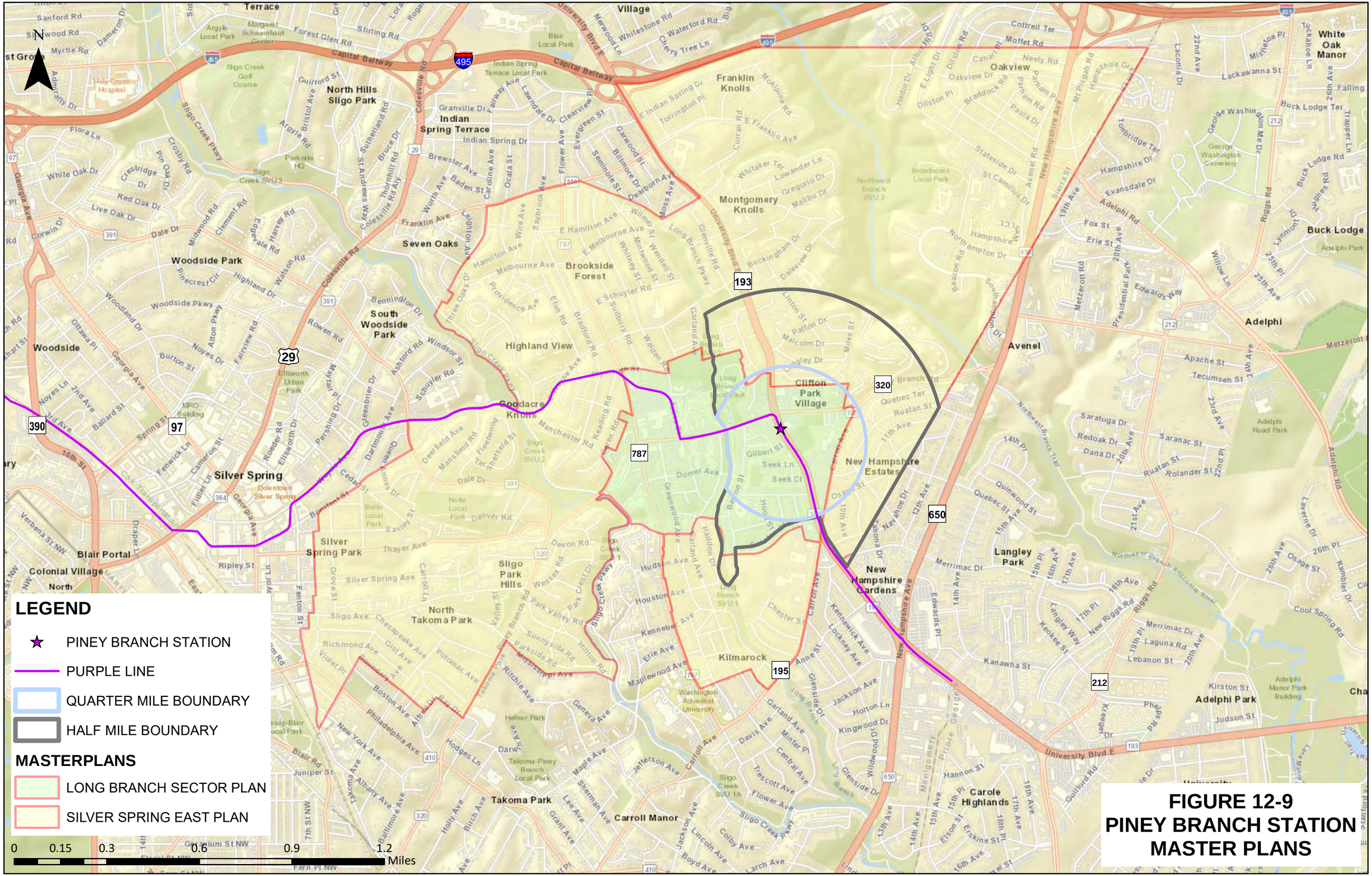


FIGURE 12-9
PINEY BRANCH STATION MASTER PLANS

12.3 Proposed Improvements

The Piney Branch Station BiPPA study area has been evaluated for several types of bicycle and pedestrian improvements. Proposed improvements have been developed and prioritized based on the ranking criteria outlined in Section 2.8 of this report. A list of proposed improvements was developed to include the recommendations of previously prepared studies and master plans, information gathered from a field review of the site and data gathered from other sources. Separate analyses and mapping were developed for pedestrian improvements and for bicycle improvements.

12.3.1 Proposed Pedestrian Improvements

This study included a thorough review of existing pedestrian facilities (sidewalk ramps, driveway aprons, linear sidewalks, etc.) and determined which facilities did not meet current ADA criteria. The report and figures indicate where spot improvements are required and where linear sidewalk improvements are required. Spot improvements are shown in Figures 12-12 (a) and (b). The maps show the locations and types of existing facilities that need to be reconstructed to meet ADA standards. Proposed linear routes/improvements for pedestrian access are shown in Figures 12-7. The map figures also indicate the improvements that will be constructed by the Purple Line project.

Refer to Table 12-4 for a summary of priority rankings of pedestrian improvements. This report describes the ranked pedestrian improvements for the Piney Branch Station.



Photo 12-10 Outdated crosswalk striping.



Photo 12-11 Sidewalk with multiple trip hazards.

1. Area-wide Improvements to Existing Sidewalks

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Sidewalk, Removal of Sidewalk Obstructions, Widening of Non-compliant Sidewalk Widths, Reconstruction of Sidewalks with Non-compliant Slopes

Priority Ranking: 4.4 Time Frame: Short-term Cost Category: 3

There is a need for general maintenance of pedestrian pathways and upgrades to those that do not meet current ADA, MCDOT, or MDOT SHA standards throughout the BiPPA. Curb ramps should be upgraded to meet slope requirements as set forth by ADA and must include detectable warning surfaces. Sidewalks should be free from trip hazards and breaks; it is recommended that trip hazards greater than ½-inch and significant breakage be repaired by replacing the affected portion of the sidewalk. In addition, sidewalks that have cross-slopes greater than allowable or pinch points with less than a 36" width should be replaced or reconfigured. Sidewalk obstructions, such as guy wires, should be reconfigured to provide adequate overhead clearance for pedestrians. Refer to Figures 12-12 (a) and (b) for locations.

Although all area-wide sidewalk improvements are a worthwhile investment, those in the vicinity of the Purple Line, Piney Branch Road (MD 320), University Boulevard (MD 193), and residential neighborhoods should be prioritized based on current and future use.

2. Area-wide Improvements to Existing Driveway Aprons

Improvement Type: Reconstruct Driveway Aprons

Priority Ranking: 4.9 Time Frame: Short-term Cost Category: 3

There is a need to upgrade existing driveway aprons to meet ADA slope requirements and be in conformance with current MCDOT and MDOT SHA standards throughout the BiPPA. Existing aprons in the residential areas of Piney Branch Station BiPPA were found to have existing cross slopes greater than 2%.

Reconstruction of driveway aprons is recommended for those roads with sidewalks that provide direct connection to the Purple Line Station. These roadways are Piney Branch Road (MD 320), University Boulevard (MD 193), and Carroll Avenue. Much like the area-wide improvements to existing sidewalks, area-wide improvements to existing driveway aprons would provide increased safety and accessibility.

3. Area-wide Improvements to Existing Intersections

Improvement Type: Reconstruction of Mid-block Crossing, Striping of Crosswalks

Priority Ranking: 5.5 Time Frame: Short-term to Mid-term Cost Category: 2

Crosswalk striping throughout the Purple Line BiPPA is fading or does not utilize the continental or "piano stripe" at high traffic intersections. At a minimum, all striping should be updated to ensure there are no faded or broken portions. Crosswalks in high-traffic areas should be prioritized.

Upgrades to these existing crosswalks would provide increased safety and comfort for pedestrians. No impacts to existing utilities or rights-of-way are anticipated.

4. Areawide Upgrades to APS/CPS

Improvement Type: Signal Upgrades to APS/CPS

Priority Ranking: 6.5 Time Frame: Short-term to Mid-term Cost Category: 1

University Boulevard (MD 193) and Carroll Avenue (MD 195) does not have an accessible pedestrian signal. Upgrading this signal to comply with ADA guidelines would create a safer and more inclusive pedestrian experience. No impacts to existing utilities, right of way or environmental features are anticipated. Minor traffic pattern changes may be required during construction.

5. Piney Branch Road (MD 320)

From: University Boulevard (MD 193) to Carroll Avenue

Improvement Type: Shared-Use Path, Reconstruction of Curb Ramps, Reconstruction of Driveway Aprons, Removal of Sidewalk Obstructions

Priority Ranking: 4.7 Time Frame: Mid-term Cost Category: 4

Refer to 12.3.2 Proposed Bikeway Improvements for a discussion of this improvement.

6. University Boulevard (MD 193)

From: Langley Drive to Piney Branch Road (MD 320)

Improvement Type: Reconstruction of Existing Sidewalks, Reconstruction of Driveway Aprons, Removal of Sidewalk Obstructions

Priority Ranking: 5.5 Time Frame: Short-term Cost Category: 3

University Boulevard (MD 193) is currently a major pedestrian corridor and activity will only increase with pedestrians traveling to and from the Purple Line. While the corridor is constrained, there are multiple opportunities to improvement pedestrian safety and accessibility. Multiple pedestrian improvements could be bundled into a streetscape project along this segment. Near the Long Branch Center, potential improvements include narrowing and reconstruction of two driveway aprons to meet ADA compliance, as well as removal of curbs and planter beds that obstruct and pinch the sidewalk. Throughout the segment, non-compliant driveway aprons should be upgraded for ADA compliance. Reconstruction of damaged and non-compliant sidewalk, curb, and gutter segments should also be implemented throughout this segment. Generally, minor vegetation maintenance is needed along the edge of sidewalk and the joint between the curb and sidewalk. On-going enforcement at some properties may be necessary to prevent parked vehicles from blocking the sidewalk as well. The car wash located at the northwest corner appears to be performing services within the sidewalk and discharging contaminated run-off across the sidewalk into the roadway. New trees should be planted in the existing empty tree boxes along the street to provide a buffer between traffic and the sidewalk. Generally, impacts to existing overhead utilities should be avoidable, however, temporary construction easements will be needed to properly reconstruct driveway aprons. There would be no environmental impacts and minimal disruption to traffic and bus transit operations during construction of these improvements. All work would be located along MDOT SHA right of way.

7. Seek Lane

From: Gilbert Street to University Boulevard (MD 193)

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, Reconstruction of Driveway Aprons, Construction of New Sidewalks

Priority Ranking: 6.4 Time Frame: Short-term Cost Category: 2

Seek Lane will be a minor corridor for pedestrians traveling to and from the station on University Boulevard and the residential community to the immediate south. Reconstruction of curb ramps for ADA compliance, minor sidewalk repairs, and upgrades of driveway aprons for ADA compliance improve accessibility. These improvements could be accompanied by roadway resurfacing, which appears to be overdue.

8. Carroll Avenue

From: University Boulevard (MD 193) to Piney Branch Road (MD 320)

Improvement Type: Reconstruction of Driveway Aprons, Removal of Sidewalk Obstructions

Priority Ranking: 5.1 Time Frame: Short-term Cost Category: 2

Carroll Avenue will be a minor corridor for pedestrians traveling to and from the Purple Line. Currently, this roadway segment connects University Boulevard (MD 193) and Piney Branch Road (MD 320) to form a triangular region with New Hampshire Estates Neighborhood Park and New Hampshire Estates Elementary School in the middle. While this route does not provide direct access to the Purple Line, pedestrians walking from the New Hampshire Estates neighborhood to the east will likely utilize some portion of this route to reach the station. Upgrades of driveway aprons for ADA compliance, removal of sidewalk obstructions such as branches and shrubs, and minor sidewalk repairs are recommended.

Although not recommended at this time, if undesirable social trails develop through the elementary school campus and park properties due to pedestrians trying to make more direct paths to the station, MCDOT should consider planning for a new sidewalk alignment between University Boulevard to Carroll Avenue. A sidewalk extending easterly along an east-west alignment roughly from Seek Lane to Carroll Avenue, running between private parcels should be considered. However, this improvement would require right of way acquisition or an easement from the adjacent private properties.

9. Gilbert Street

From: Barron Street to University Boulevard (MD 193)

Improvement Type: Reconstruction of Curb Ramps, Construction of New Curb Ramps, Construction of New Sidewalk

Priority Ranking: 6.3 Time Frame: Short-term Cost Category: 2

Gilbert Street will be a minor corridor for pedestrians traveling to and from the station on University Boulevard and the residential community to the immediate southwest. Reconstruction of curb ramps for ADA compliance, minor sidewalk repairs, and upgrades of driveway aprons for ADA compliance will improve accessibility. Consideration should be given to extending the sidewalk at Seek Lane to Gilbert Place. Then new curb ramps and a crosswalk should be installed across the west leg of the intersection of Gilbert Street and Gilbert Place. This may impact a large tree in front of one property on the south side of the street, however, the tree is overgrown with vines and is likely not in good condition. Alternatively, tree protection measures could be used to mitigate impacts to the existing tree. Resident outreach should be done before the proposed sidewalk is finalized.

10. Barron Street (Domer Avenue West of Barron Street)

From: Bayfield Street to Piney Branch Road (MD 320)

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, Removal of Sidewalk Obstructions, Striping of Crosswalks, Curb Extensions

Priority Ranking: 6.9 Time Frame: Short-term Cost Category: 2

Barron Street will be a minor corridor for pedestrians traveling to the Purple Line from the residential community to the southwest. Barron Street also provides multiple points of access to the Long Branch Trail and is essential for children walking to Rolling Estates Elementary School. Proposed improvements for this roadway include reconstruction of curb ramps for ADA compliance, minor sidewalk repairs due to tree root upheaval, and removal of sidewalk obstructions. Curb ramps, curb extensions, and a crosswalk should be added across Barron Street at Gilbert Street and at Domer Avenue. At Barron Street, the crosswalk will connect the apartment complex on the west side of the street, as many pedestrians will likely choose Gilbert Street to connect with the Purple Line. Similarly, a crosswalk at Domer Avenue will connect Long Branch Trail with Seek Lane Neighborhood Park, Seek Lane, and the Purple Line. A new, short segment of sidewalk should also be extended along the southside of the Domer Avenue at the dead-end to meet the trail. An additional crosswalk, on the south side of Domer Avenue, should be considered to cross Gilbert Place, but is a lower priority. The additional proposed crosswalks should impact a few on-street parking spaces.

11. Bayfield Street

From: Baron Street to University Boulevard (MD 193)

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, Reconstruction of Driveway Aprons, Removal of Sidewalk Obstructions

Priority Ranking: 5.1 Time Frame: Short-term Cost Category: 2

Bayfield Street will be a minor corridor for pedestrians traveling to the Purple Line from the residential community to the southeast. To reach the Purple Line, pedestrians may choose to walk toward University Boulevard (MD 193) or Barron Street depending on their origin. Bayfield Street is also essential for children walking to Rolling Estates Elementary School. There are existing sidewalks on both sides of the street, however, minor improvements should be considered as the segment is within the ¼ mile radius. Proposed improvements include reconstruction of curb ramps for ADA compliance, numerous minor sidewalk repairs to fix cracking, tree root damage, and non-compliant cross slopes. Minor vegetation maintenance is also needed to re-establish the full width of the existing sidewalk.

12. Langley Drive

From: Glenville Road (S) to University Boulevard (MD 193)

Improvement Type: Construction of New Sidewalk, Reconstruction of Driveway Aprons, Construction of New Curb Ramps

Priority Ranking: 6.0 Time Frame: Short-term Cost Category: 2

This section of Langley Drive is a residential street that connects University Boulevard (MD 193) with residential neighborhoods and Long Branch Park, which are both located northwest of the station. The paved roadway entrance from University Boulevard (MD 193) is very wide and should be narrowed to incorporate a new sidewalk on the north side. Optionally, a median could also be installed, like Langley Drive on the east side of University Boulevard (MD 193), which would help with traffic calming. There is an existing sidewalk and curb ramp on the north corner of Glenville Road (N) and Langley Drive. From the intersection of Glenville Road (N) and Langley Drive, the sidewalk should extend westward along the north side of Langley Drive to Glenville Road (S). From there pedestrians could walk across the street to the existing sidewalk on the west side of Glenville Road (S) or walk for a short distance within the road into Long Branch Park. Though not included within this recommendation, consideration should be given to extending the sidewalk all the way into the park. This improvement would increase connectivity for local residents trying to reach the proposed Purple Line. Impacts would include relocation of a drainage inlet and potentially removal of on-street parking spaces in the vicinity of the entrance at University Boulevard (MD 193) if the optional median were incorporated. Temporary construction easements may be needed for driveway apron reconstruction at two properties. Resident outreach should be done before the proposed sidewalk is finalized.

13. Piney Branch Road (MD 320)

From: Carroll Avenue to New Hampshire Avenue (MD 650)

Improvement Type: Shared-Use Path, Reconstruction of Curb Ramps

Priority Ranking: 2.5 Time Frame: Long-term Cost Category: 4

Piney Branch Road (MD 320) will be a major corridor for pedestrians traveling to and from the Purple Line at the Piney Branch Station. West of University Boulevard (MD 193), the Purple Line project will construct new sidewalks. However, east of University Boulevard (MD 193) improvements only extend just beyond the intersection. There are four apartment/condominium complexes located along the north side of Piney Branch Road (MD 320), east of University Boulevard (MD 193). The Northwest Branch of the Anacostia Trail network is also immediately to the east of the study area. There are existing sidewalks (approximately 5-ft wide) along both sides of the road, but there is no buffer between the sidewalks and the travel lanes, which are posted at 40 mph and likely have 85th percentile operating speeds closer to 50 mph. This is an uncomfortable, if not hazardous situation for pedestrians. Bus transit routes also operate along the corridor, with stops on both sides of the road. The bicycle master plan recommends a separated bikeway (two-way cycle track in this area) along the north side of the road, however, this report recommends a shared-use path with a buffer along the north side of Piney Branch Road (MD 320) to accommodate both bicyclists and pedestrians. The project would need to include replacement of existing lighting and potentially a combination of new retaining walls, easements, and/or right of way acquisition along a state road, which presents challenges. A partial signal reconstruction at Carroll Avenue would also be necessary. Consideration should be given to narrowing of travel lanes to provide additional width for a shared use path and buffer.

14. Glenville Road (N)

From: Langley Drive to south of Pickwick Village Way

Improvement Type: Construction of New Sidewalk, Reconstruction of Driveway Aprons, Construction of New Curb Ramps

Priority Ranking: 2.6 Time Frame: Mid-term Cost Category: 3

Glenville Road (N) is a residential street that connects to University Boulevard (MD 193) via Langley Drive. It serves residential neighborhoods to the north of the station. There are existing sidewalks on the northern segment of the road, but no sidewalk connection on the southern segment. Sidewalk on the west side of the road should be considered to provide better connectivity with the new station. This improvement should be constructed in conjunction with a new sidewalk on Langley Drive. The new sidewalk on Glenville Road (N) would be beneficial for the community but would likely include impacts to right of way and require a retaining wall to the immediate north of Langley Drive along three single-family home residential properties. Staircases to these homes would need to be reconfigured as well. From Langley Place to Plymouth Street, the sidewalk could be bumped out around an existing street tree, and other impacts should be minimal. The new sidewalk could connect with existing sidewalk just north of Plymouth Street and improve connectivity with the townhome community to the north. Resident outreach should be done before the proposed sidewalk is finalized.

15. – 19. Various Residential Streets

Improvement Type: Construction of Sidewalks, Construction of Curb Ramps, Reconstruction of Driveway Aprons

Priority Ranking: As noted Time Frame: Short-term Cost Category: As Noted

There are various residential streets within the ½ mile boundary, which warrant consideration for new sidewalks. Sidewalks along Quebec Street, Tahona Drive, and Osage Street would improve connectivity with abutting communities in Prince Georges County where existing sidewalks meet the County line. There may be some impacts to on-street parking and landscaping. Temporary construction easements may be needed to reconstruct driveway aprons. Public outreach should be performed in the community.

Table 12-4 Summary of Pedestrian Improvement Rankings for Various Residential Streets

Road	Limits		Cost Category	Priority Ranking
15. Quebec Street	11th Street	BiPPA Boundary / County Line	2	1.4
16. Tahona Drive	Osage Street	BiPPA Boundary / County Line	2	1.4
17. Osage Street	Chickasaw Drive	Tahona Street	2	1.6
18. Domer Avenue	Long Branch Trail	Barron Street	1	4.4
19. Forston Street	Barron Street	University Boulevard	3	1.2

N

LINTON STREET
PATTON DRIVE
GLENVILLE ROAD
NEWHALL STREET
MILES STREET
KIMES STREET
MALCOM DRIVE
LANGLEY DRIVE
LONG BRANCH CREEK
HERON DRIVE
QUEBEC TERRACE
PINEY BRANCH ROAD (MD 320)
RUATAN STREET
11TH AVENUE
LONG BRANCH STATION
UNIVERSITY BOULEVARD (MD 193)
TAHONA DRIVE
CARROLL AVENUE
GILBERT STREET
SEEK LANE
BARRON STREET
BAYFIELD STREET
OSAGE STREET
HOOD STREET
HASKINS PLACE
10TH AVENUE
11TH AVENUE
LUDLOW STREET
FORSTON STREET
GLENVILLE ROAD
MONTGOMERY COUNTY-PRINCE GEORGE'S COUNTY BOUNDARY

LEGEND

- PINEY BRANCH STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS

PROPOSED IMPROVEMENTS

- INSTALL APS/CPS

SIDEWALK

- NON-COMPLIANT DRIVEWAY APRON
- RECONSTRUCT SIDEWALK
- SIDEWALK OBSTRUCTION
- NON-COMPLIANT SLOPE
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 12-12a
PINEY BRANCH STATION
AREA-WIDE IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

N

LINTON STREET
PATTON DRIVE
GLENVILLE ROAD
NEWHALL STREET
MILES STREET
KIMES STREET
MALCOM DRIVE
LANGLEY DRIVE
LONG BRANCH CREEK
HERON DRIVE
QUEBEC TERRACE
PINEY BRANCH ROAD (MD 320)
RUATAN STREET
11TH AVENUE
LONG BRANCH STATION
UNIVERSITY BOULEVARD (MD 193)
CARROLL AVENUE
TAHONA DRIVE
GILBERT STREET
SEEK LANE
BARRON STREET
BAYFIELD STREET
OSAGE STREET
HOOD STREET
HASKINS PLACE
10TH AVENUE
11TH AVENUE
LUDLOW STREET
FORSTON STREET
GLENVILLE ROAD
MONTGOMERY COUNTY-PRINCE GEORGE'S COUNTY BOUNDARY

LEGEND

- PINEY BRANCH STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS

PROPOSED IMPROVEMENTS

- STRIPE CROSSWALK

CURB RAMP

- CONSTRUCT CURB RAMP
- RECONSTRUCT CURB RAMP
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 12-12b
PINEY BRANCH STATION AREA-WIDE IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

N

LINTON STREET
PATTON DRIVE
GLENVILLE ROAD
NEWHALL STREET
KIMES STREET
MALCOM DRIVE
MILES STREET
LANGLEY DRIVE
LONG BRANCH CREEK
HERON DRIVE
QUEBEC TERRACE
PINEY BRANCH ROAD (MD 320)
RUATAN STREET
11TH AVENUE
LONG BRANCH STATION
UNIVERSITY BOULEVARD
TAHONA DRIVE
CARROLL AVENUE
GILBERT PLACE
GILBERT STREET
(MD 193)
SEEK LANE
BAYFIELD STREET
OSAGE STREET
BARRON STREET
HOOD STREET
HASKINS PLACE
10TH AVENUE
11TH AVENUE
LUDLOW STREET
FORSTON STREET
GLENVILLE ROAD
MONTGOMERY COUNTY-PRINCE GEORGE'S COUNTY BOUNDARY

LEGEND

- PINEY BRANCH STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- EXISTING SIDEWALKS

PROPOSED IMPROVEMENTS

- SHARED USE PATH
- SIDEWALK
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 12-13
PINEY BRANCH STATION
PROPOSED PEDESTRIAN FACILITIES

0 0.05 0.1 0.2 0.3 0.4 Miles

Table 12-5 - Pedestrian Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE: Reconstruction of Curb Ramps	Reconstruction of Existing Sidewalks	Reconstruction of Driveway Aprons	Removal of Sidewalk Obstructions	Widening of Non-Compliant Sidewalk Widths	Reconstruction of Sidewalks with Non-Compliant Slopes	Reconstruction of Mid-Block Crossings	Striping of Crosswalks	Signal Upgrades to APS/CPS	Construction of New Curb Ramps	Construction of New Sidewalks	Installation of Additional Signing	Construction of Curb Extensions	Construction of Mid-Block Crossings	Construction of Median Refuge	Installation of New APS/CPS	Other	BENEFITS	Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score	IMPACTS	Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
Areawide Improvements																																	
1	ADA Upgrades to Existing Sidewalks	MDOT SHA/ MCDOT	●	●		●	●	●													2	3	5	1	11		3	3	1	3	10	2	2	4.4
2	ADA Upgrades to Existing Driveway Aprons	MDOT SHA/ MCDOT			●																2	3	5	1	11		3	2	1	3	9	2	2	4.9
3	ADA Upgrades to Existing Intersections	MDOT SHA/ MCDOT								●											2	3	5	1	11		2	3	1	2	8	2	2	5.5
4	Upgrades to APS/CPS	MDOT SHA/ MCDOT									●										2	5	5	1	13		1	1	1	1	4	1	2	6.5
Piney Branch Road (MD 320)																																	
5	University Boulevard (MD 193) to Carroll Avenue	MDOT SHA	●		●	●													●		5	4	3	1	13		3	1	3	4	11	2	2	4.7
University Boulevard (MD 193)																																	
6	Langley Drive to Piney Branch Road (MD 320)	MDOT SHA		●	●	●															3	3	4	1	11		2	2	1	3	8	2	2	5.5
Seek Lane																																	
7	Gilbert Street to University Boulevard (MD 193)	MCDOT	●	●	●								●								2	1	4	1	8		1	1	1	2	5	2	2	6.4
Carroll Avenue																																	
8	University Boulevard (MD 193) to Piney Branch Road (MD 320)	MCDOT			●	●															2	2	4	1	9		2	2	1	2	7	2	2	5.1
Gilbert Street																																	
9	Barron Street to University Boulevard (MD 193)	MCDOT	●									●	●								3	2	5	1	11		2	1	2	2	7	2	2	6.3
Barron Street																																	
10	Bayfield Street to Piney Branch Road (MD 320)	MCDOT	●	●		●				●					●						3	4	4	1	12		2	2	1	2	7	2	2	6.9
Bayfield Street																																	
11	Baron Street to University Boulevard (MD 193)	MCDOT	●	●	●	●															2	2	4	1	9		2	2	1	2	7	2	2	5.1
Langley Drive																																	
12	Glenville Road (S) to University Boulevard (MD 193)	MCDOT			●							●	●								4	4	3	1	12		3	2	1	2	8	2	2	6.0
Piney Branch Road (MD 320)																																	
13	Carroll Avenue to New Hamphire Avenue (MD 650)	MDOT SHA		●		●															5	5	3	1	14		3	1	3	4	11	1	2	2.5

$$Priority\ Ranking = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

Table 12-5 - Pedestrian Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE	Reconstruction of Curb Ramps	Reconstruction of Existing Sidewalks	Reconstruction of Driveway Aprons	Removal of Sidewalk Obstructions	Widening of Non-Compliant Sidewalk Widths	Reconstruction of Sidewalks with Non-Compliant Slopes	Reconstruction of Mid-Block Crossings	Striping of Crosswalks	Signal Upgrades to APS/CPS	Construction of New Curb Ramps	Construction of New Sidewalks	Installation of Additional Signing	Construction of Curb Extensions	Construction of Mid-Block Crossings	Construction of Median Refuge	Installation of New APS/CPS	Other	BENEFITS	Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score	IMPACTS	Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
Glenville Road (N)																																		
14	Langley Drive to Pickwick Village Way	MCDOT			●						●	●										5	4	3	1	13		3	2	2	3	10	2	1	2.6
Quebec Street																																		
15	11th Street to BiPPA Boundary/County Line	MCDOT			●						●	●										5	4	3	1	13		3	3	1	2	9	1	2	2.9
Tahona Drive																																		
16	Osage Street to BiPPA Boundary/County Line	MCDOT			●						●	●										5	4	3	1	13		3	3	1	2	9	1	2	2.9
Osage Street																																		
17	Chickasaw Drive to Tahona Street	MCDOT			●						●	●										5	4	3	1	13		3	3	1	2	9	1	2	2.9
Domer Avenue																																		
18	Long Branch Trail to Barron Street	MCDOT									●	●										5	2	3	1	11		1	2	1	1	5	2	2	8.8
Forston Street																																		
19	Barron Street to University Boulevard (MD 193)	MCDOT			●						●	●										5	3	3	1	12		3	3	1	3	10	1	2	2.4

$$Priority\ Ranking\ = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

12.3.2 Proposed Bikeway Improvements

As discussed previously, bicycling facilities are largely nonexistent in this study area. Cyclists can utilize the Long Branch Trail to travel north-south, but the trail ends at Piney Branch Road (MD 320). Bikeway improvements would benefit the area and provide access to the Piney Branch Station. The Piney Branch Station BiPPA has been evaluated for several types of bicycle improvements. The recommended improvements are generally consistent with the recommendations from the Montgomery County Bikeways Master Plan. Proposed improvements have been developed and prioritized based on the criteria outlined in Section 2.8 of this report.

Bikeway improvements are organized by discrete improvements along each road corridor. A total of six bikeway improvements were identified on five different streets. See Figure 12-8 for a map of the proposed bikeway improvements. A summary of bikeway improvements by street and their priority rankings can be found in Table 12-5.

In the Piney Branch Station study area, different types of bicycle facilities were considered and evaluated along each roadway, depending on the type of road, volume of traffic, and other safety considerations. A description of each road, the recommended bicycle improvement and ranking are described below.

1. Barron Street

From: Domer Avenue to Gilbert Street

Improvement Type: Sharrow

Priority Ranking: 7.0 Time Frame: Short-term Cost Category: 1

This portion of Barron Street runs north-south and is located to the southwest of the station. The existing roadway has sidewalks on both sides of the street, on-street parking on both sides, and one travel lane in each direction. Barron Street is a residential street with lower traffic volumes, making it a suitable candidate for sharrow markings. This segment would connect with Long Branch Trail and other on-street shared lanes to form a bicycle route to the Purple Line. Installation of the sharrow markings would not have any impacts and the cost would be low.

2. Gilbert Street

From: Barron Street to University Boulevard (MD 193)

Improvement Type: Sharrow

Priority Ranking: 7.0 Time Frame: Short-term Cost Category: 1

Gilbert Street runs east-west and also connects the station with the residential area to the southwest. The existing roadway has sidewalks on both sides of the street, on-street parking on both sides, and one travel lane in each direction. Gilbert Street is a residential street with lower traffic volumes, also making it a suitable candidate for sharrow markings. This segment would connect with Barron Street and University Boulevard (MD 193) to form a bicycle route to the Purple Line. Installation of the sharrow markings would not have any impacts and the cost would be low.

3. Carroll Avenue

From: University Boulevard (MD 193) to Piney Branch Road (MD 320)

Improvement Type: Separated Bike Lanes

Priority Ranking: 4.8 Time Frame: Mid-term Cost Category: 2

This segment of Carroll Avenue is County-owned. It borders the Hampshire Estates neighborhood and New Hampshire Estates Elementary School to the east. To the west is the University Manor Apartment complex. The existing roadway has sidewalks on both sides of the street, on-street parking on both sides of the street, a raised median along the southern segment, and one travel lane in each direction. There is perpendicular parking along the apartment buildings. The median and excess width in the southern segment provides an opportunity to implement separated bike lanes, which are recommended due to the close proximity the Purple Line. Separation would provide safer conditions for bicyclists from the higher traffic volumes on this roadway. Impacts would primarily include loss of on-street parking if the existing roadway cross section is maintained. Safety considerations should also be given to address conflicts between southbound bicyclists and angled parking. A traffic impact study would be needed for any changes at intersections with University Boulevard (MD 193) and Piney Branch Road (MD 320).

4. Piney Branch Road (MD 320)

From: Long Branch to Carroll Avenue

Improvement Type: Shared-Use Path, Reconstruction of Curb Ramps, Reconstruction of Driveway Aprons, Removal of Sidewalk Obstructions

Priority Ranking: 4.7 Time Frame: Short-term Cost Category: 4

Piney Branch Road (MD 320) will be a major corridor for pedestrians traveling to and from the Purple Line at the Piney Branch Station. West of University Boulevard (MD 193), the Purple Line project will construct new sidewalks. In the long-term, the sidewalk on the north side should be widened to a shared-use path in coordination with proposed improvements in the Long Branch BiPPA to the immediate west. However, east of University Boulevard (MD 193) improvements only extend just beyond the intersection. There are four apartment/condominium complexes located along the north side of Piney Branch Road (MD 320), east of University Boulevard (MD 193). The Northwest Branch of the Anacostia Trail network is also immediately to the east of the study area. There are existing sidewalks (approximately 5-ft wide) along both sides of the road, but there is no buffer between the sidewalks and the travel lanes, which are posted at 40 mph and likely have 85th percentile operating speeds closer to 50 mph. This is an uncomfortable, if not hazardous situation for pedestrians. Bus transit routes also operate along the corridor, with stops on both sides of the road. An uncontrolled mid-block crossing is located about half-way between University Boulevard (MD 193) and Carroll Avenue. The bicycle master plan recommends a separated bikeway (two-way cycle track in this area) along the north side of the road, however, this report recommends a shared-use path with a buffer along the north side of Piney Branch Road (MD 320) to accommodate both bicyclists and pedestrians. Locating a cycle track on the north side of the roadway would conflict with uncontrolled entrances, necessitate reduction to arterial capacity, and therefore, would not likely be approved by MDOT SHA. The project would need to include replacement of existing lighting and potentially a combination of new retaining walls, easements, and/or right of way acquisition along a state road, which presents challenges. A partial signal reconstruction at Carroll Avenue would also be necessary. Consideration should be given to narrowing of travel lanes to provide additional width for a shared use path and buffer. This project should be considered phase 1 of 2, where phase 2 would include continuation of the shared use path to New Hampshire Avenue (MD 650) – see below.

5. Piney Branch Road (MD 320)

From: Carroll Avenue to New Hampshire Avenue (MD 650)

Improvement Type: Shared-Use Path

Priority Ranking: 2.5 Time Frame: Mid-term Cost Category: 4

Piney Branch Road (MD 320) will be a major corridor for pedestrians traveling to and from the Purple Line. This segment of road is a state-owned arterial with two lanes in each direction and paved median. There are existing sidewalks on both sides of the road. The sidewalk on the north side of the road serves the Nob Hill and Forest Park apartment complexes. It also connects with the Northwest Branch of the Anacostia Trail near New Hampshire Avenue. Transit operates in the corridor and there is a mid-block crossing at approximately the mid-point of the segment with bus stops on either side. A shared-use path, with a buffer where feasible, is proposed along the north side of the road, which would serve both pedestrians and bicyclists. This project would be phase 2 of a larger project to connect residents living along the north side of Piney Branch Road (MD 320) with the station, as well as the Northwest Branch Trail users. Consideration should be given to narrowing the travel lanes to provide width for a shared-use path. Toward the east end of the segment, the existing paved median could be narrowed and converted to a raised median, providing additional width for a shared-use path. The existing bridge over the Northwest Branch Creek should be evaluated and consideration given to widening the existing sidewalk within the typical section of the existing structure. Impacts would include grading, tree removals, drainage modifications, relocation of street lighting and fire hydrants, modifications to the mid-block crossing. Retaining walls may be needed along portions of the alignment.

6. University Boulevard (MD 193)

From: Buckingham Drive to Piney Branch Road (MD 320)

Improvement Type: Separated Bike Lanes

Priority Ranking: 2.0 Time Frame: Long-term Cost Category: 4

This segment of University Boulevard (MD 193) connects residential areas to the north with the station. Its current configuration includes 5-foot sidewalks on both sides of the street, and three travel lanes in each direction. In this case, separated bike lanes are recommended at this location because of the proximity to the proposed Purple Line, and the high traffic volumes on the roadway. Right of way along this segment is constrained, therefore, implementation of separated bike lanes would require a combination of narrowing of travel lanes and the existing median, as well as right of way acquisitions. A traffic impact study would need approval from MDOT SHA before progressing this improvement.

Adding bike lines within the study area should consider the extension of the facility outside the study area to a logical stopping/starting point or to a destination or other connecting bike facility.

N

LINTON STREET
PATTON DRIVE
GLENVILLE ROAD
NEWHALL STREET
MILES STREET
KIMES STREET
MALCOM DRIVE
LANGLEY DRIVE
LONG BRANCH CREEK
HERON DRIVE
QUEBEC TERRACE
PINEY BRANCH ROAD (MD 320)
RUATAN STREET
11TH AVENUE
LONG BRANCH STATION
UNIVERSITY BOULEVARD (MD 193)
TAHONA DRIVE
CARROLL AVENUE
GILBERT STREET
SEEK LANE
BARRON STREET
OSAGE STREET
BAYFIELD STREET
HOOD STREET
HASKINS PLACE
10TH AVENUE
11TH AVENUE
LUDLOW STREET
FORSTON STREET
GLENVILLE ROAD
MONTGOMERY COUNTY-PRINCE GEORGE'S COUNTY BOUNDARY

LEGEND

- PINEY BRANCH STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS

PROPOSED IMPROVEMENTS

- SEPARATED BIKE LANES
- SHARED USE PATH
- SHARROW
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 12-14
PINEY BRANCH STATION
PROPOSED BIKEWAY IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

Table 12-6 - Bikeways Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE							BENEFITS						IMPACTS					Total Benefits Score	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
			Sharrow	Cycle Track	Separated Bike Lanes	Striped Bike Lanes	Shared-Use Paths	Other		Connectivity	Safety	Accessibility	Number of Users Served			Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost						
Barron Street																									
1	Domer Avenue to Glibert Street	MCDOT	●							2	2	2	1	7		1	1	1	1	4	2	2	7.0		
Gilbert Street																									
2	Barron Street to Univeritty Bouevard (MD 193)	MCDOT	●							2	2	2	1	7		1	1	1	1	4	2	2	7.0		
Carroll Avenue																									
3	Univerity Bouevard (MD 193) to Piney Branch Road (MD 320)	MCDOT			●					5	4	2	1	12		3	3	2	2	10	2	2	4.8		
Piney Branch Road (MD 320)																									
4	University Bouevard (MD 193) to Carroil Avenue	MDOT SHA					●			5	4	3	1	13		3	1	3	4	11	2	2	4.7		
5	Carroll Avenue to New Hampshire Avenue (MD 650)	MDOT SHA					●			5	5	3	1	14		3	1	3	4	11	1	2	2.5		
University Bouevard (MD 193)																									
6	Buckingham Drive to Piney Branch Road (MD 320)	MDOT SHA			●					5	4	2	1	12		3	3	2	4	12	1	2	2.0		

$$Priority\ Ranking = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

12.3.3 Maintenance

Landscape maintenance improvements, such as tree and hedge trimming, are an inexpensive way to increase pedestrian comfort and aesthetic value. A map showing the locations of maintenance improvements has been included in Figure 12-9 Piney Branch Station Maintenance Improvements.



Figure 12-15 Overgrown trees and shrubs provide horizontal and vertical obstructions on the road.



Figure 12-16 Curb ramp that requires cleaning of debris.

N

LINTON STREET
PATTON DRIVE
GLENVILLE ROAD
NEWHALL STREET
MILES STREET
KIMES STREET
MALCOM DRIVE
LANGLEY DRIVE
LONG BRANCH CREEK
HERON DRIVE
QUEBEC TERRACE
PINEY BRANCH ROAD (MD 320)
RUATAN STREET
11TH AVENUE
LONG BRANCH STATION
UNIVERSITY BOULEVARD (MD 193)
TAHONA DRIVE
CARROLL AVENUE
GILBERT STREET
SEEK LANE
MONTGOMERY COUNTY-PRINCE GEORGE'S COUNTY BOUNDARY
BARRON STREET
BAYFIELD STREET
OSAGE STREET
HOOD STREET
HASKINS PLACE
10TH AVENUE
11TH AVENUE
LUDLOW STREET
FORSTON STREET
GLENVILLE ROAD

LEGEND

- PINEY BRANCH STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS

PROPOSED IMPROVEMENTS

- LANDSCAPE MAINTENANCE
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY

FIGURE 12-17
PINEY BRANCH STATION
MAINTENANCE IMPROVEMENTS

0 0.05 0.1 0.2 0.3 0.4 Miles

12.4 Final Recommendations

The Piney Branch Station area is primarily a residential area with gaps in the infrastructure connecting users to the Purple Line. Although existing sidewalks are relatively continuous in the more commercial urban areas, many of the residential communities lack continuous sidewalk networks.

The present-day condition in this BiPPA has potential for the area to have a strong pedestrian and bicycle network. With a thriving residential area, improvements to the pedestrian and bicyclist safety and accessibility are essential for providing access to the Piney Branch station. Implementing the improvements in this report can also benefit the Piney Branch area by increasing pedestrian and cyclist use, as well as public safety, comfort, and health.

There are many constraints to implementing connectivity linear improvements such as cycle tracks and shared-use paths. We recommend enhancing with repairs and ADA upgrades, as well as connecting gaps in the existing sidewalk network. The primary focus for the Piney Branch BiPPA study area should be to ensure all pedestrians have a safe, accessible path to their destination.

One of the major overall goals of the Long Branch Sector Plan is to provide the residential areas of the Piney Branch BiPPA with safer and more accessible pedestrian and cyclist facilities. The Piney Branch area was originally planned to prioritize vehicular traffic, so there are many challenges to meeting this goal. The overall strategy should remain focused on rebalancing priorities to include pedestrians and bicycles as an equally important user of the right-of-way. Implementing the pedestrian and bicycle improvements proposed in this report will bring the area closer to accomplishing the goal.

13 Takoma/Langley Transit Center



13 Takoma/Langley Transit Center

13.1 Study Area

13.1.1 Existing Area

The Takoma/Langley Transit Center Station for the Purple Line is proposed to the immediate west of the intersection of University Boulevard (MD 193) and New Hampshire Avenue (MD 650) in Langley Park, Maryland. The intersection and University Boulevard (MD 193) corridor is known as Takoma-Langley Crossroads District. The intersection is one of the busiest intersections along the Purple Line serving more the 35,000 vehicles per day along each corridor. The station will be located just beyond the county line within Prince George's County but will serve many residents in Montgomery County to the south and west. The station location and map of the study limits can be found in Figure 13-1. The study area is made up of commercial shopping centers, office buildings, apartments, single family residential houses, schools, a recreation center, and churches. The existing Takoma/Langley Crossroads Transit Center is located on the north side of University Boulevard (MD 193), also, just beyond the county line. The Transit Center is owned and operated by MTA. It is the largest non-rail transfer point in the Washington Region, serving as a connection and transfer point for Metrobus, Ride On, and the University of Maryland shuttle. It will soon serve as a critical transfer point with the Purple Line as well. This study area is also comprised of two other districts known as New Hampshire Gardens to the southwest and New Hampshire Avenue corridor to the southeast. The study area also abuts the Piney Branch station study area to the north and the county line which runs along the south side of University Boulevard (MD 193) between Merrimac Drive and New Hampshire Avenue (MD 650). The study area is truncated to avoid duplicate recommendations for pedestrian and bicycle access improvements within the Piney Branch station study area. Recommendations for this report do not extend into Prince George's County.

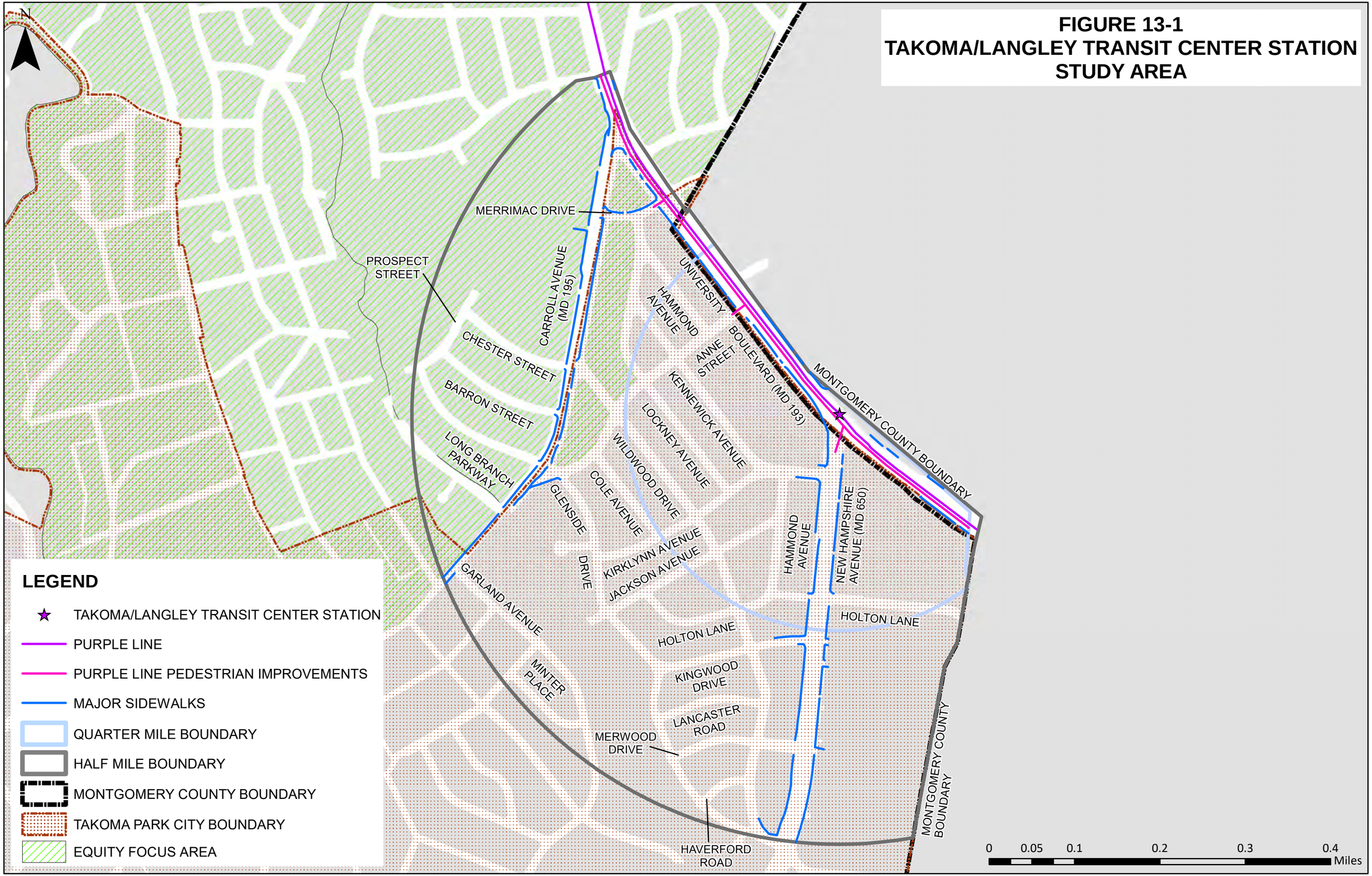
The City of Takoma Park maintains all the local streets within its limits. Most of this Study Area is covered by the City of Takoma Park, except for roads west of Carroll Avenue. Additional coordination between MCDOT and Takoma Park should be made to ensure proposed improvements are implemented within their jurisdiction.

Within the ¼-mile boundary the area is predominately commercial properties along University Boulevard (MD 193) and New Hampshire Avenue (MD 650) with single-family residential housing beyond the commercial areas to the southwest in New Hampshire Gardens. Within the ½ mile boundary, land use is primarily single-family residential housing of the same district. In the New Hampshire Avenue (MD 650) corridor, there are hotels, retail businesses, office buildings, grocery stores, restaurants, and the Takoma Park Recreation Center to the south. The Hampshire Towers Apartments are also located to the south. The Long Branch stream valley runs along the southwest boundary of the study area. Carroll Avenue (MD 195) is located to the west. Major roadways and their respective limits, minimum right-of-way, and number of lanes can be found in Table 13-1.

Importantly, the University Boulevard (MD 193) and New Hampshire Avenue (MD 650) corridors have very high pedestrian activity. Recommendations for University Boulevard (MD 193), south of Merrimac Drive, are not included in this report because it is within Prince George's County, however, this roadway is an important segment for bicycle and pedestrian access to the Takoma-Langley Crossroads, nonetheless. Existing pedestrian and bicycle traffic in the study area is also significant due to the many businesses, retail, and residences. Figure 13-1 shows the locations of the most heavily traveled sidewalks.

Based on publicly available and field collected data, it was determined that pedestrian and bicycle connectivity in the area is incomplete. Existing sidewalks, while present in most residential areas, do not currently provide continuous pedestrian access between neighborhoods, the Transit Center, and the future Purple Line station. Except for bike lanes and shared lanes along Carroll Avenue (MD 195), as well as signed routes in New Hampshire Gardens neighborhood, existing bikeways in the area are minimal.

FIGURE 13-1
TAKOMA/LANGLEY TRANSIT CENTER STATION
STUDY AREA



13.1.2 Existing Facilities

Existing pedestrian and bicycle facilities in the Takoma/Langley Transit Center BiPPA are consistent with those commonly found in other commercial or residential districts along the Purple Line corridor. The existing pedestrian network includes sidewalks, both signalized and non-signalized intersections, curb ramps, crosswalks, and mid-block crossings. See Figure 13-6 for a map of Existing Pedestrian Facilities.



Figure 13-2 A typical residential neighborhood with sidewalks.



Figure 13-3 A typical curb ramp.

Sidewalks within the County right of way are typically 4 feet wide and in moderate to good condition, although trip hazards and broken or cracked portions of the sidewalk are prevalent. Most sections of sidewalk contain a grass buffer or barrier, while some sections are placed directly adjacent to the road. Several residential roads have intermittent sidewalks or no sidewalks at all. University Boulevard (MD 193), New Hampshire Avenue (MD 650), and Carroll Avenue (MD 195) have 5-ft wide sidewalks on both sides. Frontage roads along the west side of New Hampshire Avenue (MD 650) and the east side of Carroll Avenue (MD 195) provide a buffer between the sidewalk and main road, therefore, a higher level of pedestrian comfort. MDOT SHA has installed jaywalking countermeasures along the approaches to the intersection of MD 193 and MD 650 in the form of median fencing, which will be removed and replaced along University Boulevard (MD 193) with construction of the new Purple Line station. Speed limits are photo-enforced along New Hampshire Boulevard (MD 650).

Most curb ramps and crosswalks are in moderate condition. Many curb ramps are not compliant with current ADA standards because they are not aligned properly, have slopes greater than the maximum allowable, do not have level landing areas or do not include detectable warning surfaces. Marked crosswalks are typically present, but some of these markings are faded and not in conformance with current standards.

Existing infrastructure for bicyclists includes signed/shared roadways in residential neighborhoods and a combination of bike lanes on Carroll Avenue (MD 195) and a shared lane along the frontage road on the east side of Carroll Avenue (MD 195). See Figure 13-7 for a map of Existing Cyclist Facilities.

Based on existing conditions and field collected data, several facilities can be improved to provide more safety, accessibility, and connectivity for pedestrians and bicyclists. With the number of pedestrians and cyclists expected to increase with Purple Line construction, upgrades and new facilities are essential in both the short- and long-term to ensure the safety of the area.



Figure 13-4 Typical crosswalk within the Takoma-Langley BiPPA.



Figure 13-5 Vertical Tripping Hazard.

Table 13-1 Street and Highway Classification

Designation	Roadway	Limits	Minimum Right-of-Way	Lanes	Speed Limit
Major Highway					
M-12	New Hampshire Avenue (MD 650)	End of BiPPA to University Boulevard (MD 193)	150	6	35
M-19	University Boulevard (MD 193	Carroll Avenue (MD 195) to New Hampshire Avenue (MD 650)	120	6	35
Minor Arterial					
A-89	Carroll Avenue (MD 195)	End of BiPPA to Glenside Drive	50	2	30
A-89	Carroll Avenue (MD 195)	Glenside Drive to Merrimac Dive	90	4	30
A-89	Carroll Avenue (MD 195)	Merrimac Drive to University Boulevard (MD 193)	90	2	30
Business					
B-1	Merrimac Drive*	Carrol Avenue (MD 195) to University Boulevard (MD 193)	70	2	25
B-3	Holton Lane*	Hammond Avenue to End of BiPPA	70	2	25
B-4	Anne Street*	Kennewick Avenue to University Boulevard (MD 193)	70	2	25
B-5	Hammond Avenue*	Holton Lane to Kennewick Avenue	70	2	25
B-6	Kennewick Avenue*	Anne Street to New Hampshire Avenue (MD 650)	70	2	25
Uncategorized**					
	Prospect Street	Glenside Drive to Chester Street	44	2	25
	Glenside Drive*	New Hampshire Drive (MD 650) to Prospect Street	44	2	25
	Long Brach Parkway	Carroll Avenue (MD 195) to end of BiPPA	44	2	25
	Patterson Court	End of road to Long Branch Parkway	44	2	25
	Barron Street	Carroll Avenue (MD 195) to Prospect Street	44	2	25
	Chester Street	Carroll Avenue (MD 195) to Prospect Street	44	2	25
	Glenside Court*	End of road to Glenside Drive	44	2	25
	Anne Street*	Carroll Avenue (MD 195) to Kennewick Avenue	44	2	25
	Cole Avenue*	Anne Street to Kirklynn Avenue	44	2	25
	Jackson Avenue*	Glenside Drive to Hamond Avenue	44	2	25
	Holton Lane*	Jackson Avenue to Hammond Avenue	44	2	25
	Kingwood Drive*	Glenside Drive to New Hampshire Avenue (MD 650)	44	2	25
	Lancaster Road*	Glenside Drive to Wildwood Drive	44	2	25
	Merwood Drive*	Glenside Drive to New Hampshire Avenue (MD 650)	44	2	25
	Haverford Road*	Glenside Drive to Wildwood Drive	44	2	25
	Kirklynn Avenue*	Glenside Drive to Kennewick Avenue	44	2	25
	Lockney Avenue*	Kirklynn Avenue to Merrimac Avenue	44	2	25
	Kennewick Avenue*	Anne Street to Lockney Avenue	44	2	25
	Hammond Avenue*	Anne Street to Lockney Avenue	44	2	25
	Wildwood Drive*	Glenside Drive to Carroll Avenue (MD 195)	44	2	25
	Garland Avenue*	End of BiPPA to Carroll Avenue (MD 195)	44	2	25
	Davis Avenue*	End of BiPPA to Garland Avenue	44	2	25
	Jackson Avenue*	End of BiPPA to Garland Avenue	44	2	25
	Minter Place*	Jackson Avenue to Garland Avenue	44	2	25

*These streets are under the jurisdiction of the City of Takoma Park.
**Uncategorized roads are not included in the MNCPPC Roadway Functional Classification. ROW widths are based on MC-210.01 Tertiary Residential Street. Speed limits are based on minimum posted speed required by State law

FIGURE 13-6
TAKOMA/LANGLEY TRANSIT CENTER STATION
EXISTING PEDESTRIAN FACILITIES

N

MERRIMAC DRIVE
PROSPECT STREET
CHESTER STREET
BARRON STREET
LONG BRANCH PARKWAY
CARROLL AVENUE (MD 195)
UNIVERSITY BOULEVARD (MD 193)
HAMMOND AVENUE
ANNE T STREET
KENNEWICK AVENUE
LOCKNEY AVENUE
WILDWOOD DRIVE
COLE AVENUE
GLENSIDE DRIVE
KIRKLYNN AVENUE
JACKSON AVENUE
GARLAND AVENUE
HAMMOND AVENUE
NEW HAMPSHIRE AVENUE (MD 650)
HOLTON LANE
HOLTON LANE
MINTER PLACE
KINGWOOD DRIVE
LANCASTER ROAD
MERWOOD DRIVE
HAVERFORD ROAD
MONTGOMERY COUNTY BOUNDARY
MONTGOMERY COUNTY BOUNDARY

LEGEND

- TAKOMA/LANGLEY TRANSIT CENTER STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- EXISTING SIDEWALKS
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY
- TAKOMA PARK CITY BOUNDARY
- MONTGOMERY COUNTY BOUNDARY

0 0.05 0.1 0.2 0.3 0.4 Miles

FIGURE 13-7
TAKOMA/LANGLEY TRANSIT CENTER STATION
EXISTING CYCLIST FACILITIES

N

MERRIMAC DRIVE
PROSPECT STREET
CHESTER STREET
BARRON STREET
LONG BRANCH PARKWAY
CARROLL AVENUE (MD 195)
UNIVERSITY BOULEVARD (MD 193)
HAMMOND AVENUE
ANNE STREET
KENNEWICK AVENUE
LOCKNEY AVENUE
WILDWOOD DRIVE
COLE AVENUE
GLENSIDE DRIVE
KIRKLYNN AVENUE
JACKSON AVENUE
GARLAND AVENUE
MINTER PLACE
HOLTON LANE
KINGWOOD DRIVE
LANCASTER ROAD
MERWOOD DRIVE
HAVERFORD ROAD
NEW HAMPSHIRE AVENUE (MD 650)
MONTGOMERY COUNTY BOUNDARY

LEGEND

- TAKOMA/LANGLEY TRANSIT CENTER STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS
- PURPLE LINE BIKE RACK

EXISTING BIKEWAYS

- SHARED USE PATH
- SHARED ROAD/SIGNED ROUTE
- STRIPED BIKE LANES
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY
- TAKOMA PARK CITY BOUNDARY
- MONTGOMERY COUNTY BOUNDARY

0 0.05 0.1 0.2 0.3 0.4 Miles

13.1.3 Proposed Purple Line Improvements

Multiple improvements are proposed within the Takoma/Langley Transit Center BiPPA in conjunction with the construction of the Purple Line. The Purple Line will be on-street along the median of University Boulevard (MD 193). The new Takoma/Langley Transit Center Station of the Purple Line will be constructed near the intersection of University Boulevard (MD 193) and New Hampshire Avenue (MD 650). University Boulevard (MD 193) will be reconstructed along with small sections of the intersecting streets. Sidewalks, ranging from 5- to 8-ft will be reconstructed on both sides within the project limits, and 5-ft wide bike lanes will be included in the new roadway section. The intersection of University Boulevard (MD 193) and New Hampshire Avenue (MD 650) will be reconstructed due to the widening required for the proposed Purple Line. The high-speed right-turn ramp and uncontrolled crosswalk on the southwest corner will be eliminated, improving pedestrian safety. See Figure 13-8 for the construction plans.

13.1.4 Adjacent Projects

Currently, there are no known projects within the study area other than the Purple Line.

13.2 Master Plan Summary

Although there are four master plans that encompass the Takoma/Langley Transit Center Station, two govern this BiPPA: The East Silver Spring Master Plan (2000) and the Takoma/Langley Crossroads Sector Plan (2012). See Figure 13-9 Master Plans Boundary Map, for the boundaries of these plans.

Based on the age and scope of these master plans, it was determined that the Takoma/Langley Crossroads Sector Plan was the most relevant to this study. Therefore, recommendations follow those goals closely.

In addition to the master plans, the Purple Line Pedestrian Connectivity Report, prepared for the M-NCPPC in June 2020, describes recommended pedestrian improvements in the vicinity of each Purple Line station. Connectivity was measured by taking the total comfortable distance of all residential trips and dividing it by the total distance of all residential trips. Please see the Purple Line Connectivity report for a more detailed methodology for the calculation of pedestrian connectivity. The connectivity report states that the area's existing connectivity was measured at 21%. If all the proposed improvements in the connectivity report were to be constructed, pedestrian connectivity should increase significantly to 83%.

To evaluate planning for cycling facilities, the Montgomery County Bicycle Master Plan was reviewed to provide bicycle-specific recommendations throughout Montgomery County. In instances where the Takoma Langley Crossroads Sector Plan and the Bicycle Master Plan overlap, the recommendation from the latter governed.

13.2.1 Existing Pedestrian Improvement Recommendations

There are many sidewalks and signalized intersections in this study area. The recommendations from the master plans and studies focus on increasing the safety, connectivity, sustainability, and attractiveness of existing infrastructure with discussions around complete streets and green street concepts. The listed improvements in Table 13-2 describe excerpts from the Purple Line Connectivity Report and Takoma-Langley Crossroads Sector Plan.

Table 13-2 Summary of Area Pedestrian Infrastructure Improvement Recommendations

Roadway/Route	Recommendation	Reference
Carroll Avenue (MD 195) and Glenside Drive	Construct high visibility crosswalk	Purple Line Pedestrian Connectivity Report
New Hampshire Avenue (MD 650) and Takoma/Langley Crossroad Center	Construct high visibility crosswalk	Purple Line Pedestrian Connectivity Report
New Hampshire Avenue (MD 650) and Holton Lane	Construct high visibility crosswalk	Purple Line Pedestrian Connectivity Report
New Hampshire Avenue (MD 650) and Merwood Drive	Construct high visibility crosswalk	Purple Line Pedestrian Connectivity Report
New Hampshire Avenue (MD 650) and Glenside Drive	Construct high visibility crosswalk	Purple Line Pedestrian Connectivity Report
*University Boulevard (MD 193) and New Hampshire Avenue (MD 650)	Vertical separation between back of curb and back of sidewalk where greater than 8' wide	Purple Line Pedestrian Connectivity Report
*University Boulevard (MD 193) and New Hampshire Avenue (MD 650)	Remove channelized right-turn in the northwest corner	Purple Line Pedestrian Connectivity Report
New Hampshire Avenue (MD 650)	Provide a 5' wide buffer between University Boulevard and Erskine Street on the east side	Purple Line Pedestrian Connectivity Report
Jackson Avenue	Install a 5' wide sidewalk on the west side	Purple Line Pedestrian Connectivity Report
Hammond Avenue	Install a 5' wide sidewalk on the west side	Purple Line Pedestrian Connectivity Report
Holton Lane	15' sidewalk buffered by parallel on-street parking; shared lanes for bicycles	Takoma-Langley Crossroads Sector Plan
New Hampshire Avenue (MD 650)	15' sidewalk buffered by shade trees	Takoma-Langley Crossroads Sector Plan

*This intersection is in Prince George's County.

13.2.2 Existing Bikeway Improvement Recommendations

The recommendations from the Montgomery County Bike Master Plan and are summarized in Table 13-3. There are several improvements shown since the area does not have any marked bike facilities except on a section of Carroll Avenue. Recommendations include Separate Bike Lanes, Shared Roadways, Cycle Tracks, and Striped Bike Lanes.

Table 13-3 Summary of Area Cycling Infrastructure Improvement Recommendations

Roadway/Route	Limits	Reference
Separated Bike Lane		
University Boulevard (MD 193)	BiPPA Boundary to Anne Street	Montgomery County Bicycle Master Plan
Carroll Avenue (MD 195)	Merrimac Drive to University Boulevard (MD 193)	Montgomery County Bicycle Master Plan
New Hampshire Avenue (MD 650)	BiPPA Boundary to University Boulevard (MD 193)	Montgomery County Bicycle Master Plan
Shared Roadway		
Long Branch Parkway	Carrol Avenue (MD 195) to BiPPA Boundary	Montgomery County Bicycle Master Plan
Carrol Avenue (MD 195)	Garland Avenue to Long Branch Parkway	Montgomery County Bicycle Master Plan
Anne Street	Glenside Drive to University Boulevard (MD 193)	Montgomery County Bicycle Master Plan
Holton Lane	Wildwood Drive to New Hampshire Avenue (MD 650)	Montgomery County Bicycle Master Plan
Glenside Drive	New Hampshire Avenue (MD 650) to Carroll Avenue (MD 195)	Montgomery County Bicycle Master Plan
Wildwood Drive	Glenside Drive to Carroll Avenue (MD 195)	Montgomery County Bicycle Master Plan
Cycle Track		
University Boulevard (MD 193)	Anne Street to BiPPA Boundary	Montgomery County Bicycle Master Plan
Holton Lane	New Hampshire Avenue (MD 650) to BiPPA Boundary	Montgomery County Bicycle Master Plan
Striped Bike Lane		
Carroll Avenue (MD 195)	Glenside Drive to Merrimac Drive	Montgomery County Bicycle Master Plan

FIGURE 13–8 PURPLE LINE TAKOMA /LANGLEY TRANSIT CENTER STATION CONSTRUCTION PLAN

(PREPARED BY ATKINS GLOBAL)

C3 FOR ROADWAY STANDARD DETAIL C3

C7 COUNTY CURB AND GUTTER. SEE CW-33 FOR ROADWAY STANDARD DETAIL C7

M1 MONOLITHIC CONCRETE MEDIAN TYPE A. SEE CW-33 FOR ROADWAY STANDARD DETAIL M1

M4 CONCRETE RAISED MEDIAN WITH 4" THICK SIDEWALK. SEE CW-33 FOR ROADWAY STANDARD DETAIL M4

X1 BALLAST CURB. SEE CW-33 FOR ROADWAY STANDARD DETAIL X1

1 4 INCH CONCRETE SIDEWALK

2 5 INCH CONCRETE SIDEWALK

3 SHARED USE PATH / BIKEWAY. SEE MISCELLANEOUS DETAILS SHEET THIS PACKAGE

4 CONCRETE ENTRANCE

5 TYPE F CONCRETE BARRIER (SINGLE FACE). SEE CW-33 FOR ROADWAY STANDARD DETAILS

6 TRAFFIC BARRIER W BEAM. SEE CW-33 FOR ROADWAY STANDARD DETAILS

7 FENCE. SEE FENCE PLANS THIS PACKAGE

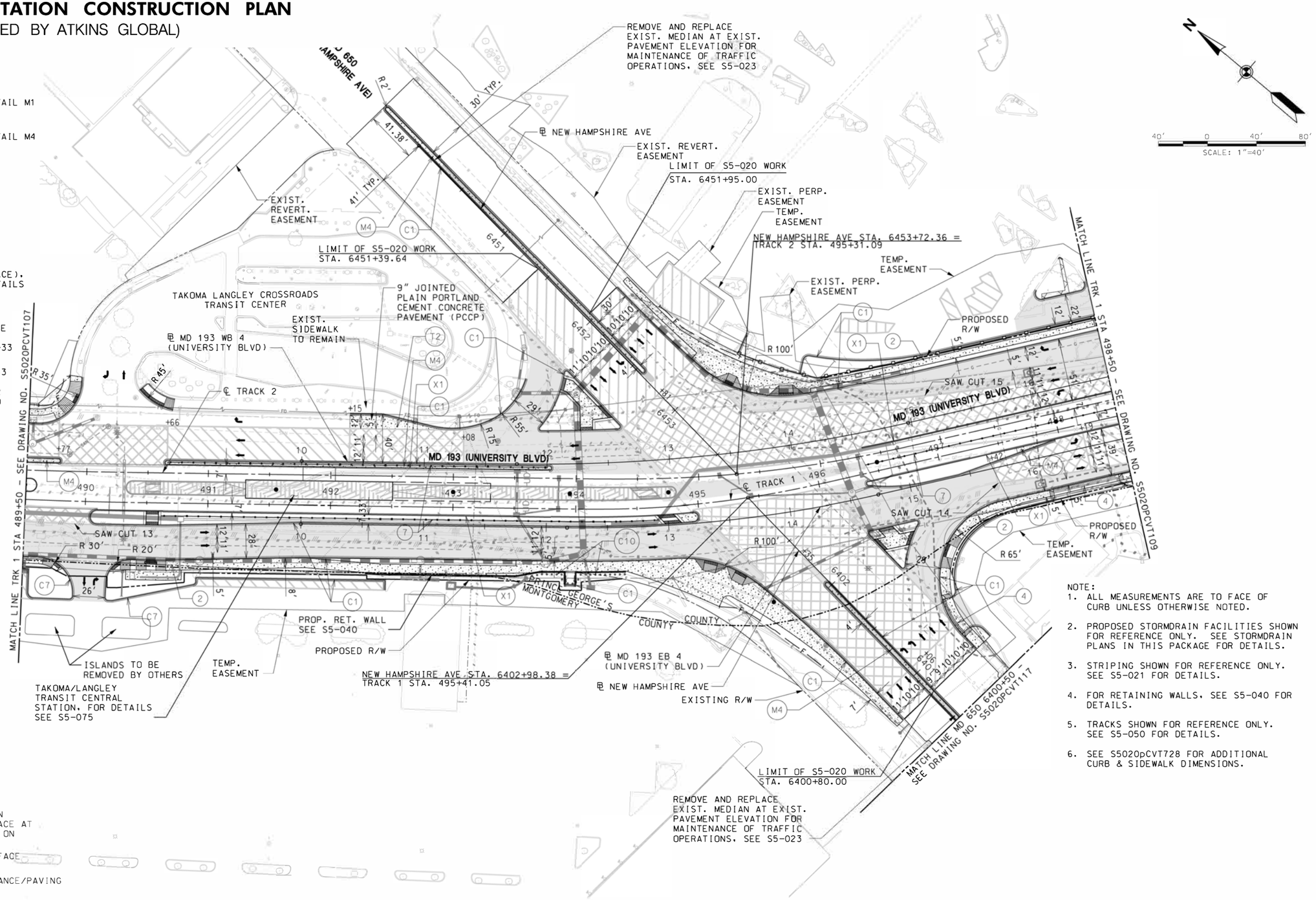
C10 PRE-CAST CONCRETE BOLLARD. SEE CW-33 FOR ROADWAY STANDARD DETAIL C10

T2 TRANSIT CONCRETE BUS PAD. SEE CW-33 FOR ROADWAY STANDARD DETAIL T2. TIE DEVICES SHALL BE INSTALLED PER DETAIL T2 ALONG ALL CONNECTIONS TO EXISTING PAVEMENT.

SAW CUT 13 TRACK 1	
STATION	OFFSET
490+07	18.42' RT

SAW CUT 14 TRACK 1	
STATION	OFFSET
497+42	31.45' RT
497+62	32.15' RT
498+12	36.84' RT

SAW CUT 15 TRACK 1	
STATION	OFFSET
496+04	62.49' LT
496+53	56.33' LT
497+02	50.85' LT
497+52	45.58' LT



NOTE:

1. ALL MEASUREMENTS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
2. PROPOSED STORMDRAIN FACILITIES SHOWN FOR REFERENCE ONLY. SEE STORMDRAIN PLANS IN THIS PACKAGE FOR DETAILS.
3. STRIPING SHOWN FOR REFERENCE ONLY. SEE S5-021 FOR DETAILS.
4. FOR RETAINING WALLS. SEE S5-040 FOR DETAILS.
5. TRACKS SHOWN FOR REFERENCE ONLY. SEE S5-050 FOR DETAILS.
6. SEE S5020pCVT728 FOR ADDITIONAL CURB & SIDEWALK DIMENSIONS.

ROADWAY LEGEND

- PROPOSED FULL DEPTH CONSTRUCTION (CAN BE WEDGE, LEVEL AND RESURFACE AT CONTRACTOR'S OPTION) SEE NOTE 5 ON S5020PGN-002
- XXX PROPOSED WEDGE, LEVEL AND RESURFACE
- PROPOSED RESURFACE
- PROPOSED CONCRETE SIDEWALK/ENTRANCE/PAVING
- PROPOSED STATION
- PAVEMENT REMOVAL

MTA. NO. 17–PL–0008

MARYLAND DEPARTMENT OF TRANSPORTATION
MARYLAND TRANSIT ADMINISTRATION — MTA Maryland

PURPLE LINE TRANSIT PARTNERS

ATKINS
3901 Calverton Blvd, Suite 400
Calverton, Maryland 20705
Telephone: 301-210-6800
www.atkinsglobal.com

PROFESSIONAL CERTIFICATION

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland

50498 — License No.
01/24/2019 — Expiration Date

STATE OF MARYLAND — JAMES M. HOLLOWAY — PROFESSIONAL ENGINEER
08/21/2018

NO.	DESCRIPTION	BY	DATE
0	RELEASE FOR CONSTRUCTION	JMH	08/10/18

REVISIONS

DESIGN	BSL
DRAWN	BSL
CHECK	TC
APPR	JMH

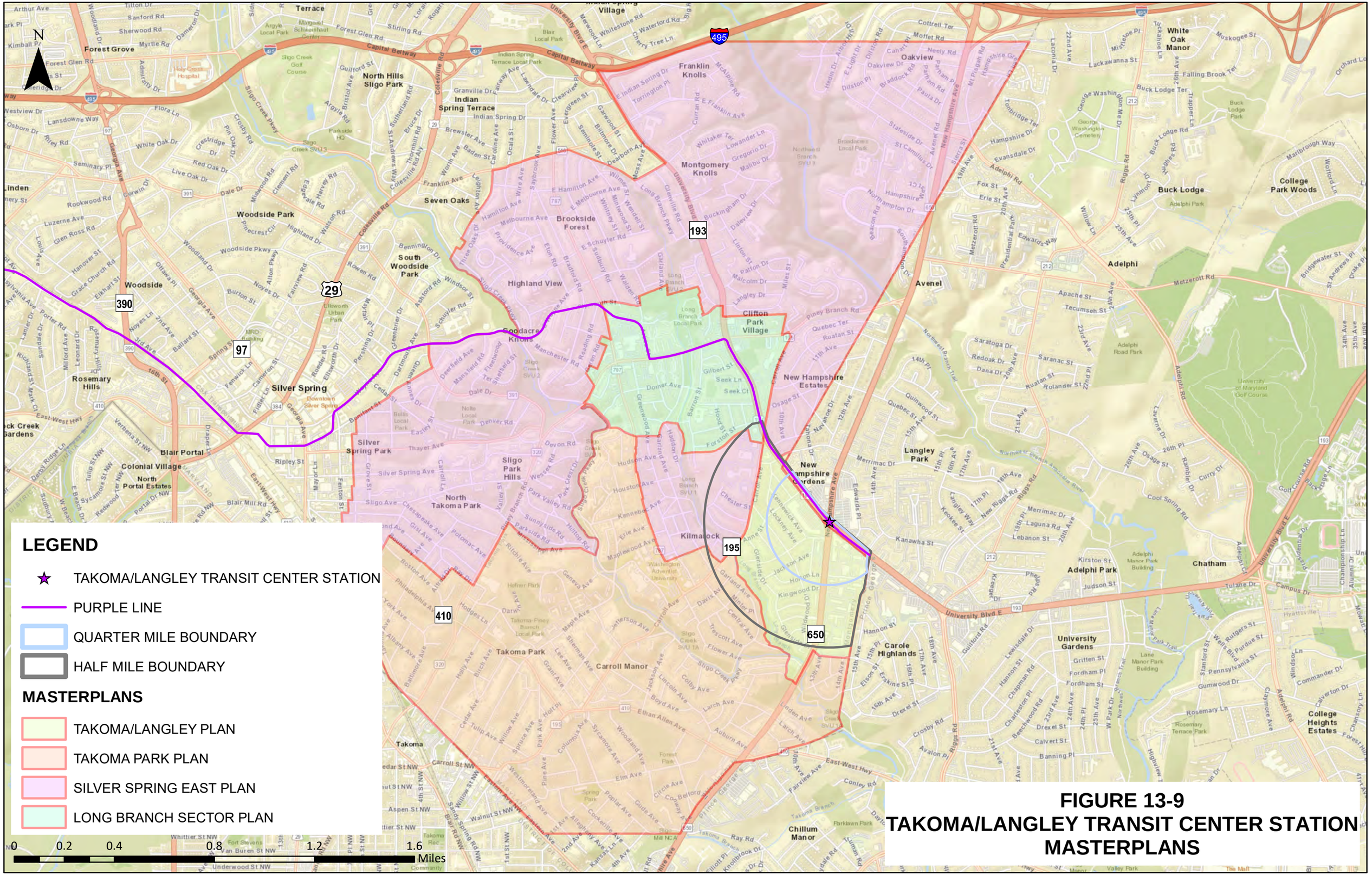
PURPLE LINE LIGHT RAIL
CIVIL DESIGN
SEGMENT 5

ROADWAY PLAN

DATE: AUGUST 10, 2018 SCALE: 1" = 40'

CONTRACT NO. 0–0000–0000
DRAWING NO. S5020PCVT108
SHEET NO. 63 OF 544

pw://CUSD036301.wsatkins.com:ATKNAMDPL01/Documents/Purple Line P3 Design/4.0 CAD (Work In Progress)/Roadway/Segment 5/Drawings/S5-020/S5020pCVT108.dgn
8/10/2018 5:32:53 PM


N
LEGEND
TAKOMA/LANGLEY TRANSIT CENTER STATION
PURPLE LINE
QUARTER MILE BOUNDARY
HALF MILE BOUNDARY
MASTERPLANS
TAKOMA/LANGLEY PLAN
TAKOMA PARK PLAN
SILVER SPRING EAST PLAN
LONG BRANCH SECTOR PLAN
0 0.2 0.4 0.8 1.2 1.6
Miles
Forest Grove
Terrace
Indian Spring Village
Franklin Knolls
Oakview
White Oak Manor
North Hills Sligo Park
Indian Spring Terrace
Montgomery Knolls
Seven Oaks
Brookside Forest
Woodside Park
Woodside
South Woodside Park
Highland View
Goodacre Knolls
Clifton Park Village
Avenel
Buck Lodge
College Park Woods
Adelphi
New Hampshire Estates
Rosemary Hills
Silver Spring
Silver Spring Park
Sligo Park Hills
North Takoma Park
Kilmalock
Langley Park
Blair Portal
Colonial Village
North Portal Estates
Takoma
Takoma Park
Carroll Manor
Carole Highlands
University Gardens
Adelphi Park
Chatham
College Heights Estates
New Hampshire Gardens
Chillum Manor
495
29
390
97
193
195
410
650
FIGURE 13-9
TAKOMA/LANGLEY TRANSIT CENTER STATION MASTERPLANS

13.3 Proposed Improvements

The Takoma/Langley Station BiPPA has been evaluated for several types of pedestrian and bicycle improvements. Proposed improvements have been developed and prioritized based on the ranking criteria outlined in Section 2.8 of this report. A list of proposed improvements was developed to include the recommendations of previously prepared studies and master plans. Information was gathered from a field review of the site and data gathered from other sources. Separate analyses and mapping was developed for pedestrian improvements and for biking improvements.

13.3.1 Proposed Pedestrian Improvements

This study included a thorough review of existing pedestrian facilities (sidewalk ramps, driveway aprons, linear sidewalks, etc.) and determined which facilities did not meet current ADA criteria. The report and figures indicate where spot improvements are required and where linear sidewalk improvements are required. Spot improvements are shown in Figures 13-12 (a) and (b). The maps show the locations and types of existing facilities that need to be reconstructed to meet ADA standards. Proposed linear routes/improvements for pedestrian access are shown in Figure 13-13. The map figures also indicate the improvements that will be constructed by the Purple Line project.

Refer to Table 13-4 for a summary of priority rankings of pedestrian improvements. This report describes the top ranked pedestrian improvements for the Takoma/Langley Transit Center Station.



Figure 13-10 Outdated crosswalk striping.



Figure 13-11 Non-compliant Curb Ramp.

1. Area-wide Improvements to Existing Sidewalks

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Sidewalk, Removal of Sidewalk Obstructions, Widening of Non-compliant Sidewalk Widths, Reconstruction of Sidewalks with Non-compliant Slopes

Priority Ranking: 2.0 Time Frame: Short-term Cost Category: 3

There is a need for general maintenance of pedestrian pathways and upgrades to those that do not meet current ADA, MCDOT, or MDOT SHA standards throughout the BiPPA. Curb ramps should be upgraded to meet slope requirements as set forth by ADA and must include detectable warning surfaces. Sidewalks should be free from trip hazards and breaks; it is recommended that trip hazards greater than ½-inch and significant breakage be repaired by replacing the affected portion of the sidewalk. In addition, sidewalks that have cross-slopes greater than allowable or pinch points with less than a 36" width should be replaced or reconfigured. Sidewalk obstructions, such as guy wires, should be reconfigured to provide adequate overhead clearance for pedestrians.

Although all area-wide sidewalk improvements are a worthwhile investment, those in the vicinity of the Purple Line, University Boulevard (MD 193), Carroll Avenue (MD 195), and New Hampshire Avenue (MD 650) should be prioritized based on current and future use.

2. Area-wide Improvements to Existing Driveway Aprons

Improvement Type: Reconstruct Driveway Aprons

Priority Ranking: 2.4 Time Frame: Short-term Cost Category: 3

There is a need to upgrade existing driveway aprons to meet ADA slope requirements and be in conformance with current MCDOT and MDOT SHA standards throughout the BiPPA. Existing aprons in the residential areas of Takoma/Langley Transit Center BiPPA were found to have existing cross slopes greater than 2%.

Reconstruction of driveway aprons is recommended for those roads with sidewalks that provide direct connection to the Purple Line Station. These roadways are University Boulevard (MD 193), Carroll Avenue (MD 195), and New Hampshire Avenue (MD 650). Much like the area-wide improvements to existing sidewalks, area-wide improvements to existing driveway aprons would provide increased safety and accessibility.

3. Area-wide Improvements to Existing Intersections

Improvement Type: Reconstruction of Mid-block Crossing, Striping of Crosswalks

Priority Ranking: 2.4 Time Frame: Short-term to Mid-term Cost Category: 2

Crosswalk striping throughout the Purple Line BiPPA is fading or does not utilize the continental or "piano stripe" at high traffic intersections. At a minimum, all striping should be updated to ensure there are no faded or broken portions. Crosswalks in high-traffic areas should be prioritized.

Upgrades to these existing crosswalks would provide increased safety and comfort for pedestrians. No impacts to existing utilities or rights-of-way are anticipated.

4. Area-wide Upgrades to APS/CPS

Improvement Type: Signal Upgrades to APS/CPS

Priority Ranking: 3.4 Time Frame: Short-term to Mid-term Cost Category: 2

Some intersections throughout the Takoma/Langley Transit Center station area do not have accessible signals. Upgrading these signals to comply with ADA guidelines would create a safer and more inclusive pedestrian experience for everyone. No impacts to existing utilities, rights-of-way or environmental features are anticipated. Minor traffic pattern changes may be required at high volume intersections during construction.

Although improving accessibility at all intersections is a worthwhile investment, those high traffic areas should be prioritized.

5. New Hampshire Avenue (MD 650)

From: Kingwood Drive to University Boulevard (MD 193)

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks/Sidewalk Widening, Removal of Sidewalk Obstructions, Striping of Crosswalks, Repair APS/CPS, Curb extension, Intersection Safety Improvements

Priority Ranking: 3.6 Time Frame: Short-term Cost Category: 3

New Hampshire Avenue (MD 650) is a major corridor for pedestrians traveling to and from the Purple Line, University Boulevard (MD 193), and the Takoma/Langley Transit Center station while also connecting to other high-demand commercial destinations. This roadway is under the jurisdiction of MDOT SHA. There are 5-ft minimum wide sidewalks on both sides of the roadway. Sidewalk along the west side is sufficient between Kingwood Drive and the bus stop in front of 7676 New Hampshire Avenue, as it has a grass buffer that provides separation. As pedestrians approach the new station along the west side of the road, a frontage road and shopping center entrances disrupt the flow of pedestrian traffic and create an unsafe route. The most direct route is along a narrow median that separates the main road and frontage road, so that there is traffic moving on both sides of pedestrians. However, if the median between the main road and frontage road were narrowed to two feet, the additional width could be added to the sidewalk on the west side of the frontage road. Although the resulting sidewalk route would be slightly less direct, it would be a safer, more comfortable route, as the additional width could be used to widen the sidewalk and add a buffer. A curb extension and reduced curb return radii should also be added at the crosswalk across Kirklynn Avenue. The crosswalk on the north leg of New Hampshire Avenue (MD 650) would be shifted southward and extended directly across the frontage road, and the stop bar would be moved back. The crosswalk on the west side of New Hampshire Avenue (MD 650) would be eliminated and the frontage road entrance narrowed. All roadway geometry should be designed to deflect vehicles for a maximized traffic calming effect.

The sidewalk along the east side of the road should be further evaluated for widening. The sidewalk is more continuous than the west side, but these improvements will result in right of way and parking impacts. Perpendicular parking could be converted to parallel parking.

Several minor upgrades such as curb ramps, high visibility continental crosswalk striping, APS/CPS repair, and removal of obstructions will enhance both accessibility and safety. Any improvements will need to be coordinated and approved by MDOT SHA.

6. Carroll Avenue (MD 195)

From: Garland Avenue to University Boulevard (MD 193)

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Existing Sidewalks, Reconstruction of Driveway Aprons, Removal of Sidewalk Obstructions, Striping of Crosswalks, Signal Upgrades to APS/CPS, Construction of New Curb Ramps, Construction of New Sidewalk, Installation of Additional Signs

Priority Ranking: 3.6 Time Frame: Short- to Mid-term Cost Category: 3

Although Carroll Avenue (MD 195) does not align directly toward the Purple Line station, depending on their origin, pedestrians west of this route will need to use portions of Carroll Avenue (MD 195) to reach other roads that lead to the station. In general, the road is only in need of minor upgrades. APS/CPS should be installed at the intersection of Carroll Avehas been changednue (MD 195) and Long Branch Parkway. There are multiple driveway aprons that do not meet ADA compliance, curb ramps that lack landings or detectable warning surface, and sidewalks with vertical obstructions. The crosswalks across Carroll Avenue (MD 195) at the Takoma Academy, at Chester Street, and at Long Branch Parkway need to be re-striped. High visibility crosswalks should be used at these locations. There are unmarked crosswalks across Carroll Avenue (MD 195) at Barron Street and at the Church of Jesus Christ Latter-Day Saints entrance. These crossings should be further studied to determine if peak pedestrian activity warrants installation of marked crosswalks. Glenside Drive does not currently have a crosswalk across Carroll Avenue (MD 195), but peak pedestrian activity should be studied here as well. None of these improvements would have substantial impacts.

A new sidewalk segment is needed along the east side of Carroll Avenue (MD 195) between Merrimac Drive and University Blvd (MD 193); however, this segment is not on a direct route to the Purple Line. Impacts to nearby utility poles should be minimized by bumping the sidewalk around utility poles. It appears the area is currently being used for overflow parking. Business outreach should be done before the proposed sidewalk is finalized. This should be coordinated with the installation of separated bike lanes.

7. Holton Lane

From: Wildwood Drive to County Boundary

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Driveway Aprons, Removal of Sidewalk Obstructions, Repair APS/CPS

Priority Ranking: 3.3 Time Frame: Short-term Cost Category: 2

Holton Lane is a minor east-west corridor for pedestrians traveling between the New Hampshire Avenue (MD 650) corridor, New Hampshire Gardens to the west, and Prince George's County to the east. Although the master plan recommends a 15' wide sidewalk along Holton Lane between University Boulevard (MD 193) and the County line, this improvement is not essential for Purple Line access and should be undertaken when this block is redeveloped by private developers, as well as in coordination with the planned extension into Prince George's County. However, there are multiple spot improvements, mostly east of MD 650, that would improve accessibility along Holton Lane with very little impacts.

8. New Hampshire Avenue (MD 650)

From: Glenside Drive to Kingwood Drive

Improvement Type: Reconstruction of Curb Ramps, Reconstruction of Sidewalks, Removal of Sidewalk Obstructions, Striping of Crosswalks, Signal Upgrades to APS/CPS, Intersection safety improvements

Priority Ranking: 1.8 Time Frame: Short-term Cost Category: 3

This stretch of New Hampshire Avenue (MD 650) falls within the ½ mile boundary. There are sidewalks on both sides of the roadway that are a 5-ft wide or greater. The frontage road on the west side provides a comfortable buffer between pedestrians and the mainline. The sidewalk along the east side of the road has no buffer but is generally well-maintained and ADA compliant. The intersection of New Hampshire Avenue (MD 650) at Merwood Drive has multiple issues. Improperly aligned pedestrian ramps lead into exposed parts of the intersection. The stop bar across the west leg allows vehicles to queue within an unmarked crosswalk. The signal loops need to be replaced, stop bar moved back, and crosswalk striped to address this issue. Crosswalk striping should be upgraded to the continental style.

Several minor upgrades such curb ramps, high visibility continental crosswalk striping, APS/CPS repair, and removal of obstructions will enhance both accessibility and safety. Any improvements will need to be coordinated and approved by MDOT SHA.

9. Long Branch Parkway

From: Carroll Avenue (MD 195) to Patterson Court

Improvement Type: Reconstruction of Driveway Aprons, Construction of New Curb Ramps, Construction of New Sidewalks

Priority Ranking: 3.1 Time Frame: Mid-term Cost Category: 2

This section of Long Branch Parkway is a residential street. This street is not a through street, but it connects to Long Branch Trail at its terminus. There is existing sidewalk along the block between Patterson Court and terminus, however, there is no sidewalk between Carroll Avenue (MD 195) and Patterson Court. Sidewalk is therefore recommended along the west side of the street to form a continuous connection. This improvement is not necessarily a high priority due to the low volume of traffic, and with respect to the Purple Line station, it is on the outskirt of the ½ mile boundary but would nonetheless improve pedestrian connectivity in the area.

Impacts to nearby utility poles and trees should be minimized by bumping the sidewalk around them. There would also be minor impacts to minor landscaping improvements within the right of way. Two driveway aprons would need to be reconstructed. Minor adjustments may be needed to a guy wire at the intersection of Carroll Avenue (MD 195) and Long Branch Parkway. Resident outreach should be done before the proposed sidewalk is finalized.

10. Barron Street

From: Carroll Avenue (MD 195) to Prospect Street

Improvement Type: Reconstruction of Driveway Aprons, Construction of New Curb Ramps, Construction of New Sidewalks

Priority Ranking: 1.6 Time Frame: Short-term Cost Category: 3

Barron Street is a residential street that should include sidewalk on at least one side of the street. In the existing condition parking is only allowed on the west side of the street. Either side of the street appears to be viable for sidewalk. This should be determined based on further study and public outreach. This improvement would increase connectivity for local residents trying to reach the proposed Purple Line. The existing roadway is an open section. Adding sidewalk would include curb and gutter set along the existing edge of road, curb ramps, driveway aprons, and storm drain improvements.

Impacts to nearby utility poles should be minimized by bumping the sidewalk around utility poles. Some small trees and private resident landscaping would need to be removed as part of this project.

11. Anne Street

From: Wildwood Drive to University Boulevard (MD 193)

Improvement Type: Removal of Sidewalk Obstructions

Priority Ranking: 4.5 Time Frame: Short-term Cost Category: 1

Anne Street will be an important east-west corridor for pedestrians traveling between the Purple Line, University Boulevard (MD 193), and the New Hampshire Gardens neighborhood. A recent sidewalk project provided continuous sidewalk along the south side of the street and improved intersection geometry at Wildwood Street for pedestrian safety. There are also existing traffic calming measures (speed humps). Therefore, only minor improvements are needed.

12. Hammond Avenue/Lockney Avenue

From: Anne Street to Merrimac Drive

Improvement Type: Reconstruction of Driveway Aprons, Construction of New Curb Ramps, Construction of New Sidewalks, Striping of Crosswalks

Priority Ranking: 3.5 Time Frame: Short-term Cost Category: 2

This section of Hammond Avenue is a residential street that should include sidewalk on at least one side of the street, preferably the west side of the street. Where Hammond Avenue meets Lockney Avenue, the sidewalk should cross over to the east side south of the traffic circle and continue to Merrimac Drive along an existing social path. Roadway geometry should be narrowed along the traffic circle to make additional room for sidewalk and deflect traffic along the south side of Lockney Avenue. A crosswalk will be needed where Hammond Avenue intersects with Anne Street.

Impacts to nearby utility poles should be avoidable, however, small trees and shrubs may be impacted. Several driveway aprons will need to be reconstructed. Resident outreach should be done before the proposed sidewalk is finalized.

13. Chester Street

From: Carroll Avenue (MD 195) to Prospect Street

Improvement Type: Reconstruction of Driveway Aprons, Construction of New Curb Ramps, Construction of New Sidewalks

Priority Ranking: 1.8 Time Frame: Mid-term Cost Category: 2

Chester Street is a residential street that should include sidewalk on at least one side of the street. This segment is similar to Barron Street in that there is parking on the west side only, however, there is existing curb and gutter, and the terrain is more challenging. There are utility poles and mature trees on the west side of the street, therefore, sidewalk should be installed on the east side of the road.

There would be minor impacts to existing landscaping walls and other minor grading impacts. Additional impacts to shrubs would also be needed. Resident outreach should be done before the proposed sidewalk is finalized. Minor right of way impacts may also be needed.

14. Glenside Drive

From: Carroll Avenue (MD 195) to Prospect Street

Improvement Type: Reconstruction of Driveway Aprons, Construction of New Curb Ramps, Construction of New Sidewalks

Priority Ranking: 3.1 Time Frame: Mid-term Cost Category: 3

This section of Glenside Drive is a residential street that should include sidewalk on at least one side of the street. In the existing condition parking is only allowed on the west side of the street. Either side of the street appears to be viable for sidewalk. This should be determined based on further study and public outreach. This improvement would increase connectivity to the Long Branch Trail, which has a connection from Prospect Street. The existing roadway is an open section. Adding sidewalk would include curb and gutter set along the existing edge of road, curb ramps, driveway aprons, and storm drain improvements.

Impacts to nearby utility poles should be minimized by bumping the sidewalk around as needed. Additional impacts to shrubs would also be needed. Changes to parking configurations will be needed depending on which side of the street sidewalks are added to. Minor right of way impacts may also be needed.

15. Kirklynn Avenue

From: Glenside Drive to Wildwood Avenue

Improvement Type: Reconstruction of Driveway Aprons, Construction of New Curb Ramps, Construction of New Sidewalks

Priority Ranking: 2.5 Time Frame: Mid-term Cost Category: 2

Kirklynn Avenue is a residential street that should include sidewalk on at least one side of the street. This street will become one of the most direct pedestrian links to the Purple Line station. There is existing sidewalk between Wildwood Avenue and New Hampshire Blvd (MD 650). New sidewalk should be constructed along the south side to complete this link. This improvement would increase connectivity to the proposed Purple Line, New Hampshire Gardens neighborhood, as well as the neighborhood west of the Long Branch stream valley, which would be connected via the crossing at Glenside Drive and Jackson Drive. The existing roadway is an open section from Glenside Drive to Barron Street, and closed section from Barron Street to Chester Street. Adding sidewalk would include curb ramps and driveway aprons.

This would be a challenging improvement, as there would be impacts to some combination of utility poles, parking, shrubs, and trees. Minor right of way impacts may also be needed. Public outreach should be performed.

16. Hammond Avenue

From: Holton Lane to Kirklynn Avenue

Improvement Type: Reconstruction of driveway aprons, Construction of New Curb ramps, Construction of New Sidewalks

Priority Ranking: 3.1 Time Frame: Mid-term Cost Category: 2

This segment of Hammond Avenue is a residential street that should include sidewalk on at least one side of the street, preferably the east side of the street. The roadway is within the ¼ mile boundary. The existing typical section is a closed section with parking on both sides. Traffic operations are two-way between Holton Lane and Jackson Avenue. Between Jackson Avenue and Kirklynn Avenue, traffic is one-way northbound.

Several trees along the north half of the block should be protected by using flexi-pave, pneumatic excavation, and other protective measures to mitigate impacts. Several driveway aprons will need to be reconstructed. Utility impacts should be avoidable. Resident outreach should be done before the proposed sidewalk design is finalized.

17. Prospect Street

From: Glenside Drive to Chester Street

Improvement Type: Reconstruction of Driveway Aprons, Construction of New Curb Ramps, Construction of New Sidewalks

Priority Ranking: 2.8 Time Frame: Mid-term Cost Category: 2

Prospect Street is a residential street that should include sidewalk on at least one side of the street. Either side of the street appears to be viable for sidewalk. This should be determined based on further study and public outreach along with proposed sidewalks along Glenside Drive, Barron Street, and Chester Street. This improvement would increase connectivity to the proposed Purple Line, as well as the Long Branch Trail. The existing roadway is an open section from Glenside Drive to Barron Street, and closed section from Barron Street to Chester Street. Adding sidewalk would include curb and gutter set along the existing edge of road, curb ramps, driveway aprons, and storm drain improvements.

Impacts to nearby utility poles and street trees should be minimized by bumping the sidewalk around as needed. Minor right of way impacts may also be needed.

FIGURE 13-12a
TAKOMA/LANGLEY TRANSIT CENTER STATION
AREA-WIDE IMPROVEMENTS

N

LEGEND

- TAKOMA/LANGLEY TRANSIT CENTER STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS

PROPOSED IMPROVEMENTS

- RECONSTRUCT SHARED USE PATH
- INSTALL ADDITIONAL SIGNING

APS/CPS

- INSTALL APS/CPS
- REPAIR APS/CPS

SIDEWALK

- NON-COMPLIANT DRIVEWAY APRON
- RECONSTRUCT SIDEWALK
- SIDEWALK OBSTRUCTION
- NON-COMPLIANT WIDTH
- NON-COMPLIANT SLOPE
- INSTALL SAFETY RAILING
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY
- TAKOMA PARK CITY BOUNDARY
- MONTGOMERY COUNTY BOUNDARY

MERRIMAC DRIVE
PROSPECT STREET
CHESTER STREET
BARRON STREET
LONG BRANCH PARKWAY
GLENSIDE
COLE AVENUE
GARLAND AVENUE
DRIVE
KIRKLYNN AVENUE
JACKSON AVENUE
MINTER PLACE
HAVERFORD ROAD
MERWOOD DRIVE
LANCASTER ROAD
KINGWOOD DRIVE
HOLTON LANE
HOLTON LANE
WILDWOOD DRIVE
LOCKNEY AVENUE
KENNEWICK AVENUE
CARROLL AVENUE (MD 195)
HAMMOND AVENUE
UNIVERSITY BOULEVARD (MD 193)
ANNE ST STREET
HAMMOND AVENUE
NEW HAMPSHIRE AVENUE (MD 650)
MONTGOMERY COUNTY BOUNDARY
MONTGOMERY COUNTY BOUNDARY

0 0.05 0.1 0.2 0.3 0.4 Miles

FIGURE 13-12b
TAKOMA/LANGLEY TRANSIT CENTER STATION
AREA-WIDE IMPROVEMENTS

N

MERRIMAC DRIVE
PROSPECT STREET
CHESTER STREET
BARRON STREET
LONG BRANCH PARKWAY
GLENSIDE DRIVE
COLE AVENUE
WILDWOOD DRIVE
LOCKNEY AVENUE
KENNEWICK AVENUE
GARLAND AVENUE
KIRKLYNN AVENUE
JACKSON AVENUE
HAMMOND AVENUE
NEW HAMPSHIRE AVENUE (MD 650)
HOLTON LANE
MINTER PLACE
KINGWOOD DRIVE
LANCASTER ROAD
MERWOOD DRIVE
HAVERFORD ROAD
CARROLL AVENUE (MD 195)
HAMMOND AVENUE
UNIVERSITY BOULEVARD (MD 193)
ANNE T STREET
MONTGOMERY COUNTY BOUNDARY
MONTGOMERY COUNTY BOUNDARY

LEGEND

- TAKOMA/LANGLEY TRANSIT CENTER STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS

PROPOSED IMPROVEMENTS

- STRIPE CROSSWALK

CURB RAMP

- CONSTRUCT CURB RAMP
- RECONSTRUCT CURB RAMP
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY
- TAKOMA PARK CITY BOUNDARY
- MONTGOMERY COUNTY BOUNDARY

0 0.05 0.1 0.2 0.3 0.4 Miles

FIGURE 13-13
TAKOMA/LANGLEY TRANSIT CENTER STATION
PROPOSED PEDESTRIAN IMPROVEMENTS

N

MERRIMAC DRIVE
PROSPECT STREET
CHESTER STREET
BARRON STREET
GLENSIDE DRIVE
LONG BRANCH PARKWAY
CARROLL AVENUE (MD 195)
HAMMOND AVENUE
UNIVERSITY BOULEVARD (MD 193)
ANNE T STREET
KENNEWICK AVENUE
LOCKNEY AVENUE
WILDWOOD DRIVE
COLE AVENUE
GLENSIDE DRIVE
KIRKLYNN AVENUE
JACKSON AVENUE
GARLAND AVENUE
HAMMOND AVENUE
NEW HAMPSHIRE AVENUE (MD 650)
HOLTON LANE
HOLTON LANE
KINGWOOD DRIVE
LANCASTER ROAD
MERWOOD DRIVE
MINTER PLACE
HAVERFORD ROAD
MONTGOMERY COUNTY BOUNDARY
MONTGOMERY COUNTY BOUNDARY

LEGEND

- TAKOMA/LANGLEY TRANSIT CENTER STATION
- PURPLE LINE
- PURPLE LINE PEDESTRIAN IMPROVEMENTS
- EXISTING SIDEWALKS
- EXISTING SHARED USE PATH

PROPOSED IMPROVEMENTS

- SIDEWALK
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY
- TAKOMA PARK CITY BOUNDARY
- MONTGOMERY COUNTY BOUNDARY

0 0.05 0.1 0.2 0.3 0.4 Miles

Table 13-4 - Pedestrian Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE: Reconstruction of Curb Ramps	Reconstruction of Existing Sidewalks	Reconstruction of Driveway Aprons	Removal of Sidewalk Obstructions	Widening of Non-Compliant Sidewalk Widths	Reconstruction of Sidewalks with Non-Compliant Slopes	Reconstruction of Mid-Block Crossings	Striping of Crosswalks	Signal Upgrades to APS/CPS	Construction of New Curb Ramps	Construction of New Sidewalks	Installation of Additional Signing	Construction of Curb Extensions	Construction of Mid-Block Crossings	Construction of Median Refuge	Installation of New APS/CPS	Other	BENEFITS	Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score	IMPACTS	Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
Area-wide Improvements																																	
1	ADA Upgrades to Existing Sidewalks	MDOT SHA/ MCDOT	●	●		●	●	●													2	3	5	1	11		3	3	2	3	11	2	1	2.0
2	ADA Upgrades to Existing Driveway Aprons	MDOT SHA/ MCDOT			●																2	3	5	1	11		2	2	2	3	9	2	1	2.4
3	ADA Upgrades to Existing Intersections	MDOT SHA/ MCDOT							●												2	4	5	1	12		3	3	2	2	10	2	1	2.4
4	Upgrades to APS/CPS	MDOT SHA/ MCDOT								●											2	4	5	1	12		2	2	1	2	7	2	1	3.4
New Hampshire Avenue																																	
5	Kingwood Drive to University Boulevard (MD 193)	MDOT SHA	●	●		●				●						●				Repair APS/CPS; Intersection Safety Imp.	5	5	5	1	16		3	2	1	3	9	2	1	3.6
Carroll Avenue (MD 195)																																	
6	Garland Avenue to University Boulevard (MD 193)	MDOT SHA	●	●	●	●				●	●	●	●	●							5	5	5	1	16		2	3	1	3	9	1	2	3.6
Holton Lane																																	
7	Wildwood Drive to County Boundary	MCDOT	●		●	●														Repair APS/ CPS	3	2	4	1	10		2	1	1	2	6	2	1	3.3
New Hampshire Avenue (MD 650)																																	
8	Glenside Drive to Kingwood Drive	MDOT SHA	●	●		●				●	●									Intersection Safety Imp.	3	5	5	1	14		2	2	1	3	8	1	1	1.8
Long Branch Parkway																																	
9	Carroll Avenue (MD 195) to Patterson Court	MCDOT			●							●	●								5	3	5	1	14		2	1	1	2	6	1	2	4.7
Barron Street																																	
10	Carroll Avenue (MD 195) to Prospect Street	MCDOT			●							●	●								5	3	5	1	14		2	2	2	3	9	1	1	1.6
Anne Street																																	
11	Wildwood Drive to University Boulevard (MD 193)	MCDOT				●															1	2	5	1	9		1	1	1	1	4	2	1	4.5
Hammond Avenue/Lockney Avenue																																	
12	Anne Street to Merrimac Drive	MCDOT			●					●		●	●								5	3	5	1	14		2	2	2	2	8	2	1	3.5
Chester Street																																	
13	Carroll Avenue (MD 195) to Prospect Street	MCDOT			●							●	●								5	3	5	1	14		2	2	2	2	8	1	1	1.8

$$Priority\ Ranking = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

Table 13-4 - Pedestrian Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE	Reconstruction of Curb Ramps	Reconstruction of Existing Sidewalks	Reconstruction of Driveway Aprons	Removal of Sidewalk Obstructions	Widening of Non-Compliant Sidewalk Widths	Reconstruction of Sidewalks with Non-Compliant Slopes	Reconstruction of Mid-Block Crossings	Striping of Crosswalks	Signal Upgrades to APS/CPS	Construction of New Curb Ramps	Construction of New Sidewalks	Installation of Additional Signing	Construction of Curb Extensions	Construction of Mid-Block Crossings	Construction of Median Refuge	Installation of New APS/CPS	Other	BENEFITS	Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score	IMPACTS	Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
Glenside Drive																																	
14	Carroll Avenue (MD 195) to Prospect Street	MCDOT			●						●	●										5	3	5	1	14		2	2	2	3	9	1	2	3.1
Kirklynn Avenue																																	
15	Glenside Drive to Wildwood Drive	MCDOT			●						●	●										5	3	5	1	14		3	2	2	2	9	2	1	3.1
Hammond Avenue																																	
16	Holton Lane to Kirklynn Avenue	MCDOT			●						●	●										5	3	5	1	14		3	2	2	2	9	2	1	3.1
Prospect Street																																	
17	Glenside Drive to Chester Street	MCDOT			●						●	●										5	3	5	1	14		3	2	2	2	9	1	2	3.1

$$Priority\ Ranking\ = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

13.3.2 Proposed Bikeway Improvements

As discussed in Section 13.1.2, existing bicycle facilities are largely minimal in this study area. Additional bicycle network improvements will improve safety, connectivity, and access to the Takoma/Langley Transit Center station. The goal of bikeway improvements is to provide contiguous bike facilities to reach the proposed Purple Line station and other nearby destinations. The Takoma/Langley Station BiPPA has been evaluated for several types of cyclist improvements. The recommended improvements are consistent with the recommendations from the Montgomery County Bikeways Master Plan.

See Figure 13-14 for a map of the proposed bikeway improvements. The benefits, impacts, and equity factor for each improvement were analyzed based on the criteria outlined in Section 2.8 of this report. A summary of improvements by street and their priority rankings can be found in Table 13-5. The County should consider the higher ranked bicycle facilities as more critical than the lower ranked bike facilities.

1. Area-wide Improvements to Signing

Improvement Type: Bicycle Route / Wayfinding Signing

Priority Ranking: 3.2 Time Frame: Short-term Cost Category: 1

There is existing bicycle route signing throughout the area. The signing should be updated to include directions and distance to the Purple Line station.

2. Anne Street

From: Wildwood Drive to University Boulevard (MD 193)

Improvement Type: Sharrow

Priority Ranking: 2.8 Time Frame: Short-term Cost Category: 1

This segment of Anne Street is within the ¼ mile boundary and connects the New Hampshire Gardens to University Boulevard (MD 193) and the Purple Line. Its current configuration has a 4-foot sidewalk on the south side of the street for its entire length, includes parking along the curb in each direction, and one travel lane in each direction. Sharrow markings are recommended to reinforce the bicycle route signing and messaging to drivers that the road is shared. Sharrow markings should be set in the middle of travel lanes (minimum 11-ft from face of curb where adjacent to parking) and 4-ft from face of curb where there is no parking. Installation of the sharrow markings would not have any impacts.

3. Holton Lane

From: Wildwood Drive to New Hampshire Avenue (MD 650)

Improvement Type: Sharrow

Priority Ranking: 2.8 Time Frame: Short-term Cost Category: 1

This segment of Holton Lane connects the residential area of the BiPPA to New Hampshire Avenue (MD 650). Its current configuration has a 4-foot sidewalk on the south/west side of the street for its length, includes parking along the curb in each direction, and one travel lane in each direction. Sharrow markings are recommended to reinforce the bicycle route signing and messaging to drivers that the roads are shared. Sharrow markings should be set in the middle of travel lanes (minimum 11-ft from face of curb where adjacent to parking) and 4-ft from face of curb where there is no parking. Installation of the sharrow markings would not have any impacts.

4. Long Branch Parkway

From: Carroll Avenue (MD 195) to BiPPA Boundary

Improvement Type: Sharrow

Priority Ranking: 2.8 Time Frame: Short-term Cost Category: 1

Long Branch Parkway connects to the Long Branch Trail from Carroll Avenue (MD 195). It has a 4-foot sidewalk on the west side of the street for half of its length, includes parking along both sides, and a single lane with alternating two-way traffic. The road has a terminus at the Long Branch Trail, so traffic volumes are very low. Sharrow markings are recommended to reinforce the bicycle route signing and wayfinding. Installation of the sharrow markings would not have any impacts to utilities, right-of-way, parking, or the environment.

5. Wildwood Drive

From: Carroll Avenue (MD 195) to Holton Lane

Improvement Type: Sharrow

Priority Ranking: 2.8 Time Frame: Short-term Cost Category: 1

This segment of Wildwood Drive is within the ¼ mile boundary but provides indirect connections to the Purple Line station by collecting bicyclists from points to the west and connecting with bicycle routes along Anne Street, Holton Lane, and Kirklynn Avenue. Wildwood Drive also has existing traffic calming features such as mini-traffic circles and speed humps. The existing typical section has a 4-foot sidewalk on the west side of the street for its length, includes parking on both sides, and two-way traffic. Sharrow markings are recommended to reinforce the bicycle route signing and messaging to drivers that the road is shared. Installation of the sharrow markings would not have any impacts.

6. Kirklynn Avenue

From: Glenside Drive to New Hampshire Avenue (MD 650)

Improvement Type: Sharrow / Signage

Priority Ranking: 3.2 Time Frame: Short-term Cost Category: 1

Although Kirklynn Avenue is not currently designated in the Montgomery County Bicycle Master Plan, the City of Takoma Park does designate it as a bicycle route. This road will provide a nearly direct route to the Purple Line station from the New Hampshire Gardens neighborhood, so bicyclists will likely use it. There is also an existing connection across the Long Branch stream valley at Jackson Avenue that should connect points to the west of the stream valley. Bicyclists can connect with the stream valley crossing from Kirklynn Avenue via Glenside Drive. Sharrow markings and bike route signage should be installed. There would be no impacts with this improvement.

7. Carroll Avenue (MD 195)

From: BiPPA Boundary to Long Branch Parkway

Improvement Type: Signage

Priority Ranking: 2.3 Time Frame: Short-term Cost Category: 1

Carroll Avenue (MD 195) is a state road and therefore subject to state requirements. Its current configuration is a closed section with 5-foot sidewalks on both sides of the roadway, one travel lane in each direction, and no shoulders. The posted speed is 30 mph and the AADT is 12,450. Although MDOT SHA permits sharrows on roads with posted speeds of 35 mph or less, it does not allow sharrows on travel lanes less than 13 feet wide, so sharrows are not recommended. There is an existing "SHARE THE ROAD" sign assembly on the southbound side of the road. The same sign assembly should be added to the northbound side. A consideration should be given to supplementing this signing with "BICYCLISTS MAY USE FULL LANE" to encourage cooperation from motorists. This segment connects with existing and proposed facilities to the northeast along Carroll Avenue (MD 195), Long Branch Parkway, and Glenside Drive. Additional signing would not have any impacts.

8. Carroll Avenue (MD 195)

From: Merrimac Drive to University Boulevard (MD 193)

Improvement Type: Separated Bike Lanes

Priority Ranking: 2.4 Time Frame: Mid-term Cost Category: 3

Carroll Avenue (MD 195) is state-owned and maintained and is part of a proposed bicycle network that will connect to bike lanes along University Boulevard (MD 193) that will be built with the Purple Line, proposed separated bicycle lanes along the county-maintained segment of Carroll Avenue on the opposite side of MD 193, and existing bike lanes/shared lanes to the south along MD 195. Its existing configuration has 5-foot sidewalks on the west side of the roadway, a left-turn lane, and one travel lane in each direction. Due to the intersection skew at MD 193, there is a separate right-turn ramp. Separated bike lanes are recommended to provide an important connection for bicyclists that is well connected from the busy traffic conditions at the intersection of MD 195 and MD 193. Installation of separated bike lanes should be coordinated with the proposed sidewalk on the east side of the road. Impacts may include utilities, parking, and street trees. An MDOT SHA approved traffic impact study and signal design at the intersection of MD 195 and MD 193 would need to be conducted to support the installation of separated bike lanes. These impacts would need to be further evaluated during design and coordinated with adjacent improvements.

9. Holton Lane

From: New Hampshire Avenue (MD 650) to BiPPA Boundary

Improvement Type: Separated Bike Lanes

Priority Ranking: 2.4 Time Frame: Long-term Cost Category: 2

This segment of Holton Lane east of New Hampshire Avenue (MD 650) connects with a shopping center and to Prince George's County. The existing typical section includes sidewalks on both sides of the street, on-street parking on both sides of the street, and one travel lane in each direction. Separated bike lanes are recommended at this location to improve bicycle connectivity and safety. This improvement also falls within the ¼ mile boundary. If there is not enough width within the existing roadway, bike lanes with no buffer should be considered instead. However, this improvement is not a high priority until a bicycle facility is installed along MD 650 or redevelopment of the adjacent properties occurs. Installation of separated bike lanes would likely impact parking on one side of the street and reduce lane widths. An MDOT SHA traffic impact study and signal design would be needed at the intersection with MD 650 as well. These impacts would need to be further evaluated during design.

10. New Hampshire Avenue (MD 650)

From: Kingwood Drive to University Boulevard (MD 193)

Improvement Type: Separated Bike Lanes

Priority Ranking: 1.5 Time Frame: Long-term Cost Category: 5

This segment of New Hampshire Avenue (MD 650) is state-owned and maintained. The posted speed is 35 mph with 35,000 – 40,000 vehicles per day, MD 650 is a major arterial. There are no existing bicycle facilities, however, a new bicycle facility that connects with Sligo Creek Trail to the south would be highly desirable. Although desirable, extensive right of way acquisition, private redevelopment of the frontage, and/or utility impacts would be needed to incorporate separated bike lanes into the typical section. The existing typical section has 5-foot sidewalks on both sides of the roadway, and three travel lanes in each direction. Separated bike lanes are recommended in the long-term to provide designated space for cyclists. Installation of separated bike lanes would have significant impacts to utilities, right-of-way, parking, and street trees. An MDOT SHA approved traffic impact study and access permit would be needed to support the installation of separated bike lanes. These impacts would need to be further evaluated during design.

11. Anne Street

From: Glenside Drive to Wildwood Drive

Improvement Type: Sharrow

Priority Ranking: 1.4 Time Frame: Short-term Cost Category: 1

This segment of Anne Street is within the ½ mile boundary and connects the New Hampshire Gardens to University Boulevard (MD 193) and the Purple Line. Its current configuration has a 4-foot sidewalk on the south side of the street for its entire length, includes parking along the curb in each direction, and one travel lane in each direction. Sharrow markings are recommended to reinforce the bicycle route signing and messaging to drivers that the road is shared. Sharrow markings should be set in the middle of travel lanes (minimum 11-ft from face of curb where adjacent to parking) and 4-ft from face of curb where there is no parking. Installation of the sharrow markings would not have any impacts.

12. Glenside Drive

From: New Hampshire Avenue (MD 650) to Carroll Avenue (MD 195)

Improvement Type: Sharrow

Priority Ranking: 1.4 Time Frame: Short-term Cost Category: 1

Glenside Drive is entirely within the ½ mile boundary but provides indirect connections to the Purple Line station by collecting bicyclists from points to the west and connecting with bicycle routes along Anne Street and Kirklynn Avenue. The existing typical section includes a recently constructed 4-foot sidewalk on the east side of the street for most of its length, on-street parking in each direction, and two-way traffic. Glenside Drive is an important connection between the Sligo Creek Trail to the south and Long Branch Trail to the north, as M-NCPPC does not intend to extend the Long Branch Trail south through the stream valley from Long Branch Parkway. Sharrow markings are recommended to supplement the bicycle route signing and assist with wayfinding between the Sligo Creek Trail and Long Branch Trail. Sharrow markings should be set in the middle of travel lanes (minimum 11-ft from face of curb where adjacent to parking) and 4-ft from face of curb where there is no parking. Installation of the sharrow markings would not have any impacts.

13. Wildwood Drive

From: Glenside Drive to Holton Lane

Improvement Type: Sharrow

Priority Ranking: 1.4 Time Frame: Short-term Cost Category: 1

This segment of Wildwood Drive is within the ½ mile boundary but provides indirect connections to the Purple Line station by collecting bicyclists from points to the west and connecting with bicycle routes along Anne Street, Holton Lane, and Kirklynn Avenue. Wildwood Drive also has existing traffic calming features such as mini-traffic circles and speed humps. The existing typical section has a 4-foot sidewalk on the west side of the street for its entire length, includes parking on both sides, and two-way traffic. Sharrow markings are recommended to reinforce the bicycle route signing and messaging to drivers that the road is shared. Installation of the sharrow markings would not have any impacts.

14. New Hampshire Avenue (MD 650)

From: BiPPA Boundary to Kingwood Drive

Improvement Type: Separated Bike Lanes

Priority Ranking: 0.8 Time Frame: Long-term Cost Category: 5

This segment of New Hampshire Avenue (MD 650) is state-owned and maintained. There are no existing bicycle facilities, however, a new bicycle facility that connects with Sligo Creek Trail to the south would be highly desirable. Although desirable, extensive right of way acquisition, private redevelopment of the frontage, and/or utility impacts would be needed to incorporate separated bike lanes into the typical section. The existing typical section has 5-foot sidewalks on both sides of the roadway, and three travel lanes in each direction. Separated bike lanes are recommended in the long-term to provide designated space for bicyclists. Installation of separated bike lanes would have significant impacts to utilities, right-of-way, parking, and street trees. An MDOT SHA approved traffic impact study and access permit would be needed to support the installation of separated bike lanes. These impacts would need to be further evaluated during design.

FIGURE 13-14
TAKOMA/LANGLEY TRANSIT CENTER STATION
PROPOSED BIKEWAY IMPROVEMENTS

N

MERRIMAC DRIVE
PROSPECT STREET
CHESTER STREET
BARRON STREET
LONG BRANCH PARKWAY
CARROLL AVENUE (MD 195)
UNIVERSITY BOULEVARD (MD 193)
HAMMOND AVENUE
ANNE S STREET
KENNEWICK AVENUE
LOCKNEY AVENUE
WILDWOOD DRIVE
COLE AVENUE
GLENSIDE DRIVE
KIRKLYNN AVENUE
JACKSON AVENUE
GARLAND AVENUE
HAMMOND AVENUE
NEW HAMPSHIRE AVENUE (MD 650)
HOLTON LANE
HOLTON LANE
MINTER PLACE
KINGWOOD DRIVE
LANCASTER ROAD
MERWOOD DRIVE
HAVERFORD ROAD
MONTGOMERY COUNTY BOUNDARY
MONTGOMERY COUNTY BOUNDARY

LEGEND

- TAKOMA/LANGLEY TRANSIT CENTER STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS
- EXISTING SHARED USE PATH

PROPOSED IMPROVEMENTS

- CYCLE TRACK
- SEPARATED BIKE LANES
- SHARROW
- STRIPED BIKE LANES
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY
- TAKOMA PARK CITY BOUNDARY
- MONTGOMERY COUNTY BOUNDARY

0 0.05 0.1 0.2 0.3 0.4 Miles

Table 13-5 - Bikeways Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE							BENEFITS						IMPACTS									
			Sharrow	Cycle Track	Separated Bike Lanes	Striped Bike Lanes	Shared-Use Paths	Other		Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score		Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
Area-wide Improvements to Signing																									
1	Bike Route / Wayfinding Signing	MCDOT	●							3	2	2	1	8		1	2	1	1	5	2	1	3.2
Anne Street																									
2	Wildwood Drive to University Boulevard (MD 193)	MCDOT	●							3	2	1	1	7		1	2	1	1	5	2	1	2.8
Holton Lane																									
3	Wildwood Drive to New Hampshire Avenue (MD 650)	MCDOT	●							3	2	1	1	7		1	2	1	1	5	2	1	2.8
Long Branch Parkway																									
4	Carroll Avenue (MD 195) to BiPPA Boundary	MCDOT	●							3	2	1	1	7		1	2	1	1	5	1	2	2.8
Wildwood Drive																									
5	Carroll Avenue (MD 195) to Holton Lane	MCDOT	●							3	2	1	1	7		1	2	1	1	5	2	1	2.8
Kirklynn Avenue																									
6	Glenside Drive to New Hampshire Avenue (MD 650)	MCDOT	●					Signage		3	2	2	1	8		1	2	1	1	5	2	1	3.2
Carroll Avenue (MD 195)																									
7	BiPPA Boundary to Long Branch Parkway	MDOT SHA						Signage		3	2	1	1	7		1	3	1	1	6	1	2	2.3
8	Merrimac Drive to University Boulevard (MD 193)	MDOT SHA			●					5	5	1	1	12		3	3	1	3	10	1	2	2.4
Holton Lane																									
9	New Hampshire Avenue (MD 650) to BiPPA Boundary	MCDOT			●					5	4	1	1	11		3	3	1	2	9	2	1	2.4
New Hampshire Avenue (MD 650)																									
10	Kingwood Drive to University Boulevard (MD 193)	MCDOT			●					5	5	1	1	12		5	4	2	5	16	2	1	1.5

$$Priority\ Ranking = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

Table 13-5 - Bikeways Ranking Table

PROJECT ID NO.	LOCATION	JURISDICTION	IMPROVEMENT TYPE						BENEFITS						IMPACTS									
			Sharrow	Cycle Track	Separated Bike Lanes	Striped Bike Lanes	Shared-Use Paths	Other		Connectivity	Safety	Accessibility	Number of Users Served	Total Benefits Score		Utility / Right-of-Way	Traffic / Transit / Parking	Environmental	Cost	Total Impacts Score	Proximity Factor	Equity Factor	PRIORITY RANKING
Anne Street																								
11	Glenside Drive to Wildwood Drive	MCDOT	●							3	2	1	1	7		1	2	1	1	5	1	1	1.4
Glenside Drive																								
12	New Hampshire Avenue (MD 650) to Carroll Drive (MD 195)	MCDOT	●							3	2	1	1	7		1	2	1	1	5	1	1	1.4
Wildwood Drive																								
13	Glenside Drive to Holton Lane	MCDOT	●							3	2	1	1	7		1	2	1	1	5	1	1	1.4
New Hampshire Avenue (MD 650)																								
14	BiPPA Boundary to Kingwood Drive	MCDOT			●					5	5	1	1	12		5	3	2	5	15	1	1	0.8

$$Priority\ Ranking\ = \frac{Benefits}{(Impacts\ and\ Cost)}\ x\ Proximity\ Factor\ x\ Equity\ Factor$$

13.3.3 Maintenance

Landscape maintenance improvements, such as tree and hedge trimming, are an inexpensive way to increase pedestrian comfort and aesthetic value. A map of these items has been included in Figure 13-17 Takoma/Langley Transit Center Station Maintenance.



Figure 13-15 Overgrown grass provide horizontal and vertical obstructions in the sidewalk.



Figure 13-16 Low hanging tree branches creating overhead obstructions.

FIGURE 13-17
TAKOMA/LANGLEY TRANSIT CENTER STATION MAINTENANCE IMPROVEMENTS

N

MERRIMAC DRIVE
PROSPECT STREET
CHESTER STREET
BARRON STREET
LONG BRANCH PARKWAY
CARROLL AVENUE (MD 195)
UNIVERSITY BOULEVARD (MD 193)
HAMMOND AVENUE
ANNE ST
KENNEWICK AVENUE
LOCKNEY AVENUE
WILDWOOD DRIVE
GLENSIDE DRIVE
COLE AVENUE
KIRKLYNN AVENUE
JACKSON AVENUE
GARLAND AVENUE
MINTER PLACE
HOLTON LANE
KINGWOOD DRIVE
LANCASTER ROAD
MERWOOD DRIVE
HAVERFORD ROAD
NEW HAMPSHIRE AVENUE (MD 650)
MONTGOMERY COUNTY BOUNDARY

LEGEND

- TAKOMA/LANGLEY TRANSIT CENTER STATION
- PURPLE LINE
- PURPLE LINE IMPROVEMENTS

PROPOSED IMPROVEMENTS

- LANDSCAPE MAINTENANCE
- QUARTER MILE BOUNDARY
- HALF MILE BOUNDARY
- TAKOMA PARK CITY BOUNDARY
- MONTGOMERY COUNTY BOUNDARY

0 0.05 0.1 0.2 0.3 0.4 Miles

13.4 Final Recommendations

The Takoma/Langley Transit Center station BiPPA is primarily a residential area with two major commercial corridors. Existing sidewalks are prevalent and relatively continuous, but additional improvements can be made to enhance connectivity, accessibility, and safety. Although existing bicycle infrastructure is minimal, many of the bicycle routes are on low volume, residential streets, so the need for more robust facilities is not urgent. Establishing a bicycle facility along New Hampshire Avenue (MD 650) should be a long-term goal that anchors the network within this BiPPA. Implementing the improvements in this report can only further benefit the Takoma/Langley area by increasing pedestrian and bicyclist use, and increasing public safety, comfort, and health.

Completion of sidewalk gaps and ADA compliance should be the primary focus for this area to ensure all pedestrians have a safe, accessible path to their destination. The highest ranked improvements are Long Branch Parkway and Anne Street. Other pedestrian improvements that have a high ranking and should be prioritized include: Upgrade to APS/CPS signals, New Hampshire Avenue, Carroll Avenue, and Hammond Avenue.

The highest ranked bicycle improvements include area-wide bicycle route signing to incorporate wayfinding to/from the Purple Line station. Kirklynn Avenue is the second highest ranked bicycle improvement. Sharrows throughout the area would also help supplement the existing bicycle route signing and assist with wayfinding.

Two of the goals of the Takoma/Langley Crossroads Sector Plan are to: 1) provide safe and improved connectivity for pedestrians and cyclists, and 2) create an effective and efficient multi-modal transportation system that accommodates development. To accomplish these goals, planners and engineers will have to continue pushing to rebalance priorities to include pedestrians and bicycles as an equally important user of the right-of-way. The Takoma/Langley Crossroads area is heavily geared towards vehicular traffic, but along with the Purple Line, the implementation of the pedestrian and bicycle improvements proposed in this report would bring the area much closer to accomplishing these goals.