

Transportation/Land-Use Connections (TLC) Program

New Carrollton Interim Pedestrian Safety Improvements

Prince George's County, Maryland

June 2010

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Project No. 10525

June 2010



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Section 1
Introduction

Introduction

Through a grant from the Metropolitan Washington Council of Governments (MWCOG) Transportation/Land-Use Connections (TLC) Program, the Maryland-National Capital Park and Planning Commission (M-NCPPC) and Kittelson & Associates, Inc. (KAI) completed a study to develop recommendations for improving walking conditions in the vicinity of the New Carrollton rail station. The study evaluates the quality and adequacy of existing pedestrian infrastructure (e.g., sidewalks, crosswalks, traffic signals) and identifies locations for low-cost pedestrian safety improvements. This report summarizes the key components of that study:

- public participation process, including a project website to collect comments and a public meeting held within the study area;
- existing pedestrian facilities and challenges in the New Carrollton station area;
- potential pedestrian safety treatments, with descriptions and graphics, applicable to specific locations in the study area; and,
- a complete list of recommended pedestrian safety projects with cost estimates

RECOMMENDATIONS

Table 1 summarizes the recommended projects for high-priority pedestrian improvements that could be implemented in the near-term, depending on available funding. Table 1 reflects “low-hanging fruit” (i.e., projects that provide high value for cost). While most of the projects listed in Table 1 are relatively low cost, several projects were included with significant costs because of the high anticipated benefits of these projects. The project list was developed based on project team observations of existing deficiencies and public feedback. Recommended projects include new pedestrian crossings, enhancements to existing pedestrian crossings, signal timing and design modifications, and other pedestrian amenities. The complete project list developed as part of this study is presented in **Section 4: Recommendations and Funding**.

Table 1 Interim, High Priority Recommended Pedestrian Safety Improvement Projects

No.	Location	Description	Type of Treatment	Cost Estimate	
				Low	High
1	Garden City Drive near Metro Station Entrance	Install new sign at existing mid-block crosswalk	In-Street "Stop for Pedestrians" Sign	\$300	\$600
2	Harkins Road at Metro Parking Driveway	Install sign in center of travelway on both side of the median	In-Street "Stop for Pedestrians" Signs	\$600	\$1,000
3	85 th Avenue from Annapolis Road to Harkins Road	Stripe bike lanes in existing shoulder	Striping	\$1,300	\$6,500
4	Harkins Road at W Lanham Drive	Extend existing median to provide refuge for pedestrians	Raised Median	\$1,200	\$2,000
5	Metro Station Entrance at Garden City Drive	Construct curb extension across station driveway	Curb Extension	\$1,200	\$2,000
6	Annapolis Road at Garrison Road	Tighten curb radius for EBRT on Annapolis Road	Reduced Curb Radii	\$2,500	\$4,000
7	Ellin Road at Metro Station Entrance	Install RRFB at existing crosswalk near the IRS bridge	Rectangular Rapid Flash Beacon	\$10,000	\$15,000
8	Ellin Road from Metro Station to Veterans Parkway	Install six new poles and lights	Lighting	\$60,000	\$90,000
9	Annapolis Road at Arehart Drive	Install HAWK signal at a mid-block crossing of Annapolis Road	Pedestrian Hybrid Signal	\$50,000	\$75,000
10	Harkins Road at W Lanham Drive	Ensure pedestrian buttons are functioning	Cycle Length Adjustments	minimal	
11	Ellin Road at Harkins Road	Confirm pedestrian phase meets standards for clearance time	Cycle Length Adjustments	minimal	
Total Cost				\$127,100	\$196,100

To implement the recommended projects presented in Table 1, near-term action items were developed. The following list summarizes several key action items needed associated with implementation of pedestrian safety improvements:

- Strategically pursue projects through capital improvements funding or grant funding for projects. In the case where grants, construction in conjunction with another roadway project, or a willing land owner make construction of any of the recommended projects possible, pursue funding sources for that project.
- Incrementally implement projects by constructing new pedestrian crossings, neighborhood paths, or other improvements with interim-design features first, then incrementally develop additional amenities as needed and as funding becomes available.
- Develop permitting and design for the recommended projects as soon as possible to ensure “shovel-ready” projects when funding becomes available.
- Work with other jurisdictions and agencies to encourage implementation.

The following sections of the report provide additional details regarding the study methodology, cost estimates, and recommendations of the study.

Section 2
Study Overview

Study Overview

The New Carrollton Interim Pedestrian Safety Improvements study evaluates the quality and adequacy of existing pedestrian infrastructure, and identifies locations for low-cost pedestrian safety improvements in the New Carrollton station area. While sidewalks are provided adjacent to most roadways near the station, there are occasional gaps and sidewalks frequently contain obstructions or narrow sections. In addition to evaluating existing sidewalk facilities, this study identifies locations lacking adequate pedestrian crossings or other pedestrian amenities. The study area is roughly a ½ mile radius, or ten-minute walking distance, from the New Carrollton Metro Station. Figure 1 shows the approximate study area.

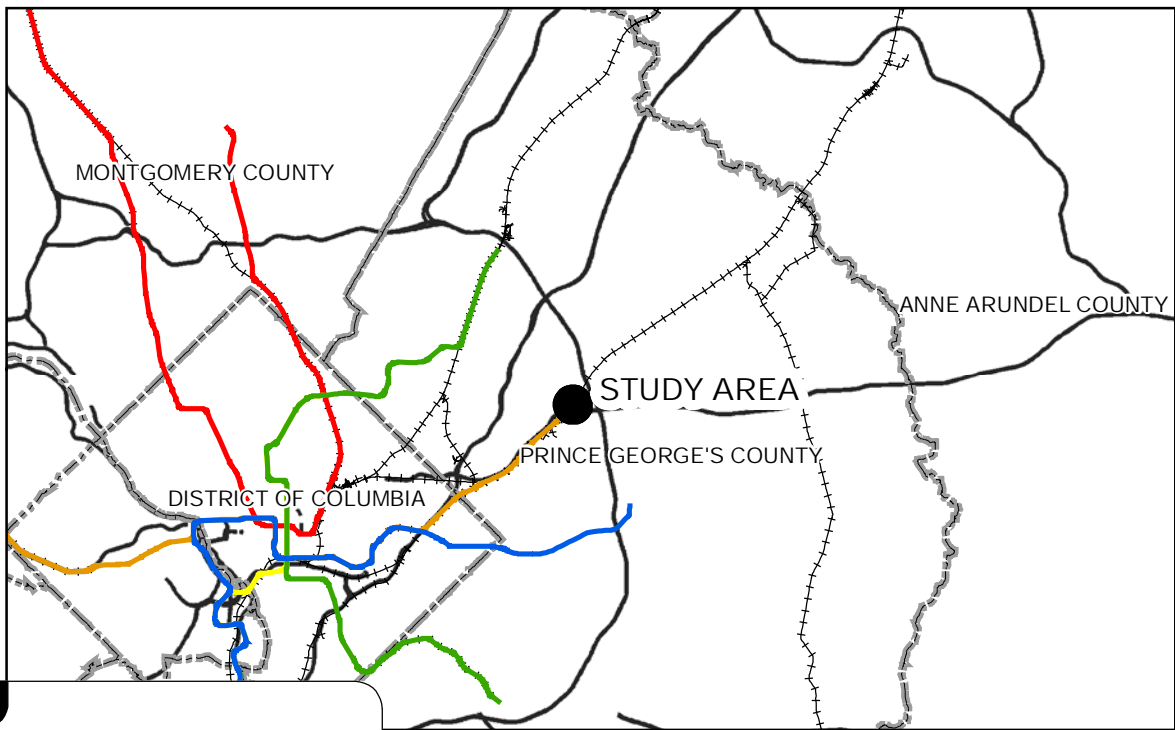
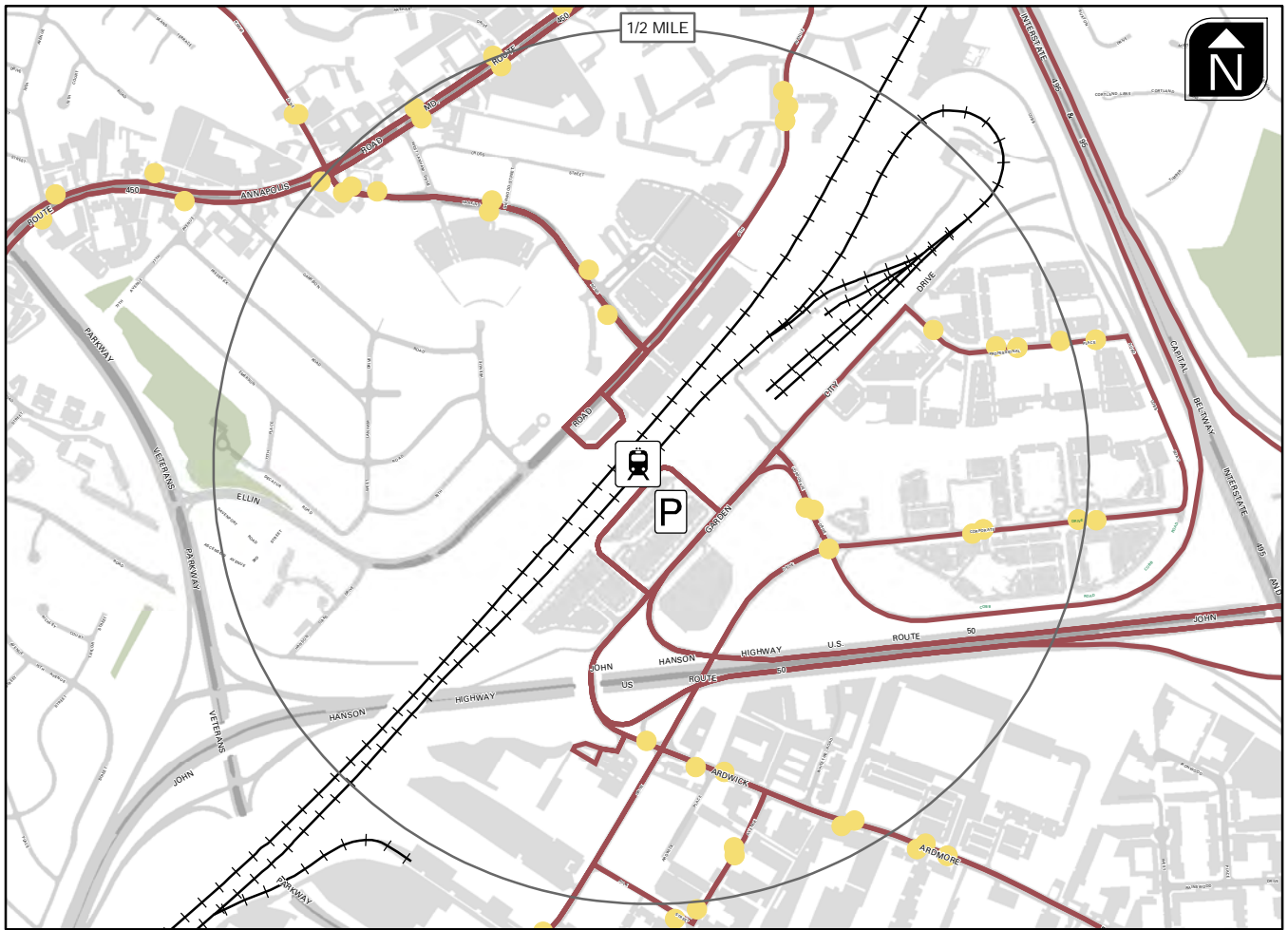
This plan provides recommendations for improving the pedestrian environment around the New Carrollton rail station, with an emphasis on low-cost, near-term improvements. Recommendations include pedestrian crossing improvements, signal timing changes, and new facilities for pedestrian comfort and convenience.

STUDY PROCESS

The study began in December 2009 through engagements with stakeholders in the study area. M-NCPPC, stakeholder groups, and New Carrollton residents helped guide this study. During the data collection phase of the project, a website was created where residents could map existing pedestrian deficiencies and identify locations for improvements. While the public comment feature of the website is now closed, the comments received during the project are still available for viewing. The website can be accessed at <http://map.project.kittelson.com/carrollton>.

In addition to the website, public outreach occurred through an open house held on March 25th at the West Lanham Hills Neighborhood Recreation Center, which is located less than ½ mile from the station. The workshop allowed local residents and other interested members of the community to express concerns and ideas for improvements. The planning process also included meetings with other agency stakeholders that may be responsible or interested in various aspects of the study's recommendations. In particular, stakeholder outreach included staff from the Maryland State Highway Administration (SHA), Prince George's County Department of Public Works and Transportation (DPW&T), and Washington Metropolitan Area Transit Authority (WMATA).

In addition, the project team conducted field visits to the New Carrollton station area in the winter and spring of 2010 to document existing pedestrian facilities and opportunities for improvements. Historical crash data provided by SHA for the major roadways in the study area supplemented the information gathered from field visits.



LEGEND

- EXISTING BUS STOP
- EXISTING BUS ROUTE

SITE VICINITY MAP
NEW CARROLLTON, MARYLAND

FIGURE
1

H:\profile\10525 - Interim Pedestrian Safety Improvements\GIS\FIG01 - Site Vicinity Map.mxd

BACKGROUND

The primary existing land uses adjacent to the New Carrollton rail station are residential (single-family detached and garden apartment), institutional, and office. Annapolis Road (MD 450) includes several commercial destinations, and is roughly the northern boundary of the study area. The Capital Beltway (I-95/I-495) and US 50 are grade-separated highways, with few pedestrian crossings, and form boundaries on the east and south sides of the study area. Veterans Parkway (MD 410) roughly bounds the station area to the west. Limited pedestrian and bicycle access across these roadways isolate New Carrollton station from the surrounding area, making it difficult to reach the station without a vehicle.

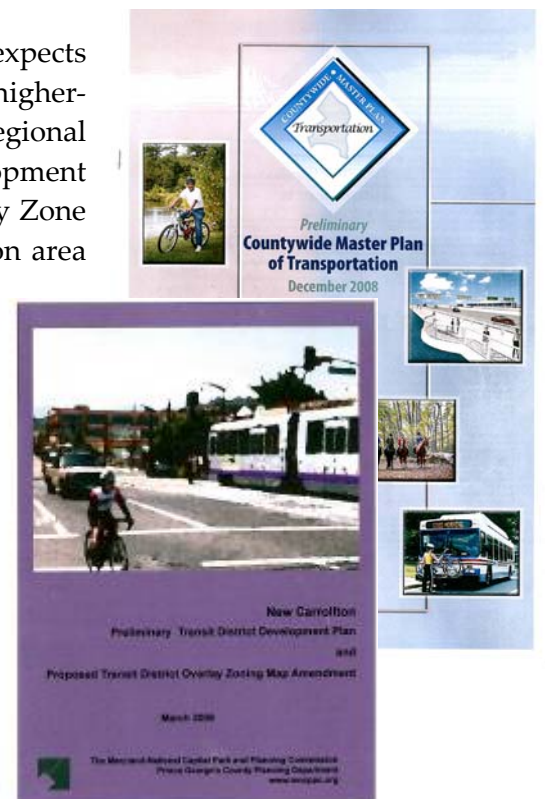
Within the study area, Ellin Road, Harkins Road, and Garden City Drive are four-lane streets with sidewalks on one or both sides of the roadway. With the exception of 85th Avenue (a two-lane collector facility that connects with Ellin Road), the remaining roadways are local streets with limited accesses to major roadways, and frequent dead-ends or T-intersections. Overall, while many of the streets within the study area include sidewalks and basic pedestrian amenities, the station area is primarily auto-oriented. As a result, improvements to pedestrian infrastructure are needed to support goals to develop a pedestrian-friendly, transit-oriented neighborhood.

Planning Context and Past Studies

The area surrounding the New Carrollton rail station expects significant growth over the next 20 years as a result of higher-density development attracted by the station's regional accessibility. The New Carrollton Transit District Development Plan (TDDP) and concepts for the Transit District Overlay Zone (TDOZ) envision significant transformations in the station area between 2010 and 2030. The vision of the plan includes up to 5,500 housing units, 6,100,000 square feet of office and retail space, and a complete transportation system for all users that allows access to a network of parks, institutions, and open spaces.

As part of expected growth near the station, the TDDP promotes a pedestrian focus around the "Metro Core," a mixed-use, medium to high-density commercial, retail, and residential area at the center of the TDOZ. This also includes improvements to the pedestrian environment, including landscaping, along major roads in the immediate area.

The alignment for the proposed Purple Line will introduce a new rail service to the area, further increasing the area's pedestrian activity and development potential. The proposed line will extend New Carrollton to Silver Spring and Bethesda,



Prince George's County Transportation Master Plan and New Carrollton Transit District and Zoning Plans

and include connections to the Red, Green, and Orange Metrorail lines. The line could open as soon as 2016.

As higher densities increase the demand for walking and biking, corresponding improvements to the transportation system are needed to support this demand. The Countywide Master Plan of Transportation provides the basic framework for transportation improvements within Prince George's County. In particular, it identifies principles for "complete streets" (i.e., streets that accommodate all modes within the transportation system and not just automobiles). These general principles are:

- a. Encourage medians as pedestrian refuge islands.
- b. Design turning radii to slow turning vehicles.
- c. Find wasted space and better utilize it.
- d. Time traffic signals to function for all modes.
- e. Reduce crossing distances.
- f. Increase crossing opportunities.
- g. Encourage pedestrian-scaled land use and urban design.
- h. Acknowledge that pedestrians will take the most direct route.
- i. Ensure universal accessibility.
- j. Pursue targeted education and enforcement efforts to reduce bicycle and motor vehicle crashes.

The project team used these principles to guide selection of the study recommendations.

Finally, the recently completed Central Annapolis Road Sector Plan provides an additional resource. While the boundaries of the Sector Plan are outside of the study area (the plan included sections of Annapolis Road to the west of Veteran's Parkway), it highlights the need for better connections to New Carrollton rail station and improved pedestrian safety along Annapolis Road and Veteran's Parkway. Of particular note for this study, public outreach associated with the Sector Plan identified the need for:

- more frequent and safer pedestrian crossings along Annapolis Road;
- improvements to the Veteran's Parkway/Annapolis Road intersection;
- pedestrian facilities along Veteran's Parkway; and,
- a trail connection between Ellin Road/Veteran's Parkway and Ardwick-Ardmore Road.

Transit Service

Metrobus, Prince George's County The Bus system, Metrorail, MARC (Maryland Area Rail Commuter), and Amtrak all provide service at New Carrollton station. An elevated platform in the

center of the station provides access to rail service, while two bus bays (West and East) provide locations for passengers to access Metrobus and The Bus service.



Metrobus heading to New Carrollton station, which is also served by Amtrak and Metrorail

Union Station, Baltimore Penn Station, and Perryville. Forty-three trains (22 southbound and 21 northbound) stop at the station on regular weekdays. Amtrak also operates thirteen daily trains through New Carrollton station, mainly along the Northeast Corridor.

Twenty-five bus routes serve the West-Side and East-Side Bus Bays at the station. Table 2 summarizes the destinations and headways (time between consecutive buses) for bus routes stopping at New Carrollton Station.

Metrorail, operated by WMATA, currently serves 710,000 riders daily on five lines connecting D.C. with parts of Northern Virginia, and Maryland. The Orange Line operates with high frequency during weekday morning and evening peak hours, with trains usually arriving every 2 to 4 minutes. During the middle of the day, trains operate with 6-minute headways, and in the evenings with 12- to 15- minute headways. Average weekday Metrorail boardings at New Carrollton total nearly 10,000.

Penn Line MARC trains, operated by the Maryland Transit Administration (MTA), provide service between Washington

Table 2 Destinations and Headways for Bus Routes Servicing New Carrollton Station

Route Number	Destination	Operator	Monday to Friday			Saturday	Sunday
			AM Peak	Midday	PM Peak	Day	Day
East Bus Bays							
B29	Crofton	Metro	2 trips	--	30	--	--
B31	Gateway Center	Metro	--	--	60**	--	--
B21	Bowie State University	Metro	30	70	--	--	--
B22	Bowie State University	Metro	--	30-70	30	--	--
C28	Pointer Ridge Dr	Metro	25-35	--	25-35	--	--
F14	Naylor Rd	Metro	30	50	32-40	50	--
F12	Cheverly	Metro	32-33	50-60	30-33	--	--
88	Laurel	Metro	--	--	3 trips	--	--
921	Navy Stadium	MTA	3 trips	1 trip	45	--	--
TB21	Equestrian Center	TB	30	60	30	--	--
TB21x	Prince George's Community College	TB	20	30	30	--	--
West Bus Bays							
84	Rhode Island Ave	Metro	20	60	21-25	60	60
B24	Bowie Park & Ride Lot	Metro	--	60•	30•	--	--
B25	Bowie Park & Ride Lot	Metro	35	60	30#	--	--
B27	Bowie State University	Metro	30	60@	30	--	--
F4	Silver Spring	Metro	4-15	40	15	30	30
F6	Silver Spring	Metro	20-35	40	--	--	--
R12	Deanwood	Metro	30	60	30	--	--
T16	Greenbelt	Metro	--	60	--	60	60*
T17	Greenbelt	Metro	25-30	--	30	--	--
F13	Washington Business Park	Metro	30	60	30	--	--
F13	Cheverly	Metro	30	60	30	--	--
T18	Rhode Island Ave	Metro	15-20	33	20	30	45
TB15x	Greenbelt	TB	80	--	80	--	--
TB16	Greenbelt	TB	40	60	40	--	--

Notes: ** 7:28 p.m. to 9:28 p.m. only
 • After 5 p.m.
 * 11:27 a.m. to 3:25 p.m. serves NASA Visitor Center
 # To 4:05 p.m.
 @ At 3:05 p.m., 6:05 to 9:05 p.m. only

As shown in Table 2, numerous buses stop at the New Carrollton station. Many bus routes are destined towards other Metrorail stations and have frequent service during the a.m. and p.m. peak hours.

Metroail Station Access

Significant numbers of Metrorail riders access New Carrollton station through all major transit access modes: walking, biking, driving, and transfers from other transit lines. There are 18 bike racks and 16 lockers at the New Carrollton station, over twenty-five connecting transit lines, and approximately 3,500 parking spaces. Metered surface parking spaces and garages are available; parking costs \$4.25 per day with a SmarTrip card. Riders can also be dropped off at Kiss ‘n’ Ride locations on both sides of the tracks. Finally, Zipcar offers three car-sharing vehicles for riders with Zipcar memberships.



Wayfinding on 85th Avenue to the New Carrollton station

Table 3 summarizes 2005 mode-split information collected specifically for Metrorail boardings as part of *Station Site and Access Planning Manual*, completed by WMATA (Reference 1).

Table 3 Year 2005 New Carrollton Metrorail Boardings by Mode

Walk/Bike	Bus and Connecting Rail	Drop-Offs	Drove and Parked	Total (all modes)
810	2,020	1,210	5,490	9,520
8%	21%	13%	58%	100%

As shown in the table, drivers parking at the station have the greatest share of trips to the Metrorail at New Carrollton. However, over 20 percent of Metrorail riders arrive at the station via walking, biking, or other transit lines, demonstrating that Metrorail service is a major generator of pedestrian activity in the station area. Moreover, as anticipated growth around the New Carrollton station is realized, the percentage of people accessing the station by walking will likely increase as more transit patrons will be within walking distance of transit.

EXISTING PEDESTRIAN FACILITIES AND CHALLENGES

Public comments (gathered from the project website and public meeting), field visits to the station area, and conversations with the project team revealed an existing pedestrian environment with several opportunities for improvements. The study area has many pedestrian facilities, including sidewalks, marked and unmarked crosswalks, and refuge islands for pedestrians, but several locations lack adequate facilities and potentially compromise pedestrian safety.

Pedestrian facilities are provided around the New Carrollton rail station, including sidewalks, crosswalks, and a grade-separated crossing over Ellin Road. Some of the existing facilities, however, do not meet standards set forth in the 2009 Manual on Uniform Traffic Control Devices (MUTCD, Reference 2) and/or the draft US Access Board Public Rights-of-Way Accessibility Guidelines (PROWAG, Reference 3), or are otherwise lacking in adequate facilities.

The results of the field visit noted several key aspects of the pedestrian environment lacking in the New Carrollton study area. Many locations lacked sidewalk connectivity, including a wide sidewalk and buffer that end abruptly on Ellin Road near Emerson Place. While there is a sidewalk on the other side of the road, it forces pedestrians to cross a four-lane divided roadway at an uncontrolled location.



The sidewalk currently ends on the north side of Ellin Road.

Additionally, some of the sidewalks that were provided did not provide adequate space for pedestrians to pass one another due to obstructions. Utility poles and fire hydrants were two examples of sidewalk obstructions noted in the field. PROWAG specifies that sidewalks should be at least 4 feet wide at all times, including locations where fixed elements are on the path.

Several of the major roadways in the study area do not have pedestrian crossings, or where they are present they might not be adequate for all users. For example, pedestrian refuge islands that are not wide enough for persons in wheelchairs or cyclists crossing with bikes. Pedestrians are often required to travel long distances between intersections to reach locations to cross; mid-block crossings are infrequent.



Pedestrians crossing Annapolis Road between gaps in traffic

Stretches of sidewalk between intersections are often broken frequently by private driveways, creating an environment that is challenging for pedestrians. Driveways create additional conflict points between vehicles, pedestrians, and cyclists. Several driveways on Annapolis Road are designed with large curb radii,

which create longer crossing distances for pedestrians and allow vehicles to turn at higher speeds. Appendix A provides a detailed summary of the field review.

Finally, crash data were collected and analyzed for state roadways in the study area to determine historical trends. Table 4 three pedestrian crashes have been reported along Annapolis Road in the last three years. While this represents the best data available at the time, many crashes go unrecorded and no crash data were available for the many non-state roadways in the study area.

Table 4 Pedestrian Reported Crash History (January 1, 2006 to December 31, 2008)

Location	Number of Crashes	Road Conditions
Annapolis Road/W Lanham Drive	2	Dry
Annapolis Road between the Capital Beltway Off-Ramp and 85 th Avenue	1	Wet

Section 3
Toolbox of Potential
Strategies

Toolbox of Potential Strategies

The Toolbox of Potential Strategies contains descriptions and examples of possible pedestrian improvements to implement in the New Carrollton station area. These tools are based on some of the best practices across the country and are applicable to many locations in the study area. The New Carrollton Interim Pedestrian Safety Improvements study focused on near-term improvements that can be implemented at specific locations. Additional future considerations are presented at the end of this section, intended to serve as guidance as development occurs and/or additional funding becomes available.

The strategies presented in this section serve as countermeasures to many of the existing pedestrian facilities and challenges presented in the previous section of this report. While each strategy is only applicable in limited locations, the combination of systematic pedestrian improvements throughout a given area has been shown to create significant improvements to pedestrian safety. For instance, a study contained in the 2010 Transportation Research Record, entitled “Reduction of Pedestrian Fatalities, Injuries, Conflicts, and Other Surrogate Measures in Miami-Dade, Florida” (Reference 5), documents the positive impact of inexpensive pedestrian safety measures. Several small-scale pedestrian improvements were implemented on eight high-crash corridors, following a public education and enforcement program on pedestrian safety. The two years following the installation of improvements resulted in a 41 percent reduction in the number of crashes.

The strategies contained in the next few pages are low-cost pedestrian improvements that could be implemented in the next 1 to 5 years, depending on available funding. Projects include new installations or changes to existing pedestrian crossings, minor signal timing changes, and additional amenities for pedestrians. The pedestrian treatments presented on the following pages are organized into five categories:

- Striping Changes
- Signal Timing Changes
- Crossing Improvements
- Comfort and Convenience
- Other Improvements

Pedestrian treatments are organized to address pedestrian deficiencies that were documented during public comment sessions, field visits, and a review of historical crashes. Each category relates to one or more of the 10 complete streets principles identified in the Countywide Mater Plan of Transportation.

The treatments presented under the category Signal Timing Changes are based on improving uncomfortable intersections for pedestrians, as documented in public forums and observed in the field. Crossing Improvements take advantage of several locations on Ellin Road and Harkins Road that have existing wide medians that may serve as formalized pedestrian refuge islands. The Comfort and Convenience treatments serve to orient pedestrians toward destinations in the study

area, and provide amenities such as trash cans and additional lighting that were requested through public comments.

The specific treatments within each category present alternatives for improvements. Each treatment is presented on a half page with the following basic information:

- Typical cost provided by the Pedestrian and Bicycle Information Center (Reference 6)
- Description
- Effectiveness
- Implementation considerations
- Compliance with standards contained in the MUTCD, PROWAG, and the *Maryland SHA Bicycle and Pedestrian Design Guidelines* (Reference 7)
- Photo or graphic

This information is intended to provide an overview of each treatment, with information on its intended application. Many of the summaries also provide one or more examples of a recommended project in the New Carrollton station area. Each example in the study area provides additional context for the development of the complete recommendation list for this plan.

Several references were used to compile the information in the following sections, including the *Desktop Reference for Crash Reduction Factors* (Reference 8), “Pedestrian Countdown Signals: Experience with an Extensive Pilot Installation” (Reference 9), *NCHRP Report 562: Improving Pedestrian Safety at Unsignalized Crossings* (Reference 10), *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach* (Reference 11), and other references cited throughout this report.

Signal Timing Changes

Signal timing changes at intersections range from minor changes in the amount of time for crossing pedestrians to the addition of pedestrian signals and push-buttons. These intersection improvements provide walkers with the time and awareness to cross approaches of the intersection, increasing safety for pedestrians and drivers. The strategies identified in this section are consistent with the complete street principles in the Countywide Mater Plan, which states “Time traffic signals to function for all modes.”

LEADING PEDESTRIAN INTERVAL

Cost: Minimal staff time for signal re-timing

Description: Pedestrians are allowed to begin crossing at the crosswalk before conflicting vehicles start moving. For example, right-turning vehicles may have a red light for 5 to 7 seconds while pedestrians and through vehicles are allowed to begin through the intersection.



Effectiveness: Pedestrians get a head start on vehicles in crossing the roadway, increasing the percentage of turning drivers yielding to pedestrians. Note that right-turn-on-red is often prohibited in conjunction with leading pedestrian intervals (5).

Implementation Considerations: Adding a leading pedestrian interval reduces the amount of green time available for conflicting vehicle movements.

Compliance with Standards: Pedestrian Walk intervals should be a minimum of 4 to 7 seconds in duration. The Flash Don't Walk phase, according to the 2009 MUTCD, is based on the amount of time it takes a pedestrian to cross with a walk speed of 3.5 feet per second.

PEDESTRIAN COUNTDOWN SIGNALS

Cost: \$20,000 to \$40,000 for all four legs

Description: Newer pedestrian signal heads, contrasted with static Walk/Flash Don't Walk signals, inform pedestrians of the time remaining to cross the street with a countdown on the signal head.



Effectiveness: Fewer pedestrians crossing the street late in the countdown, as compared to signal heads with only the Flash Don't Walk light. Fewer pedestrians left in crosswalk in steady don't walk phase (9).

Implementation Considerations: Pedestrian signal heads should be clearly visible while pedestrians are waiting and crossing the street.

Compliance with Standards: The 2009 MUTCD requires all new pedestrian signals, and any retrofitted signals, to include countdown pedestrian signals. Per MUTCD guidance, the countdown should include enough time for pedestrians to cross the full width of the street or, in rare cases, reach a refuge island.

Application in Study Area: The Ellin Road/Veterans Highway intersection does not have an existing pedestrian signal phase. Pedestrians were observed frequently crossing at this intersection. As part of the installation of crosswalks and sidewalks at this location, pedestrian countdown signals should be installed for MUTCD compliance and pedestrian safety.

PROHIBIT RIGHT-TURNS ON RED

Cost: \$300 to \$500 per sign; \$1,000 to \$3,000 for electronic signs

Description: Reduces conflicts between cars and pedestrians by prohibiting cars to turn right, into the path of crossing pedestrians. This treatment may be deployed on a full-time or restricted basis.



Effectiveness: Electronic NRTOR signs have been shown to decrease pedestrian/vehicle conflicts significantly (5). According to the forthcoming AASHTO Highway Safety Manual, NRTOR also significantly reduces pedestrian crashes.

Implementation Considerations: Restricting right-turns at an intersection may increase delay for drivers.

Compliance with Standards: Prohibiting right-turns at intersections during the red phase complies with MUTCD standards

Application in Study Area: No specific location identified.

CYCLE LENGTH ADJUSTMENTS

Cost: Minimal

Description: Reduce the amount of green time, and therefore overall cycle length, at intersections to decrease the amount of time pedestrians wait to cross the street.



Effectiveness: By reducing the average amount of time pedestrians wait to cross the street, pedestrians are more likely to cross during the Walk phase.

Implementation Considerations: May reduce capacity for vehicles and require coordination with jurisdictions operating signals on a corridor

Compliance with Standards: Signal timing changes comply with MUTCD standards as long as the minimum Walk and clearance times for the intersection are met.

Application in Study Area: No specific location identified (signal timing was not analyzed as part of this study)

PUSH-BUTTON RETROFITS

Cost: \$5,000 to \$10,000 for all four legs

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



Effectiveness: Confirm press buttons have been shown to increase the number of pedestrians using the push-button, and more pedestrians wait for the Walk phase at the signal (5).

Implementation Considerations: New confirm press pedestrian push-buttons are easily exchanged with existing ones. New installations at intersections without existing push-buttons are more costly.

Compliance with Standards: The MUTCD specifies that separate poles, located at least 10 feet apart, should be used for pedestrian push-buttons unless physical constraints make use of two poles impractical.

Application in Study Area: All locations without confirm press push-buttons are candidates for installation. Priority should be given to locations with high pedestrian volumes or existing trends of low compliance. For example, the Ellin Road/Veterans Parkway intersection should include confirm press push-buttons with the installation of crosswalks and pedestrian signals.

Crossing Improvements

Crossing improvements include upgrading intersection and mid-block crosswalks, reducing crossing distances for pedestrians, and adding new crossings locations. The strategies contained in this section improve safety at pedestrian crossing by reducing the amount of time they are exposed to vehicle traffic. Several of the complete street principles identified in the Countywide Mater Plan relate to crossing improvements:

- Encourage medians as pedestrian refuge islands.
- Design turning radii to slow turning vehicles.
- Reduce crossing distances.
- Increase crossing opportunities.

RAISED MEDIAN ISLANDS

Interim striping/flex-bollards cost: \$1,300 to \$2,000 per crossing; **full construction cost:** \$4,000 to \$30,000 per crossing

Description: Provide a protected area in the middle of a crosswalk for pedestrians to stop while crossing. Interim islands consist of striping on the pavement to identify pedestrian space, while fully constructed islands typically include curbs and signs notifying drivers to avoid the location.



Effectiveness: Installing raised medians have been shown to reduce the number of crashes at marked and unmarked crosswalks, as documented in the *Desktop Reference for Crash Reduction Factors* (8).

Implementation Considerations: Raised islands should notify crossing pedestrians that they are exiting a safe place by including detectable warning surfaces or changes in direction (for example, directing pedestrians towards oncoming traffic) in the design.

Compliance with Standards: At a minimum, raised islands should be 6 feet wide to accommodate persons in wheelchairs. Wider islands are often preferred, particularly when included on multilane facilities.

Application in Study Area: The existing median on Harkins Road could be extended at the intersections of W Lanham Drive and Ellin Road to provide a refuge island for pedestrians.

IN-STREET “STOP FOR PEDESTRIANS” SIGNS

Cost: \$300 to \$500 per sign

Description: Signs placed in the middle of crosswalks to increase driver awareness of pedestrians and the legal responsibility to yield right-of-way to pedestrians in crosswalks



Effectiveness: Increases the number of drivers that yield to pedestrians in the crosswalk (10).

Implementation Considerations: Signs are placed in the middle of the roadway and are subject to possible damage from cars and trucks. In-street signs usually require more maintenance due to more frequent replacement.

Compliance with Standards: Signs comply with the latest guidance contained in the MUTCD and provided by SHA. Placement within crosswalks are specified in Chapter 11 of the *Maryland SHA Bicycle and Pedestrian Design Guidelines* (7).

Application in Study Area: A sign is recommended at the existing midblock crossing of Garden City Drive on the southeast side of the station, which is more than a quarter mile from the next available pedestrian crossing of Garden City Drive.

RECTANGULAR RAPID FLASH BEACON

Cost: \$10,000 to \$15,000 for both directions

Description: Signs with a pedestrian-activated “strobe-light” flashing pattern attracts attention and notifies the driver that pedestrians are at the crosswalk.

Effectiveness: RRFBs on the side of the road increase driver yielding behavior significantly (to around 80% typically). Additional signs can be included on a center island or median, although these have a lower marginal benefit as compared to roadside signs (10).



Implementation Considerations: Flashing pattern can be activated with manual push-buttons or automated passive (e.g., video or infrared) pedestrian detection, and should be unlit when not activated.

Compliance with Standards: The MUTCD gave interim approval to RRFBs for optional use in limited circumstances in July 2008. The interim approval allows for usage as a warning beacon to supplement standard pedestrian crossing warning signs and markings at either a pedestrian or school crossing, where the crosswalk approach is not controlled by a YIELD sign, STOP sign, traffic-control signal, or at a roundabout.

Application in Study Area: Vehicles travel at high speeds near the midblock crossing of Ellin Road near the Metro station, and several people commented that drivers do not always stop for pedestrians. A Rectangular Rapid Flash Beacon is recommended at this location to increase pedestrian visibility and remind drivers to stop for crossing pedestrians.

PEDESTRIAN HYBRID SIGNAL

Cost: \$50,000 to \$75,000 per installation

Description: The pedestrian activated signal (also known as a HAWK signal), unlit when not in use, begins with a flashing yellow light altering drivers to slow. A solid red light requires drivers to stop while pedestrians have the right-of-way to cross the street. While the pedestrian signal is in the Flash Don't Walk Phase, the overhead signal flashes red, and drivers may proceed if the crosswalk is clear.



Effectiveness: Studies show that hybrid signals result in over 95 percent of drivers yielding to pedestrians. Moreover, drivers experience less delay at hybrid signals compared to other signalized intersections (10).

Implementation Considerations: Pedestrian Hybrid Signals should only be installed at marked crosswalk locations with additional signs to warn drivers about the pedestrian crossing. Maintenance is similar to a full signal.

Compliance with Standards: Included in the 2009 MUTCD

Application in Study Area: The long distances between pedestrian crossings on Annapolis Road could be reduced with the installation of a pedestrian hybrid signal.

CURB EXTENSIONS

Interim striping cost: \$1,300 to \$2,000 per corner; **full construction cost:** \$5,000 to \$25,000 per curb

Description: Extend the sidewalk into the street (typically a parking lane) to create additional space for pedestrians

Effectiveness: Allow pedestrians and vehicles to see each other at the crosswalk. Curb extensions (or pedestrian bulb-outs) also reduce crossing distance for pedestrians, reducing the amount of exposure to traffic.

Implementation Considerations: Curb extensions are more easily installed along roadways with on-street parking since not all lanes are used for through traffic. They may be installed at intersections or mid-block crossings.

Compliance with Standards: Guidance for the design of curb extensions are provided in Chapter 10 of the *Maryland SHA Bicycle and Pedestrian Design Guidelines*.

Application in Study Area: Few streets in the study area that have on-street parking where curb extensions are typically implemented. However, the Metro Station Entrance on Garden City drive has a striped curb extension that is recommended for expansion to include space for pedestrians to wait, and should eventually include a fully constructed curb extension.



REDUCED CURB RADII

Interim striping cost: \$2,500 to \$4,000 per corner; **full construction cost:** \$5,000 to \$25,000 per curb

Description: Reconstructing a street corner with a smaller radius to reduce vehicle speeds while turning.

Effectiveness: Smaller curb radii can improve the safety for pedestrians at intersections by reducing crossing width, providing additional space for pedestrians to wait before crossing, and slowing turning vehicles.

Implementation Considerations: The design of the curb radius is a function of the angle between the intersecting streets, typical size of vehicles at the intersection, and maintenance. For example, intersections with several large trucks may need to have a slightly larger curb radius than local streets, typically 15 to 25 feet. However, streets with on-street parking or bicycle lanes can have smaller radii since vehicles have more space to negotiate turns.

Compliance with Standards: Guidance for the design of right-turn lanes and appropriate curb radii are provided in Chapter 10 of the *Maryland SHA Bicycle and Pedestrian Design Guidelines*.

Application in Study Area: The Annapolis Road/Garrison Road intersection includes a large radius for the eastbound right-turn that is recommended for reduction. Vehicles on Annapolis Road are able to turn onto Garrison Road with little reduction in speed and would reduce the total crossing distance by nearly one-quarter.



Comfort and Convenience

Strategies to improve comfort and convenience for pedestrians enhance the pedestrian environment to encourage walking between destinations. Types of improvements include pedestrian-scaled amenities such as wayfinding signs, parks, lighting, and benches. The strategies contained in this section focus on creating a comfortable and safe pedestrian environment that increases the number of pedestrians in the area. These strategies primarily fulfill needs to “Encourage pedestrian-scaled land use and urban design,” as included in the Countywide Master Plan of Transportation

IMPROVED WAYFINDING

Cost: \$500 for signs, more for complete network

Description: Signs directing pedestrians towards destinations in the area, typically including distances or average walk times.

Effectiveness: Wayfinding signs make it easier for residents and visitors to navigate the station area.

Implementation Considerations: Signing should be uniform and consistent through the area, and should complement existing wayfinding signs implemented by other agencies.

Compliance with Standards: Pedestrian wayfinding is not a traffic control device and is not covered by the MUTCD.

Application in Study Area: Provide guidance on reaching the rail station and on location of key destinations for pedestrians departing rail station.



LANDSCAPING

Cost: wide range based on treatment

Description: Landscaping treatments range from planted strips on roadways to small “pocket” parks on corners to improve aesthetics.

Effectiveness: Not applicable

Implementation Considerations: Depending on the application, landscaping costs vary substantially based on the type of amenities provided. The amount of space available for landscaping will influence the extents. Landscaping such as shrubs, trees, and flowers should be regularly maintained to preserve the quality of public space.



Compliance with Standards: Landscaping is not a traffic control device, and is not covered by the MUTCD.

Application in Study Area: No specific location identified

LIGHTING

Cost: \$10,000 to \$15,000 per light

Description: Pedestrian-scaled lighting along sidewalks and pathways

Effectiveness: Street lighting enhances pedestrian safety and security by lighting areas at night, making walkers visible to drivers and others. Lighting is particularly beneficial in commercial districts or frequently traveled routes.

Implementation Considerations: The physical structure (pole) should not obstruct sidewalks and all pathways, particularly crosswalks, should be well lit. Lighting levels should be uniform as to not distract drivers on the roadway.



Compliance with Standards: The Illuminating Engineering Society of North America provides specific guidance for walkways and bikeways (Reference 12).

Application in Study Area: Ellin Road and 85th Avenue were identified as locations that lack adequate lighting for pedestrians, creating an unsafe environment. Additional lights are recommended on the roadway.

BENCHES AND TRASH RECEPTACLES

Cost: \$500 to \$1,500 for benches and \$500 to \$1,000 for trash receptacles

Description: Benches are typically placed along sidewalks or multiuse pathways for pedestrians to rest, while trash receptacles provide a location for waste along frequented paths.



Effectiveness: Benches enhance pedestrian areas, particularly commercial districts, by allowing people to socialize and linger.

Implementation Considerations: These investments should be made where there is currently, or expected, heavy pedestrian activity. In order to preserve park and open spaces, trash cans should be provided to reduce the likelihood of littering in these more sensitive areas. Trash cans need to be emptied regularly to prevent overflowing.

Compliance with Standards: Street furniture should not reduce the minimum clear distances required for adjacent pedestrian walkways.

Application in Study Area: Both treatments are recommended throughout the study area.

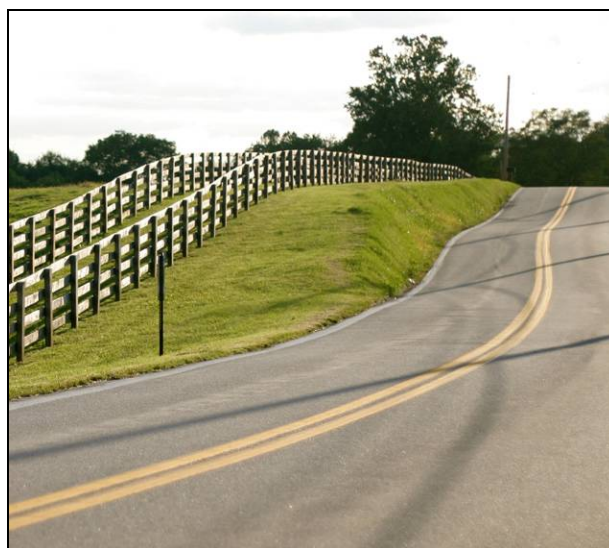
Striping Changes

Striping changes include new or revised pavement markings that upgrade sections of roadway or intersections, often by reallocating vehicle space to accommodate pedestrians, bicycles, or transit vehicles. Roadway striping changes can include a wide array of strategies, but the treatments contained in this section focus on using existing roadway space for pedestrians and bicyclists. Striping changes may also be accompanied with flex-posts (inexpensive delineators to reinforce pavement markings) or other treatments. The following striping changes in this section serve to “Find wasted space and better utilize it,” as stated in the Countywide Mater Plan.

OPEN-SECTION ROADWAY PEDESTRIAN IMPROVEMENTS

Cost: varies based on extent of treatment; not including labor, costs for striping and flex posts are approximately \$1/foot and \$75 each; it may require a half or full day of labor to install these treatments

Description: Open section roadways do not include curbs, sidewalks, or other amenities typical of urban streets. Any additional space outside of the travel lanes should be marked as a shoulder, where pedestrians may use it to travel along the roadway if necessary. Wider striping (6” to 8”) and flex posts delineate space for walkers.



Effectiveness: Narrow walkways or shoulders on open-section roadways are not ideal, but may be necessary in certain situations. Wider shoulders are more favorable for pedestrians.

Implementation Considerations: Where a shoulder is provided between points (for example between the termination of a sidewalk and a bus stop), it should be a consistent width.

Compliance with Standards: Not applicable

Application in Study Area: No specific location identified.

BIKE LANE MARKINGS

Cost: \$1,000 to \$5,000 per mile

Description: Bike lanes are the area of a roadway designated for non-motorized bicycle use, separated from vehicles by pavement markings.

Effectiveness: Bike lanes improve safety and comfort by increasing visibility and awareness of cyclists, in addition to providing adequate facilities for biking.

Implementation Considerations: Bike lanes are typically 5 feet or wider on roadways with a curb and gutter. Consideration should be given for a wider bike lane depending on the amount space consumed by existing gutters and other obstructions.

Compliance with Standards: AASHTO recommends a minimum width of 5 feet for bike lanes adjacent to parking, curbs, or guardrails.

Application in Study Area: The existing shoulder on 85th Avenue is recommended to be restriped to include adequate width and pavement markings for a bike lane.



Other Improvements

This last type of treatments included in this section are improvements that include installing new walkways, consolidating or relocating bus stops to improve transit times, and establishing waiting space for transit riders at stops. The strategies contained in this section improve pedestrian comfort and safety by defining space for walkers, while improving access to transit. Two complete street principles identified in the Countywide Mater Plan relate to the improvements contained in this section:

- Acknowledge that pedestrians will take the most direct route.
- Ensure universal accessibility.

BUS STOP CONSOLIDATION/ RELOCATION

Cost: minimal cost to remove existing stops; new shelters cost \$10,000 to \$15,000

Description: Bus stops located close to one another can be consolidated into a single stop, reducing the total number of stops the bus has to make and concentrating boardings/alightings at one location. Bus stops can also be relocated to improve access to existing sidewalks, crosswalks, or destinations.



Effectiveness: Reducing the number of stops from 10 per mile to 8 per mile increases average bus speeds by 1.5 minutes/mile or more, depending on average dwell time at stops.

Implementation Considerations: The placement of bus stops depends on the existing transit network and operator. Coordination with WMATA and The Bus is necessary to determine if or where potential stops could be moved. Consideration should also be given to the available right-of-way and/or willingness of adjacent property owners to have stop amenities on their property.

Compliance with Standards: WMATA's *Guidelines for the Placement and Design of Bus Stops* provide standards for WMATA bus stops, including spacing standards. The Draft PROWAG guidelines also specify the minimum dimensions for bus stops, which include a clear length along the roadway of 8 feet and a clear width perpendicular to the roadway of 5 feet.

Application in Study Area: The existing bus stops near Arehart Drive could be consolidated in conjunction with an improved pedestrian crossing.

PEDESTRIAN WALKWAYS

Cost: \$11 to \$15 per square foot

Description: Sidewalks and multiuse pathways are the primary facilities for pedestrians to travel and provide mobility to various destinations.



Effectiveness: Safe and comfortable walkways have been shown to increase pedestrian use.

Implementation Considerations: Walkways should be part of every new roadway and retrofitted in locations without them to complete a network of pedestrian facilities. Where possible, a buffer (4 to 6 feet) should be provided to separate pedestrians from vehicle traffic.

Compliance with Standards: For ADA compliance, the minimum clear width of a sidewalk is 4 feet, but the FHWA and the Institute of Transportation Engineers (ITE) recommend a 5-foot minimum for pedestrians to pass one another or walk side-by-side.

Application in Study Area: Several locations identified in the study area

BUS STOPS ON OPEN-SECTION ROADWAYS

Cost: \$3,500 to \$5,000

Description: Bus stops located along open-section roadways do not have the typical amenities of other stops, and usually only include a signing marking the stop. Concrete pads for boarding/alighting passengers at stops should be provided.



Effectiveness: Concrete pads further signify the presence of a bus stop, provide a location for passengers to wait comfortably, and ease passenger loading.

Implementation Considerations: Consideration should be given to accessibility to and from the bus stop, in addition to providing amenities at the stop. Stops without adjacent sidewalks or space for pedestrians to walk on the shoulder are difficult for riders to access and likely underutilized and unsafe.

Compliance with Standards: A 5' by 8' unobstructed landing pad is required at bus stops to accommodate wheelchairs (3).

Application in Study Area: No specific location identified.

FUTURE CONSIDERATIONS

Future considerations are based on the future planning context for the New Carrollton station area. Since projects identified in this plan will be interim improvements that will likely lead to future upgrades, these considerations are generally planned for 10 or more years in the future. Project costs are not associated with these recommendations.

Table 5 summarizes the long-term recommendations.

Table 5 Long-Term Pedestrian Safety Improvement Projects

Location	Type of Treatment	Description
Annapolis Road	Access Management	Several driveways with full or partial access existing along Annapolis Road, creating several conflict points between turning vehicles and pedestrians. As redevelopment opportunities arise, driveways should be consolidated. Where feasible, business accesses should be on minor streets or in the rear of businesses to improve pedestrian safety.
Station Area	Land Use	As the area surrounding the station increases in density, the character of newly constructed buildings should consider the pedestrian and bicycle environment. Opportunities to include pedestrian amenities or plazas adjacent to buildings should be sought, in addition to completing the pedestrian network around the station.
Ellin Road	Bus Layovers	Buses and taxi cabs were noted to layover on Ellin Road, just southwest of the New Carrollton station. Plans for the Purple Line include new bus bays and waiting areas for the existing West Side Bus Bays as the new service is introduced to the area.

Section 4
Recommendations and
Funding

Recommendations and Funding

The project list for the New Carrollton Interim Pedestrian Safety study applies treatments from the Toolbox of Potential Strategies to locations in the study area that have concerns, as documented by members of the community, field visits, and crash data review. Each project includes the specific location for improvement, the type of treatment, and a cost estimate for installation. Table 6 shows the complete list of recommended projects.

Table 6 Complete Recommended Pedestrian Safety Improvement Projects

No.	Location	Description	Type of Treatment	Priority	Cost Estimate ¹	
					Low (Interim)	High (Interim)
1	Garden City Drive near Metro Station Entrance	Install new sign at existing mid-block crosswalk	In-Street "Stop for Pedestrians" Sign	High	\$300	\$500
2	Harkins Road at Metro Parking Driveway	Install two signs in the median on either side of the existing crosswalk	In-Street "Stop for Pedestrians" Signs	High	\$600	\$1,000
3	85 th Avenue from Annapolis Road to Harkins Road	Stripe bike lanes in existing shoulder	Striping	High	\$1,300	\$6,500
4	Harkins Road at W Lanham Drive	Extend existing median to provide refuge for pedestrians	Raised Median	High	\$4,000 (\$1,200)	\$30,000 (\$2,000)
5	Metro Station Entrance at Garden City Drive	Construct curb extension across station driveway	Curb Extension	High	\$5,000 (\$1,200)	\$25,000 (\$2,000)
6	Annapolis Road at Garrison Road	Tighten curb radius for EBRT on Annapolis Road	Reduced Curb Radii	High	\$5,000 (\$2,500)	\$30,000 (\$4,000)
7	Ellin Road near Metro Station Entrance	Install RRFB at existing crosswalk near the IRS bridge	Rectangular Rapid Flash Beacon	High	\$10,000	\$15,000
8	Ellin Road from Metro Station to Veterans Parkway	Install six new poles and lights	Lighting	High	\$60,000	\$90,000
9	Annapolis Road at Arehart Drive	Install HAWK signal at a mid-block crossing of Annapolis Road	Pedestrian Hybrid Signal	High	\$50,000	\$75,000
10	Harkins Road at W Lanham Drive	Ensure pedestrian buttons are functioning	Cycle Length Adjustments	High	minimal	
11	Ellin Road at Harkins Road	Confirm pedestrian phase meets standards for clearance time	Cycle Length Adjustments	High	minimal	
12	Veterans Parkway at Ellin Road	Add crosswalks on all approaches	Marked Crosswalks	Medium	\$100	\$300
13	85 th Avenue at existing mid-block crossing	Install new sign at existing mid-block crosswalk	In-Street "Stop for Pedestrians" Sign	Medium	\$300	\$500

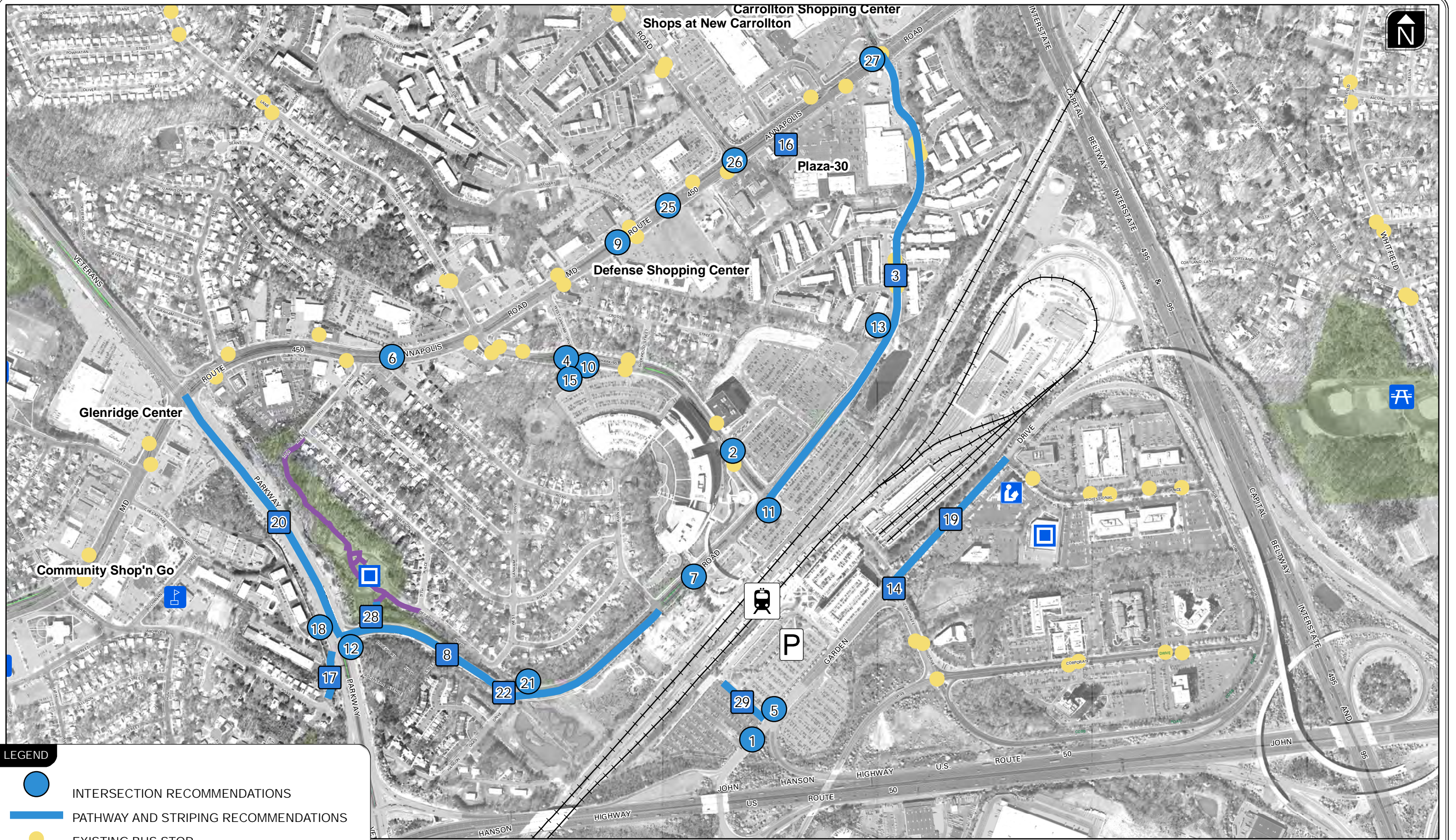
14	Garden City Drive at Corporate Drive	Improve access to pedestrian push-buttons at intersection	Pedestrian Walkway	Medium	\$3,300	\$4,500
15	Harkins Road at W Lanham Drive	Replace existing buttons	Push-button retrofits	Low	\$5,000	\$10,000
16	Annapolis Road east of Riverdale Road	Formalize existing path from Annapolis Road to retail destinations	Pedestrian Walkway	Medium	\$6,600	\$9,000
17	Veterans Parkway at Ellin Road	Formalize pathway around sound barrier	Pedestrian Walkway	Medium	\$19,800	\$27,000
18	Veterans Parkway at Ellin Road	Add pedestrian crossing phase and install pedestrian signals	Pedestrian Countdown Signal	Medium	\$20,000	\$40,000
19	Garden City Drive from Corporate Drive to Professional Place	Install sidewalks on north side of the road	Pedestrian Walkway	Medium	\$79,200	\$108,000
20	Veterans Parkway from Ellin Road to Annapolis Road	Install sidewalks on east side of the road	Pedestrian Walkway	Medium	\$125,400	\$171,000
21	Ellin Road at Hanson Oaks Drive	Install traffic signal	Other	Medium	\$150,000	\$200,000
22	Ellin Road from Veterans Parkway to Emerson Place	Install sidewalks on north/east side of the road	Pedestrian Walkway	Medium	\$165,000	\$225,000
23 ²	Station Area	Provide 10 trash receptacles throughout the study area	Trash Receptacles	Low	\$5,000	\$10,000
24 ²	Station Area	Provide 10 benches throughout the study area	Benches	Low	\$5,000	\$15,000
25	Annapolis Road at Arehart Drive	Consolidate two closest bus stops on Annapolis Road	Bus Stop Relocation	Medium	\$10,000	\$15,000
26	Annapolis Road at Riverdale Road	Move closest bus stops to intersection (far side)	Bus Stop Relocation	Low	\$10,000	\$15,000
27	Annapolis Road at 85 th Avenue	Move closest bus stops to intersection (far side)	Bus Stop Relocation	Low	\$10,000	\$15,000
28	Ellin Road at West Lanham Rec Center	Formalize pathway to Rec Center	Pedestrian Walkway	Low	\$13,200	\$18,000
29	Garden City Drive at Metro Station Entrance	Install sidewalks across from the US 50 off-ramp into the station	Sidewalks	Low	\$23,100	\$31,500
Total Cost³					\$787,200	\$1,187,800

¹ Interim cost estimates (taken from Table 1) are included for applicable projects.

² Projects 23 and 24 are not shown in Figure 2.

³ Interim cost estimates are not included in the total costs.

As shown in the table, there are a number of near-term projects that were identified for the New Carrollton station area. Figure 2 shows the locations of the recommended projects.



H:\profile\10525 - Interim Pedestrian Safety Improvements\GIS\FIG02 - Recommended Projects.mxd

LEGEND

- INTERSECTION RECOMMENDATIONS
- PATHWAY AND STRIPING RECOMMENDATIONS
- EXISTING BUS STOP
- MULTIUSE PATHS

NOTE: PROJECTS 23 AND 24 ARE NOT MAPPED.

RECOMMENDED PROJECTS
NEW CARROLLTON, MARYLAND **FIGURE 2**

IMPLEMENTATION

To facilitate implementation of the recommended pedestrian safety improvements, this section identifies near-term action items, projects that may be suitable for inclusion in upcoming capital improvement programs, and potential funding sources. Policies and regulatory changes are recommended to prioritize, program, fund and construct the projects recommended in the New Carrollton Interim Pedestrian Safety Improvements project list.

Near-Term Action Items

The following list of near-term action items provide a guide toward realizing the pedestrian safety improvements identified in this report and a framework for project selection, programming, design, and construction. Recommended implementation strategies are:

Implementation Strategy 1. Strategically Pursue Projects

- Action Item 1.1. Pursue capital improvements funding or grant funding for projects.
- Action Item 1.2. In the case where grant requirements or construction in conjunction with another roadway project, or a willing land owner make construction of any of the recommended projects possible, pursue funding sources for that project regardless of priority.

Implementation Strategy 2. Incrementally Implement Projects

- Action Item 2.1. Consider constructing new pedestrian crossings, neighborhood paths, or other improvements with minimum-design features first, then incrementally develop additional amenities as desired by neighborhood residents.
- Action Item 2.2 Develop permitting and design for the recommended projects as soon as possible in order to have the projects prepared for funding when it becomes available.

Implementation Strategy 3. Work with Other Jurisdictions and Agencies to Encourage the Pedestrian Safety Improvements

- Action Item 3.1. Work with WMATA, Prince George's County Department of Public Works and Transportation, and other agencies to construct the recommended projects.

Funding Sources

Fully implementing the recommended pedestrian safety improvements will require funding. Existing, potential and anticipated funding sources that are available to fund the pedestrian safety projects included in the project list were identified. This section presents a variety potential funding sources available to help pay for future improvements, including Federal, State, regional, local, and private sector funding programs. Most of the programs are competitive and involve the completion of extensive applications with clear documentation of project need, costs, and benefits. Several of these sources may be currently used in the study area, while others present new opportunities to fund projects.

The majority of funding for pedestrian projects is acquired through the non-motorized programs and funding opportunities provided by the Federal Highway Administration's Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) program, which was enacted in 2005. SAFETEA-LU authorizes the Federal surface transportation programs for highways, highway safety, and transit for the five-year period 2005-2009. SAFETEA-LU expired in September 2009, but has been maintained through a series of extensions from Congress. A new federal transportation bill is expected to renew or replace SAFETEA-LU. While federal funding sources are likely to change somewhat as a result of new legislation, we anticipate that most of the programs described below will continue to be available.

There are a number of programs within SAFETEA-LU that provide for the funding of pedestrian and bicycle projects.

Recreational Trails Program

The Recreational Trails Program of the Federal Transportation Bill provides funds to states to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. Examples of trail uses include hiking, bicycling, in-line skating, equestrian use, and other non-motorized and motorized uses. These funds are available for both paved and unpaved trails, but may not be used to improve roads for general passenger vehicle use or to provide shoulders or sidewalks along roads.

Recreational Trails Program funds may be used for:

- Maintenance and restoration of existing trails
- Purchase and lease of trail construction and maintenance equipment
- Construction of new trails, including unpaved trails
- Acquisition or easements of property for trails
- Acquisition of land or easements for trail right-of-way. State administrative costs related to this program (limited to seven percent of a State's funds)
- Operation of educational programs to promote safety and environmental protection related to trails (limited to five percent of a State's funds)

Safe Routes to School (SR2S)

The purpose of the Safe Routes to Schools program is to provide children a safe, healthy alternative to riding the bus or being driven to school. The SR2S Grants were established to address pedestrian and bicycle mobility and safety near schools, and eligible projects must be within two miles of a primary or middle school (K-8).

Under the SR2S Program, Federal funds are administered by the state transportation department. Under the Maryland Safe Routes to School Program, approximately \$2.5 million was available for funding in 2008. The grants can be used to identify and reduce barriers and hazards to children walking or bicycling to school. As presently structured, A Safe Routes to School Plan is required for a project to be eligible for the infrastructure grant program. If this requirement continues to be a

feature of a re-authorized State Routes program, local jurisdictions should work with the school district to develop this plan, which includes outreach, studies and safety education.

Transportation Enhancements

Administered by the Maryland Department of Transportation, this program is funded by a set-aside of Highway Trust Funds. Projects must serve a transportation need. These funds can be used to build a variety of pedestrian, bicycle, streetscape and other improvements that enhance the cultural, aesthetic, or environmental value of transportation systems. The statewide grant process is highly competitive.

Transportation, Community and System Preservation Program

The Transportation, Community and System Preservation Program provides federal funding for transit-oriented development, traffic calming, and other projects that improve the efficiency of the transportation system, reduce the impact on the environment, and provide efficient access to jobs, services and trade centers. The program is intended to provide communities with the resources to explore the integration of their transportation system with community preservation and environmental activities.

Local Improvement Districts (LIDs) and Business Improvement Districts (BIDs)

Local Improvement Districts (LIDs) and Business Improvement Districts (BIDs) are often used by cities to construct localized improvement projects such as streets, sidewalks, and landscaping. Through the LID/BID process, the costs of local improvements are spread among property owners and/or businesses within the district through a special property tax assessment (in the case of LIDs) or a fee paid by businesses (in the case of BIDs). The cost can also be allocated based on property frontage or other methods such as trip generation. Formation of a LID or BID within the New Carrollton study area could provide a dedicated source of funding to ensure implementation of this plan's recommendations.

Section 5
References

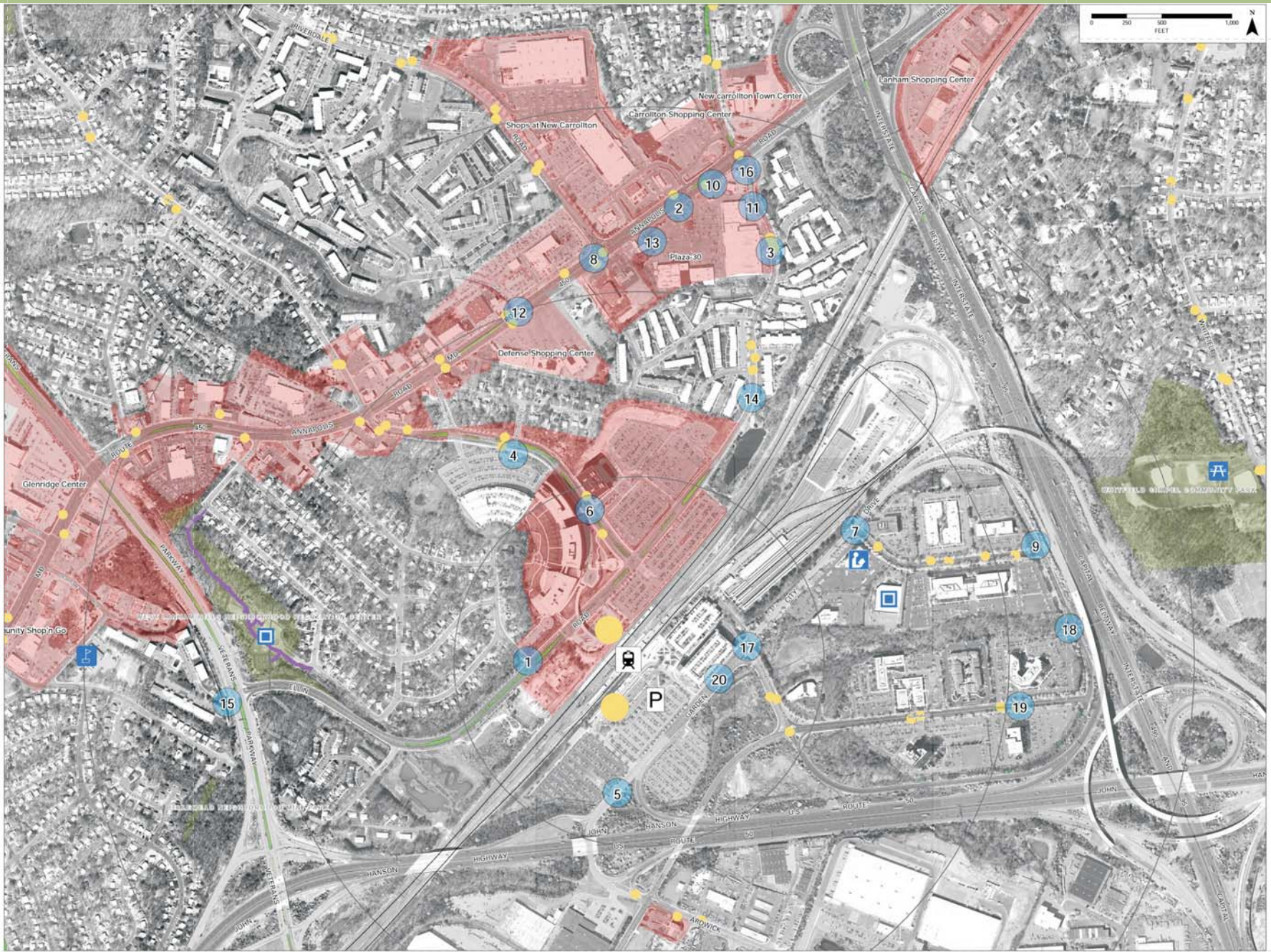
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Appendix A
Summary of Field Review

EXISTING CONDITIONS



- # Example Pedestrian Facilities & Potential Issues
- Rail Station
- Bus Stop
- Park and Ride
- School
- Library
- Picnic Area
- Other Pedestrian Generators
- Multiuse Paths
- Commercial Areas

EXISTING CONDITIONS

1



Sidewalk Continuity

All streets should provide sidewalks on both sides of the road. In extraordinary circumstances, where space is limited, a wide shoulder may serve as an adequate pedestrian facility. Gaps in the pedestrian network reduce safety and comfort for pedestrians.

Photo: A wide sidewalk and buffer abruptly end on Ellin Road at Emerson Place. While there is a sidewalk on the other side of the road, it forces pedestrians to cross a four-lane divided roadway at an uncontrolled location.

Sidewalk Width

Sidewalks should have adequate width to accommodate persons in wheelchairs, allow pedestrians to pass one another, and provide comfort for pedestrians to walk two or three abreast in high activity areas.

Photo: The width of the sidewalk on Annapolis Road (MD 450) frequently changes, with several narrow sections that are uncomfortable for pedestrians.



2

3



Sidewalk Obstructions

Sidewalks should be clear of obstructions to allow persons in wheelchair adequate space and provide room for pedestrians to pass one another. The US Access Board specifies that sidewalks should be at least 4 feet wide at all times, including locations where fixed elements are on the path.

Photo: The location of this utility pole on 85th Avenue reduces the effective width of the sidewalk, making it difficult for pedestrians to navigate.

Unmarked Crosswalks

On narrow, low-speed streets unmarked crosswalks are generally sufficient for pedestrians to cross the street safely, as the low-speed environment makes drivers more responsive to the presence of pedestrians. Consideration should be given to installing crosswalk markings and signage at locations where traffic volumes are high, near schools, and at long crossings of multiple vehicle lanes.

Photo: An unmarked crossing along Harkins Road



4

EXISTING CONDITIONS

5



Marked Crosswalks

Marked crosswalks indicate the location of a crosswalk to motorists and can be accompanied by signs, curb extensions and/or median refuge islands. By increasing the visibility of pedestrians, marked crosswalks can improve driver yield rates to pedestrians on many facilities. Marked crosswalks at unsignalized locations should be carefully designed to ensure safe pedestrian crossings, as studies have shown that marked crosswalks at multilane roadways can lead to higher pedestrian crash rates in some instances.

Photo: A marked crosswalk is provided on Garden City Drive across from the New Carrollton rail station.

Crosswalk Signs

Pedestrian crosswalk signs designate crosswalk locations and are located at locations where people are crossing the road. These signs advise drivers where to watch for pedestrians and increase the visibility of the crossing location. Signs are available with a variety of messages.

Photo: A pedestrian crosswalk sign on Harkins Road is located in advance of the crosswalk rather than at the crosswalk, violating MUTCD standards (i.e., federal standards for design and placement of traffic control devices). The MUTCD specifies crosswalk warning signs with downward-point arrows be located at the specific crossing location.



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Pedestrian Push-Buttons

Pedestrian push-buttons are activated by pedestrians waiting to cross the street and must be accessible to all types of pedestrians. In addition, pedestrian pushbuttons should: (1) clearly indicate which leg of the intersection they control; and, (2) confirm each press with an audible message (usually an electronic "click").

Photo: Pedestrian push-buttons at the Garden City Drive/Professional Place intersection



Pedestrian Refuge Islands

Pedestrian refuge islands are provided at long crossing locations where pedestrians may not easily be able to cross the full width of the street during a single movement.

Photo: A pedestrian refuge island is provided on Annapolis Road (MD 450) in the median, but is not an adequate width for persons in wheelchairs or cyclists crossing with bikes. A six-foot minimum width is preferred to refuge islands.

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EXISTING CONDITIONS

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Curb Ramps

Curb ramps enable persons in wheelchairs and with strollers to safely and easily cross at intersections, and are required for to meet accessibility standards. Ideally, two ramps should be provided at each corner (one leading to each crosswalk).

Photo: Curb ramps at the Cobb Road/Professional Place intersection

Right - Turn Radii

Right-turning vehicles, at intersections and driveways, create a potential conflict with crossing pedestrians. Curbs with large radii create longer crossing distances for pedestrians and allow vehicles to turn at higher speeds.

Photo: A large curb radius at a driveway on Annapolis Road (MD 450)

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Access Management

Driveways are locations with potential conflicts between vehicles, pedestrians, and cyclists. Driveways can be consolidated between two or more adjacent land uses and narrowed to a minimum width for safe ingress/egress vehicle movements to improve safety and comfort for pedestrians and cyclists.

Photo: Driveways on 85th Avenue create additional conflict points for vehicles, pedestrians, and cyclists.

Mid - Block Crossings

Mid-block crossings provide safe locations for pedestrians to cross between signals and are necessary on roads with distantly spaced intersections.

Photo: Annapolis Road has few opportunities for pedestrians to cross the street, and long distances between signals. Consequently people cross during gaps in traffic at potentially unsafe locations.

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EXISTING CONDITIONS

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Demand Trails

Pedestrian generators without direct connections to adjacent sidewalks often result in demand, or goat, trails. These trails show heavy use and are usually the shortest distance between two locations; where possible, such trails should be formalized and improved to increase pedestrian access.

Photo: A demand trail near Annapolis Road (MD 450) leads from the sidewalk to several commercial uses setback from the roadway.

Reallocating Existing Facilities

Existing paved surfaces may be reallocated, through signing and striping improvements, to slow speeds by narrowing travel lanes or accommodate bike lanes on existing shoulders.

Photo: The existing pavement width on 85th Avenue provides adequate room for vehicles with a wide shoulder that could become a designated bike facility.



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Network Connectivity

A comprehensive pedestrian and bicycle network connects destinations and enables people to travel safely and comfortably between locations.

Photo: Connections to the New Carrollton station from west of Veterans Parkway (MD 410) are limited. The photo shows the T-intersection at Ellin Road, which currently does not have a pedestrian connection to the residential neighborhoods west of Veterans Parkway.

Wayfinding

Signs indicating the location of destinations, transit facilities, and areas of interest are beneficial to all roadway users. Wayfinding targeted at cyclists typically includes distance and average travel times to these destinations.

Photo: A sign directing travelers to the New Carrollton Metro Station is provided on 85th Avenue.



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EXISTING CONDITIONS

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Pedestrian Countdown Signal

Pedestrian countdown signals provide information on the time remaining for pedestrians to cross. The MUTCD requires countdown signals at all new or retrofitted signals.

Photo: A pedestrian countdown signal near the New Carrollton rail station for crossing Garden City Drive at Corporate Drive.

Landscaped Buffer

Landscaped buffers separate pedestrians from other travel modes and increase the comfort and safety of sidewalks.

Photo: An existing sidewalk with a landscaped buffer, including grass and large trees, on Cobb Road.



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Transit Connections

A comprehensive pedestrian network enables people to travel safely and comfortably between all travel modes, including access to transit stops. Walking is the principle mode for people connecting to transit, and transit stops should include amenities for people waiting. Benches, shelters, and lighting are examples of amenities that improve the comfort and safety of transit stops.

Photo: Bus stops, such as this stop for The Bus on Cobb Road, are just one of the several transit connection points in the area. Pedestrians and bus riders will also transfer modes at the New Carrollton rail station, serving Metrobus, Metrorail, commuter and regional rail lines.

Adjacent Land Uses

The adjacent land uses and building forms influence the attractiveness of pedestrian facilities. Retail activity, restaurants, and “pedestrian-scaled” buildings generally provide a more comfortable pedestrian environment.

Photo: A parking garage adjacent to the sidewalk on Garden City Drive.



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