US 50 Pedestrian and Bicyclist Safety and Connectivity Study

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Prepared For:
Salisbury-Wicomico Metropolitan Planning Organization

Prepared in cooperation with the United States Department of Transportation, Federal Highway Administration and Federal Transit Administration.

EXECUTIVE SUMMARY

The City of Salisbury is located in Wicomico County of Maryland's Eastern Shore. U.S. Route 50 and U.S. Route 13 are major through routes for summer beach traffic traveling through the Salisbury area en route to their final destination. The Salisbury Bypass route, which was built around the city, diverts much of the summer beach traffic around Salisbury. When combined with the current U.S. Route 50 Business and U.S. Route 13 Business bisects Salisbury into four quadrants. Because of this higher-trafficked roadway, alternative modes of transportation such as walking and bicycling are challenging in many parts of the City. In response to the pedestrian and cyclist concerns within the study area, the Salisbury-Wicomico Metropolitan Planning Organization (S/WMPO) identified the eastern part of the City bisected by U.S. Route 50 Business as an area to identify safety concerns of pedestrians and bicyclists crossing U.S. Route 50 Business heading towards major activity generators. Therefore, this Study identifies potential solutions to effectively coordinate pedestrian movements within the Study area.

The U.S. Route 50 Pedestrian and Cyclist Safety and Connectivity Plan (Study) consisted of an American with Disabilities Act (ADA) inventory of pedestrian facilities, an assessment of existing conditions, pedestrian and traffic counts, identification of potential improvements, prioritization of potential improvements, and development of preliminary cost estimates.

Stakeholder input was vital to identify existing issues and feasible solutions, and included S/WMPO, City of Salisbury, Wicomico County Board of Education, and the Maryland State Highway Administration (SHA). Three (3) stakeholder progress meetings were conducted to discuss the existing interchange conditions, potential solutions, and prioritization of improvements requiring additional research and investigation.

Existing Conditions

U.S. Route 50 Business carries approximately 20,000 vehicles daily through the project limits. Prior to the construction of the U.S. Route 13/50 Bypass, U.S. Route 50 Business facilitated vacation through traffic and experienced significant summer peak traffic. However, the current six-lane roadway no longer serves its original purpose and does not experience high daily traffic volumes. While the roadway is classified as an Urban Freeway, it currently functions as a local connector and facilitates local traffic through the City.

In addition to U.S. Route 50 Business: MD 350 (Mt. Hermon Road); MD 346 (E. Main Street); Ward Street; Davis Street; Naylor Street; Truitt Street; Civic Avenue; and Beaglin Park Drive were also included in the Study. See Figure 1 for the study area of interest. Each of these roadways service local users, but have deficiencies related to pedestrian and bicycle facilities.

A pedestrian and bicycle facility inventory was conducted and a deficiency review of the facilities within the project limits was completed to identify barriers making these modes of transportation difficult. The deficiencies identified included:

- Non-ADA compliant pedestrian facilities;
- missing sidewalk links;
- disconnected bicycle facilities;
- poor intersection alignment/signing;
- inadequate facility usage; and
- poor pedestrian and bicycle facility usage compliance.

Potential Improvements

Potential improvements were developed assuming large-scale reconstruction, right-of-way, and environmental impacts would be avoided. These improvements are presented in **Table ES-1**. Instead, lower-cost, short-term and mid-term improvements were developed to alleviate the deficiencies

without large cost or impact. These improvements were identified as either Level 1 or Level 2 Improvements. The Level 1 Improvements consists of projects to be implemented in the near-term. In comparison, Level 2 Improvements could be implemented in the mid- to long-term. Examples of these included:

- Educational campaigns (Level 1);
- Sidewalk and pedestrian ramp upgrades (Level 1);
- Pavement restriping and marking upgrades (Level 1);
- Landscaping features (Level 1);
- Pedestrian push button and signal additions/upgrades (Level 2);
- Intersection corner bulb-out/extensions (Level 2);
- Lighting improvements (Level 2);
- Addition of physical channelizing islands (Level 2); and
- Reduction of curb radii (Level 2).

In addition to the short-term and mid-term improvements, several long-term improvements, or Level 3 Improvements, were identified. The Level 3 Improvements were not studied in depth because of the complexity of the proposed improvements and need for additional investigation beyond the scope of this study. In addition, due to the complexity and estimated high cost and impact of these improvements the MPO decided that these improvements would not be feasible to implement. For these reasons, the Level 3 Improvements were eliminated from consideration. Examples of the Level 3 Improvements included:

- Intersection channelization/modification;
- Road closure;
- Frontage road construction;
- Raised intersections;, and
- Pedestrian/bike overpass or underpass.

The Study also contains four (4) Targeted Improvement Areas, which these locations include a combination of the Level 1 and 2 Improvements to be implemented within a location identified in the study area as having a specific need for pedestrian, bicyclist, and/or additional vehicular accommodations. The Targeted Improvements Areas identified are as follows:

- U.S. Route 50 corridor from Ward Street to Beaglin Park Drive;
- U.S. Route 50 and Davis Street intersection;
- Mt. Hermon Road Corridor from East Main Street to Beaglin Park Drive; and
- Mt. Hermon Road/East Main Street/Truitt Street intersection.

Next Steps

The (summary chart) **Table ES-1** identifies initial improvements to consider for implementation in the near-term either locally or by SHA. Additionally, the aforementioned table consists of follow-up projects requiring further evaluation. The Level 1 Improvements consists of projects to be implemented in the near-term. In comparison, Level 2 Improvements could be implemented in the mid- to long-term. The improvement concepts in Levels 2 should be evaluated in more detail to further determine: pedestrian and bicyclist benefits; if there are any fatal flaws in the concepts; and to refine the associated cost estimates and project impacts, which will allow for project programming and implementation. Detailed analyses including traffic modeling would be necessary to confirm the traffic and operational benefits for several of the potential improvements.

Additional engineering analysis would be needed for all improvements, especially those including modified lane configurations, access changes, or widening and other roadside improvements to identify limits of disturbance and any impacts to roadside features. More detailed cost estimates would be developed using the additional engineering analysis to give transportation programming staff better

information to program constrained long-range transportation project funding, as well as to identify effects to the Transportation Improvement Program (TIP) and Statewide Transportation Improvement Program (STIP) plans. The appropriate level and detail of environmental study and documentation would have to be considered for each improvement.

Table ES-1: Toolbox of Improvements

Improvement		Rationale/Potential Benefit	Cost Range
Level 1 Improvements (Near-term)			
1.	Cycling/Walking Educational Campaign	• Educate bicyclists about minimizing risks to their safety • Present proper operation of pedestrian and bicyclist facilities	$1,000 to $5,000
2.	Speed Display Unit	• Provide immediate vehicle speed feedback • Reduce potential for speeding	Rent $200/week
3.	General Sidewalk Improvements	• Provide complete linkages between origins and destinations • Achieve ADA compliance	$5-$15/SF
4.	Pedestrian Ramp Improvements	• Provide access to existing and provide sidewalks at intersections • Achieve ADA compliance	$1,000 to $2,000 each
5.	Driveway Crossing Improvements	• Achieve ADA compliance	$2,000 to $5,000 each
6.	Crosswalk Improvements	• Provide clear delineation for intended pedestrian route	$1,000 each
7.	Transit Stop Improvements	• Provide protection from weather • Provide clear user information • Improve area aesthetics	$10,000 to $20,000
8.	Street Furniture	• Provide comforts for pedestrians and bicyclists patronizing local businesses • Add attractive and recognizable features to the area	$1,000 to $5,000
9.	Turn Lane Modifications	• Reduce vehicular conflicts for pedestrians and bicyclists	$500 to $1,000
10.	Signage Improvements	• Provide clear destinations and distances for bicyclists and pedestrians	$100 to $500 each
11.	Stop Line Adjustments	• Provide adequate clearance for new/modified crosswalks	$100 to $500 each
12.	Right-Turn-On-Red Restrictions	• Reduce vehicular conflicts for pedestrians and bicyclists	$100 to $500+ each
13.	Dedicated/Shared Bike Lanes	• Provide a clear designated on-road route for bicyclists • Improve bicycle route connectivity	$1,000-$5,000
14.	Landscaping	• Improve area aesthetics • Incorporate urban stormwater management	$500+

Level 2 Improvements (Near/Mid-Term)			
1.	Raised Pedestrian Crossings	• Vehicles reduce speed approaching crossing • Raises pedestrians to a more prominent view for drivers	$2,000-$5,000
2.	Pedestrian Signal Improvements	• Provide ADA compliant pedestrian signals	$10,000 to $30,000
3.	Conversion to One-Way	• Reduce vehicle conflicts at adjacent intersections	$1,000+
4.	Pedestrian Refuge Island Modification	• Achieve ADA compliance for minimum width refuge area	$5,000 to $10,000 each
5.	Conversion of Painted Channelizing Islands	• Provide physical delineation between pavement and pedestrians • Provides temporary refuge area	$1,000 to $5,000 each
6.	Curb Radius Reduction/Curb Extensions	• Reduces width of pedestrian crossing • Facilitates ability to add two pedestrian ramps per corner	$5,000 to $10,000+
7.	Lane Narrowing	• Reduces number of travel lanes • Provides space for bicycle lane • Separates turning movements from through traffic • Passively reduces vehicle speeds	$5,000+
8.	Lighting Improvements	• Improves visibility of bicyclists and pedestrians	$10,000+
9.	Chokers	• Define parking areas • Provide space for roadside enhancements	$5,000 to $10,000
10.	Hawk Signal	• Provides pedestrians with dedicated crossing time	$75,000 to $150,000
Targeted Improvement Areas			
1.	U.S. Route 50 Corridor Improvements	• Provides dedicated bicycle lane from Ward Street to Beaglin Park Drive • Potentially reduce vehicle speeds traveling through corridor • Install median fencing from Ward Street to Naylor Mill Road	$15,000 to $30,000
2.	U.S. Route 50 and Davis Street Intersection	• Inhibit pedestrian crossings of U.S. Route 50 Business at Davis Street • Reduce vehicular conflict points • Ease bicyclist and pedestrian crossings of Davis Street • Improve area aesthetics • Eliminate left turns from U.S. Route 50 onto Davis Street by converting Davis Street to right-in/right-out only	$500,000+

3.	Mt. Hermon Road Corridor Improvements	• Provide dedicated and marked bicycle lanes • Reduces vehicle speeds through corridor • Reduces vehicle turning conflicts • Improves area aesthetics	Varies
4.	Mt. Hermon Road/E. Main Street/Truitt Street Intersection Roundabout	• Reduce vehicle conflict points • Provide easier navigation for pedestrians and bicyclists • Improves area aesthetics • Can be combined with other targeted improvements	$1.5M to $2.0M

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1. INTRODUCTION

The study area is located in east-central part of the City of Salisbury, Maryland (see **Figure 1**). Salisbury is a hub for avid bicyclists throughout Maryland and the east coast. With hundreds of miles of shared use bicycle routes and trails available for cyclists and walkers alike, the area is a welcome destination. Multiple on-road bike trails begin and end nearby at the Wicomico County Youth and Civic Center located several blocks south of the project limits.

The Salisbury/Wicomico Metropolitan Planning Organization (S/WMPO) is comprised of representatives from Salisbury, Maryland; Fruitland, Maryland; Delmar, Maryland; Hebron, Maryland; Delmar, Delaware; Wicomico County, Maryland; Somerset County, Maryland; and Sussex County, Delaware,. The S/WMPO recognizes the importance for safe and efficient pedestrian and cyclist facilities within the study area and initiated the U.S. Route 50 Pedestrian and Cyclist Safety and Connectivity Plan (Study). The purpose of the Study is to identify: safety concerns of pedestrians crossing U.S. Route 50 Business on their way to Wicomico Middle School and Wicomico Senior High School; measures to increase pedestrian safety along US Route 50 Business; and identify possible solutions to effectively coordinate pedestrian movements within the study area. Through this study, Safety and Connectivity Plan has been developed in concert with local planning initiatives, master plans, and with pedestrian and bicycle policies and guidance on a state and national level.

In 2011, the Salisbury/Wicomico Metropolitan Planning Organization Master Plan developed a Long-Range Transportation Plan (LRTP) based on a vision "…includes having streets that are pleasant to walk along and **SAFE**, as well as **EFFICIENT** bike routes to reduce car dependency." In addition, the Maryland General Assembly created the Bicycle Access Act of 2001 mandating the Maryland Department of Transportation to issue its *Twenty Year Bicycle and Pedestrian Master Plan*. It is MDOT's goal to make "Maryland a place where people have **SAFE** and **CONVENIENT** option of walking and bicycling for transportation, recreation, and health."

This goal of this Study was to develop a list of potential improvements with the potential to be quickly and efficiently implemented within the project limits. This Study is divided into three (3) parts in order to clearly present the identification and development process undertaken. Part 1 includes a summary of the purpose and scope of the Study, as well as the stakeholder coordination activities. Part 2 presents the methodology of the study. This Part includes a review of the existing S/WMPOs Functional Master Plan of Hiker and Biker Trails and a presentation of the existing deficiencies. Traffic counts and accident data are also presented in this section along with several general observations made during the field reviews. Finally, Part 3 presents the approach to which the improvements were developed. Included in this Part is the "Toolbox of Improvements", which can be used at the governing agencies discretion when identifying improvements for the Maryland Statewide Transportation Improvement Program (STIP). These improvements are prioritized by "Levels" as defined by relative cost of implementation and impact to construct; however, the level indication is not provided as a correlation to potential benefit. The final section provides a summary of the Study recommendations.

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RK&K

RHODESIDE & HARWELL
LANDSCAPE ARCHITECTURE

SCALE IN FEET
0 250
125 500

LEGEND

- STUDY AREA BOUNDARY
- EXISTING SIDEWALK (ADA COMPLIANT)
- EXISTING SIDEWALK (NON-ADA COMPLIANT)
- STATE BICYCLE ROUTE
- EXISTING SHARED-USE PATH
- PROPOSED SHARED-USE PATH
- SIGNALIZED INTERSECTION
- PEDESTRIAN CROSSING/SIGNAL
- SHORE TRANSIT BUS STOP

US ROUTE 50 PEDESTRIAN AND BICYCLIST SAFETY AND CONNECTIVITY PLAN

STUDY AREA

DATE:	FIGURE NO.
JUNE 2014	1

2. PURPOSE OF THE FEASIBILITY STUDY

The purpose of the U.S. Route 50 Pedestrian and Cyclist Safety and Connectivity Plan (Study) is to identify pedestrian and cyclist needs along U.S. Route 50 Business (Salisbury Parkway) and Mt. Hermon Road (MD 350) from Ward Street to Beaglin Park Drive. The results of this Study can be used in the planning and programming of future pedestrian and bicyclist facility improvements.

3. SCOPE OF STUDY

a. Project Limits

The study area is presented in **Figure 1** and includes U.S. Route 50 Business (East Salisbury Parkway) as the northern study limit and MD 350 (Mt. Hermon Road) as the southern limit. The study area is bounded by Ward Street to the west and by Beaglin Park Drive to the east. Multiple roadways intersect both U.S. Route 50 Business and Mt. Hermon Road including Davis Street, Naylor Street, Truitt Street, East Main Street, and Civic Avenue. Other roads within the study limits include East William Street and Long Avenue.

U.S. Route 50 Business runs in an east/west direction through the study area and is classified as an Urban Expressway and generally contains six lanes, three in each direction, with a raised median. U.S. Route 50 Business is not on the National Highway System. The roadway is comprised of a closed curbed section with no inside or outside shoulder and generally contains 5-foot wide sidewalk along each direction extending from west of Ward Street to East Main Street. Heading in an easterly direction from E. Main Street, the sidewalk and curb are removed and a shoulder of varying width is introduced. In addition, the roadway transitions to a four-lane section with right-turn lanes introduced at the signalized intersections.

Mt. Hermon Road, the southern study limit, also runs in an east/west direction. The portion of Mt. Hermon Road within the Study area, classified as an Urban Minor Arterial, contains four lanes, two eastbound and two westbound, with sidewalk and/or bike path along both sides of the roadway. There are many property entrances located along Mt. Hermon Road, but with no dedicated center turn lane all turns take place from the left through lane.

b. Study Activities

The Study consisted of five separate tasks, as described below:

- Begin data collection consisting of traffic counts and field inventory of existing pedestrian and bicyclist facilities and begin development of toolbox of improvements;
- Conduct stakeholder meeting;
- Refine improvements, develop cost estimates, and develop draft Study;
- Present findings to the Technical Advisory Committee and the MPO Council; and
- Incorporate comments on Draft-Final Plan, submit Plan to MPO Council.

c. Stakeholder Input

Three meetings were held with stakeholders to present the existing roadway and traffic issues and discuss potential solutions. The invited stakeholders represented a large group of interested parties, ranging from transportation and planning agencies including S/WMPO, Wicomico County Board of Education, and the Maryland State Highway Administration District 1.

Meeting 1 was conducted on April 1, 2013. At this meeting, the project team presented the purpose and goals of the study, existing roadway conditions, pedestrian and bicyclist network issues, and an accident analysis. In addition, the team presented a range of potential short-term and mid-term solutions. Examples of these types of solutions are listed in Appendix C.

Meeting 2 was conducted on May 9, 2013 and included representatives from the S/WMPO Technical Advisory Committee. At this meeting, the project team presented the Toolbox of Improvements and the Targeted Improvement Areas.

Meeting 3 was also conducted on May 9, 2013 and included representatives from the S/WMPO Council. At this meeting, the project team presented the Toolbox of Improvements and the Targeted Improvement Areas.

At each meeting, project information, study materials, and data were presented. Following the presentations, an interactive discussion was held between the stakeholders and project team. The stakeholders provided input on existing conditions, evaluated the potential improvements, identified implementation issues, and provided suggestions on how to evaluate and prioritize the improvements. The project team incorporated stakeholder input to identify and refine the potential improvements.

4. STUDY IMPLEMENTATION

a. S/WMPO Hiking and Biking Plan

There are currently no planned improvements for sidewalks and bicycle routes within the study area. In 2012, the S/WMPO completed the *Functional Master Plan of Biking & Hiking Trails*. The purpose of this study was to provide an overview of the existing biking and hiking trails, identify potential trail corridors, recommend guidelines and specifications for designing and constructing trails of different types, and recommend next steps in identifying funding opportunities for future implementation. While the study evaluated and recommended multiple new routes throughout the S/WMPO study boundary, there were no specific recommendations for improvements within the Safety and Connectivity Study area. However, the design and development guidelines presented in the study were taken into consideration for this planning effort.

b. Existing American's with Disabilities Act Sidewalk Compliance

In order to better understand what defines a facility as being not compliant with the American's with Disabilities Act (ADA), one must understand the history of ADA. The ADA deficiencies identified in this Study were based on the U.S. Access Board-issued Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way, July 2011. However, the ADA of 1990 was passed as a civil rights statute prohibiting discrimination to any individual with a physical or mental impairment substantially limiting one life activities. Title II regulations require businesses and nonprofit services providing public accommodations must comply with nondiscrimination requirements to the disabled. Title III regulations requires businesses and nonprofit service providers that provide public accommodations do the same. On July 23, 2010, the U.S. Department of Justice (DOJ) issued final regulations revising the Department's ADA regulations and Standards for Design. The revised regulations amend the Departments Title II and Title II Regulations. These final rules went into effect on March 15, 2011, and new and altered facilities were required to meet the 2010 Standards for Accessible Design as of March 15, 2012. However, these Standards are not easily implementable to facilities located within the public rights-of-way. For this reason, the U.S. Access Board issued the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way. It is anticipated that these standards will be added as an appendix to the Code of

Federal Regulations. All new and altered facilities within the public rights-of-way will be required to meet these standards, which is the justification for using these draft regulations as the basis of the inventory.

c. Example Deficiencies

Generally, sidewalks are located along one, or both sides of each roadway within the study limits. Deficiencies within the Study limits were identified during a field visit conducted in February, 2013. Examples of such deficiencies are presented in this section and were categorized as either a general deficiency or as an ADA deficiency. Each deficiency encountered in the field was identified and recorded as a location in need of improvement.

Example Deficiency 1 – Lack of Sidewalk Connectivity
There were several locations identified within the Study area where there was no sidewalk available; however, there were worn paths visible in the vegetation indicating pedestrians are actively using the route.

Example Deficiency 1 – Lack of Sidewalk Connectivity

- **General pedestrian facility deficiency.**
- **Unstable and irregular walking surface.**
- **Pedestrians may alternatively choose to unsafely walk within adjacent travel lane.**

Photo Source: RK&K, 2013

As shown in **Figures 2-4**, US 50 Business contains sidewalk from Ward Street, and points west, to the East Main Street intersection. At the US 50 Business and East Main Street intersection, pedestrians cannot travel north or south along East Main Street due to missing sidewalk. In addition, pedestrians are also unable to continue east along US 50 Business due to the lack of pedestrian facilities along this section of roadway; therefore, pedestrian must reverse course and travel west along U.S. 50 business.

East William Street/Mt. Hermon Road, the southern east-west roadway within the study area, also contains sidewalk but this sidewalk is not continuous throughout the study area. There are several missing segments located along East William Street and one missing sidewalk section along eastbound Mt. Hermon Road located just east of the Mt. Hermon Road and East Main Street intersection.

SALISBURY - WICOMICO METROPOLITAN PLANNING ORGANIZATION

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RHODESIDE & HARWELL
LANDSCAPE ARCHITECTURE

SCALE IN FEET
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50 200

LEGEND

- STUDY AREA BOUNDARY
- EXISTING SIDEWALK (ADA COMPLIANT)
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- MISSING SIDEWALK
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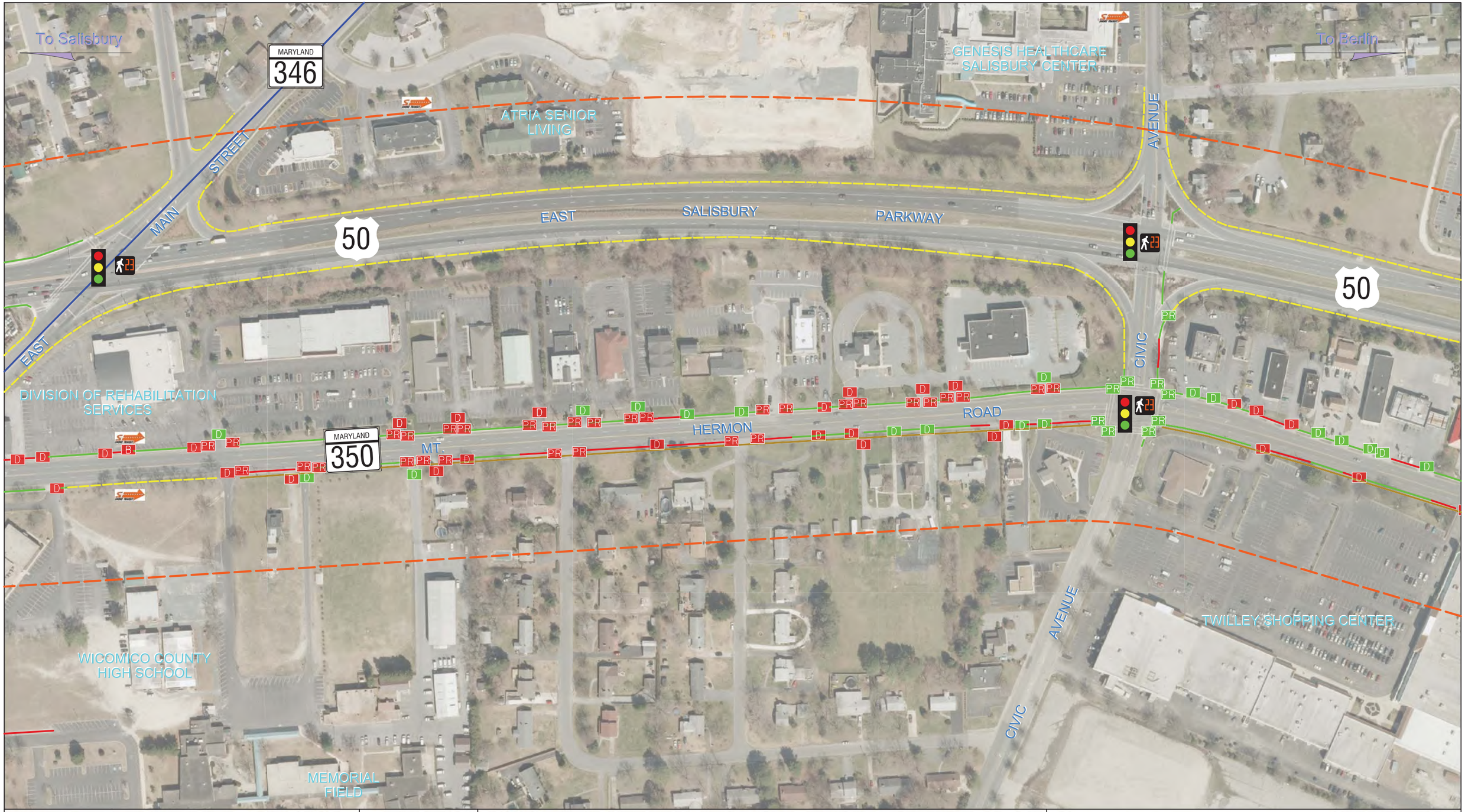
US ROUTE 50 PEDESTRIAN AND BICYCLIST SAFETY AND CONNECTIVITY PLAN

EXISTING CONDITIONS PEDESTRIAN AND BICYCLE FACILITIES

DATE:
JUNE 2014

FIGURE NO.
2



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RHODESIDE & HARWELL
LANDSCAPE ARCHITECTURE

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US ROUTE 50 PEDESTRIAN AND BICYCLIST SAFETY AND CONNECTIVITY PLAN

EXISTING CONDITIONS PEDESTRIAN AND BICYCLE FACILITIES

DATE:
JUNE 2014

FIGURE NO.
3

SALISBURY - WICOMICO METROPOLITAN PLANNING ORGANIZATION

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RHODESIDE & HARWELL LANDSCAPE ARCHITECTURE

SCALE IN FEET

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LEGEND

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US ROUTE 50 PEDESTRIAN AND BICYCLIST SAFETY AND CONNECTIVITY PLAN

EXISTING CONDITIONS PEDESTRIAN AND BICYCLE FACILITIES

DATE: JUNE 2014

FIGURE NO. 4

Aside from the two east-west roadways within the study limits, gaps in sidewalk were found along several of the north-south roadways. These include East Main Street, which is missing sidewalk from Mt. Hermon Road to U.S. 50 Business. See **Figure 2**. In addition, the sidewalk which runs along the north side of U.S. 50 Business does not provide a continuous east-west path within the project limits. Beaglin Park Drive is also missing continuous sidewalk, but a bicycle path (Northeast Collector Trail – Phase 2) is proposed to be constructed. In contrast, the existing sidewalk network was found to be continuous along at least one side of each of the following roadways: Davis Street; Naylor Street; Truitt Street; Civic Avenue; and Beaglin Park Drive.

Example Deficiency 2 – Inaccessible Sidewalk

Inaccessible sidewalks are defined as those currently existing; however, they do not meet the minimum requirements for ADA compliant sidewalk. Inadequate cross slopes, grades, and/or dimensions could each lead to a sidewalk being identified as inaccessible.

Example Deficiency 2 – Inaccessible Sidewalk

- **General and ADA pedestrian facility deficiency.**
- **Unstable/slippery walking surface.**
- **Excessive cross slope (>2%)**
- **Lack of 4-foot wide minimum clear.**
- **Obstructions in path of travel.**

Photo Source: RK&K, 2013

Within the Study area, several locations were found to have inaccessible sidewalk. These locations include East William Street, East Main Street, and several locations along Mt. Hermon Road. See **Figures 2, 3, and 4**.

Example Deficiency 3 – Deteriorated/Unmaintained Sidewalk

There were multiple locations throughout the Study area where sidewalk was found to be deteriorated or left unmaintained. These locations can hinder the pedestrian's ability to walk along the intended sidewalk path.

Example Deficiency 3 – Deteriorated/Unmaintained Sidewalk

- **General and ADA pedestrian facility deficiency.**
- **Unstable/slippery walking surface.**
- **Lack of 4-foot wide minimum clear path.**
- **Detectable warning surface domes filled with debris making detection difficult.**

Photo Source: RK&K, 2013

During the field visit, several locations were found to require maintenance. These locations included the U.S. 50 Business and Davis Street intersection corners, sidewalk along eastbound U.S. 50 Business east of Naylor Street, and the sidewalk along East William Street.

Example Deficiency 4 – Missing Pedestrian Curb Ramps

Several locations were identified within the Study area where no curb ramps are available for pedestrians to access the sidewalk. These locations could potentially place pedestrians in danger if they are physically unable to mount the existing curb to access the sidewalk.

Example Deficiency 4 – Missing Pedestrian Curb Ramps

- **General and ADA pedestrian facility deficiency.**
- **Crosswalk striping indicates intended pedestrian path.**
- **Lack of curb ramp makes sidewalk inaccessible.**

Photo Source: RK&K, 2013

Several intersection corners are currently missing pedestrian curb ramps, these locations include:

- NE corner Truitt Street and East Main Street intersection;
- SW corner of Long Avenue and East Main Street intersection; and
- SE corner of Long Avenue and Mt. Hermon Road intersection.

Example Deficiency 5 – Inaccessible Pedestrian Curb Ramps

Inaccessible pedestrian curb ramps are defined as those that currently exist, but do not meet the minimum requirements for an ADA compliant pedestrian curb ramp. Inadequate cross slopes, grades, widths, or lack of detectable warning surfaces could each lead to a pedestrian curb ramp as being identified as inaccessible.

Example Deficiency 5 – Inaccessible Pedestrian Curb Ramps

- **ADA pedestrian facility deficiency.**
- **Cross slopes and ramp transition grades exceed maximum allowable.**
- **No detectable warning surface.**

Photo Source: RK&K, 2013

Several intersection corners currently contain inaccessible curb ramps, these locations include:

- SE and SW corners of U.S. Route 50 Business and Truitt Street intersection;
- NW corner of East William Street and Naylor Street intersection;
- NW corner of East Main Street and East William Street intersection;
- W corner of East Main Street and East William Street intersection;
- NW and SW corners of Mt. Hermon Road and Beaglin Park Drive.

Example Deficiency 6 – Unclear Intended Pedestrian Route

Several locations within the project limits do not contain clear pedestrian route indications. These locations make it difficult for pedestrians and bicyclists to safely navigate areas within the project limits. Lack of pedestrian ramps, offset curb lines, and lack of/worn crosswalk markings attribute to unclear pedestrian and bicyclist route delineation.

Example Deficiency 6 – Unclear Intended Pedestrian Route

- **General pedestrian facility deficiency.**
- **Unclear intended pedestrian route leads to jaywalking.**
- **Difficult to navigate intersection for pedestrians and bicyclists.**

Photo Source: RK&K, 2013

Several locations exist within the study limits where the intended pedestrian route is either ambiguous or preferred by pedestrians as the route would require a further distance than wanted. These locations include the East Main Street and Mt. Hermon Road intersection and the U.S. Route 50 Business and Davis Street intersection.

The East Main Street/Mt. Hermon Road/Truitt Street intersection is a six-legged intersection, which makes pedestrian and bicyclist traffic through the intersection difficult. While crosswalks exist on three of the six legs, the crosswalks do not provide clear direction to pedestrians on how to traverse the intersection. In addition, bicyclists must navigate through multiple lanes of traffic to proceed.

The U.S. Route 50 Business and Davis Street intersection is another location where pedestrian travel is relatively difficult and the intended route is unclear. Pedestrians are intended to either travel west to the Ward Street intersection, or east to the Truitt Street intersection (both signalized) to cross U.S. Route 50 Business. In addition, there are no traffic control devices or crosswalk markings on U.S. Route 50 Business which provide passive guidance to cross elsewhere. However, there is no clear signage restricting pedestrians from crossing live traffic. Specific issues associated with this intersection will be described in detail in subsequent sections.

The six example deficiencies described in this section were used as the basis for development of the proposed improvements of the Study.

d. Existing Traffic Conditions

Traffic counts were taken at the U.S. 50 Business and Davis Street, U.S. 50 Business and East Main Street, U.S. 50 Business and Truitt Street, and the U.S. 50 Business and Ward Street intersections on Tuesday, May 29 and Wednesday May 30, 2012. Pedestrian, Bicyclist, and vehicular traffic volumes were included in the counts. The counts were taken between 2:00 PM and 4:00 PM on May 29 to capture the afternoon peak period and between 7:00 AM and 9:00 AM to capture the morning peak period volumes including the anticipated peak pedestrian volumes. These times were selected for traffic counts because of the Study's limits and proximity to Wicomico Middle School and Wicomico High

School, both of which are located immediately outside of the study's limits. By selecting these times for traffic counts, walking student volumes and behaviors would be observed.

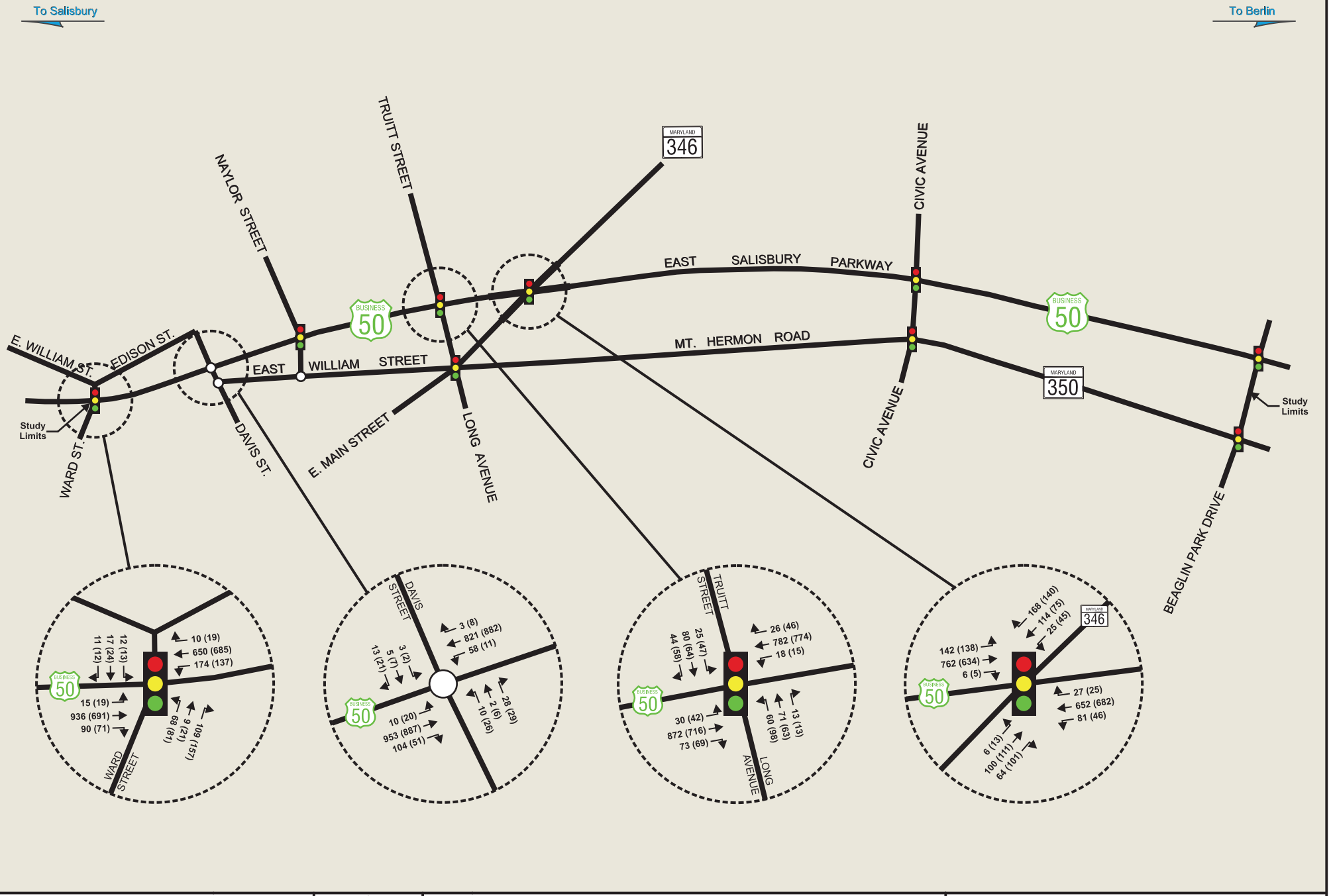
The peak hour turning traffic volumes for automobiles are presented in **Figure 6**. Based on the traffic data, the peak AM hour was found to be from 7:30 AM to 8:30 AM and the PM peak hour was found to be from 3:00 PM to 4:00 PM. The total pedestrian traffic volumes are presented in **Table 1**.

Table 1: Pedestrian volume counts

Intersection	Approach Crossed (pedestrians)			
	North	South	West	East
US 50 Business at Ward Street	9	1	7*	63
US 50 Business at Davis Street	11	5	78*	15*
US 50 Business at Truitt Street	3	3	18	26*
US 50 Business at East Main Street	9*	8*	29	28*

The information presented in **Table 1** includes the total AM and PM pedestrian crossings, which occurred during the time of the counts. As indicated in the Table by an asterisk, pedestrians frequently crossed U.S. 50 Business via an undesignated approach. The signalized intersections along U.S. Route 50 at Ward Street, Truitt Street, and East Main Street intersections all contain one (1) pedestrian crossing, which includes a pedestrian push button and pedestrian traffic signal. The Ward Street pedestrian crossing is located on the east intersection approach while the Truitt Street and East Main Street pedestrian crossings are located on the west approaches. As is evident from the data, there is a high non-compliance exhibited when pedestrians are crossing U.S. 50 Business. This is especially significant at the U.S. 50 Business and Davis Street intersection where there are no designated pedestrian crossings of U.S. 50 Business. Yet, 93 of the 109 crossings counted, or 85 percent of pedestrians at this intersection crossed U.S. 50 Business. Unlike the Ward Street, Truitt Street, and East Main Street intersections where vehicular traffic must occasionally stop because of a red traffic signal, there are no traffic control devices on U.S. 50 Business at the Davis Street intersection. Pedestrians frequently enter live traffic to cross U.S. 50 Business as shown in **Figure 5**. In addition, the majority of these crossings occurred between 7:15 AM and 7:45 AM and between 2:30 PM and 3:15 PM, corresponding directly to the opening and closing times of Wicomico Middle and High Schools. This occurrence indicates the majority of pedestrians are school aged children. In an effort to reduce pedestrian crossings from occurring at this location, Wicomico Middle School repeats an announcement several times on the intercom system advising students to cross U.S. 50 Business at the Ward Street intersection, which is signalized and has a crossing guard, and not at the Davis Street intersection.

Figure 5: U.S. 50 Business and Davis Street Pedestrians



NOT TO SCALE

LEGEND

- Unsignalized Intersection
- Signalized Intersection
- xx (xx) / xx (xx) / xx (xx) — AM (PM) Peak Hour Turning Movement Volume

US ROUTE 50 PEDESTRIAN AND BICYCLIST SAFETY AND CONNECTIVITY PLAN

2012 EXISTING TRAFFIC CONDITIONS

DATE: JUNE 2014

FIGURE NO. 6

An analysis of the crash data for the Study area was performed from January 2009 through December 2011. A review of the accident data revealed 50 crashes were reported by the Maryland State Highway Administration (SHA) as being "intersection related," and approximately 63 of the 73 total crashes occurred in the vicinity of an intersection (within approximately 150 feet of the intersection). The U.S. 50 Business and East Main Street intersection had the highest number of crashes, 18. The most common type of collisions recorded over the three-year study period were angle and rear end collisions. The highest number of rear end collisions occurred along U.S. 50 Business at Civic Avenue (four northbound/three southbound) and East Main Street (three northbound/three southbound). The highest number of angle collisions occurred at Truitt Avenue (one northbound/five southbound). Ward Street recorded the highest number of left turn collisions (three northbound/three southbound). The main cause identified for most crashes were: failure to yield right of way; failure to give full attention; followed too closely; or traveling too fast for conditions.

There were four pedestrian related collisions and one bicycle related collision within the study limits. Three of the pedestrian collisions and the bicycle collision occurred at the U.S. 50 Business and Davis Street intersection all involving westbound vehicles. The remaining pedestrian related collision occurred at the U.S. 50 Business and Truitt Street intersection involving an eastbound vehicle. Three of the pedestrian collisions occurred during the AM peak period while the other pedestrian and bicycle collision occurred during the 2 PM hour. Two of the four pedestrian collisions occurred on wet pavement. All three of the pedestrian collisions and the bicycle collision on Davis Street were of unknown causes and the pedestrian collision on Truitt Street was attributed to "fail to yield right of way" by the drivers.

Rear end collisions were most common at the U.S. 50 Business and Civic Avenue and East Main Street intersections. Although there was no discernable pattern to the rear end crashes, they are typically caused due to poor signal visibility or poor pavement conditions. Angle crashes were most common at Truitt Street along southbound U.S. 50 Business. One probable cause for this type of crash could be poor intersection sight distance or inadequate signal timing. There were three left turn crashes at Ward Street which may have been as a result of inadequate sight distance or by left turning motorists selecting inappropriately small gaps in traffic, which may occur when motorists experience extended delay.

5. POTENTIAL IMPROVEMENTS

a. Approach

The goals of the Study were to analyze the existing pedestrian and bicyclist facilities within the study area, identify pedestrian and bicyclist deficiencies and needs, and develop recommendations for improvements designed to address the needs of users. Guides referenced in development of these recommendations include the following:

- Maryland Department of Transportation Safe Routes to School Guidebook;
- AASHTO Guide for the Development of Bicycle Facilities, 4th Edition, 2012;
- Maryland State Highway Administration Bicycle Policy and Design Guidelines, 2013;
- Maryland State Highway Administration Accessibility Policy and Guidelines for Pedestrian Facilities along State Highways, June 2010; and
- United States Access Board Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way, July 26, 2011.

After the initial observations and field study, a list of potential improvements was developed for multiple locations throughout the study area. The list was developed into a "Toolbox of Improvements" categorized into one of three Levels of Improvement, which could be applied independently to remediate local areas of concern or concurrently to improve a facility segment. Level 1 and 2 Improvements were differentiated based on scale and complexity of the respective improvements. Level 1 Improvements would be generally low cost and low impact improvements, which could be implemented in a relatively short length of time. Level 2 Improvements would be generally higher cost improvements requiring additional planning or study prior to implementation. Level 2 Improvements could require a longer timeframe to implement and would have a great impact (physical and user) when compared to Level 1 Improvements. In addition to the Level 1 and Level 2 Improvements, several long-term improvements, or Level 3 Improvements, have been identified. The Level 3 Improvements were not studied in depth because of the complexity of the proposed improvements and need for additional investigation beyond the scope of this Study. In addition, due to the complexity and estimated high cost and impact of these improvements the MPO decided that these improvements would not be feasible to implement. For these reasons, the Level 3 Improvements were eliminated from consideration. After development of the Toolbox of Improvements, a macroscopic view of the Study area was taken in which several locations were identified as requiring improvements beyond what could be provided by a Level 1 or 2 Improvement. These locations included a combination of improvements to serve a larger area than the study limits. These improvements were identified as Targeted Improvement Areas. These improvements range in complexity and cost, but provide an overall benefit to the entire corridor as opposed to a localized, single improvement area. All improvements which include recommendations to modify traffic signal timing and/or lane configurations would require a traffic study to ensure that levels of services would not be reduced to unsatisfactory levels.

b. Toolbox of Improvements – Level 1 Improvements

The Level 1 Improvements are characterized as relatively low cost, immediate impact improvements. The following Level 1 improvements are focused on specific locations within the study limits and illustrated in **Figure 7**:

- Cycling/Walking Educational Campaign – The purpose of this improvement would be to educate the local student population and general walking and bicycling public of the dangers of not using designated crossings and signalized intersections. This campaign could be used to inform students to report accidents to authorities no matter how minor so that accident frequency and locations could be tracked. This improvement could include a coordinated effort with local activity centers to promote safe biking and walking habits and to solicit feedback from students to identify hazardous or difficult locations to navigate. This improvement could also include an evaluation of the effectiveness of the existing crossing guard location and determination of the need for additional crossing guards/locations;

- Speed Display Unit – This improvement would include the use of a mobile or permanent speed display trailer to provide active feedback to drivers who may be exceeding the speed limit. This could potentially slow drivers down making it easier for bicyclists and pedestrian to travel along the roadways. Specific locations are identified as Item 2 on **Figure 7**;

- General Sidewalk Improvements – This improvement would include the construction of new sidewalk to fill missing links, repair deteriorated sidewalk, and working with homeowners to enforce sidewalk cleaning. Specific locations are identified as Item 3 on **Figure 7**;

- Pedestrian Ramp Improvements – This improvement would include the reconstruction and construction of curb ramps to provide full ADA compliance and sidewalk connectivity within the corridor. Specific locations are identified as Item 4 on **Figure 7**;

- Driveway Crossing Improvements – This improvement would involve the reconstruction of existing driveway crossings to bring these crossings into full ADA compliance, as well as consideration to develop an access management plan. Specific locations are identified as Item 5 on **Figure 7**;

- Crosswalk Improvements – This improvement would include the addition of crosswalks or conversion from standard crosswalks to high visibility crosswalks. These locations are identified as Item 6 on **Figure 7**;

- Transit Stop Improvement – This improvement would involve the addition of vegetation, passenger shelters, and general beautification at transit stops. The locations identified for this improvement are noted as Item 7 on **Figure 7**;

- Street Furniture – This improvement would include the addition of benches along the sidewalks within the corridor. Several locations were identified to have sufficient space to add benches behind the existing sidewalk. These locations are identified as Item 8 on **Figure 7**;

- Turn Lane Modifications – This modification would include the prohibition of turning movements or the adjustment of lane arrangements at the locations identified as Item 9 on **Figure 7**. Implementation of this improvement would require a traffic signal analysis to ensure traffic levels of service are not reduced to unsatisfactory levels. This would include the following modification:

    - Southbound approach of Ward Street at U.S. Route 50 Business – change from a left turn lane and shared through-right to a shared through-left and right turn lane;

    - Northbound approach of Davis Street at US Route 50 Business – Eliminate access from U.S. Route 50 Business to East William Street;

    - Westbound approach of Mt. Hermon Road at East Main Street – Eliminate westbound Mt. Hermon Road right turn to northbound East Main Street; however, still permit right turn from Mt. Hermon Road onto Truitt Street. Elimination of highly skewed right turn would allow for the curb line to be pulled closer to the intersection and would provide for more desirable pedestrian crossing locations of East Main Street and Mt. Hermon Road;

    - Southbound approach of Beaglin Park Drive at Mt. Hermon Road – Eliminate right turn lane and modify right lane to be a shared right-through lane. Implementation of this improvement would be combined with the right-turn-on-red restriction improvement;

- Signing Improvements – While there is no specific location identified on **Figure 7** for signing improvements. Implementation of this improvement would include installing new wayfinding signage for pedestrians and bicyclists directing them to specific routes and destinations such as the Salisbury City Park, US Post Office, and the Wicomico Youth and Civic Center;

- Stop Line Adjustments – These improvement locations are presented as Item 11 on **Figure 7**. These improvements would be required after the installation/upgrade of pedestrian curb ramps at the respective intersection corners. The existing stop lines would not facilitate compliant pedestrian crosswalks and crossings

- Right-Turn-On-Red Restrictions - This modification would include right-turn-on-red restrictions to locations identified as Item 12 on **Figure 7**. Implementation of this improvement would provide pedestrians with a greater level of comfort when crossing the roadway as compared to crossing with vehicles making right turns after stopping. However, this modification would

require additional analysis to verify the vehicular traffic impact. Potential intersections include east and westbound on U.S. 50 Business at Naylor and Truitt Streets;

- Dedicated/Shared Bike Lanes – Locations proposed for these improvements identified as Item 13 on **Figure 7**. This improvement would include the elimination of the rightmost eastbound and westbound lanes of U.S. Route 50 and installation of marked bicycle lanes from Ward Street to Beaglin Park Drive, as well as a potential reduction in the speed limit along U.S. 50 Business extending from E. Main Street to Beaglin Park Drive. This improvement would also include the narrowing of existing lanes along Mt. Hermon Road and installation of shared bicycle lanes along the rightmost lanes from East Main Street to Beaglin Park Drive.

- Landscaping – Locations proposed for these improvements are identified as Item 14 on **Figure 7**. These locations were identified as existing green spaces that could be re-purposed to install general greenscaping and/or bio-retention areas to treat stormwater for the proposed improvements.

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LANDSCAPE ARCHITECTURE

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SCALE IN FEET
0 250
125 500

LEGEND

1. EDUCATIONAL CAMPAIGN
2. SPEED DISPLAY UNIT
3. SIDEWALK IMPROVEMENTS
4. CURB RAMP IMPROVEMENTS
5. DRIVEWAY IMPROVEMENTS
6. CROSSWALK IMPROVEMENTS
7. TRANSIT STOP IMPROVEMENTS
8. STREET FURNITURE
9. TURN LANE IMPROVEMENTS
10. SIGNING IMPROVEMENTS
11. STOP LINE ADJUSTMENT
12. RIGHT TURN ON RED RESTRICTIONS
13. DEDICATED/SHARED BIKE LANES
14. LANDSCAPING

US ROUTE 50 PEDESTRIAN AND BICYCLIST SAFETY AND CONNECTIVITY PLAN

LEVEL 1 IMPROVEMENT LOCATIONS

DATE:	FIGURE NO.
JUNE 2014	7

c. Toolbox of Improvements – Level 2 Improvements

The Level 2 Improvements are characterized as having relatively moderate impact from both a physical footprint perspective and a user's inconvenience perspective during installation. Some of these improvements would build upon Level 1 Improvements making them permanent. These improvements would also have relatively moderate cost to install as compared to Level 3 recommendations. As with the Level 1 Improvements, these improvements may require additional study prior to implementation. These improvements are focused on specific locations within the study limits and are illustrated in **Figure 8**. The Level 2 Improvements include the following:

- Raised Pedestrian Crossings – This improvement would include the installation of raised pedestrian crossings at the locations identified as Item 1 on **Figure 8**. The proposed locations include the existing mid-block crossing of East Main Street at Wicomico Middle School, south approach of Long Avenue at the Mt. Hermon Road/East Main Street intersection, north approach of Long Avenue and Glen Avenue, and the north approach of Beaglin Park Drive at the Mt. Hermon Road intersection. This improvement will serve as a traffic calming measure at which vehicles will slow down as they approach;
- Pedestrian Signal Improvements – This improvement will include the installation/upgrade of ADA compliant accessible pedestrian signals and push buttons at the locations identified as Item 2 on **Figure 8**. This improvement would include the addition of audible pedestrian signals (APS) and countdown pedestrian signals (CPS);
- Conversion to One-Way – This improvement would convert an existing two-way roadway to one-way. One location within the study area, East William Drive from East Main Street to Davis Street, would be suitable for conversion to a one-way roadway (westbound) and is identified as Item 3 on **Figure 8**;
- Pedestrian Refuge Island Modification – These improvement locations are identified as Item 4 on **Figure 8**. These improvements are needed in order to make the existing refuge islands along U.S. Route 50 Business are 4 feet wide and need to be 6 feet wide in order to be ADA compliant in accordance with MDSHA ADA Guidelines. The islands could be widened by applying appropriate taper lengths to achieve the two additional feet of width at the respective pedestrian crossing cut-through locations and by narrowing the adjacent lanes;
- Conversion of Painted Channelizing Islands – These improvement locations are identified as Item 5 on **Figure 8**. These improvements would include the elimination of the existing painted pavement channelizing islands and replacement with raised islands. These locations would not only physically restrict vehicles from traveling over the painted island, but would also serve as a refuge area for existing pedestrian crossings. For example, the U.S. 50 Business and Ward Street intersection contains two painted channelizing islands. By replacing these painted islands with physical islands, the crosswalks could be relocated to provide shorter pedestrian crossing distances and bring the pedestrians into the driver's view by placing them closer to the intersection. This improvement is presented in **Figure 9**.
- Curb Radius Reduction/Curb Extensions – These improvement locations are identified as Item 6 on **Figure 8**. These improvements would include the extension of the existing curb line and/or reduction of existing curb line radii. This improvement would reduce the distance a pedestrian is required to cross and also require vehicles to slow as they rounded the intersection corners. With this improvement roadway drainage patterns would need to be analyzed for the existing and proposed systems.

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SCALE IN FEET

0 250 125 500

LEGEND

1. RAISED PED CROSSINGS
2. PED SIGNAL IMPROVEMENTS
3. CONVERSION TO ONE-WAY
4. REFUGE ISLAND MODIFICATION
5. CHANNELIZED ISLAND CONVERSION
6. CURB EXTENSIONS
7. CORNER RADIUS REDUCTION
8. LANE NARROWING
9. LIGHTING IMPROVEMENTS
10. CHOKERS
11. HAWK SIGNAL

US ROUTE 50 PEDESTRIAN AND BICYCLIST SAFETY AND CONNECTIVITY PLAN

LEVEL 2 IMPROVEMENT LOCATIONS

DATE:	FIGURE NO.
JUNE 2014	8

An example of this improvement at the north leg of the US Route 50 Business and Truitt Street intersection and is presented in **Figure 10**.

- Lane Narrowing - Locations proposed for these improvements identified as Item 8 on **Figure 8**. This improvement would include the elimination of one westbound and one eastbound lane on Mt. Hermon Road from the East Main Street intersection to the Beaglin Park Drive intersection.

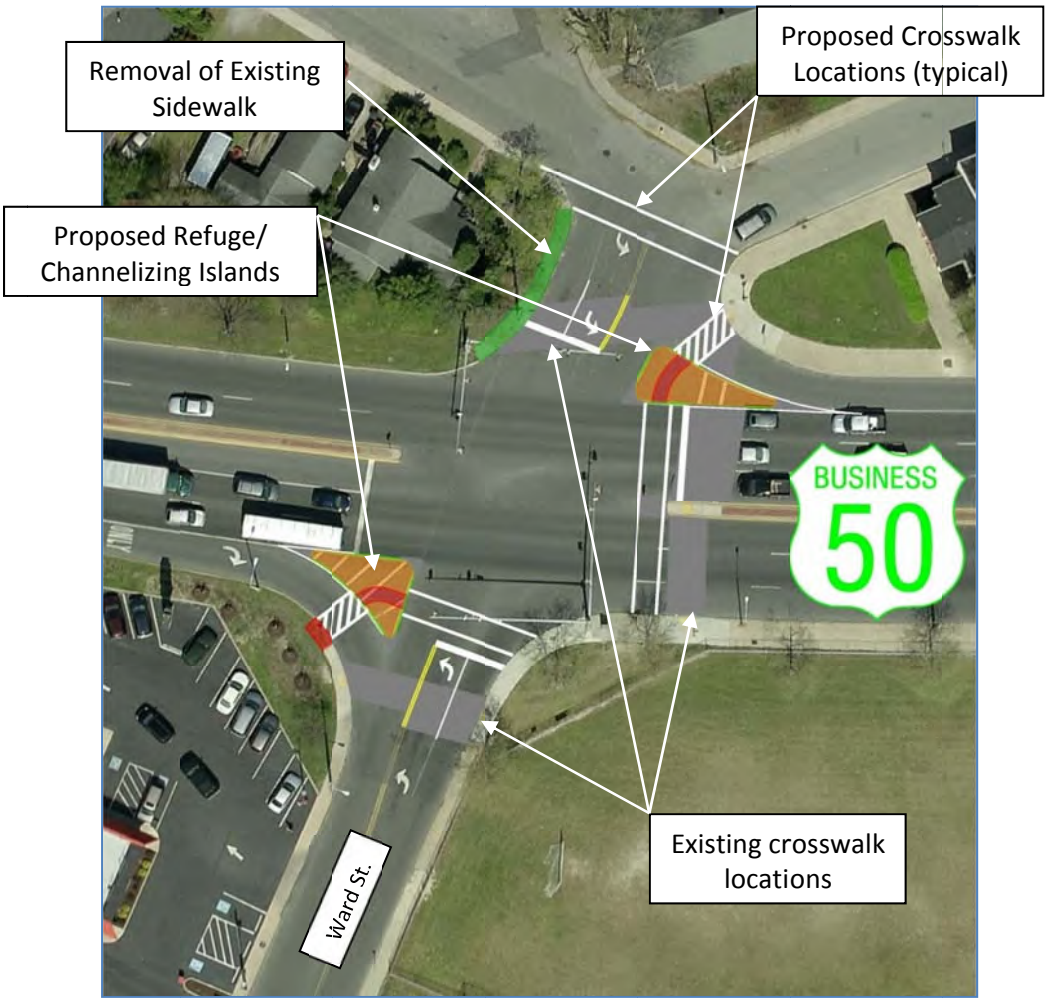


Figure 9: US Route 50 and Ward Street intersection

- Lighting Improvements – Locations proposed for these improvements are identified as Item 9 on **Figure 8**. These locations are specifically targeted toward the Ward Street, Davis Street, Naylor Street, Truitt Street, East Main Street, and Civic Avenue intersections with U.S. Route 50 Business. Currently, where lighting exists at these intersections, it is generally located on the opposite side of the roadway from the pedestrian crossing. By adding lighting to the side of the roadway with the marked pedestrian crossings, pedestrian will be more visible to drivers.
- Chokers – These improvement locations are identified as Item 10 on **Figure 8**. Chokers can be installed on one, or both sides of the roadway and act as a traffic calming measure. Chokers are generally installed on wider roadways where vehicle speeds are greater than desirable.

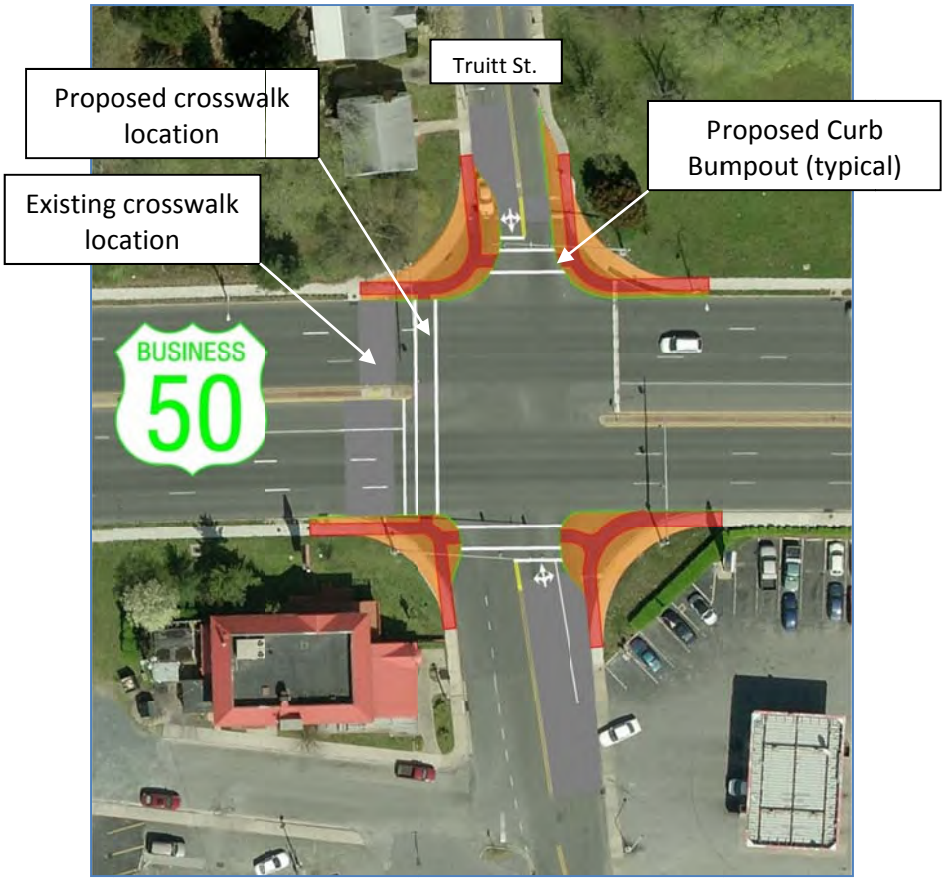


Figure 10: US Route 50 and Truitt Street intersection

- Hawk Signal – One location was identified as being a potential location to install a HAWK signal. This location is presented as Item 11 on **Figure 8** and would be at the existing mid-block pedestrian crossing of East Main Street at Wicomico Middle School. A HAWK signal, or HAWK beacon, is a pedestrian actuated traffic signal remaining dark until a pedestrian approaches the crosswalk and actuates the signal. An example HAWK signal is presented in **Figure 11**.

Source: http://www.kabircares.org/ideas-on-rhode-island-avenue-crosswalks/

Figure 11: HAWK Signal

d. Toolbox of Improvements – Targeted Improvement Areas

Finally, four "Targeted Improvement Areas" were identified during the study. These locations include a combination of the Level 1, 2, and 3 Improvements and other site specific improvements, which could be implemented within a location identified in the Study area as having a specific need for pedestrian, bicyclist, and/or additional vehicular accommodations. For these improvements, planning level cost estimates were developed to be used by the member jurisdictions of the S/WMPO for planning and programming efforts.

Targeted Improvement Area 1: Bike Lanes on U.S. Route 50 Business

The U.S. Route 50 corridor from Ward Street to Beaglin Park Drive – This improvement would build upon the Level 1 Improvement in which dedicated bicycle lanes would be added to U.S. Route 50 Business. Along eastbound U.S. Route 50 Business, this improvement would include converting the right lane for approximately 5,200 feet from the Ward Street intersection to the Civic Avenue intersection. Because of the lack of a shoulder for this segment of U.S. 50 Business, a future traffic study would have to be performed in order to determine whether or not right turn lanes would be required at the Davis Street, Naylor Street, Truitt Street, East Main Street intersection, and Civic Avenue intersection, as well as compatibility with recommended bike lane. East of the Civic Avenue intersection, the eastbound acceleration lane from Civic Avenue would be repurposed and the right shoulder converted to a bicycle lane. Approaching Beaglin Park Drive, the eastbound right turn lane to southbound Beaglin Park Drive would be removed. At this point, the proposed eastbound U.S. Route 50 Business bicycle lane would connect to the proposed Beaglin Park Drive (Northeast Collector Trail) bicycle path.

Likewise, the westbound U.S. Route 50 Business shoulder from Beaglin Park Drive to East Main Street would be converted to a dedicated bicycle lane. However, the respective acceleration and deceleration lanes at the Beaglin Park Drive, Civic Avenue, and East Main Street intersection would be removed. From East Main Street to Ward Street the right lane (3,330+/- feet) is proposed to be converted to a dedicated bicycle lane. Converting the right lane to a dedicated bicycle lane would leave two westbound lanes and maintain a continuous typical section along U.S. Route 50 Business through the corridor. Aside from these modifications, minor adjustment to existing channelizing islands would be required in order to accommodate the proposed changes in the right turn lanes. This improvement would cost approximately $75,000. These improvements, along with a proposed typical section, are presented in **Figure 12**.

To Salisbury

To Berlin

MARYLAND 346

CONTINUE TWO EASTBOUND AND TWO WESTBOUND LANES ON US 50

TIE INTO TWO EXISTING WESTBOUND LANES ON US 50

±3,300'

±5,200'

NAYLOR STREET

TRUITT STREET

US POST OFFICE

E. MAIN STREET

EAST

SALISBURY PARKWAY

CIVIC AVENUE

BUSINESS 50

MARYLAND 350

MT. HERMON ROAD

EAST WILLIAM STREET

WARD ST.

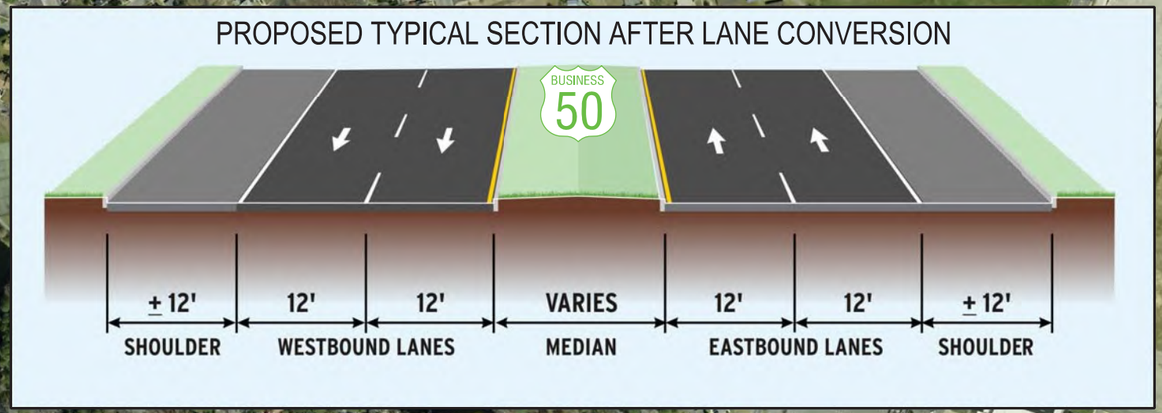
WICOMICO MIDDLE SCHOOL

SALISBURY CITY PARK

BEAGLIN PARK DRIVE

TIE INTO TWO EXISTING EASTBOUND LANES ON US 50

PROPOSED TYPICAL SECTION AFTER LANE CONVERSION



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SCALE IN FEET

0 250 125 500

LEGEND

- STUDY AREA BOUNDARY
- EXISTING SIDEWALK (ADA COMPLIANT)
- EXISTING SIDEWALK (NON-ADA COMPLIANT)
- STATE BICYCLE ROUTE
- EXISTING SHARED-USE PATH
- PROPOSED SHARED-USE PATH
- SIGNALIZED INTERSECTION
- PEDESTRIAN CROSSING/SIGNAL
- SHORE TRANSIT BUS STOP

US ROUTE 50 PEDESTRIAN AND BICYCLIST SAFETY AND CONNECTIVITY PLAN

TARGETED IMPROVEMENT AREA: US 50 BUSINESS LANE CONVERSION

DATE: JUNE 2014

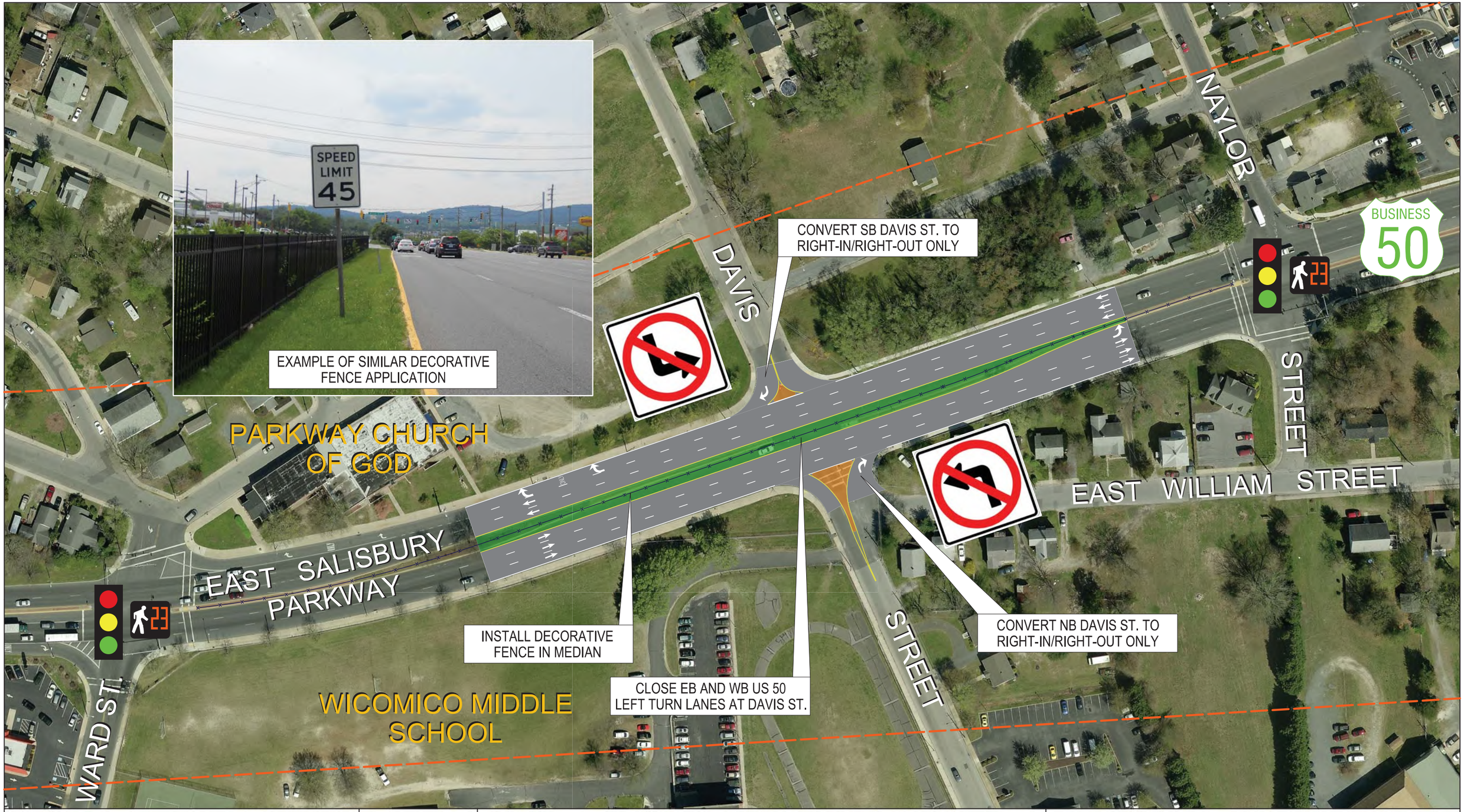
FIGURE NO. 12

Targeted Improvement Area 2: Davis Street Safety Crossing Improvement

The U.S. Route 50 Business and Davis Street intersection – This intersection was of particular concern during the February 2013 field visit. As described earlier in this report, the U.S. Route 50 Business/Davis Street intersection does not include a pedestrian crossing. In addition, there is no crossing guard stationed at this intersection during school opening and closing times while there is one stationed at the Ward Street intersection immediately west of this location. However, many pedestrians (mainly school aged students) still choose to cross U.S. Route 50 Business at this location. In addition, U.S. Route 50 Business does not have any method of traffic control at the Davis Street intersection and vehicles are generally traveling through the intersection at, or near, the speed limit. In order to further restrict pedestrians from crossing U.S. Route 50 Business at Davis Street, this targeted improvement would include the following modifications:

- Restrict Davis Street approaches to right-in/right-out only maneuvers;
- Eliminate eastbound and westbound U.S. Route 50 Business left turns at Davis Street by closing the median. This improvement would further restrict vehicles from crossing U.S. Route 50 Business at Davis Street, and instead encourage crossings at signalized intersections including Ward and Naylor Streets;
- Install channelizing island and signage at the Davis Street approaches to further enforce the right-in/right-out maneuver. In addition, the channelizing islands would restrict vehicles traveling on eastbound U.S. Route 50 Business from entering East William Street;
- Convert East William Street to one way westbound such that vehicles would be further restricted from entering East William Street directly from U.S. Route 50 Business and the northbound approach on Davis Street. This improvement is optional, but could also be implemented in conjunction with the improvements associated with Targeted Improvement Area 3;
- Install decorative fencing along the median of US Route 50 Business extending from Ward to Naylor Streets. The fencing would act as a physical barrier to pedestrians from crossing U.S. Route 50 Business at unsafe and unsignalized intersections; and
- Install landscaping in the median of U.S. Route 50 Business from Ward to Naylor Streets. The landscaping would serve as another deterrent to pedestrians and also act as a beautification enhancement continuing the existing median treatment located between Truitt Street and Naylor Street.

These improvements are presented in **Figure 13** with a graphical rendering shown in **Figure 14**. In addition to these improvements, a coordinated effort with the Wicomico County Board Of Education could include closure of the Wicomico County Middle School faculty driveway access on Davis Street. This access point could be relocated to the existing school driveway access located on Ward Street. Justification for this closure is attributed to field observations of school students accessing Davis Street via the existing gate opening for the driveway. If this access point would be closed, students may travel to the next logical access point, which is located at the U.S. Route 50 Business and Ward Street intersection. At this intersection, a school crossing guard is on duty to provide a safe and convenient crossing. These improvements combined would cost approximately $500,000 to construct.



SALISBURY - WICOMICO METROPOLITAN PLANNING ORGANIZATION

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RHODESIDE & HARWELL LANDSCAPE ARCHITECTURE

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SCALE IN FEET

0 50 25 100

LEGEND

- STUDY AREA BOUNDARY
- PROPOSED LANDSCAPING
- PROPOSED PAVEMENT
- PROPOSED SPLITTER ISLAND
- PROPOSED FENCE
- TRAFFIC FLOW ARROW
- SIGNALIZED INTERSECTION
- PEDESTRIAN CROSSING/SIGNAL

US ROUTE 50 PEDESTRIAN AND BICYCLIST SAFETY AND CONNECTIVITY PLAN

TARGETED IMPROVEMENT AREA 2: US 50 AT DAVIS STREET

DATE:	FIGURE NO.
JUNE 2014	13

Figure 14: Graphical Rendering of Davis Street Targeted Improvement Area

Targeted Improvement Area 3: Mt. Hermon Road "Road Diet"

Mt. Hermon Road Corridor from East Main Street to Beaglin Park Drive – This section of roadway is currently four lanes total, two in the westbound and two in the eastbound direction. There is either sidewalk or a bicycle path along the majority of the corridor; however, there are a few missing segments. This corridor serves many of the businesses within the Study area and because of this, there are many access points located on the roadway. In order for vehicles to enter these businesses, they must turn from the left lane and yield to two lanes of oncoming traffic. In addition, drivers must account for pedestrians walking on the sidewalks and through the driveway crossings as they navigate their vehicles through the business entrances.

This corridor is well suited for a "Road Diet." Application of a Road Diet to this corridor would involve restriping the entire roadway to include one westbound lane, one eastbound lane, and one center two-way-left-turn-lane as shown in **Figures 15-18**. A Road Diet is generally applicable on roadways with average daily traffic volumes of 20,000 vehicles or less under, which Mt. Hermon Road operates. In addition to this modification, an on-road dedicated bicycle lane would be added in each direction. This bicycle lane would connect the proposed Beaglin Park Drive bike path located at the eastern terminus to the East Main Street State bicycle route and Salisbury City Park at the western terminus. Application of this improvement would allow turning vehicles to enter the center turn lane prior to turning and would also require those vehicles to yield to only one lane of oncoming traffic. The cost associated with this Level 3 recommendation would essentially be negligible if the improvement is applied during the next scheduled resurfacing project for Mt. Hermon Road. However, if the improvement were to be programmed, the cost of the full improvement is estimated at approximately $800,000. A graphical rendering of this improvement is presented in **Figure 19.**

SALISBURY - WICOMICO METROPOLITAN PLANNING ORGANIZATION

RK&K

RHODESIDE & HARWELL
LANDSCAPE ARCHITECTURE

N

SCALE IN FEET
0 50
25 100

LEGEND

- STUDY AREA BOUNDARY
- EXISTING SIDEWALK (ADA COMPLIANT)
- EXISTING SIDEWALK (NON-ADA COMPLIANT)
- STATE BICYCLE ROUTE
- EXISTING SHARED-USE PATH
- PROPOSED SHARED-USE PATH
- SIGNALIZED INTERSECTION
- PEDESTRIAN CROSSING/SIGNAL
- SHORE TRANSIT BUS STOP

US ROUTE 50 PEDESTRIAN AND BICYCLIST SAFETY AND CONNECTIVITY PLAN

TARGETED IMPROVEMENT AREA: MT. HERMON ROAD CORRIDOR

DATE:
JUNE 2014

FIGURE NO.
15

EAST SALISBURY PARKWAY

BUSINESS 50

MARYLAND 350

STOP

ONLY

CIVIC AVENUE

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LANDSCAPE ARCHITECTURE

SCALE IN FEET
0 50
25 100

LEGEND

- STUDY AREA BOUNDARY
- EXISTING SIDEWALK (ADA COMPLIANT)
- EXISTING SIDEWALK (NON-ADA COMPLIANT)
- STATE BICYCLE ROUTE
- EXISTING SHARED-USE PATH
- PROPOSED SHARED-USE PATH
- SIGNALIZED INTERSECTION
- PEDESTRIAN CROSSING/SIGNAL
- SHORE TRANSIT BUS STOP

US ROUTE 50 PEDESTRIAN AND BICYCLIST SAFETY AND CONNECTIVITY PLAN

TARGETED IMPROVEMENT AREA: MT. HERMON ROAD CORRIDOR

DATE:
JUNE 2014

FIGURE NO.
16

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RHODESIDE & HARWELL
LANDSCAPE ARCHITECTURE

SCALE IN FEET
0 50
25 100

LEGEND

- STUDY AREA BOUNDARY
- EXISTING SIDEWALK (ADA COMPLIANT)
- EXISTING SIDEWALK (NON-ADA COMPLIANT)
- STATE BICYCLE ROUTE
- EXISTING SHARED-USE PATH
- PROPOSED SHARED-USE PATH
- SIGNALIZED INTERSECTION
- PEDESTRIAN CROSSING/SIGNAL
- SHORE TRANSIT BUS STOP

US ROUTE 50 PEDESTRIAN AND BICYCLIST SAFETY AND CONNECTIVITY PLAN

TARGETED IMPROVEMENT AREA: MT. HERMON ROAD CORRIDOR

DATE:	FIGURE NO.
JUNE 2014	17

BUSINESS 50

EAST SALISBURY PARKWAY

BEAGLIN PARK DRIVE

BEGIN WESTBOUND
DEDICATED BICYCLE LANE

MARYLAND 350

ST. ALBANS DRIVE

END EASTBOUND
DEDICATED BICYCLE LANE

RITE AID

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RHODESIDE & HARWELL
LANDSCAPE ARCHITECTURE

N

SCALE IN FEET
0 50
25 100

LEGEND

- STUDY AREA BOUNDARY
- EXISTING SIDEWALK (ADA COMPLIANT)
- EXISTING SIDEWALK (NON-ADA COMPLIANT)
- STATE BICYCLE ROUTE
- EXISTING SHARED-USE PATH
- PROPOSED SHARED-USE PATH
- SIGNALIZED INTERSECTION
- PEDESTRIAN CROSSING/SIGNAL
- SHORE TRANSIT BUS STOP

US ROUTE 50 PEDESTRIAN AND BICYCLIST SAFETY AND CONNECTIVITY PLAN

TARGETED IMPROVEMENT AREA: MT. HERMON ROAD CORRIDOR

DATE:
JUNE 2014

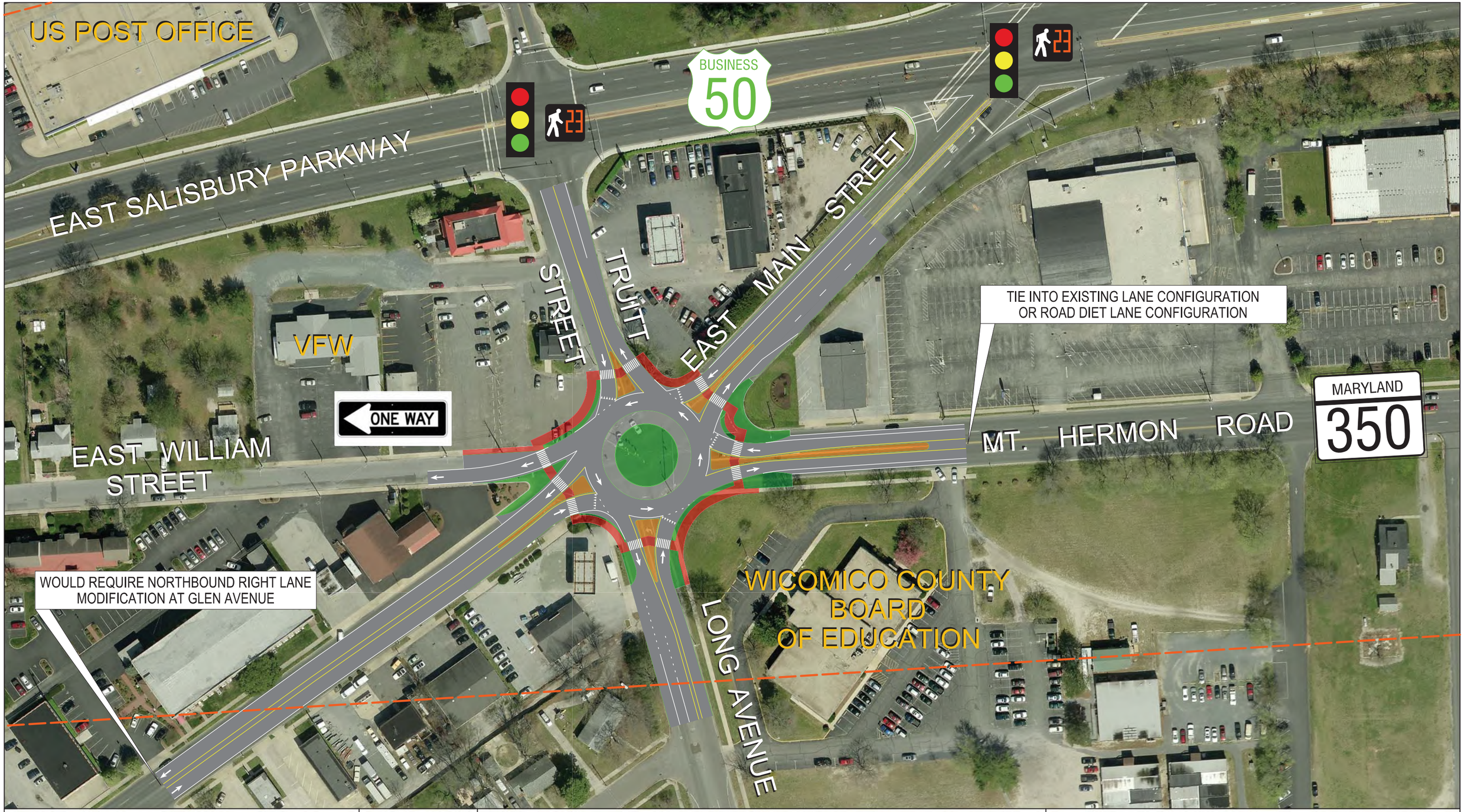
FIGURE NO.
18

Figure 19: Graphical Rendering of Mt. Hermon Road "Road Diet" Targeted Improvement

Targeted Improvement Area 4: Mt. Hermon Road Roundabout

Mt. Hermon Road/East Main Street/Truitt Street intersection – This intersection is currently a six-legged, highly skewed, signalized intersection. Five of the six roadways have multi-lane approaches. This intersection not only creates confusion for pedestrians and bicyclists traveling through the intersection, but also for vehicular traffic as the signal heads for all approaches are located on only three separate signal poles leading to awkward viewing angles and overlapping views of signals.

This intersection would be well suited for a single-lane roundabout. Because of the number of approaches to this intersection, the intersection contains a very large footprint. Based on preliminary roundabout design, it appears that a single-lane roundabout may be designed with a minor amount of new right-of-way required. A secondary modification to this improvement would include the conversion of East William Street to a one-way westbound roadway. The single-lane roundabout would also tie into the proposed Mt. Hermon Road "Road Diet" from Targeted Improvement Area 3. This improvement would cost approximately $1.5 to $2 million excluding any potential right-of-way costs. A preliminary concept for this roundabout is presented in **Figure 20** with a graphical rendering presented in **Figure 21**.



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RHODESIDE & HARWELL
LANDSCAPE ARCHITECTURE

N

SCALE IN FEET
0 50
25 100

LEGEND

- STUDY AREA BOUNDARY
- PROPOSED SIDEWALK
- PROPOSED LANDSCAPING
- PROPOSED PAVEMENT
- PROPOSED SPLITTER ISLAND
- PROPOSED TRUCK APRON
- TRAFFIC FLOW ARROW
- SIGNALIZED INTERSECTION
- PEDESTRIAN CROSSING/SIGNAL

US ROUTE 50 PEDESTRIAN AND BICYCLIST SAFETY AND CONNECTIVITY PLAN

TARGETED IMPROVEMENT AREA: MT. HERMON RD. / E. MAIN ST. INTERSECTION

DATE:	FIGURE NO.
JUNE 2014	20

Figure 21: Graphical Rendering of Mt. Hermon Road/East Main Street Intersection Targeted Improvement

e. Toolbox of Improvements and Costs

The potential improvements described above are summarized in **Table 2**. **Table 2** can be utilized as the Toolbox of Improvements from which improvement could be selected for further study or design. More detailed cost estimates would be developed using the additional engineering analysis to give transportation programming staff better information from which to program constrained long-range transportation project funding, as well as to identify effects to the Transportation Improvement Program (TIP) and Statewide Transportation Improvement Program (STIP) plans. The appropriate level and detail of environmental study and documentation would have to be considered for each improvement.

Table 2: Toolbox of Improvements

Improvement		Rationale/Potential Benefit	Cost Range
Level 1 Improvements			
1.	Cycling/Walking Educational Campaign	• Educate bicyclists about minimizing risks to their safety • Present proper operation of pedestrian and bicyclist facilities	$1,000 to $5,000
2.	Speed Display Unit	• Provide immediate vehicle speed feedback • Reduce potential for speeding	Rent $200/week
3.	General Sidewalk Improvements	• Provide complete linkages between origins and destinations • Achieve ADA compliance	$5-$15/SF
4.	Pedestrian Ramp Improvements	• Provide access to existing and provide sidewalks at intersections • Achieve ADA compliance	$1,000 to $2,000 each
5.	Driveway Crossing Improvements	• Achieve ADA compliance	$2,000 to $5,000 each
6.	Crosswalk Improvements	• Provide clear delineation for intended pedestrian route	$1,000 each
7.	Transit Stop Improvements	• Provide protection from weather • Provide clear user information • Improve area aesthetics	$10,000 to $20,000
8.	Street Furniture	• Provide comforts for pedestrians and bicyclists patronizing local businesses • Add attractive and recognizable features to the area	$1,000 to $5,000
9.	Turn Lane Modifications	• Reduce vehicular conflicts for pedestrians and bicyclists	$500 to $1,000
10.	Signing Improvements	• Provide clear destinations and distances for bicyclists and pedestrians	$100 to $500 each
11.	Stop Line Adjustments	• Provide adequate clearance for new/modified crosswalks	$100 to $500 each
12.	Right-Turn-On-Red Restrictions	• Reduce vehicular conflicts for pedestrians and bicyclists	$100 to $500+ each
13.	Dedicated/Shared Bike Lanes	• Provide a clear designated on-road route for bicyclists • Improve bicycle route connectivity	$1,000-$5,000

14.	Landscaping	• Improve area aesthetics • Incorporate urban stormwater management	$500+
Level 2 Improvements			
1.	Raised Pedestrian Crossings	• Vehicles reduce speed approaching crossing • Raises pedestrians to a more prominent view for drivers	$2,000-$5,000
2.	Pedestrian Signal Improvements	• Provide ADA compliant pedestrian signals	$10,000 to $30,000
3.	Conversion to One-Way	• Reduce vehicle conflicts at adjacent intersections	$1,000+
4.	Pedestrian Refuge Island Modification	• Achieve ADA compliance for minimum width refuge area	$5,000 to $10,000
5.	Conversion of Painted Channelizing Islands	• Provide physical delineation between pavement and pedestrians • Provides temporary refuge area	$1,000 to $5,000
6.	Curb Radius Reduction/Curb Extensions	• Reduces width of pedestrian crossing • Facilitates ability to add two pedestrian ramps per corner	$5,000 to $10,000+
7.	Lane Narrowing	• Reduces number of travel lanes • Provides space for bicycle lane • Separates turning movements from through traffic • Passively reduces vehicle speeds	$5,000+
8.	Lighting Improvements	• Improves visibility of bicyclists and pedestrians	$10,000+
9.	Chokers	• Define parking areas • Provide space for roadside enhancements	$5,000 to $10,000
10.	Hawk Signal	• Provides pedestrians with dedicated crossing time	$75,000 to $150,000
Targeted Improvement Areas			
1.	US Route 50 Corridor Improvements	• Provides dedicated bicycle lane from Ward Street to Beaglin Park Drive • Potentially reduce vehicle speeds traveling through corridor	$15,000 to $30,000
2.	US Route 50 and Davis Street Intersection	• Inhibit pedestrian crossings of US Route 50 Business at Davis Street • Reduce vehicular conflict points • Ease bicyclist and pedestrian crossings of Davis Street • Improve area aesthetics	$500,000
3.	Mt. Hermon Road Corridor Improvements	• Provide dedicated and marked bicycle lanes • Reduces vehicle speeds through corridor • Reduces vehicle turning conflicts • Improves area aesthetics	Varies
4.	Mt. Hermon Road/E. Main Street/Truitt Street Intersection	• Reduce vehicle conflict points • Provide easier navigation for pedestrians and bicyclists • Improves area aesthetics • Can be combined with other targeted improvements	$1.5M to $2.0M