
GOLDEN
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Multimodal Access Enhancement Plan

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STUDY BACKGROUND & GOALS

STUDY DESCRIPTION AND PROCESS

The Metropolitan Washington Council of Governments (MWCOG) has provided funds through the Transportation/ Land-Use Connections (TLC) Program to conduct the Golden Mile Multimodal Access Enhancement Plan, which aims to further the goals laid out in the Golden Mile Small Area Plan (SAP). Recognizing the community's desire for a more multimodal environment, the City of Frederick created the Golden Mile SAP. The plan presents a vision of the future of the Golden Mile that integrates transportation and land use to create a dense, vibrant, and livable community. The plan recognizes that true multimodal redevelopment along the US 40 (i.e., the Golden Mile) corridor must rely upon safer and more convenient walking and biking environments, increased street and trail connectivity, and improved transit accessibility and comfort.

Prior to the construction of the Interstate Highway System and I-70, US 40 was the major regional east-west route; however, as suburban, auto-focused development occurred, more local trips became reliant on the roadway, competing for space with these regional users. The result is a multi-lane facility designed for high auto speeds, while also attempting to serve the needs of local users: pedestrians and bicyclists, transit users, and slower moving auto traffic. Today's Golden Mile is an uncomfortable environment for non-auto modes, with minor inconveniences for motorists.

In order to address the desire for the corridor to become multimodal in nature, the Golden Mile Multimodal Access Enhancement Plan identifies opportunities to improve and increase transit and mobility options in association with land redevelopment and livability goals that support the use of those mobility opportunities as outlined in the Golden Mile Small Area Plan.

The Golden Mile Multimodal Access Plan evaluates the existing pedestrian, bicycle, transit, and vehicular conditions along the corridor and in the surrounding areas, including the review of previous studies associated with the corridor. This evaluation has been used to determine how the corridor is currently being used and where opportunities exist to support improved connectivity with the surrounding neighborhoods, and has been presented in the form of an existing conditions memorandum. While a brief summary of the existing conditions report follows, more detail can be found in the site visit summary in Appendix 1 and in the existing conditions summary in Appendix 2.

Based on the results of the existing conditions analysis, a number of graphical on-street and off-street recommendations have been developed for multimodal and connectivity related improvements within the study area. This report begins with a brief summary of the existing conditions and then moves into a series of detailed recommendations. Finally, an action plan is proposed, inclusive of suggestions for funding sources, to help guide the future development in the study area. This report is organized as follows:

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2 RECOMMENDATIONS

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- TRANSIT OPERATIONS AND ACCESSIBILITY
- VEHICULAR CONNECTIVITY, OPERATIONS, AND SAFETY

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EXISTING CONDITIONS

The Golden Mile SAP provided a detailed existing conditions analysis regarding the economic, social, and physical environment. However, a deeper understanding of the existing facilities, safety conditions, pedestrian and bicycle connectivity, and transit environment was required in order to ensure that the recommendations in the Access Enhancement Plan fully covered the breadth of the issues in the study area. This understanding better enabled the study team to ensure that recommendations developed will enable the vision presented in the SAP to be successfully implemented. The following section provides a brief, graphic introduction to the study area and the situation today.

STUDY AREA

The Golden Mile Corridor study area includes a 1.75-mile segment of US Route 40 (aka W. Patrick Street) in Frederick, Maryland from Old Camp Road to US Route 15 / Catoctin Mountain Highway. In order to better understand the context of the Golden Mile, the study area also encompasses the surrounding areas within one half mile to the north and south of the corridor. Additional analysis was also completed at the following signalized intersections:

- US 40/Waverly Drive
- US 40/McCain Drive
- US 40/Willowdale Drive
- US 40/Hillcrest Drive
- US 40/Hoke Place
- US 40/Linden Avenue/Baughmans Lane

FIGURE 1 | GOLDEN MILE STUDY AREA

EXISTING FACILITIES

As seen in Figure 2, the corridor generally includes sidewalks (with grass buffers in many locations) on the north and south sides of US 40. The Maryland State Highway Administration (SHA) is currently improving pedestrian connections at several study intersections, including McCain Drive, Willowdale Drive, Grove Hill Road, Hillcrest Drive, Hoke Place, and Old Camp Road. While the new pedestrian improvements provided by the SHA's ongoing signal upgrades are great efforts to improve pedestrian safety and mobility, walking along the corridor remains an uncomfortable experience due to high auto volumes and speeds, and a daunting sense of scale. With the exception of a single SHARE THE ROAD sign just east of Baughmans Lane, no bicycle facilities are provided on US 40. However, there are several existing and proposed trails and paths in the area that will eventually provide key east/west and north/south connections to and within the study area.

Several alternate, low speed roadways are located in the study area. Key Parkway serves as a parallel route to US 40 that specifically caters to local traffic and non-auto modes of transportation. The remaining north/south connectors are similarly oriented, with the exception of Baughmans Lane, which may not be favorable for active transportation options due to its auto-oriented nature.

FIGURE 2 | EXISTING FACILITIES

SAFETY AND TRAFFIC OPERATIONS

A safety analysis was completed along the corridor using data acquired from the Maryland State Highway Administration. In total, there were 207 police reported crashes over a period of four years (2009 to 2012). In general, the most prominent types of crashes were rear-end and angle collisions. Although there were no fatalities reported during the four-year period, 115 of the crashes involved injuries resulting in 170 people injured over the four-year period. As detailed in Figure 3, the majority of crashes occurred in the vicinity of intersections. The three intersections with the highest numbers of crashes include Hillcrest Drive, Willowdale Avenue, and Hoke Place.

There were also 11 pedestrian crashes over the four-year period. While there were no fatalities, pedestrian crashes on high speed facilities are a point of concern because they often result in serious injuries. All pedestrian crashes were located between McCain Drive and the US 15 on ramp.

Regarding traffic operations, very little delay is experienced along US 40 overall during weekday AM and PM peak hours. However, the north and south streets do experience some delay as a result of the long signal cycles and split-phase operations.

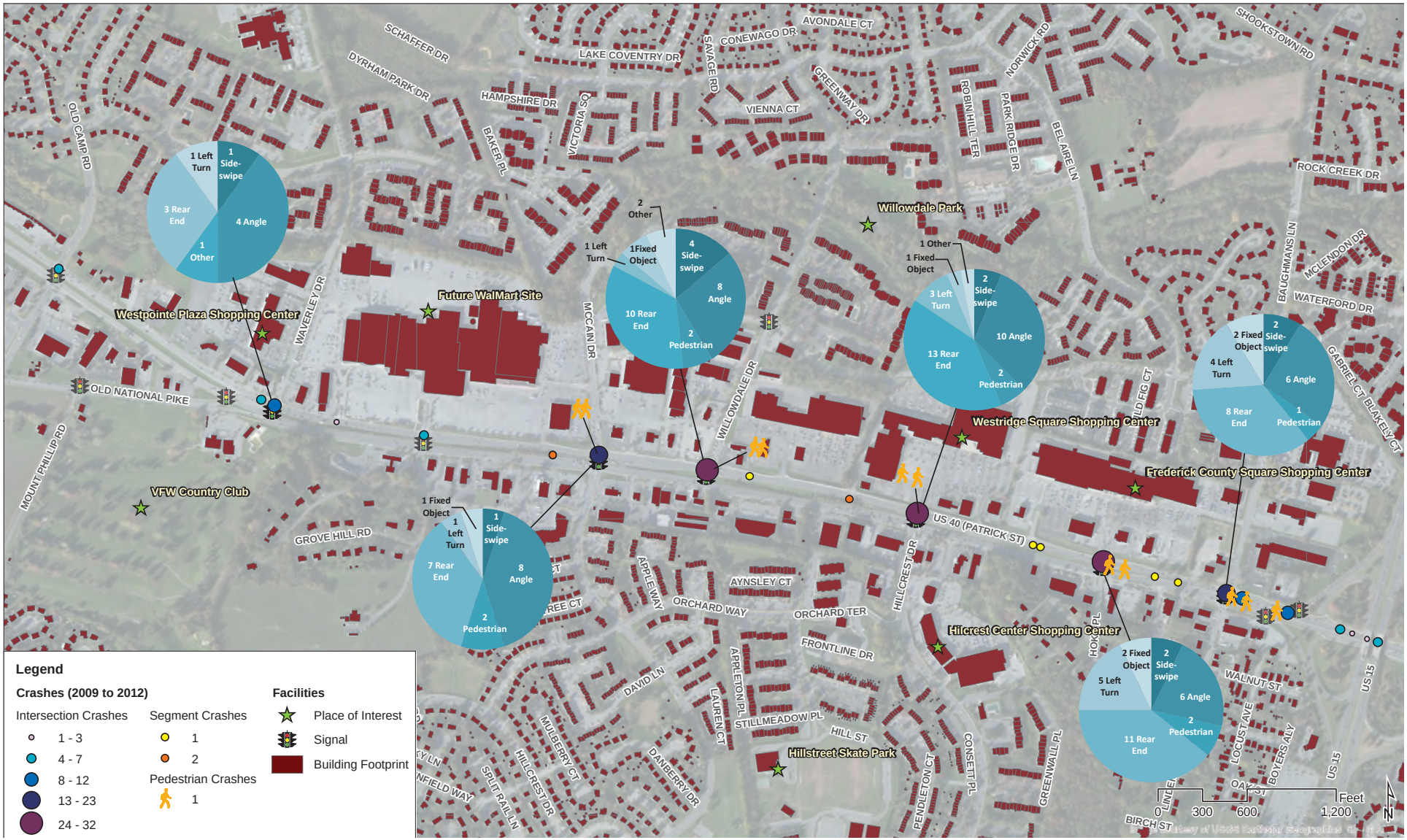

FIGURE 3 | SAFETY AND TRAFFIC OPERATIONS

PEDESTRIAN AND BICYCLE CONNECTIVITY

Due to the structure of the roadway network, it is particularly difficult to walk between residential and retail uses, and requires users to travel long distances around or within large property parcels. Because of this, there are places where it is apparent that pedestrians have been creating their own paths through landscaped areas for convenience. Pedestrians are also currently limited in their ability to access these shopping centers and travel between them, because the centers are often grade separated or are separated by some type of barrier.

Numerous connectivity issues also exist within shopping centers. By nature of the auto-oriented development pattern in the Golden Mile area, retail establishments are generally separated from streets by large parking lots. This is a typical pattern for development over the past fifty years, and while it provides accessible and visible parking for motorists, limited provisions are made for people accessing these establishments by non-auto modes or for walking within them. The external connectivity issues shown below delineate areas with barriers between shopping centers and US 40 or between each other. The internal connectivity issues identify shopping centers with no internal pedestrian features.

FIGURE 4 | PEDESTRIAN AND BICYCLE CONNECTIVITY

TRANSIT ENVIRONMENT

Public transportation service within Frederick County is provided by TransIT Services of Frederick County (TransIT). The Golden Mile Corridor is served by five fixed-route bus lines, all of which converge at Boscov's in the Frederick Towne Mall transfer point. TransIT buses do not currently stop along the corridor due to the high speeds of the roadway and lack of bus stop facilities. Therefore, buses must route through the shopping centers to drop off passengers. While this does provide some convenience to passengers, it adds significantly to the travel time buses take to travel a route, and thus limits the amount of service that can be provided. Headways vary between 30 minutes to two hours, and service generally runs on time. Based on an evaluation of the quality of service, the transit service provides service where it is needed, serving most of the population on time when passengers are expecting to see their buses. Even though the service is generally on time, the long headways qualitatively bring the entire level of service down. The frequency of the service also causes passengers to alter their schedules to use transit, meaning those who have other transportation options will likely use those options to accommodate personal schedules.

FIGURE 5 | TRANSIT ENVIRONMENT

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RECOMMENDATIONS

Based on the existing conditions study, field reviews, and a review of previous studies, a number of recommendations have been developed. Generally, they can be broken down into three categories:

- Pedestrian and Bicycle Connectivity, Safety, and Comfort
- Transit Operations and Accessibility
- Vehicular Safety, Operations, and Accessibility

This section discusses the recommendations for each category in detail, including graphic examples and written descriptions. The sections are organized in a format that details the issues observed and then discusses the recommendations to address the issues. With the exception of corridor-wide issues, each issue is accompanied by a map that calls out problem locations. A final compilation of all of the recommendations is included, which discusses the recommendation, location, responsible party, potential funding source, and time frame for implementation.

PEDESTRIAN AND BICYCLE CONNECTIVITY, SAFETY, AND COMFORT

The pedestrian and bicycle conditions along US 40 and the surrounding areas were evaluated through background research, analysis, and a number of field reviews. As an auto-oriented corridor, the pedestrian and bicycle experience on US 40 is generally uncomfortable and inconvenient. Signalized pedestrian crossings ranged between 100 and 150 feet in length and there are no bicycle facilities. Additionally, since the buildings are generally set back from the road, sidewalk users are often situated between fast-moving vehicles to one side and parking lots on the other. Sidewalks do not lead into parking lots, leaving pedestrians to find their own way through them and to destinations. Physical barriers also block both access to destinations from major roads and cross access between destinations. Even so, several residents were observed walking and bicycling along the corridor for work, shopping, and other daily activities. Recommendations were identified to make small- and large-scale improvements supporting the enhancement of the pedestrian and bicycle environment over the short and long term. The issues addressed can generally be divided into two categories: connectivity issues and safety/comfort issues.

FIGURE 6 | PROPOSED PEDESTRIAN AND BICYCLE IMPROVEMENTS

CONNECTIVITY ISSUES

The connectivity issues observed in the study area can generally be divided into two types: internal connectivity issues and external connectivity issues. Internal issues include items such as the lack of an identified pedestrian path within shopping centers, while external issues deal with barriers to entry to destinations from the surrounding streets as well as cross access issues. As such, recommendations were developed to address each type of issue.

A INTERNAL CONNECTIVITY ISSUES

ISSUE

Internal connectivity is an issue within many of the shopping centers along the corridor. While sidewalks may lead to the entrance to the parking lot, there are no pedestrian facilities to lead from the entrance of the parking lot to the entrances of the offices, stores, and restaurants. Even those who arrive at the shopping center by car are required to find their own way through the parking lot once they arrive.

POTENTIAL SOLUTION

The WalMart site plan shows one way to address this issue. Sidewalks complete with crosswalks where necessary should be constructed through parking areas to entrances as redevelopment occurs. It is important for these pedestrian features to be accompanied by other amenities, such as street trees and lighting to provide a desired level of pedestrian comfort. While sidewalk connections will need to be evaluated as new development occurs, approximately 2,700' of potential pedestrian connections have been identified.

FIGURE 7 | PROPOSED WALMART SITE PLAN

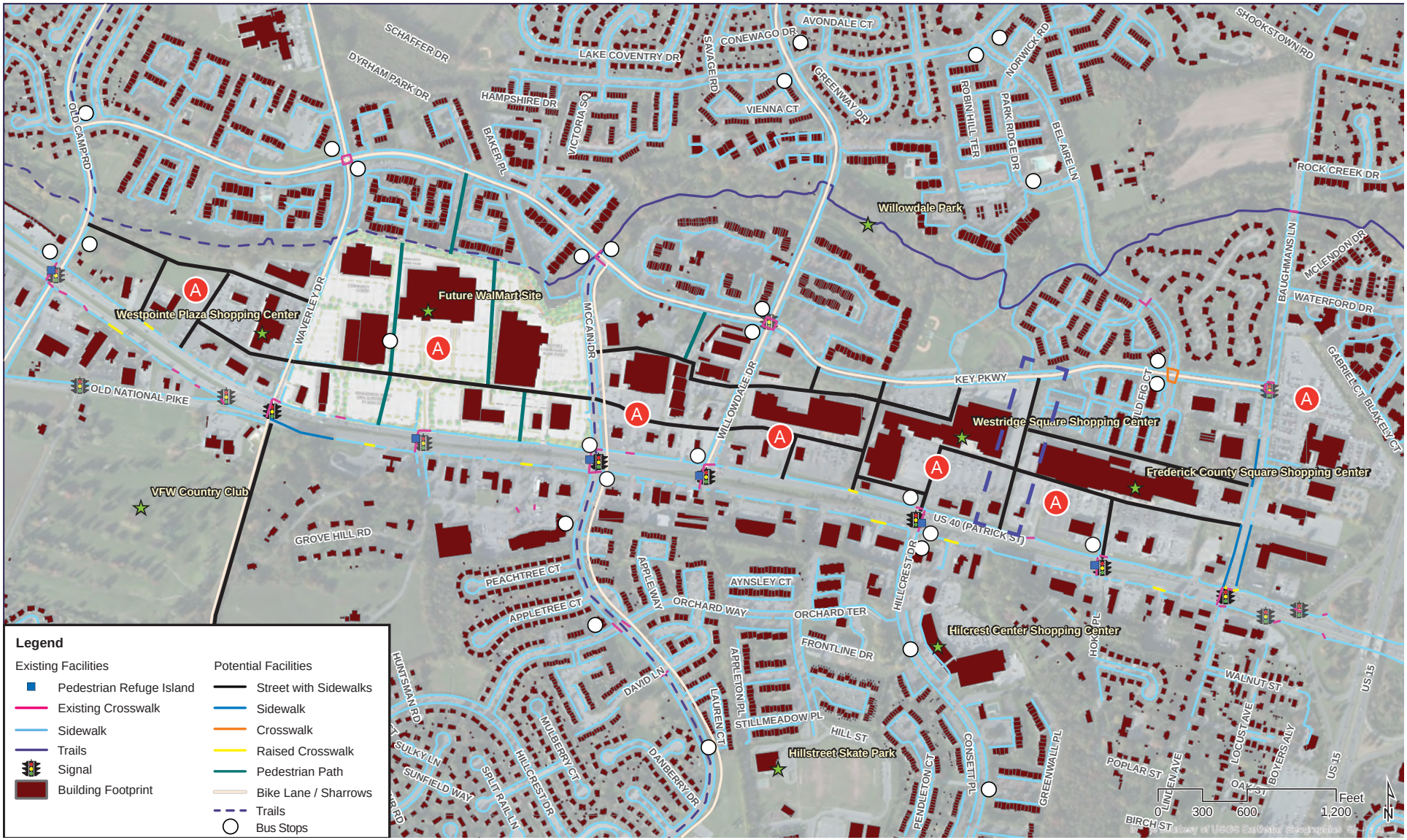


FIGURE 8 | INTERNAL CONNECTIVITY ISSUES

B CONNECTIVITY TO US 40 & KEY PARKWAY

ISSUE

Limited pedestrian connectivity exists between the shopping centers and US 40. In some cases, large elevation changes between US 40 and the adjacent shopping centers are uncrossable by pedestrians, at the locations highlighted in blue in Figure 9. Additionally, there is almost no connectivity to Key Parkway from any of these shopping centers. Although the backs of these shopping centers front Key Parkway, pedestrian and bicycle connections are imperative in order for Key Parkway to succeed as an alternative route for non-motorized transportation.

POTENTIAL SOLUTION

The sidewalks suggested for internal connectivity should connect to each entrance of the property and should also connect to any transit stops that serve the property. If necessary, a separate pedestrian entrance can be made at these locations. Additionally, new connections should be made between the properties and the adjacent residential areas as well as Key Parkway. A good example of how this can be seen in the WalMart site plan, where connections were made to the surrounding apartment complexes. As these shopping centers redevelop, policies should be made to encourage them to face both Key Parkway and US 40 to create a more inclusive and walkable environment. Approximately 20 locations were identified for new pedestrian connections to adjacent streets.

C CROSS ACCESS CONNECTIVITY

ISSUE

A third connectivity issue is the lack of access between adjacent shopping centers and businesses. In many cases, these areas are separated from each other by drainage ditches, thick landscaping, elevation changes, or other impediments. In order to cross between adjacent uses, all users must travel out to an external street (usually US 40) and around to the next business, as opposed to simply crossing between the two. This adds extra time and unnecessary hassle to trips that should otherwise be simple, while potentially increasing traffic on US 40.

POTENTIAL SOLUTION

The Golden Mile Small Area Plan suggests that a new east-west connecting street, "The Avenue," be created in the long term to connect between the shopping centers as they redevelop into more high density development. While this is a long-term solution, there are still opportunities to create pedestrian and bicycle connections between the existing shopping centers in the short term. These can be addressed in the form of paths through the shopping centers, and should be coordinated with the property owners and tenants to ensure they understand the need and benefit of these connections. Approximately 10 locations for cross access connectivity have been located.

FIGURE 9 | EXTERNAL CONNECTIVITY ISSUES

SAFETY AND COMFORT ISSUES

A number of improvements are already occurring along US 40 with the implementation of SHA's pedestrian signal upgrades, median refuges, ADA-compliant ramps, and striping projects. Even so, US 40 is still a heavily traveled roadway, and the pedestrian and bicycle experience is uncomfortable. In addition to the current issues being addressed, there is room for several general and specific improvements, which are described in the following section.

A COMPLETE SIDEWALK NETWORK

ISSUE

Sidewalks provide a minimum level of comfort for pedestrians, absent of any other features. However, sidewalks are missing in four locations throughout the study area, as seen in Figure 10. The locations are:

- US 40 west of Old National Pike (south side)
- Baughmans Lane north of US 40 (both sides)
- Baughmans Lane south of Key Parkway (West Side)

POTENTIAL SOLUTION

Complete sidewalk network in locations missing sidewalks. Approximately 1310' of sidewalks need to be completed in the study area.

B IDENTIFY ALTERNATIVE BICYCLE ROUTES TO US 40

ISSUE

The current configuration on US 40, encouraging bicycles to share the roadway, creates an uncomfortable situation for bicyclists. In order to address this, alternative routes for pedestrian and bicycle travel are addressed. Due to Key Parkway's local traffic, low speeds, street lighting, and adequate conditions for non-motorized travel, it is a good alternate route for those users.

POTENTIAL SOLUTION

While Key Parkway does have some excellent features to encourage non-motorized use, it does have wide travel lanes with intermittent parking (17-foot travel lanes when parked vehicles are not present) and offers few impediments to speeding. In order to address this, a restriping project is suggested. An alternative has been identified for improving cycling conditions while potentially slowing traffic (Figure 12). The alternative provides 5' bicycle lanes and 12' travel lanes. 12' lanes can potentially encourage divers to drive at higher speeds, so it may be necessary to consider other traffic calming features in the future. This alternative allows Key Parkway to have dedicated space for bicycles as well as vehicles. While it eliminates on-street parking, all developments along Key Parkway currently provide internal parking. To better understand the effects of the removal of on-street parking along Key Parkway, a parking study should be completed to determine how many parked vehicles may be affected by the removal of on street parking for the cross section changes.

These changes can be made at a low cost, as they will not require a change in the existing paved surface or curbed area. Additionally, since Key Parkway currently has streetscaping including trees and pedestrian lighting along much of the corridor, little additional streetscaping would be required to increase comfort levels for pedestrians and bicyclists.

Figure 11 describes the streetscape improvements listed in this section.

C IDENTIFY NORTH/SOUTH PEDESTRIAN AND BICYCLE CONNECTIONS

ISSUE

There are concentrations of apartment complexes and single family homes both to the north and south of the US 40 corridor. In order to ensure there are facilities to support the high numbers of pedestrians and bicyclists observed in the study area, it is important to ensure there are north/south connections that support non-motorized travel. Currently, sidewalks exist along Old Camp Road, Waverly Drive, McCain Drive, and Willowdale Drive, as well as intermittently along Baughmans Lane. However, there are no bicycle facilities along these streets and little streetscaping exists other than existing pedestrian-scale lighting.

POTENTIAL SOLUTION

Restriping and other improvements were evaluated along Old Camp Road, Waverly Drive, McCain Drive, and Willowdale Drive, which all have low traffic speeds and volumes, as well as excess auto capacity. Due to the current auto-centric nature of Baughmans Lane and the future auto-oriented changes that are planned (i.e., WaWa's and additional turn lanes at NW corner of Baughmans Lane), no curb-to-curb street modifications are recommended.

Regarding the other four streets, two cross sections were developed. As shown in Figure 13, the recommendation for Old Camp Road includes two 11-foot travel lanes, two 5-foot bicycle lanes, and an 8-foot landscaped median. Multiple modifications are planned for Old Camp Road as well, outside of this study. Old Camp Road is to be extended in the future to the north to meet Shookstown Road, while Mt Phillip Road is planned to be realigned to connect into Old Camp Road to the south, thus making it a major north/south connector. Additional studies would be required to better understand traffic demand, community impact, and property access of these large-scale improvements before implementing the recommended curb-to-curb recommendations. Today, the section of Old Camp Road north of US 40 has no driveways, and therefore turning vehicles exist only at intersections. The recommendation for bike lanes and a median is most appropriate for such a street. The recommendations could be implemented in stages as development and roadway realignments occur in the future. It is suggested the proposed cross section be implemented north of US 40 and later extended to Mount Phillip Road as it is realigned in the future.

The remaining three streets - Waverly Drive, McCain Drive, and Willowdale Drive - have a high number of driveways and a greater need for access to properties. The three streets also all have the same curb-to-curb width of approximately 40 feet. As shown in Figure 14, the restriping recommendation includes two 10-foot travel lanes, two 4.5-foot bicycle lanes, and a 10-foot two-way left-turn lane. The recommendation more adequately balances the needs of all users, while potentially creating an environment more accommodating for non-auto users through reduced roadway capacity and addition of bicycle facilities.

Both cross sections include bicycle lanes and street trees within the existing buffers between the sidewalk and the street. They also maintain the existing pedestrian scale lighting. As previously discussed, these streetscaping elements provide a desired level of comfort for pedestrians, bicyclists, and motorists.

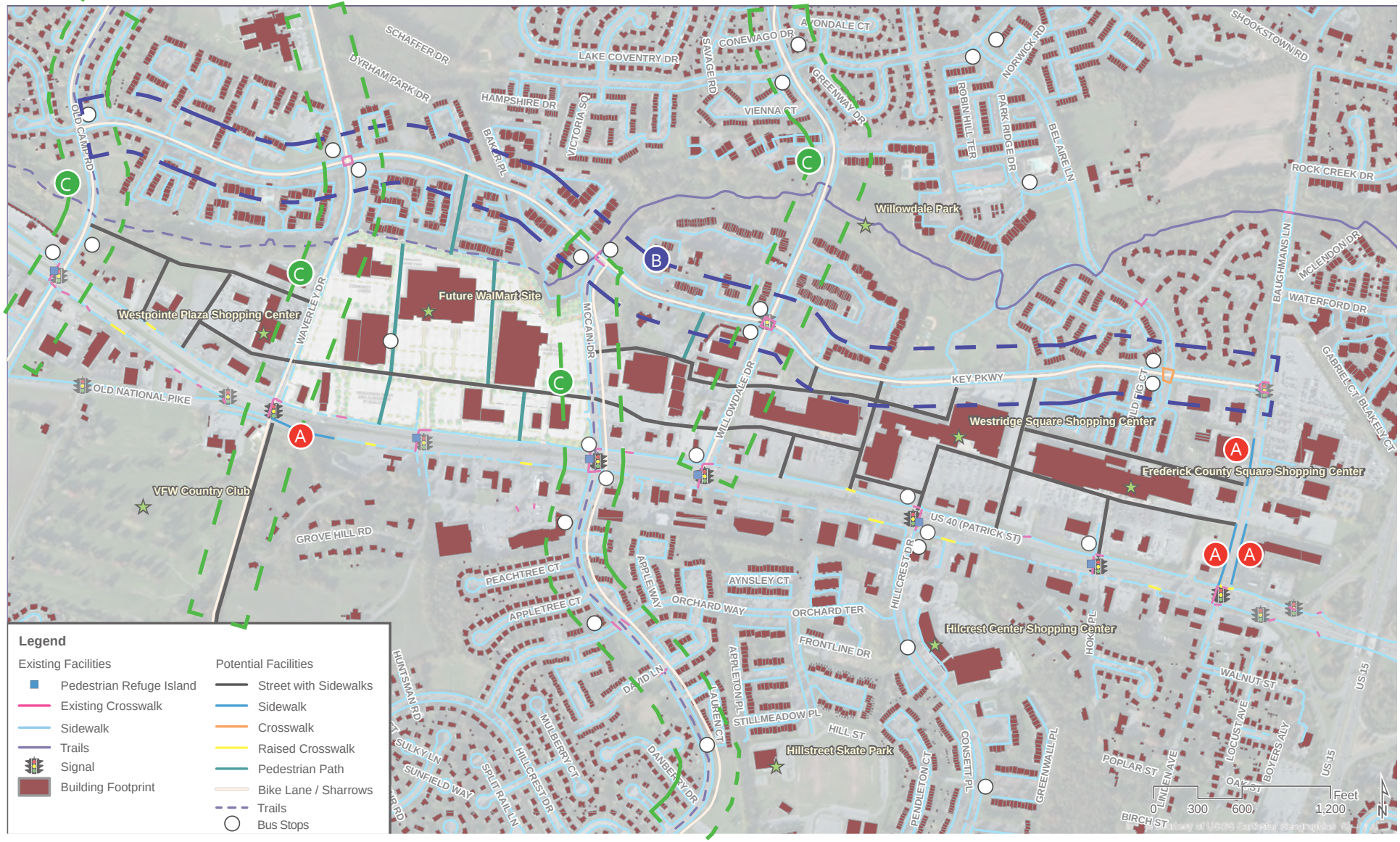


FIGURE 10 | SAFETY AND COMFORT ISSUES

Location	Length (ft.)	Current Cross Section			Proposed Cross Section					Responsible Party	Funding Source	Time Frame
		Lanes	Lane Width	Curb-to-Curb*	Lanes	Lane Width	Bike Lanes	Median	Curb-to-Curb*			
Key Parkway	8,605′	2	18′	36′	2	12′	5′	N/A	36′	City/County	City/Maryland Bikeways Program	Short
Willowdale Drive	4,670′	4	10′	40′	3	10′ - 11′	4.5′	N/A	40′	City/County	City/Maryland Bikeways Program	Short
Waverly Drive	4,070′	4	10′	40′	3	10′ - 11′	4.5′	N/A	40′	City/County	City/State Routes to School/ Maryland Bikeways Program	Short
McCain Drive	5,405′	4	10′	40′	3	10′ - 11′	4.5′	N/A	40′	City	Safe Routes to School/Maryland Bikeways Program	Short
Old Camp Road	4,090′	2	20′	40′	2	11′	5′	8′	40′	City/County	City/Maryland Bikeways Program	Mid

*Includes Gutter

Timing

Short 0 to 3 years

Mid 3 to 5 years

FIGURE 11 | RESTRIPING AND STREETSCAPING PROJECTS

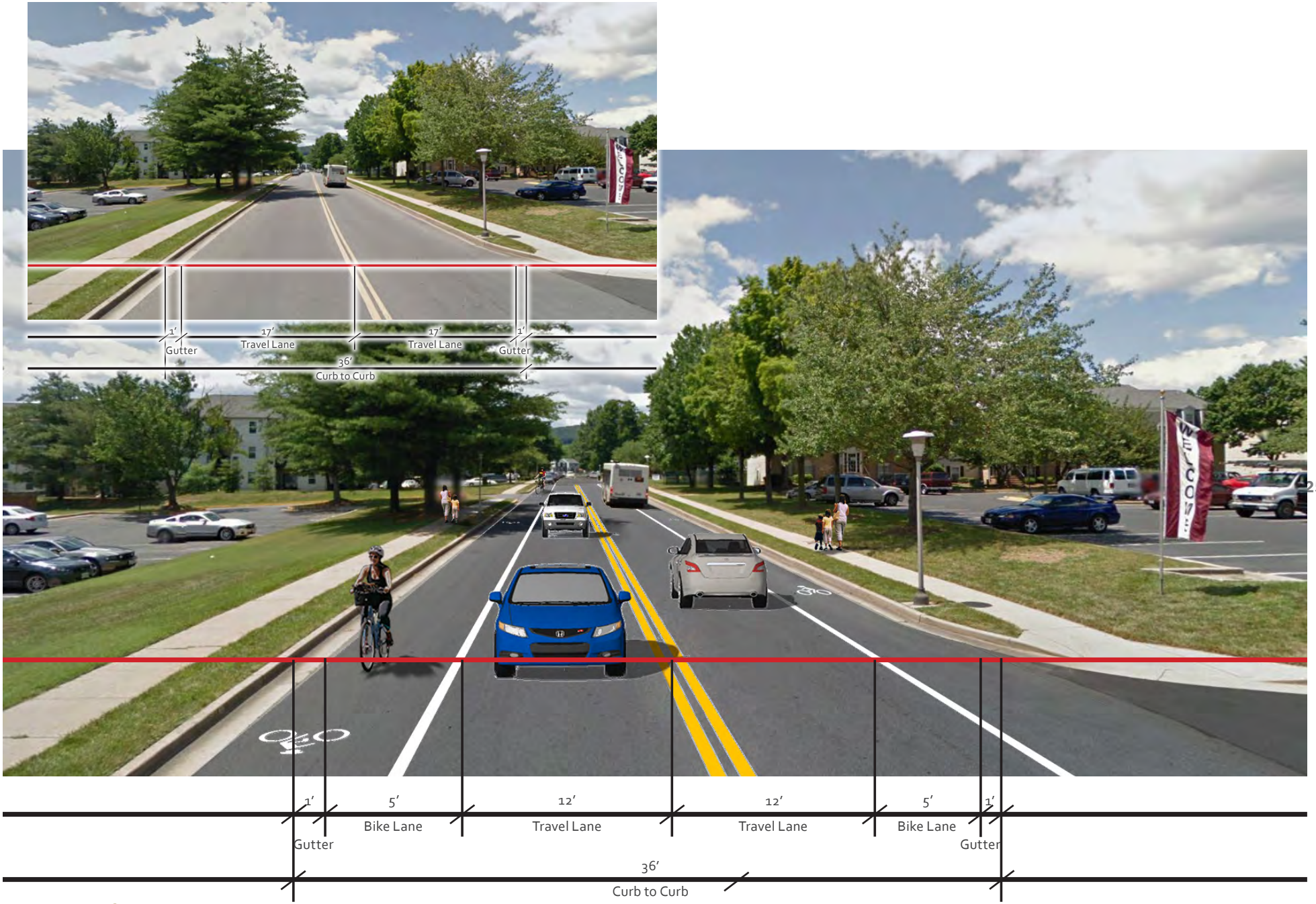


FIGURE 12 | KEY PARKWAY: RESTRIPING AND STREETSCAPING OPPORTUNITIES

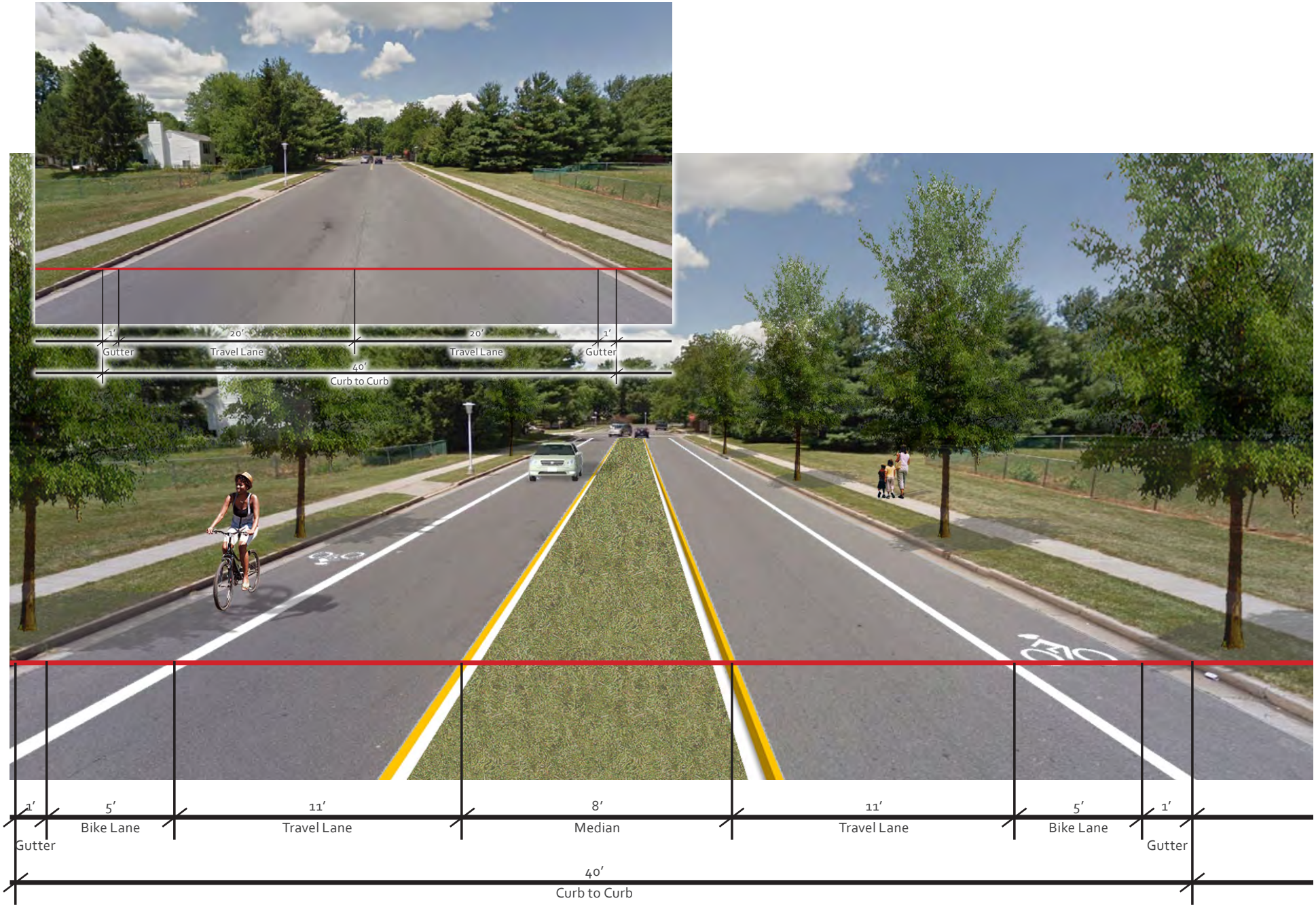


FIGURE 13 | OLD CAMP ROAD: RESTRIPING AND STREETSCAPING OPPORTUNITIES

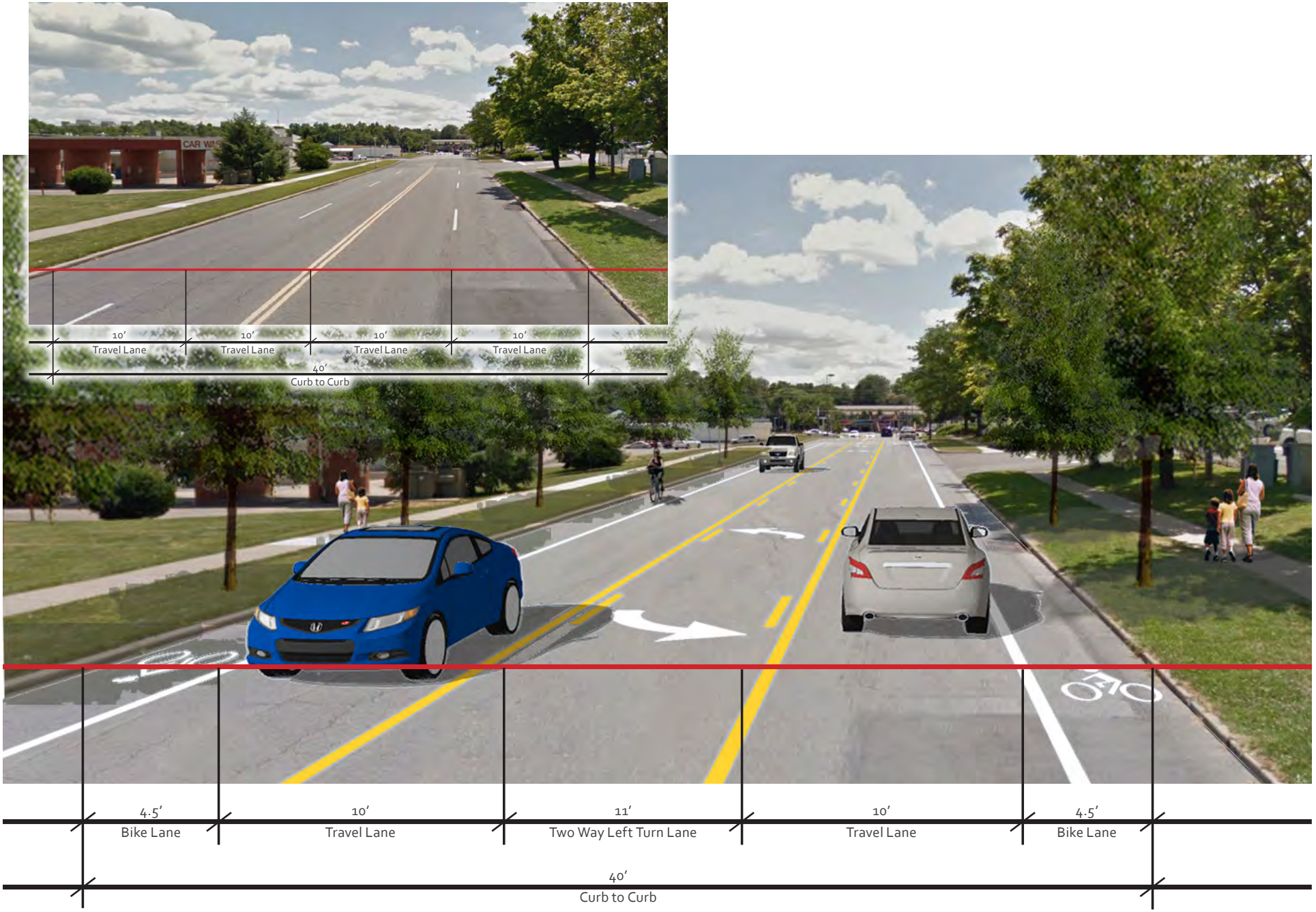


FIGURE 14 | WILLOWDALE DRIVE: RESTRIPING AND STREETSCAPING OPPORTUNITIES (SIMILAR OPPORTUNITIES EXIST ON WAVERLY DRIVE AND MCCAIN DRIVE)

D IMPROVE DRIVEWAY AND SIDE STREET CROSSINGS FOR PEDESTRIANS

ISSUE

Pedestrians and bicyclists are exposed to the greatest risk where vehicles cross their paths, such as intersections and driveways. There are a number of side street and driveway openings along the US 40 corridor, particularly along the south side. While driveway sharing is a desirable solution, it may not be feasible to do so in some areas. Therefore, an alternative solution that can slow down traffic and raise awareness for both drivers and pedestrians was considered.

Additionally, pedestrian crossings were also considered off of the corridor. The intersection of Willowdale Drive and Key Parkway is very active for both vehicular traffic and pedestrians. While it is signalized, it does not have a signalized pedestrian crossing, making it difficult for pedestrians to know when to cross.

POTENTIAL SOLUTION

Generally, crosswalks should be striped at every driveway crossing and intersection. In some areas, where greater awareness of pedestrians is desired, raised crosswalks should be considered. Raised crosswalks extend the sidewalk across the street and bring pedestrians to the motorists' level. Therefore, they serve to calm traffic as well as draw attention to the pedestrian crossing. They have been proven to decrease motor vehicle speeds and to increase the yield rate of vehicles by as much as 40 percent.[1] Figure 15 shows an example of a raised crosswalk in Boulder, Colorado at an intersection similar to the intersection of US 40 and Baughmans Lane. As shown in Figure 16, raised crosswalks have been proposed at several driveway locations along the corridor.

While all driveways should receive crosswalks as they are built/reconstructed, 8 locations for raised crosswalks have been identified.

At the intersection of Willowdale Drive and Key Parkway, a pedestrian countdown signal should be installed.

E COMBINE/SHARE DRIVEWAYS

ISSUE

There are several areas along the corridor, particularly on the south side, where wide or frequent driveways interrupt the sidewalk or where sidewalks are lacking. Some parcels along the Corridor have multiple, wide, and/or underutilized driveways. These areas can encourage fast turning movements into and out of adjacent properties, or unnecessarily increase bicyclists' and pedestrians' exposure to potential vehicular conflicts.

POTENTIAL SOLUTION

A corridor-wide access management review should be completed to identify potential driveway consolidation and refinements. This review would need to be conducted with extensive stakeholder engagement, and include a case-by-case basis consideration of each driveway's need and potential refinement. Narrowing the width and reducing the number of curb cuts can reduce the number and severity of crashes with non-motorized travelers. In turn, a reduced number of driveways may reduce rear-end crashes corridor-wide.

FIGURE 15 | EXAMPLE OF A RAISED CROSSWALK IN BOULDER, CO

1 Pedestrian and Bicycle Information Center (PBIC). Safe Routes to School Guide. National Center for Safe Routes to School. 2014.

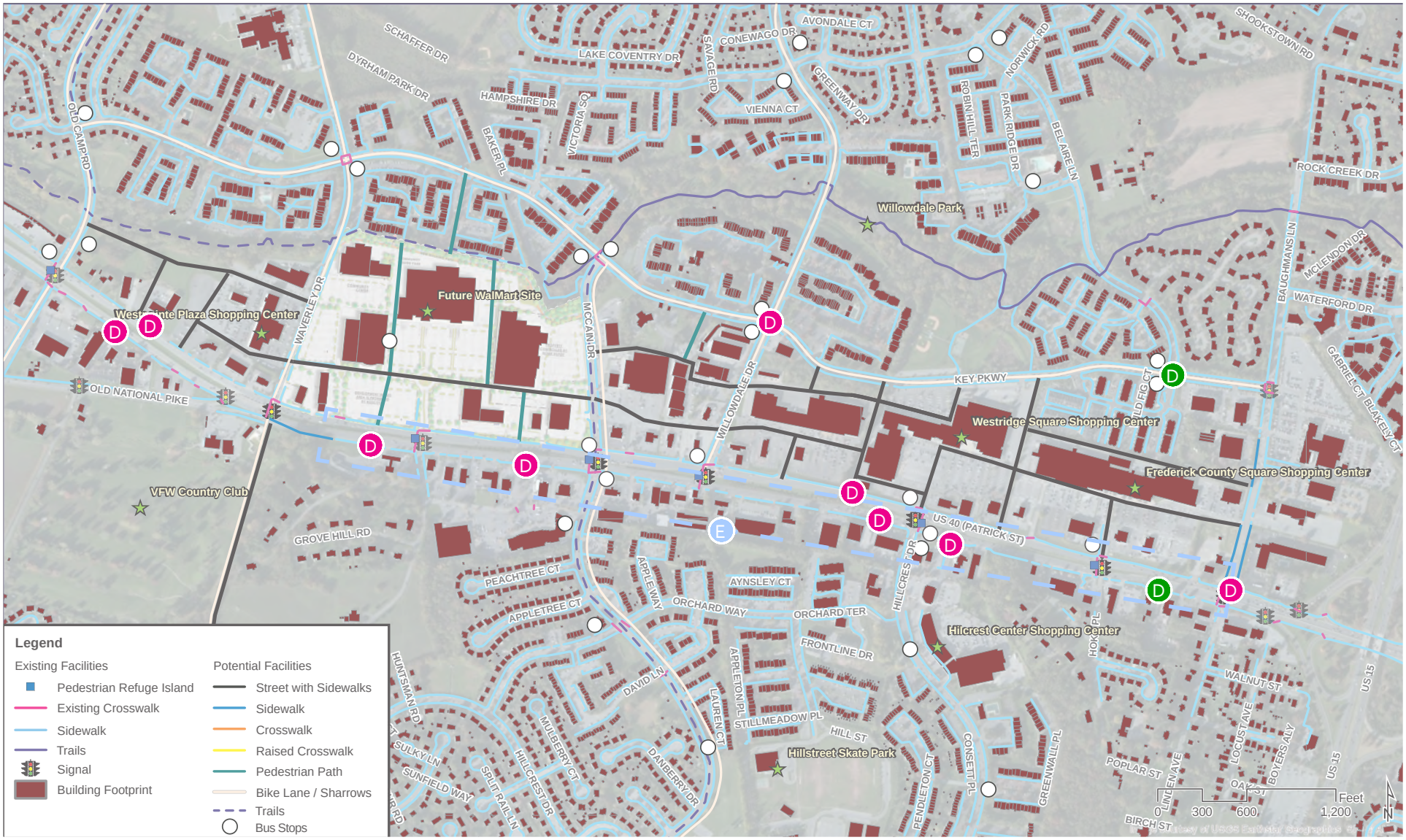


FIGURE 16 | CROSSING AND DRIVEWAY IMPROVEMENTS

IMPROVE LIGHTING AND AESTHETICS ALONG THE CORRIDOR

ISSUE

Pedestrians and bicyclists feel less safe walking or bicycling along a corridor that is not well lit because they are unable to see obstacles, and vehicles are less likely to see them as well. US 40 currently does not have pedestrian lighting at any point in the study area. While there is some vehicular lighting along the corridor, it is infrequent. There is also parking lot lighting adjacent to the corridor; however, limited lighting is in place for spaces pedestrians most often frequent.

POTENTIAL SOLUTION

In order to address this issue, the addition of lighting is recommended. There are several options for lighting, with varying levels of benefits for pedestrians and motorists alike.

- Street Lighting is intended to illuminate the width of a corridor. Typically, these light posts are tall with cobra-style arms to illuminate across the greatest distance. This design focuses the greatest level of illumination over the street and does not typically address lighting for the sidewalks. The scale of these light poles, typically higher, conveys a more open roadway and higher-traffic speed environment. This type of lighting is most appropriately used on highways where vehicular traffic is the only mode encouraged.
- Pedestrian Lighting is intended to illuminate the pedestrian realm, and is typically mounted 12 – 14 feet above the sidewalk, a scale more appropriate to a pedestrian or bicyclist. They can be decorative and help to convey the "sense of place" or "branding" of the corridor community. Because pedestrian-scale lighting is smaller in nature than traditional cobra-style lighting, it helps to convey to the driver they have entered a lower-speed, multimodal area.

The best solution for this corridor would be to use a combination of street lighting and pedestrian lighting. One design allows for street lighting with pedestrian scale lighting attached to it. However, because the spacing standards for cobra-style street lighting are farther apart than would be required to properly illuminate the pedestrian realm, intermediate pedestrian lighting should be added between the cobra-style lighting. Appropriate spacing depends on the type of lighting used.

LANDSCAPE TREATMENTS ALONG THE CORRIDOR

ISSUE

There is some vegetation and landscaping along the US 40 corridor, however it is mostly located in the median or within private right of way. Street trees are an important component to support the walkable urban corridor vision of any urban street. They help create a sense of enclosure along the road (sometimes referred to as a "street wall"), narrowing a motorist's field of vision and thus encouraging lower vehicle speeds. This is critically important as land development has not yet transitioned to more urban patterns (smaller setbacks from the street). If placed between the road and the sidewalk, they can help provide a physical and visual buffer between pedestrians and vehicles. Finally, street trees provide shade making it more pleasant to walk on hot, sunny days. Other landscaping elements, such as ground cover and shrubs, can be used to add to the streetscape as well enhance the corridor aesthetics. Shrubs can also be placed in between the pedestrian facilities and the road to provide an added buffer between pedestrians and the roadway.

POTENTIAL SOLUTION

It is recommended a streetscaping plan be developed and implemented along the corridor so that a consistent look can be achieved while creating the benefit of a more pedestrian and bicycling-friendly environment. Landscape treatments should consider Crime Prevention through Environmental Design (CPTED). Also, as the corridor continues to evolve to a more urban condition, the design and posted speeds along the roadway should be evaluated to allow for a more urban street design that accommodates appropriate streetscape and multimodal travel.

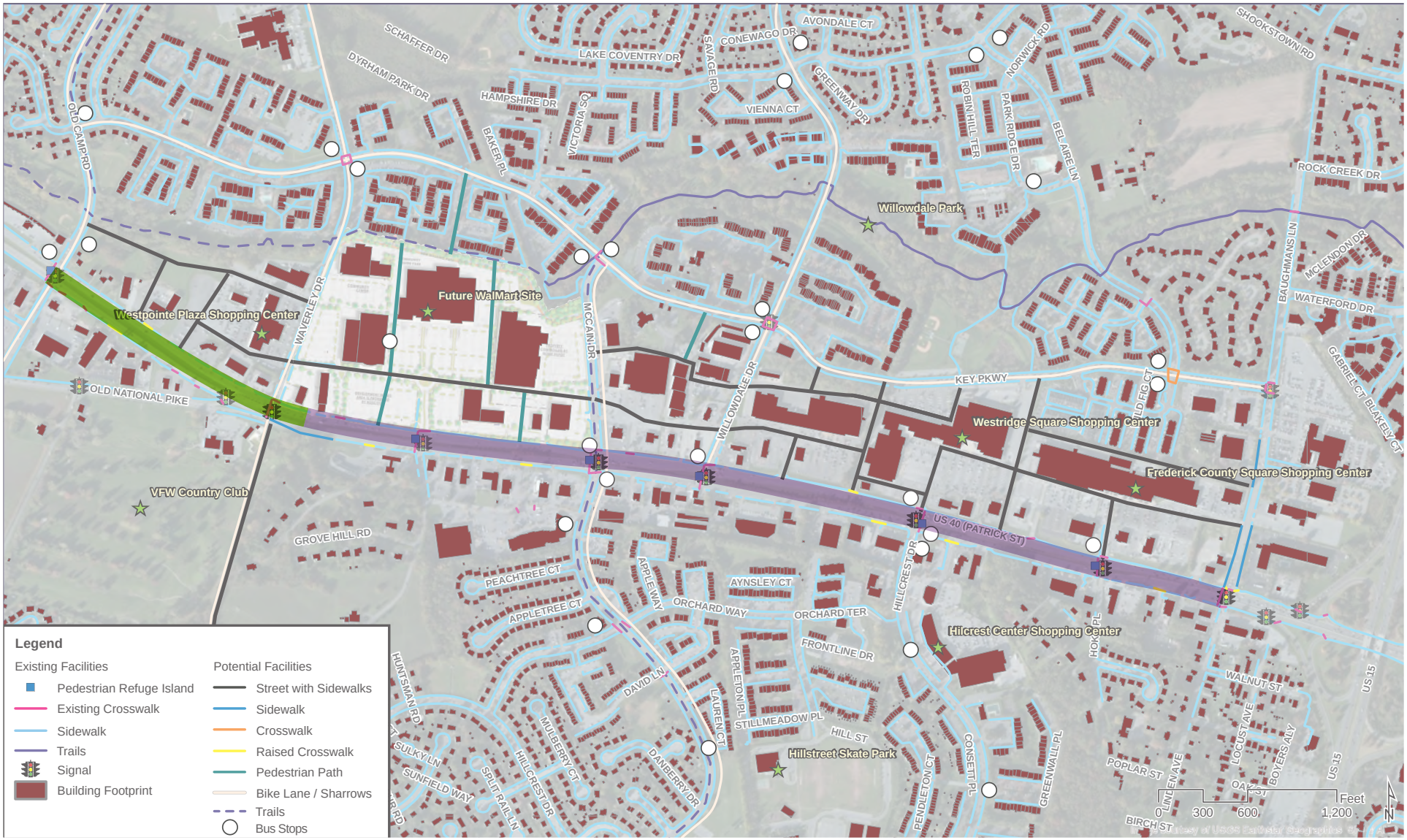


FIGURE 17 | LIGHTING AND STREETSCAPING IMPROVEMENTS

TRANSIT OPERATIONS AND ACCESSIBILITY

The existing conditions analysis highlighted the benefits and drawbacks of the transit service provided in the Golden Mile area. While the service is generally on time and service is offered throughout most of the day, the frequency of the service is low. This requires passengers to alter their schedules, which can be inconvenient and alienate choice riders. Additionally, the transfer point at Boscov's in the Frederick Towne Mall property is set to become a more formal transit center, although there are still questions as to placement. In order to address these issues, the following recommendations have been developed.

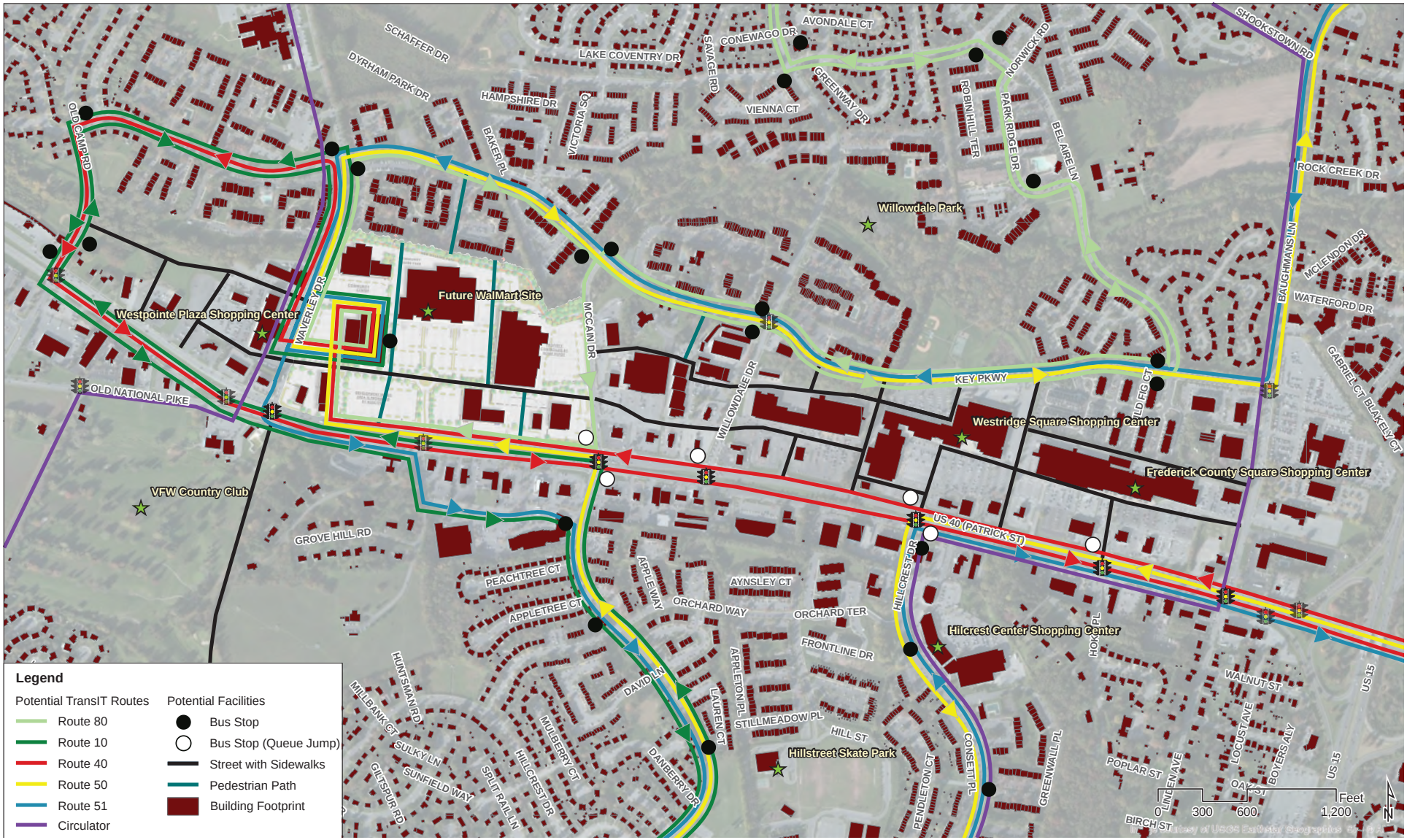


FIGURE 18 | PROPOSED TRANSIT IMPROVEMENTS

A UPGRADE TRANSIT FACILITIES

ISSUE

A major goal of the Golden Mile Multimodal Access Enhancement Plan was to gain a better understanding of where and how transit facilities can be upgraded. It was observed in the field and confirmed by TransIT staff that buses cannot currently stop along the corridor because traffic volumes are too high and traffic moves too fast, thus creating an unsafe condition for transit users. Because the transit routes deviate into shopping centers as opposed to stopping directly on US 40, a significant amount of time is added to routes and therefore the amount of service that can be provided is limited.

POTENTIAL SOLUTION

Upgrading transit facilities so that it is seen as a viable and convenient transportation option must be done incrementally and through a range of enhancements. Keeping buses on US 40 instead of routing them into and out of shopping centers can reduce travel times and increase reliability of the bus system. In order to accommodate seamless accessibility to buses on US 40, bus stop locations and bus pull-out areas must be incorporated onto US 40 in a manner that ensures safety for bus riders and motorists alike, while not increasing corridor congestion. Short- and long-term options were explored to determine if changes could be completed incrementally, ultimately with little infrastructure investment initially, followed by more substantial roadway modifications as the Golden Mile corridor continues to redevelop. Creating queue jump lanes and dedicated bus pull-out areas can improve reliability and frequency of bus service by providing buses priority at signalized intersections, while also ensuring loading buses do not cause additional congestion or conflicts along US 40.

Short-term considerations included the conversion of existing right-turn lanes on US 40 into shared bus stops/right-turn lanes, allowing buses to travel straight through the intersection and forcing motorists to make right-turns as they do today. Bus pull-outs are typically used to provide a designated space for buses to pick up and drop off passengers out of the existing flow of traffic. By removing the bus from the through lane, it can actually help to improve traffic flow. This treatment is appropriate in congested locations with high levels of transit usage. However, the pull-outs also present a challenge to buses by requiring them to merge back into traffic after using the bus stop, which can cause delay to the bus when motorists fail to yield. Additionally, buses stopping prior to the right-hand turn could be frustrating to motorists behind the bus waiting to turn (although today there is minimal measured delay at these right-turn locations). The combination of high vehicle speeds on US 40 and the need for buses to merge back into traffic in a small distance eventually ruled out this option. The trade-offs of bus reliability and improved bus frequencies were outweighed by the potential risks of buses merging into high speed traffic to reenter the traffic stream. Moreover, building sidewalks into shopping centers from bus stops should be completed prior to adding bus stops on US 40, which again, results in this recommendation being less of a short-term option and more of a larger infrastructure project.

To promote safe and effective bus operations and stop locations on US 40, it is likely the existing configuration of the Golden Mile will require significant modification before effective transit running way features can be accommodated. A long-term solution has been developed involving the use of the existing right-turn lanes in combination with modifications to the roadway to create queue jumps and far-side stops. Queue jumps provide preference to buses at intersections by providing an additional travel lane on the approach to a signalized intersection that is restricted to transit vehicles. The queue jump is operated on a phase separate from the rest of the signal (typically 5-7 seconds), allowing transit vehicles to pass through the intersection, while not conflicting with vehicles traveling in the same direction. Vehicles in the queue jump are able to bypass queued traffic (hence the name queue jump) at an intersection, thus reducing the delay of transit vehicles through heavily congested intersections. As can be seen in Figure 19, there are several locations along the corridor in which queue jumps may be appropriate.

Example layouts for the proposed bus stop locations and running way enhancements have been created to better show how they may work at McCain Drive, Willowdale Drive, Hillcrest Drive, and Hoke Place, which can be seen in Figures 20 through 23. Some of the key differences between this long-term solution and the short-term considerations are the use of far-side bus stops (long-term) instead of near-side bus stops (near-term), which in most cases requires modifying the curb and sidewalk. Significant drainage impacts will be likely under this scenario. Additionally, SHA's current reconstruction of the sidewalks and ramps in some of these areas would require modification. A summary of the changes to intersections where queue jumps are recommended follows:

McCain Drive (Figure 20)

- Queue jump and right-turn only lane (EB and WB)
- Add new sidewalks, bus sop, shelter (SE and NW corner)
- Cut back curb for dedicated space for buses (EB and WB)
- Add crosswalk and pedestrian refuge (E side)
- Add crosswalks at driveways and intersections

Hoke Place (Figure 21)

- Queue jump and right-turn only lane (WB)
- Add new sidewalks, bus sop, shelter (NW corner)
- Cut back curb for dedicated space for buses (EB)
- Add crosswalk and pedestrian refuge (E side)

Willowdale Drive (Figure 22)

- Queue jump and right-turn only lane (WB)
- Add new sidewalks, bus sop, shelter (NW corner)
- Cut back curb for dedicated space for buses (WB)
- Add crosswalk and pedestrian refuge (E side)
- Add crosswalk and pedestrian refuge (E side)

Hillcrest Drive (Figure 23)

- Queue jump and right-turn only lane (EB and WB)
- Add new sidewalks, bus sop, shelter (SE and NW corner)
- Cut back curb for dedicated space for buses (EB and WB)
- Add crosswalk and pedestrian refuge (W side)
- Add crosswalks at driveways and intersections

FIGURE 19 | BUS FACILITY IMPROVEMENTS

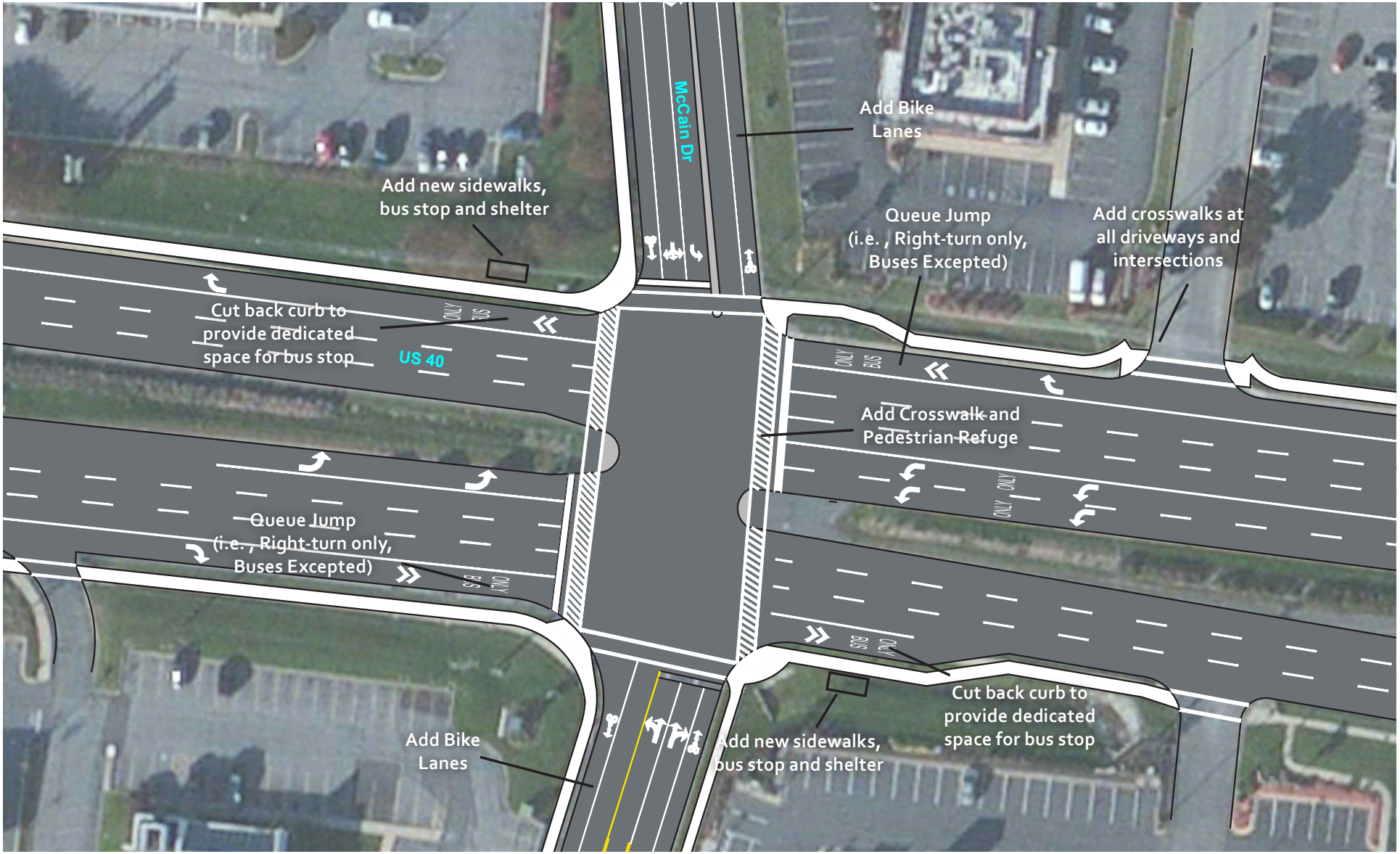


FIGURE 20 | MCCAIN DRIVE IMPROVEMENTS

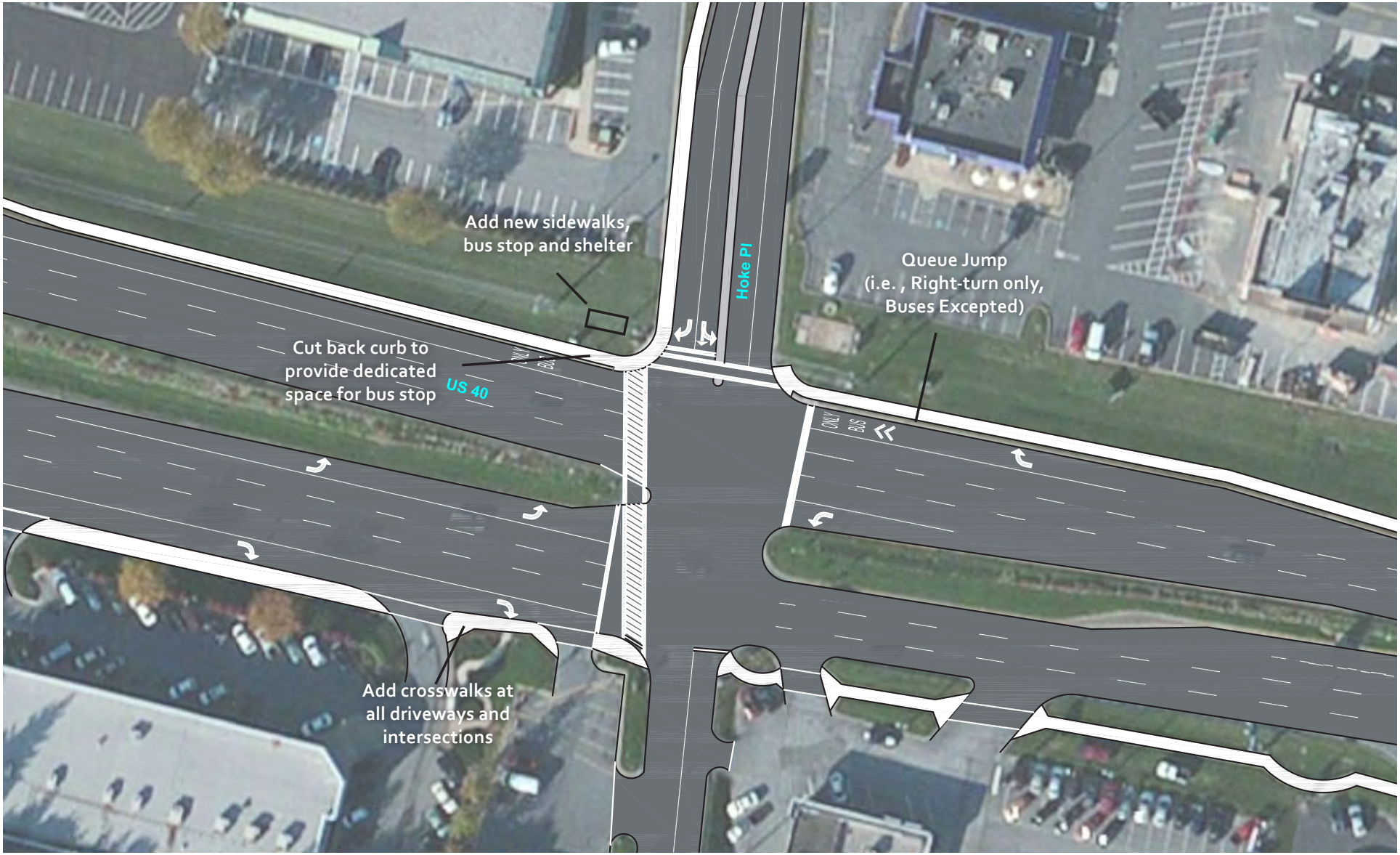


FIGURE 21 | HOKE PLACE IMPROVEMENTS

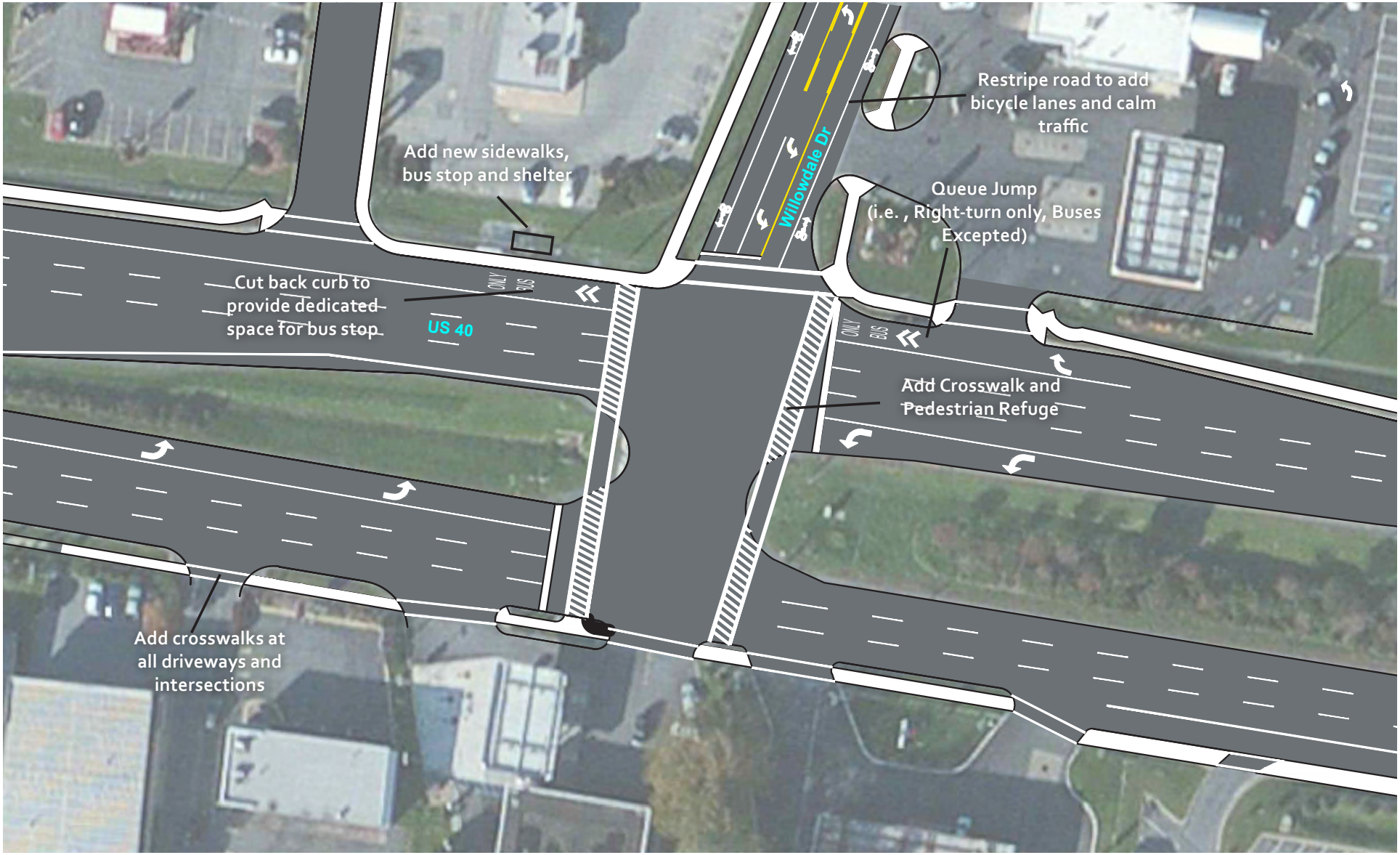


FIGURE 22 | WILLOWDALE DRIVE IMPROVEMENTS

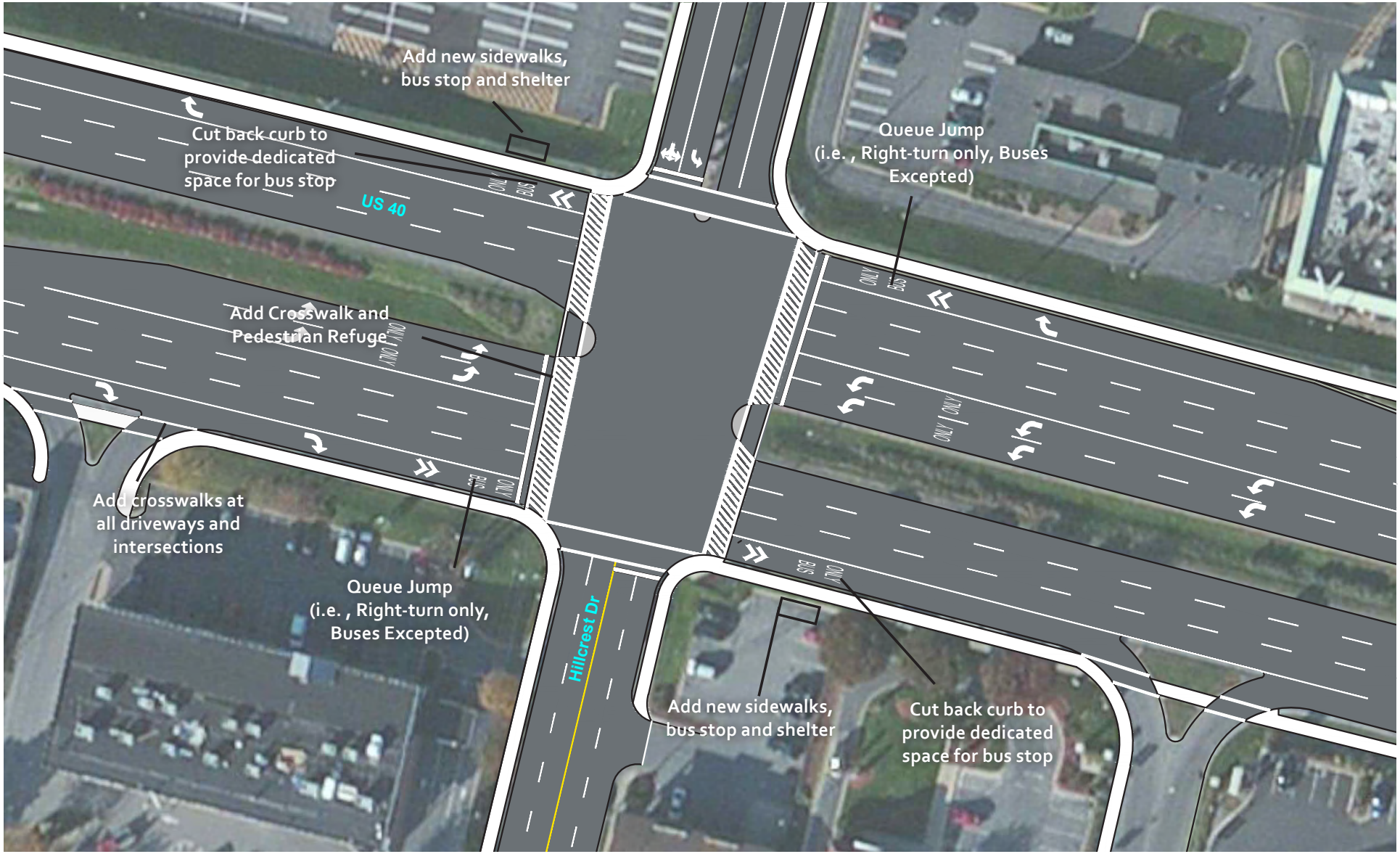


FIGURE 23 | HILLCREST DRIVE IMPROVEMENTS

REFINE BUS STOP LOCATIONS

ISSUE

In some places throughout the study area, bus stop locations are spaced less than ¼ mile apart. In general, people are willing to walk about 5 minutes, or ¼ mile to access a bus.[1] Therefore, while spacing stops every ¼ mile or closer provides the maximum amount of coverage (and thus, double coverage) it is not very efficient as it requires buses to stop more than is likely necessary in most places in the study area.

POTENTIAL SOLUTION

In order to help improve bus frequency and reliability, a majority of the stops in the study area were consolidated and relocated. The new locations can be seen in Figure 24. While removing bus stops can be controversial, no stop is located more than ½ mile from another, meaning most of the same areas covered previously will still be covered. Additionally, this arrangement allows for greater efficiencies as buses can stop less frequently. Fewer stops and faster running times may attract new ridership or even give TransIT the ability to add buses to routes. Other benefits may include installation of transit shelters and other related amenities as there will be less stops to maintain. As stops are relocated, the responsible parties should ensure that there are crosswalks located at bus stops or within a close proximity to the bus stops.

This study is suggesting the removal/relocation of 11 stops and the construction of 5 new stops.

ENHANCE BUS STOP AMENITIES

ISSUE

The bus stops in the Golden Mile corridor are currently lacking shelters, and in most cases, are lacking seating and other amenities. Without a covered shelter, transit riders are susceptible to heat, rain, snow, and other weather conditions. Without seating areas, riders may be forced to stand while waiting, which can be a problem for elderly or disabled riders. Without adequate facilities, those who may otherwise use transit by choice are less likely to, and those who are transit dependent are subject to discomfort as they wait.

POTENTIAL SOLUTION

As transit stops are relocated, they should be supplied with at least an area for seating. In an ideal scenario, all stops should also be furnished with shelters, however this may not be financially feasible. In that case, shelters should be built at those stops with the highest ridership levels. At a minimum, a shelter should be constructed at each stop where a queue jump is constructed and at any stop that sees 100 or more passengers per day. WalMart is constructing a passenger transfer hub at Boscov's as part of it's mitigation strategy, and this hub should also have a shelter. At other stops, as redevelopment occurs, transit amenities should be updated in the immediate vicinity of the development as part of mitigation strategies.

This study is recommending a future total of 22 stops. Therefore, 22 new benches should be installed. Bus shelters should be installed by TransIT at the following five locations where queue jumps are proposed, as shown in Figure 24:

- McCain Drive (both directions)
- Hoke Place (Westbound only)
- Willowdale Drive (both directions)
- Hillcrest Drive (Westbound only)

Transit shelters may be developer funded at the remaining 17 locations.

1 Transportation Research Board. Transit Capacity and Quality of Service Manual, Third Edition. Transportation Research Board. 2014.

FIGURE 24 | REFINED AND ENHANCED BUS STOP LOCATIONS

D DEVELOP A NEW PASSENGER TRANSFER HUB

ISSUE

A passenger transfer center is currently located at Boscov's, where bus routes 10, 40, 50, 51, and 80 all layover at the start/end of their respective routes. The transfer center provides a coordination location for transfers to occur, including a waiting space for riders. The WalMart redevelopment plan incorporates an updated transfer hub adjacent to Boscov's. At the time of this study, the final location was yet to be determined, but two options have been proposed: one on the east side of the Boscov's building between WalMart and Boscov's and one in the rear of Boscov's near the loading zone and dumpsters. The area in the back of the Boscov's building is not an inviting location for bus riders and is removed from all storefront entrances. Placing it in a less-traveled area, such as the rear of a building, may also present personal safety issues and a general sense of unease for waiting passengers. Lastly, placing a bus transfer hub away from pedestrian activity and in an area where garbage is typically stored does not send a positive message to those reliant on transit to serve their daily needs.

POTENTIAL SOLUTION

Incorporating the passenger transfer center into the east side of Boscov's would be the ideal location for a series of bus stops. It will be convenient to both an entrance to Boscov's as well as the entrance to WalMart, while being much more visible in a well-traveled area. The bus routes should be altered to better reach this hub. Figure 25 shows a potential route configuration. Instead of traveling through the roundabout at the entrance to the future WalMart, westbound buses can enter the driveway just west of the main entrance and reach the east side of Boscov's more directly. Lastly, incorporating a shelter or large awning into the side of Boscov's can actually be a great way to provide protection from weather without using a series of bus shelters that may only accommodate a few users at one of the busiest bus stops in the system.

E ENABLE GREATER CONNECTIVITY BETWEEN BUSINESSES AND RESIDENTS

ISSUE

While there are several transit routes covering the Golden Mile area, there is not great transit access between the businesses along the corridor and the surrounding residences. Because of this, it was noted that residents, especially those who are transit dependent, may have a hard time accessing the businesses for appointment and other activities.

POTENTIAL SOLUTION

In the long term, the creation of a circulator route in the Golden Mile area may be a way to overcome the accessibility issues, as well as supporting increased density. Funding for the shuttle would likely require a combination of City and Business owner subsidies. Depending on demand, it would potentially consist of one passenger van running on regular service intervals during the daytime. Potential routing of the circulator is shown in Figures 24 and 25.

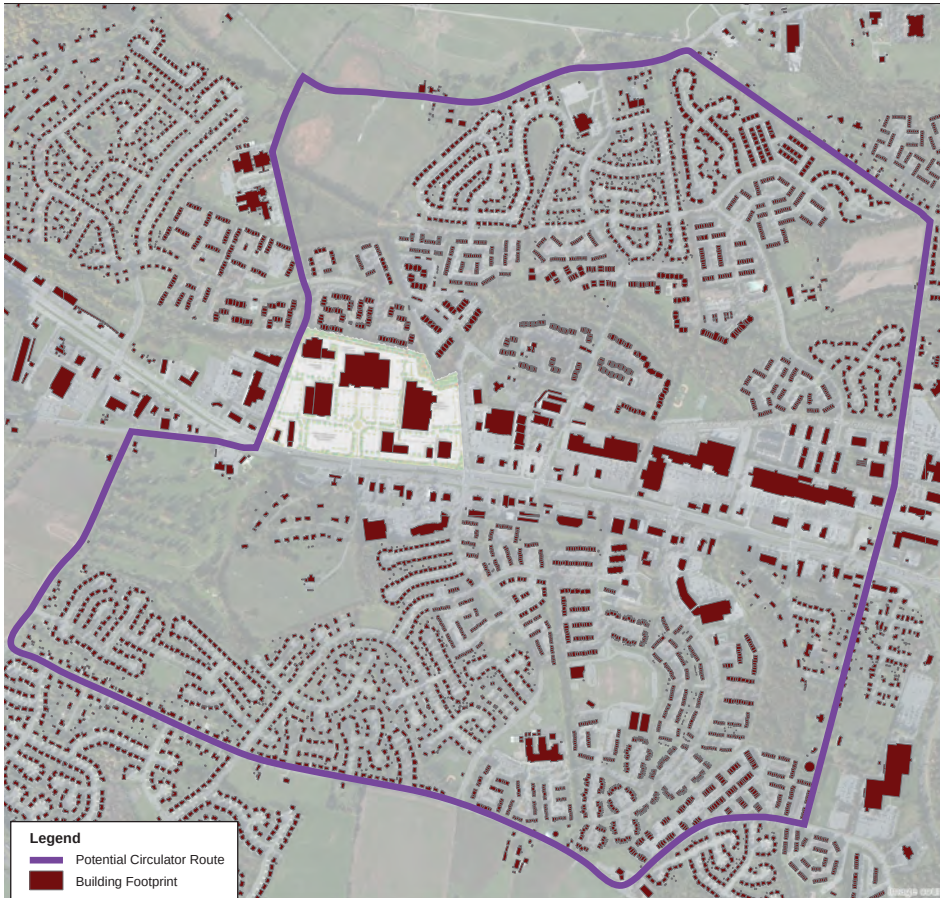


FIGURE 25 | POTENTIAL CIRCULATOR ROUTE

FIGURE 26 | PASSENGER TRANSFER TERMINAL AND CIRCULATOR LOCATIONS

VEHICULAR CONNECTIVITY, OPERATIONS, AND SAFETY

The Golden Mile corridor is generally an auto-oriented corridor. As such, it is important to consider ways to improve the environment for automobiles in addition to the needs of other modes to ensure all users are able to travel the corridor safely. The existing conditions analysis found connectivity issues in the corridor. The existing conditions analysis also considered the crash history and the traffic operations along the corridor, particularly at key signalized intersections. In general, the corridor sees some of the same safety issue as other similar corridors in Maryland, with the largest concerns being rear-end and angle crashes, often at relatively high speeds. Traffic in the corridor generally operates at an acceptable level of service, although the north/south streets in the corridor have some issues with delay. Based on the analysis performed, the following recommendations were developed.

FIGURE 27 | PROPOSED IMPROVEMENTS TO FACILITIES

A INCREASE VEHICULAR CONNECTIVITY THROUGHOUT THE CORRIDOR

ISSUE

The lack of access between adjacent shopping centers and the inability to directly access shopping centers from surrounding residential areas results in poor vehicle connectivity throughout the Golden Mile corridor. Motorists must use US 40 to travel between establishments instead of traveling between uses internally, thus adding unnecessary vehicle trips to US 40.

POTENTIAL SOLUTION

Pedestrian and vehicular connections have been identified between shopping centers in the Golden Mile Small Area Plan that can help to bridge the current barriers between them. While those connections depend on full redevelopment of the study area, this study has identified several that can occur under the current development pattern, as can be seen in Figure 28. Addressing these connectivity issues will more clearly separate the higher speed regional traffic on US 40 from the local, slower moving traffic accessing businesses along the corridor, which may in turn improve safety along the corridor. The expanded network of streets will also distribute traffic more evenly than is occurring today. Other connections are proposed that can help better incorporate Key Parkway as a connecting street, and thus better connecting the shopping centers to the surrounding residential areas.

This study is recommending the construction of approximately 17,000 feet of new streets with appropriate pedestrian and streetscaping amenities.

B ADDRESS VEHICULAR DELAY ON SIDE STREETS

ISSUE

As determined through the existing conditions traffic analysis, limited delay is experienced for through traffic on US 40, even during peak hours (most signalized intersections experience level-of-service A, B, or C for the eastbound and westbound through movements). The prioritization of eastbound and westbound through traffic results in increased levels of delay on the side streets, with level-of-service of D, E, and F. With expected redevelopment in the area, especially the proposed Wal-Mart in the near-term, intersections such as Waverley Drive, Grove Hill Road, and McCain Drive may experience increased levels of traffic delay in the future. The analysis results reflect signal timing plans SHA anticipates incorporating on US 40 once the reconstruction of signals and pedestrian amenities are completed in summer 2014.

POTENTIAL SOLUTION

Any modification to side street green time will likely result in increased levels of travel delay on US 40 during peak hours. Modifications could likely be made the eastbound and westbound signal timing to more adequately "balance" approach delay on the side streets. It is recommended the signal timing be reevaluated once Wal-Mart is open to better understand the impacts to the US 40 corridor due to increased ingress and egress traffic between Waverley Drive and McCain Drive. During this evaluation, pedestrian clearance times should also be evaluated to ensure adequate time is given to pedestrians to allow signal stage crossings of US 40. While the newly constructed pedestrian refuges in the medians of US 40 will provide a safer "waiting" location if a pedestrian is not able to cross US 40 in a single phase, only providing time to cross half of US 40 could result in an additional two minutes of wait time in the center of the roadway.

No recommendations throughout this report significantly impact traffic delay or congestion at signalized intersections on US 40. While some of the proposals to convert 4-lane streets to 3-lane streets (i.e., Willowdale Drive, Waverly Drive, McCain Drive) do decrease mid-block capacity, lane configurations at key intersections are not modified. Additionally, while providing bus stops on US 40 will increase pedestrian and transit activity on US 40, the recommended expansion of US 40 at key bus stop locations will provide adequate capacity to allow buses to safely stop outside the travel lanes.

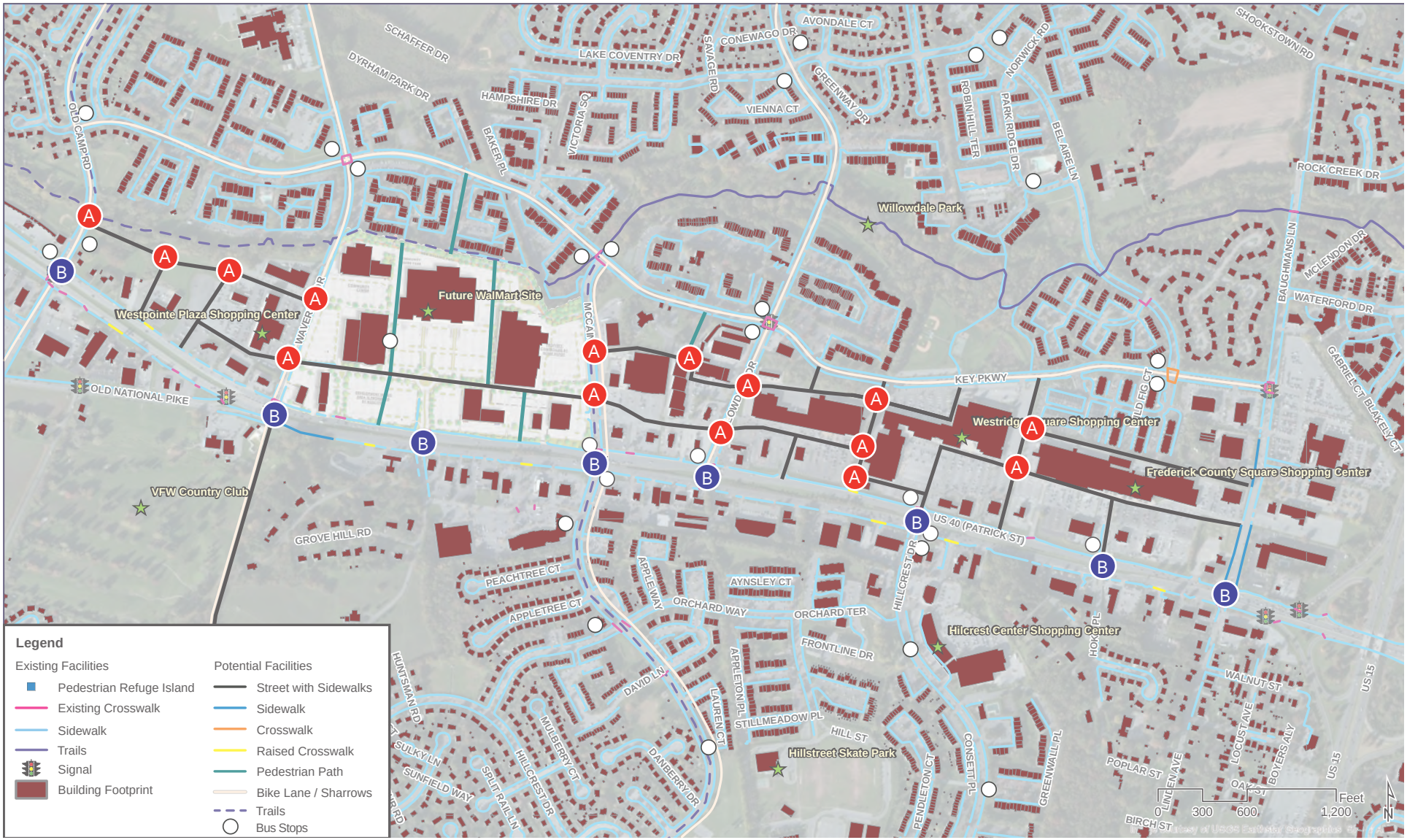


FIGURE 28 | VEHICULAR CONNECTIVITY AND DELAY

SAFETY

Based on the results of a safety analysis completed on US 40, it was found that of the 207 reported crashes between 2009 and 2012, nearly 60% resulted in personal injury with 170 total injured persons (no fatalities were reported). Rear-ended collisions accounted for 48 percent of the crashes, while angle collisions accounted for 23 percent of total crashes. The high number of rear-end crashes is fairly common along US 40 state-wide, where a mix of regional and local trips compete for the same space at varying speeds and turning movements.

CONSIDER WAYS TO PREVENT COMMON CRASH TYPES

ISSUE

The two most common crash types along the corridor include rear-end and angle crashes. While we cannot conclusively determine the cause for every crash, the following general safety considerations may be applicable:

- Rear-end crashes are not uncommon on higher-speed regional facilities such as US 40. The signalized intersections on US 40 are likely experiencing safety issues due to the inconsistency between the design of US 40 and the purpose and role it serves within the transportation network (local versus regional). The current alignment of US 40 was constructed several decades before I-70 and served as the main route between Hagerstown, Frederick, and Baltimore. To serve that purpose, it was built with features such as wide shoulders, a grass median, limited access, and high speed curves. Since the opening of I-70 and with the expansion of the City of Frederick away from its historic downtown, some sections of US 40 have experienced intense development and have some elements of a suburban facility such as frequent driveways and signalized intersections, while also retaining the elements of the original, high-speed roadway.
- Angle crashes typically occur at locations where left turning vehicles turn across oncoming traffic at unsignalized intersections, and at signalized intersections with permissive left-turn phases (i.e., left-turning motorists receive a green ball must wait for a gap in oncoming traffic before turning). Higher speed facilities may see a higher proportion of these crash types as it is generally more difficult for turning motorists to judge appropriate gap distance when oncoming traffic is traveling at higher speeds.

POTENTIAL SOLUTION

Addressing corridor-wide crash issues on US 40 cannot be completed through small measures alone and must rely on a total transformation of the roadway. The following represents a series of measures and strategies to improve auto and non-auto safety:

- Replace some of the higher speed, rural elements of the roadway with lower speed, suburban elements. Potential projects include:
- Creation of narrow, defined driveways where current parking lots continuously front the roadway
- Addition of curbs on the median and outside edges of the roadway
- Elimination of channelized right turns and continuous right turn lanes
- Increased visibility and prominence of bicycle and pedestrian facilities
- Decreased shoulder width (where applicable)

This transformation may take many years to complete, but could be implemented incrementally over time. The Golden Mile Small Area Plan and this study both offer several techniques for reinventing the Golden Mile into a much more multimodal corridor with reduced speeds and increased presence of non-auto modes of travel.

ADDRESS PEDESTRIAN CRASHES

ISSUE

Of the 207 reported crashes from 2009 to 2012, 11 of those involved pedestrians. The relatively high number of pedestrian crashes on a higher-speed facility such as US 40 almost certainly guarantees serious injury to pedestrians. As documented in AAA's "Impact Speed and a Pedestrian's Risk of Severe Injury or Death," results indicate "that the average risk of severe injury for a pedestrian struck by a vehicle reaches 10% at an impact speed of 16 mph, 25% at 23 mph, 50% at 31 mph, 75% at 39 mph, and 90% at 46 mph. The average risk of death for a pedestrian reaches 10% at an impact speed of 23 mph, 25% at 32 mph, 50% at 42 mph, 75% at 50 mph, and 90% at 58 mph." Some key issues present in the corridor that may negatively impact pedestrian safety include:

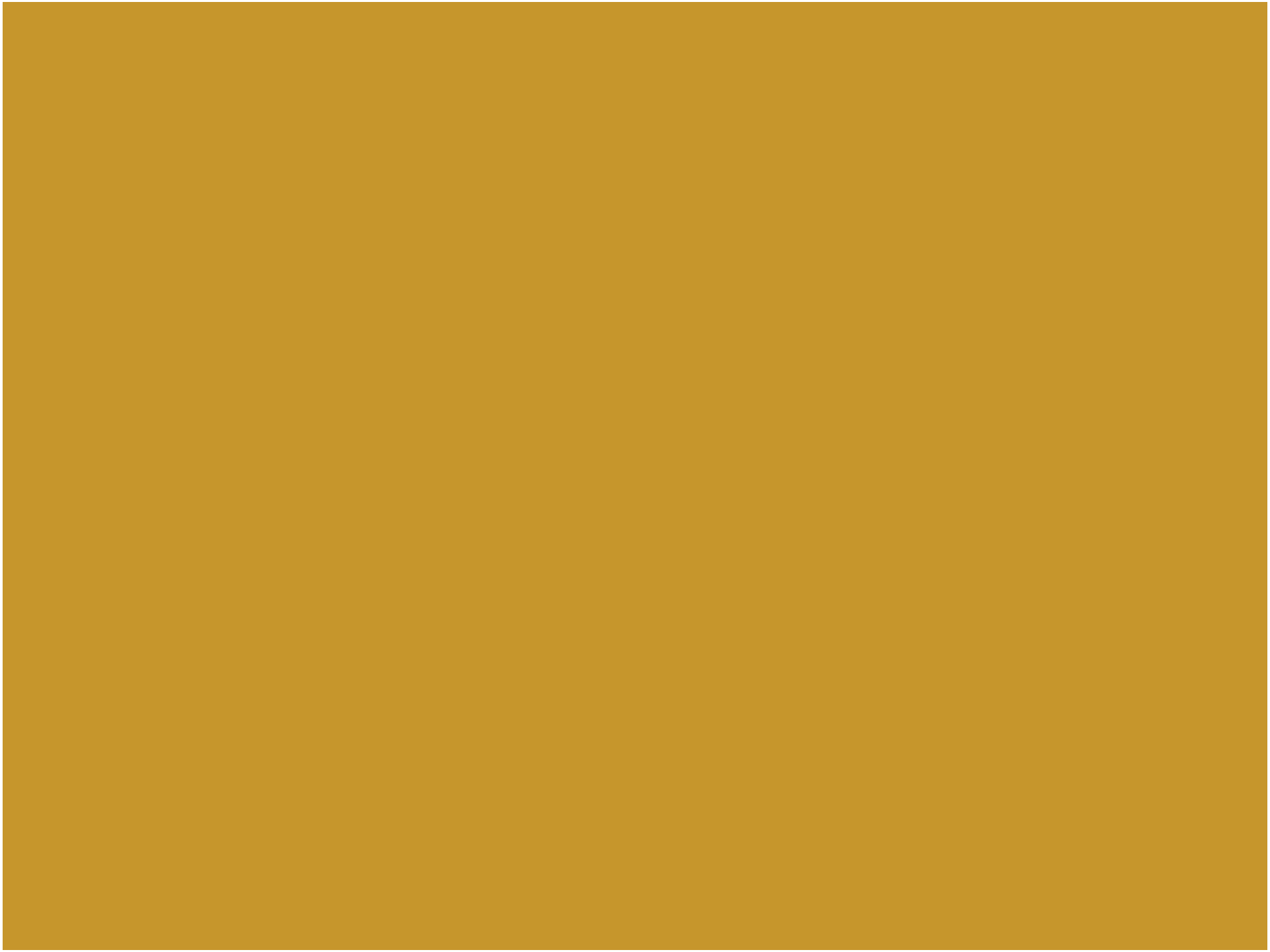
- Limited number of crosswalks throughout the corridor. Signalized intersections only use one crosswalk across US 40 per intersection.
- Long signal cycle lengths (180 seconds at most intersections) may contribute to pedestrians who choose to cross the roadway regardless of walk signals.
- Split phase operations and protected left-turn phases limit the time available pedestrian crossing time and opportunities.

POTENTIAL SOLUTION

Similar to the previous crash discussion, completely changing how US 40 looks, feels, and operates are key measures for improving the pedestrian experience. These changes must include land use, transportation, and redevelopment modifications to the entire area (e.g., buildings closer to and facing streets, increased densities, strategic placement and allotment of parking spaces, an expanded network of streets and pedestrian facilities, etc.). However, some key short-term changes that may improvement pedestrian safety and the perception of safety, include:

- Construct crosswalks across US 40 at every transit stop that is controlled by a traffic signal. This is one way to meet the crossing demand as well as to alert motorists to areas where pedestrians are likely to cross.
- Analyze the signal cycle lengths to see if there is a configuration that works better for all modes
- Decrease signal progression speeds on US 40 (currently set at 45-50 mph). This may potentially create a safer non-auto environment, and can potentially be completed in a way that minimally impacts auto delay.
- Eliminate all channelized turn movements.

As previously discussed, SHA is currently making laudable progress to more adequately accommodate pedestrians in the study area by including pedestrian countdown signals, pedestrian median refuges, and reconstructed ramps.



RECOMMENDATIONS SUMMARY

Recommendation	Location	Measure	Responsible Party	Funding Source	Time Frame*
Pedestrian and Bicycle Connectivity					
Construct sidewalks within developments (e.g., Wal-Mart)	Private Development	Varies	Developer	Developer	Mid
Construct crosswalks within developments	Private Development	Varies	Developer	Developer	Mid
Construct new pedestrian paths/sidewalks	Internal Connections	2,712'	Developer	Developer	Mid
	External Connections	870'	City/SHA	City/SHA Sidewalk Retrofit (Fund 79)	Mid
	Baughmans Lane (at WaWa)	370'	Wawa	Wawa	Short
	Baughmans Lane (north of WaWa)	450'	City	City	Mid
	US 40 at Waverly Drive	490'	City	SHA Sidewalk Retrofit (Fund 79)	Mid
Key Parkway Restriping and Associated Parking Study	Key Parkway	8,605'	City/County	City/County/Maryland Bikeways Program	Short
Old Camp Road Restriping	Old Camp Road	4,090'	City/County	City/County/Maryland Bikeways Program	Mid
Waverly Drive Restriping	Waverly Drive	4,070'	City/County/MDOT	City/County/State Routes to School/ Maryland Bikeways Program	Short
McCain Drive Restriping	McCain Drive	5,405'	City/County/MDOT	Safe Routes to School/Maryland Bikeways Program	Short
Willowdale Drive Restriping	Willowdale Drive	4,670'	City/County/MDOT	City/County/Maryland Bikeways Program	Short
Install Pedestrian Signal	Willowdale Drive at Key Parkway	1 location	City	City	Short
Build Raised Crosswalks	Throughout US 40	8 locations	City/County/SHA	City/County/SHA ADA Sidewalk Retrofit (Fund 33)	Mid
New Crosswalks and Ramps	Throughout US 40	Varies	SHA	SHA ADA Retrofit (Fund 33)	Mid
Driveway Consolidation Study	Throughout US 40	Varies	SHA	SHA	Mid
US 40 Pedestrian Lighting	US 40 from McCain Drive to Baughmans Lane	8,294'	SHA	SHA Community Safety and Enhancement Program (Fund 84)	Long
US 40 Landscaping	US 40 from McCain Drive to Baughmans Lane	8,294'	SHA	SHA Community Safety and Enhancement Program (Fund 84)	Mid

FIGURE 29 | RECOMMENDATIONS SUMMARY

Recommendation	Location	Measure	Responsible Party	Funding Source	Time Frame*
Transit Operations and Accessibility					
Queue Jump Lanes	McCain Drive (south side)		City/County/SHA	City/County/SHA Safety (Fund 77)	Long
	Willowdale Drive Restriping (north side)		City/County/SHA	City/County/SHA Safety (Fund 77)	Long
	Hillcrest Drive (both sides)		City/County/SHA	City/County/SHA Safety (Fund 77)	Long
	Hoke Place (north side)		City/County/SHA	City/County/SHA Safety (Fund 77)	Long
Add new bus stops	Throughout Study Area	5 locations	City/County/SHA	City/County/ADA Retrofit (Fund 33)	Mid
Remove bus stops	Throughout Study Area	11 locations	City/County/SHA	City/County/ADA Retrofit (Fund 33)	Mid
Add benches	Throughout Study Area	22 locations	City/County/SHA	City/County/ADA Retrofit (Fund 33)	Mid
Add bus shelters	Throughout Study Area	5 locations	City/County/SHA	City/County/ADA Retrofit (Fund 33)	Long
Develop a new Passenger Transfer Hub	Boscov's	N/A	County	County/Developer	Short
Develop a shuttle circulator	Shopping centers	N/A	Business Owners	Business Owners	Long
Vehicular Safety, Operations, and Accessibility					
Construct new streets with pedestrian features	Internal Streets	17,050'	City/County/ Developers	City/County/ Developers	Long
Signal timing study	US 40 from McCain Drive to Baughmans Lane	N/A	SHA	SHA	Mid
Before/After Pedestrian timing review	US 40 from McCain Drive to Baughmans Lane	N/A	SHA	SHA	Short
Before/After Safety Study	US 40 from McCain Drive to Baughmans Lane	N/A	SHA	SHA	Mid

Timing
Short 0 to 3 years
Mid 3 to 5 years
Long More than 5 years

3

ACTION PLAN

The Golden Mile Multimodal Access Enhancement Plan is one step of many in the transformation of the Golden Mile into a multimodal, vibrant, livable, and memorable place. This study presents a plan that lays the groundwork for improvements that represent a first step in the ultimate realization of the vision presented in the SAP. As such, many of the recommendations can be put in place in the near- to mid- term before major redevelopment occurs. By implementing these recommendations, the area will better cater to the community that lives there today while building a foundation for the future. The following action plan delineates steps that can be taken by the City, County, TransIT, and SHA alike. By naming responsible agencies, developing a time frame, and identifying potential funding sources, it lays out a framework for the agencies in the area to use as they make land use and transportation decisions regarding the Golden Mile.

Strategies	Action Items that Support Strategies	Time Frame	Responsible Agencies	Potential Funding Source
Pedestrian and Bicycle Connectivity				
Improve Internal and External Connectivity	Work with developers to construct pedestrian paths between shopping centers	Mid	City	Developer
	Implement access management best practices as corridor redevelops (cross access easements, driveway right-sizing/consolidation/shared parking)	Long	SHA	Developer
	Implement policies requiring the construction of internal pedestrian features for new development	Mid	City	Developer
	Incorporate guidelines that accommodate walking and bicycling for all new streets in local land development regulations	Mid	City	Developer
	Enact policies that allow for alternative traffic impact mitigation strategies that include paying for pedestrian and bicycle improvements	Mid	City/SHA	Developer
Complete Sidewalk Network	Incorporate sidewalk enhancements into capital improvement programs, and/or seek funding to implement sidewalk enhancements	Short	City/SHA	CIP, ADA Retrofit
Cross Section Implementation	Incorporate restriping into capital improvement programs, and/or seek funding to implement restriping	Long	City/County/MDOT	CIP, SRTS, MD Bikeways Program
Improve Crossings for Pedestrians	Enact policies that allow for alternative traffic impact mitigation strategies that include paying for pedestrian and bicycle improvements	Short	City/SHA	Developer
	Stripe crosswalks at all driveways and intersections	Short	City/SHA	SHA, Developer, City
	Install countdown pedestrian signal at intersection of Willowdale Drive and Key Parkway	Short	City	City
Driveway Combination/ Sharing	Evaluate access needs and develop a phased implementation plan for managed access, incorporating strategies such as driveway consolidation, cross access easements, etc.	Mid	SHA	SHA
	Coordinate with local businesses and explore retrofitting of existing driveways as part of a corridor access management study and to allow for cross-access easements and driveway right-sizing	Long	SHA	Developer
Lighting Treatments	Complete a lighting study along the corridor assessing pedestrian and street lighting	Mid	City	
	Develop lighting guidelines that can be implemented by SHA, the City, or developers including the construction of human-scale lighting on sidewalks	Mid	City/SHA	SHA, Developer, City
	Implement lighting improvements as the corridor redevelops	Long	City/SHA	SHA, Developer, City
Landscape Treatments	Develop and implement policies requiring new streetscaping standards as properties redevelop	Mid	SHA	Developer, Community Safety and Enhancement Program Fund
	Consider alternative traffic impact mitigation strategies that include paying for streetscaping and lighting improvements	Long	City/SHA	Developer

FIGURE 30 | ACTION PLAN

Strategies	Action Items that Support Strategies	Time Frame	Responsible Agencies	Potential Funding Source
Transit Operations and Accessibility				
Conversion of Right Turn Lanes to Bus Facilities	Repaint right turn lanes to delineate bus pull outs in identified locations	Long	SHA	SHA
	As transit usage increases along the corridor, work to identify funding sources to cut curb and build queue jumps	Long	SHA	SHA
Refine Bus Stop Locations	Relocate bus stops as proposed	Short	TransIT	TransIT
	Develop a marketing and education plan to ensure that passengers understand where new bus stops are located	Short	TransIT	TransIT
Enhance Bus Stop Amenities	Install shelters at locations at locations where daily boardings+alightings are greater than 100 or where bus pull outs/queue jumps are located on US 40	Short	TransIT	TransIT
	Enact policies that allow for alternative traffic impact mitigation strategies that include paying for new transit shelters or amenities	Short	SHA, City	Developer
Develop New Passenger Transfer Hub	Work with WalMart and Boscov's to relocate transfer hub to east side of Boscov's building	Short	City, TransIT	Developer
Assess Opportunities for Increased Service	As bus stops are relocated and routes are rerouted, assess the timing of routes and determine whether and where service improvement opportunities may be feasible	Long	TransIT	TransIT
Enable Greater Connectivity Between Shopping Centers	Support the construction of an internal roadway network and plan an active role in determining the layout of that network	Long	City	City, Developer
	As the internal roadway network is developed, work with businesses to develop a plan for the financing of a circulator through the shopping centers on the north side of the corridor	Long	TransIT, City	Developer
Vehicular Safety, Operations, and Accessibility				
Increase Vehicular Connectivity Throughout the Corridor	Require new developments pay into a fund to build street network according to Golden Mile Small Area Plan or to construct portions of street network	Long	City	Developer
Address Vehicular Delay on Side Streets	Conduct a signal timing study to determine if changes to signal cycle lengths will result in less delay on side streets	Short	SHA	SHA
Improve Safety	Initiate a corridor-wide safety study	Short	SHA	SHA

Timing
Short 0 to 3 years
Mid 3 to 5 years
Long More than 5 years

APPENDIX 1: SITE VISIT SUMMARY

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TECHNICAL MEMORANDUM

Golden Mile Multimodal Access Enhancement Plan

Task 2 - Site Visit Summary

Date:	March 3, 2014	Project #: 13862
To:	Tim Davis, City of Frederick	
From:	Adam Vest, PE, PTOE, Kittelson & Associates, Inc.	
cc:	Sarah Crawford, MWCOG	

As part of the Golden Mile Multimodal Access Enhancement Plan, a number of site visits have been conducted to better understand conditions in the field for all user types. The site visits are also valuable in verifying results of ongoing and future study analyses. Site visit details include:

- Kittelson & Associates, Inc. (KAI) conducted a site visit on the day of the Kick-Off Meeting (Friday, December 13, 2013).
- RJM Engineering conducted a site visit on Monday, January 27, 2014 during the PM peak period.
- KAI conducted a site visit on Wednesday, February 14, 2014 during afternoon peak hours. Also attendance was Tim Davis from the City of Frederick and Carrie Watters from TransIT Services of Frederick County.

The following site visit observations are predominantly observational in nature and are not a substitute for detailed multimodal analysis. However, supplemented by some measurements in the field and engineering judgment, many field observations will be used to support accompanying analysis and future recommendations.

GOLDEN MILE CORRIDOR

Prior to the construction of the Interstate Highway System and I-70, US 40 was constructed with no access controls as the major regional east-west route; however, as suburban, auto-focused development occurred, more local trips became reliant on the roadway, competing for space with these regional users, many of whom could use I-70 but do not because of peak period traffic congestion. The result is a multi-lane facility designed for high auto volumes and speeds, while also attempting to serve the needs of local users: pedestrians and bicyclists, transit users, and slower moving auto traffic. Using the corridor in any way other than as a motorist is an unpleasant experience. Signalized pedestrian crossings range between 100 and 150 feet in length, there are no bicycle facilities, and currently all bus routes circulate through shopping center parking lots adjacent

to US 40. Despite this (and despite the cold weather), a number of non-auto users were observed along and in the immediate vicinity of the study corridor during recent site visits. With the exception of a few "pinch points" (e.g., Baughmans Lane), auto traffic moves through the corridor relatively unimpeded, even during peak periods. Moreover, most dedicated right-turn lanes appeared to have a good deal of excess capacity.

Exhibit 1. Excess Right-Turn Lane Capacity on US 40 at McCain Drive (Eastbound)

Except for a few locations, the corridor includes sidewalks (with grass buffers in many locations) on the north and south sides of US 40. Additionally, several signalized intersections are currently being retrofitted by SHA to include new ramps and sidewalks, accessible and countdown pedestrian signals (APS and CPS), pedestrian refuges on US 40 and some adjacent streets, and all new signal hardware (i.e., poles, mast arms, signal heads, controller boxes, and underground conduit and utilities). Many of these intersections were under construction during site visits. While this is clearly a concerted effort to improve pedestrian safety and mobility, walking along the corridor remains an uncomfortable experience due to high auto volumes and speeds, as well as a daunting sense of scale (a pedestrian on a five-foot sidewalk must walk next to a roadway that is 8-9 lanes wide on one side with large shopping center parking lots on the other side).

Most bicyclists in the study area were seen either riding along US 40 on adjacent sidewalks or crossing US 40 at signalized crossings. Despite the single observed "Share the Road" sign just east of Baughmans Lane, no bicyclists were observed riding with traffic on US 40. As previously discussed, all bus stops in the study area are located on adjacent streets and internal parking lots. As observed in

the field, the lack of a direct route results in obvious service disruptions and delays, as buses must rely on crossing at many signalized intersections on minor streets with limited available green time. During the PM peak period, the same buses were seen multiple times crossing US 40 and traveling into and out of parking lots.

Exhibit 2. Bike Signing on US 40.

Exhibit 3. Bus Layover Area at Boscov's

STUDY INTERSECTIONS

There are seven key signalized intersections along US 40 that are included in the approved scope of work. These include (west to east):

- Waverley Drive/US 40
- Grove Hill Road/Frederick Towne Mall/US 40
- McCain Drive/US 40
- Willowdale Drive/US 40
- Hillcrest Drive/US 40
- Hoke Place/US 40
- Baughmans Lane/Linden Avenue/US 40

Detailed observations were made at each of these intersections. Observations were predominantly made during the PM peak period.

Waverley Drive/US 40

Intersection Operations

The Waverley Drive/US 40 intersection operated smoothly during the peak hour and vehicle queues had no problem clearing in a single cycle's green time, with the exception of the westbound

channelized left-turn lane to US 40 Alternate (Old National Pike). This ramp had a capacity of approximately 10 vehicles, after which it overflowed into the intersection of US 40 and Waverley Drive. This overflow was observed during the PM peak hour, however no vehicles were found to be "stuck" in the intersection after the US 40 westbound through movement was red, therefore this operational problem has more to do with safety than capacity. Moreover, the eastbound "on ramp" contains a pedestrian signal, although no activity was observed during the site visit.

Exhibit 4. Traffic Signals at Waverley Drive/US 40.

Additional Observations

The pedestrian refuge in the median spanning US 40 could potentially be widened to increase pedestrian safety and comfort. Although bicycle facilities are not present today, widening this median would better serve cyclists that are crossing US 40 in the future. The eastbound US 40 shoulder, and the lane width for the ramp from US 40 Alternate could be evaluated to make this possible. Sidewalks were recently constructed in the southwest corner of the intersection, as well as to the west of the intersection on the south side of US 40.

Grove Hill Road/Frederick Towne Mall/US 40

Intersection Operations

Much of the Frederick Towne Mall is vacant, therefore it was not surprising no issues were observed with the operation of the signalized intersection of Grove Hill Road/Frederick Towne Mall/US 40. Each leg of the intersection had no problem clearing the intersection on a single phase of green.

Additional Observations

The crossing of US 40 is very long (approximately 140 feet) without a median pedestrian refuge. There are a number of pedestrian trip generators on the North side of US 40 including a shopping center and several eateries. The crosswalk at the shopping center entrance (north side of US 40) is skewed and would better serve visually impaired pedestrians if it is more adequately "lined up" in the future. This intersection will likely start seeing a good deal more multimodal traffic with a Wal-Mart planned for construction on the north side in the near-term. This intersection is also currently under construction to upgrade the signal and pedestrian facilities. The crosswalk on the west side of the intersection is being shifted to the west to provide a shorter crossing distance, a median pedestrian refuge is being constructed, and new sidewalks and ramps are also being completed.

McCain Drive/US 40

Intersection Operations

There were no issues with the operation of the signal at McCain Drive/US 40. Each leg of the intersection had no problem clearing the intersection on one green.

Additional Observations

This intersection was currently under construction during the site visit. Span wires for temporary signals are present, while mast arm signal heads have been bagged. The crossing of US 40 is extremely long (greater than 140') without a median pedestrian refuge. It also appears to have a disconnect between existing and future striping. Ultimately, crosswalk striping should be removed, and a final crossing configuration restriped. Future geometric upgrades should consider including a refuge in the existing median of 15+ feet. Additionally, the crosswalks at both North McCain Drive and South McCain Drive are skewed and may be challenging to visually impaired pedestrians.

Similar to other intersections along the corridor, ongoing construction includes upgrades to signal and pedestrian facilities. The crosswalk on the west side of the intersection is being shifted to the west to provide a shorter crossing distance, the crosswalks on the north and south approaches are being realigned, median pedestrian refuges are being constructed on the north and west approaches, and new sidewalks and ramps are also being completed.

Exhibit 5. Ongoing Construction at McCain Drive/US 40.

Willowdale Drive/US 40

Intersection Operations

There were no issues with the operation of the signal at Willowdale Drive/US 40. Each leg of the intersection had no problem clearing the intersection on one green. Queues on southbound Willowdale Drive extended beyond the entrance to Wendy's at times, however this was in part due to the large gaps motorists were leaving to allow for turning vehicles entering Willowdale Road from the Shell Station.

Additional Observations

This intersection was currently under construction during the site visit. Span wires for temporary signals are present, while mast arm signal heads have been bagged. It was observed that there are two sets of crosswalk markings spanning US 40. The markings are adjacent to one another and approximately a foot to two feet apart. Since neither one adequately serves pedestrians at this location, it would be beneficial to remove both and restripe the crossing.

Exhibit 6. Mismatched Crosswalks and Bagged Signals at Willowdale Drive/US 40.

Hillcrest Drive/US 40

Intersection Operations

This intersection operated smoothly during the peak hour, and vehicle queues had no problem clearing in a single cycle's green time. It was observed that the dual left-turn lanes on eastbound US 40 (turning into the shopping center) were at times full and exceeded the capacity of the lanes by 1-2 vehicles.

Additional Observations

This intersection was currently under construction during the site visit. Span wires for temporary signals are present, while mast arm signal heads have been bagged. Non-MUTCD compliant turn-lane arrows are present at the shopping center driveway exit. Additionally, although the ramp at the north-west corner of the intersection is being reconstructed, it does not appear to extend the sidewalk down to the shopping center. There appears to be a need for additional pedestrian facilities between US 40 and the shopping center storefronts and bus stops.

Exhibit 7. Pedestrian Walking concurrent flow in the Street due to Lack of Sidewalk at Westridge Shopping Center

Hoke Place/US 40

Intersection Operations

This intersection operated smoothly during the peak hour, and vehicle queues had no problem clearing in a single cycle's green time. Due to the proximity of driveways on northbound Hoke Place, and eastbound US 40, queuing did at times block entrances to the 7-11 and neighboring businesses.

Additional Observations

This intersection was currently under construction during the site visit. Span wires for temporary signals are present, while mast arm signal heads were not yet installed at the time of observation. The crosswalk spanning US 40 was used, and connects a residential area south of US 40, to the many businesses located north of US 40. Shortening this crossing, and/or the addition of a midblock crossing could be analyzed to improved pedestrian safety at this location.

Exhibit 8. Hoke Place/US 40 Crosswalk (west approach of US 40)

Baughmans Lane/Linden Avenue/US 40

Intersection Operations

It was observed that queuing for the eastbound left turning movement was not always able to completely clear during one cycle length. An average of two vehicles from the queue were not able to clear for this movement. Queuing for other movements was found to clear each cycle without a problem, although it was noted that driveways to adjacent businesses (Comfort Inn and GetGo Gas Station) were blocked on Linden Ave at times during the peak hour. Based on observations, Baughmans Lane appeared to have the highest vehicle volumes of all study cross streets, particularly to the north.

Additional Observations

This location did not appear to be under construction at the time of observation. Motorists traveling through on both Linden Avenue and Baughmans Lane are faced with a significant shift through the intersection in order to safely travel through. If alignment modifications are not possible in the future, additional pavement markings could be explored to make this shift more apparent to motorists. Low motorist compliance was also observed with yielding to pedestrians at the free-right on westbound

US 40 onto Baughmans Lane. Standard pedestrian signing (such as the W11-2) was not present at the crossing.

OTHER CORRIDORS IN THE STUDY AREA

In addition to detailed observations along US 40, the team also observed conditions along key network streets in the US 40 vicinity. The streets included five north-south streets (Old Camp Road, Waverley Drive, McCain Drive, Willowdale Drive, and Baughmans Lane) and one parallel east-west street to the north (Key Parkway). Butterfly Lane runs parallel to US 40 on the south, but only one of the aforementioned north-south streets connect Key Parkway to Butterfly Lane (McCain Drive). However, the redevelopment of the VFW site will realign Mt Philip Road so that it meets Old Camp Road, thus connecting Key Parkway to Butterfly Lane.

Key Parkway

Key Parkway provides an understated but key role in the Golden Mile study area. It serves as a parallel route to US 40, specifically catering to local traffic and non-auto modes of transportation. During the site visit, the street was very active with children and young adults getting off school buses, including a steady stream of peak hour traffic likely traveling home at the end of a work day. Although all residential uses along Key Parkway provide on-site/off-street parking, some vehicles were parked along Key Parkway, particularly between Waverley Drive and McCain Drive. With a curb-to-curb width of approximately 34-36 feet, Key Parkway would be an ideal location for bike lanes and a safer and more comfortable east-west route than US 40. Including bike lanes would eliminate on-street parking opportunities however. Space would also be constrained due to turn lanes at Waverley Drive and Willowdale Drive but shared lane markings could likely be used at these locations.

Exhibit 9. Typical Cross Section on Key Parkway.

North-South Streets

The five north-south streets (Old Camp Road, Waverley Drive, McCain Drive, Willowdale Drive, and Baughmans Lane) all serve a very similar and important function; they all collect traffic from local streets and feed them to higher order roadways. With the exception of Old Camp Road, the other four streets look and feel almost identical, with two lanes in each direction and a curb-to-curb width of approximately 40 feet. The most obvious observation during peak periods is the excess capacity along the roadway, as well as the number of driveways. Consideration should be given to road diets by reducing the number of travel lanes and adding bike lanes. A potential configuration would be two travel lanes (one 10-foot lane in each direction), a two-way left-turn lane (10 feet), and two bike lanes. This would likely provide a safer option for left-turning motorists, potentially "calm" traffic, and provide a much needed bicycling connection between Key Parkway and residential uses to commercial activity along US 40. This configuration may be appropriate along Waverley Drive, McCain Drive, and Willowdale Drive.

Based on field observations, Baughmans Lane is clearly the busiest of the north-south streets in the study area and the aforementioned road modifications are likely not appropriate between Key Parkway and US 40. Additionally, with a new WaWa's service station approved for the northwest corner of Baughmans Lane and US 40, additional capacity is planned for the intersection, including a third southbound left-turn lane. Such an environment may not be appropriate for reallocating lanes to improve active transportation options, especially when several other north-south routes appear to be simpler options.

Exhibit 10. Waverley Drive Cross Section (approximately 40 feet curb-to-curb)

Exhibit 11. McCain Drive Cross Section (approximately 40 feet curb-to-curb)

The western-most of the five north-south routes is Old Camp Road. With limited commercial activity, minimal driveways north of US 40, a park on the west side, and low observed traffic volumes, Old

Camp Road currently has a calmer feel than other north-south streets in the study area. The street also has no pavement markings, despite having a curb-to-curb width of over 40 feet. Considering the surrounding environment, Old Camp Road could easily be a key north-south route in the study area. Providing bike lanes, or even a median, could easily be achieved with the available street space. Once Mt Philip Road is realigned south of US 40, Old Camp Road will also provide a connection to areas to the south, including a good deal of residential uses. In the long term when Old Camp Road is upgraded to a multilane dual highway (Christopher's Crossing Extended), context sensitivity would need to be applied in its design to maintain accessability to all modes of travel.

APPENDIX 2: EXISTING CONDITIONS SUMMARY

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Existing Conditions Evaluation

Date: April 30, 2014

Project #: 13862

To: Tim Davis, Project Manager
City of Frederick
140 West Patrick Street
Frederick, Maryland 21701

From: Adam Vest, PE, PTOE and Chris Romano, LEED AP ND

Project: Golden Mile Multimodal Access Enhancement Plan

Subject: Existing Conditions Summary

STUDY BACKGROUND AND GOALS

Study Description and Process

The Metropolitan Washington Council of Governments (MWCOG) has provided funds through the Transportation/Land-Use Connections (TLC) Program to conduct the Golden Mile Multimodal Access Enhancement Plan. The Golden Mile Small Area Plan (SAP) recognizes that true multimodal redevelopment along the US 40 (i.e., the Golden Mile) corridor must rely upon safer and more convenient walking and biking environments, increased street and trail connectivity, and improved transit accessibility and comfort. Prior to the construction of the Interstate Highway System and I-70, US 40 was the major regional east-west route; however, as suburban, auto-focused development occurred, more local trips became reliant on the roadway, competing for space with these regional users. The result is a multi-lane facility designed for high auto speeds, while also attempting to serve the needs of local users: pedestrians and bicyclists, transit users, and slower moving auto traffic. Today's Golden Mile is an unsafe and uncomfortable environment for non-auto modes, with minor inconveniences for motorists.

In order to address the desire for the corridor to become multimodal in nature, the Golden Mile Multimodal Access Enhancement Plan will identify opportunities to improve and increase transit and mobility options in association with land redevelopment and livability goals that support the use of those mobility opportunities as outlined in the Golden Mile Small Area Plan. These opportunities

include dedicated space for transit by utilizing existing right-turn lanes, new pedestrian and bicycle facilities, and changes and improvements to the street network connectivity.

The Golden Mile Multimodal Access Plan evaluates the existing pedestrian, bicycle, transit, and vehicular conditions along the corridor and in the surrounding areas, including the review of previous studies associated with the corridor. This evaluation determines how the corridor is currently being used and where opportunities exist to support improved connectivity with the surrounding neighborhoods, ultimately moving towards a more livable study area. Based on the results of this analysis, graphical on-street and off-street recommendations will be developed for multimodal and connectivity related improvements along and surrounding the corridor. An action plan, inclusive of suggestions for funding sources, will be created to help guide the future development in the study area.

The following memorandum outlines and analyzes the existing conditions in order to develop an understanding of how the corridor performs today. The existing conditions evaluation will then inform project decisions and recommendations for improving non-auto travel (i.e., comfort, safety, accessibility) in the study area. Topics addressed include:

- A review of past studies
- Findings and observations from field reviews
- Analysis of existing traffic operations
- Evaluation of transit accessibility and quality of service,
- Review of multimodal connectivity.

Study Area

The Golden Mile Corridor study area includes a 1.75-mile segment of US Route 40 in Frederick, Maryland from Old Camp Road to US Route 15 / Catoctin Mountain Highway. In order to better understand the context of the Golden Mile, the study area also encompasses the surrounding areas within one half mile to the north and south of the corridor. Within the corridor, detailed analyses were also performed on the following six signalized intersections:

- US 40/Waverly Drive
- US 40/McCain Drive
- US 40/Willowdale Drive
- US 40/Hillcrest Drive
- US 40/Hoke Place
- US 40/Linden Avenue/Baughman’s Lane


SCHAFFER DR
DYRHAM PARK DR
LAKE COVENTRY DR
SAVAGE RD
CONEWAGO DR
AVONDALE CT
GREENWAY DR
VIENNA CT
HAMPSHIRE DR
VICTORIA SQ
BAKER PL
OLD CAMP RD
Willowdale Park
Future WalMart Site
Westpointe Plaza Shopping Center
WAVERLEY DR
MCCAIN DR
WILLOWDALE DR
KEY PKWY
OLD NATIONAL PIKE
MOUNT PHILLIP RD
Westridge Square Shopping Center
Frederick County Square Shopping Center
WATERFORD DR
GABRIEL CT
BLAKELY CT
CHILD FIG CT
VFW Country Club
GROVE HILL RD
US 40 (PATRICK ST)
HILLCREST DR
PEACHTREE CT
APPLETREE CT
APPLE WAY
ORCHARD WAY
AYNSLEY CT
ORCHARD TER
FRONTLINE DR
Hilcrest Center Shopping Center
HOKE PL
TEAL CT
HUNTSMAN RD
MILLBANK CT
DAVID LN
APPLETON PL
LAUREN CT
STILLMEADOW PL
HILL ST
Hillstreet Skate Park
GROUSE CT
SULKY LN
SUNFIELD WAY
GILTSPUR RD
ROLLINGHOUSE DR
SPLIT RAIL LN
HILLCREST DR
MULBERRY CT
DANBERRY DR
RENDLETON CT
CONSETT PL
GREENWALL PL
WALNUT ST
US 15
LOCUST AVE
BOYERS ALY
POPLAR ST
LINDEN AVE
OAK ST
BIRCH ST
Frederick
Miles
0 1 2
0 300 600 1,200 Feet
N
Legend
Place of Interest
Signal
Building Footprint

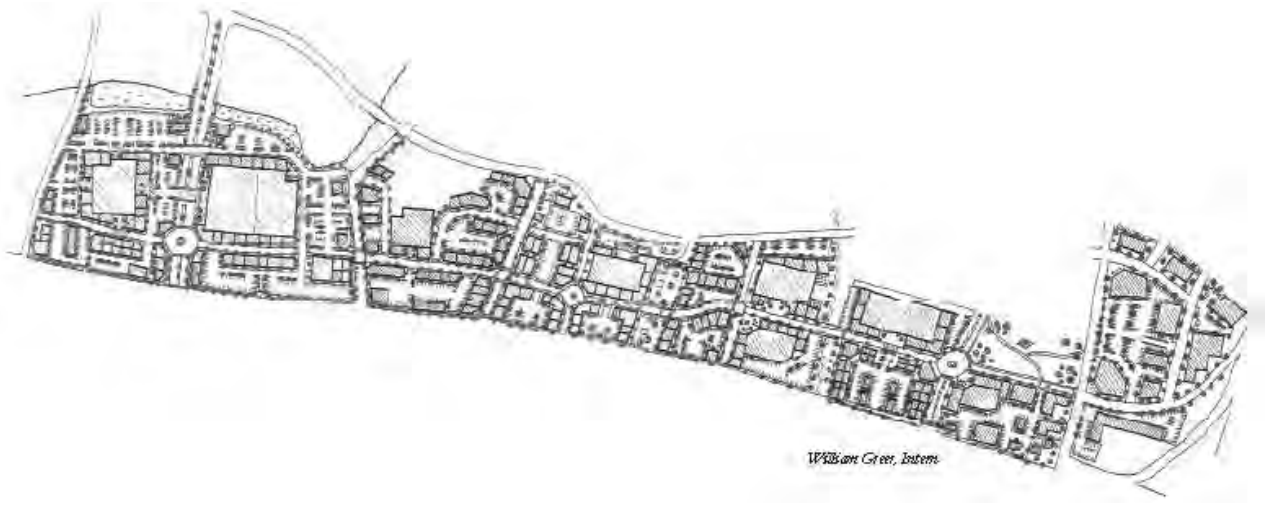
PREVIOUS STUDIES

The Golden Mile corridor has been a subject of several studies and efforts over the past several years. These studies have ranged from area vision plans to roadway engineering plans and redevelopment plans. In order to provide a comprehensive overview of these efforts, each study has been reviewed and the major points are outlined here.

Golden Mile Small Area Plan

The 2013 Golden Mile Small Area Plan discusses the existing conditions of the Golden Mile using a holistic approach, including demographics, land use, economic development, transportation, and the environment. The Plan noted the existing retail space in the area was underutilized, lacking in continuous bicycle and pedestrian infrastructure. Based on this information, several scenarios were developed and a preferred alternative was chosen. The preferred alternative envisions the redevelopment of the area into a mixed use, high density, multimodal area. It recommends the creation of a new internal street, "The Avenue," that will provide an alternative east/west route just north of the US 40. Several other local streets are also proposed, creating an effective street network between US 40 and Key Parkway. This plan lays out a long-term vision for the area, whereas the Golden Mile Multimodal Access Enhancement Plan aims at short- and medium-term solutions to improve multimodal mobility in anticipation of increased development.

Exhibit 1. Preferred Small Area Plan Concept Alternative



Golden Mile Retail Report

The 2009 Golden Mile Retail Report aimed to determine the health of the Golden Mile by examining the demographics, expenditures, traffic counts, and occupancy data in the area. The report found the Golden Mile to be comprised of over 2.6 million square feet of commercial space, with about 10 percent vacancy. The retail along the corridor primarily consists of grocery store anchored shopping centers, restaurants, and branch banking, among other uses. The report also outlines several recommendations for potential assistance programs that can help to revitalize the corridor, including the creation of a Business Improvement District or the implementation of Tax increment financing, in addition to several state run programs.

Maryland State Highway Administration (SHA) Recommendations and Construction

This report was compiled in 2012 to make recommendations for the FY 13 District 7 Maintenance milling/resurfacing project that will be beginning in spring of 2014. It made several recommendations for improvements on US 40 regarding the painting of pavement markings, the installation of signage, and the upgrading of all signals to video detection. In addition to the resurfacing process, six signals are in the process of being reconstructed at the following US 40 intersections:

- Old Camp Road
- Grove Hill Road
- McCain Drive
- Willowdale Drive
- Hillcrest Drive
- Hoke Place

These projects include the installation of new mast arms, signals, and related signage and equipment. They will also include a number of pedestrian improvements; including the installation of accessible pedestrian signals (APS) and countdown pedestrian signals (CPS); restriping and relocating crosswalks; and installing pedestrian refuges in medians, among other improvements.

VFW Redevelopment

The VFW golf course is planned to be redeveloped as West Park Village; a mixed-use community containing residential units, a new park, conservation land, and retail fronting US 40. The plan includes a realignment of Mt. Phillip Road to better connect to Old Camp Road. Additionally, a trail will be constructed through the new West-End Park with connections to US 40.

Exhibit 2. VFW Redevelopment Plan

Wal-Mart Redevelopment Plan

Wal-Mart will be redeveloping a portion of the Frederick Town Mall site between Boscov's and Home Depot. Its most recent plan aims to implement some of the SAP recommendations, including an initial implementation of a portion of The Avenue and an associated roundabout at the entrance to the site. While the final plans have not been decided, it will further help to implement the city's plans by funding the creation of a new transit hub adjacent to Boscov's. Additionally, it will fund the restoration of Rock Creek Park and a new walking path along the park, including a pedestrian bridge through the park to connect the site to the adjacent residences. In conjunction with these community improvements, a new community center will be completed with a park on the northwest side of the development and a community garden on the northeast side.

Exhibit 3. Wal-Mart Redevelopment Plan

WaWa Store Redevelopment

WaWa has submitted plans for the redevelopment of a site at the northwest corner of the US 40/Baughman's Lane intersection, including a new gas station, convenience store, and related parking. In order to accommodate the increased traffic from this development, WaWa will be constructing an additional dedicated left-turn lane and a channelized right turn lane with the associated pedestrian island and crossing facilities in the southbound direction (north approach) on Baughman's Lane. WaWa will also install new sidewalks where they are missing and will landscape the site adjacent to the surrounding sidewalk.

FIELD REVIEW FINDINGS

As part of the Golden Mile Multimodal Access Enhancement Plan, a number of site visits have been conducted to better understand conditions in the field for all user types. The site visits are also valuable in verifying results of ongoing and future study analyses. Site visit details include:

- Kittelson & Associates, Inc. (KAI) conducted a site visit on the day of the Kick-Off Meeting (Friday, December 13, 2013).
- RJM Engineering conducted a site visit on Monday, January 27, 2014 during the PM peak period.
- KAI conducted a site visit on Wednesday, February 14, 2014 during afternoon hours. Also in attendance were Tim Davis from the City of Frederick and Carrie Watters from TransIT Services of Frederick County.

The field reviews focused on the existing conditions in the corridor, considering topics such as pedestrian and bicycle facilities and conditions; usage of the corridor by all modes; vehicular conditions; and transit stop locations, routes, and usage. These reviews were completed at both to corridor wide and intersection level. The following sections discuss general conditions observed in the field in addition to more detailed analysis. For a more detailed description of the field reviews, please see Appendix A.

SAFETY

A safety analysis was completed along the corridor using data acquired from the Maryland State Highway Administration. In total, there were 207 police reported crashes over a period of four years (2009 to 2012). In general, the most prominent types of crashes were rear-end collisions, comprising 48 percent (98 occurrences) of total crashes; and angle collisions, comprising 23 percent (48 occurrences) of total crashes. There were 11 (5 percent) pedestrian crashes recorded during this study as well. Of the total crashes, 24 involved alcohol use (12 percent) and 26 (13 percent) occurred during wet surface conditions. Although there were no fatalities reported during the four-year period, 115 (56 percent) of the crashes were injury crashes resulting in 170 people injured over the four year period. Table 1 presents a summary of these crash types and levels of severity on an annual basis.

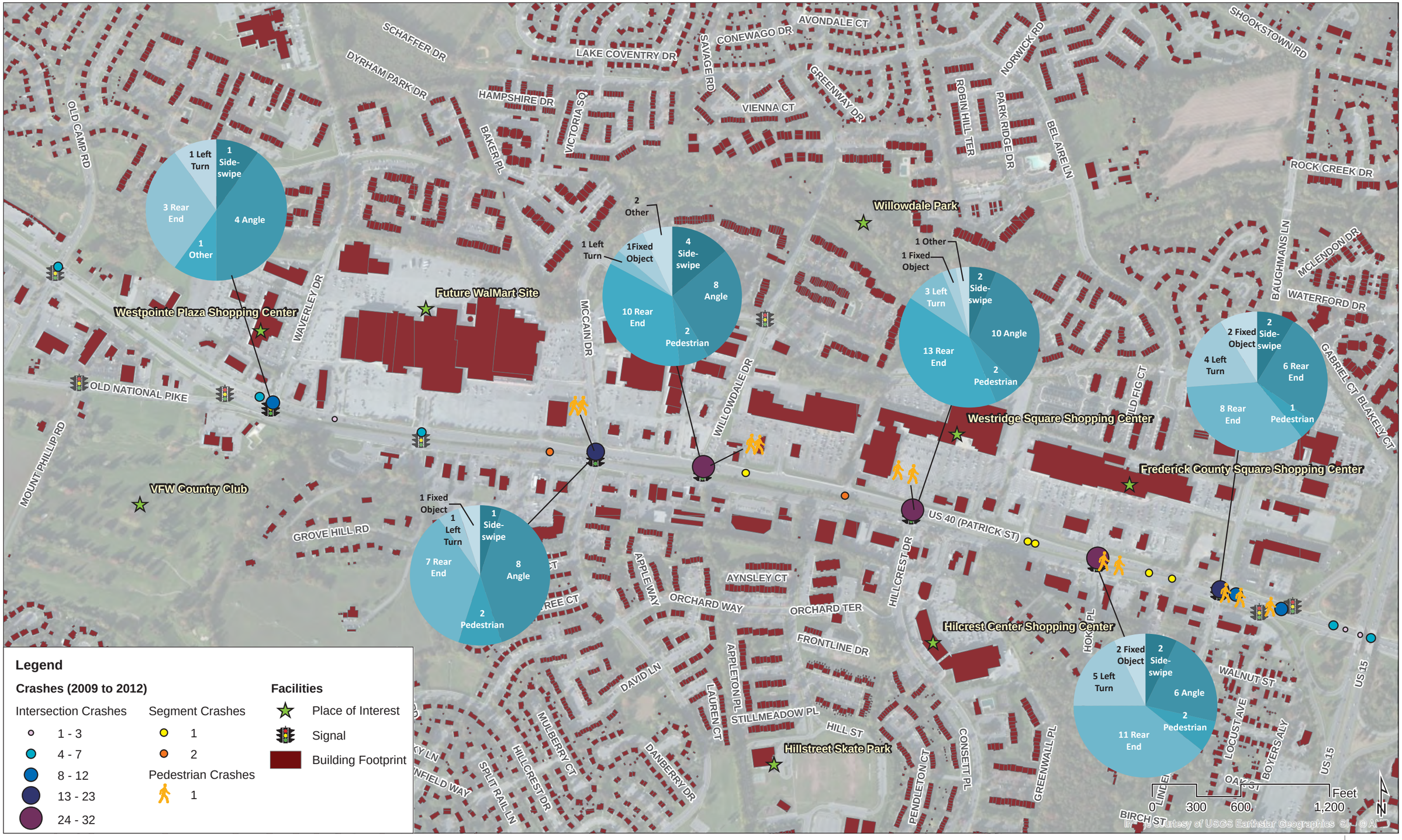
Figure 2 presents a graphic representation of the crash data along the corridor. As can be seen, the majority of the crashes occurred at or around intersections. The three intersections with the highest numbers of crashes include Hillcrest Drive, with 32 crashes; Willowdale Avenue, with 29 crashes; and Hoke Place, with 28 crashes. Common reasons cited for these crashes include failure to pay attention and, at Hoke Place, failure to obey a traffic signal. The Intersections tend to follow the general trend in crashes, with rear end and angle collisions being the two major collision types. The high number of rear-end crashes is fairly common along roadways such as US 40, where the mix of regional and local trips presents varying speeds and turning movements.

As stated previously, there were 11 pedestrian crashes over the four-year period. While there were no fatalities, pedestrian crashes on high speed facilities are a point of concern because they often result in serious injuries. All of the pedestrian crashes were located between McCain Drive and the US 15 on ramp, with each signalized intersection experiencing two crashes with the exception of Baughman's Lane. While one crash occurred at Baughman's Lane, two more occurred within a 500-foot segment of on- and off-ramps for US 15.

Table 1. US 40 Crash Data Summary (Old Camp Road to US 15)

	Collision Type					Severity			
Year	Rear-End	Angle	Pedestrian	Left Turn	Other	PDO[1]	PI[2]	Fatality	Total Number of Crashes
2009	30	8	1	5	1	21	31	0	52
2010	29	17	2	6	3	32	33	0	65
2011	22	10	6	4	0	18	28	0	46
2012	17	13	2	3	0	21	23	0	44
Total	**98**	**48**	**11**	**18**	**4**	**92**	**115**	**0**	**207**

[1] Property Damage Only [2] Personal Injury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DYRHAM PARK DR
LAKE COVENTRY DR
SAVAGE RD
CONEWAGO DR
AVONDALE CT
NORWICK RD
SHOOKSTOWN RD
HAMPSHIRE DR
VICTORIA SQ
VIENNA CT
GREENWAY DR
ROBIN HILL TER
PARK RIDGE DR
BEL AIRE LN
OLD CAMP RD
BAKER PL
ROCK CREEK DR
Willowdale Park
MCLENDON DR
BAUGHMANS LN
WATERFORD DR
1 Left Turn
1 Side-swipe
3 Rear End
4 Angle
1 Other
Westpointe Plaza Shopping Center
WAVERLEY DR
Future WalMart Site
MCCAIN DR
2 Other
1 Left Turn
1Fixed Object
4 Side-swipe
8 Angle
10 Rear End
2 Pedestrian
WILLOWDALE DR
1 Other
1 Fixed Object
3 Left Turn
2 Side-swipe
10 Angle
13 Rear End
2 Pedestrian
Westridge Square Shopping Center
2 Fixed Object
2 Side-swipe
4 Left Turn
6 Rear End
8 Rear End
1 Pedestrian
GABRIEL CT
BLAKELY CT
OLD NATIONAL PIKE
MOUNT PHILLIP RD
VFW Country Club
GROVE HILL RD
Frederick County Square Shopping Center
US 40 (PATRICK ST)
1 Fixed Object
1 Left Turn
1 Side-swipe
7 Rear End
8 Angle
2 Pedestrian
APPLE WAY
ORCHARD WAY
ORCHARD TER
AYNSLEY CT
HILLCREST DR
HOKE PL
Hilcrest Center Shopping Center
FRONTLINE DR
DAVID LN
APPLETON PL
LAUREN CT
STILLMEADOW PL
HILL ST
Hillstreet Skate Park
MULBERRY CT
HILLCREST DR
SPLIT RAIL LN
DANBERRY DR
CONSETT PL
PENDLETON CT
GREENWALL PL
2 Fixed Object
2 Side-swipe
5 Left Turn
6 Angle
2 Pedestrian
11 Rear End
WALNUT ST
LOCUST AVE
BOYERS ALY
OAK ST
LINDEN
BIRCH ST
US 15
Legend
Crashes (2009 to 2012)
Intersection Crashes
1 - 3
4 - 7
8 - 12
13 - 23
24 - 32
Segment Crashes
1
2
Pedestrian Crashes
1
Facilities
Place of Interest
Signal
Building Footprint
0
300
600
1,200
Feet
N
Image courtesy of USGS Earthstar Geographics SIO © A

TRAFFIC OPERATIONS

A detailed traffic operations analysis was completed for the AM and PM Peak Hour at seven signalized intersections along the corridor:

- US 40/Waverly Drive
- US 40/Grove Hill Road
- US 40/McCain Drive
- US 40/Willowdale Drive
- US 40/Hillcrest Drive
- US 40/Hoke Place
- US 40/Linden Avenue/Baughman's Lane

The following section describes the conditions observed at these intersections on Monday, January 27, 2014. Table 2 provides an overview of these conditions and results, as determined through the use of Synchro 7 software. Overall, very little delay is experienced along US 40 during weekday AM and PM peak hours. Motorists traveling from one end of the corridor to the other experience minimal delay, with the exception of eastbound Hillcrest Drive in the afternoon, where a combination of the split phasing and additional green time provided to westbound US 40 do have an impact on vehicle delay. The north and south streets do experience a good deal of delay however, although it is primarily a result of the long cycle lengths (180 seconds in most cases) and split phase operations, not heavy vehicle demand. The volume-capacity ratios are sufficiently low as well, which again suggests adequate capacity at all intersections but a good deal of waiting at red signals on the north and south streets.

Table 2. Intersection Operations on US 40 (AM and PM Peak Hour)

Int.	Eastbound (AM/PM)			Westbound (AM/PM)			Northbound (AM/PM)			Southbound (AM/PM)		
	LOS	Delay (s)	Max v/c	LOS	Delay (s)	Max v/c	LOS	Delay (s)	Max v/c	LOS	Delay (s)	Max v/c
Waverly Dr.	B/B	10.7/ 13.4	0.33/ 0.39	A/A	8.0/ 1.8	0.20/ 0.39	-	-	-	E/E	63.3/ 76.7	0.64/ 0.72
Grove Hill Rd.	A/A	3.0/ 7.4	0.36/ 0.33	A/A	3.2/ 6.2	0.25/ 0.45	E/D	67.2/ 37.3	0.09/ 0.42	E/D	67.7/ 36.1	0.09/ 0.21
McCain Dr.	C/C	21.0/ 26.8	0.49/ 0.52	B/B	17.6/ 19.7	0.52/ 0.62	E/F	62.6/ 87.4	0.57/ 0.94	E/F	69.0/ 82.7	0.67/ 0.77
Willowdale Dr.	B/B	58.0/ 10.0	0.60/ 0.66	D/A	42.3/ 9.1	0.41/ 0.63	E/F	69.8/ 85.3	0.12/ 0.19	E/ F	70.0/ 85.1	0.77/ 0.83
Hillcrest Dr.	B/E	19.5/ 64.6	0.57/ 0.71	B/B	10.3/ 10.9	0.52/ 0.65	E/E	61.6/ 75.8	0.72/ 0.87	E/ E	66.5/ 74.5	0.39/ 0.35
Hoke Pl.	A/B	8.7/ 10.1	0.60/ 0.68	A/A	2.6/ 3.7	0.43/ 0.64	D/E	54.7/ 60.4	0.06/ 0.13	E/ E	62.2/ 76.1	0.69/ 0.82
Baughman's Lane/Linden Ave.	B/B	17.1/ 13.4	0.59/ 0.76	D/C	42.3/ 29.0	0.61/ 0.81	E/F	62.6/ 114.6	0.56/ 0.95	E/F	65.2/ 104.5	0.75/ 0.97

Long cycle lengths along US 40 (a full 3 minutes at most study intersections) do not only impact side street motorists. They also result in long waits for pedestrians crossing US 40. According to the Maryland *Manual on Uniform Traffic Control Devices (MUTCD) – 2011 Edition*, the minimum

pedestrian crossing time at intersections includes a minimum of 7 seconds of "Walk" followed by a calculated pedestrian clearance time. The pedestrian clearance time (i.e., Flashing Don't Walk with Countdown) calculation assumes a pedestrian walking speed of 3.5 feet per second, thus allowing sufficient time to allow a pedestrian in the crosswalk who left the curb at the end of the "Walk" signal indication to reach the far curb or a median pedestrian refuge. Pedestrian crossing distances on US 40 in the study area range from 120 to 150 feet in length; assuming a one-stage crossing at all US 40 study intersections, this results in a minimum pedestrian change interval of 29 to 43 seconds, and therefore requires the green time on north-south streets to be at a minimum the same as pedestrian change interval.

As most signals along the corridor were under construction during the existing conditions evaluation, an in-field observation and calculation of pedestrian crossing times was not possible. However, SHA did provide updated Synchro 7 files including the proposed AM, midday, and PM peak hour signal timings for US 40. Additional discussions also took place with SHA to ensure adequate pedestrian crossing times were being considered for the formal signal timing implementation.

PEDESTRIAN AND BICYCLE CONNECTIVITY

As previously discussed, using this corridor in any way other than as a motorist is an unpleasant experience. Signalized pedestrian crossings range between 100 and 150 feet in length, there are no bicycle facilities, and currently all bus routes circulate through shopping center parking lots adjacent to US 40. Even so, residents living around the corridor consistently make use of the corridor as pedestrians and bicyclists for all types of trips, including work, shopping, dining, and entertainment.

In order to better understand the network that facilitates connectivity in the area, several other streets were considered in addition to US 40. The streets included five north-south streets (Old Camp Road, Waverley Drive, McCain Drive, Willowdale Drive, and Baughman's Lane) and one parallel east-west street to the north (Key Parkway). Butterfly Lane runs parallel to US 40 on the south, but only one of the aforementioned north-south streets connect Key Parkway to Butterfly Lane (McCain Drive). However, the previously described redevelopment of the VFW site will realign Mt. Philip Road so that it meets Old Camp Road, thus connecting Key Parkway to Butterfly Lane.

Key Parkway is a low speed, two lane roadway that acts as a local street for the residences and businesses that front it and surround it. It also serves an important function as an alternate route to US 40 in this area. During site visits, the roadway was observed to experience steady, slow moving traffic and was consistently used by pedestrians and bicyclists.

The five north-south streets (Old Camp Road, Waverley Drive, McCain Drive, Willowdale Drive, and Baughman's Lane) all serve a very similar and important function; they all collect traffic from local streets and feed them to higher order roadways. With the exception of Old Camp Road, the other four streets look and feel almost identical, with two lanes in each direction and a curb-to-curb width of approximately 40 feet.

Pedestrian and Bicycle Conditions

As can be seen in Figure 3, the corridor generally includes sidewalks (with grass buffers in many locations) on the north and south sides of US 40. While the new pedestrian improvements provided by the ongoing signal upgrades are great efforts to improve pedestrian safety and mobility, walking along the corridor remains an uncomfortable experience due to high auto volumes and speeds, as well as a daunting sense of scale (a pedestrian on a five-foot sidewalk must walk next to a roadway that is 8-9 lanes wide on one side with large shopping center parking lots on the other side).

In the field reviews, most bicyclists in the study area were observed either riding along US 40 on adjacent sidewalks or crossing US 40 at signalized crossings. Despite the single observed SHARE THE ROAD sign just east of Baughman's Lane, no bicyclists were observed riding with traffic on US 40. According to SHA's *Bicycle Policy & Design Guidelines (May 2013)*, SHARE THE ROAD assemblies are typically "used to alert motorists of the presence of bicyclists in locations where bicyclists are forced to leave a shoulder, Bicycle Lane, or other bikeway and use the motor vehicle lanes because of either an obstruction or the end of the bikeway." SHA recommends use of these assemblies where the rightmost travel lane is greater than or equal to 13 feet or less than 15 feet wide, and there is insufficient shoulder width or the shoulder is otherwise un-rideable. With the exception of dedicated right-turn lanes along the corridor, no shoulder exists on US 40 in the study area, so if these assemblies are used, they should be located more frequently throughout the corridor and in both eastbound and westbound directions.

That being said, Key Parkway serves as a parallel route to US 40 that specifically caters to local traffic and non-auto modes of transportation. There are sidewalks, pedestrian scale lighting, and landscaping along both sides of the street.. There are also several marked pedestrian crossings along Key Parkway. Locations include the following intersections:

Signalized

- Key Parkway and Willowdale Drive
- Key parkway and Baughmans Lane

Stop Controlled

- Key Parkway and Old Camp Road
- Key Parkway and Waverly Drive
- Key Parkway and McCain Drive (north and west approaches only)

Although it does not currently have bicycle lanes, with a curb-to-curb width of approximately 34-36 feet, Key Parkway would be an ideal location for bike lanes and a safer and more comfortable east-west route than US 40. Alternatively, with a 25 MPH speed limit, shared lane markings could also be considered.

Regarding the north-south streets, all currently have sidewalks on at least one side, street trees, and some form of pedestrian-scale lighting, with the exception of Baughman's Lane which is missing sidewalks along some portions (some of which will be completed by the Wawa redevelopment). The most obvious observation during peak periods on all of these roads except Baughman's Lane is the excess capacity along the roadway, as well as the number of driveways. It should be noted that with

the realignment of Mt. Phillip Road to better connect to Old Camp Road, Old Camp Road will likely become a key north-south route for all modes of travel.

Based on field observations, Baughman's Lane is clearly the busiest of the north-south streets in the study area. Additionally, with a new WaWa's service station approved for the northwest corner of Baughman's Lane and US 40, additional capacity is planned for the intersection, including a third southbound left-turn lane. This roadway may not be favorable for active transportation options due to its auto-oriented nature.

Trails and Paths

As shown in Figure 1, there are a number of trails and paths that are existing and proposed in the study area, including Rock Creek Path, the West Side Regional Park Path, and Christopher's Crossing. Rock Creek Path will eventually connect from Rock Creek Drive to downtown Frederick via a connection to the Carroll Creek Path, running parallel to the Golden Mile. Currently, it connects the Golden Mile to downtown, extending from just west of McCain Drive to where it connects to the Caroll Creek Path. The eventual Wal-Mart redevelopment will also include construction of a portion of this path. While it does act as a parallel connector to US 40 today, it may not connect users to the surrounding retail and employment. Therefore, it is more suited towards recreational than daily use. But this may change with the Wal-Mart development, providing a more convenient connection to the surrounding neighborhoods.

The West Side Regional Park Connector is another proposed key connection. Running along McCain Drive, it will connect from Butterfly Lane to Key Parkway providing a second, much needed north/south route in the study area. It will also connect into Rock Creek Path. This route will likely be especially important because it connects to Hillcrest Elementary School, as well as Hillcrest Park and Hillstreet Skate Park on the south side of the study area and to Willowdale Park on the north side.

Christopher's Crossing is a proposed trail that lies at the far west end of the corridor, running north along Old Camp Road and eventually creating a ring around Frederick. This path will likely be used mostly for recreational trips, but does connect into the Rock Creek Path as well as many other paths throughout Frederick.

Legend

Facilities
- Pedestrian Refuge Island
- Crosswalk
- Sidewalk
- Bus Stop
- Place of Interest
- Signal
- Building Footprint

Trails
- Rock Creek Path
- West Side Regional Park Path
- Christopher's Crossing

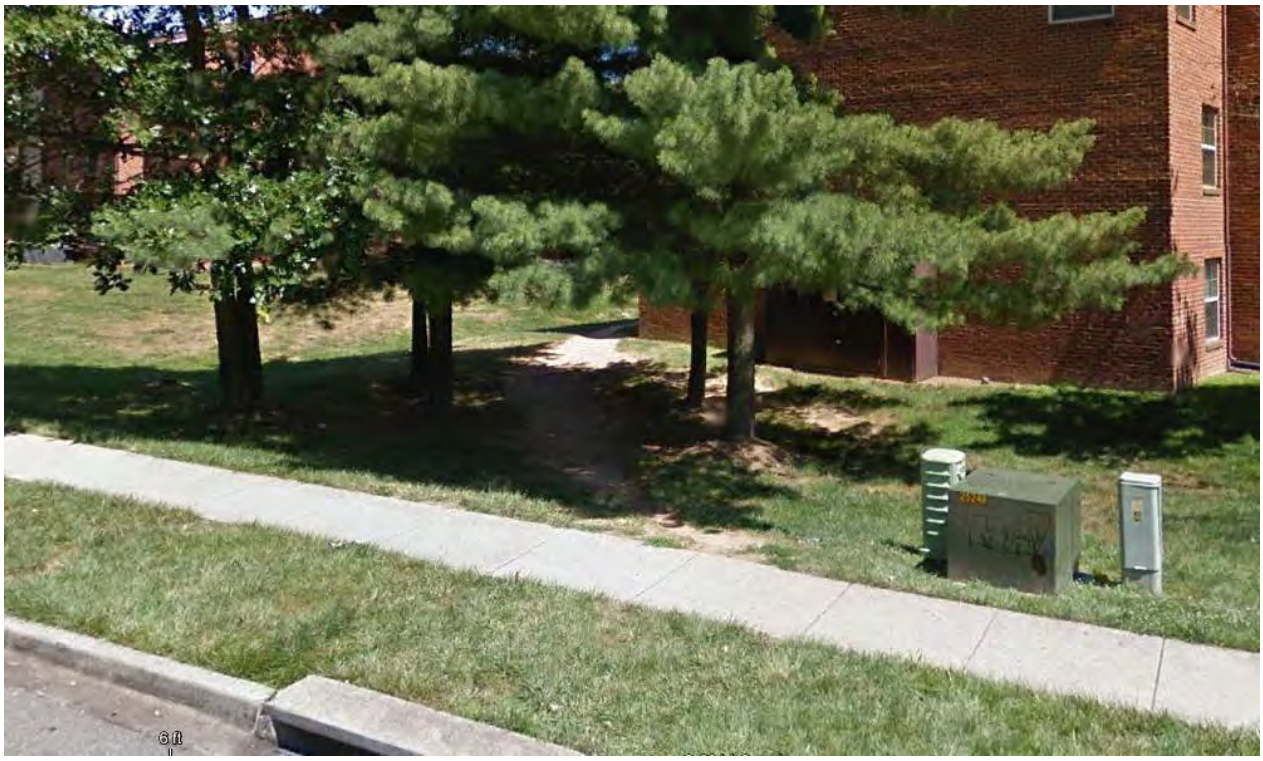
Status
- Existing
- Proposed

Pedestrian and Bicycle Desire Lines

In order to gain a better understanding of where pedestrian needs are not being met, an analysis of likely pedestrian and bicycle desire lines was completed. The process considered sidewalk gaps, pedestrian barriers, and distances between north-south and east-west connections to determine where pedestrians would likely want to travel. Overall, it is clear that the Golden Mile retail uses are not well connected to each other or the surrounding residential uses.

Due to the structure of the roadway network, it is necessary to walk around large blocks to travel between adjacent shopping centers or between shopping centers and adjacent residential uses. Because of this, there are places where it is apparent that pedestrians have been creating their own paths through landscaped areas for convenience. One example of this is between Key Parkway and an adjacent apartment complex, as seen in Exhibit 4, but others exist throughout the study area.

Exhibit 4. Pedestrian Desire Line Between Key Parkway and Apartment Complex



Additionally, pedestrians are currently limited in their ability to access these shopping centers, because the centers are often grade separated from US 40 or are separated by some type of barrier. These grade separations also exist between shopping centers, further creating issues for cross access between shopping centers.

There are also connectivity issues within shopping centers. By nature of the auto-oriented development pattern in the Golden Mile area, retail establishments are generally separated from streets by large parking lots. This is a typical pattern for development over the past fifty years, and while it provides accessible and visible parking for motorists, there are not many provisions made for

people accessing these establishments by bicycle or on foot. For example, the Westridge Square Shopping Center (Exhibit 5) does not include sidewalks leading into the shopping center from either US 40 or Key Parkway. There are no sidewalks or crosswalks within the parking lot to facilitate the movement of pedestrians from the road to the buildings. Furthermore, the landscaped buffers between Westridge Square Shopping Center and the adjacent shopping centers create barriers for users attempting to cross between the two, thus forcing pedestrians to either create their own path or walk out to US 40 and around to the next entrance.

Exhibit 5. Westridge Square Shopping Center

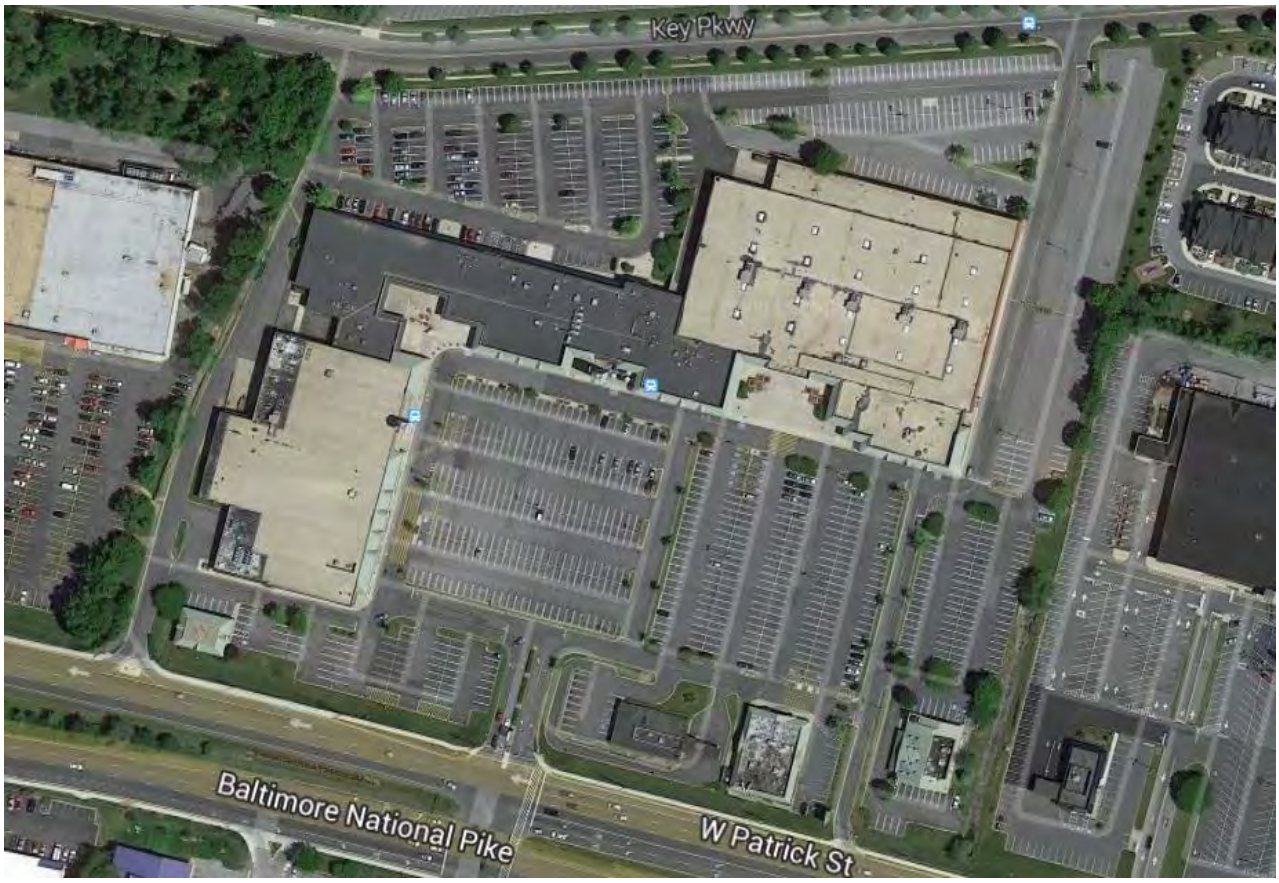


Figure 4 displays the areas with poor pedestrian and bicycle connectivity, including areas where internal connectivity is poor (such as parking lots without sidewalks) and those where external connectivity is poor (such as areas where there is no cross access or where there is some obstacle between the road and the destination). In turn, auto connectivity is also addressed. It is important to note that while the SAP presented a long-term vision for the street network around the Golden Mile corridor, the efforts of this project aim to provide some of the initial building blocks of major investment in multimodal connectivity in the study area. It is also important to point out that some of these issues are being addressed as sites redevelop. For example, as discussed previously, the Wal-Mart redevelopment includes sidewalks through the shopping center and pedestrian connections to the surrounding residential areas. This plan provides some positive examples of solutions to some of the issues discussed in this memorandum.

TRANSIT OPERATIONS AND ACCESSIBILITY

Public transportation service within Frederick County is provided by TransIT Services of Frederick County (TransIT). TransIT operates nine "Connector" fixed-route bus routes, as well as six "Shuttle" routes that operate limited numbers of trips to the more rural areas of the county. The Golden Mile Corridor is served by five of the fixed-route bus lines. Of those five routes, Route 40 is the only route traveling along the corridor throughout the entire study area. Route 40 is also TransIT's busiest route, carrying a daily average of 559 riders. Routes 10 and 51 are the third and fourth busiest, carrying 540 and 523 riders daily, respectively. Route 10 carries a daily average of 468 riders, and Route 80 sees the lowest ridership of the five, carrying an average of 195 daily riders. Headways vary between 30 minutes to two hours, and service generally runs on time.[1] A summary of these conditions is provided in Table 3.

Table 3. Transit Conditions

Route	Headway	Average Daily Ridership	Passengers Per Hour	On-Time Performance
Route 10	45 Minutes	540	18.9	83%
Route 40	1 hour (30 Minutes peak)	559	25.4	98%
Route 50	1 hour (30 Minutes peak)	468	20.8	97%
Route 51	1 hour (30 Minutes peak)	523	23.2	89%
Route 80	1.5 hours average	195	13.4	92%

Currently, no stops along any routes within the corridor offer amenities such as seating areas, shelters, garbage bins, or lighting. All of the routes converge at Boscov's in the Frederick Towne Mall transfer point, which sees 352 boardings and alightings per day. This transfer point is one of TransIT's two busiest transfer points. Some of these routes have coordinated transfer times to minimize wait time for passengers while others are not. In the future, this stop will be redeveloped to provide greater amenities to riders and better coordination is planned to be provided utilizing the extra staging area. Details of the new passenger transfer center continue to be investigated through on-site redevelopment efforts.

As can be seen in Figure 5, TransIT buses do not currently stop along the corridor due to the high speeds of the roadway and lack of bus stop facilities. Therefore, buses must route through the shopping centers to drop off passengers. While this does provide some convenience to passengers, it adds significantly to the amount of time buses take to travel a route, and thus limits the amount of service that can be provided.

Even though the transit routes may not be direct, the routes provide a decent level of coverage throughout the study area as can be seen from the walkshed, providing access to approximately 70 percent of the homes and businesses within the study area within a five minute walk of a bus stop. Even so, there are still opportunities for improvement in the placement of stops as well. In general, people are willing to walk approximately 5 minutes, or one fourth mile, to or from a transit stop.

[1] TransIT. *Frederick Transit: Current Conditions*. Frederick, Maryland. 2013.

Therefore, spacing stops closer together than one fourth mile creates overlaps in service that can lead to unnecessary increases in delay due to the number of stops. Bus routes and ridership data are provided in Figure 5.

Exhibit 6. Layover Area at Boscov's

Legend

TransIT Route	Factored Boardings Plus Alightings by Stop	
Route 80	15 - 24	Building Footprint
Route 10	25 - 74	Transit Walkshed
Route 40	75 - 99	
Route 50	100 - 249	
Route 51	250+	

Transit Quality of Service

Quality of Service (QOS) reflects the passenger's perception of transit performance. In order to better understand the transit conditions in the study area and where opportunities for increasing service may be possible, a transit QOS analysis was completed within the study area. This analysis was developed based on the standards presented in the *Transit Capacity and Quality of Service Manual (TCQSM), 3rd Edition*. The analysis considers the availability of transit service to customers as well as the comfort and convenience of the service. Due to the number of inputs involved, the desire to be context sensitive, and the availability of data, a full analysis was not completed. Rather, an adapted measure was developed which includes the following inputs:

Availability

- Frequency (i.e., Average Headways)
- Service Span (total hours of coverage including the first and last hours)
- Access (percentage of buildings in the study area covered by the walkshed; provided in Figure 5)

Comfort and Convenience

- Reliability (Average on time performance)

Using the standards developed in the TCQSM, the results of this analysis were used to determine the quality of service from the perspective of the passenger and of the transit operator. It should be noted that at times, these perspectives are conflicting due to the different needs of each individual and the function the service measure provides for each. Additionally, averages were used for each of these measures, and therefore the results offer a snapshot of the general TransIT operating conditions in the study area and may or may not reflect the specific conditions on a particular route at a particular time. The results of this analysis can be seen in Table 4.

Table 4. Transit Quality of Service

Measure	Measure	Passenger Perspective	Operator Perspective
Service Coverage	70% Coverage	• A majority of destinations within higher density areas are served • Walking and bicycling access to transit likely to be longer, as service is provided farther away from many origins and/or destinations	• Potential opportunity to add service, as many areas that could support service have no service
Average Headway	60 Minutes (30 peak, in some cases)	• Passengers will check scheduled arrival times to minimize their waiting time • Passengers must adapt their travel to the transit schedule, often resulting in less-than-optimal arrival or departure times for them	• Typical maximum headway for fixed-route bus service (60 min) • Potentially feasible at densities as low as 4 dwelling units/net acre, depending on ability to subsidize service • May be provided to meet a service coverage standard • 30 minute headways are seen when traffic congestion increases (peak hour) but budget is not available to add service
Average Hours of Service	17 Hours per Day	• Provides service late into the evening and/or earlier in the morning, allowing a broad range of trip purposes to be served (e.g., night classes, retail and industrial employee work trips, early morning flights/train trips)	• May require more than two full-time drivers per vehicle or overtime pay • To enhance nighttime passenger security off the bus, some bus operators allow flag stops where safe, to minimize passenger walking distance to their destination • Evening service may be operated on a different set of routes than operate the rest of the day (e.g., emphasizing coverage over travel time)
On Time Performance	92% on Average	• Passenger making one round trip per weekday with no transfers experiences one not-on-time vehicle every week	• Achievable by transit services operating on a grade-separated guideway not shared with non-transit vehicles

In general, the transit service provides service where it is needed; serving most of the population on time when passengers are expecting to see their buses. Even though the service is generally on time, the long headways qualitatively brings the entire level of service down. Additionally, the frequency of the service causes passengers to alter their schedules to use transit, meaning those who have other transportation options will likely use other options to meet personal schedules. In other words, the service likely caters to users who rely solely on bus service for medium to long distance trips throughout the City and County. The aforementioned issues can potentially be reduced by rerouting buses to minimize the time spent traveling into and out of shopping centers, and providing service primarily along US 40. This will likely allow for more efficient bus operations and the potential to shorten current headways.

NEXT STEPS

The existing conditions report has identified several areas where there is potential for context sensitive improvements along the corridor. These include considering places to create new pedestrian and bicycle connections, as well as new roadway connections. Additionally, some potential areas of focus for transit improvements have also been identified. A future report will consist of written and graphical recommendations for types and locations of multimodal improvements based on the results of this analysis. A future action plan will also be produced to guide the implementation of these recommendations, complete with timing and potential funding sources.