
EVERYBODY BIKES AND WALKS
PITMAN
BICYCLE AND PEDESTRIAN PLAN FOR PITMAN BOROUGH
COMING SOON TO PITMAN

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CONTENT

FIGURE 1. **ALCYON PARK**

1. INTRODUCTION

Pitman Borough is a compact town in southern New Jersey with a well-connected street grid system, a pedestrian-only historic core, and a walkable main street featuring shops, restaurants, and the iconic Broadway Theatre. This plan, *Everybody Bikes and Walks Pitman,* presents a series of recommendations that build on these assets to create an even more enjoyable, convenient, and safe walking and biking environment.

To achieve this goal, Pitman Borough has developed this bicycle and pedestrian circulation plan as part of the New Jersey Department of Transportation's (NJDOT) Local Bicycle/Pedestrian Planning Assistance Program, which seeks to foster the development of non-motorized transportation modes in accordance with statewide goals and local needs.

Everybody Bikes and Walks Pitman provides an overview of the existing conditions for bicyclists and pedestrians in the study area. It includes an analysis of crash data, identifies important pedestrian and bicycle traffic generators, identifies key corridors and intersections for non-motorized traffic within Pitman, and maps the roadway network's existing and proposed bicycle level of traffic stress (LTS).

This plan concludes with policy guidance and design recommendations for enhanced bicycle and pedestrian facilities to improve the overall bicycle and pedestrian network.

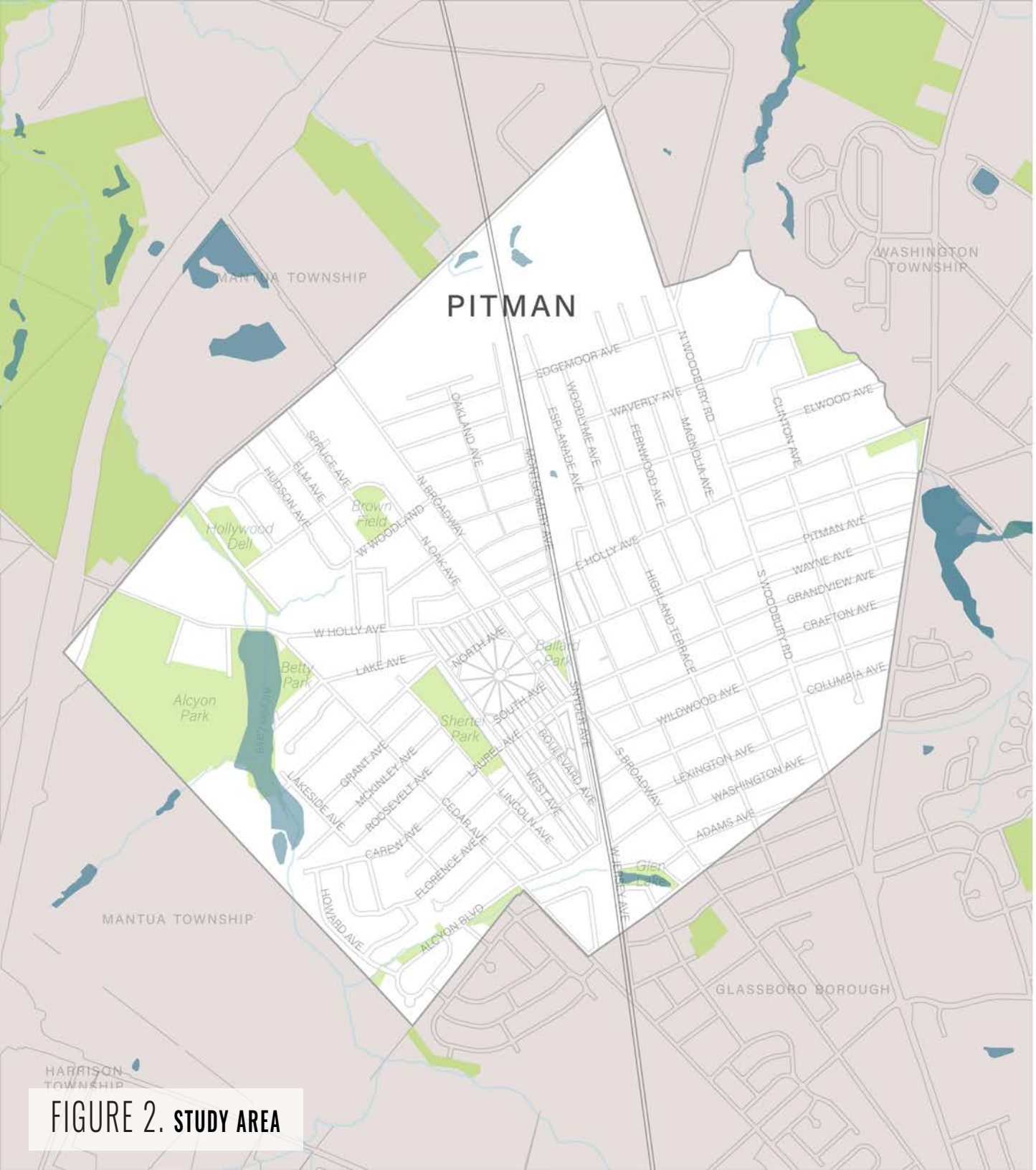


FIGURE 2. **STUDY AREA**

AREA : 2,308 SQ. MI.

POPULATION: 8,886

MEDIAN AGE: 41.3

MAJOR CORRIDORS: ROUTE 47, WOODBURY RD, BROADWAY, HOLLY AVE

BUS: NJ TRANSIT ROUTES 313, 408, 412

TRAIN: PROPOSED GLASSBORO-CAMDEN LINE

Study Area

miles
0 0.125 0.25 0.5

2. BACKGROUND

2.1 AREA SUMMARY

Pitman Borough is a small, compact community bordered by Lambs Road, Delsea Drive, Adams Avenue/Longmere Avenue/North Cummings Avenue, and the Chestnut Branch of Mantua Creek. Pitman is located within Gloucester County in southern New Jersey, and situated in the greater Philadelphia, Pennsylvania metropolitan region. Rowan University, a major regional employer, lies directly south of Pitman. Pitman is a fully built-out community and is relatively dense compared to the more rural and suburban municipalities that surround it.

Pitman began as a Methodist summer camp attracting people from across New Jersey. They built what is known as Pitman Grove, a central auditorium from which twelve streets branch out to form a wheel shape. By the mid 1880s summer residents had begun to stay in Pitman the full year and in 1905 Pitman Borough was officially established. The historic Pitman Grove is filled with Victorian summer bungalows and its streets are now restricted to pedestrians. In 1977, Pitman Grove was added to the National Register of Historic Places to commemorate its rich heritage.

Although the town's population has decreased from its high of 10,000 residents in the 1970s, Pitman's leaders plan to attract more young families and small businesses by making the borough more walkable and bikeable.

Pitman is very centrally located and connected to many regional roadways. NJ Route 55 skirts the borough to the west connecting to other major highways in the area, while NJ Route 47 (Delsea Drive) borders Pitman on the east, and County Route 635 (Lambs Road) forms Pitman's northern border. Three more County Routes travel through Pitman: Route 624 (Holly Avenue) runs east-west while Route 553 (Woodbury Road) and Route 553 Alternate (Broadway) run north-south.

NJ Transit connects Pitman to Philadelphia and New Jersey destinations via three bus routes: 313 (Philadelphia-Cape May), 408 (Philadelphia-Millville), and 412 (Philadelphia-Glassboro/Sewell). Additionally, a light rail connection between Camden and Glassboro has been proposed using existing rail right-of-way where freight currently operates. According to initial plans, the Glassboro-Camden Line (GCL) would stop in downtown Pitman between Pitman Avenue and South Broadway, which could attract additional residents and investment.

2.2 DEMOGRAPHICS

According to the most recently available Census Data The American Community Survey estimates (2017), 8,886 people live in Pitman. The median age is 41.3 years, slightly older than Gloucester County (39.9) and the state of New Jersey (39.8). Similarly, the percentage of

the population 19 years and younger is 23.6%, compared to 25.2% of Gloucester County and 24.8% of New Jersey.

Household sizes are larger in Pitman (2.61 people per household) than in Gloucester County (2.38) but smaller than the state average (2.74). A much higher percentage of Pitman residents own their own home (75.9%) compared to either Gloucester County or state-wide (67.7% and 64.1%, respectively).

On the other hand, the median income in Pitman ($73,538) is lower than either Gloucester County ($81,489) or New Jersey ($80,088). When commuting to work, most Pitman residents drove alone (86.9%), while 2.2% took public transit and 1.1% walked. Gloucester County reflected similar trends, while New Jersey as a whole, with its larger urban areas, saw 11.8% of residents take public transit and 2.9% walk.

Pitman leaders are working to change some of these trends by attracting young families, boosting economic activity, and increasing the number of people walking and biking by creating infrastructure that is easier and more comfortable to use.

2.3 PREVIOUS PLANS & STUDIES

PITMAN MASTER PLAN UPDATE

The 2017 Update to the Pitman Master Plan includes a goal to study bicycle and pedestrian opportunities in the Borough, which this

FIGURE 3. **UPTOWN PITMAN REVITALIZATION PLAN**

plan accomplishes. The Plan Update also recommends increasing the bicycle level of service on County Roads and implementing a Complete Streets policy with multi-modal guidelines that can be followed when redesigning roadways.

UPTOWN PITMAN REVITALIZATION PLAN

The 2012 Uptown Pitman Revitalization Plan provides an economic development framework to guide public and private investments in Pitman. Enhancing Pitman's walkable atmosphere is one of the central tenets of the plan. The plan also calls for promoting walking and biking for residents and visitors and draws a clear connection between supportive walking and biking facilities and fully realizing the GCL station potential for economic development.

The plan makes several key pedestrian and bicycle recommendations:

- Defining and implementing improvements to the major pedestrian and bicycle routes within ½ mile of the district

FIGURE 4. **GLOUCESTER COUNTY MULTI-USE TRAILS NETWORK STUDY**

- Providing convenient crosswalks and phased traffic signals where appropriate
- Making pedestrian pathways ADA-accessible, safe, well lit, and well maintained
- Providing a network of bikeways
- Providing adequate bike parking
- Implementing traffic calming measures
- Promoting and expanding the Tour de Pitman bike ride

GLOUCESTER COUNTY MULTI-USE TRAILS NETWORK STUDY

Created in 2008, the Delaware Valley Regional Planning Commission's Gloucester County Multi-Use Trails Network Study outlines four trail routes that could form an inter-connected network throughout Gloucester County, some of which has been built over the last decade. The four route alignments include the Gloucester

FIGURE 5. **HARRISON TOWNSHIP BICYCLE AND PEDESTRIAN PLAN**

County Trail (rail-to-trail), Delaware Estuary Route (on-road), Towns and Trains Trail, and Little Ease Trail.

The Towns and Trains Trail proposed in the study would link Pitman to Red Bank Battlefield Park in the north and Malaga Lake to the south. Through Pitman, trail users would share the existing roadway with vehicles on Broadway.

HARRISON TOWNSHIP BICYCLE & PEDESTRIAN PLAN

The neighboring municipality of Harrison Township completed a Bicycle and Pedestrian Plan in 2013. The plan recommends an off-road trail connection between Mullica Hill and Pitman, via Richwood. This trail would run on U.S. 322 sidestreets, connecting to Lambs Road where the trail would continue adjacent to the road with a spur that would connect to the proposed Rowan-Ceres Park Trail.

EVERYBODY BIKES & WALKS PITMAN

Bicycle and Pedestrian Plan
for Pitman Borough

Instructions

1. **Draw** your ideas on the map by clicking on "add street/corridor comment" or "add spot/ intersection comment below."
2. After drawing, **describe** the issue for problem areas/corridors in the pop-up survey.
3. **Upload** a photo of the area in the pop-up survey (optional).
4. **View/comment** on others' ideas. To view input from others, go to About & Help > View Options > Turn on/off other peoples' responses.

Legend

- Problem pedestrian corridor
- Desired pedestrian route
- Problem bike corridor
- Desired bike route
- Problem spot
- Bike parking needed

About & Help ▾ | Add Street/Corridor Comment | Add Problem Spots/Bike Parking

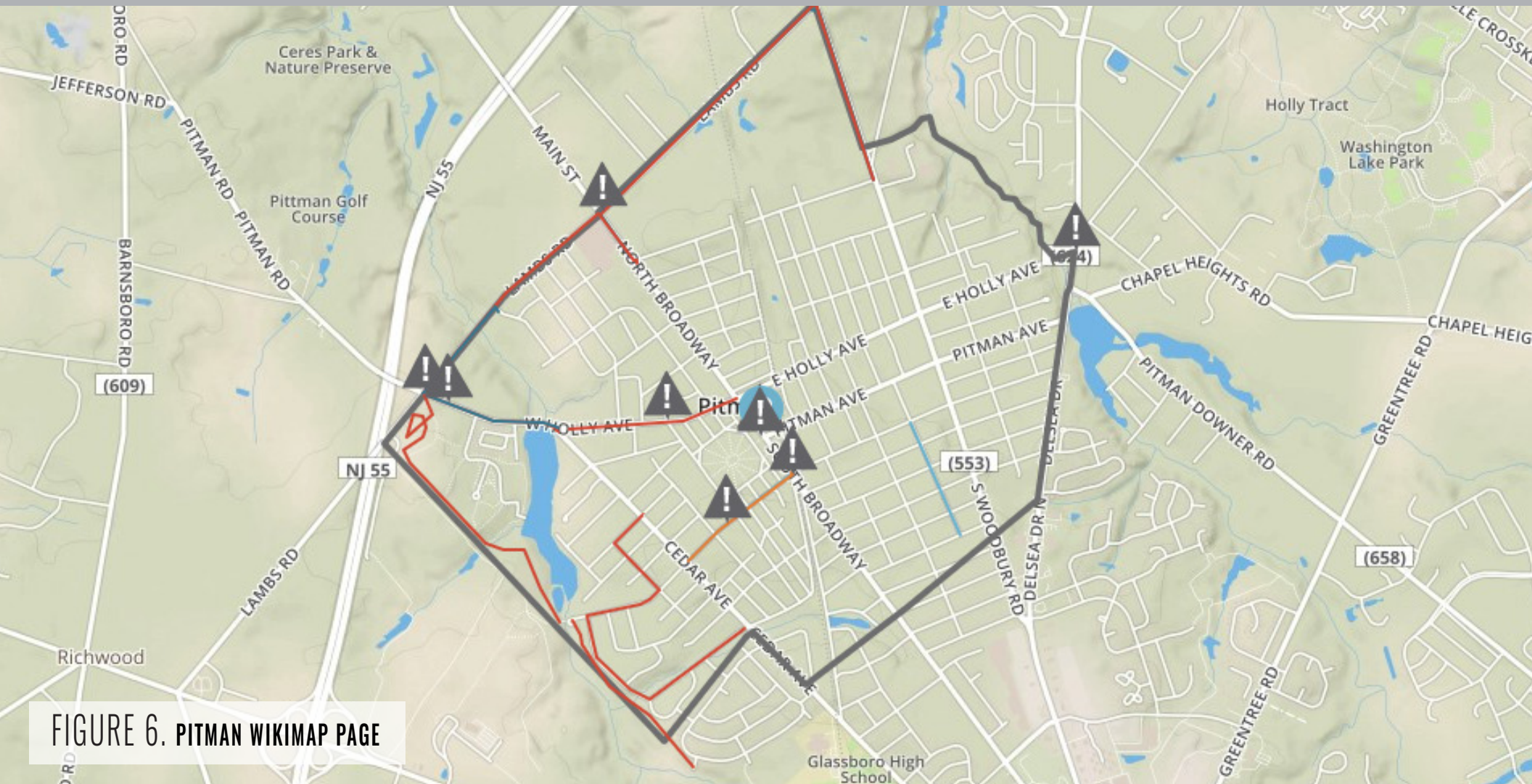


FIGURE 6. **PITMAN WIKIMAP PAGE**

3. PUBLIC INVOLVEMENT

3.1 PUBLIC INVOLVEMENT

Public involvement is a critical component of any successful planning process. The goal of the public involvement process is to engage a broad and diverse group of residents and stakeholders through different means to develop a plan that reflects the priorities of residents and visitors in the study area.

STEERING COMMITTEE

The study's Steering Committee was composed of a variety of professional staff and volunteers, including representatives from the Pitman Borough Council, Police Department, Fire Department, Pitman Economic Development Committee and Green Team, New Jersey Department of Transportation, and the owner of a local bicycle shop.

STEERING COMMITTEE #1 MEETING: SEPTEMBER 19, 2018

At the Kick-Off Meeting, the Steering Committee members learned about the overall purpose and process of the study, asked questions, shared important local imformation, and provided recommendations on the study's priorities, including access to recreational trails and making walking and biking easier for children and families.

STEERING COMMITTEE MEETING #2: DECEMBER 18, 2018

The project team presented the initial existing conditions analysis, including field observations about the current infrastructure and environment that supports walking and biking in Pitman and where there are challenges, identification of major destinations and existing bike parking, crash mapping and analysis, and identification of priority corridors and intersections for bicycle and pedestrian improvements. Potential rail crossing locations and trail opportunities and connections were also discussed. Members highlighted additional corridors for c and links to key destinations.

STEERING COMMITTEE MEETING #3: JULY 31, 2019

The Steering Committee met to discuss key takeways from the Focus Group and review the study's preliminary recommendations, improvement concepts at priority intersections and corridors, bicycle level of traffic stress under existing conditions and with proposed improvements, and locations for improved bike parking. Members suggested refinements to some of the proposed concepts, provided general input on the recommendations, and discussed ideas for the public Open House.

WIKIMAP

In March, 2019 the WikiMap was released to collect information and suggestions from the public in an online format. Through an interactive web map, people could place points or lines at locations to indicate problem spots/corridors and explain the conflicts, desired walking and biking routes, and where they wanted more bike parking.

The participants' comments centered on:

- Sidewalk or multi-use trail on Lambs Road, West Holly Avenue, and Woodbury Road
- Bike parking needed at Broadway and Pitman Avenue
- Cars speeding and/or failing to yield to people walking and biking on Lambs Road & Broadway, Lambs Road & West Holly Avenue, Woodbury Road & Grandview, Delsea Drive & East Holly Avenue, and Laurel Avenue
- More crosswalks needed on Holly Avenue

FOCUS GROUP: FEBRUARY 4, 2019

Over 20 people participated in the Focus Group held at the Human Village Brewery. The project team presented an overview of the study process, initial existing conditions, and solicited feedback on some of the challenges people face walking and biking in Pitman and the most important areas/aspects to focus on.

The participants comments centered on:

- Desire for specific treatments at intersections and along corridors
- Focus on quality of life needs and linking to economic development
- Need better/direct connections to trails

FIGURE 7. **PITMAN PUBLIC OPEN HOUSE**

FIGURE 8. **FOCUS GROUP**

- Pitman lacks crosswalks, especially on major roads (Cedar Ave, Broadway, Holly Ave)
- Target connections to schools and parks

PUBLIC INFORMATION CENTER (PIC) / OPEN HOUSE: OCTOBER 21, 2019

After incorporating Steering Committee feedback and public input from the WikiMap and Focus Group into the proposed concepts, the project team held an Open House at the Pitman Gallery & Art Center. It featured several boards depicting existing conditions, crash and level of traffic stress analyses, a toolkit for bicycle and pedestrian improvements, recommended design concepts at key intersections and corridors, recommended bicycle facilities and overall network, and a map of proposed pedestrian improvements:

- Shortening the crosswalk across Ballard Avenue, adding a crosswalk across Broadway at the tip of Ballard Park, and creating new green space
- Creating a T-intersection at West Holly and Cedar Avenues with new crosswalks and new green space
- Adding a separated bike lane on Snyder Avenue and making Snyder one-way southbound to reduce turning movements and conflicts at Laurel Avenue and Broadway
- Pedestrian and bicycle only rail crossings at Edgemoor/ Cyrus Avenues and Snyder Avenue/ Alcyon Boulevard/Villa Avenue
- Over 20 people attended the PIC, reviewed the boards, asked questions, and gave feedback on the proposed concepts. Suggested modifications or additions included:
- Adding a sidewalk on the northeastern side of West Holly Avenue (between Lambs Road and Carr Avenue)
- Adding a flashing beacon at the intersection of Cedar, Laurel, and Carew Avenues (where there had been one previously)
- Moving proposed crosswalk at Broadway and Crafton Avenue to the southern side of the intersection to better serve the existing bus stop
- Several attendees expressed concerns about different aspects of the proposed concepts, including:
- Whether one-way operations on Snyder Avenue would negatively or positively impact the high number of conflicts occurring at intersection of Broadway and Laurel Avenue
- Potential parking impacts on Broadway south of Crafton Avenue
- Operations at the proposed T-intersection of West Holly and Cedar Avenues, which would be analyzed in a detailed traffic study and signal warrant study

FIGURE 9. **BROADWAY THEATER**

4. STUDY METHODOLOGY

4.1 ATTRACTORS AND GENERATORS

The study followed commonly accepted planning practices, beginning with data collection and analysis, understanding existing conditions, field observations, consultation with local stakeholders, development of initial recommendations, public engagement, and refining final recommendations.

Working with the Steering Committee, the project team identified and mapped major attractors and generators of walking and biking in Pitman. In addition, data was collected on area demographics, roadway characteristics, and pedestrian and bicyclist crashes over the past ten years. A bicycle level of traffic stress analysis was conducted to determine how comfortable riding different roadways is within the network. All of these factors were overlaid and considered when identifying primary pedestrian and bicycle corridors.

Places that typically generate a high number of pedestrian and bicycle trips were inventoried and mapped (see Figure 10). These attractors and generators were categorized into the following types:

- **Schools —** The project team observed a relatively high rate of children walking and biking to schools. Children are considered an at-risk group who may need specific designs to travel safely and independently when walking and biking. Finally, bussing is not provided for school children in Pitman, which exacerbates the need for connected walking and biking routes.
- **Parks & Community Gathering Places —** People often walk or bike from downtown and residential areas to enjoy parks, recreational facilities, and other community gathering places such as Sunset Auditorium. Children are also frequent park users.
- **Commercial/Retail/Theatre —** Shoppers frequently walk to stores or restaurants on Broadway and nearby streets, or park close by and walk to their final destination.
- **Places of Worship —** Some worshipers walk to their church if it is within easy walking distance.
- **Transit —** Bus service in Pitman attracts users on foot and by bike.
- **Municipal Buildings —** The library, municipal building, and post office are all centrally located and easy to walk or bike to from nearby neighborhoods.
- **Historic Core —** The historic, pedestrian-only Pitman Grove encourages walking.
- **Bike Shop —** Some bicyclists arrive via bicycle at the local bike shop for a coffee, store browsing, or for a longer group bike ride.

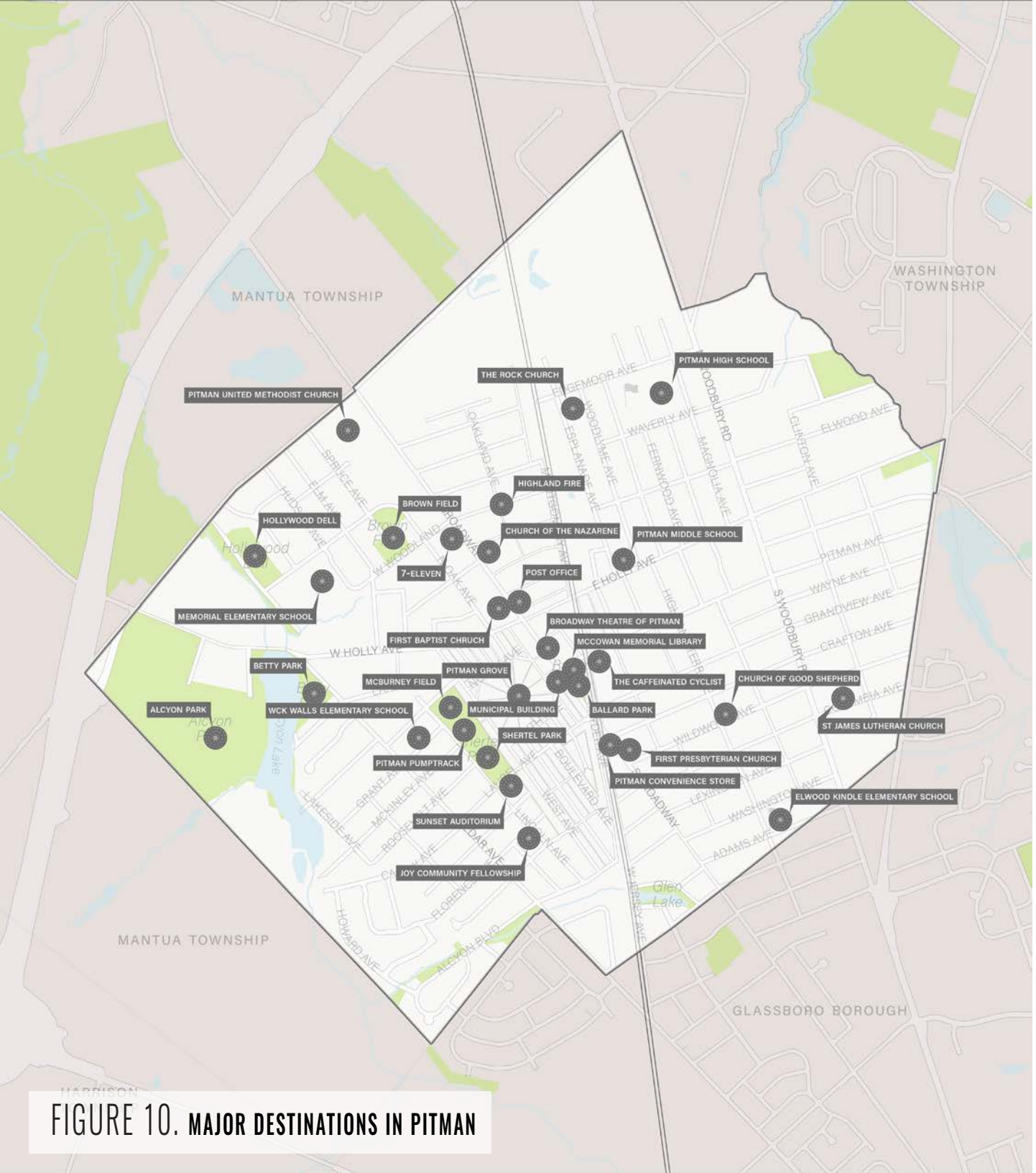


FIGURE 10. **MAJOR DESTINATIONS IN PITMAN**

FIGURE 11. **PITMAN SCHOOLS**

FIGURE 12. **PUMP TRACK**

FIGURE 13. **RECREATIONAL TRAILS**

FIGURE 14. **ALCYON PARK**

FIGURE 15. **CRASH TYPES AND LOCATIONS**

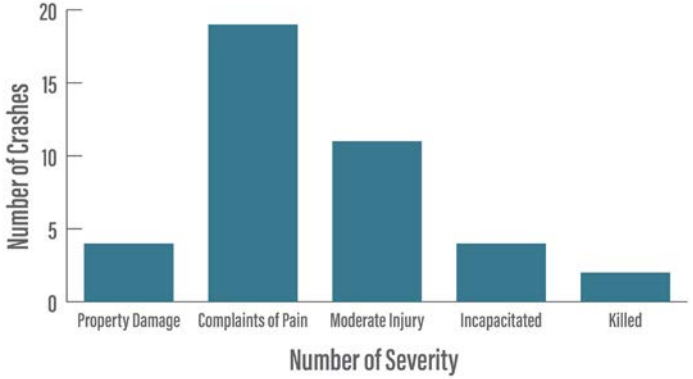


FIGURE 16. **CRASHES BY SEVERITY**

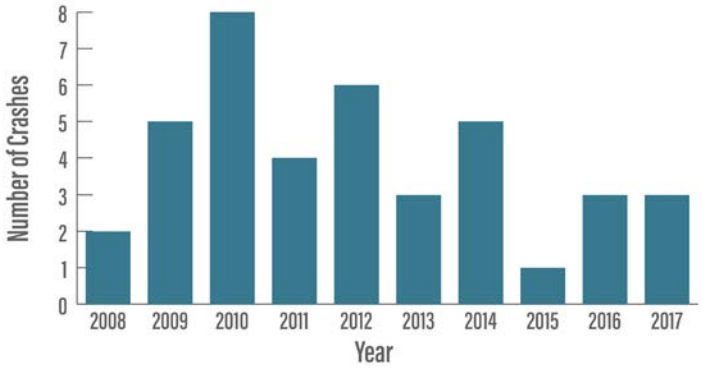


FIGURE 17. **NUMBER OF CRASHES BY YEAR**

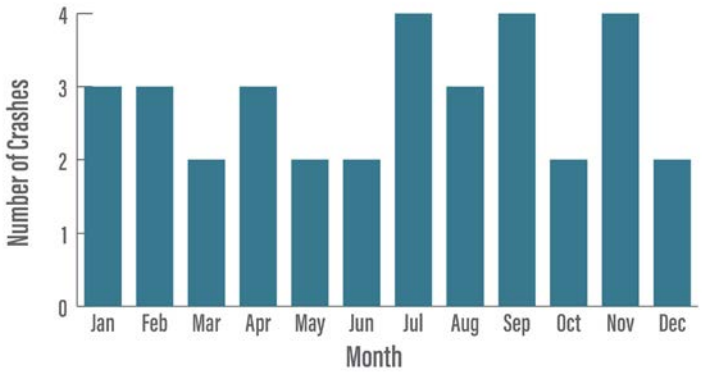


FIGURE 18. **NUMBER OF CRASHES BY MONTH**

4.2 CRASH LOCATIONS

New Jersey Department of Transportation (NJDOT) crash data was collected from Safety Voyager for the ten year period between 2008-2017. Only pedestrian and bicycle crashes were included within the municipal boundaries of Pitman and a 2,500 foot buffer to capture crashes on connecting streets in adjacent municipalities.

These bicycle and pedestrian crashes were mapped (see Figure 15) using latitude and longitude information. The project team reviewed the crash locations and details to determine any clustering, spatial patterns, or other commonalities.

Small clusters of crashes occurred at Broadway and Holly Avenue, Ballard Park, and Woodbury Road and East Holly Avenue. Crashes tend to happen along major corridors with high traffic volumes (Broadway, Holly Avenue, and Woodbury Road).

Most of the crashes were not severe (property damage only or complaint of pain), however 28% of people suffered moderate injury, 10% were incapacitated, and 5% were killed (one pedestrian and one bicyclist).

4.3 CRASH ANALYSIS

The project team analyzed the crash data for patterns and trends that might indicate areas where engineering, enforcement, or educational strategies might improve safety for pedestrians and bicyclists.

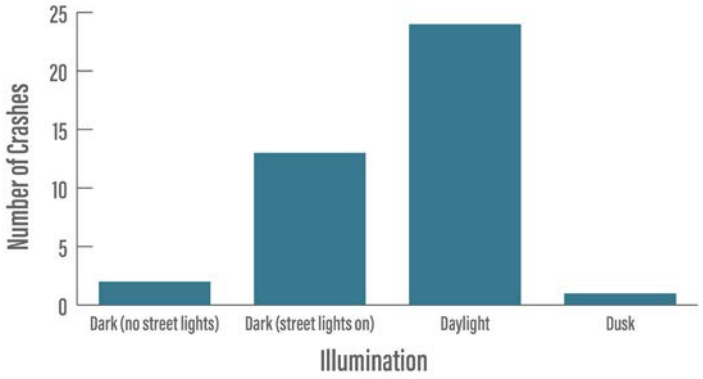


FIGURE 19. **NUMBER OF CRASHES BY ILLUMINATION**

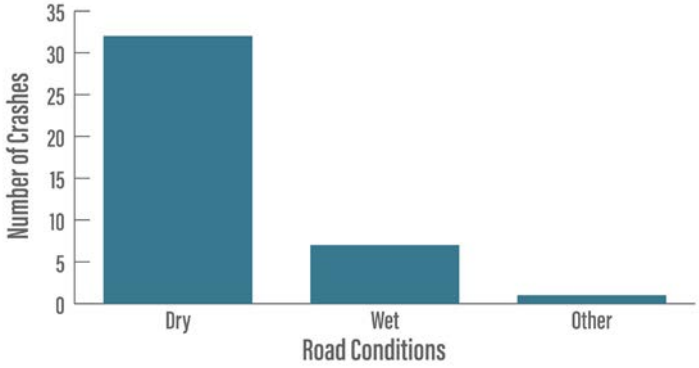


FIGURE 20. **NUMBER OF CRASHES BY ROAD CONDITIONS**

Crashed peaked in 2010 and have generally decreased since then. Crashes occurred throughout the year but at a slightly higher rate in July, September, and November, possibly related to popular events that draw many people on foot. Of all crashes, 80% occurred in dry conditions and 60% occurred during daylight hours, indicating that slippery road conditions and illumination were not strong factors. These types of crashes may be related to driver speed and failure to yield to pedestrians and bicyclists, behaviors which can be influenced by different roadway designs, targeted enforcement, and educational campaigns.

4.4 BICYCLE LEVEL OF TRAFFIC STRESS ANALYSIS

Bicycle Level of Traffic Stress (LTS) evaluates conditions and regulations of roadways to measure a bicyclists' potential comfort. The LTS metric originates from a Dutch concept of low-stress bicycle facilities. Different bicyclists have varying tolerances for stress from factors such as volume, speed, and proximity of vehicular traffic. Generally, lower stress facilities have larger distance of separation between bicyclist and vehicular traffic and/or have lower speeds and lower traffic volumes. Conversely, high stress environments are where bicycle facilities are in close proximity to vehicular traffic, multi-use roadways, and higher speeds or higher traffic volumes. Based on the analysis of various variables, a given roadway segment is classified into one of four classifications, as seen in Figure 21.

Four Levels of Traffic Stress

The level of traffic stress analysis categorizes streets based on four levels. These levels of stress categories, discussed below, were determined through significant research in the Netherlands, and adapted for the United States by research at Northeastern University.

L1 | Most Users

Suitable for almost all cyclists, including children. On LTS 1 links, cyclists are either physically separated from traffic, in an exclusive bicycling zone next to slow traffic, or on a shared-street with a low speed differential.

L2 | Most Adults

Suitable for most adults, but demands more attention than might be expected from children. Similar cross sections to LTS 1, but with more likeliness for interaction with motor vehicles.

L3 | Enthusiastic Riders

Welcoming level for many people currently riding bikes in this country. Cyclists either ride in an exclusive on-street lane next to moderate speed traffic or on a shared lane on non-multi-lane streets.

L4 | Experienced Riders

Suitable only for the most experienced riders or not suitable for any riders. Roadway is characterizes by high travel speeds, multiple lanes, and/or lacking in dedicated bicycle facilites.

FIGURE 21. BICYCLE LEVEL OF STRESS

The LTS was evaluated for all roads in Pitman. The project team assessed major roadways and minor roadways and in the study area using a variety of data sources, including base mapping, GIS datafiles, NJDOT Straight Line Diagram, and traffic volumes data from NJDOT and DVRPC. Criteria for LTS in varying roadway regulations and conditions can be seen in Appendix A.

Based on the existing LTS conditions in Pitman Borough, Lambs Road, Woodbury Road, Holly Avenue, and Delsea Drive are LTS 4 primarily because of higher speed limits and/or traffic volumes on these road segments (Figure 23). The Holly Avenue corridor contains inconsistent levels of LTS scores, which is due to varying speed limits on different segments of the corridor. Many roads in Pitman are residential streets with low traffic speeds and volumes making them LTS 1 roadways that are accessible for all users. The confluence of crash data and bicycle LTS analysis informed strategic pedestrian and bicycle recommendations.

4.5 FIELD OBSERVATIONS

The project team walked and biked on all major streets and many residential streets in Pitman over several field visits to gain a better understanding of traffic stress, roadway conditions and operations, and to identify deficiencies and barriers. Schools and parks were given particular attention with regards to existing conditions and major barriers that would make walking or biking to school or to recreational amenities more challenging. Observations were made

FIGURE 22. **CHILD BIKING HOME ON SIDEWALK ON EAST HOLLY AVENUE**

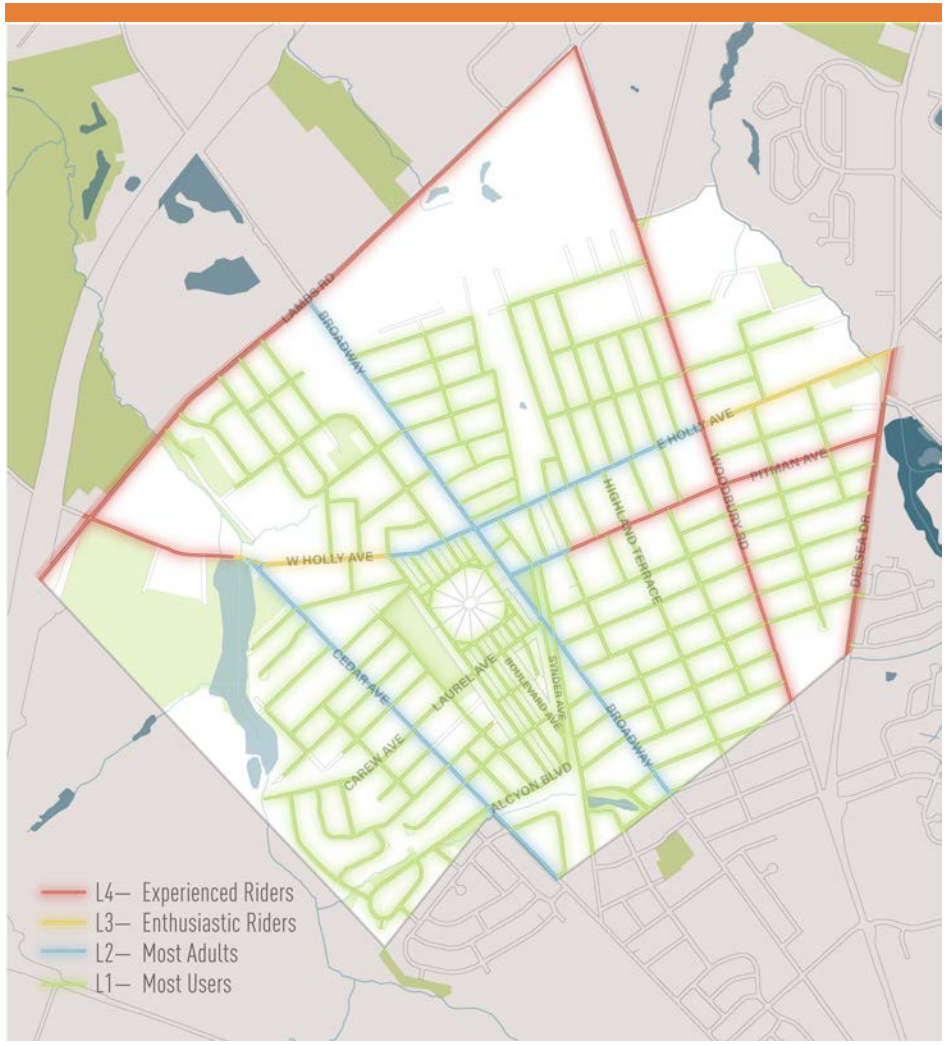


FIGURE 23. EXISTING BICYCLE LEVEL OF STRESS

about corridors with high levels of walking and biking currently. Certain key intersections and corridors identified by the Steering Committee, trip generators, or crash analysis were examined in person to observe roadway characteristics, operational issues, and any conflicts.

The project team also confirmed roadway characteristics such as width, number of lanes, and parking, as well as photographing existing roadway sections, problem spots, and where are people walking and biking. Bike parking locations were also inventoried.

FIGURE 24. **TARGET INTERSECTION TREATMENTS AND SIDEWALK CONNECTIONS**

5. TARGET INTERSECTIONS

5.1 EXISTING PEDESTRIAN CONDITIONS

As a fully-built out, historic municipality, Pitman offers many pedestrian-friendly features including a largely complete sidewalk network, a connected and compact street grid, many upgraded or improved intersections, a pedestrian-only historic core, transit connections, and high walking rates.

There are opportunities to improve conditions for people walking, such as filling in gaps in the sidewalk network, adding crosswalks at important intersections, reducing crossing widths, consistent lowered speed limits, and making it easier for people to cross high volume/high speed roads.

5.2 KEY PEDESTRIAN CORRIDORS & TARGET INTERSECTIONS

The project team developed pedestrian infrastructure improvement concepts for targeted intersections and corridors based upon the existing conditions analysis, Steering Committee guidance, and public input. These concepts focus on improving safety, comfort, and circulation opportunities to and from key destinations. Recommended pedestrian improvements focus on connecting schools, parks, trails, shops, businesses, and residential areas throughout Pitman. Target corridors and intersections for pedestrian improvements were selected based on the history of crashes at that location, field observations, pedestrian generators, and Steering Committee input. These corridors include:

- North and South Broadway

FIGURE 25. **PITMAN GROVE**

- West and East Holly Avenue
- North and South Woodbury Road
- Cedar Avenue

Target intersections and proposed improvements are detailed in the following pages. Generally, improvement concepts are intended to be easily implementable and emphasize low-cost options, such crosswalks, signage, and curb ramps. Projects may be implemented over time as funding allows and incorporated into roadway maintenance to minimize costs. The list of recommended projects may be used to support grant applications, integrate pedestrian projects into the capital improvement pipeline, and/or identify pedestrian improvements as roadways are due for maintenance and resurfacing. Other longer-term projects and opportunities are also identified, along with the first steps and associated costs.

The proposed improvements are intended as conceptual recommendations that would likely require varying levels of design or further analysis, depending on the magnitude of project. The Implementation & Cost Matrix provides general order-of-magnitude cost estimates for each improvement based on average material rates for striping, curbing, curb ramps, sidewalks, signage, etc. These estimates are only intended to convey the level of investment that proposed concepts would require for implementation. The cost estimates are based on industry and NJDOT standards for per unit material costs, and do not include any potential cost of right-of-way acquisition, utility relocation, or contingencies. See Appendix B (Implementation & Cost Matrix) for further details.

N Broadway & Woodland Ave

FIGURE 26. EXISTING N BROADWAY AND WOODLAND AVE

This unsignalized intersection is located at the very northern end of commercial activity on North Broadway. Woodland Avenue connects to Memorial Elementary School, Brown Field, and the Hollywood Dell. There are currently three high crosswalks at this intersection and curb ramps.

- Pedestrians using existing crossings are not highly visible
- Longer crossing distance across North Broadway
- Vehicle speeds increase on North Broadway as density decreases approaching Lambs Road
- Desire for pedestrian connectivity across North Broadway
- Bus stops at North Broadway and Woodland Avenue

FIGURE 27. EXISTING N BROADWAY & WOODLAND AVE

FIGURE 28. PROPOSED N BROADWAY & WOODLAND AVE

RECOMMENDATIONS

- Tighten the geometry of the intersection with curb extensions to decrease pedestrian exposure and slow drivers
- Provide a potential gateway, landscaping, and/or branding identity opportunity
- Provide an attractive option for crossing with greater visibility
- Serve the bus stops at this location

CURB EXTENSIONS : $48,000

TOTAL : $48,000

N Broadway & McClelland Ave

FIGURE 29. STREETVIEW N BROADWAY AND MCCLELLAND AVE

This unsignalized intersection is close to the Post Office and the Water Ice Station which attracts a large number of pedestrians, especially children in the warmer months.

- Pedestrians crossings are not highly visible
- Longer crossing distance across North Broadway
- Vehicle speeds increase on North Broadway as density decreases approaching Lambs Road
- Desire for pedestrian connectivity across North Broadway

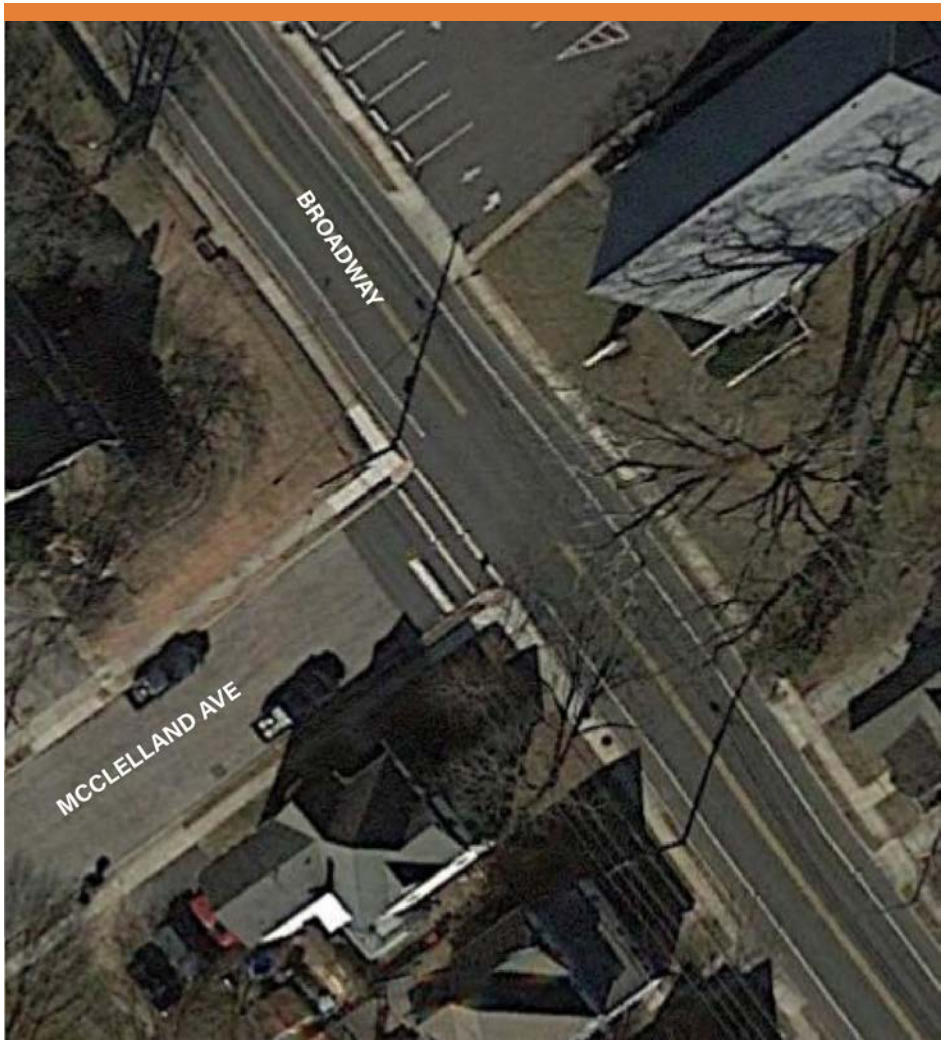


FIGURE 30. EXISTING N BROADWAY AND MCCLELLAND AVE

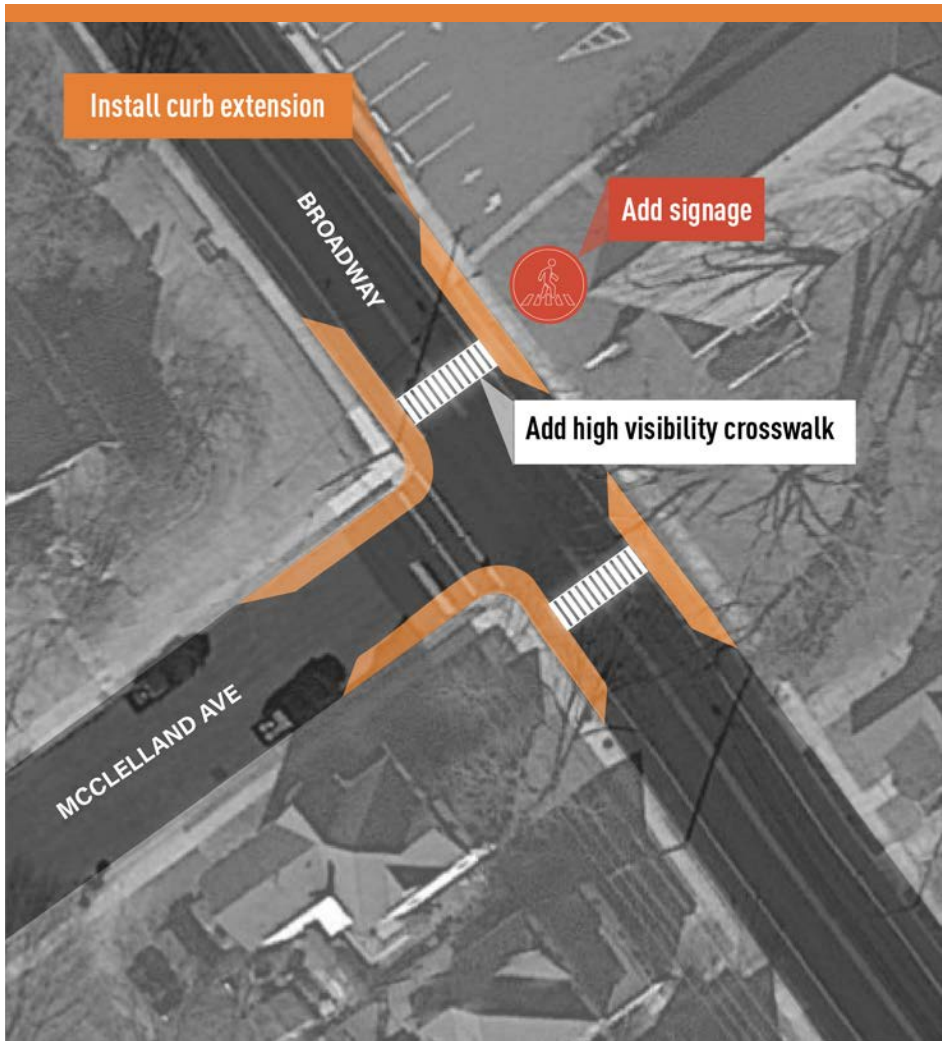


FIGURE 31. PROPOSED N BROADWAY AND MCCLELLAND AVE

RECOMMENDATIONS

- Tighten the geometry of the intersection with curb extensions to decrease pedestrian exposure and slow drivers
- Provide a potential landscaping and/or branding identity opportunity
- Provide an attractive option for crossing with greater visibility

CURB EXTENSIONS: $48,000

CROSSWALK : $1,084

SIGNAGE : $100

ADA RAMPS: $2,960

TOTAL : $52,144

S Broadway & 2nd Ave

FIGURE 32. STREETVIEW S BROADWAY AND 2ND AVE

This unsignalized intersection is directly in front of the Broadway Theatre and many shops and restaurants. On show nights, this is one of the busiest intersections in Pitman, filled with pedestrians. Currently, there is a curb extension on the northeastern side of the intersection.

- Pedestrians using existing crossings are not highly visible
- Longer crossing distance across South Broadway
- Desire for pedestrian connectivity across South Broadway

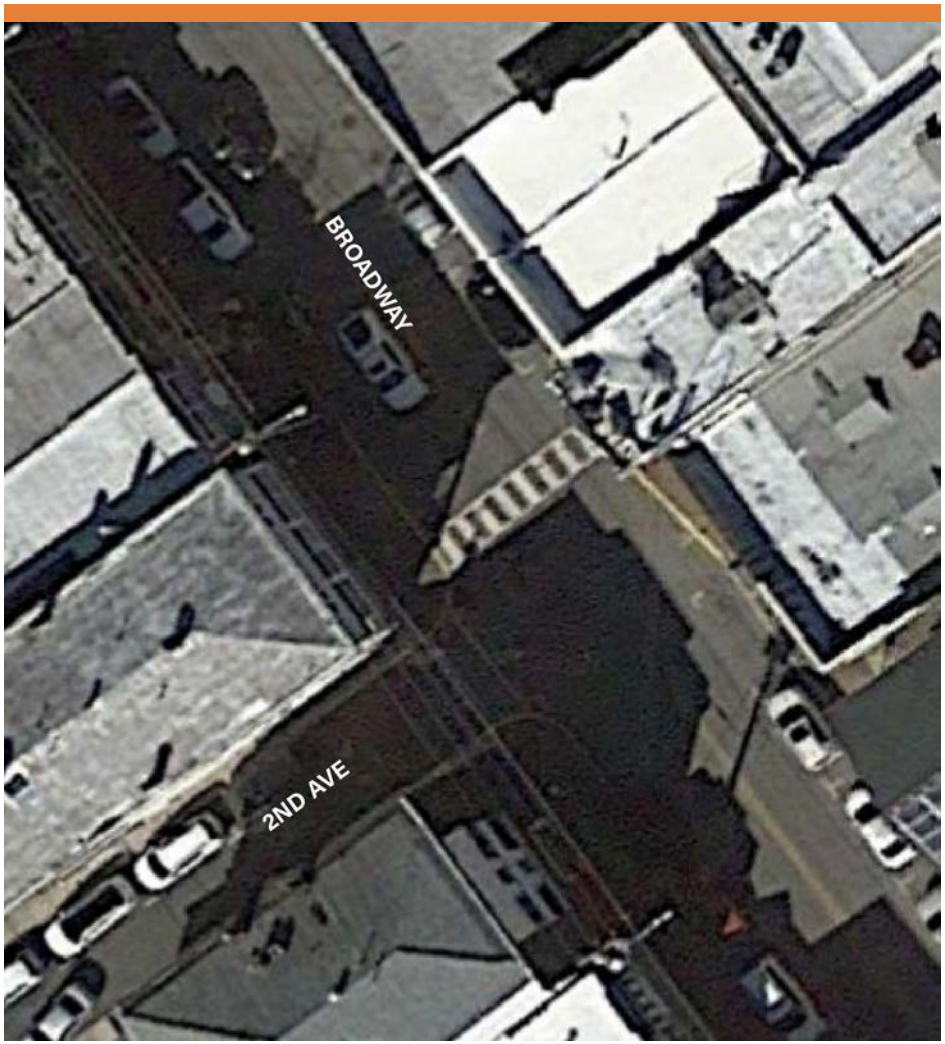


FIGURE 33. EXISTING S BROADWAY AND 2ND AVE

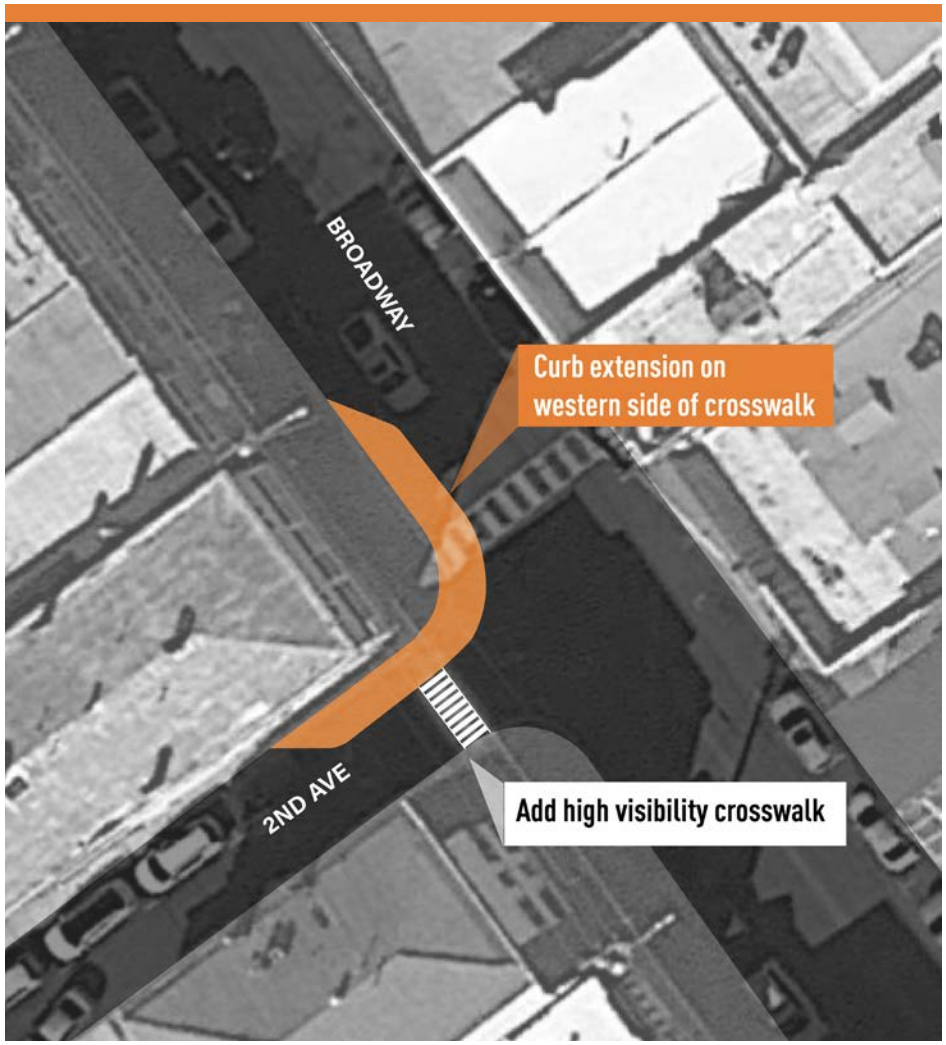


FIGURE 34. PROPOSED S BROADWAY AND 2ND AVE

RECOMMENDATIONS

- Tighten the geometry of the intersection with a curb extension on the other side to decrease pedestrian exposure and slow drivers
- Provide a potential landscaping, street furniture, and/or branding identity opportunity
- Provide an attractive option for crossing with greater visibility

CURB EXTENSIONS : $12,000

CROSSWALK : $203

ADA RAMPS : $1,480

TOTAL : $13,368

S Broadway & Pitman Ave Option 1

FIGURE 35. STREETVIEW S BROADWAY AND PITMAN AVE

This signalized intersection is a major intersection in downtown Pitman, in the heart of the commercial corridor. It is close to shops, restaurants, the library, Ballard Park, the municipal building, the local bike shop, and historic Pitman Grove. Currrently, there are curb ramps, high visibility crosswalks, and pedestrian signals. Buses regularly make left turns from Pitman Avenue onto Broadway and right turns from Broadway onto Pitman Avenue.

- Pedestrians using existing crossings are not highly visible
- Longer crossing distance across South Broadway and Pitman Avenue
- Desire for pedestrian connectivity across South Broadway
- Bus stop on the southwestern side of the intersection

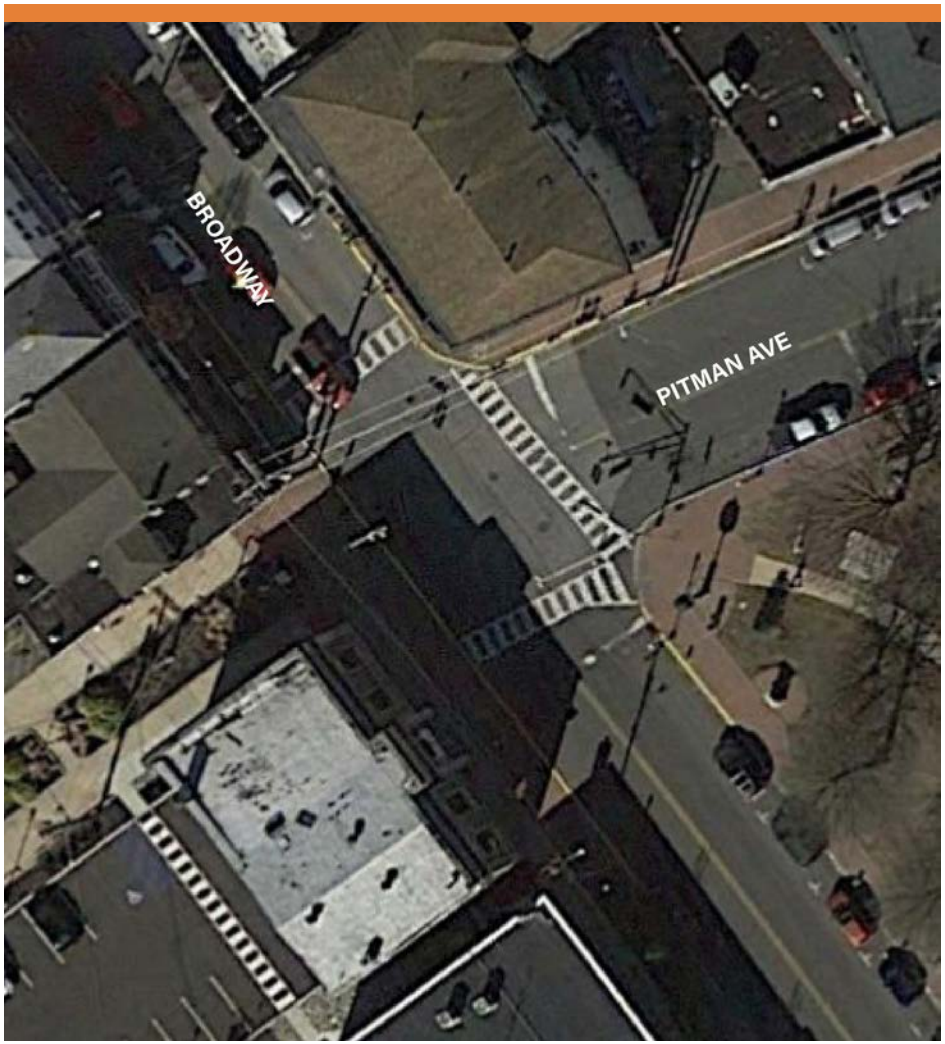


FIGURE 36. EXISTING S BROADWAY AND PITMAN AVE

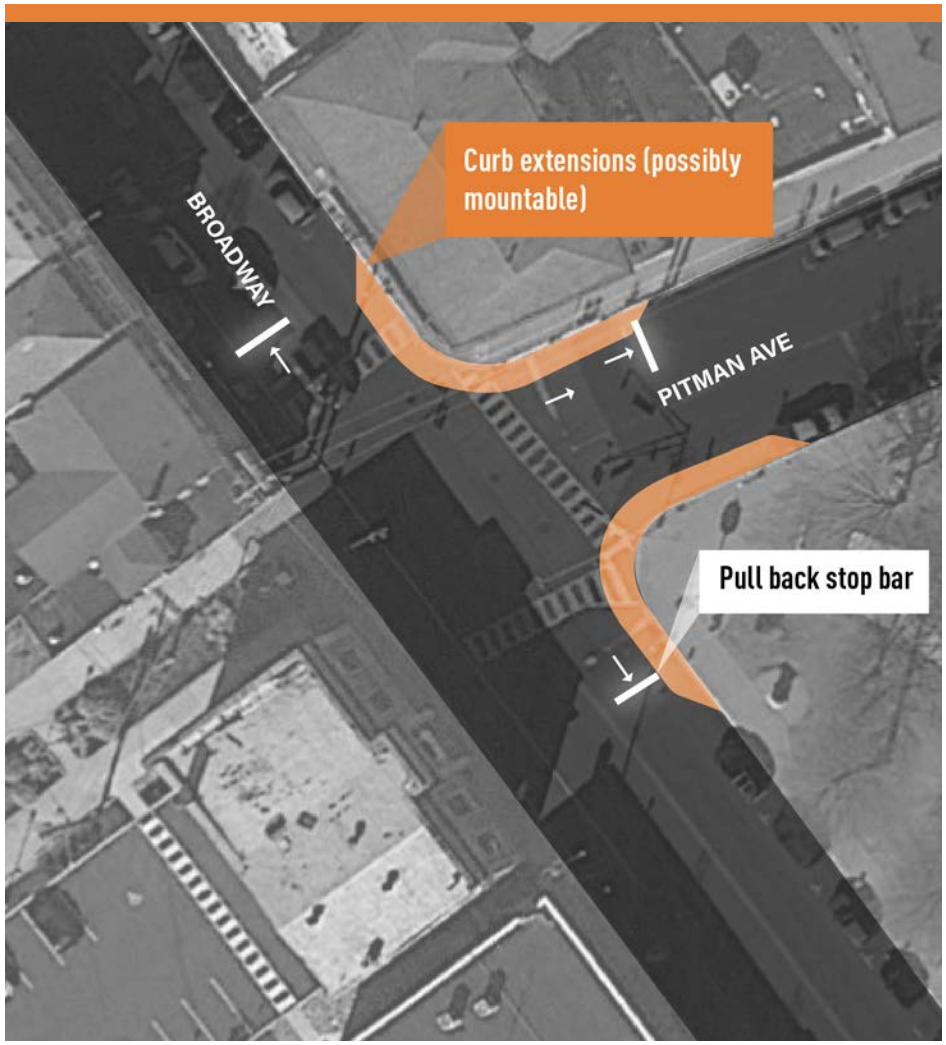


FIGURE 37. PROPOSED S BROADWAY AND PITMAN AVE

RECOMMENDATIONS

- Tighten the geometry of the intersection with curb extensions to decrease pedestrian exposure and slow drivers. Consider installing mountable curbing to allow buses and trucks to complete turns
- Provide a potential gateway, landscaping, street furniture, and/or branding identity opportunity
- Provide an attractive option for crossing with greater visibility
- Provide greater distance between people in the crosswalk and drivers who are stopping by pulling back the stop bars
- Confirm pedestrian signals are working correctly

CURB EXTENSIONS : $24,000

STOP BARS : $186

TOTAL : $24,186

S Broadway & Pitman Ave Option 2

FIGURE 38. STREETVIEW S BROADWAY AND PITMAN AVE

See page 30 for existing conditions summary.

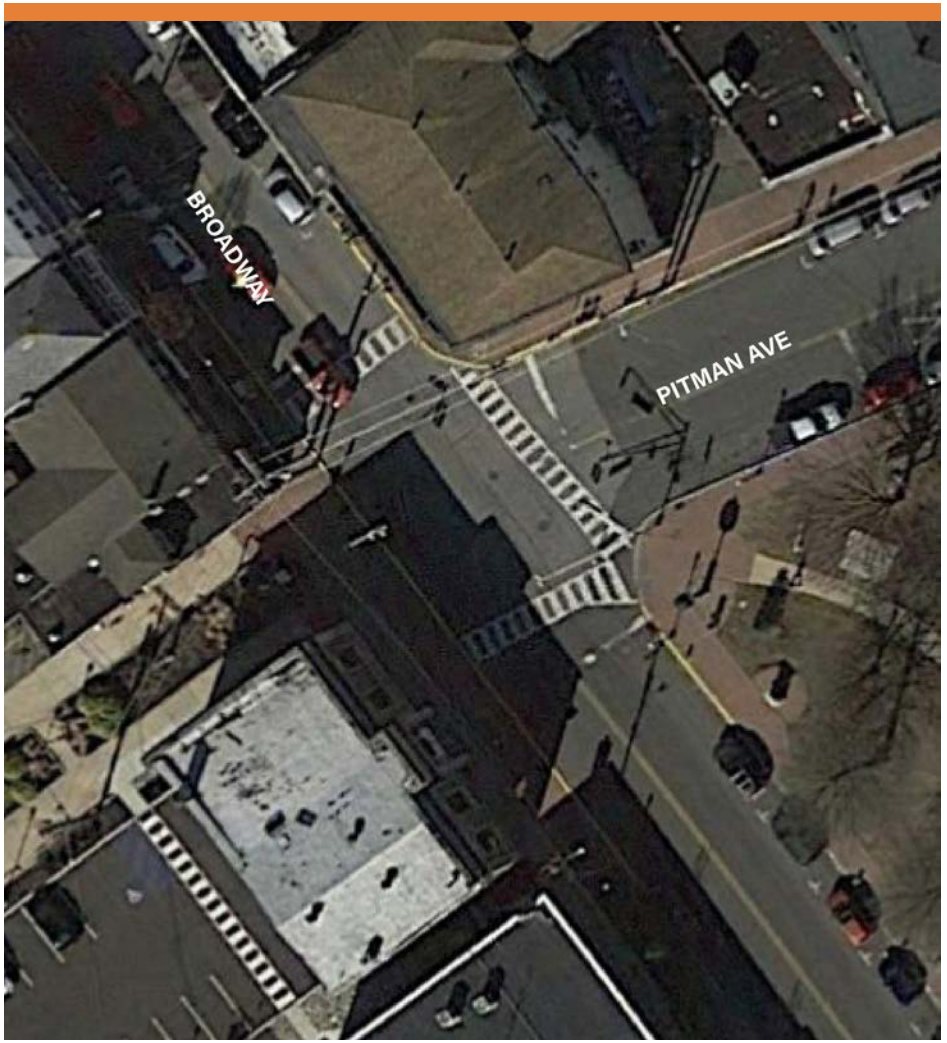


FIGURE 39. EXISTING S BROADWAY AND PITMAN AVE

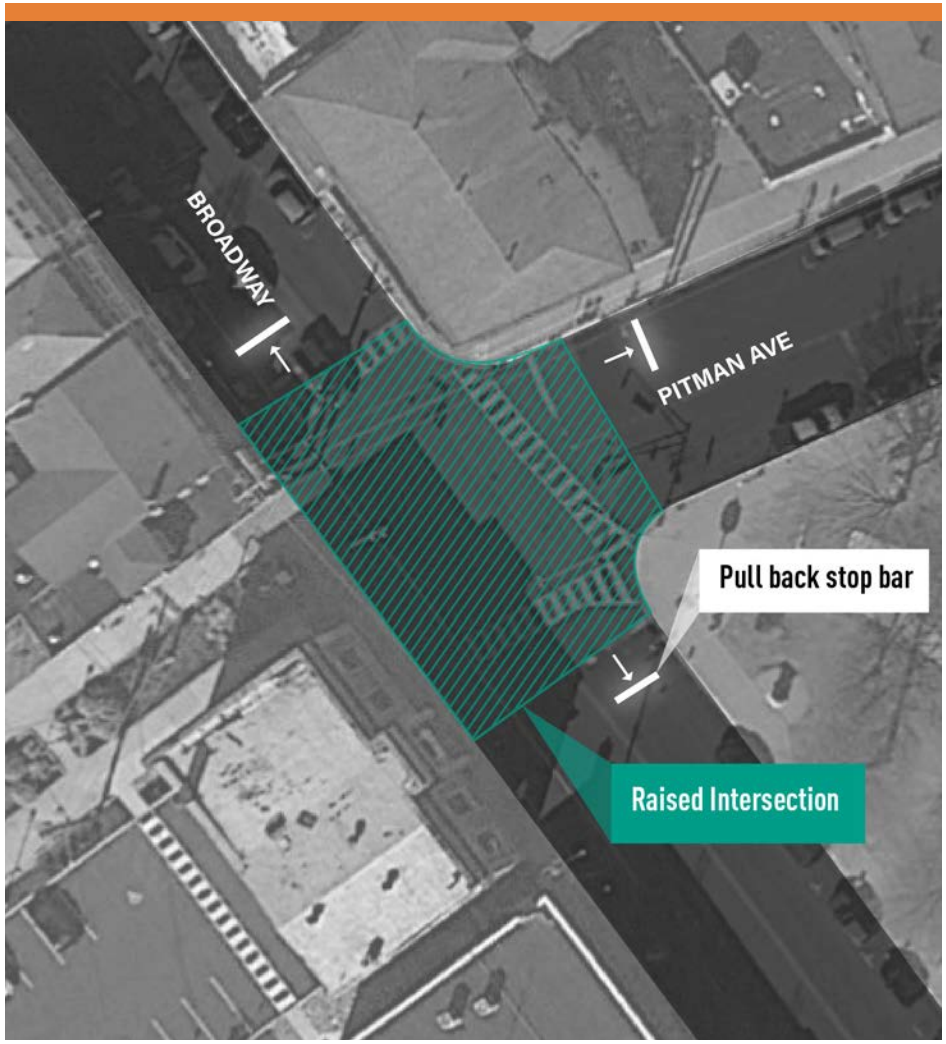


FIGURE 40. PROPOSED S BROADWAY AND PITMAN AVE OPTION 2

RECOMMENDATIONS

- Raised intersection treatment makes the intersection visually different with a slight vertical deflection that causes drivers to slow down
- Raised intersection indicates to drivers that they are sharing space with pedestrians, who have the priority
- Provide greater distance between people in the crosswalk and drivers who are stopping by pulling back the stop bars
- Confirm pedestrian signals are working correctly

RAISED INTERSECTION : $59,160

STOP BAR : $186

TOTAL : $59,346

S Broadway & Ballard Ave

FIGURE 41. STREETVIEW S BROADWAY AND BALLARD AVE

This unsignalized intersection at the tip of Ballard Park is located along the dense commercial corridor of South Broadway with high numbers of pedestrians. Ballard Avenue serves as parking lot between South Broadway and Pitman Avenue and many people park there and cross South Broadway on foot.

- Very long crossing distance immediately adjacent to roadway increases pedestrian exposure
- Long distances between crosswalks on South Broadway encourages people to cross at unexpected locations when there is a gap in vehicular traffic
- High speed turns from South Broadway to Ballard Avenue
- Strong desire for pedestrian connectivity to businesses on the western side of South Broadway
- Bus stop at Ballard Avenue and South Broadway

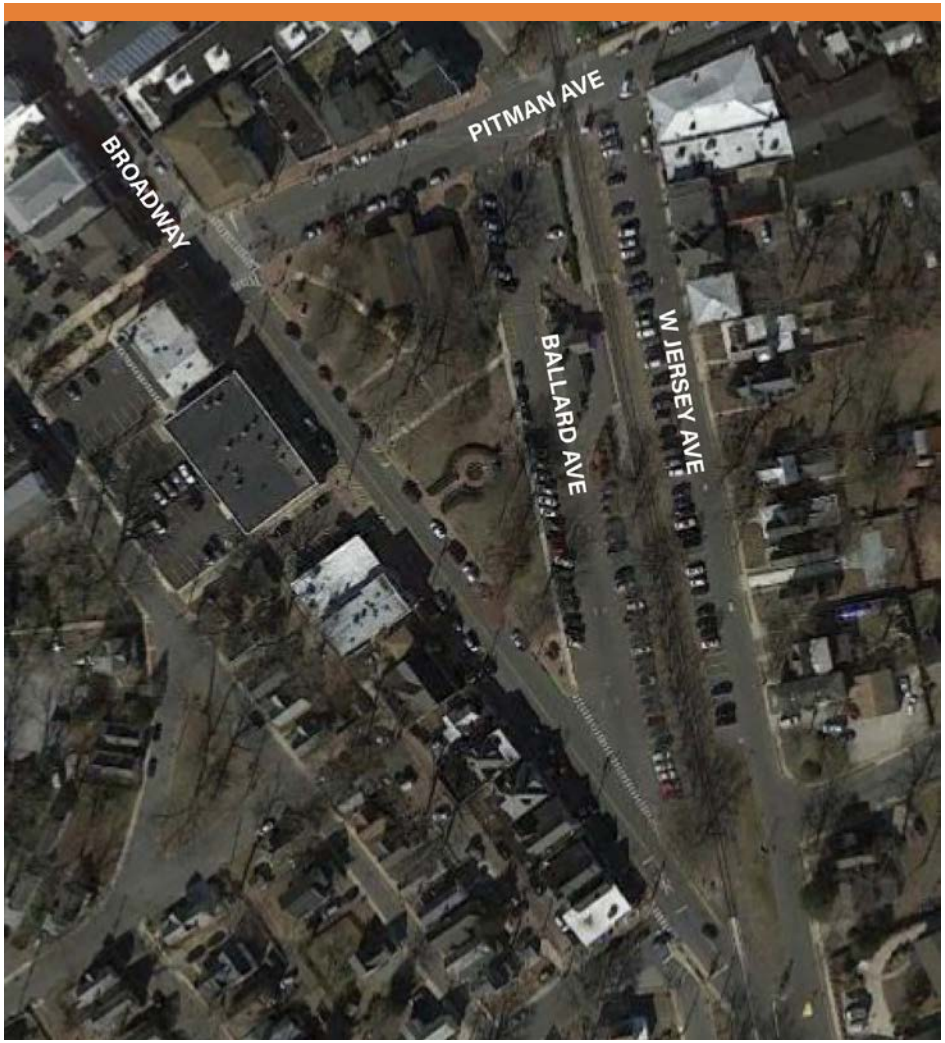


FIGURE 42. EXISTING S BROADWAY AND BALLARD AVE

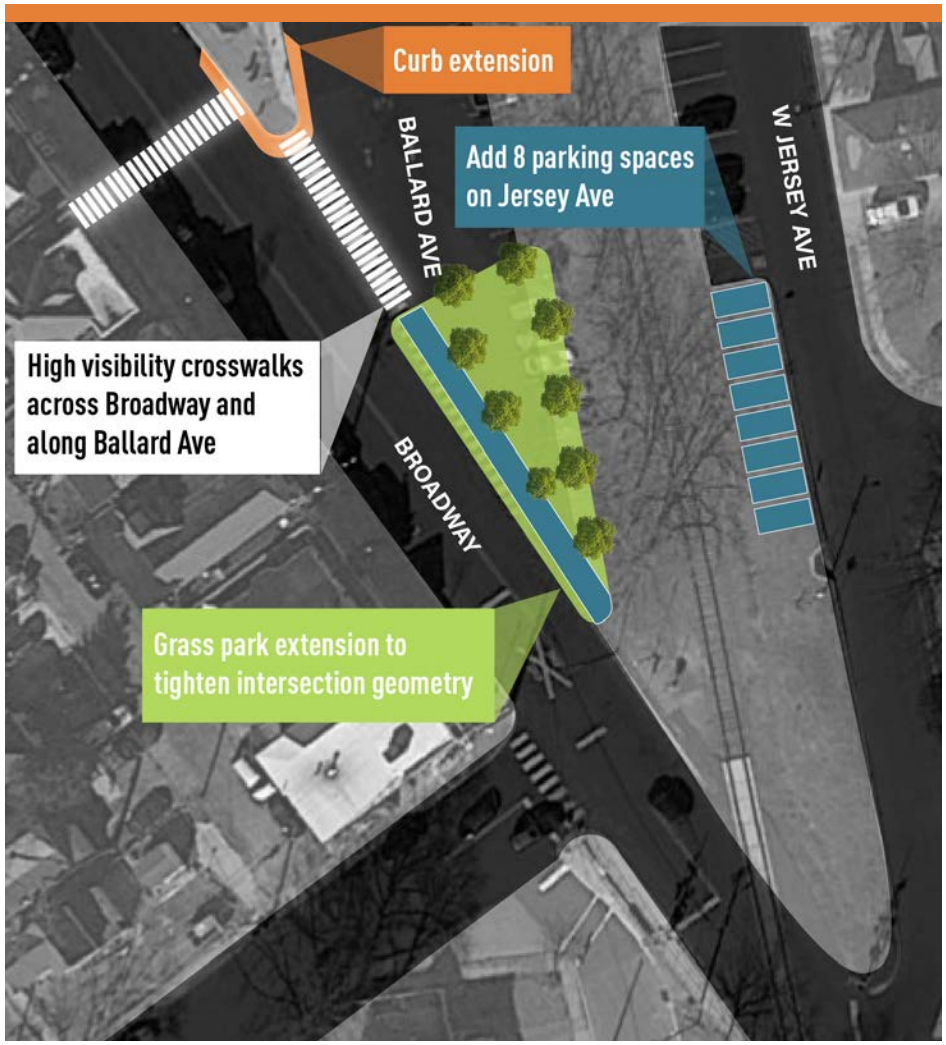


FIGURE 43. PROPOSED S BROADWAY AND BALLARD AVE

RECOMMENDATIONS

- Tightening the geometry of the intersection with curb extensions helps decrease pedestrian exposure and slows drivers making a right onto Ballard Avenue
- Provides a crosswalk at a natural crossing point, away from the high-conflict intersection at Laurel Avenue and South Broadway with rail, sight-distance, and grade differential issues
- Expands green space in a highly used corridor
- 8 parking spots proposed on West Jersey Avenue to replace any necessary spaces removed on Ballard Avenue (not included in cost estimates)
- Provides an attractive option for crossing with greater visibility to decrease random midblock crossing activity where drivers are not expecting pedestrians and serves the bus stop at that location
- Provides direction connection at natural crossing point between parking and retail destination.

CURBING : $37,055

SIDEWALK : $3,888

CROSSWALK : $1,898

CURB EXTENSION : $12,000

ADA RAMPS : $2,960

TOTAL : $57,802

S Broadway & Crafton Ave

FIGURE 44. STREETVIEW N BROADWAY AND CRAFTON AVE

This unsignalized intersection is located at the very southern end of commercial activity on South Broadway, adjacent to the Pitman Convenience Store, where many people walk and bike. There is one standard crosswalk across Crafton Avenue currently.

- Pedestrians using existing crossings are not highly visible
- Longer crossing distance across South Broadway
- Vehicle speeds increase on South Broadway as density decreases approaching Glassboro
- Desire for pedestrian connectivity across South Broadway
- Bus stops at South Broadway and Crafton Avenue

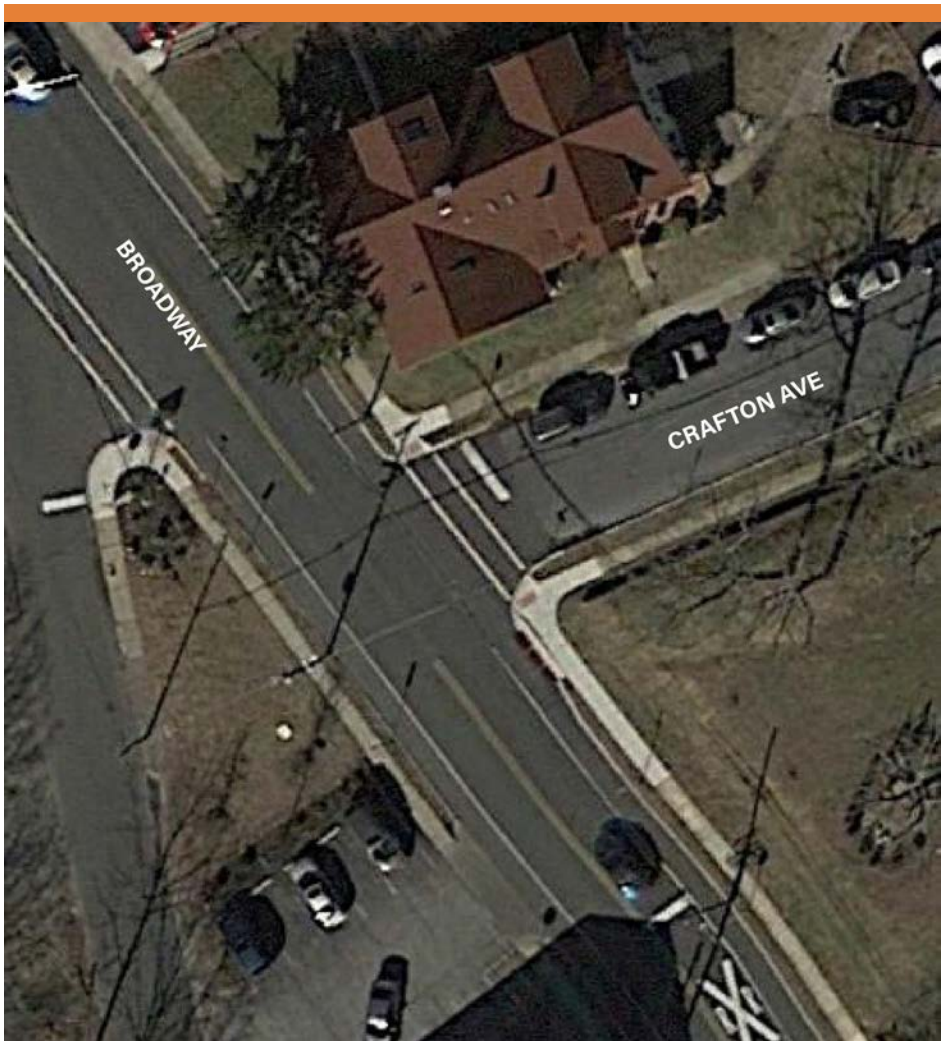


FIGURE 45. EXISTING S BROADWAY AND CRAFTON AVE

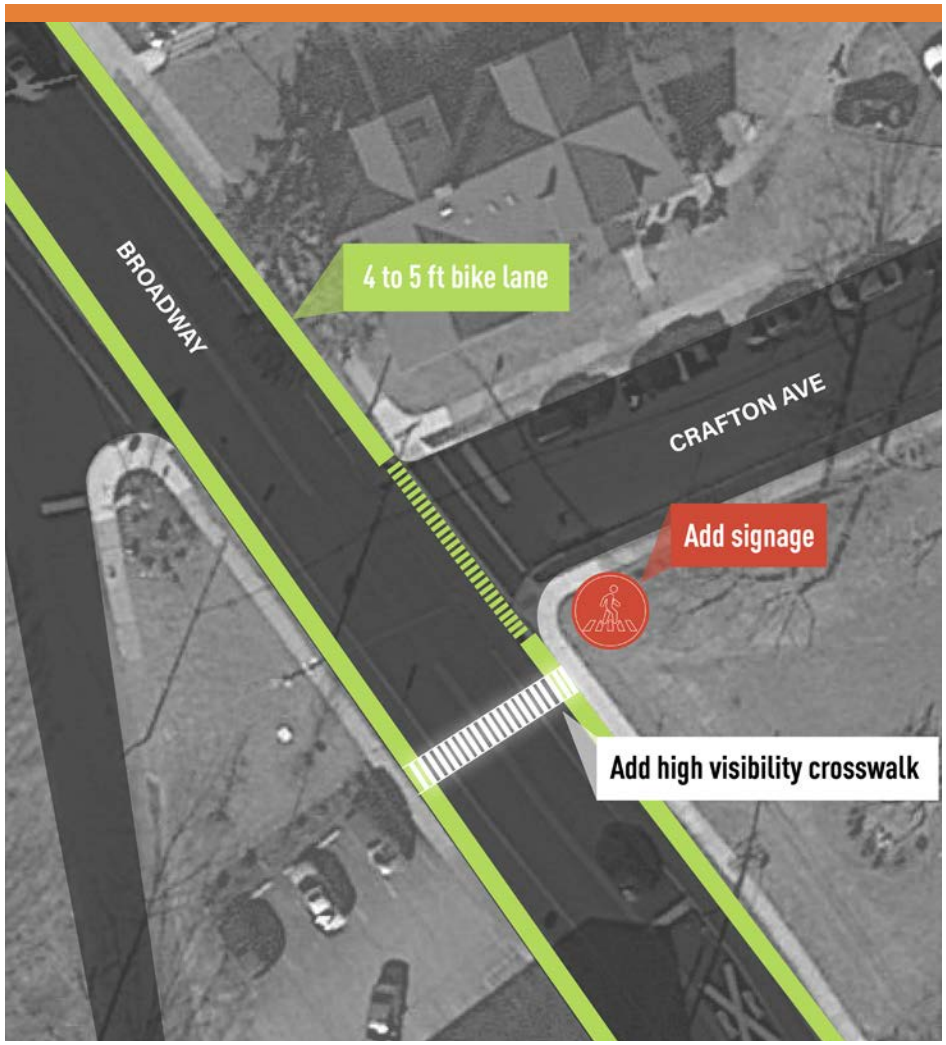


FIGURE 46. PROPOSED S BROADWAY AND CRAFTON AVE

RECOMMENDATIONS

- Provides an attractive option for crossing with greater visibility
- Serve the bus stops at this location
- The proposed bike lanes will help to tighten the geometry of the intersection to decrease pedestrian exposure and slow drivers

CURB EXTENSIONS : $12,000

CROSSWALK : $406

ADA RAMPS : $1,480

SIGNAGE : $100

TOTAL : $13,986

Woodland Ave & Elm Ave

FIGURE 47. STREETVIEW WOODLAND AVE AND ELM AVE

This unsignalized intersection at Woodland Avenue and Elm Avenue is an important crossing point for many children on their way to Memorial Elementary School and people visiting Hollywood Dell. It has three standard crosswalks.

- Strongly skewed intersection creates long crossing distances
- One stop bar is placed too far away from the intersection, hindering sight distance

FIGURE 48. EXISTING WOODLAND AVE AND ELM AVE

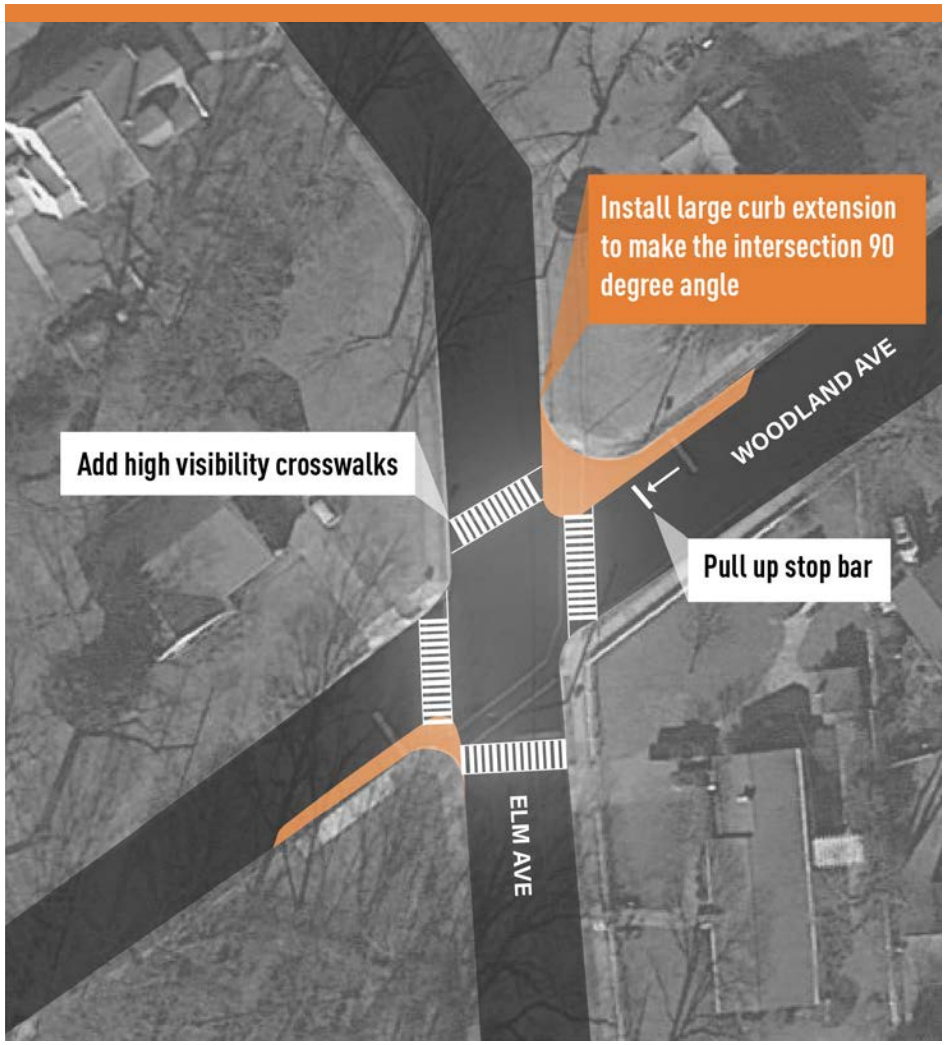


FIGURE 49. PROPOSED WOODLAND AVE AND ELM AVE

RECOMMENDATIONS

- Normalize the intersection by adding curb extensions, shortening crossing distances
- Pull the stop bar forward to allow for better sight lines
- Upgrade crosswalks to high visibility crosswalks and add a fourth crosswalk and curb ramps to increase accessibility

CURB EXTENSIONS : $24,000

CROSSWALK : $3,254

ADA RAMPS : $4,440

TOTAL : $31,694

Cedar Ave & Cleveland Ave

FIGURE 50. STREETVIEW CEDAR AVE AND CLEVELAND AVE

This unsignalized intersection at Cedar Avenue and Cleveland Avenue is an important crossing point for many children on their way to WCK Wall Elementary School and people visiting McBurney Field. It currently has a standard crosswalk on Cleveland Avenue.

- Pedestrians crossings are not highly visible
- Longer crossing distance across Cedar Avenue
- Vehicle speeds on Cedar Avenue perceived as higher than the posted speed limit
- Desire for pedestrian connectivity across Cedar Avenue

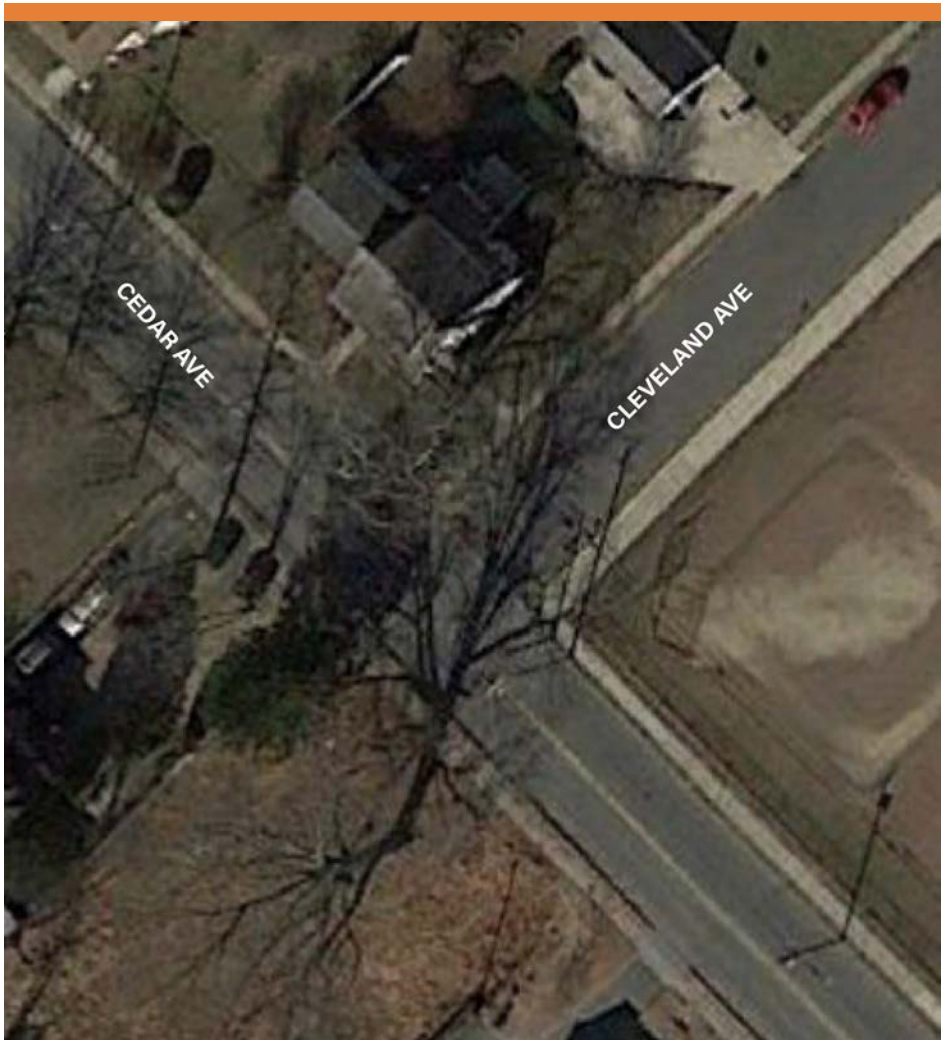


FIGURE 51. EXISTING CEDAR AVE AND CLEVELAND AVE

FIGURE 52. PROPOSED CEDAR AVE AND CLEVELAND AVE

RECOMMENDATIONS

- Add a high visibility crosswalk across Cedar Avenue with signage and curb ramps, providing an attractive option for crossing with greater visibility
- The proposed bike lanes will help to tighten the geometry of the intersection to decrease pedestrian exposure and slow drivers

CROSSWALK: $406

SIGNAGE : $100

ADA RAMPS : $1,480

TOTAL : $1,986

Cedar Ave & Grant Ave

FIGURE 53. STREETVIEW CEDAR AVE AND GRANT AVE

This unsignalized intersection at Cedar Avenue and Grant Avenue is an important crossing point for many children on their way to WCK Wall Elementary School and the Pump Track. It currently has three standard crosswalks.

- Pedestrians using existing crossings are not highly visible
- Longer crossing distance across Cedar Avenue
- Vehicle speeds on Cedar Avenue perceived as higher than the posted speed limit
- Desire for pedestrian connectivity across Cedar Avenue

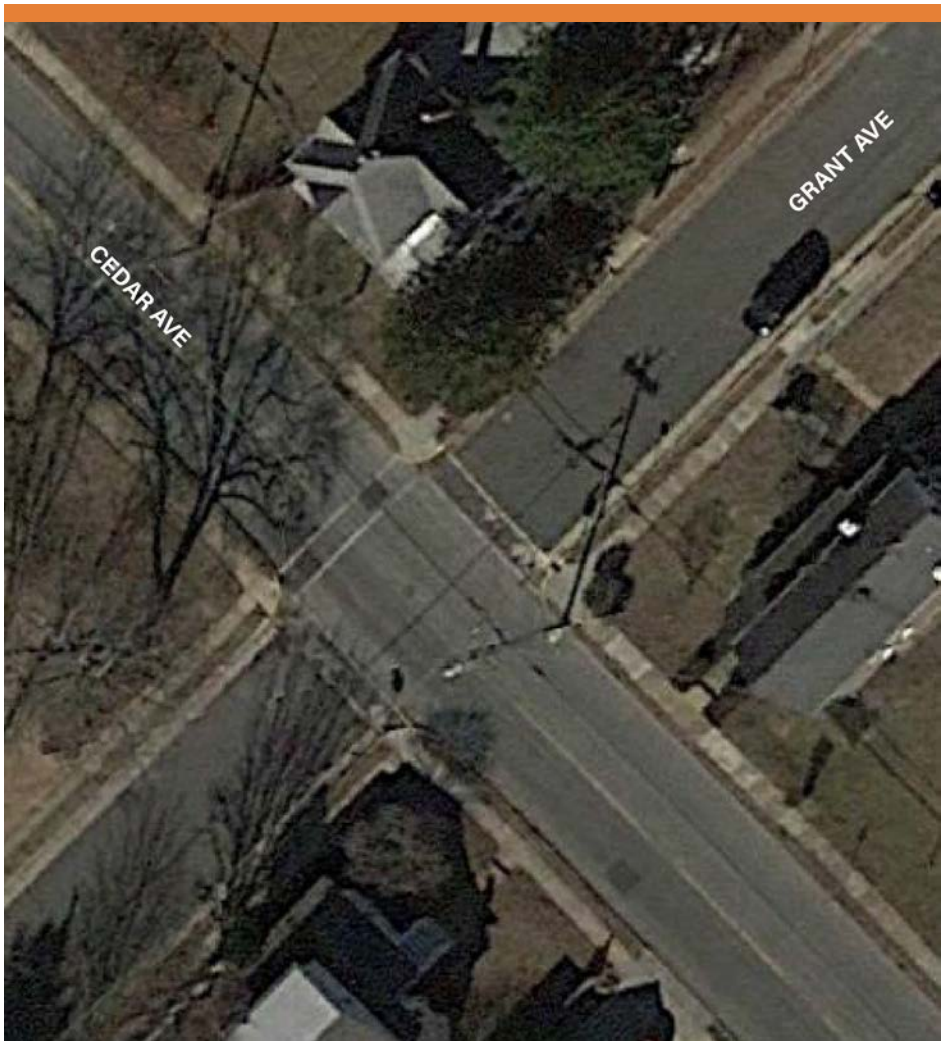


FIGURE 54. EXISTING CEDAR AVE AND GRANT AVE

FIGURE 55. PROPOSED CEDAR AVE AND GRANT AVE

RECOMMENDATIONS

- Add a high visibility crosswalk across Cedar Avenue with signage and curb ramps, providing an attractive option for crossing with greater visibility
- The protected bike lanes will help to tighten the geometry of the intersection to decrease pedestrian exposure and slow drivers

CROSSWALK : $542

SIGNAGE : $100

ADA RAMPS : $1,480

TOTAL : $2,122

Cedar Ave & Laurel Ave/Carew Ave

FIGURE 56. STREETVIEW CEDAR AVE AND LAUREL AVE/CAREW AVE

This unsignalized, disjointed intersection on Cedar Avenue is where Laurel Avenue and Carew Avenue meet. It is near Shertel Park and Sunset Auditorium and connects to South Broadway and the proposed trail at the end of Carew Avenue. It currently has two standard crosswalks.

- Pedestrians crossings are not highly visible
- Longer crossing distance across Cedar Avenue
- Vehicle speeds on Cedar Avenue perceived as higher than the posted speed limit
- Desire for pedestrian connectivity across Cedar Avenue

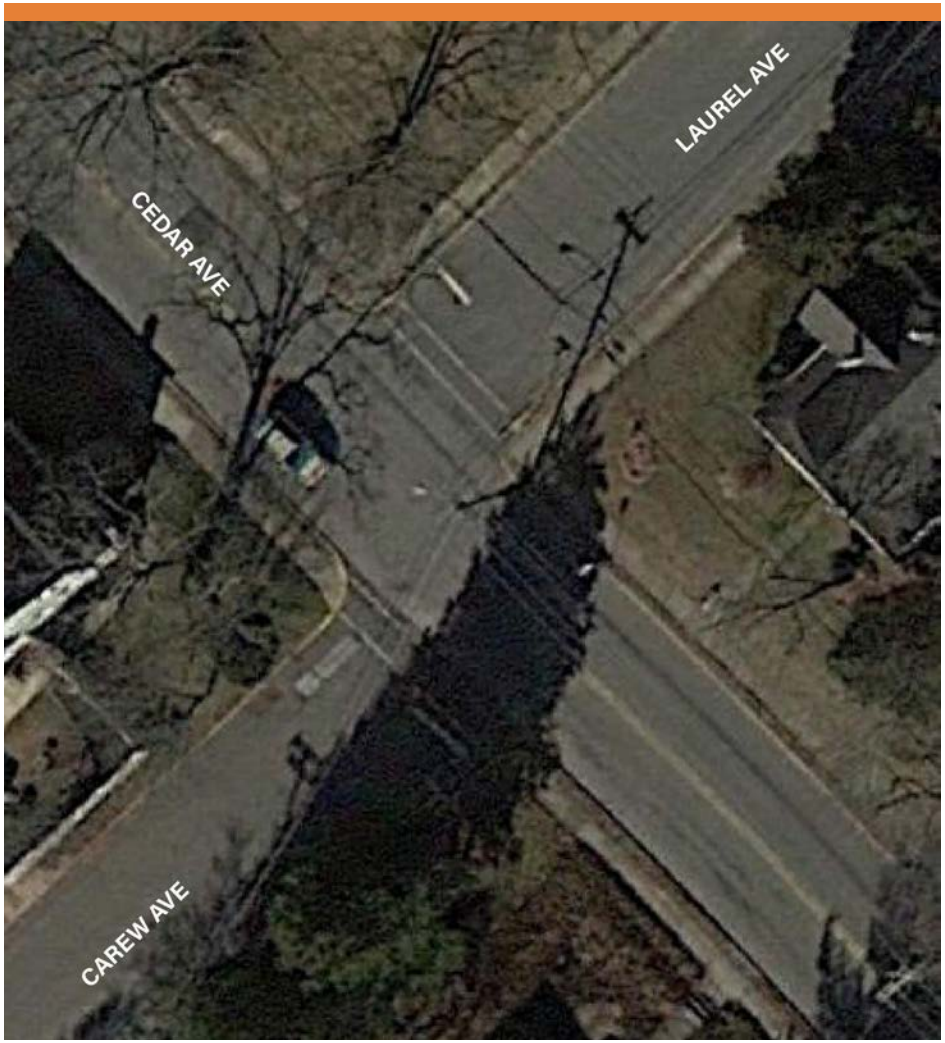


FIGURE 57. EXISTING CEDAR AVE AND LAUREL AVE/CAREW AVE

FIGURE 58. PROPOSED CEDAR AVE AND LAUREL AVE/CAREW AVE

RECOMMENDATIONS

- Add a high visibility crosswalk across Cedar Avenue with a rectangular rapid flashing beacon and curb ramps, providing an attractive option for crossing with greater visibility
- The proposed bike lanes will help to tighten the geometry of the intersection to decrease pedestrian exposure and slow drivers

FLASHING BEACON : $13,550

CROSSWALK : $542

ADA RAMPS : $1,480

TOTAL : $15,572

Cedar Ave & Alcyon Blvd

FIGURE 59. STREETVIEW CEDAR AVE AND ALCYON BLVD

This unsignalized intersection at Cedar Avenue and Alcyon Boulevard is near the southern boundary of Pitman. It provides another connection to the proposed trail at the end of Carew Avenue. It currently has no crosswalks.

- Pedestrians crossings are not highly visible
- Longer crossing distance across Cedar Avenue
- Vehicle speeds on Cedar Avenue perceived as higher than the posted speed limit
- Desire for pedestrian connectivity across Cedar Avenue

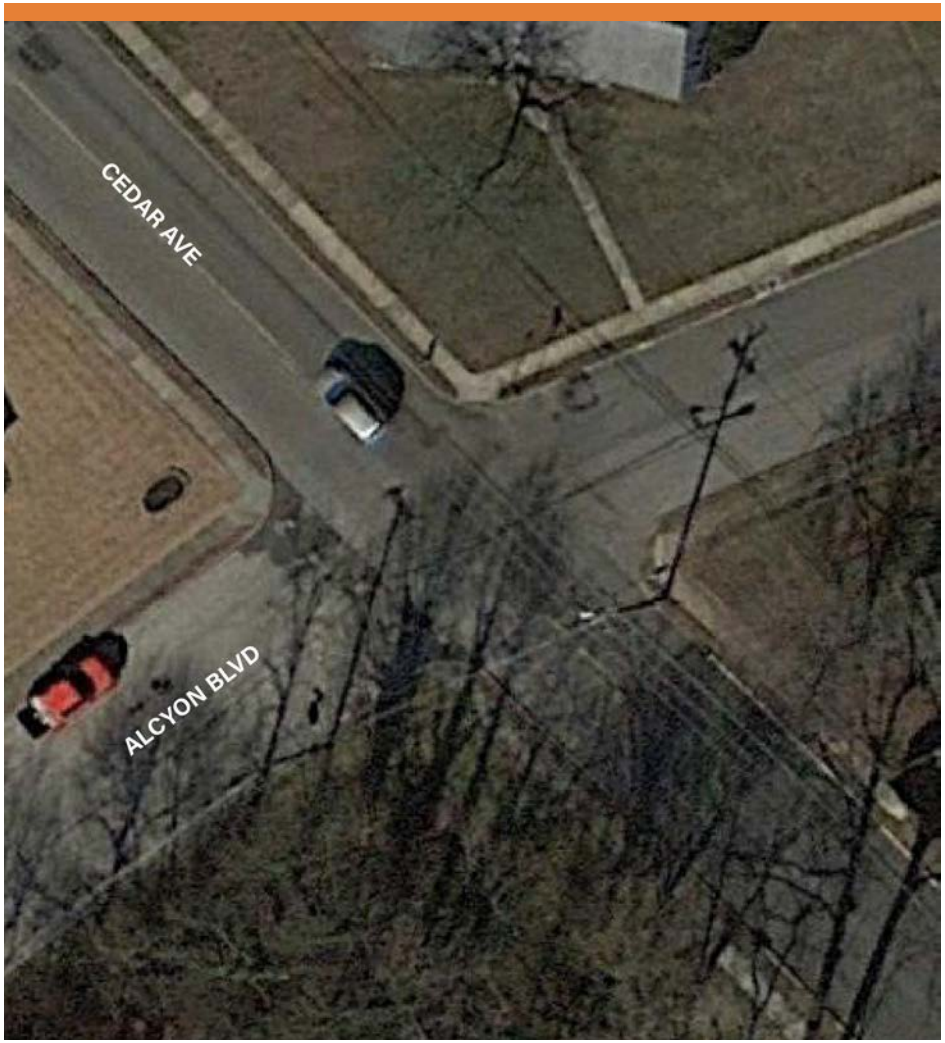


FIGURE 60. EXISTING CEDAR AVE AND ALCYON BLVD

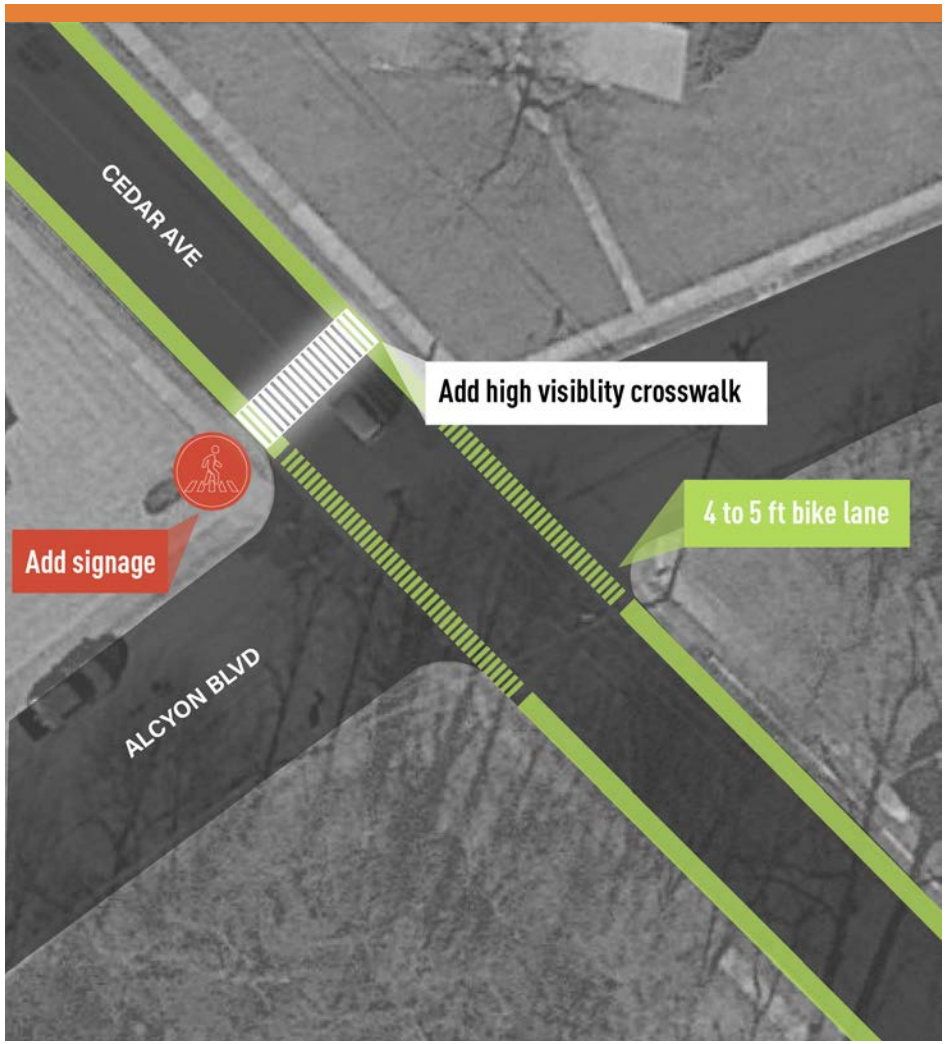


FIGURE 61. PROPOSED CEDAR AVE AND ALCYON BLVD

RECOMMENDATIONS

- Add a high visibility crosswalk across Cedar Avenue with signage and curb ramps, providing an attractive option for crossing with greater visibility. Provides regularly spaced crosswalks in conjunction with the other proposed crosswalks.
- The proposed bike lanes will help to tighten the geometry of the intersection to decrease pedestrian exposure and slow drivers

CROSSWALK : $542

SIGNAGE : $100

ADA RAMPS : $1480

TOTAL : $2,122

W Holly Ave & Alcyon Woods

FIGURE 62. ALCYON WOODS

Alcyon Park and Alcyon Woods are very important recreational amenities that currently have limited pedestrian and bicyclist access.

- Alcyon Woods only has interior unpaved bike trails, which may not be usable by everyone
- Narrow sidewalk on the southern side of West Holly Avenue from Carr Avenue to Track Avenue, where it stops and does not connect to Lambs Road
- Sidewalk on the northern side of West Holly Avenue extends to Carr Avenue, where it stops and does not connect to Lambs Road
- Vehicle speeds on West Holly Avenue are high in this section where the posted speed limit is 50 mph.
- Desire for pedestrian connectivity to the park and to Lambs Road

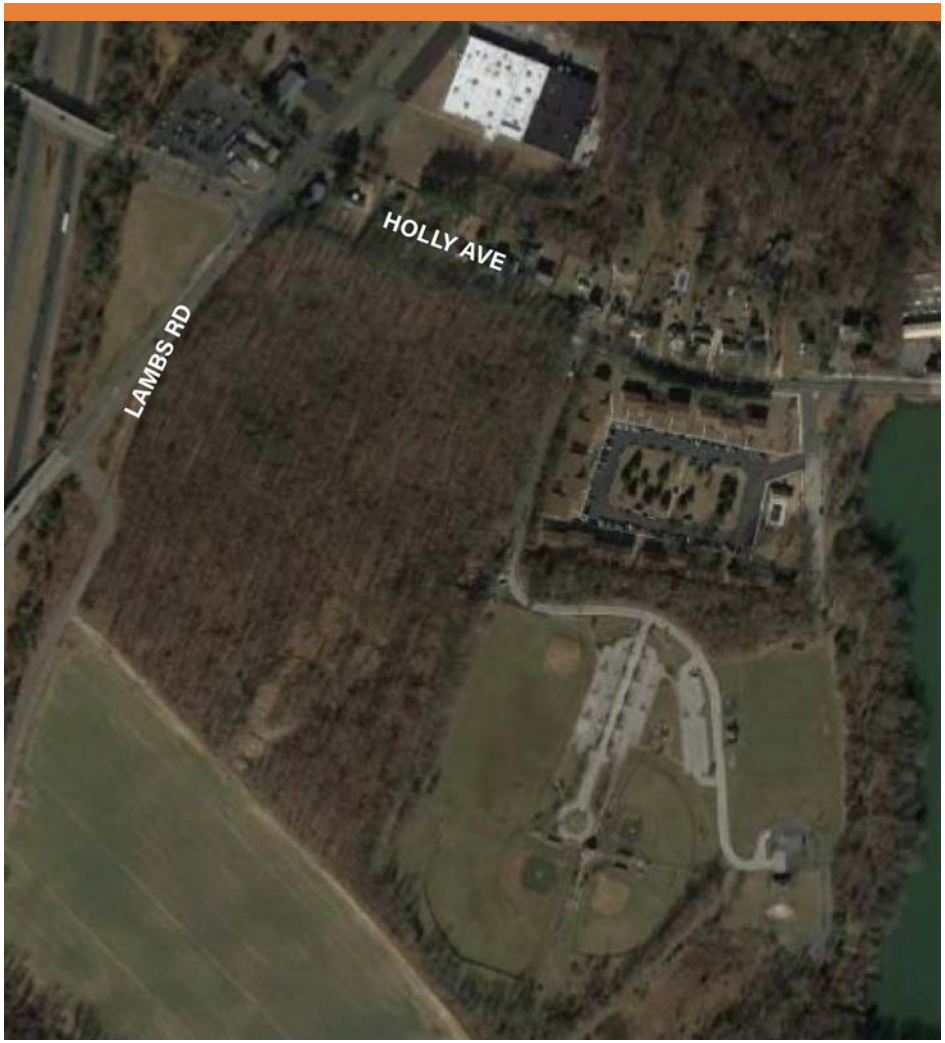


FIGURE 63. EXISTING ALCYON WOODS

FIGURE 64. PROPOSED ALCYON WOODS

RECOMMENDATIONS

- Add a 10-foot shared use path around the perimeter of Alcyon Woods and along West Holly Avenue to Cedar Avenue to allow joggers, families, and bicyclists to access and use this amenity and increase accessibility.
- Add the missing sidewalk on the northern side of West Holly Avenue to provide greater accessibility to the park and Lambs Road
- Improvements create continuous pedestrian and bicyclist access on West Holly Avenue from Broadway to Lambs Road
- Coordinate improvements with shared use path and bicycle lanes on West Holly Avenue

SHARED PATH : $170,385

SIDEWALK: $56,155

TOTAL : $226,541

W Holly Ave & Cedar Ave

FIGURE 65. STREETVIEW W HOLLY AVE AND CEDAR AVE

This unsignalized intersection at the terminus of Cedar Avenue is located at the top of Alcyon Lake and Betty Park. There is a triangle in the center of the intersection, creating a wide right hand slip lane onto Cedar Avenue. Many residents use this intersection to connect to Alcyon Park.

- High speed right hand turn from West Holly Avenue to Cedar Avenue
- Limited visibility when making left or right hand turns from Cedar Avenue onto West Holly Avenue
- Large, wide intersection limits connectivity to Alcyon Park
- Limited opportunities to cross
- Stop sign is placed after crosswalk on Cedar Ave northbound, creating potential confusion

FIGURE 66. EXISTING W HOLLY AVE AND CEDAR AVE

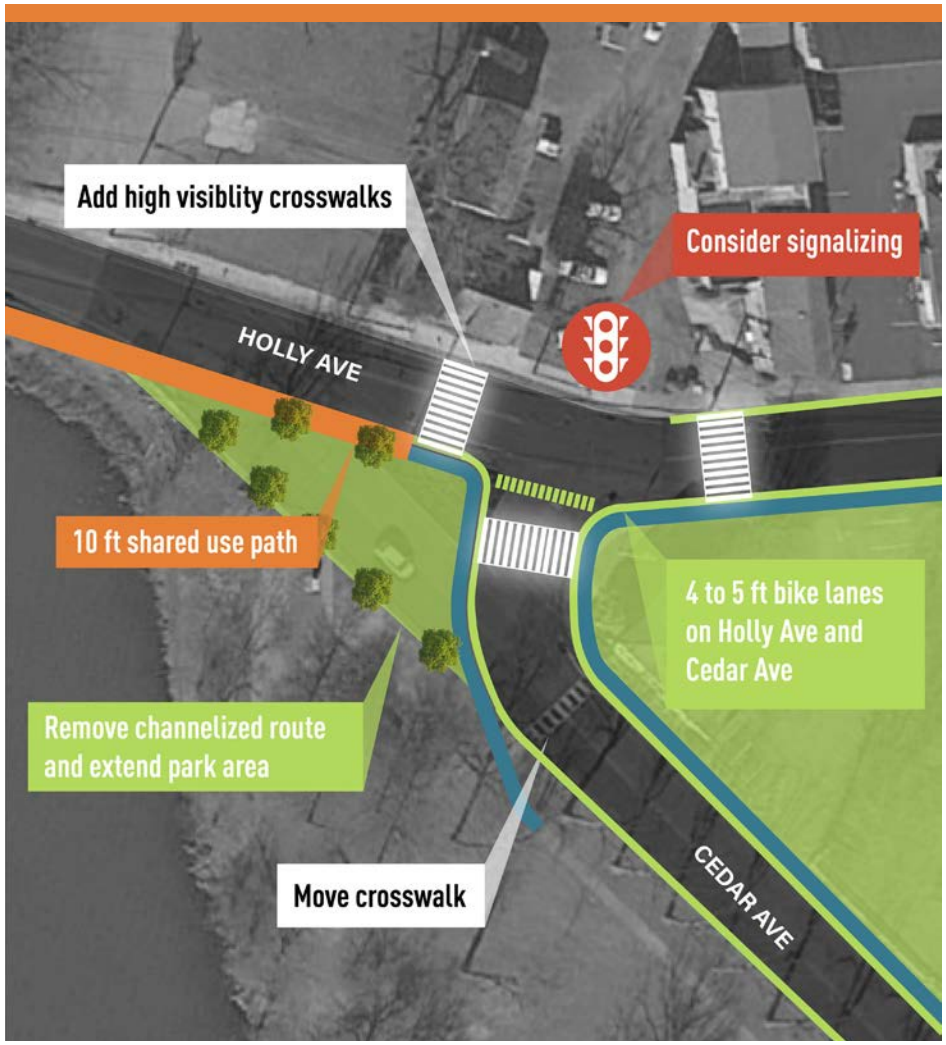


FIGURE 67. PROPOSED W HOLLY AVE AND CEDAR AVE

RECOMMENDATIONS

- Tighten the geometry of the roadway and simplifies the intersection into a regular T-intersection, increasing visibility, and reducing turning speed (curbing cost below only includes curbing)
- Crosswalks and bicycle lanes increase park accessibility
- Additional green space enlarges Betty Park and increases park accessibility
- Crosswalks and bicycle lanes increase park accessiblity
- The improvement should be in tandem with bicycle and pedestrian improvements on Holly Ave to improve the corridor comprehensively
- Conduct traffic and signal warrant studies

SIDEWALK : $14,155

CROSSWALKS : $1,220

CURBING : $376,600

ADA RAMPS: $4,440

TOTAL : $403,915

W Holly Ave and West Ave/Walnut Ave

FIGURE 68. STREETVIEW W HOLLY AVE AND WEST AVE/ WALNUT AVE

This unsignalized intersection is located in between Broadway and Cedar on West Holly Avenue, connecting the residential areas north and south of West Holly Avenue. Several of the blocks south of West Holly Avenue are in the Memorial Elementary School District and children need to cross the street to get to school. West Avenue/Walnut Avenue is one of the few streets that connects across East Holly Avenue. There are no crosswalks or curb ramps at this intersection currently.

- Pedestrians crossings are not highly visible
- Longer crossing distance across West Holly Avenue
- High volume of vehicles means fewer gaps in traffic to cross
- Vehicles sometimes do not yield to pedestrians trying to cross
- Desire for pedestrian connectivity across West Holly Avenue

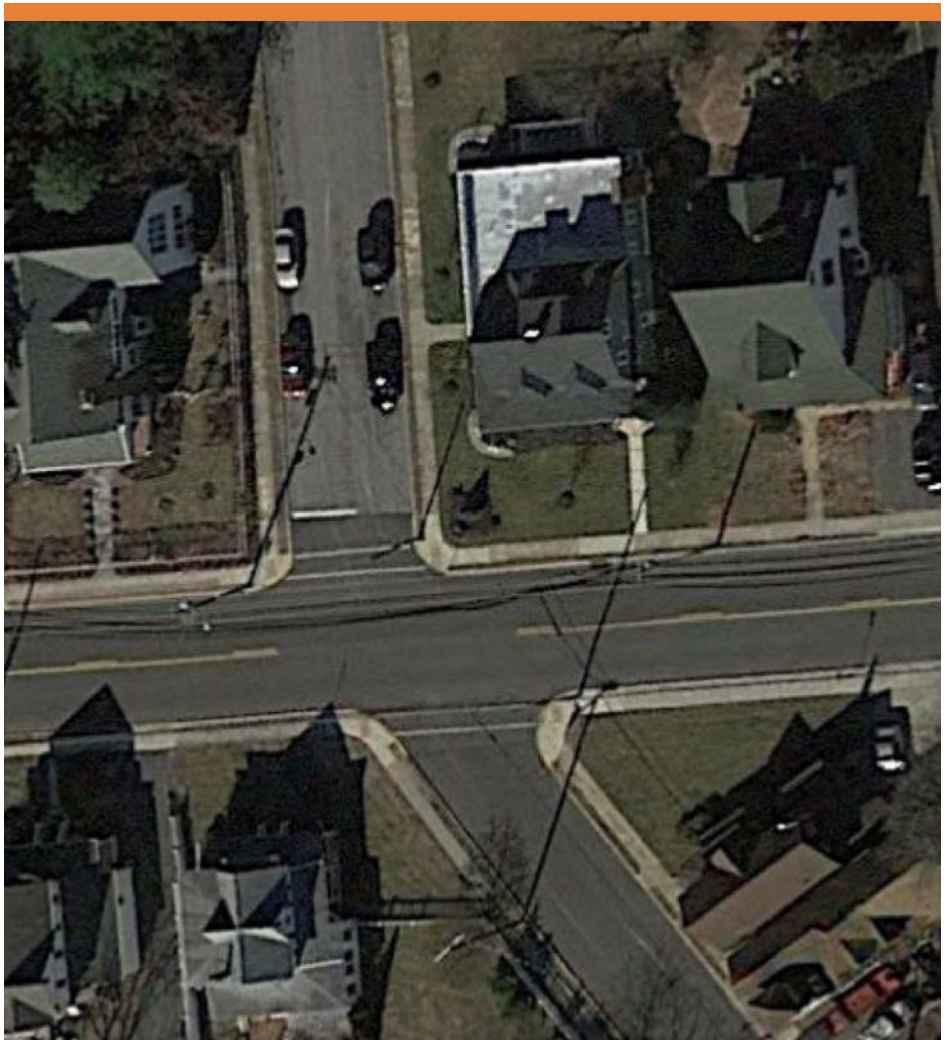


FIGURE 69. EXISTING W HOLLY AVE AND WEST AVE/WALNUT AVE

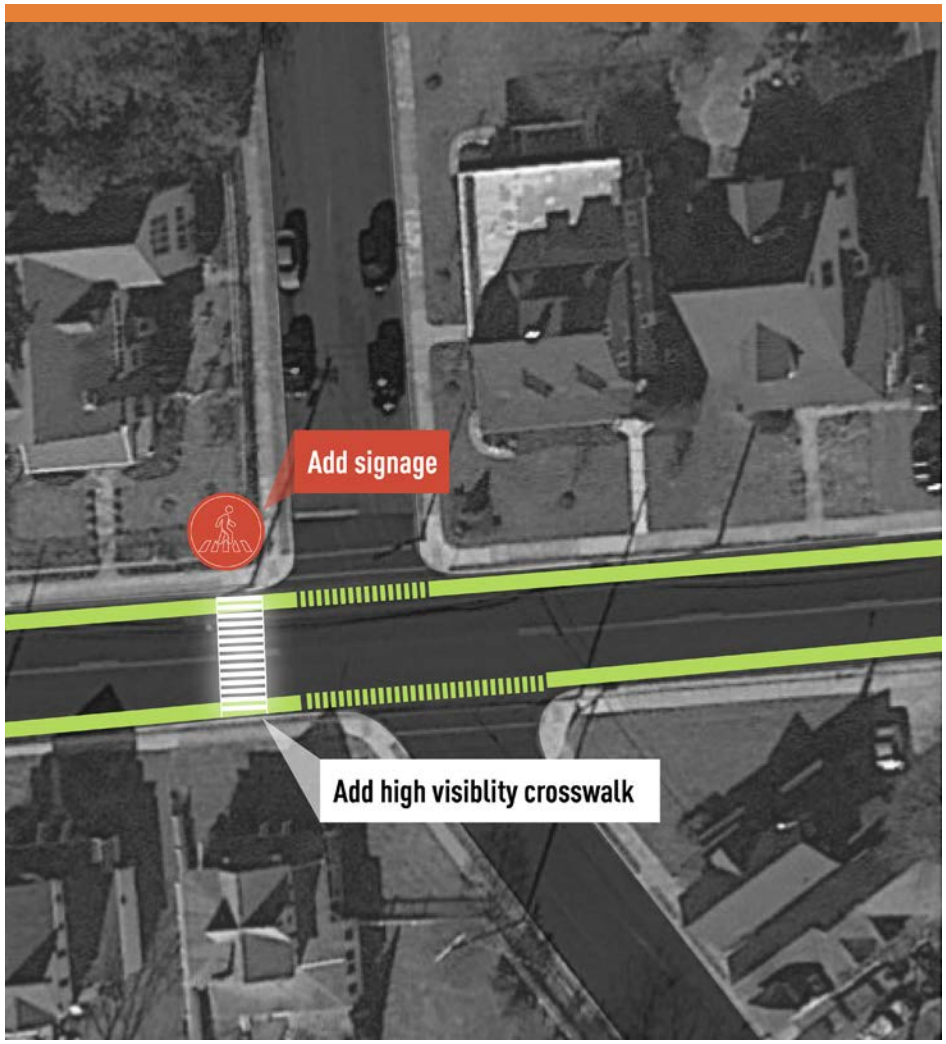


FIGURE 70. PROPOSED W HOLLY AVE AND WEST AVE/WALNUT AVE

RECOMMENDATIONS

- Add a high visibility crosswalk across West Holly Avenue with signage and curb ramps, providing an attractive option for crossing with greater visibility. Provides regularly spaced crosswalks in conjunction with the other proposed crosswalks.
- The proposed bike lanes on West Holly Avenue will also help tighten the geometry of the intersection to decrease pedestrian exposure and crossing distance and slow drivers

CROSSWALK : $474

SIGNAGE : $100

ADA RAMPS : $1,480

TOTAL : $2,054

Holly Ave & Broadway (Option 1)

FIGURE 71. STREETVIEW HOLLY AVE AND BROADWAY

This signalized intersection at Holly Avenue and Broadway is the central, major intersection in Pitman and demarcates west/east/north/south street directions. It is located along the dense commercial corridor of Broadway with high numbers of pedestrians as well as vehicular traffic. This location is close to the Post Office, shops, and businesses on Broadway and East Holly Avenue. There is a municipal parking lot on the southwest corner where people park and then cross Broadway on foot. A small cluster of crashes occurred at this intersection between 2008-2017 and it was upgraded with high visibility crosswalks and pedestrian signals.

- Skewed intersection with long crossing distances
- Wide curb radii encourage drivers to make turns at higher speeds
- Strong desire for pedestrian connectivity to businesses on Broadway

FIGURE 72. EXISTING HOLLY AVE AND BROADWAY

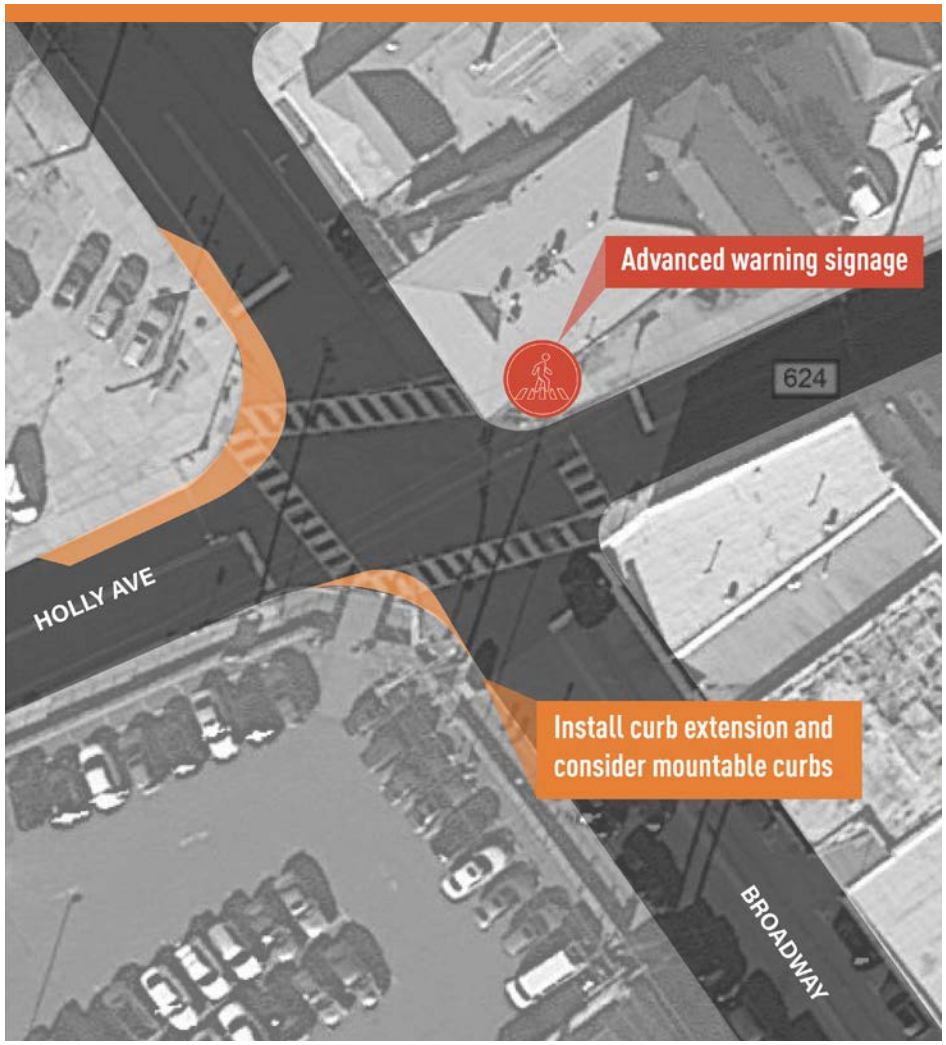


FIGURE 73. PROPOSED HOLLY AVE AND BROADWAY

RECOMMENDATIONS

- Tighten the geometry of the intersection with curb extensions and signage to decrease pedestrian exposure and slow drivers making a right turn onto Broadway or a left turn onto West Holly Avenue. Consider installing mountable curbing to allow trucks to complete turns.
- Provide an attractive option for crossing with greater visibility and shorter crossing distances
- Provide a potential gateway, landscaping, street furniture, and/or branding identity opportunity

CURB EXTENSIONS : $24,000

SIGNAGE : $100

TOTAL : $24,100

Holly Ave & Broadway Option 2

FIGURE 74. STREETVIEW HOLLY AVE AND BROADWAY

See existing conditions on page 54.

FIGURE 75. EXISTING HOLLY AVE AND BROADWAY

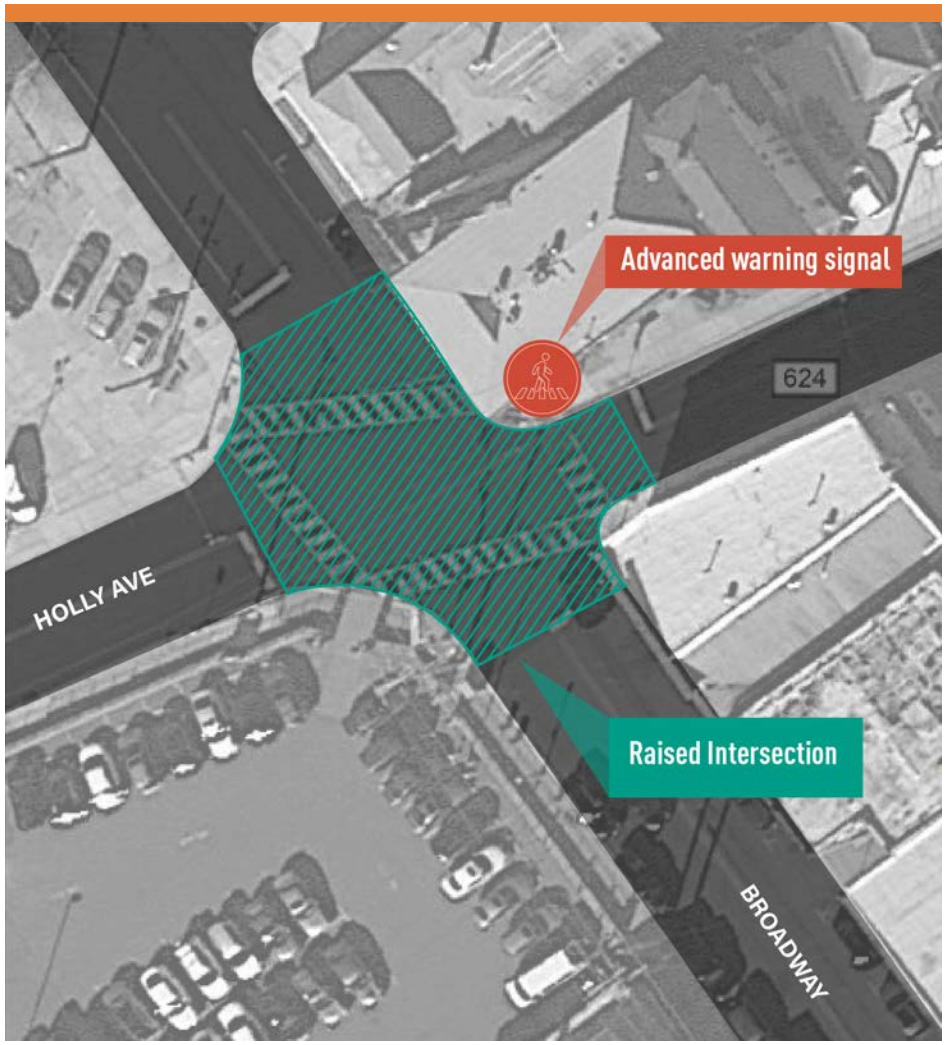


FIGURE 76. PROPOSED HOLLY AVE AND BROADWAY OPTION 2

RECOMMENDATIONS

- Raised intersection treatment makes the intersection visually different with a slight vertical deflection that causes drivers to slow down
- Raised intersection indicates to drivers that they are sharing space with pedestrians, who have the priority

RAISED INTERSECTION : $59,160

SIGNAGE : $100

TOTAL : $59,260

E Holly Ave & Esplanade Ave/Mt. Vernon Ave

FIGURE 77. STREETVIEW E HOLLY AVE & ESPLANADE AVE/MT. VERNON AVE

This unsignalized intersection is located in front of the Pitman Middle School and school fields on East Holly Avenue. East Holly Avenue connects to the Broadway commercial corridor. This is an important crossing point for school children to access the middle school and a crossing guard is stationed there. There are currently two standard crosswalks at this intersection and curb ramps.

- Pedestrians using existing crossings are not highly visible
- Longer crossing distance across East Holly Ave
- High volume of vehicles means fewer gaps in traffic to cross
- Vehicles sometimes do not yield to pedestrians trying to cross
- Desire for pedestrian connectivity across East Holly Avenue

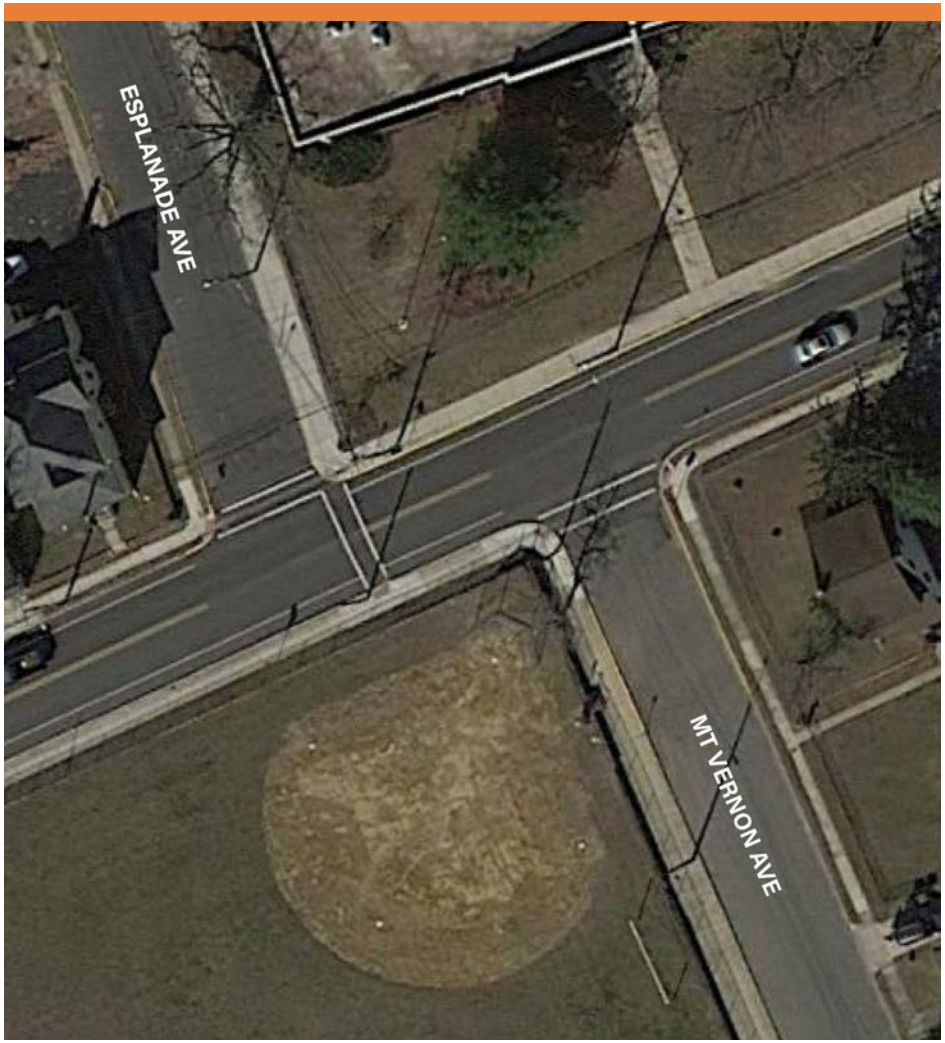


FIGURE 78. EXISTING E HOLLY AVE AND ESPLANADE AVE/MT. VERNON AVE

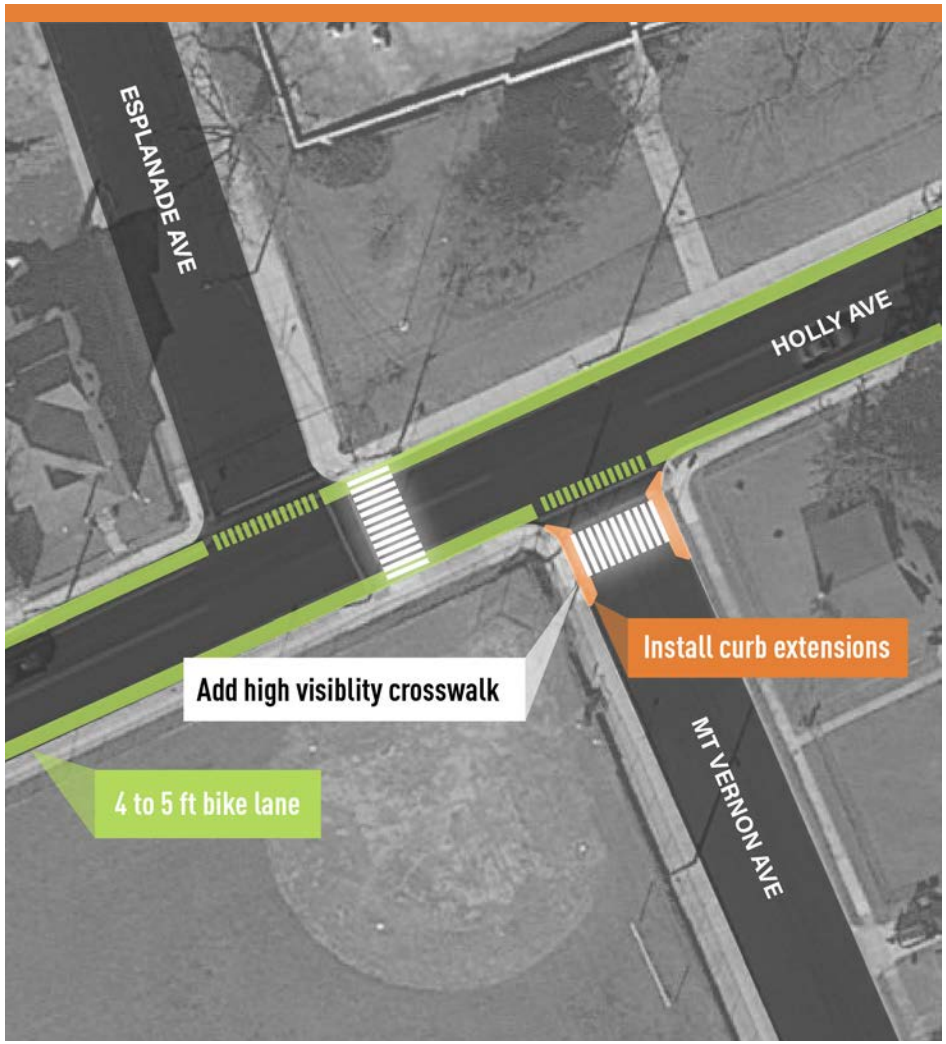


FIGURE 79. PROPOSED E HOLLY AVE AND ESPLANADE AVE/MT. VERNON AVE

RECOMMENDATIONS

- Replace standard crosswalks with high visibility crosswalks
- Tighten the geometry of the intersection with curb extensions on Mt. Vernon Avenue to decrease crossing distance and slow drivers making turns
- Provide an attractive option for crossing with greater visibility
- The proposed bike lanes on East Holly Avenue will also help tighten the geometry of the intersection to decrease pedestrian exposure and crossing distance and slow drivers

CROSSWALK : $406

SIGNAGE : $100

ADA RAMPS : $1,480

TOTAL : $1,986

E Holly Ave & Woodlynn Ave

FIGURE 80. STREETVIEW OF E HOLLY AVE AND WOODLYNN AVE

This unsignalized intersection is located next to Pitman Middle School and the school parking lot on East Holly Avenue. East Holly Avenue connects to the Broadway commercial corridor. This is an important crossing point for school children and those parking in the parking lot to access the middle school. There are no crosswalks or curb ramps at this intersection currently.

- Pedestrians crossings are not highly visible
- Longer crossing distance across East Holly Ave
- High volume of vehicles means fewer gaps in traffic to cross
- Vehicles sometimes do not yield to pedestrians trying to cross
- Desire for pedestrian connectivity across East Holly Avenue

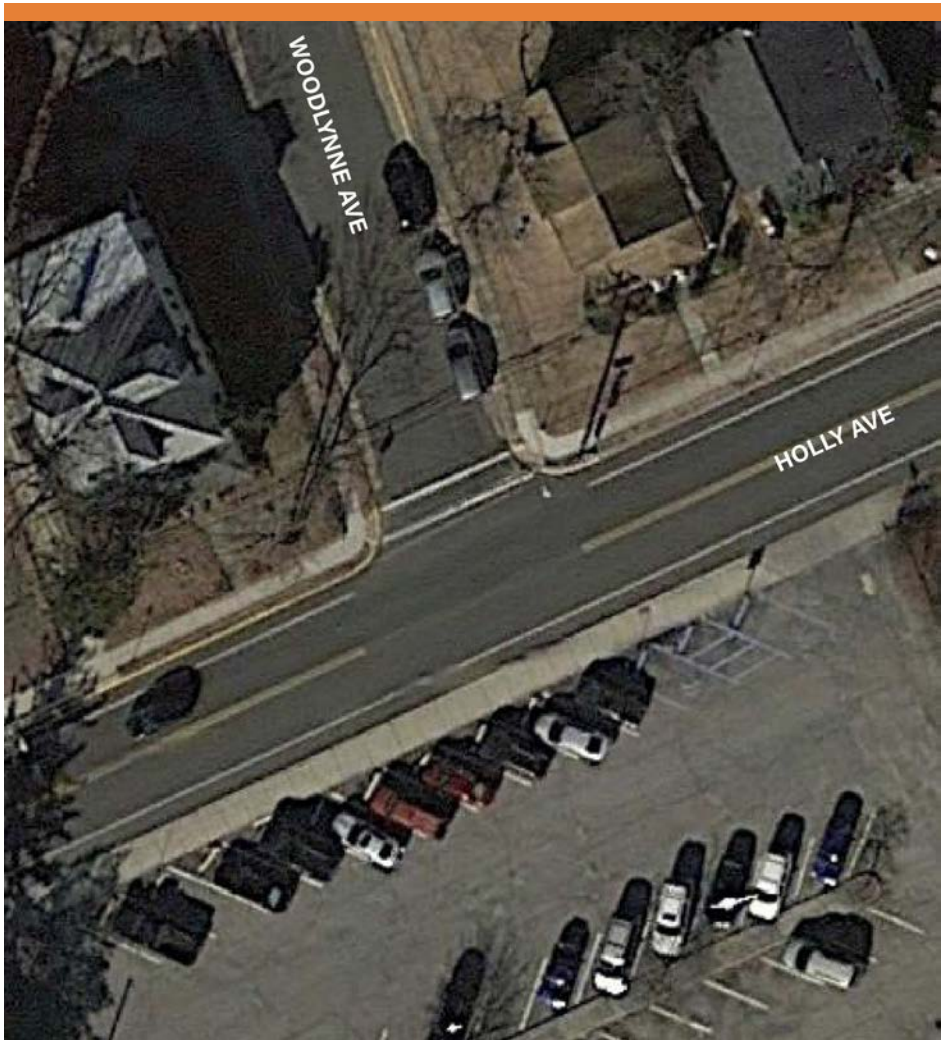


FIGURE 81. EXISTING E HOLLY AVE AND WOODLYNN AVE

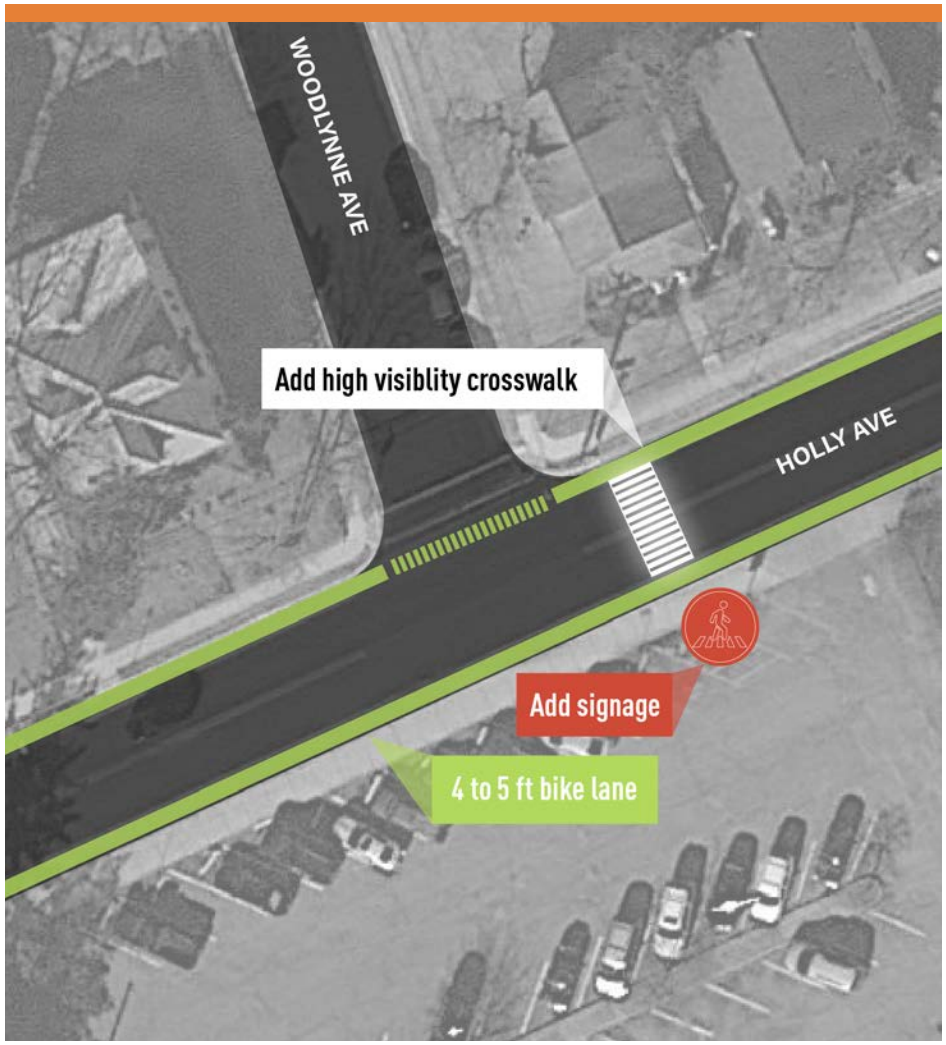


FIGURE 82. PROPOSED E HOLLY AVE AND WOODLYNN AVE

RECOMMENDATIONS

- Add a high visibility crosswalk across East Holly Avenue with signage and curb ramps, providing an attractive option for crossing with greater visibility. Provides regularly spaced crosswalks in conjunction with the other proposed crosswalks.
- The proposed bike lanes on East Holly Avenue will also help tighten the geometry of the intersection to decrease pedestrian exposure and crossing distance and slow drivers

CROSSWALK : $406

SIGNAGE : $100

ADA RAMPS : $1,480

TOTAL : $1,986

E Holly Ave & Fernwood Ave

FIGURE 83. STREETVIEW E HOLLY AVE & FERNWOOD AVE

This unsignalized intersection is located in between Broadway and North Woodbury Road on East Holly Avenue, connecting the residential areas north and south of East Holly Avenue. Pitman High School is located several blocks north of this intersection and children south of East Holly Avenue need to cross the street to get to school. There are no crosswalks or curb ramps at this intersection currently.

- Pedestrians crossings are not highly visible
- Longer crossing distance across East Holly Ave
- High volume of vehicles means fewer gaps in traffic to cross
- Vehicles sometimes do not yield to pedestrians trying to cross
- Desire for pedestrian connectivity across East Holly Avenue

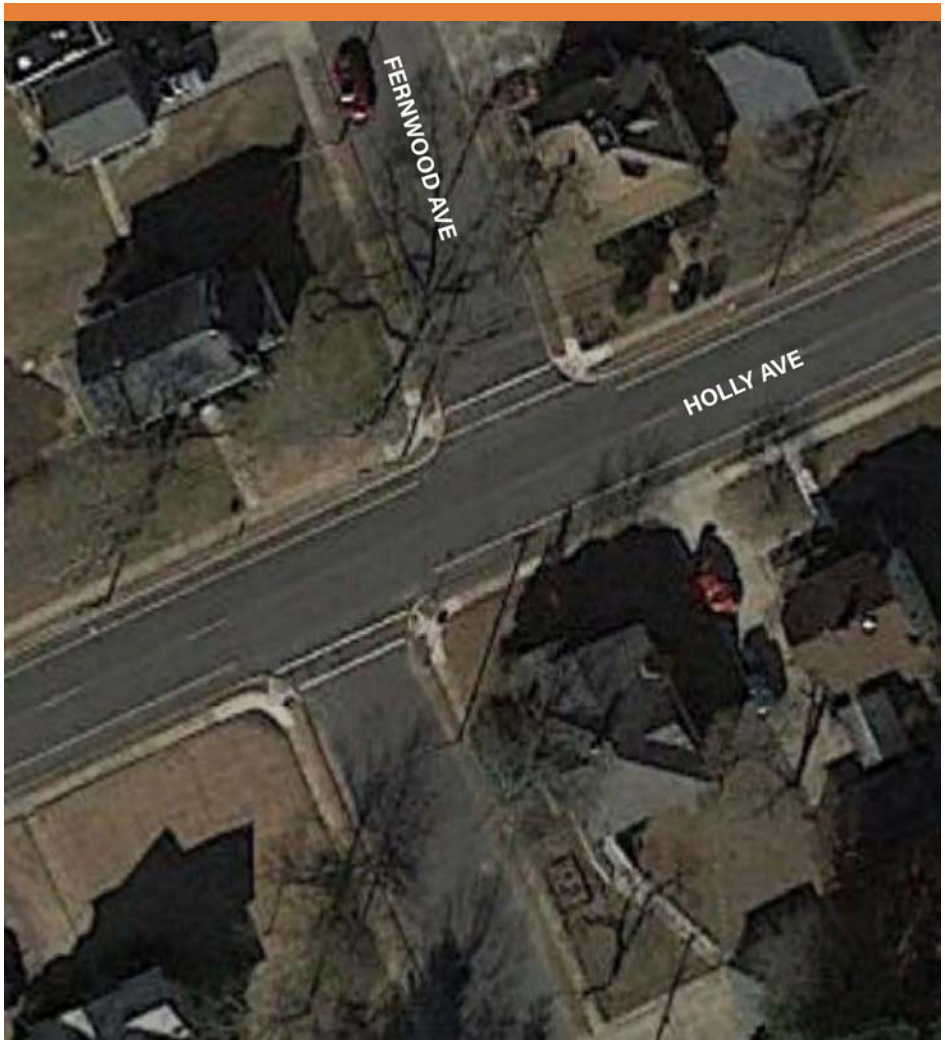


FIGURE 84. EXISTING E HOLLY AVE AND FERNWOOD AVE

FIGURE 85. PROPOSED E HOLLY AVE AND FERNWOOD AVE

RECOMMENDATIONS

- Add a high visibility crosswalk across East Holly Avenue with signage and curb ramps, providing an attractive option for crossing with greater visibility. Provides regularly spaced crosswalks in conjunction with the other proposed crosswalks.
- The proposed bike lanes on East Holly Avenue will also help tighten the geometry of the intersection to decrease pedestrian exposure and crossing distance and slow drivers

CROSSWALK : $406

SIGNAGE : $100

ADA RAMPS : $1,480

TOTAL : $1,986

E Holly Ave & Clinton Ave

FIGURE 86. STREETVIEW E HOLLY AVE & CLINTON AVE

This unsignalized intersection is located in between North Woodbury Road and Delsea Drive on East Holly Avenue, connecting the residential areas north and south of East Holly Avenue. On the northern side of the street are higher density residential areas which lack a connection to the playground near Delsea Drive. There are no crosswalks or curb ramps at this intersection currently.

- Pedestrians crossings are not highly visible
- Longer crossing distance across East Holly Ave
- High volume of vehicles means fewer gaps in traffic to cross
- Vehicles sometimes do not yield to pedestrians trying to cross
- Desire for pedestrian connectivity across West Holly Avenue

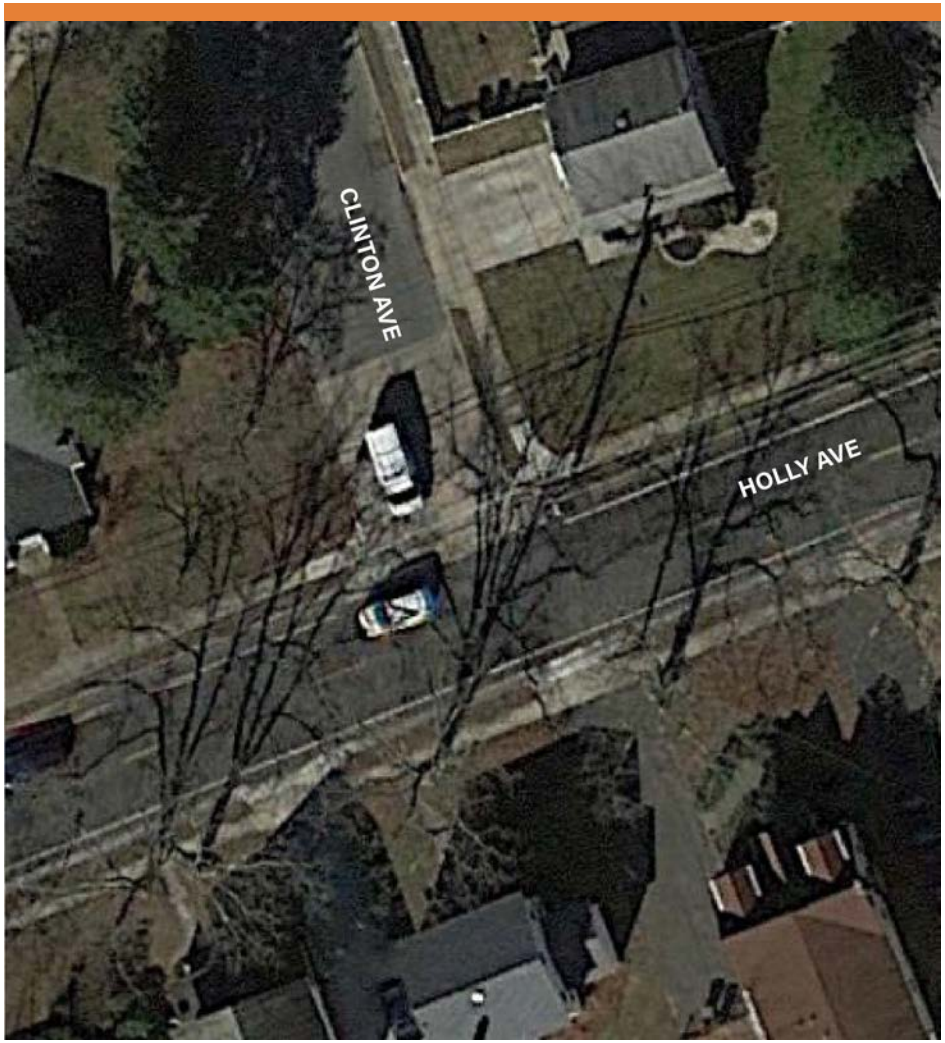


FIGURE 87. EXISTING E HOLLY AVE AND CLINTON AVE

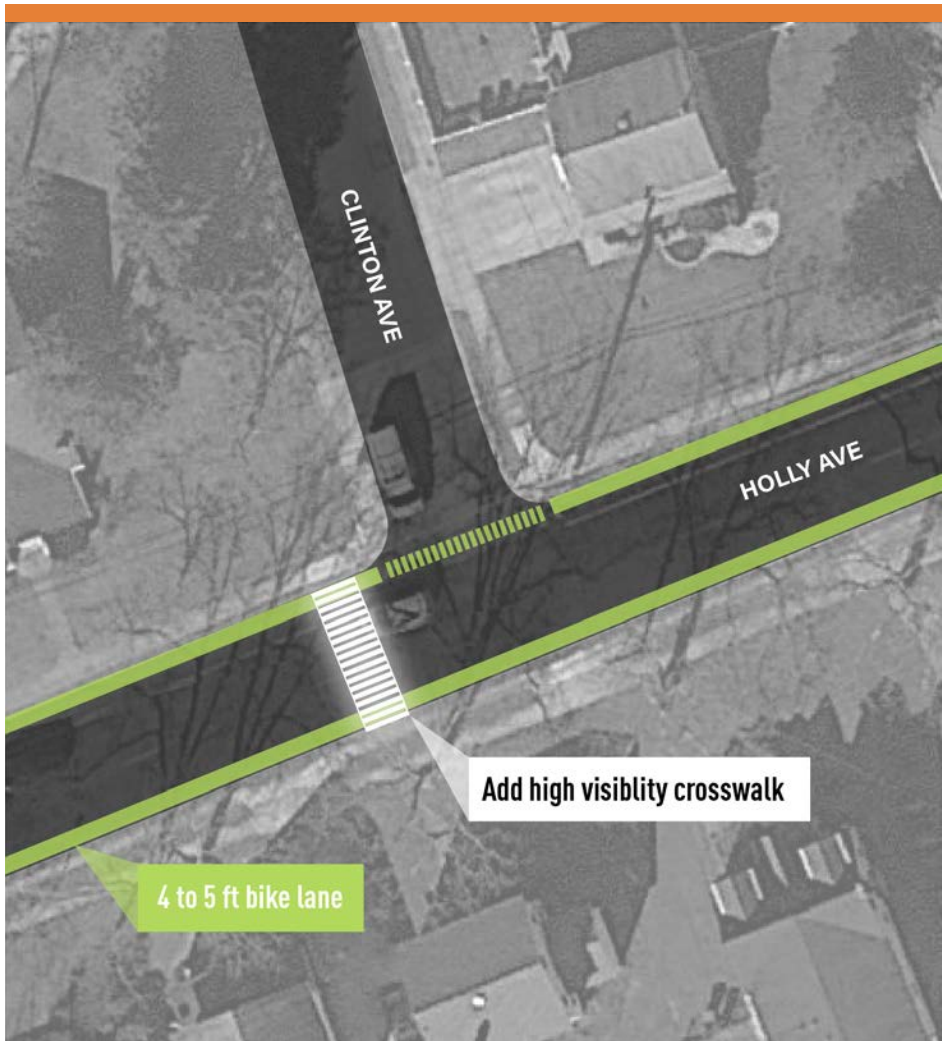


FIGURE 88. PROPOSED E HOLLY AVE AND CLINTON AVE

RECOMMENDATIONS

- Add a high visibility crosswalk across East Holly Avenue with signage and curb ramps, providing an attractive option for crossing with greater visibility. Provides regularly spaced crosswalks in conjunction with the other proposed crosswalks.
- The proposed bike lanes on East Holly Avenue will also help tighten the geometry of the intersection to decrease pedestrian exposure and crossing distance and slow drivers

CROSSWALK : $406

ADA RAMPS : $1,480

TOTAL : $1,886

E Holly Ave & Franklin Ave

FIGURE 89. STREETVIEW E HOLLY AVE & FRANKLIN AVE

This unsignalized intersection is located in between North Woodbury Road and Delsea Drive on East Holly Avenue, connecting the residential areas north and south of East Holly Avenue. On the northern side of the street are higher density residential areas which lack a connection to the playground near Delsea Drive. There are no crosswalks or curb ramps at this intersection currently.

- Pedestrians crossings are not highly visible
- Longer crossing distance across East Holly Ave
- High volume of vehicles means fewer gaps in traffic to cross
- Vehicles sometimes do not yield to pedestrians trying to cross
- Desire for pedestrian connectivity across West Holly Avenue

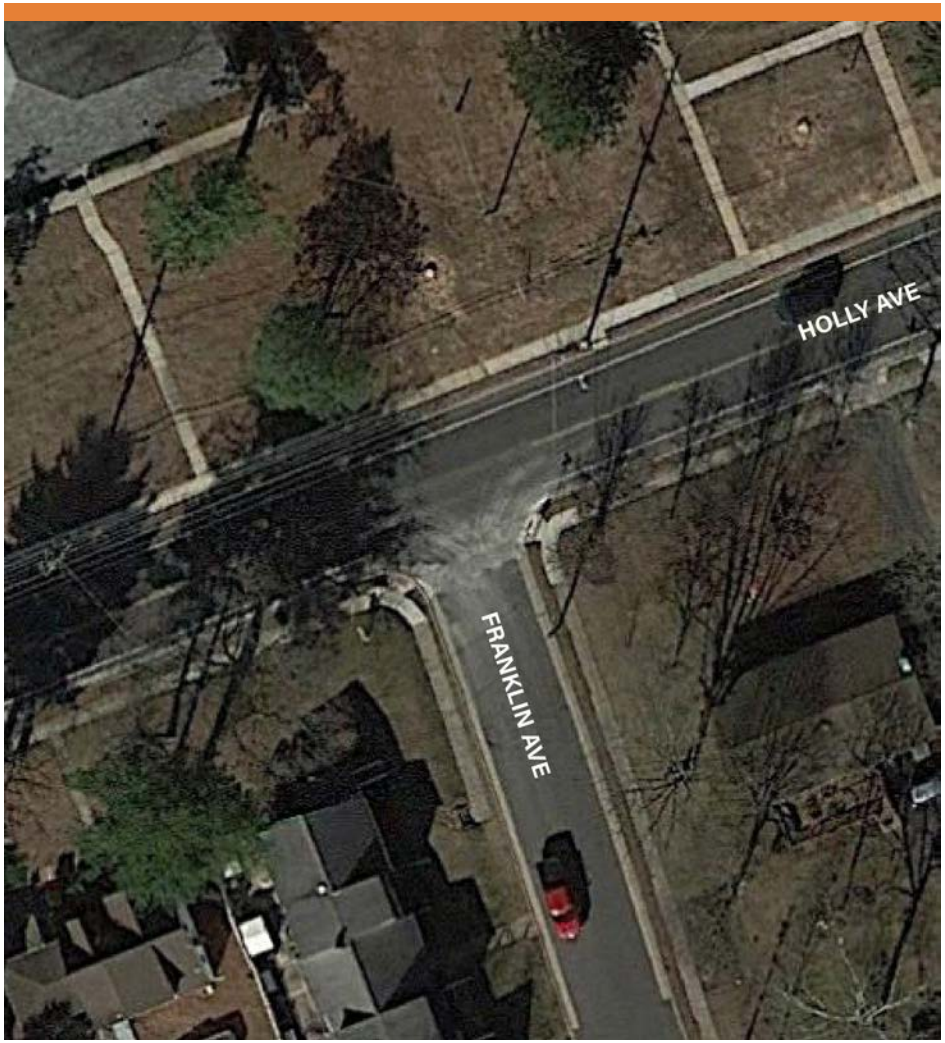


FIGURE 90. EXISTING E HOLLY AVE AND FRANKLIN AVE

FIGURE 91. PROPOSED E HOLLY AVE AND FRANKLIN AVE

RECOMMENDATIONS

- Add a high visibility crosswalk across East Holly Avenue with signage and curb ramps, providing an attractive option for crossing with greater visibility. Provides regularly spaced crosswalks in conjunction with the other proposed crosswalks.
- Provide a connection to the playground
- The proposed bike lanes on East Holly Avenue will also help tighten the geometry of the intersection to decrease pedestrian exposure and crossing distance and slow drivers

CROSSWALK : $406

SIGNAGE : $100

ADA RAMPS : $1,480

TOTAL : $1,986

N Woodbury Ave & Waverly Ave/Muriel Ave

FIGURE 92. STREETVIEW N WOODBURY AVE AND WAVERLY AVE/MURIEL AVE

This unsignalized intersection is located in between East Holly Avenue and Lambs Road on North Woodbury Road, connecting the residential areas on the east and west side of North Woodbury Road. This intersection provides a connection to Pitman High School and the trail off Muriel Avenue. There are no crosswalks, sidewalks, or curb ramps at this intersection and no crossings exist between East Holly Avenue and Lambs Road on North Woodbury Road currently.

- Pedestrians crossings are not highly visible
- Long crossing distance across North Woodbury Road
- High volume and speed of vehicles means fewer gaps in traffic to cross
- Vehicles sometimes do not yield to pedestrians trying to cross
- Desire for pedestrian connectivity across North Woodbury Avenue

FIGURE 93. EXISTING N WOODBURY AVE AND WAVERLY AVE/MURIEL AVE

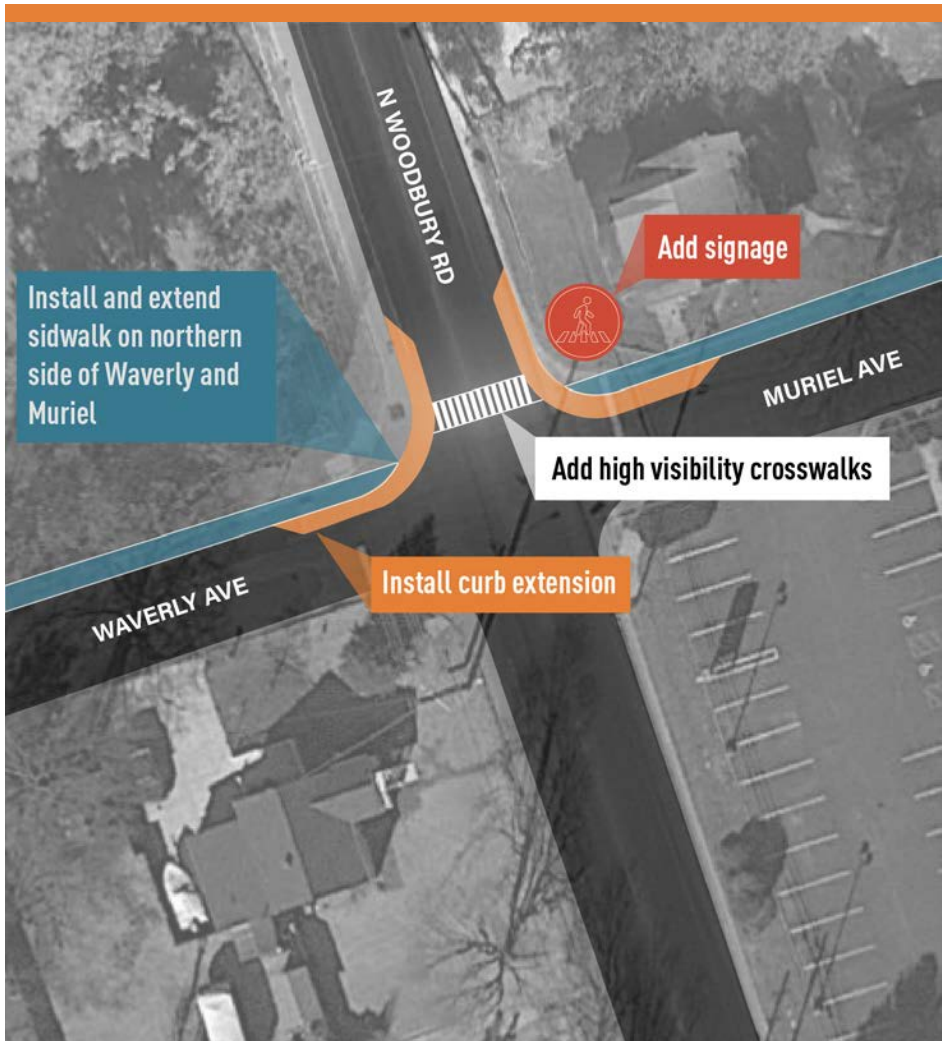


FIGURE 94. PROPOSED N WOODBURY AVE AND WAVERLY AVE/MURIEL AVE

RECOMMENDATIONS

- Add a high visibility crosswalk across North Woodbury Road with signage and curb ramps, providing an attractive option for crossing with greater visibility. Provide a critical missing crossing on North Woodbury Road
- Tighten the geometry of the intersection with curb extensions to decrease pedestrian exposure and slow drivers
- Provide a potential gateway, landscaping, and/or branding identity opportunity
- Install missing sidewalk along Waverly and Muriel Avenues
- Provide a connection to Pitman High School and trail

SIDEWALK : $73,266

CURB EXTENSION : $24,000

CROSSWALK : $406

SIGNAGE : $100

ADA RAMPS : $1,480

TOTAL : $99,253

S Woodbury Ave & Columbia Ave

FIGURE 95. STREETVIEW WOODBURY AVE AND COLUMBIA AVE

This unsignalized intersection is located in between Delsey Drive and Pitman Avenue on South Woodbury Road, connecting the residential areas on the east and west side of South Woodbury Road. This intersection provides a connection to Elwood Kindle Elementary School. There are no crosswalks, sidewalks, or curb ramps at this intersection.

- Pedestrians using existing crossings are not highly visible
- Long crossing distance across SouthWoodbury Road
- High volume and speed of vehicles means fewer gaps in traffic to cross
- Vehicles sometimes do not yield to pedestrians trying to cross
- Desire for pedestrian connectivity across South Woodbury Avenue

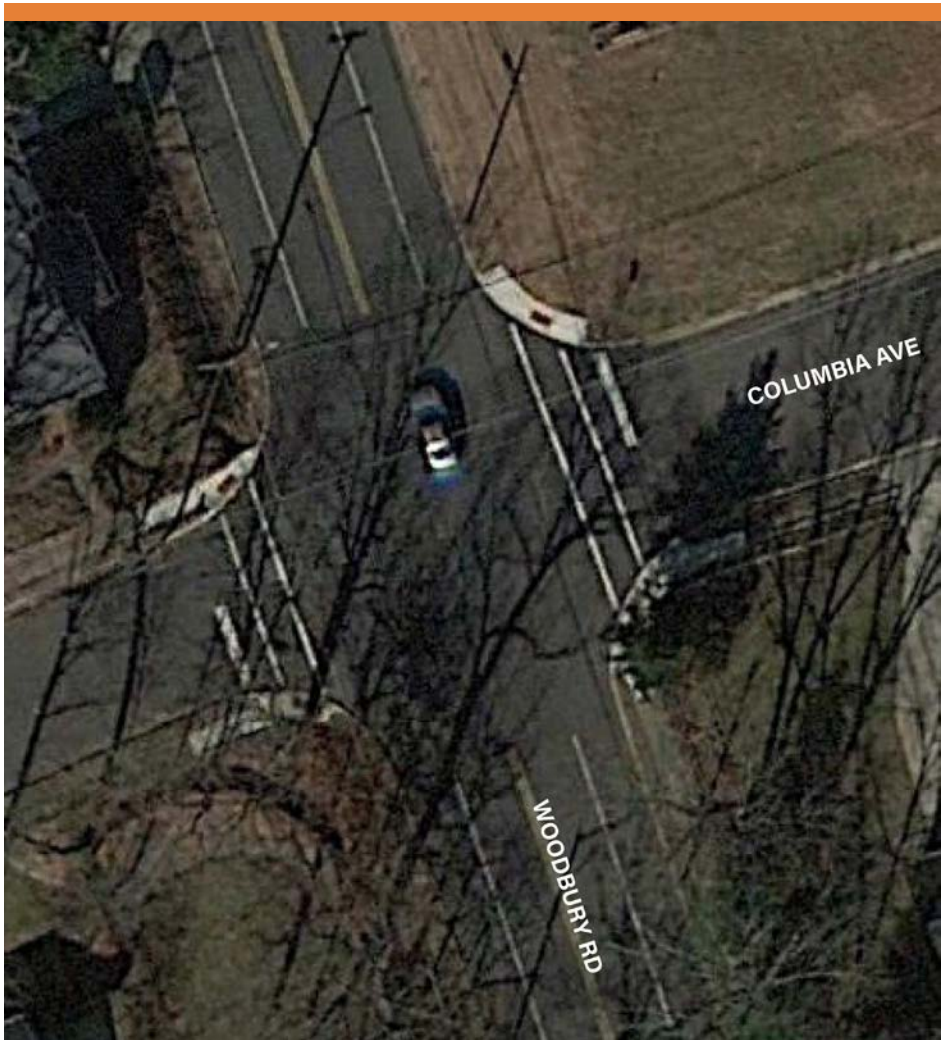


FIGURE 96. EXISTING S WOODBURY AVE AND COLUMBIA AVE

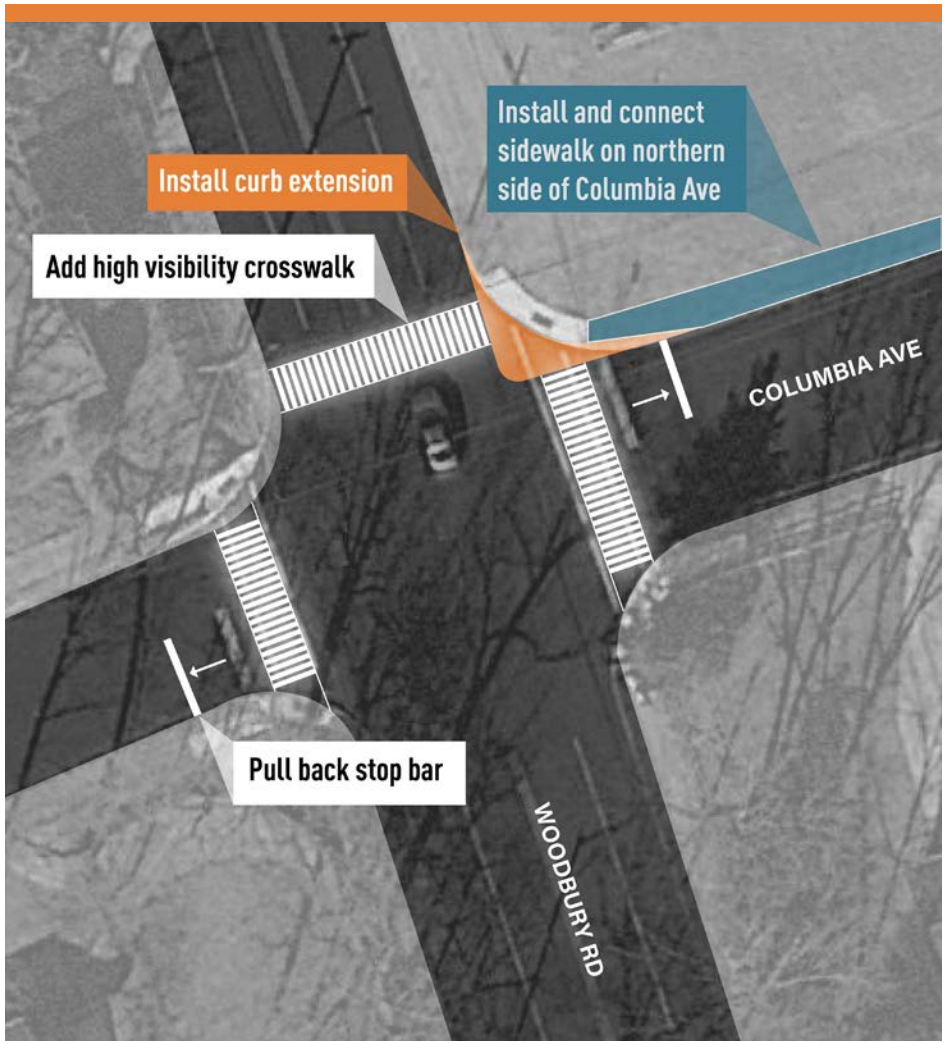


FIGURE 97. PROPOSED S WOODBURY AVE AND COLUMBIA AVE

RECOMMENDATIONS

- Add high visibility crosswalks across South Woodbury Road and Columbia Avenue with signage and curb ramps, providing an attractive option for crossing with greater visibility.
- Tighten the geometry of the intersection and normalize it with a curb extension to decrease pedestrian exposure and slow drivers
- Install missing sidewalk along Columbia Avenue
- Provide greater distance between people in the crosswalk and drivers who are stopping by pulling back the stop bars
- Provide a connection to Elwood Kindle Elementary School

SIDEWALK : $5,693

CURB EXTENSIONS : $12,000

CROSSWALK : $1,830

ADA RAMPS : $4,440

TOTAL : $23,963

Carew Ave (Vassar Ave to Cedar Ave)

FIGURE 98. STREETVIEW CAREW AVE

This section of Carew Avenue is located in between Cedar Avenue and the trail, connecting the trail at the terminus of Carew to the residential areas west and east of Cedar Avenue. This portion of Carew Avenue is missing a sidewalk and curb ramps.

- No continuous sidewalk connection on one side of the street on Carew Avenue
- Desire for pedestrian connection to trail

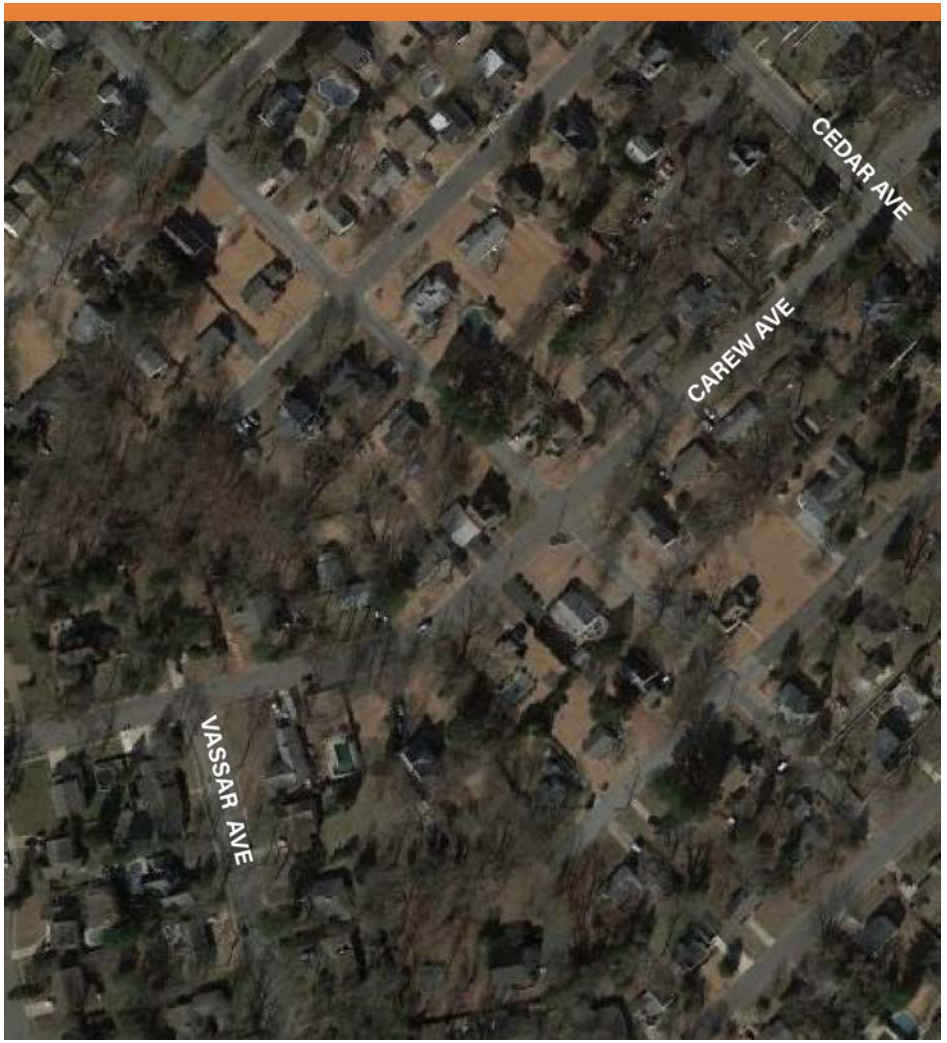


FIGURE 99. EXISTING CAREW AVE (VASSAR AVE TO CEDAR AVE)

RECOMMENDATIONS

- Install missing sidewalk along northern side of Carew Avenue with curb ramps at intersections to increase accessibility
- Provide continuous pedestrian connection to trail

FIGURE 100. PROPOSED WOODBURY AVE AND COLUMBIA AVE

SIDEWALK : $30,888

TOTAL : $30,888

Lambs Rd (N Broadway to W Holly Ave)

Lambs Road is a high speed road on the northern border of Pitman that connects to nearby municipalities. Mantua Township has jurisdiction over the northern side of Lambs Road. There is a mixture of low-density commercial, residential, and agricultural uses along Lambs Road. The section of Lambs Road between West Holly Avenue and the trail is part of a Lambs Road trail connection proposed in Harrison Township Bicycle & Pedestrian Plan. Currently, there are many missing sections of sidewalk, and few curb ramps on the southern side of Lambs Road, and no sidewalks on the northern side.

- Desire for pedestrian connectivity along Lambs Road and connection to the trail
- Sidewalk and curb ramps missing or partially missing from Spruce Avenue to the trail
- Sidewalk is substandard width and/or in poor condition
- Excess right of way and/or dedicated right of way exists for a portion of Lambs Road

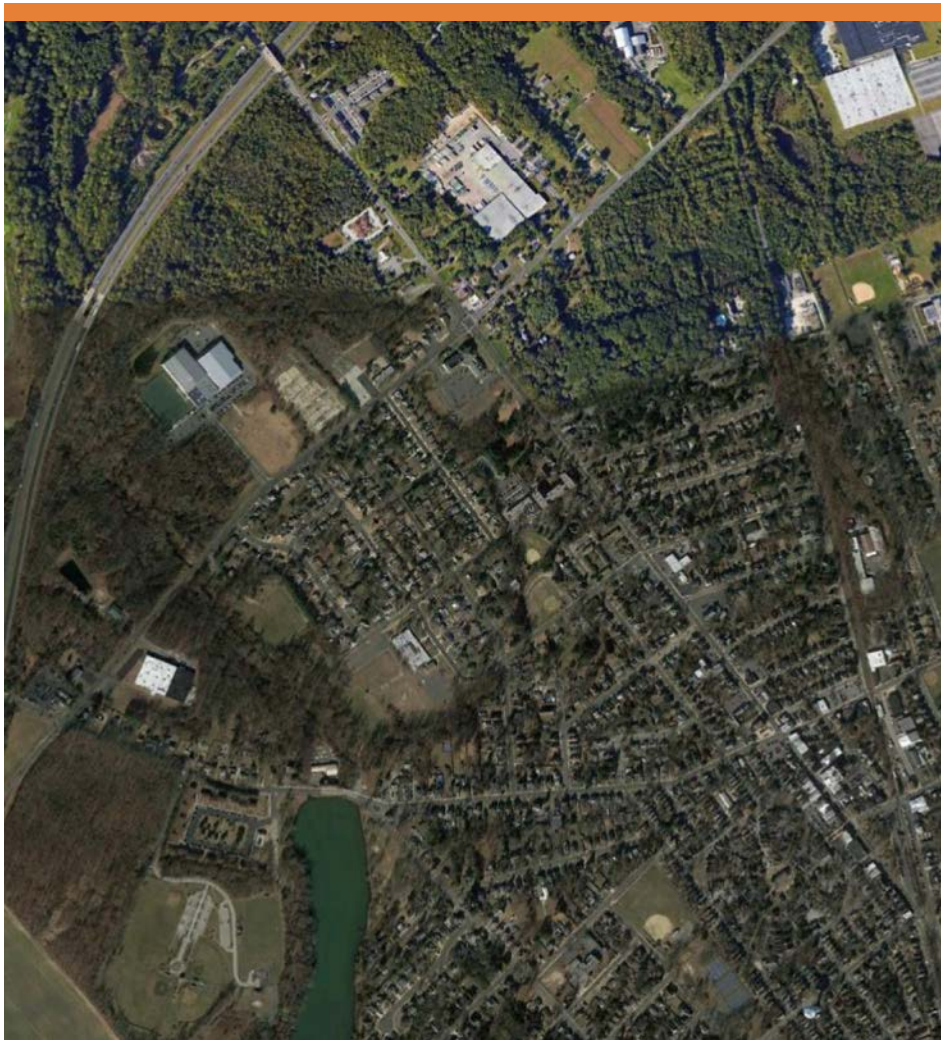


FIGURE 101. EXISTING LAMBS RD TO N BROADWAY

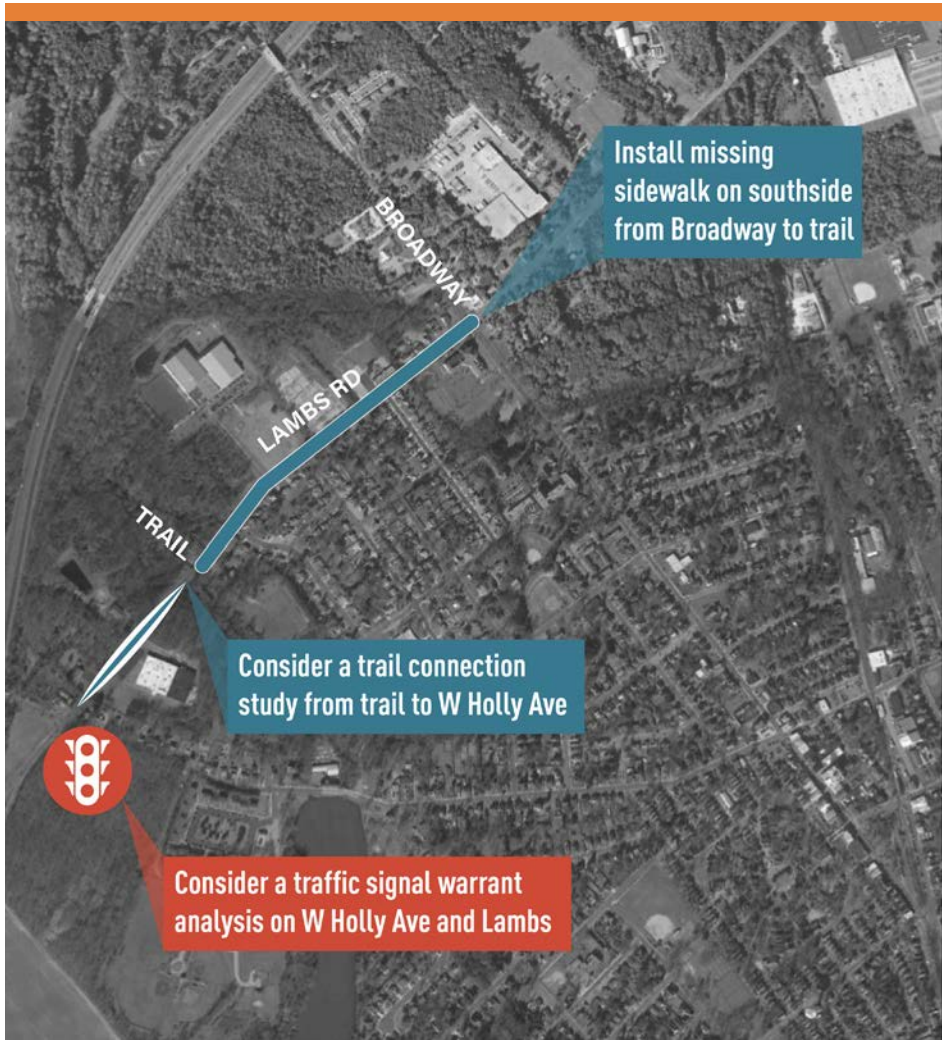


FIGURE 102. PROPOSED LAMBS RD TO N BROADWAY

RECOMMENDATIONS

- Install a 5' or wider sidewalk and curb ramps on the southern side of Lambs Road for pedestrians to access the trail and increase accessibility
- Improvements create continuous pedestrian access on Lambs Road from Broadway to the trail
- Consider a signal warrant study at Lambs Road and West Holly Avenue and installation of crosswalks and additional lighting
- Consider a longer-term feasibility study for connecting to the trail from West Holly Avenue along Lambs Road, in conjunction with Harrison Township and Mantua Township

SIDEWALK : $81,500

TOTAL : $81,500

Lambs Rd & Trail

FIGURE 103. STREETVIEW LAMBS RD AND TRAIL

The trail into Ceres Park crosses over Lambs Road near Canterbury Avenue, which does not currently have a crosswalk or pedestrian/bicycle warning signage. The trail is well-used and connects to Ceres Park as well as Hollywood Dell, Memorial Elementary School, and the intersection at West Holly and Cedar Avenues.

- Pedestrians crossings are not highly visible
- Longer crossing distance across Lambs Road
- High volume and speed of vehicles means fewer gaps in traffic to cross
- Lambs Road is a higher speed road
- Vehicles sometimes do not yield to pedestrians trying to cross
- Desire for pedestrian connectivity across Lambs Road to continue on trail

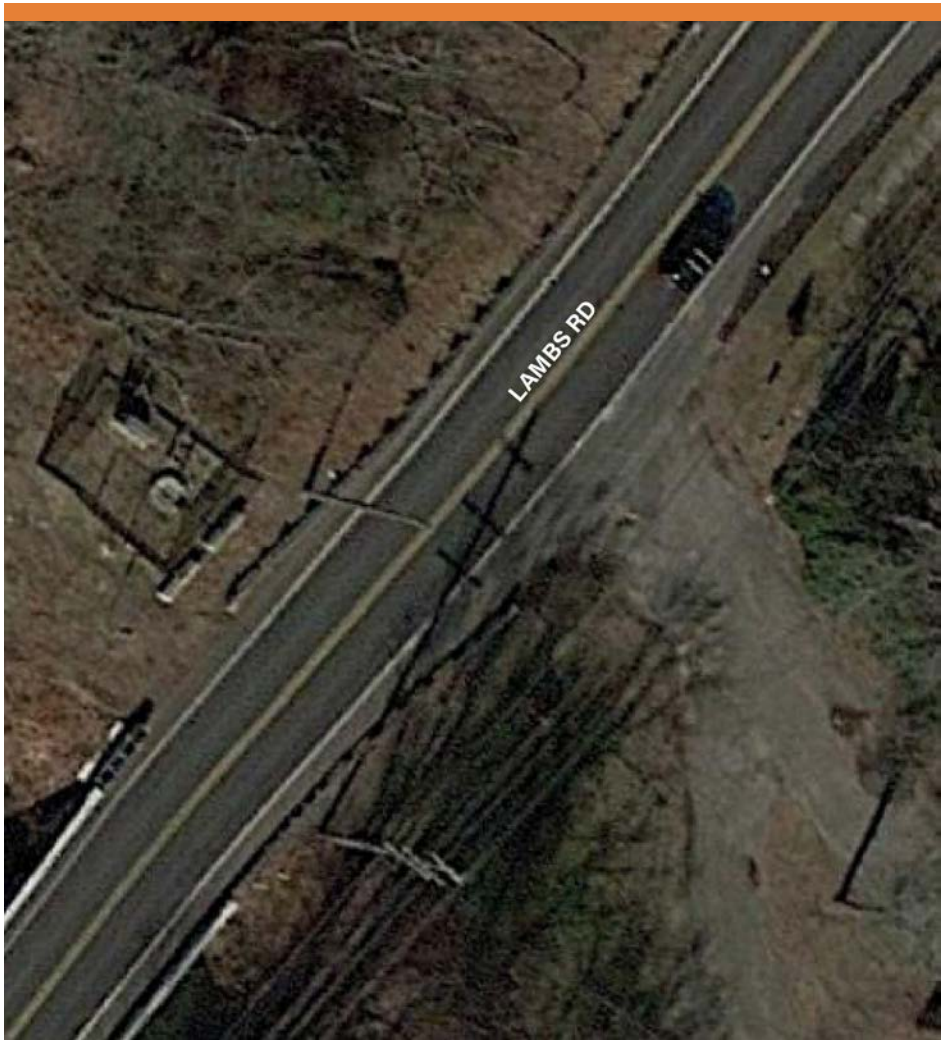


FIGURE 104. EXISTING LAMBS RD AND TRAIL

RECOMMENDATIONS

- Add a high visibility crosswalk across Lambs Road with a rectangular rapid flashing beacon, providing an attractive option for crossing with greater visibility

FIGURE 105. PROPOSED LAMBS RD AND TRAIL

CROSSWALK : $632

FLASHING BEACON : $13,550

TOTAL : $14,182

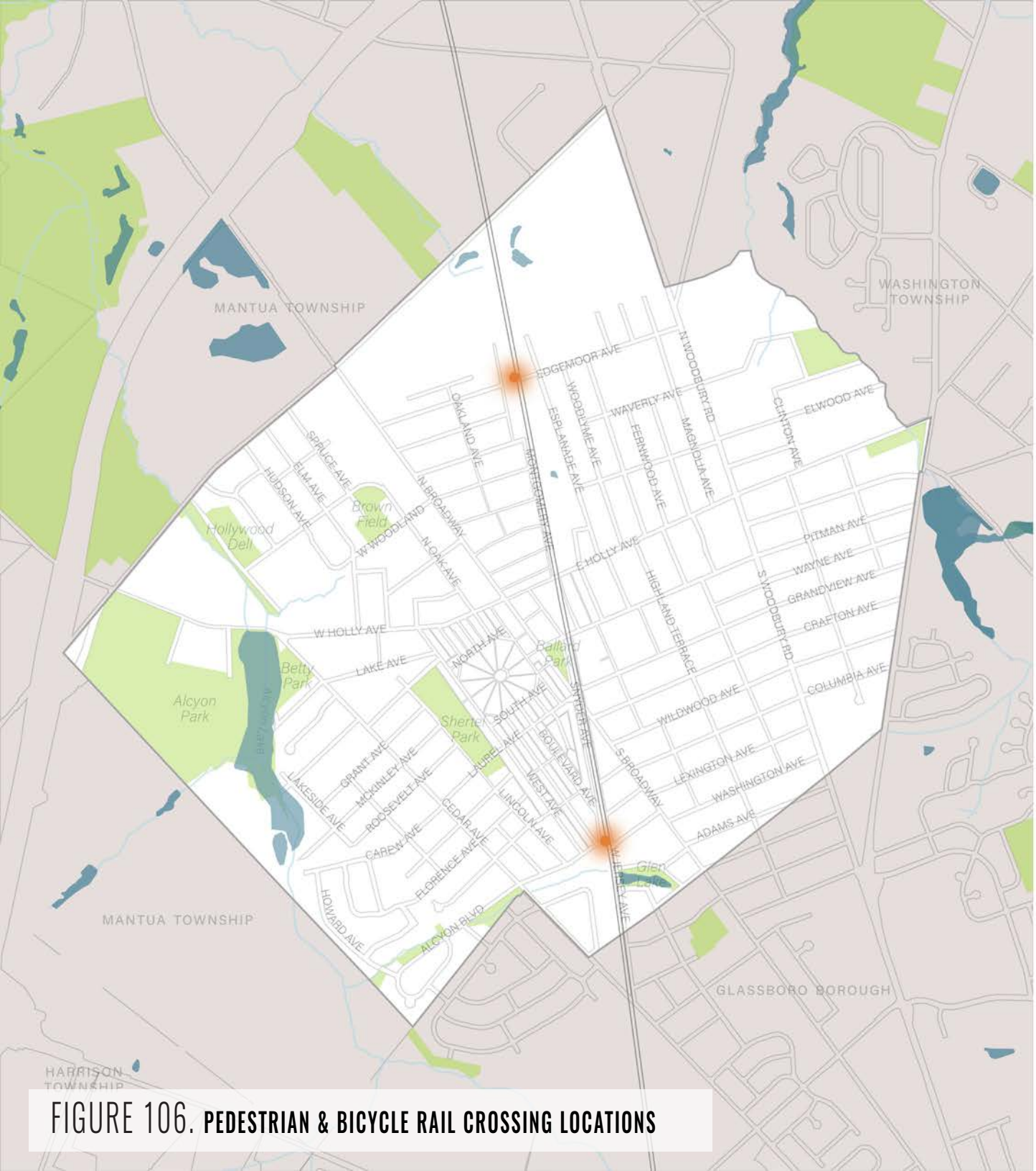


FIGURE 106. **PEDESTRIAN & BICYCLE RAIL CROSSING LOCATIONS**

FIGURE 107. **PEDESTRIAN AND BICYCLE RAIL CROSSING LOCATION**

FIGURE 108. **CHILD WALKING ON TRACKS NEAR PITMAN AVE**

5.3 RAIL CROSSINGS

PEDESTRIAN & BICYCLIST IMPROVEMENTS ACROSS RAIL

Pitman is bisected by a currently active freight rail corridor with low volumes of trains. Historically, Pitman and other towns along the Pennsylvania-Reading Seashore Line, had daily passenger rail commuter service, which was discontinued in 1971. A proposed passenger service called the Glassboro Camden Line would provide light rail service between Glassboro and Camden, with a stop in Pitman. While there are many potential benefits, the frequent service would increase the volume of trains on the tracks and serve as another barrier between the western and eastern parts of Pitman. Before the light rail line is constructed, the project team recommends evaluating and building two connections across the railroad tracks for pedestrians and bicyclists only.

These crucial connection points are proposed across Edgemoor and Cyrus Avenues and across Snyder Avenue/Alcyon Boulevard and Villa Avenue. This would create four regularly-spaced bicycle and pedestrian crossings over the railroad tracks, significantly increasing accessibility, especially in northern and southern Pitman. The Edgemoor/Cyrus connection was first proposed when Pitman High School was built and it remains an important connection point for children getting to school, as evidenced by the well-worn dirt path currently there. To the south, the Snyder/Alcyon/Villa connection is another natural crossing point where a dirt path has been created by people frequently crossing the tracks there. A crossing here would create an easy connection from southwestern Pitman to Broadway, Elwood Kindle Elementary School, and the retail on Delsea Drive.

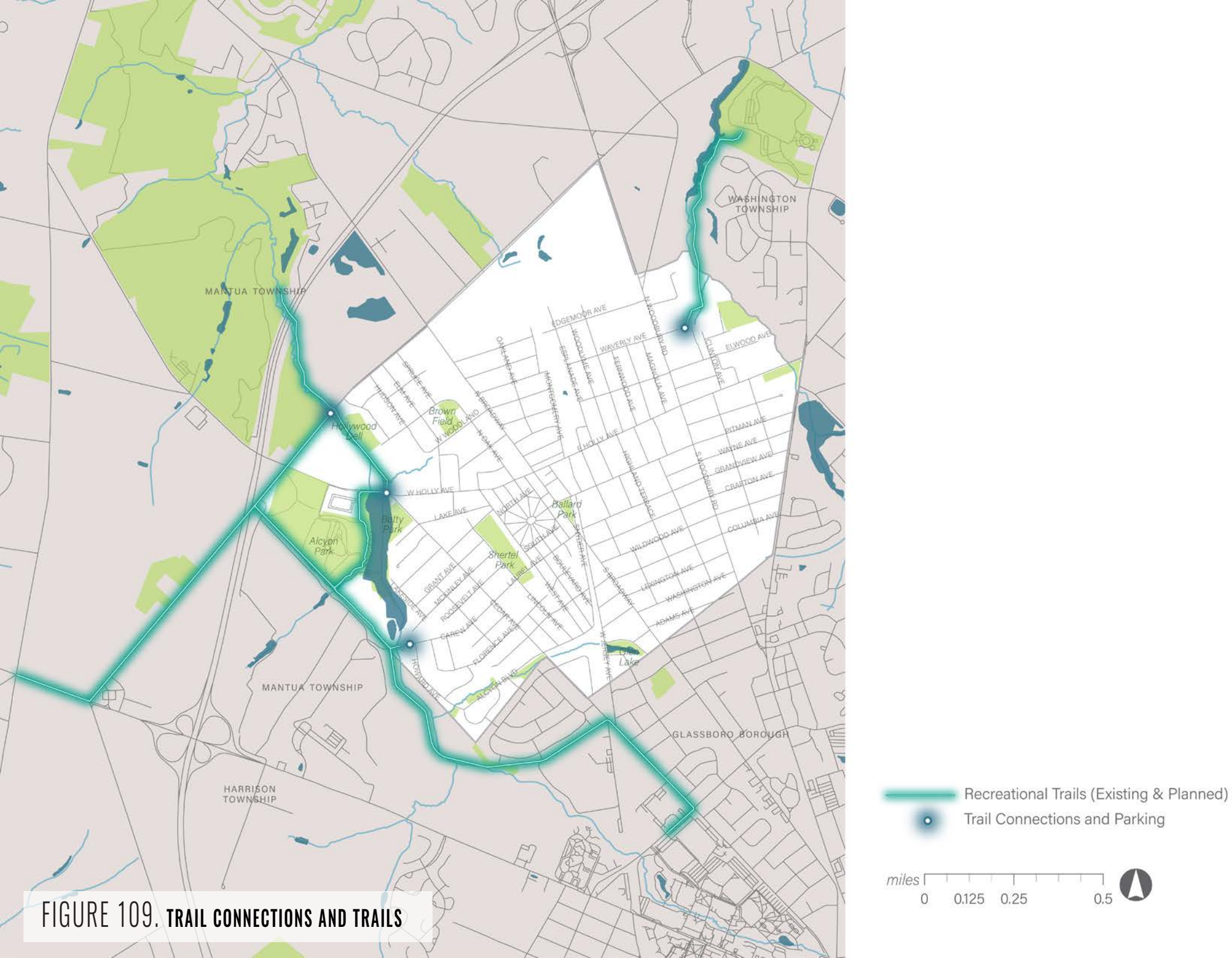


FIGURE 109. **TRAIL CONNECTIONS AND TRAILS**

FIGURE 110. **LAMBS ROAD TRAIL CONNECTION**

FIGURE 111. **WAVERLY AVE AND MURIEL AVE TRAIL CONNECTION**

5.4 TRAIL CONNECTIONS

Pitman is well-positioned to take advantage of the several existing and proposed regional trails that traverse the borough. Providing connection and access to trails enables residents to enjoy walking and biking within Pitman and beyond. There are four potential trail access points: Lambs Road, Cedar Avenue, Muriel Avenue, and Carew Avenue (shown in Figure 109). Feasibility studies should be conducted to determine right-of-way and property ownership and then appropriate connection facility designs and alignments can be developed. Informal parking areas currently exist at all four proposed connection locations. The project team recommends also examining the feasibility of installing small gravel parking lots to accommodate trail users arriving by vehicle.

Pitman could also consider working with neighboring municipalities to upgrade and formalize trails that cross jurisdictional boundaries. Improvements could include pavement, wayfinding signage, lighting, and benches.

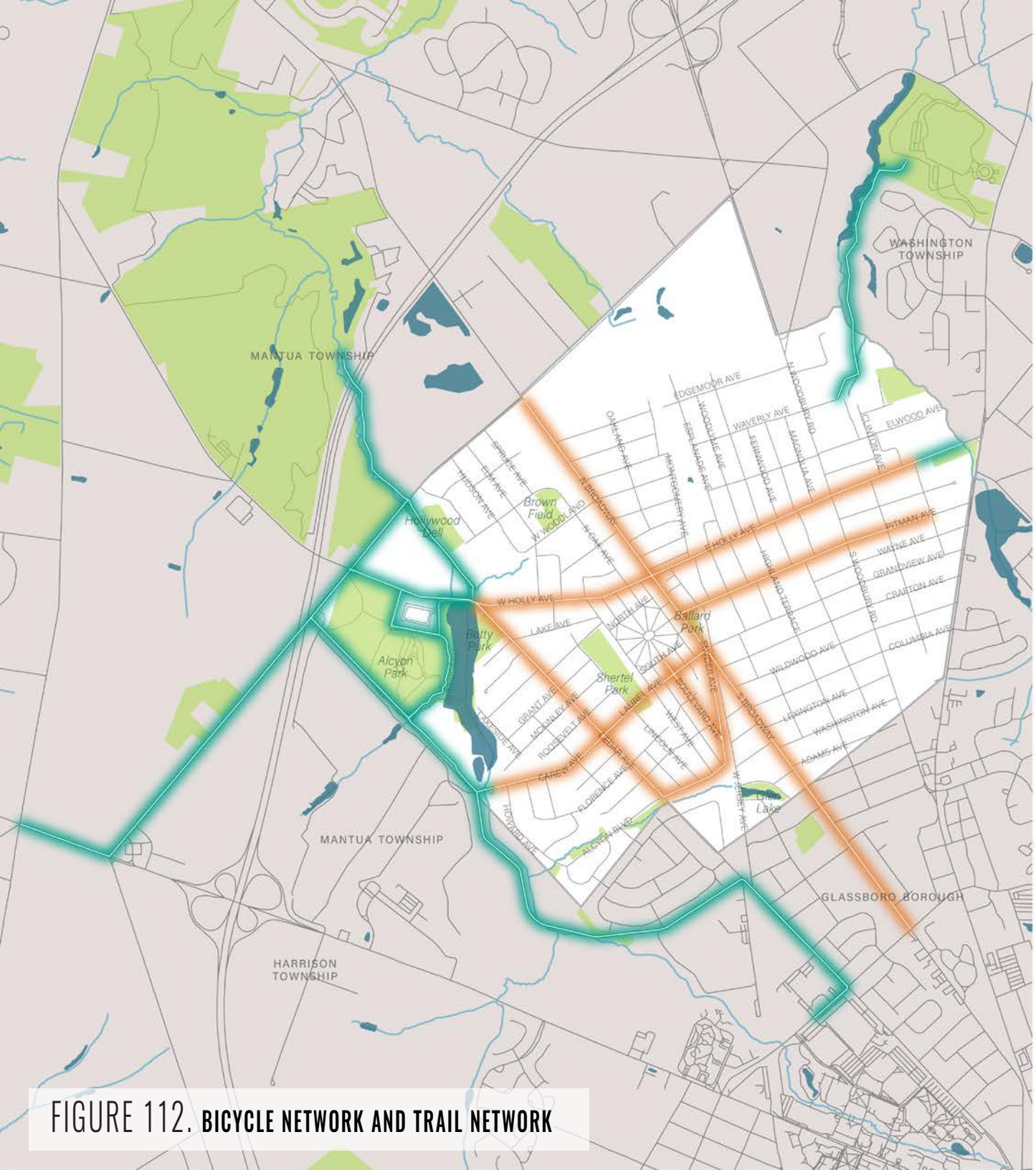


FIGURE 112. **BICYCLE NETWORK AND TRAIL NETWORK**

6. PRIORITY BICYCLE CORRIDORS & RECOMMENDATIONS

6.1 EXISTING BICYCLE CONDITIONS

Pitman is a relatively dense, compact borough which makes it an ideal place for biking relatively short distances while also offering the ability to connect to regional destinations via nearby trail systems. However, there are no dedicated on-street bicycle facilities and higher speed roadways can make biking uncomfortable or create a barrier to crossing. Many of Pitman's streets are low-speed, low volume, residential streets that provide very comfortable bicycling environments for users of all ages, but major roads and the rail line serve as barriers to key destinations and longer bicycle trips. Pitman already enjoys a high bicycling rate among children, teenagers, and adults and with some targeted bicycle improvements could encourage more people to bike more frequently.

FIGURE 113. **PROPOSED BICYCLE LANE TYPES**

6.2 RECOMMENDED BICYCLE INFRASTRUCTURE

There are opportunities to improve conditions for people biking such as creating dedicated space for them on roadways (bicycle lanes), adding shared use paths for biking and walking, consistent or lowered speed limits, creating formal connections to regional trails, adding and improving bicycle parking, and installing bicycle-safe storm grates.

The project team developed bicycle infrastructure improvement concepts for targeted locations and corridors based upon the existing conditions analysis, Steering Committee guidance, and public input. These concepts focus on improving safety, comfort, and circulation opportunities to and from key destinations. Recommended bicycle improvements focus on creating a low-stress bicycle network linking schools, parks, trails, shops, businesses, and residential areas throughout Pitman.

Generally, improvement concepts are intended to be easily implementable and emphasize low-cost options, such as restriping of existing roadways or enhanced signage. Projects may be implemented over time as funding allows and incorporated into routine roadway maintenance at minimal additional cost. The list of recommended projects may be used to support grant applications, integrate bicycle projects into the capital improvement pipeline, and/or identify bicycle improvements as roadways are due for maintenance and resurfacing. Other longer-term projects and opportunities are also identified, along with the first steps and associated costs.

The proposed improvements are intended as conceptual recommendations that would likely require varying levels of design or further analysis, depending on the magnitude of project. The Implementation & Cost Matrix provides general order-of-magnitude cost estimates for each improvement based on average material rates for striping, delineators, signage, etc. These estimates are only intended to convey the level of investment that proposed concepts would require for implementation. The cost estimates are based on industry and NJDOT standards for per unit material costs, and do not include any potential cost of right-of-way acquisition, utility relocation, or contingencies. See Appendix B for Implementation & Cost Matrix for further details.

6.3 ON-STREET BICYCLE NETWORK

The project team focused on recommendations that would create an on-street bicycle network, through which bicyclists could access many destinations and utilize a variety of routes. Since Pitman is a fully built-out community with a high degree of street connectivity, on-street facilities on existing streets and right-of-way are a short-term, practical option to improving bicyclist mobility. Development of the on-street bicycle network improvements was guided by:

- Major destinations: Provide convenient access to key

FIGURE 114. **ROWAN-CERES CONNECTOR TRAIL PHOTO SIMULATION**

destinations

- Inter-municipal linkages: Connect to regional trails via on-street facilities
- Bicycle level of traffic stress (LTS): Utilize the existing conditions LTS analysis as a guide to identify high traffic stress roadways and develop targeted recommendations to improve user comfort and connectivity of a low stress network
- Roadway constraints: Focus on easily implementable improvements that can be constructed within existing roadway widths with minimal disruption to current roadway configurations and existing on-street parking

The bicycle network is made up of a variety of facility types, selected based on their suitability for the speeds, volumes, widths, constraints, and surrounding context of that roadway segment. Ideally, from a user expectation standpoint, the bicycle facility should be as consistent as possible from end to end. Occasionally, one street may change from segment to segment, meaning that the bicycle facility sometimes also must change to suit the different configuration. See Appendix C for example photos and detailed explanation of each type of bicycle facility.

Proposed types of on-street facilities and shared used paths:

- Bicycle lanes
- Buffered bicycle lanes
- Shared streets (sharrows)
- Shared use paths

On-Street Bicycle Network Streets/Corridors:

- West Holly/East Holly Avenue
- Broadway
- Pitman Avenue
- Snyder Avenue
- Alcyon Avenue
- Boulevard Avenue
- Carew/Laurel Avenues
- Cedar Avenue

OFF-ROAD TRAILS

To supplement the on-street bicycle network, the project team also identified key access points to existing regional trails to enhance connectivity to points beyond Pitman. See 5.4 Trail Connections for more details. Pitman could also consider working with neighboring municipalities to upgrade and formalize trails that cross jurisdictional boundaries. Improvements could include pavement, wayfinding signage, lighting, and benches.

Proposed bicycle improvements and recommendations are detailed in the following pages.

Broadway

LAMBS RD TO HOLLY AVE

Broadway from Lambs Road to Holly Avenue is a relatively low-speed street with some width constraints. A shared street marked by sharrow pavement markings is proposed.

HOLLY AVE TO W JERSEY AVE

Broadway from Holly Avenue to West Jersey Avenue is a relatively low-speed street with significant width constraints, surrounded by dense commercial activity. Within this segment, Broadway is effectively Pitman's "Main Street." Shared lanes are proposed for this sections because cartway width limitations preclude dedicated bicycle lanes without impacting on-street parking. Due to relatively high volumes in peak periods and failure to yield to cyclists, a shared street marked by more visible green-backed sharrow pavement markings is proposed. Since this area represents the heart of Pitman, the project team also recommends traffic calming measures to bring down speeds to making biking through this section more comfortable. Possible traffic calming treatments include curb extensions, landscaping/plantings, street furniture, and gateway signage/overhead banners.

W JERSEY AVE TO EUCLID AVE

Broadway from West Jersey Avenue to Euclid Avenue is a wider, higher speed street. Due to relatively high volumes and speeds and available roadway width (34'), a buffered bicycle lane in each direction is proposed. The proposed cross section of bicycle lanes on Broadway are illustrated on the next page. Each bicycle lane is 5' wide with a 1' striped buffer and delineator post. Additional analysis on potential parking impacts and loading is suggested. Furthurmore, the proposed trail at Alcyon Woods and bike lanes would improve connection to the County proposed Rowan Ceres Bike Path (see Figure 112).

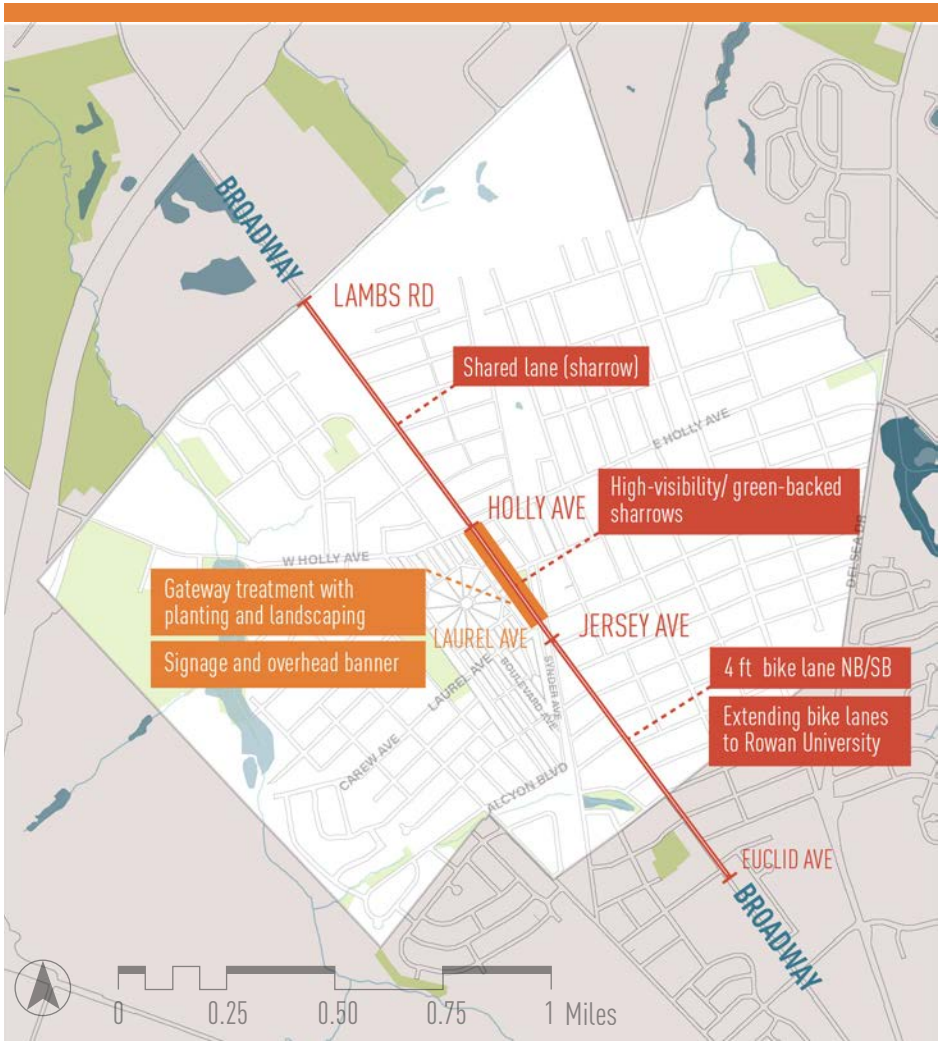


FIGURE 115. PROPOSED BROADWAY CORRIDOR

Broadway (W Jersey Ave to Euclid Ave) Existing

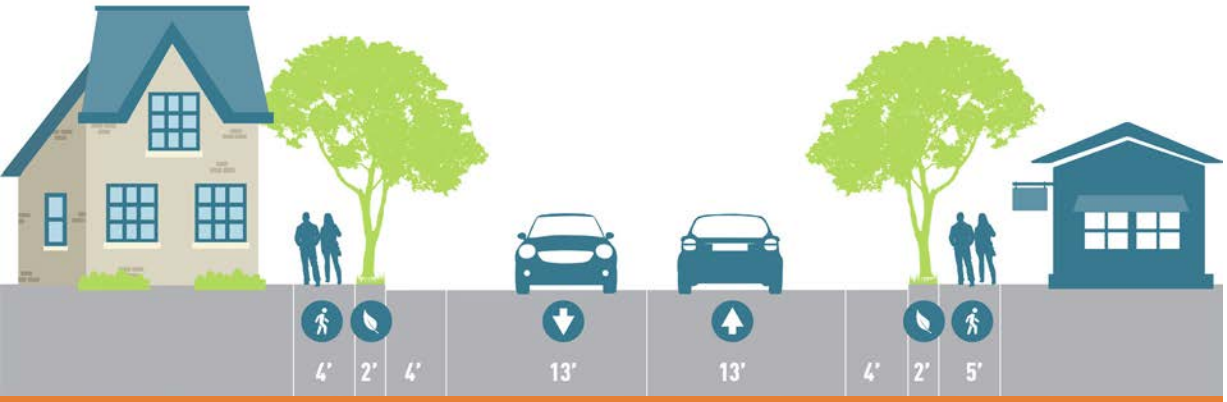


FIGURE 116. EXISTING BROADWAY CROSS SECTION

Broadway (W Jersey Ave to Euclid Ave) Proposed

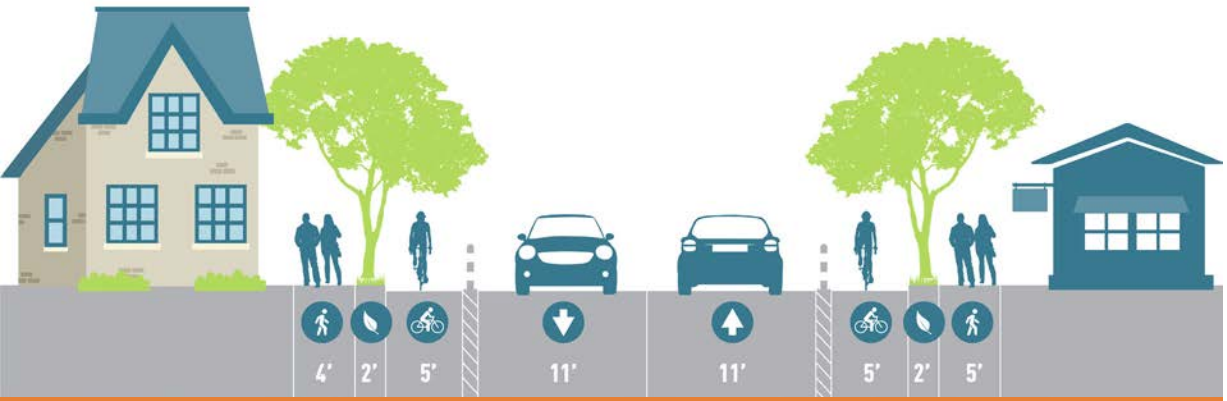


FIGURE 117. PROPOSED BROADWAY CROSS SECTION

Existing Challenges

- Some low-speed, higher-volume sections
- Failure to yield to bicyclists/aggressive driving
- Bicycle riding on the sidewalk, creating conflicts with pedestrians

Proposed Benefits

- Separated bicycle facility to reduce conflicts with vehicles on a portion of the roadway
- Greater visibility of bicyclists and drivers know to expect bicyclists
- More bicyclists feel comfortable riding in the street rather than on the sidewalk, reducing conflicts with pedestrians
- Traffic calming
- Corridor/gateway branding opportunity
- Connection to Rowan University

Holly Ave

LAMBS RD TO CEDAR AVE

West Holly Avenue from Lambs Road to Cedar Avenue is a higher speed roadway due to adjacent lower density development. Due to relatively high volumes and speeds and constrained roadway width (27.5'), a shared use path (10') on the southern side of the street is proposed. The proposed cross section of the shared use path is illustrated on the next page. Given the expected demand, the shared use path is wide enough to be shared by bicyclists and pedestrians with enough room to pass as needed. As proposed, this shared use path would also extend around the perimeter of Alcyon Woods. At the intersection with Lambs Road, there is a longer-term opportunity to connect to the trail from West Holly Avenue along Lambs Road, in conjunction with Harrison Township and Mantua Township.

CEDAR AVE TO BROADWAY

On West Holly Avenue from Cedar Avenue to Broadway the speed limit decreases but vehicles often continue to travel at higher speeds. Due to relatively high volumes, speeds, and constrained roadway width, a bicycle lane in each direction is proposed. Each bicycle lane would be 4-5' wide.

BROADWAY TO COMMERCE AVE

West Holly Avenue from Broadway to Commerce Avenue is a relatively low speed street with very constrained cartway. Given the narrowness of the roadway, a shared street marked by sharrow pavement markings is proposed.

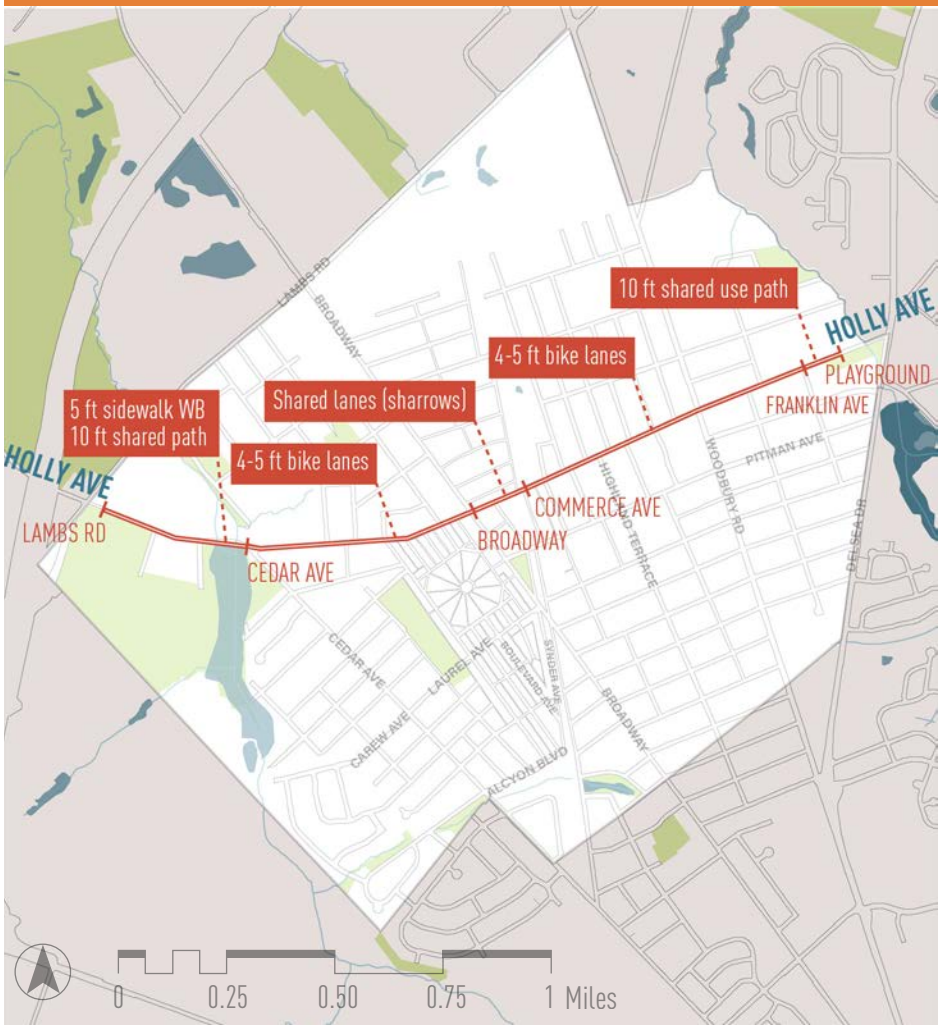


FIGURE 118. PROPOSED HOLLY AVE CORRIDOR

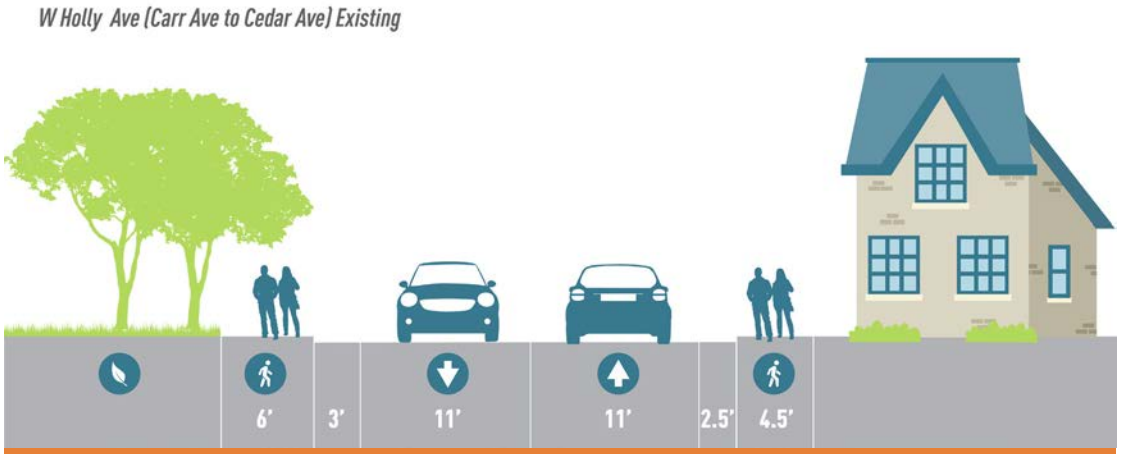


FIGURE 119. EXISTING W HOLLY AVE CROSS SECTION

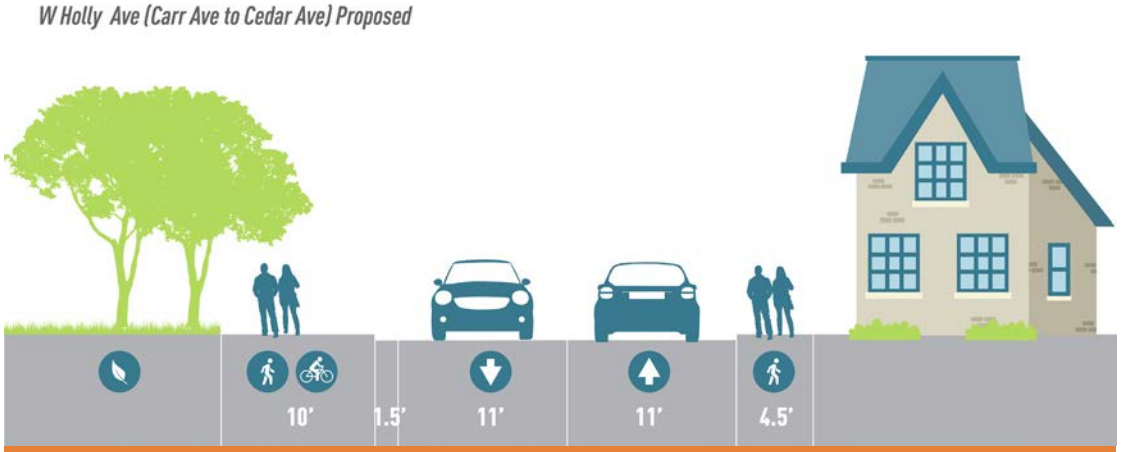


FIGURE 120. PROPOSED W HOLLY AVE CROSS SECTION

Existing Challenges

- Some higher-speed, higher-volume sections
- Failure to yield to bicyclists/aggressive driving

Proposed Benefits

- Separated bicycle facility to reduce conflicts with vehicles on the majority of the roadway
- Greater visibility of bicyclists and drivers know to expect bicyclists
- Traffic calming

Holly Ave (Continued)

COMMERCE AVE TO FRANKLIN AVE

On West Holly Avenue from Commerce Avenue to Franklin Avenue the speed limit increases and there is high volume of cars, especially before and after the school bell for Pitman Middle School, also located on the corridor. Many school children currently ride their bicycle to school using the sidewalk, where drivers are not expecting them, creating conflicts. Due to relatively high volumes and speeds, a bicycle lane in each direction is proposed. Each bicycle lane would be 4-5' wide.

FRANKLIN AVE TO PLAYGROUND

West Holly Avenue from Franklin Avenue to the playground before Delsea Drive is a higher speed street. Due to relatively high volumes and speeds, a shared use path (10') on the southern side of the street is proposed to connect to the playground. Given the expected demand, the shared use path is wide enough to be shared by bicyclists and pedestrians with enough room to pass as needed.

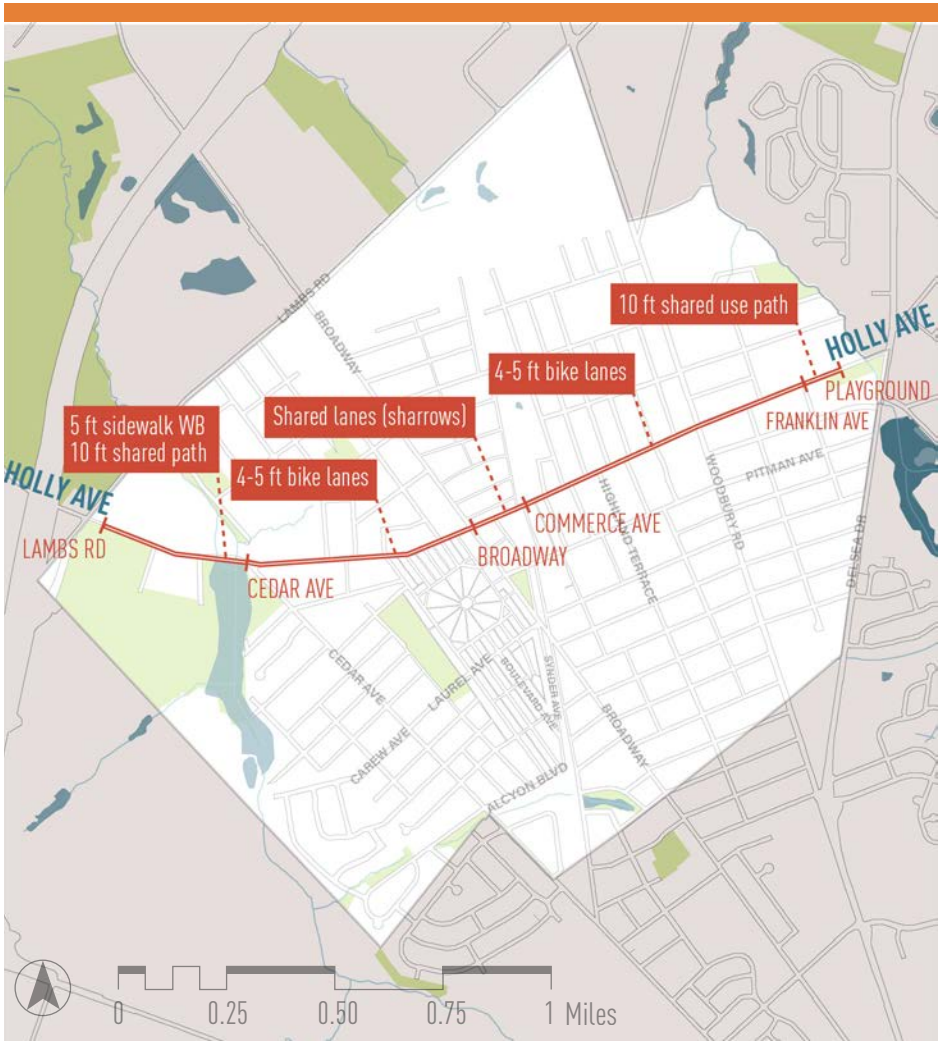


FIGURE 121. PROPOSED HOLLY AVE CORRIDOR

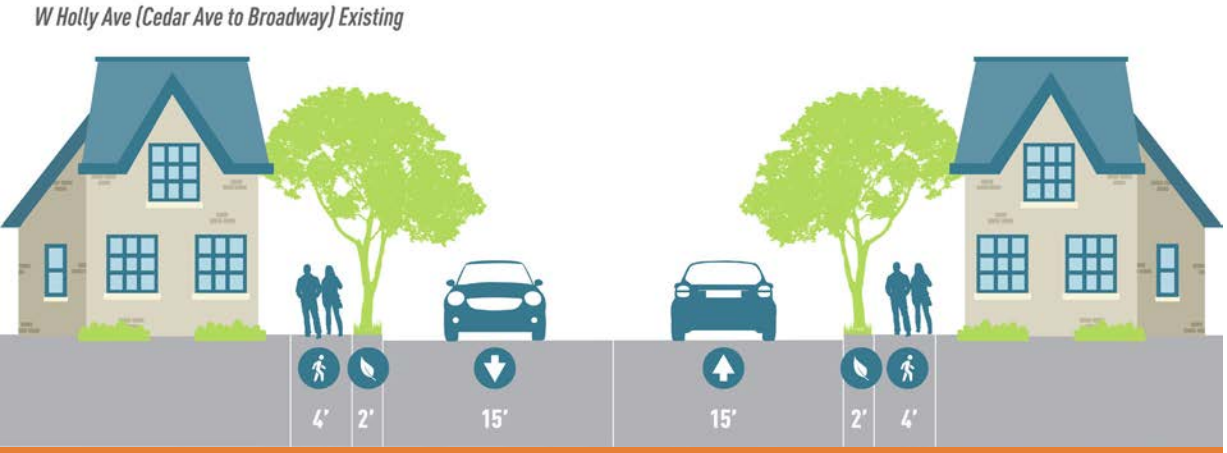


FIGURE 122. EXISTING W HOLLY AVE CROSS SECTION

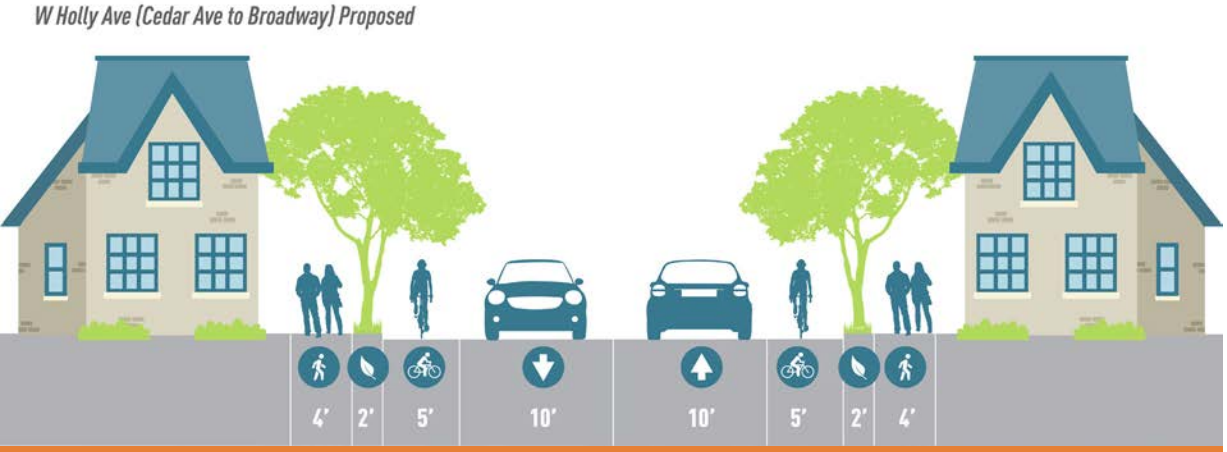


FIGURE 123. PROPOSED W HOLLY AVE CROSS SECTION

Existing Challenges

- Higher-speed, higher-volume section
- Failure to yield to bicyclists/aggressive driving

Proposed Benefits

- Separated bicycle facility to reduce conflicts with vehicles on the roadway
- More bicyclists feel comfortable riding in the street rather than on the sidewalk, reducing conflicts with pedestrians
- Greater visibility of bicyclists and drivers know to expect bicyclists
- Traffic calming

Pitman Ave

BROADWAY TO HIGHLAND TERRACE

Pitman Avenue from South Broadway to Highland Terrace is a very wide street (48') with higher speed limits where buses currently operate. This portion of roadway has higher density commercial activity as the street nears downtown Pitman. Due to available roadway width, speeds, and presence of buses, a bicycle lane in each direction is proposed. Each bicycle lane would be 4-5' wide. The proposed cross section of bicycle lanes on Pitman Avenue is illustrated on the next page.

HIGHLAND TERRACE TO FRANKLIN AVE

Pitman Avenue from Highland Terrace to Franklin Avenue is a very wide street (48'), however the speeds and volumes in this section are relatively low. A shared street marked by sharrow pavement markings is proposed.

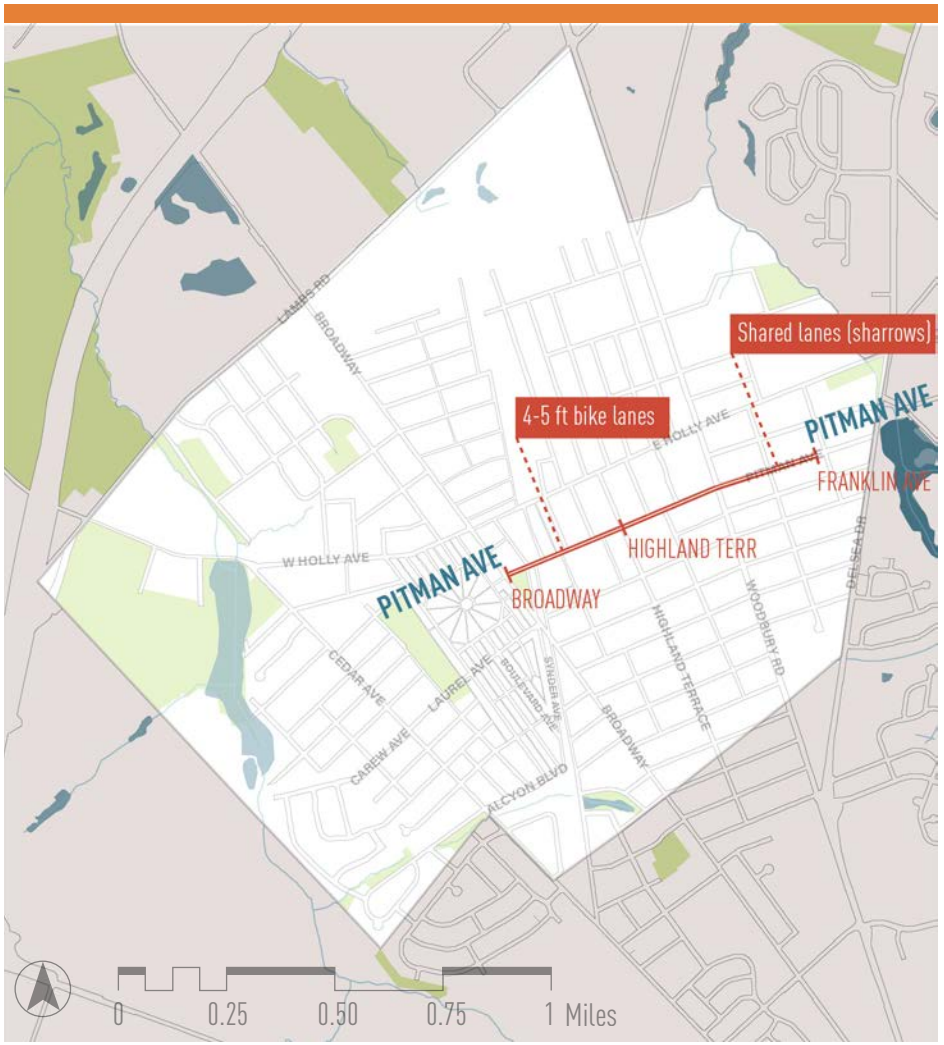
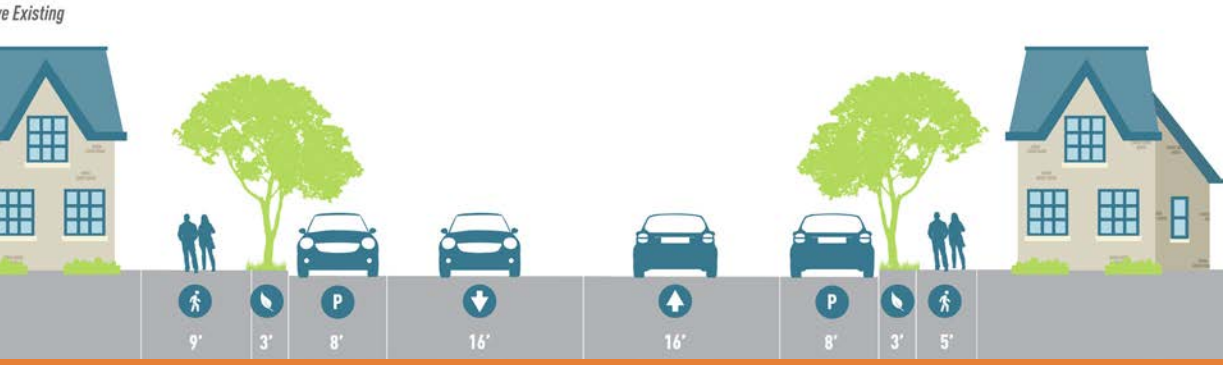
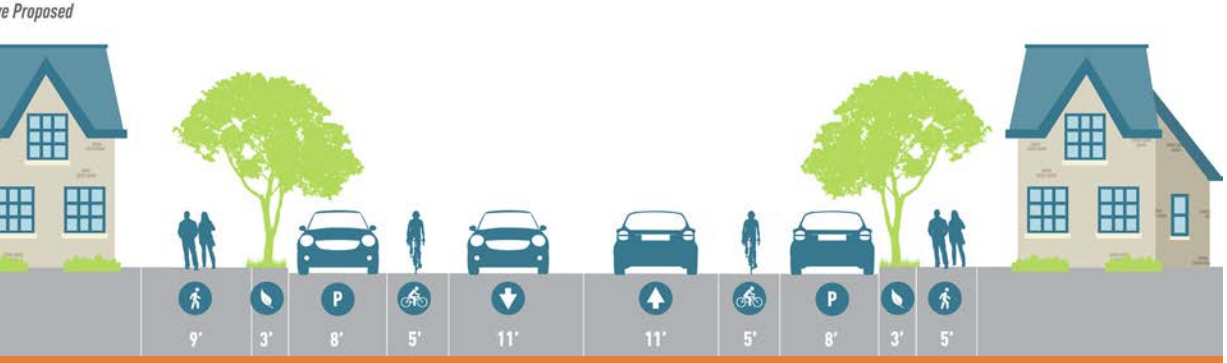


FIGURE 124. PROPOSED PITMAN AVE CORRIDOR



RE 125. EXISTING PITMAN AVE CROSS SECTION



RE 126. PROPOSED PITMAN AVE CROSS SECTION

Existing Challenges

- Higher demand for cyclists parking

Proposed Benefits

- Separated bicycle facility to reduce conflicts with vehicles on a portion of the roadway
- Greater visibility of bicyclists and drivers know to expect bicyclists
- Traffic calming

Cedar Ave

W HOLLY AVE ALYCON BLVD

Cedar Avenue from West Holly Avenue to Alcyon Boulevard is a wider, higher speed street. Due to relatively high volumes and speeds and available roadway width (30'), a bicycle lane (5') in each direction is proposed. The proposed cross section of bicycle lanes on Cedar Avenue is illustrated on the next page. Additional analysis on potential parking impacts is suggested.

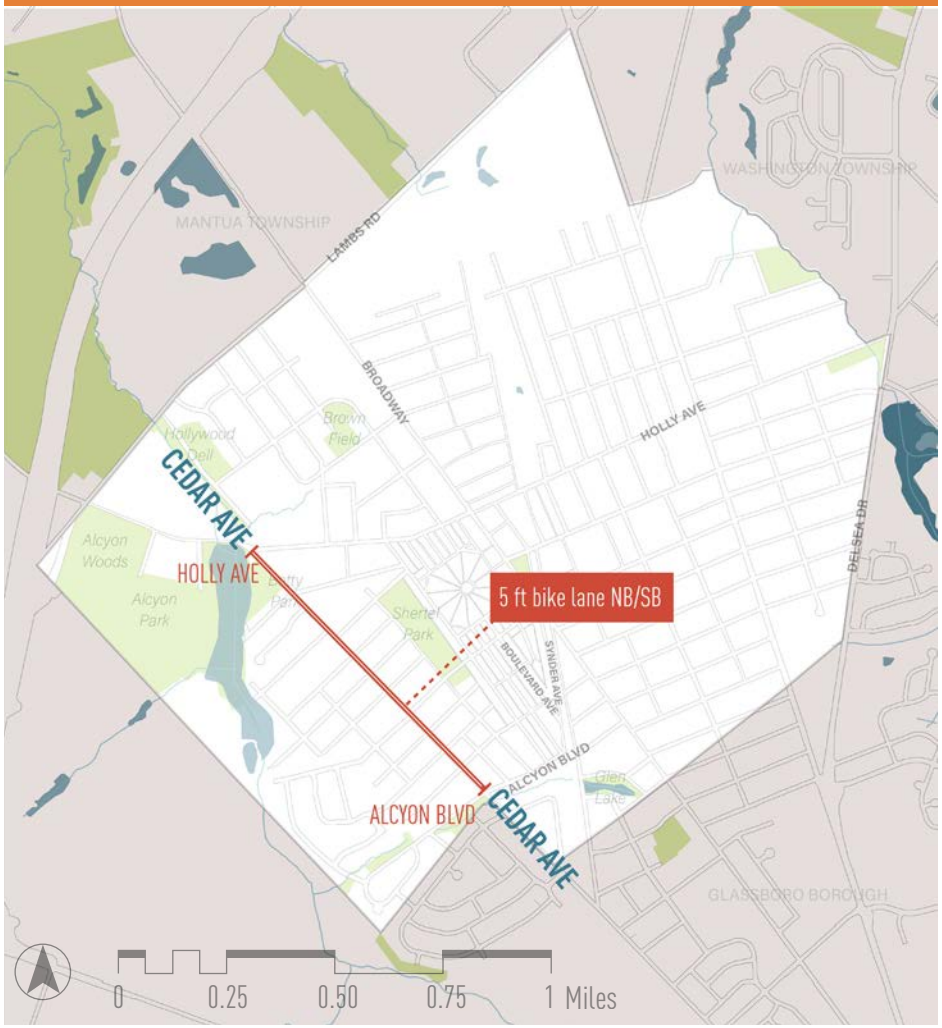
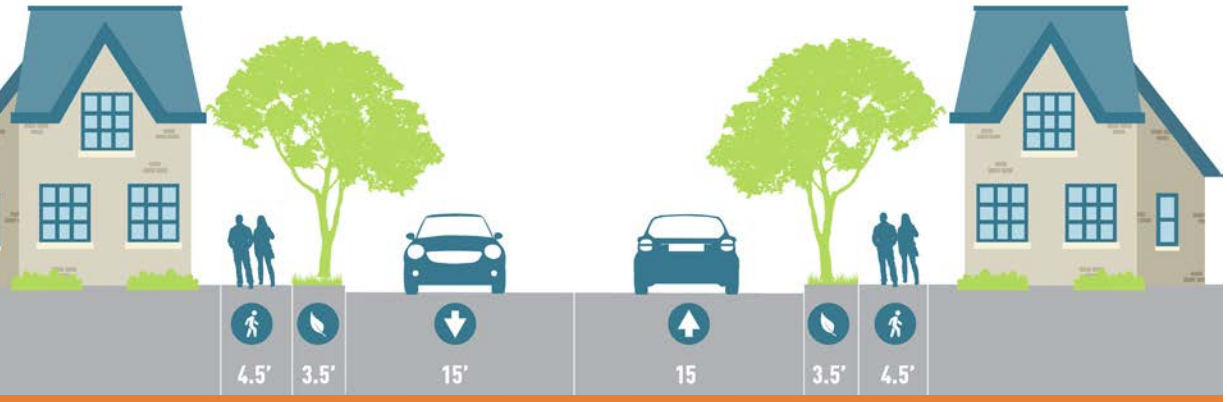


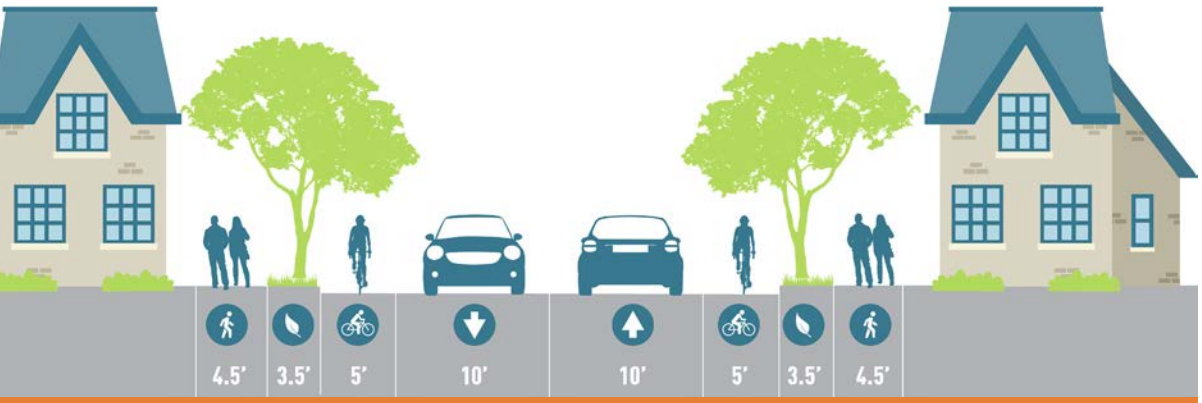
FIGURE 127. PROPOSED CEDAR AVE CORRIDOR

ar Ave Existing



RE 129. EXISTING CEDAR AVE CROSS SECTION

Ave Proposed



RE 128. PROPOSED CEDAR AVE CROSS SECTION

Existing Challenges

- High-speed traffic few impediment to free flow traffic

Proposed Benefits

- Separated bicycle facility to reduce conflicts with vehicles the roadway
- Greater visibility of bicyclists and drivers know to expect bicyclists
- Traffic calming

Laurel Ave

S BROADWAY TO CEDAR AVE

Laurel Avenue from South Broadway to Cedar Avenue is a wider, higher speed street. Due to relatively high volumes and speeds and available roadway width (30'), a bicycle lane (4-5') in each direction is proposed. The proposed cross section of bicycle lanes on Laurel Avenue is illustrated on the next page.

Carew Ave

TRAIL TO CEDAR AVE

Carew Avenue from the trail to Cedar Avenue is a low-volume, low-speed street that creates an important connection to the trail for bicyclists. A shared street marked by sharrow pavement markings is proposed.

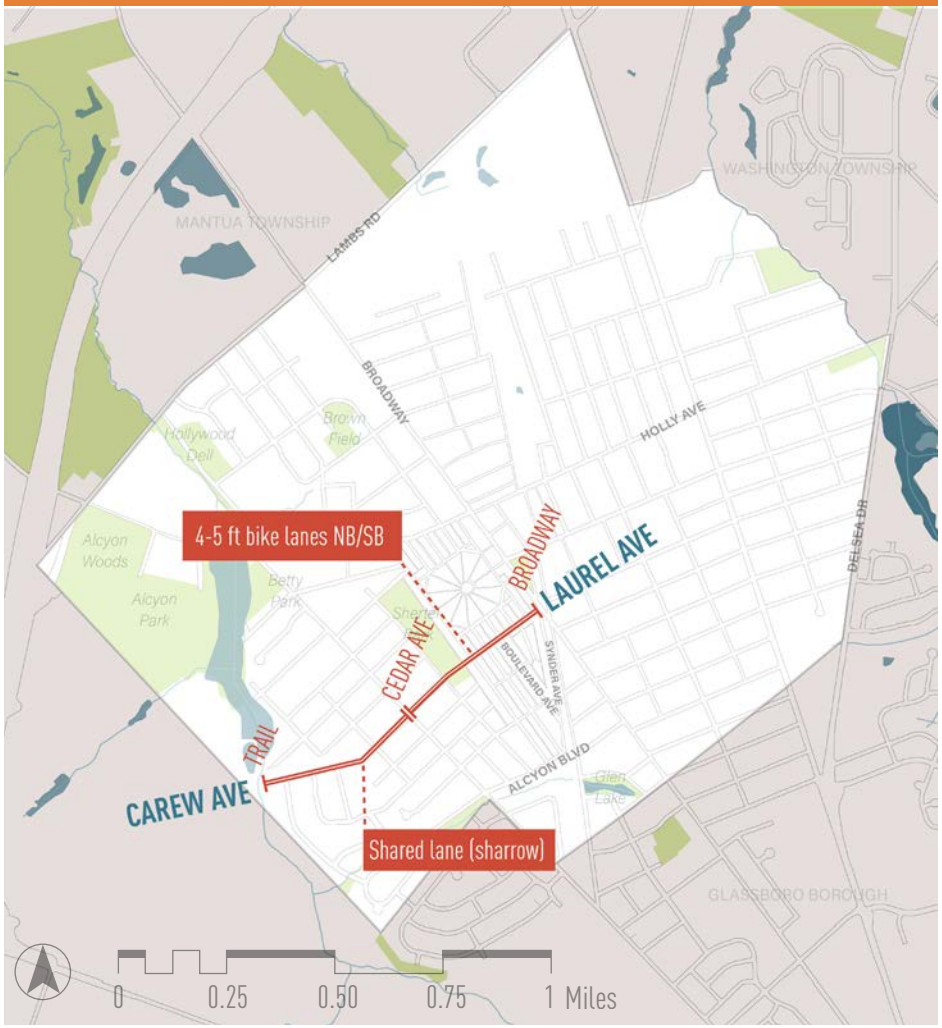
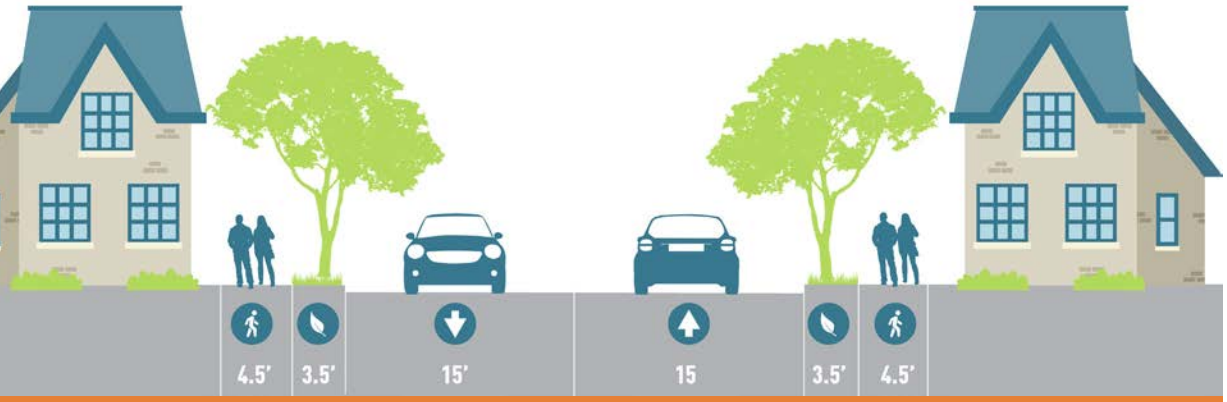


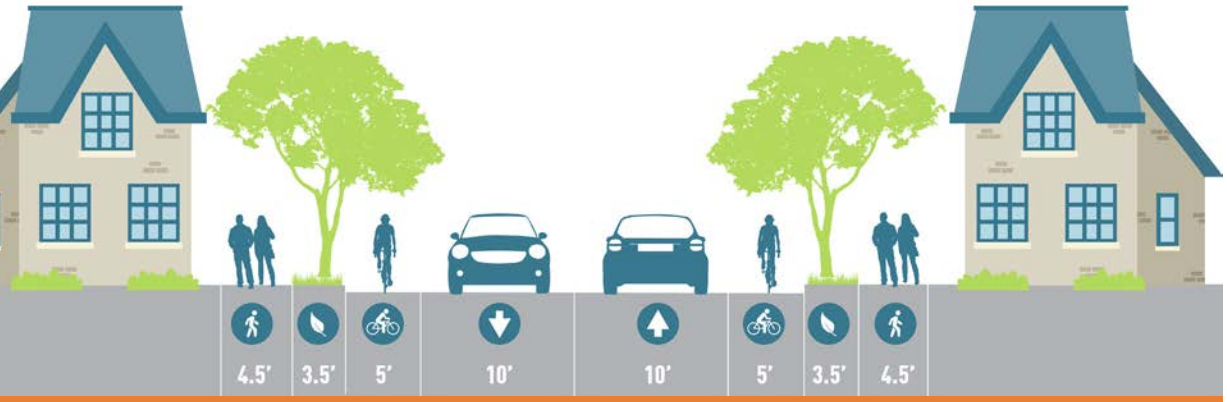
FIGURE 130. PROPOSED LAUREL AVE CORRIDOR

rel Ave Existing



URE 131. EXISTING LAUREL AVE CROSS SECTION

rel Ave Proposed



URE 132. PROPOSED LAUREL AVE CROSS SECTION

Existing Challenges

- Higher-speed, higher-volume section
- No direct connecting route

Proposed Benefits

- Separated bicycle facility to reduce conflicts with vehicles on a portion of the roadway
- Greater visibility of bicyclists and drivers know to expect bicyclists
- Traffic calming
- Provides an important connection in the overall bicycle network

Snyder Ave

LAUREL AVE TO ALCYON BLVD

Snyder Avenue from Laurel Avenue to Alcyon Boulevard is a low-volume, low-speed street that provides an important connection to southern Pitman. Snyder is adjacent to the rail line and the land between the roadway and tracks in some places is being used as an informal parking area.

To accommodate formal parking on the street and create a dedicated space for bicyclists, a buffered bicycle lane, a parking lane, and a one-way southbound travel lane are proposed. The bicycle lane is 4' wide with a 2' striped buffer and delineator post to prevent parking in the bike lane. The width of the buffer between the bicycle lane and travel lane may narrow or widen to accommodate changes in cartway width. The proposed cross section of bicycle lanes on Snyder Avenue are illustrated on the next page.

An estimated 55 dedicated on-street parking spaces would be generated to replace the informal parking areas. The removal of the northbound travel lane may also help reduce conflicts at the Snyder Avenue/Laurel Avenue/Broadway intersection by reducing turning movements.

FIGURE 133. PROPOSED SYNDER AVE CORRIDOR

FIGURE 134. **EXISTING SNYDER AVE**

FIGURE 135. **PROPOSED SNYDER AVE PHOTO SIMULATION**

Existing Challenges

- No direct southbound route to southern Pitman

Proposed Benefits

- Provide an important connection in the overall bicycle network
- Separated bicycle facility to reduce conflicts with vehicles on the roadway
- Greater visibility of bicyclists and drivers know to expect bicyclists
- Formalize parking

Boulevard Ave

LAUREL AVE TO SNYDER AVE

Boulevard Avenue from Laurel Avenue to Snyder Avenue is a low-volume, low-speed street that would serve as the northbound paired connection with the southbound Snyder Avenue buffered bicycle lane. A shared street marked by sharrow pavement markings is proposed.

Alcyon Blvd

CEDAR AVE TO SNYDER AVE

Alcy on Boulevard from Cedar Avenue to Snyder Avenue is a low-volume, low-speed street that is part of an important connection to the trail for bicyclists. A shared street marked by sharrow pavement markings is proposed (see example photos on following page).

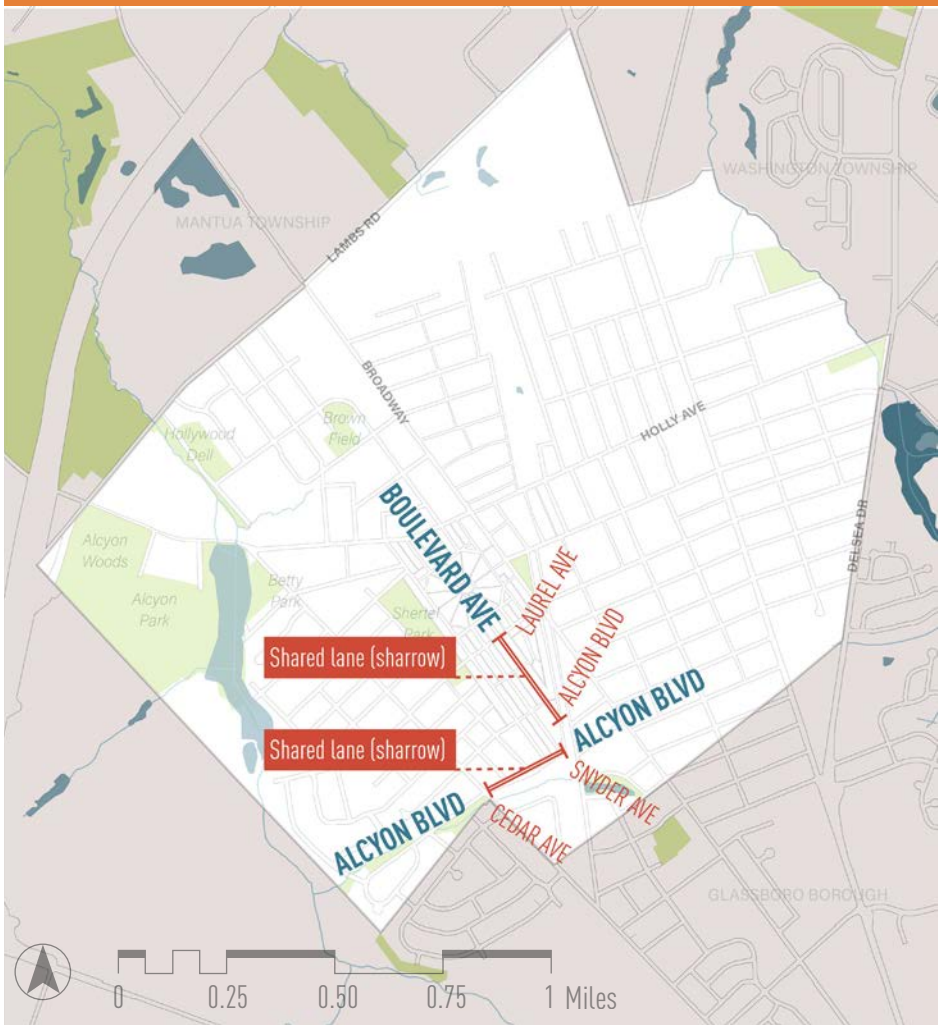


FIGURE 136. PROPOSED BOULEVARD AVE CORRIDOR

FIGURE 137. EXAMPLE OF SHARED LANE (SHARROW)GREENBACK PAVEMENT MARKING

FIGURE 138. EXAMPLE OF SHARED LANE (SHARROW) PAVEMENT MARKING

Existing Challenges

- No direct northbound route from southern Pitman (Boulevard Ave)
- No direct connecting route (Alcyon Blvd)

Proposed Benefits

- Provide important connections in the overall bicycle network
- Greater visibility of bicyclists and drivers know to expect bicyclists

Alcyon Woods

ALCYON WOODS PERIMETER PATH

West Holly Avenue from Lambs Road to Cedar Avenue is a higher speed street. Due to relatively high volumes and speeds and constrained roadway width (27.5'), a shared use path (10') on the southern side of the street and on the perimeter of Alcyon Woods is proposed. A rendering of the proposed shared use path on West Holly Avenue is illustrated on the next page.

Given the expected demand, the shared use path is wide enough to be shared by bicyclists and pedestrians with enough room to pass as needed. Currently, bicyclists are not allowed in Alcyon Park and the unpaved trails of Alcyon Woods are not suitable for all users. The shared used perimeter path will allow a variety of users to enjoy this recreational amenity.

For greater connectivity, the project team recommends allowing bicyclist on the on the Alcyon Park paths to facilitate direct connection with the trail at West Holly Avenue and Cedar Avenue and to connect with the planned Rowan-Ceres Park Trail.

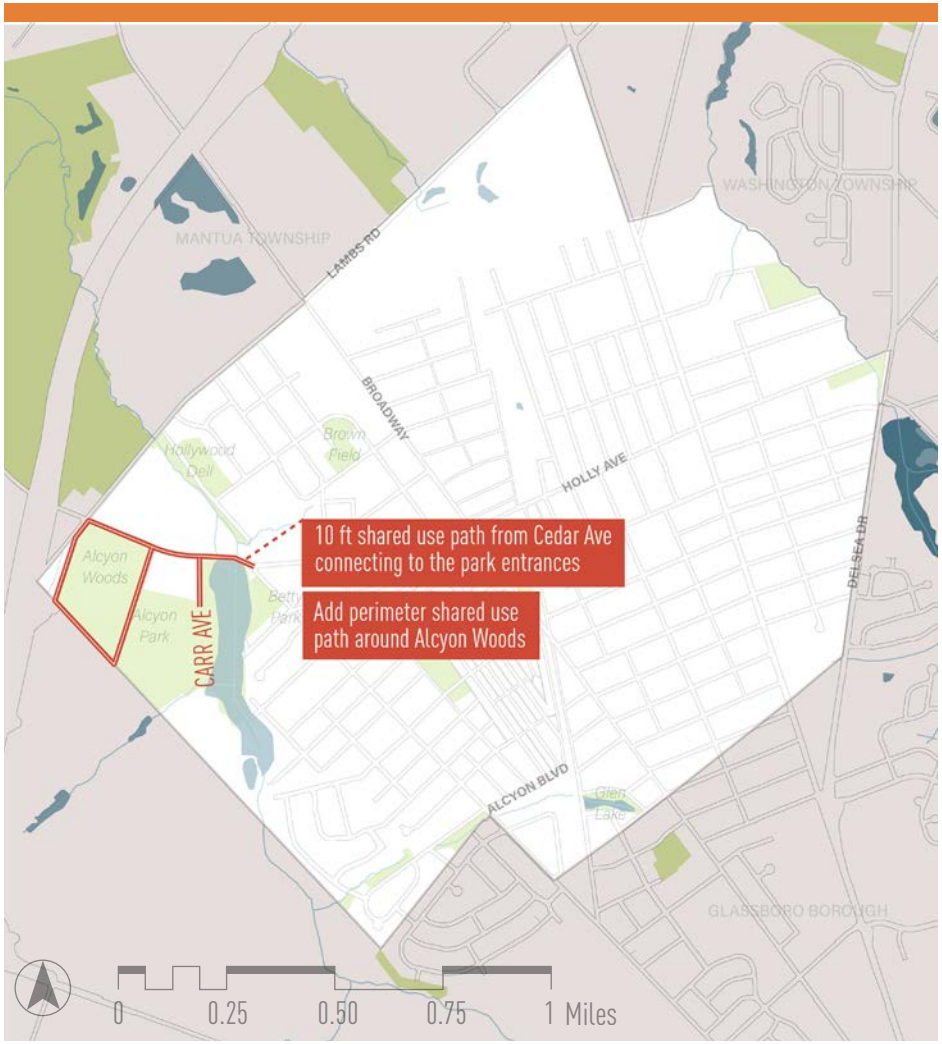


FIGURE 139. PROPOSED ALCYON TRAIL

FIGURE 140. **EXISTING W HOLLY AVE**

FIGURE 141. **PROPOSED W HOLLY AVE SHARED USE PATH TO ALCYON WOODS**

Existing Challenges

- No bicycling allowed in Alcyon Park
- Only unpaved bicycle trails in Alcyon Woods
- No formal bicycle parking

Proposed Benefits

- Provide an important recreational amenity for users of all ages and abilities
- Connect to other destinations using the shared use path and other bicycle facilities

Recommended Bicycle Rack Design

INVERTED U

Common style appropriate for many uses; two points of ground contact. Can be installed in series on rails to create a free-standing parking area in variable quantities. Avaliable in many variations.

POST & RING

Common style appropriate for many uses; one point of ground contact. Compared to inverted-U racks, these are less prone to unintended perpendicular parking. Products exist for converting unused parking meter posts.

WHEELWELL-SECURE

Includes an element that cradles one wheel. Design and performance vary by manufacturer, typically contains bikes well, which is desirable for long-term parking and in large-scale installation (e.g. campus); accommodates fewer bicycle types and attachments

Racks to Avoid

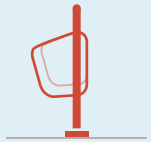
WAVE

Not intuitive or user-friendly; real-world use of this style often falls short of expectations; supports bike frame at only one location when used as intended.

SCHOOLYARD (COMB)

Does not allow locking of frame and can lead to wheel damage. Inappropriate for most public uses, but useful for temporary attended bike storage at events and in locations with no theft concerns.

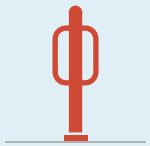
COATHANGER



This style has a top bar that limits the types of bikes it can accommodate.

WHEELWELL

Racks that cradle bicycles with only a wheelwell do not provide suitable security, pose a tripping hazard, and can lead to wheel damage.



This style typically does not appropriately support a bike's frame at two separate locations, which limits its framelock capability and bicycle stability.

SPIRAL

Despite possible aesthetic appeal, spiral racks have functional downsides related to access, real-world use, and the need to lift a wheel to park.

Images and descriptions courtesy of APBP *Essentials of Bicycle Parking*

FIGURE 142. **BICYCLES NOT USING BIKE RACKS AT LIBRARY**

FIGURE 143. **BICYCLES PARKED AT SCHOOL**

6.4 BICYCLE PARKING

EXISTING BICYCLE PARKING

Bicycle parking facilities are needed to extend bicycle use from for recreation to a feasible mode of transportation. Bicycle parking in Pitman is needed near schools, parks, trails, and commercial areas. Most of the racks in Pitman are "comb" style racks, an older design standard, and are not well used except near schools.

Providing adequate, secure bicycle parking is an important measure to accommodate and encouraging cycling as an alternative travel mode. Proper parking facilities increase the convenience of bicycling for commuting, utilitarian, or recreational purposes while also alleviating the threat of theft, though Pitman has had very few reported bike thefts. Parking should be conveniently located, well lit, and easily visible for bicyclists arriving at a destination. There are a variety of bicycle parking racks available. Based on guidelines from the Association of Pedestrian and Bicycle Professionals (APBP), a bicycle rack should meet the following requirements:

- Be intuitive to use
- Support the bicycle upright by its frame in two locations
- Prevent the wheel of the bicycle from tipping over
- Enable the frame and one or both wheels to be secured
- Support bicycles without a diamond shaped frame and horizontal top tube (e.g. step through frames)
- Allow both front-in and back-in parking with a U-lock through the frame and front or rear wheel
- Resist the cutting or detaching of any rack element with hand tools

FIGURE 144. **EXISTING AND PROPOSED BICYCLE PARKING**

FIGURE 145. **POST AND RING BICYCLE RACK NEAR BROADWAY AND HOLLY AVE**

FIGURE 146. **INVERTED U BIKE RACK EXAMPLE WITH BRANDING**

Older style racks, such as the "comb"/"schoolyard," and "wave" are not recommended because they do not properly support the bicycle frame, generally do not facilitate locking of the frame to the rack, and frequently cause interference between the handlebars of adjacent bikes when the rack is near capacity. Recommended racks include the "inverted U," "A," and "post and ring." These rack types are illustrated in page 106. Bike racks should also be properly spaced to allow easy, independent access to each bike.

PROPOSED BICYCLE PARKING

The community input process as well as field observations of Pitman helped to identify a lack of bicycle parking at key destinations as a challenge to biking in Pitman. Recommendations for bicycle parking locations can be found on Figure144 on page 108. These locations were determined based on community input through WikiMap, the Focus Groups, Open House, and proposed bicycle network. In addition to new bicycle parking locations, the project team recommends improving substandard racks at key destinations such as parks, schools, and downtown Pitman.

6.6 BICYCLE SAFE STORM DRAINS AND RAIL CROSSINGS

The project team recommends installation of bicycle friendly storm grates and rail crossings. Some styles of storm drains and grates that feature openings in the metal structure running in parallel with a bicyclists' direction of travel can cause a bicycle wheel to get caught in the drain and cause rider injury and damage. Newer styles of storm drains feature openings that are smaller and do not pose a hazard to bicyclists. To address this risk, a through field inventory should be conducted to identify any of these types of storm drains installed at locations where they could catch a bicycle wheel. Next, a replacement list should be developed, prioritizing storm drains that are on the list of recommended bicycle network corridors and on corridors next scheduled for repaving/maintenance. Replacing storm drains is a fairly simple, straightforward operation with a relatively low cost and creates a much safer bicycling environment.

Cyclists traveling over railroad tracks can also get their wheel stuck in between the track flange and pavement, causing them to flip over the handlebars and injure themselves. Rail crossings should be regularly maintained to keep gaps and potholes to a minimum, which can exacerbate the problem. For maximum safety, rail crossings should be designed to facilitate 90 degree crossings (60 degrees at a minimum). Bicycle lane designs on East Holly Avenue, Pitman Avenue, and Broadway should incorporate this guidance.

The additional proposed pedestrian and bicycle-only rail crossings will help people cross a major barrier and increase connectivity between the eastern and western parts of Pitman. The proposed rail crossings at Cyrus Avenue/Edgemoor Avenue and Snyder Avenue/Alcyon Boulevard/Villa Avenue should also be designed for 90 degree crossings to ensure that any new infrastructure meets safety standards.

6.5 IMPACTS OF IMPROVEMENT ON STRESS

One of the principles goals of Everybody Bikes and Walks Pitman is to increase bicycle mode share by providing low-stress bicycle facilities. The Bicycle Level of Stress (LTS) method was used to determine the level of traffic stress, or comfort, that a bicyclist typically feels riding on a road in Pitman. In order to determine the impact the proposed bicycle network might have on bicyclist comfort level, the analysis was re-run assuming full implementation on the proposed network of bicycle facilities (see Figure 149). Then the analysis was re-run assuming implementation of a borough wide 25 mph speed limit as well as the full network (see Figure 150).

For the proposed network, buffered bicycle lanes and separated bicycle lanes were displayed using the same symbology. This is because both of these treatments require the same physical space

to implement. For the purposes of this revised stress analysis, all the links were considered to be separated bicycle lanes, which are LTS 1 facilities.

Currently, there are three major roadway barriers located on the peripheral of Pitman which reduce overall bicycle connectivity and circulation. Figure 149 shows LTS on road segments after proposed bicycle improvement. Based on Figure 149 the largest benefits occur on Holly Avenue, Cedar Avenue, and South Broadway. In Figure 150 shows LTS on road segments after the proposed bicycle improvements and borough-wide speed reduction. Based on Figure 150, there is significant improvement on Broadway, Holly Avenue , Pitman Avenue , and Cedar Avenue. Improvements to major roadways that go through Pitman create better connections to recreational resources and assets within Pitman.

In its existing state, 70% of the roadway network can be classified as LTS 1. With the proposed changes, 74% of Pitman roadways would be classified as LTS 1. These segments are critical for increasing bicycle mode share as they appeal to the largest group of potential riders. New LTS 1 segments include key connections to recreational trails , downtown Pitman, and other destinations (such as schools and parks). Not only does the proposed network increase the number of LTS 1 roadways, but these new segments are interconnected and conveniently accessed throughout the Borough, providing low-stress, comfortable connections to key destinations.

6.7 25 MPH SPEED LIMIT BOROUGH-WIDE

Vehicle speed is a critical determinant in crash severity, as illustrated in the sidebar to the left. To maintain consistent driver expectations and behaviors, a standard Borough-wide speed limit of 25 mph is proposed throughout the community on local streets as well as Holly Avenue, Pitman Avenue, and Broadway. Lambs Road, Delsea Drive, and Woodbury Road are major county routes and would not be included due to their importance in the overall regional network. A lowered speed limit supports this shared-street concept, where pedestrians, bicyclists, and motorists share the street to balance transportation, recreation, and community life needs.

Lowered speeds create a less stressful and safer walking and biking environment, which encourages more people to walk and bike .

Four Levels of Traffic Stress

The level of traffic stress analysis categorizes streets based on four levels. These levels of stress categories, discussed below, were determined through significant research in the Netherlands, and adapted for the United States by research at Northeastern University.

L1 | Most Users

Suitable for almost all cyclists, including children. On LTS 1 links, cyclists are either physically separated from traffic, in an exclusive bicycling zone next to slow traffic, or on a shared-street with a low speed differential.

L2 | Most Adults

Suitable for most adults, but demands more attention than might be expected from children. Similar cross sections to LTS 1, but with more likeliness for interaction with motor vehicles.

L3 | Enthusiastic Riders

Welcoming level for many people currently riding bikes in this country. Cyclists either ride in an exclusive on-street lane next to moderate speed traffic or on a shared lane on non-multi-lane streets.

L4 | Experienced Riders

Suitable only for the most experienced riders or not suitable for any riders. Roadway is characterizes by high travel speeds, multiple lanes, and/or lacking in dedicated bicycle facilites.

FIGURE 148. BICYCLE LEVEL OF TRAFFIC STRESS SCALE

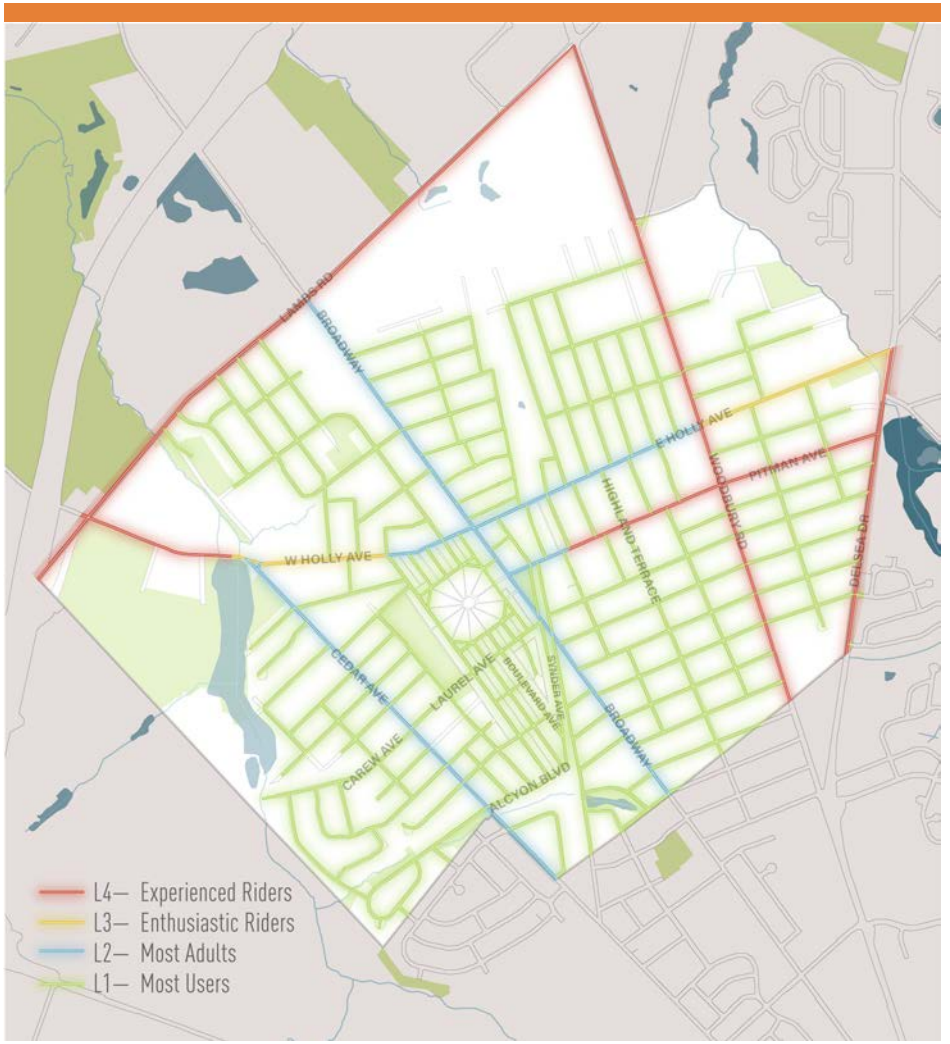


FIGURE 147. EXISTING BICYCLE LEVEL OF STRESS

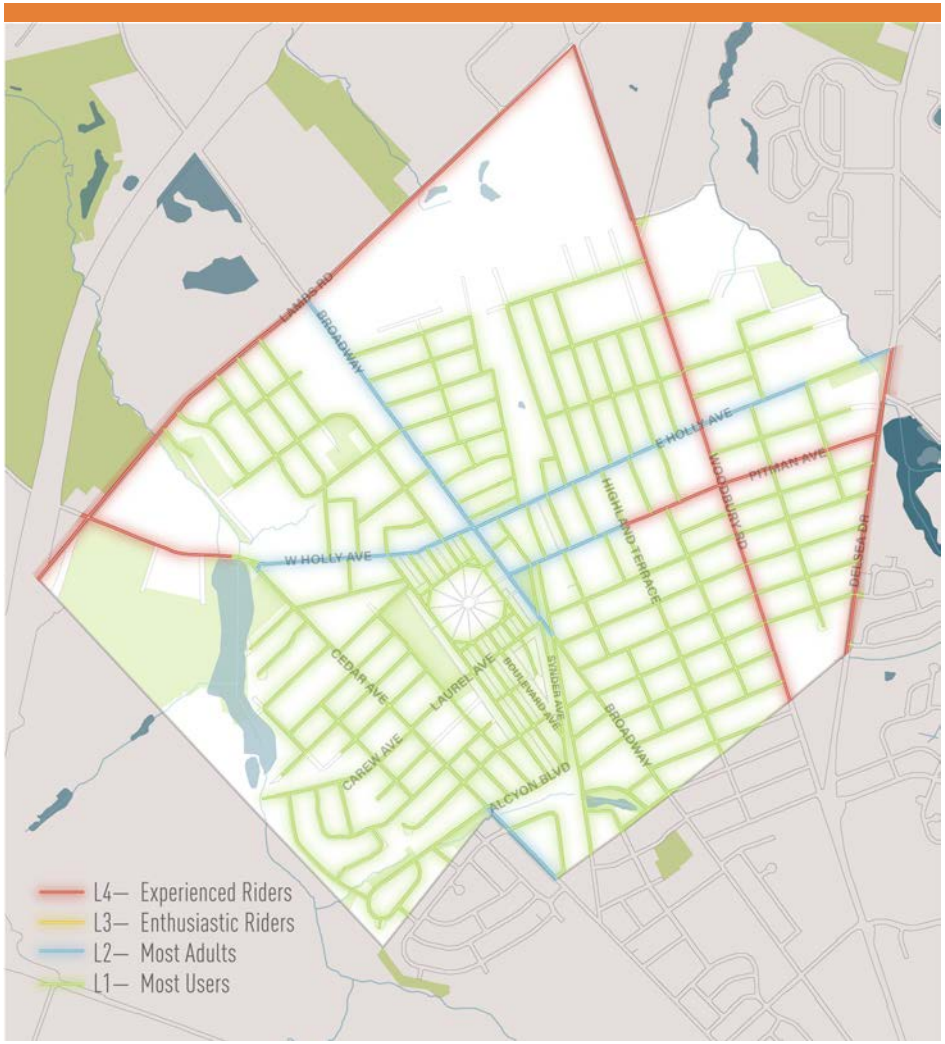


FIGURE 149. BICYCLE LEVEL OF STRESS AFTER RECOMMENDATION IMPLEMENTATION

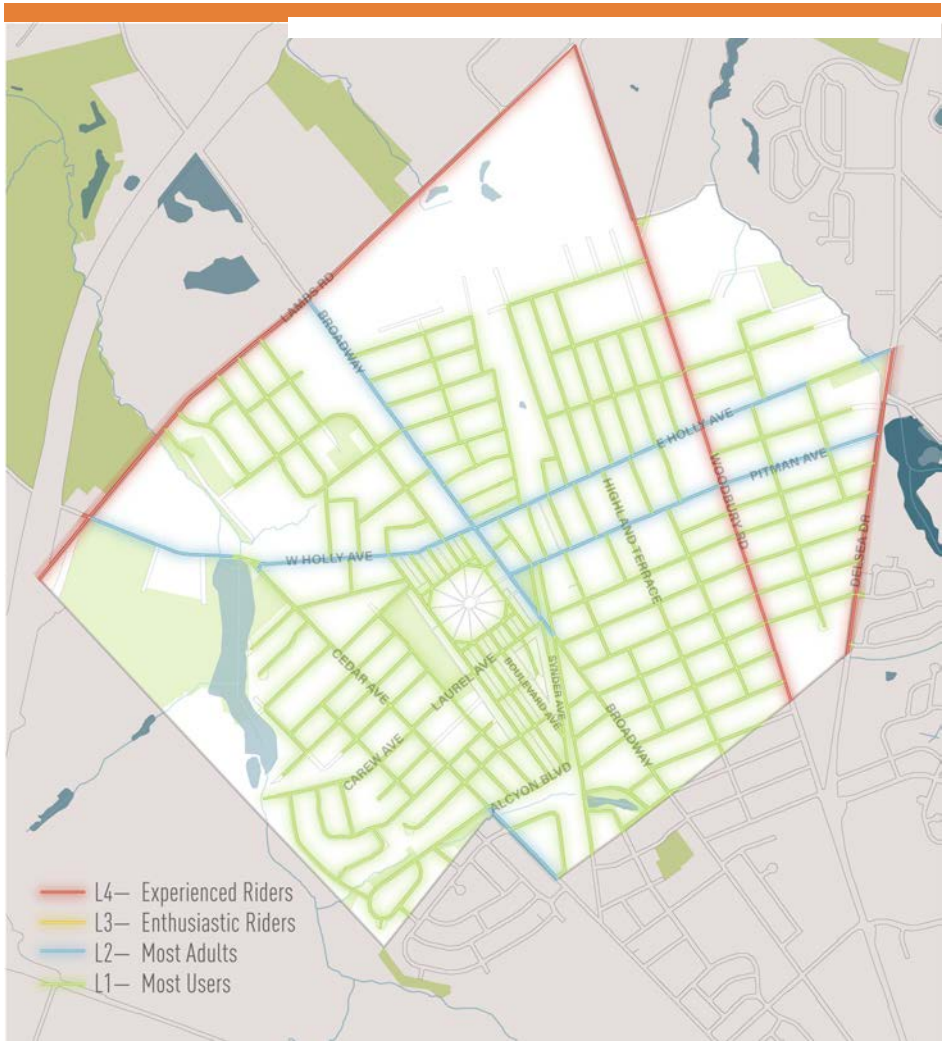


FIGURE 150. BICYCLE LEVEL OF STRESS AFTER RECOMMENDATION AND 25MPH SPEED LIMIT

FIGURE 151. **ALCYON PARK**

7. PROGRAMS AND POLICIES

This chapter describes the programs and policies relevant to improving bicycle and pedestrian infrastructure and public spaces in Pitman.

While proper design and physical infrastructure improvements are essential to creating a safe, comfortable, and convenient environment for biking and walking, they are only part of the process. Underlying policies and programs sponsored by the Borough, as well as partnerships with non-governmental organizations or local businesses, can help create a successful and sustaining bicycle and pedestrian friendly community, support and promote higher rates of biking and walking, and foster mutual respect among all roadway users. Efforts can include educational programs, encouragement initiatives, and enforcement activities. Appropriate travel behaviors and practices among bicyclists, pedestrians and drivers alike are essential to creating safe and accessible communities.

7.1 EDUCATION

Educational programs provide all roadway users – cyclists, pedestrians, and motorists – with information about their rights and responsibilities and applicable laws. These efforts can increase general awareness and promote courteous and safe interaction among all users. Educational programs may include a simple distribution of information in a wide range of formats to improve motorist, cyclist, or pedestrian awareness and understanding of traffic laws and safe practices. Larger efforts could include a more structured, hands-on training program to improve individual skills and abilities. Educational programs should be tailored to specific audiences, such as school-age children, parents, adults, seniors, or motorists.

Specific recommendations for the study area include:

- Continue efforts to distribute public service announcements (PSAs) and brochures on topics such as speeding, safe bicycling, how to bicycle with traffic, proper helmet usage, bicycle routes, and safe pedestrian behavior. Materials can be posted or distributed at the public library, municipal offices, the school, and/or at community events. PSAs may also be printed in the local newspaper or posted on the Pitman website or social media sites. Resources with safety information and brochures include the Cross County Connection Transportation Management Association (TMA); NJDOT's Biking in New Jersey and Pedestrian Safety websites; the Pedestrian and Bicycle Information Center, a national clearinghouse of information related to walking and biking sponsored by the FHWA and operated by the University of North Carolina Highway Safety Research Center; and the National Highway Traffic Safety Administration (NHTSA).

- For locations where on-street bicycle facilities are recommended, adjacent residents should be provided with guidance on how to properly place garbage or recycling containers to ensure that they do not block striped bicycle routes.

- Integrate bicycle and pedestrian educational programs into the

FIGURE 152. **PEDESTRIAN WALKING ON BROADWAY**

school curriculum. The Cape May City Elementary School is located near the center of the City, making it within a comfortable walking or biking distance for the vast majority of students. To support and foster safe biking and walking to and from school, as well as to develop lifelong habits, educational programs tailored for children should be an important element of the overall community campaign. Several types of resources are available:

- Traffic Safety Learning Progression Component: Funded by the Division of Highway Traffic Safety and developed by Kean and Rowan Universities, the curriculum includes lessons on pedestrian, bicycle, and traffic safety. It is an on-going educational program, with lesson plans on several pedestrian safety issues tailored to each age group with interactive activities. These materials are available to all New Jersey schools free of charge. Kindergarten through Grade 8 lesson plans can be found at http://bianj.org/prevention/childhood-safety/pedestriansafety/ and Grade 9-12 lesson plans at http://teensafedriving.bianj.org/submit-a-lesson-plan/

- Safe Routes to School (SRTS): Resources are available through SRTS, a Federal and state program designed to enable and encourage children to walk and bike to school. Education is a key element when developing a SRTS plan. Information is available through the NJDOT program office, the Federal Highway Administration, and the National Center for Safe Routes to School.

- Other programs, such as WalkSafe™, BikeSafe™, and Safe Kids also offer educational materials and other activities focused on school-aged children.

7.2 ENCOURAGEMENT

Encouraging active modes of transportation such as walking and biking has a host of benefits for residents and the community, including better health, reduced road congestion, support for local businesses, reduced environmental impact, and lower per-trip costs. By supporting and promoting walking and bicycling activities, Pitman can spur a change in travel habits among residents and visitors, and entice more residents to walk and bike more regularly. Recommendations include:

- Encourage the use of "Walking School Buses" and "Bike Trains" to promote physical activity for children and parents traveling to and from schools. Walking school buses and bike trains provide an organized and supervised way for children to walk and bike to school, particularly for younger children, and can make walking and biking a fun, social activity. Work with school staff, parent volunteers, and the police department to organize the events. Assistance is available through the Cross County Connection TMA.

- Utilize resources through SRTS and Cross County Connection TMA to provide activities that encourage

bicycling and walking at local schools, such as bike rodeos or other events.

- Create and publish an online bike map on the Borough's website, highlighting the location of bicycle lanes, off-road facilities, preferred on-road cycling routes, bike parking, and major destinations (schools, businesses, etc). Providing information on Pitman's bicycle facilities and best routes can encourage more people to try bicycling. Resources include the bike network evaluated in this report, as well as the county-wide map developed by Cross County Connection TMA. Cross County Connection TMA also offers assistance in creating electronic and printable bike maps.

- Highlight pedestrian and bicycle improvements that accompany transportation projects through press releases, websites, and social media. By focusing on these elements and improved conditions, more people will be encouraged to walk and bike.

- Apply to become a Bicycle or Walk Friendly Community. These programs, sponsored by the League of American Bicyclists and the Federal Highway Administration, respectively, will not only encourage bicycle use or increased walking by residents, but serve as a potential marketing tool to encourage visitors to travel to the study area.

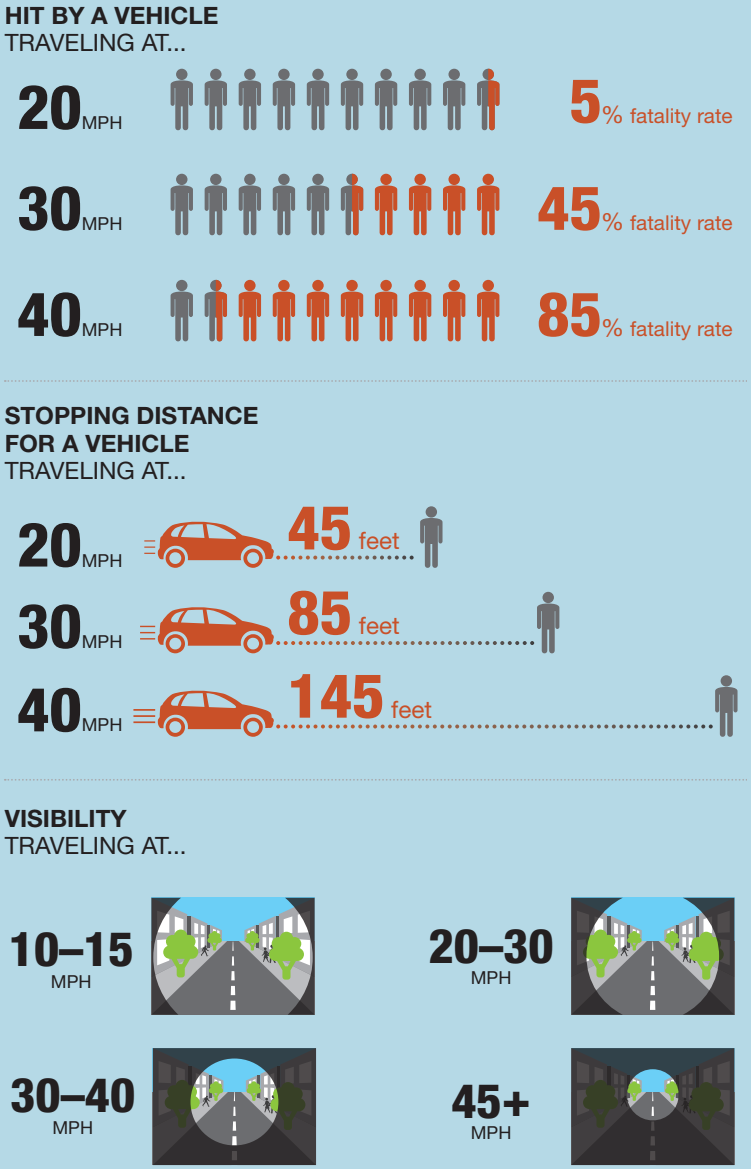
- Promote and market Pitman's existing bicycling and walking assets, including its connections commercial areas, historical landmarks, parks, and trails. Work with local businesses to publicize the communities' resources.

7.3 ENFORCEMENT

When combined with education, enforcement is a key element to ensuring safe travel for all roadway users. While the police department cannot dedicate a significant amount of resources to enforce traffic regulations, targeted enforcement campaigns, through warnings and tickets, are effective at correcting unsafe behaviors. Enforcement should apply to both motorists (speeding, failure to stop for pedestrians) and cyclists (riding on the wrong side of the street, failure to adhere to traffic control devices). Study area specific recommendations include:

Implement a pedestrian safety enforcement (PSE) program. A key resource for local police departments is the PSE program sponsored by the NJ Division of Highway TrafficSafety (NJDHTS) with support from NJDOT. The PSE program provides a structured approach to crosswalk compliance enforcement, with training and support for local police officers. It addresses two important contributing factors to pedestrian crashes: driver knowledge of the law and driver yielding behavior. A variety of resources for enforcement are available through the NJDHTS, including grant funding. PSE training workshops are also available through the

SPEED VS. SAFETY



Source: NACTO's "Urban Bikeway Design Guide

NJ Bicycle and Pedestrian Resource Center. One common PSE program supported by the NJDHTS is the "Cops in Crosswalks" decoy program. Used in municipalities throughout New Jersey, the program is a targeted enforcement campaign. A plainclothes police officer attempts to cross a marked crosswalk, and drivers who fail to stop for the pedestrian are given a warning or citation. NJDOT provides additional information about PSE programs and resources in its Pedestrian Safety Action Plan Toolbox.

Institute a community-oriented traffic calming campaign to help raise awareness about speeding and safety.

7.4 EMERGENCY RESPONSE

The recommended street improvements in this plan are intended to complement emergency response efforts. Safer walking and biking facilities can have no impact on or even improve emergency response times when designed thoughtfully to achieve both goals. Design best practices include:

- Mountable curbs
- Traffic calming treatments (landscaping, curb extensions, raised intersections)
- Paint and surface material treatments
- Strategic parking placement

8. NEXT STEPS

The recommendations in this plan provide a roadmap for improving conditions for bicycling and walking in Pitman. The proposed recommendations outline a range of engineering, education, and enforcement, and encouragement concepts and strategies to enhance bicycle and pedestrian mobility. Prioritized and implemented over time, as funding is available, they will foster higher levels of walking and bicycling activity, spur economic activity along the commercial corridors, and create a more robust network to link residents with the places they want to go.

8.1 PROCESS AND FUNDING SOURCES

Pitman should work with Gloucester County, the South Jersey Transportation Planning Organization (SJTPO), and NJDOT to advance the proposed improvements. The Borough can prioritize the projects that best fit within available budget, resurfacing schedule, and community preferences. The speed of implementation and the number of projects undertaken rests with the Borough. Residents, bicycling organizations, and community groups are often important catalysts in advocating for implementing the proposed improvements and ensuring that projects continue progressing to completion.

A variety of funding sources are available to support local bicycle and pedestrian improvements and programs. The New Jersey Bicycle and Pedestrian Resource Center has compiled a summary of available resources, available online (http://njbikeped.org/funding-2/). The recommended projects and cost estimates in this Plan can form the basis of future grant applications.

As planning concepts advance to engineering, projects should reflect current best practices in bicycle and pedestrian design, including guidance from:

- NACTO Urban Bikeway Design Guide
- NACTO Urban Street Design Guide
- FHWA Small Town and Rural Multimodal Networks
- NJDOT New Jersey Complete Streets Design Guide


EVERYBODY LIKES
PITMAN

9. APPENDIX A

BICYCLE LEVEL OF TRAFFIC STRESS (LTS) ANALYSIS CRITERIA

CRITERIA FOR LEVEL OF STRESS IN MIXED TRAFFIC

Posted Speed Limit	Street Width		
	2-3 Lanes	4-5 Lanes	6 + Lanes
Up to 25 mph	LTS 1 or 2	LTS 3	LTS 4
30 mph	LTS 2 or 3	LTS 4	LTS 4
35 + mph	LTS 4	LTS 4	LTS 4

LEVEL OF STRESS FOR UNSIGNALIZED CROSSINGS WITHOUT A MEDIAN REFUGE

Speed Limit of Street Being Crossed	Width of Street Being Crossed		
	2-3 Lanes	4-5 Lanes	6 + Lanes
Up to 25mph	LTS 1	LTS 2	LTS 4
30 mph	LTS 1	LTS 2	LTS 4
35 + mph	LTS 2	LTS 3	LTS 4
40 + mph	LTS 3	LTS 4	LTS 4

VOLUME ADJUSTMENT

Volume	LTS
-	1
5,000	2
10,000	3
15,000	4

Source: Low-Stress Bicycling and Network Connectivity, Mineta Transportation Institute, 2012

CRITERIA FOR BIKE LANES ALONGSIDE A PARKING LANE

	LTS ≥ 1	LTS ≥ 2	LTS ≥ 3	LTS ≥ 4
Street width (through lanes per direction)	2	(no effect)	4 or more	(no effect)
Sum of bike lane and parking lane width (includes marked buffer and paved gutter)	15 ft or more	14 ft	13.5 ft or less	(no effect)
Speed limit or prevailing speed	25 mph or less	30 mph	35 mph	40 mph or more
Bike lane blockage (typically applies in commerical areas)	rare	(no effect)	frequent	(no effect)

Note: (no effect) = factor does not trigger an increase to this level of traffic stress

CRITERIA FOR BIKE LANES NOT ALONGSIDE A PARKING LANE

	LTS ≥ 1	LTS ≥ 2	LTS ≥ 3	LTS ≥ 4
Street width (through lanes per direction)	2	4, if directions are seperated by a raised median	5, or 4 without a separating median	(no effect)
Sum of bike lane and parking lane width (includes marked buffer and paved gutter)	6 ft or more	5.5 ft or less	(no effect)	(no effect)
Speed limit or prevailing speed	30 mph or less	(no effect)	35 mph	40 mph or more
Bike lane blockage (typically applies in commerical areas)	rare	(no effect)	frequent	(no effect)

Note: (no effect) = factor does not trigger an increase to this level of traffic stress

Source: Low-Stress Bicycling and Network Connectivity, Mineta Transportation Institute, 2012

10. APPENDIX B

IMPLEMENTATION MATRIX

Location	Type of Improvement	Category	Improvement	Approximate Material Cost	Implementation Term	Lead Agency	Supporting Agency
N Broadway (Lambs Rd to Pitman Ave)	Bicycle	Corridor	Install Shared Lane Markings	$8,900.00	Pending Resurfacing Scheduling	Gloucester County	NJDOT/Pitman Borough
S Broadway (Pitman Ave to County Rd 553)	Bicycle	Corridor	Install Buffered Bike Lane	$16,750.00	Pending Resurfacing Scheduling	Gloucester County	NJDOT/Pitman Borough
W Holly Ave (Lambs Rd to Cedar Ave)	Bicycle	Corridor	Install Multi-Use Path	$226,600.00	Pending Resurfacing Scheduling	Gloucester County	NJDOT/Pitman Borough
W Holly Ave (Cedar Ave to N Broadway)	Bicycle	Corridor	Install Bike Lane	$8,500.00	Pending Resurfacing Scheduling	Gloucester County	NJDOT/Pitman Borough
W Holly Ave (N Broadway to Commerce Ave)	Bicycle	Corridor	Install Shared Lane Markings	$1,700.00	Pending Resurfacing Scheduling	Gloucester County	NJDOT/Pitman Borough
W Holly Ave (Commerce Ave to Franklin Ave)	Bicycle	Corridor	Install Bike Lane	$10,700.00	Pending Resurfacing Scheduling	Gloucester County	NJDOT/Pitman Borough
W Holly Ave (Franklin Ave to Delsea Dr)	Bicycle	Corridor	Install Multi-Use Path	$121,500.00	Pending Resurfacing Scheduling	Gloucester County	NJDOT/Pitman Borough
Pitman Ave (S Broadway to Highland Terrace)	Bicycle	Corridor	Install Bike Lane	$4,900.00	Pending Resurfacing Scheduling	Gloucester County	NJDOT/Pitman Borough
Pitman Ave (Highland Terrace to Franklin Ave)	Bicycle	Corridor	Install Shared Lane Markings	$5,700.00	Pending Resurfacing Scheduling	Gloucester County	NJDOT/Pitman Borough
Cedar Ave (W Holly Ave to Lake Ave)	Bicycle	Corridor	Install Multi-Use Path	$83,000.00	Pending Resurfacing Scheduling	Gloucester County	NJDOT/Pitman Borough
Cedar Ave (Lake Ave to Alcyon Blvd)	Bicycle	Corridor	Install Bike Lane	$10,000.00	Pending Resurfacing Scheduling	Gloucester County	NJDOT/Pitman Borough
Carew Ave (Lamb Trail to Cedar Ave)	Bicycle	Corridor	Install Shared Lane Markings	$4,200.00	Pending Resurfacing Scheduling	Pitman Borough	NJDOT
Laurel Ave (Carew Ave to S Broadway)	Bicycle	Corridor	Install Bike Lane	$7,700.00	Pending Resurfacing Scheduling	Pitman Borough	NJDOT
Alcyon Blvd (Cedar Ave to Snyder Ave)	Bicycle	Corridor	Install Shared Lane Markings	$2,700.00	Pending Resurfacing Scheduling	Pitman Borough	NJDOT
Boulevard Ave (Laurel Ave to Snyder Ave)	Bicycle	Corridor	Install Shared Lane Markings	$3,700.00	Pending Resurfacing Scheduling	Pitman Borough	NJDOT
Snyder Ave (Laurel Ave to Boulevard)	Bicycle	Corridor	Install Buffered Bike Lane	$6,900.00	Pending Resurfacing Scheduling	Pitman Borough	NJDOT
N Broadway and Woodland Ave	Pedestrian	Intersection Spot Improvement	Install Curb Extensions (4)	$48,000.00	Mid-Term	Gloucester County	NJDOT/Pitman Borough
N Broadway and McClelland Ave	Pedestrian	Intersection Spot Improvement	Install Curb Extensions (4)	$48,000.00	Mid-Term	Gloucester County	NJDOT/Pitman Borough
			Install High Visibility Crosswalk (2)	$1,084.80	Mid-Term		
			Install ADA compliant ramps (4)	$2,960.00	Mid-Term		
			Install Signage	$100.00	Short-Term		
S Broadway and 2nd Ave	Pedestrian	Intersection Spot Improvement	Install Curb Extension	$12,000.00	Mid-Term	Gloucester County	NJDOT/Pitman Borough
			Install High Visibility Crosswalk	$203.40	Mid-Term		
			Install ADA compliant ramps (2)	$1,480.00	Mid-Term		
S Broadway and Pitman Ave (option 1)	Pedestrian	Intersection Spot Improvement	Install Curb Extensions (2)	$24,000.00	Mid-Term	Gloucester County	NJDOT/Pitman Borough

			Install Stop Bars (3)	$186.00	Short-Term		
S Broadway and Pitman Ave (option 2)	Pedestrian	Intersection Improvement Spot	Install Raised Intersection	$59,160.00	Long-Term	Gloucester County	NJDOT/Pitman Borough
			Install Stop Bars (3)	$186.00	Short-Term		
S Broadway and Ballard * Does not include cost of adding 8 parking spaces on Jersey Ave	Pedestrian	Intersection Improvement Spot	Install Curbing to Tighten Intersection	$37,055.00	Long-Term	Gloucester County	NJDOT/Pitman Borough
			Install Sidewalk	$3,888.89	Long-Term		
			Install High Visibility Crosswalks (2)	$1,898	Mid-Term		
			Install Curb Extensions (1)	$12,000.00	Mid-Term		
			ADA compliant ramp (1)	$2,960.00	Mid-Term		
S Broadway and Crafton Ave	Pedestrian	Intersection Improvement Spot	Install Curb Extension	$12,000.00	Mid-Term	Gloucester County	NJDOT/Pitman Borough
			Install High Visibility Crosswalk	$406.80	Mid-Term		
			ADA compliant ramp (2)	$1,480.00	Mid-Term		
			Install Signage	$100.00	Short-Term		
Woodland Ave and Elm Ave	Pedestrian	Intersection Improvement Spot	Install Curb Extensions (2)	$24,000.00	Mid-Term	Gloucester County	NJDOT/Pitman Borough
			Install High Visibility Crosswalks (4)	$3,254.40	Mid-Term		
			ADA compliant ramp (6)	$4,440.00	Mid-Term		
Cedar Ave and Cleveland Ave	Pedestrian	Intersection Improvement Spot	Install High Visibility Crosswalk (1)	$406.80	Short-Term	Gloucester County	NJDOT/Pitman Borough
			Install Signage	$100.00	Short-Term		
			ADA compliant ramp (2)	$1,480.00	Short-Term		
Cedar Ave and Grant Ave	Pedestrian	Intersection Improvement Spot	Install High Visibility Crosswalk (1)	$542.40	Short-Term	Gloucester County	NJDOT/Pitman Borough
			Install Signage	$100.00	Short-Term		
			ADA compliant ramp (2)	$1,480.00	Short-Term		
Cedar Ave and Laurel Ave/Carew Ave	Pedestrian	Intersection Improvement Spot	Install Flashing Beacons	$13,550.00	Long-Term	Gloucester County	NJDOT/Pitman Borough
			Install High Visibility Crosswalk (1)	$542.40	Short-Term		
			ADA compliant ramp (2)	$1,480.00	Short-Term		
Cedar Ave and Alcyon Blvd	Pedestrian	Intersection Improvement Spot	Install High Visibility Crosswalk (1)	$542.40	Short-Term	Gloucester County	NJDOT/Pitman Borough
			Install Signage	$100.00	Short-Term		
			ADA compliant ramp (2)	$1,480.00	Short-Term		
W Holly and Alcyon Woods	Pedestrian	Intersection Improvement Spot	Install Multi-Use Path	$170,385.87	Long-Term	Gloucester County	NJDOT/Pitman Borough
			Install Sidewalk from Carr Ave to Lambs Rd	$56,155.56	Long-Term		

W Holly Ave and Cedar Ave	Pedestrian	Intersection Improvement Spot	Install High Visibility Crosswalks (3)	$1,220.40	Long-Term	Gloucester County	NJDOT/Pitman Borough
			Tighten geometry	$376,600	Long-Term		
			ADA compliant ramp (6)	$4,440.00	Long-Term		
			Install Sidewalk	$14,155.56	Long-Term		
			Traffic Analysis	$7,500	Mid-Term		
W Holly Ave and Broadway option 1	Pedestrian	Intersection Improvement Spot	Install Advanced Warning Signal	$100	Long-Term	Gloucester County	NJDOT/Pitman Borough
			Install Curb Extensions (2)	$24,000.00	Mid-Term		
W Holly Ave and Broadway option 2	Pedestrian	Intersection Improvement Spot	Install Raised Intersection	$59,160.00	Long-Term	Gloucester County	NJDOT/Pitman Borough
			Install Advanced Warning Signal	$100	Long-Term		
W Holly and West Ave/Walnut Ave			Install High Visibility Crosswalk	$474.60	Short-Term	Gloucester County	NJ/DOT/Pitman Borough
			Install Signage	$100.00	Short-Term		
			ADA compliant ramp (2)	$1,480.00	Short-Term		
E Holly Ave and Esplanade Ave and Mt Vernon	Pedestrian	Intersection Improvement Spot	Install High Visibility Crosswalks (2)	$813.60	Mid-Term	Gloucester County	NJDOT/Pitman Borough
			Install Curb Extensions (2)	$24,000.00	Mid-Term		
			ADA compliant ramp (4)	$2,960.00	Mid-Term		
E Holly Ave and Woodlynn Ave	Pedestrian	Intersection Improvement Spot	Install High Visibility Crosswalk	$406.80	Short-Term	Gloucester County	NJDOT/Pitman Borough
			Install Signage	$100.00	Short-Term		
			ADA compliant ramp (2)	$1,480.00	Short-Term		
E Holly Ave and Fernwood Ave	Pedestrian	Intersection Improvement Spot	Install High Visibility Crosswalk	$406.80	Short-Term	Gloucester County	NJDOT/Pitman Borough
			Install Signage	$100.00	Short-Term		
			ADA compliant ramp (2)	$1,480.00	Short-Term		
E Holly Ave and Clinton Ave	Pedestrian	Intersection Improvement Spot	Install High Visibility Crosswalk	$406.80	Short-Term	Gloucester County	NJDOT/Pitman Borough
			ADA compliant ramp (2)	$1,480.00	Short-Term		
E Holly Ave and Franklin Ave	Pedestrian	Intersection Improvement Spot	Install High Visibility Crosswalk	$406.80	Short-Term	Gloucester County	NJDOT/Pitman Borough
			Install Signage	$100.00	Short-Term		
			ADA compliant ramp (2)	$1,480.00	Short-Term		

Woodbury Ave and Waverly Ave	Pedestrian	Intersection Spot Improvement	Install Sidewalks	$73,266.67	Long-Term	Gloucester County	NJDOT/Pitman Borough
			Install High Visibility Crosswalk	$406.80	Mid-Term		
			Install Curb Extensions (2)	$24,000.00	Mid-Term		
			ADA compliant ramp (2)	$1,480.00	Mid-Term		
			Install Signage	$100.00	Short-Term		
Woodbury Ave and Columbia Ave	Pedestrian	Intersection Spot Improvement	Install High Visibility Crosswalks (3)	$1,830.60	Mid-Term	Gloucester County	NJDOT/Pitman Borough
			Install Curb Extension	$12,000.00	Mid-Term		
			Install Sidewalk	$5,693.33	Mid-Term		
			ADA compliant ramp (6)	$4,440.00	Mid-Term		
Lambs Rd (N Broadway to W Holly Ave)	Pedestrian	Corridor	Install Sidewalk	$81,500.00	Long-Term	Gloucester County	NJDOT/Pitman Borough
			Trail Connection Study	$50,000.00	Mid-Term		
			Signal Warrant Analysis	$7,500.00	Mid-Term		
Carew Ave (Vassar Ave to Cedar Ave)	Pedestrian	Corridor	Install Sidewalk	$30,888.89	Long-Term	Pitman Borough	NJDOT
Lambs Rd Trail Crossing	Pedestrian	Intersection Spot Improvement	Install High Visibility Crosswalk	$632.80	Short-Term	Gloucester County	NJDOT/Pitman Borough
			Install Flashing Beacons	$13,550.00	Short-Term		

11. APPENDIX C

Bicycle and Pedestrian Toolkit

Bicycle Toolkit

Bicycle Lane

Description and Application

- Typically on streets with speed limits of 25 or 30 mph
- Typical minimum bicycle lane width is 5 ft

Benefits

- Provides a designated lane for bicyclists
- Provides a greater space for bicycling without making the bike lane appear so wide it is mistaken for a travel lane

Buffered Bicycle Lane

Description and Application

- Conventional bicycle lane paired with a designated buffered space
- Typically on streets with speed limits of 25 or 30 miles mph
- Typically minimum buffer is 1 ft and bicycle lane width is 5 ft

Benefits

- Provides greater distance between vehicle and bicyclist
- Provides space for a bicyclist to pass another bicyclist
- Provides a greater space for bicycling without making the bike lane appear so wide it is mistaken for a travel lane

Shared Marked Lanes (Sharrow)

Description and Application

- Used on single-lane, low speed, lower volume roadways
- Used on roadways where it is not feasible or appropriate to provide dedicated bicycle facilities
- Used to connect and provide a designated route between dedicated bicycle facilities

Benefits

- Provides directional and wayfinding guidance to bicyclists and visual cues to motorists to anticipate the presence of bicyclists

Multiuse Trail

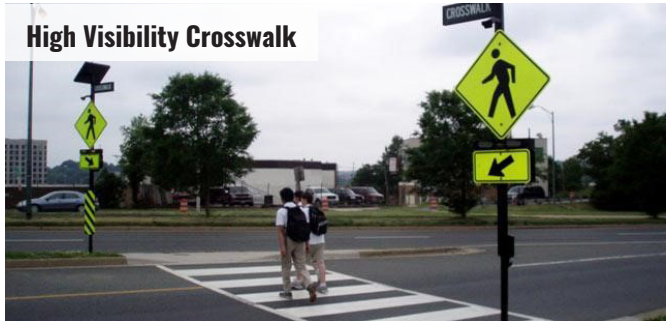
Description and Application

- A shared path for walking and biking separated from vehicle traffic by open space
- Typically applied to linear corridors within independent rights-of-way with minimal interruption by vehicle traffic
- Alternative facility for higher speed roads

Benefits

- Provides comfortable route for bicyclists of all ages and abilities

Pedestrian Toolkit



Description and Application
- Crosswalk provides guidance for pedestrians crossing roadways
- Used in key intersections where pedestrian activity is high (i.e schools)

Benefits
- Increases visibility of pedestrian crossing paths
- Discourages motorists from encroaching into crosswalk

Description and Application
- Visually and physically narrows the road at intersections
- Typically applied to parking lane at an intersection

Benefits
- Shortens crossing distance for pedestrians
- Serves as a visual cue to drivers to slow down as they are entering a neighborhood street or area
- Increases overall visibility of pedestrians

Description and Application
- Uses an amber flashing light that supplements a warning sign at a unsignalized intersection or mid-block crossing

Benefits
- Offers a lower cost alternative to traffic signal
- Increases driver yielding behavior at crossings when supplementing standard crossing warning signs and markings
- Elicits a greater response from drivers than traditional methods

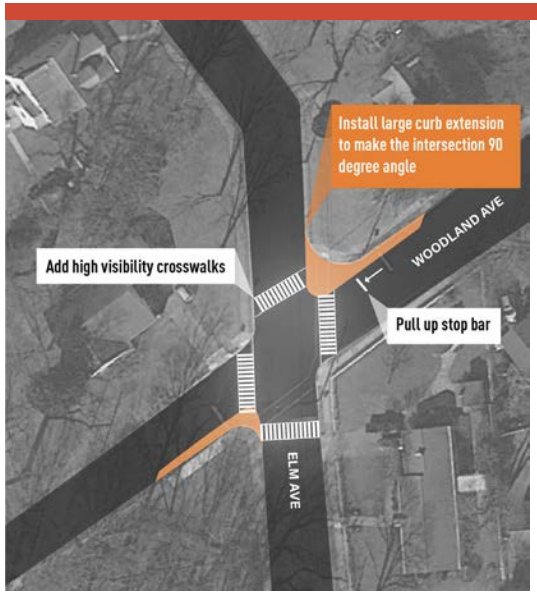
Description and Application
- Raises the level of the roadway at a key intersection

Benefits
- Reinforces slow speeds
- Encourages motorists to yield to pedestrians at crosswalk

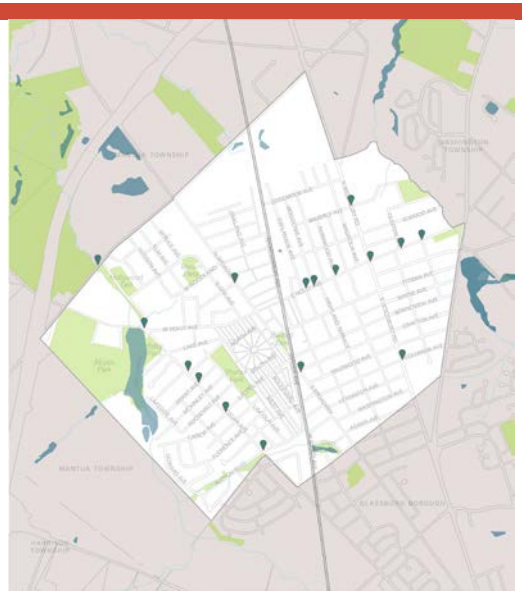
12. APPENDIX D

Pedestrian Treatment Types

Crosswalks



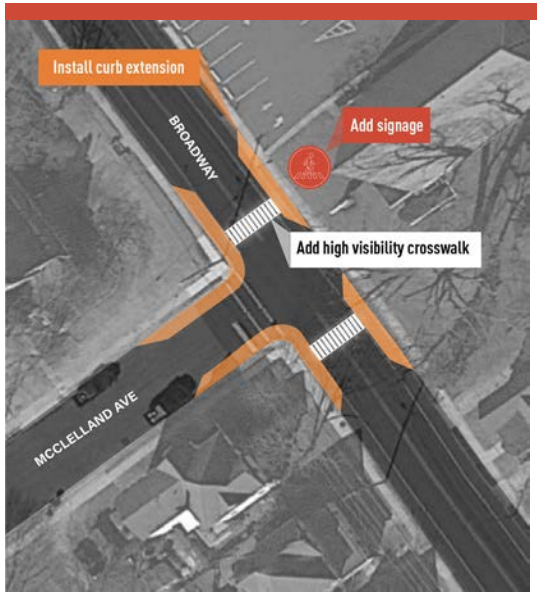
Crosswalk Treatment Example

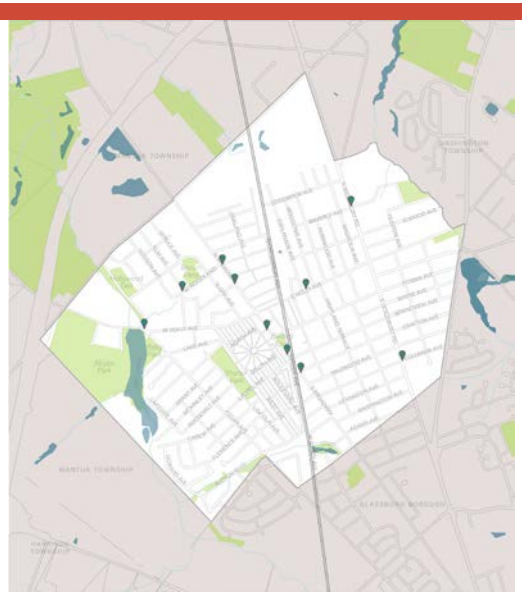


Applied Locations

- N Broadway and McClelland Ave
- N Broadway and Crafton Ave
- S Broadway and Ballard Ave
- Woodbury Rd and Waverly Ave
- Woodbury and Columbia Ave
- Lambs Road (near trail)
- W Holly Ave and Cedar Ave
- W Holly Ave and Woodlynne Ave
- W Holly Ave and Woodbury Ave
- W Holly Ave and West Ave
- E Holly Ave and Franklin Ave
- E Holly Ave and Fernwood Ave
- E Holly Ave and Esplanade Ave
- E Holly and Clinton Ave
- Cedar Ave and Grant Ave
- Cedar Ave and Cleveland Ave
- Cedar Ave and Carew Ave/ Laurel Ave
- Cedar Ave and Alcyon Blvd

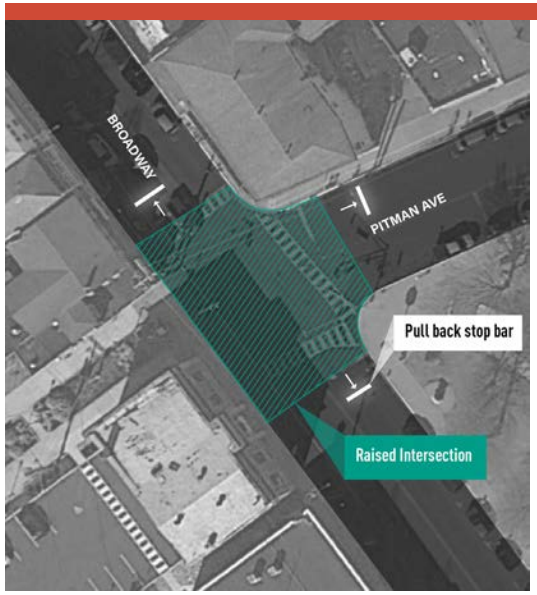
Curb Extensions





- N Broadway and Woodland Ave
- N Broadway and McClelland Ave
- Broadway and Ballard Ave
- N Broadway and 2nd Ave
- Woodland Ave and Elm Ave
- Woodbury Rd and Waverly Ave
- Woodbury and Columbia Ave
- E Holly Ave and Esplanade Ave
- W Holly Ave and Cedar Ave

Raised Intersections



Raised Intersection Treatment Example

Applied Locations

- W Holly Ave and Broadway
- N Broadway and Pitman Ave

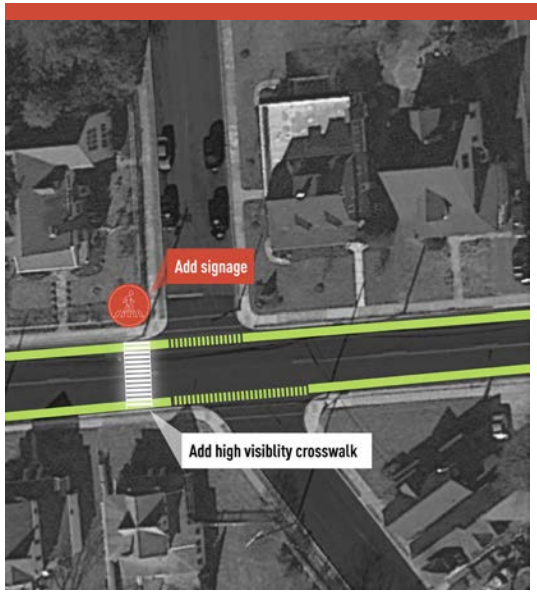
Flashing Beacon

Flashing Beacon Treatment Example

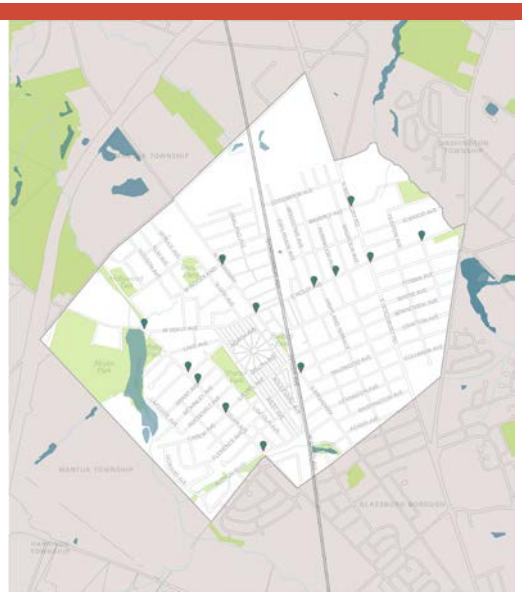
Applied Locations

- Lambs Road (near trail entrance)
- Cedar Ave and Laurel Ave/ Carew Ave

Signgage



Signage Treatment Example

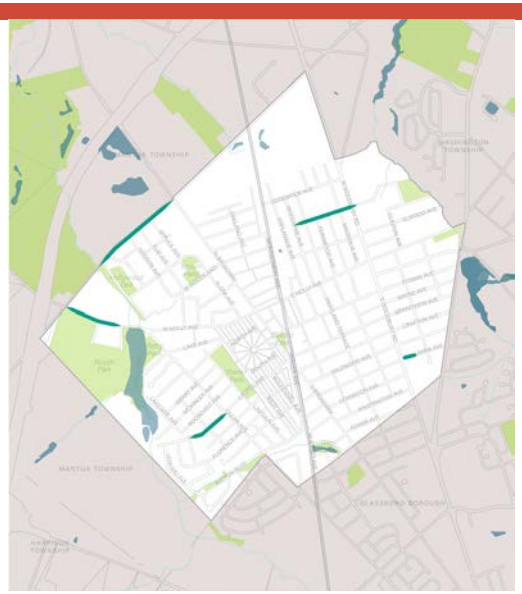


Applied Locations

- N Broadway and McClelland Ave (Signage)
- W Holly Ave and N Broadway (Signage)
- Woodbury Rd and Waverly Ave (Signage)
- W Holly Ave and West Ave (Signage)
- E Holly Ave and Woodlynne Ave (Signage)
- E Holly Ave and Woodbury Ave (Signage)
- E Holly Ave and Franklin Ave (Signage)
- E Holly Ave and Fernwood Ave (Signage)
- W Holly Ave and Cedar Ave (Signal)
- W Holly Ave and Broadway (Signal)
- Cedar Ave and Grant Ave (Signage)
- Cedar Ave and Cleveland Ave (Signage)
- Cedar Ave and Carew Ave/Laurel Ave (Signage)
- Cedar Ave and Alcyon Blvd (Signage)
- S Broadway and Crafton Ave (Signage)

Sidewalk Installation

Sidewalk Treatment Example



Applied Locations

- Woodbury Rd and Waverly Ave
- Woodbury Rd and Columbia Ave
- Lambs Rd (from Trail to Broadway)
- Carew Ave (from Vassar Ave to Cedar Ave)
- W Holly Ave (from Carr Ave to Lambs Rd)

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