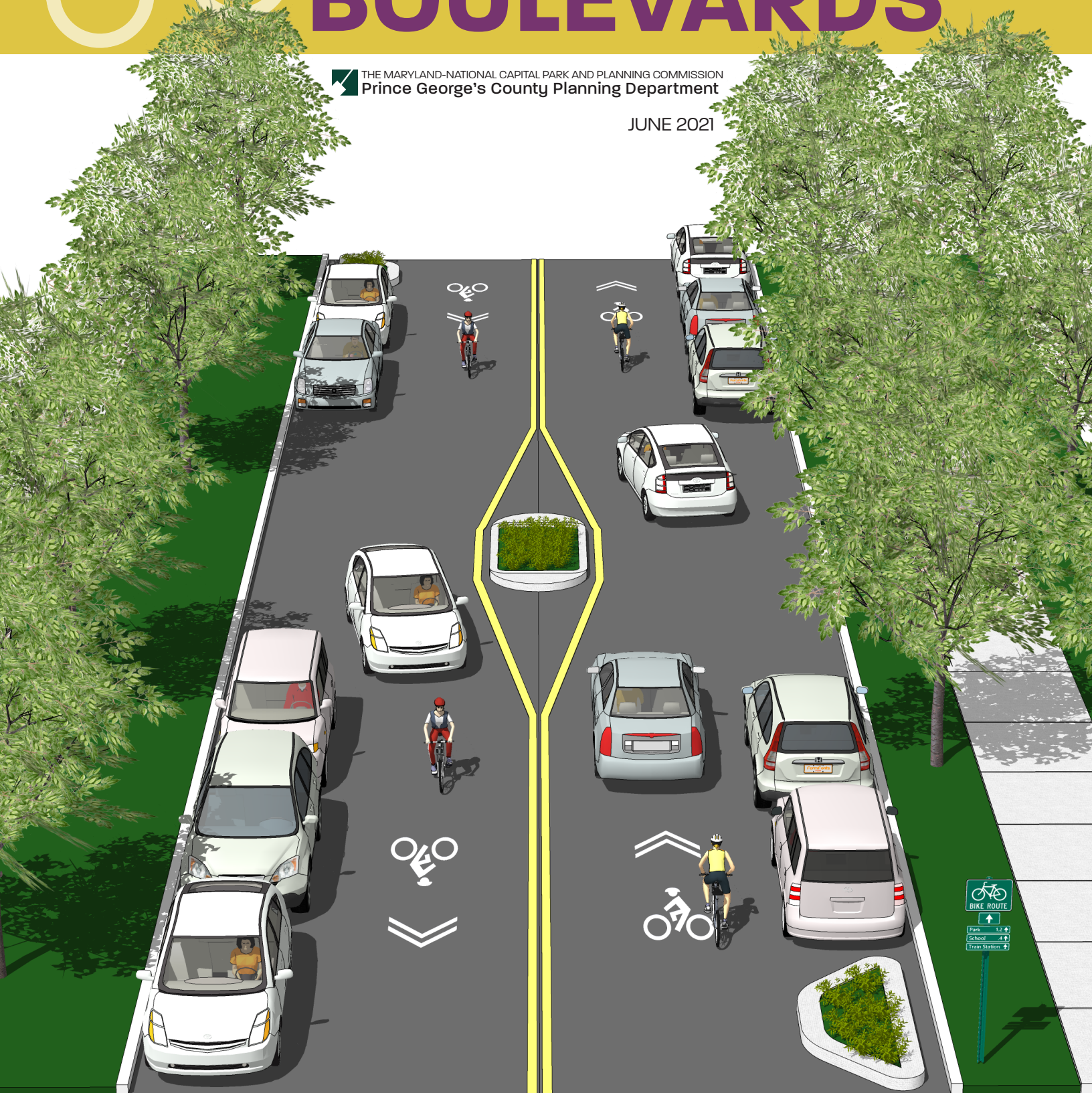
Langley Park Neighborhood

BICYCLE BOULEVARDS

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION
Prince George's County Planning Department

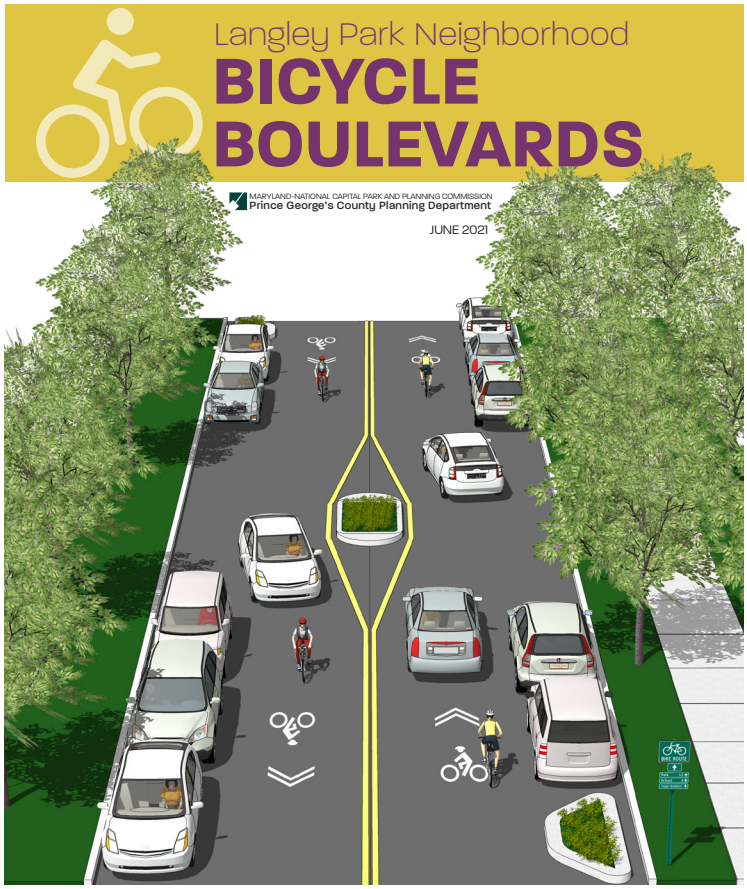
JUNE 2021



Abstract

Date	June 2021
Title	Langley Park Neighborhood Bicycle Boulevards
Author	The Maryland-National Capital Park and Planning Commission
Subject	Bicycle and Pedestrian Connectivity in Langley Park area
Source of copies	The Maryland-National Capital Park and Planning Commission 14741 Governor Oden Bowie Drive Upper Marlboro, MD 20772
Series number	220212405
Number of pages	70

The aim of this project is to improve bicycle and pedestrian connectivity to the proposed Riggs Road Purple Line station and other activity centers in this area. This report documents existing conditions, identifies issues and opportunities, explains design alternatives, and documents the prioritization process used to identify the preferred design alternatives and spot improvements for the study segments. This project is supported by the Metropolitan Washington Council of Government's (MWCOG) Transportation Land Use Connections (TLC) Program.



June 2021

Prepared by Kittelson and Associates, Inc., Rhodeside & Harwell, Inc., and AB Consultants Inc.
for The Maryland-National Capital Park and Planning Commission

Prince George's County Planning Department
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The Commission has three major functions:

- The preparation, adoption, and, from time to time, amendment or extension of the General Plan for the physical development of the Maryland-Washington Regional District.
- The acquisition, development, operation, and maintenance of a public park system.
- In Prince George's County only, the operation of the entire county public recreation program.

The Commission operates in each county through a Planning Board appointed by and responsible to the County government. All local plans, recommendations on zoning amendments, administration of subdivision regulations, and general administration of parks are responsibilities of the Planning Boards.

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- Our mission is to help preserve, protect and manage the County's resources by providing the highest quality planning services and growth management guidance and by facilitating effective intergovernmental and citizen involvement through education and technical assistance.
- Our vision is to be a model planning department of responsive and respected staff who provide superior planning and technical services and work cooperatively with decision makers, citizens, and other agencies to continuously improve development quality and the environment and act as a catalyst for positive change

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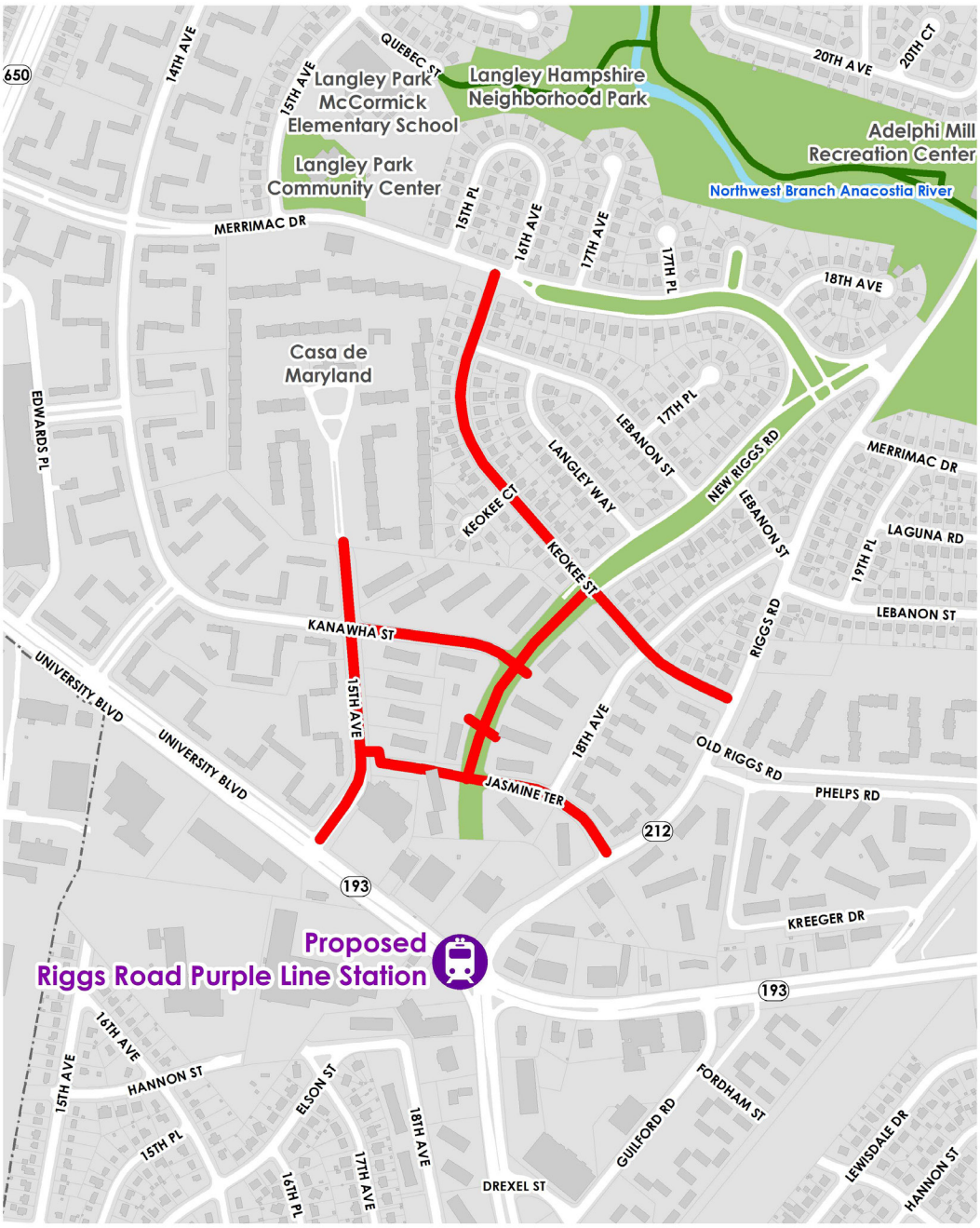


Study Segments

Riggs Road - Langley Park Area Bicycle Boulevards

0 200 400 800 Feet

Legend

- County Boundary
- Water Bodies
- Buildings
- Parks/Open Space
- Existing Trails
- Study Segments

Source: Planning Department of Prince George's County, Maryland (2018)

Introduction

Prince George's County initiated this project to advance ongoing pedestrian and bicycle connectivity efforts in the Langley Park area. The overarching aim of this project, as well as several other related ongoing projects in the vicinity, is to improve bicycle and pedestrian connectivity to the proposed Riggs Road Purple Line station and other activity centers in the area. This report documents existing conditions, identifies issues and opportunities, explains design alternatives, and documents the prioritization process used to identify preferred design alternatives and spot improvements for the study segments.

Project Background

This planning and design project is the outcome of technical assistance provided by the Metropolitan Washington Council of Governments (MWCOG) Transportation-Land Use Connections (TLC) program. Kittelson & Associates Inc. (Kittelson), in collaboration with Rhodeside Harwell Inc. (RHI) and AB Consultants Inc. (ABCI) supported The Maryland-National Capital Park and Planning Commission (M-NCPPC) Prince George's County Planning Department and Prince George's County Department of Public Works and Transportation (DPW&T) for this planning and design project. The project team includes members of the consultant team and staff from M-NCPPC, DPW&T, and MWCOG. The project team evaluated bicycle facility design alternatives and developed 30% preliminary design plans for a preferred alternative for six study segments in the Langley Park area.

The Langley Park area near the intersection of MD 212 (Riggs Road) and MD 193 (University Boulevard) is one of the most densely populated and diverse areas in Maryland. It is designated by MWCOG as an Activity Center and is considered an Equity Emphasis Area. This project developed preliminary designs for bicycle facilities and highlighted the need for enhancing pedestrian facilities that connect the study area to the upcoming Purple Line light rail station and the surrounding mixed-use activity centers.

Several previous and ongoing studies, discussed in the next section, analyzed the bicycle and pedestrian connectivity of the neighborhoods surrounding the proposed Purple Line transit stations and identified corridors for improvement. The previous studies identified street segments for enhancing bicycle infrastructure in the study area. This project built on the previous recommendations and developed a preliminary design for bicycle facilities along the following study segments:

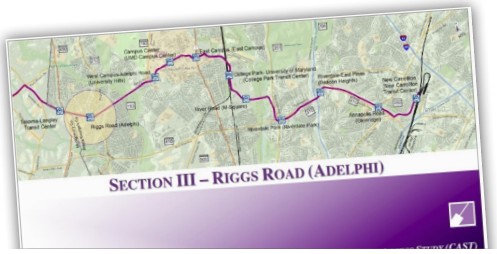
- 15th Avenue: MD 193 (University Boulevard) to Villas at Langley Apartments Entrance
- Keokee Street: Merrimac Drive to MD 212 (Riggs Road)
- Kanawha Street: 15th Avenue to New Riggs Road Right-Of-Way (ROW)
- Jasmine Terrace: 15th Avenue to Riggs Road
- Jasmine Terrace Extension (Parking Lot): 15th Avenue to New Riggs Road ROW
- New Riggs Road ROW: Jasmine Terrace to Keokee Street

Previous and Ongoing/Recent Studies

TAKOMA/LANGLEY CROSSROADS SECTOR PLAN (2009)

The purpose of this sector plan was to enhance the character and quality of life of the community and provide for transit-oriented development around the proposed Purple Line light rail transit stations. Some of the relevant recommendations included:

- Improve connectivity in the sector plan area by creating a compact network of pedestrian-friendly streets.
- Expand the bicycle route network with safe, convenient, and attractive bicycle facilities such as shared-use roadways, on-road bicycle lanes, cycle tracks, sidepaths, storage and parking facilities, and safe road crossings on all streets.
- Create safe routes by identifying high-priority sidewalk and bikeway corridors that lead to schools, transit centers, parks, and other activity centers where sidewalk and bikeway construction is required to improve safety, accessibility, and mobility.



PURPLE LINE CORRIDOR ACCESS STUDY (CAST) (2011)

Building upon the Takoma/Langley Crossroads Sector Plan, Prince George's County finalized the Purple Line Corridor Access Study in June 2011. The goal of the study was to evaluate multimodal access to the 11 proposed Purple Line stations within Prince George's County. Section III (Riggs Road) of the Plan established the priority pedestrian/bicycle access routes and the type of improvements needed for each route. The Study also recommended traffic calming and intersection improvements along study corridors.

SPACES SIDEWALK & STREETSCAPE IMPROVEMENTS PROJECT (SPACES) FOR UNIVERSITY BOULEVARD IN LANGLEY PARK (2020 – 2021)

M-NCPPC Prince George's County Planning Department recently conducted a study along University Boulevard from MD 650 (New Hampshire Avenue) to Adelphi Road. This segment of University Boulevard forms the southern boundary for this study area. The SPACEs project seeks to improve biking and pedestrian safety, better connect neighborhoods to the corridor, and enhance the public realm. Recommendations from the SPACEs project tie into this project.

CASA LANGLEY PARK AREA NEIGHBORHOOD REHABILITATION STREET DESIGN PROJECT (2020- ONGOING)

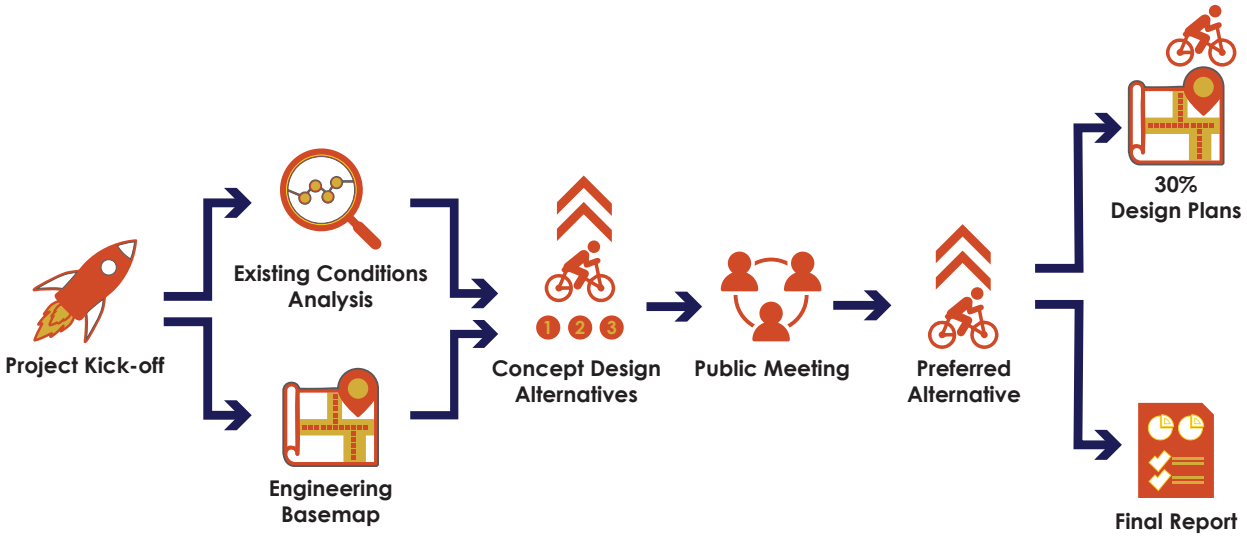
Prince George's County DPW&T, in collaboration with CASA de Maryland, is developing streetscape plans for multiple neighborhood street segments around the study area. The designs include the installation of traffic calming devices, such as curb extensions and speed humps, along with new street trees, crosswalks, and sidewalks. Street segments being redesigned include:

- Langley Way: Edwards Place to 14th Avenue
- 14th Avenue: Langley Way to Kanawha Street
- 14th Avenue: MD 193 (University Boulevard) to Kanawha Street
- Kanawha Street: 14th Avenue to 15th Avenue
- 15th Avenue: Kanawha Street to Villas at Langley Apartments

Recommendations from the CASA project were considered in this project to encourage consistent street design throughout the study area.

Planning Process

The project team developed a streamlined planning process to guide the project through various tasks. The project began with a kick-off meeting on December 7, 2020. As part of the existing conditions analysis, the project team developed an engineering basemap based on readily available data. This basemap was used for the 30% design plans. The project team shared the design alternatives and the prioritization methodology as part of a virtual public meeting on March 18, 2021.



PROJECT GOALS

The project team identified three project goals to further the overarching vision of creating comfortable neighborhood bicycle connections to and from the proposed Purple Line station:

- Develop conceptual design alternatives for each study segment.
- Seek public feedback on conceptual design alternatives and choose preferred alternatives.
- Finalize preferred design alternatives and develop 30% design.

The outcome of this project is this final report document as well as 30% preliminary design plans for bicycle facilities and traffic calming elements for the study segments. These plans are based on a preferred alternative identified through public input and a planning-level qualitative assessment. The planning-level qualitative assessment was conducted using a list of evaluation measures.

EVALUATION MEASURES

The preferred design alternative for each study segment was based on public input and a qualitative assessment using the following measures:

- Bicycle Safety and Comfort
- Public and Stakeholder Input
- Estimated Cost
- Right-of-Way Impacts
- Parking and Property Access Impacts
- Drainage and Utility Impacts

Existing Conditions Analysis

This section provides a summary of the study area, focusing on existing land uses, existing and proposed pedestrian, bicycle, and transit facilities, and recent crash history. In addition, it provides a summary of the roadway characteristics of the study segments.

Existing Land Use

The study area is mostly comprised of multi-family and single-family residential uses. Commercial uses are concentrated along MD 193 (University Boulevard) and at the intersection of University Boulevard and Riggs Road, where the future Purple Line station will be located. The residential density decreases with distance away from University Boulevard from medium-density, three-story walk-up apartments to low-density, single-family detached houses. There are some open space and institutional uses toward the northern edge of the study area, such as Langley Hampshire Neighborhood Park, Langley Park Community Center, and Langley Park-McCormick Elementary School.

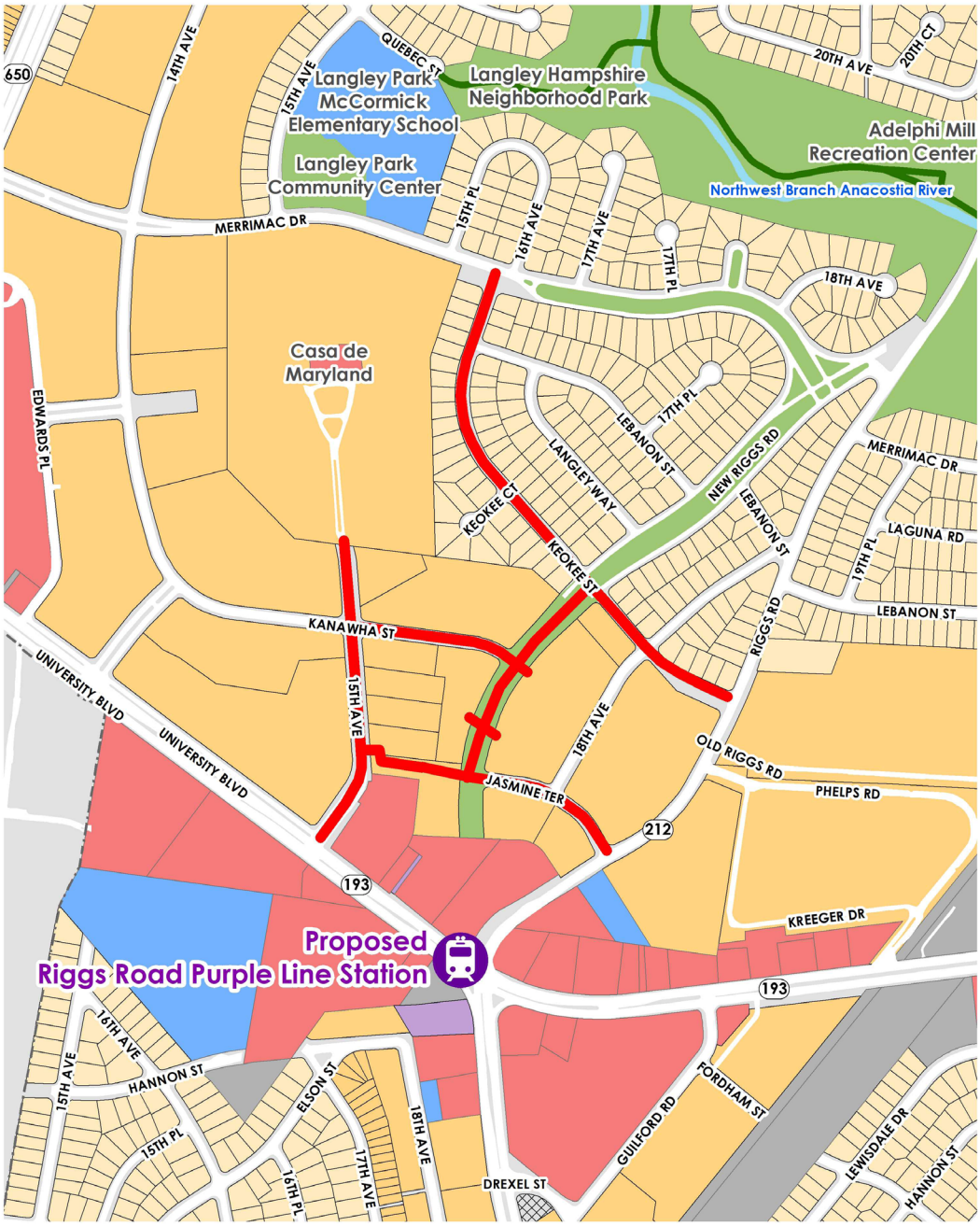
Apartment buildings fronting 15th Avenue.

Single-family detached houses fronting Keokee Street.

Apartment buildings fronting Kanawha Street and Jasmine Terrace.

Commercial and retail land uses fronting University Boulevard.

Map 2. Existing Land Use



Existing Land Use

Riggs Road - Langley Park Area Bicycle Boulevards

0 200 400 800 Feet

Legend

- County Boundary
- Water Bodies
- Parks/Open Space
- Commercial
- Residential - Single Family
- Residential - Mid-High Density
- Institutional
- Mixed Use
- Transp. & Utilities
- Vacant
- Existing Trails
- Study Segments

Source: Planning Department of Prince George's County, Maryland (2018)

15th Avenue has an eight-foot-wide sidewalk on the east side that can function as a shared-use path.

Trail connection to Northwest Branch Trail from Quebec Street, just north of the study area.

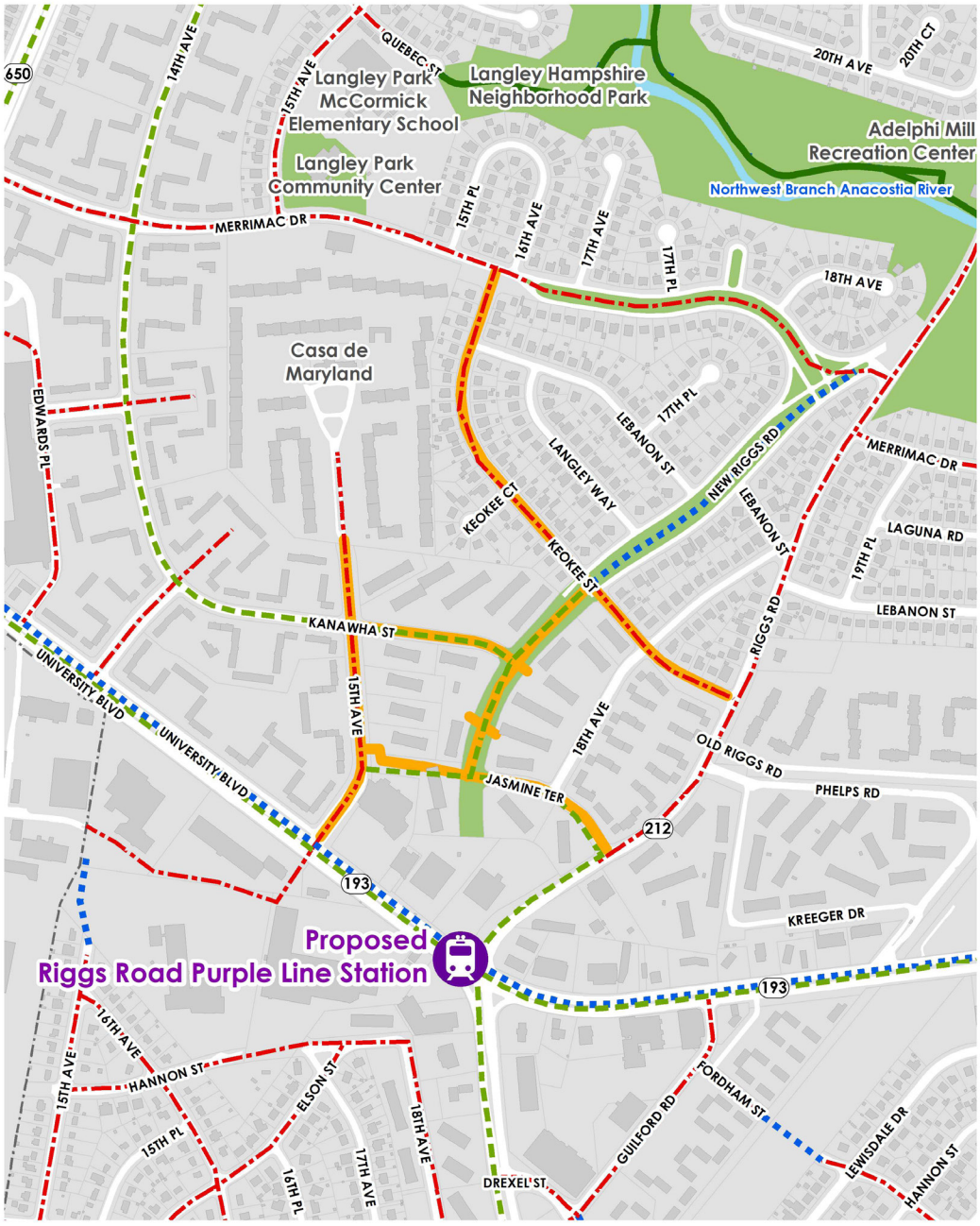
Existing and Proposed Bicycle Facilities

There are no dedicated on-street bicycle facilities within the study area. MD 193 (University Boulevard) is a six-lane divided roadway, which is extremely uncomfortable for bicyclists because of the lack of separated bicycle lanes and fragmented sidewalks interrupted by frequent wide commercial driveways. However, with the construction of the Purple Line currently underway along University Boulevard, there have also been plans for additional bicycle facilities along the roadway. New separated bicycle lanes and shared-use paths are planned as part of the light rail corridor and station construction. MD 212 (Riggs Road) is a two-lane undivided road with on-street parking on both sides and no bicycle facilities. Even though Riggs Road is a two-lane road, and traffic moves slower than on University Boulevard, bicyclists feel uncomfortable riding along the roadway. These two roadways, taken together, form a barrier for the study area that severely limits bicycle connectivity beyond the immediate study area.

Most of the study segments including Keokee Street, Kanawha Street, and Jasmine Terrace, are narrow, low-speed, and low-traffic volume residential streets with on-street parking on both sides. These streets can function well as shared roads. Even without dedicated on-street bicycle facilities and with additional traffic calming, bicyclists would feel safer riding with vehicular traffic on these streets. The only study segment that has a striped, double-yellow centerline is 15th Avenue. Although 15th Avenue is wider and busier than other study segments, it only has one lane in each direction with on-street parking on both sides. 15th Avenue also has an eight-foot-wide sidewalk on the east side that could function as a shared-use path. 15th Avenue could become more comfortable for bicyclists to share the roadway with additional traffic calming.

There are two regional trails near the study area. The Northwest Branch Trail is located just north of the study area and can be accessed from the Quebec Street cul-de-sac, just north of Langley Park-McCormick Elementary School. The Sligo Creek Trail is located south of the study area and can be accessed from MD 650 (New Hampshire Avenue). Both trails join the Anacostia River Trail system and connect to Washington, D.C., and several other destinations within the region. There are no comfortable bicycle connections to these trails from the study area. Improving bicycle connections to these trails will greatly enhance regional bicycle connectivity.

Map 3. Existing and Proposed Bicycle Facilities



Existing and Proposed Bike Facilities

Riggs Road - Langley Park Area Bicycle Boulevards

0 200 400 800 Feet

Legend

- County Boundary
- Water Bodies
- Buildings
- Parks/Open Space
- Existing Trails
- Study Segments

Proposed Facilities

- Bike Lane
- Trail/Side Path
- Shared Roadway

Source: Planning Department of Prince George's County, Maryland (2018)

Existing Pedestrian Facilities

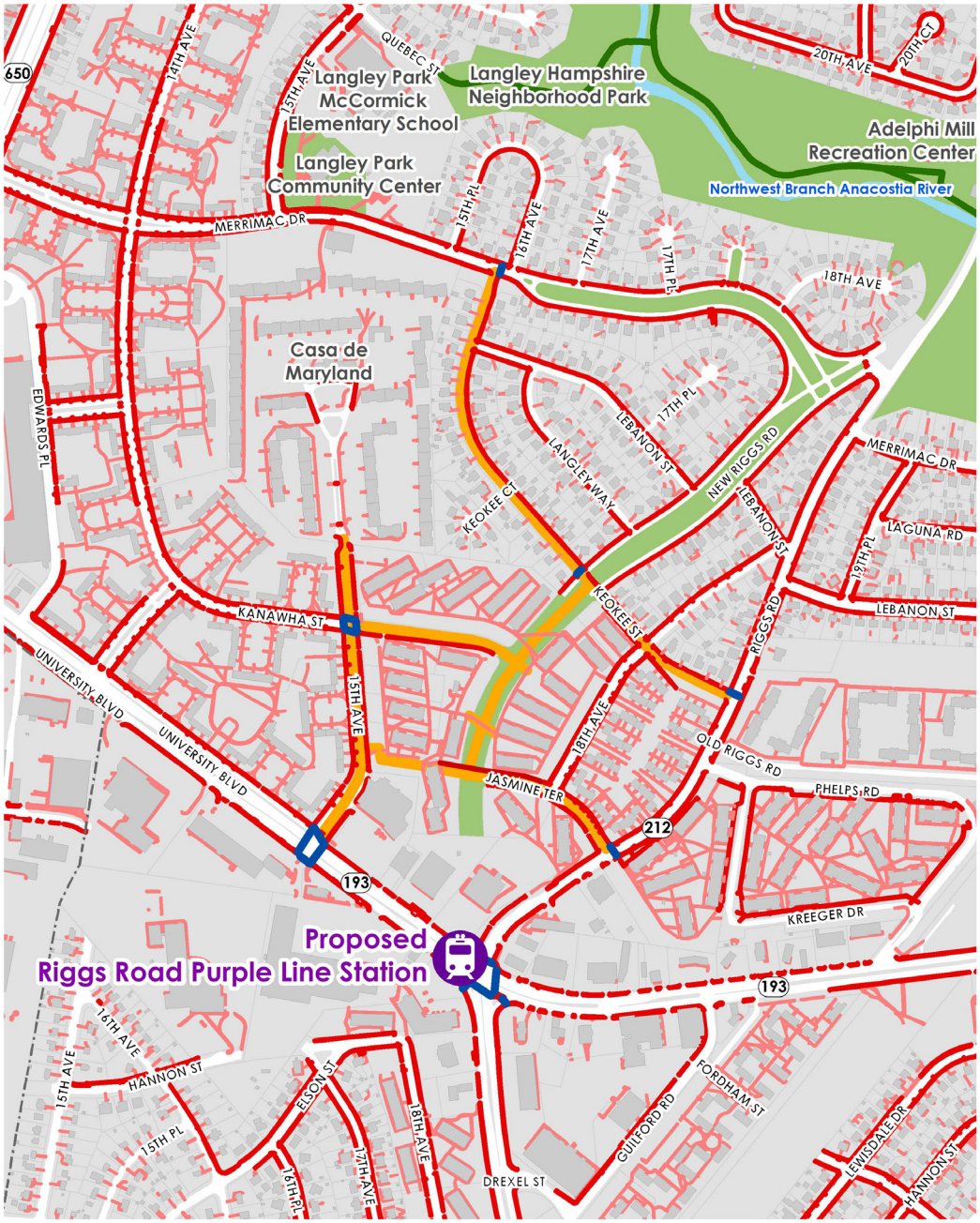
Most streets within and around the study area have pedestrian facilities. MD 193 (University Boulevard) is not a comfortable road for pedestrians because fragmented sidewalks are interrupted by frequent, wide commercial driveways. However, a wide shared-use path is planned along the roadway as part of the Purple Line light rail corridor and station construction. In the study area, Riggs Road, Merrimac Drive, and Kanawha Street, west of 15th Avenue have sidewalks on both sides. There are uncontrolled marked crosswalks at the intersections of Jasmine Terrace and Riggs Road, Kanawha Street and Riggs Road, and Merrimac Drive and Keokee Street.

Within the study area, 15th Avenue has wide sidewalks on both sides, and the intersection of 15th Avenue and Kanawha Street has marked crosswalks and ADA-compliant pedestrian curb ramps. Jasmine Terrace also has sidewalks on both sides separated by a tree-lined landscape buffer. Kanawha Street study segment has a sidewalk on one side (south side). There is a sidewalk on the east side of Keokee Street, from New Riggs Road to Merrimac Drive. However, Keokee Street from MD 212 (Riggs Road) to New Riggs Road has sidewalks on both sides. New Riggs Road, south of Keokee Street, is a dedicated public right of way (ROW) for a roadway that was never built. It functions as a linear green space with several towpaths, indicating high pedestrian demand for new connections. There are three paved pathways within the New Riggs Road green space. One connects Jasmine Terrace to Jasmine Terrace Extension (parking lot) study segment. The other two connect internal apartment complex pathways and parking lots. Several off-street pathways exist within the study area, which connect apartment buildings and off-street parking lots. This network of pathways dramatically expands the pedestrian connectivity within the study area.

Pathway connecting Jasmine Terrace to Jasmine terrace Extension (parking lot) through New Riggs Road ROW linear green space.

15th Avenue and Kanawha Street intersection has marked crosswalks, sidewalks, and ADA-compliant curb ramps.

Map 4. Existing Pedestrian Facilities



Existing and Proposed Pedestrian Facilities

Riggs Road - Langley Park Area Bicycle Boulevards

0 200 400 800 Feet

Legend

- County Boundary
- Water Bodies
- Buildings
- Parks/Open Space
- Existing Trails
- Study Segments
- Existing Crosswalks
- Existing Sidewalks
- Existing Pathways

Source: Planning Department of Prince George's County, Maryland (2018)

Vehicle Crash History (2015-2018)

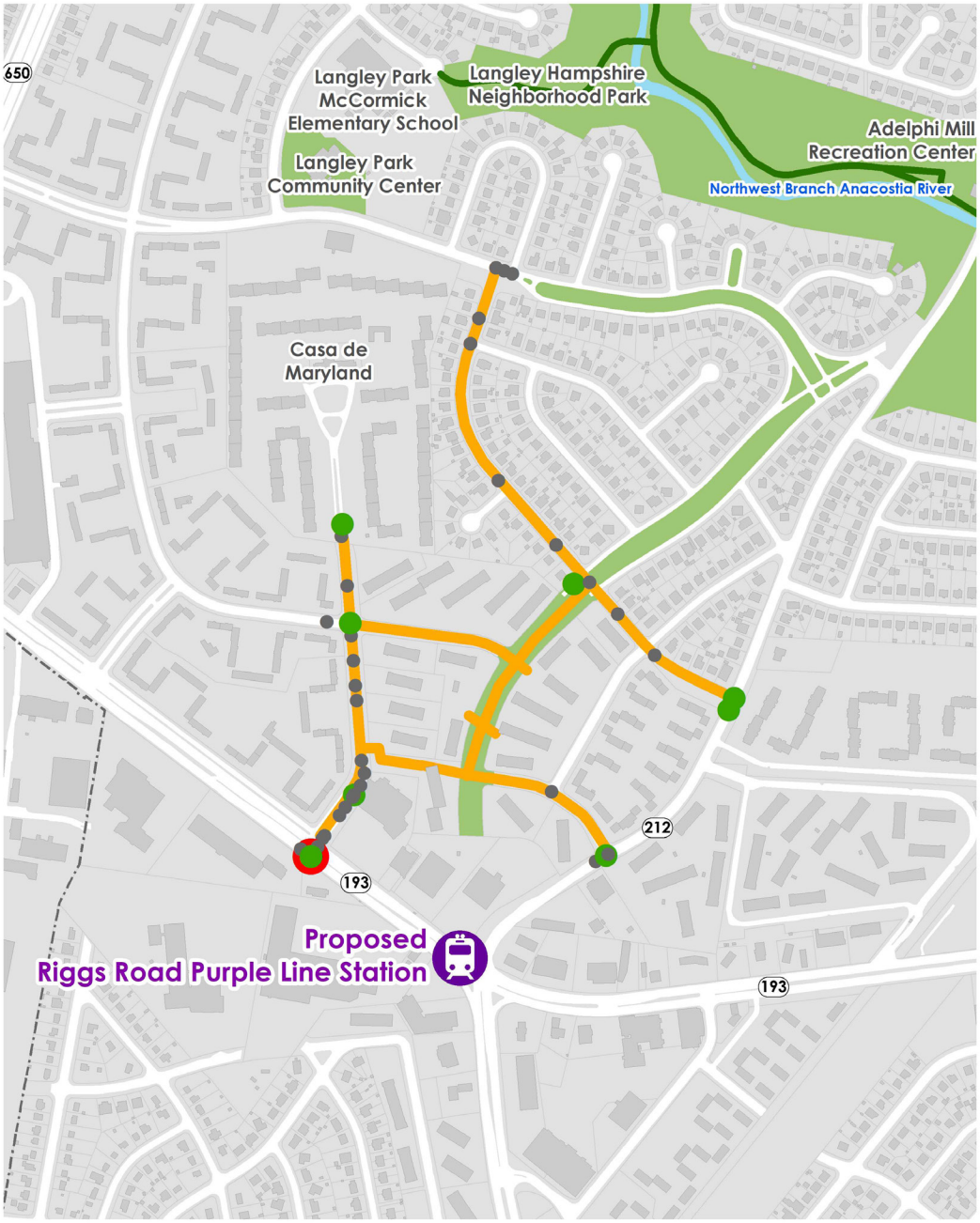
The project team summarized crash data from the County's Vision Zero program from 2015 to 2018 for the study segments. A total of 106 crashes occurred on study segments between 2015 and 2018. A total of 74 crashes occurred along 15th Avenue, 27 crashes occurred along Keokee Street, and five crashes occurred along Jasmine Terrace. Most of the crashes occurred at intersections or driveways.

As Table 1 shows, the most severe crashes involved rear-ends, angle, left turn, and single-vehicle crashes. Of the 106 crashes recorded at or near the study segments, 23 crashes resulted in injuries of varying degrees, and 83 were property-damage-only crashes.

Table 1. All Crashes by Severity Type

Crash Severity	Crash Type	Total
Property Damage Only	Head-On	10
	Left Turn	6
	Rear-End	7
	Side Swipe	21
	Angle	7
	Single Vehicle	3
	Other	14
	Total	83
Possible Injury	Head-On	1
	Left Turn	2
	Rear-End	4
	Angle	2
	Other	3
	Total	12
Injured	Rear-End	2
	Angle	3
	Left Turn	1
	Single Vehicle	1
	Other	1
	Total	8
Severe Injury	Rear-End	1
	Single Vehicle	2
	Total	3
Fatality	N/A	0
Total crashes		106

Map 5. Vehicle Crashes by Severity



Vehicle Crashes by Severity (2015 - 2018)

Riggs Road - Langley Park Area Bicycle Boulevards

0 200 400 800 Feet

Legend

- County Boundary
- Water Bodies
- Buildings
- Parks/Open Space
- Existing Trails
- Study Segments

Crash Severity

- Severe Injury
- Minor Injury
- Property Damage Only

Source: MNCCPC Vision Zero

Pedestrian and Bicycle Crash History (2015-2018)

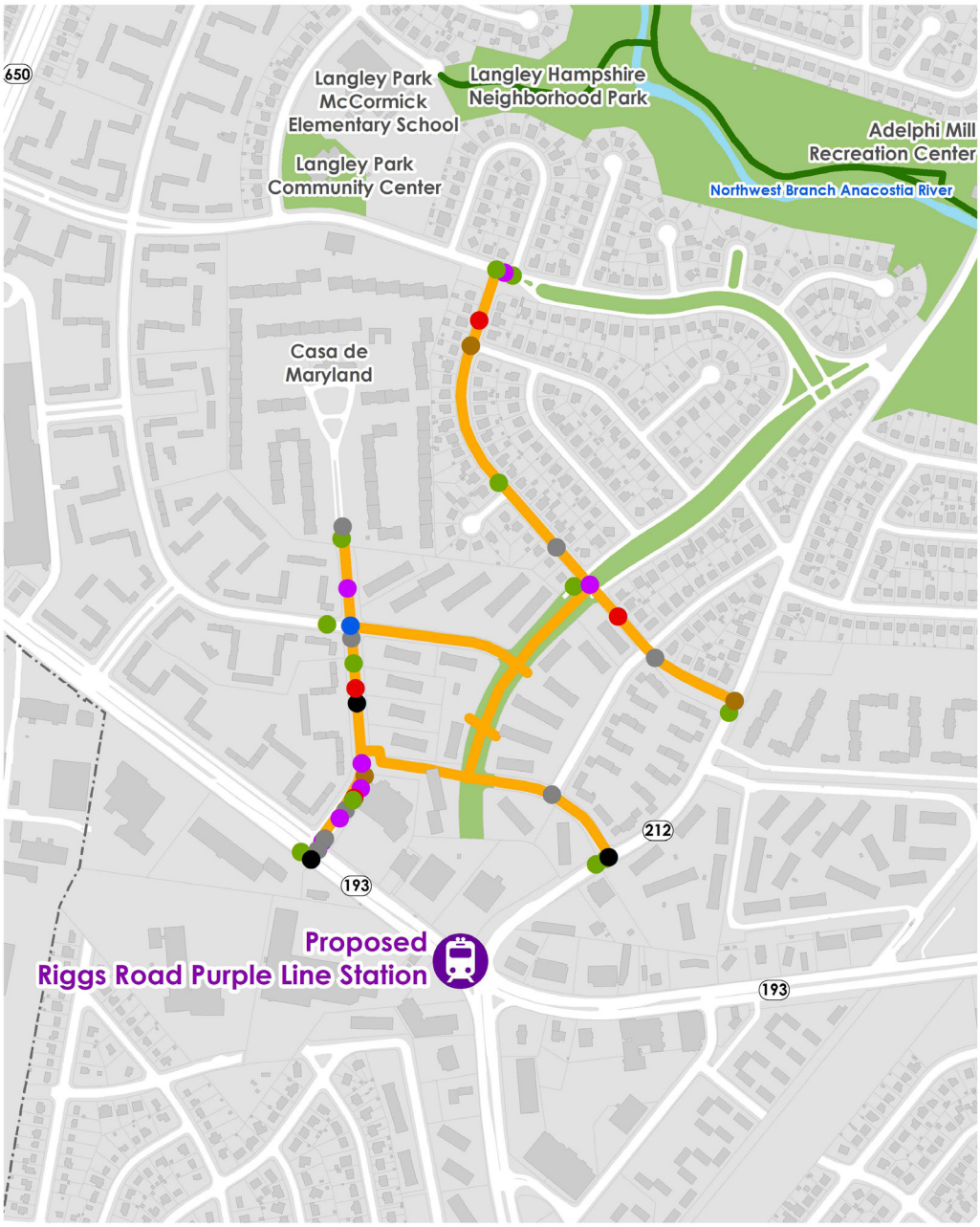
The project team summarized crash data involving bicyclists and pedestrians from the County's Vision Zero program for the years 2015 to 2018 for the study segments. There were two pedestrian crash events reported during that period. These two pedestrian crashes occurred at the intersections of 15th Avenue with University Boulevard and 15th Avenue at the entrance to the Villas at Langley apartment complex.

Table 2 shows that at these two locations, at least six pedestrians were involved in injury crashes. No bicyclists were involved in traffic crashes and no pedestrian fatalities occurred due to traffic crashes. During 2015 to 2018, one pedestrian was involved in a crash with property damage only, two pedestrians were involved in possible injury crashes, two pedestrians were involved in injury crashes, and two pedestrians were involved in severe injury crashes.

Table 2. All Crashes by Severity & Involvement

Crash Severity	Crash Involvement	Total
Property Damage Only	Crash Involvement	Total
	Other Vehicle	62
	Parked Vehicle	16
	Pedestrian	1
	Fixed Object	2
	Other Object	1
	Off Road	1
	Total	83
Possible Injury	Other Vehicle	7
	Parked Vehicle	1
	Pedestrian	2
	Other Conveyance	1
	Total	12
Injured	Other Vehicle	6
	Pedestrian	2
	Total	8
Severe Injury	Other Vehicle	1
	Pedestrian	2
	Total	3
Fatality	N/A	0
Total pedestrians injured		6
Total crashes		106

Map 6. Vehicle Crashes by Type



Vehicle Crashes by Type (2015 - 2018)

Riggs Road - Langley Park Area Bicycle Boulevards

0 200 400 800 Feet

Legend

- County Boundary
- Water Bodies
- Buildings
- Parks/Open Space
- Existing Trails
- Study Segments

Collision Type

- Head-On
- Left Turn
- Rear-End
- Side-Swipe
- Angle
- Single Vehicle
- Other

Source: MNCCPC Vision Zero

15th Avenue is the only study segment with bus transit. Buses make a turn at the intersection of 15th Avenue and Keokee Street.

Existing and Future Transit Network

The study area has access to bus transit service from WMATA and TheBus. There are several bus stops along University Boulevard, 15th Avenue, Kanawha Street, and Riggs Road served by bus routes 18, C2, C4, F8, R1, and R2. 15th Avenue is the only study segment with bus transit. Buses make a turn at the intersection of 15th Avenue and Keokee Street. It is critical to consider the turning bus movement geometry while developing designs for this intersection.

Future transit network additions include the Purple Line light rail line along University Boulevard with a station at the intersection of Riggs Road.

PHOTO VIA MDOT

The future Purple Line light rail will have a stop on University Boulevard at Riggs Road.

Map 7. Existing and Future Transit Network

Existing and Future Transit Network

Riggs Road - Langley Park Area Bicycle Boulevards

0 200 400 800 Feet

Legend

- County Boundary
- Water Bodies
- Buildings
- Parks/Open Space
- Existing Trails
- Study Segments
- Future Purple Line
- Bus Routes
- Bus Stops

Source: Planning Department of Prince George's County, Maryland (2020)
Washington Metropolitan Area Transit Authority (2020)
State of Maryland GIS Data Catalog (2020)

Existing Roadway Characteristics

POSTED SPEEDS & TRAFFIC CALMING MEASURES

Posted speeds do not exceed 25 mph along neighborhood streets, including all the study segments. Other roads around the study area have posted speeds of up to 35 mph, including University Boulevard and Riggs Road.

Some traffic calming devices have already been installed in and around the study area. These include three speed humps along Merrimac Drive from 14th Avenue to Keokee Street, as well as curb extensions along 15th Avenue, north of Kanawha Street.

PARKING

The study area has a substantial number of off-street surface parking lots that serve all the multi-family apartment complexes and commercial uses. All study segments have unmetered and unrestricted on-street parking. Based on field observations, on-street and off-street parking is well used in the study area. A prior study of parking in and around the study area identified:

- Approximately 13 percent of parking (both off-street lots and on-street spaces) are more than 85 percent occupied.
- Approximately 68 percent of parking segments are less than 75 percent occupied.
- The on-street parking is approximately 49 percent occupied, with 256 of the 519 parking spaces occupied, and seven of the 48 block faces have occupancies greater than 85 percent.

One of the study segments is an off-street parking lot that serves an apartment complex. However, this parking lot aligns with a pathway that connects to Jasmine Terrace, east of the New Riggs Road ROW linear open space. Vehicular access to this parking lot is limited to Kanawha Street. Although there is a vehicular and pedestrian gate to this parking lot from 15th Avenue, only the pedestrian gate is open to the public. The vehicular gate is locked.

Existing Right-of-Way

Approximate measurements were taken using parcel data in GIS to assess the available ROW along the study segments.

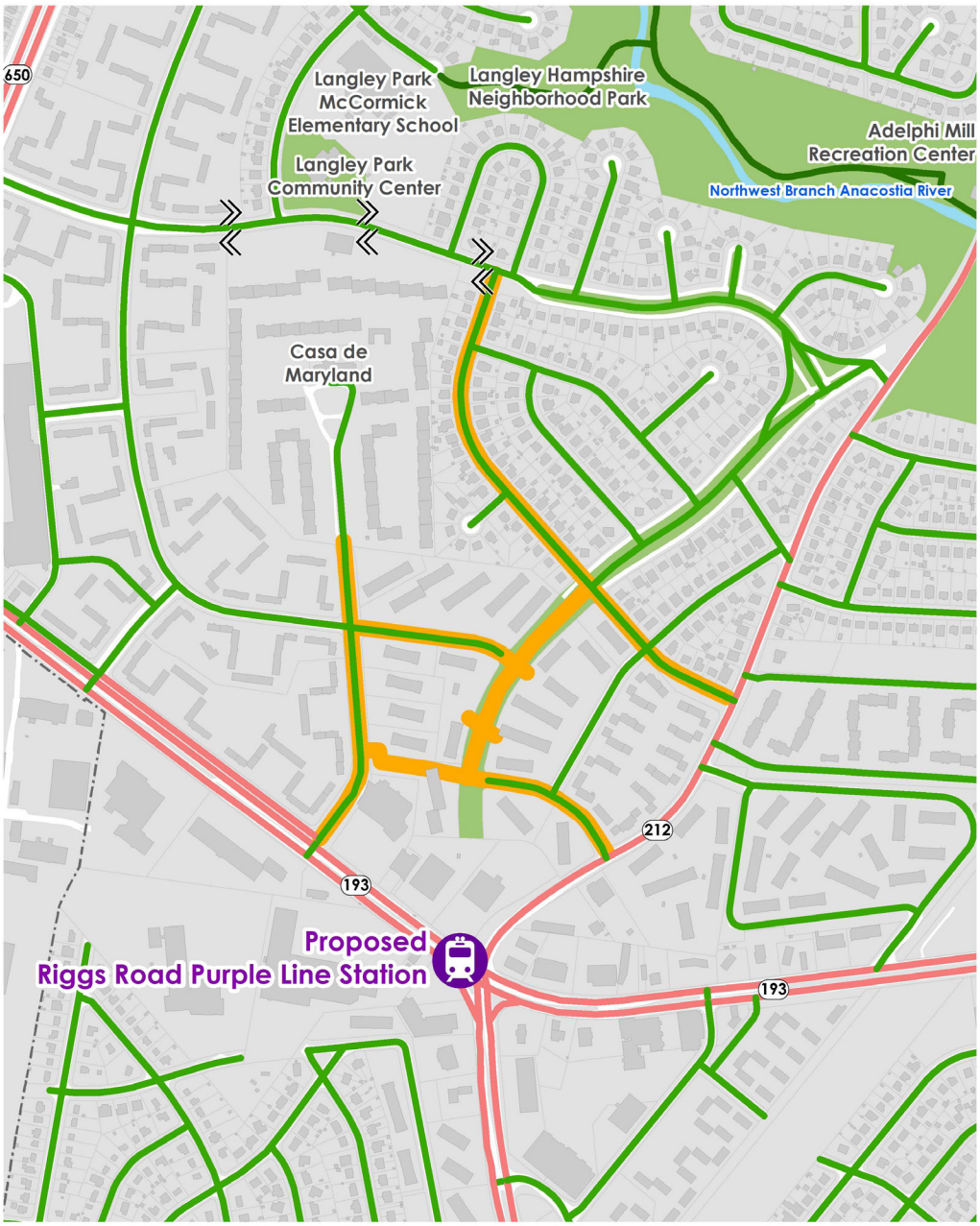
Keokee Street's approximate ROW ranges from 50 feet to 90 feet. 15th Avenue's ROW width is approximately 75 feet. Kanawha Street and Jasmine Terrace have an approximate ROW width of 60 feet. New Riggs Road linear open space ROW has an approximate ROW width of 100 feet. The Jasmine Terrace Extension (parking lot) transverses a private property that is approximately 80 feet wide.

Recently installed curb extension on 15th Avenue.

On-street parking on 15th Avenue.

New Riggs Road ROW is approximately 100 feet and functions as a linear open space within the neighborhood.

Map 8. Posted Speeds & Traffic Calming Measures



Posted Speeds and Traffic Calming Measures

Riggs Road - Langley Park Area Bicycle Boulevards

0 200 400 800 Feet

Legend

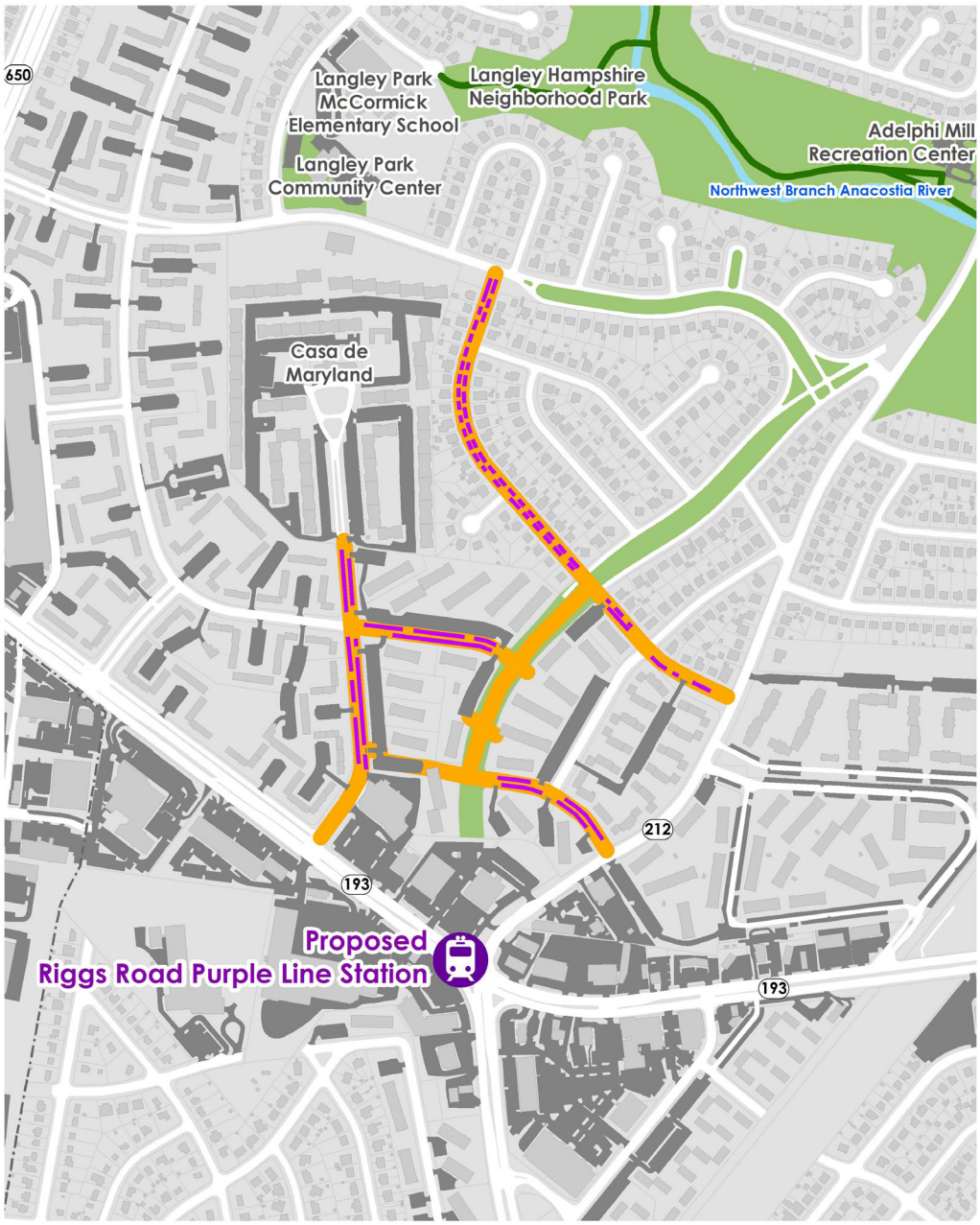
- County Boundary
- Water Bodies
- Buildings
- Parks/Open Space
- Existing Trails
- Study Segments

Speed Limit

- 25
- 30 - 35

Source: Planning Department of Prince George's County, Maryland (2018)

Map 9. Parking



Parking

Riggs Road - Langley Park Area Bicycle Boulevards

0 200 400 800 Feet

Legend

- County Boundary
- Water Bodies
- Buildings
- Parks/Open Space
- Existing Trails
- Study Segments
- On-Street Parking
- Off-Street Parking

Source: Planning Department of Prince George's County, Maryland (2018)

Map 10. Existing Right-of-Way

Existing Right-of-Way

Riggs Road - Langley Park Area Bicycle Boulevards

0 200 400 800 Feet

Legend

- County Boundary
- Water Bodies
- Buildings
- Parks/Open Space
- Existing Trails
- **Approx. Right-of-Way (feet)**
  - 50
  - 60
  - 75
  - 90

Source: Planning Department of Prince George's County, Maryland (2018)

Curb-to-Curb Widths

Typical mid-block curb-to-curb widths for study segment streets range from 25 feet to 35 feet. All segments, except Keokee Street, are 35 feet wide from curb to curb. Keokee Street has a width of 25 feet. Jasmine Terrace Extension (parking lot) is approximately 58 feet wide from curb to curb.

15th Avenue, Kanawha Street, and Jasmine Terrace are 35 feet wide between curbs.

Keokee Street is 25 feet wide between curbs.

Map 11. Curb-to-Curb Widths

Curb to Curb Widths

Riggs Road - Langley Park Area Bicycle Boulevards

0 200 400 800 Feet

Legend

- County Boundary
- Water Bodies
- Buildings
- Parks/Open Space
- Existing Trails

Curb to Curb Width (feet)

- 25
- 35

Source: Planning Department of Prince George's County, Maryland (2018)

Figure 1. 15th Avenue – Existing Cross-Section (Looking North)

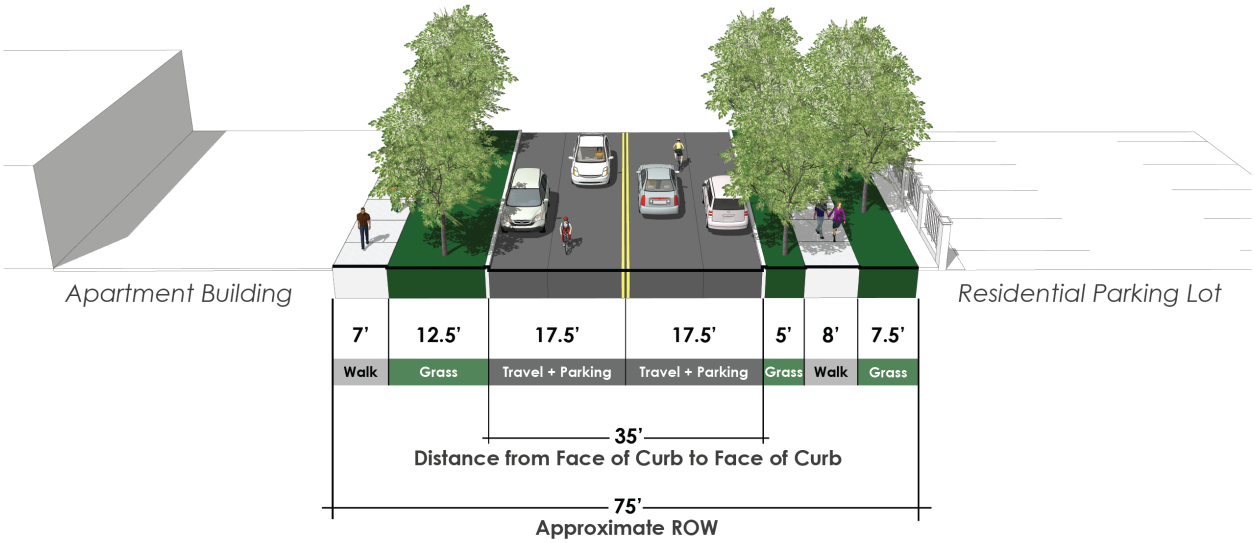


Figure 2. Jasmine Terrace (Extension) – Existing Cross-Section (Looking East)

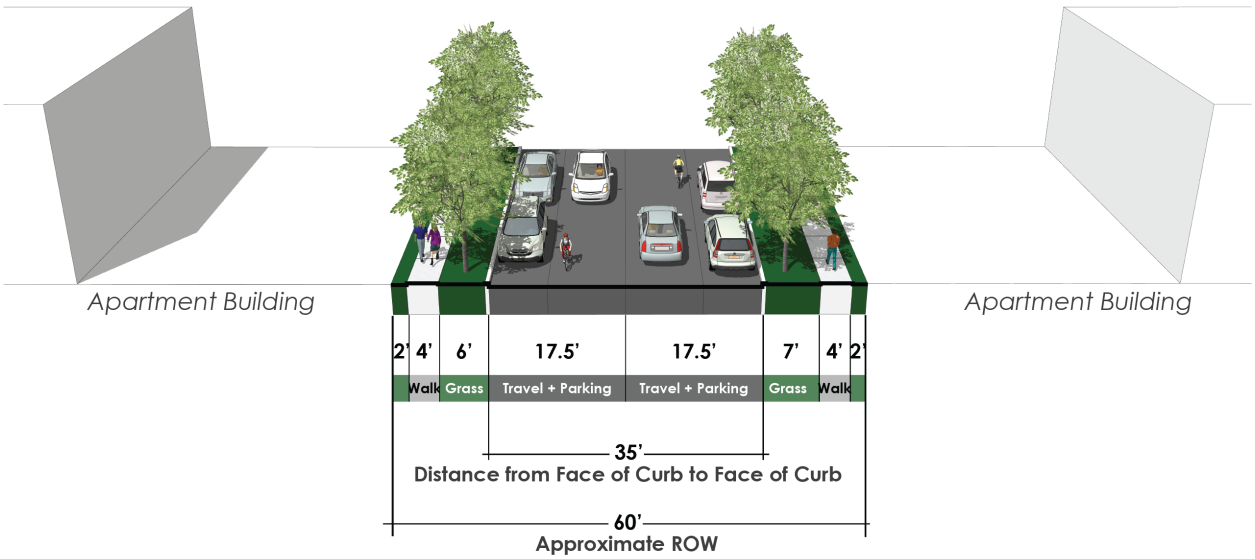


Figure 3. Kanawha Street – Existing Cross-Section (Looking East)

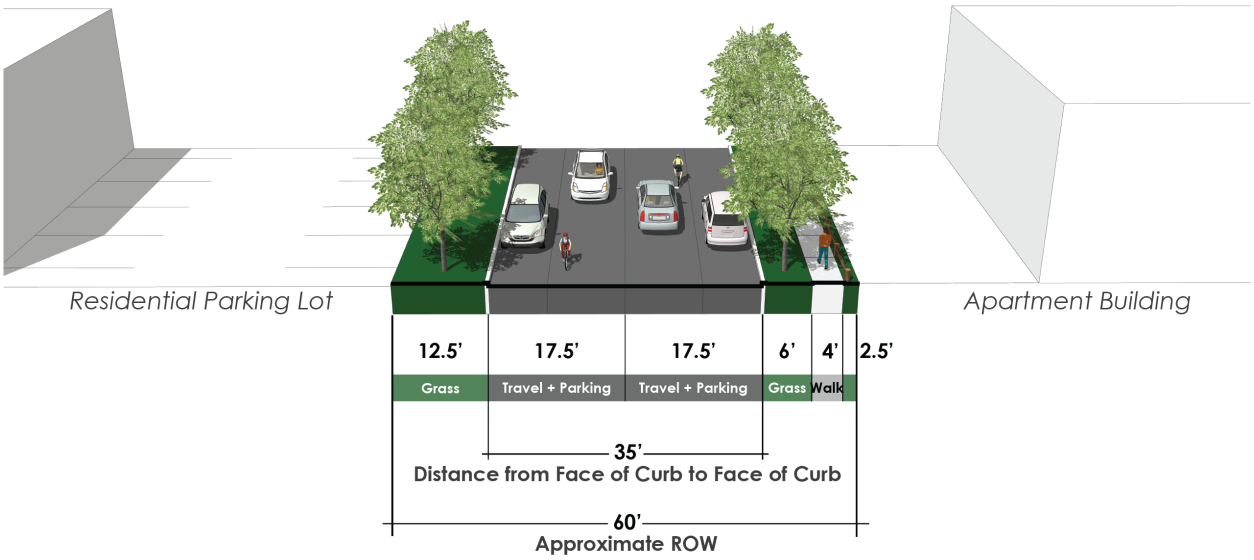


Figure 4. Keokee Street – Existing Cross-Section (Looking North)

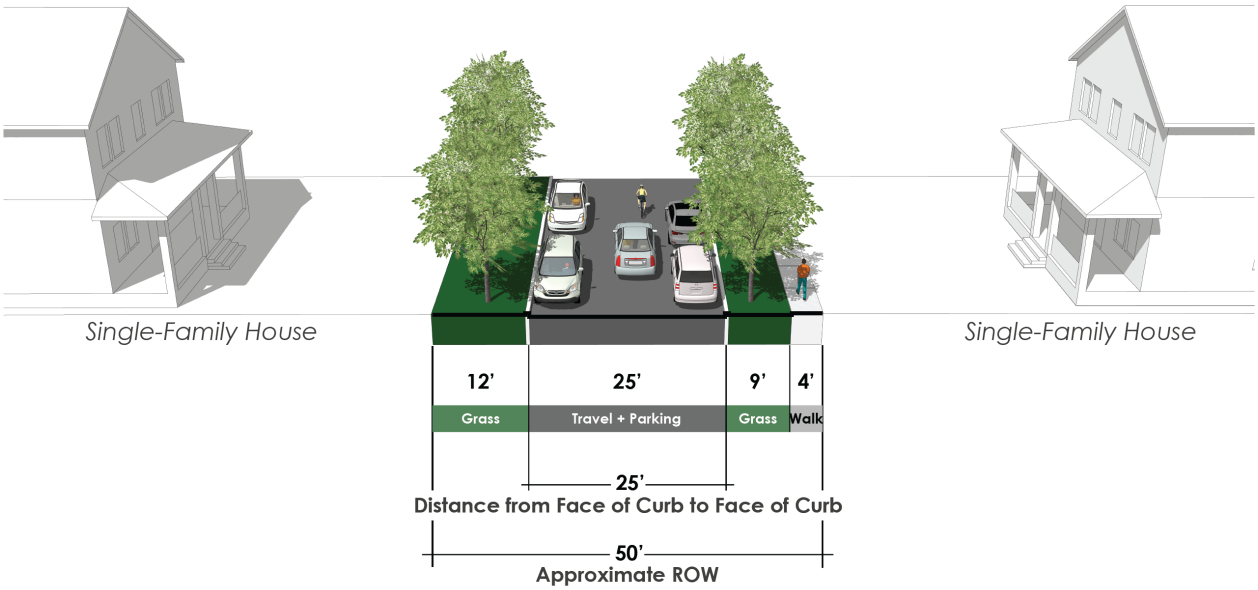


Figure 5. Jasmine Terrace Extension (Parking Lot) – Existing Cross-Section (Looking East)

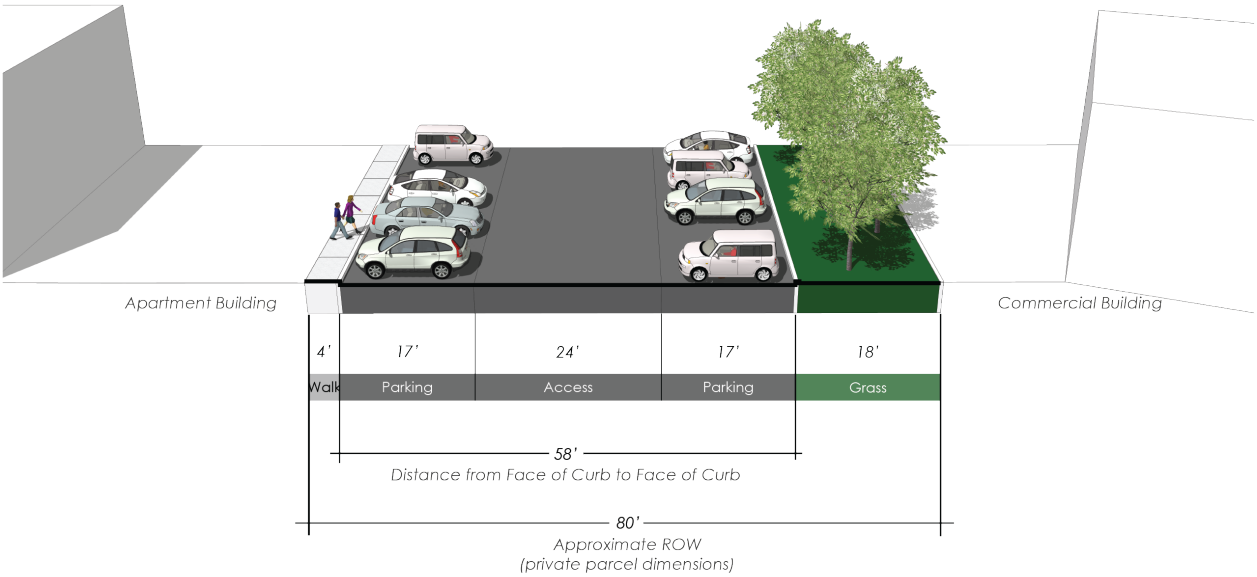
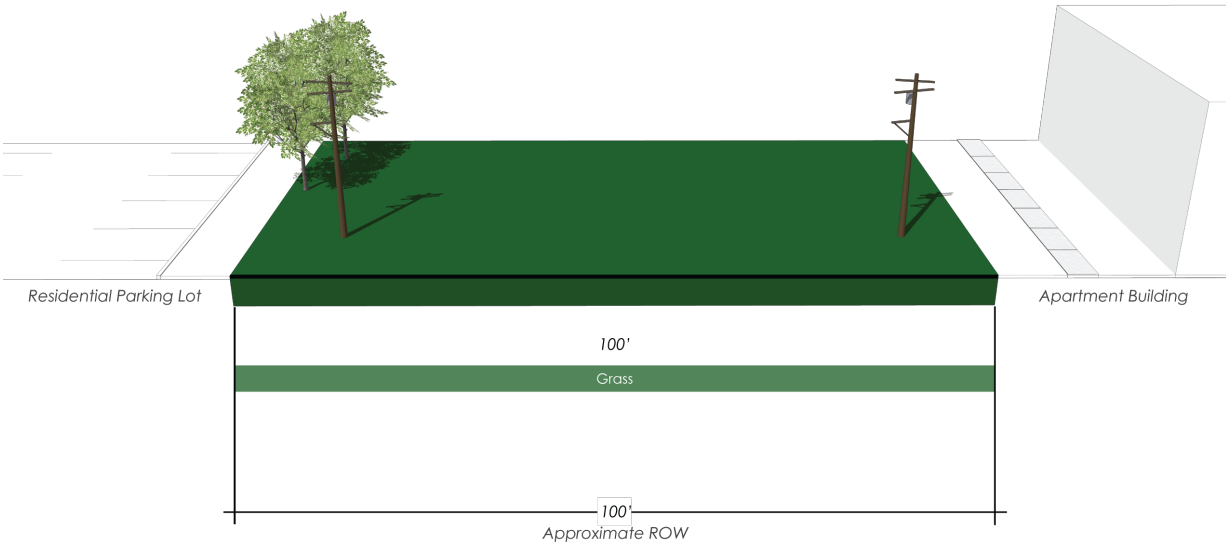


Figure 6. New Riggs Road ROW – Existing Cross-Section (Looking North)



Challenges and Opportunities

Based on the existing conditions analysis, the study segments offer an opportunity to stitch together a neighborhood bicycle network. This network would enhance connectivity to and from the future Purple Line light rail station and to the mix of commercial and retail destinations along University Boulevard. This network would be further enhanced by potential future connections to the Northwest Branch Trail and the Sligo Creek Trail.

Although all study segments have low posted speed limits and the land use is primarily residential, there are different issues and opportunities based on each of their unique characteristics and surrounding contexts.

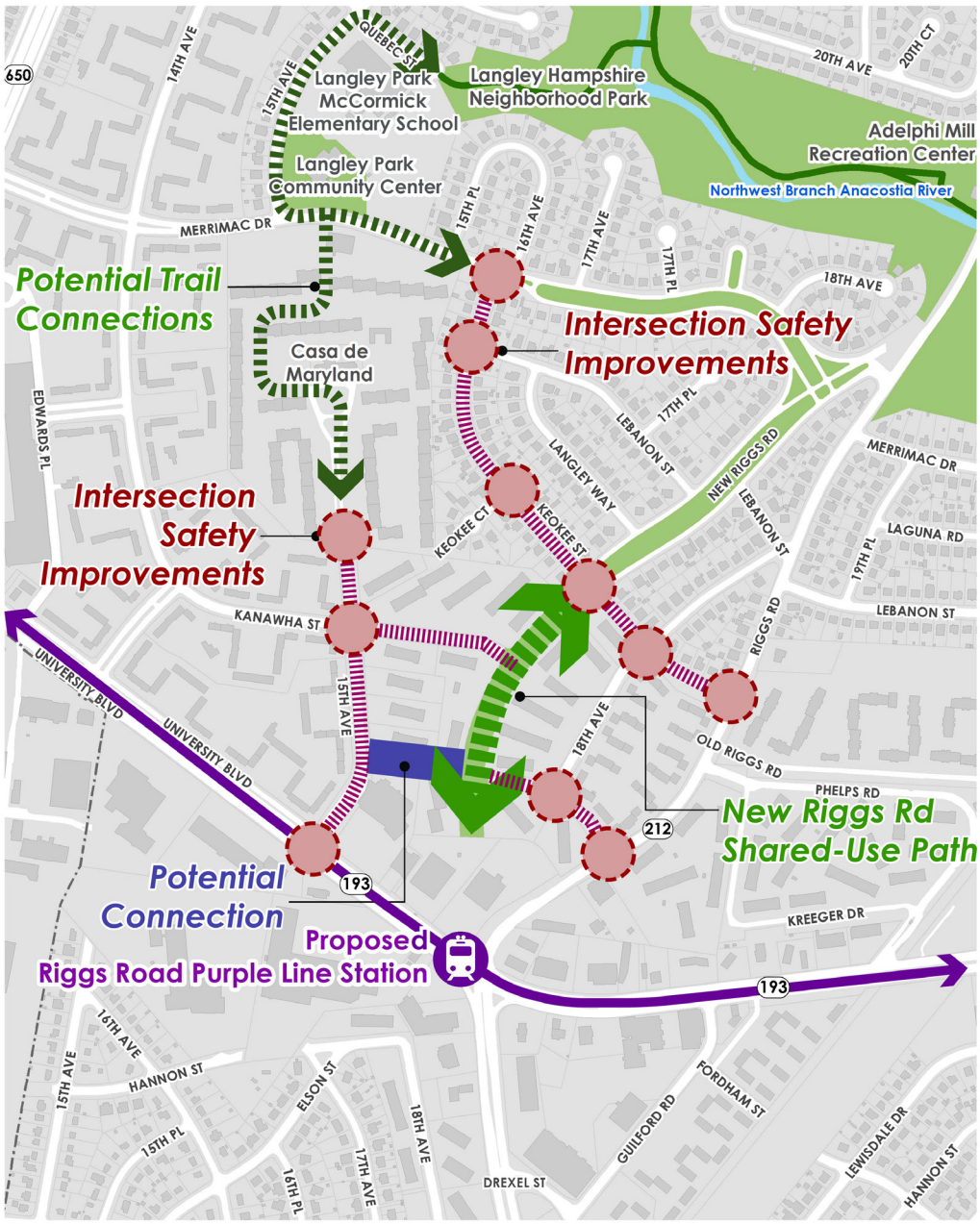
There have been many vehicular crashes along 15th Avenue. The two recorded pedestrian crashes in the study area also occurred on 15th Avenue. Therefore, improving the safety and comfort of drivers, pedestrians, and bicyclists along 15th Avenue is a priority for this study. 15th Avenue also serves as a transit corridor, adding to the need for improved pedestrian and bicycle infrastructure along this segment.

New Riggs Road ROW provides a unique opportunity for a shared-use path to run across the neighborhood north to south within a linear green open space. This shared-use path could also connect to cross-streets and pathways such as Keokee Street, Kanawha Street, and Jasmine Terrace.

Kanawha Street and Jasmine Terrace provide excellent opportunities to create east-west connections in the neighborhood. An extension of Jasmine Terrace through a residential parking lot would give a more direct east-west connection from Riggs Road to 15th Avenue. This extension could take the form of a shared space or a "parking lot woonerf" where paving materials, textures, and other design elements define parking spaces and drive aisles that can be shared by bicycles. Any proposed changes to this segment would need to be designed and approved in consultation with the property owner.

Keokee Street is a narrow street compared to the other study segments, is fronted by single-family detached homes, and has on-street parking on both sides for most of the segment's length despite its narrow width. Keokee Street provides the only east-west vehicular connection between Riggs Road and Merrimac Drive within the study area. Keokee Street also recorded many crashes. There is an opportunity to develop Keokee Street as a neighborhood bicycle connector to reach destinations such as the Langley Park Boys and Girls Club, Langley Park Community Center, Langley Park-McCormick Elementary School, and the Northwest Branch Trail.

Map 12. Challenges and Opportunities



Issues and Opportunities

Riggs Road - Langley Park Area Bicycle Boulevards

0 200 400 800 Feet

Legend

- County Boundary
- Water Bodies
- Buildings
- Parks/Open Space
- Existing Trails
- Study Segments

Source: Planning Department of Prince George's County, Maryland (2018)

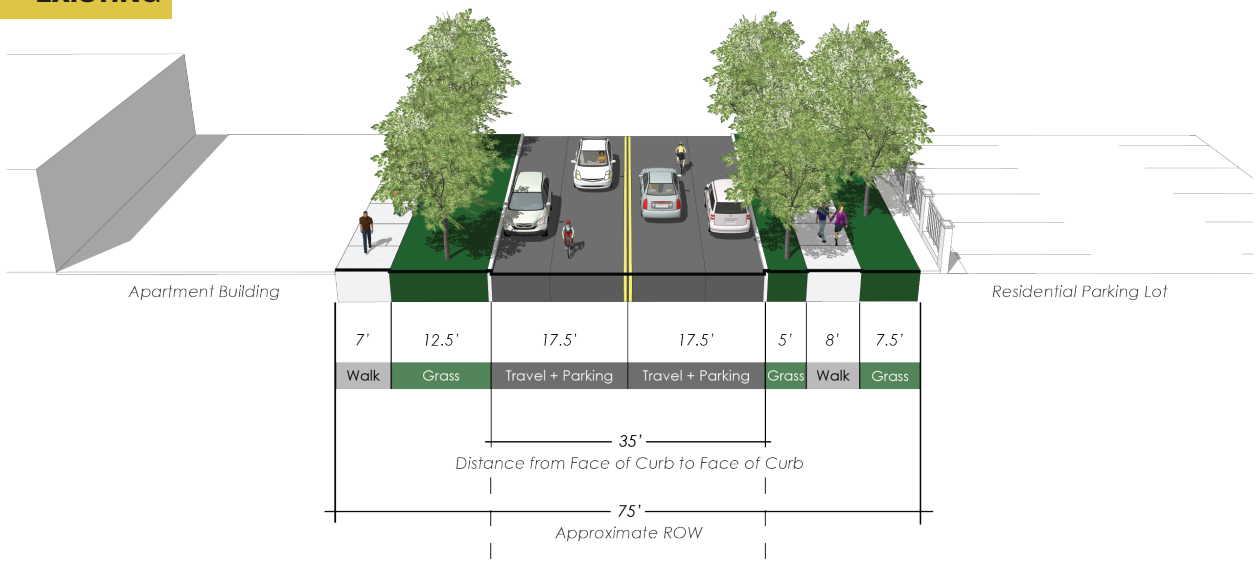

STOP

Alternatives

The study team developed alternatives based on the project goals that tested various bicycle facility options for the study segments. The alternatives are built upon the issues and opportunities identified as part of the existing conditions analysis. Three alternatives were developed for 15th Avenue, Kanawha Street, Jasmine Terrace, and the New Riggs Road ROW. Two alternatives were developed for Keokee Street. Since Jasmine Terrace Extension study segment is a private parking lot, it was identified as a potential future connection for enhanced east-west pedestrian and bicycle connectivity between 15th Avenue and New Riggs Road ROW. However, because additional coordination with the property owners is required, no specific alternatives were developed for Jasmine Terrace Extension. The following sections explain the alternatives in detail.

15th Avenue Alternatives

EXISTING



OPTION 1: BICYCLE BOULEVARD

Option 1 along 15th Avenue consists of a bicycle boulevard treatment. Bicycle boulevards are streets designed to maintain or induce low motorized traffic volumes and speeds that allow bicyclists to comfortably ride in the travel lane along with vehicular traffic. These are often designated as bicycle routes. Some of the typical treatments include bicycle "sharrow" markings indicating that the bicyclists are encouraged to use the travel lane and traffic calming treatments such as speed humps, curb extensions, and median islands.

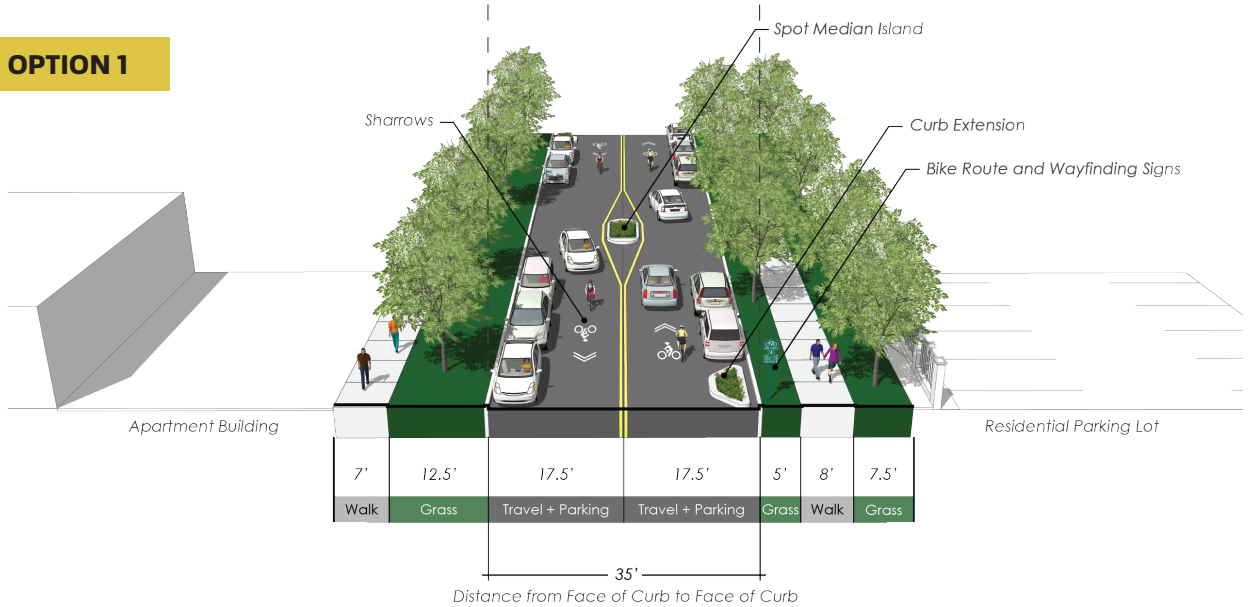
OPTION 2: SEPARATED BICYCLE LANES

Option 2 adds a separated bicycle lane in place of existing on-street parking. Separated bicycle lanes are dedicated on-street bicycle lanes separated by buffer areas with vertical curbs and/or flex posts to separate the bicycle lane from vehicular traffic. This option offers the safest and most comfortable riding experience for bicyclists at the expense of the existing on-street parallel parking.

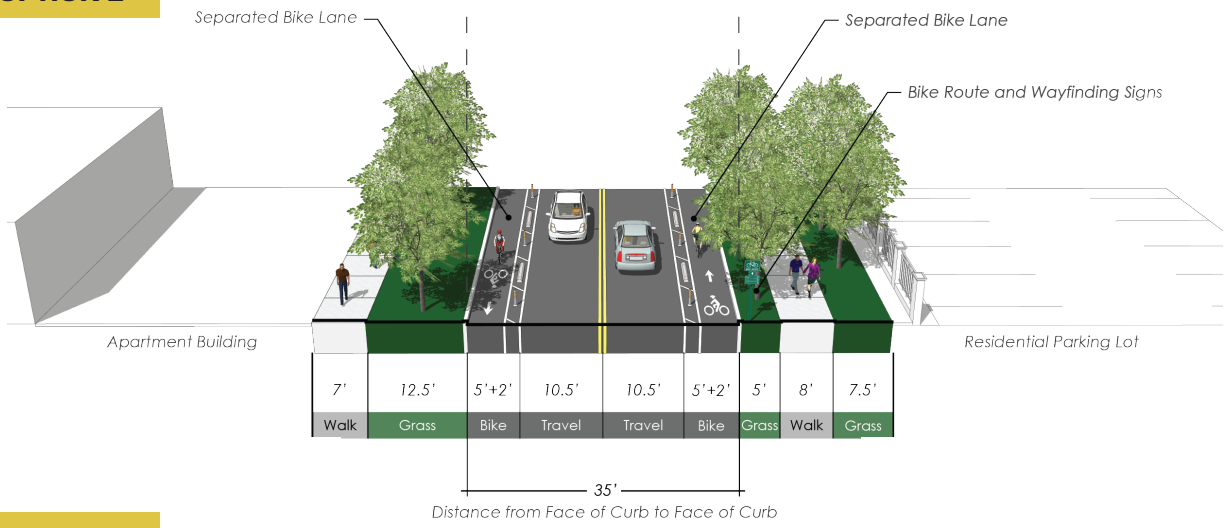
OPTION 3: BICYCLE LANES AND PARKING

Option 3 consists of moving curbs and widening the roadway to fit on-street parking and conventional striped bicycle lanes on both sides. This option reduces the green landscape buffer between sidewalk and curbs to expand the roadway. This option may also impact existing street trees and utility poles. This option provides additional bicycle comfort due the presence of a dedicated bicycle lane; however, it is not as comfortable as a separated bicycle lane because the bicycle lane in this option is sandwiched between parking and vehicular travel lane.

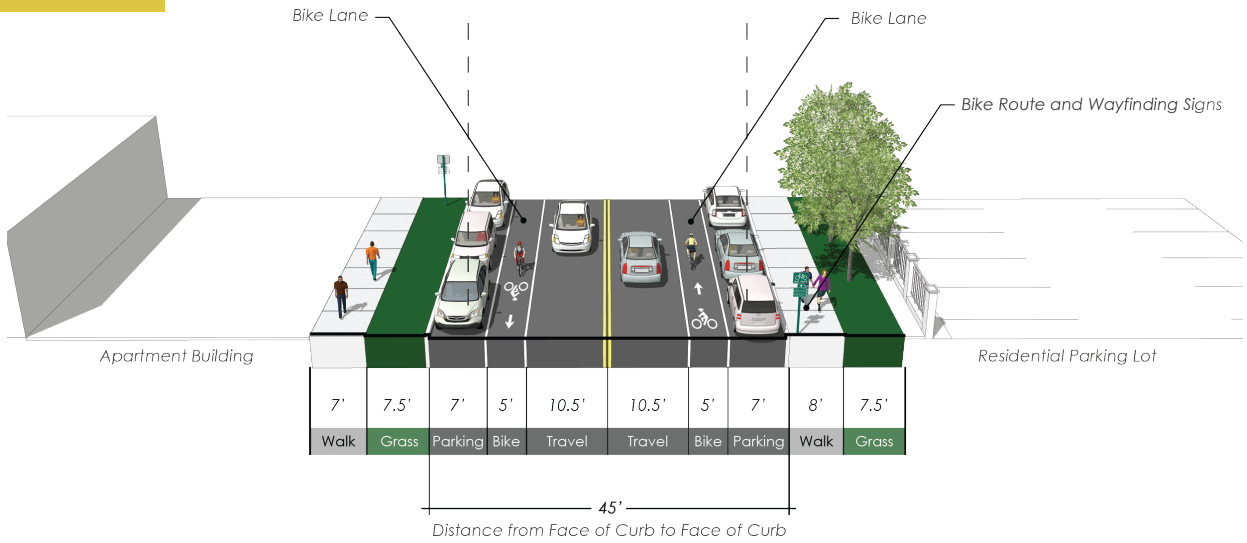
OPTION 1



OPTION 2

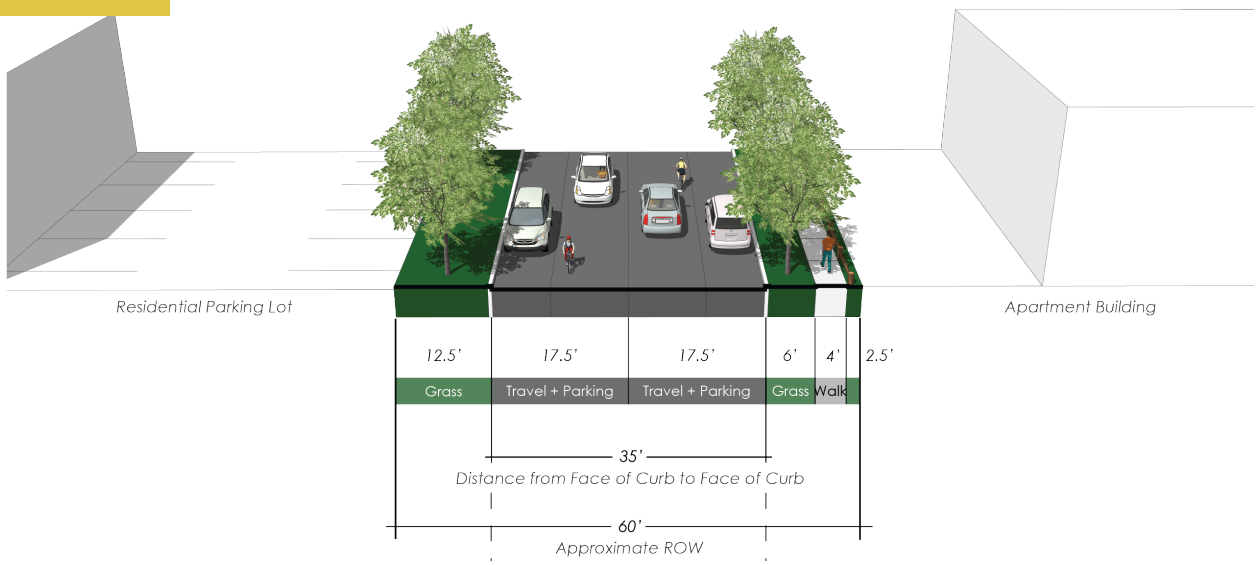


OPTION 3



Kanawha Street Alternatives

EXISTING



OPTION 1: BICYCLE BOULEVARD

Option 1 along Kanawha Street consists of a bicycle boulevard treatment. Bicycle boulevards are streets designed to maintain or induce low motorized traffic volumes and speeds that allow bicyclists to comfortably ride in the travel lane along with vehicular traffic. These are often designated as bicycle routes. Some of the typical treatments include bicycle sharrow markings indicating that the bicyclists are encouraged to use the travel lane and traffic calming treatments such as speed humps, curb extensions, and median islands.

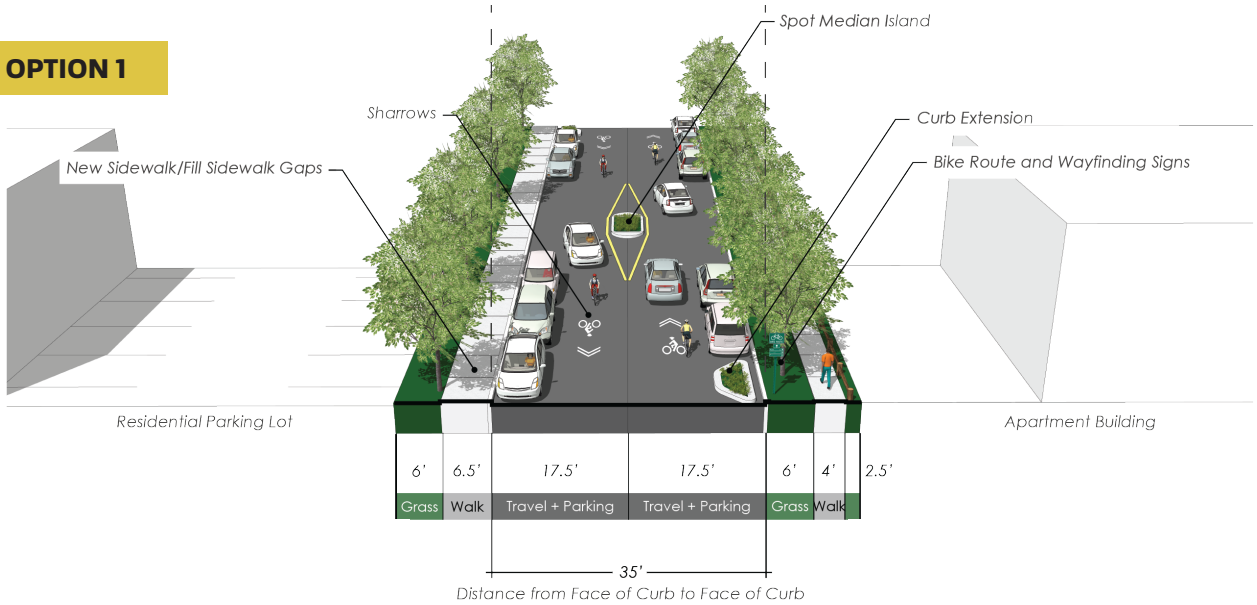
OPTION 2: SEPARATED BICYCLE LANES

Option 2 adds a separated bicycle lane in place of existing on-street parking. Separated bicycle lanes are dedicated on-street bicycle lanes separated by buffer areas with vertical curbs and/or flex posts to separate the bicycle lane from vehicular traffic. This option offers the safest and most comfortable riding experience for bicyclists at the expense of the existing on-street parallel parking.

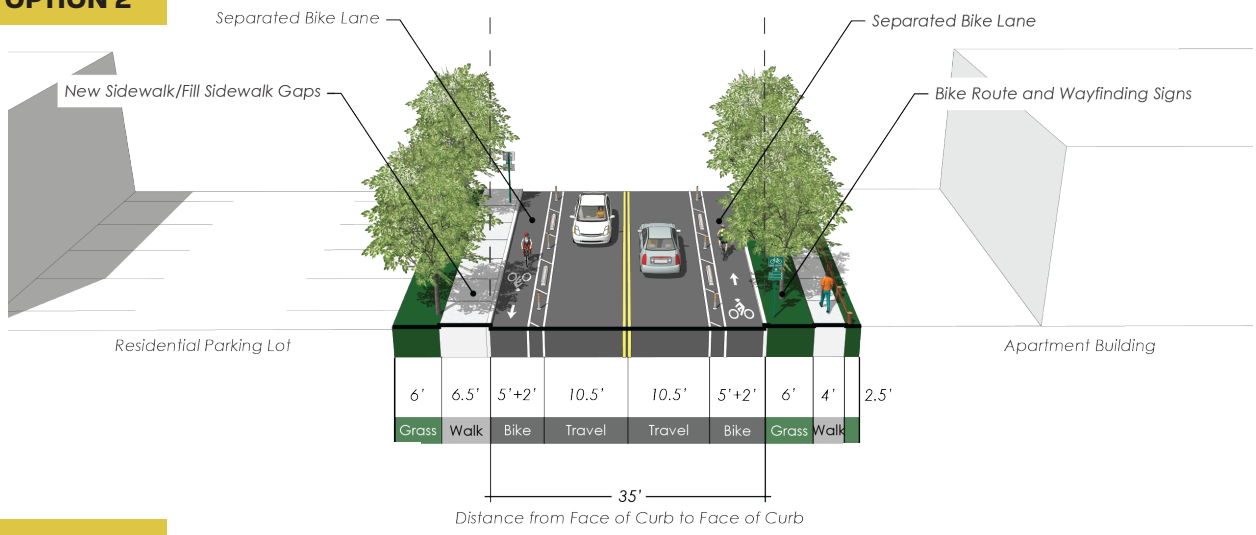
OPTION 3: BICYCLE LANES AND PARKING

Option 3 consists of moving curbs and widening the roadway to fit on-street parking and conventional striped bicycle lanes on both sides. This option reduces the green landscape buffer between sidewalk and curbs to expand the roadway. This option may also impact existing street trees and utility poles. This option provides additional bicycle comfort due the presence of a dedicated bicycle lane, however, it is not as comfortable as a separated bicycle lane because the bicycle lane in this option is sandwiched between parking and vehicular travel lane.

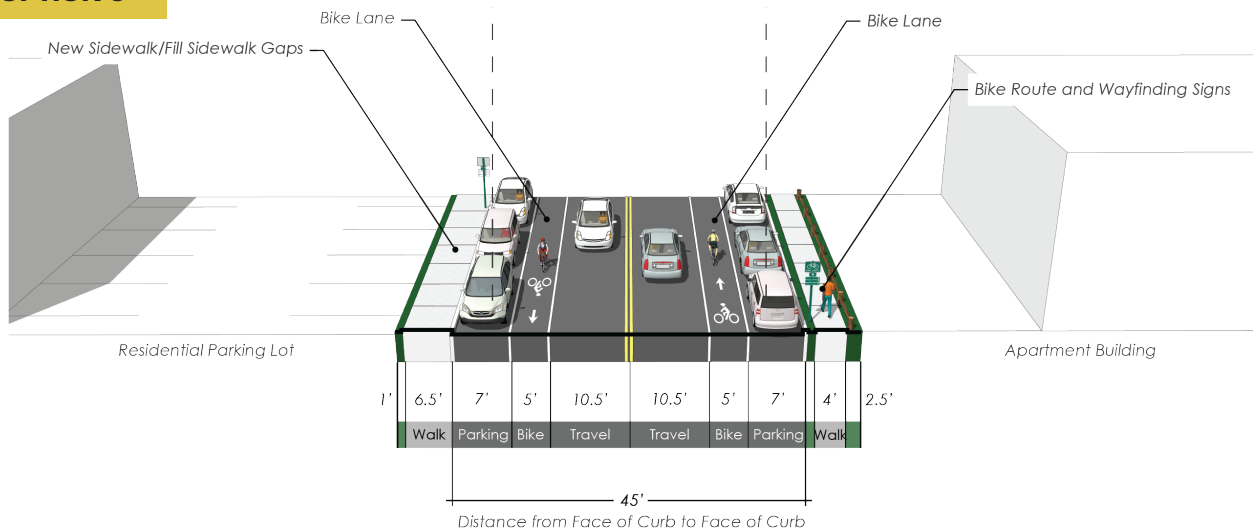
OPTION 1



OPTION 2

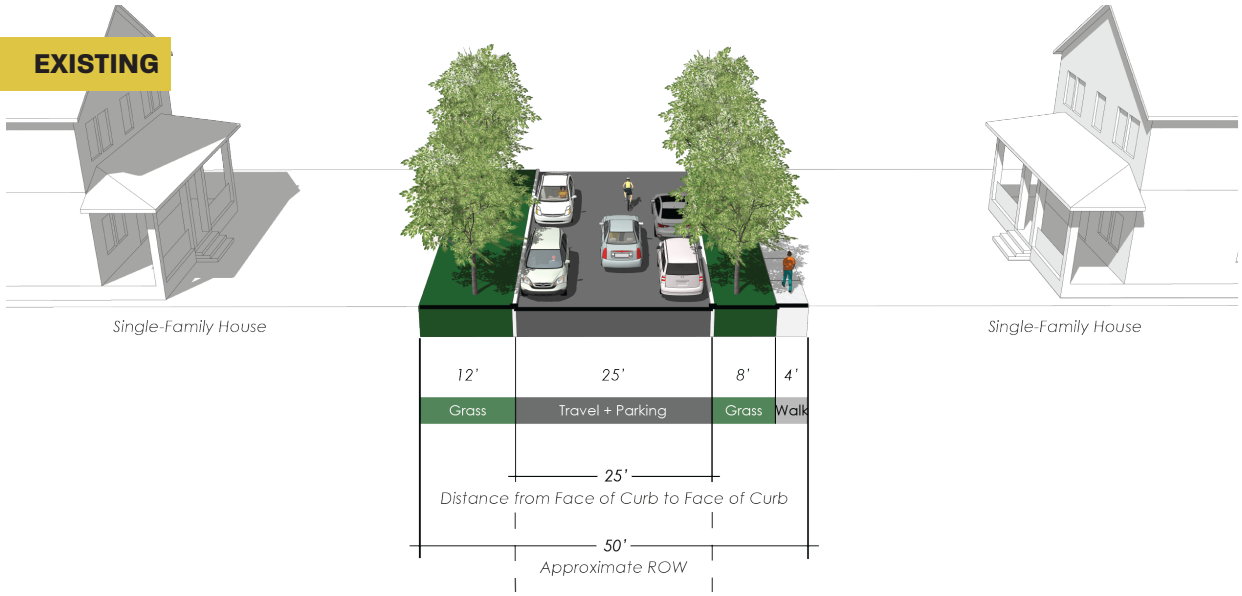


OPTION 3

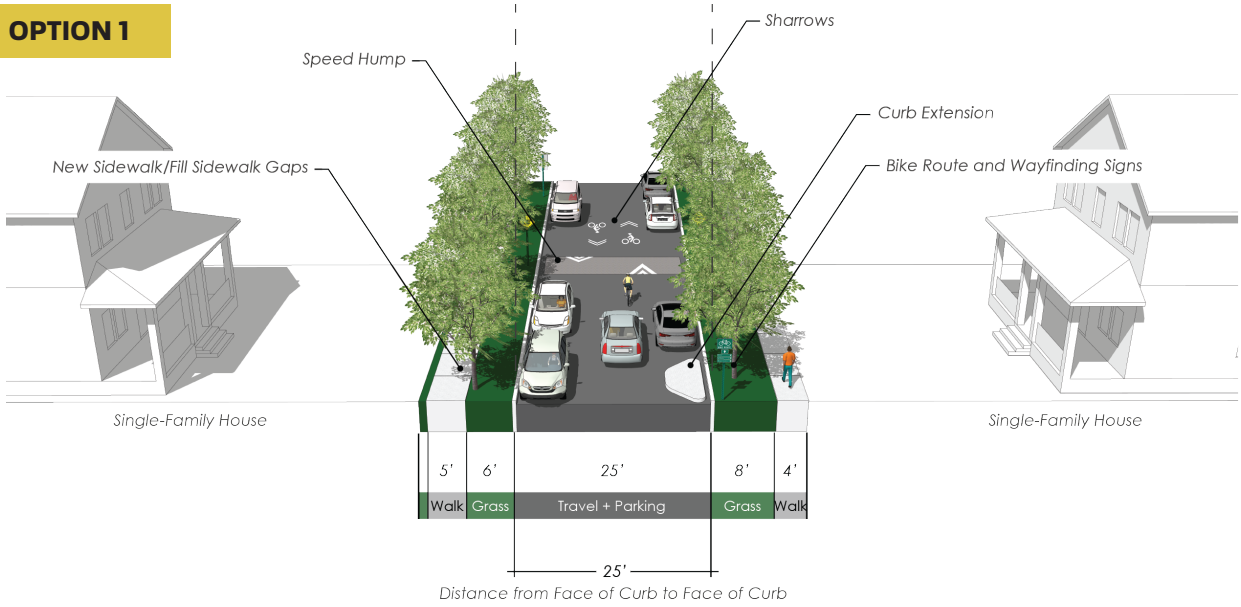


Keokee Street Alternatives

EXISTING



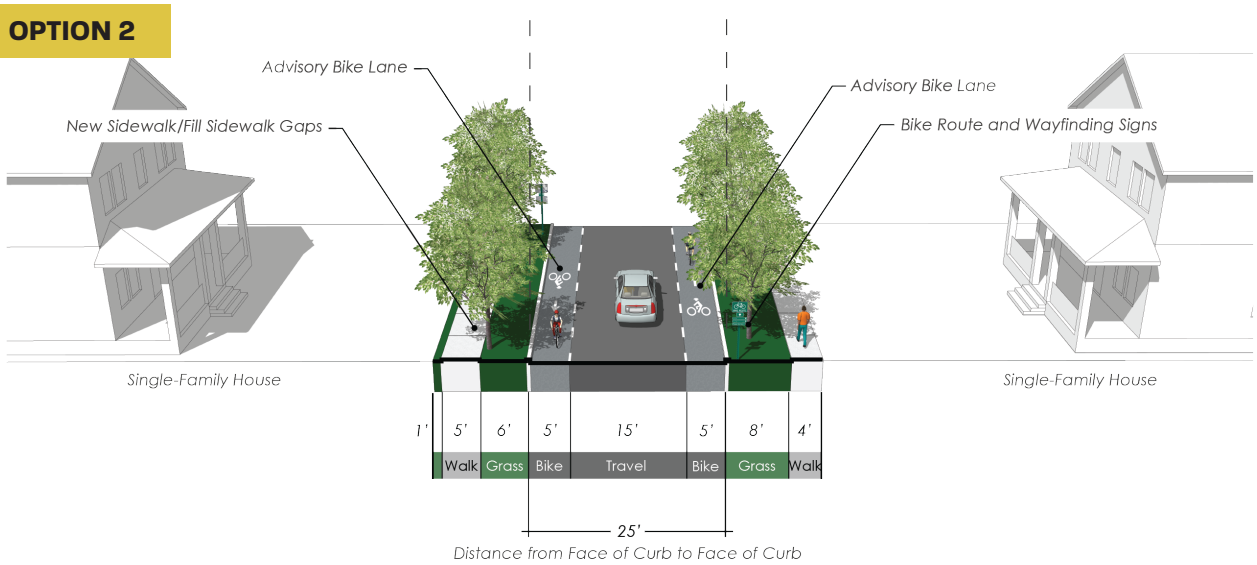
OPTION 1



OPTION 1: BICYCLE BOULEVARD

Option 1 along Keokee Street consists of a bicycle boulevard treatment. Bicycle boulevards are streets designed to maintain or induce low motorized traffic volumes and speeds that allow bicyclists to comfortably ride in the travel lane along with vehicular traffic. These are often designated as bicycle routes. Some of the typical treatments include bicycle sharrow markings indicating that the bicyclists are encouraged to use the travel lane and traffic calming treatments such as speed humps, curb extensions, and median islands.

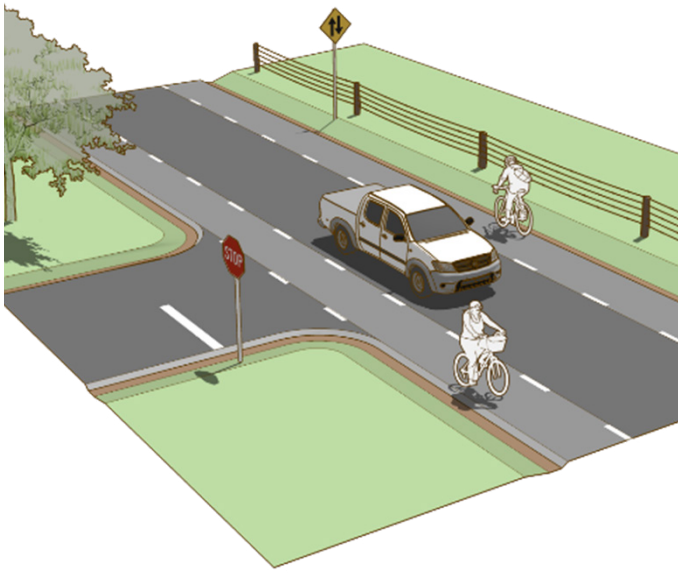
OPTION 2



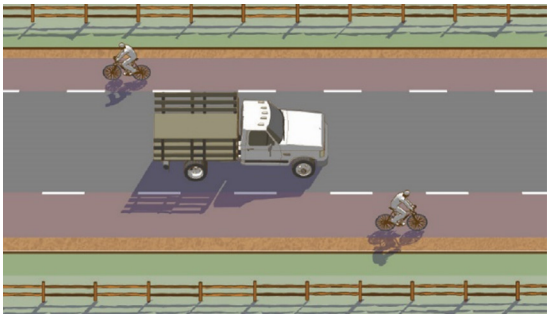
OPTION 2: ADVISORY BICYCLE SHOULDERS

Option 2 adds advisory bicycle shoulders in place of on-street parking. Advisory bicycle shoulders are a new treatment type in the United States. They create usable shoulders for bicyclists on a roadway that is otherwise too narrow to accommodate bicycle lanes. On roadways with advisory bicycle shoulders, motorists travel in the center, single, two-way travel lane and may need to encroach into the advisory shoulder space to pass oncoming vehicles. The images below explain how bicycle advisory shoulders function.

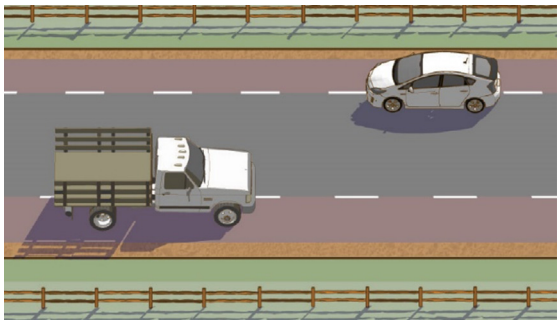
Figure 7. Advisory shoulders



Advisory shoulders create usable shoulders for bicyclists on a roadway that is otherwise too narrow.



Motorists travel in the center two-way travel lane.

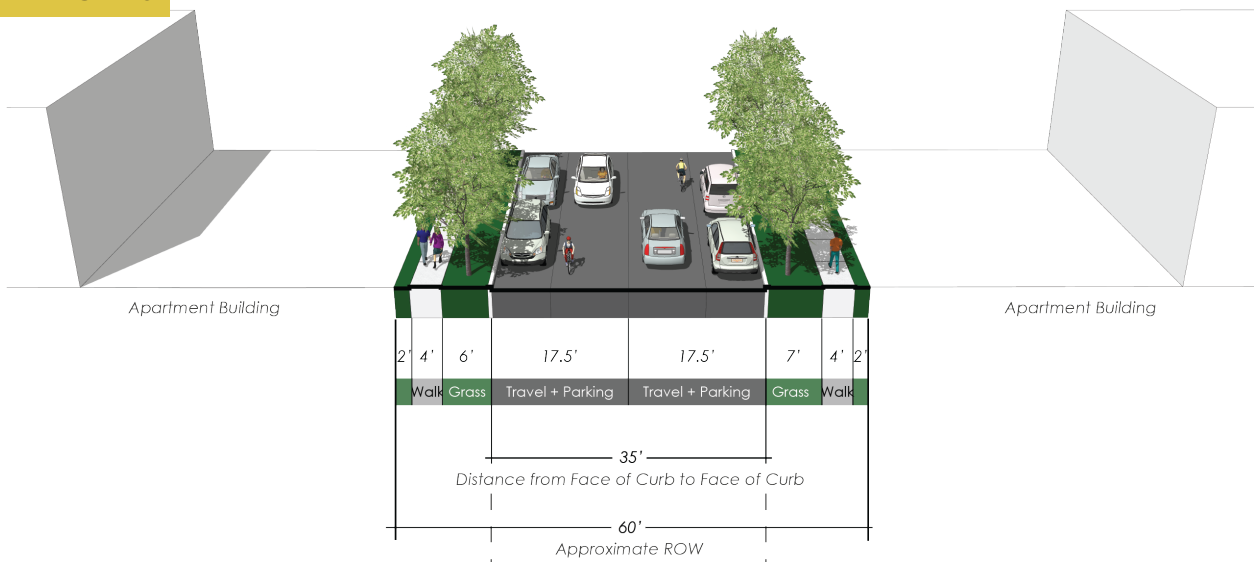


Motorists may need to encroach into the advisory shoulder space to pass oncoming vehicle

SOURCE: FHWA SMALL TOWN AND RURAL MULTIMODAL NETWORKS

Jasmine Terrace Alternatives

EXISTING



OPTION 1: BICYCLE BOULEVARD

Option 1 consists of a bicycle boulevard treatment. Bicycle boulevards are streets designed to maintain or induce low motorized traffic volumes and speeds that allow bicyclists to comfortably ride in the travel lane along with vehicular traffic. These are often designated as bicycle routes. Some of the typical treatments include bicycle sharrow markings indicating that the bicyclists are encouraged to use the travel lane and traffic calming treatments such as speed humps, curb extensions, and median islands.

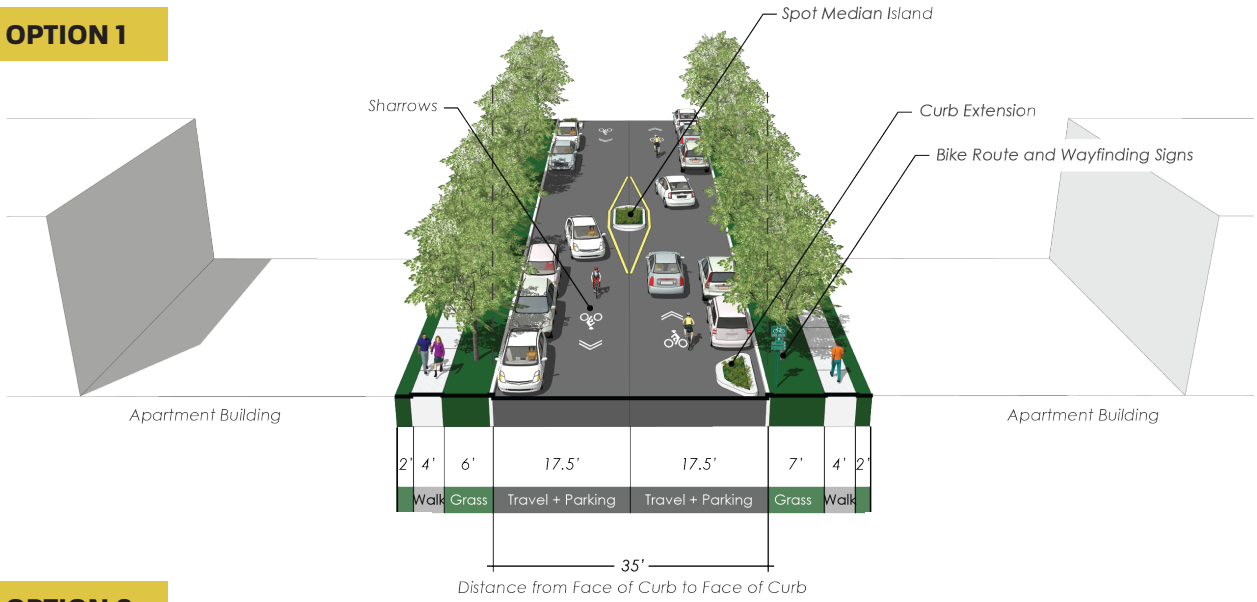
OPTION 2: SEPARATED BICYCLE LANES

Option 2 adds advisory bicycle shoulders in place of on-street parking. Advisory bicycle shoulders are a new treatment type in the United States. They create usable shoulders for bicyclists on a roadway that is otherwise too narrow to accommodate bicycle lanes. On roadways with advisory bicycle shoulders, motorists travel in the center, single, two-way travel lane and may need to encroach into the advisory shoulder space to pass oncoming vehicles.

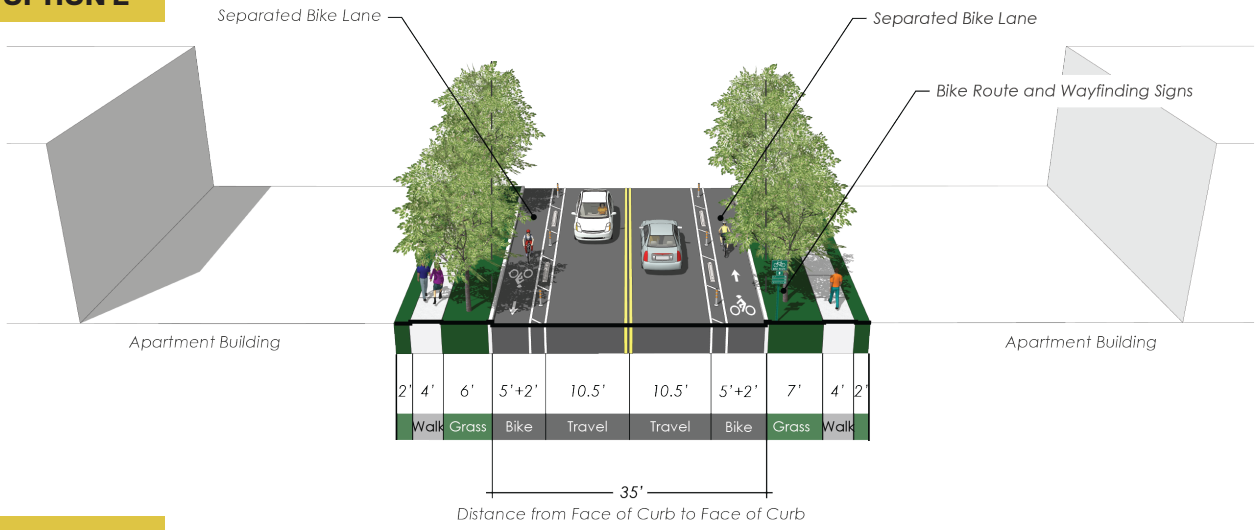
OPTION 3: BICYCLE LANES AND PARKING

Option 3 consists of moving curbs and widening the roadway to fit on-street parking and conventional striped bicycle lanes on both sides. This option reduces the green landscape buffer between sidewalk and curbs to expand the roadway. This option may also affect existing street trees and utility poles. This option provides additional bicycle comfort due the presence of a dedicated bicycle lane; however, it is not as comfortable as a separated bicycle lane since the bicycle lane in this option is sandwiched between parking and the vehicular travel lane.

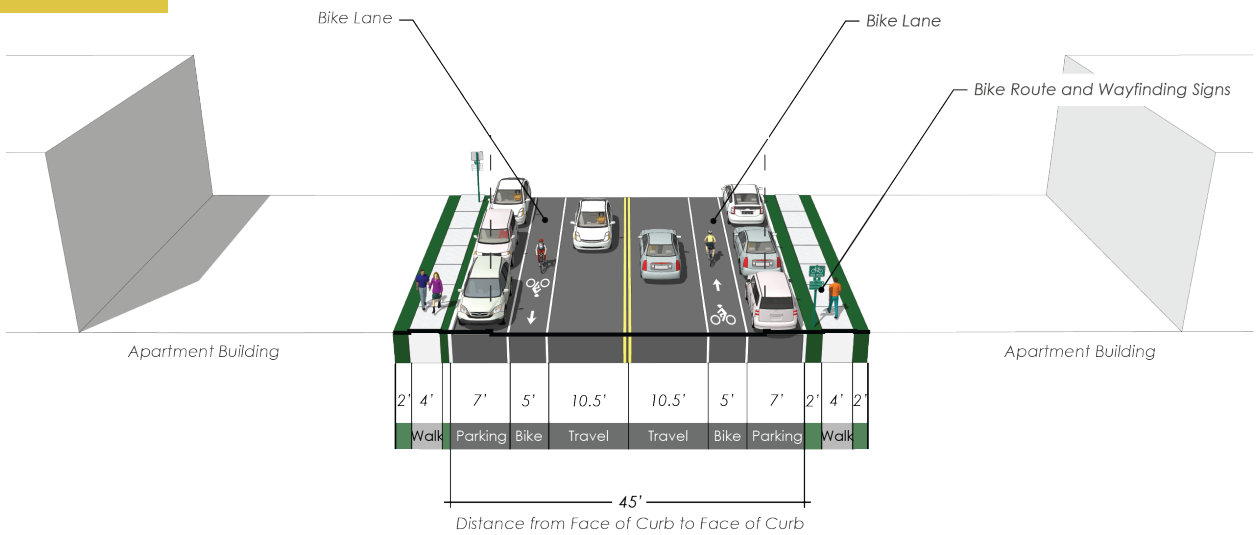
OPTION 1



OPTION 2



OPTION 3



New Riggs Road ROW Alternatives

New Riggs Road is an unbuilt Master Plan roadway ROW that is functioning as a linear public green space. The study team explored opportunities to install a shared-use path within the New Riggs Road ROW. Currently, this ROW comprises connecting concrete paths between the University Garden apartment complexes, mature trees, grassy areas, and overhead utility lines. Pedestrian and bicyclist access is limited through the site and is especially challenging to navigate between Keokee Street and Jasmine Terrace. There is also significant stormwater erosion from adjacent streets and parking lots, which limits other recreational opportunities. The following three design alternatives illustrate potential shared-use path alignments through the site and consider future opportunities for recreational and landscaping improvements. These shared-use trail alignments will connect to future bikeways along adjacent streets.

OPTION 1

OPTION 1

Option 1 consists of a simple, linear path that directly connects to Keokee Street, Jasmine Terrace, and Kanawha Street. As shown, this alignment works with the existing site conditions and provides improved circulation with limited stormwater management facilities. This center-running shared-use path alignment is functional, but limits opportunities for additional recreational uses around it. .

OPTION 2

OPTION 2

Option 2 makes the same connections to Keokee Street, Jasmine Terrace, and Kanawha Street as Option 1, but incorporates a modest curve along the path's alignment to match the site's existing topography. This alternative path is slightly longer than the first alternative and includes more paved areas. Additional stormwater management facilities might need to be included in this alternative to accommodate potential increased stormwater runoff. However, this design's gentle curves provide more space for recreation and gathering.

OPTION 3

OPTION 3

Option 3 also connects to Keokee Street, Kanawha Street, and Jasmine Terrace but incorporates a more curvilinear and dynamic shared-use path alignment to create a more park-like feeling within the site. The added curves along the path would likely decrease bicyclist travel speeds throughout the space to minimize conflicts with adjoining recreational uses. As shown, this alternative also incorporates a new paved plaza for neighborhood gatherings. This design is the most significant alteration of the existing space, but provides the most opportunities for placemaking and recreational uses.

Public Engagement

The project team developed multiple virtual engagement tools to gain feedback on project goals and alternatives. Due to the outbreak of COVID-19 and the statewide stay-at-home order, the project team was unable to host an in-person public meeting to share and discuss possible futures of the area. The study team created a project website, a public input survey, and an interactive map to share information and hear from residents, visitors, employees, and business owners about the project. The website, survey and interactive map remained open for public feedback throughout the month of March 2021.

Virtual Public Meeting

A virtual public meeting was hosted March 18, 2021, through Microsoft Teams Live. A Spanish version of the meeting presentation was pre-recorded and published on the project website. Presenters from M-NCPPC, DPW&T, MWCOG, Kittelson & Associates, and Rhodeside & Harwell went over the project background, previous plans and studies in the area, the existing conditions, and the design alternatives for the study segments. A total of 62 people attended the public meeting. Attendees were encouraged to take the online survey and visit the interactive map to provide input. The meeting was followed by a Q&A session to respond to any immediate questions or comments.

Public meeting presentation slides as well as notes summarizing questions, comments, and responses are added in Appendix A.

Online Survey and Interactive Map

The study team developed an online public survey to gather input from the community and published it in English and Spanish to reach community members. A total of 24 people submitted responses through the English version, and two people submitted their input through the Spanish version. The study team also published an online interactive map in English and Spanish. The online interactive map was meant to gather location-specific feedback on issues and opportunities related to bicycle travel, safety, and facilities. There were 50 comments submitted on the English interactive map, and none on the Spanish map. The following paragraphs and tables describe the survey and interactive map results in detail.

Of the survey respondents, 77 percent identified themselves as living near the study area, 15 percent were residents within the study area, 4 percent were employees or employers near the study area, and a remaining 4 percent responded "other." The vast majority of the online survey respondents (77 percent) might not be living within the study area or in the immediate vicinity to the study area and might reside within the larger Washington metropolitan region. The study team recognizes that the survey results based on this response pattern may not reflect the views of the immediate study area community members.

The main takeaways from the survey results are that most respondents prefer separated bicycle facilities and a quality shared-use path along New Riggs Road ROW with new community amenities and programming. However, at the public meeting, local community stakeholders raised serious concerns about replacing existing well-used on-street parking to add bicycle facilities. Appendix A includes online survey results and interactive map comments.

15TH AVENUE ALTERNATIVES

As Table 3 shows, most survey respondents (60 percent) prefer Option 2.

Table 3. 15th Avenue Alternatives – Survey Results

Choices	Preference	Responses
Option 1: Bicycle Boulevard	20%	4
Option 2: Separated Bicycle Lanes	60%	12
Option 3: Parking + Bicycle Lanes + Parking	20%	4
Total Responses		20
Skipped Question		6

JASMINE TERRACE ALTERNATIVES

As Table 4 shows, most survey respondents (60 percent) prefer Option 2.

Table 4. Jasmine Terrace Alternatives – Survey Results

Choices	Preference	Responses
Option 1: Bicycle Boulevard	15%	3
Option 2: Separated Bicycle Lanes	60%	12
Option 3: Parking + Bicycle Lanes + Parking	25%	5
Total Responses		20
Skipped Question		6

KANAWHA STREET ALTERNATIVES

As Table 5 shows, most survey respondents (62 percent) prefer Option 2.

Table 5. Kanawha Street Alternatives – Survey Results

Choices	Preference	Responses
Option 1: Bicycle Boulevard	19%	4
Option 2: Separated Bicycle Lanes	62%	13
Option 3: Parking + Bicycle Lanes + Parking	19%	4
Total Responses		21
Skipped Question		5

KEOKEE STREET ALTERNATIVES

As Table 6 shows, most survey respondents (62 percent) prefer Option 2.

Table 6. Keokee Street Alternatives – Survey Results

Choices	Preference	Responses
Option 1: Bicycle Boulevard	38%	8
Option 2: Advisory Bicycle Shoulders	62%	13
Total Responses		21
Skipped Question		5

NEW RIGGS ROAD RIGHT-OF-WAY ALTERNATIVES

As Table 7 shows, most survey respondents (63 percent) prefer option 3.

Table 7. New Riggs Road ROW Alternatives – Survey Results

Choices	Preference	Responses
Option 1	16%	3
Option 2	21%	4
Option 3	63%	12
Total Responses		19
Skipped Question		7


NUESTRO
LANGLEY
PARK
NUESTRA
HISTORIA
MERRIMAC DR
KEOKEE ST
STOP

Prioritization Process

The study team identified qualitative evaluation measures to test the design alternatives. In addition to the public input, these evaluation measures were used to identify a preferred alternative for the study segments. The qualitative evaluation measures used to test the various design alternatives are:

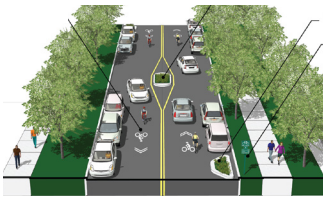
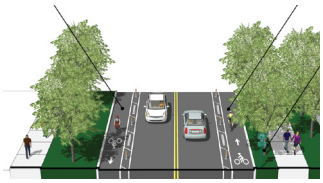
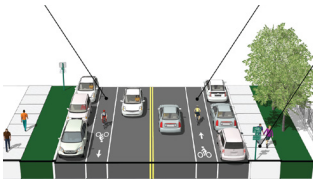
- Bicycle Level of Traffic Stress: This measure compares the level of traffic stress a person on a bicycle will experience while riding on the study segment. This measure is not a calculation based on the Bicycle LTS methodology but is a qualitative assessment measure comparing alternatives amongst themselves.
- Cost: This measure assumes that any alternative that does not require reconstructing curbs or relocating drainage and utility infrastructure is a low-cost alternative. In contrast, any reconstruction of curbs or relocation of utilities will be a high-cost alternative.
- Right-of-Way and Utility Impacts: This measure assumes that any alternative that does not require moving curbs or relocating drainage and utility infrastructure is a low-impact alternative. In comparison, any reconstruction of curbs or relocation of utilities will be a high-impact alternative.
- Parking Impacts: This measure assumes that any alternative that removes existing on-street parking will be considered a high parking impact alternative. In contrast, alternatives that maintain an on-street parking lane, even if there is any loss in the total number of parking spaces due to the addition of traffic calming treatments such as curb extensions or median islands, are considered low-impact alternatives.

The following tables summarize the evaluation of design alternatives by study segments based on the above-listed evaluation measures.

LANGLEY PARK NEIGHBORHOODS
BICYCLE BOULEVARDS

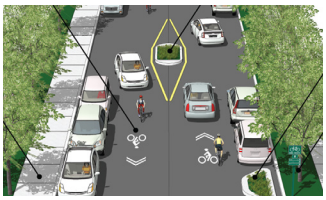
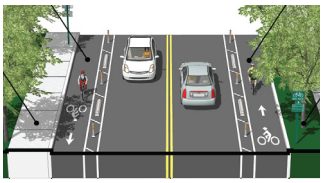
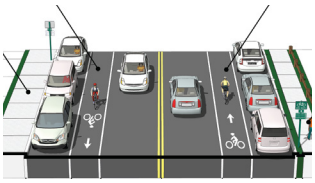
15th Avenue Alternatives Evaluation

Table 8. 15th Avenue – Qualitative Assessment Summary

Evaluation measures	ASSESSMENT Option 1: Bicycle Boulevard	Option 2: Separated Bicycle Lanes	Option 3: Bicycle Lanes and Parking
			
Bicycle Level of Traffic Stress	**Medium**	**Low**	**Medium**
Cost	**Low**	**Low**	**High**
Parking Impacts	**Low**	**High**	**Low**
Right-of-Way Impacts and Utility Impacts	**Low**	**Low**	**High**
Summary	Provides additional bicycle comfort to the existing condition, but not as much as a separated bicycle lane. However, this option has low construction costs, low parking impacts, and low drainage and utility impacts because this option can be implemented within the existing curb-to-curb width without any need to reconstruct the roadway or curbs.	Provides high bicycle comfort. However, this option has high parking impacts. This option continues to have low construction costs and low drainage and utility impacts, because this option can be implemented within the existing curb-to-curb width without any need to reconstruct the roadway or curbs.	Has high construction costs and high drainage and utility impacts because this option cannot be implemented within the existing curb-to-curb width and needs to reconstruct the roadway and curbs.

Kanawha Street Alternatives Evaluation

Table 9. Kanawha Street –Qualitative Assessment Summary

Evaluation measures	ASSESSMENT Option 1: Bicycle Boulevard	Option 2: Separated Bicycle Lanes	Option 3: Bicycle Lanes and Parking
			
Bicycle Level of Traffic Stress	**Medium**	**Low**	**Medium**
Cost	**Low**	**Low**	**High**
Parking Impacts	**Low**	**High**	**Low**
Right-of-Way Impacts and Utility Impacts	**Low**	**Low**	**High**
Summary	Provides additional bicycle comfort to the existing conditions, but not as much as a separated bicycle lane. This option has low construction costs, low parking impacts, and low drainage and utility impacts because this option can be implemented within the existing curb-to-curb width without any need to reconstruct the roadway or curbs.	Provides high bicycle comfort. However, this option has high parking impacts. This option continues to have low construction costs and low drainage and utility impacts, because this option can be implemented within the existing curb-to-curb width without any need to reconstruct the roadway or curbs.	Has high construction costs and high drainage and utility impacts because this option cannot be implemented within the existing curb-to-curb width and would require reconstruction of the roadway and curbs.

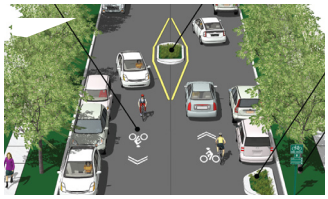
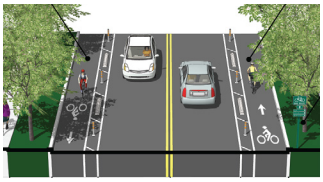
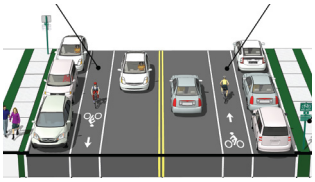
Keokee Street Alternatives Evaluation

Table 10. Keokee Street –Qualitative Assessment Summary

Evaluation measures	ASSESSMENT Option 1: Bicycle Boulevard	ASSESSMENT Option 2: Separated Bicycle Lanes
		
Bicycle Level of Traffic Stress	**Medium**	**Low**
Cost	**Low**	**Low**
Parking Impacts	**Low**	**High**
Right-of-Way Impacts and Utility Impacts	**Low**	**Low**
Summary	Provides additional bicycle comfort to the existing conditions, but not as much as a separated bicycle lane. However, this option has low construction costs, low parking impacts, and low drainage and utility impacts because this option can be implemented within the existing curb-to-curb width without any need to reconstruct the roadway or curbs.	Provides additional bicycle comfort than existing conditions. However, this option has high parking impacts. This option continues to have low construction costs and low drainage and utility impacts because it can be implemented within the existing curb-to-curb width without any need to reconstruct the roadway or curbs.

Jasmine Terrace Alternatives Evaluation

Table 11. Jasmine Terrace –Qualitative Assessment Summary

Evaluation measures	ASSESSMENT Option 1: Bicycle Boulevard	Option 2: Separated Bicycle Lanes	Option 3: Bicycle Lanes and Parking
			
Bicycle Level of Traffic Stress	**Medium**	**Low**	**Medium**
Cost	**Low**	**Low**	**High**
Parking Impacts	**Low**	**High**	**Low**
Right-of-Way Impacts and Utility Impacts	**Low**	**Low**	**High**
Summary	Provides additional bicycle comfort to the existing conditions, but not as much as a separated bicycle lane. However, this option has low construction costs, low parking impacts, and low drainage and utility impacts because this option can be implemented within the existing curb-to-curb width without any need to reconstruct the roadway or curbs.	Provides high bicycle comfort. However, this option has high parking impacts. This option continues to have low construction costs and low drainage and utility impacts because it can be implemented within the existing curb-to-curb width without any need to reconstruct the roadway or curbs.	Has high construction costs and high drainage and utility impacts because it cannot be implemented within the existing curb-to-curb width and needs to reconstruct the roadway and curbs.

New Riggs Road ROW Alternatives Evaluation

Table 12. New Riggs Road ROW –Qualitative Assessment Summary

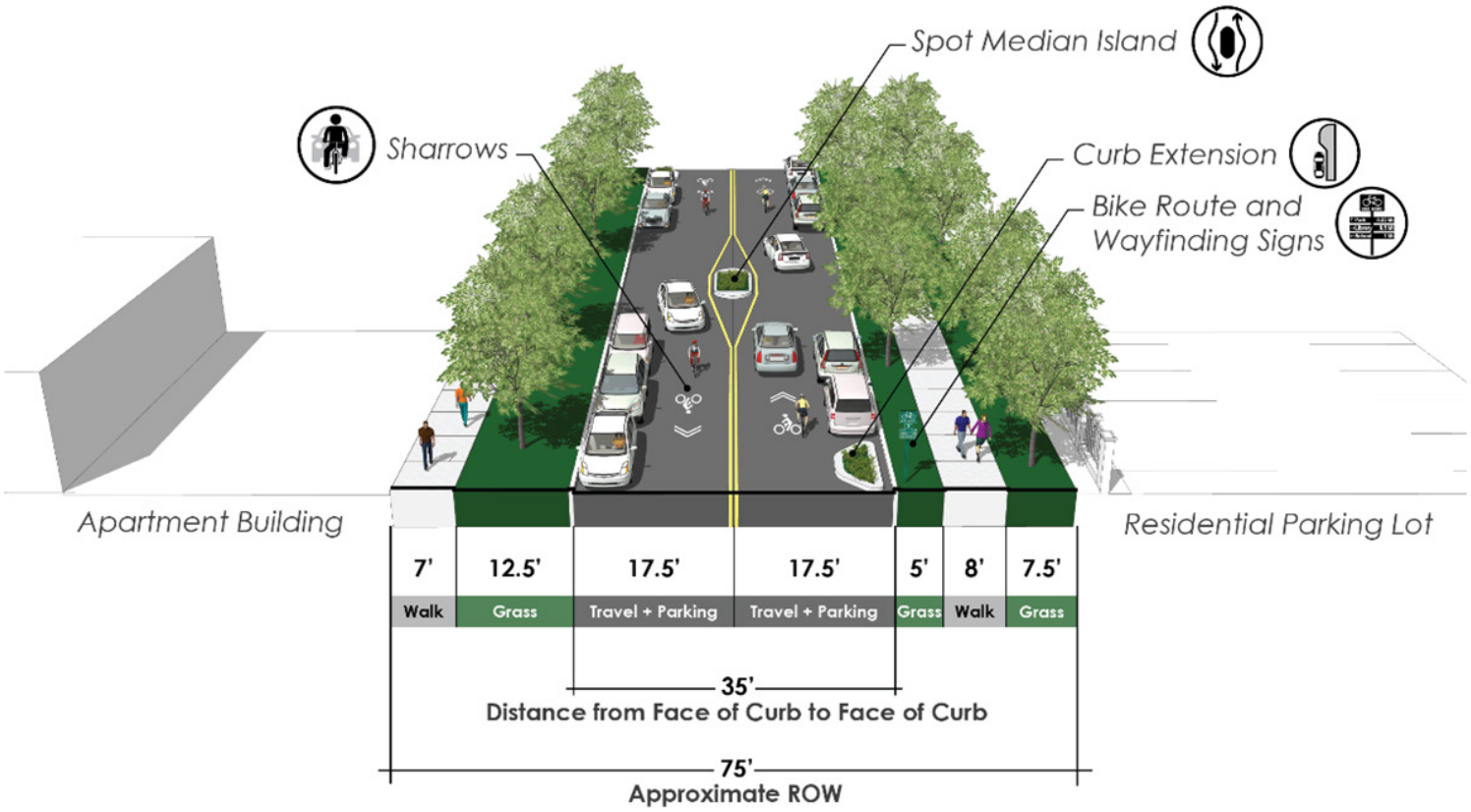
Evaluation measures	ASSESSMENT		
	Option 1	Option 2	Option 3
			
Bicycle Level of Traffic Stress	**Medium**	**Low**	**Low**
Construction & Maintenance Cost	**Low**	**Medium**	**High**
ADA Accessible	**Yes**	**Yes**	**Yes**
Right-of-Way Impacts & Utility Impacts	**Low**	**Medium**	**High**
Summary	A simple, linear path that simplifies construction and maintenance. This option is designed to fit within the ROW with minimum utility impacts.	Incorporates a modest curve along the path's alignment to match the site's existing topography. However, the design results in higher paved area as well as green stormwater management areas that increases construction and maintenance costs from Option 1. The	Includes a more curvilinear and dynamic shared-use path alignment to create a more park-like feeling within the site. The added curves along the path would This alternative also incorporates a new paved plaza for neighborhood gatherings. This design is the most significant alteration of the existing space resulting in higher construction and maintenance costs as well as higher utility impacts.

Preferred Alternatives

The study team conducted a work session to finalize preferred alternatives for the study segments and recommend spot improvements. This work session was conducted with planning staff and implementation agency staff to synthesize the feedback received through the online survey, interactive map comments, and at the public meeting.

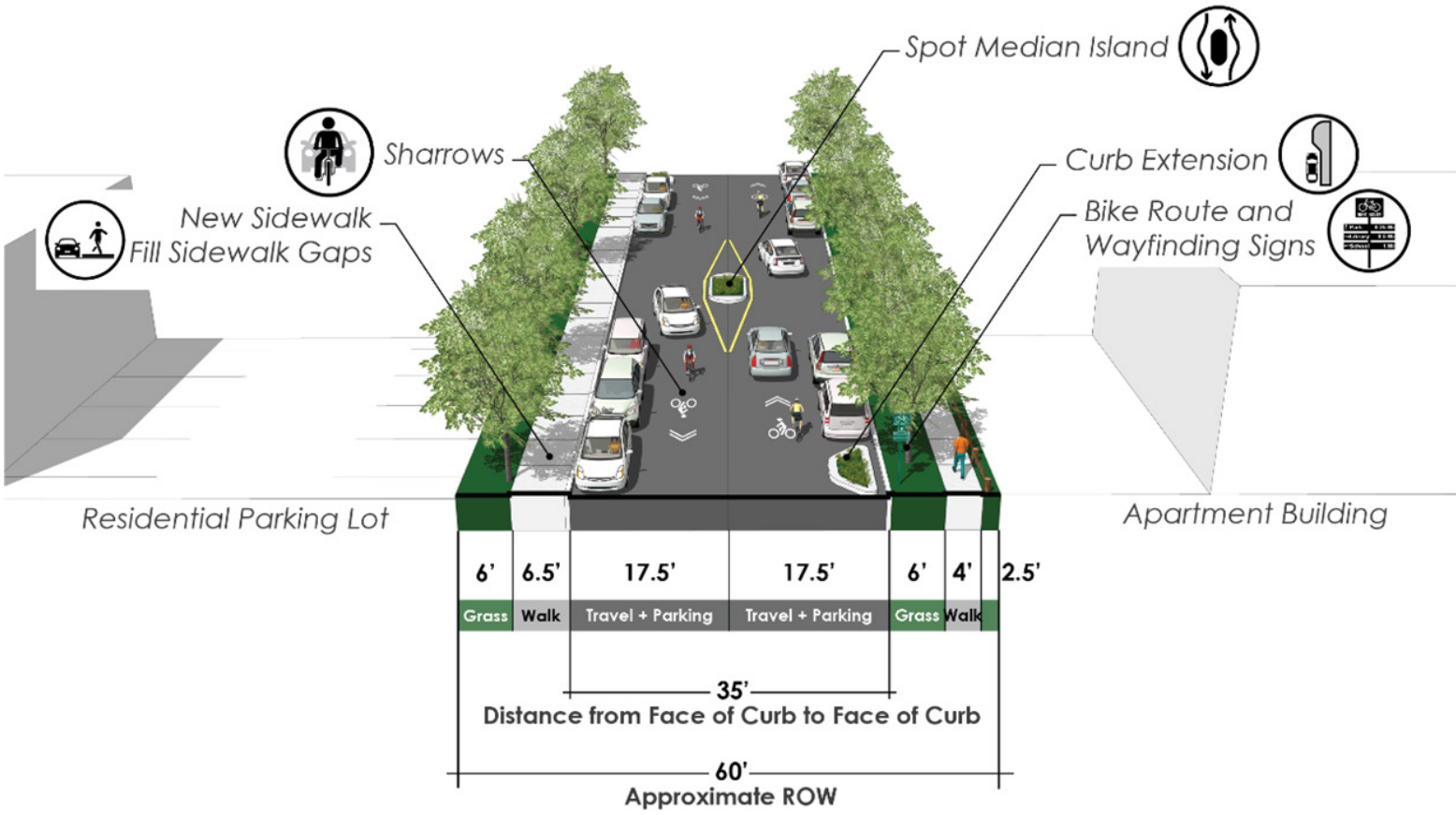
Appendix B, available online, includes a plan set for the preliminary engineering concept designs for the preferred alternatives and spot improvements along the study segments.

15th Avenue



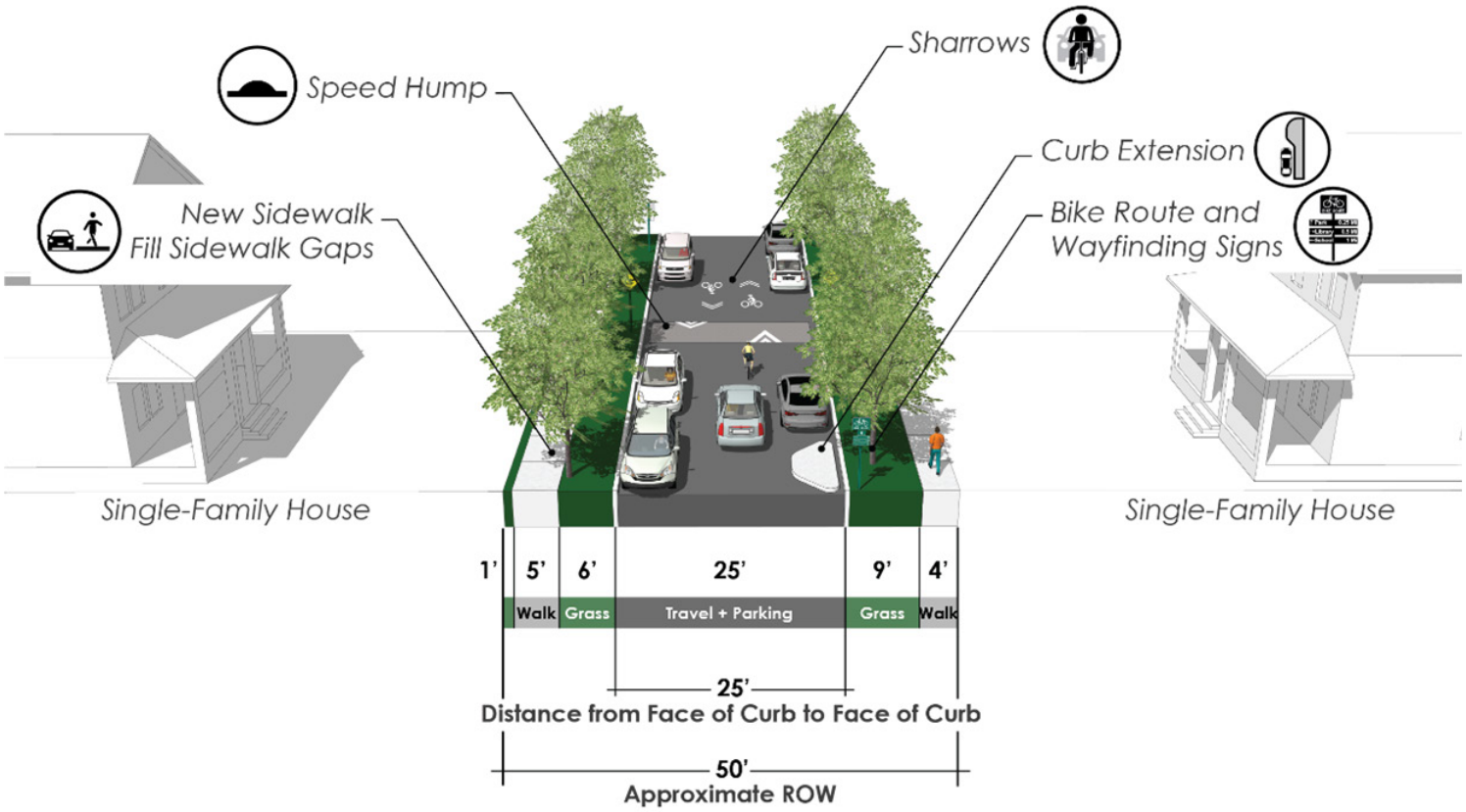
PREFERRED ALTERNATIVE: OPTION 1
BICYCLE BOULEVARD

Kanawha Street



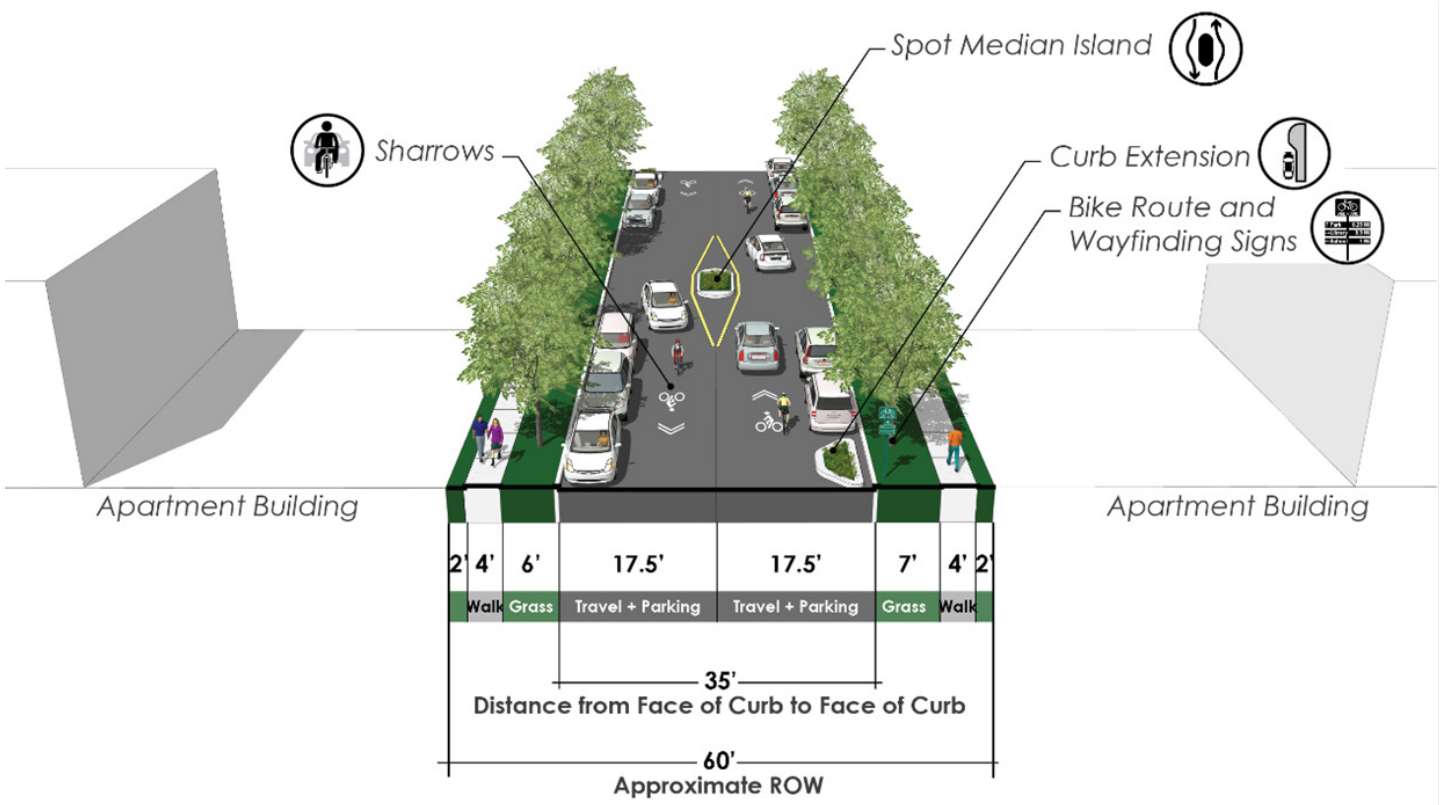
PREFERRED ALTERNATIVE: OPTION 1
BICYCLE BOULEVARD

Keokee Street



PREFERRED ALTERNATIVE: OPTION 1
BICYCLE BOULEVARD

Jasmine Terrace



PREFERRED ALTERNATIVE: OPTION 1
BICYCLE BOULEVARD

New Riggs Road Right-of-Way

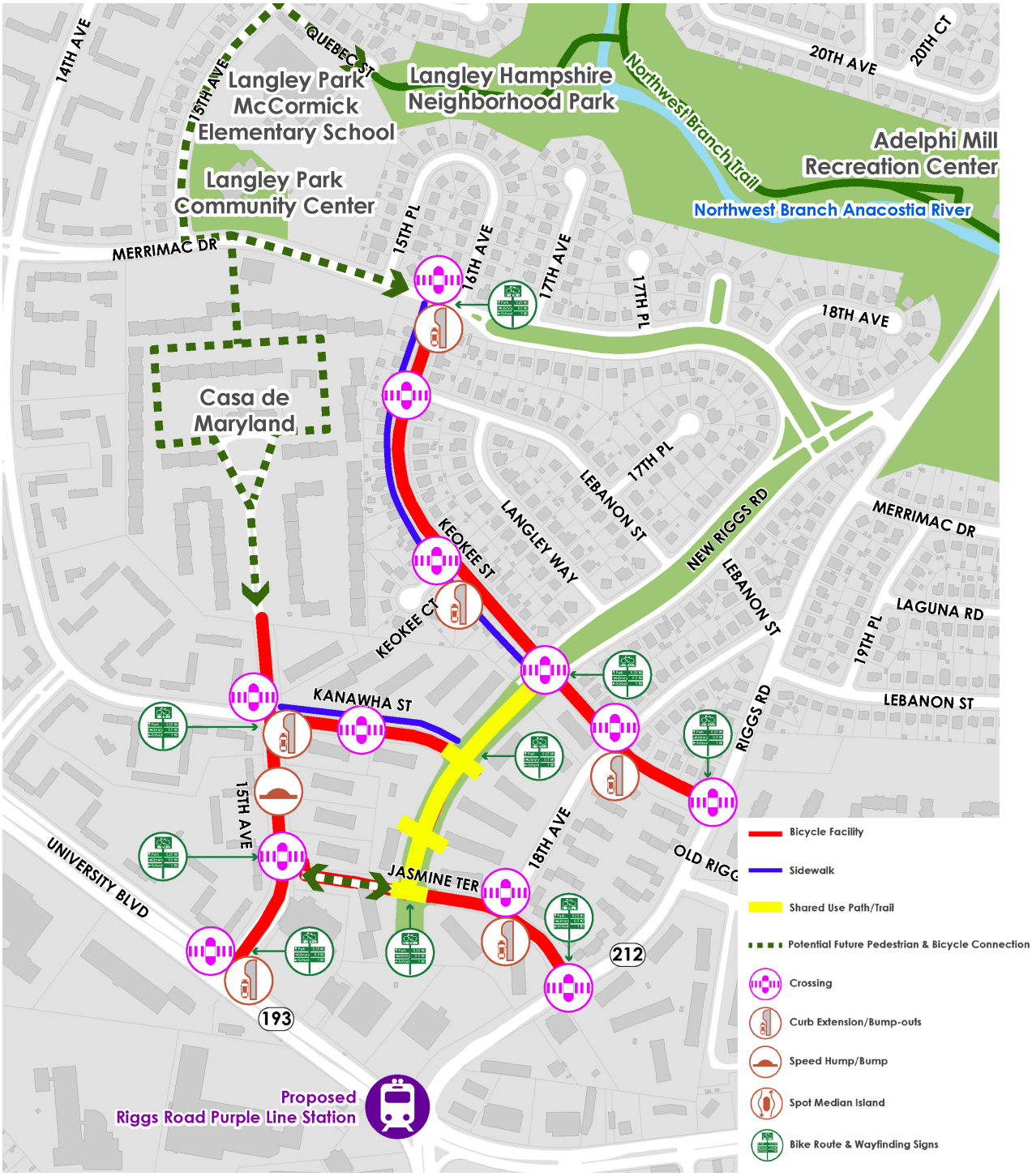
PREFERRED ALTERNATIVE: OPTION 1

Spot Improvements

The study team also identified specific spot improvements for the study segemnts. These spot improvements included traffic calming treatments, crossing improvemnets, wayfinding sign locations, and intersection recommendations.

Map 13 shows the locations and types of recommended spot improvements as well as other potential future opportunities to connect nearby bicycle facilities and destinations.

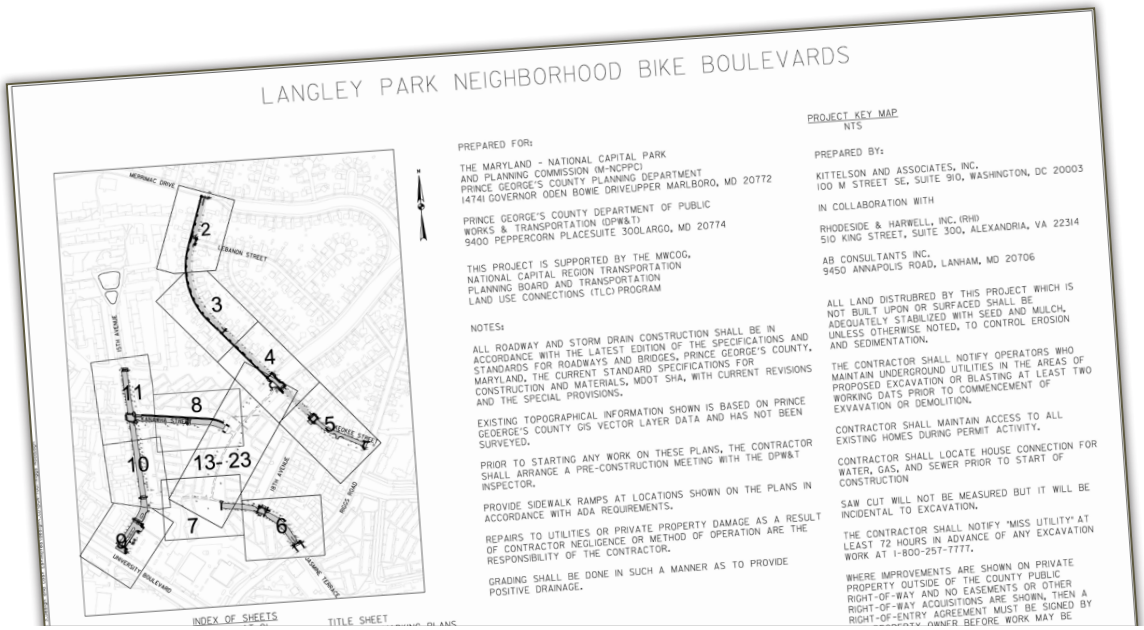
Map 13. Spot Improvements and Other Potential Future Opportunities



Appendix A

Virtual Public Meeting

The presentation slides are available online at http://bit.ly/LangleyAppxA



LANGLEY PARK NEIGHBORHOOD BIKE BOULEVARDS

PREPARED FOR:

THE MARYLAND - NATIONAL CAPITAL PARK
AND PLANNING COMMISSION (M-NCPPC)
PRINCE GEORGE'S COUNTY PLANNING DEPARTMENT
14741 GOVERNOR ODEN BOWIE DRIVEUPPER MARLBORO, MD 20772

PRINCE GEORGE'S COUNTY DEPARTMENT OF PUBLIC
WORKS & TRANSPORTATION (DPW&T)
9400 PEPPERCORN PLACESUITE 300LARGO, MD 20774

THIS PROJECT IS SUPPORTED BY THE MWCOG,
NATIONAL CAPITAL REGION TRANSPORTATION
PLANNING BOARD AND TRANSPORTATION
LAND USE CONNECTIONS (TLC) PROGRAM

NOTES:

ALL ROADWAY AND STORM DRAIN CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE SPECIFICATIONS AND STANDARDS FOR ROADWAYS AND BRIDGES, PRINCE GEORGE'S COUNTY, MARYLAND, THE CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, MDOT SHA, WITH CURRENT REVISIONS AND THE SPECIAL PROVISIONS.

EXISTING TOPOGRAPHICAL INFORMATION SHOWN IS BASED ON PRINCE GEOERGE'S COUNTY GIS VECTOR LAYER DATA AND HAS NOT BEEN SURVEYED.

PRIOR TO STARTING ANY WORK ON THESE PLANS, THE CONTRACTOR SHALL ARRANGE A PRE-CONSTRUCTION MEETING WITH THE DPW&T INSPECTOR.

PROVIDE SIDEWALK RAMPS AT LOCATIONS SHOWN ON THE PLANS IN ACCORDANCE WITH ADA REQUIREMENTS.

REPAIRS TO UTILITIES OR PRIVATE PROPERTY DAMAGE AS A RESULT OF CONTRACTOR NEGLIGENCE OR METHOD OF OPERATION ARE THE RESPONSIBILITY OF THE CONTRACTOR.

GRADING SHALL BE DONE IN SUCH A MANNER AS TO PROVIDE POSITIVE DRAINAGE.

PROJECT KEY MAP
NTS

PREPARED BY:

KITTELSON AND ASSOCIATES, INC.
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IN COLLABORATION WITH

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510 KING STREET, SUITE 300, ALEXANDRIA, VA 22314

AB CONSULTANTS INC.
9450 ANNAPOLIS ROAD, LANHAM, MD 20706

ALL LAND DISTRUBRED BY THIS PROJECT WHICH IS NOT BUILT UPON OR SURFACED SHALL BE ADEQUATELY STABILIZED WITH SEED AND MULCH, UNLESS OTHERWISE NOTED, TO CONTROL EROSION AND SEDIMENTATION.

THE CONTRACTOR SHALL NOTIFY OPERATORS WHO MAINTAIN UNDERGROUND UTILITIES IN THE AREAS OF PROPOSED EXCAVATION OR BLASTING AT LEAST TWO WORKING DATS PRIOR TO COMMENCEMENT OF EXVAVATION OR DEMOLITION.

CONTRACTOR SHALL MAINTAIN ACCESS TO ALL EXISTING HOMES DURING PERMIT ACTIVITY.

CONTRACTOR SHALL LOCATE HOUSE CONNECTION FOR WATER, GAS, AND SEWER PRIOR TO START OF CONSTRUCTION

SAW CUT WILL NOT BE MEASURED BUT IT WILL BE INCIDENTAL TO EXCAVATION.

THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT LEAST 72 HOURS IN ADVANCE OF ANY EXCAVATION WORK AT 1-800-257-7777.

WHERE IMPROVEMENTS ARE SHOWN ON PRIVATE PROPERTY OUTSIDE OF THE COUNTY PUBLIC RIGHT-OF-WAY AND NO EASEMENTS OR OTHER RIGHT-OF-WAY ACQUISITIONS ARE SHOWN, THEN A RIGHT-OF-ENTRY AGREEMENT MUST BE SIGNED BY

INDEX OF SHEETS

TITLE SHEET

Appendix B

30% Design Plans

The complete design set is available online at http://bit.ly/LangleyAppxB

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