MARYLAND DEPARTMENT OF TRANSPORTATION

STATE HIGHWAY ADMINISTRATION

MDOT State Highway Administration

MD 190 (River Road) Needs Analysis

MD 190 NEEDS ANALYSIS

Corridor Background
- Context Zones
- Study Limits
- Existing Conditions
- Speed Limit Zones & Signs
- Pedestrian Facilities
- Bicycle Facilities
- Transit Facilities
- Traffic Conditions
- Crash History

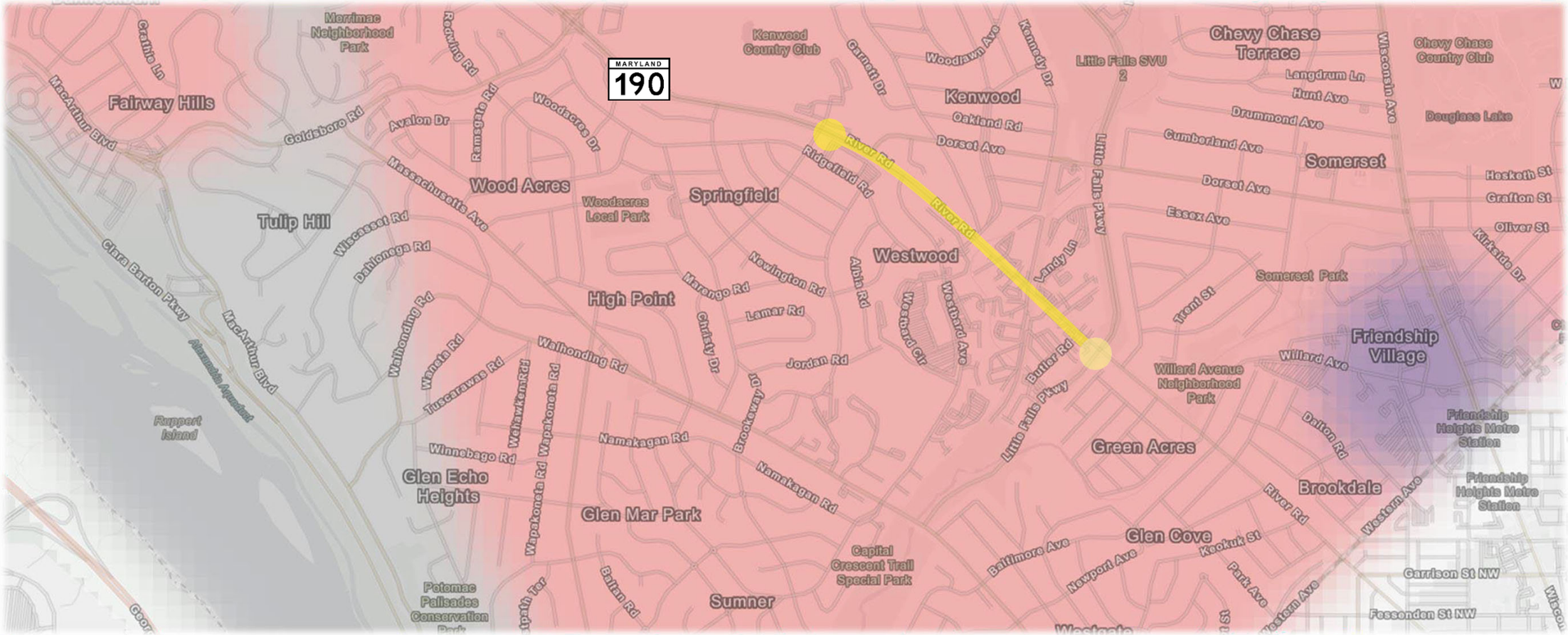
Westbard Sector Plan (MNCPPC)
- Sector Plan Goals (MNCPPC)
- Complete Streets (MCDOT)
- Near-Term Improvements (MCDOT)

Improvement Strategy (SHA)
- Near-Term
- Mid-Term
- Long-Term
- Carbon Reduction Program

Summary

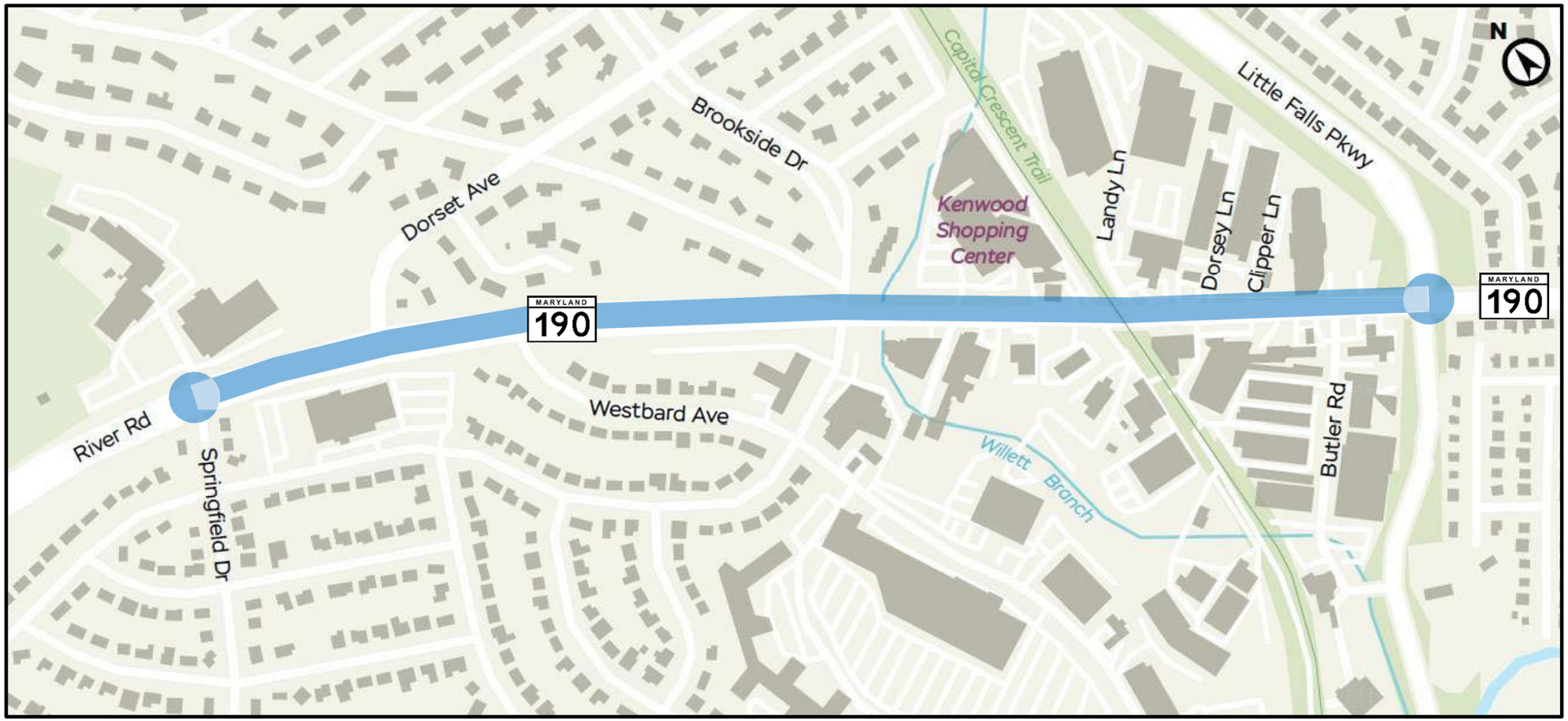
MD 190 CORRIDOR BACKGROUND

CONTEXT ZONES



MD 190 CORRIDOR BACKGROUND

STUDY LIMITS



- 0.75 mile
- 4 to 5 travel lanes
- 35 mph posted speed limit
- 25,000 vehicles daily

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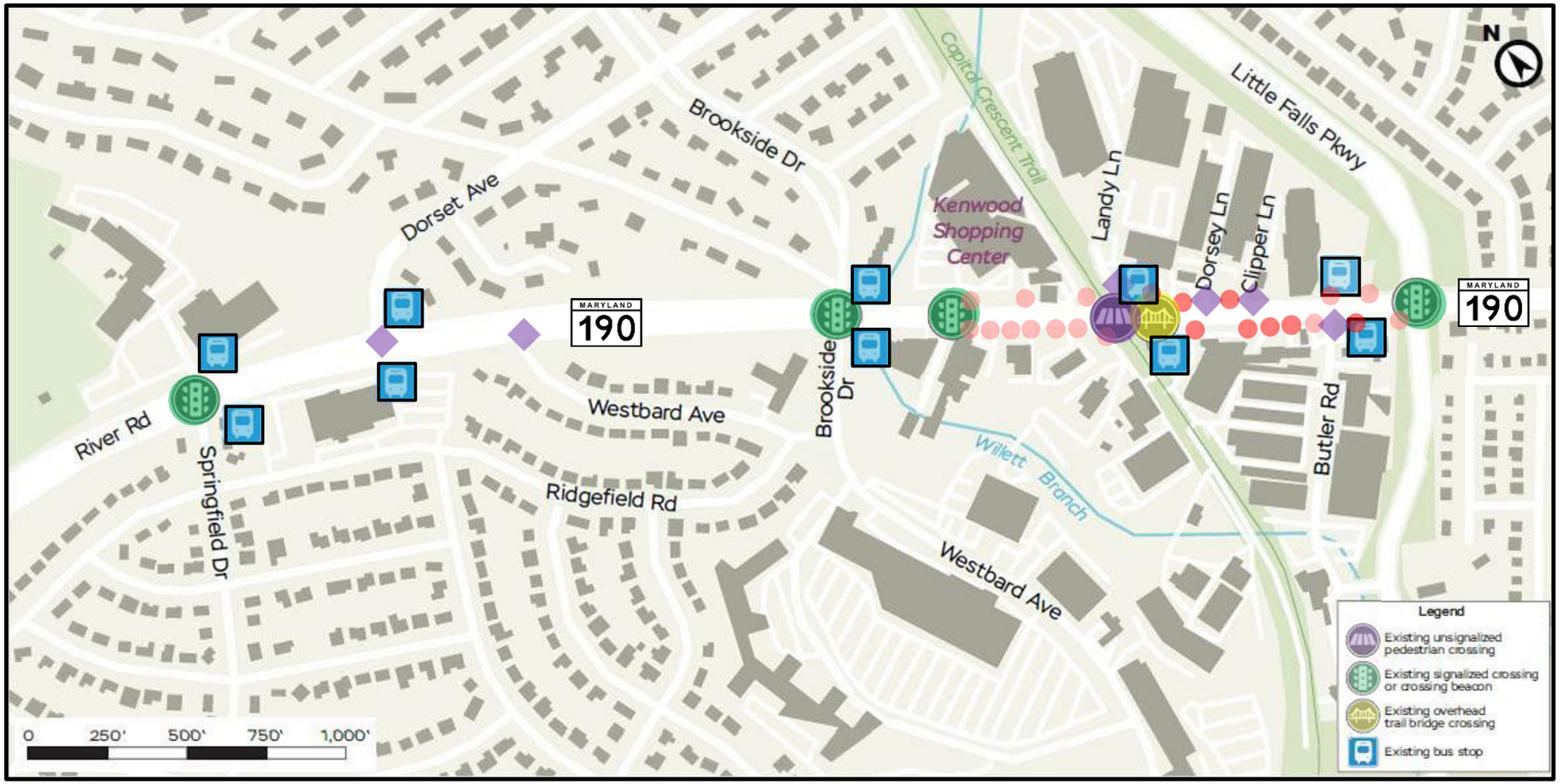
STATE HIGHWAY ADMINISTRATION

MD 190 CORRIDOR BACKGROUND

EXISTING CONDITIONS



- 4 signalized intersections
- 6 unsignalized intersections
- 1 unsignalized crosswalk
- 22 uncontrolled access points
- 1 trail bridge
- 10 bus stops

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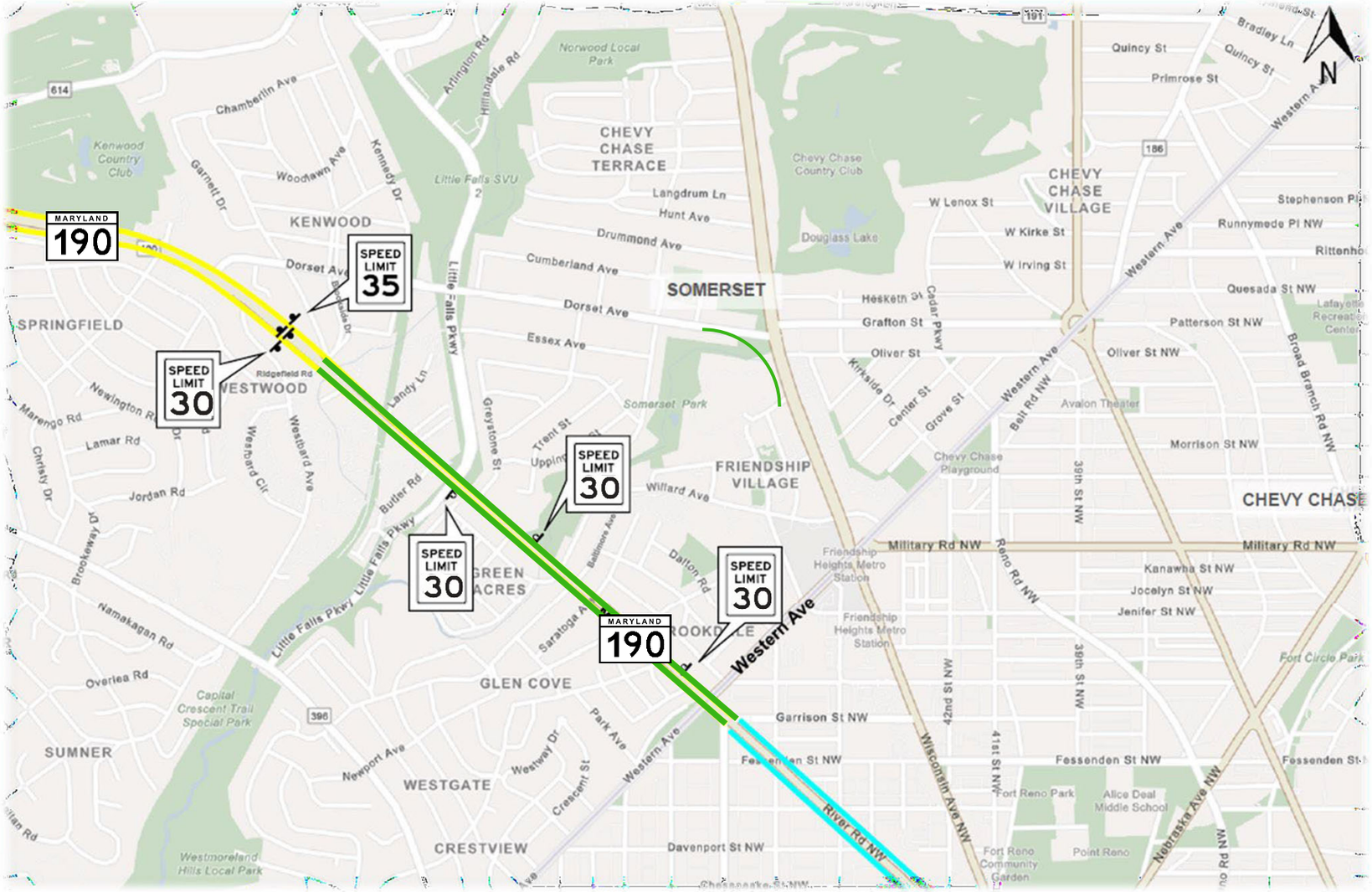
STATE HIGHWAY ADMINISTRATION

MD 190 CORRIDOR BACKGROUND

SPEED LIMIT ZONES AND SIGNS



SPEED LIMIT ZONES

- 25 mph
- 30 mph
- 35 mph
- 40 mph
- 45 mph

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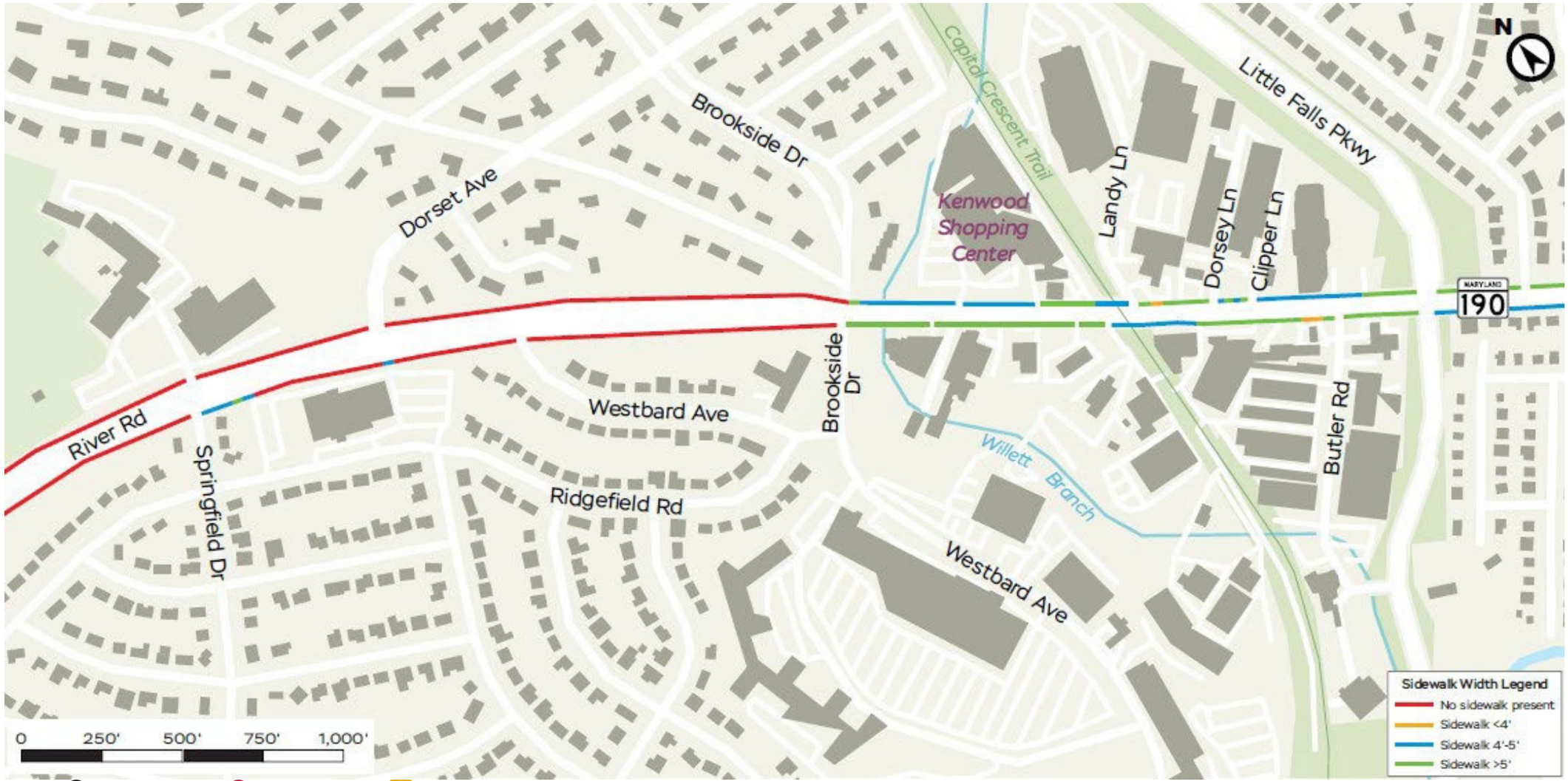
STATE HIGHWAY ADMINISTRATION

MD 190 CORRIDOR BACKGROUND

PEDESTRIAN FACILITIES



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STATE HIGHWAY ADMINISTRATION

MD 190 CORRIDOR BACKGROUND

PEDESTRIAN LEVEL OF COMFORT

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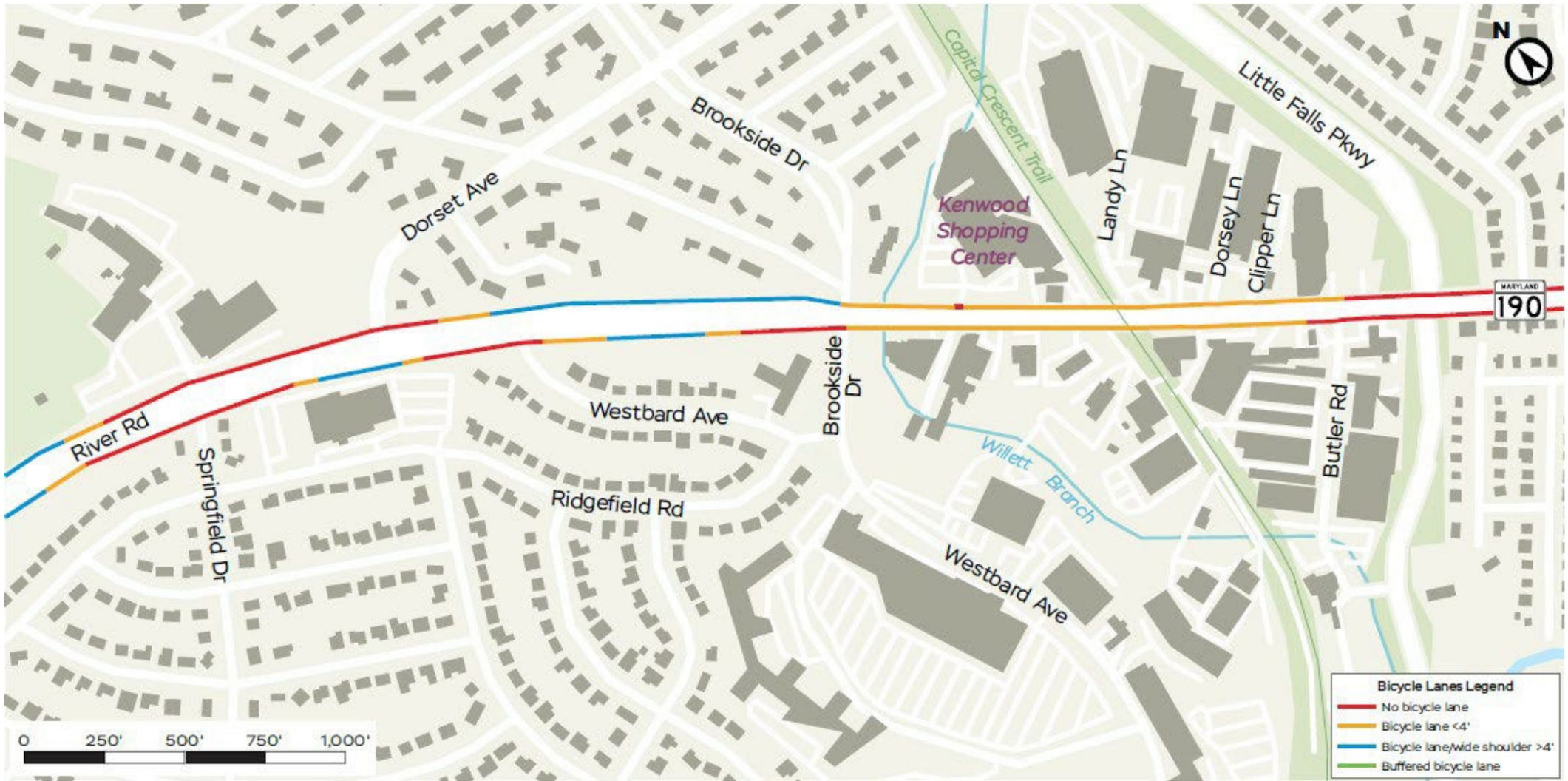
STATE HIGHWAY ADMINISTRATION

MD 190 CORRIDOR BACKGROUND

BICYCLE FACILITIES



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STATE HIGHWAY ADMINISTRATION

MD 190 CORRIDOR BACKGROUND

BICYCLE LEVEL OF TRAFFIC STRESS

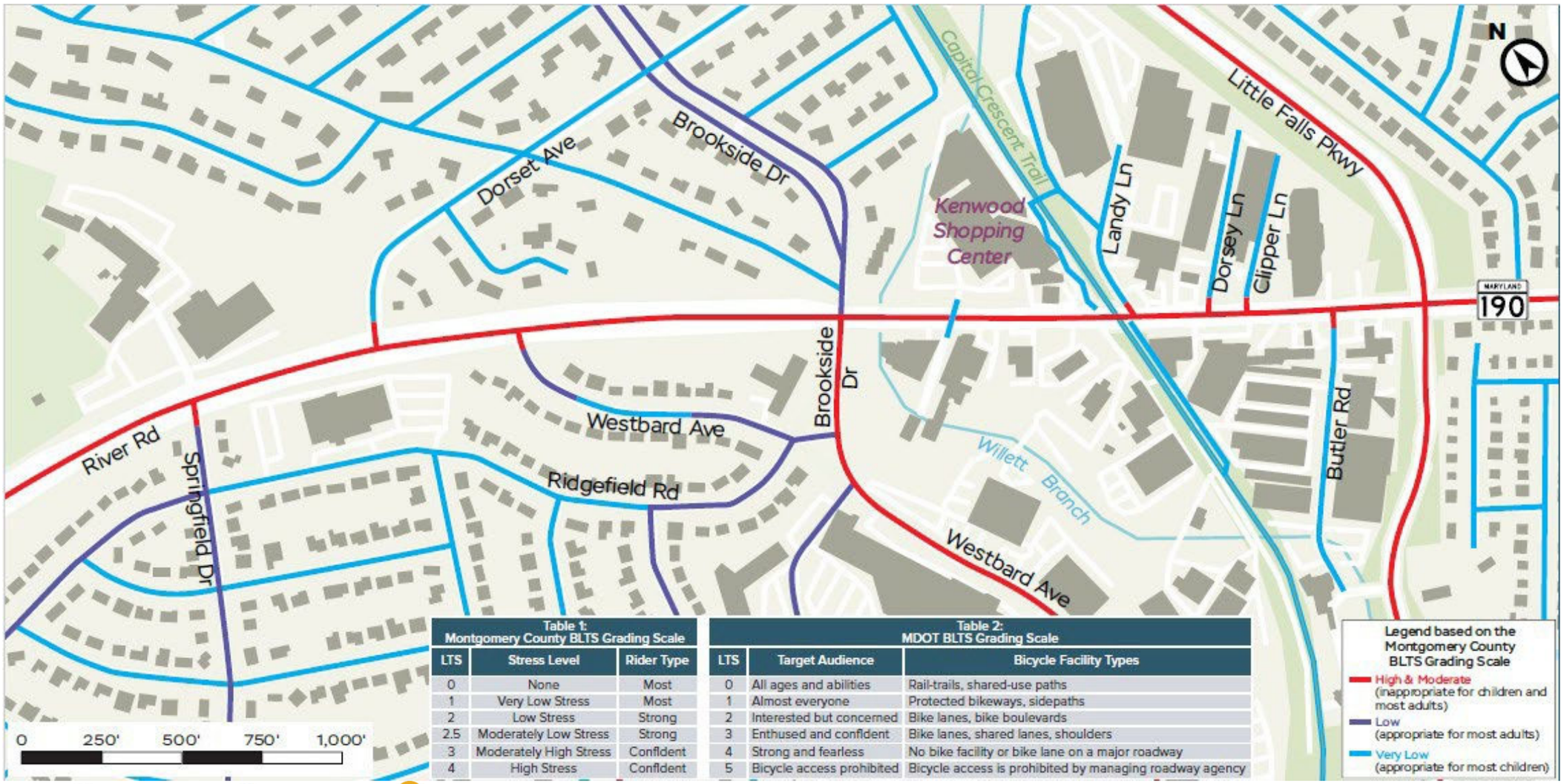


Table 1: Montgomery County BLTS Grading Scale

LTS	Stress Level	Rider Type
0	None	Most
1	Very Low Stress	Most
2	Low Stress	Strong
2.5	Moderately Low Stress	Strong
3	Moderately High Stress	Confident
4	High Stress	Confident

Table 2: MDOT BLTS Grading Scale

LTS	Target Audience	Bicycle Facility Types
0	All ages and abilities	Rail-trails, shared-use paths
1	Almost everyone	Protected bikeways, sidepaths
2	Interested but concerned	Bike lanes, bike boulevards
3	Enthused and confident	Bike lanes, shared lanes, shoulders
4	Strong and fearless	No bike facility or bike lane on a major roadway
5	Bicycle access prohibited	Bicycle access is prohibited by managing roadway agency

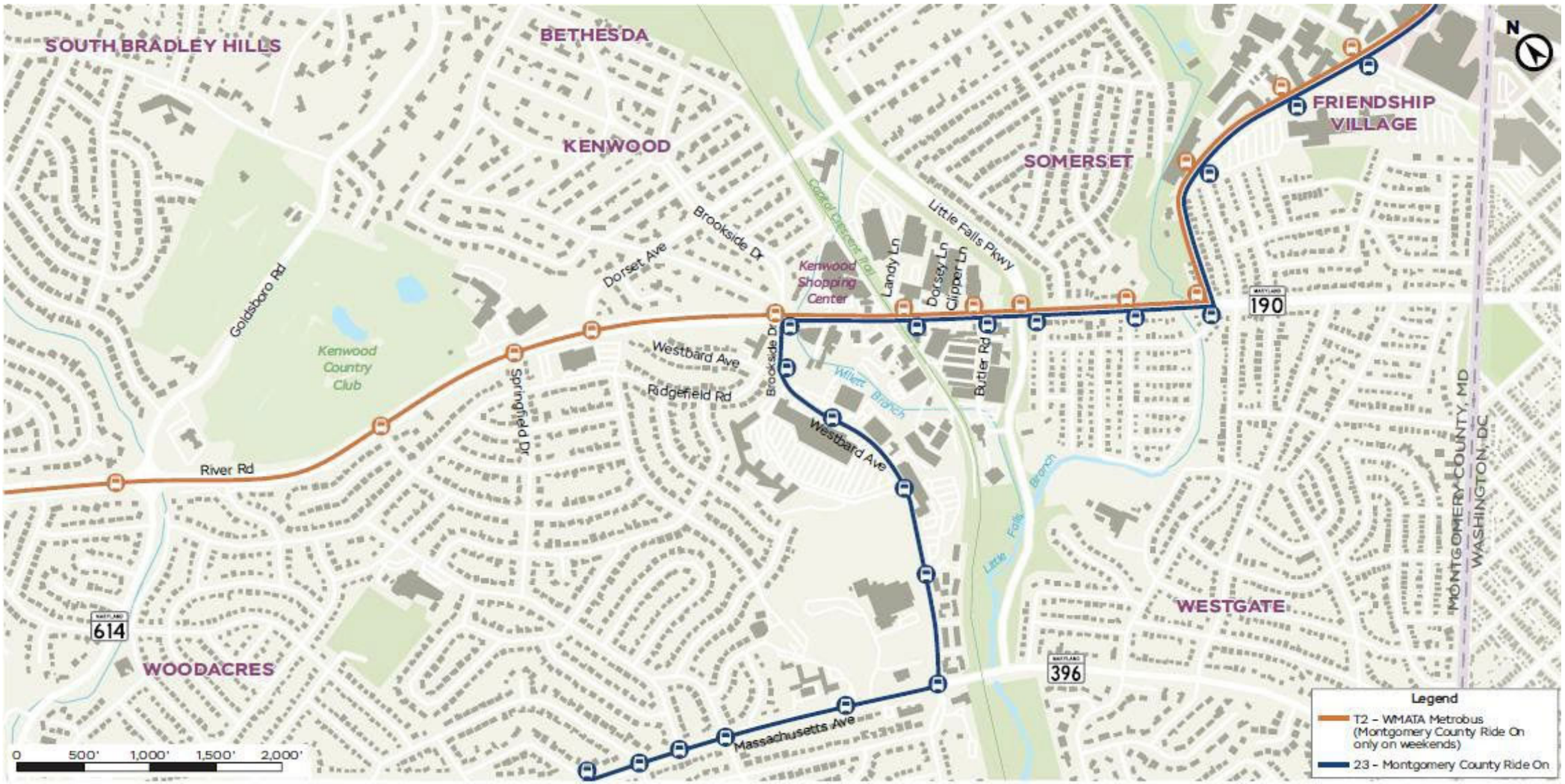
Legend based on the Montgomery County BLTS Grading Scale

- High & Moderate (inappropriate for children and most adults)
- Low (appropriate for most adults)
- Very Low (appropriate for most children)

MDOT MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

MD 190 CORRIDOR BACKGROUND

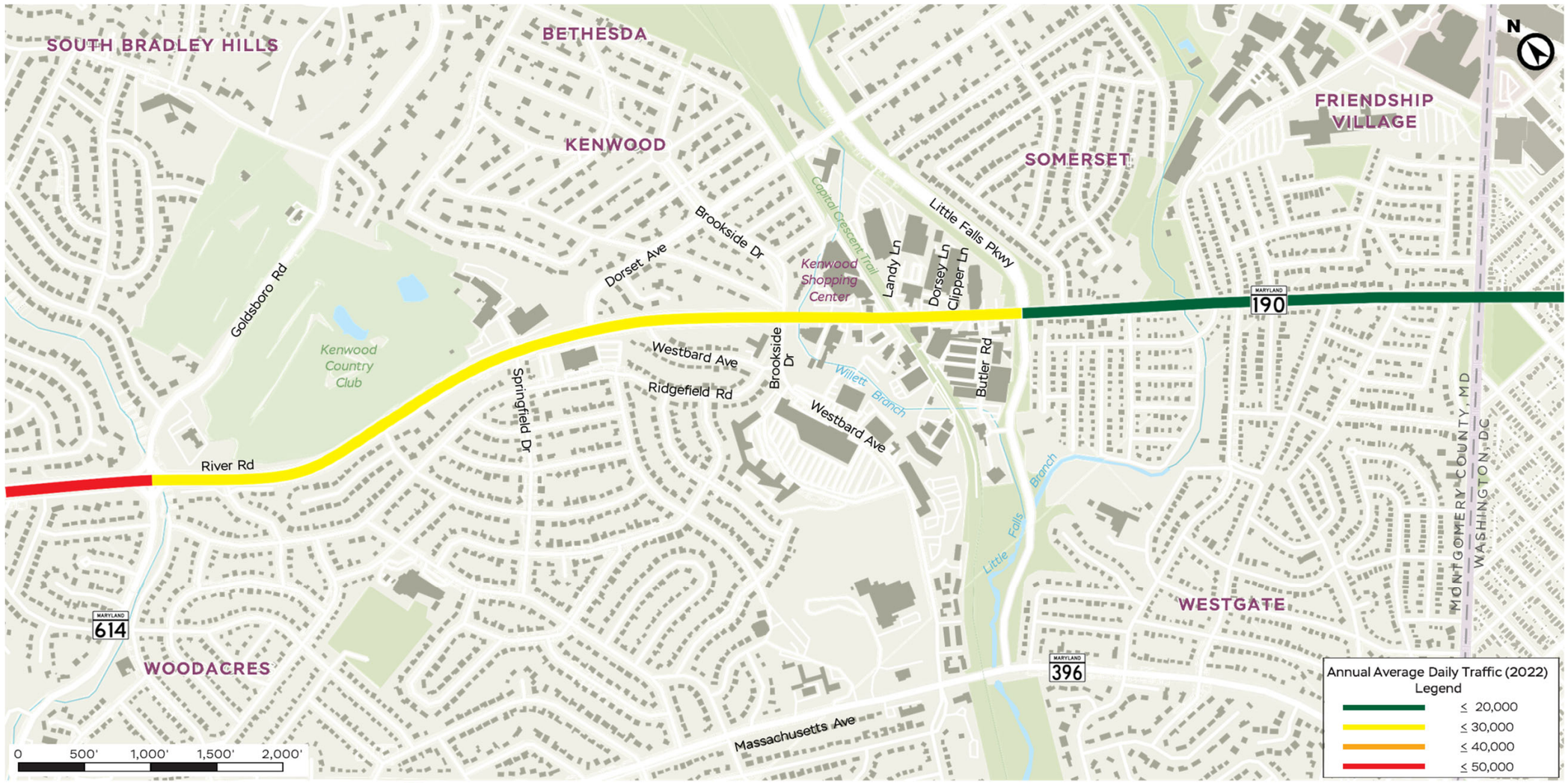
TRANSIT CONDITIONS



MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

MD 190 CORRIDOR BACKGROUND

TRAFFIC CONDITIONS



MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

MD 190 CORRIDOR BACKGROUND

CRASH HISTORY

**Crash data for a five-year period (2017–2022)*

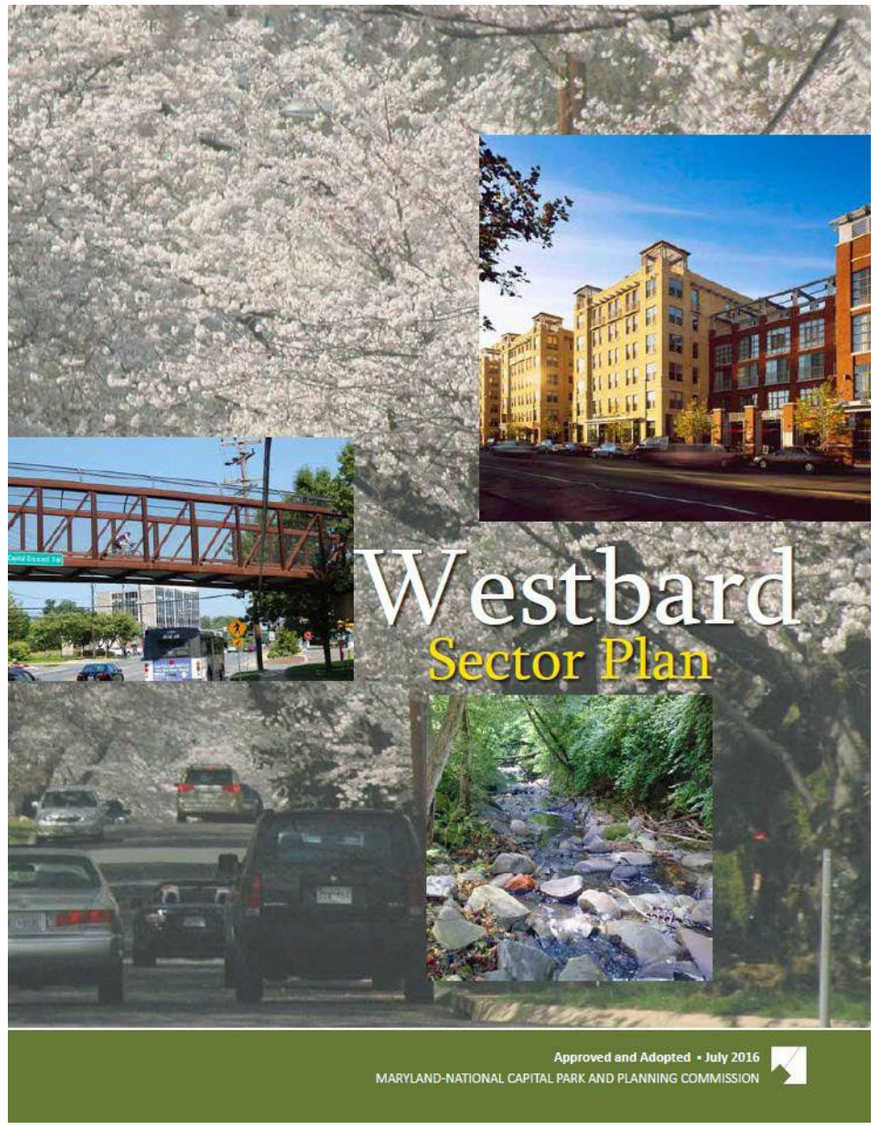
MD 190 CORRIDOR BACKGROUND

WESTBARD SECTOR PLAN

An overarching goal for the Westbard area is to implement a complete transportation network that can accommodate all users. Specific steps for implementing the overall goal are as follows:

Goals:

- Improve mobility within and through the Westbard area with increased connections.
- Enhance roadways to accommodate multi-modal transportation options.
- Expand and implement new transit options.
- Accommodate regional mobility while increasing local connectivity.
- Maintain a land use and a transportation balance.
- Improve bicycle and pedestrian infrastructure.



MD 190 CORRIDOR BACKGROUND

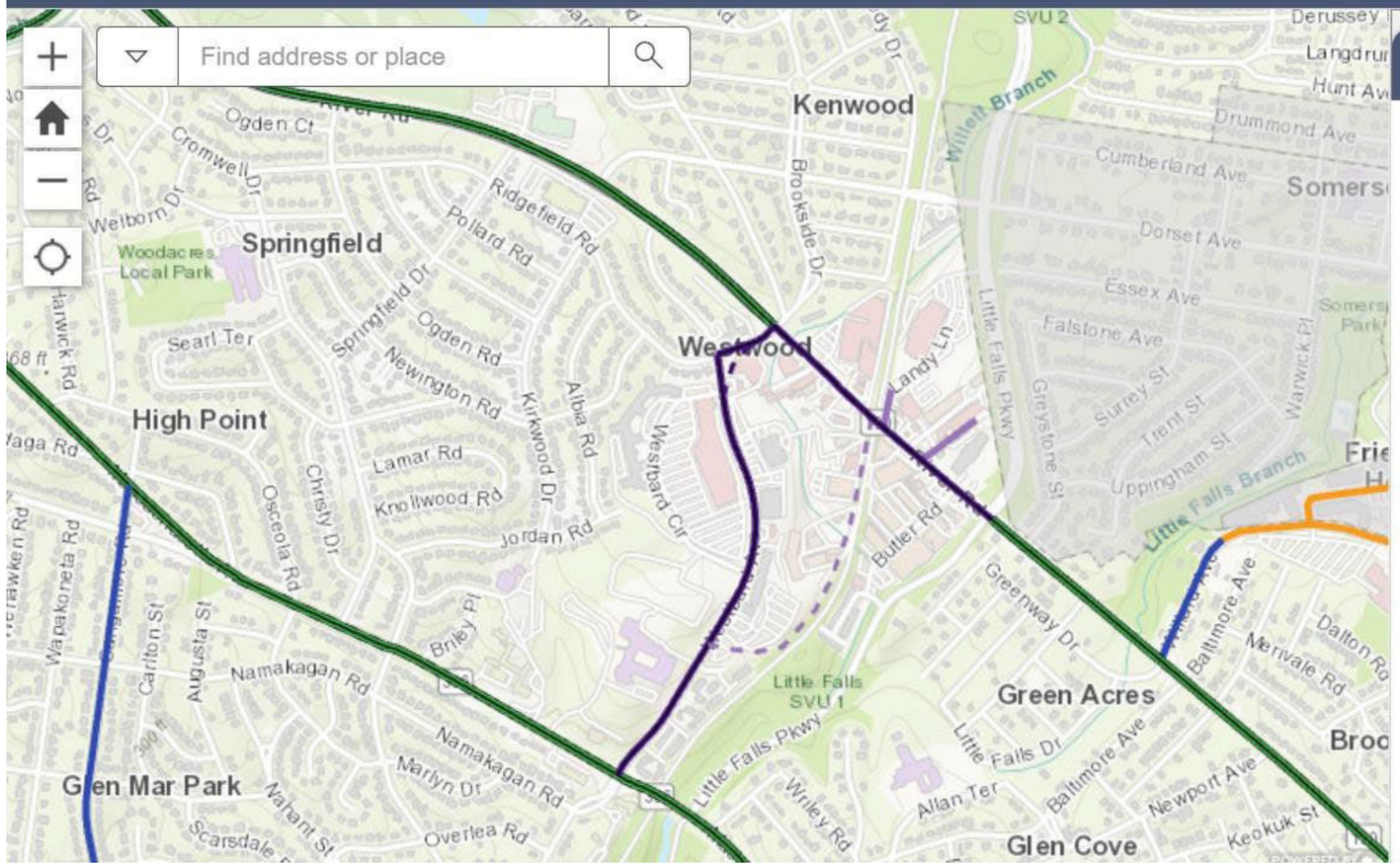
WESTBARD SECTOR PLAN

Table 4.3.1: Capital Improvements Program

Project Name	Category	Lead Agency	Coordinating Agencies	Cost Estimate
Willett Branch naturalization	Environment and M-NCPPC Parks	M-NCPPC	DEP/MCDOT	TBD
Redesign of River Road with median and cycle track	Transportation	SHA	M-NCPPC/MCDOT	TBD
Reconfigure Westbard Avenue at Ridgefield Road	Transportation	MCDOT	M-NCPPC/SHA	TBD
Redesign Westbard Avenue with cycle track from River Road to Westbard Circle	Transportation	MCDOT	M-NCPPC	TBD
Construct shared-use path on Westbard Avenue from Westbard Circle to Massachusetts Avenue	Transportation	MCDOT	M-NCPPC	TBD
Construct new connector road from Westbard Avenue to River Road with bicycle shared roadway	Transportation	MCDOT	M-NCPPC/SHA	TBD
New CCT connection from new connector road	Transportation	MCDOT	M-NCPPC	TBD
New transit hub at Westwood Shopping Center (Giant Food)	Transportation	MCDOT	M-NCPPC	TBD
Ride-on service expansion (headways and possible coverage area)	Transportation	MCDOT	M-NCPPC	TBD
Bike share stations	Transportation	MCDOT	M-NCPPC	TBD
Underground of public utilities	Transportation	MCDOT	SHA/M-NCPPC	TBD
Adding to Montgomery County Public Schools recreational facilities	MCPS and M-NCPPC Parks	MCPS	M-NCPPC	TBD
Establishment of Countywide Urban Recreational Park at a minimum of 10,000 square feet	M-NCPPC Parks	M-NCPPC Parks	DEP/M-NCPPC	TBD

MD 190 CORRIDOR BACKGROUND

Master Plan of Highways and Transitways



WELCOME | INFO | CLASSIFICATION

River Rd (MD 190)

From Location: Ridgefield Rd
To Location: Little Falls Pkwy
Current Classification: Town Center Boulevard

Planned Lanes: 4
Designated Transit Lanes: 0
Traffic Lanes: 4

Transitway Type: n/a
Transitway Name: n/a
Right-of-Way (feet): 110
Master Planned Target Speed: 30
Master Plan: Westbard Sector Plan (2016)
Prior Classification: Major Highway

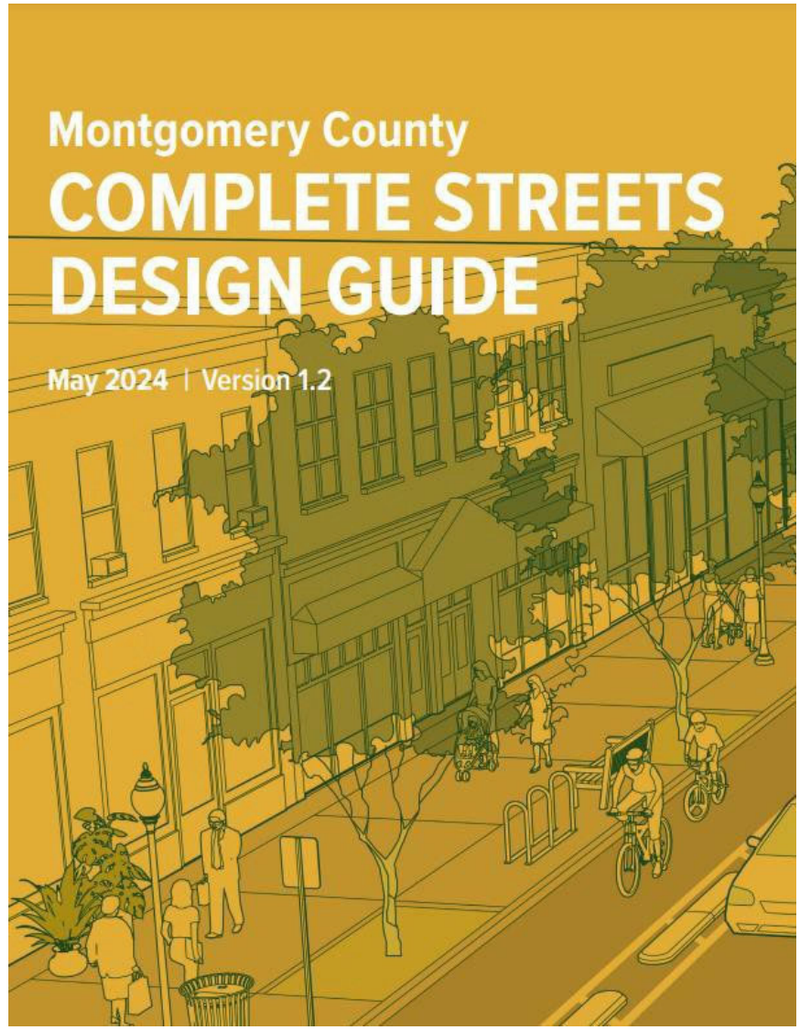
MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

MD 190 CORRIDOR BACKGROUND

COMPLETE STREETS

Figure 5-27. Guidance on appropriate bikeway by street type

Street Type	Parameter	Two-Way SBL	One-Way SBL	Sidepath	Buffered Bike Lanes	Conventional Bike Lanes	Advisory Bike Lanes	Bikeable Shoulders
Downtown Boulevard	Bikeway	11' default; 8' min	6.5' default, 5' min	11' default; 8' min	6' default; 4-5' min (2)	6' default; 5' min (3)	6' default; 4-5' min (4)	N/A
	Street Buffer	8' default; 6' min	8' default; 6' min	8' default; 6' min	2' min	N/A	N/A	N/A
Downtown Street	Bikeway	10' default; 8' min	6.5' default, 5' min	10' default; 8' min	6' default; 4-5' min (2)	6' default; 5' min (3)	6' default; 4-5' min (4)	N/A
	Street Buffer	6' (1)	6' (1)	6' (1)	2' min	N/A	N/A	N/A
Town Center Boulevard	Bikeway	11' default; 8' min	6.5' default, 5' min	11' default; 8' min	6' default; 4-5' min (2)	6' default; 5' min (3)	6' default; 4-5' min (4)	N/A
	Street Buffer	8' default; 6' min	8' default; 6' min	8' default; 6' min	2' min	N/A	N/A	N/A
Town Center Street	Bikeway	10' default; 8' min	6.5' default, 5' min	10' default; 8' min	6' default; 4-5' min (2)	6' default; 5' min (3)	6' default; 4-5' min (4)	N/A
	Street Buffer	6' (1)	6' (1)	6' (1)	2' min	N/A	N/A	N/A
Boulevard	Bikeway	11' default; 8' min	6.5' default, 5' min	11' default; 8' min	6' default; 4-5' min (2)	6' default; 5' min (3)	6' default; 4-5' min (4)	N/A
	Street Buffer	8' default; 6' min	8' default; 6' min	8' default; 6' min	2' min	N/A	N/A	N/A
Area Connector	Bikeway	10' default; 8' min	6.5' default, 5' min	10' default; 8' min	6' default; 4-5' min (2)	6' default; 5' min (3)	6' default; 4-5' min (4)	N/A
	Street Buffer	6'	6'	6'	2' min	N/A	N/A	N/A
Neighborhood Connector	Bikeway	10' default; 8' min	6.5' default, 5' min	10' default; 8' min	6' default; 4-5' min (2)	6' default; 5' min (3)	6' default; 4-5' min (4)	N/A
	Street Buffer	6'	6'	6'	2' min	N/A	N/A	N/A



MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

MD 190 CORRIDOR BACKGROUND

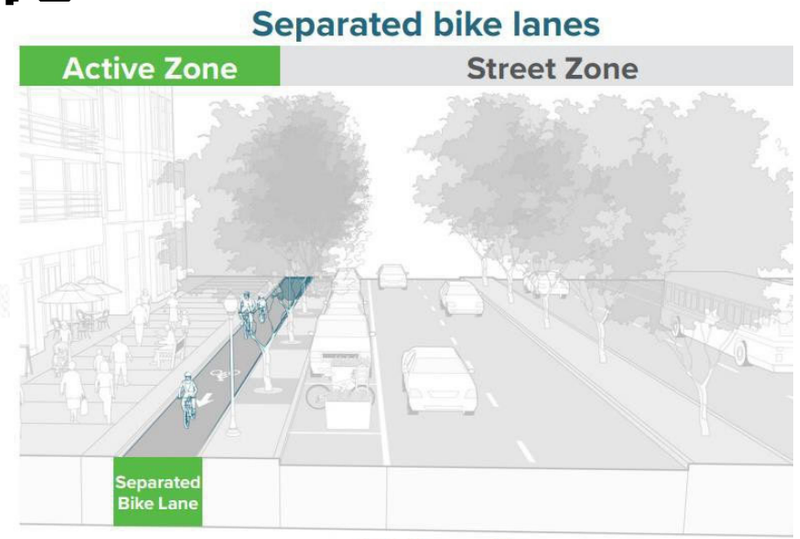
COMPLETE STREETS

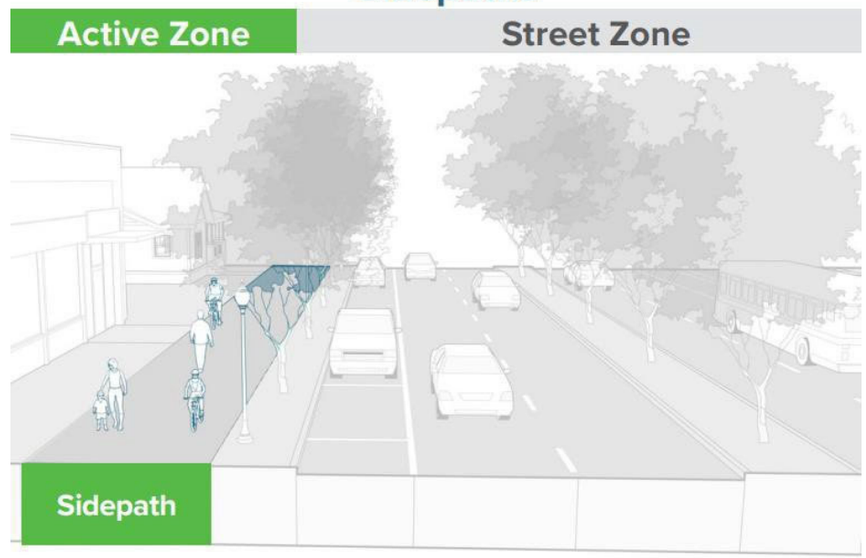
Green-Colored Pavement Markings

Green pavement markings communicate to road users where portions of the roadway have been designated for exclusive or preferential use by bicyclists, and enhance awareness of bicycle lanes, bicycle crossings, bicycle boxes, or two-stage turn queue boxes at or through an intersection.

Conflict Zone Striping (Bike Crossings)

Where separated bike lanes cross streets, alleys, and driveways, conflict zone pavement markings should be used. The conflict zone striping typically uses a green-colored surface marking to provide a distinction between it and a pedestrian crossing. When the conflict zone is used for a two-way bike facility, a centerline stripe is recommended, as shown in Figure 6-22.





MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

NEAR-TERM IMPROVEMENTS - CORRIDORWIDE

Additional speed limit signs along westbound MD 190 west of Springfield Drive

The MD 190 corridor includes multiple opportunities for short-term improvements that will improve safety, access, and mobility for travelers in the corridor. ADA compliance should be ensured during the installation of any of these near-term improvements. Potential near-term improvements to be implemented throughout the study corridor, including those already in development by SHA, include improving awareness for all road users of speeds and the presence of bicycles.

Near-Term Improvements	
Location	**Improvement Description**
Corridor-wide	Improve awareness of speed limits with additional signs at key locations (completed)
	Improve awareness of bike lanes (completed) by: » Installing "Ahead" and "Ends" signs » Installing "Bike Lane" signs » Installing "Begin Right Turn Lane Yield to Bikes" signs
	Trim foliage blocking sight distance and signs relating to speeds, pedestrians, and bicyclists

Bike lane sign along eastbound MD 190 approaching Little Falls Parkway

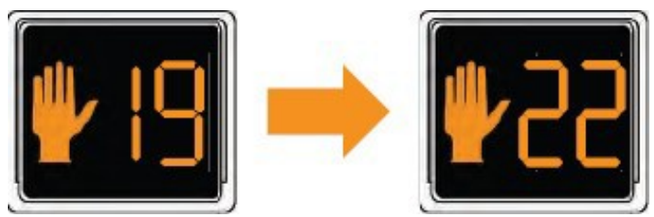
MD 190 CORRIDOR

NEAR-TERM IMPROVEMENTS - SEGMENT 1

Near-Term Improvements	
Location	**Improvement Description**
Springfield Drive	Extend pedestrian clearance intervals (flashing don't walk time)
	Extend vehicle clearance intervals (yellow/all-red time)
WB MD 190 at Dorset Ave	Install an Advance Intersection Warning sign

Segment 1 (MD 190 between Springfield Drive and Brookside Drive)

Potential improvement options throughout Segment 1 target improving the signal timings for vehicular and pedestrian safety at Springfield Drive by lengthening the time allotted for pedestrians to cross MD 190, and lengthening the timing for vehicles to clear through the intersection after the light turns yellow. By increasing the yellow and red phases, the green phase will be slightly reduced to ensure coordination with surrounding signals along the corridor. Another potential improvement treatment includes improving awareness of the unsignalized side street at Dorset Avenue. Public feedback indicated a request to provide a sign along MD 190 alerting motorists of the presence of vehicles turning to/ from Dorset Avenue.



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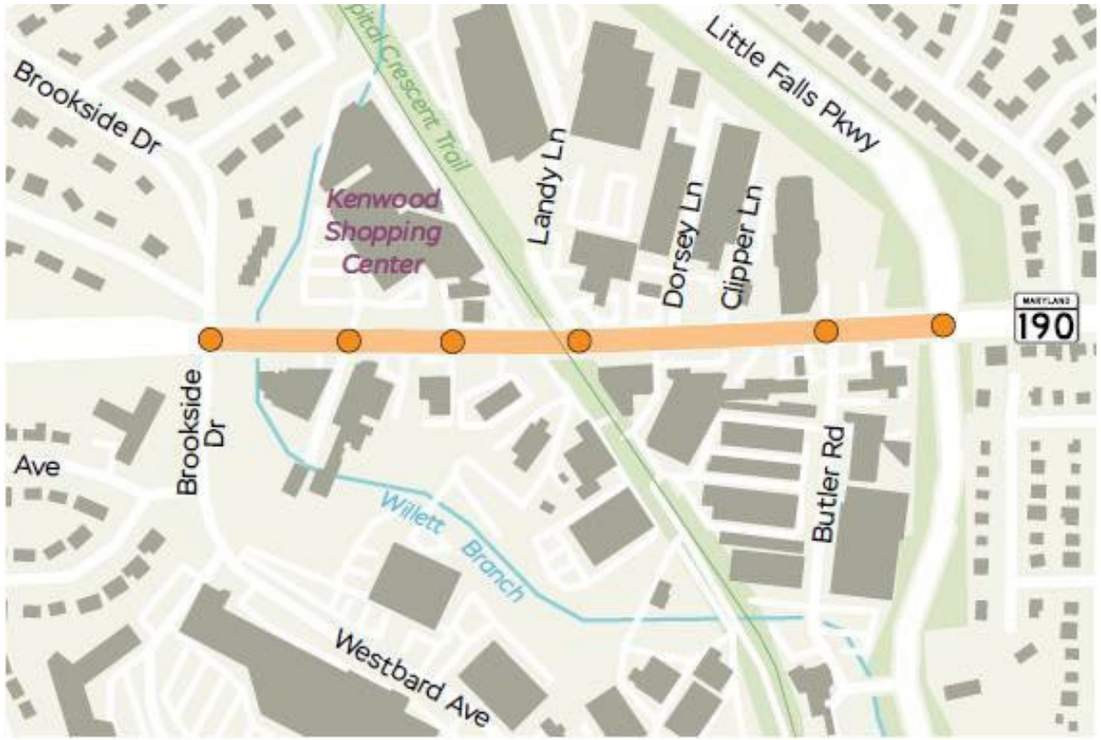
STATE HIGHWAY ADMINISTRATION

MD 190 CORRIDOR

NEAR-TERM IMPROVEMENTS - SEGMENT 2



Near-Term Improvements	
Location	**Improvement Description**
Brookside Drive	Replace crosswalks with continental crosswalks (completed)
	Extend vehicle clearance intervals (yellow/all-red time)
	Evaluate conditions for crossing pedestrians with the reopening of the signal
Kenwood Shopping Center	Replace crosswalks with continental crosswalks (completed)
	Extend vehicle clearance intervals (yellow/all-red time)
	Modify the pedestrian clearance times
Talbert's Ice & Beverage Service/ Bethesda Smoke Shop	Install delineation between EB MD 190 sidewalk and parking to prevent vehicles from parking on the sidewalk
Little Falls Parkway	Replace crosswalks with continental crosswalks
Uncontrolled Driveways	Install a lane separator system and/or flex posts approaching key locations
Throughout Segment 2	Improve awareness of bike lanes for turning traffic at driveways and intersections (Work Order for flex posts previously submitted; pending construction)
	Consider "No Parking/Standing/Stopping" zones and signs to prevent trucks blocking bike lane

Continental crosswalk markings at Kenwood Shopping Center signal

Example of lane separator system/flex posts

Segment 2 (MD 190 between Brookside Drive and Little Falls Parkway)

Potential improvement options throughout Segment 2 target improvements at intersections, including upgrading pavement markings, improving signal timings for vehicular and pedestrian safety, and improving awareness of bicyclists with signing installation. These potential signal timing improvements include lengthening the allotted for pedestrians to cross MD 190 and lengthening the timing for vehicles to clear through the intersection after the light turns green.

At the time of this analysis, the intersection of MD 190 at Brookside Drive was a three-legged intersection with the south leg closed due to the construction of Westbard Avenue. The intersection contains high volumes of pedestrians and bicyclists and will need to be evaluated once the south leg is reopened to traffic.

Potential segment improvements include separating parked vehicles at businesses by providing a separating system, such as flex posts, at key locations where turning conflicts are present. To keep bicycle lanes clear, restricting vehicles from parking on the roadway to load/unload may be considered.

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

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MD 190 CORRIDOR

MID-TERM IMPROVEMENTS - SEGMENT 1

Segment 1 (MD 190 between Springfield Drive and Brookside Drive)

Mid-Term Improvements	
Location	**Improvement Description**
Throughout Segment 1	Convert the existing bike lane shoulder to a barrier-separated bike lane with green pavement for conflict zones

Projects that require additional design, analysis, and coordination that are expected to take one or multiple years to implement are considered mid-term improvements. The potential mid-term improvements identified for the corridor include strategies to improve separation of vehicle and pedestrian/bicycle traffic and vehicle speed management strategies including lane narrowing, vertical delineation, and reduction of posted speed limits.

The existing wide shoulder throughout Segment 1 is marked as a bicycle lane. With the presence of acceleration/deceleration lanes approaching and departing unsignalized side streets, the bike lane narrows and disappear in both directions of MD 190. To provide a consistent and buffered bicycle lane throughout this segment, a potential treatment option includes narrowing the lanes to provide space for bicycle lanes in both directions to be separated from vehicular traffic.

This improvement option is categorized within the mid-term time frame for the installation of lane markings, lane delineators, and green pavement, shifting/narrowing lanes to accommodate a buffer space and bicycle lane, and potential conflicts with above-ground utilities.

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

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MD 190 CORRIDOR

MID-TERM IMPROVEMENTS - SEGMENT 2

Segment 2 (MD 190 between Brookside Drive and Little Falls Parkway)

Mid-Term Improvements	
Location	**Improvement Description**
Kenwood Station Shopping Center	Evaluate implementing a right turn on red restriction exiting the shopping center to improve pedestrian safety and lessen the impact of limited sight distance
	Implement a Leading Pedestrian Interval (LPI) for the west leg
	Install a hardened centerline for the west leg to slow down left-turning vehicles and improve safety for pedestrians
Landy Lane/under Capital Crescent Trail bridge	Install Pedestrian Hybrid Beacon (PHB), pedestrian median refuge, and access management (in progress)
Within Sidewalk	Relocate obstructions, including utility poles, sign posts, and fire hydrants
Throughout Segment 2	Convert the existing bike lane shoulder to a barrier-separated bike lane with green pavement for conflict zones
Throughout Segment to Washington DC	Reduce speed limit from 35mph to 30mph (in progress)

MDOT MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

The intersection of MD 190 at Kenwood Station is a pedestrian generator with direct access to the shopping center on the north leg. To protect non-motorists, potential treatment options include restricting right turns on red from the shopping center to avoid conflicts with pedestrians within the crosswalk, modifying signal timings to allow more crossing time for pedestrians, and installing a hardened centerline to slow down turning vehicles into the shopping center. All potential improvements shall be studied further prior to implementation.

There are opportunities for mid-term improvements at the uncontrolled crosswalk under the Capital Crescent Trail bridge, including realigning the crosswalk and providing a median refuge to create a shorter crossing distance and providing pushbuttons and pedestrian hybrid beacons to provide a protected crossing. Challenges for the development of this mid-term improvement include utility conflicts and maintaining driveway access for businesses.

Several improvement options could be implemented throughout the whole segment, including relocating obstructions such as utility poles, sign posts, and fire hydrants from within the sidewalk to maximize sidewalk width for pedestrian comfort, modifying the existing bicycle lane to a buffered bicycle lane (connecting to Segment 1) by reducing lane widths and providing space between vehicular traffic and bicycle traffic, and reducing the speed limit within the segment and further east to slow down vehicles thereby improving safety for all road users.

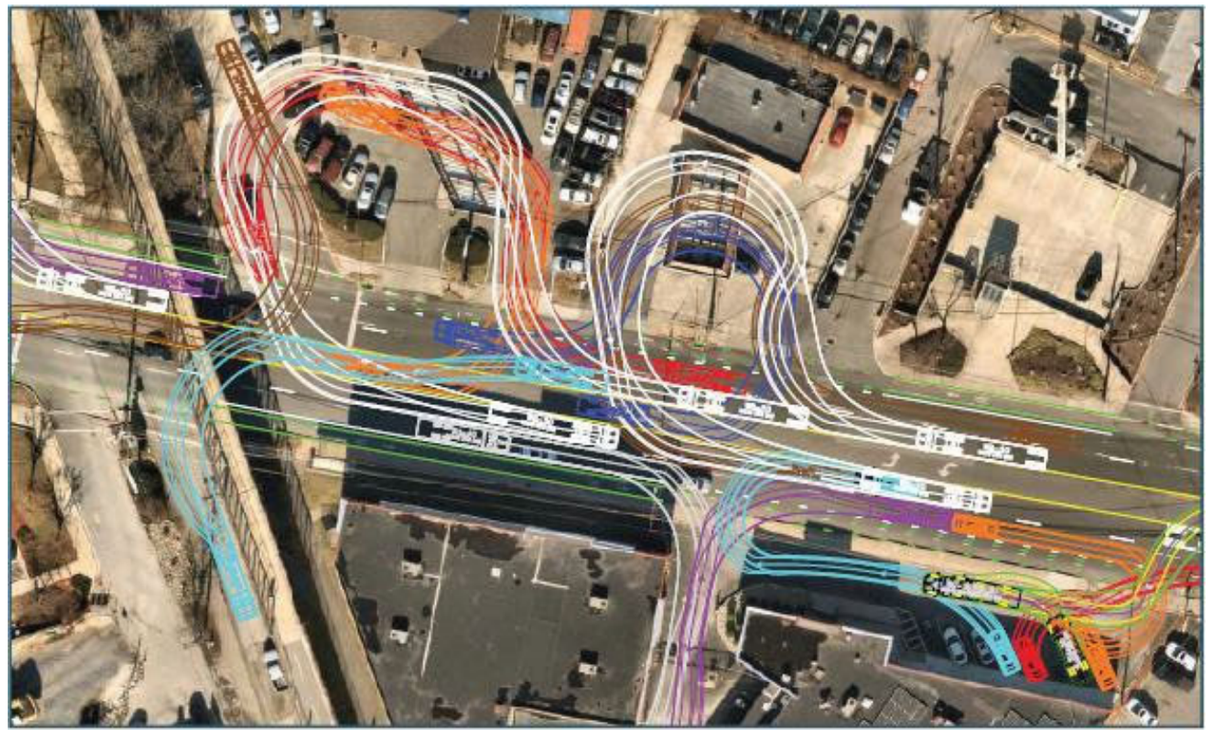
LONG-TERM IMPROVEMENTS - CORRIDORWIDE

Projects that require significant design, analysis, and coordination that are expected to take many years to implement are considered long-term improvements. The potential long-term improvements identified for the corridor include strategies to further improve separation of vehicle and pedestrian/bicycle traffic, access management strategies, and an additional protected crossing across MD 190.

To maximize safety for all road users along the corridor including motorists, bicyclists, and pedestrians, a shared use path option could be considered in the long-term throughout the corridor. A pathway along the south side of MD 190 would provide bicycle and pedestrian access separated from the roadway with a grassy buffer. A bicycle lane would still be provided in the westbound direction in Segment 1 (MD 190 between Springfield Drive and Brookside Drive). To provide space for the shared use path, vehicle travel lane widths would be narrowed and shifted. Additional design and analysis would be necessary for drainage, linework, pavement conditions, resurfacing, underground utilities, and stormwater management. A preliminary concept is shown on the next page.

As discussed in the Westbard Sector Plan, consolidation of the 22 uncontrolled access points within Segment 2 (MD 190 between Brookside Drive and Little Falls Parkway) is a goal for the corridor to reduce the number of conflict points, turning maneuvers, reduce risk for left-turn crashes, and improve safety for non-motorists. Extensive coordination with local businesses and evaluation of truck turning paths will be important with this potential long-term option.

Long-Term Improvements	
Location	**Improvement Description**
Throughout Segment	Implement Westbard Sector Master Plan improvements, including improving access management to consolidate/reduce the number of driveways and intersections and address pattern of left-turn crashes
	Implement a Shared Use Path along the south side of MD 190
	Upgrade all HID fixtures to be LED and evaluate existing corridor lighting



Preliminary analysis of truck turning paths at corridor driveways

MD 190 CORRIDOR

LONG-TERM IMPROVEMENTS - SEGMENT 1

Springfield Drive and Brookside Drive

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

MD 190 CORRIDOR

LONG-TERM IMPROVEMENTS - SEGMENT 2

Brookside Drive and Little Falls Parkway

MD 190 CORRIDOR

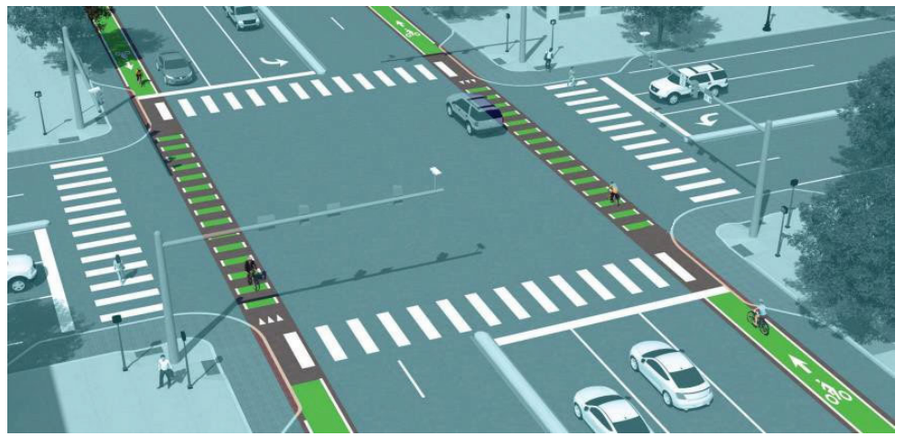
SUMMARY

MD 190 CORRIDOR

SUMMARY

Segment 1 (MD 190 between Springfield Drive and Brookside Drive)

Mid-Term Improvements	
Location	**Improvement Description**
Throughout Segment 1	Convert the existing bike lane shoulder to a barrier-separated bike lane with green pavement for conflict zones



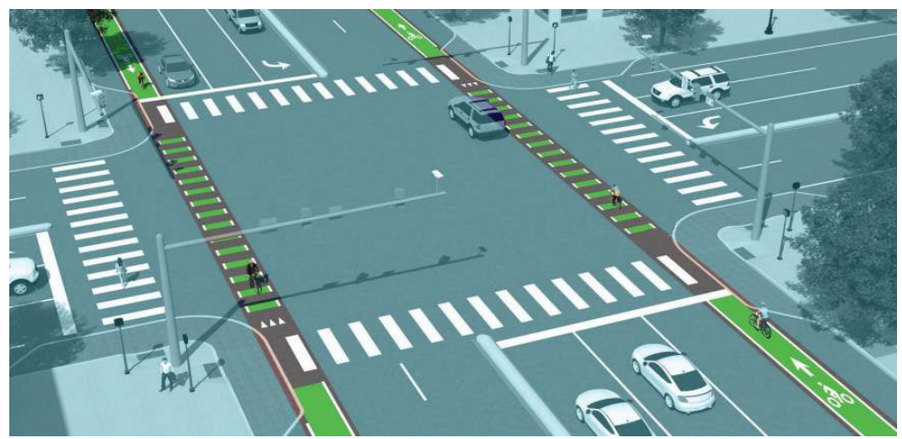
MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

MD 190 CORRIDOR

SUMMARY

Segment 2 (MD 190 between Brookside Drive and Little Falls Parkway)

Mid-Term Improvements	
Location	**Improvement Description**
Throughout Segment 2	Convert the existing bike lane shoulder to a barrier-separated bike lane with green pavement for conflict zones
Throughout Segment to Washington DC	Reduce speed limit from 35mph to 30mph (in progress)



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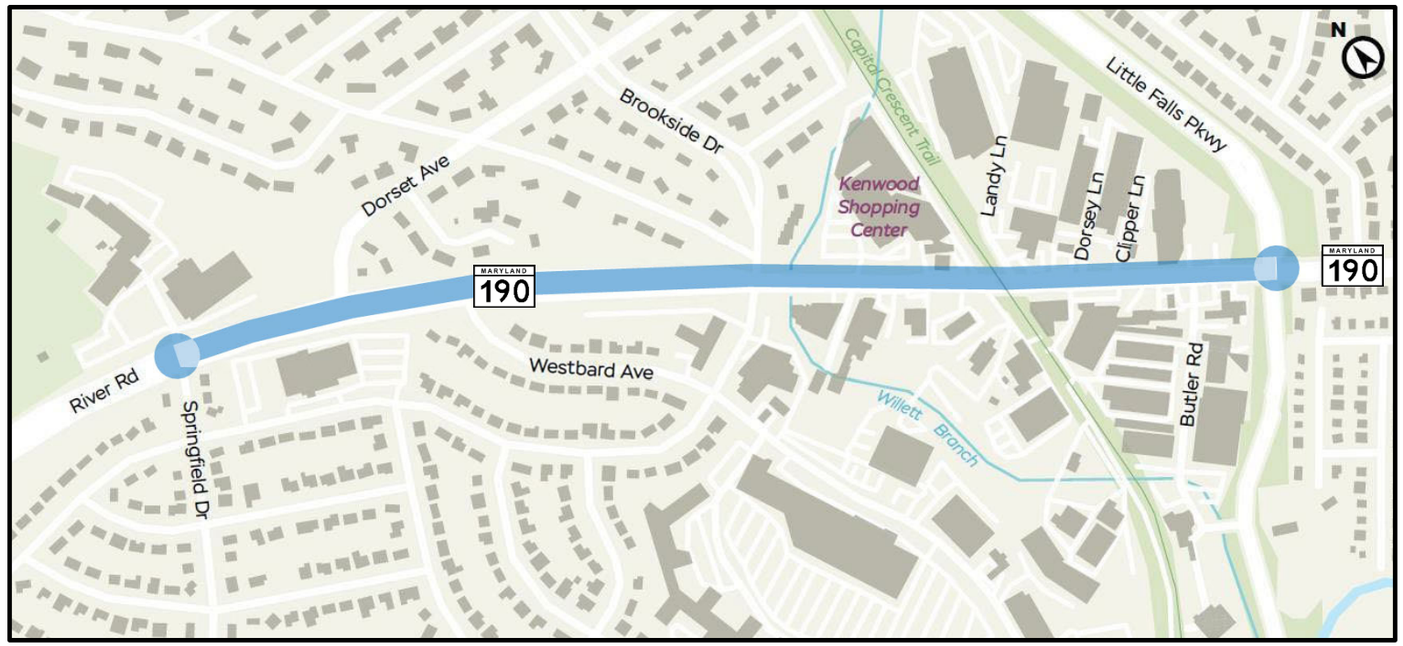
MD 190 CORRIDOR

QUESTIONS AND COMMENTS

Project Manager:
David Schlie
Email: dschlie@mdot.maryland.gov



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MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION