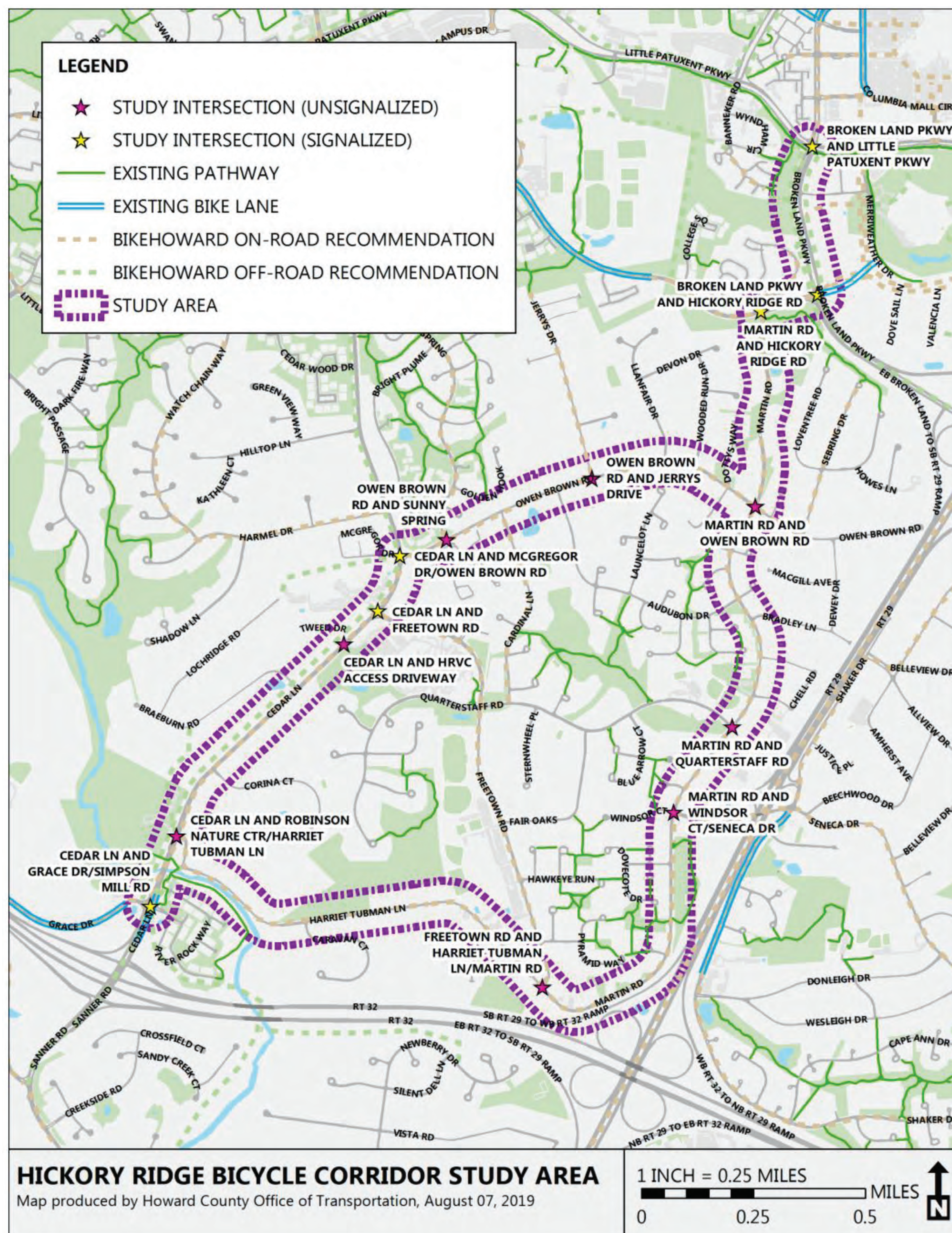


HICKORY RIDGE BIKE CORRIDOR STUDY

The purpose of this project is to identify a preferred route and recommend improvements for continuous bicycle facilities to connect existing bike lanes on Grace Drive (providing access from River Hill and points west) to Hickory Ridge, Downtown Columbia and the rest of the Columbia pathway system and bike network.



Study Area

Broken Land Parkway

Little Patuxent Parkway to Hickory Ridge Road

Hickory Ridge Road

Broken Land Parkway to Martin Road

Martin Road

Hickory Ridge Road to Freetown Road

Owen Brown Road

Martin Road to Cedar Lane

Cedar Lane

Owen Brown Road to Grace Drive

Harriet Tubman Lane

Freetown Road to Cedar Lane

The concept designs you will see tonight reflect public feedback from a survey administered from July through September, field observations conducted by the design team, and a Bicycle Level of Traffic Stress analysis of existing roadways.

Please visit each station to learn the results of the survey and field observations, and how Bicycle Level of Traffic Stress analysis helps us design bike routes that are low-stress and work for everyone.

Anticipated Schedule

Data Gathering: August-September 2019

- Public Input Survey Open until September 15
- Field Observations

Technical Assessment: October-December 2019

- Level of Traffic Stress Analysis
- Environmental Analysis

Concept Development: January-February 2020

- Concept Sketches
- Tree, Right-of-Way, and Stormwater Impacts
- Compliance with Best Practices

Study Conclusion: March 2020

- Report Development
- Public Presentation

We need your feedback on the draft concept designs.

Please fill out a survey form after you have reviewed the boards!

WELCOME!



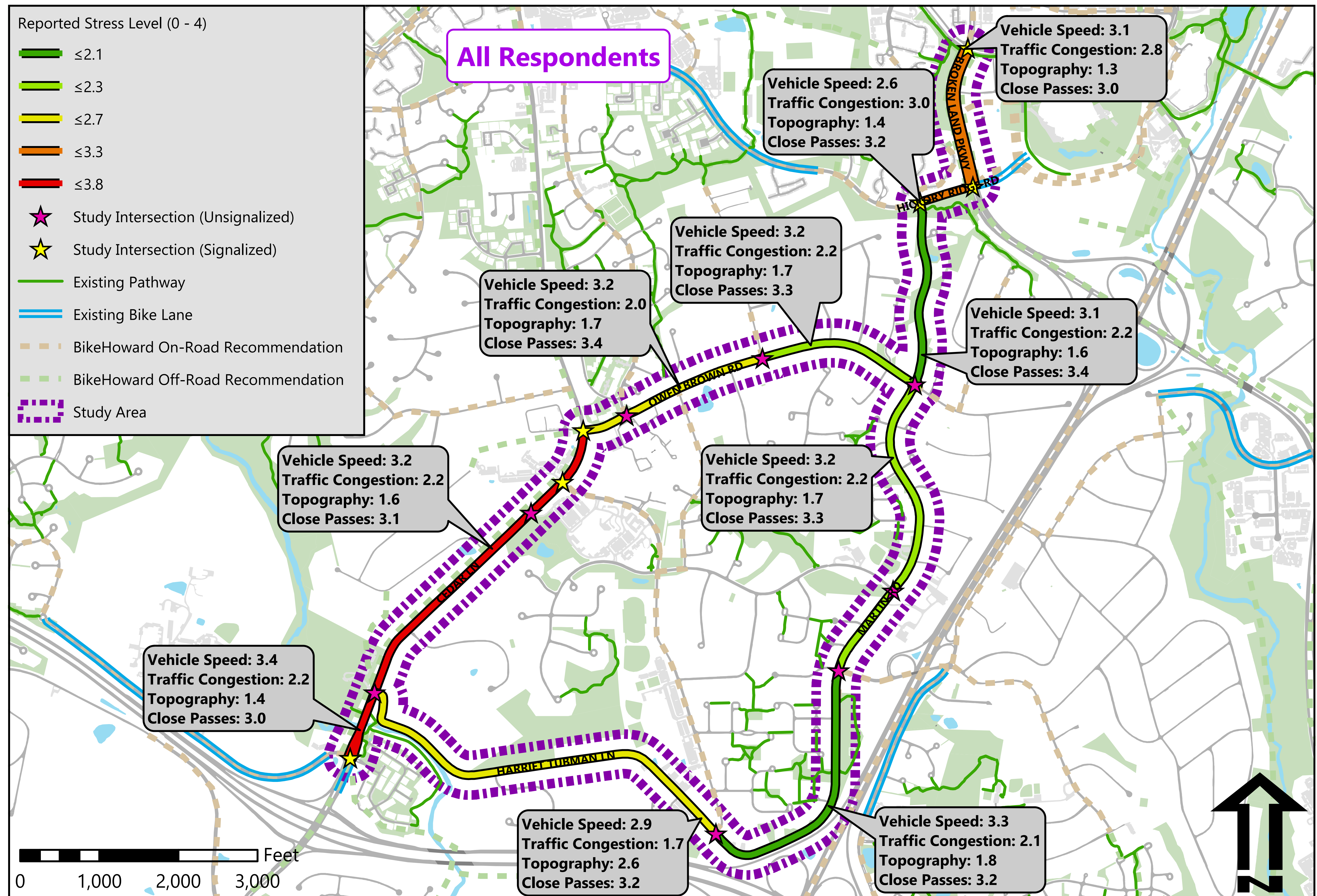
HICKORY RIDGE BIKE CORRIDOR STUDY

The Hickory Ridge Bike Corridor survey was posted on the Bike Howard website between July 30 - September 15, 2019 and received 201 responses. The survey was promoted by the Hickory Ridge Village Board, County Council, the Bicycle Advisory Group, and Bike Howard.

Survey Goals:

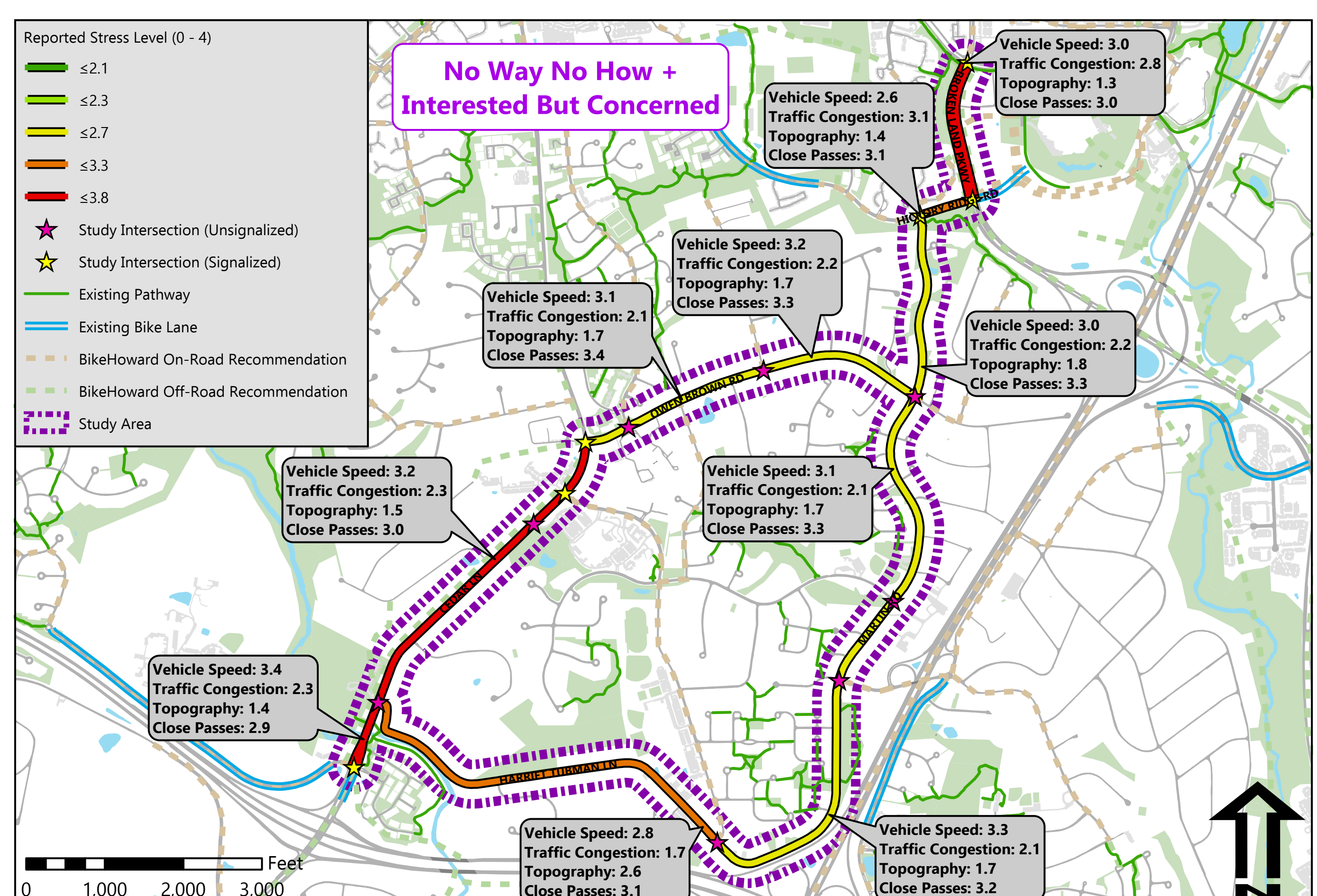
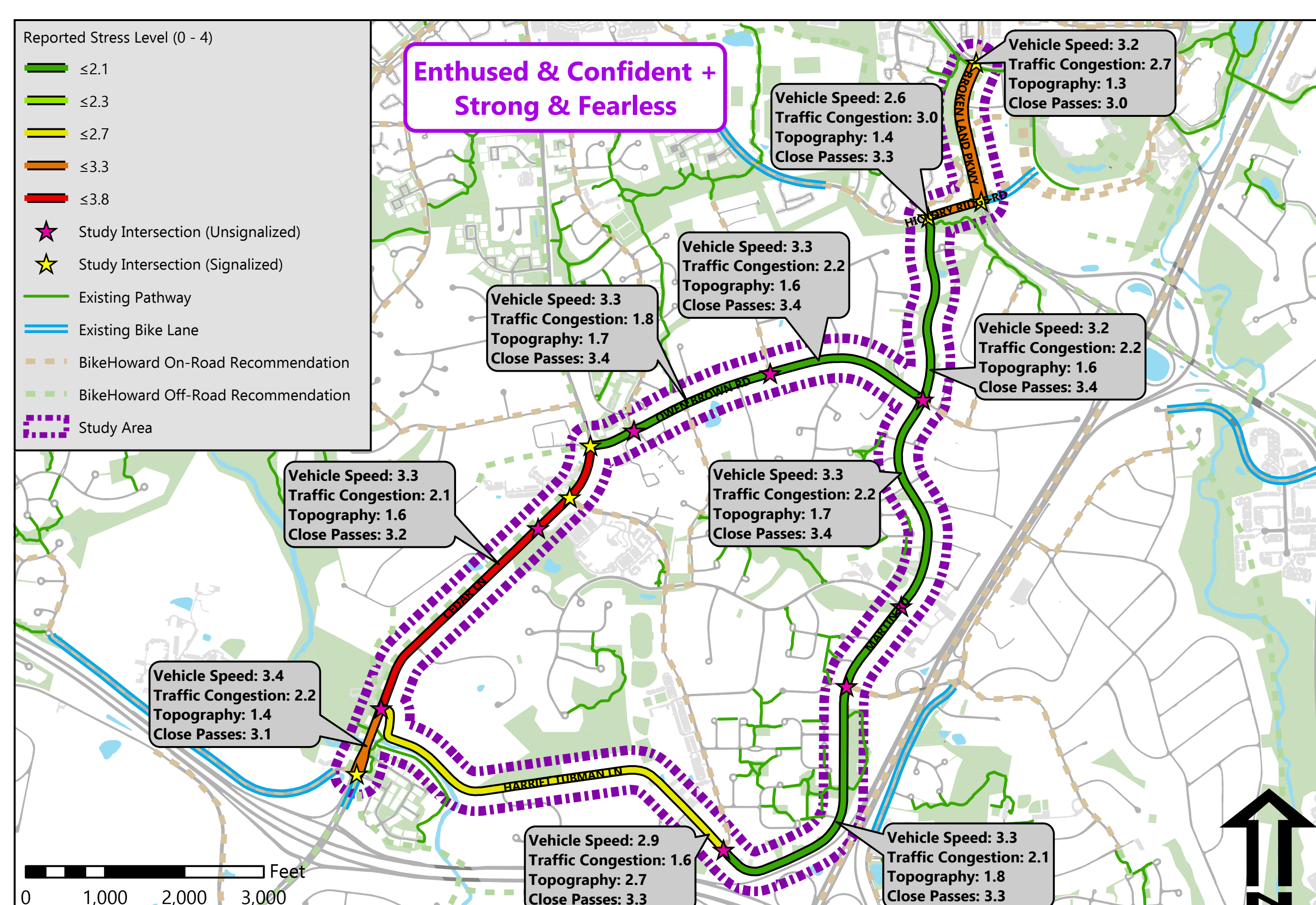
- Gather input from people who bicycle in the area
- Identify what makes certain road segments stressful to bike on

Respondents were asked to rate vehicle speed, traffic congestion, topography, and close passes from least to most stressful (0-4) for each of the segments shown in the below map. More stressful corridors are shown in red and less stressful in green, as indicated in the legend.



Respondents also identified their general approach to bicycling as No Way No How (2%), Interested But Concerned (39%), Enthused & Confident (50%), or Strong & Fearless (9%).

The below maps show how individuals with different approaches to bicycling experience stressors differently throughout the study area:



SURVEY RESULTS

HICKORY RIDGE BIKE CORRIDOR STUDY

How Bicycle Level of Traffic Stress is Measured

Bicycle Level of Traffic Stress analysis uses factors such as the speed of traffic, volume of traffic, and the number of lanes to rate each roadway segment on a scale of 1 to 4, where 1 is a low-stress place to ride and 4 is a high-stress place to ride. It analyzes the total connectivity of a network to evaluate how many destinations can be accessed using low-stress routes.

“Traffic stress... is a combination of perceived danger and other stressors... associated with riding a bike close to motor traffic.”

- Northeastern University Professor Peter Furth

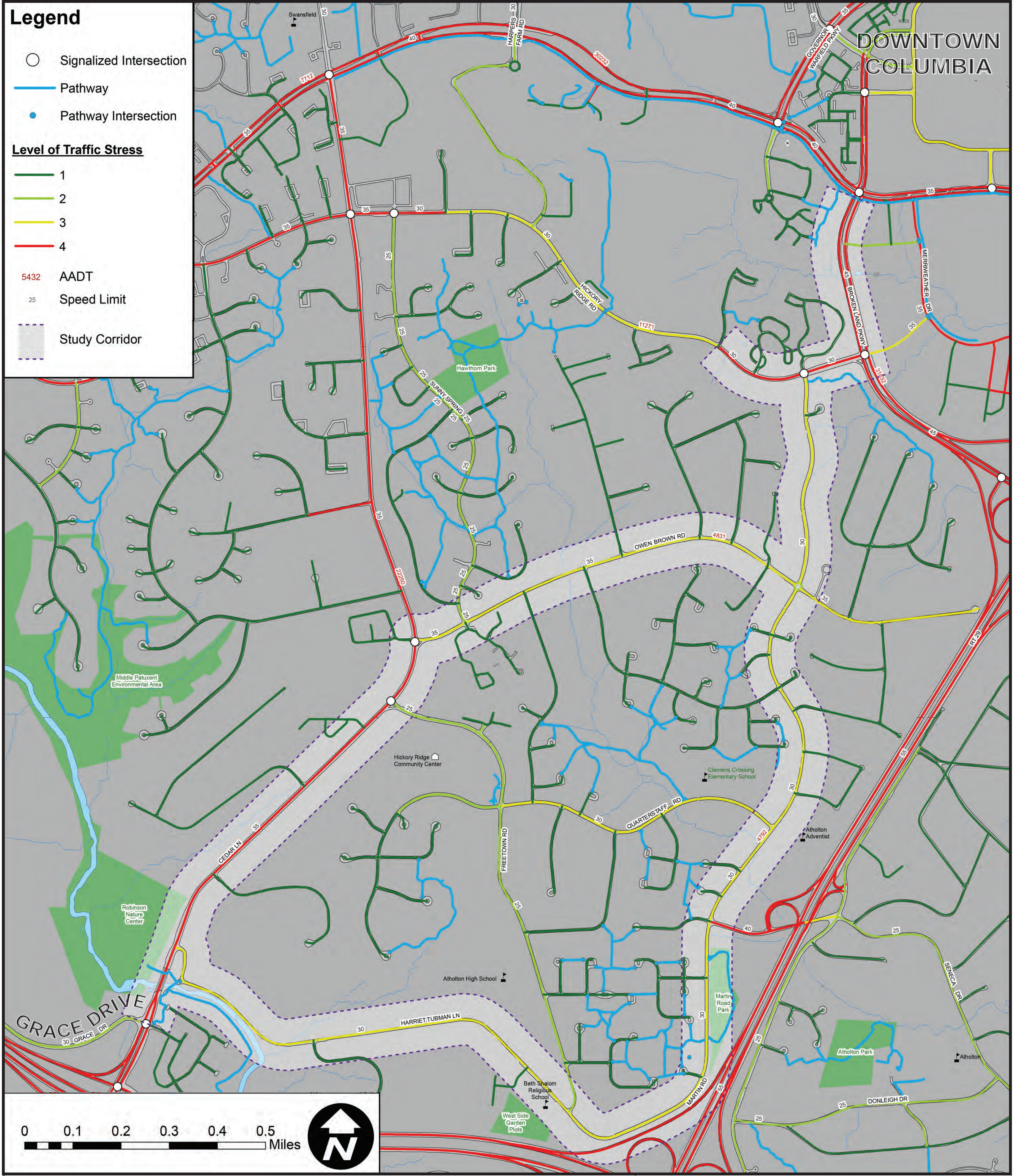
Mixed-Traffic Criteria							
Number of Lanes	Average Daily Traffic	<25 mph	30 mph	35 mph	40 mph	45 mph	50+ mph
2-way street (no centerline)	0-750	LTS 1	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4
	751-2000	LTS 1	LTS 2	LTS 3	LTS 3	LTS 4	LTS 4
	2001-3000	LTS 1	LTS 2	LTS 3	LTS 4	LTS 4	LTS 4
	3001+	LTS 2	LTS 2	LTS 3	LTS 4	LTS 4	LTS 4
1 through lane per direction (1-way street or 2-way street with centerline)	0-750	LTS 1	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4
	751-2000	LTS 1	LTS 2	LTS 3	LTS 3	LTS 4	LTS 4
	2001-6000	LTS 2	LTS 3	LTS 4	LTS 4	LTS 4	LTS 4
	6001+	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4	LTS 4
2 through lanes per direction	0-6000	LTS 3	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4
	6001+	LTS 3	LTS 4	LTS 4	LTS 4	LTS 4	LTS 4
3+ through lanes per direction	any ADT	LTS 3	LTS 4	LTS 4	LTS 4	LTS 4	LTS 4

Bike Lanes and Shoulders not Adjacent to a Parking Lane							
Number of Lanes	Bike Lane Width	<25 mph	30 mph	35 mph	40 mph	45 mph	50+ mph
1 thru lane per direction, or unlaned	6+ feet	LTS 1	LTS 2	LTS 2	LTS 3	LTS 3	LTS 3
	4 or 5 feet	LTS 2	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4
2 thru lanes per direction	6+ feet	LTS 2	LTS 2	LTS 2	LTS 3	LTS 3	LTS 3
	4 or 5 feet	LTS 2	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4
3+ lanes per direction	any width	LTS 3	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4

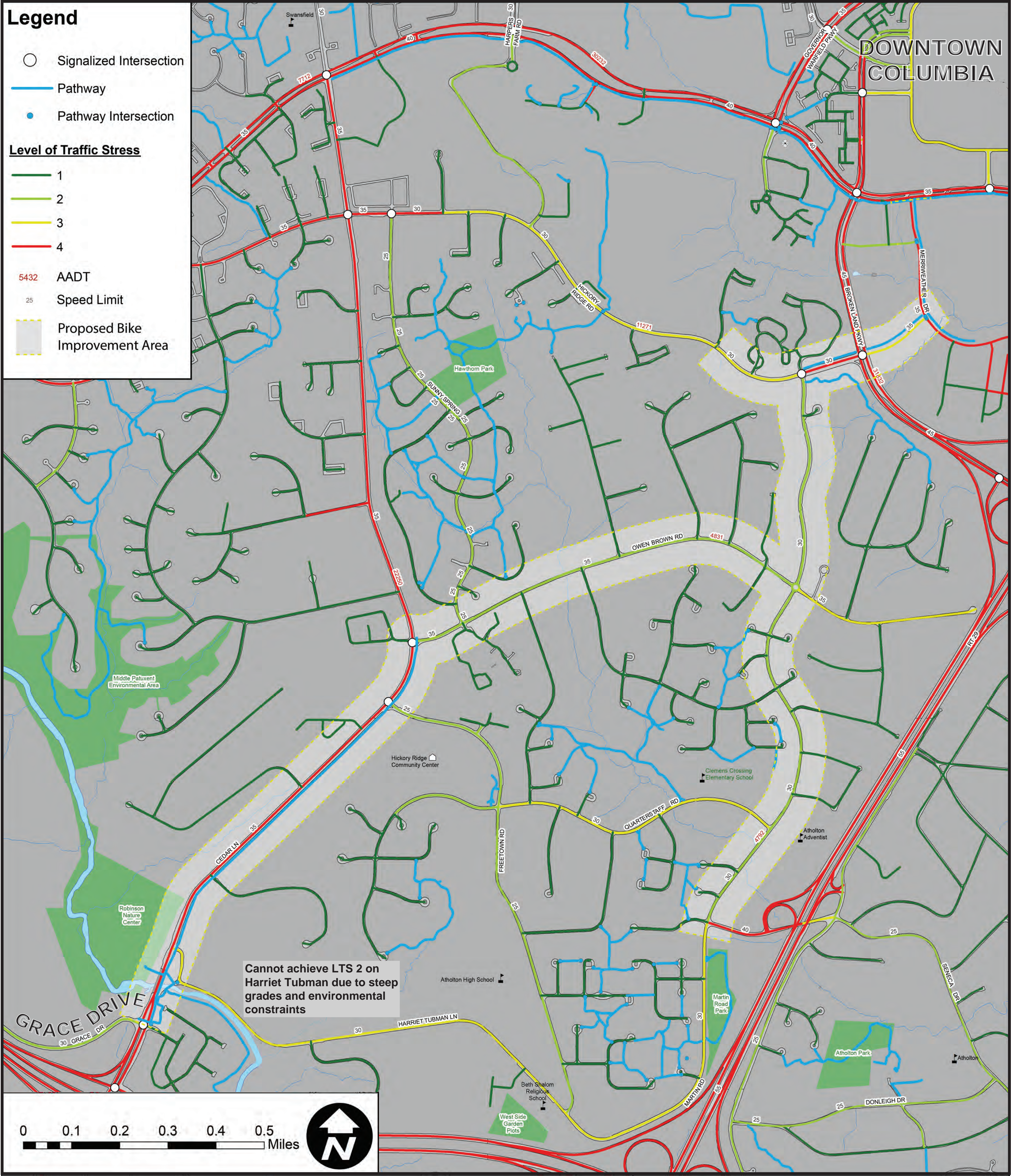
Level of Traffic Stress	Description	Example
1	The level that most children can tolerate; shared use paths are considered low stress since the cyclist is removed from traffic	
2	Tolerated by the mainstream adult population; roads with low volume and low speed auto traffic	
3	Tolerated by riders who are “enthused and confident” but still prefer having their own dedicated space for cycling	
4	Only tolerated by riders who are characterized as “strong and fearless”	

HICKORY RIDGE BIKE CORRIDOR STUDY

Routes We Studied



Routes Recommended for Improvements



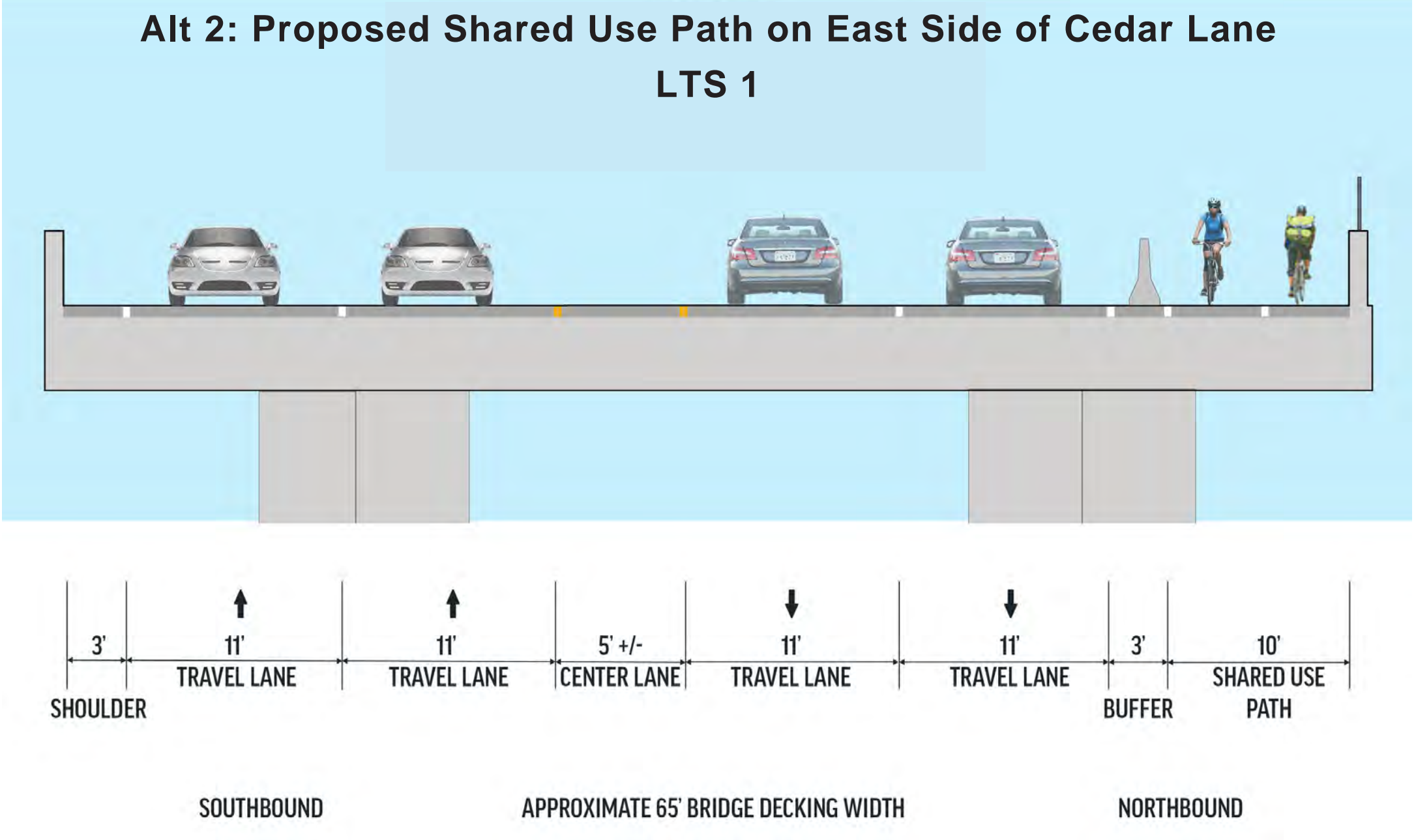
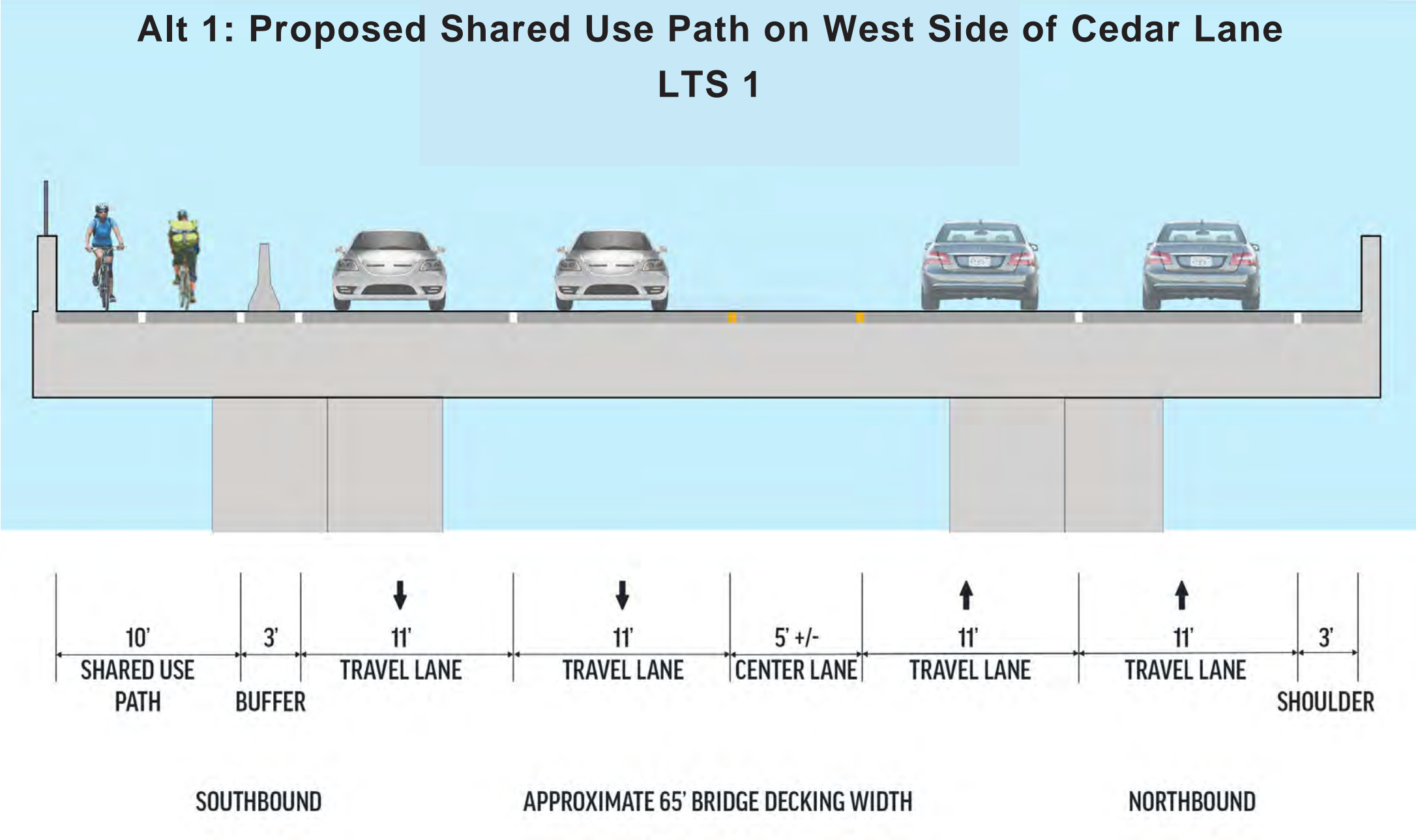
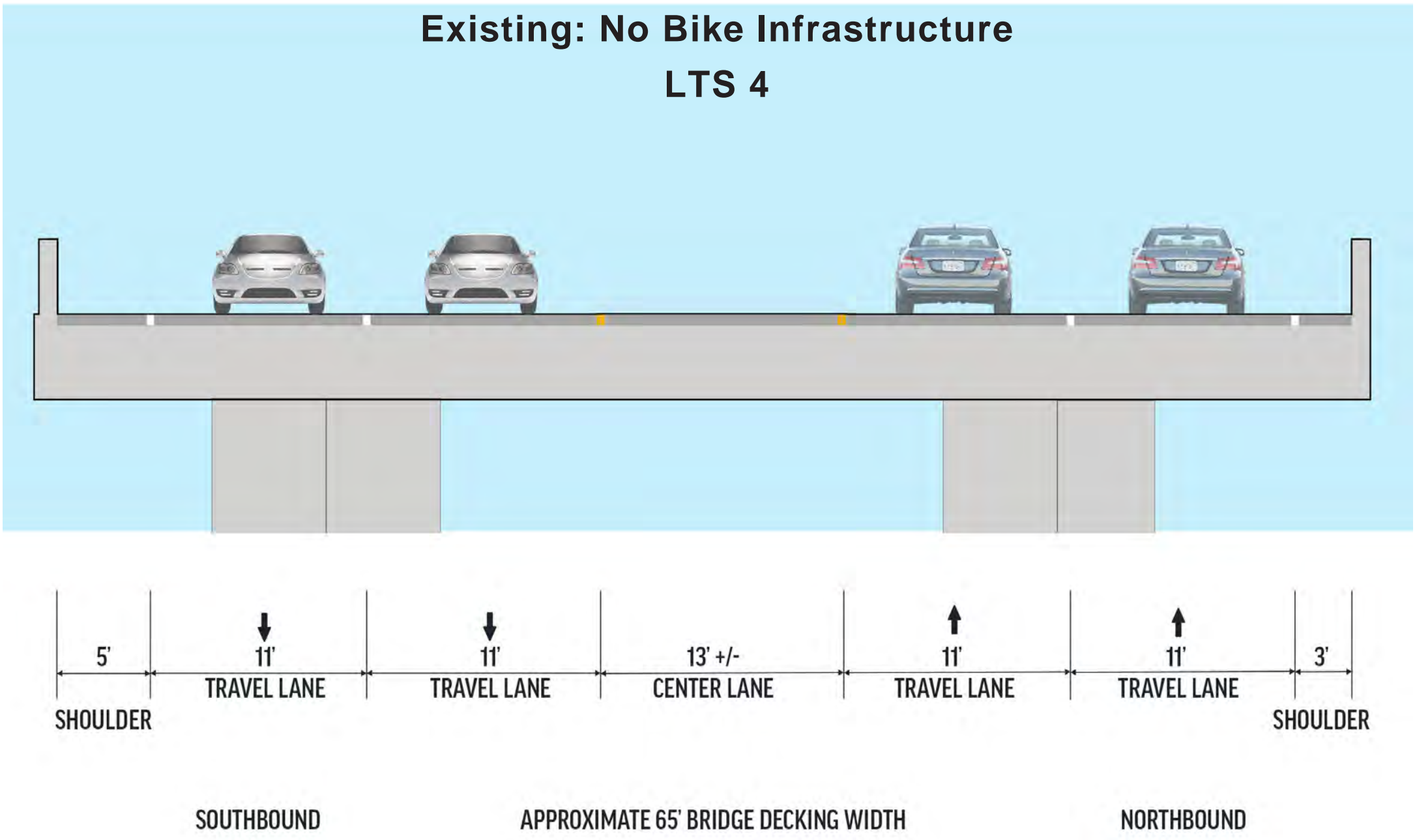
HICKORY RIDGE BIKE CORRIDOR STUDY

EXISTING

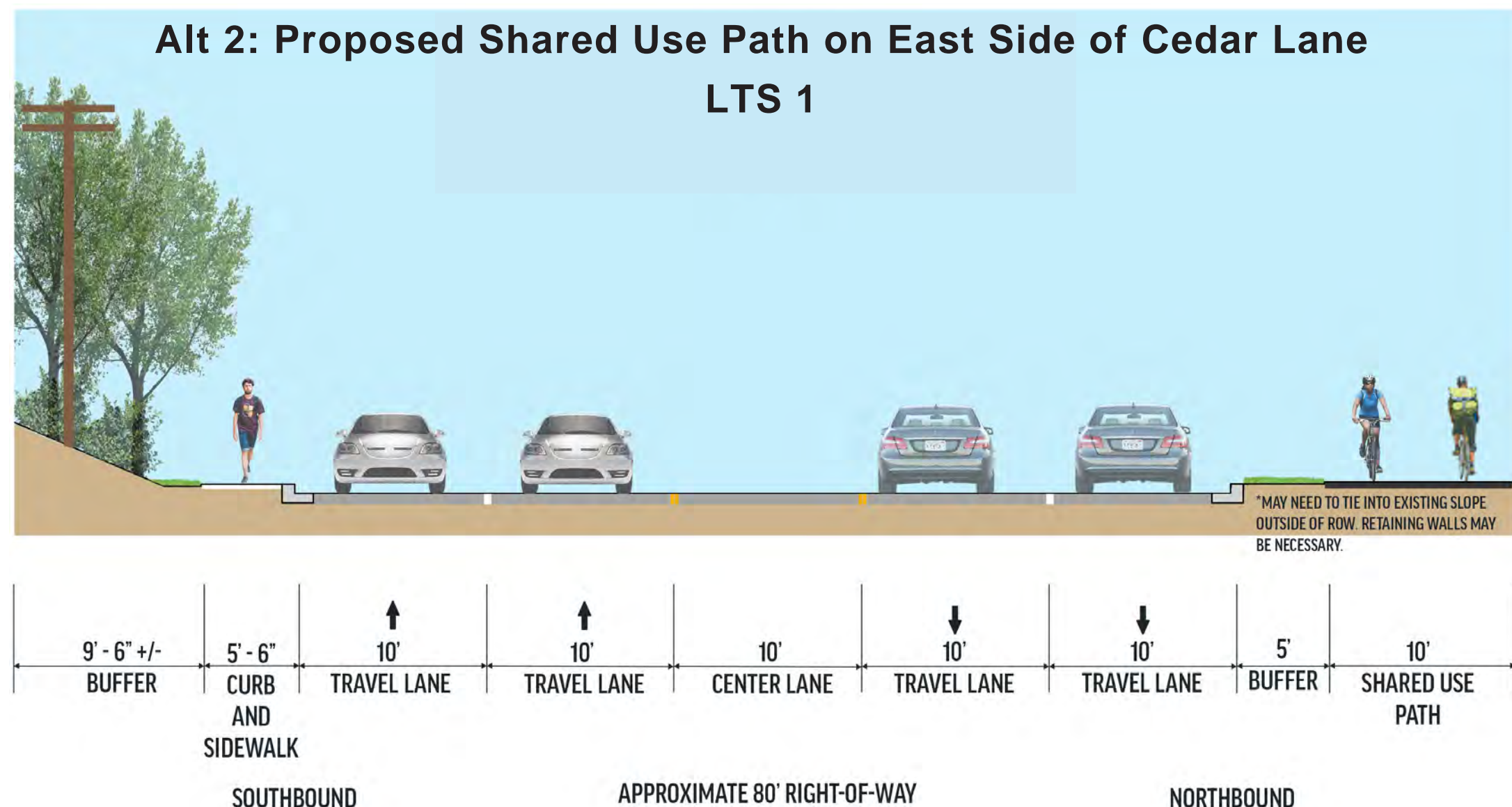
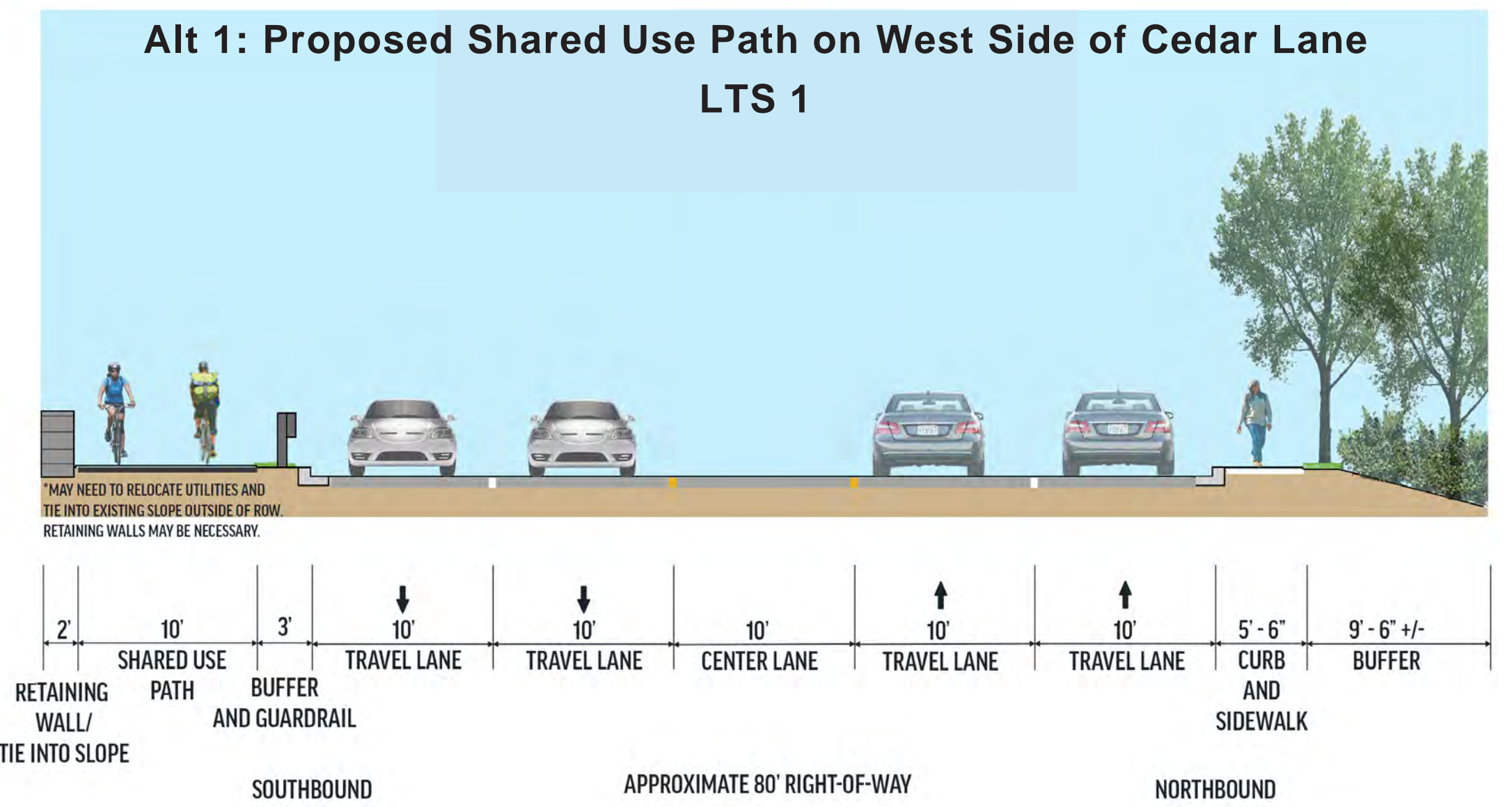
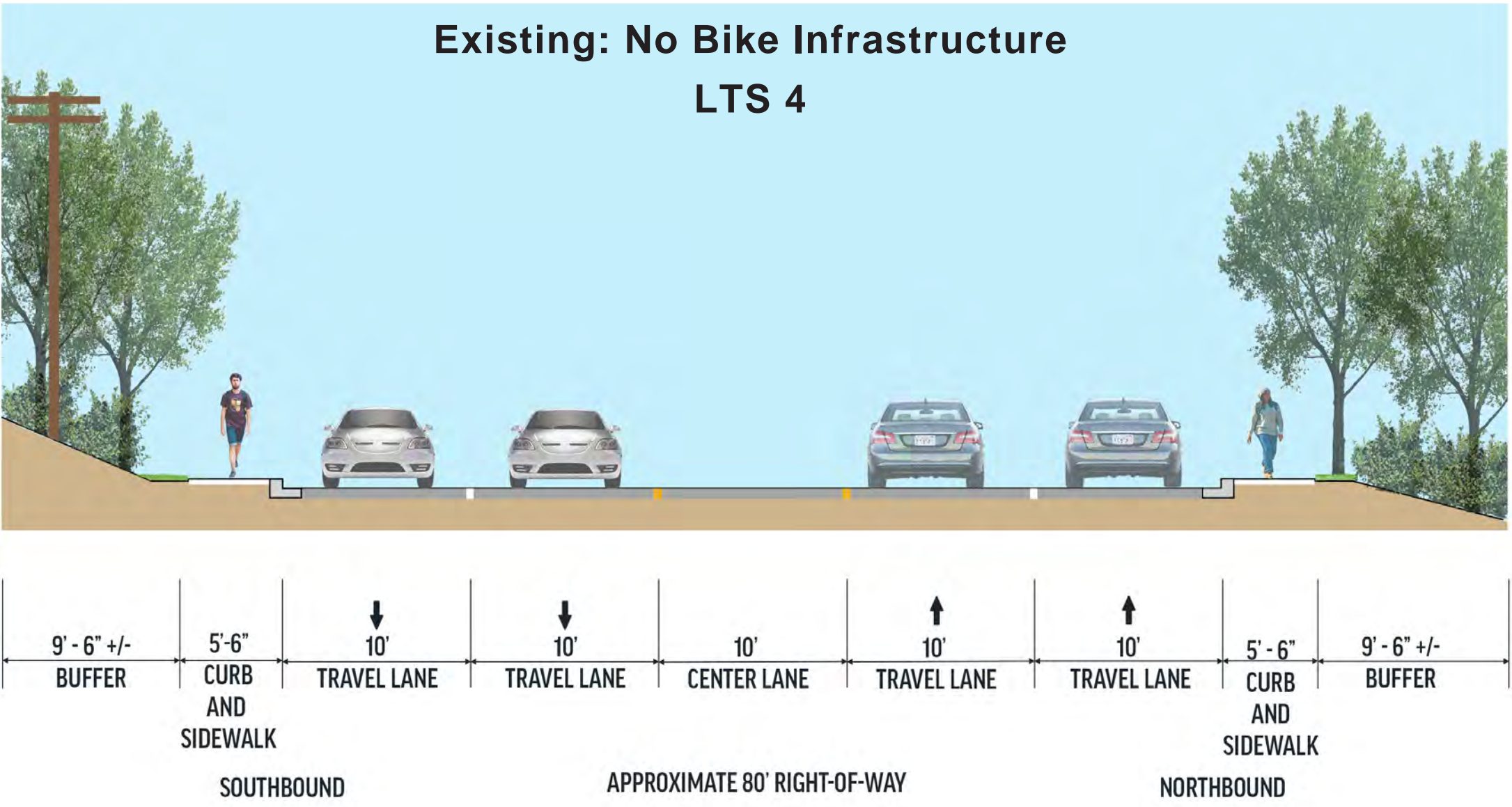
WEST

EAST

① CEDAR LANE BRIDGE OVER MIDDLE PATUXENT RIVER



② CEDAR LANE FROM OWEN BROWN ROAD TO BRIDGE OVER MIDDLE PATUXENT RIVER



WEST

EAST

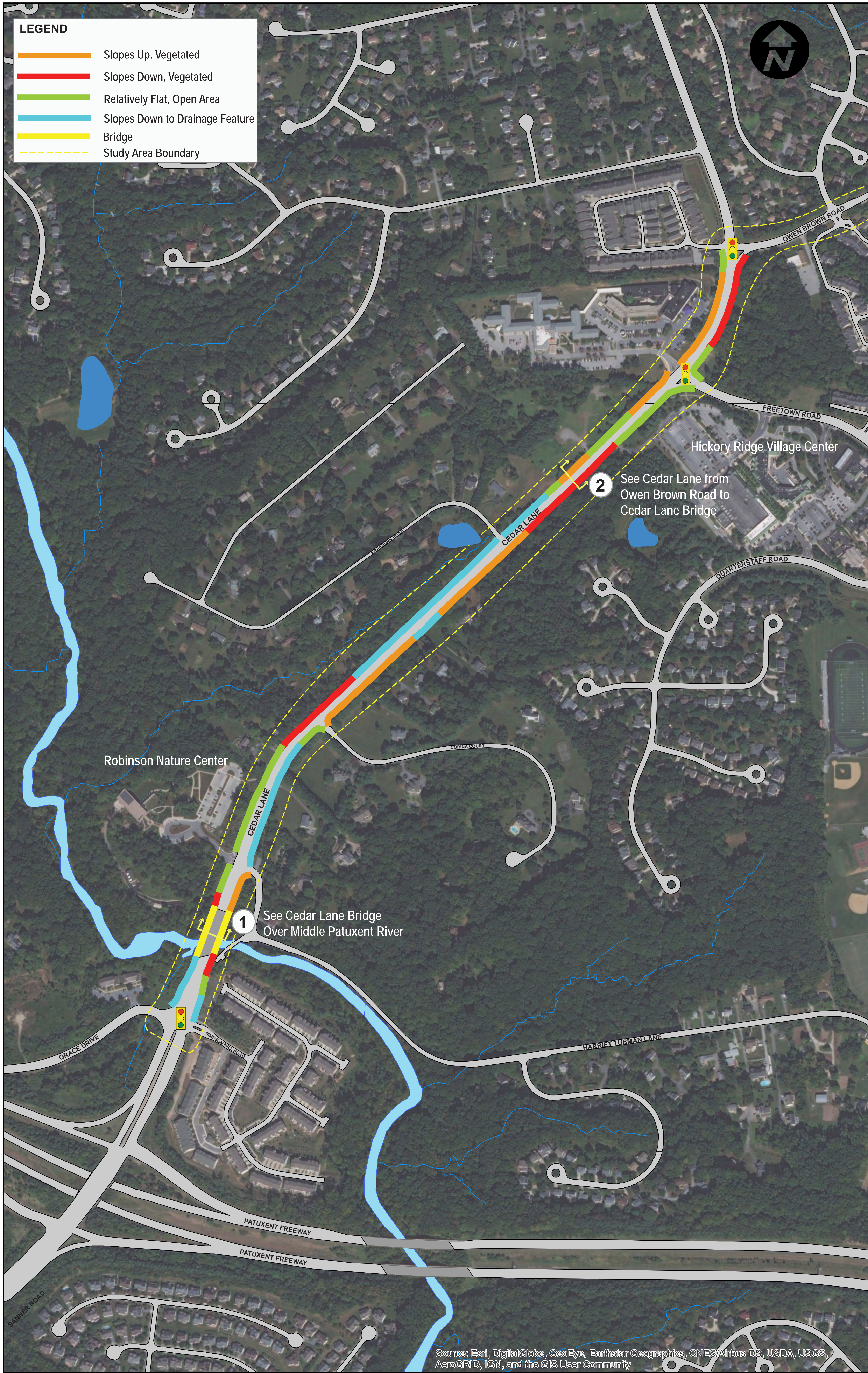
+	<ul style="list-style-type: none">Converts existing sidewalk from north of Owen Brown Road to Robinson Nature CenterDirect access to Grace Drive and Robinson Nature CenterDoes not cross unsignalized intersection with Harriet Tubman LaneMinimal tree and slope impacts between Owen Brown Road and Freetown Road
-	<ul style="list-style-type: none">Potential impacts to drainage features and stream (~1,600 Linear Feet)Potential impacts to existing overhead utilities (~3,000 Linear Feet)Potential impacts to existing guardrail (~1,600 Linear Feet)Potential impacts to slope (~2,100 Linear Feet) that may require more fill than east side

+	<ul style="list-style-type: none">Direct access to Freetown Road, Hickory Village Town Center and Owen Brown RoadCyclist from the east would not need to cross Cedar LaneMinimal existing overhead utilities (~100 Linear Feet)Less potential impacts to drainage features (~700 Linear Feet)Provides facilities on both sides (existing sidewalk on west side; new shared use path on east side)
-	<ul style="list-style-type: none">Potential impacts to drainage features (~ 700 Linear Feet)Existing sidewalk only from Freetown Road to Corina CourtPotential impacts to existing guardrail (~1,000 Linear Feet)Potential impacts to slope (~1,550 Linear Feet) that may require more cut than west side

Do you prefer the west or east side location for the shared use path? Please tell us why on the survey.

HICKORY RIDGE BIKE CORRIDOR STUDY

To meet project goals, a shared use path (LTS 1) is proposed along Cedar Lane from Owen Brown Road to Grace Drive. There are existing topographical constraints on both east and west of Cedar Lane. This map shows approximate locations of topography changes and drainage features.

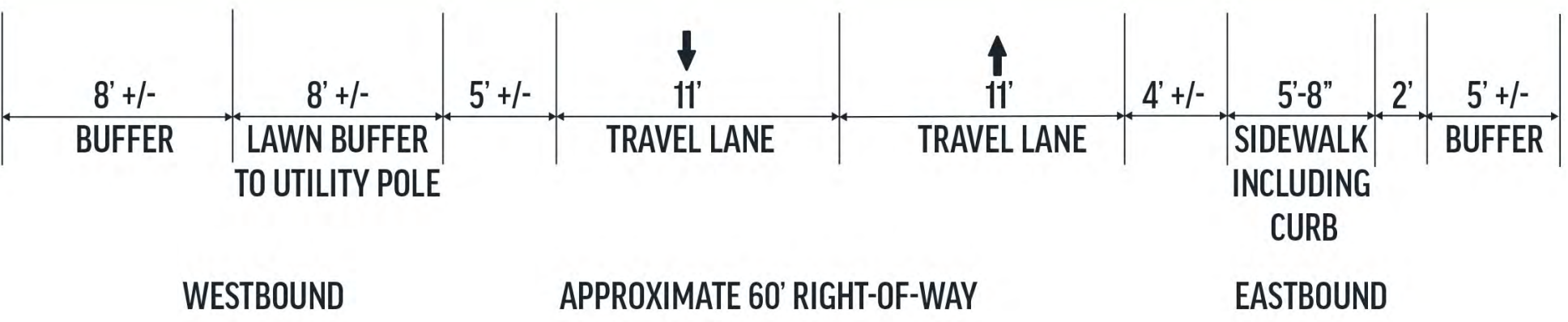
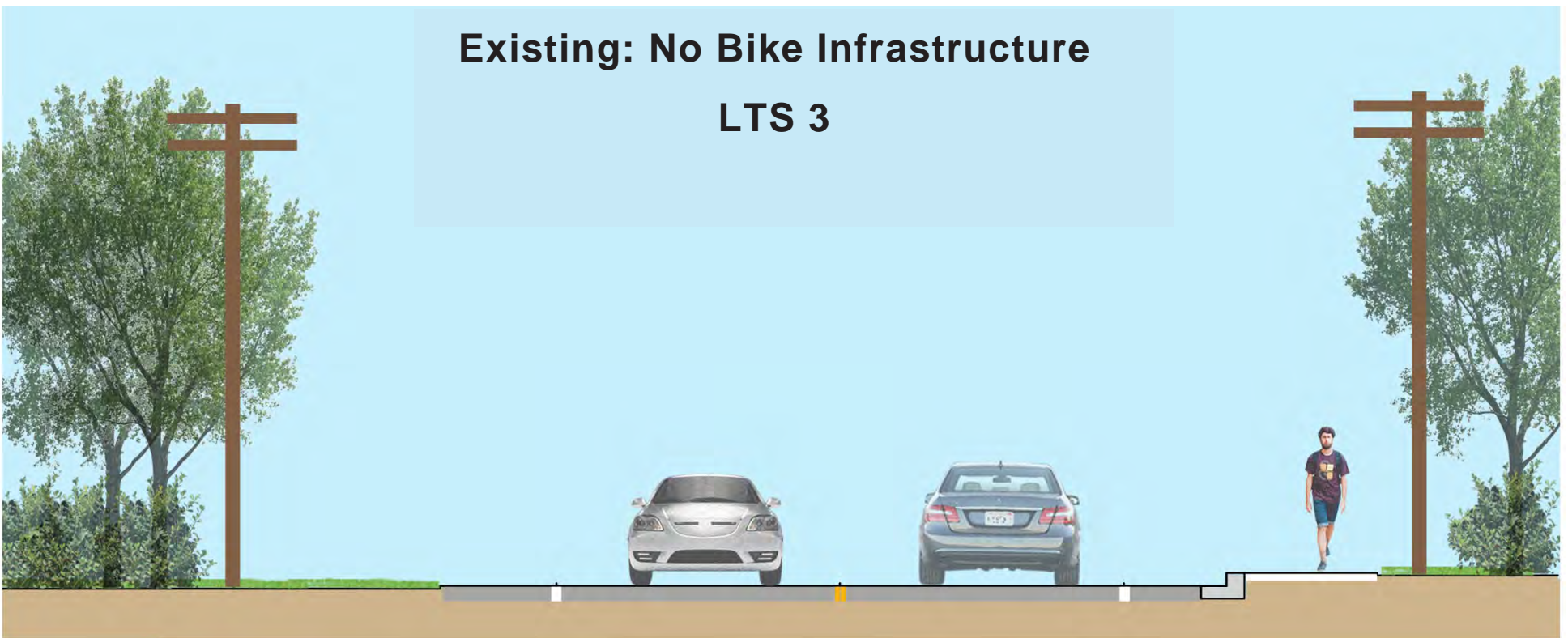


HICKORY RIDGE BIKE CORRIDOR STUDY

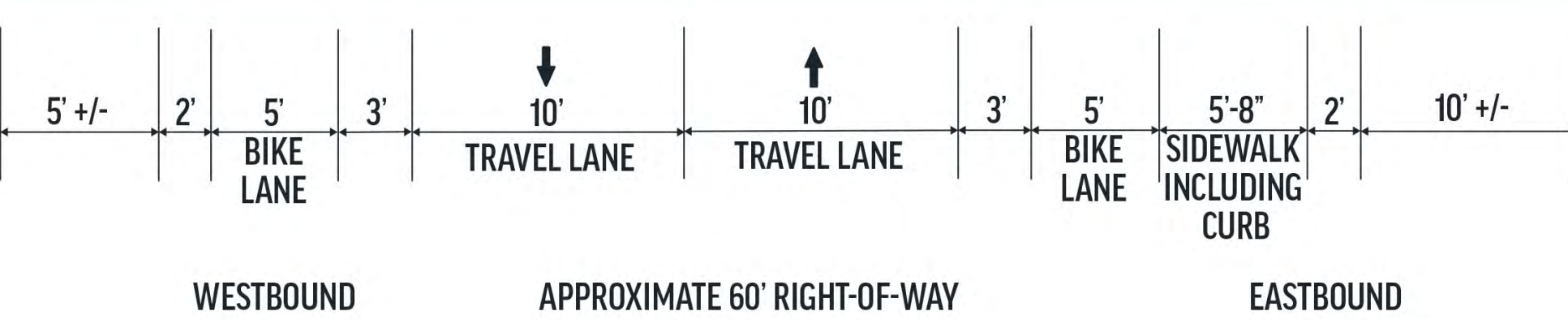
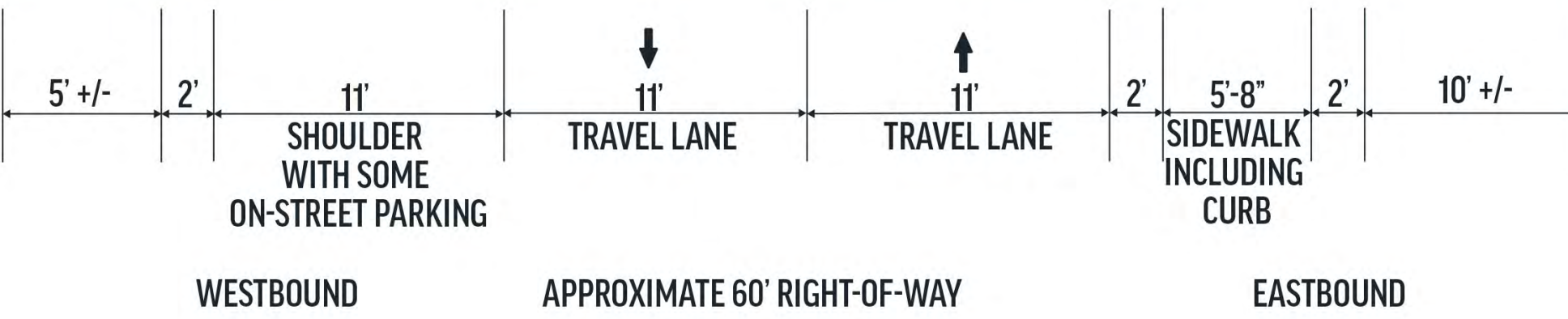
EXISTING

PROPOSED

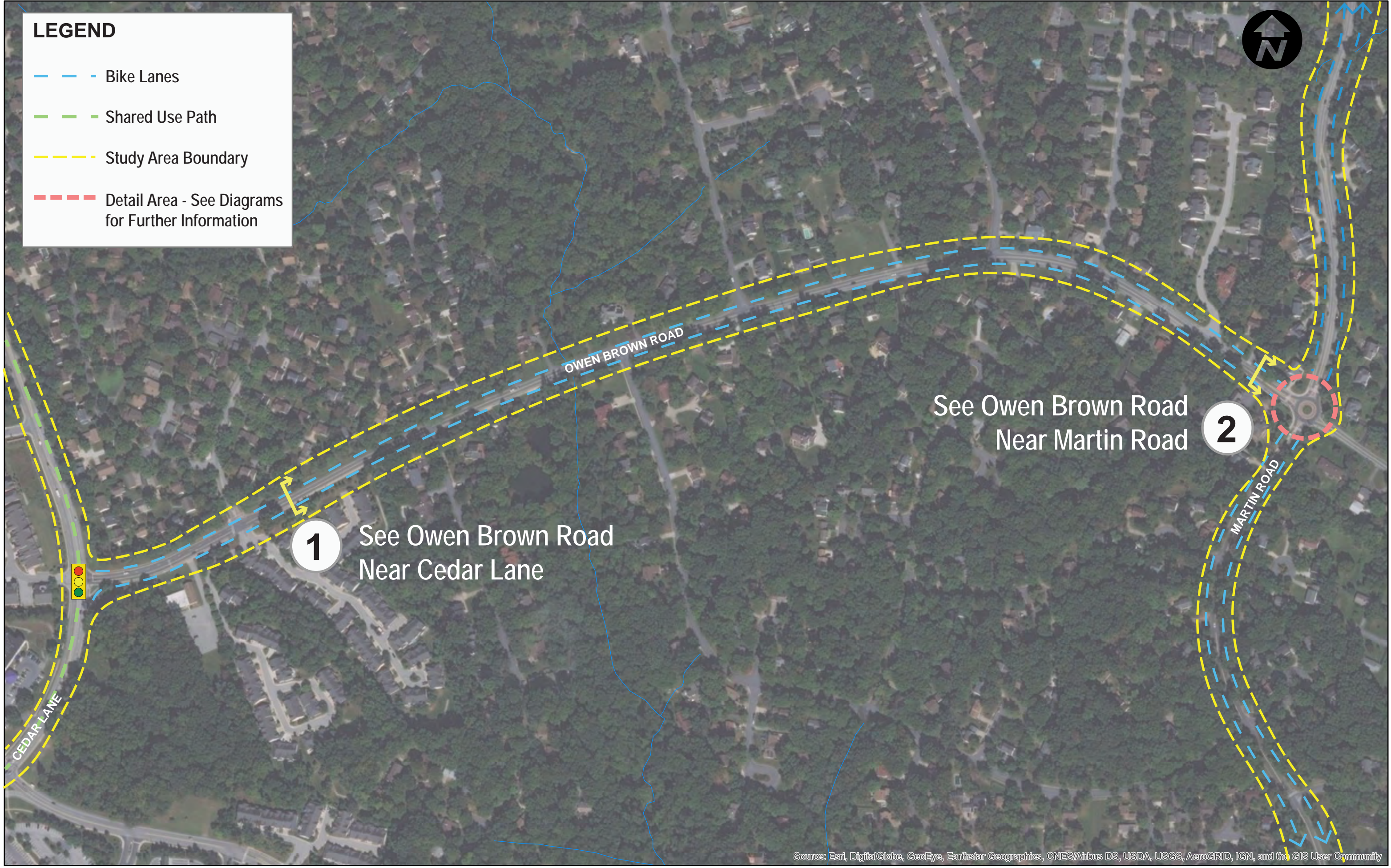
1 OWEN BROWN ROAD NEAR CEDAR LANE



2 OWEN BROWN ROAD NEAR MARTIN ROAD ROUNDABOUT



The existing pavement width for Owen Brown Road between Martin Road and Cedar Lane allows for buffered bike lanes to be installed by restriping pavement. Minimal additional asphalt would be needed to achieve the project goal of a LTS 2 bicycle facility that connects Martin Road and Cedar Lane.



1 View facing east of Owen Brown Road showing existing roadway configuration with sidewalk and curb on south side



2 View facing west of Owen Brown Road at roundabout showing existing roadway configuration with curb and sidewalk on south side and curb with parking in shoulder on north side

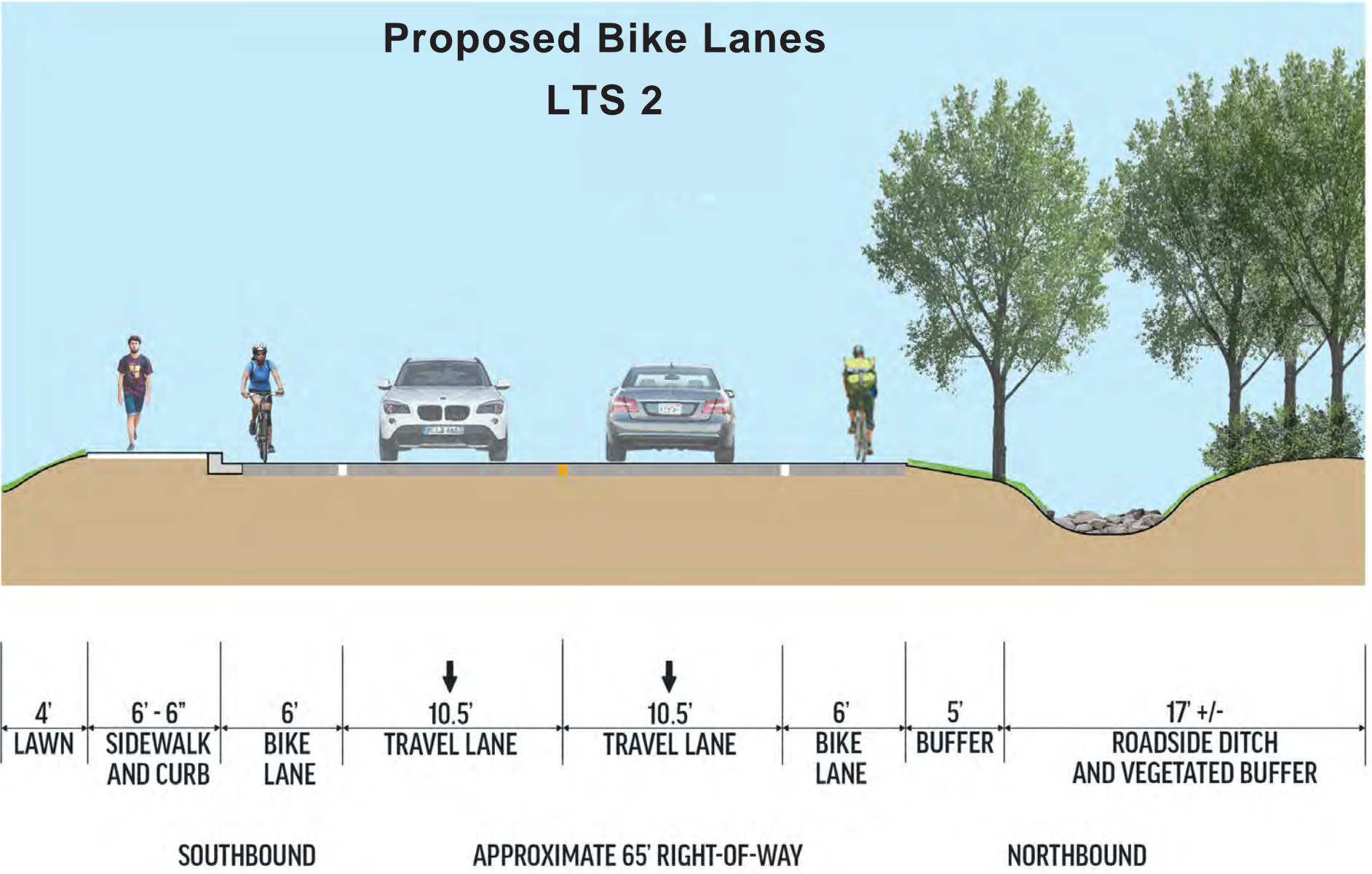
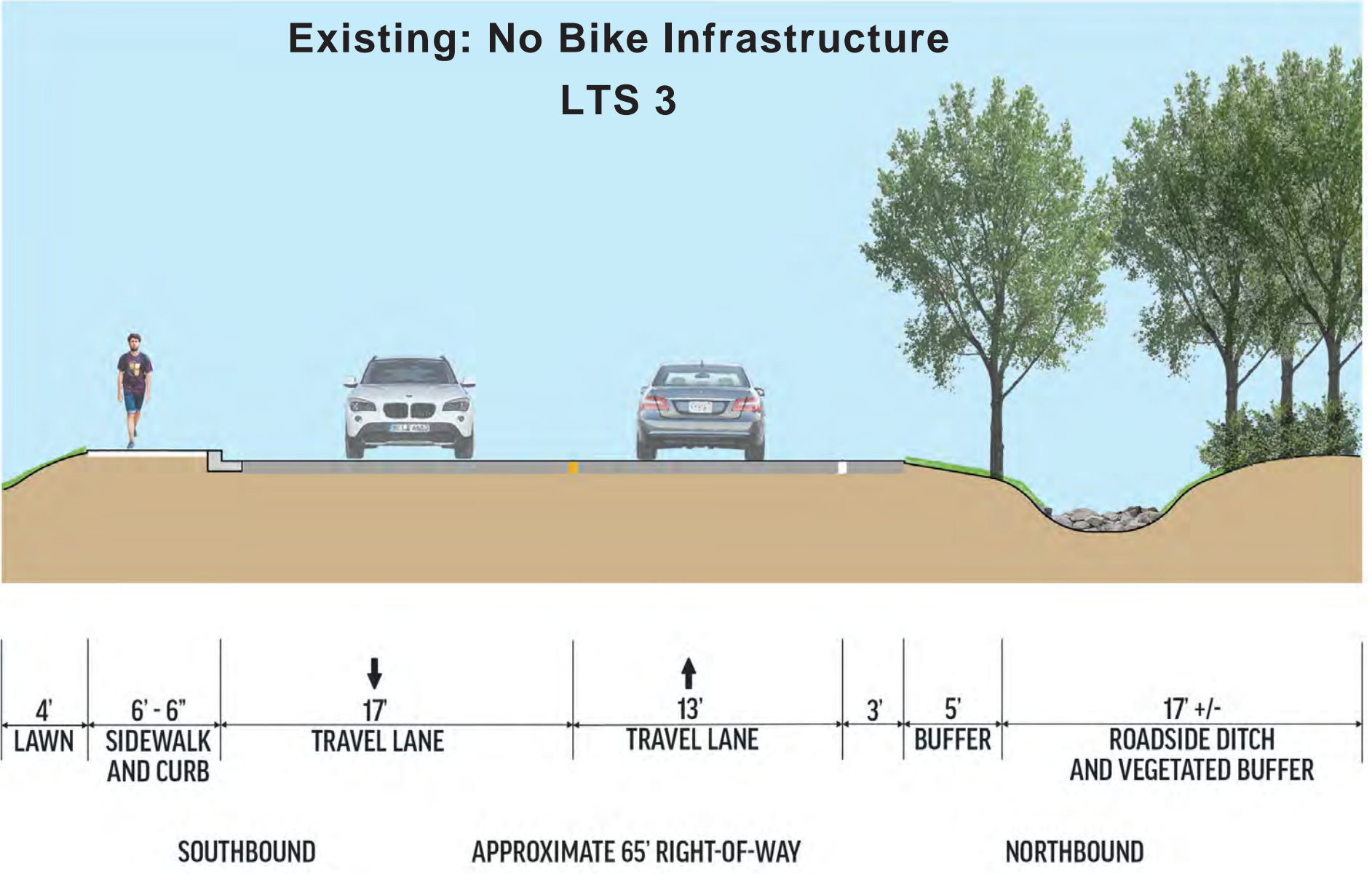
HICKORY RIDGE BIKE CORRIDOR STUDY

EXISTING

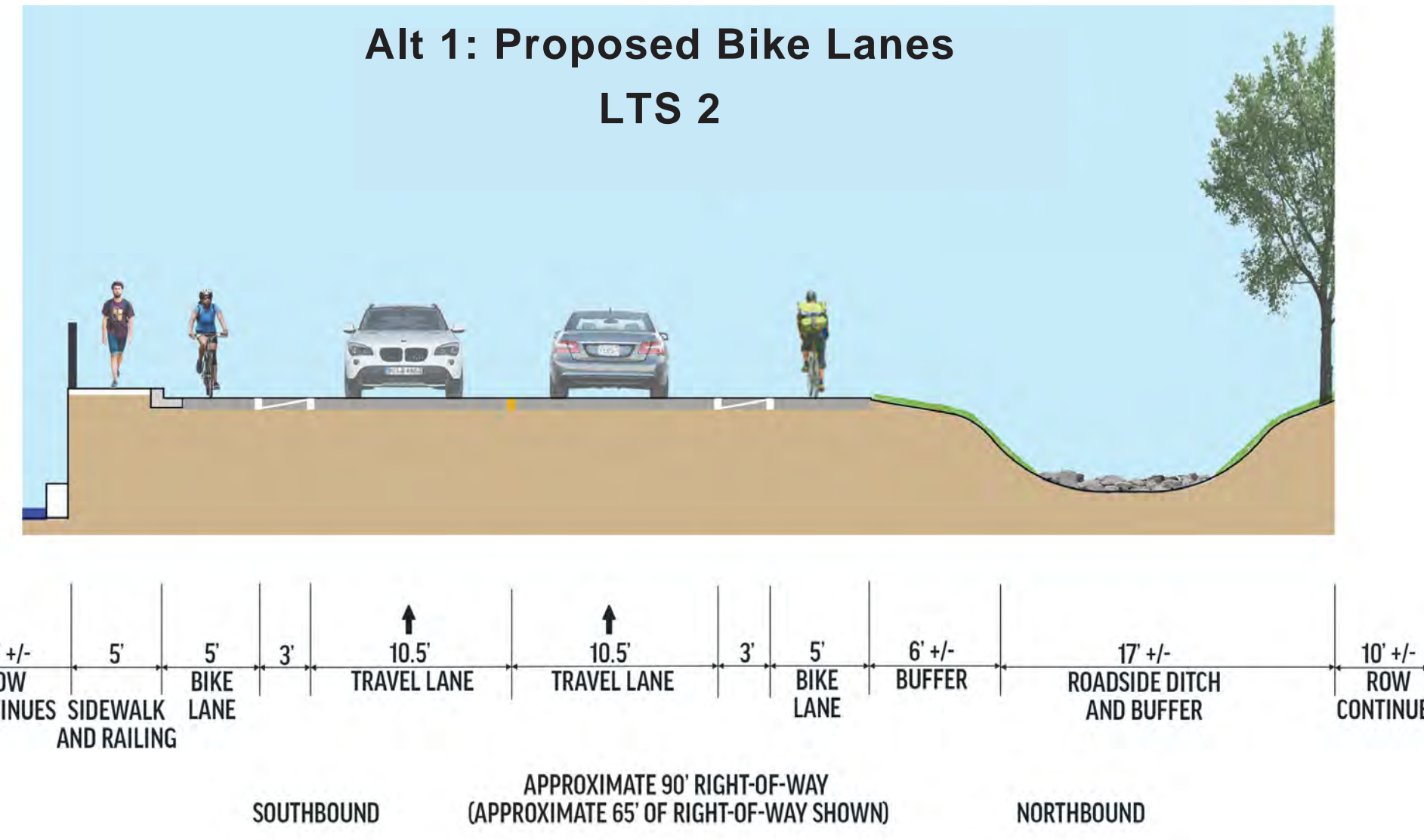
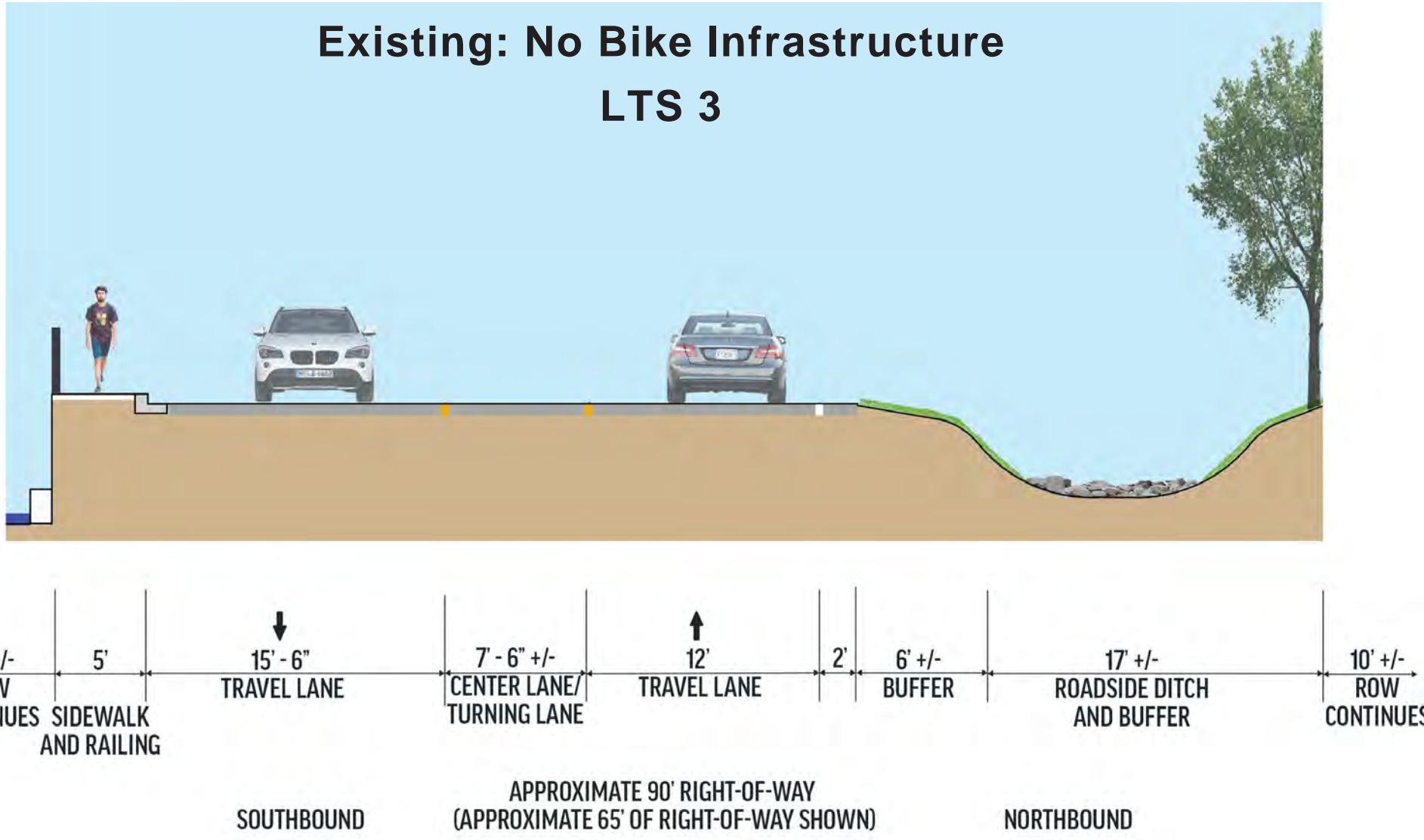
PROPOSED

The typical sections depict two areas of constraint south of the roundabout at Owen Brown Road

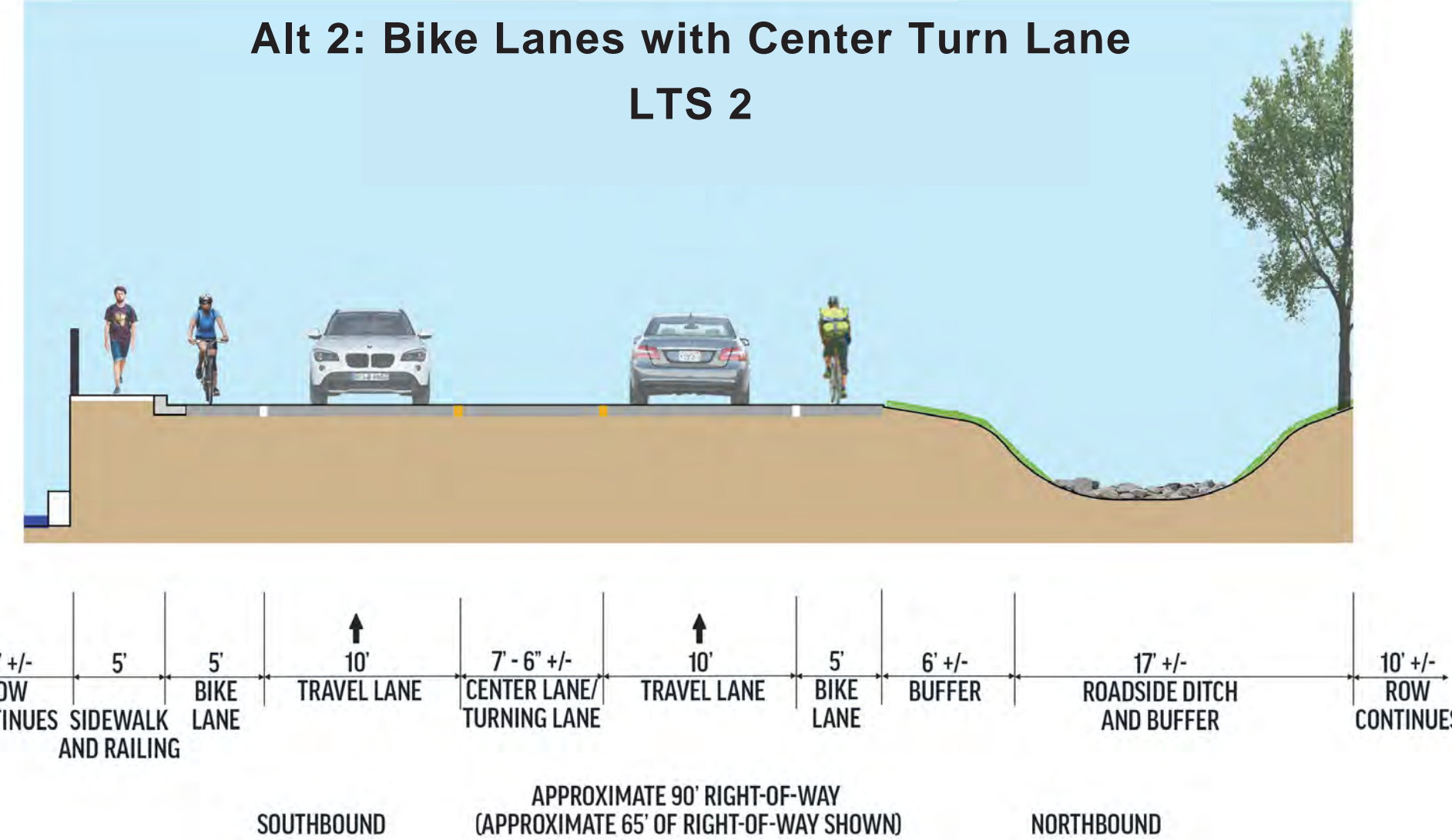
① MARTIN ROAD NORTH OF QUARTERSTAFF DRIVE



② MARTIN ROAD SOUTH OF QUARTERSTAFF DRIVE



Existing turn lanes on Martin Road near Quarterstaff Drive



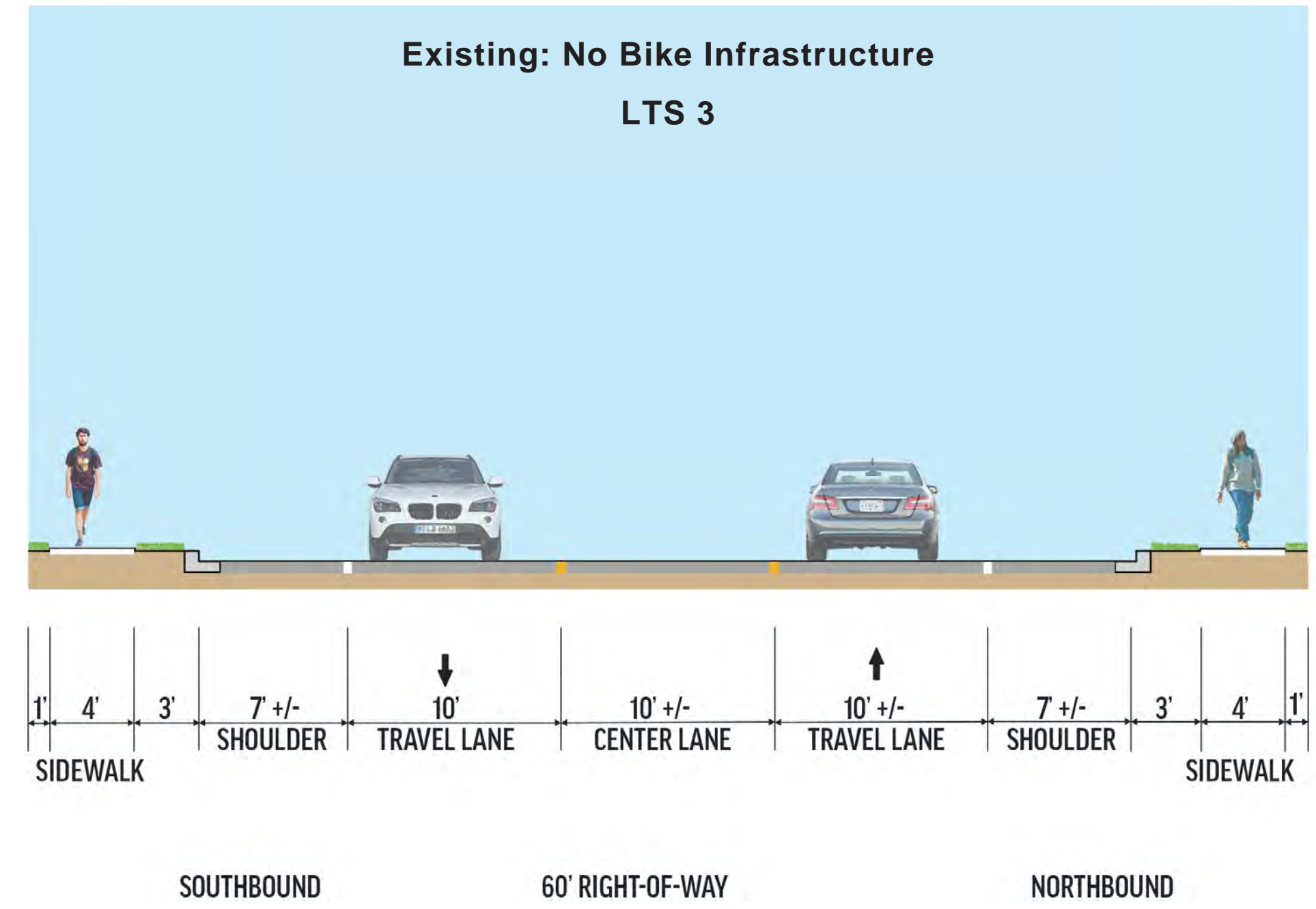
MARTIN ROAD - SOUTH OF ROUNDABOUT



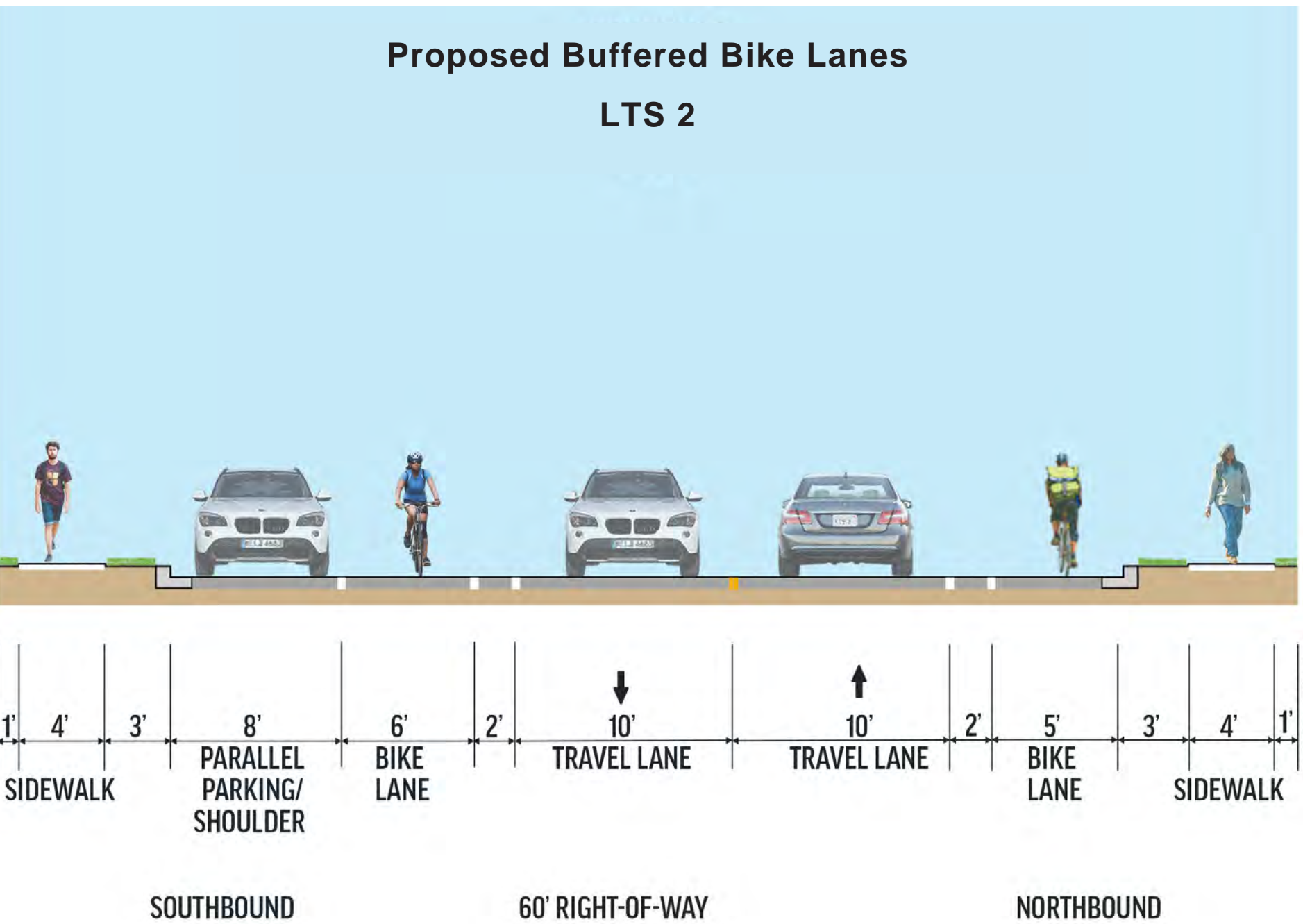
HICKORY RIDGE BIKE CORRIDOR STUDY

EXISTING

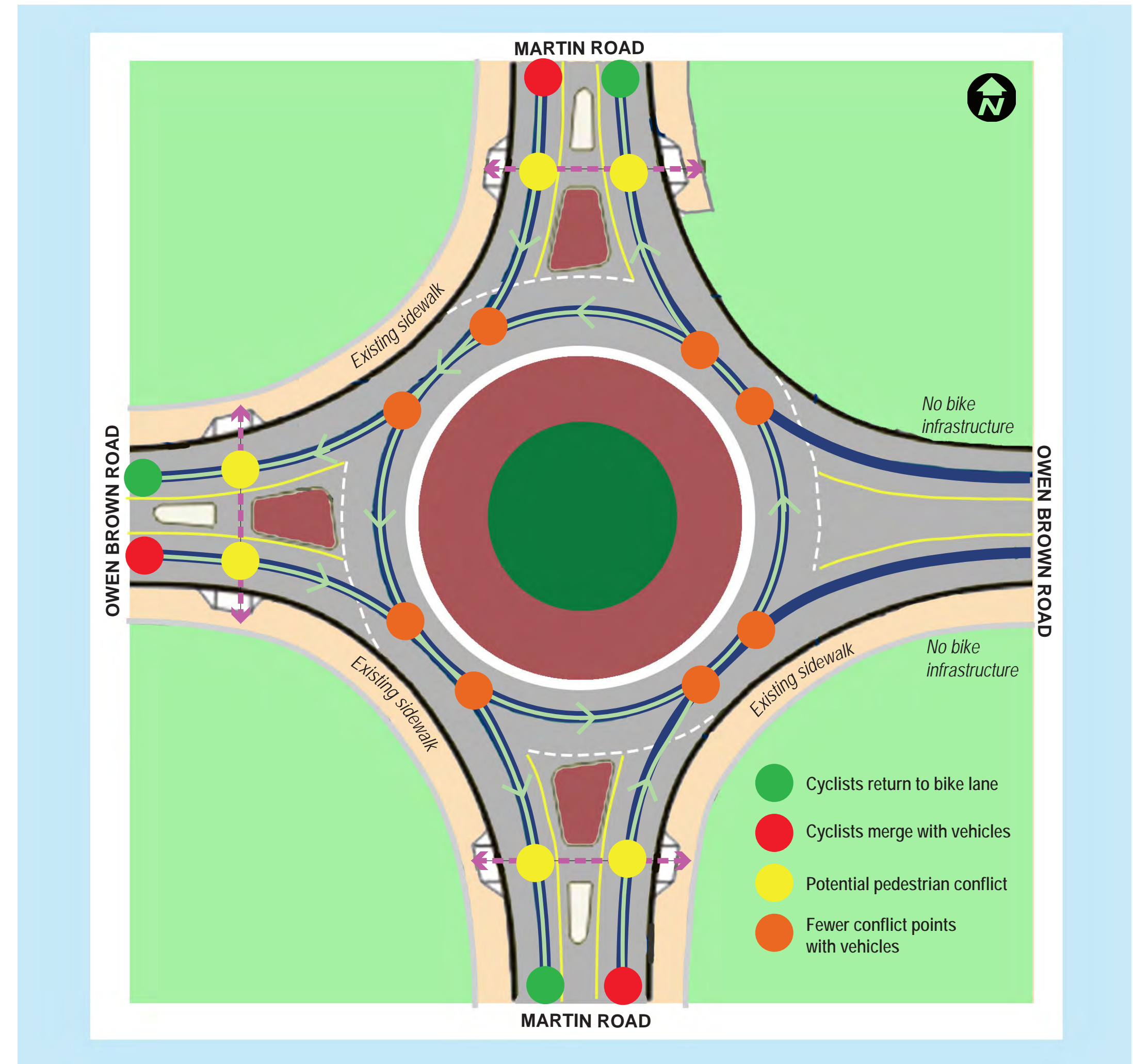
1 MARTIN ROAD NORTH OF ROUNDABOUT



PROPOSED

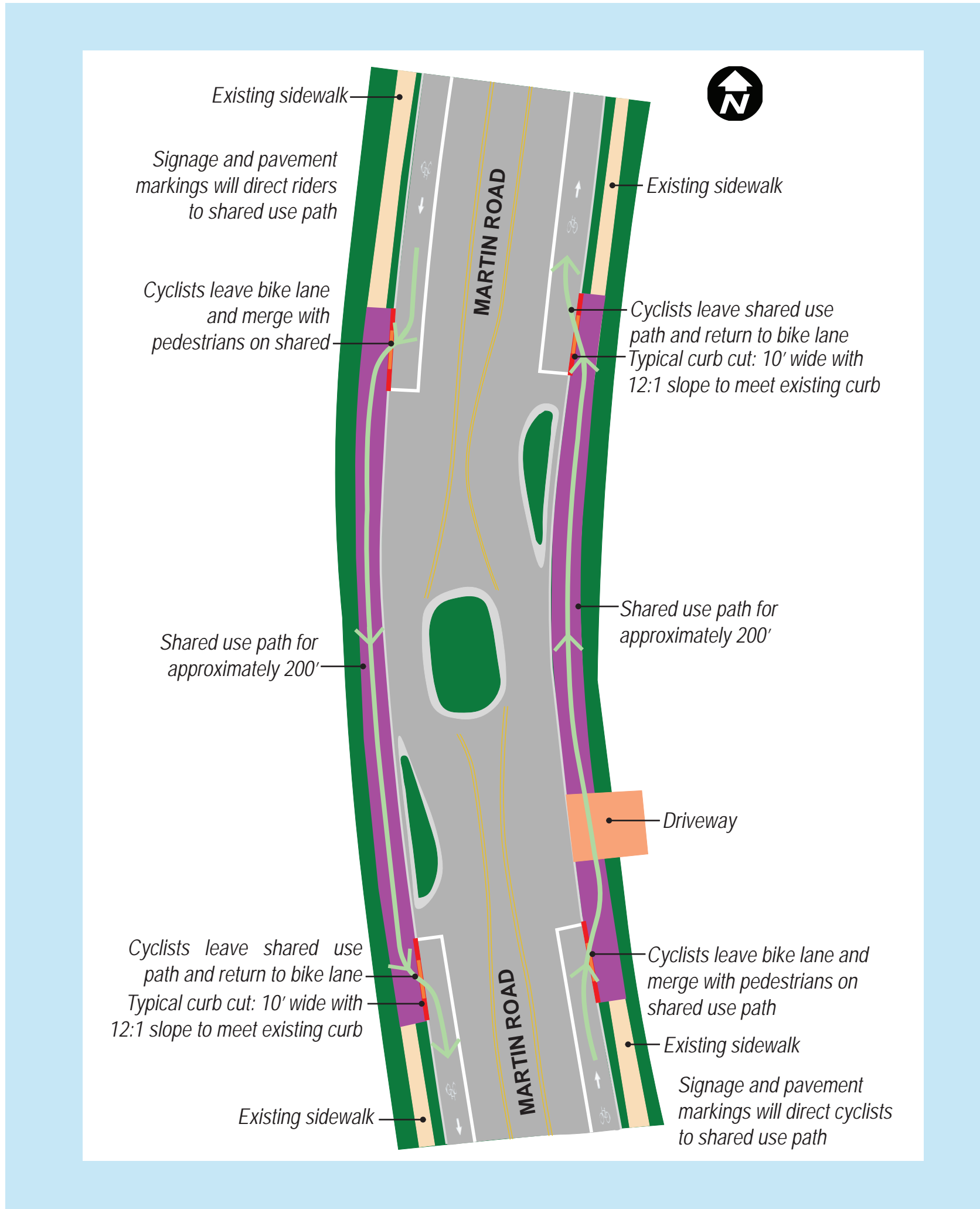


2 ROUNDABOUT DIAGRAM



Circulating as a vehicle: Bike lanes are not recommended within a roundabout. Instead, cyclists merge with traffic before entering the roundabout, circulate with traffic, and then re-enter the bike lane after exiting

3 TRAFFIC CALMING DIAGRAM



Navigating around traffic calming on Martin Road: Cyclists will leave dedicated on-street bike lane and use new curb cuts to merge onto shared use path around the traffic calming and return to on-street bike lane

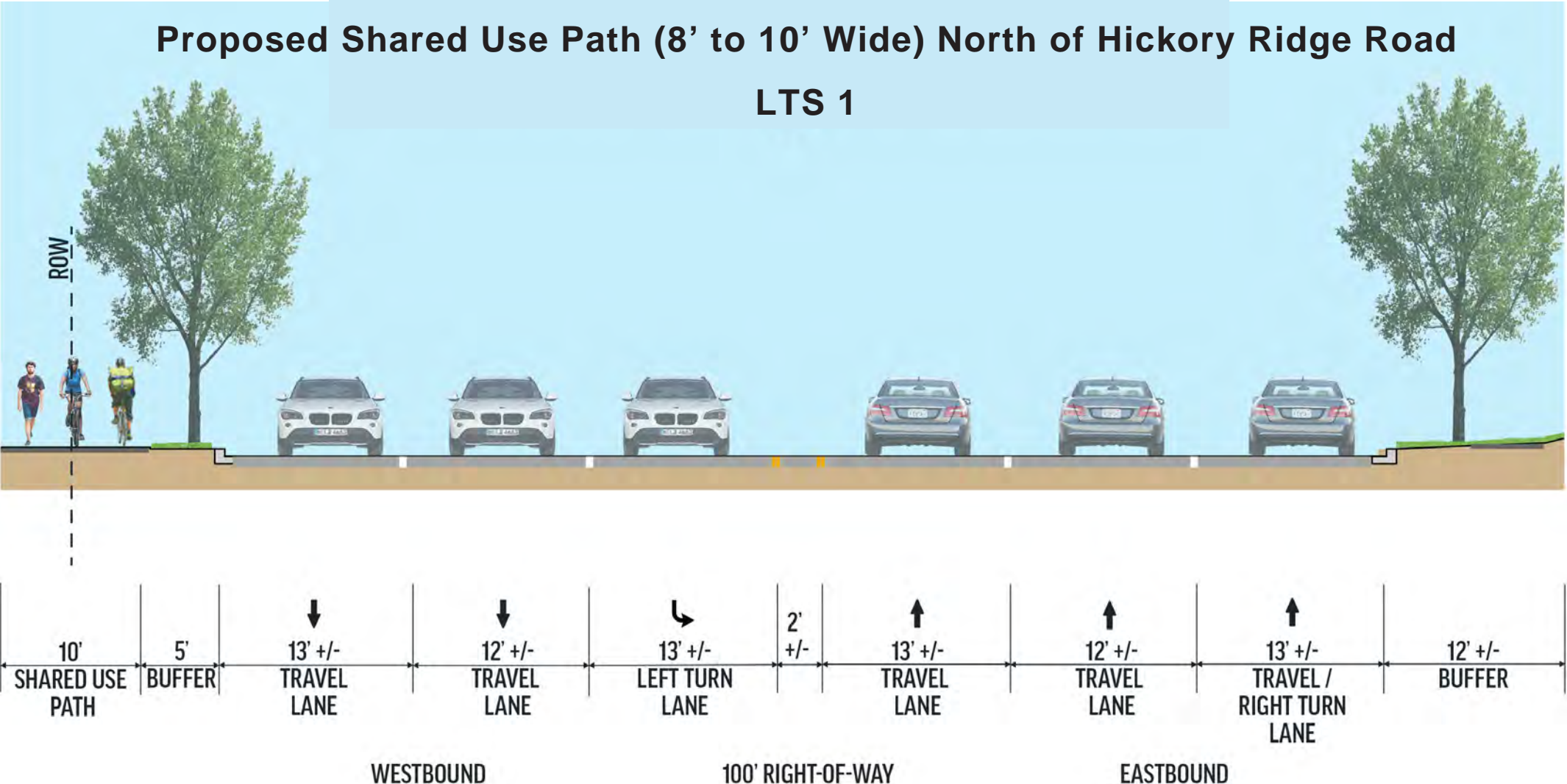
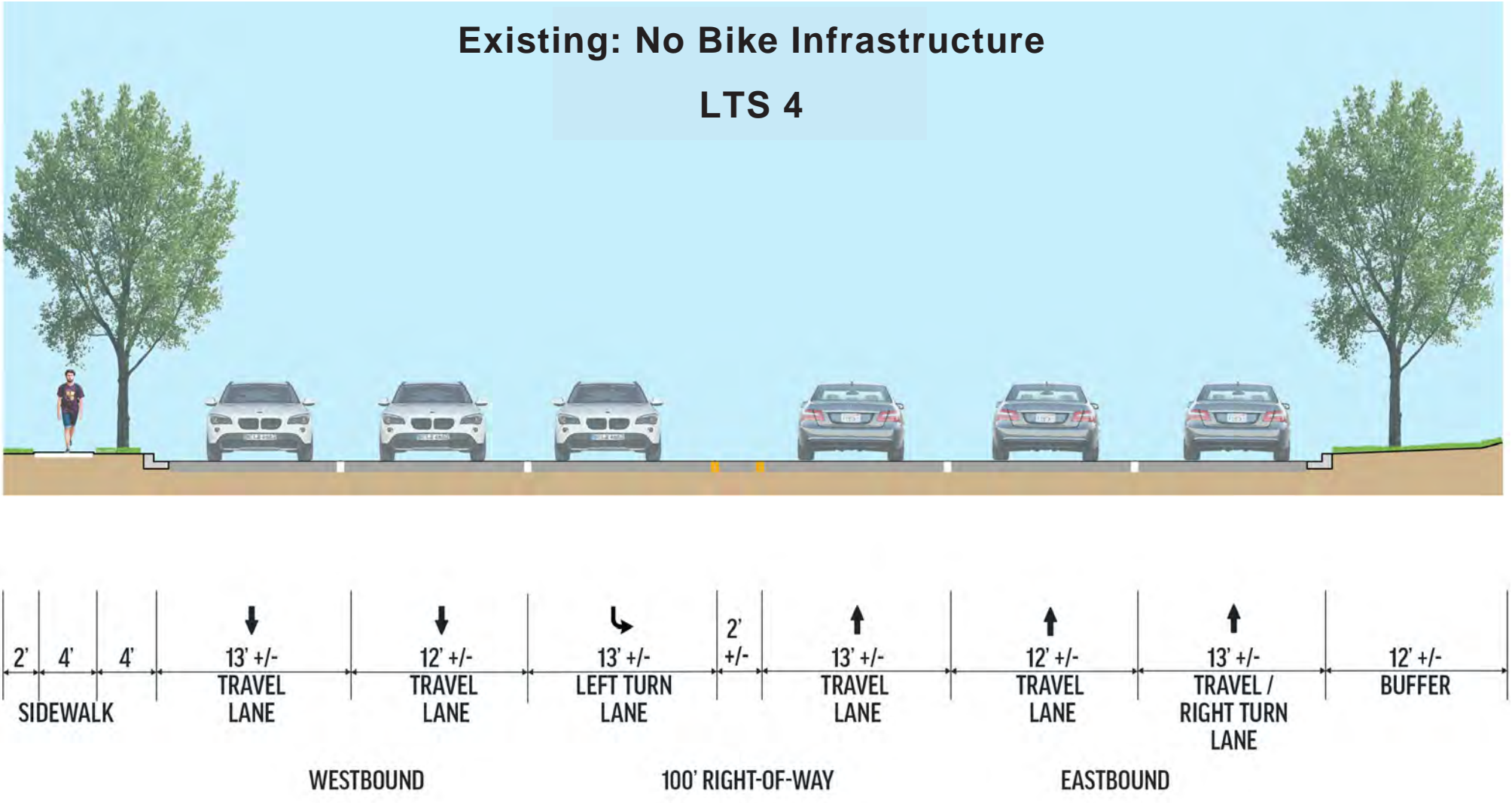


HICKORY RIDGE BIKE CORRIDOR STUDY

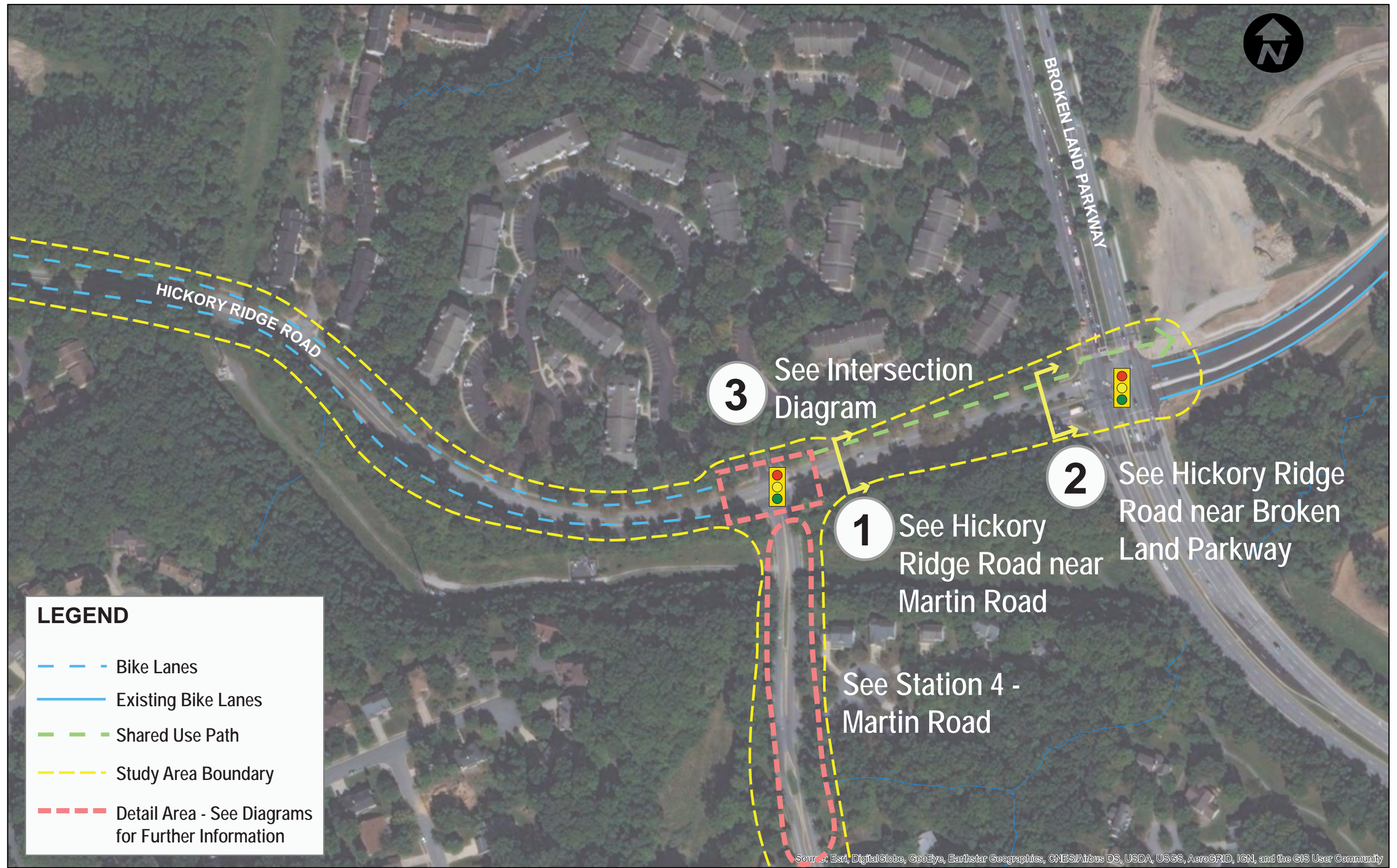
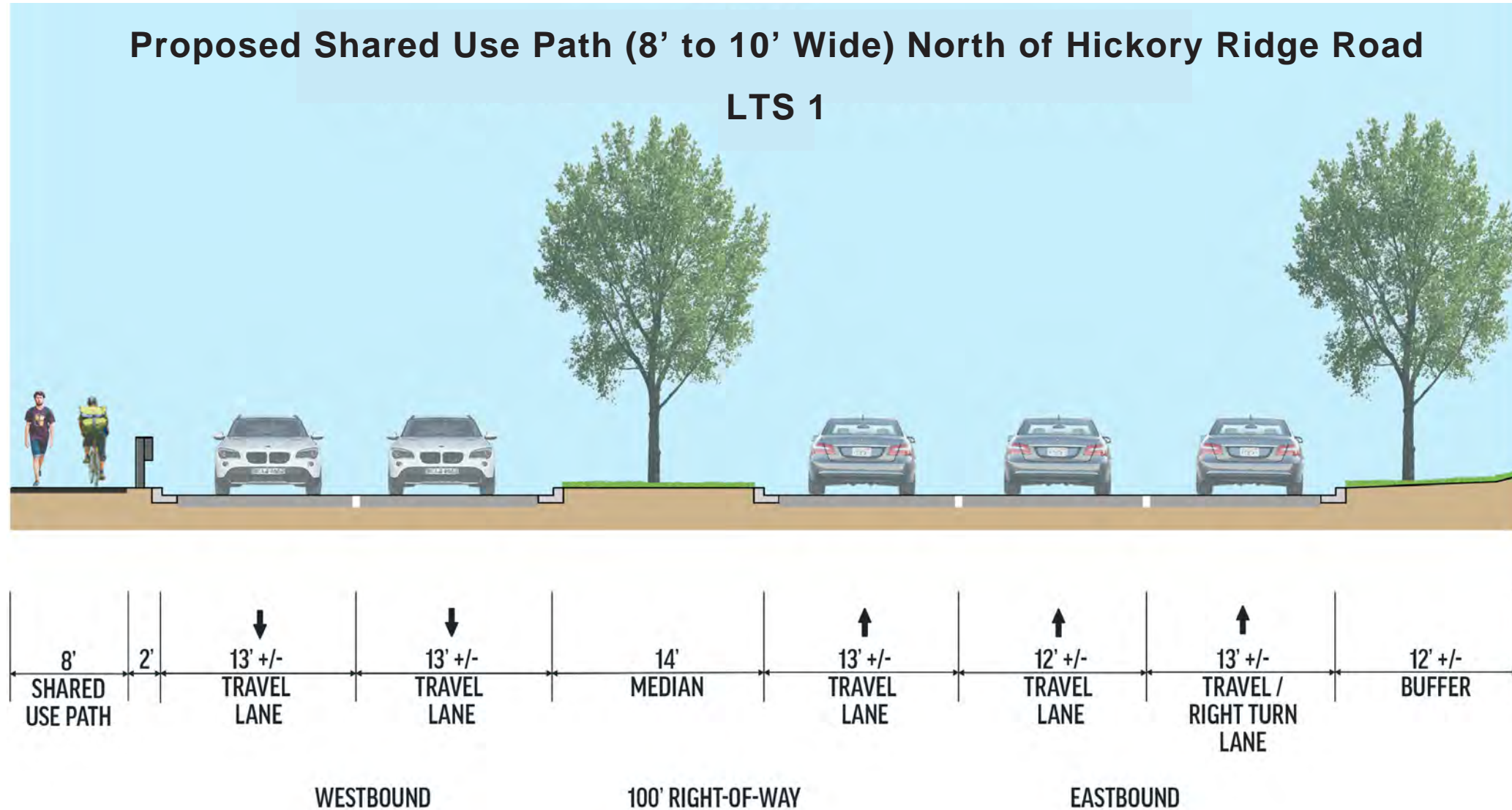
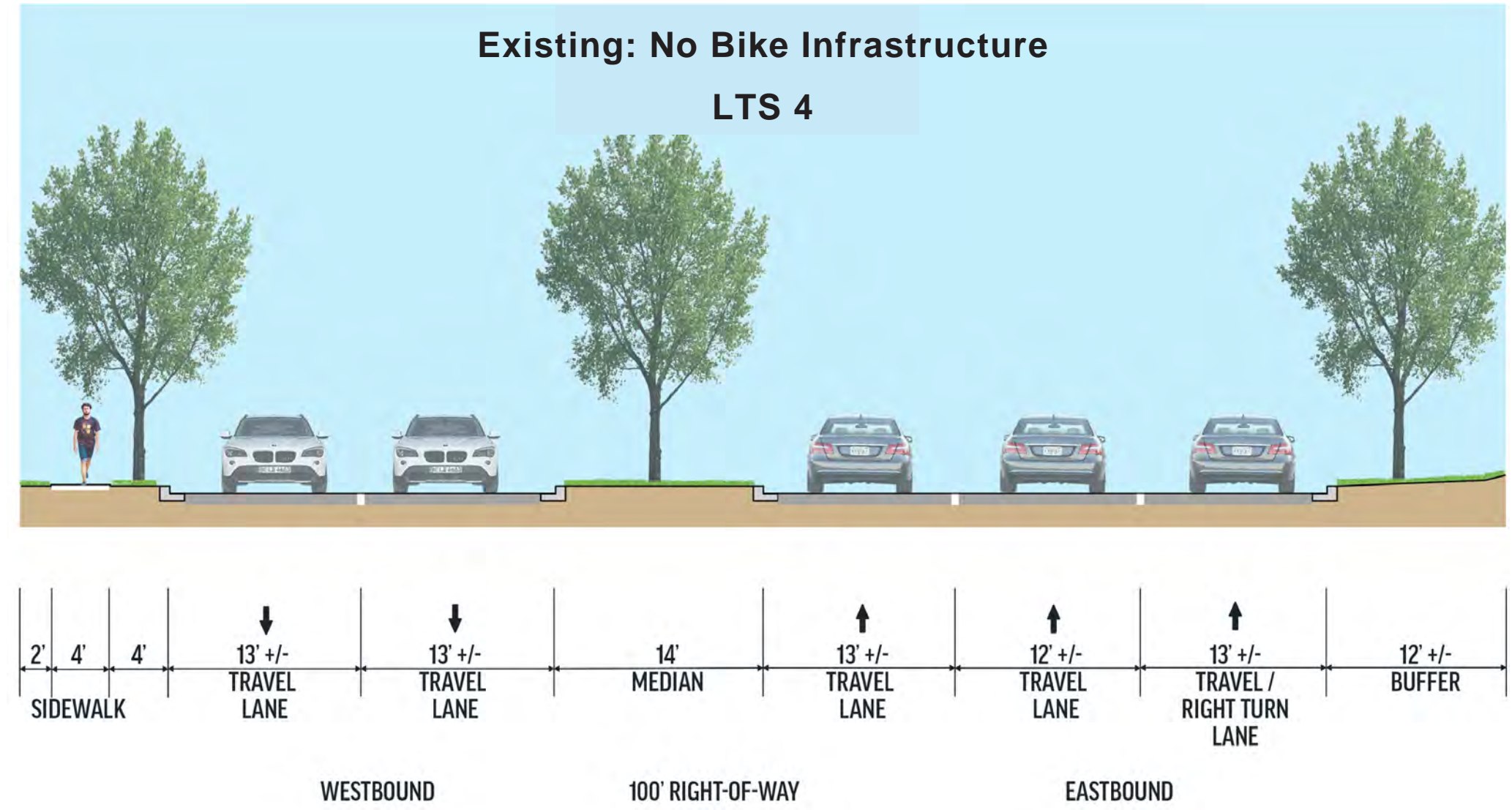
EXISTING

PROPOSED

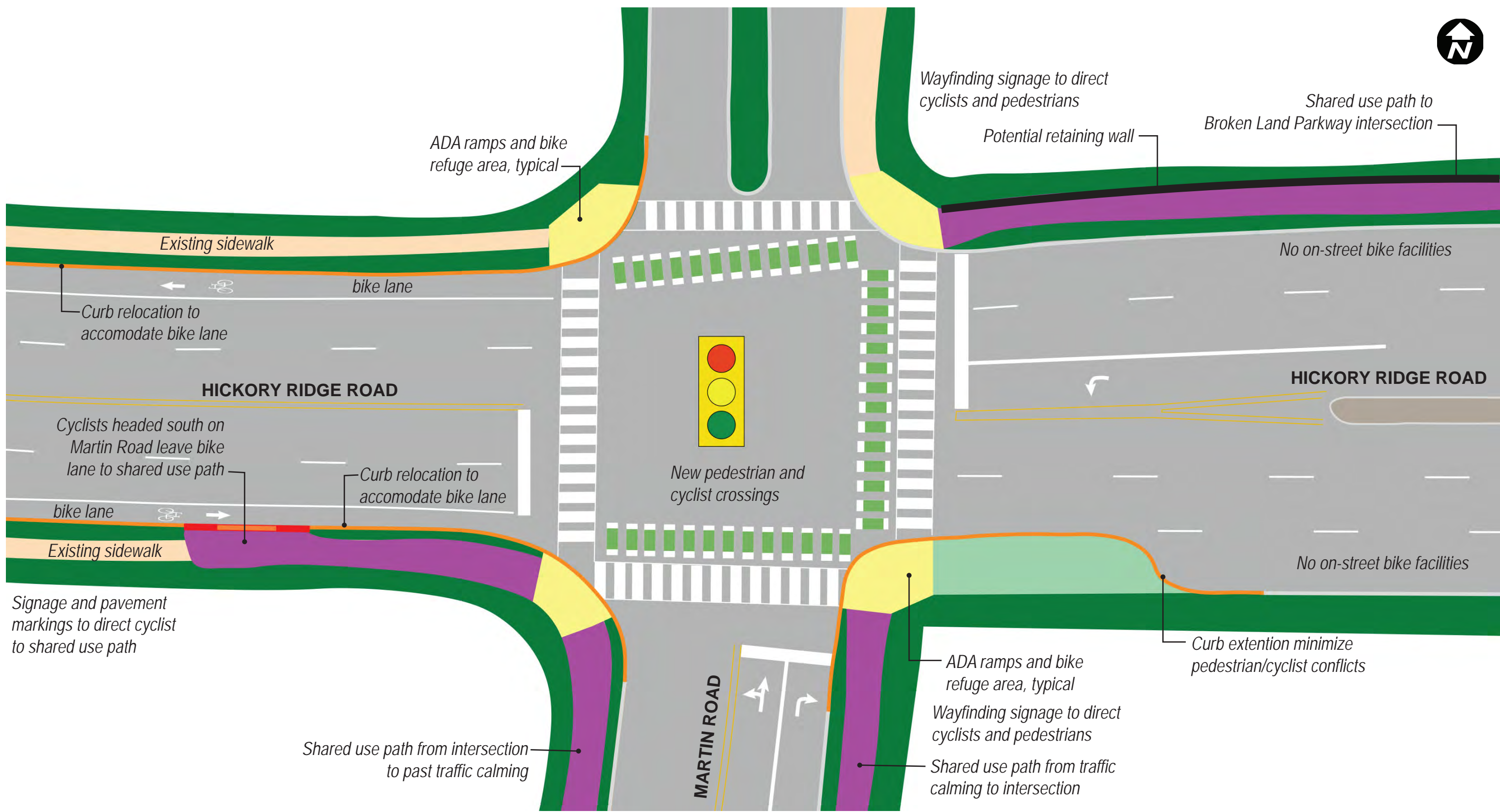
1 HICKORY RIDGE ROAD NEAR MARTIN ROAD



2 HICKORY RIDGE ROAD NEAR BROKEN LAND PARKWAY

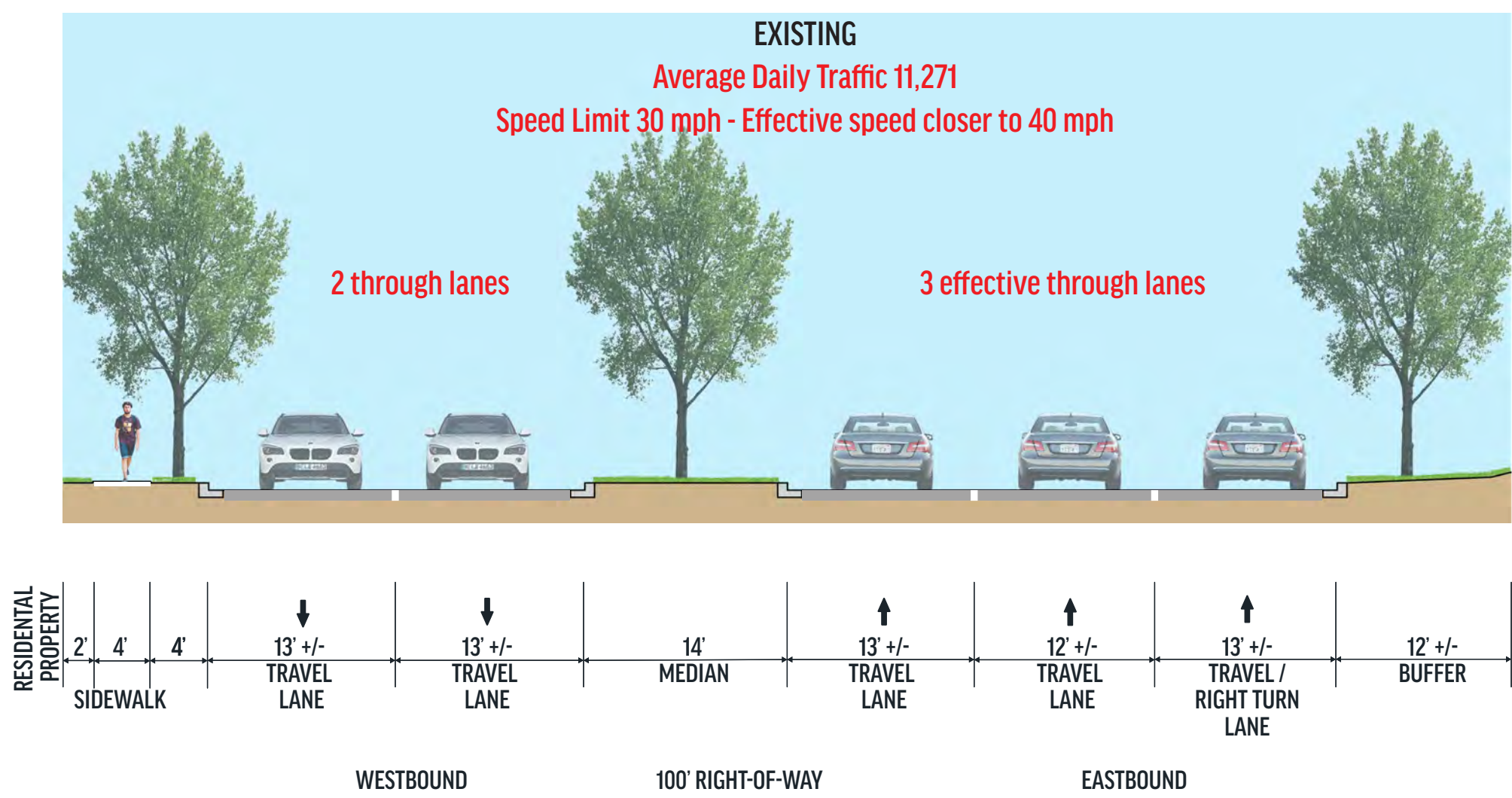


3 PROPOSED HICKORY RIDGE ROAD AND MARTIN ROAD INTERSECTION DIAGRAM



HICKORY RIDGE BIKE CORRIDOR STUDY

Existing conditions on Hickory Ridge Road evaluated with Mixed-Traffic Criteria



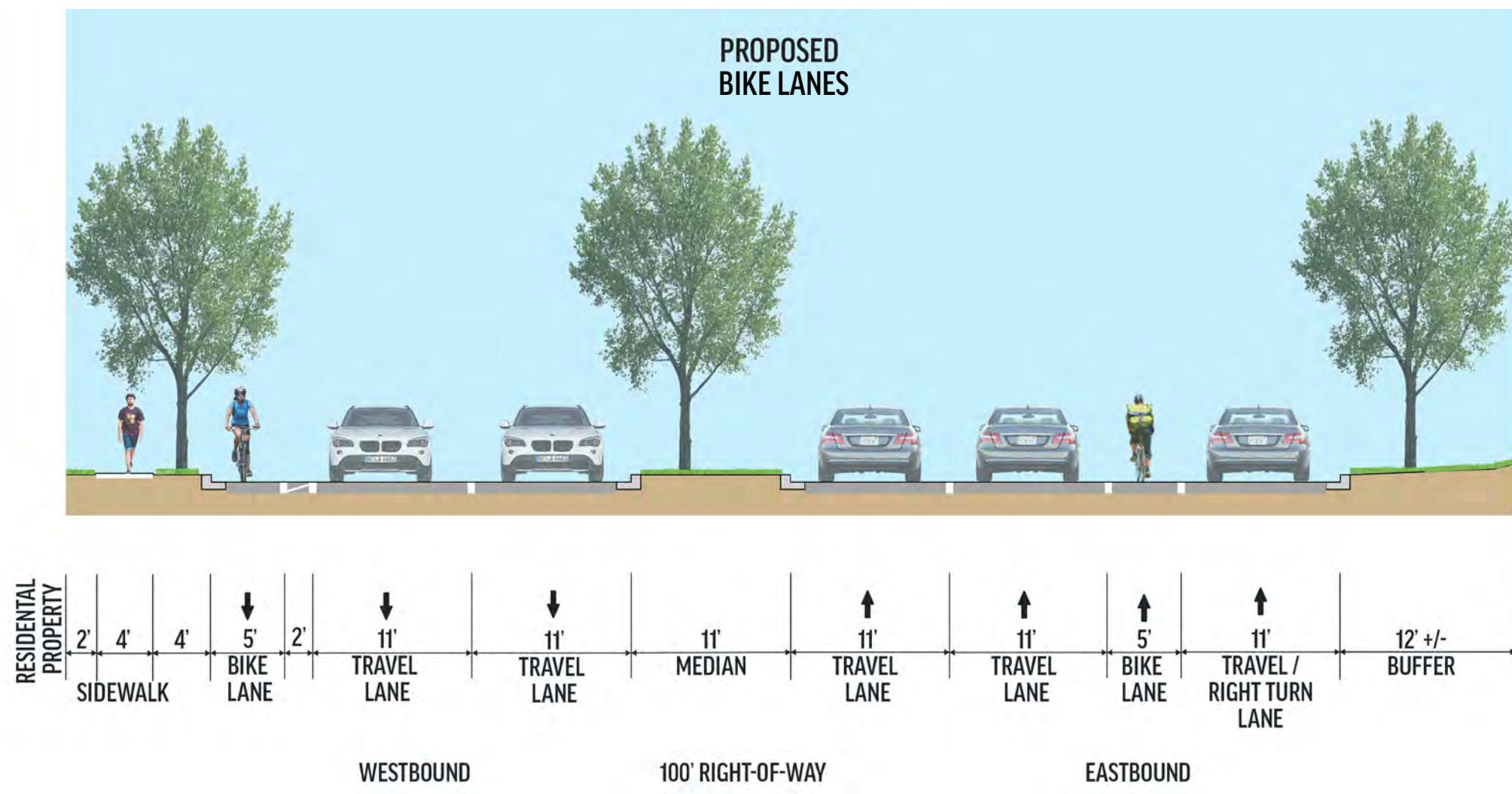
Mixed-Traffic Criteria							
Number of Lanes	Average Daily Traffic	<25 mph	30 mph	35 mph	40 mph	45 mph	50+ mph
2-way street (no centerline)	0-750	LTS 1	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4
	751-2000	LTS 1	LTS 2	LTS 3	LTS 3	LTS 4	LTS 4
	2001-3000	LTS 1	LTS 2	LTS 3	LTS 4	LTS 4	LTS 4
1 through lane per direction (1-way street or 2-way street with centerline)	0-750	LTS 1	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4
	751-2000	LTS 1	LTS 2	LTS 3	LTS 3	LTS 4	LTS 4
	2001-6000	LTS 2	LTS 3	LTS 4	LTS 4	LTS 4	LTS 4
2 through lanes per direction	0-6000	LTS 3	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4
	6001+	LTS 3	LTS 4	LTS 4	LTS 4	LTS 4	LTS 4
3+ through lanes per direction	any ADT	LTS 3	LTS 4	LTS 4	LTS 4	LTS 4	LTS 4

The existing conditions as shown in the section to the left measure as a LTS 4 (only tolerated by "strong and fearless riders")

- However, observations showed additional factors contributing to a high-stress condition including:
- Effective speeds were higher than 30 mph (assumed based on field observations)
 - The double left turn from northbound Broken Land Parkway onto westbound Hickory Ridge results in frequent high vehicular volumes and cars cannot give cyclists adequate space when passing
 - The full length right turn lane on eastbound Hickory Ridge also requires cyclists to change lanes to continue straight across Broken Land Parkway



Can we achieve LTS 2 with on-road bike lanes? NO

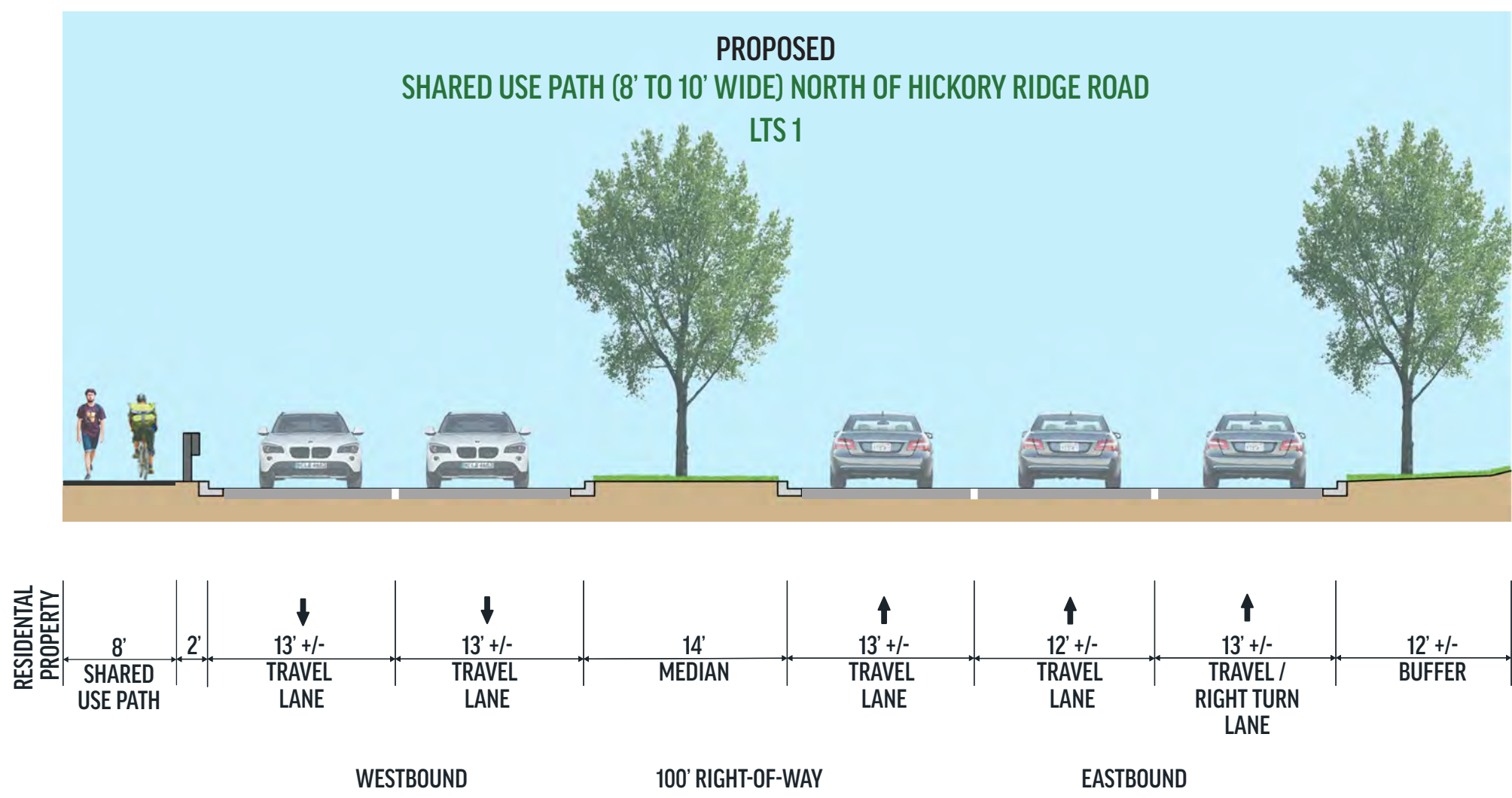


Bike Lanes and Shoulders not Adjacent to a Parking Lane							
Number of Lanes	Bike Lane Width	<25 mph	30 mph	35 mph	40 mph	45 mph	50+ mph
1 thru lane per direction, or unlaned	6+ feet	LTS 1	LTS 2	LTS 2	LTS 3	LTS 3	LTS 3
	4 or 5 feet	LTS 2	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4
2 through lanes per direction	6+ feet	LTS 2	LTS 2	LTS 2	LTS 3	LTS 3	LTS 3
	4 or 5 feet	LTS 2	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4
3+ through lanes per direction	any width	LTS 3	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4

On-road bike lanes as shown in the section to the left measure as an LTS 3 (only tolerated by "enthused and confident riders"), which does not meet the goal of LTS 2.

- Additionally, the project could not be accomplished through restriping:
- The bike lane cannot be accommodated within the existing curbs in the westbound direction but would require moving the median curb, resulting in a high-cost project that would take a long time to implement
 - The bike lane in the eastbound direction would either be located between the right turn lane and through traffic (as shown in the section to the left), or against the curb, which would require cyclists to change lanes to continue straight across Broken Land Parkway
 - Effective speeds would likely remain higher than 30 mph

Can we achieve LTS 2 with a shared use path? YES



Completely separated from traffic therefore LTS 1

*RIGHT-OF-WAY ACQUISITION AND RETAINING WALL MAY BE NECESSARY FOR AN 8' OR 10' WIDE SHARED USE PATH WITH A 5' BUFFER

The goal for the Hickory Ridge Bike Corridor is to have a continuous low-stress bicycle route between Downtown Columbia and Grace Drive.

For the purposes of this study, we are defining low-stress as at least LTS 2 (comfortable for the mainstream adult population) along each road segment.

Hickory Ridge Road is a multi-lane, high speed, high volume roadway currently rated LTS 4.

This board shows how we used the Level of Traffic Stress (LTS) methodology to decide on an appropriate low-stress bike facility along Hickory Ridge Road.