



CITY COUNCIL WORK SESSION AGENDA
Work Sessions - Traffic Calming Study: Greenbelt Center City

This meeting will be held in-person and virtual.

**25 Crescent Road
Greenbelt, MD 20770**

OR

Virtual Participation

Zoom Webinar Attendees:

**Please submit your request in writing via email to questions@greenbeltmd.gov
<https://us02web.zoom.us/j/84759941689?pwd=4soU9oJKwxZstzzK24xaa4BQJpcfCm.1>**

Dial-in: 301 715 8592

Webinar ID: 847 5994 1689

Passcode: 406119

Wednesday, November 20, 2024

7:30 PM

I. Work Session Packet - Traffic Calming Study: Greenbelt Center City

1. Work Session: Traffic Calming Study: Greenbelt Center City

Suggested Action:

Agenda

- **Introductions**
- **Council Discussion**
 - **View the full Draft Traffic Calming Study: Greenbelt Center City, including appendices, at <https://www.greenbeltmd.gov/government/planning-community-development/publications/traffic-calming-study>**
- **Questions and Answers**
- **Other Items**
 - **Informational Items**

[2300257.01 _DRAFT Traffic Calming Study_v.2 _Compiled_no appendices.pdf](#)

[24-1120_Traffic Calming Presentation_Council Work Session.pdf](#)

[DRAFT 10.16.2024 APB Minutes_v.1.jfearer.pdf](#)

[2024-10-29 Public Meeting Minutes.pdf](#)

2. **Special Meeting/Closed Session - Personnel Matters and City Manager's Evaluation Overview**

[Closed Session Official Notice 241120.pdf](#)

City Council Work Session Agenda Item Report

Meeting Date: November 20, 2024

Submitted by: Shaniya Lashley-Mullen

Submitting Department: Administration

Item Type: Work Session Item

Agenda Section: Work Session Packet - Traffic Calming Study: Greenbelt Center City

Subject:

Work Session: Traffic Calming Study: Greenbelt Center City

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- Questions and Answers
- Other Items
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Attachments:

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Traffic Calming Study: Greenbelt Center City



Prepared by



for

City of Greenbelt

Department of Planning and Community Development



July 2024

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INTRODUCTION

Greenman-Pedersen, Inc. (GPI) has prepared this Traffic Calming Study for key roadways within Central Greenbelt and provided recommended countermeasures to reduce vehicle speed, improve safety for all users, and improve pedestrian / cyclist connectivity.

STUDY AREA

The following local roadways under the City of Greenbelt's jurisdiction have been analyzed for evaluation of traffic calming:

- Ridge Road – from Lastner Lane to Westway
- Lakeside Drive – from Lakecrest Drive to Crescent Road
- Lastner Lane – from Ridge Road to Crescent Road
- Greenhill Road – from Crescent Road to Research Road
- Hillside Road – from Crescent Road to Research Road

EXISTING CONDITIONS

Greenman-Pedersen, Inc. (GPI) performed multiple site visits throughout November 2023 to evaluate the potential safety concerns and associated speeding concerns along the roadway limits stated above in Greenbelt, Maryland.

All five of the study area roadways are classified by Maryland Department of Transportation State Highway Administration (SHA) as local roadways under the City of Greenbelt jurisdiction. These roadways feed into major collectors (Crescent Road and Southway) that connect to major arterials MD 201 (Kenilworth Avenue) to the west or MD 193 (Greenbelt Road) to the south.

All roadways provide on-street parking along at least one side of the roadway except for Lakeside Drive, which limits parking to only one side of the roadway for its entire length. The posted speed limit of 25 miles per hour (MPH) is posted in multiple locations for both directions of travel on all study area roadways. All roadways provide a "closed" roadway section with curb and gutter for drainage.

There are no bicycle facilities provided although it is assumed that they can share the roadway with vehicles. Pedestrian facilities vary and are outlined for each road specifically below.

Ridge Road

Ridge Road is approximately 2 miles long and ranges from 28-42 feet wide, providing one travel lane in each direction, separated by a striped double-yellow centerline. On-street parking is provided along at least one side of the roadway for the majority of its length with painted spaces of seven feet wide and vehicle travel lane widths ranging from 10-14 feet wide. A speed hump is currently provided east of Research Road. Ridge Road runs around the outer perimeter of the historic Greenbelt community, providing access to the Beltsville Agricultural Research Center, Greenbelt Elementary School, two religious facilities, and 25 bus stops.

Sidewalks are provided along at least one side of the roadway for its entire length and provides multiple connections to the City's internal path network. A speed reduction zone is provided with 15 MPH school zone flashers in proximity to the Greenbelt Elementary School.

Lakeside Drive

Lakeside Drive is approximately 0.8 miles long and ranges from 25-35 feet wide, providing one travel lane in each direction with directional flow not separated. Yield-controlled intersections exist at Olivewood Court, Maplewood Court, and Lakeview Court. Vehicle travel lane widths range from 9-14 feet wide and on-street parking is assumed to be seven feet wide. Directional travel is separated by a striped double-yellow center line between Lakecrest

Drive and Westway. Lakeside Drive has a generally curved alignment with significant changes in vertical grades. Lakeside Drive provides a connection between Lakecrest Drive and Crescent Road and access to two bus stops.

There are no sidewalks along Lakeside Drive; however, there are multiple connections to the City's internal path network.

Lastner Lane

Lastner Lane is approximately 0.6 miles long and ranges from 34-36 feet wide, providing one travel lane in each direction, separated by a striped double-yellow centerline. Vehicle travel lane widths range from 17-18 feet wide. On-street parking is restricted on both sides of the roadway south of Rosewood Drive. Lastner Lane has a generally curved alignment with significant changes in vertical grades. Lastner Lane provides a connection between Ridge Road and Crescent Road, Boxwood Village Playground, and access to four bus stops.

Sidewalks are provided along both sides of the roadway except for the segment between Ivy Lane and Crescent Road where sidewalk is only provided along the easterly side.

Greenhill Road

Greenhill Road is approximately 0.4 miles long and is 26-feet wide, providing one travel lane in each direction with directional flow not separated. Greenhill Road has a generally curved alignment with significant changes in vertical grades at its northerly end. Greenhill Road provides a connection between Crescent Road and Research Road, the Greenbelt Baptist Church, and access to four bus stops.

Sidewalks are provided along both sides of the roadway except for the segment south of Greendale Place where sidewalk is only provided along the easterly side and the segment between Research Road and 128 Greenhill Road where sidewalk is only provided along the northerly side.

Hillside Road

Hillside Road is approximately 0.4 miles long and ranges from 22-40 feet wide, providing one travel lane in each direction with directional flow not separated. Vehicle travel lane widths range from 11-15 feet wide. Hillside Road has a generally curved alignment with gradual changes in vertical grades over its length. Hillside Road provides a connection between Research Road and Crescent Road, the Greenbelt Community Church, and access to 10 bus stops.

Sidewalks are provided along at least one side of the roadway for its entire length and provides multiple connections to the City's internal path network.

Traffic Volumes

Automatic traffic recorders (ATRs) were used to obtain daily traffic volumes and speeds along the study area roadways for weekday daily and Saturday periods from Thursday, November 16, 2023 to Saturday, November 18, 2023 when public school was in session. All traffic-count data is provided in detail in the Appendix A. Table 1 summarizes the existing daily and peak-hour traffic volumes.

The highest volume of traffic was recorded at Ridge Road between Eastway and Hamilton Place with peak hour directional distribution approximately 50/50 split at a rate less than five vehicles per minute. Other roadways showed higher directional distributions between weekday AM and PM periods which indicates a strong relationship to typical commuter hours. There is no indication that these study area roadways are being utilized for the purposes of cut-through travel although an origin-destination study would need to be performed in order to confirm.

Table 1
EXISTING TRAFFIC VOLUME SUMMARY

Location/Time Period	Daily Volume (vpd) ^a	Peak Hour Volume (vph) ^b	K Factor (%) ^c	Directional Distribution ^d	Percent Heavy Vehicles (%) ^e
Ridge Road between Laurel Hill Road and Plateau Place:					
Weekday	998	--	--	--	7
Weekday AM Peak Hour	--	230	23.0	55% NB	--
Weekday PM Peak Hour	--	148	14.8	61% SB	--
Saturday	478	--	--	--	6
Saturday Mid Peak Hour	--	73	15.3	52% SB	--
Ridge Road between Westway and Southway:					
Weekday	986	--	--	--	9
Weekday AM Peak Hour	--	124	12.6	79% EB	--
Weekday PM Peak Hour	--	128	13.0	55% EB	--
Saturday	916	--	--	--	7
Saturday Mid Peak Hour	--	123	13.4	55% EB	--
Ridge Road between Eastway and Hamilton Place:					
Weekday	1,427	--	--	--	5
Weekday AM Peak Hour	--	288	20.2	52% NB	--
Weekday PM Peak Hour	--	185	13.0	51% SB	--
Saturday	974	--	--	--	3
Saturday Mid Peak Hour	--	120	12.3	52% SB	--
Ridge Road between Lastner Lane and Research Road:					
Weekday	539	--	--	--	10
Weekday AM Peak Hour	--	117	21.7	57% EB	--
Weekday PM Peak Hour	--	80	14.8	53% WB	--
Saturday	364	--	--	--	7
Saturday Mid Peak Hour	--	54	14.8	59% EB	--
Lakeside Drive between Olivewood Court and Pinecrest Court:					
Weekday	287	--	--	--	3
Weekday AM Peak Hour	--	31	10.8	71% NB	--
Weekday PM Peak Hour	--	40	13.9	58% SB	--
Saturday	290	--	--	--	2
Saturday Mid Peak Hour	--	29	10.0	52% SB	--
Lakeside Drive north of Crescent Road:					
Weekday	245	--	--	--	2
Weekday AM Peak Hour	--	14	5.7	57% NB	--
Weekday PM Peak Hour	--	33	13.5	54% NB	--
Saturday	210	--	--	--	4
Saturday Mid Peak Hour	--	29	13.8	68% NB	--

^a In vehicles per day.

^b In vehicles per hour.

^c Percentage of daily traffic occurring during the peak hour.

^d EB = eastbound, WB = westbound, NB = northbound, SB = southbound.

^e Heavy Vehicles Percentage = Class 4 vehicle and higher of total vehicles (including busses).

Table 1 (Continued)
EXISTING TRAFFIC VOLUME SUMMARY

Location/Time Period	Daily Volume (vpd) ^a	Peak Hour Volume (vph) ^b	K Factor (%) ^c	Directional Distribution ^d	Percent Heavy Vehicles (%) ^e
Lastner Lane south of Ridge Road:					
Weekday	536	--	--	--	12
Weekday AM Peak Hour	--	120	22.3	56% NB	--
Weekday PM Peak Hour	--	79	14.7	61% SB	--
Saturday	379	--	--	--	7
Saturday Mid Peak Hour	--	56	14.8	63% NB	--
Lastner Lane between Rosewood Drive and Ivy Lane:					
Weekday	726	--	--	--	9
Weekday AM Peak Hour	--	136	18.7	56% SB	--
Weekday PM Peak Hour	--	99	13.6	64% NB	--
Saturday	646	--	--	--	4
Saturday Mid Peak Hour	--	86	13.3	59% SB	--
Greenhill Road west of Research Road:					
Weekday	608	--	--	--	9
Weekday AM Peak Hour	--	117	19.2	56% EB	--
Weekday PM Peak Hour	--	101	16.6	51% WB	--
Saturday	465	--	--	--	2
Saturday Mid Peak Hour	--	62	13.3	52% EB	--
Greenhill Road north of Greenway Place:					
Weekday	809	--	--	--	7
Weekday AM Peak Hour	--	137	16.9	55% SB	--
Weekday PM Peak Hour	--	119	15.7	51% NB	--
Saturday	663	--	--	--	1
Saturday Mid Peak Hour	--	67	10.1	51% SB	--
Hillside Road north of Northway Road:					
Weekday	710	--	--	--	8
Weekday AM Peak Hour	--	92	13.0	55% SB	--
Weekday PM Peak Hour	--	99	13.9	54% SB	--
Saturday	468	--	--	--	2
Saturday Mid Peak Hour	--	53	11.3	62% SB	--
Hillside Road south of Woodland Way:					
Weekday	860	--	--	--	7
Weekday AM Peak Hour	--	108	12.6	60% SB	--
Weekday PM Peak Hour	--	122	14.2	57% NB	--
Saturday	650	--	--	--	2
Saturday Mid Peak Hour	--	92	14.2	50% SB	--

^a In vehicles per day.

^b In vehicles per hour.

^c Percentage of daily traffic occurring during the peak hour.

^d EB = eastbound, WB = westbound, NB = northbound, SB = southbound.

^e Heavy Vehicles Percentage = Class 4 vehicle and higher of total vehicles.

As shown in Table 1, all study roadway segments were found to provide adequate capacity for the weekday and Saturday daily volumes except for the segment of Ridge Road between Eastway and Hamilton Place. Capacity of a two-lane local street is 1,000 vehicles per day based on the Highway Capacity Manual (HCM) level-of-service D/E threshold.

Speeds

Vehicle speed measurements were conducted along the study area roadways by measuring the elapsed time for vehicles traveling a short, pre-measured distance between two checkpoints. The travel times were recorded using ATRs and the speeds were derived by dividing the elapsed time into the measured distance between checkpoints. The results of the speed measurements are summarized in Table 2.

Table 2
OBSERVED TRAVEL SPEED SUMMARY ^a

Location	Posted Speed ^a	Average Speed ^b	85 th Percentile Speed ^c	Peak Direction
Ridge Road between Laurel Hill Road and Plateau Place	25	27	33	53% SB
Ridge Road between Westway and Southway	25	24	30	64% EB
Ridge Road between Eastway and Hamilton Place	25	26	31	52% NB
Ridge Road between Lastner Lane and Research Road	25	26	31	52% WB
Lakeside Drive between Olivewood Court and Pinecrest Court	25	22	28	53% SB
Lakeside Drive north of Crescent Road	25	20	25	54% SB
Lastner Lane south of Ridge Road	25	24	29	52% SB
Lastner Lane between Rosewood Drive and Ivy Lane	25	25	30	52% SB
Greenhill Road west of Research Road	25	22	27	52% WB
Greenhill Road north of Greenway Place	25	20	24	52% SB
Hillside Road north of Northway Road	25	22	27	50% SB
Hillside Road south of Woodland Way	25	26	32	50% SB

^a In miles per hour (MPH).

^b Average speed of all observed vehicles.

^c Speed at, or below which 85 percent of all observed vehicles travel.

As shown in Table 2, the 85th percentile speeds (the speed at or below which 85 percent of all observed vehicles travel under free-flow conditions) were found to be consistent (within +/- 3 MPH) with the posted speed limit along Lakeside Drive, Greenhill Road, and the northerly half of Hillside Road. The 85th percentile travel speeds along Lastner Lane were found to be within 5 MPH of the posted speed limit, which is generally considered acceptable by industry standards, but can be improved to meet goals set by the City of Greenbelt. All segments of Ridge Road and the southerly half of Hillside Road were found to have 85th percentile travel speeds 5 MPH or greater than the posted speed limit which is particularly concerning due to the frequency of bus travel. The combination of higher speeds from heavier vehicles could result in more dangerous collisions. Coordination may be needed with the service providers to evaluate bus headways and vehicle telemetry to make sure drivers aren't operating in an unsafe manner.

Speeding along the study area roadways (speeds five mph or greater than posted limit) was generally observed between the weekday morning hours of 6-11 AM and weekday evening hours of 2-4 PM. The lack of speeding between the hours of 6 PM to 6 AM suggests that the existing roadways create an environment that is generally consistent with the posted speed limit.

A summary of the weekday average daily traffic (ADT) and the 85th percentile speeds is illustrated in Figure 1.

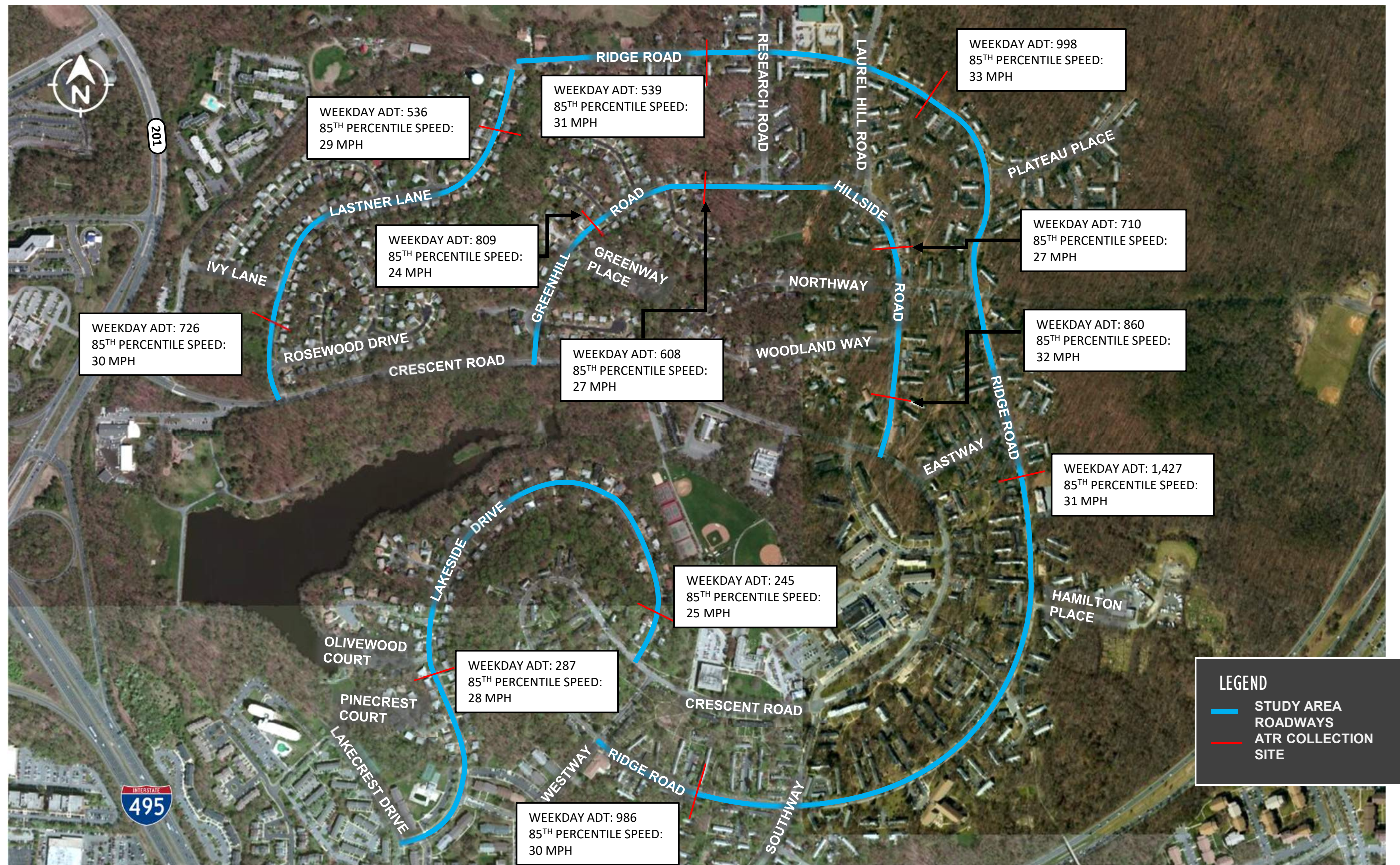


FIGURE 1
DATA COLLECTION LOCATION MAP

Public Transportation

Washington Metropolitan Area Transit Authority (WMATA) bus route G12 provides service along Lastner Lane. Bus routes G12 and G14 provide service along Ridge Road and Lakeside Drive. These routes provide services during weekdays and weekends. Prince George's County Department of Public Works and Transportation (PG DPW&T) bus route 11 provides service along Greenhill Road and Hillside Road on weekdays only.

Both WMATA and PG DPW&T bus routes provide connections to Metro Rail at Greenbelt Station or New Carrollton Station. The conditions of bus stops vary by what amenities they provide (i.e., benches, shelters), if any. All stops provide sign designation; however not all stops provide bus pads or are placed consistently on the arrival or departure side of intersections and some pads do not connect to sidewalks. The detailed bus schedules are provided in the Appendix B.

Prince George's County provides public school bus service for Greenbelt Elementary School which utilize study area roadways. These stops are not signed or provide dedicated bus pads. The detailed bus schedules are provided in the Appendix B. Morning pickups are scheduled for the following routes:

- Bus Route 459 – 9:05 AM located at Lakeside Drive / Westway intersection.
- Bus Route 460 – 9:04 AM located at Lackcrest Drive / Lakeside Drive intersection.

Afternoon drop-offs are scheduled for the following routes:

- Bus Route 276 – 3:55 PM located at Lakeside Drive / Westway intersection.
- Bus Route 277 – 3:46 PM located at Lackcrest Drive / Lakeside Drive intersection.

Collisions

Collision data for the study area intersections was obtained from the City of Greenbelt for the most recent available four-year period (January 2019 through November 2023). A summary of the crashes along the study area roadways is provided in Table 3. The collision data does not provide information regarding how the crash occurred or contributing factors that may have influenced driver behavior. The detailed crash summaries are provided in the Appendix C. A visual summary of the collision data is provided in Figure 2.

Based on the data provided by the City of Greenbelt, there is a high frequency of hit & run collisions which does not have a clear rationale or pattern of collision type (i.e., angle, sideswipe, rear-end, etc.). It's also not clear whether these hit & run collisions occurred for vehicles parked along the roadway or parked within off-street lots. These collisions may be minor fender-bender incidents which are more common at slower vehicle speeds. In order to provide a conservative assessment, it has been assumed that collisions occurred along the roadway most closely located with address listed. The roadway segments with annual crash rate greater than three collisions per year over the four-year study period are:

- Ridge Road from Research Road to Northway (10)
- Ridge Road from Hamilton Place to Southway (15)
- Lakeside Drive from Westway to Lakecrest Drive (15)

Lakeside Drive, Lastner Lane, and Hillside Road have overall lower average and 85th percentile travel speeds which indicates that safety issues along this roadway can also be attributed to factors other than speed, though it's unclear from the crash data what those factors are. Crashes that resulted in personal injury are less than five percent likely to occur per study roadway which is consistent with lower travel speed roadways.

There were no clear collision pattern types based on the data provided and no intersection had annual crash rates higher than three per year. The intersections with the highest concentration of collisions over the four-year study period are:

- Ridge Road / Southway (7)
- Greenhill Road / Hillside Road / Research Road (5)
- Lakeside Drive / Westway (4)
- Lastner Lane / Crescent Road (4)

Table 3
COLLISION SUMMARY

Location	Number of Collisions		Collision Severity ^a		Collision Type ^b			Percentp During Commuter Peak ^c
	Total	Average per Year	PD	PI	Hit & Run	Vehicle	Ped / Bike	
Ridge Road from Lastner Lane to Research Road	3	0.75	2	1	1	2	--	33%
Ridge Road from Research Road to Northway	10	2.50	10	--	5	5	--	0%
Ridge Road from Northway to Hamilton Place	8	1.00	8	--	1	7	--	38%
Ridge Road from Hamilton Place to Southway	15	3.75	14	1	4	10	1	7%
Ridge Road / Southway	7	1.75	7	--	1	6	--	0%
Ridge Road from Southway to Westway	5	1.25	5	--	2	3	--	40%
Lakeside Drive / Crescent Road	3	0.75	3	--	1	2	--	33%
Lakeside Drive from Crescent Road to Olivewood Court	0	0.00	--	--	--	--	--	0%
Lakeside Drive from Olivewood Court to Westway	7	1.75	7	1	1	6	--	14%
Lakeside Drive / Westway	4	1.00	4	--	--	4	--	0%
Lakeside Drive from Westway to Lakecrest Drive	15	3.75	15	--	11	4	--	27%

Source: City of Greenbelt (2019-November 2023).

^a PD = assumed property damage only; PI = Personal Injury.

^b Ped / Bike = Pedestrian / Bicycle.

^c Percent of vehicle incidents that occurred during the weekday AM (7:00 AM-9:00 AM) and weekday PM (4:00 PM-6:00 PM) commuter peak periods.

Table 3
COLLISION SUMMARY (Continued)

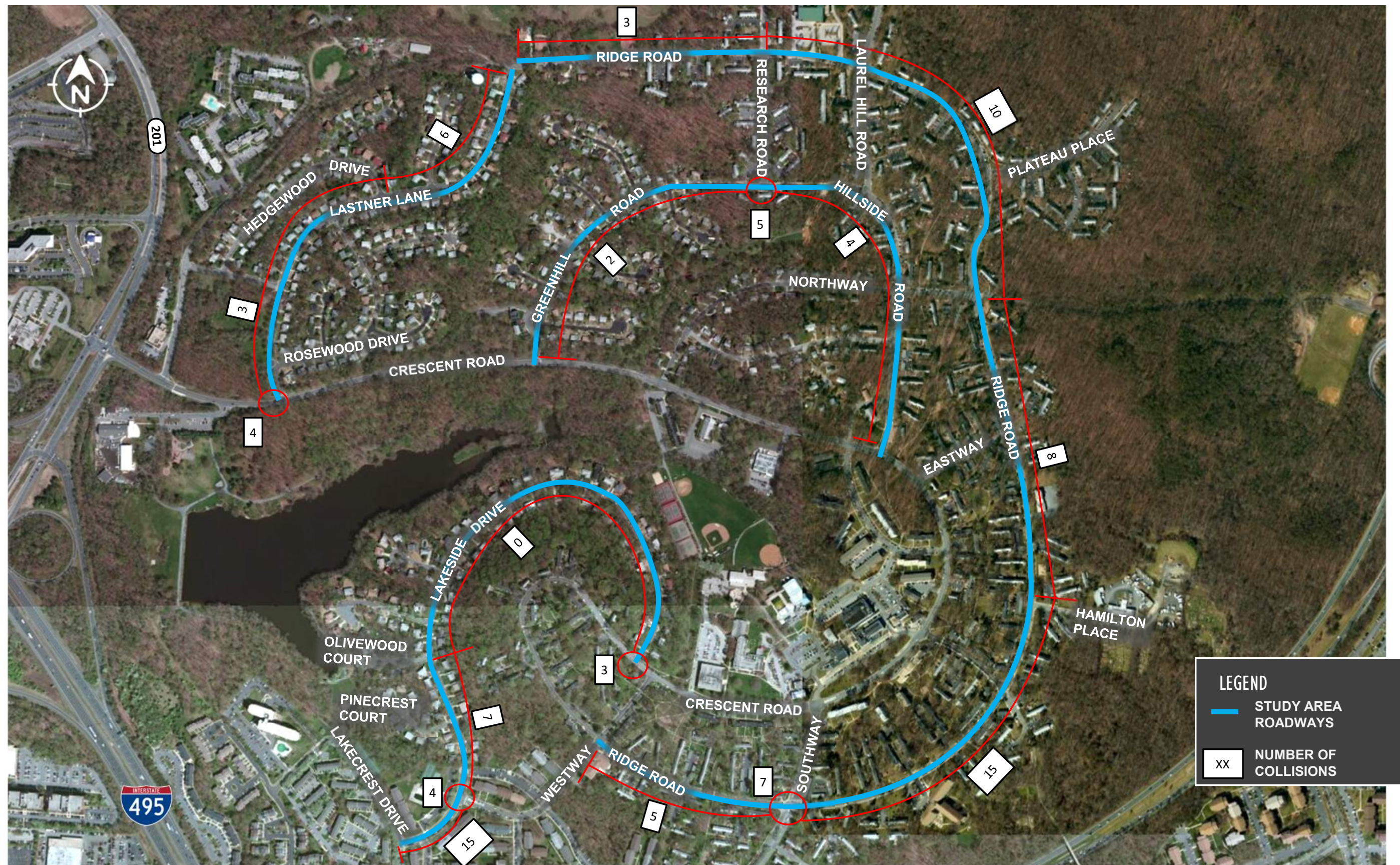
Location	Number of Collisions		Collision Severity ^a		Collision Type ^b			Percent During Commuter Peak ^c
	Total	Average per Year	PD	PI	Hit & Run	Vehicle	Ped / Bike	
Lastner Lane from Ridge Road to Hedgewood Drive	6	1.50	6	--	4	2	--	50%
Lastner Lane from Hedgewood Drive to Crescent Road	3	0.75	3	--	1	2	--	0%
Lastner Lane / Crescent Road	4	1.00	4	--	--	4	--	0%
Greenhill Road from Crescent Road to Research Road	2	0.50	2	--	--	2	--	0%
Greenhill Road / Research Road	5	1.25	4	1	1	3	1	0%
Hillside Road from Research Road to Crescent Road	4	1.00	4	--	--	4	--	25%

Source: City of Greenbelt (2019-November 2023).

^a PD = assumed property damage only; PI = Personal Injury.

^b Ped / Bike = Pedestrian / Bicycle.

^c Percent of vehicle incidents that occurred during the weekday AM (7:00 AM-9:00 AM) and weekday PM (4:00 PM-6:00 PM) commuter peak periods.



STUDIES BY OTHERS

GPI has reviewed previous studies for the study area roadways which were performed on behalf of The City of Greenbelt^{1,2,3,4,5,6}. These studies noted the following themes related to Traffic Calming:

- Multiple requests for speed studies due to complaints from residents about excessive vehicle speeds along study area roadways.
- The City adopted a Complete and Green Streets policy which prioritizes pedestrian and bicycle travel in 2019 and updated in 2022.
- Roadway design needs to address safety for all modes and abilities.
 - Sidewalks, paths, ramps, etc. need to meet Public Rights-of-Way Accessibility Guidelines (PROWAG).
 - Signage and pavement markings need to meet the Maryland Manual for Uniform Traffic Control Devices (MdMUTCD) standards.
- Parking prohibitions to provide adequate sight distances at street intersections and mid-block crossings.
- Improve connections between the interior pathway system and roadways.
- Improve bicycle safety, connectivity, and comfort for both on-road and pathway facilities.
 - Installing share-lane markings (sharrows).

TRAFFIC CALMING

GPI has reviewed the Maryland State Highway Administration (SHA) Context Driven Toolkit⁷, the National Association of City Transportation Officials (NACTO) Urban Street Design Guide⁸, and Global Street Design Guide⁹ for “speed reduction mechanisms” for potential traffic calming countermeasures which could be implemented along the study area roadways.

Design strategies / calming treatments not considered

Barrier Separated Bike Lane and Protected Intersection

These treatments typically include the presence of a vertical curbing element (made of rubber, concrete, flexible posts, etc.) in addition to a painted buffer. Flexible posts or plastic bollards within curbing elements are set to a height less than 3.5 feet high to minimize conflicts with sight lines. While these are applicable in urban environments similar to those in Greenbelt, the existing study area roadway widths do not provide adequate room for bicycle lanes and therefore providing a buffer for this type of bicycle accommodation has not been recommended as part of this study.

In-Lane Floating Bus Stop

In-lane floating bus stop consists of a raised platform that allows buses to pick up passengers without pulling out of traffic lanes. In order to accomplish this without negatively impacting cyclists, bike lanes are diverted behind the bus stop amenities. While this configuration allows transit vehicles to stay in their own lane without crossing the bike paths, there are concerns with current design standards by the disabled community. This treatment may

¹ Speed and Traffic Reports Greenhill Rd; City of Greenbelt; April 2015.

² Approved Pedestrian & Bicycle Master Plan Update; City of Greenbelt; January 2022.

³ Speed and Traffic Reports Ridge Road between Southway and Westway; City of Greenbelt; December 2015.

⁴ Stop Sign Compliance on Lastner Lane; City of Greenbelt; February 2022.

⁵ Ridge Road Speed Concern; City of Greenbelt; March 2022.

⁶ Sight Distance Analysis, 33 Ridge Road; Greenman-Pedersen, Inc.; December 2022.

⁷ Context Driven Toolkit; MD SHA - <https://experience.arcgis.com/experience/769bd85416ff4e46bf3cb78a67ed4640/>

⁸ Urban Street Design Guide; NACTO; <https://nacto.org/publication/urban-street-design-guide/design-controls/design-speed/speed-reduction-mechanisms/>

⁹ Traffic Calming Strategies; Global Street Design Guide; <https://globaldesigningcities.org/publication/global-street-design-guide/designing-streets-people/designing-for-motorists/traffic-calming-strategies/>

not be necessary for bus routes with long headways and low volume of passengers as the disruption of the stops could be minimal. No bus ridership data was collected as part of this study and therefore has not been recommended at this time.

Pedestrian Hybrid Beacon, Leading Pedestrian Intervals, No Turn on Red

Strategies related to traffic signals have not been included in this study as a single traffic signal is provided within the study area. This signal is located east of 22 Court Ridge Road is assumed to be operating two-phases (east-west travel along Ridge Road and a dedicated pedestrian phase) with adequate time to cross the two-lane roadway. Turning movement counts (TMCs) were not performed as part of this study to determine if traffic signal warrants are met and all other intersections are unsignalized.

Lane Width Reduction

Reducing the width of vehicle travel lanes where they are either undefined or painted at offset widths greater than 11-feet can create an environment where drivers feel comfortable traveling at higher speeds than what is posted. SHA recommends that minimum 11-foot lanes be provided on roadways which regularly accommodate truck and bus traffic. However, this treatment is typically used on collector and arterial roadways where roadway shoulders are also provided and has therefore, not been considered as part of this study.

Lane Shift, Chicane and On-Street Parking

Shifting the centerline alignment of a roadway and thus providing horizontal deflection which forces drivers to deviate from a straight-line can help to reduce speed. This treatment is frequently reinforced by placing on-street parking on different sides of the roadway. If the centerline of the roadway is shifted multiple times throughout a roadway segment due to placement of on-street parking or curb bump-outs, then the treatment is considered to be a chicane.

The limits of on-street parking are already established by signage and/or pavement markings on at least one side of the study area roadways. This traffic calming treatment was not considered because it would require more significant corridor-wide modifications increasing impacts and cost.

Posted Speed Limit Reduction

The posted speed limit of 25 MPH has been determined and is enforced by the City of Greenbelt. This speed is generally consistent with local roadways and does not require further reduction. A speed limit reduction for the Greenbelt Elementary School has been established as 15 MPH.

Building Lines and Street Trees

It is not recommended that future homes be constructed closer to the roadway nor the placement of street trees within the sidewalks where it would impact the minimum width requirements. These strategies can help to narrow a driver's field of vision but may affect the character of the neighborhood.

Diverter and One-Way Restriction

Diverter typically include the placement of a barrier which breaks vehicle access of a roadway but maintains permeability for pedestrians and bicyclists. Restricting traffic flow through regulation signage and/or turning barriers can also re-route vehicles. There is no evidence from the ATR data collected that the study area roadways are being utilized as cut-through routes which needs correcting. In addition, it is unclear from the collision data if these treatments would be needed to address a specific pattern of collisions.

Raised Intersection / Speed Table

Raised intersections exist where the approaching roadways are vertically deflected to meet sidewalk level. This strategy is more desirable for urban areas where pedestrian volumes vastly exceed vehicles and are given right-of-way.

There are no “Snow Emergency Route” signs posted along the study area roadways. However, this strategy is less desirable for emergency responders as they will be forced to reduce their speed or risk bottoming out their vehicles. The study area roadways do not provide direct access to a dense commercial area where it would be preferred that pedestrian crossings be prioritized.

Design strategies / calming treatments considered but not utilized

Roundabout, Mini Roundabout, and Traffic Circle

A mini roundabout or traffic circle is defined by the Federal Highway Administration (FHWA) as “a single lane with an inscribed circular diameter between 50 and 90 feet. Its defining feature is traversable central and splitter islands to accommodate large vehicles.” These treatments are typically applied at unsignalized intersections.

Construction of a roundabout would require reconstruction of existing curb lines and evaluation of drainage impacts similar to curb bump-outs which alter intersection radii. FHWA defines a roundabout as featuring “channelized, curved approaches that reduce vehicle speed, entry yield control that gives right-of-way to circulating traffic, and counterclockwise flow around a central island that minimizes conflict points.” The central and splitter islands are not traversable for passenger vehicles and can sometimes utilize semi-mountable curbs to accommodate large vehicles. These designs can require additional right-of-way impacts and require the update of regulatory and warning signage from STOP signed control. It is unclear from the collision data if the design of these intersection treatments would be preferred to address specific collision patterns and therefore have not been included as part of this study. No TMCs were collected as part of this study so the impact to intersection operations is unknown at this time and would need to be confirmed. The following intersections could be evaluated further for these treatments:

- Ridge Road / Northway
- Ridge Road / Gardenway
- Ridge Road / Southway
- Greenhill Road / Orange Court / Greenway Place
- Hillside Road / Northway

Pros:

- Reduces number of collision points within a typical four-way intersection.
- Geometry lends to reduction in collision severity impacts.
- Operates without the need for electricity.
- Improves intersection and stopping sight distances where existing sight lines are limited.

Cons:

- Can require more space than typical STOP controlled intersections.
- Require additional design considerations for cyclists.
- Traffic circles and mini roundabouts can require additional education to inform residents about the functionality of the treatment. Not all motorists intuitively understand who has the right-of-way.

Speed Hump

Speed humps are parabolic vertical traffic calming devices larger than speed bumps which span the roadway width so vehicles are encouraged to pass over with both wheels at the same time. Placement of speed humps needs to be evaluated to make sure they're not spaced too far apart to be effective or too close to intersections. Additional assessment is required to evaluate drainage areas and confirm that flow is not interrupted.

Pros:

- Design and construction materials vary depending on the roadway needs and speed reduction desired.
- Design has proved to successfully reduce vehicle speeds for low volume, low speed roadways.
- Vehicles approaching at higher speeds experience an uncomfortable jarring.

Cons:

- Less desirable for emergency responders as they will be forced to reduce their speed or risk bottoming out their vehicles.
- Placement in areas with a high density of driveways can be difficult.

Speed Cushion

Speed cushions are a variation of speed humps or speed tables that include wheel cutouts to allow large vehicles to pass unaffected, while reducing passenger car speeds by extending enough to affect the wheel in one direction. Placement of speed cushions needs to be evaluated to make sure they're not spaced too far apart to be effective or too close to intersections.

Pros:

- Design and construction materials vary depending on the roadway needs and speed reduction desired.
- More desirable for emergency responders and buses as the wheelbases of their vehicles are wider than passenger vehicles and therefore can pass over without the need to reduce their speed. It is recommended that approval from emergency response officials be obtained prior to installation.

Cons:

- Cannot be combined with mid-block crosswalks.
- Placement in areas with a high density of driveways can be difficult.
- Sufficient visibility and lighting are recommended to function safely.

Rectangular Rapid Flashing Beacon (RRFB)

RRFBs consist of two, rectangular- shaped yellow indications, each with a light-emitting diode (LED)-array-based light source¹⁰. The LED array flashes with an alternating high frequency when activated by a pedestrian push button to attract driver's attention of a pedestrian's presence.

Pros:

- Reduce pedestrian crashes.
- Flashers activate only when button is depressed so message is likely to be more effective than LED lights which flash continuously.

Cons:

- More expensive than regular signage.
- Requires energy source (i.e., solar powered or hard-wired).

Design strategies / calming treatments considered**Continental Crosswalk**

Continental crosswalks, also known as Longitudinal Bar crosswalks, are a type of crosswalk design with high visibility to drivers due to their thick striping which is applied parallel to approaching vehicles. This style of marking is consistent with the MdMUTCD and is recommended for all crosswalks at intersecting roadways but is not required for private driveways.

Pros:

- Increased visibility.

¹⁰ Rectangular Rapid Flashing Beacons (RRFB); U.S. Department of Transportation Federal Highway Administration; Office Of Safety; https://highways.dot.gov/sites/fhwa.dot.gov/files/RRFB_508_0.pdf

- Low-cost strategy which is generally easy to maintain.
- Material application can vary.

Cons:

- Additional maintenance may be required depending on material applied.

Green Pavement for Bike Lanes

Application of green pavement markings placed along a bicycle lane can help improve driver awareness of a conflicting bicycle facility. Additional benefits of this treatment include increased yielding compliance from drivers and discourages illegal stopping in bike lanes. Green-colored pavement has Interim Approval (IA-14) through Federal Highway Administration (FHWA) for use pending revision to the Manual on Uniform Traffic Control Devices (MUTCD) conditions. SHA recommends that green pavement “can be considered at intersections, particularly through wide or complex intersection where the bike path may be unclear, and conflicts with medium or high permissive turning volumes.”

Pros:

- Increased visibility of cyclists and potential conflicts.
- Improved yielding behavior by drivers to cyclists.
- Low-cost strategy which is generally easy to maintain.

Cons:

- Additional maintenance may be required depending on material applied.

Corner Radii and Curb Extensions

Corner radii reductions and curb extensions (also referred to as bump-outs) visually and physically narrow the roadway. The reduction of a corner radius can have a significant impact to the turning speed of vehicles and can create a more compact intersection.

Pros:

- Reduced corner radii can force vehicles to reduce speed in order to execute a turning movement safely.
- More compact intersections can improve sight lines for vehicles and pedestrians by placing crosswalks and STOP lines closer to the center of the intersection.
- More compact intersections reduce crossing distance for pedestrians.
- Can provide opportunities for pavement removal. It is recommended that the sections of pavement removal, not part of proposed sidewalks, be replaced with turfgrass to decrease stormwater impacts.
- Semi-mountable curbing and pavement options are possible for reducing the turning speeds of passenger vehicles while remaining accessible for vehicles with larger turning radii such as busses or emergency vehicles.
- Increases available space for street furniture, benches, plantings, and street trees.

Cons:

- Reconstruction of curb may require additional consideration for drainage and stormwater management depending on the grade of the roadway.
- Reduction of curb radii can limit access to larger vehicles such emergency responders or busses.

Departure-side Bus Stops

Placement of bus stops on the departure side of intersections is not generally considered to be a traffic calming strategy; however, there are noted safety benefits compared to stops located on the arrival side of an intersection.

Pros:

- Buses clear the intersection to allow passengers to board or alight without holding up traffic behind them.
- The intersection crosswalk is not obstructed by a stopped bus for vehicles traveling in the same direction which may otherwise block a pedestrian seeking to cross the roadway.
- Discourages passengers from crossing the street in-front of the bus.

Cons:

- Trailing vehicles may enter an unsignalized intersection behind a bus and block other movements.

Midblock Crosswalk

This treatment allows pedestrians to cross a roadway at non-intersection locations. It is recommended that midblock crossings be provided along with pedestrian warning signage in advance and at the crossing location.

Pros:

- Where possible, a median can be provided to allow pedestrians the ability to cross one direction of travel at a time and reduce crossing distance.
- Dedicated crossing location where drivers can better anticipate that a pedestrian will cross.

Cons:

- Placement can be limited by a variety of factors including driveway density, sight lines, and traffic speed.
- Crossing location can require additional measures for signage and pavement markings to reinforce compliance.

Hardened Centerline and Median

The practice of hardening centerlines can be accomplished by the creation of a physical barrier between two opposing flows of traffic in addition to pavement striping and is similar to barrier separated bike lanes. This can also be accomplished more permanently by constructing a median (typically includes some combination of asphalt/concrete, loam/seed, and vertical curbing).

Pros:

- Reduces the speed of turning vehicles as they're forced to navigate around an obstruction.
- Reduction of head-on, angled, and pedestrian collisions.
- Potential to provide pedestrian refuge allowing for crossing one direction of travel at a time.
- Helps reduce travel lane widths, which in turn, reduces vehicle speeds.
- Mountable/sloped treatment allows larger vehicles to complete turning maneuvers successfully.

Cons:

- Centerline hardening treatments cannot be used in lieu of required KEEP RIGHT (R4-7 or R4-7(1)) and OBJECT MARKER (OM1-3) signs where median noses are present.
- Medians may require additional consideration for drainage and stormwater management depending on the location of the median and the grade of the roadway.
- Does not improve sight line visibility of pedestrians looking to enter the roadway from the sidewalk.
- May require high visibility paint or additional delineators to alert approaching motorists.

Pinchpoint / Choker

Curb extensions applied at midblock locations where both roadway edges are narrowed as mirrored opposites.

Pros:

- Focuses the driver's field of vision.
- Facilitates mid-block crossings and improves pedestrian visibility.
- Formalizes limits of on-street parking.

Cons:

- Reconstruction of curb may require additional consideration for drainage and stormwater management depending on the grade of the roadway.

Raised Crosswalk

Raised crosswalks are similar to speed humps design with the exception that the vertical deflection levels off and provides a flat surface for crosswalk¹¹. Further investigation into pedestrian crossing volumes could be explored in future studies to determine if increased safety precautions at heavily utilized crossings are needed based on usage and collision history.

Pros:

- Design varies depending on the roadway needs and speed reduction desired.
- May be combined with mid-block crosswalks.

Cons:

- This strategy is less desirable for emergency responders as they will similarly be forced to reduce their speed or risk bottoming out their vehicles.
- Placement in areas with a high density of driveways can be difficult.

CONCEPTUAL COST ESTIMATES

The recommended improvements are anticipated to be implemented by the City of Greenbelt's Public Works Department. In order to provide an estimate cost of implementation and materials, GPI utilized the Maryland SHA Price Index – January 2024¹². The list is not fully inclusive of drainage structures, erosion and sediment controls, mobilization, impacts to utilities etc. The quantities of all materials were based on measurements taken from Google Earth and have not been confirmed with to-scale measurements. The cost to implement these improvements will fluctuate based on the City's procurement process, availability of materials, and current unit costs. The itemized conceptual cost estimate details are provided in Appendix D.

CONCEPTUAL IMPROVEMENTS

This section provides context of the multiple traffic calming design strategies and treatments at key locations. The study area roadway segments have been assigned a priority ranking based on the available data to better guide the City on which locations should be addressed first. A summary of locations for traffic calming improvements to be considered by the City of Greenbelt are summarized in Figure 3. The locations are focused on intersections and roadway segments where the needs for traffic calming were rated medium to high. The detailed ranking criteria are provided in Appendix E.

The recommended improvements for the study area roadways are intended to accomplish the overall goal of improving safety by addressing the concern of vehicle travel speed. Unless otherwise noted, all recommended improvements are made within the City of Greenbelt's right-of-way. These recommendations are made as concepts and do not account for impacts to utilities.

Similar to previous studies prepared by others, GPI recommends that a combination of traffic calming measures be implemented on the study area roadways. These improvements will have the intentional effect of reducing vehicle speeds along the study area roadways when implemented together while helping promote alternative modes of travel within Historic Greenbelt. A typical corridor design was not feasible due to the densely spaced intersections of side-street and driveways are densely spaced (approximately 12 to 25 intersections per mile), changes to limits of on-street parking, and presence of sidewalk. All recommended sidewalk and ramp improvements are intended to be constructed in a manner consistent with standards set by the Americans with Disabilities Act (ADA).

¹¹ Raised Crosswalk; U.S. Department of Transportation Federal Highway Administration; https://safety.fhwa.dot.gov/ped_bike/step/docs/techSheet_RaisedCW2018.pdf

¹² Price Index January 2024; Maryland Department of Transportation State Highway Administration; https://roads.maryland.gov/ohd2/MDSHA_Pirce%20Index_Jan2024.pdf

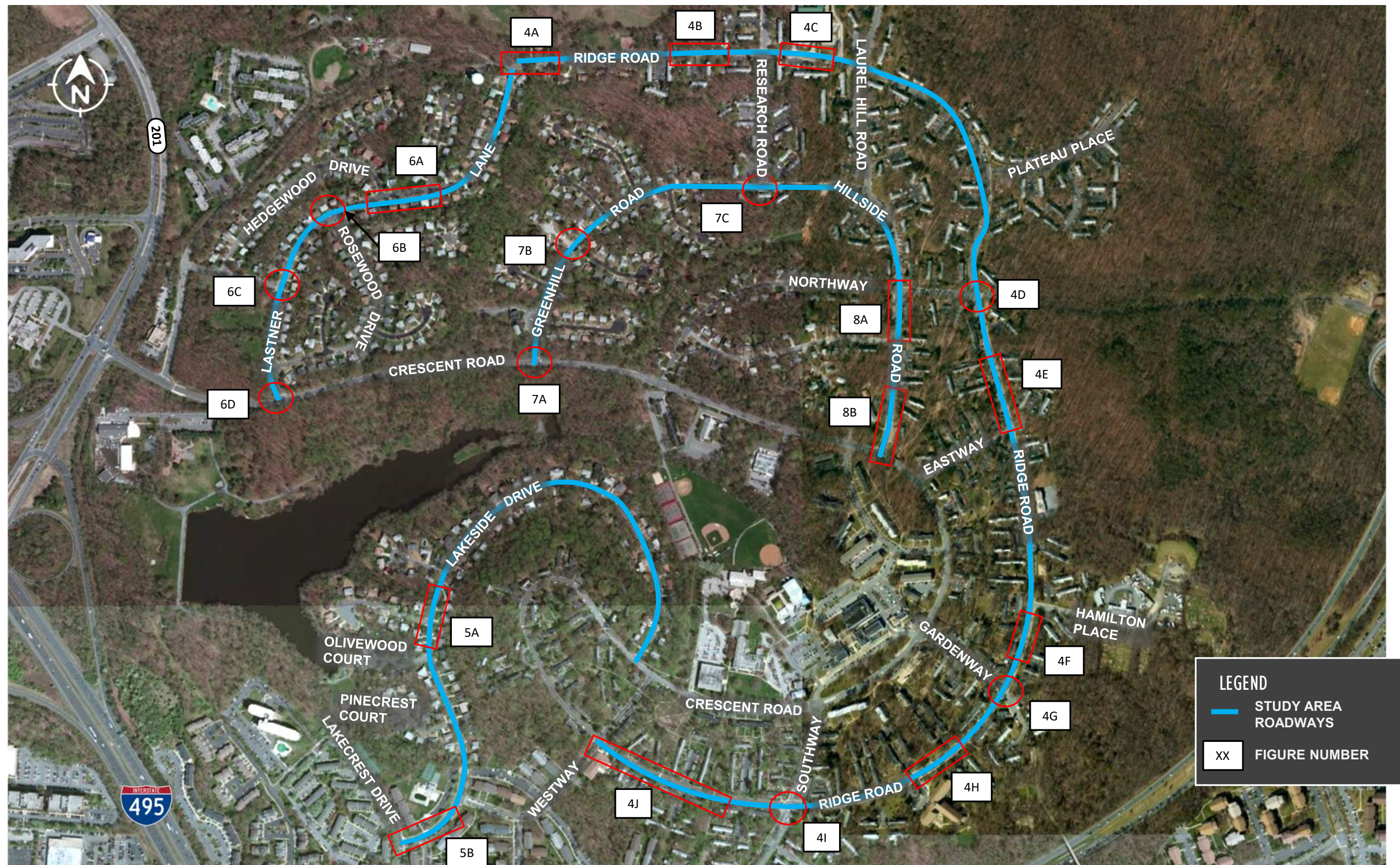


FIGURE 3
OVERALL CONCEPTUAL IMPROVEMENT MAP

Ridge Road / Lastner Lane – Priority Medium

The recommended long-term improvements are illustrated in Figure 4A.

Short-term: Estimated cost = \$17,240.

- Install temporary curb with flex posts to create a pinchpoint at the existing mid-block crossing.
- Install temporary curb with flex posts extending west from the Ridge Road mid-block crossing to narrow the westbound roadway width to 11-feet wide.
- Restripe the STOP lines on the Lastner Lane northbound and Ridge Road westbound approaches closer to the intersection.
- Stripe the double yellow centerlines on the Lastner Lane northbound and Ridge Road westbound approaches extending to the relocated STOP lines.
- Stripe share the road “sharrow” pavement markings in both directions along Ridge Road.

Long-Term: Estimated cost = \$47,400 not including costs for drainage improvements.

- Construct approximately 40 feet of sidewalk along the northerly side of Ridge Road to realign the Ridge Road mid-block crossing perpendicular. This crossing is currently oriented at an angle, and it is recommended that this be realigned to a perpendicular crossing to further reduce crossing distance and improve pedestrian visibility.
- Reconstruct access ramps at the Ridge Road mid-block crossing to meet ADA standards. The existing northerly ramp partially exists within a residential driveway, is obstructed by a utility pole, and does not meet ADA standards.
- Remove sections of Ridge Road to construct a pinchpoint at the Ridge Road mid-block crossing and reduce the Ridge Road westbound approach to Lastner Lane to 11-feet wide.
 - The recommended roadway width reduction will require the reconstruction of one driveway apron but is not anticipated to affect any existing drainage structures.
- Apply short-term striping recommendations.

GPI recommends the following be performed at the intersection of Ridge Road / Lastner Lane and the existing mid-block crossing located approximately 230 feet to the east. Traffic calming improvements are recommended in this location based on the 85th percentile speed of 31 MPH recorded. No reduction of marked on-street parking spaces is anticipated as a result of these improvements.



FIGURE 4A
RIDGE ROAD / LASTNER LANE IMPROVEMENTS

Ridge Road at 7 Court Research Road – Priority Medium

The recommended long-term improvements are illustrated in Figure 4B.

Short-term: Estimated cost = \$15,780.

- Install temporary curb to supplement existing with flex posts to increase the separation of walkway and roadway.
- Perform vegetation clearing and necessary adjustments of flex posts to provide a minimum 5-foot wide walkway.
- Stripe share the road “sharrow” pavement markings in both directions along Ridge Road.

Long-Term: Estimated cost = \$34,350 not including costs for drainage improvements.

- Construct approximately 135 feet of 5-foot wide sidewalk along the northerly side of Ridge Road to connect existing sidewalk east of 7 Court Research Road to existing sidewalk west of the 92 Ridge Road driveway.
- Remove sections of Ridge Road to provide grass buffer for sidewalk and reduce the Ridge Road westbound approach to Lastner Lane to 11-feet wide.
 - Adjustment of existing curb will reinforce parking restriction between 92 Ridge Road and 7 Court Research Road and better define limits of permitted on-street parking.
 - The recommended roadway width reduction will require the reconstruction of two driveway aprons but is not anticipated to affect any existing drainage structures.

GPI recommends the following be performed between the intersection of Ridge Road / 7 Court Research Road and approximately 135 feet to the west at 92 Ridge Road. Traffic calming improvements are recommended in this location based on the 85th percentile speed of 31 MPH recorded. No reduction of on-street parking spaces is anticipated as a result of these improvements.



FIGURE 4B
 RIDGE ROAD AT 7 COURT RESEARCH ROAD IMPROVEMENTS

Ridge Road at Greenbelt Elementary School / 65 Ridge Road – Priority High

The recommended long-term improvements are illustrated in Figure 4C.

Short-term: Estimated cost = \$9,100.

- Install temporary curb with flex posts to create a pinchpoint at the existing mid-block crossing.
- Install temporary curb with flex posts on either side of the 65 Ridge Road driveways to re-enforce the limits of on-street parking and narrow the appearance of the roadway.
- Stripe share the road “sharrow” pavement markings in both directions along Ridge Road.

Long-Term: Estimated cost = \$19,200 not including costs for drainage improvements.

- Construct curb bump-outs to create a pinchpoint at the existing mid-block crossing. Construct curb bump-outs on either side of the 65 Ridge Road driveways to reinforce the limits of on-street parking and narrow the appearance of the roadway.
- Reconstruct the existing speed hump to create a formal raised crosswalk which will allow pedestrians to cross the roadway at sidewalk elevation.
 - Reconstruction will require the reconstruction of ramps on either side of the crossing and drainage channels.

Traffic calming improvements are recommended in this location based on the 85th percentile speed of 33 MPH and high volume of collisions along this segment of roadway recorded. No reduction of on-street parking spaces is anticipated as a result of these improvements.



FIGURE 4C
RIDGE ROAD AT GREENBELT ELEMENTARY SCHOOL / 65 RIDGE ROAD IMPROVEMENTS

Ridge Road / Plateau Place - Priority High

The recommended long-term improvements are illustrated in Figure 4D.

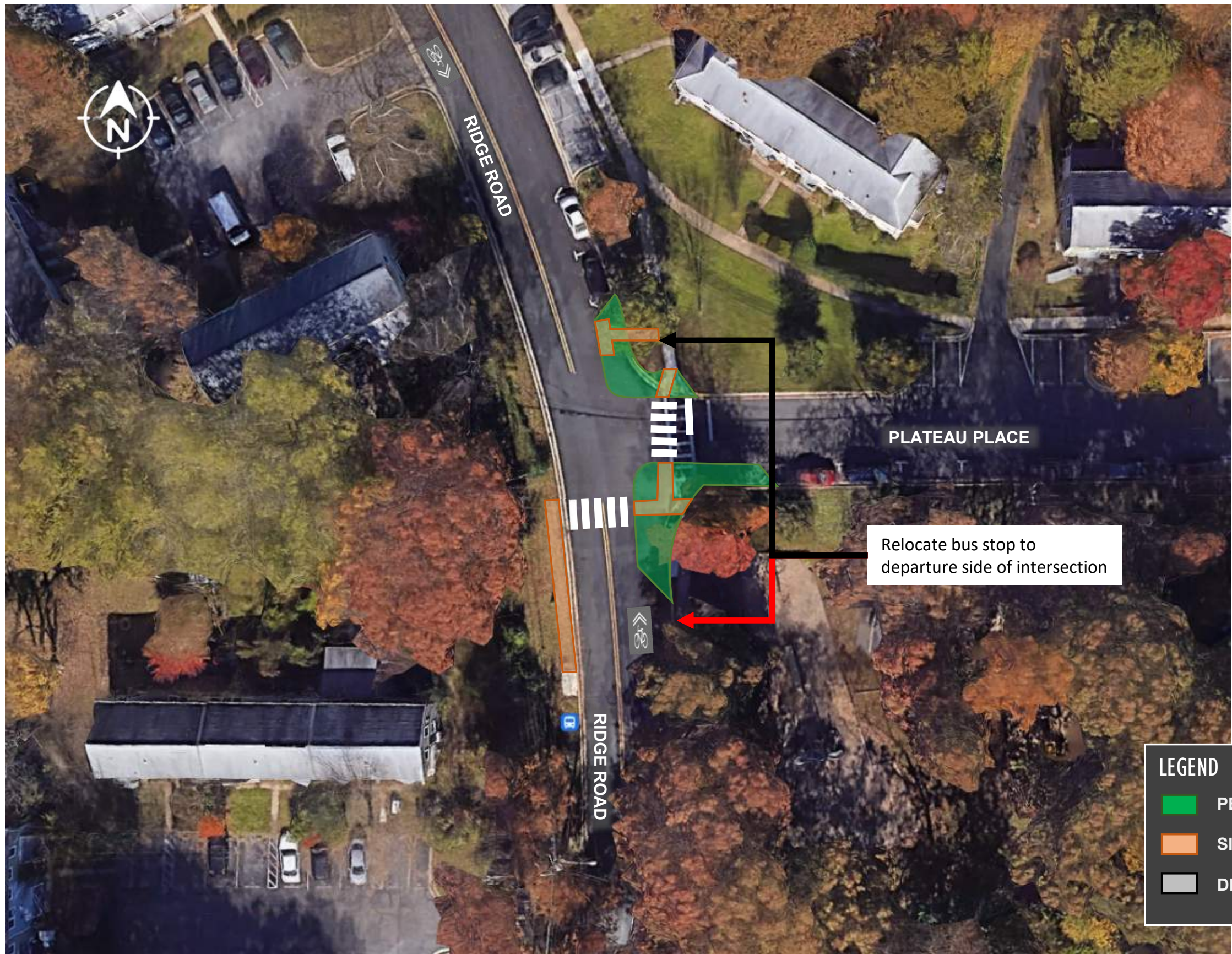
Short-term: Estimated cost = \$12,850.

- Install temporary curb with flex posts to reduce corner radii at the intersection.
- Install temporary curb with flex posts along entrance of Plateau Place to re-enforce the limits of on-street parking and narrow the appearance of the roadway.
- Stripe share the road “sharrow” pavement markings in both directions along Ridge Road.
- Stripe continental crosswalks at ramp crossings.

Long-Term: Estimated cost = \$50,520 not including costs for drainage improvements.

- Construct curb bump-outs to reduce corner radii at the intersection.
- Extend existing sidewalk to the new curb locations.
- Construct new ramps crossing at Ridge Road towards the existing bus stop and new sidewalk.
- Coordinate with WMATA to relocate the bus stop located on the southwest corner to the northwest corner and construct a new bus pad.
- Apply short-term striping recommendations.

Traffic calming improvements are recommended in this location based on the 85th percentile speed of 33 MPH and high volume of collisions along this segment of roadway recorded. No reduction of on-street parking spaces is anticipated as a result of these improvements.



LEGEND

- PERVIOUS AREA
- SIDEWALK / RAMP
- DRIVEWAY RECONSTRUCTION

FIGURE 4D
RIDGE ROAD / PLATEAU PLACE IMPROVEMENTS

Ridge Road / Northway – Priority High

The recommended long-term improvements are illustrated in Figure 4E.

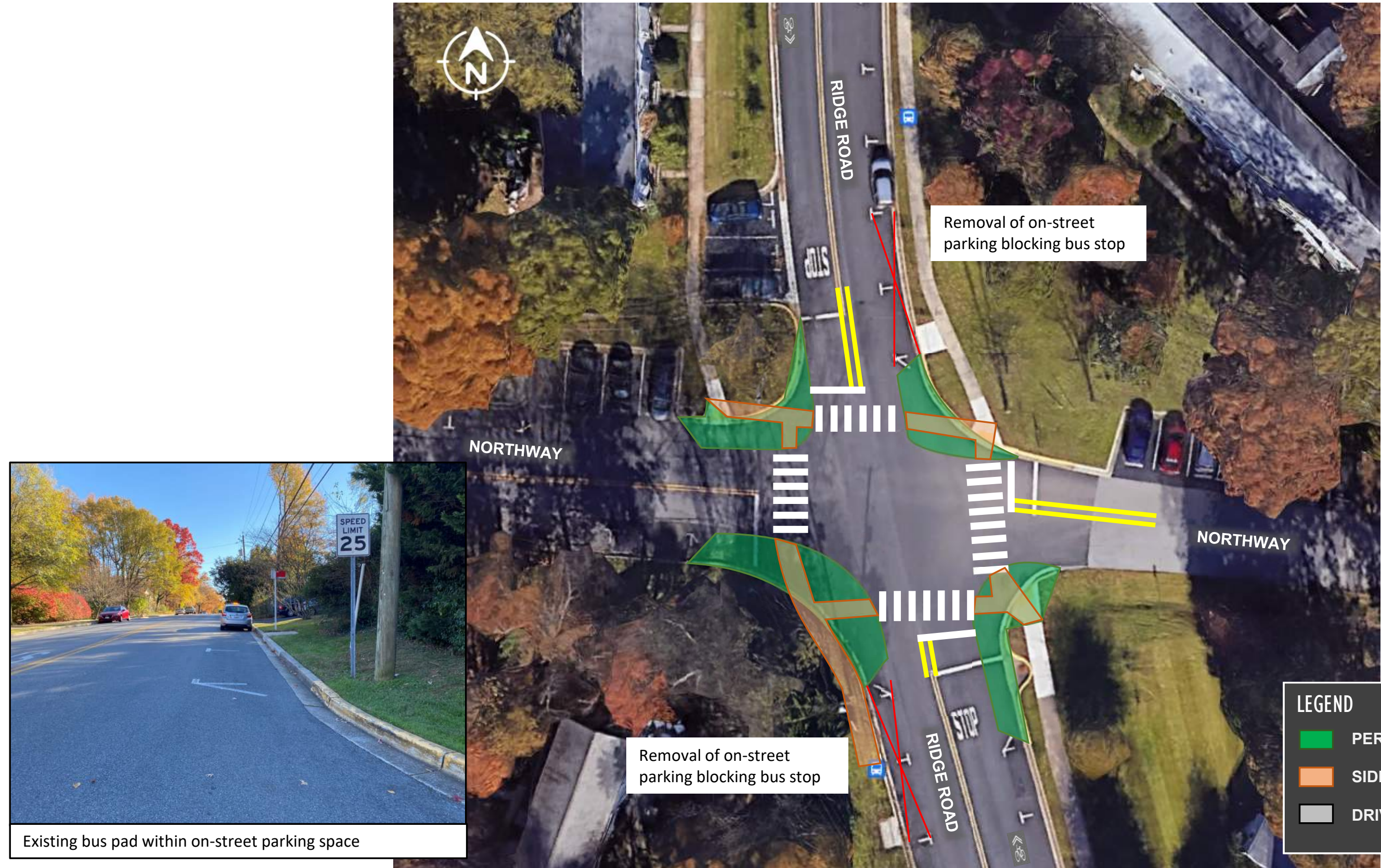
Short-term: Estimated cost = \$23,160.

- Install temporary curb with flex posts to reduce corner radii on all four corners of the intersection.
- Stripe a continental crosswalk across the Northway westbound approach where access ramps are currently provided.
- Restripe the STOP lines on the Ridge Road northbound, Ridge Road southbound, and Northway westbound approaches closer to the intersection.
- Stripe the double yellow centerlines on the Ridge Road northbound, Ridge Road southbound, and Northway westbound approaches extending to the relocated STOP lines.
- Remove two parking spaces on the southwest corner and two parking spaces on the northeast corner of the intersection which obstruct the WMATA bus stop.
- Stripe share the road “sharrow” pavement markings in both directions along Ridge Road.

Long-Term: Estimated cost = \$54,330 not including costs for drainage improvements.

- Construct curb bump-outs to reduce corner radii on all four corners of the intersection.
 - Adjustment of curb lines will require updates to drainage inlets on the northwest, southwest, and southeast corners.
- Construct sidewalk connections on all four corners of the intersection to create crossings for the Northway eastbound and Ridge Road southbound approaches.
 - Sidewalk construction on the southwest corner should extend from the intersection to the existing bus pad.
- Apply short-term striping recommendations.
- Stripe continental crosswalks across all four approaches.

Traffic calming improvements are recommended in this location based on the 85th percentile speed of 33 MPH recorded. The reduction of two on-street parking spaces is anticipated as a result of these improvements to provide a dedicated space for WMATA buses.



LEGEND

- PERVIOUS AREA
- SIDEWALK / RAMP
- DRIVEWAY RECONSTRUCTION

FIGURE 4E
RIDGE ROAD / NORTHWAY IMPROVEMENTS

Ridge Road from 46 Court Ridge Road to Eastway / 44 Court Ridge Road – Priority High

The recommended long-term improvements are illustrated in Figure 4F.

Short-term: Estimated cost = \$19,740.

- Install temporary curb with flex posts to create a pinchpoint for a mid-block crosswalk which would connect the easterly sidewalk with the internal path network.
- Install temporary curb with flex posts to reduce corner radii on all four corners of the Eastway / 44 Court Ridge Road intersection.
- Stripe a continental crosswalk across Ridge Road at the proposed mid-block crossing.
- Install advanced warning and pedestrian warning signage at new crossing.
- Restripe the STOP line on Ridge Road northbound, Ridge Road southbound, Eastway eastbound approaches closer to the intersection.
- Stripe the double yellow centerline on the Ridge Road northbound, Ridge Road southbound, Eastway eastbound approaches extending to the relocated STOP lines.
- Stripe share the road "sharrow" pavement markings in both directions along Ridge Road.

Long-Term: Estimated cost = \$55,220 not including costs for drainage improvements.

- Construct curb bump-out to create a pinchpoint for a raised, mid-block crosswalk which would connect the easterly sidewalk with the internal path network.
 - The recommendation for a raised crosswalk at this mid-block crossing is based on the overall straight alignment of Ridge Road which is more comfortable for drivers to travel at higher speeds and is a more appropriate speed control measure than STOP sign control.
- Construct curb bump-outs to reduce corner radii on all four corners of the Eastway / 44 Court Ridge Road intersection.
- Construct sidewalk connections on the southeast and southwest corners of the intersection and ADA-compliant ramps.
- Coordinate with WMATA to relocate the bus stop located on the northwest corner to the southwest corner and construct a new bus pad.
- Apply short-term striping recommendations excluding Ridge Road STOP lines.
- Stripe a continental crosswalk across Ridge Road northbound and southbound approaches to Eastway and across Eastway approach to improve access to relocated bus stops.

Traffic calming improvements are recommended in this location based on the 85th percentile speed of 33 MPH and high volume of collisions along this segment of roadway recorded. The reduction of three on-street parking spaces is anticipated as a result of these improvements.



FIGURE 4F
RIDGE ROAD FROM 46 COURT RIDGE ROAD TO EASTWAY / 44 COURT RIDGE ROAD IMPROVEMENTS

33 Ridge Road – Priority High

A sight distance analysis study was performed by GPI December 2022 which confirmed the limited sight distances at the driveways at 33 Ridge Road¹³. The recommended long-term improvements are illustrated on the following page. The recommended long-term improvements are illustrated in Figure 4G.

Short-term: Estimated cost = \$143.

- Remove four on-street parking spaces north of the southerly driveway opposite Hamilton Place.
- Remove three on-street parking spaces south of the southerly driveway.
- Install flex posts to create to shadow out the 33 Ridge Road driveway opening further from the edge of curb.

¹³ Sight Distance Analysis, 33 Ridge Road; Greenman-Pedersen, Inc.; December 9, 2022.



Ridge Road / Gardenway – Priority High

The recommended long-term improvements are illustrated in Figure 4H.

Short-term: Estimated cost = \$21,470.

- Install temporary curb with flex posts to reduce corner radii on the southeast and southwest corners of the intersection.
- Restripe a continental crosswalk across the Ridge Road approach.
- Restripe the STOP line on the Ridge Road northbound and Gardenway eastbound approaches closer to the intersection.
- Stripe the double yellow centerline on the Ridge Road northbound and Gardenway eastbound approaches extending to the relocated STOP lines.
- Stripe share the road “sharrow” pavement markings in both directions along Ridge Road.

Long-Term: Estimated cost = \$28,440 not including costs for drainage improvements.

- Construct semi-mountable curb bump-outs to reduce corner radii on the southeast and southwest corners of the intersection. Lack of crosswalk across Gardenway eastbound approach allows for use of semi-mountable treatment without affecting location of pedestrian ramps.
 - Adjustment of curb lines will require updates to the drainage inlet on the southeast corner.
 - Adjustment to curb radii will need to be evaluated to WMATA bus turning paths to ensure that all turning movements can be executed.
- Construct sidewalk connections on the southeast and southwest corners of the intersection and ADA-compliant ramps.
- Apply short-term striping recommendations.

Traffic calming improvements are recommended in this location based on the 85th percentile speed of 31 MPH recorded.

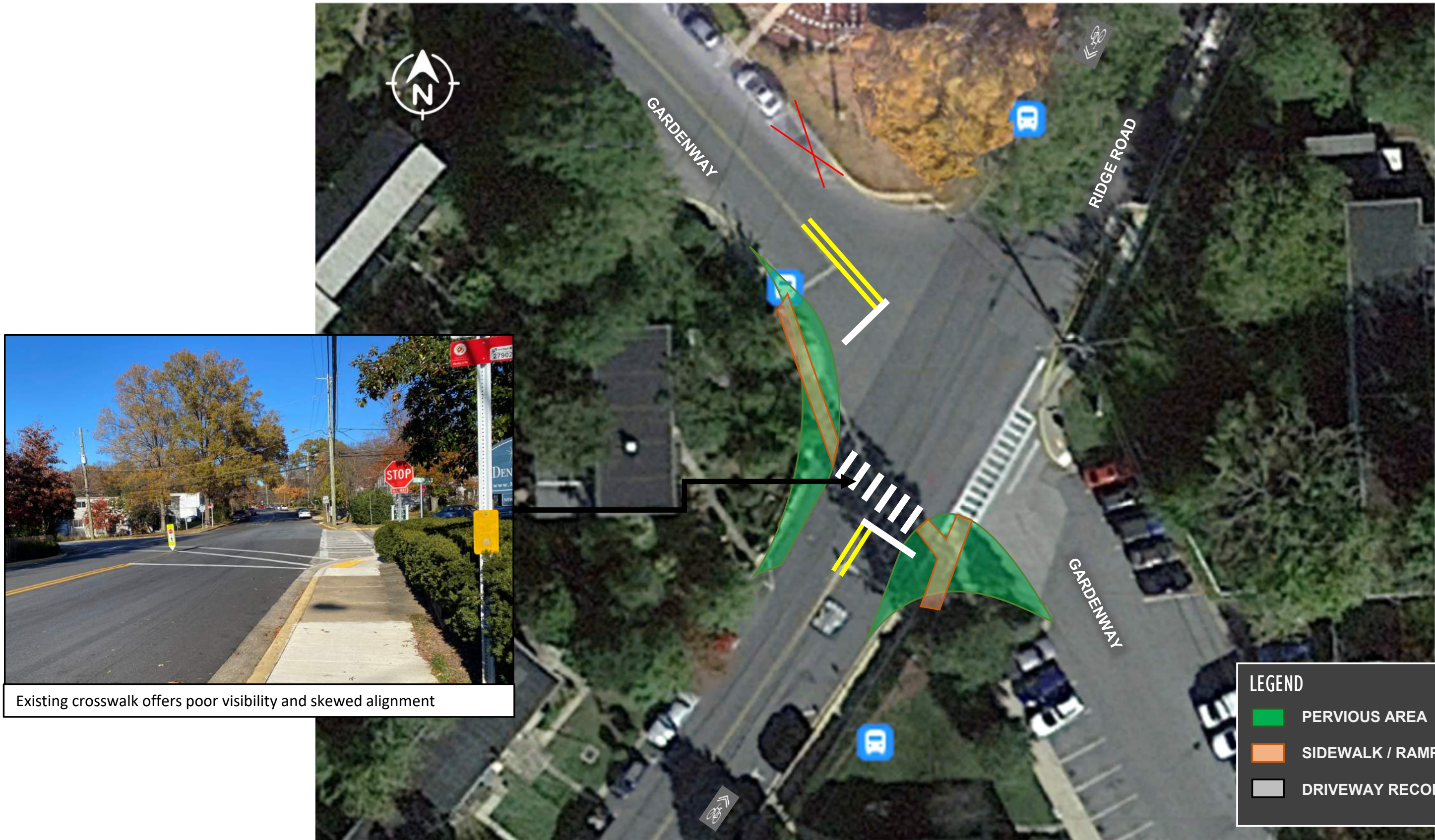


FIGURE 4H
RIDGE ROAD / GARDENWAY IMPROVEMENTS

21 – 24 Court Ridge Road – Priority High

The recommended long-term improvements are illustrated in Figure 4I.

Short-term: Estimated cost = \$11,050.

- Install temporary curb with flex posts to create a pinchpoint at the Ridge Road northbound and southbound approach to the 21 Court Ridge Road / 22 Court Ridge Road driveway entrances.
- Install temporary curb with flex posts to create a pinchpoint at the Ridge Road northbound and southbound approaches to the mid-block crosswalk north of the 23 Court Ridge Road / 24 Court Ridge Road driveway entrances.
- Stripe share the road “sharrow” pavement markings in both directions along Ridge Road.

Long-Term: Estimated cost = \$44,480 not including costs for drainage improvements.

- Construct curb bump-outs to create a pinchpoint at the Ridge Road northbound and southbound approach to the 21 Court Ridge Road / 22 Court Ridge Road driveway entrances.
- Construct curb bump-outs to create a pinchpoint at the Ridge Road northbound and southbound approaches to the mid-block crosswalk north of the 23 Court Ridge Road / 24 Court Ridge Road driveway entrances.
- Remove existing traffic signal at the Ridge Road southbound approach to the 21 Court Ridge Road / 22 Court Ridge Road driveway entrances and replace with MdMUTCD-compliant rectangular rapid flashing beacons (RRFBs).
 - Existing equipment does not meet current MdMUTCD or ADA standards.
 - Additional analysis would need to be performed to confirm warranting conditions for a traffic signal to remain and be reconstructed.

Traffic calming improvements are recommended in this location based on the 85th percentile speed of 31 MPH and high volume of collisions along this segment of roadway recorded. No reduction of on-street parking spaces is anticipated as a result of these improvements.



FIGURE 41
21 – 24 COURT RIDGE ROAD IMPROVEMENTS

Ridge Road / Southway – Priority High

The recommended long-term improvements are illustrated in Figure 4J.

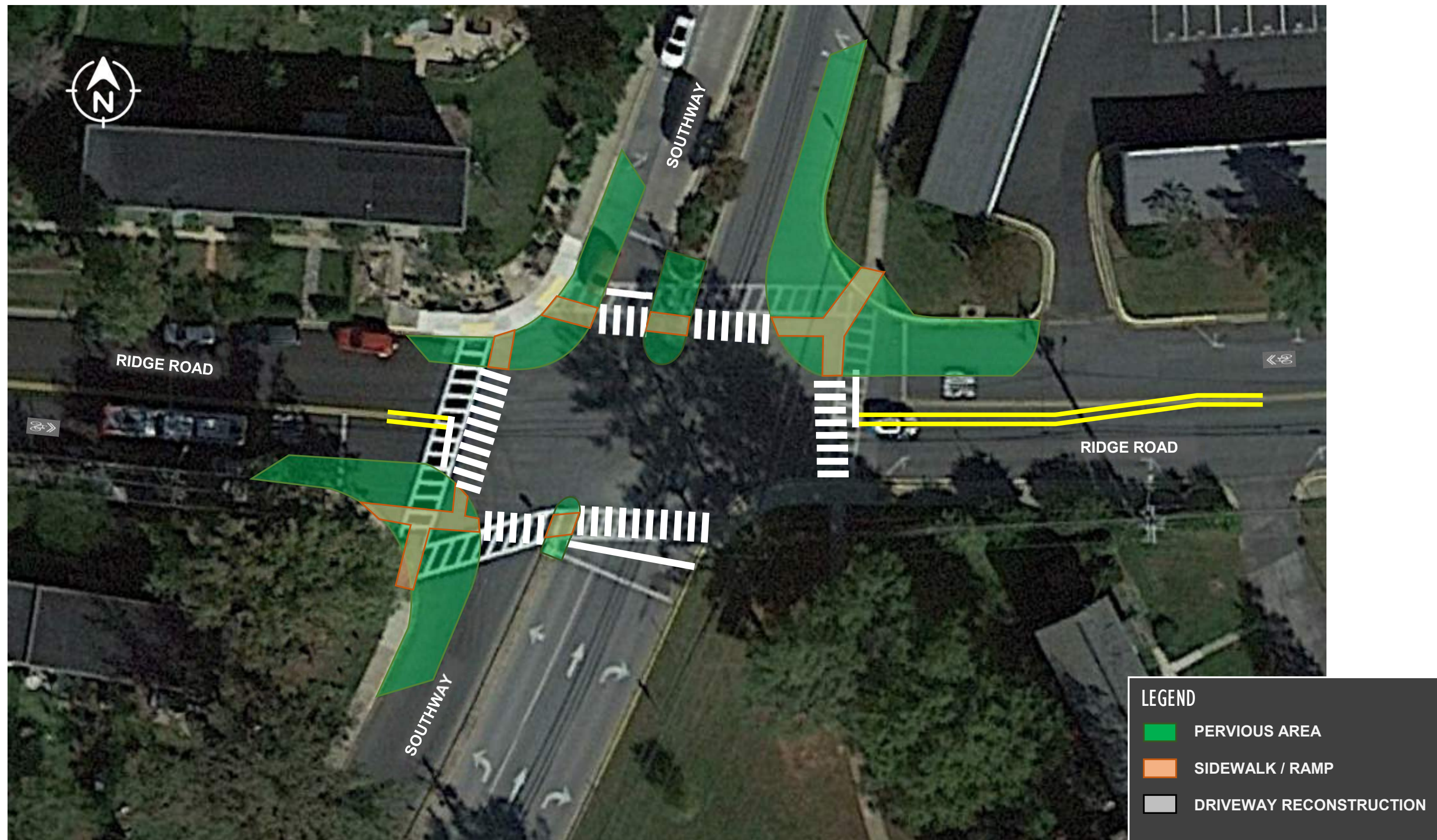
Short-term: Estimated cost = \$32,180.

- Install temporary curb with flex posts to reduce corner radii on all four corners of the intersection and provide 11-foot wide lanes approaching and departing.
- Stripe share the road “sharrow” pavement markings in both directions along Ridge Road.

Long-Term: Estimated cost = \$91,660 not including costs for drainage improvements.

- Construct curb bump-outs to reduce corner radii on all four corners of the intersection and provide 11-foot wide lanes approaching and departing.
 - Adjustment of curb lines will require updates to the drainage inlet on the northeast corner.
- Reconstruct sidewalk connections at the intersection and ADA-compliant ramps except for the southeast corner.
- Reconstruct Southway northbound and southbound medians to provide pedestrian refuge areas.
- Restripe continental crosswalks on all four approaches.
- Restripe the STOP line on all four approaches closer to the intersection.
- Stripe the double yellow centerline on the Ridge Road eastbound and westbound approaches extending to the relocated STOP lines.
- Restripe the double yellow centerline on the Ridge Road westbound approach to accommodate proposed bump-outs and provide 11-foot wide travel lanes east of the intersection.

Traffic calming improvements are recommended in this location based on the 85th percentile speed of 30-31 MPH recorded and the concentration of intersection collisions. No reduction of on-street parking spaces is anticipated as a result of these improvements.



Ridge Road between Southway and Westway – Priority Medium

The recommended long-term improvements are illustrated in Figure 4K.

Short-term: Estimated cost = \$16,480.

- Install temporary curb with flex posts to create pinchpoints at three pathway entrances.
- Install temporary curb with flex posts to reduce radii at the southwest and southeast corners of the Ridge Road / Westway intersection.
- Restripe continental crosswalks for the three mid-block crosswalks.
- Stripe share the road “sharrow” pavement markings in both directions along Ridge Road.

Long-Term: Estimated cost = \$58,860 not including costs for drainage improvements.

- Construct curb bump-outs to create pinchpoints at three pathway entrances.
- Construct curb bump-outs to reduce radii at the southwest and southeast corners of the Ridge Road / Westway intersection.
- Construct a raised, mid-block crosswalk at the existing crossing west of 11 Court Ridge Road and at the mid-block crosswalk between 14 Court Ridge Road and Southway.
- Install advanced warning and pedestrian warning signage at new crossing.
- Apply short-term striping recommendations.
- Stripe continental crosswalks for Westway northbound and Ridge Road westbound approaches.
- Restripe STOP line for Ridge Road westbound approach behind proposed crosswalk.

Traffic calming improvements are recommended in this location based on the 85th percentile speed of 30 MPH recorded and connections to the internal path network. Previous studies noted that there is overall speed compliance in this area; however, more recent data suggests that additional steps may be required for compliance with the posted speed limit. No reduction of on-street parking spaces is anticipated as a result of these improvements.



FIGURE 4K
RIDGE ROAD BETWEEN SOUTHWAY AND WESTWAY IMPROVEMENTS

Lakeside Drive from Lakeview Circle to Olivewood Court – Priority Medium

The recommended long-term improvements are illustrated in Figure 5A.

Short-term: Estimated cost = \$10,810.

- Install STOP control signage and pavement markings to replace current YIELD conditions at the intersections with Olivewood Court, Maplewood Court, and Lakeview Circle.
- Install temporary curb with flex posts to remove on-street parking within the intersections with Olivewood Court and Lakeview Court.

Long-Term: Estimated cost = \$96,080 not including costs for drainage improvements or impacts to utilities.

- Construct curb bump-outs along east side of Lakeside Drive across from Lakeview Circle and Olivewood Court to condense the intersections and formalize limits of on-street parking.
 - This will provide a secondary benefit of providing pedestrian access from Lakeview Circle and Olivewood Court to the internal path network.
- Construct a five-foot wide sidewalk along the westerly side of Lakeside Drive from Lakeview Court to Olivewood Court. The City right-of-way extends approximately nine feet beyond the current edge of roadway where sidewalk is being proposed based on measurements made using Prince George's County GIS database <https://www.pgatlas.com/>.
- Reconstruct ramps at the existing pedestrian crossing at Maplewood Court to provide a more perpendicular crossing and condense the intersection.
- Reapply continental crosswalk pavement markings at realigned crossing.

Traffic calming improvements are recommended in this location based on the 85th percentile speed of 28 MPH recorded and connections to the internal path network. It is estimated that these recommended improvements will result in the reduction of approximately three on-street parking spaces.



FIGURE 5A
LAKESIDE DRIVE FROM LAKEVIEW CIRCLE TO OLIVEWOOD COURT IMPROVEMENTS

Lakeside Drive from Lakecrest Drive to Westway – Priority Medium

The recommended long-term improvements are illustrated in Figure 5B.

Short-term: Estimated cost = \$41,770.

- Stripe hatched median with flex posts along Lakeside Drive to reduce travel lane width to 11 feet wide in each direction.
- Install temporary curb with flex posts to create a median which narrows the travel lane width to 11-feet wide in each direction.

Long-Term: Estimated cost = \$76,980 not including costs for drainage improvements or impacts to utilities.

- Construct raised landscaped median along Lakeside Drive to reduce travel lane width to 11 feet wide in each direction.



FIGURE 5B
LAKESIDE DRIVE FROM WESTWAY TO LAKECREST DRIVE IMPROVEMENTS

Lastner Lane from Julian Court to Hedgewood Drive – Priority High

The recommended long-term improvements are illustrated in Figure 6A.

Short-term: Estimated cost = \$23,800.

- Stripe continental crosswalks across the Julian Court and Hedgewood Drive approaches to Lastner Lane.
- Install advanced warning and pedestrian warning signage at new crossing.
- Install temporary curb with flex posts to remove on-street parking within the intersections with Julian Court and Hedgewood Drive.
- Install temporary curb with flex posts to reduce corner radii on the Julian Court and Hedgewood Drive approaches to Lastner Lane.

Long-Term: Estimated cost = \$50,430 not including costs for drainage improvements.

- Construct curb bump-outs to reduce corner radii on Julian Court and Hedgewood Drive and extend curb on opposite side of intersection to remove on-street parking within the intersections.
 - Adjustment of curb lines will require updates to drainage inlets at Hedgewood Drive.
- Construct sidewalk connections and ramps for crosswalks across Lastner Lane at the southbound approach to Julian Court and the northbound approach to Hedgewood Drive.
- Install advanced warning and pedestrian warning signage at new crossing.
- Apply short-term striping recommendations.
- Coordinate with WMATA to relocate the bus stop located on the northeast corner of the Lastner Lane / Julian Court intersection to the northwest corner and construct a new bus pad.

Traffic calming improvements are recommended in this location based on the 85th percentile speed of 29 MPH recorded. It is estimated that these recommended improvements will result in the reduction of approximately three on-street parking spaces.



FIGURE 6A
 LASTNER LANE FROM JULIAN COURT TO HEDGEWOOD DRIVE IMPROVEMENTS

Lastner Lane / Rosewood Drive – Priority Medium

The recommended long-term improvements are illustrated in Figure 6B.

Short-term: Estimated cost = \$15,790.

- Stripe a continental crosswalk across the Rosewood Drive approach to Lastner Lane.
- Install temporary curb with flex posts to remove on-street parking within the intersection.

Long-Term: Estimated cost = \$30,820 not including costs for drainage improvements.

- Construct curb bump-outs to reduce corner radii and extend curb on opposite side of intersection to remove on-street parking within the intersection and improve sight lines.
 - Adjustment of curb lines will require update to drainage inlet on southeast corner of the intersection.
- Construct sidewalk connections and ramps for crosswalks across both Lastner Lane approaches.
- Install advanced warning and pedestrian warning signage at new crossings.
- Apply short-term striping recommendations.

Traffic calming improvements are recommended in this location based on the 85th percentile speed of 30 MPH recorded. It is estimated that these recommended improvements will result in the reduction of approximately two on-street parking spaces.



LEGEND

- PERVIOUS AREA
- SIDEWALK / RAMP
- DRIVEWAY RECONSTRUCTION

FIGURE 6B
LASTNER LANE / ROSEWOOD DRIVE IMPROVEMENTS

Lastner Lane / Ivy Lane – Priority Medium

The recommended long-term improvements are illustrated in Figure 6C.

Short-term: Estimated cost = \$21,810.

- Stripe a continental crosswalk across the Ivy Lane approach to Lastner Lane.
- Install temporary curb with flex posts to remove on-street parking within the intersection.

Long-Term: Estimated cost = \$41,780 not including costs for drainage improvements.

- Construct curb bump-outs to reduce corner radii and extend curb on opposite side of intersection to remove on-street parking within the intersection and improve sight lines.
 - Adjustment of curb lines will require update to drainage inlet on northeast side of the intersection in front of 116 Lastner Lane.
- Construct sidewalk connections and ramps for crosswalks across the Lastner Lane southbound approach.
- Apply short-term striping recommendations.
- Coordinate with WMATA to construct a new bus pad.

Traffic calming improvements are recommended in this location based on the 85th percentile speed of 30 MPH recorded. It is estimated that these recommended improvements will result in the reduction of approximately two on-street parking spaces.



LEGEND

- PERVIOUS AREA
- SIDEWALK / RAMP
- DRIVEWAY RECONSTRUCTION

FIGURE 6C
LASTNER LANE / IVY LANE IMPROVEMENTS

Lastner Lane / Crescent Road – Priority Medium

The recommended long-term improvements are illustrated in Figure 6D.

Short-term: Estimated cost = \$23,930.

- Stripe green bicycle pavement markings across the Lastner Lane southbound approach.
- Restripe existing roadway shoulder along the northerly side of Crescent Road, west of the intersection, to provide a continuous bicycle lane.
- Install temporary curb with flex posts to reduce turning radii.

Long-Term: Estimated cost = \$44,250.

- Construct curb bump-outs to reduce corner radii and improve sight lines.
- Reconstruct sidewalk connections and ramps for crosswalks across the Lastner Lane southbound and Crescent Road westbound approaches.
- Apply short-term striping recommendations.
- Restripe continental crosswalk and extend STOP line across the Lastner Lane southbound approach closer to the intersection.
- Stripe the double yellow centerline on the Lastner Lane extending to the relocated STOP line.
- Coordinate with PG DPW&T to relocate the bus stop located on the southwest corner of the intersection to the southeast corner and construct a new bus pad.
- Coordinate with PG DPW&T to construct a new bus pad at existing stop on northeast corner of intersection.
 - This stop is not recommended for relocation due to the existing shelter.

Traffic calming improvements are recommended in this location based on the 85th percentile speed of 30 MPH recorded. No reduction of on-street parking spaces is anticipated as a result of these improvements.

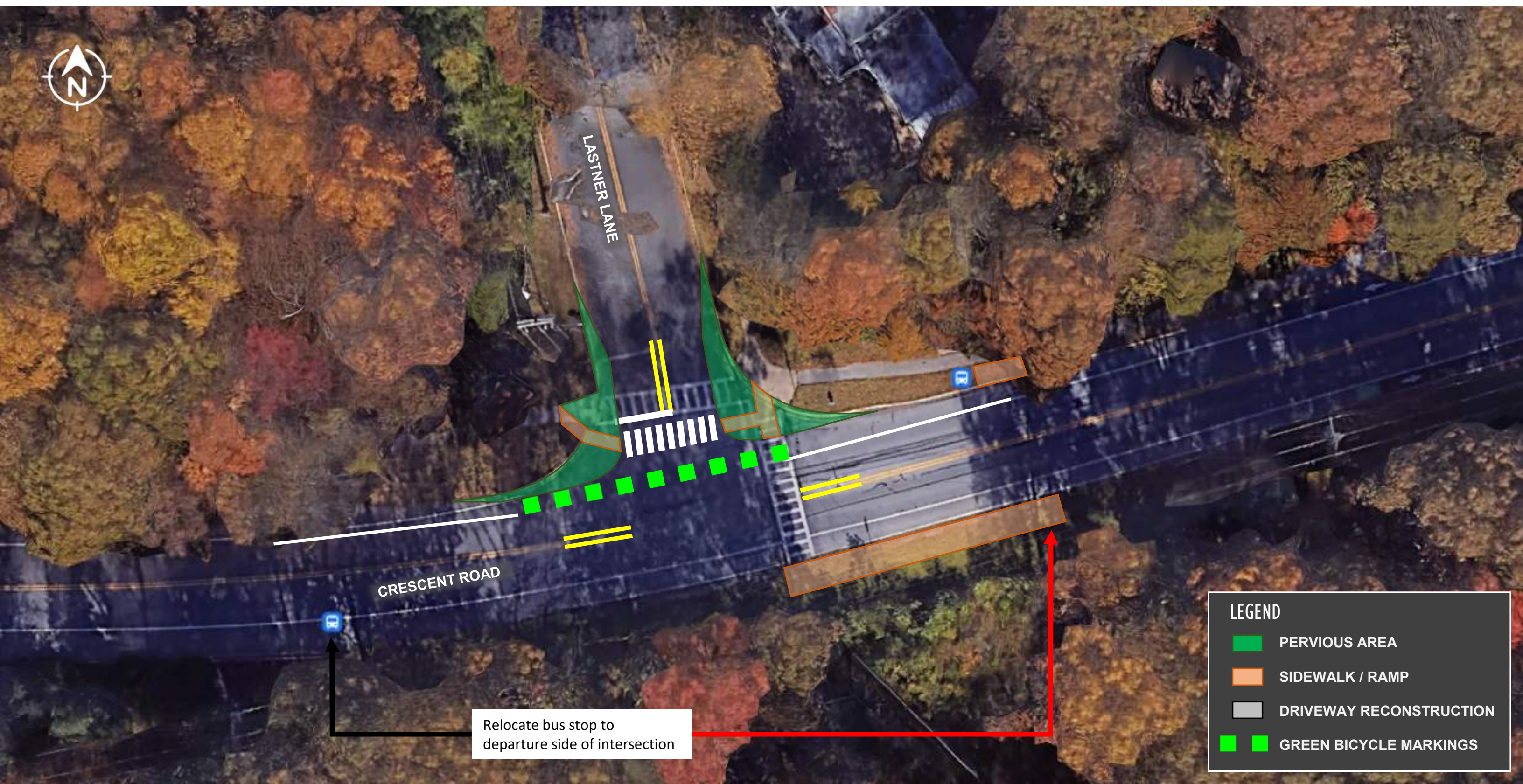


FIGURE 6D
LASTNER LANE / CRESCENT ROAD IMPROVEMENTS

Greenhill Road / Crescent Road – Priority Medium

The recommended long-term improvements are illustrated in Figure 7A.

Short-term: Estimated cost = \$17,330.

- Stripe green bicycle pavement markings across the Lastner Lane southbound approach.
- Install temporary curb with flex posts to reduce turning radii.

Long-Term: Estimated cost = \$32,820.

- Construct curb bump-outs to reduce corner radii and improve sight lines.
- Reconstruct sidewalk connections and ramps for crosswalks across the Greenhill Road southbound and Crescent Road westbound approaches.
- Apply short-term striping recommendations.
- Coordinate with PG DPW&T to construct new bus pads and provide connection to internal path network.

No reduction of on-street parking spaces is anticipated as a result of these improvements.

Previous studies and the most recent data collected show that 85th percentile travel speeds are +/- 5 MPH within the posted speed limit. In addition, the average annual collision crash rate is less than one per year indicating that a critical safety issue does not exist. There were six recorded vehicles traveling at ≥ 35 MPH over the most recent 72-hour data collection. However, GPI notes that improvements could be made to address other concerns regarding sight lines and pedestrian connectivity which could also have the benefit of traffic calming.



LEGEND	
	PERVIOUS AREA
	SIDEWALK / RAMP
	DRIVEWAY RECONSTRUCTION
	GREEN BICYCLE MARKINGS

FIGURE 7A
GREENHILL ROAD / CRESCENT ROAD IMPROVEMENTS

Greenhill Road / Orange Court / Greenway Place – Priority Medium

The recommended long-term improvements are illustrated in Figure 7B.

Short-term: Estimated cost = \$13,040.

- Install temporary curb with flex posts to reduce corner radii on all four corners of the intersection.
- Stripe a continental crosswalk across the Orange Court and Greenway Place approaches where access ramps are currently provided.

Long-Term: Estimated cost = \$29,790 not including costs for drainage improvements.

- Construct curb bump-outs to reduce corner radii on all four corners of the intersection.
 - Adjustment of curb lines will require updates to drainage inlet on southeast corner.
- Construct sidewalk connections on all four corners of the intersection to create crossings for the Greenhill Road northbound and southbound approaches.
- Apply short-term striping recommendations.
- Stripe continental crosswalks and restripe STOP lines for the Greenhill Road northbound and southbound approaches.
- Coordinate with PG DPW&T to relocate the bus stop located on the northwest corner to the southwest corner and construct a new bus pad.

No reduction of on-street parking spaces is anticipated as a result of these improvements.

Previous studies and the most recent data collected show that 85th percentile travel speeds are +/- 5 MPH within the posted speed limit. In addition, the average annual collision crash rate is less than one per year indicating that a critical safety issue does not exist. There were six recorded vehicles traveling at ≥35 MPH over the most recent 72-hour data collection. However, GPI notes that improvements could be made to address other concerns regarding sight lines and pedestrian connectivity which could also have the benefit of traffic calming.

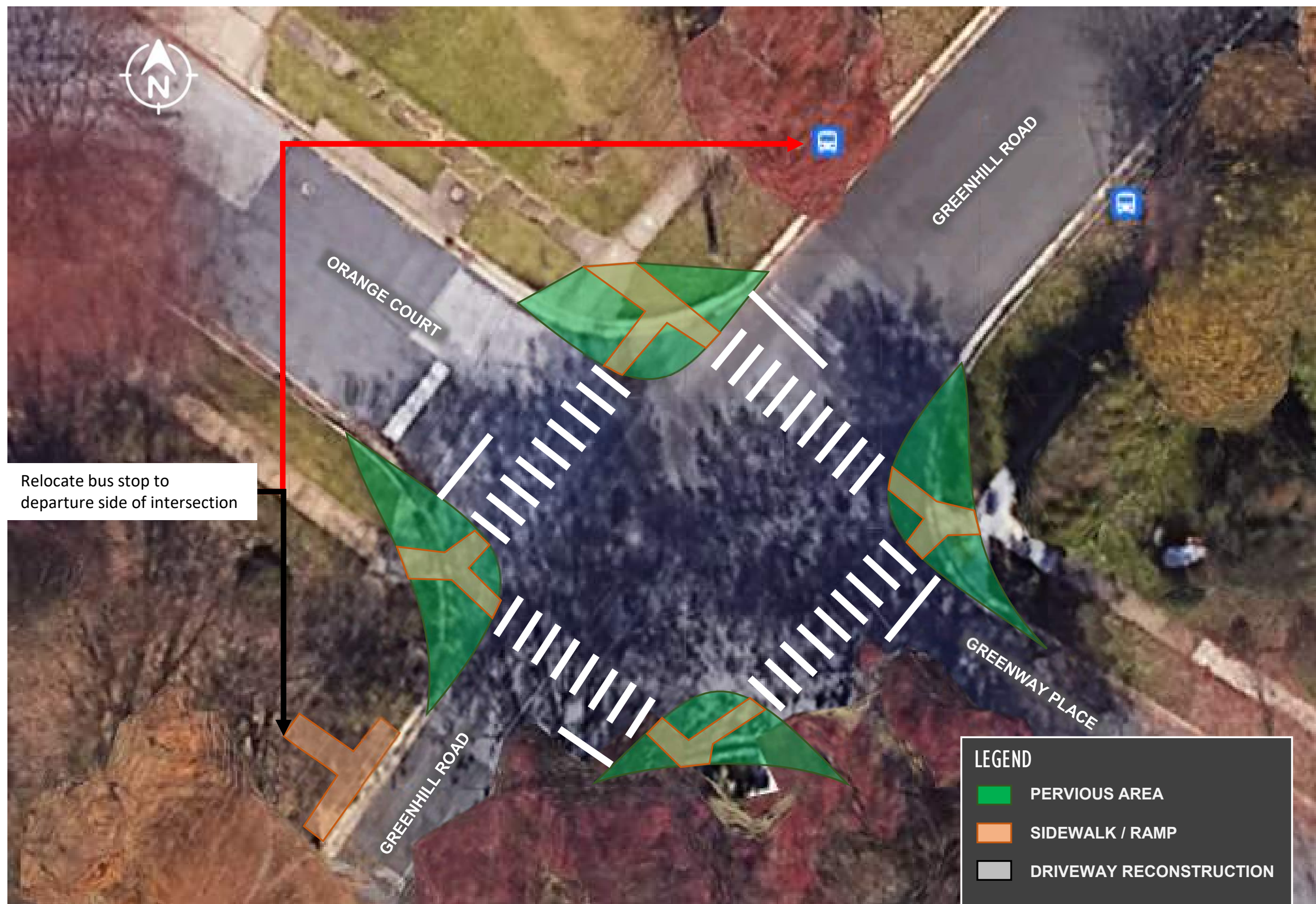


FIGURE 7B
GREENHILL ROAD / ORANGE COURT / GREENWAY PLACE IMPROVEMENTS

Greenhill Road / Hillside Road / Research Road – Priority Medium

The recommended long-term improvements are illustrated in Figure 7C.

Short-term: Estimated cost = \$13,330.

- Install temporary curb with flex posts to reduce corner radii on the Research Road southbound approach.

Long-Term: Estimated cost = \$28,820 not including costs for drainage improvements.

- Construct curb bump-outs to reduce corner radii on the Research Road southbound approach.
 - Adjustment of curb lines will require update to drainage inlet on northwest corner.
- Reconstruct ramps for Research Road crosswalk.
- Construct ramps and sidewalk connections for the Hillside Road westbound approach.
- Stripe continental crosswalks and restripe STOP line for the Hillside Road westbound approach.
- Install advanced warning and pedestrian warning signage at new crossing.

No reduction of on-street parking spaces is anticipated as a result of these improvements.

Previous studies and the most recent data collected show that 85th percentile travel speeds are +/- 5 MPH within the posted speed limit. In addition, the average annual collision crash rate is less than one per year indicating that a critical safety issue does not exist. There were six recorded vehicles traveling at ≥ 35 MPH over the most recent 72-hour data collection. However, GPI notes that improvements could be made to address other concerns regarding sight lines and pedestrian connectivity which could also have the benefit of traffic calming.



LEGEND

- PERVIOUS AREA
- SIDEWALK / RAMP
- DRIVEWAY RECONSTRUCTION

FIGURE 7C
GREENHILL ROAD / HILLSIDE ROAD / RESEARCH ROAD IMPROVEMENTS

Hillside Road from Northway to Woodland Way – Priority Medium

The recommended long-term improvements are illustrated in Figure 8A.

Short-term: Estimated cost = \$27,050.

- Install temporary curb with flex posts to reduce corner radii on all four corners of the Hillside Road / Northway intersection.
- Install temporary curb with flex posts to reduce corner radii on the Woodland Way eastbound approach to Hillside Road.
- Install advanced pedestrian warning signage at existing crosswalk located at 12 Hillside Road and between Northway and Woodland Way.

Long-Term: Estimated cost = \$83,850 not including costs for drainage improvements.

- Construct raised crosswalk at the existing mid-block crosswalk located at 12 Hillside Road to improve pedestrian visibility and access to the internal path network.
 - The recommendation for a raised crosswalk at this mid-block crossing is based on the desire to reduce vehicle speed northbound prior to the roadway curve and provide a consistent pedestrian facility where visibility is improved beyond parked vehicles in the existing head-in spaces.
 - This treatment will further enhance recent striping and sidewalk improvements.
 - Install advanced warning and pedestrian warning signage at new crossing.
- Construct curb bump-outs to reduce corner radii all four corners of the Hillside Road / Northway intersection and on the Woodland Way eastbound approach to Hillside Road.
 - Adjustment of curb lines will require update to drainage inlets on the northeast and northwest corner of Hillside Road / Northway.
- Reconstruct existing ramps and construct new connections for crosswalks across Hillside Road at Northway.
- Coordinate with PG DPW&T to construct new pinchpoint between Northway and Woodland Way for bus pads and provide connection to internal path network.
 - This mid-block crossing location was recently restriped with on-street parking spaces directly adjacent to crosswalk markings.
- Stripe continental crosswalks and restripe STOP line for the Hillside Road westbound approach to Northway, Northway westbound approach, Woodland Way eastbound approach.
- Maintain striped continental crosswalk at the proposed pinchpoint crossing between bus pads.

It is estimated that these recommended improvements will result in the reduction of approximately four on-street parking spaces. The 85th percentile speeds along Hillside Road north of Northway reflect similar speed characteristics as Greenhill Road.



FIGURE 8A
HILLSIDE ROAD FROM NORTHWAY TO WOODLAND WAY IMPROVEMENTS

Hillside Road / Crescent Road – Priority Medium

The recommended long-term improvements are illustrated in Figure 8B.

Short-term: Estimated cost = \$20,270.

- Install temporary curb with flex posts to reduce corner radii on the Hillside Road southbound approach to Crescent Road.
- Install temporary curb with flex posts north of 4A-4H Hillside Road driveway to create a pinchpoint and mid-block crossing.
- Install advanced warning and pedestrian crossing signage at proposed mid-block crossing.
- Stripe a continental crosswalk at the proposed pinchpoint crossing.

Long-Term: Estimated cost = \$77,450.

- Construct curb bump-outs to reduce corner radii on the Hillside Road southbound approach to Crescent Road.
 - Adjustment of curb lines will require update to drainage inlets on the northeast and northwest corner of Hillside Road / Crescent Road.
- Construct a raised crosswalk north of 4A-4H Hillside Road driveway to create a pinchpoint and mid-block crossing.
- Install advanced warning and pedestrian warning signage at new crossing.
- Reconstruct existing ramps and construct new connections for crosswalks across Hillside Road southbound approach and Crescent Road westbound approach.
- Construct five-foot wide sidewalk along the easterly side of Hillside Road from Crescent Road to the proposed mid-block crossing and remove existing ramps which terminate at Hillside Road without crosswalk connections.
 - The recommended sidewalk construction will require the reconstruction of two driveway aprons but is not anticipated to affect any existing drainage structures.
- Construct five-foot wide sidewalk along the southerly side of Crescent Road to remove parking within the intersection and provide connection to existing footpath.
- Stripe continental crosswalks for proposed mid-block crossing, Hillside Road southbound approach and Crescent Road westbound approach.
- Restripe STOP line for the Hillside Road southbound approach.
- Restripe on-street parking spaces on easterly side of Hillside Road as needed based on the relocation of ramp access.
- Install advanced warning and pedestrian warning signage at new crossings.

It is estimated that these recommended improvements will result in the net reduction of approximately four on-street parking spaces. The 85th percentile speed along Hillside south of Woodland Way are +/- 7 MPH above the speed limit. In addition, there were 115 recorded vehicles traveling at ≥35 MPH over the most recent 72-hour data collection.

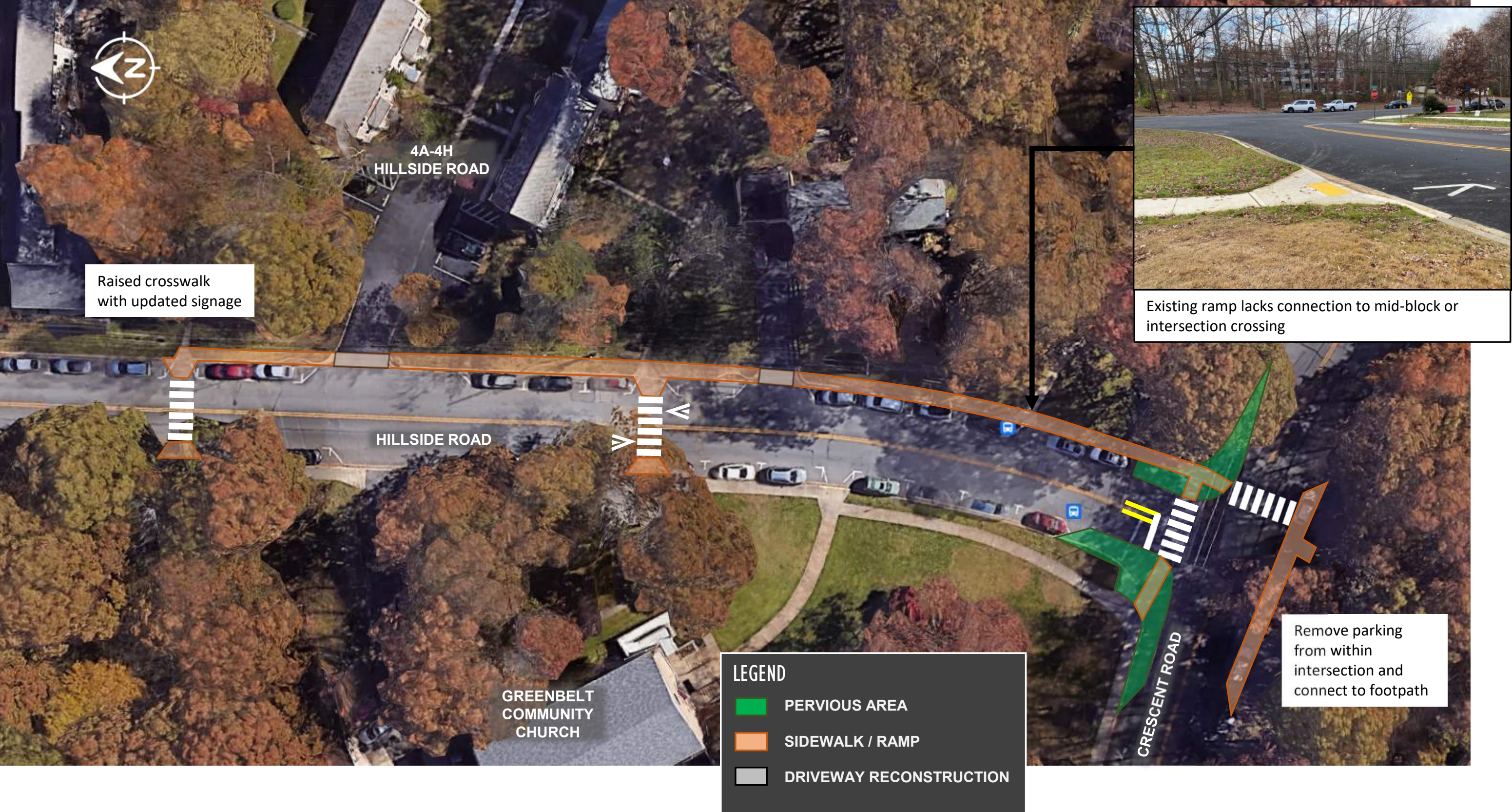


FIGURE 8B
HILLSIDE ROAD / CRESCENT ROAD IMPROVEMENTS

CONCLUSIONS AND RECOMMENDATIONS

The study area roadways, except for Lakeside Drive, provide sidewalk along at least one side for its entire length and while the construction of continuous sidewalks along both sides of the roadway would improve pedestrian accessibility, it would not necessarily address pedestrian safety or reduce vehicle travel speeds. Connections to the existing sidewalk and internal path network have been recommended in conjunction with traffic calming measures to improve overall walkability. GPI notes additional access points to the trail network exist and may also be considered for these treatment options in future pedestrian connectivity efforts. The existing roadway widths are insufficient for providing dedicated bicycle lanes; however, the anticipated reduction of vehicle speeds with the proposed improvements will create a safer environment for cyclists to operate within the roadway.

The recommended long-term improvements include reconstruction of intersections to create bump-outs or pinch-points by adjusting curb radii which has the benefit of creating passive control with permanent infrastructure. The removal of pavement and added grass areas will reduce demand on drainage systems and have an overall positive environmental impact. The long-term recommendations are generally more expensive because they require additional resources and materials to implement; however, they generally require less maintenance.

The proposed locations for raised crosswalks can be downgraded to short-term improvements by striping crosswalks, installing/relocating pedestrian warning signage, and installing flexible bollards to shadow out further from the edge of curb.

The recommended short-term improvements would seek to create similar conditions as the long-term improvements by providing flexible bollards (less than 3.5 feet high) and updated signage and pavement markings. It is still recommended that ramps be reconstructed, as needed, to provide ADA compliance with the latest standards. No pavement would be removed under short-term conditions and more easily applied pavement marking paint can be considered. Placement of signage, bollards, and paint can still yield lower travel speeds by forcing drivers to alter their driving behavior through narrower travel lanes, tighter turning radii, and improving visibility for pedestrians and cyclists.

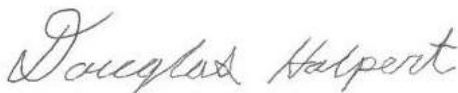
All recommended improvements seek to address the City of Greenbelt's Pedestrian / Bike Master Plan goals of improving pedestrian/bicycle safety and mobility. Physical manipulation of the study area roadways, including key intersections, though horizontal and vertical deflection create an environment where it will be uncomfortable for drivers to travel a higher speed and thus creating roadways which are more forgiving in terms of the severity of incidents. With the above recommended improvements, the goal of reducing vehicle travel speeds can be accomplished without active enforcement. Both long-term and short-term recommendations have been made with the conscious effort of improving access to public transit. Some of these recommendations have been made at the cost of removing on-street parking spaces. No parking occupancy study has been performed to confirm if number of parking spaces is adequately meeting demand nor the potential for additional spaces in other locations.

It is recommended that the City of Greenbelt continue their outreach efforts to educate its residents about any roadway improvements that are implemented and explain the reasoning for design. This will help reinforce cultural norms of acceptable driving behaviors in a residential area.

Should you have any questions or require additional information, please feel free to contact me at (443) 753-5546.

Sincerely,

Greenman-Pedersen, Inc.



Douglas S. Halpert, P.E., PTOE
Project Manager



Public Meeting

Traffic Calming Study: Greenbelt Center City



Presented to: The City of Greenbelt

Date: Fall 2024



Engineering | Design | Planning | Construction Management

Project Team

Jaime Fearer, AICP – Assistant Director of Planning

Terri Hruby, AICP – Director of Planning & Community Development

Greenman-Pederson, Inc. (GPI) – Design Consultant

Purpose and Need

To address safety concerns within Historic Greenbelt in relation to vehicular speeding. This project evaluates conditions along the following roadways:

- **Ridge Road – from Lastner Lane to Westway**
- **Lakeside Drive – from Lakecrest Drive to Crescent Road**
- **Lastner Lane – from Ridge Road to Crescent Road**
- **Greenhill Road – from Crescent Road to Research Road**
- **Hillside Road – from Crescent Road to Research Road**

Study & Report Timeline

Data collection
(completed)

Draft report
preparation and
internal review
(completed)

Advisory Planning
Board (APB)
Meeting
10/16/2024

Community/Public
Meeting
10/29/2024

City Council Work
Session
11/20/2024

Collect all comments
and make revisions
Fall/Winter 2024

Submit final report
to APB for
recommendation to
Council
Winter/Spring 2025

Submit final report
to City Council for
adoption
Winter/Spring 2025

Traffic Calming Introduction

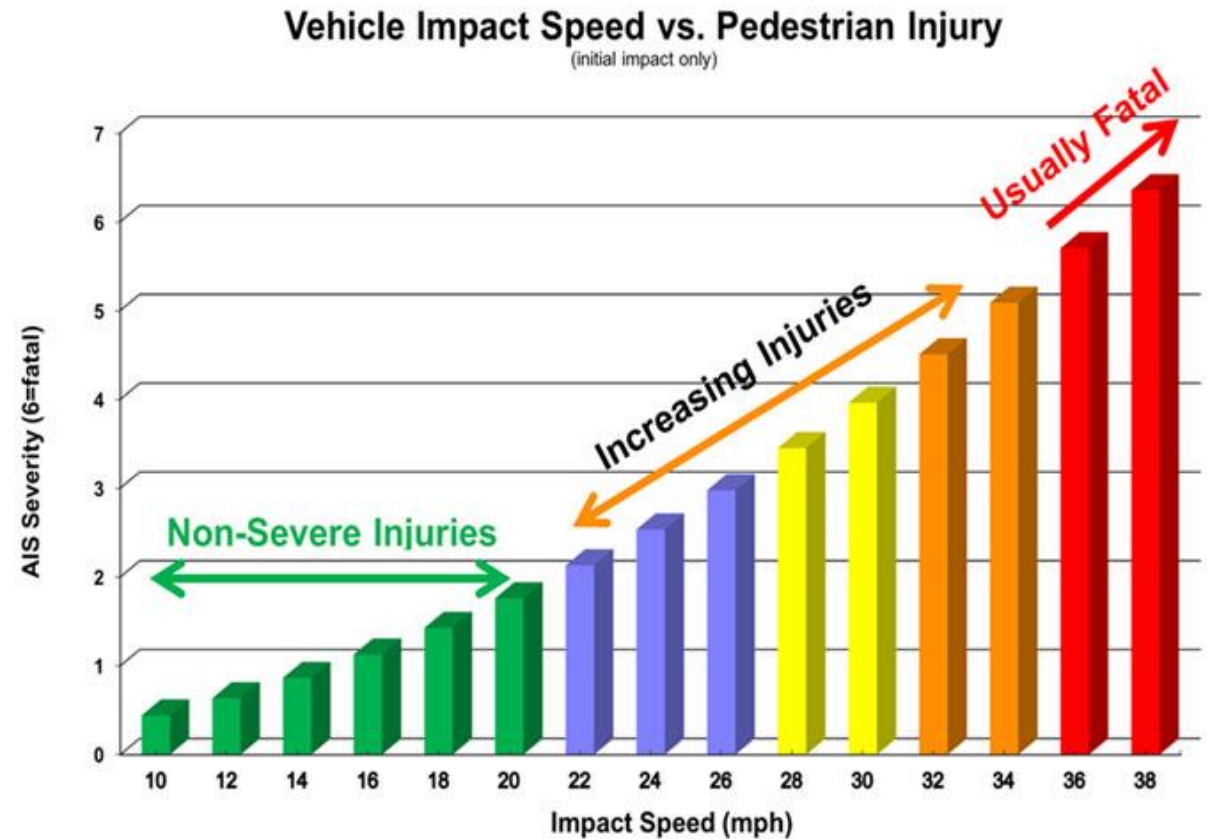
The primary purpose of traffic calming is to support the livability and vitality of residential and commercial areas through improvements in non-motorist safety, mobility, and comfort. These objectives are typically achieved by reducing vehicle speeds or volumes on a single street or a street network. Traffic calming measures consist of horizontal, vertical, lane narrowing, roadside, and other features that use self-enforcing physical or psycho-perception means to produce desired effects.

– **Federal Highway Administration**

The Goal

Traffic calming reduces automobile speeds or volumes, mainly through the use of physical measures, to improve the quality of life in both residential and commercial areas and increase the safety and comfort of walking and bicycling.

– **Federal Highway Administration**



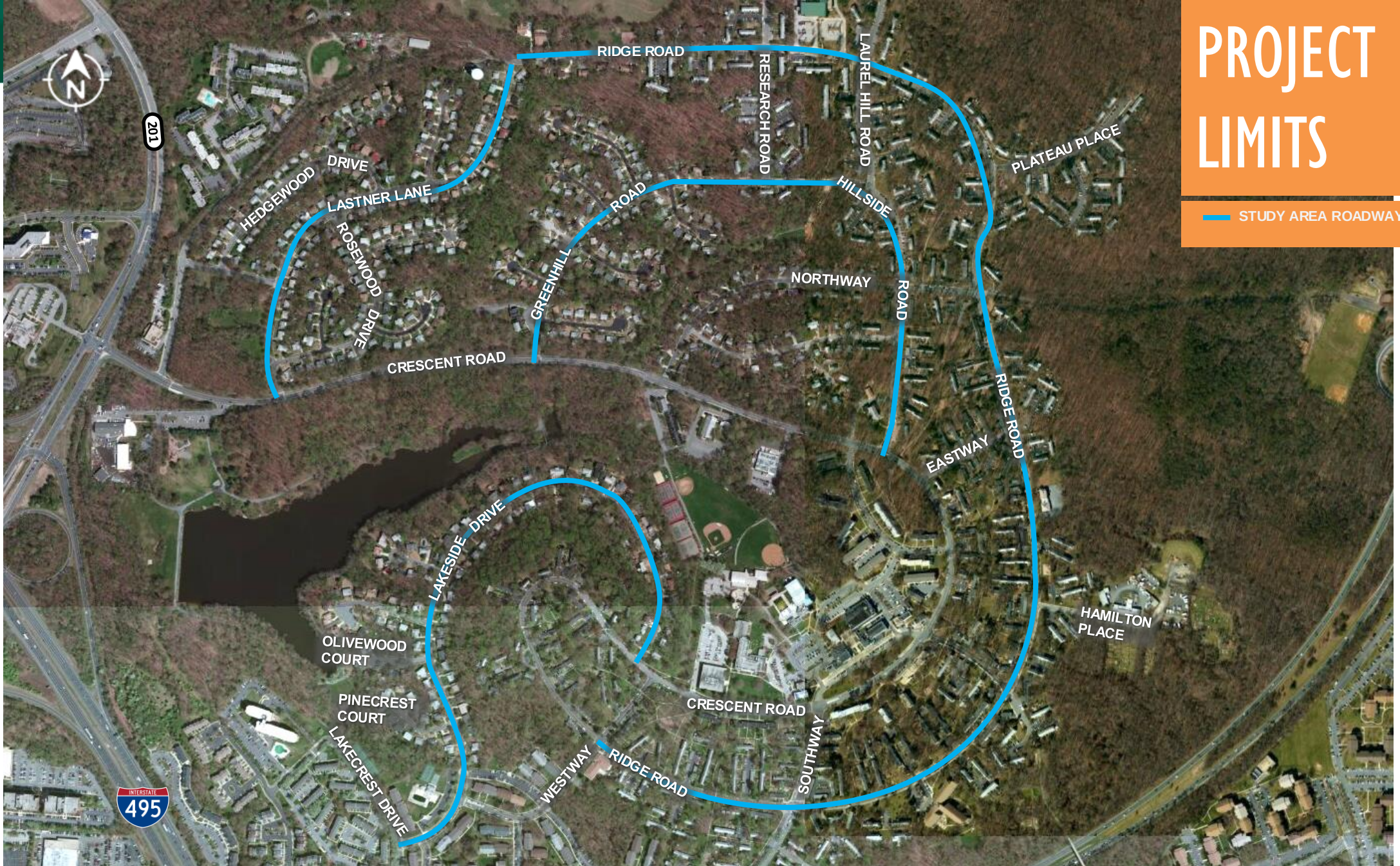
The Process

- **Identify the project limits**
- **Gather existing data**
- **Determine metrics**
- **Assign priority to locations**
- **Evaluate traffic calming strategies**
- **Propose recommendations**

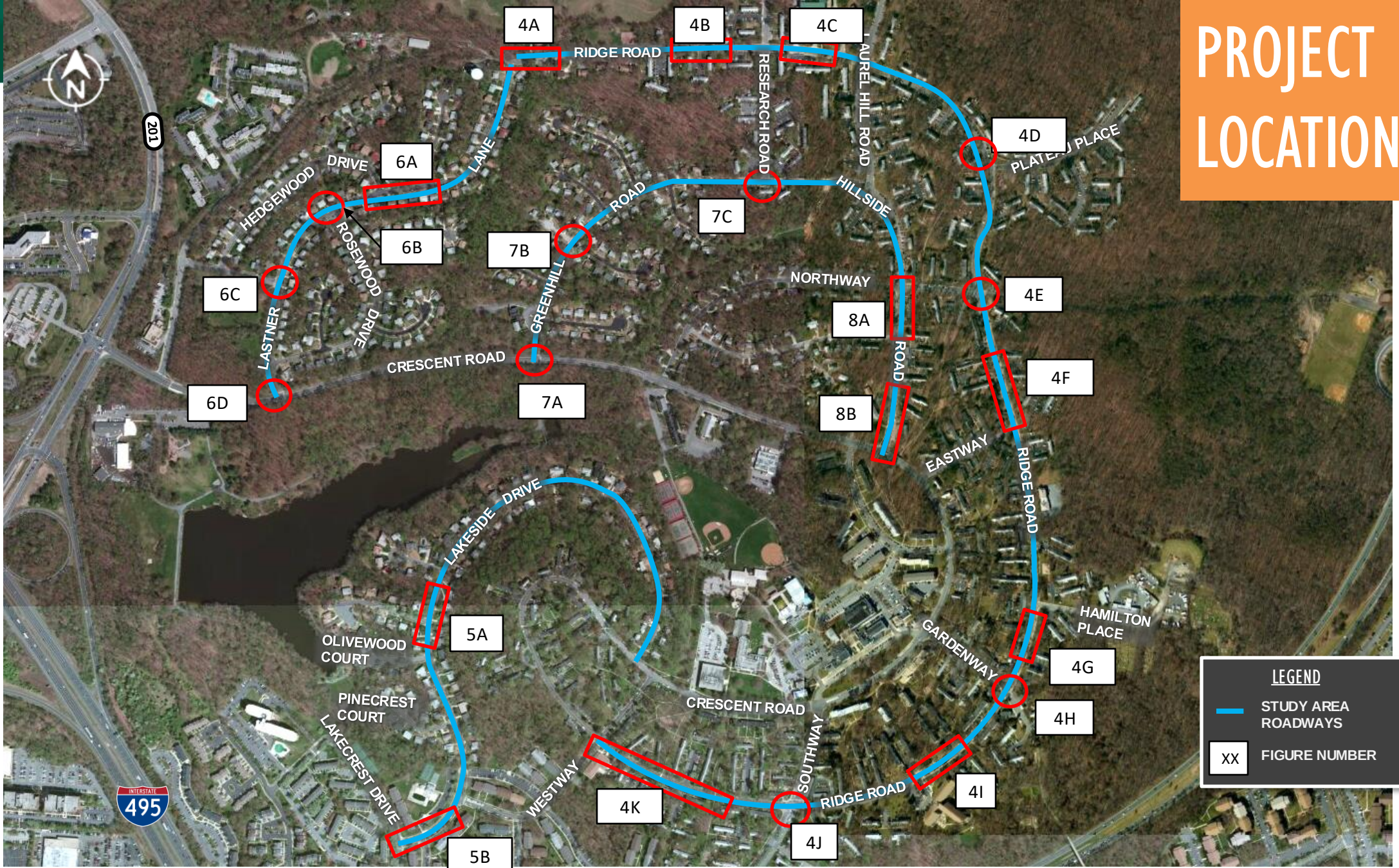


PROJECT LIMITS

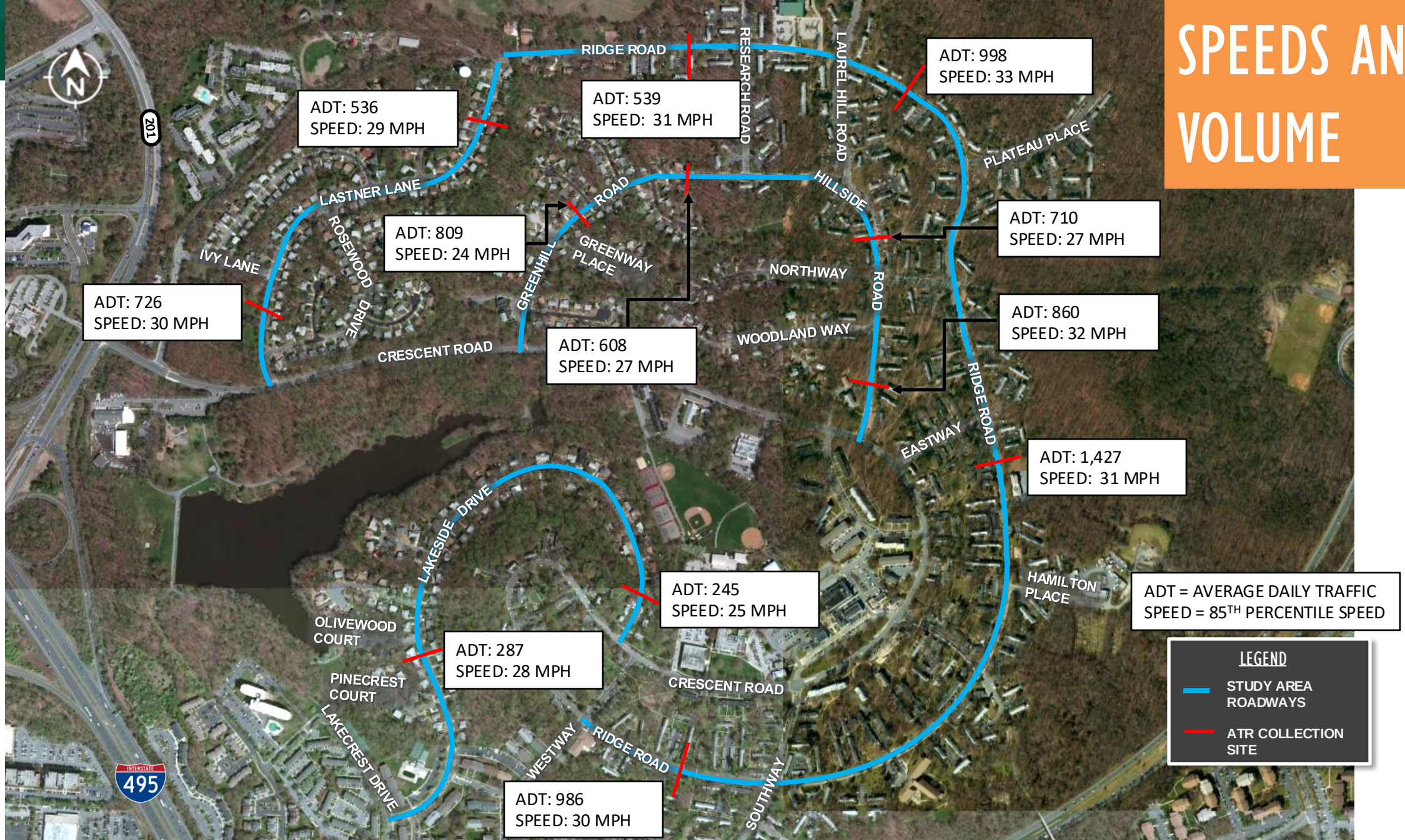
— STUDY AREA ROADWAYS



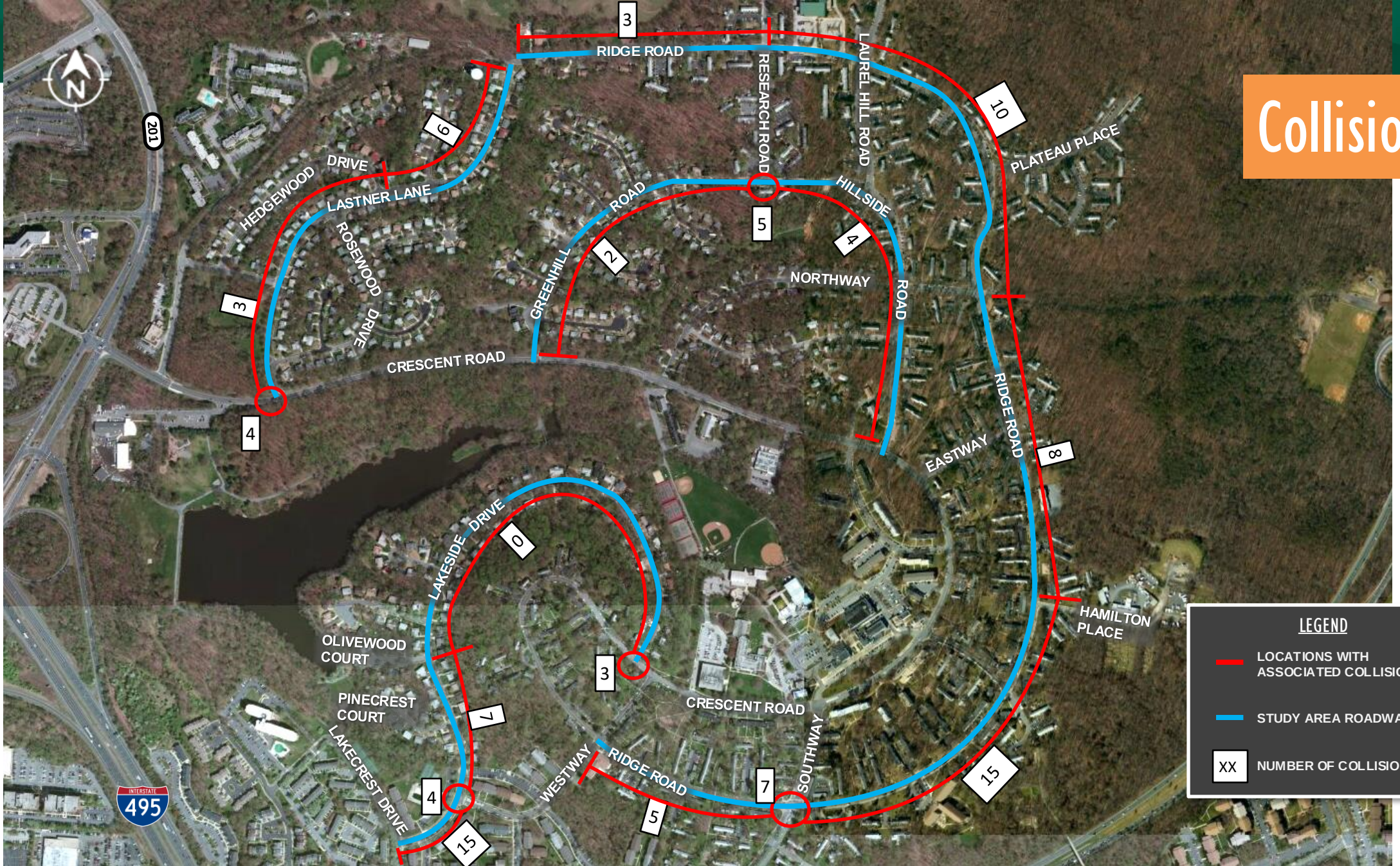
PROJECT LOCATION



SPEEDS AND VOLUME



Collisions



The Metrics

- Metrics in this study include:
 - vehicle volume
 - vehicle speed
 - collision data
- Points are assigned to a range of data for each metric
- Points are totaled to assign a low, medium, or high priority to each location

Average Daily Traffic (ADT) over 24-hours on average weekday

POINTS	ADT Volume (vehicles per day)
0.5	100 to 250
1.0	251-500
1.5	501-1,000
2.0	>1,001

85th PERCENTILE TRAVEL SPEED

POINTS	85 TH % SPEED
0.5	<26
1.0	27-28
1.5	29-30
2.0	31-32
2.5	33-35

Collision History over a four-year period

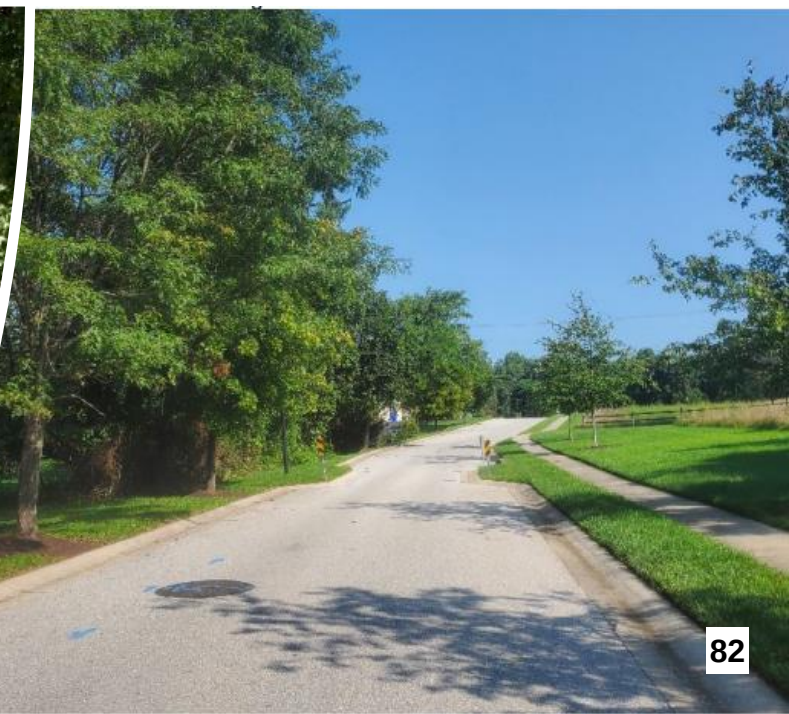
POINTS	Avg. Annual Crashes
0.5	0.51 to 1.00
1.0	1.01 to 1.25
1.5	1.26 to 1.50
2.0	1.51 to 2.00
2.5	2.01 to 2.50
3.0	>2.51

Overall Rating

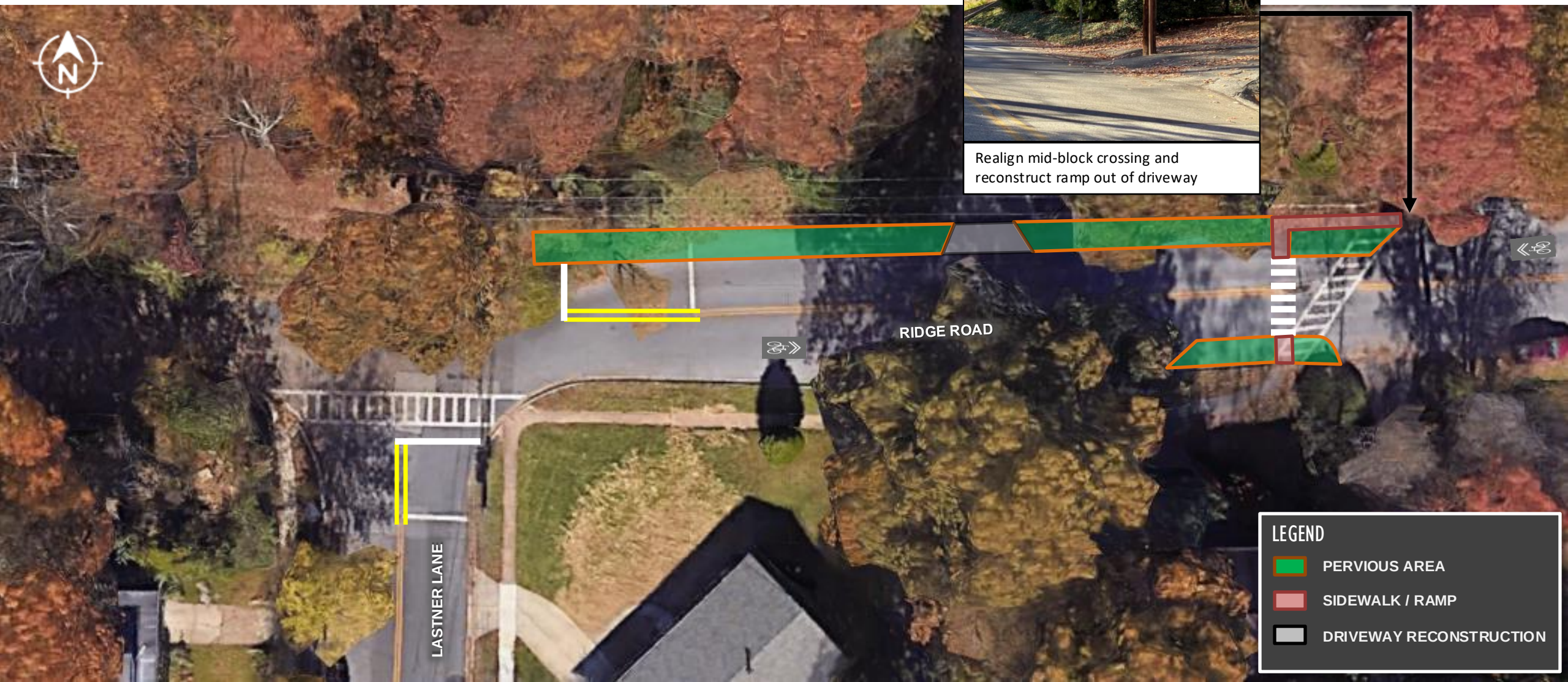
TOTAL POINTS	Priority
0≤X<2.0	Low
2.0≤X<4.0	Medium
≥4.0	High

Traffic Calming Strategies

- Speed humps
- Curb bumpouts
- Raised medians
- Street narrowing
- Raised crosswalks



Example of Recommendations



Additional Recommendations from Study Report



LEGEND

- PERVIOUS AREA
- SIDEWALK / RAMP
- DRIVEWAY RECONSTRUCTION



FHWA Figure 3.14.8. Sample Design for Raised Crosswalk

FIGURE 86C
RIDGE ROAD AT GREENBELT ELEMENTARY SCHOOL / 65 RIDGE ROAD IMPROVEMENTS

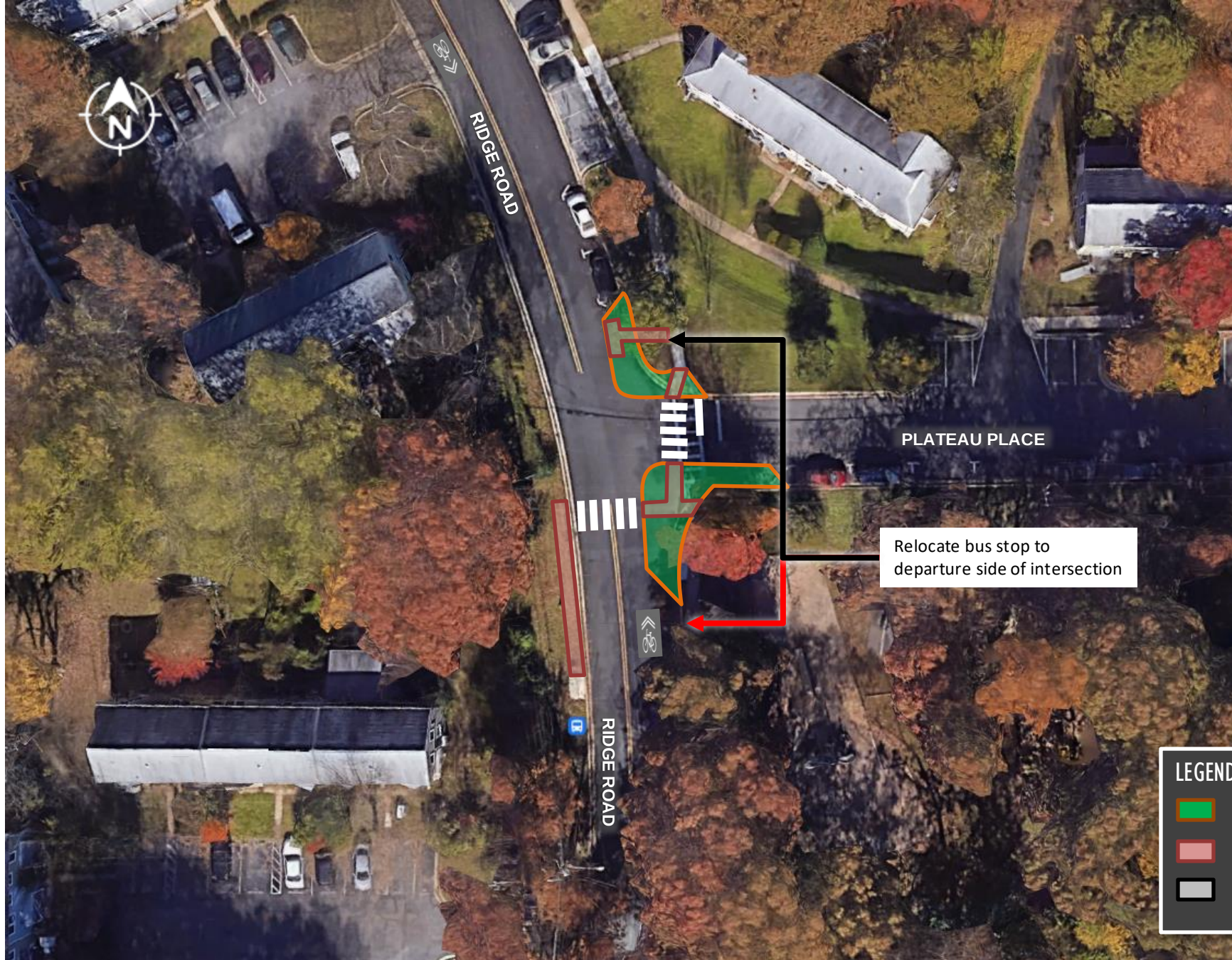


FIGURE 87D
RIDGE ROAD / PLATEAU PLACE IMPROVEMENTS

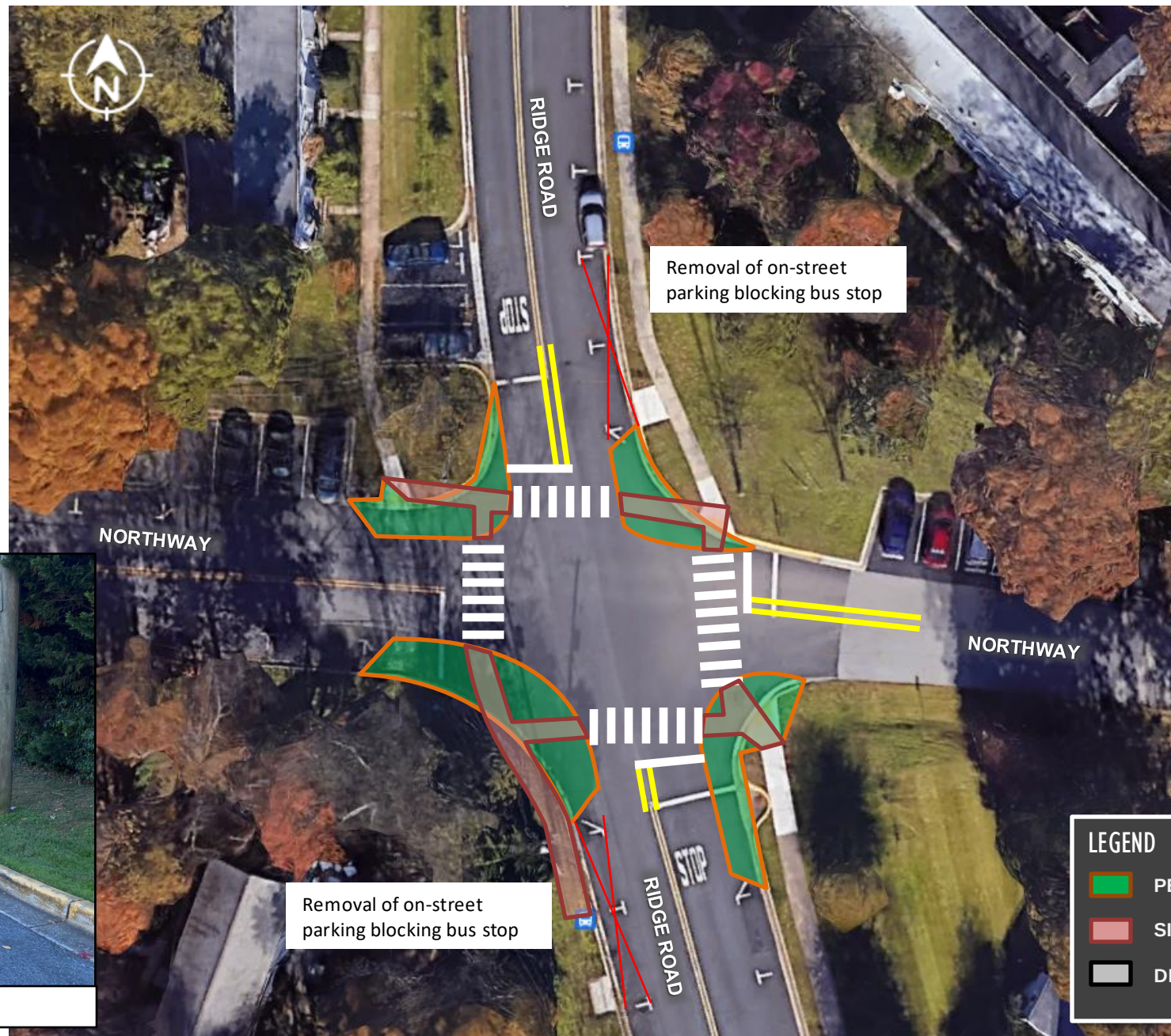
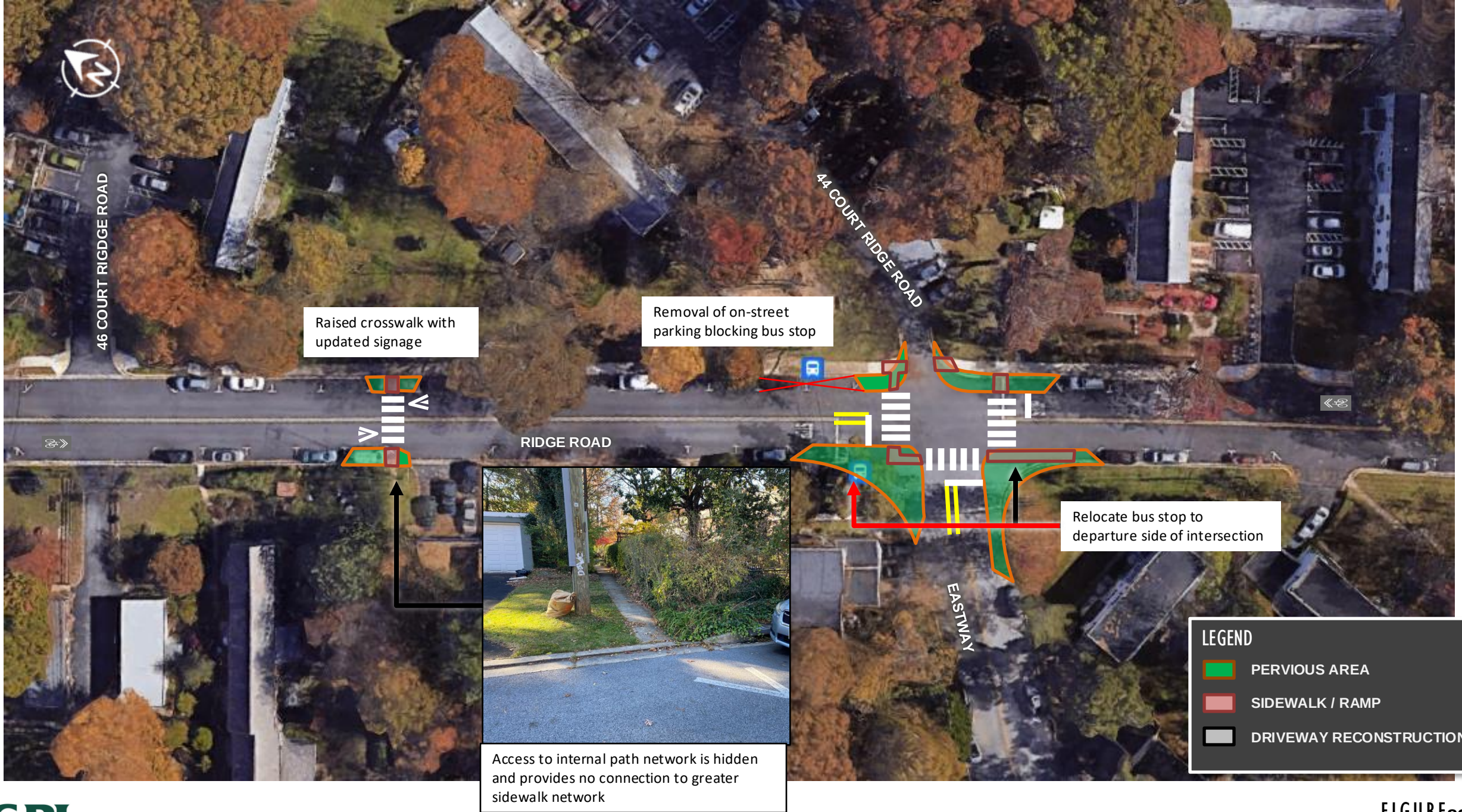


FIGURE 88 E
RIDGE ROAD / NORTHWAY IMPROVEMENTS







Existing crosswalk offers poor visibility and skewed alignment



LEGEND

PERVIOUS AREA

SIDEWALK / RAMP

DRIVEWAY RECONSTRUCTION



21 COURT RIDGE ROAD



Existing traffic signal controls vehicle travel along Ridge Road only

Remove existing signal and replace with RRFB

22 COURT RIDGE ROAD

23 COURT RIDGE ROAD

RIDGE ROAD

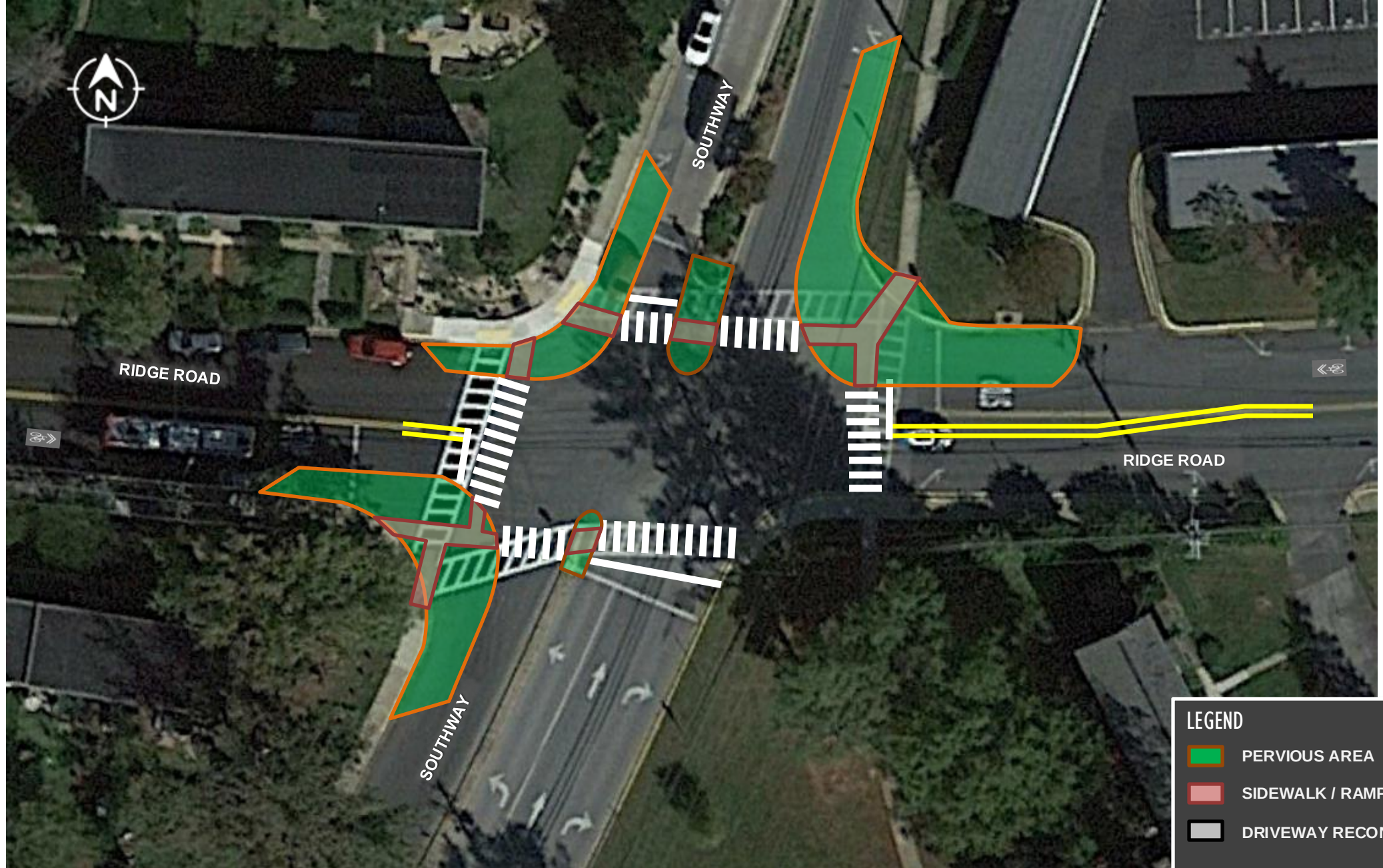
24 COURT RIDGE ROAD



Entrances to crosswalk obstructed by parked vehicles

LEGEND

-  PERVIOUS AREA
-  SIDEWALK / RAMP
-  DRIVEWAY RECONSTRUCTION







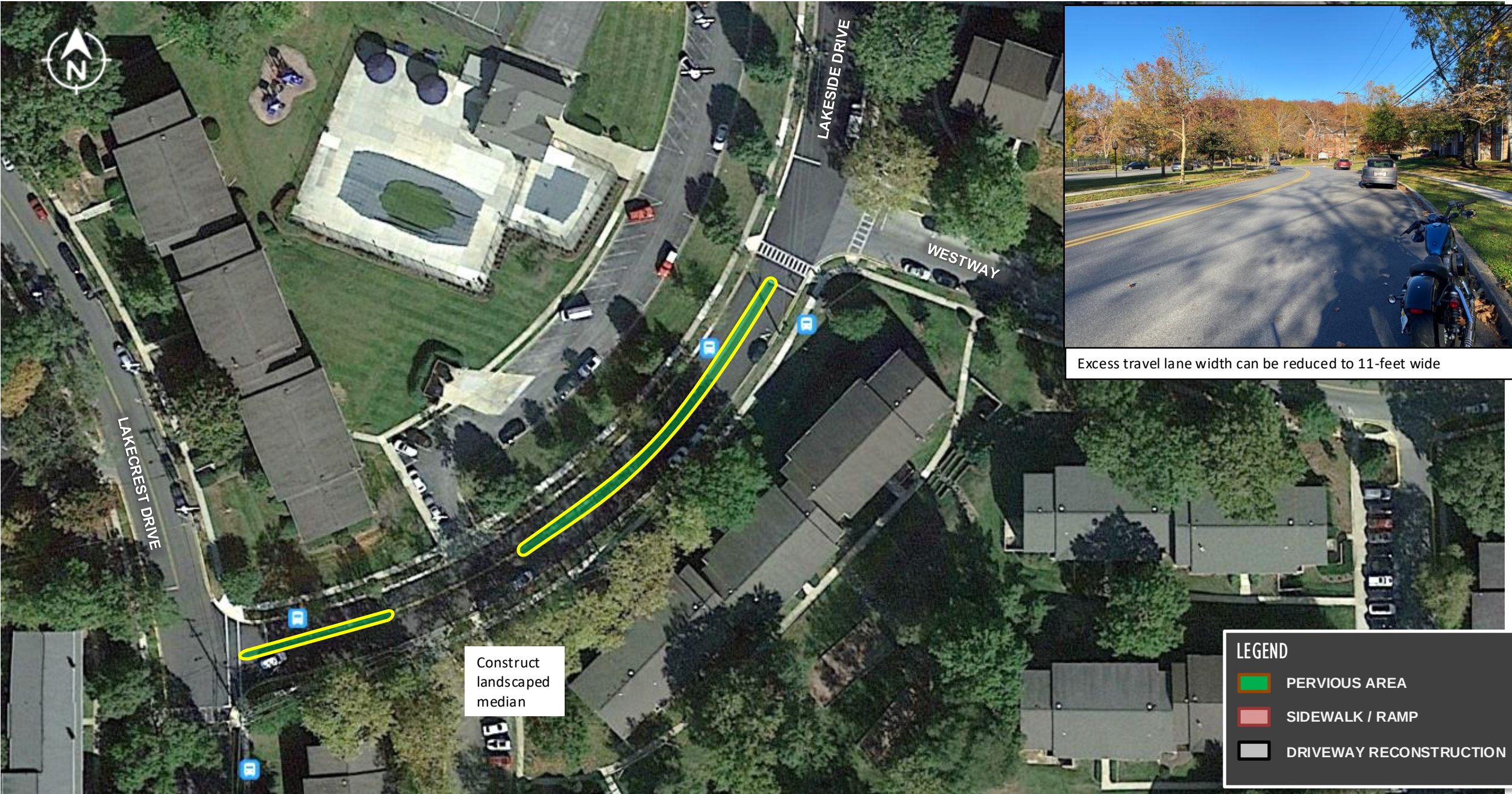
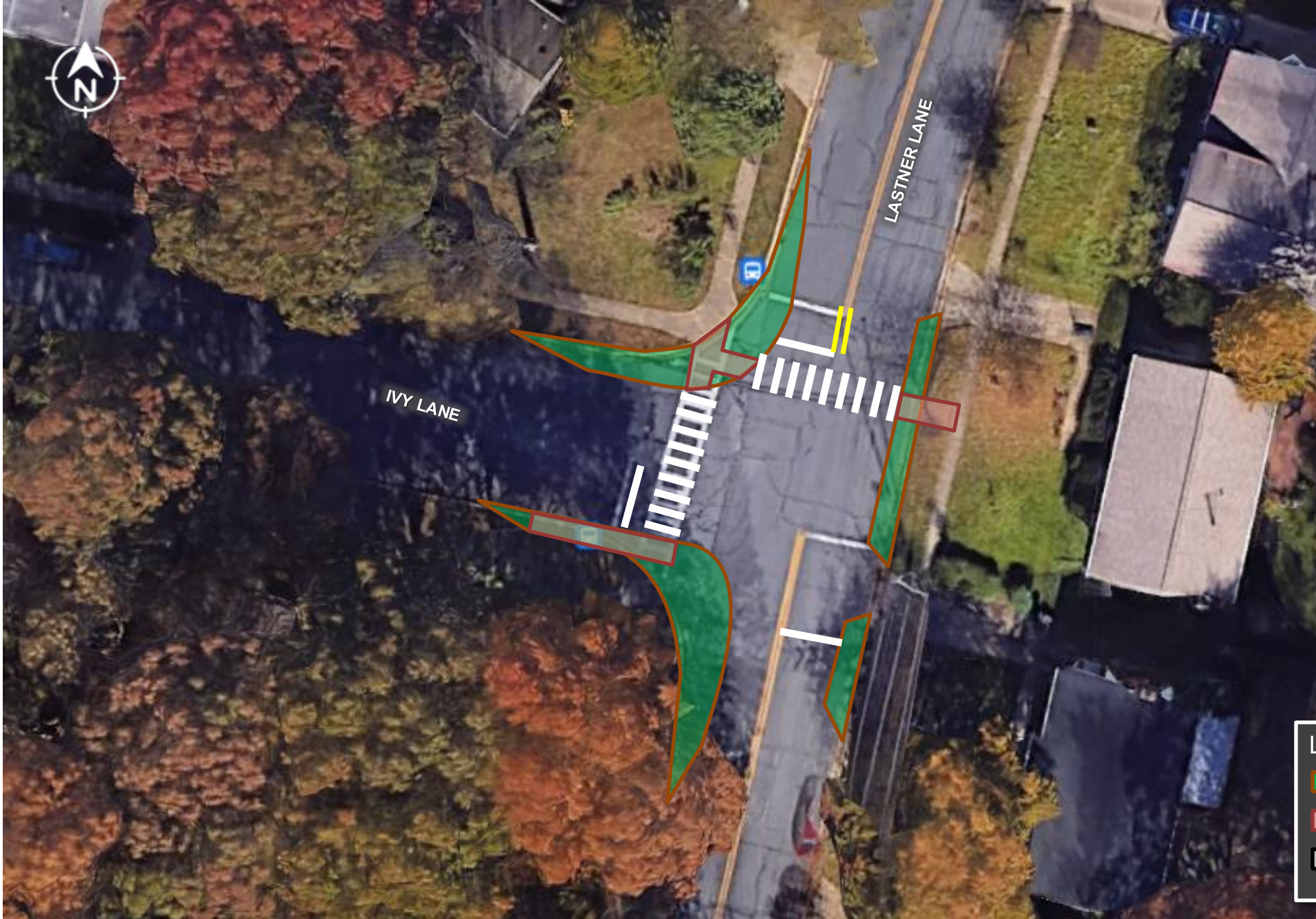




FIGURE 97 A
LASTNER LANE FROM JULIAN COURT TO HEDGEWOOD DRIVE IMPROVEMENTS



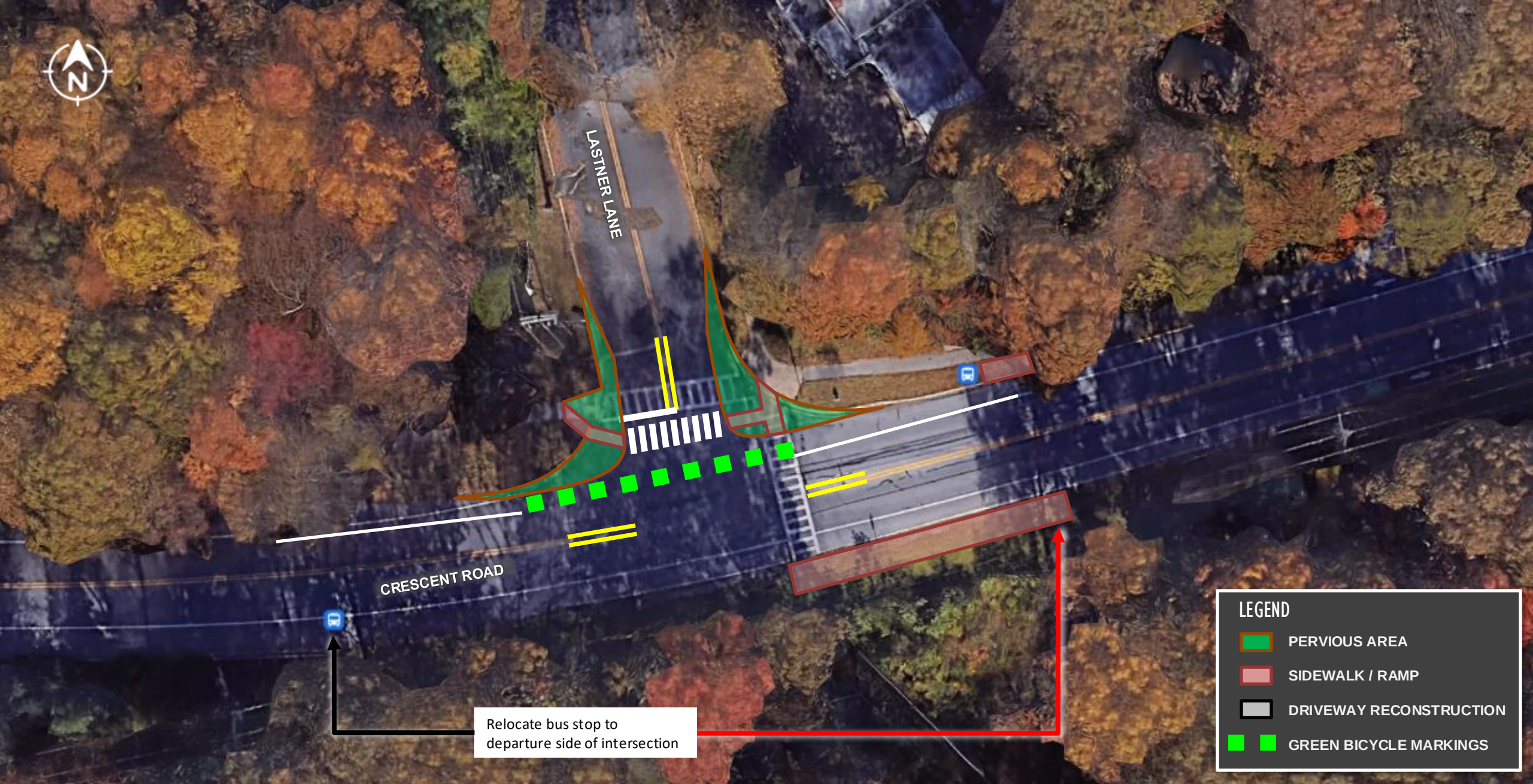
FIGURE 98 B
LASTNER LANE / ROSEWOOD DRIVE IMPROVEMENTS



LEGEND

- PERVIOUS AREA
- SIDEWALK / RAMP
- DRIVEWAY RECONSTRUCTION

FIGURE99 C
LASTNER LANE / IVY LANE IMPROVEMENTS



Relocate bus stop to
departure side of intersection

LEGEND

PERVIOUS AREA

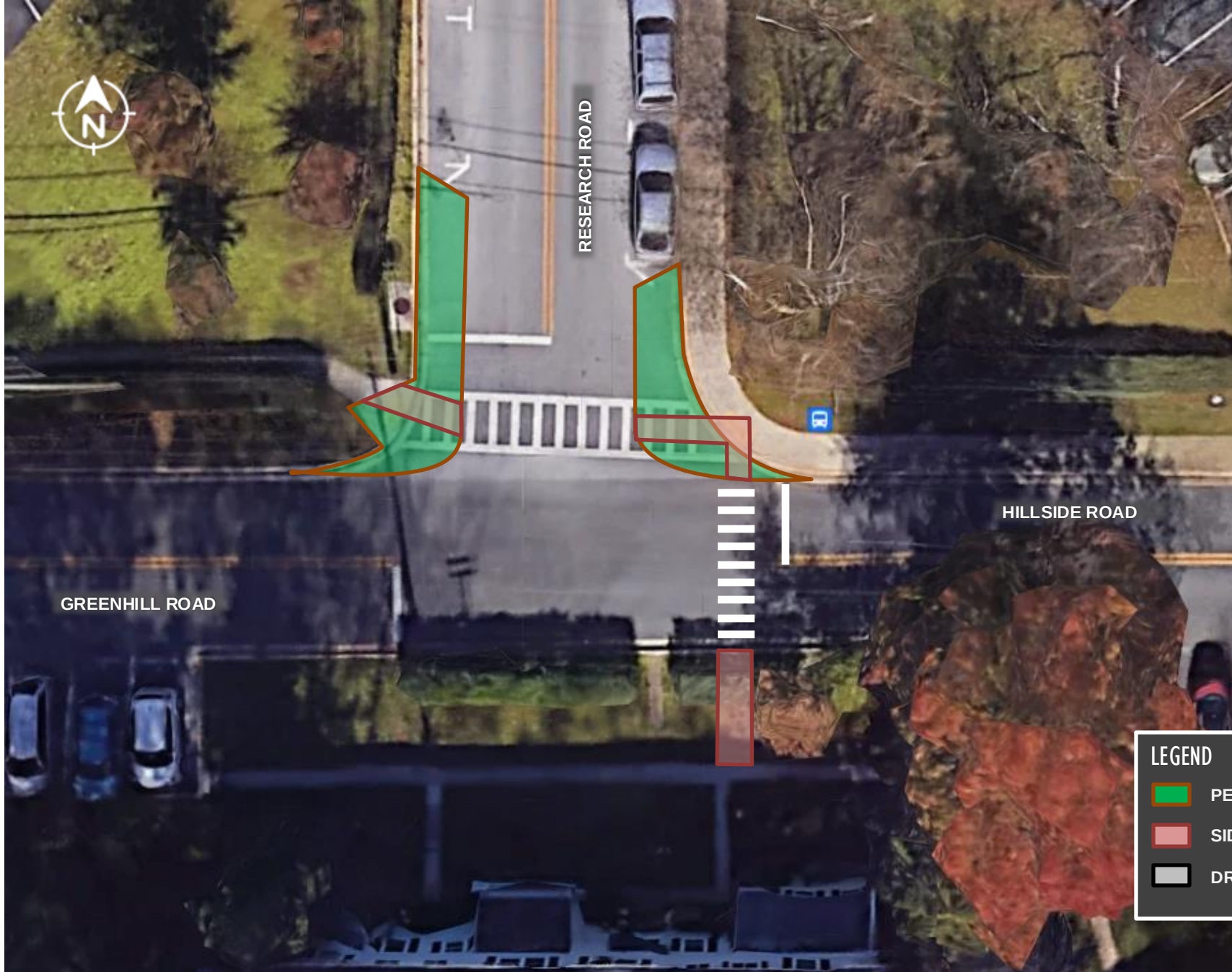
SIDEWALK / RAMP

DRIVEWAY RECONSTRUCTION

GREEN BICYCLE MARKINGS







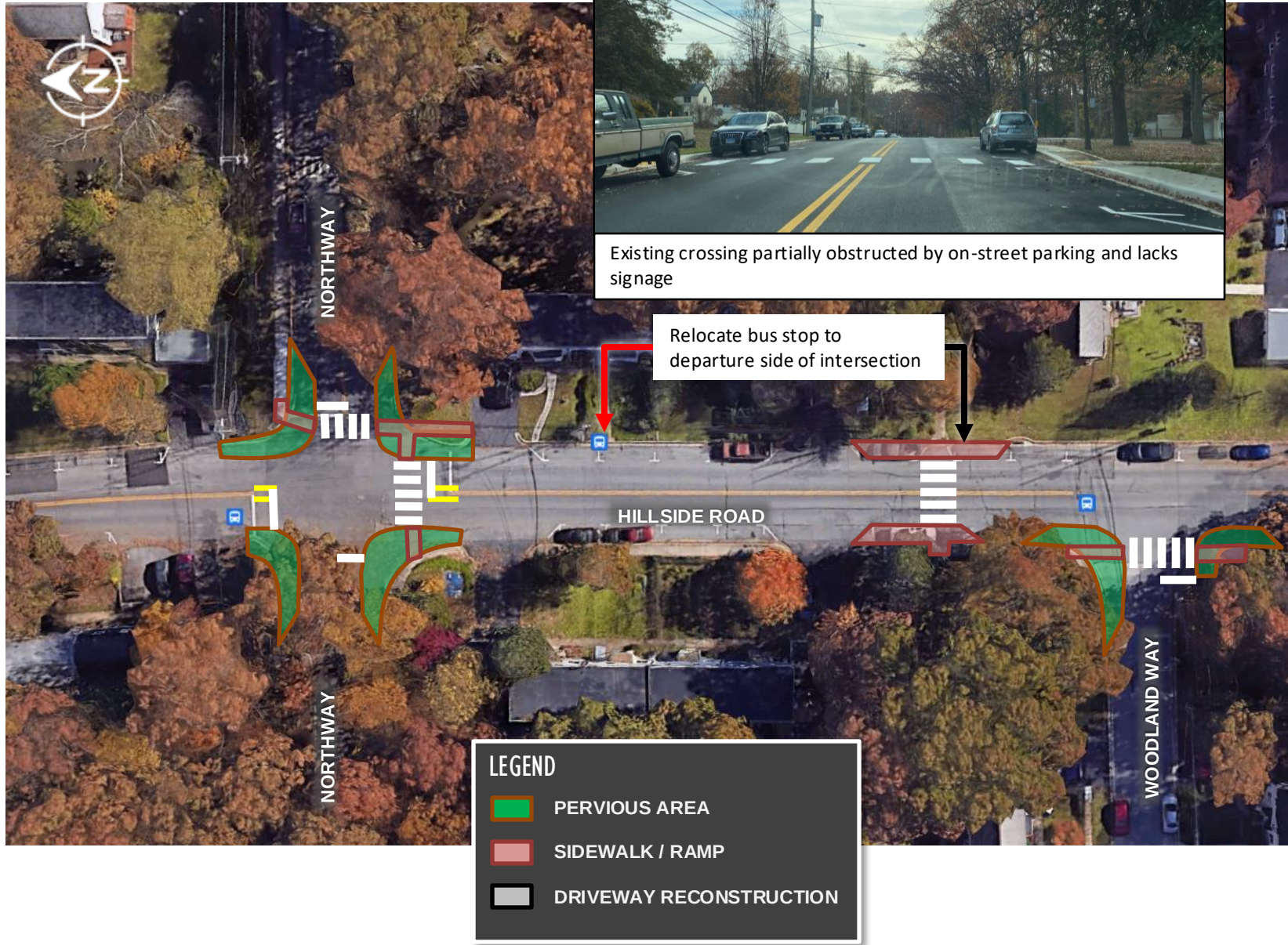


FIGURE 104 A
HILLSIDE ROAD FROM NORTHWAY TO WOODLAND WAY IMPROVEMENTS



Study & Report Timeline

Data collection
(completed)

Draft report
preparation and
internal review
(completed)

Advisory Planning
Board (APB)
Meeting
10/16/2024

Community/Public
Meeting
10/29/2024

City Council Work
Session
11/20/2024

Collect all comments
and make revisions
Fall/Winter 2024

Submit final report
to APB for
recommendation to
Council
Winter/Spring 2025

Submit final report
to City Council for
adoption
Winter/Spring 2025



**Greenbelt Advisory Planning Board
Wednesday, October 16, 2024
6:30 pm**

**Greenbelt Community Center
Room 201**

UNAPPROVED MEETING MINUTES

Minutes prepared by Jaime Fearer

- I. The meeting was called to order at 6:56 pm.

<u>Members</u>	<u>Present</u>	<u>Absent</u>
Keith Chernikoff		X
James Drake	X	
Ben Friedman, Chair	X	
Isabelle Gournay, Vice Chair		X
Matthew Inzeo	X	
Maria Silvia Miller (6:50 pm)	X	
Syed Shamim		X

BOARD MEMBERS PRESENT: Ben Friedman, James Drake, Matthew Inzeo, Maria Silvia Miller

STAFF PRESENT: Jaime Fearer

COUNCIL LIASION AND/OR COUNCILMEMBERS PRESENT: Danielle McKinney

ALSO PRESENT: Alan Wang, GPI; Angie Strevig, GPI; Bill Orleans

- II. Agenda: Approved as presented.
- III. Minutes of September 18, 2024: Approved as presented.
- IV. Council Liaison Update:
- Ribbon-cutting for CCI earlier in the day
 - Work Session with Beltway Plaza – likely some next steps APB can work on
 - New merchant coming to the former Boston Market
 - No merchant yet identified for former TJ Maxx
 - Prince George’s County Municipal Association discussion on Maglev 10/17/24

- Proposed removal of armrests from city benches removed from 10/14/24 Council agenda
- Concerns about vehicular speeds at Cherrywood and Ivy Lanes

V. Discussion: Draft Traffic Calming Study: Greenbelt Center City

- Question: How were the locations for the speed study determined?
- Question: Does the collision data consider changes in driver volumes and behavior due to the pandemic?
- Question: Does the collision data include parking lot collisions? (i.e., Lakeside Drive near Lakecrest Drive)
- Comment: Annotate the figures to make it clearer what is new striping/markings
- Comment on 5B: Don't believe that speeding is the issue with this segment, and may be drivers running the stop sign on Lakecrest driving from north to south; median might cause more collisions
- Question: Why not put stop signs on Lakeside at Maplewood Court?
 - GPI Response: Stop signs need to be warranted
- Comment: Speeding buses (school and transit) on Ridge Road
- Comment: Stretches of Ridge Road with no natural stops contributes to the speeding. What is the best practice for adding stop signs?
 - GPI Response: Stop signs are not considered traffic calming and need justification
- Comment: Stop sign compliance issues at Ridge Road and Gardenway
- Comment: Ridge Road between Westway and Southway – concerns about sightlines at crosswalks
- Comment: Concerns about losing parking for crosswalk improvements/daylighting
- Comment: Be clearer about what the study means by short-term

VI. Staff Updates:

- Advisory Board/Committee Dinner – Sunday, October 20, 5:00 – 8:00 pm at Martin's Crosswinds
- Majority of the ARPA Ped/Bike and Bus Stop projects for procurement approved by Council over the past month
- T-Mobile not moving forward with temporary monopole; replacing coverage by utilizing existing facilities
- Draft "Traffic Calming Study: Greenbelt Center City":
 - The general Community Meeting will be Tuesday, October 29, 2024, at 7:00 pm, Community Center, Room 201
 - It would be great to have APB members in attendance to help "staff" project tables on October 29.
 - The Council Work Session is re-scheduled for Wednesday, November 20, at 7:30 pm (in lieu of a regular APB meeting that evening)
- Greenbelt Strategic Wayfinding Plan: Council Work Session re-scheduled for Monday, December 16, 7:30 pm

- VII. New Business:
- No new business was discussed.
- VIII. The meeting adjourned at 8:31 pm.

DRAFT

MEETING MINUTES

MEETING DATE: October 29, 2024

LOCATION: 15 Crescent Rd, Greenbelt, MD 20770 room 201

IN ATTENDANCE:

City Staff:

- Emmett Jordan – Mayor
- Kristen L.K. Weaver – Mayor Pro Tem
- Danielle McKinney
- Amy Knesel

Advisory Planning Board Members:

- Ben Friedman, Chair
- Maria Silvia Miller
- James Drake
- Keith Chernikoff

Greenbelt City Staff:

- Terri Hruby – Director of Planning & Community Development
- Jaime Fearer – Assistant Director of Planning
- Ryan Sigworth – Community Planner II

GPI:

- Angie Strevig – Director of Highway Engineering
- Alan Wang – Project Manager

SUBJECT: Traffic Calming Study for Greenbelt City Center – Public Meeting

Project limits and location:

- Consider making parkway one-way south to north rather than north to south
- Parkway needs speed bumps
- Please consider pedestrian way finding along Crescent between Southway and Gardenway and for the inner paths.
- Low visibility when making turns on Westway and Ridge Road intersections
- Not safe or comfortable to cross as a cyclist at Crescent and 201.

Collisions:

- Lighting needs to be improved at Southway and Ridge Road
- Laurel Hill and Ridge Road in great need of improvements as well. Extremely busy with school traffic. Access to internal pathway is hidden and does not connect to sidewalk network. Needs sidewalk.

Project limits and location:

- Crescent at Southway needs major bump-outs.
- Chicanes on the Eastway and Ridge Road.

Ridge Road:

- 4A
 - Need raised crosswalk with bumpout at playground between 4A and 4B.
- 4B
 - Install a real sidewalk from 90 Ridge to Lastner.
 - Need raised crosswalk with bumpout at playground between 4A and 4B.
- 4C
 - Ask Terri/Jaime- At the stop signs, do the cameras ticket? How do they measure? Where is the data?
 - When parents drop off and pick up kids is extremely busy, should see at that time.
 - Road narrows will reduce areas for cyclists to move out of the travel way as frequently.
- 4D
 - Plateau needs stop signs on Ridge Road, a 3-way stop.
 - The playground needs a tall fence on Ridge.
 - There is room for a small roundabout since there are green spaces around the intersection.
 - There are so many bus stops with no or little to no sidewalk or connections. Happy to see them considered.
 - This area has a parking on one side, alternating which side parking is allowed creates chicanes.
- 4E
 - Set up bump outs so that approaching intersection is at 90 degrees.
 - Tighter turning radius(Bottom southbound corner)
 - Need walkway to and from methodist church.
- 4F
 - Waiting behind the bus is an acceptable calming technique, keep it.
 - Yes please, remove parking from bus stops.
- 4G
 - Can you do anything to narrow to see better?
- 4H
 - Good to see stop lines further forward
 - Tighter turning radius!
- 4I
 - Good idea on the RRFB flashing lights
 - I see this problem a lot very scary - Entrances to crosswalk obstructed by parked vehicles.
- 4J
 - Please move the stop line on the west side of Ridge at Southway closer to the intersection.
 - If there is an intersection that has space for a roundabout this, is it.
- 4K
 - Reconsider this third raised crosswalk, there is no connecting path on both sides. (second crosswalk from Westway and ridge intersection)
 - Curvature of Ridge Road limits pedestrian visibility of vehicles when moving from South to North. May need to remove parking spots or have flashing crosswalks.
 - The curvature also limits driver's visibility turning put of 14ft Ridge Road.
 - Please consider removing one or more parking spaces on the north side of Ridge between the 13 court driveway and Southway.
 - There is an informal crossing between 13, 15 courts- curbs cut on the North side but none

on the South side. A lot of people cross here because it's a major interior walkway on the North side but there is no sidewalk parallel to Ridge Road on the northside, so you have to cross to continue. A crosswalk here would be great but would cause the loss of two parking spaces unless they could be aligned slightly Eastway.

Lakeside Drive:

- 5A
 - Stop sign at Maplewood and lakeside intersection
 - Or flashing crosswalk instead of stop sign.

Lastner Lane:

- 6B
 - Crosswalks is a good idea but this road being a slope, it may be dangerous for pedestrians due to speeding vehicles. Consider possible mitigation strategies.
- 6D
 - Green bicycle markings - YES!!! (X2)

Hillside Road:

- 8A
 - Hillside and Laurel Hill intersection needs bump-outs/more crosswalks

City Council Work Session Agenda Item Report

Meeting Date: November 20, 2024

Submitted by: Shaniya Lashley-Mullen

Submitting Department: Administration

Item Type: Special Meeting Item

Agenda Section: Work Session Packet - Traffic Calming Study: Greenbelt Center City

Subject:

Special Meeting/Closed Session - Personnel Matters and City Manager's Evaluation Overview

Suggested Action:

Attachments:

[Closed Session Official Notice 241120.pdf](#)



OFFICIAL NOTICE

By Section 3-305(b)(1) of the General Provisions Article of the *Annotated Code of the Public General Laws of Maryland*, a closed session of the Greenbelt City Council will be held on Wednesday, November 20, 2024, immediately following the Work Session – Traffic Calming Study: Greenbelt Center City, in the Council Chambers of the Municipal Building, to discuss the appointment, employment, assignment, promotion, discipline, demotion, compensation, removal, resignation, or performance evaluation of appointees, employees, or officials over whom it has jurisdiction; or any other personnel matter that affects one or more specific individuals.

The purpose of this meeting is 1) to address personnel matters over which this public body has jurisdiction; and 2) to discuss the City Manager's Evaluation Overview

** The public may attend the Special Council Meeting of the City Council immediately before the closed session and observe the vote of the Council to move into the closed session on Wednesday November 20, 2024.*

Bonita Anderson
City Clerk