Existing Conditions Report

Edsall Road Corridor Improvements Study

From S Pickett Street to Western City Line

PREPARED FOR

City of Alexandria and
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Introduction

Background

In 2021, the City of Alexandria (i.e., the City) adopted the Alexandria Mobility Plan (AMP), the comprehensive transportation plan that establishes key principles for guiding the development of the City's transportation system. These principles include eliminating all traffic deaths and serious injuries by 2028 and prioritizing low-carbon, safe, inclusive, and accessible mobility options for all. Following the AMP development, a bicycle network was proposed and the City identified Edsall Road as a key bicycle connection.

The Edsall Road corridor serves relatively high-density housing or mixed-use development and provides access to nearby pedestrian and bicyclist activity centers, including Samuel Tucker ES. However, active transportation facilities along the corridor are frequently uncomfortable or absent, and crash data indicates a significant number of injury crashes involving vulnerable users over the past few years. The City of Alexandria is seeking to implement corridor improvements on Edsall Road that promote safety and mobility for all road users, in line with the strategies outlined in the AMP.

In 2024, the City of Alexandria was awarded a technical assistance grant through the Metropolitan Washington Council of Governments' Transportation-Land Use Connections Program (MWCOG-TLC) conduct a corridor study and develop conceptual improvement plans for Edsall Road.

Study Area

The study area consists of approximately one mile of Edsall Road between South Pickett Street and western limit of the City of Alexandria (just east of Winter View Drive). An overview of the study area is shown in Figure 1.

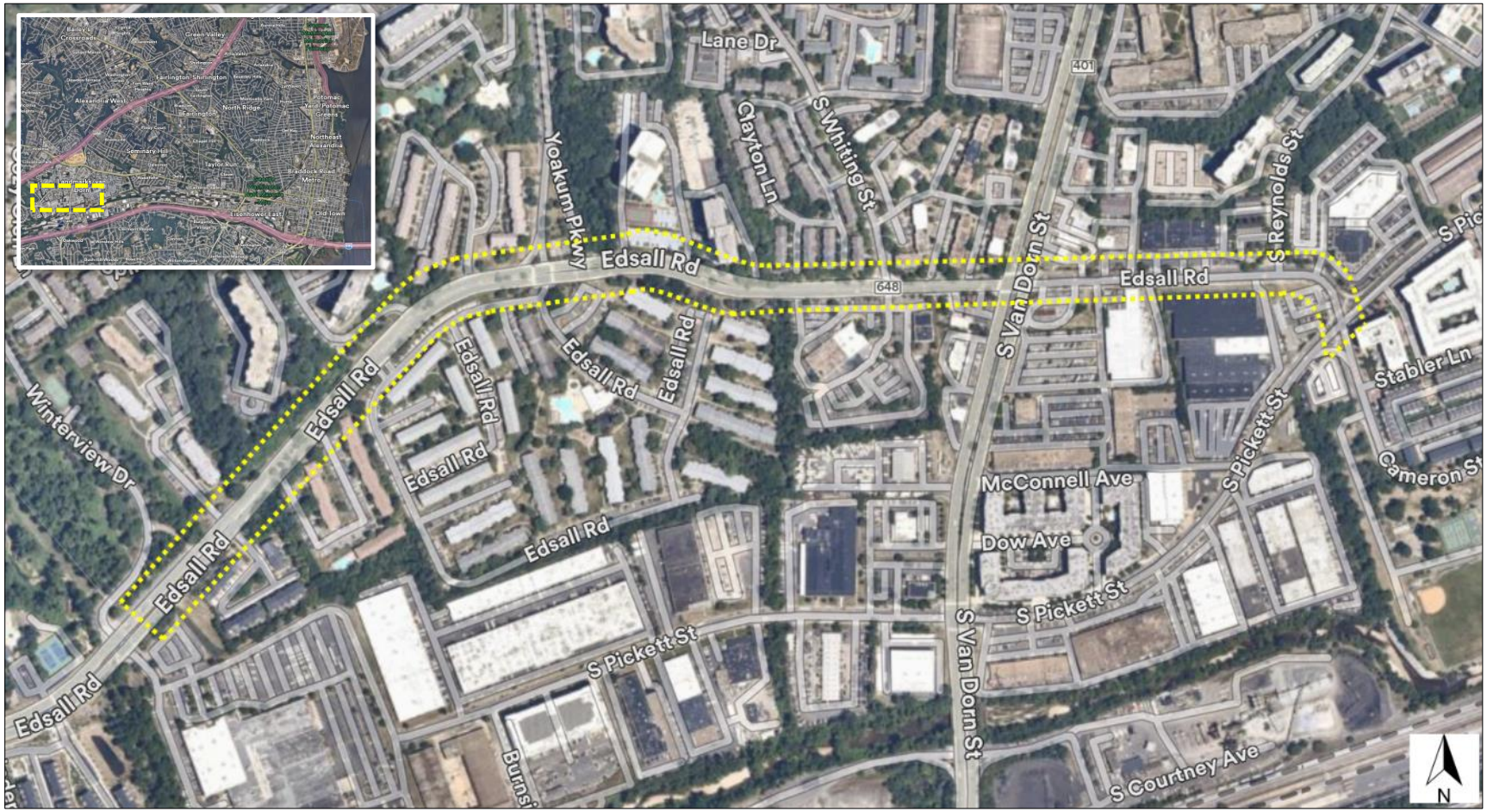


Figure 1. Edsall Road Study Area Overview

Existing Conditions

Study Area Characteristics

Edsall Road is primarily east-west oriented within the study limits. It is classified as a major collector between South Pickett Street and South Van Dorn Street and transitions into a minor arterial west of South Van Dorn Street. Edsall Road serves as a key connection to I-395 and carries significant commercial truck traffic into and out of the city.

The speed limit on Edsall Road is 25 miles per hour (MPH) between South Pickett Street and South Whiting and transitions to 35 MPH near Yoakum Parkway. Within the study area, Edsall Road begins as a four-lane undivided roadway at South Pickett Street and widens to five lanes featuring right and left lanes at South Van Dorn Street and South Whiting Street intersections. The corridor becomes a four-lane roadway with a raised landscaped median west of South Whiting Street through the western project limit, with median openings and left-turn pockets at access points to residential complexes along the western half of the study corridor.

Edsall Road intersections with South Pickett Street, South Van Dorn Street, South Whiting Street, and Yoakum Parkway are signal-controlled. The Edsall Road intersection with South Reynolds Street is two-way Stop-controlled.

The terrain along Edsall Road varies significantly within the study area, with significant grade changes near South Pickett Street and South Van Dorn Street intersections, as well as sharp horizontal curvature between South Pickett Street and South Reynolds Street. These changes negatively impact both sight distance and sidewalk accessibility in these areas and contribute to speeding.

Sidewalks are present on both sides of Edsall Road throughout the study area with connecting sidewalk facilities on most minor streets. There are marked crosswalks across Edsall Road only at signalized intersections throughout the study corridor. The distance between marked crosswalks is approximately 1,200 feet apart between South Pickett Street and South Van Dorn Street, 370 feet between South Van Dorn Street and South Whiting Street, and 1,200 feet between South Whiting Street and Yoakum Parkway. There are no dedicated bicyclist facilities on Edsall Road. However, bicycle lanes are planned for South Pickett Street and Yoakum Parkway, through their intersections with Edsall Road. There is no parking allowed along Edsall Road anywhere in the study area.

Land use along this corridor is primarily medium- and high-density residential, commercial, and industrial. Alexandria Complete Streets Guidelines include several street typologies and classifies Edsall Road as an Industrial Corridor, built to accommodate commercial trucks[1].

There are several car rentals and dealerships, car wash facilities, gas stations, large storage units, and shopping plazas along the corridor that generate vehicle traffic, including large vehicles. Hertz and Enterprise car rentals and BMW of Alexandria are located between South Pickett Street and South Reynolds Street intersections. There are several commercial shopping plazas near the intersection of South Van Dorn Street, including LA Mart International and Fair Price and 7-Eleven shopping strip, as well as Shell and Exxon gas stations and Mr. Wash car wash located directly at the intersection of Edsall Road and South Van Dorn Street. Starting on the west side of South Van Dorn Street, the land use becomes more residential and includes multiple condominium and apartment complexes towards Yoakum Parkway intersection and beyond. These include Highpointe Condominiums, South Port Apartments, and Landmark Ridge. Figure 2 shows the existing land use along the corridor.

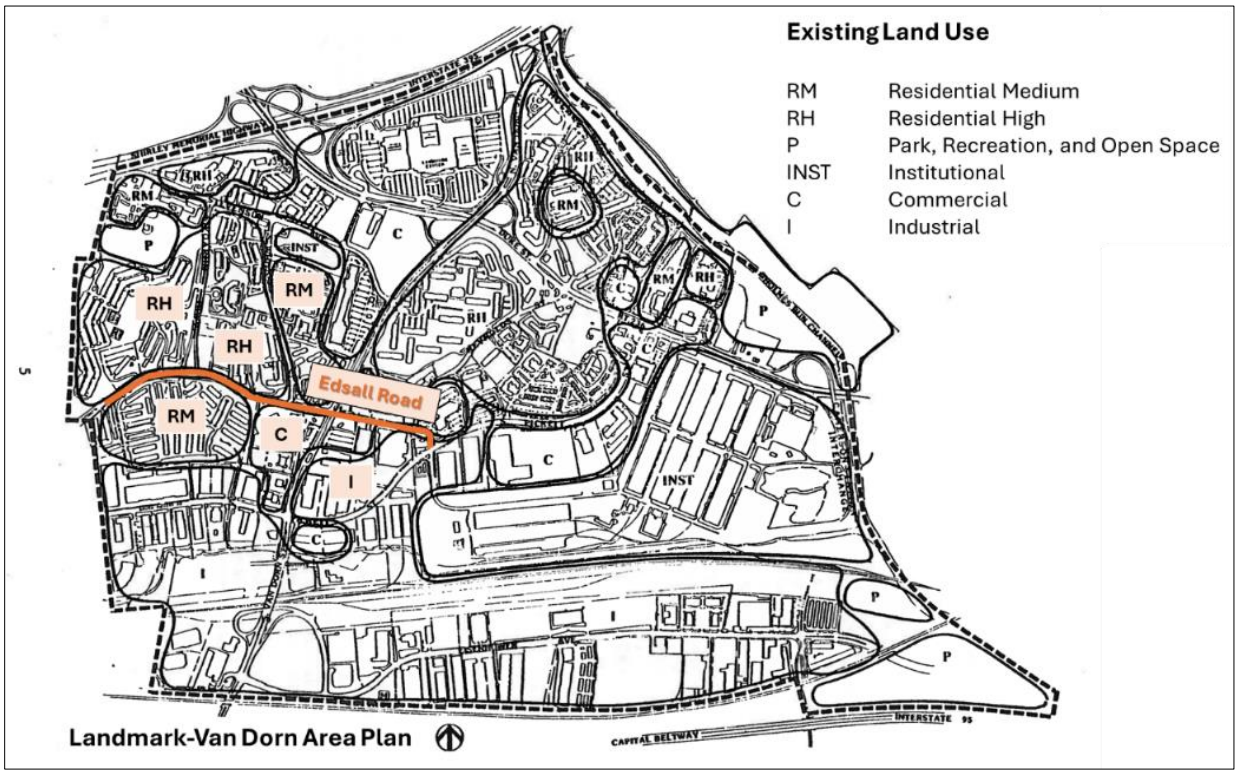


Figure 2. Land Use along Edsall Road (source: Alexandria Master Plan)

[1] Alexandria Complete Street Guidelines emphasizes that despite fewer pedestrians and bicyclists using industrial corridors as their destination, many of these corridors still serve as through routes to adjacent destinations and should provide accommodations for safe passage of pedestrian and bicyclists.

There are frequent driveways along Edsall Road, particularly on the east half of the study corridor between South Pickett Street and South Van Dorn Street. Driveway frequency decreases on the west half of the study corridor with the raised median, west of South Whiting Street. Lastly, Samuel W. Tucker Elementary School is located south of the study area on Cameron Station Boulevard. A summary of the corridor characteristics is shown in Table 1.

Table 1. Corridor Characteristics

Characteristic	Description
Orientation	East-West
Functional Classification	Major Collector (east of S Van Dorn Street) Minor Arterial (west of S Van Dorn Street)
Estimated Annual Average Daily Traffic (AADT) in 2021 (vehicles per day)[2]	9,100 (east of S Van Dorn Street) 12,000 (west of S Van Dorn Street)
Average Daily Volume (ADT) in 2024 (vehicles per day)[3]	10,400 (east of S Van Dorn Street) 15,600 (between S Van Dorn Street and Yoakum Parkway) 14,700 (east of Yoakum parkway)
Speed Limit (MPH)	35 (west of S Whiting Street) 25 (east of S Whiting Street)
Number of Lanes	4 lanes undivided (2 each direction) E of S Van Dorn Street 5 lanes (2 each direction & turn lanes) W of S Van Dorn Street 4 lanes w/ median (2 each direction & turn pockets) W of S Whiting Street
Lane Widths (feet)	11' (Typical)
Land Uses	Medium- and High Density Residential, Commercial, Industrial
Transit	7 bus stops in the westbound direction, 6 bus stops in the eastbound direction – 3 transit providers. Washington Metropolitan Area Transit Authority (WMATA): Routes 21C & 7A Fairfax County: Routes 321 & 322 City of Alexandria DASH: Routes 30 & 31
Pedestrian Facilities	Sidewalks along both sides of Edsall Road for the entire corridor. Marked crosswalks across Edsall Road are provided at 4 intersections along the corridor – all at signalized intersections. Multiple bus stop locations are not served by crosswalks and/or are substantially distanced from marked crosswalks
Bicycle Facilities	None on Edsall Road. Future bicycle lanes are planned for S Pickett Street and Yoakum Partway, directly connecting to Edsall Road

[2] Estimated Annual Average Daily Traffic with Factored Short Term Traffic Count Data with Growth Element, per VDOT https://www.vdot.virginia.gov/doing-business/technical-guidance-and-support/traffic-operations/traffic-counts/

[3] Volume counts conducted by the City of Alexandria on March 12-14, 2024, rounded to the nearest 100.

Relevant Planning Documents

Planning documents for the City of Alexandria and plans for nearby developments and projects were reviewed to identify priorities for the corridor, and coordinate with nearby planned or ongoing projects as needed. Some of these plans include recommendations and proposed improvements for the study area that may impact the design alternatives developed as part of this project. The relevant planning documents that were reviewed in this study are summarized in the following sections.

Alexandria Mobility Plan

Alexandria Mobility Plan (AMP) was developed in 2021 and established several guiding principles for future the development of the transportation system. The Guiding Principles of the AMP for the City include:

- Work to make its transportation network easily accessible for users of all ages and abilities.
- Provide a transportation system with high-quality mobility options that are reliable, frequent, proximate, and comfortable.
- Acknowledge the disparities in neighborhoods and populations in the city that have been historically underserved.
- Eliminate all traffic deaths and serious injuries by 2028.
- Prioritize low-carbon mobility options and reduce automobile dependency.

To support these principles, the City established mode-specific strategies and priority networks and adopted a plan for a citywide bicycle network, as shown in Figure 3. The plan proposed "Enhanced Bicycle Facility" on Edsall Road between South Pickett Street and the City line.

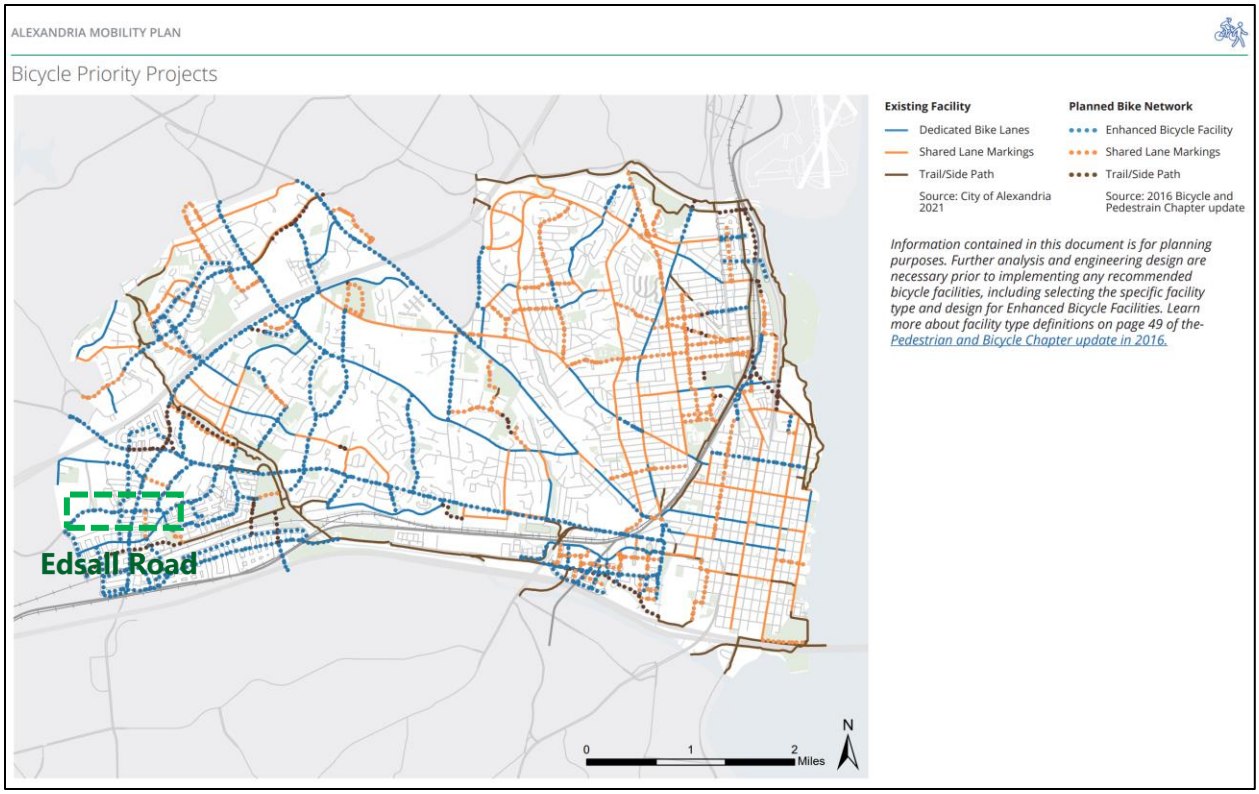


Figure 3. AMP Bicycle Priority Projects

Vision Zero Action Plan

The City of Alexandria published a Vision Zero Action Plan in 2017, to help achieve the City's goal of zero deaths and serious injuries by 2028 and building a safer city where human life and safety is valued above all else.

An evaluation of fatal and serious injury crashes in Alexandria revealed that while pedestrians and bicyclists were involved in only 6% of total crashes, they were overrepresented in serious crashes, with 34% of fatal and serious injury crashes involving a pedestrian or a bicyclist. The Vision Zero Action Plan has developed a map of High Injury Network (HIN), that was updated in 2022, based on ten years of crash data (2011 – 2016). While Edsall Road was not identified as a HIN corridor, it is located adjacent to South Van Dorn Street, including the intersection of Edsall Road and South Van Dorn Street that falls within the project study area. Figure 4 shows Alexandria's map of high injury corridors.

Figure 4. Alexandria High Injury Network (2011-2020)

As part of the comprehensive crash data analysis, the City also identified high-risk conditions that lead to fatal and serious injury crashes and found speeding to be involved in 17% of these types of crashes. Figure 5 shows the high-risk conditions identified in the Vision Zero Action Plan. It is important to note the role that high vehicle speed plays in crashes that involve vulnerable road users (i.e., pedestrian, bicyclists, children, and elderly users). This is due to the human body's vulnerability to high levels of kinetic energy, making it crucial to encourage safer speeds through roadway design, as well as education, communication, and equitable speed enforcement efforts to achieve the goal of zero deaths and serious injuries.

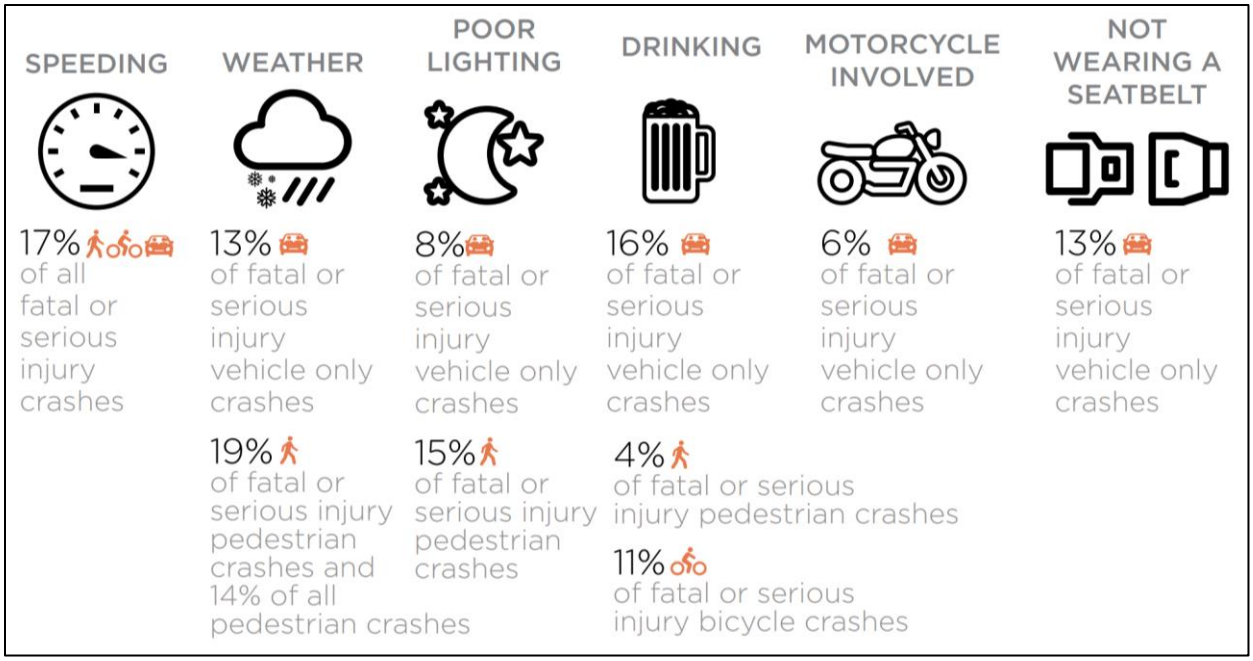


Figure 5. Alexandria Vision Zero High Risk Conditions

Greenhill / West Alexandria Development plans

The Greenhill / West Alexandria Development plan was approved in 2018 and has proposed rezoning of the site located between Edsall Road, South Pickett Street, and South Van Dorn Street from Commercial and Industrial to a Coordinated Development District (CDD) to allow for residential buildings and hotels. The redevelopment of the site will also include potentially closing two existing curb cuts along the southbound approach at the intersection of Edsall Road and South Pickett Street, and addition of new curb cuts along the south curb of Edsall Road east of South Van Dorn Street. The traffic impact study (TIS) for the development found no significant impact on traffic operations, with all but one intersection operating at or below Level of Service (LOS) E. Trip generation assumptions from the TIS will be provided by the City to be included in traffic projections for the future conditions analysis for Edsall Road. Figure 6 shows the location of the Greenhill / West Alexandria Development project.

Figure 6. Greenhill / West Alexandria Development project

South Pickett Street Corridor Improvements Project

The City of Alexandria initiated a Corridor Improvements Project for South Pickett Street in 2023, to study the corridor between Duke Street and Edsall Road. The proposed improvements include repurposing a travel lane on each direction, to accommodate one-way protected bike lanes on each side of South Pickett Street and a dedicated center running turn lane. The City Council approved the project plans in November 2024. Figure 7 shows the proposed conceptual design for the intersection of Edsall Road and South Pickett Street, which will guide the conceptual design for the Edsall Road project at this intersection to ensure that the proposed improvements by the two studies are consistent at this intersection and provide a seamless connection between the two roadways for all road users.

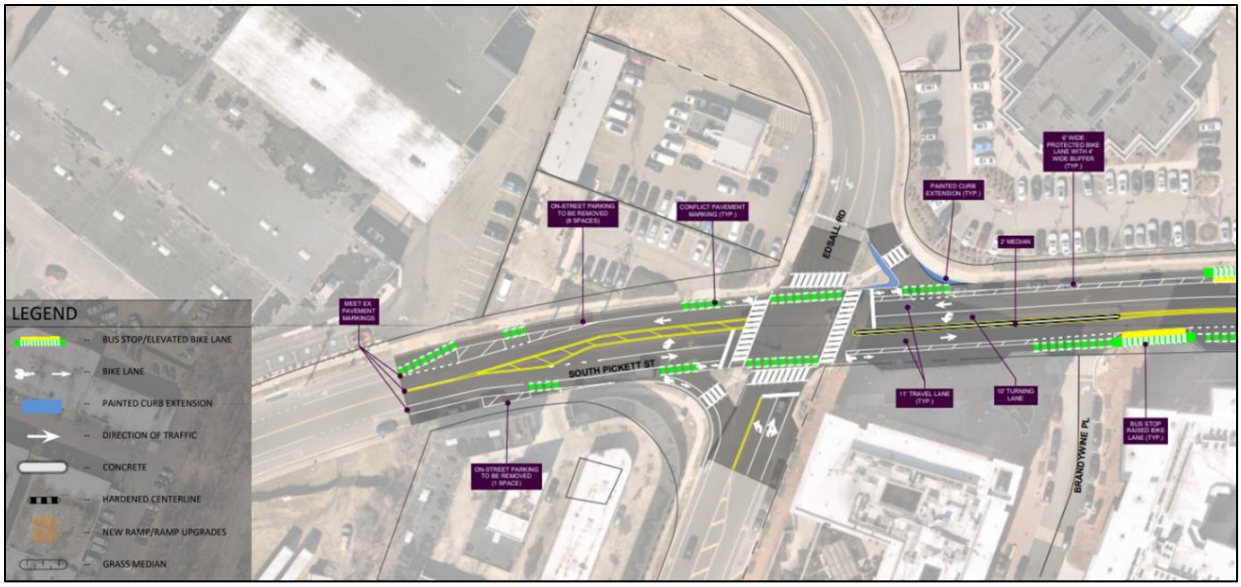


Figure 7. S Pickett Street Corridor Improvements: Concept for Edsall Road and S Pickett Street

Yoakum Parkway Corridor Improvements

The City of Alexandria is concurrently advancing a Corridor Improvements Project for Yoakum Parkway between Stevenson Avenue and Edsall Road. The project evaluates multiple alternative concepts to provide bicycle lanes and other corridor improvements along Yoakum Parkway. Figure 8 shows two alternative designs for the intersection of Edsall Road and Yoakum Parkway. One of the alternatives will require closing the westbound slip lane from Edsall Road onto Yoakum Parkway to vehicular traffic and repurpose it as a bicycle connection. Design and outreach efforts will be coordinated between the two projects to ensure that the proposed improvements are consistent for the intersection of Edsall Road and Yoakum Parkway and provide a seamless connection between the two roadways for all road users.

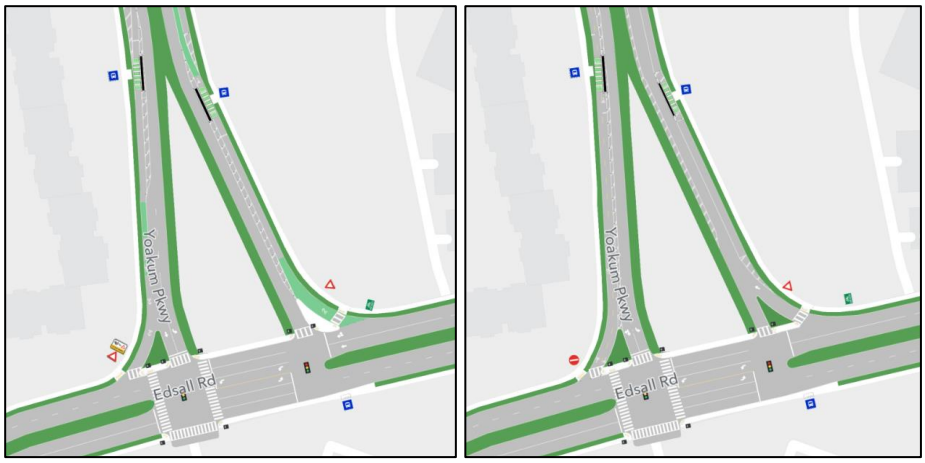


Figure 8. Yoakum Parkway Corridor Improvements
Conceptual Design Alternatives for Edsall Road and Yoakum Parkway Intersection

Samuel Tucker Elementary School Walk Audit

A walk audit was conducted for Samuel Tucker Elementary School by school officials, City staff, and parents in 2017 to assess the existing safe routes to school programming for the school, as well as the school zone infrastructure. The school is proximate to the study corridor with two study intersections (i.e., South Pickett Street and South Reynolds Street intersections) within the school zone ¼ mile walkshed. Figure 9 shows the location of the school with respect to the Edsall Road study corridor, including the ¼ mile school zone buffer.

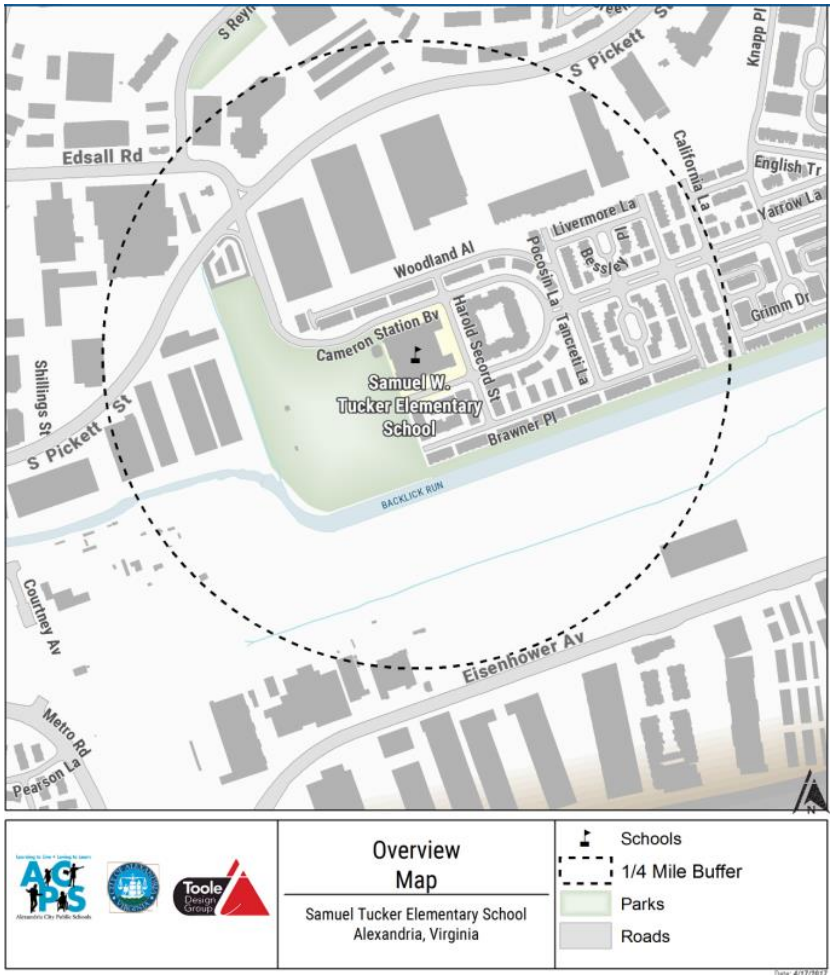


Figure 9. Samuel Tucket Elementary School Zone Overview
(source: Samuel Tucket Elementary School Zone Walk Audit Report)

A survey of parents found that less than 10% of students travel by walking and/or cycling to/from school. The survey also aimed to identify the issues that affect parents' decision to not allow their child to walk or bike to/from the school. The top three main issues reported were "amount of traffic along route" (78% of responses), "safety at intersections and crossings" (67% of responses), and "speed of traffic along route" (56% of responses).

The study resulted in several recommendations for the area around the school, including short, medium, and long-term recommendations for the intersection of Edsall Road and South Pickett Street (Figure 10). It is important that the project considers crossing improvements within the 1/4 mike walkshed of the school to promote safer routes for walking and cycling to school.

Issue	Recommendation	Timeframe*
"Right Turn Watch for Pedestrians" signage obscured by other signage	Reconfigure signage so each sign is clearly visible.	Short
Curb ramp at NW corner not ADA-compliant due to lack of gap in detectable warning surface	Add separating island between crosswalks to break up detectable warning surface	Short
Insufficient pedestrian crossing time	Provide Leading Pedestrian Interval and extended walk phase when push button activated. Alternatively, provide pedestrian-only phase during arrival and dismissal to allow students to safely cross.	Medium
Presence of slip lanes	Provide raised crosswalk across slip lane. NOTE: Limited ROW prevents the elimination of slip lanes.	Long

Figure 10. School Walk Audit Recommendations for Edsall Road and S Pickett St intersection

Traffic Data

Turning Movement Counts

Turning movement counts (TMCs) were provided by the City for the intersections within the study limits. The counts were conducted on Tuesday, Wednesday, and Thursday, March 12th, 13th, 14th, 2024 from 7:00 to 11:00 AM and 3:30 to 7:30 PM. The traffic volumes were averaged over these three days counts, with the overall vehicular AM and PM peak hours occurring from 7:30 to 8:30 AM and 4:45 to 5:45 PM, respectively. All study interactions are controlled by a traffic signal, except for the intersection of Edsall Road and South Reynolds Street, which is controlled by a stop sign on the South Reynolds Street approach.

The volumes were balanced between all the intersections except between the two intersections of Edsall Road at South Van Dorn Street and Edsall Road at South Reynolds Street. The imbalance between these two intersections can be attributed to the traffic activity generated by the commercial access points located within this section. To balance the volume across the intersections and reduce the imbalance between the abovementioned intersections, volumes were added to the through movement along Edsall Road. This adjustment reduced the imbalanced traffic to 10% of the through movement volumes.

Appendix A presents the detailed breakdown of the balanced volumes and the remaining imbalance along Edsall Road between Van Dorn Street and South Reynolds Street. Figure 11 shows the balanced turning movement volumes for study intersection during 7:30 to 8:30 AM and 4:45 to 5:45 PM.

Pedestrian and Bicyclist Volume Counts

The City provided bicycle and pedestrian volumes in addition to the vehicular turning volumes. The counts were conducted on Tuesday, Wednesday, and Thursday, March 12th, 13th, 14th, 2024. Figure 12 and Figure 13 show the pedestrian and bicycle volumes at the study interactions during the full data collection periods (i.e., 7:00 to 11:00 AM and 3:30 to 7:30 PM). The data indicates that some pedestrians are crossing Edsall Road at South Reynolds Street, despite the lack of marked crosswalks at this intersection.

Existing Conditions Traffic Analysis

Synchro Professional (Version 11) Software was used to develop AM and PM peak hour models for existing conditions analysis. These models were based on existing lane configurations, 2024 peak hour volumes, and traffic signal timings and phasing provided by the City. Signal phasing was verified through field observations and Google Street View. Measures of Effectiveness (MOEs) including control delay (seconds per vehicle), Level of Service (LOS), and 95th percentile queue lengths were evaluated in accordance with the HCM 2000 methodologies.

The analysis indicates that all approaches at the study intersections operate at LOS D or better, except for the eastbound and westbound approaches at the intersection of Edsall Road and South Van Dorn Street, which operate at LOS E during both peak hours[4]. All 95th percentile queue lengths are within their respective storage length available, except for the northbound left-turn lane from Cameron Station Boulevard to South Pickett Street. Additionally, 95th percentile queue length on the eastbound approach of South Pickett Street at Edsall Road exceed the storage lane length for right-turning vehicles, resulting in blockages.

The intersection delay and LOS results for the study intersections are summarized in Table 2. Detailed Synchro output reports provided in *Appendix B*.

[4] Edsall Road and South Van Dorn Street Intersection is not within the scope of Edsall Road Corridor Study

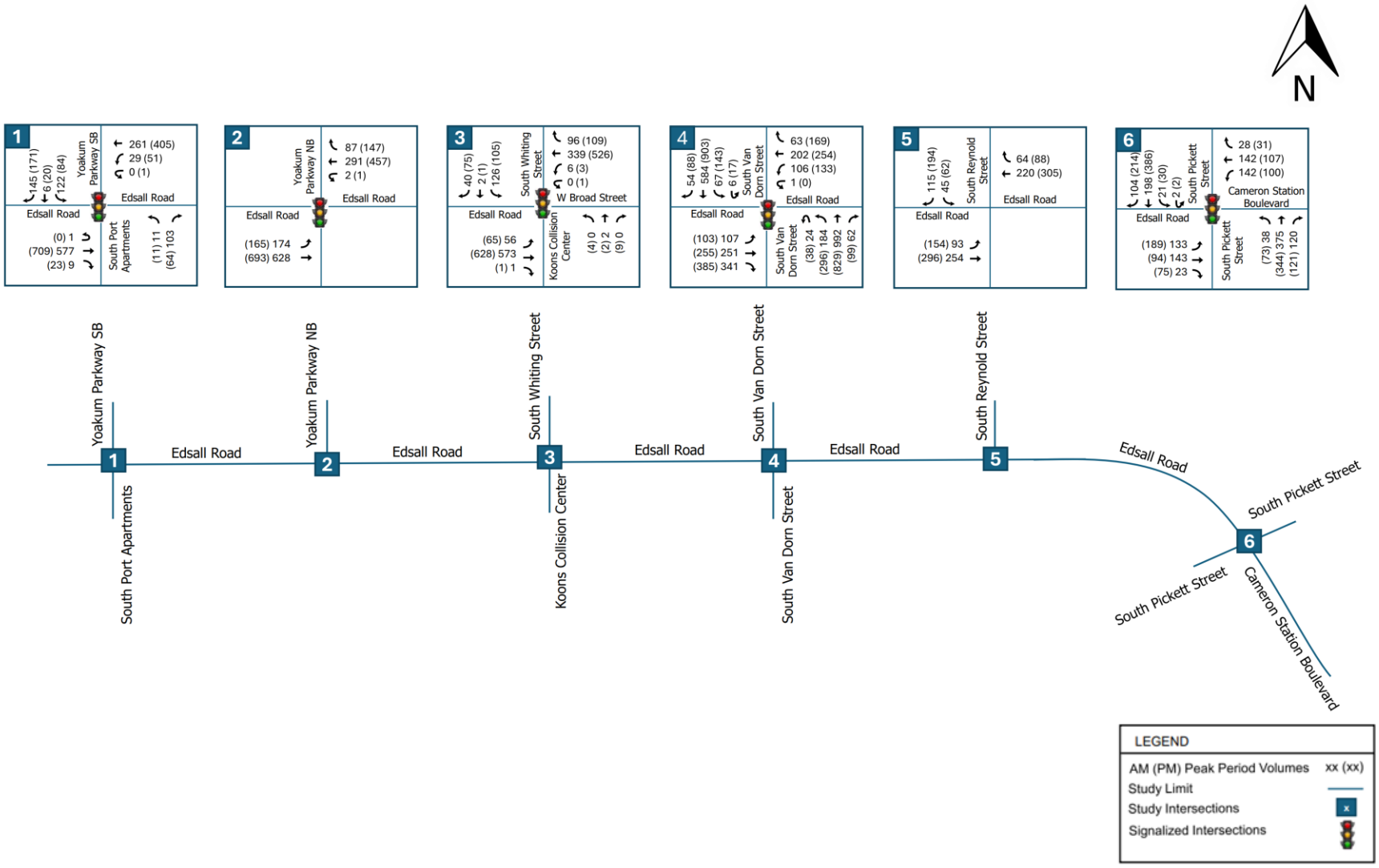


Figure 11. Edsall Road Existing Condition AM (PM) Peak Hour Turning Movement Volumes

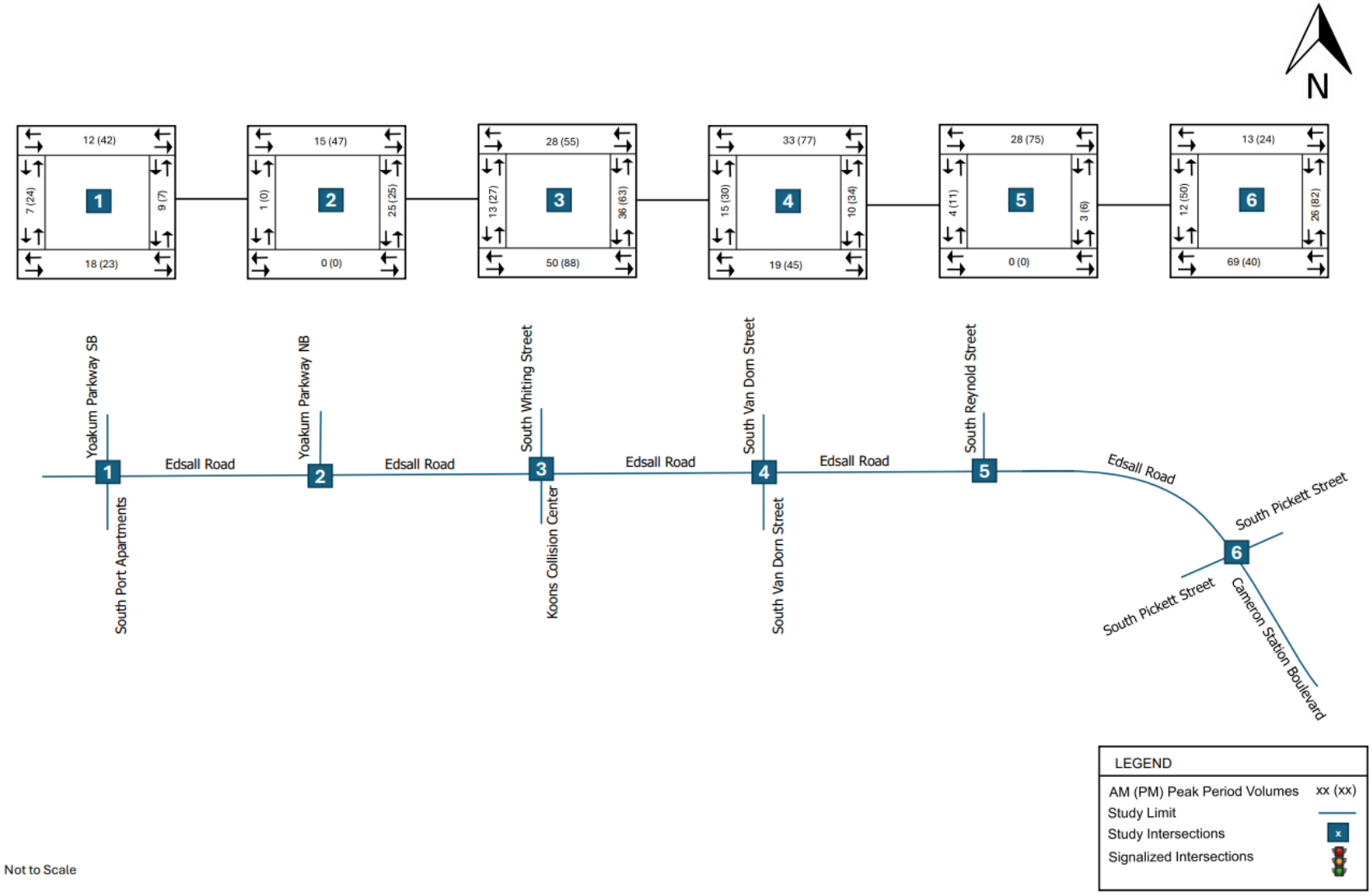


Figure 12. Edsall Road Existing Condition AM (PM) Period Pedestrian Volumes

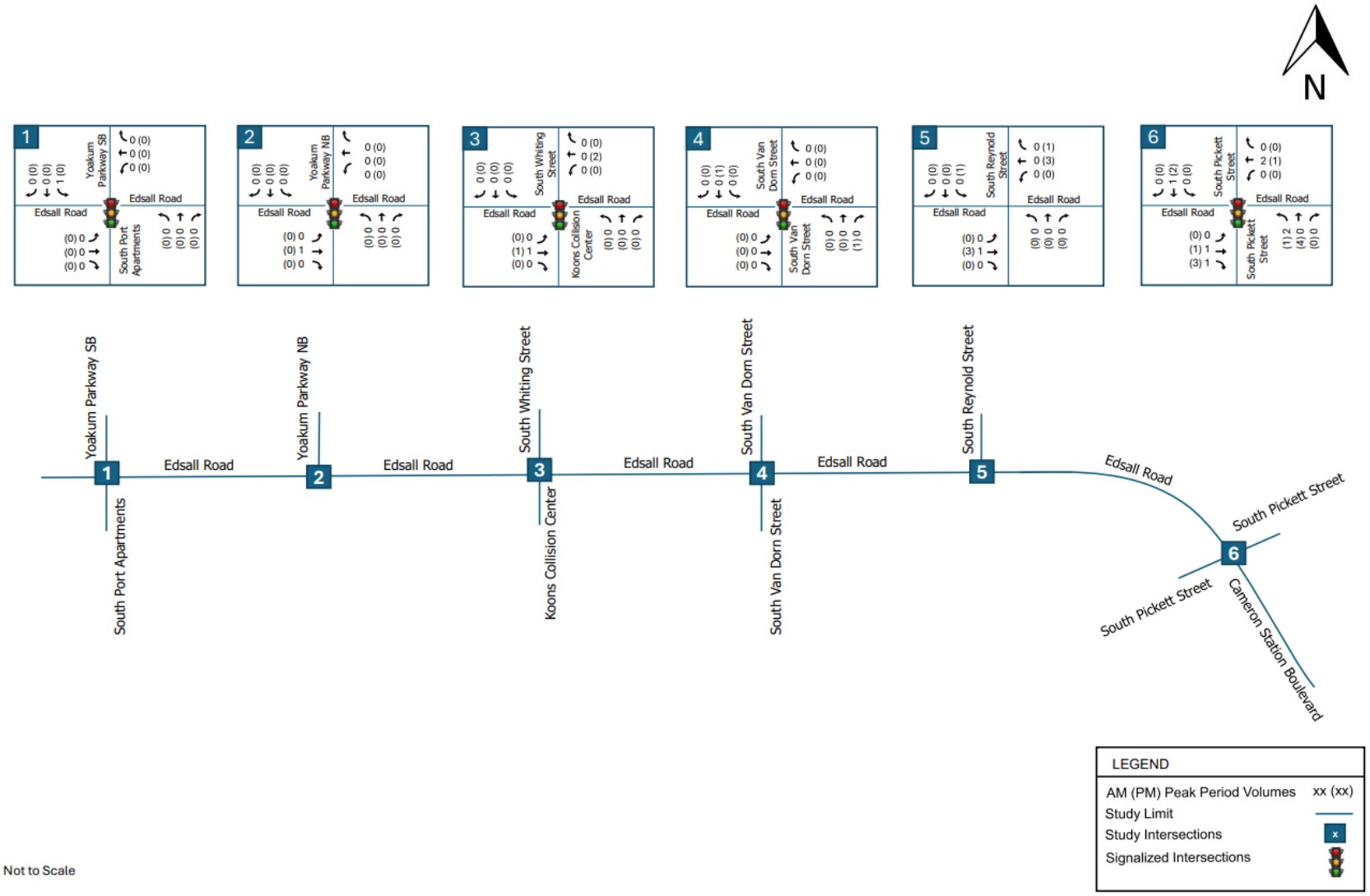


Figure 13. Edsall Road Existing Condition AM (PM) Period Bicycle Volumes

Table 2. Capacity Analysis Results - Existing Year (2024) Conditions

Intersection #	Control Type	Intersection Name	Approach	Movement/ Lane Group	AM Peak			PM Peak			Storage Length (ft)
					Delay (sec)	LOS	Queue Length, 95th pctile (ft)	Delay (sec)	LOS	Queue Length, 95th pctile (ft)	
1	Signalized	Edsall Road & Yoakum Parkway (Southbound)	Edsall Road	EBTR	7.9	A	190	7.4	A	195	-
				EB Overall	7.9	A	-	7.4	A	-	-
			Edsall Road	WBL	2.8	A	m2	2.3	A	m3	80*
				WBT	2.8	A	10	2.0	A	11	80*
				WB Overall	2.8	A	-	2.0	A	-	-
			South Port Apartments	NBL	29.5	C	20	30.2	C	20	-
				NBR	29.7	C	40	30.0	C	16	105
				NB Overall	29.7	C	-	30.0	C	-	-
			Yoakum Parkway SB	SBL	32.7	C	121	31.9	C	86	-
				SBTR	30.1	C	51	31.1	C	64	-
				SB Overall	31.3	C	-	31.3	C	-	-
Overall Intersection					**13.7**	**B**	**-**	**11.2**	**B**	**-**	**-**
2	Signalized	Edsall Road & Yoakum Parkway (Northbound)	Edsall Road	EBL	1.9	A	1	46.7	D	35	80*
				EBT	0.3	A	0	0.3	A	0	80*
				EB Overall	0.7	A	-	9.2	A	-	-
			Edsall Road	WBTR	21.5	C	250	17.4	B	368	340*
				WB Overall	21.5	C	-	17.4	B	-	-
Overall Intersection					**7.4**	**A**	**-**	**12.6**	**B**	**-**	**-**
3	Signalized	Edsall Road & South Whiting Street	Edsall Road	EBL	3.8	A	24	3.5	A	26	355
				EBTR	4.5	A	94	4.1	A	108	-
				EB Overall	4.4	A	-	4.0	A	-	-
			Edsall Road	WBLT WBTR	9.0	A	156	9.8	A	211	350*
				WB Overall	9.0	A	-	9.8	A	-	-
			Koons Collision Center	NBL	0.0	A	0	28.1	C	9	-
				NBTR	32.2	C	7	28.1	C	12	50
				NB Overall	32.2	C	-	28.1	C	-	-
			South Whiting Street	SBL	43.8	D	126	34.9	C	86	185
				SBTR	32.4	C	27	28.3	C	31	-
				SB Overall	41.0	D	-	32.1	C	-	-
Overall Intersection					**11.0**	**B**	**-**	**10.0**	**A**	**-**	**-**

Notes:

1. *HCM 2000 was used to read the measures of effectiveness.*
2. *The # footnote indicates that the volume for the 95th percentile cycle exceeds capacity.*
3. *The m footnote indicates that volume for the 95th percentile queue is metered by an upstream signal.*
4. ** Denotes the block length has been assumed as storage length.*

Table 2. Capacity Analysis Results - Existing Year (2024) Conditions (Continued)

Intersection #	Control Type	Intersection Name	Approach	Movement/ Lane Group	AM Peak			PM Peak			Storage Length (ft)
					Delay (sec)	LOS	Queue Length, 95th pctile (ft)	Delay (sec)	LOS	Queue Length, 95th pctile (ft)	
4	Signalized	Edsall Road & South Van Dorn Street	Edsall Road	EBL	46.1	D	130	41.9	D	118	350*
				EBT	65.0	E	408	63.1	E	282	350*
				EBR	79.9	E	87	69.2	E	#291	350*
				EB Overall	69.4	E	-	63.3	E	-	-
			Edsall Road	WBL	47.2	D	142	47.0	D	159	840*
				WBT	61.8	E	306	65.5	E	345	840*
				WBR	53.7	D	0	50.6	D	66	230
				WB Overall	56.2	E	-	56.6	E	-	-
			South Van Dorn Street	NBL	83.3	F	172	74.5	E	#247	385
				NBTR	44.4	D	734	39.3	D	507	-
				NB Overall	50.8	D	-	48.7	D	-	-
			South Van Dorn Street	SBL	88.9	F	152	73.2	E	231	400
				SBTR	37.8	D	371	38.7	D	467	-
				SB Overall	43.1	D	-	43.5	D	-	-
Overall Intersection					**53.9**	**D**	**-**	**51.2**	**D**	**-**	**-**
5	Unsignalized	Edsall Road & South Reynolds Street	Edsall Road	EBL	5.0	A	9	6.0	A	13	-
				EBT	0.0	A		0.0	A		
				EB Overall	2.6	A	-	3.4	A	-	-
			Edsall Road	WBT	0.0	A	0	0.0	A	0	-
				WBR	0.0	A		0.0	A		
				WB Overall	0.0	A	-	0.0	A	-	-
			South Reynolds Street	SBL	13.2	B	18	15.3	B	30	-
				SBR							250
6	Signalized	Edsall Road & South Pickett Street	South Pickett Street	EBLT	20.3	C	250	21.0	C	273	-
				EBTR							120
				EB Overall	20.3	C	-	21.0	C	-	-
			South Pickett Street	WBL	11.1	B	20	10.9	B	30	850*
				WBTR	13.4	B	176	18.6	B	490	850*
				WB Overall	13.2	B	-	18.3	B	-	-
			Cameron Station Boulevard	NBL	30.8	C	113	31.8	C	80	85
				NBTR	48.5	D	179	39.5	D	140	-
				NB Overall	40.4	D	-	36.3	D	-	-
			Edsall Road	SBL	29.3	C	106	26.0	C	142	225*
				SBTR	46.7	D	168	35.1	D	146	255*
				SB Overall	39.0	D	-	30.3	C	-	-
Overall Intersection					**26.8**	**C**	**-**	**24.0**	**C**	**-**	**-**

Notes:

5. *HCM 2000 was used to read the measures of effectiveness.*
6. *The # footnote indicates that the volume for the 95th percentile cycle exceeds capacity.*
7. *The m footnote indicates that volume for the 95th percentile queue is metered by an upstream signal.*
8. ** Denotes the block length has been assumed as storage length.*

Average Daily Traffic (ADT) and Speed Data

24-hour speed and volume data were provided by the City of Alexandria for a 3-day period from Tuesday, March 12 to Thursday, March 14, 2024, using Automated Traffic Recorders (ATRs) at three locations along the study corridor. In accordance with VDOT's Traffic Operations and Safety Analysis Manual (TOSAM), the data was recorded in 15-minute increments and reported in terms of average (i.e., mean) speed and 85th percentile speed over the data collection period.[5] Below is a summary of the data:

- Edsall Road, Between South Reynolds Street and LA Mart Driveway

Figure 14 shows the location of the ATRs as well as the average and 85th percentile speeds on Edsall Road between South Reynolds Street and the LA Mart Driveway.

Figure 14. Average and 85th Percentile Speeds between S Reynolds Street and LA Mart Driveway

The posted speed limit in this section of Edsall Road is 25 MPH. The westbound and eastbound directions had similarly high 85th percentile travel speeds, approximately 6 MPH and 11 MPH over the posted speed limit, respectively. Table 3 shows the summary of speed data for each direction in this segment.

[5] Virginia Department of Transportation. *Traffic Operations and Safety Analysis Manual*. Virginia Department of Transportation. 2020.

Table 3. Speed data on Edsall Road between S Reynolds Street and LA Mart Driveway

	Westbound	Eastbound
Number of Vehicles	5,391	5,008
Number of Vehicles Exceeding 25 MPH	2,564 (48%)	4,174 (83%)
85th Percentile Speed	30.6 MPH	35.5 MPH
Average Speed	23.5 MPH	30.0 MPH
Maximum Observed Speed	47.5 MPH	62.5 MPH

- Edsall Road, between South Whiting Street and Yoakum Parkway

Figure 15 shows the location of the ATRs as well as the average and 85th percentile speeds on Edsall Road between South Whiting Street and Yoakum Parkway.

Figure 15. Average and 85th Percentile Speeds between S Whiting Street and Yoakum Parkway

The posted speed limit in this section of Edsall Road is 25 MPH. The westbound and eastbound directions had similarly high 85th percentile travel speeds, approximately 9 MPH and 11 MPH over the posted speed limit, respectively. The significant deviation from the speed limit may be partially attributed to the insufficient speed limit signs along Edsall Road. Table 4 shows the summary of speed data for each direction in this segment.

Table 4. Speed data on Edsall Road between S Whiting Street and Yoakum Parkway

	Westbound	Eastbound
Number of Vehicles	7,343	8,256
Number of Vehicles Exceeding 25 MPH	6,308 (86%)	7,478 (91%)
85th Percentile Speed	34.0 MPH	36.4 MPH
Average Speed	29.0 MPH	31.0 MPH
Maximum Observed Speed	47.5 MPH	52.5 MPH

- Edsall Road, Landmark Ridge Driveway to Edsall Place

Figure 16 shows the location of the ATRs as well as the average and 85th percentile speeds on Edsall Road between Landmark Ridge Driveway to Edsall Place.

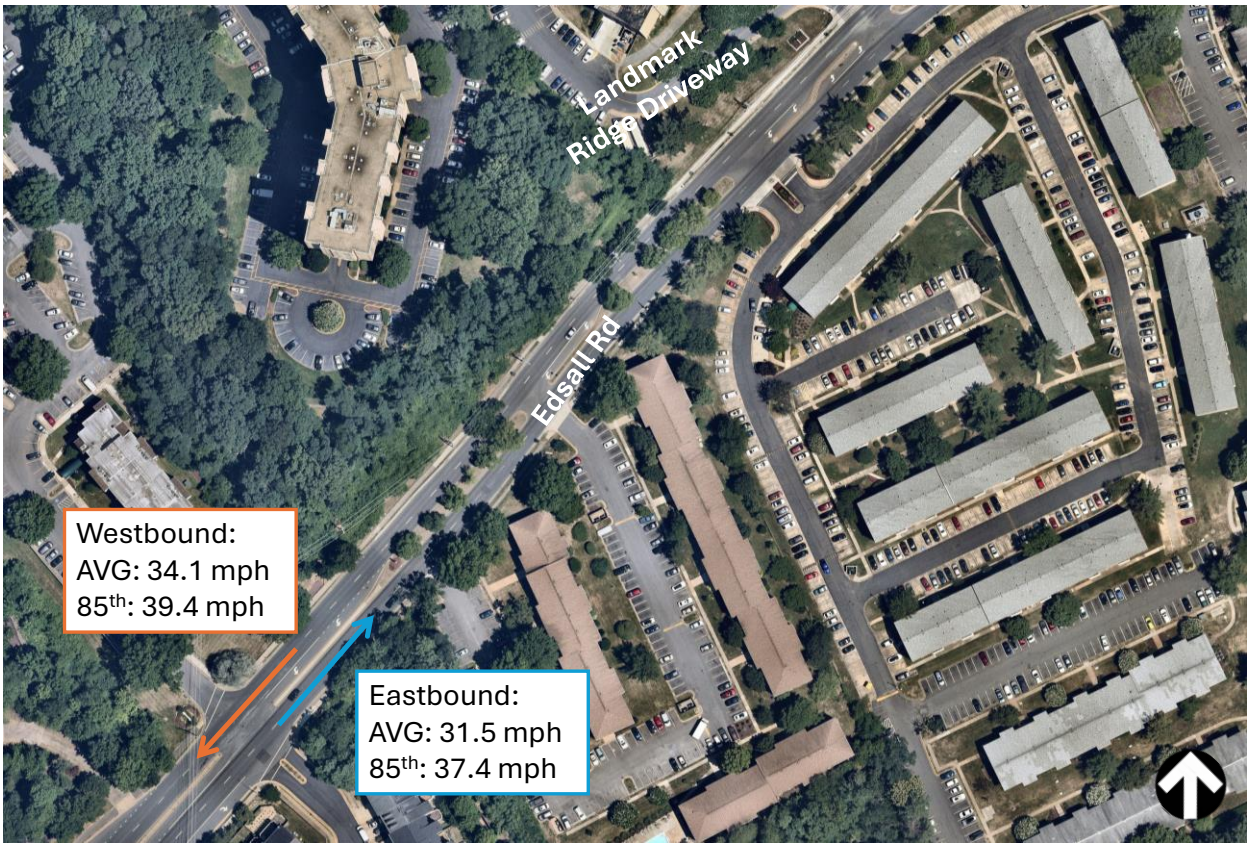


Figure 16. Average and 85th Percentile Speeds between Landmark Ridge Driveway and Edsall Place

The posted speed limit on this section of Edsall Road is 35 MPH. The westbound and eastbound directions had similarly high 85th percentile travel speeds, which are highest observed speeds along the corridor; however, the vehicle speeds are only approximately 2 to 4 MPH over the posted speed limit (i.e., 35 MPH). Table 5 shows the summary of speed data for each direction in this segment.

Table 5. Speed data on Edsall Road between Landmark Ridge Driveway and Edsall Place

	Westbound	Eastbound
Number of Vehicles	6,961	7,776
Number of Vehicles Exceeding 25 MPH	6,686 (96%)	6,991 (90%)
85th Percentile Speed	39.4 MPH	37.4 MPH
Average Speed	34.1 MPH	31.5 MPH
Maximum Observed Speed	67.5 MPH	57.5 MPH

Vehicle Classification

Vehicle classification data was collected according to the Federal Highway Administration (FHWA) 13-category classification, as part of the 24-hour speed and volume data that were provided by the City of Alexandria for the study corridor. Table 6 summarized the percentage of total average daily volume in each classification category at the locations where classification data was provided. Based on the vehicle classification data, on average, approximately 2 to 3 percent of total daily volume along Edsall Road is comprised of bused and heavy vehicles (i.e., categories 4 to 13).

Table 6. Vehicle Classification Data

FHWA Classification Category		Between S Reynolds St and LA Mart Driveway	Between S Whiting St and Yoakum Parkway	Between Landmark Ridge Driveway and Edsall Place
1	Motorcycles	0.3%	0.1%	0.1%
2	Passenger Cars	89.0%	87.3%	87.7%
3	2-Axle, 4-Tire Single Units	8.0%	9.2%	9.6%
4	Buses	1.5%	1.7%	0.6%
5	2-Axle, 6-Tire Single Units	1.1%	1.6%	1.7%
6	3-Axle Single Units	0.1%	0.1%	0.1%
7	> =4-Axle Single Units	0.0%	0.0%	0.0%
8	<=4-Axle Single Trailers	0.1%	0.0%	0.0%
9	5-Axle Single Trailers	0.0%	0.1%	0.1%
10	>=6-Axle Single Trailers	0.0%	0.0%	0.0%
11	<=5-Axle Multi-Trailers	0.0%	0.0%	0.0%
12	6-Axle Multi-Trailers	0.0%	0.0%	0.0%
13	>=7-Axle Multi-Trailers	0.0%	0.0%	0.0%

Transit

Three transit providers offer bus service along Edsall Road within the study limits. These include:

- Washington Metropolitan Area Transit Authority (WMATA) Routes 21C and 7A
- Fairfax County Routes 321 and 322
- City of Alexandria DASH Routes 30 and 35

There are 7 bus stops in the westbound direction and 6 bus stops in the eastbound direction along Edsall Road within the study limits. Figure 17 shows a map of bus routes operating within the study area. Tables 7 and 8 show the characteristics of each transit stop along the corridor, as well as respective bus routes and weekday average daily activity that they generate at each stop. The westbound bus stops at South Whiting Street serves three bus routes and have the highest rider activity during the average weekday (approximately 325 riders per day), followed by the eastbound bus stops at South Whiting Street and Yoakum Parkway (approximately 140 and 150 riders per day, respectively).

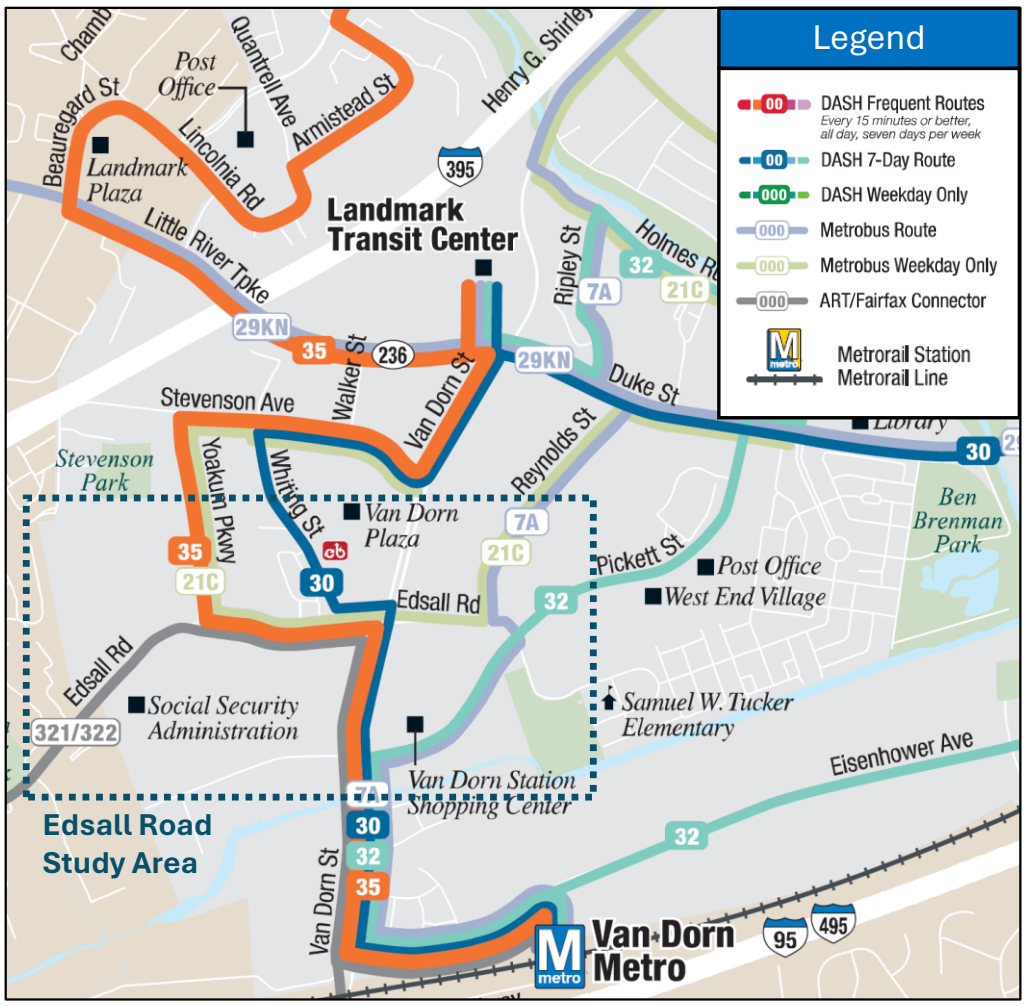


Figure 17. Transit Service on Edsall Road

Table 7. Westbound Transit Stop Characteristics

Transit Stop Name Stop ID	Routes	Overall Condition	Marked Crosswalk Distance	Near Side or Far Side	Average Daily Activity
Edsall Rd/S Van Dorn St ID: 4000460	› 21C	› Transit stop sign	270′ (West) 900′ (East)	Near Side	3
Edsall Rd/S Whiting St ID: 4000052, 1806	› 21C › 30 › 35 › 321	› Transit stop sign with seating amenities › DASH departure status screen › Located at signalized intersection	0′ (West) 370′ (East)	Near Side	326
6000 Edsall Rd ID: 1808	› 321	› Transit stop sign	600′ (West) 590′ (East)	Near Side	4
Edsall Rd/Yoakum Pkwy ID: 1812	› 321	› Transit stop sign with ~2 ft tall wall used by pedestrians for seating	1,670′ (West) 370′ (East)	Far Side	20
6260 Edsall Rd ID: 1813	› 321	› Transit stop sign	1,050′ (West) 990′ (East)	Far Side	3
Edsall Rd/Edsall Ridge Pl ID: 1815	› 321	› Transit stop sign	600′ (West) 1,440′ (East)	Near Side	2
Edsall Rd/Winter View Dr ID: 1809	› 321	› Transit stop sign › Located near signalized intersection	60′ (West) 1,980′ (East)	Near Side	5

Table 8. Eastbound Transit Stop Characteristics

Transit Stop Name Stop ID	Routes	Overall Condition	Marked Crosswalk Distance	Near Side or Far Side	Average Daily Activity
Edsall Rd/S Van Dorn St ID: 4000049	› 21C	› Transit stop sign	90′ (West) 1,090′ (East)	Far Side	1
Edsall Rd/S Whiting St ID: 4000046, 1807	› 21C › 35 › 322	› Transit stop sign › Located at signalized intersection	1,170′ (West) 0′ (East)	Near Side	140
Edsall Rd/Yoakum Pkwy ID: 4000054, 1811	› 21C › 35 › 322	› Transit stop sign with sheltered seating amenities › DASH departure status screen › Located near signalized intersection	160′ (West) 1,030′ (East)	Far Side	149
6200 Edsall Rd ID: 1810	› 322	› Transit stop sign	1300′ (West) 720′ (East)	Near Side	6
Edsall Rd/Edsall Ridge Pl ID: 1796	› 322	› Transit stop sign	600′ (West) 1,400′ (East)	Far Side	4
Edsall Rd/Winter View Dr ID: 1800	› 322	› Transit stop sign › Located at signalized intersection	60′ (West) 1,980′ (East)	Far Side	1

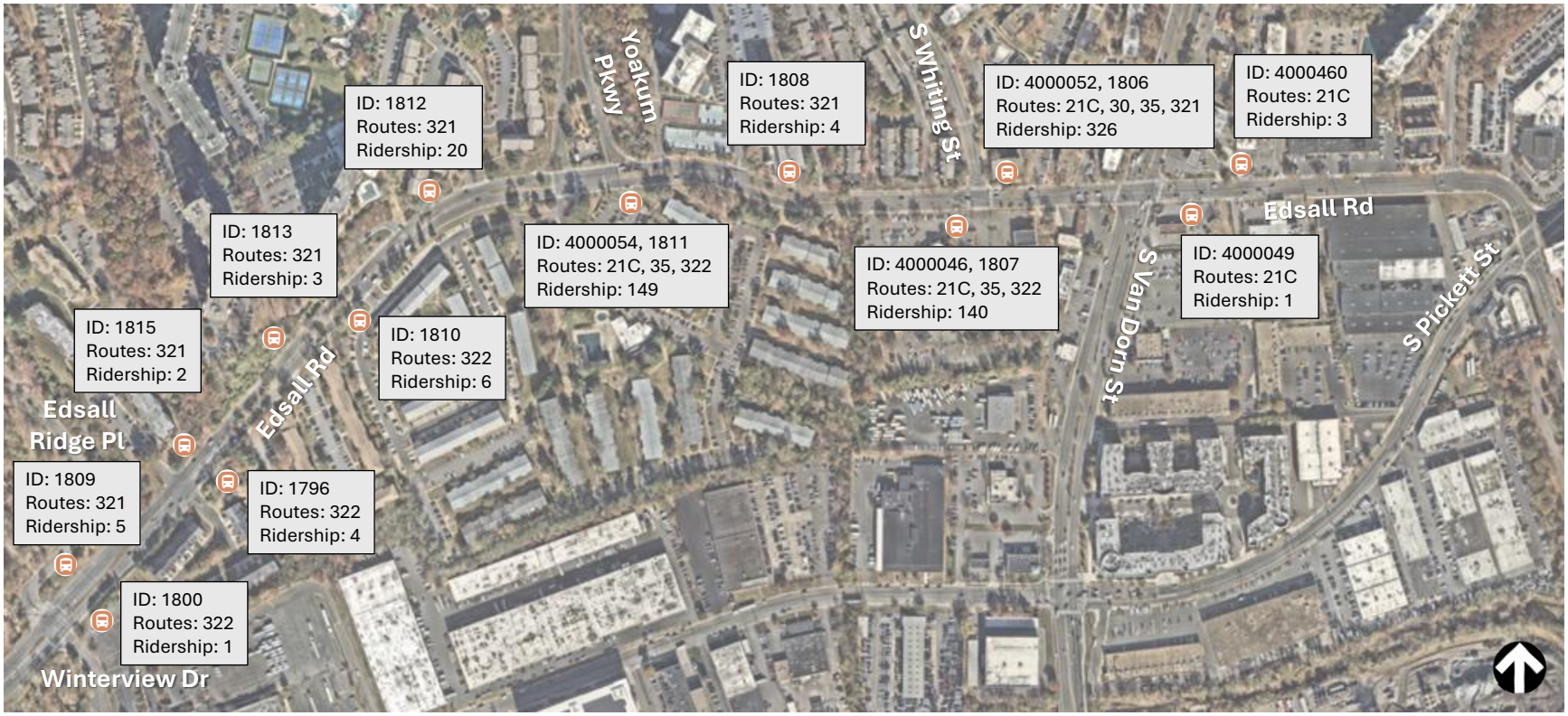


Figure 18. Edsall Road Bus Stops, Routes, and Average Daily Ridership

Crash Analysis

Crash data was obtained for the study area from Virginia Department of Transportation (VDOT) crash database for the period from June 1, 2019, to June 30, 2024. The crash analysis was conducted to identify hotspots, including areas with higher concentration of injury crashes, as well as other common crash patterns. During the five-year study period, 104 crashes were recorded in the study area. Of the 104 crashes, there were no fatal crashes, three severe injury (i.e., ambulatory injury) crashes, 31 visible injury crashes, and three non-visible injury crashes. Figure 19 shows an overview of crashes by severity and Figure 20 shows an overall map of where these crashes have occurred along the corridor, as well as a heatmap weighted by crash severity. As shown in Figure 20, crash density and severity are generally higher near the signalized intersections, where traffic volumes and the number of conflicts are generally higher.

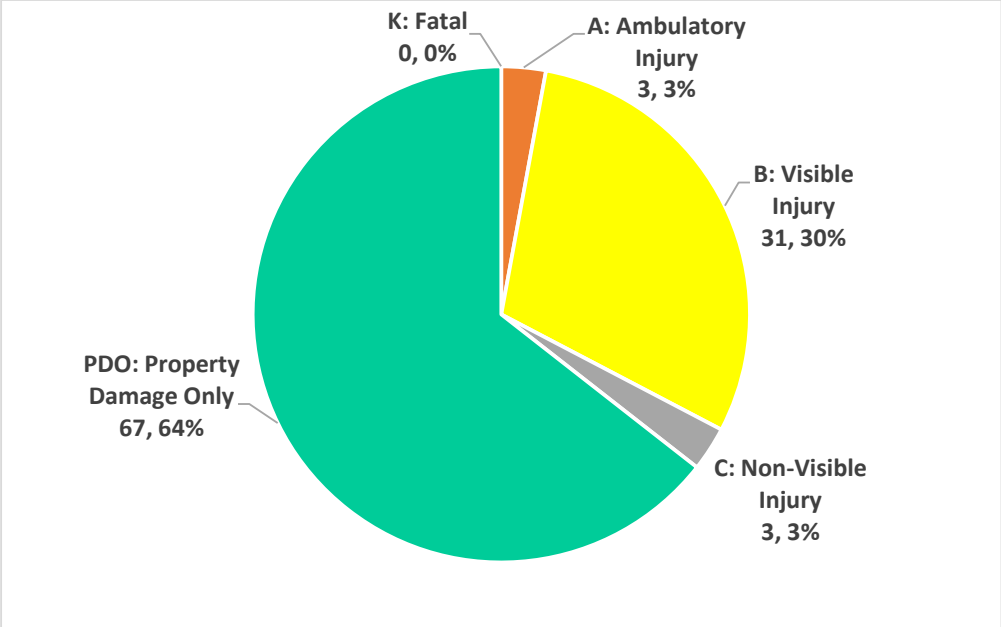


Figure 19. Edsall Road Crashes by Severity (June 2019 – June 2024)

A review of crash narratives for 37 injury crashes (i.e., crash severity K, A, B, and C) was conducted to find trends and potential contributing factors. Injury crashes that involved pedestrians or bicyclists are discussed in the following section. Of the remaining 21 injury crashes, there were nine and seven angle and rear-end crashes, respectively. The narrative review for the angle crashes at intersections that resulted in an injury showed several drivers failed to yield to and/or misjudged the available gap in the through traffic during a permissive left turn phase. Outside the intersections, some angle crashes occurred due to the drivers misjudging the gap in the through traffic when turning out of a driveway or trying to change several lanes abruptly or over a short distance. Among the rear-end crashes, a common theme was drivers failing to comply or pay full attention to the traffic lights or traffic conditions ahead of them and engaging their brakes abruptly or too late as a result.

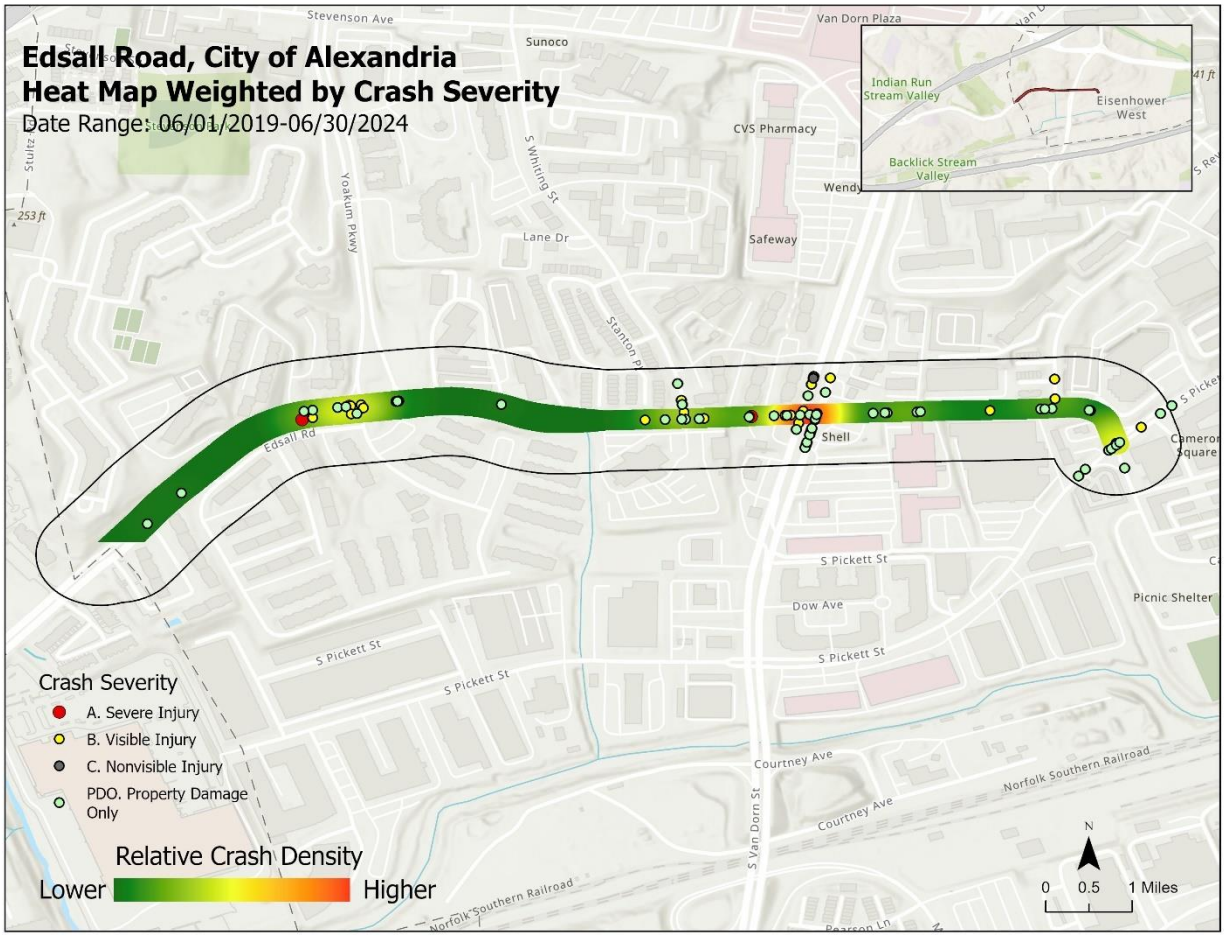


Figure 20. Edsall Road Crash Density Heatmap (June 2019 – June 2024)

Analysis of crashes by crash type revealed Angle crashes to be the most dominant type of crash, accounting for 38 percent of total crashes (42 out of 104), followed by Rear-End crashes accounting for 15 percent of total crashes (16 out of 104). Figure 21 shows the location of angle crashes and crash severity. As shown in Figure 21, angle crashes are heavily concentrated at the signalized intersections at South Whiting Street, South Van Dorn Street, and South Pickett Street, as well as the uncontrolled intersections with several commercial and residential driveways located along the stretch between LA Mart International Food and South Whiting Street.

Other notable trends include:

- 15 percent of crashes involved drivers aged 65 and older
- 12 percent of crashes involved drivers aged under 25
- 23 percent of crashes cited distraction as a contributing factor
- 14 percent of crashes cited speed as a contributing factor
- 7 percent of crashes involved parties under the influence of alcohol or drug

Table 9 shows the crash types by year for the analysis period. Note that crash data for 2019 and 2024 reflect a six month-period, resulting in fewer overall number of crashes.

Table 9. Edsall Road Crashes by Crash Type and Year (June 2019 – June 2024)

Year	Type of Crash							Total
	Angle	Head-On	Rear-End	Sideswipe	Fixed Object (Off Road)	Pedestrian	Other	
2019	10	-	2	1	1	1	1	**16**
2020	6	2*	2	5	-	2	1	**18**
2021	7	-	4	2	3	2	1*	**19**
2022	9	2	5	3*	2	2	-	**23**
2023	5	2*	-	1	4	4	1	**17**
2024	5	-	3	1	-	1	1	**11**
Total	**42**	**2**	**16**	**10**	**10**	**12**	**4**	**104**

* *Includes one crash involving a bicyclist*

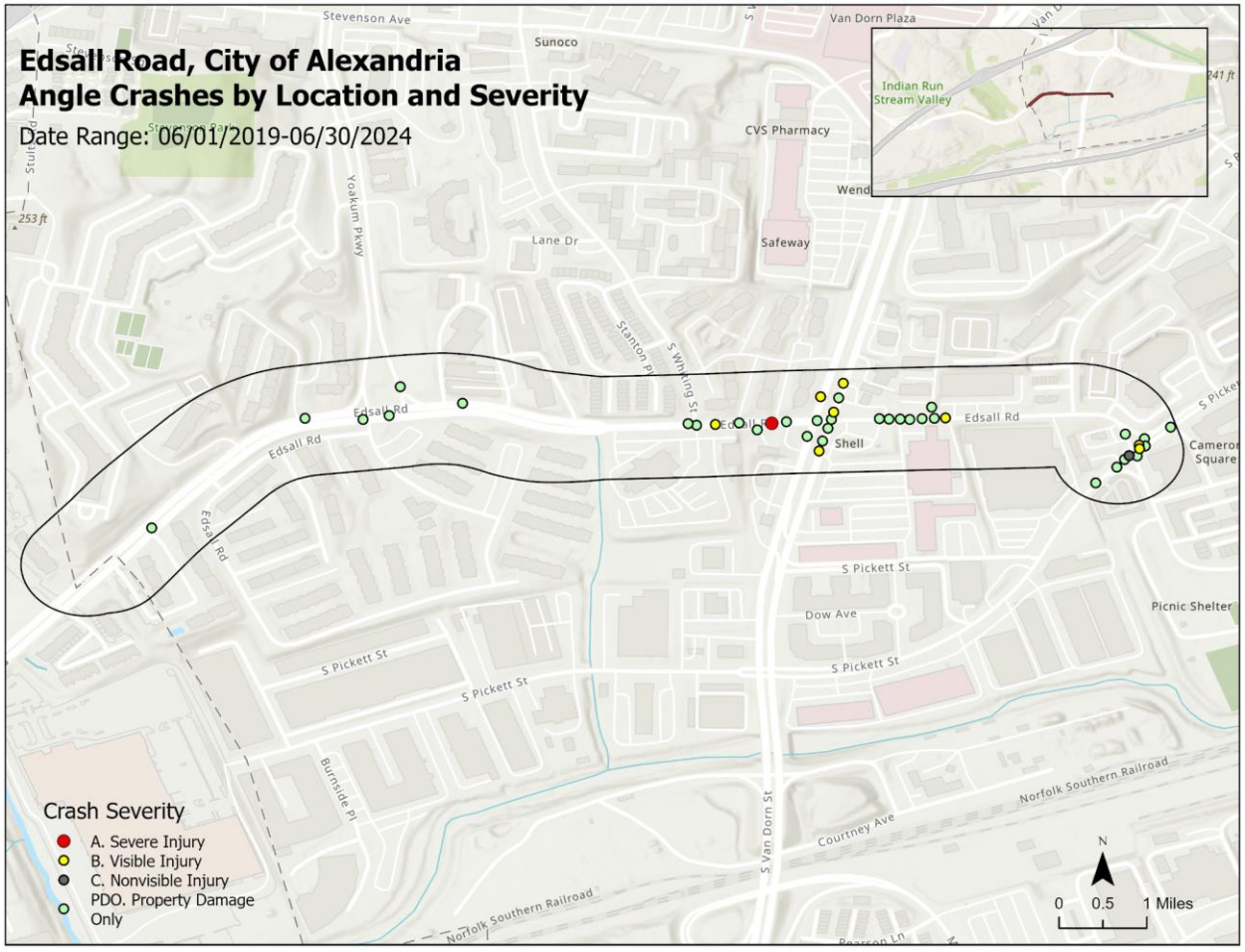


Figure 21. Angle Crashes by Location and Severity

A review of crashes by time of day revealed that 63 percent of crashes occurred during off-peak times, followed by 23 percent occurring during the PM peak (i.e., 4:00 to 7:00 PM) and 9 percent occurring during the AM peak (i.e., 7:00 to 10:00 AM). Lighting and weather conditions for crashes within the study area were also reviewed for common trends. Most crashes occurred during clear weather (86 percent) and dry conditions (85 percent). Figure 22 shows the lighting conditions for crashes during the study period. An overview summary table of all Edsall Road crashes is provided in *Appendix C*.

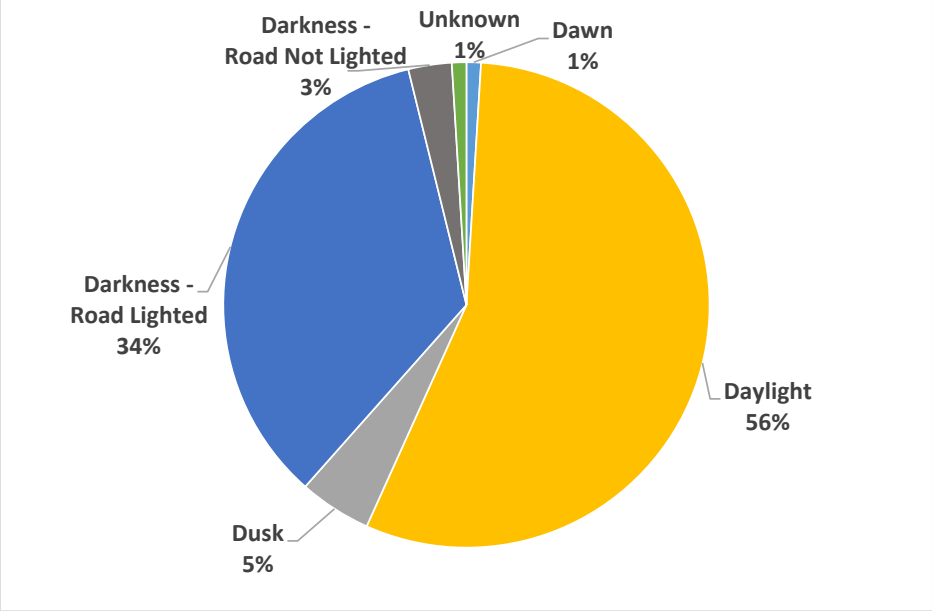


Figure 22. Edsall Road Crashes by Lighting Conditions (June 2019 – June 2024)

Vehicle-Pedestrian & Vehicle-Bicyclist Crashes

During the study period, there were 12 vehicle-pedestrian crashes and four vehicle-bicyclist crashes within the study area. While there were no fatalities resulting from crashes that involved pedestrians and bicyclists. Two crashes resulted in severe injuries and the remaining 10 crashes resulted in visible injuries. Most of these crashes occurred at or near intersections. Figure 23 shows the locations of crashes involving pedestrians and bicyclists within the study corridor. A review of crash narratives showed that six of these crashes occurred while the pedestrian had the right-of-way and drivers failed to yield while attempting to make a turn.

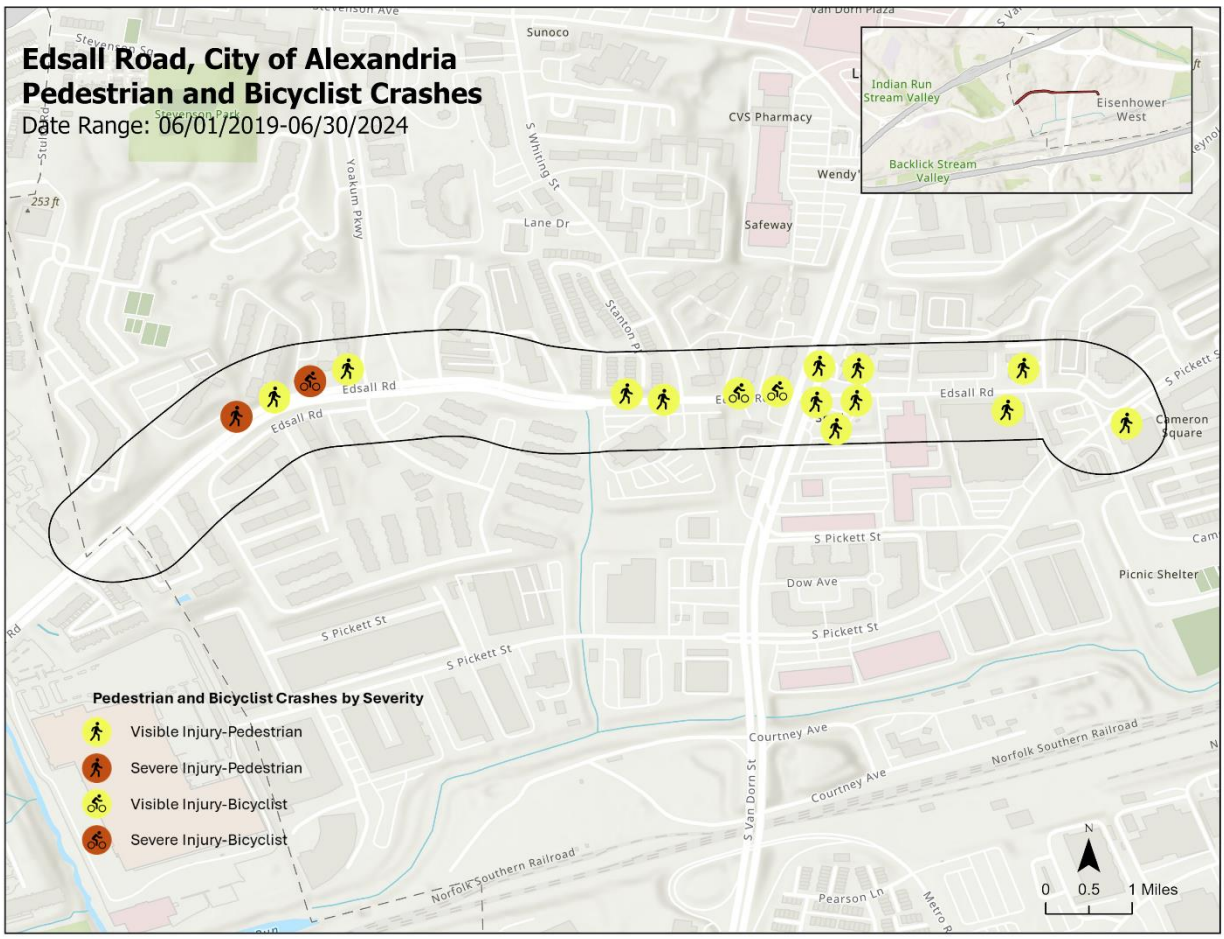


Figure 23. Edsall Road Pedestrian and Bicyclist Involved Crashes (June 2019 – June 2024)

Equity

The USDOT Equitable Transportation Community (ETC) Explorer[6] is an interactive web-based tool that uses 2020 Census data to determine the cumulative burden across different components at the census tract level as a result of underinvestment in transportation. These components include Transportation Insecurity, Climate and Disaster Risk Burden, Environmental Burden, Health Vulnerability, and Social Vulnerability. Census tracts are considered to be experiencing disadvantage if the overall index score places them in the 65% (or higher) of all US census tracts. Census tracts at "0%" are considered the least disadvantaged and "100%" are considered the most. It should be noted that ETC is not a binary tool indicating whether a census tract is disadvantaged; it is a dynamic tool that allows every community in the country to understand how it is experiencing burden that transportation investments can mitigate or reverse.

According to the ETC Explorer dashboard, three census tracts in the project area are considered 100% disadvantaged. Figure 24 shows the study corridor and the disadvantaged census tracts,

[6] https://www.transportation.gov/priorities/equity/justice40/etc-explorer

and Figure 25 shows the overall disadvantage component scores. The scores are created by normalizing and summing indicators within each component, ranked by percentile against all other census tracts in the nation.

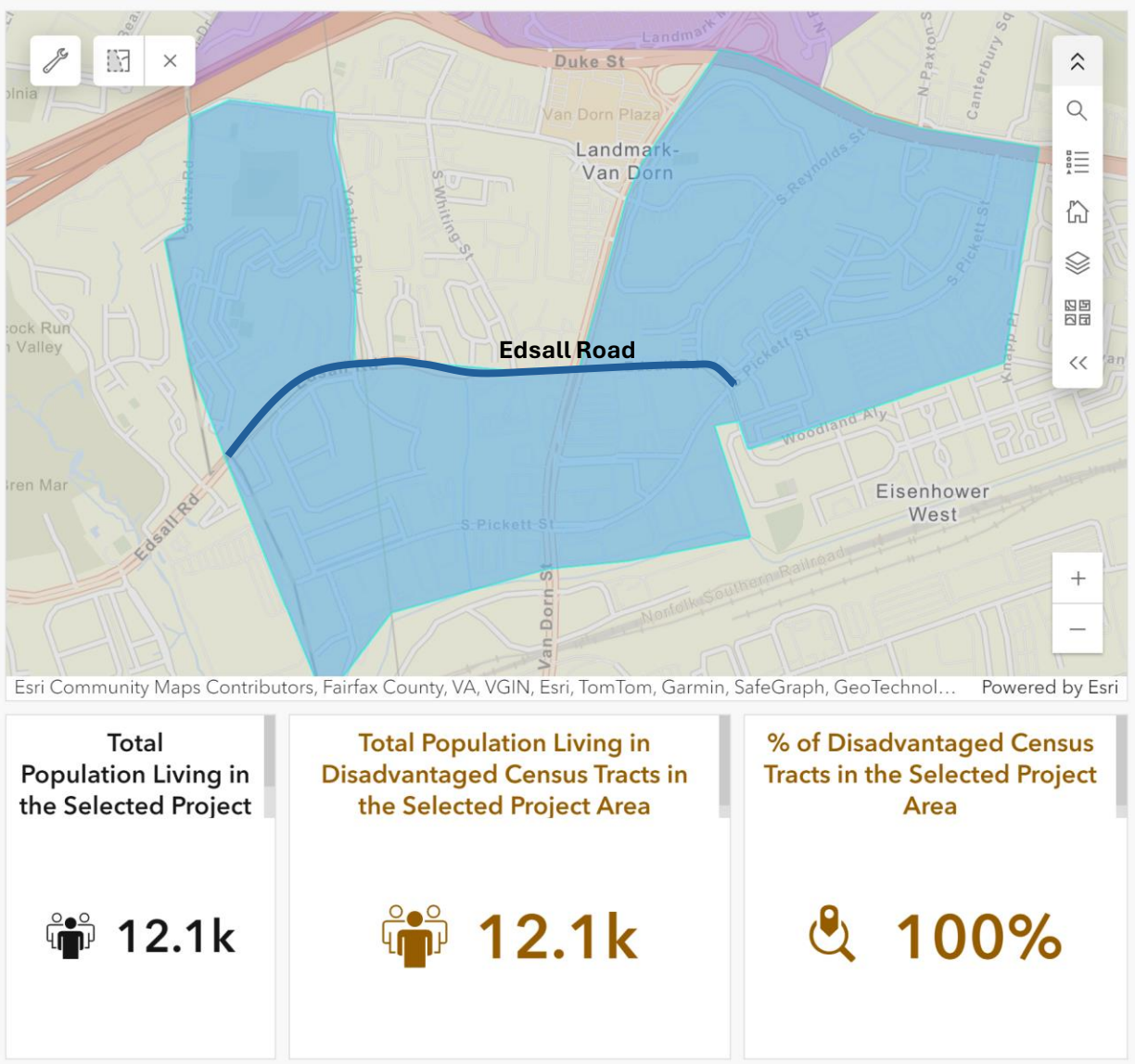


Figure 24. USDOT ETC Explorer Disadvantaged Census Tracts along Edsall Road

The Metropolitan Washington Council of Governments (COG) and National Capital Region Transportation Planning Board (TPB) have developed Equity Emphasis Areas (EEAs) as a planning tool to incorporate equity into project planning and prioritize investments in underserved communities. The EEAs make up 10 percent of the region's land area but are home to 30 percent of the region's total population who have been identified by the TPB as having high concentrations of low-income individuals and communities of color, households who rent,

individuals with disabilities, and workers without a telecommuting option. Figure 26 shows the COG/TPB EEAs in the City of Alexandria and within the study area.

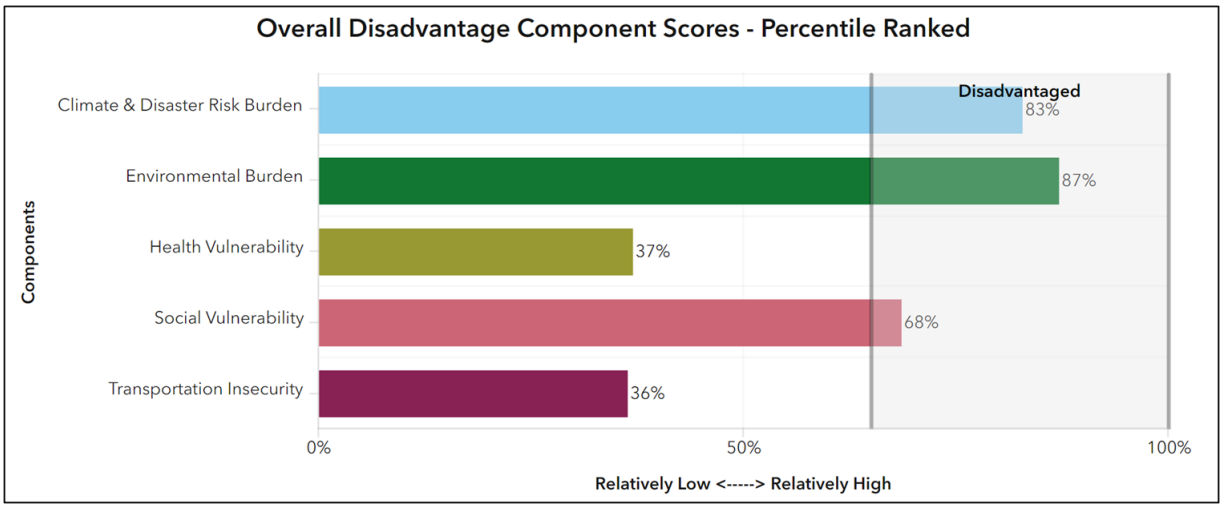


Figure 25. USDOT ETC Explorer Overall Component Scores for Disadvantaged Census Tracts

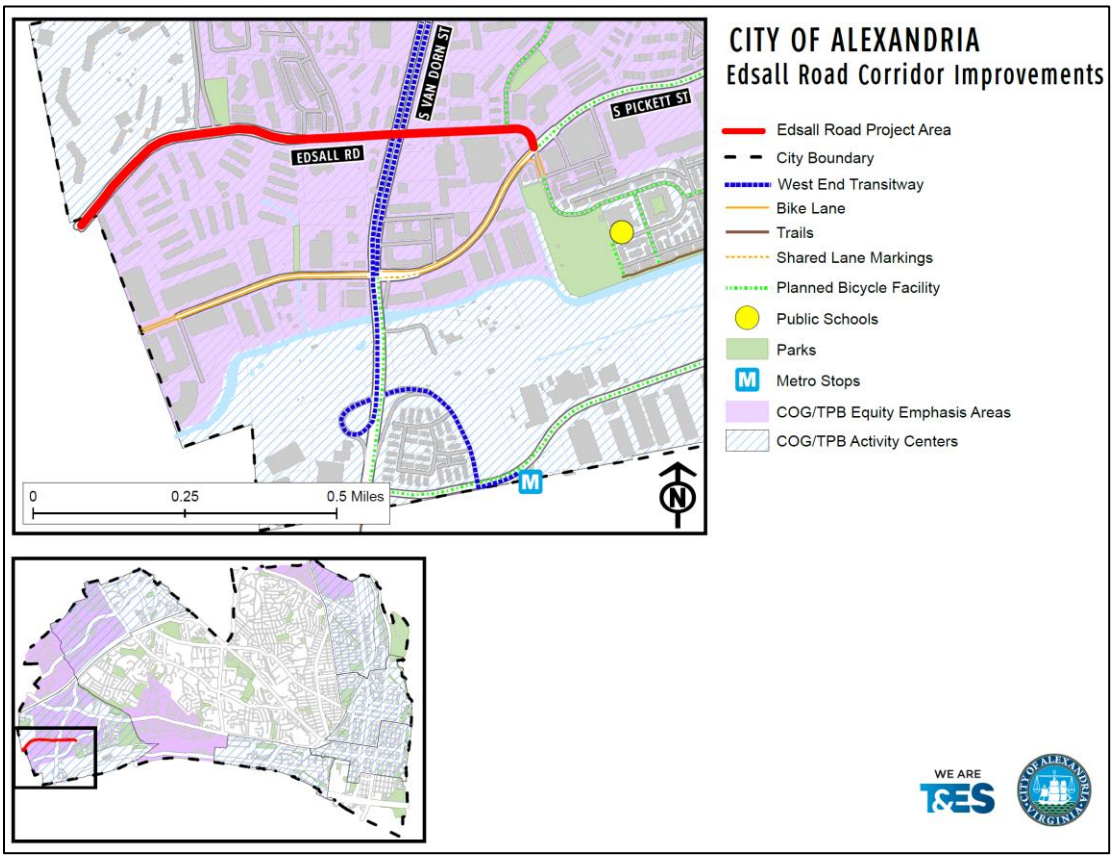


Figure 26. COG/TPB Equity Emphasis Areas (source: City of Alexandria MWCOG-TLC Application)

Site Visit

The project team conducted a site visit on October 17, 2024, between 10:00 AM and 12:00 PM along the study corridor. The technical team was joined by representatives from the City of Alexandria Transportation and Environmental Services (T&ES) and Planning and Zoning (P&Z) teams, Alexandria Police Department, Fairfax County Department of Transportation, and Alexandria Transit Company (i.e., DASH). The objective of the site visit was to observe the existing conditions in the field, including safety and operational issues, as well as other site conditions and limitations that could inform the development of safety countermeasures and conceptual design and for the study corridor. Stakeholder representatives provided additional context and background information at certain locations throughout the corridor that supplemented the observations in the field. Figures 27 through 32 include site photos and some of the observations that were made during the site visit at study intersections[7]. A detailed list of observations from the site visit can be found in *Appendix D*.

[7] The City of Alexandria is conducting an independent safety study for the intersection of Edsall Road and South Van Dorn Street. The Edsall Road Corridor Study will not develop recommendations for this intersection, except for conceptual plans for pedestrian and/or bicyclist facilities connecting through this intersection.

Figure 27. Edsall Road and S Pickett Street – Southeast corner of intersection looking northwest

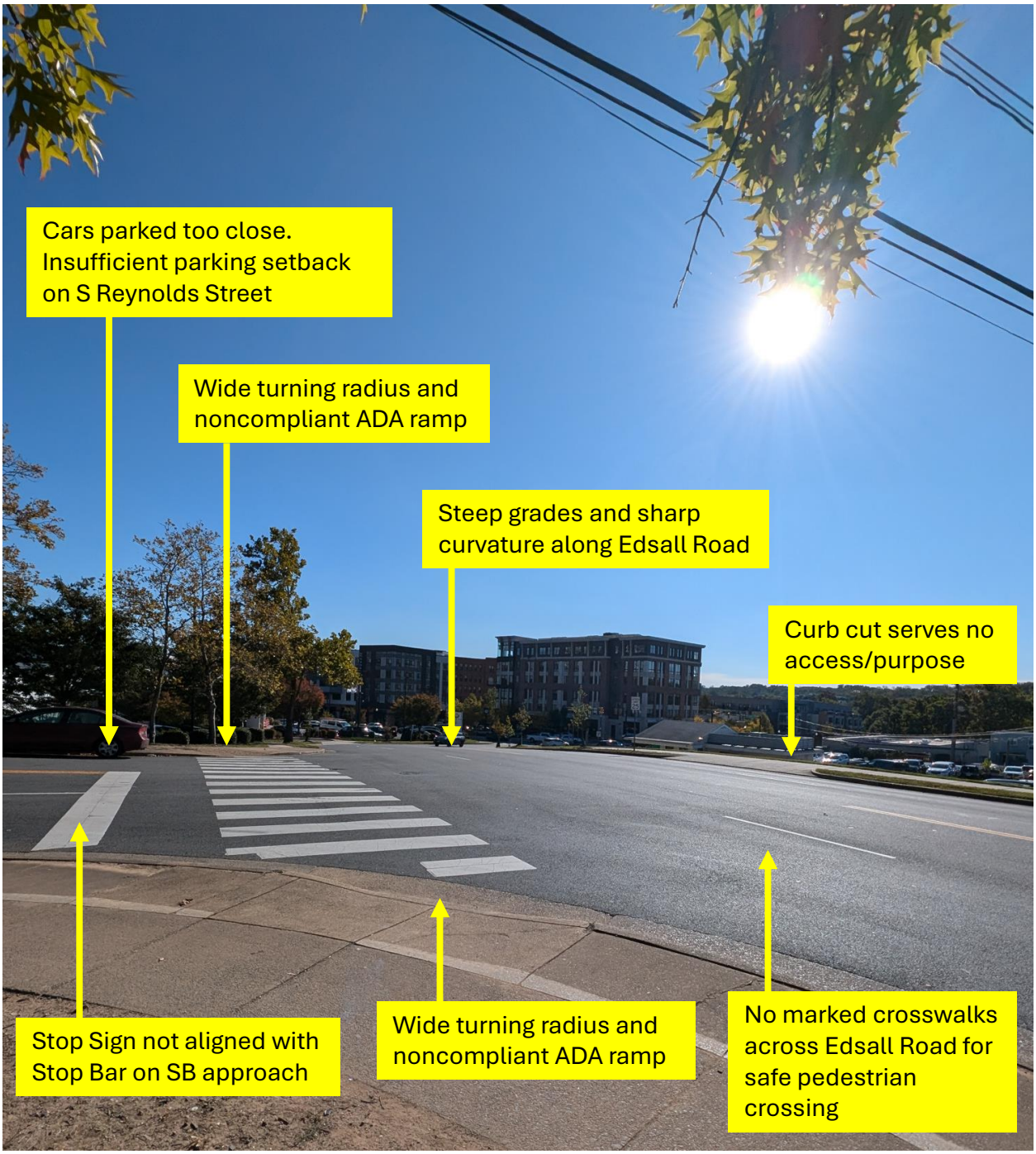


Figure 28. Edsall Road and S Reynolds Street – northwest corner of intersection looking east

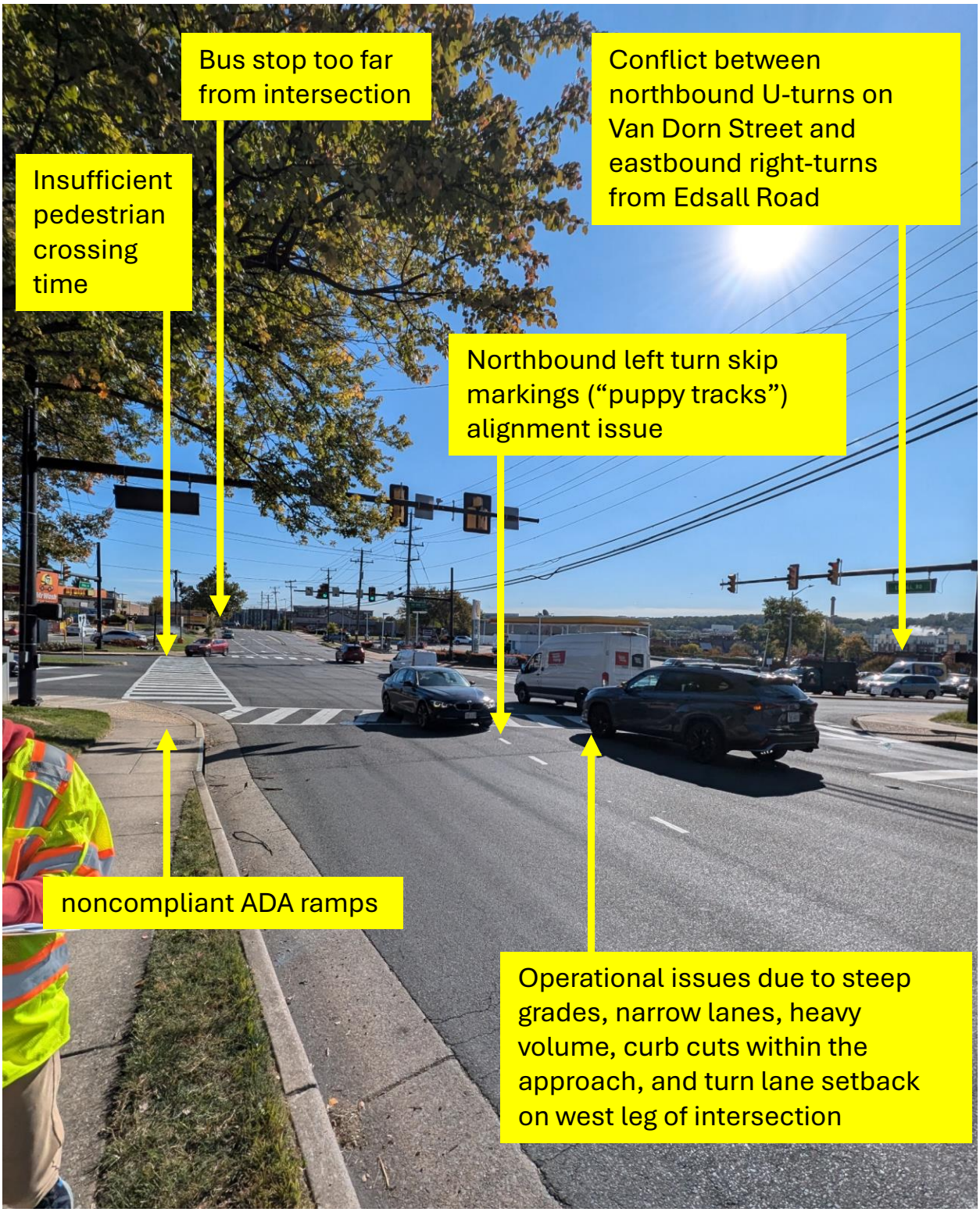


Figure 29. Edsall Road and S Van Dorn Street – northwest corner of intersection looking east

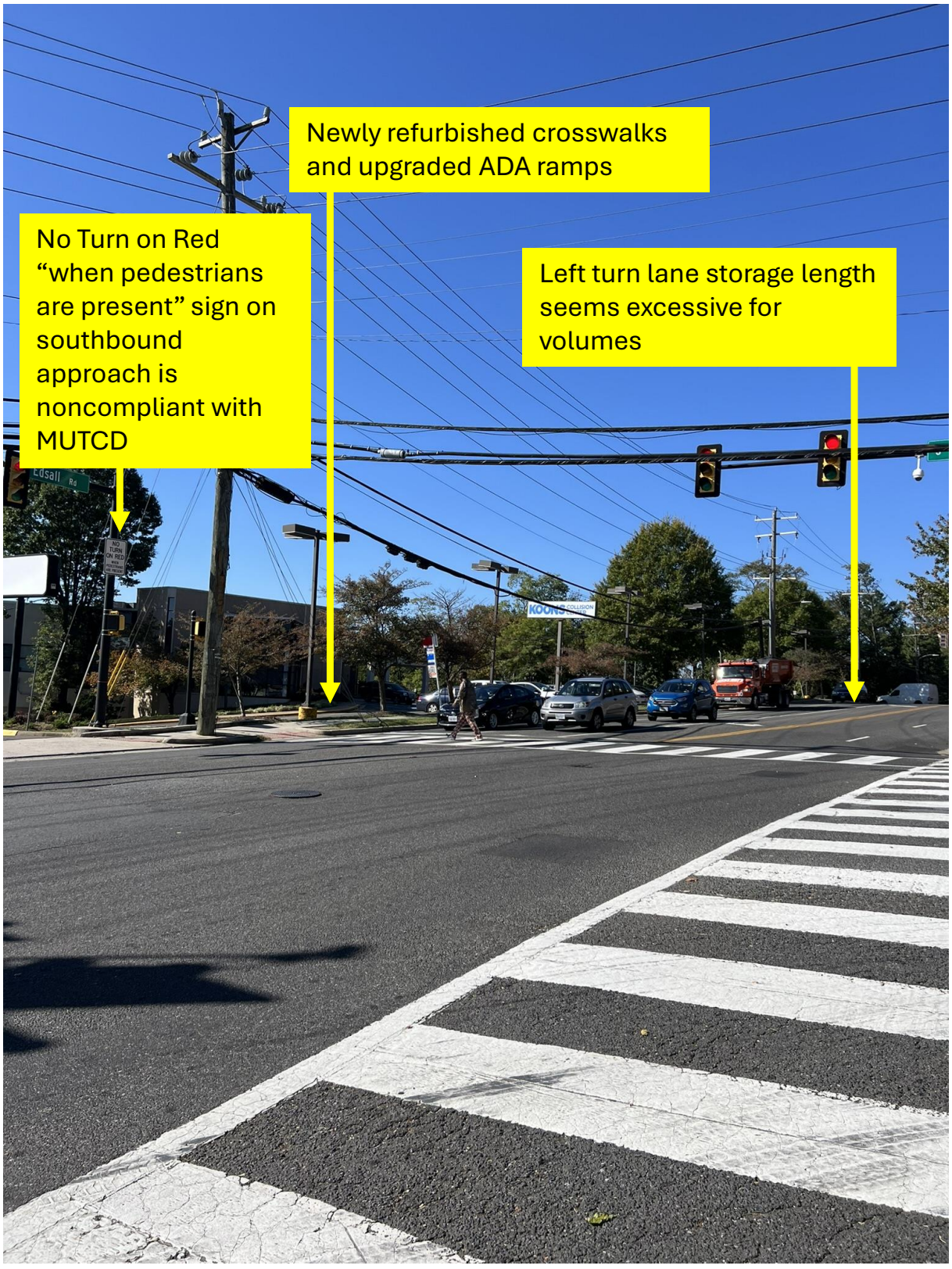


Figure 30. Edsall Road and S Whiting Street – northeast corner of intersection looking west

Figure 31. Edsall Road east of Yoakum Parkway - Highpointe Condominiums looking west

Figure 32. Edsall Road and Yoakum Parkway – northeast corner of intersection looking west

Community Input

The City of Alexandria published an online feedback form to seek community input regarding their experiences traveling along Edsall Road and Yoakum Parkway. The feedback period was from November 1, 2024, through November 22, 2024.

Flyers promoting the feedback opportunity were posted at bus stops, shared with community groups, and emailed to property managers, business owners, and other key stakeholders along the corridor. An announcement was also posted to the project website and shared via eNews and social media. A total of 119 people submitted feedback via the online form. The following section provides a summary of the community feedback and the main themes. Full survey report, including all survey responses can be found in *Appendix E*.

In addition to the online feedback form, 311 service requests submitted by residents regarding their safety concerns along Edsall Road and Yoakum Parkway were compiled and reviewed. These service requests are included in *Appendix F*.

Community Feedback Form Discussion

The community feedback form was prepared and English and Spanish. The form consisted of six questions regarding travel characteristics, challenges and concerns, and desired features for Edsall Road and Yoakum Parkway. A summary and discussion of responses received to Questions 1 through 6 are provided in the following section.

The form also consisted of nine questions on demographics (e.g. age, gender identity, race/ethnicity, household income, etc.). Demographic information (i.e., responses to Question 7 through 16) can be found in the full report provided in *Appendix E*.

Travel Characteristics

Questions 1 and 2 asked the community what modes they use in the project area and why do they typically travel in the project area. These were multiple choice questions and participants were encouraged to select all that apply. The percentages are calculated over the total responses; therefore, the some of these values is not 100%.

Question 1: Which modes of transportation do you use in the project area? Select all that apply.

Response	Number	Percentage
Drive (Car, truck, motorcycle, SUV, or passenger)	107	89.2%
Bus (DASH, Metrobus, Fairfax Connector, Shuttle)	45	37.82%
Walk	66	55.46%
Bicycle, e-bike, or scooter	25	21.01%
Wheelchair or other mobility-assist device	2	1.68%

Question 2: Why do you typically travel on Edsall Road or Yoakum Parkway? Select all that apply.

Response	Number	Percentage
I live or work near the project area.	93	78.81%
I travel through this area but do not stop.	18	15.25%
I use Edsall Road or Yoakum Parkway to access shops or restaurants.	68	57.63%
I use Edsall Road or Yoakum Parkway to get to nearby parks.	46	38.98%
I use Edsall Road or Yoakum Parkway to get to nearby schools.	6	5.08%
Other (please specify)	18	15.25%

The following quotes highlight some examples of other reasons people travel on Edsall Road and Yoakum Parkway. For the full list of responses, see *Appendix E*.

- "I regularly use Edsall and Yoakum to visit friends"
- "I live nearby and go for walks just for enjoyment"
- "The bus to the metro!"
- "Walk along the sidewalks walking dogs along both roads"
- "I use these roads to get to 395. They are central to the West End of Alexandria."

Challenges and Concerns

Question 3 asked respondents about challenges and concerns they have as regular users of Edsall Road and Yoakum Parkway. It asked them to select all the concerns that apply to their experience, from a list. There was an opportunity to specify other concerns.

Question 3: Please select any issue or challenges you experience on Edsall Road and Yoakum Parkway. Select all that apply.

Response	Number	Percentage
It is difficult to cross the street at signalized intersections.	46	39.32%
It is difficult to cross the street at intersections without traffic signals.	45	38.46%
People drive to fast.	68	58.12%
There are too many traffic delays.	19	16.24%
It is difficult to access bus stops.	13	11.11%
The bus stops are not comfortable.	25	21.37%
The street is not accessible for people with disabilities.	19	16.24%
The traffic signals are not timed well for people driving.	28	23.93%
The traffic signals are not timed well for people walking or biking.	32	27.35%
There are no dedicated bicycle facilities	47	40.17%
None of the above	13	11.11%
Other (please specify)	36	30.77%

The following quotes, grouped by theme, highlight some examples of other challenges respondents identified for Edsall Road. For the full list of responses, see *Appendix E*.

Pedestrian Safety: One recurring theme is the difficulty of crossing the street at intersections. Respondents highlight speeding vehicles, poor signal timing for pedestrians, blind spots, as major concerns:

- "Drivers do not care about pedestrians. You have to have a death wish to walk very far in this neighborhood."
- "Too many blind spots and curves to sidewalks and roads. The trees are also not well maintained and hinder visibility."
- "Pedestrian crossing light crossing Van Dorn on Edsall is timed about 20 seconds too short. Even walking as fast as I can I cannot cross in time."

Traffic Delays: Many residents experience traffic delays, particularly at the intersection of Edsall Road and Van Dorn Street.

- "The Van Dorn X Edsall intersection always busy. Turning left from Edsall onto Northbound Van Dorn: often not enough time to make it within one light cycle. Probably need 2 turn lanes"

Limited Bus Accessibility: Accessing bus stops is challenging. Some bus stops lack comfort and accessibility features:

- "The reason I do not take the bus to this neighborhood is that there are almost no north / south buses in the City."
- "They need to put the bus stop back across the street on Edsall Rd (Southbound) returning from the metro stations for women walking that long path of Yoakum Parkway early morning/late evening in the dark."

Lack of Bicycle Infrastructure: Without dedicated bicycle infrastructure, biking and other active transportation modes feel unsafe, resulting in people choosing other modes or routes.

- "There is no bike or scooter access path. You have to ride directly in front of or behind moving vehicles on Edsall Road and Yoakum Parkway."
- "Extremely dangerous to bike on these roads… the traffic lane width and traffic speed & density on these roads discourages bicyclists."

Poor Lighting and Visibility: Insufficient lighting, particularly on Yoakum Parkway, impacts safe nighttime travel.

- "The sidewalks are not very lit, and walking at night feels unsafe, especially on Yoakum Parkway when heading towards Stevenson."

Edsall Road

Question 4 asked respondents "What do you like about Edsall Road?" Of the 119 respondents, 77 provided feedback to the open-ended question.

Generally, people who primarily drive appreciate the multiple lanes, convenient access to the highway, and connection to nearby roads. People also appreciate the landscaping and greenery, access businesses, and the presence of sidewalks.

- "Effective signals and traffic lanes mean there are few traffic delays."
- "It's 4 lanes, which helps with traffic coming off the highway"
- "Having 4 lanes to minimize traffic delays and a reasonable speed limit of 35"
- "I use it often to drive from Whiting to the highway, and I appreciate that it is a multilane road given all of the traffic."
- "Transportation access"

- “I like how close it is to so many smaller immigrant businesses. Also when there are less cars its actually quite pretty”
- Nice way to avoid Stevenson”
- “Attractively landscaped”
- “Access to so many other streets, areas, and businesses”
- “Convenient access to the highway, shopping and public transportation.”

Yoakum Parkway

Question 5 asked respondents “What do you like about Yoakum Parkway?” Of the 119 respondents, 81 provided feedback to the open-ended question.

Respondents value the wide median, park-like atmosphere with trees, and less traffic compared to Edsall Road.

- "I think it's one of the prettiest roads in the area."
- "I enjoy all of the trees along the street and the separated sidewalks. Having some space between the street and the sidewalks helps create a safer feeling pedestrian area. The tree coverage is very helpful in providing shade and makes the area feel much more welcoming and residential."
- “It has parking and traffic runs smoothly.”
- “Not much. It at least has a sidewalk, but otherwise is hostile to any transit, bikes, or pedestrians. Basically anyone not in a personal car is treated as an afterthought.”
- "It's a convenient Segway into Edsall road and while it is nicely maintained it feels dangerous to drive through due to the speeding and lack of pedestrian awareness"
- “The sidewalks that aren’t curb tight and the street lights are fully Dark Sky compliant. The use of shark’s teeth at crosswalks to indicate right of way.”
- “I like living on the street because it’s generally quiet and convenient access to get on the 395 going North or South or to take me on to van Dorn street to head east on the 495 to OTX.”
- “It works very well currently, and I do not believe it needs any upgrades. Parking is very well controlled so that there are unobstructed views of traffic from the multiple driveways.”

Other Thoughts

Question 6 asked respondents “Is there anything else you want to say about your experiences here?” Of the 119 respondents, 70 provided feedback to the open-ended question.

Some common themes from the responses include concerns about pedestrian and bicycle safety, the lack of walkability, demand for dedicated bicycle infrastructure, calls for reduced speeding and traffic calming measures, and concerns about maintenance, upkeep, and

cleanliness. There were several responses that indicated a general satisfaction with the current state of operations on Edsall Road and Yoakum Parkway and a opposition to reduced roadway capacity.

Safety concerns for pedestrians and cyclists: Many feel unsafe walking or biking in the area due to speeding vehicles, lack of dedicated bike infrastructure, and dangerous intersections.

- "Edsall in particular is hostile to anyone not in a motor vehicle."
- "Hey!!! Why aren't there any protect bike lanes in such a dangerous stretch of road?"
- "Better lighting on Edsall Rd and Yoakum Parkway. Better sidewalks. Put up no turn on red signs. Sings for no u-turns. Cameras or warning signs at dangerous intersections Edsall road is too bumpy tears up your car."

Lack of walkability: Despite dense housing, the area lacks amenities within walking distance, and safe pedestrian crossings are limited.

- "Despite so much dense housing, the area isn't very walkable. Few crossings, and few places to get safely and easily. Not very safe for bikes either."
- "Would drive less if there is more frequent buses to and from Pentagon area mid-morning and early afternoon. More bike paths, consecutive sidewalks."
- "WB Edsall to NB Van Dorn needs a 'No Right Turn on Red' as it is difficult if not impossible to see oncoming traffic. This is an intersection looking for a fatal accident and is easily preventable."

Demand for dedicated bicycle infrastructure: Numerous respondents desire dedicated bike lanes or paths to improve safety and encourage cycling.

- "Wish there were dedicated bike facilities"
- "I support bold redesign to improve transit access, bicycle infrastructure, and pedestrian safety."
- "Add more bike stations along Edsall and van dorn would be ideal"
- "I live in the west end and ride my bike whenever I can, but have never ridden on edsall or yoakum because they do not feel safe"

Calls for reduced speeding and traffic calming measures: Respondents suggest lower speed limits, speed bumps, or increased enforcement to address speeding.

Concerns about maintenance and upkeep: Trash, overgrown vegetation, potholes, and malfunctioning signals are among the issues raised.

- "Some of the areas on Yoakum are overgrown with weeds & tree branches overhang the sidewalk making it difficult to walk."

- "It needs more trees, more maintenance, more lights give a clean and safe environment for the neighborhood."
- "Ther are portions of sidewalk and real estate that are in desperate need of care and clean up"

Opposition to change: a subset of respondents believes the roads currently function well and are wary of significant alterations.

- "Would prefer posted speed limits do not change or else not go below 30 mph"
- "I oppose any plans to reduce capacity in an already severely congested West End."
- "NO MORE BIKE LANES!"

Next Steps

The project team will hold a design charrette in January 2025 to identify and develop up to two design alternatives for the study corridor. Alternatives will focus on multimodal safety and mobility improvements for all road users, including improvements to walking and cycling infrastructure. Traffic analysis will be conducted for the existing conditions, as well as for current and future years for the design alternative(s), and adjustments will be made to the conceptual alternatives to mitigate potential operational impacts to the extent necessary and feasible.

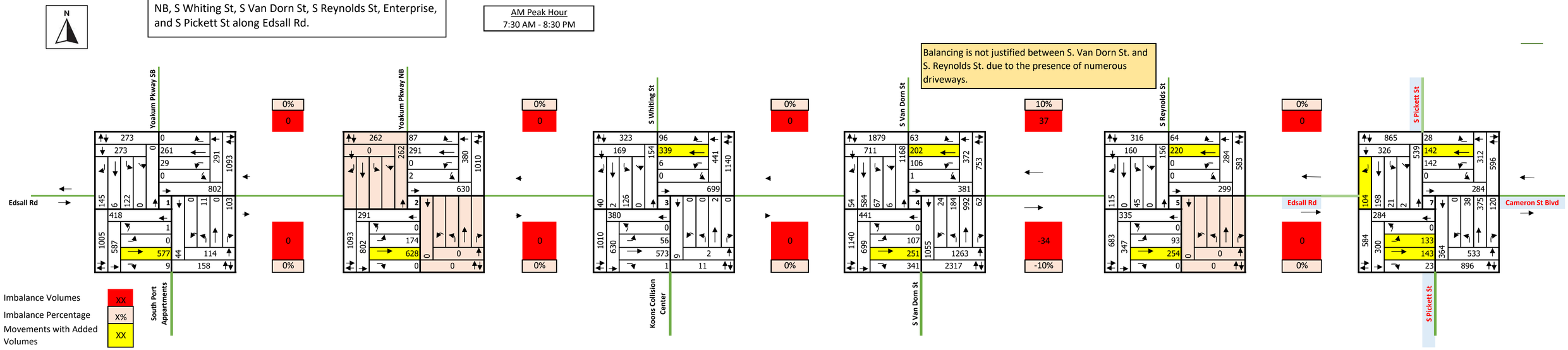
Findings from the alternative traffic analysis (including measures of effectiveness such as level of service and 95th percentile queue lengths for current and future years) will be documented in a memorandum. Additionally, expected safety impacts and benefits for the proposed improvements (e.g., reduced conflict points and Crash Modification Factors (CMF) where available/applicable) will be documented in the memorandum. Planning level construction cost estimates will be developed for the proposed alternative(s).

Appendix A – Turning Movement Volume Balancing

AM Volume Diagram
- Existing Volumes for Yoakum Pkway SB, Yoakum Pkway NB, S Whiting St, S Van Dorn St, S Reynolds St, Enterprise, and S Pickett St along Edsall Rd.

AM Peak Hour
7:30 AM - 8:30 PM

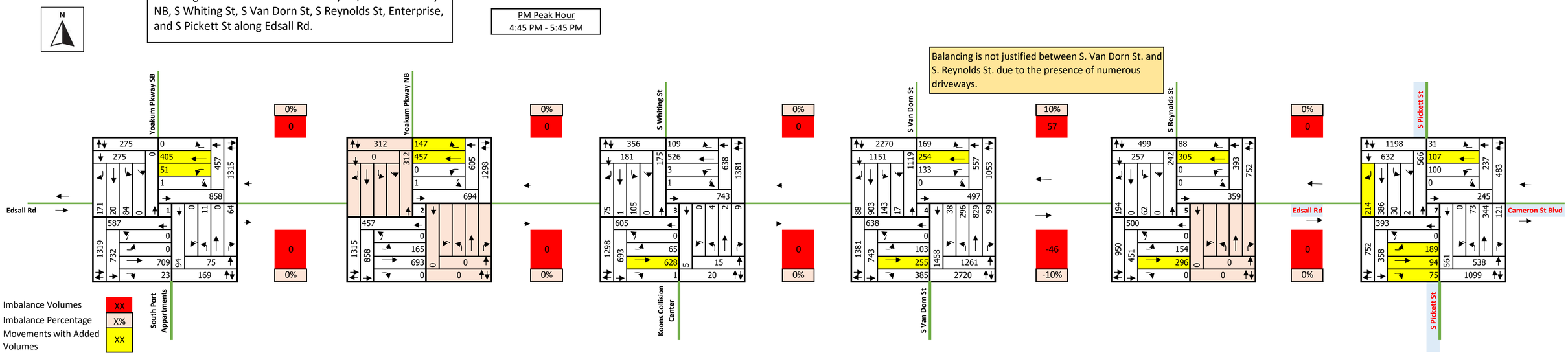
Balancing is not justified between S. Van Dorn St. and S. Reynolds St. due to the presence of numerous driveways.



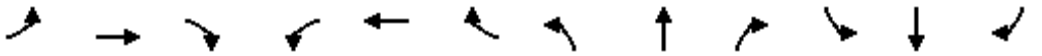
PM Volume Diagram
- Existing Volumes for Yoakum Pkway SB, Yoakum Pkway NB, S Whiting St, S Van Dorn St, S Reynolds St, Enterprise, and S Pickett St along Edsall Rd.

PM Peak Hour
4:45 PM - 5:45 PM

Balancing is not justified between S. Van Dorn St. and S. Reynolds St. due to the presence of numerous driveways.



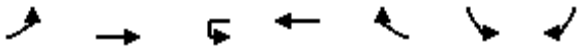
Appendix B - Existing Year (2024) Synchro Output



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	578	9	29	261	0	11	0	103	122	6	145
Future Volume (vph)	0	578	9	29	261	0	11	0	103	122	6	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5		6.5	6.5		6.0		6.0	6.0	6.0	
Lane Util. Factor		*0.83		1.00	*0.77		1.00		1.00	1.00	1.00	
Frpb, ped/bikes		1.00		1.00	1.00		1.00		0.99	1.00	0.99	
Flpb, ped/bikes		1.00		1.00	1.00		1.00		1.00	1.00	1.00	
Frt		1.00		1.00	1.00		1.00		0.85	1.00	0.86	
Flt Protected		1.00		0.95	1.00		0.95		1.00	0.95	1.00	
Satd. Flow (prot)		2998		1745	2787		1751		1501	1607	1562	
Flt Permitted		1.00		0.37	1.00		0.60		1.00	0.95	1.00	
Satd. Flow (perm)		2998		677	2787		1103		1501	1607	1562	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	642	10	32	290	0	12	0	114	136	7	161
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	89	0	126	0
Lane Group Flow (vph)	0	651	0	32	290	0	12	0	25	136	42	0
Confl. Peds. (#/hr)			6	6			1		3	3		1
Heavy Vehicles (%)	0%	5%	0%	3%	5%	0%	3%	0%	6%	12%	0%	3%
Turn Type		NA		Perm	NA		Perm		Perm	Perm	NA	
Protected Phases		2			6						4	
Permitted Phases				6			8		8	4		
Actuated Green, G (s)		62.0		40.4	40.4		20.8		20.8	20.8	20.8	
Effective Green, g (s)		62.0		40.4	40.4		20.8		20.8	20.8	20.8	
Actuated g/C Ratio		0.65		0.42	0.42		0.22		0.22	0.22	0.22	
Clearance Time (s)		6.5		6.5	6.5		6.0		6.0	6.0	6.0	
Vehicle Extension (s)		2.0		2.0	2.0		3.5		3.5	3.5	3.5	
Lane Grp Cap (vph)		1950		286	1181		240		327	350	340	
v/s Ratio Prot		c0.22			0.10						0.03	
v/s Ratio Perm				0.05			0.01		0.02	c0.08		
v/c Ratio		0.33		0.11	0.25		0.05		0.08	0.39	0.12	
Uniform Delay, d1		7.4		16.6	17.7		29.4		29.6	31.8	29.9	
Progression Factor		1.00		0.13	0.13		1.00		1.00	1.00	1.00	
Incremental Delay, d2		0.5		0.7	0.4		0.1		0.1	0.8	0.2	
Delay (s)		7.9		2.8	2.8		29.5		29.7	32.7	30.1	
Level of Service		A		A	A		C		C	C	C	
Approach Delay (s)		7.9			2.8			29.7			31.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	95.3	Sum of lost time (s)	19.0
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	174	628	2	291	87	0	0
Future Volume (vph)	174	628	2	291	87	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5			
Lane Util. Factor	1.00	*0.77		*0.63			
Frpb, ped/bikes	1.00	1.00		0.99			
Flpb, ped/bikes	1.00	1.00		1.00			
Frt	1.00	1.00		0.97			
Flt Protected	0.95	1.00		1.00			
Satd. Flow (prot)	1752	2735		2153			
Flt Permitted	0.30	1.00		0.95			
Satd. Flow (perm)	560	2735		2050			
Peak-hour factor, PHF	0.91	0.91	0.92	0.91	0.91	0.92	0.91
Adj. Flow (vph)	191	690	2	320	96	0	0
RTOR Reduction (vph)	0	0	0	12	0	0	0
Lane Group Flow (vph)	191	690	0	406	0	0	0
Confl. Peds. (#/hr)					6		
Heavy Vehicles (%)	3%	7%	0%	5%	12%	0%	0%
Turn Type	custom	NA	Perm	NA			
Protected Phases	5 4	2 4		6			
Permitted Phases	2		6				
Actuated Green, G (s)	88.8	95.3		40.4			
Effective Green, g (s)	82.8	89.3		40.4			
Actuated g/C Ratio	0.87	0.94		0.42			
Clearance Time (s)				6.5			
Vehicle Extension (s)				2.0			
Lane Grp Cap (vph)	935	2562		869			
v/s Ratio Prot	0.08	c0.25					
v/s Ratio Perm	0.10			c0.20			
v/c Ratio	0.20	0.27		0.47			
Uniform Delay, d1	2.0	0.3		19.7			
Progression Factor	0.87	1.00		1.00			
Incremental Delay, d2	0.1	0.1		1.8			
Delay (s)	1.9	0.3		21.5			
Level of Service	A	A		C			
Approach Delay (s)		0.7		21.5		0.0	
Approach LOS		A		C		A	

Intersection Summary			
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	95.3	Sum of lost time (s)	19.0
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	573	1	6	339	96	0	2	0	126	2	40
Future Volume (vph)	56	573	1	6	339	96	0	2	0	126	2	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.5			5.5			5.5		5.5	5.5	
Lane Util. Factor	1.00	*0.98			*0.94			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00			0.99			1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00			1.00			1.00		0.98	1.00	
Frt	1.00	1.00			0.97			1.00		1.00	0.86	
Flt Protected	0.95	1.00			1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1731	3447			3152			1900		1690	1541	
Flt Permitted	0.42	1.00			0.95			1.00		0.76	1.00	
Satd. Flow (perm)	772	3447			2987			1900		1346	1541	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	64	651	1	7	385	109	0	2	0	143	2	45
RTOR Reduction (vph)	0	0	0	0	20	0	0	0	0	0	38	0
Lane Group Flow (vph)	64	652	0	0	481	0	0	2	0	143	9	0
Confl. Peds. (#/hr)	6		15	15		6	4		12	12		4
Heavy Vehicles (%)	4%	8%	0%	6%	7%	15%	0%	0%	0%	5%	0%	4%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	65.1	65.1			55.5			13.9		13.9	13.9	
Effective Green, g (s)	65.1	65.1			55.5			13.9		13.9	13.9	
Actuated g/C Ratio	0.72	0.72			0.62			0.15		0.15	0.15	
Clearance Time (s)	5.0	5.5			5.5			5.5		5.5	5.5	
Vehicle Extension (s)	2.0	0.2			0.2			2.0		2.0	2.0	
Lane Grp Cap (vph)	607	2493			1841			293		207	237	
v/s Ratio Prot	0.01	c0.19						0.00			0.01	
v/s Ratio Perm	0.07				0.16					c0.11		
v/c Ratio	0.11	0.26			0.26			0.01		0.69	0.04	
Uniform Delay, d1	3.8	4.2			7.9			32.2		36.0	32.4	
Progression Factor	1.00	1.00			1.10			1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.3			0.3			0.0		7.8	0.0	
Delay (s)	3.8	4.5			9.0			32.2		43.8	32.4	
Level of Service	A	A			A			C		D	C	
Approach Delay (s)		4.4			9.0			32.2			41.0	
Approach LOS		A			A			C			D	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

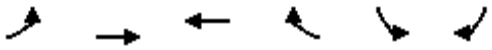
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	107	251	341	107	202	63	24	184	992	62	6	67
Future Volume (vph)	107	251	341	107	202	63	24	184	992	62	6	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	9.4	9.4	9.4	9.4	9.4	9.4		6.2	5.8			6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		*0.98	*0.88			1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97		1.00	1.00			1.00
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.99			1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00			0.95
Satd. Flow (prot)	1710	1792	1470	1702	1743	1454		3146	3175			1757
Flt Permitted	0.53	1.00	1.00	0.36	1.00	1.00		0.95	1.00			0.95
Satd. Flow (perm)	946	1792	1470	636	1743	1454		3146	3175			1757
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.92	0.96	0.96	0.96	0.92	0.96
Adj. Flow (vph)	111	261	355	111	210	66	26	192	1033	65	7	70
RTOR Reduction (vph)	0	0	271	0	0	51	0	0	2	0	0	0
Lane Group Flow (vph)	111	261	84	111	210	15	0	218	1096	0	0	77
Confl. Peds. (#/hr)	6		2	2		6		4		1		1
Heavy Vehicles (%)	5%	6%	8%	6%	9%	8%	1%	14%	4%	9%	0%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	Prot	NA		Prot	Prot
Protected Phases	3	8		7	4		1	1	6		5	5
Permitted Phases	8		8	4		4						
Actuated Green, G (s)	51.4	39.3	39.3	56.4	41.8	41.8		18.7	82.1			13.4
Effective Green, g (s)	51.4	39.3	39.3	56.4	41.8	41.8		18.7	82.1			13.4
Actuated g/C Ratio	0.29	0.22	0.22	0.31	0.23	0.23		0.10	0.46			0.07
Clearance Time (s)	9.4	9.4	9.4	9.4	9.4	9.4		6.2	5.8			6.0
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0		4.0	3.0			4.0
Lane Grp Cap (vph)	321	391	320	285	404	337		326	1448			130
v/s Ratio Prot	0.02	c0.15		c0.03	0.12			c0.07	c0.35			0.04
v/s Ratio Perm	0.08		0.06	0.09		0.01						
v/c Ratio	0.35	0.67	0.26	0.39	0.52	0.05		0.67	0.76			0.59
Uniform Delay, d1	49.3	64.4	58.3	46.3	60.3	53.6		77.7	40.7			80.7
Progression Factor	0.92	0.94	1.36	1.00	1.00	1.00		1.00	1.00			1.00
Incremental Delay, d2	0.6	4.6	0.6	0.9	1.5	0.1		5.6	3.7			8.2
Delay (s)	46.1	65.0	79.9	47.2	61.8	53.7		83.3	44.4			88.9
Level of Service	D	E	E	D	E	D		F	D			F
Approach Delay (s)		69.4			56.2				50.8			
Approach LOS		E			E				D			

Intersection Summary			
HCM 2000 Control Delay	53.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	30.8
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	584	54
Future Volume (vph)	584	54
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.8	
Lane Util. Factor	*0.96	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	3427	
Flt Permitted	1.00	
Satd. Flow (perm)	3427	
Peak-hour factor, PHF	0.96	0.96
Adj. Flow (vph)	608	56
RTOR Reduction (vph)	3	0
Lane Group Flow (vph)	661	0
Confl. Peds. (#/hr)		4
Heavy Vehicles (%)	5%	4%
Turn Type	NA	
Protected Phases	2	
Permitted Phases		
Actuated Green, G (s)	76.6	
Effective Green, g (s)	76.6	
Actuated g/C Ratio	0.43	
Clearance Time (s)	5.8	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	1458	
v/s Ratio Prot	0.19	
v/s Ratio Perm		
v/c Ratio	0.45	
Uniform Delay, d1	36.8	
Progression Factor	1.00	
Incremental Delay, d2	1.0	
Delay (s)	37.8	
Level of Service	D	
Approach Delay (s)	43.1	
Approach LOS	D	

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	93	254	220	64	45	115
Future Volume (Veh/h)	93	254	220	64	45	115
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	119	326	282	82	58	147
Pedestrians					6	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					1	
Right turn flare (veh)						10
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		969	315			
pX, platoon unblocked						
vC, conflicting volume	370				730	188
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	370				730	188
tC, single (s)	4.4				7.1	7.0
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	89				80	82
cM capacity (veh/h)	1097				297	802

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	228	217	188	176	205
Volume Left	119	0	0	0	58
Volume Right	0	0	0	82	147
cSH	1097	1700	1700	1700	1049
Volume to Capacity	0.11	0.13	0.11	0.10	0.20
Queue Length 95th (ft)	9	0	0	0	18
Control Delay (s)	5.0	0.0	0.0	0.0	13.2
Lane LOS	A				B
Approach Delay (s)	2.6		0.0		13.2
Approach LOS					B

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	38	375	120	2	21	198	104	142	142	28	133	143
Future Volume (vph)	38	375	120	2	21	198	104	142	142	28	133	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.0	5.5		5.0	6.5		5.0	6.5
Lane Util. Factor		*0.78			1.00	1.00		1.00	1.00		1.00	1.00
Frpb, ped/bikes		0.99			1.00	0.99		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00		1.00	1.00
Frt		0.97			1.00	0.95		1.00	0.98		1.00	0.98
Flt Protected		1.00			0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)		2797			1637	1694		1732	1804		1717	1744
Flt Permitted		0.90			0.24	1.00		0.48	1.00		0.42	1.00
Satd. Flow (perm)		2514			413	1694		873	1804		760	1744
Peak-hour factor, PHF	0.80	0.80	0.80	0.92	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	48	469	150	2	26	248	130	178	178	35	166	179
RTOR Reduction (vph)	0	15	0	0	0	16	0	0	7	0	0	6
Lane Group Flow (vph)	0	652	0	0	28	362	0	178	206	0	166	202
Confl. Peds. (#/hr)	13		5		5		13	3		9	3	
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	7%	1%	0%	0%	11%	5%	5%	4%	2%	4%	5%	4%
Turn Type	Perm	NA		pm+pt	pm+pt	NA		pm+pt	NA		pm+pt	NA
Protected Phases		4		3	3	8		5	2		1	6
Permitted Phases	4			8	8			2			6	
Actuated Green, G (s)		46.0			54.4	54.4		25.7	15.2		26.9	15.8
Effective Green, g (s)		46.0			54.4	54.4		25.7	15.2		26.9	15.8
Actuated g/C Ratio		0.47			0.56	0.56		0.26	0.16		0.28	0.16
Clearance Time (s)		5.5			5.0	5.5		5.0	6.5		5.0	6.5
Vehicle Extension (s)		2.0			2.0	2.0		2.0	2.5		2.0	2.5
Lane Grp Cap (vph)		1183			272	943		321	280		317	282
v/s Ratio Prot					0.00	c0.21		c0.06	0.11		0.06	c0.12
v/s Ratio Perm		c0.26			0.05			0.09			0.08	
v/c Ratio		0.55			0.10	0.38		0.55	0.74		0.52	0.72
Uniform Delay, d1		18.5			11.1	12.2		29.6	39.3		28.6	38.8
Progression Factor		1.00			1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2		1.8			0.1	1.2		1.2	9.1		0.7	7.9
Delay (s)		20.3			11.1	13.4		30.8	48.5		29.3	46.7
Level of Service		C			B	B		C	D		C	D
Approach Delay (s)		20.3				13.2			40.4			39.0
Approach LOS		C				B			D			D

Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	97.7	Sum of lost time (s)	22.0
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	23
Future Volume (vph)	23
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.80
Adj. Flow (vph)	29
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	5
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	20%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

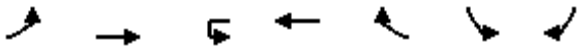
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	0	709	23	1	51	405	0	11	0	64	84	20
Future Volume (vph)	0	709	23	1	51	405	0	11	0	64	84	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5			6.5	6.5		6.0		6.0	6.0	6.0
Lane Util. Factor		*0.91			1.00	*0.76		1.00		1.00	1.00	1.00
Frpb, ped/bikes		1.00			1.00	1.00		1.00		0.99	1.00	0.98
Flpb, ped/bikes		1.00			1.00	1.00		1.00		1.00	1.00	1.00
Frt		1.00			1.00	1.00		1.00		0.85	1.00	0.87
Flt Protected		1.00			0.95	1.00		0.95		1.00	0.95	1.00
Satd. Flow (prot)		3373			1780	2831		1796		1563	1610	1604
Flt Permitted		1.00			0.34	1.00		0.51		1.00	0.95	1.00
Satd. Flow (perm)		3373			641	2831		963		1563	1610	1604
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	762	25	1	55	435	0	12	0	69	90	22
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	0	55	0	147
Lane Group Flow (vph)	0	785	0	0	56	435	0	12	0	14	90	59
Confl. Peds. (#/hr)			7		7			7		1	1	
Heavy Vehicles (%)	0%	2%	0%	0%	1%	2%	0%	0%	0%	2%	12%	0%
Turn Type		NA		Perm	Perm	NA		Perm		Perm	Perm	NA
Protected Phases		2				6						4
Permitted Phases				6	6			8		8	4	
Actuated Green, G (s)		61.9			49.2	49.2		19.0		19.0	19.0	19.0
Effective Green, g (s)		61.9			49.2	49.2		19.0		19.0	19.0	19.0
Actuated g/C Ratio		0.66			0.53	0.53		0.20		0.20	0.20	0.20
Clearance Time (s)		6.5			6.5	6.5		6.0		6.0	6.0	6.0
Vehicle Extension (s)		2.0			2.0	2.0		3.5		3.5	3.5	3.5
Lane Grp Cap (vph)		2235			337	1491		195		317	327	326
v/s Ratio Prot		c0.23				0.15						0.04
v/s Ratio Perm					0.09			0.01		0.01	c0.06	
v/c Ratio		0.35			0.17	0.29		0.06		0.04	0.28	0.18
Uniform Delay, d1		6.9			11.5	12.4		30.0		29.9	31.4	30.8
Progression Factor		1.00			0.12	0.13		1.00		1.00	1.00	1.00
Incremental Delay, d2		0.4			0.9	0.4		0.2		0.1	0.5	0.3
Delay (s)		7.4			2.3	2.0		30.2		30.0	31.9	31.1
Level of Service		A			A	A		C		C	C	C
Approach Delay (s)		7.4				2.0			30.0			31.3
Approach LOS		A				A			C			C

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	93.4	Sum of lost time (s)	19.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	171
Future Volume (vph)	171
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.93
Adj. Flow (vph)	184
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	7
Heavy Vehicles (%)	1%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

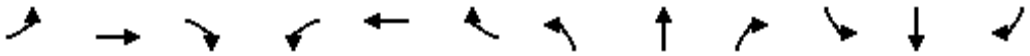
Intersection Summary



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	165	693	1	457	147	0	0
Future Volume (vph)	165	693	1	457	147	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5			
Lane Util. Factor	1.00	*0.75		*0.63			
Frpb, ped/bikes	1.00	1.00		0.99			
Flpb, ped/bikes	1.00	1.00		1.00			
Frt	1.00	1.00		0.96			
Flt Protected	0.95	1.00		1.00			
Satd. Flow (prot)	1787	2767		2206			
Flt Permitted	0.20	1.00		0.95			
Satd. Flow (perm)	367	2767		2105			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	179	753	1	497	160	0	0
RTOR Reduction (vph)	0	0	0	11	0	0	0
Lane Group Flow (vph)	179	753	0	647	0	0	0
Confl. Peds. (#/hr)					8		
Heavy Vehicles (%)	1%	3%	0%	2%	9%	0%	0%
Turn Type	custom	NA	Perm	NA			
Protected Phases	5 4	2 4		6			
Permitted Phases	2		6				
Actuated Green, G (s)	86.9	93.4		49.2			
Effective Green, g (s)	80.9	87.4		49.2			
Actuated g/C Ratio	0.87	0.94		0.53			
Clearance Time (s)				6.5			
Vehicle Extension (s)				2.0			
Lane Grp Cap (vph)	701	2589		1108			
v/s Ratio Prot	0.07	c0.27					
v/s Ratio Perm	0.15			c0.31			
v/c Ratio	0.26	0.29		0.58			
Uniform Delay, d1	3.5	0.3		15.1			
Progression Factor	13.15	1.00		1.00			
Incremental Delay, d2	0.2	0.1		2.3			
Delay (s)	46.7	0.3		17.4			
Level of Service	D	A		B			
Approach Delay (s)		9.2		17.4		0.0	
Approach LOS		A		B		A	

Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	93.4	Sum of lost time (s)	19.0
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	628	1	4	526	109	4	2	9	105	1	75
Future Volume (vph)	65	628	1	4	526	109	4	2	9	105	1	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.5			5.5		5.5	5.5		5.5	5.5	
Lane Util. Factor	1.00	*0.89			*1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00			0.99		1.00	0.97		1.00	0.98	
Flpb, ped/bikes	1.00	1.00			1.00		0.99	1.00		0.98	1.00	
Frt	1.00	1.00			0.97		1.00	0.88		1.00	0.85	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1748	3282			3533		1795	1620		1681	1530	
Flt Permitted	0.35	1.00			0.95		0.70	1.00		0.75	1.00	
Satd. Flow (perm)	652	3282			3364		1332	1620		1328	1530	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	661	1	4	554	115	4	2	9	111	1	79
RTOR Reduction (vph)	0	0	0	0	17	0	0	8	0	0	68	0
Lane Group Flow (vph)	68	662	0	0	656	0	4	3	0	111	12	0
Confl. Peds. (#/hr)	12		31	31		12	5		19	19		5
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	3%	3%	0%	0%	4%	4%	0%	0%	0%	5%	0%	4%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	53.8	53.8			44.2		10.2	10.2		10.2	10.2	
Effective Green, g (s)	53.8	53.8			44.2		10.2	10.2		10.2	10.2	
Actuated g/C Ratio	0.72	0.72			0.59		0.14	0.14		0.14	0.14	
Clearance Time (s)	5.0	5.5			5.5		5.5	5.5		5.5	5.5	
Vehicle Extension (s)	2.0	0.2			0.2		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	534	2354			1982		181	220		180	208	
v/s Ratio Prot	0.01	c0.20						0.00			0.01	
v/s Ratio Perm	0.08				c0.20		0.00			c0.08		
v/c Ratio	0.13	0.28			0.33		0.02	0.01		0.62	0.06	
Uniform Delay, d1	3.4	3.8			7.9		28.1	28.0		30.6	28.2	
Progression Factor	1.00	1.00			1.20		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.3			0.3		0.0	0.0		4.4	0.0	
Delay (s)	3.5	4.1			9.8		28.1	28.1		34.9	28.3	
Level of Service	A	A			A		C	C		C	C	
Approach Delay (s)		4.0			9.8			28.1			32.1	
Approach LOS		A			A			C			C	

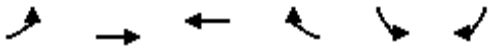
Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	103	255	385	133	254	169	38	296	829	99	17	143
Future Volume (vph)	103	255	385	133	254	169	38	296	829	99	17	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	9.4	9.4	9.4	9.4	9.4	9.4		6.2	5.8			6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		*0.95	*0.92			1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.95		1.00	1.00			1.00
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.98			1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00			0.95
Satd. Flow (prot)	1756	1863	1534	1764	1863	1501		3362	3360			1770
Flt Permitted	0.38	1.00	1.00	0.34	1.00	1.00		0.95	1.00			0.95
Satd. Flow (perm)	699	1863	1534	635	1863	1501		3362	3360			1770
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.92	0.98	0.98	0.98	0.92	0.98
Adj. Flow (vph)	105	260	393	136	259	172	41	302	846	101	18	146
RTOR Reduction (vph)	0	0	157	0	0	139	0	0	6	0	0	0
Lane Group Flow (vph)	105	260	236	136	259	33	0	343	941	0	0	164
Confl. Peds. (#/hr)	21		10	10		21		9		11		11
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	Prot	NA		Prot	Prot
Protected Phases	3	8		7	4		1	1	6		5	5
Permitted Phases	8		8	4		4						
Actuated Green, G (s)	37.8	27.5	27.5	39.6	28.4	28.4		19.1	61.2			19.5
Effective Green, g (s)	37.8	27.5	27.5	39.6	28.4	28.4		19.1	61.2			19.5
Actuated g/C Ratio	0.25	0.18	0.18	0.26	0.19	0.19		0.13	0.41			0.13
Clearance Time (s)	9.4	9.4	9.4	9.4	9.4	9.4		6.2	5.8			6.0
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0		4.0	3.0			4.0
Lane Grp Cap (vph)	248	341	281	251	352	284		428	1370			230
v/s Ratio Prot	0.03	0.14		c0.04	0.14			c0.10	c0.28			0.09
v/s Ratio Perm	0.08		c0.15	0.10		0.02						
v/c Ratio	0.42	0.76	0.84	0.54	0.74	0.11		0.80	0.69			0.71
Uniform Delay, d1	45.0	58.1	59.1	44.6	57.3	50.4		63.6	36.5			62.6
Progression Factor	0.91	0.91	0.83	1.00	1.00	1.00		1.00	1.00			1.00
Incremental Delay, d2	1.1	10.1	20.0	2.4	8.3	0.2		10.9	2.8			10.7
Delay (s)	41.9	63.1	69.2	47.0	65.5	50.6		74.5	39.3			73.2
Level of Service	D	E	E	D	E	D		E	D			E
Approach Delay (s)		63.3			56.6				48.7			
Approach LOS		E			E				D			

Intersection Summary			
HCM 2000 Control Delay	51.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	30.8
Intersection Capacity Utilization	95.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	903	88
Future Volume (vph)	903	88
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.8	
Lane Util. Factor	*0.99	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	3629	
Flt Permitted	1.00	
Satd. Flow (perm)	3629	
Peak-hour factor, PHF	0.98	0.98
Adj. Flow (vph)	921	90
RTOR Reduction (vph)	5	0
Lane Group Flow (vph)	1006	0
Confl. Peds. (#/hr)		9
Turn Type	NA	
Protected Phases	2	
Permitted Phases		
Actuated Green, G (s)	61.4	
Effective Green, g (s)	61.4	
Actuated g/C Ratio	0.41	
Clearance Time (s)	5.8	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	1485	
v/s Ratio Prot	0.28	
v/s Ratio Perm		
v/c Ratio	0.68	
Uniform Delay, d1	36.2	
Progression Factor	1.00	
Incremental Delay, d2	2.5	
Delay (s)	38.7	
Level of Service	D	
Approach Delay (s)	43.5	
Approach LOS	D	

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	154	296	305	88	62	194
Future Volume (Veh/h)	154	296	305	88	62	194
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	166	318	328	95	67	209
Pedestrians					17	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					2	
Right turn flare (veh)						10
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		969	315			
pX, platoon unblocked						
vC, conflicting volume	440				884	228
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	440				884	228
tC, single (s)	4.2				6.9	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	85				71	73
cM capacity (veh/h)	1091				230	762

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	272	212	219	204	276
Volume Left	166	0	0	0	67
Volume Right	0	0	0	95	209
cSH	1091	1700	1700	1700	947
Volume to Capacity	0.15	0.12	0.13	0.12	0.29
Queue Length 95th (ft)	13	0	0	0	30
Control Delay (s)	6.0	0.0	0.0	0.0	15.3
Lane LOS	A				C
Approach Delay (s)	3.4		0.0		15.3
Approach LOS					C

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	38.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	73	344	121	2	30	386	214	100	107	31	189	94
Future Volume (vph)	73	344	121	2	30	386	214	100	107	31	189	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.0	5.5		5.0	6.5		5.0	6.5
Lane Util. Factor		*0.83			1.00	1.00		1.00	1.00		1.00	1.00
Frpb, ped/bikes		0.99			1.00	0.99		1.00	0.99		1.00	0.98
Flpb, ped/bikes		1.00			1.00	1.00		0.99	1.00		0.99	1.00
Frt		0.97			1.00	0.95		1.00	0.97		1.00	0.93
Flt Protected		0.99			0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)		2944			1767	1751		1749	1785		1756	1704
Flt Permitted		0.74			0.31	1.00		0.64	1.00		0.47	1.00
Satd. Flow (perm)		2179			573	1751		1185	1785		862	1704
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	78	366	129	2	32	411	228	106	114	33	201	100
RTOR Reduction (vph)	0	17	0	0	0	17	0	0	10	0	0	29
Lane Group Flow (vph)	0	556	0	0	34	622	0	106	137	0	201	151
Confl. Peds. (#/hr)	4		7		7		4	12		20	20	
Confl. Bikes (#/hr)										1		
Turn Type	Perm	NA		pm+pt	pm+pt	NA		pm+pt	NA		pm+pt	NA
Protected Phases		4		3	3	8		5	2		1	6
Permitted Phases	4			8	8			2			6	
Actuated Green, G (s)		46.0			54.5	54.5		22.2	15.0		32.2	20.0
Effective Green, g (s)		46.0			54.5	54.5		22.2	15.0		32.2	20.0
Actuated g/C Ratio		0.47			0.55	0.55		0.22	0.15		0.33	0.20
Clearance Time (s)		5.5			5.0	5.5		5.0	6.5		5.0	6.5
Vehicle Extension (s)		2.0			2.0	2.0		2.0	2.5		2.0	2.5
Lane Grp Cap (vph)		1015			358	966		307	271		391	345
v/s Ratio Prot					0.00	c0.36		0.03	0.08		c0.06	0.09
v/s Ratio Perm		0.26			0.05			0.05			c0.10	
v/c Ratio		0.55			0.09	0.64		0.35	0.50		0.51	0.44
Uniform Delay, d1		18.9			10.9	15.4		31.6	38.4		25.5	34.4
Progression Factor		1.00			1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2		2.1			0.0	3.3		0.2	1.1		0.5	0.7
Delay (s)		21.0			10.9	18.6		31.8	39.5		26.0	35.1
Level of Service		C			B	B		C	D		C	D
Approach Delay (s)		21.0				18.3			36.3			30.3
Approach LOS		C				B			D			C

Intersection Summary			
HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	98.7	Sum of lost time (s)	22.0
Intersection Capacity Utilization	98.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	75
Future Volume (vph)	75
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.94
Adj. Flow (vph)	80
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	12
Confl. Bikes (#/hr)	1
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Appendix C – Overview of Edsall Road Crashes

Year	Type of Crash										Severity					Total
	Angle	Head-On	Rear-End	Sideswipe	Fixed Object - In Road	Fixed Object - Off Road	Animal	Pedestrian	Non-Collision	Other	K: Fatal	A: Ambulatory Injury	B: Visible Injury	C: Non-Visible Injury	PDO: Property Damage Only	
2019	10		2	1		1		1		1			5		11	**16**
2020	6	2	2	5				2		1			6	1	11	**18**
2021	7		4	2		3		2		1			6	2	11	**19**
2022	9	2	5	3		2		2				1	7		15	**23**
2023	5	2		1		4		4		1		1	5		11	**17**
2024	5		3	1				1		1		1	2		8	**11**
Total	42	6	16	13		10		12		5		3	31	3	67	**104**

Year	Time of Day			Lighting						Weather				Surface			Total
	AM Peak (7 am-10 am)	PM Peak (4 pm-7pm)	Off-Peak	Dawn	Daylight	Dusk	Darkness Road Lighted	Darkness Road Not Lighted	Unknown	Cloudy / Clear	Fog/Mist	Rain	Snow	Dry	Wet	Water (Standing, Moving)	
2019	1	4	11		11	1	4			14		2		14	2		**16**
2020	2	5	11	1	7		8	1	1	17		1		17	1		**18**
2021	2	3	14		11	2	6			19				19			**19**
2022	2	7	14		12	1	8	2		21		2		20	3		**23**
2023	1	5	11		9	1	7			13		4		13	4		**17**
2024	2	1	8		8		3			11				10		1	**11**
Total	10	25	69	1	58	5	36	3	1	95		9		93	10	1	**104**

Appendix D – Edsall Road Site Visit Summary

Date

10/17/2024

Time

10 AM – 12 PM

Location

Edsall Rd from South Pickett St to Yoakum Pkwy

Attendees

Name	Organization	Email
Alex Carroll	City of Alexandria T&ES	alexandria.carroll@alexandriava.gov
Bryan Hayes	City of Alexandria T&ES	bryan.hayes@alexandriava.gov
Kian Kompany	T3 Design	kkompany@t3design.us
Christian Harar	VHB	charar@vhb.com
Sgt. D. Reeve	City of Alexandria PD	daniel.reeve@alexandriava.gov
Dan Lovas	VHB	dlovas@vhb.com
Sahar Nabaee	VHB	snabaee@vhb.com
Asma Ali	T3 Design	aali@t3design.us
Zachary DesJardins	Fairfax County	zachary.desJardins@fairfaxcounty.gov
Ryan Knight	City of Alexandria T&ES	ryan.knight@alexandriava.gov
Tristan Cunningham	DASH	tristan.cunningham@alexandriava.gov
Eric Voigt	DASH	eric.voigt@alexandriava.gov
Maggie Cooper	City of Alexandria P&Z	margaret.cooper@alexandriava.gov
Heather Gade	VHB	hgade@vhb.com

Observations

General/Corridor-wide

- Edsall Rd project recommendations should be within the existing curb lines (approx. 50 foot wide cross-section) and focus on the near-term. Long-term improvements that may not fit within the existing curb lines are being considered by the City, including converting the intersection to a roundabout.
- Alexandria Fire and EMS generally prefers road diets that have a center-running left-turn lane, especially in where there are frequent driveways/access points as well as near traffic signals.

- Sidewalks and ramps are not ADA compliant at several locations throughout the study corridor. Repairs are also needed along the curb and gutter which could be problematic if of bike lane are installed. The City is not planning a full sidewalk widening/upgrade at this time, but spot improvements may be feasible as needed.
- Design Vehicle: SU-30/40 or bus was recommended for use by the City.
- Access management: Businesses may take legal action against the city if driveway closures impact their property access.
- Pedestrian signals may be on recall or actuated, depending on location.
- Minimum typical lane widths are 11 feet for transit and 10 feet for turning lanes.
- The City expressed openness to maximizing bus stop efficiency and supports ZICLA bus platforms. The City has proposed the treatment in the conceptual design for South Pickett Street project.
- The City would like to include future conditions analysis of traffic and will provide further instructions on future growth rates as well as traffic impact studies for planned developments within the study area, including the Greenhill Development bordering South Pickett Street intersection.
- Project recommendations need to be coordinated and align with the proposed concepts for South Pickett St project. Additionally, coordination must take place with Yoakum Parkway project. The City is conducting joint public outreach and engagement for Edsall Road and Yoakum Parkway projects.
- Raised crosswalks are not desired across Edsall Road, but the City is open to RRFBs and other treatments.
- VDOT approval is not needed for crosswalks.
- Traffic and Parking Board approval is needed for daylighting beyond the minimum 20 ft standard.
- For No Turn on Red at intersections Traffic Board approval is needed, but a study is not required.
- For speed limit reduction, Traffic and Parking Board and the City Manager's approvals are needed.

<u>Edsall Road and South Pickett Street Intersection</u>

- Crosswalk across the WB slip lane from South Pickett St onto Edsall Rd does not have any control or pedestrian signage. The slip lane will need to remain open in the near term, but the City has plans to close the slip lane.
- Pedestrian signals are actuated. Pedestrian signal heads are mounted too high.
- Hertz car rental has multiple driveways at this intersection, including a driveway at the SB intersection approach on Edsall Rd. Stop bars are located behind this driveway. The second driveway is wide enough for two-way traffic and already marked as such.

- This parcel is planned for redevelopment and there may be opportunities for closing/relocating the driveways.
- Steep downhill and horizontal curvature along Edsall towards South Pickett affecting sight distance in both directions (approaching South Pickett and Reynolds). Ryan mentioned we will need to maintain 11-ft lanes for SB approach. The Clearance Intervals should be evaluated based on the intersection grade.
- There is low left turn volume from Pickett Street onto Edsall Road.
- The high visibility crosswalk markings at the intersection need to be refurbished.
- There is a potential pedestrian crossing demand at midblock along Edsall Road.
- Grades/ sight distance concerns at intersection.
- Noted high pedestrian signal heads. It was noted that this may be due to the need for accommodating additional pole mounted signs. The minimum mounting height is 8 feet for the City.

<u>Edsall Road and South Reynolds Street Intersection</u>

- Ramps are not ADA compliant.
- Turning radius is too wide, allowing for high-speed turns onto Edsall. Given the road curvature and poor sight distance, this could be problematic for pedestrian crossing.
- Intersection is within the school zone/walkshed for Samuel Tucker and due to the unsafe crossing, the school buses students at this location. New crosswalk, possible on the w leg with refuge and/or RRFB seems desired by the City staff.
- Parking setback needs to be adjusted on Reynolds to prohibit parking within these limits. Currently cars park immediately next to the crosswalk, limiting sight distance between the two roads. Note: City code requires a min. 20 ft parking clearance from intersecting curblines at intersections.
- There is a driveway that serves no purpose along EB Edsall Rd, immediately across South Reynolds St.
- The stop sign on Reynolds Street is located well in advance of the stop bar and needs to be evaluated per MUTCD guidelines. Additionally, the sign is damaged and needs to be replaced.
- Stop ahead warning sign on Reynolds Road in advance of the intersection may be considered as the roadway has a curvy alignment and is at a downslope.
- Pedestrians were observed crossing Edsall Road near South Reynolds Street, and law enforcement officer confirmed this is a regular activity, despite no controlled crossing provided at/near the intersection.

<u>Between S Reynolds Street and S Van Dorn Street Intersections</u>

- Sgt. Reeve noted that there is frequent mid-block crossing between homes and the shopping center by residents who prefer to avoid the signalized crossing at Van Dorn.

While on site, few pedestrians were observed crossing mid-block, as well as frequent activity with vehicles going in and out of the shopping center.
- The bus stop in front of 7-Eleven (east of Van Dorn) is too far from the intersection, seemingly to avoid the right turn lane and the 7-Eleven driveway.
- The WB right turn lane taper begins in front of the 7-Eleven Driveway and should be revised to start after the driveway.
- Sidewalks are not in very good condition, and some are uneven and/or broken near/at driveway aprons with debris within the pedestrian ROW. City staff noted there are no plans for full reconstruction, but spot improvements may be feasible.
- The EB sidewalk may need a handrail given the steep grassy area along.

<u>Edsall Road and S Van Dorn Street Intersection</u>

- Ramps are not ADA compliant.
- Van Dorn Street is a high crash intersection. There is an ongoing intersection improvement project for this intersection. Beyond connection for the bike lanes along Edsall Rd through this intersection, other safety recommendations are not needed from the Edsall Road project.
- The left-turn stop bar on NB approach is set back to accommodate relatively frequent U-turn movements– many are going to McDonalds. City staff noted recurring complaints about conflicts between NB U-turns and EB right turns from Edsall Rd, including large trucks
- NB left turn puppy tracks on Van Dorn don't align well and create conflicts. There is a taper along the curbline on Edsall Rd to accommodate turning vehicles from S Van Dorn.
- Grade on the west leg creates operational challenges. Aggressive EB left turns from Edsall Rd down the crest.
- Design vehicle SU-30/40 were recommended. For locations where the buses make turns, design vehicle should be the bus.
- A lot of heavy trucks go through this intersection, which is another reason for stacked/setback for left-turn lanes/stop bars, as well as wide turn radius on all approaches.
- Crosswalks across Edsall Rd are on recall but are actuated across Van Dorn. Pedestrian crossing time may need to be evaluated for adequacy.
- Crosswalk markings are deteriorated and need to be refurbished.
- Signal backplates for EB signal heads are broken.
- There are 5 lanes on Edsall Rd, in the section between S Van Dorn and South Whiting (and through Whiting to the point where the raised median begins).
- EB right turn and left turn lanes for the entire length of the segment between Van Dorn and Whiting, with multiple driveways along the right-turn lane.

- Whiting St to Van Dorn is quite hilly/steep for cycling
- The EB right turn lane seems narrow for the conditions. During the field visit it was observed that a truck in the right turn lane stopped behind a truck in the adjacent through lane as the width was too tight to accommodate two trucks side by side.
- The sight distance seems to be inadequate for right turning traffic from all approaches.
- The signal head backplates are damaged.
- Further discussion needed to determine the effort required to address intersection challenges.

Edsall Road and South Whiting Street Intersection

- The corridor transitions into a more residential area at this location.
- The WB bus stop cannot be moved to the far side of the intersection, because the bus turns right onto Whiting.
- Feasibility of a road diet will need to be evaluated, given the location of the bus stop. The City like raised bus platforms such as zicla.
- It was noted that the EB bus stop has less ridership and is less busy compared to the WB direction. There is generally high right turn volume on the WB direction onto Whiting St. DASH representatives raised noted potential challenges with mixing bus and bike traffic at this location.
- The EB left turn lane on Edsall Rd at Whiting St begins well ahead of the intersection, at the raised median. It is not clear whether at any point there has been a significant demand for this lane. City staff noted that this may have been included to serve access to offices on Stevenson Ave from Edsall Rd (which ends in a cul-de-sac), but the turn lane seems excessively long for current demand levels.
- There is a NTOR when Peds are Present sign on the NB direction. City is looking into phasing out these signs due to low compliance. Full-time NTOR is more successful in terms of compliance.
- Pedestrian ramps and pavement markings seemed to have been recently upgraded, possibly through a resurfacing project or resident request for repairs.
- Pedestrian actuated across Edsall Rd and recall across South Whiting St.
- The WB bus stop is not ADA-friendly. There is a gap/wood log separating the sidewalk and the bus step/bench area.

Edsall Road and Yoakum Parkway Intersection

- Yoakum Parkway operates as a couplet in each direction with a wide median separating the two directions
- Yoakum Road Diet/reconfiguration will include bike lanes and is proposed for the section from Edsall Rd to Stevenson Ave. Project has proposed to close the NB slip lane to bus

and vehicular traffic, only allowing turns by cyclists. It may not be possible to do the same in the SB direction and the SB slip lane will likely remain.

- Dominion substation driveway is located between SB and NB Yoakum Pkwy approaches and is hidden by trees and foliage. Additionally, the ground mounted no right turn sign is covered by vegetation.
- East leg crosswalk may have visibility issues for left-turning vehicles coming from Yoakum Parkway.
- The team observed pedestrians crossing on (unmarked) east leg and discussed getting feedback from residents on the need for new/relocated crosswalk.
- The team also discussed on coordinating signal timing to prevent left-turn traps.
- The “yield” signs for SB right turning vehicles from Yoakum Parkway onto Edsall Road is blocked by utility pole.
- There are no pedestrian signals or control for the east intersection crossing across Yoakum.
- Pedestrian crosswalks are on recall across Edsall Rd and actuated on the side streets. However, the push button is missing from the SW corner/pole.
- E/W pedestrian phase started after the through movement on Edsall Rd and ends ahead of the red (can be extended longer).
- The WB bus stop (Fairfax County Route 321) in front of Highpointe Condominiums (approximately 450 ft east of Yoakum Pkwy) is not served by a crosswalk across Edsall Rd.
- The EB bus stop is not aligned with the crosswalk at Yoakum Pkwy
- Speed limit changes from 25 MPH to 35 MPH west of Yoakum for WB, but the EB transition is not very clear and additional speed limit signs may be needed.

Appendix E. Community Feedback Form Questions and Responses – Full Report

Edsall Road / Yoakum Parkway Corridor Improvements

The City of Alexandria is evaluating options to enhance travel along Edsall Road and Yoakum Parkway, making it more accessible for individuals of all ages and abilities. Your feedback is invaluable, and we invite you to share your experiences on these corridors.

1. Which modes of transportation do you use in the project area? Select all that apply.

- Drive (Car, truck, motorcycle, SUV, or passenger)
- Bus (DASH. Metrobus, Fairfax Connector, Shuttle)
- Walk
- Bicycle, e-bike, or scooter
- Wheelchair or other mobility-assist device

2. Why do you typically travel on Edsall Road or Yoakum Parkway? Select all that apply.

- I live or work near the project area.
- I travel through this area but do not stop.
- I use Edsall Road or Yoakum Parkway to access shops or restaurants.
- I use Edsall Road or Yoakum Parkway to get to nearby parks.
- I use Edsall Road or Yoakum Parkway to get to nearby schools.
- Other (please specify)

3. Please select any issues or challenges you experience on Edsall Road and Yoakum Parkway. Select all that apply.

- It is difficult to cross the street at signalized intersections.
- It is difficult to cross the street at intersections without traffic signals.
- People drive too fast.
- There are too many traffic delays.
- It is difficult to access bus stops.
- The bus stops are not comfortable.
- The street is not accessible for people with disabilities.
- The traffic signals are not timed well for people driving.
- The traffic signals are not timed well for people walking or biking.
- There are no dedicated bicycle facilities.
- Other (please specify)
- None of the above

4. What do you like about Edsall Road?

5. What do you like about Yoakum Parkway?

6. Is there anything else you want to say about your experience here?

Demographic Questions

Demographic questions help us understand who we are reaching with community engagement, but these questions are entirely optional.

7. What is your age?

- Under 18
- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65+

8. What is your gender identity?

- Male
- Female
- Non-binary
- Prefer to self-describe:

9. What is your race/ethnicity? Select all that apply.

- White or Caucasian
- Black or African American
- Hispanic or Latino
- Asian or Asian American
- Native American
- Pacific Islander
- Another race/ethnicity

10. What is your annual household income?

- Under $49,999
- $50,000 - $99,999
- $100,000 - $149,999
- $150,000 - $199,999

- Over $200,000

11. What is your home zip code?

12. What is the zip code of your work, school, or volunteer location?

13. Do you currently own or rent your primary residence?

    - Own
    - Rent
    - Other (please specify)

14. How did you hear about this project?

    - City announcement
    - Poster or flyer
    - Social media
    - Local news article
    - Neighborhood newsletter or announcement
    - Neighbors, family, or friends
    - Other (please specify)

15. Please share your email address if you would like to receive project updates or information.

16. Can staff reach out to you with any follow-up questions

Appendix F. 311 Service Requests Submitted by Residents

311 Case Number	Date Submitted	Location	Issue Description
24-00022870	8/1/2024	201 Yoakum Pkwy	The pedestrian crossing signal at the midway point of Yoakum Pkwy was recently rebuilt. It remains unsafe. Drivers routinely ignore the signal and do not yield the right of way and the signal gives a false sense of safety. This crossing should be upgraded to mitigate the critical safety issues.
24-00020860	7/13/2024	Yoakum Pkwy / Stevenson Ave	I wanted to bring to your attention a concerning traffic issue at the intersection of Yoakum Parkway and Stevenson Avenue. Motorists traveling northbound on Yoakum Parkway often assume that vehicles headed eastbound on Stevenson Avenue also have a stop sign. This assumption has led to multiple near-accidents, as vehicles exiting Yoakum Parkway pull directly in front of cars on Stevenson Avenue. This may fall under the jurisdiction of VDOT, but could a "Cross Traffic Does Not Stop" sign be added to the stop sign on Yoakum Parkway at Stevenson Avenue to improve safety?
24-00016685	6/7/2024	Edsall Rd / Yoakum Pkwy	Resident is requesting to have install a traffic light (red, yellow and green) at the intersection of Yoakum Pkwy & Edsall Rd on the 300 block of Yoakum Parkway. The crosswalk sign light flashing cars do not stop for pedestrian and they keep going.
24-00014681	5/29/2024	300 Yoakum Pkwy	I have reported this as a hazard and a quick fix but you all have ignored my requests. You have closed or voided the tickets. I am putting you on notice that I am also letting everyone in our building, The Cascade of Landmark, that if they cause an accident because they could not see oncoming traffic to notify their car insurance carrier that the City of Alexandria has been notified about this issue 3 separate times and that their insurance company should seek reimbursement from the City until they actually install one of the mirrors that shows on-coming traffic. Send someone out in a car and try to turn left out of Cascade at Landmark onto Yoakum with the cars parked all the way up to the driveway. It is

			DANGEROUS. I implore you to PLEASE install one of the mirrors so we can see the on-coming traffic!!!! (and enforce the parking rules that are left on Yoakum - lots of revenue there since people are ignoring the signs most of the time in the late evenings and overnight).
24-00009514	4/8/2024	5911 Edsall Rd	Due renovations of the parking lot at Highpointe Condominiums, resident have been told that they could park on Yoakum Parkway and No Parking restrictions will be lifted until July 8, 2024. There have been to provisions or accommodations given to any of the elderly or handicap disabled residents to help them park their vehicle closer to the property. Resident is looking for some assistance from the city as soon as possible for these residents.
24-00008224	3/25/2024	205 Yoakum Pkwy	Resident would like some clarification in the city code about the use of electric bikes being used on the sidewalk. Resident is part of the Transportation Committee on the Commission of Aging, and their members are concerned with the safety of residents using the sidewalks.
23-00037350	9/20/2023	6112 Edsall Rd	Drivers frequently run red lights at this intersection [6112 Edsall Rd] in all directions, endangering everyone from other drivers to pedestrians. I've seen 3 vehicles do this the last 2 mornings (at 5:50 am on 9/19 and at 5:30 am today, 9/20). Installing red-light cameras and issuing accompanying fines would help ameliorate this dangerous problem.
23-00017973	6/29/2023	Edsall Rd / Van Dorn St	Requesting safety classes for riding scooters in the state of Virginia. There are no lanes on this street. Riders have to ride in the street.
23-00017745	6/27/2023	Edsall Rd / Van Dorn St	Here is a suggestion for a no right turn on red sign. WB Edsall Rd to NB Van Dorn. 1. Because of the hill and shrubs - you cannot see the NB traffic on Van Dorn very well so it is easy to pull out and not see oncoming traffic going North. 2. Pedestrians walk South and while driver wants to turn North - they often come close to hitting pedestrians walking South on the East side of Van Dorn while the driver is focusing on looking South.

23-00016004	6/12/2023	260 Yoakum Pkwy	speed bumps installed on Yoakum Parkway are too high and are going to damage to cars. They are not standard size, not up to code
99-00068021	8/3/2019	300 Yoakum Pkwy	When vehicles are parked on Yoakum Pkwy, it is difficult to see oncoming traffic to make a turn from the Cascade at Landmark community. This is likely to cause an accident if a vehicle goes above the speed limit or is not paying attention.
99-00068357	7/18/2019	Yoakum Pkwy / Stevenson Ave	The intersection of Stevenson Ave and Yoakum Parkway poses a safety hazard to pedestrians wishing to cross the street, cars wishing to turn left from Yoakum Parkway onto Stevenson Ave and creates frustrated drivers who honk incessantly. Creating a "3-way stop" by adding 3 stop signs at the intersection of Yoakum Pkwy and Stevenson Ave in Alexandria would prevent future accidents and diminish daily honking that arises from frustrated drivers. Already, there have been two pedestrian deaths at this intersection. Although crosswalks have been added, the lack of stop signs at all three sides of the intersection poses a threat. I believe the community would appreciate a safer intersection.
99-00068057	7/17/2019	Edsall Rd / Yoakum Pkwy	Same comment as stated on 7/2/2019. Cannot see color of stoplight at intersection of Edsall Road and Yoakum Parkway. Looks like the traffic light is facing downward and needs to be adjusted.
99-00067992	7/4/2019	Edsall Rd / Yoakum Pkwy	Lights at Edsall and Yoakum are not visible at all until you get immediately under it. It's the light where you can turn left on Yoakum. Only left turn green arrow is visible upon approach but no other light is.
99-00043594	6/3/2019	Edsall Rd / Reynolds St	The intersection of Edsall and S Reynolds has many pedestrians that cross the street here even though there is no crosswalk. The curve on Edsall causes sight problems for drivers and they cannot necessarily see people who are crossing the street here. It would be advantageous to have a designated crosswalk and light-up street signs at this point.

99-00066822	4/23/2019	Edsall Rd / Yoakum Pkwy	The second set of signals are not visible as you approach the intersection. This condition has been this way for over a month. If you stand under the lights, you can see them, however in order to see the problem you need to be driving towards the intersection coming from 395 towards Van Dorn street.
99-00066033	1/7/2019	Edsall Rd / Reynolds St	The intersection of S. Reynolds Street and Edsall Road needs a crosswalk and pedestrian safety lights urgently. This intersection is very dangerous as children, elderly, and all types of pedestrians are crossing a very wide and busy Edsall road and they are not taken into account. Drivers are always speeding down this road and pedestrians and cyclists are not visible at night.