Transportation Impact Study

4131 Chain Bridge Road

City of Fairfax, Virginia

September 27, 2023

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Executive Summary

The following report presents the findings of a Transportation Impact Study (TIS) conducted for the proposed 4131 Chain Bridge Road development in the City of Fairfax, Virginia. This study was developed in accordance with guidelines and recommendations set forth by the City of Fairfax.

This study was prepared in accordance with the best professional practices and standards in order to assess the impact of the proposed development on the surrounding transportation systems and recommend improvements to lessen or negate those impacts. This study involves the evaluation of anticipated roadway conditions with and without the proposed development and recommends possible transportation improvements and strategies to offset both the impacts of the increase in future traffic demand and the changes in traffic operations and characteristics due to the development. This study serves to assist public officials and developers in balancing interrelations between efficient traffic movements with necessary access.

Site Location and Study Area

The proposed development will be located between the eastern frontage of Chain Bridge Road (Route 123) at Judicial Drive and the western frontage of University Drive (Route 6627) at Breckinridge Lane, to the north of Armstrong Street, in the City of Fairfax, Virginia.

For this study, the analysis presented herein includes five existing intersections and two future intersections.

The study intersections are as follows:

1. University Boulevard (Route 6627) at Breckinridge Lane
2. University Boulevard (Route 6627) at Armstrong Street
3. Chain Bridge Road (Route 123) at West Drive
4. Chain Bridge Road (Route 123) at Armstrong Street
5. Chain Bridge Road (Route 123) at Judicial Drive
6. Chain Bridge Road (Route 123) at New Service Drive
7. University Boulevard (Route 6627) at New Service Drive

Description of Proposed Development

The proposed site is situated on one approximately 2.67-acre parcel of land that can be identified on the City of Fairfax Real Estate Assessment Database with the following Tax Map #: 57-4-02-040. The parcel is currently zoned as RM (Residential Medium) with a Future Land Use of Activity Center, per the Future Land Use Map of the 2035 Comprehensive Plan. Currently, a single-family home is built on the parcel (Davies Property). It should be noted that the trips associated with the existing single-family home were not removed in the analysis.

The proposed site is a mixed-use development consisting of approximately 355 multi-family residential apartment dwelling units, and approximately 4,810 square feet of retail use, along with an approximately 494-space three-level structured garage. The development of the site is anticipated to be complete by 2026.

Principal Findings and Conclusions

Discussions regarding the study assumptions and relevant background information were held with the City of Fairfax staff during a scoping meeting on April 20, 2023. A copy of the scoping document is included in Appendix A.

The analysis presented in this report supports the following major finding:

- The intersection capacity analysis results for the Future Conditions wit Development are similar to Existing and Future Conditions without Development. Therefore, the development will have a minimal impact on the traffic operations and safety of the street network.

Additional assumptions, findings, and conclusions are as follows:

TIA Components

- As determined based on discussions with the City, 1.0% regional growth was applied to the Chain Bridge Road / University Drive mainline through movements at the intersection of Chain Bridge Road at Judicial Street as well as at the intersection of University Boulevard/George Mason Boulevard at Armstrong Street volumes.
- A mode split/TDM reduction of 15 percent was applied to the residential uses, as agreed upon with the City.
- The internal trip reduction is based on the smaller of 15 percent trips between residential and commercial uses, as agreed upon with the City.
- The proposed development is anticipated to generate approximately 133 new trips during the AM peak hour, 143 new trips during the PM peak hour, and 1,650 new daily trips on a typical weekday.

Infrastructure

- Existing vehicular access is provided via one driveway on Chain Bridge Road.
- Access to the site will be provided via two partial-movement right-in/right-out (RIRO) entrances, one along Chain Bridge Road and University Drive each, connected via an internal new service drive on-site.

Non-SOV Elements

- Five bus routes provide service in the vicinity of the site, providing regional access to the area.

Analysis Results

- Three intersections within the study area operate below acceptable levels of service under Existing Conditions (2023), and the same intersections continue to operate below acceptable levels of service under Future Conditions without Development (2026) and Future Conditions with Development (2026).
- The intersection capacity analysis results for the Future Conditions with and without Development are similar to Existing Conditions.
- Based on the queuing analysis performed for Future Conditions with Development, the turning movements at the study intersections are anticipated to have 95th percentile queues that can be accommodated within the available storage lengths of the turn bays for all the scenarios.
- It is to be noted that no signal timing adjustment has been proposed as a mitigation measure for the signalized intersections along Chain Bridge Road. This is because all signals along Chain Bridge Road are coordinated and the side street movements run under split phasing. Any adjustment would impact the overall performance of the adjacent intersection and the entire corridor. The side street delays are typical for commuter corridors in Northern Virginia and reflect the prioritization of traffic along the mainlines in order to accommodate the largest possible volume in the area. Therefore, the corridor has a better overall traffic operation than prioritizing all movements equally.

Introduction

The following report presents the findings of a Transportation Impact Study (TIS) conducted for the proposed development of the 4131 Chain Bridge Road in the City of Fairfax, Virginia. This study was developed in accordance with guidelines and recommendations set forth by the City of Fairfax.

The proposed program is a mixed-use development consisting of approximately 355 multi-family residential apartment dwelling units, and approximately 4,810 square feet of retail use, along with an approximately 494-space three-level structured garage. The development of the site is anticipated to be complete by 2026.

The following tasks were completed as part of this study effort:

- A scoping meeting was held with the City of Fairfax on April 20, 2023, which included discussions about the parameters of the study and relevant background information. A copy of the signed scoping document is included in Appendix A.
- Existing conditions were observed in the field to verify roadway geometry, pedestrian and bicycle infrastructure, and traffic flow characteristics.
- Turning movement counts were collected at the study area intersections on Tuesday, April 25, 2023, during the morning and afternoon peak periods.
- Vehicular traffic analysis for the study intersections was performed using *Synchro 11* based on Highway Capacity Manual (HCM) 6th Edition methodology. HCM 2000 methodology was used if HCM 6th Edition was not applicable.
- Intersection capacity analyses were performed for the 2023 existing year, 2026 Future Conditions without Development, and 2026 Future Conditions with Development.
- Future traffic volumes were developed by accounting for regional growth in the area and background developments and roadway improvements. A growth rate of 1.0% per year regional growth was applied to the Chain Bridge Road / University Drive mainline through movements at the intersection of Chain Bridge Road at Judicial Street as well as at the intersection of University Boulevard/George Mason Boulevard at Armstrong Street for the period between 2023 and 2026.
- Proposed site traffic volumes were generated based on the methodology outlined in ITE *Trip Generation*, 11th Edition.
- An assessment of the previous crashes has been conducted at existing study intersections.

Sources of data for this study include the Institute of Transportation Engineers (ITE), the City of Fairfax, the Virginia Department of Transportation (VDOT), and the office files and field reconnaissance efforts by Gorove Slade.

Background Information: Existing Development and Nearby

Description of the Existing Site

Site Location

The proposed development will be located between the eastern frontage of Chain Bridge Road (Route 123) at Judicial Drive and the western frontage of University Drive (Route 6627) at Breckinridge Lane, to the north of Armstrong Street, in the City of Fairfax, Virginia

The geographic scope of the study area was developed in accordance with City of Fairfax guidance. Figure 1 shows the location of existing and future study intersections.

Figure 1: Study Intersections

Description of the Parcel

The proposed site is situated on one approximately 2.67-acre parcel of land that can be identified on the City of Fairfax Real Estate Assessment Database with the following Tax Map #: 57-4-02-040. The parcel map is shown in Figure 2.

Figure 2: Parcel Map

Location within Jurisdiction and Region

The site is located between the eastern frontage of Chain Bridge Road (Route 123) at Judicial Drive and the western frontage of University Drive (Route 6627) at Breckinridge Lane, to the north of Armstrong Street, in the City of Fairfax, Virginia as shown in Figure 3.

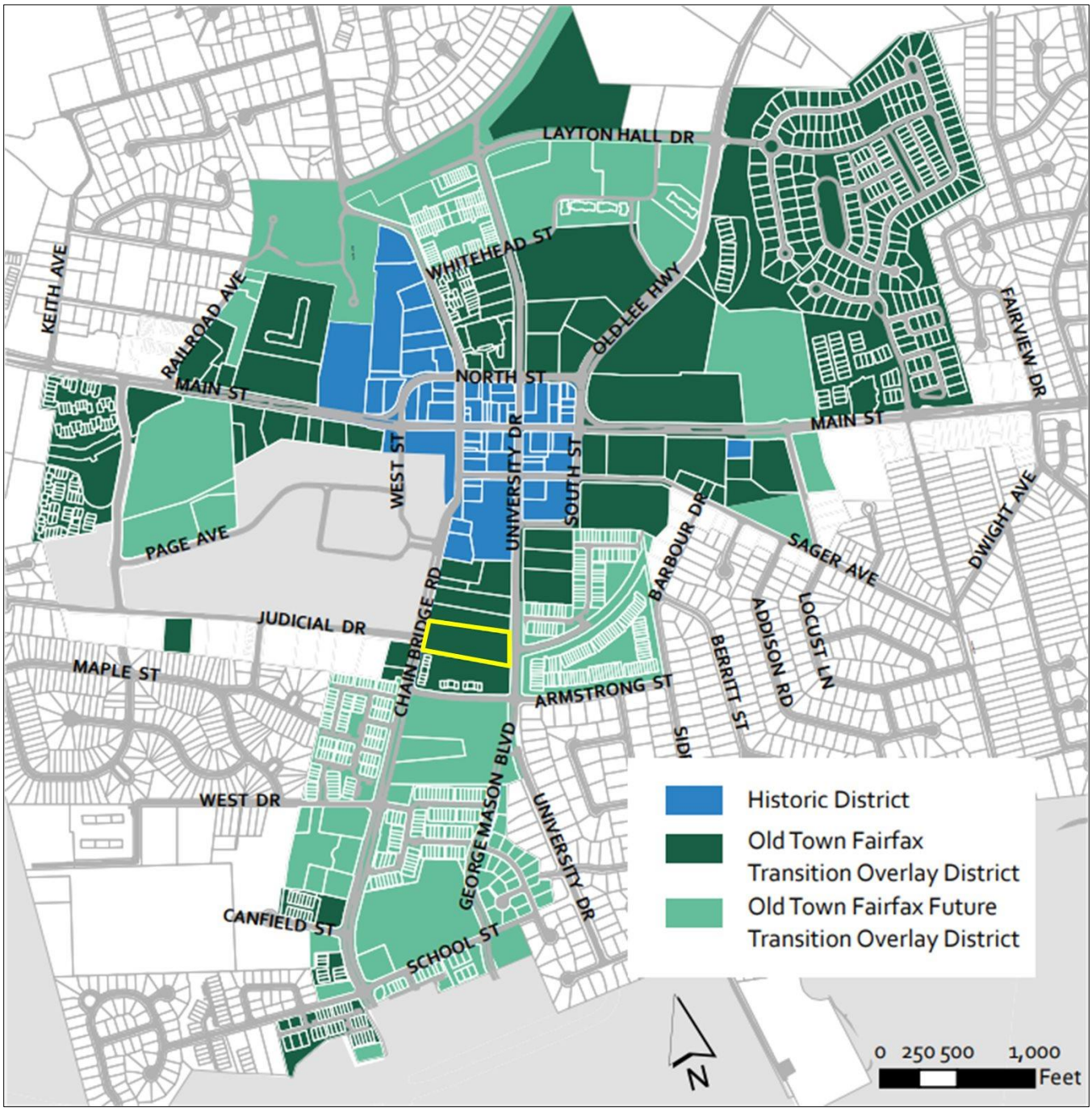


Figure 3: Jurisdiction Location (Source: City of Fairfax 2035 Comprehensive Plan)

Comprehensive Plan Recommendations

According to the City of Fairfax 2035 Comprehensive Plan, this site is planned for the Activity Center Place Type (ACPT). The ACPT applies to locations in the City where pedestrian-oriented, mixed-use development is strongly encouraged. The Old Town Fairfax Activity Center encompasses a cultural hub for the City, with a concentration of historic buildings, public services, active open space, and commercial buildings. Old Town Fairfax can also capitalize on its proximity to George Mason University to attract university supported businesses and arts and entertainment venues.

Zoning for the Site and Nearby Uses

The existing zoning for the site is RM (Residential Medium) as shown in Figure 4.

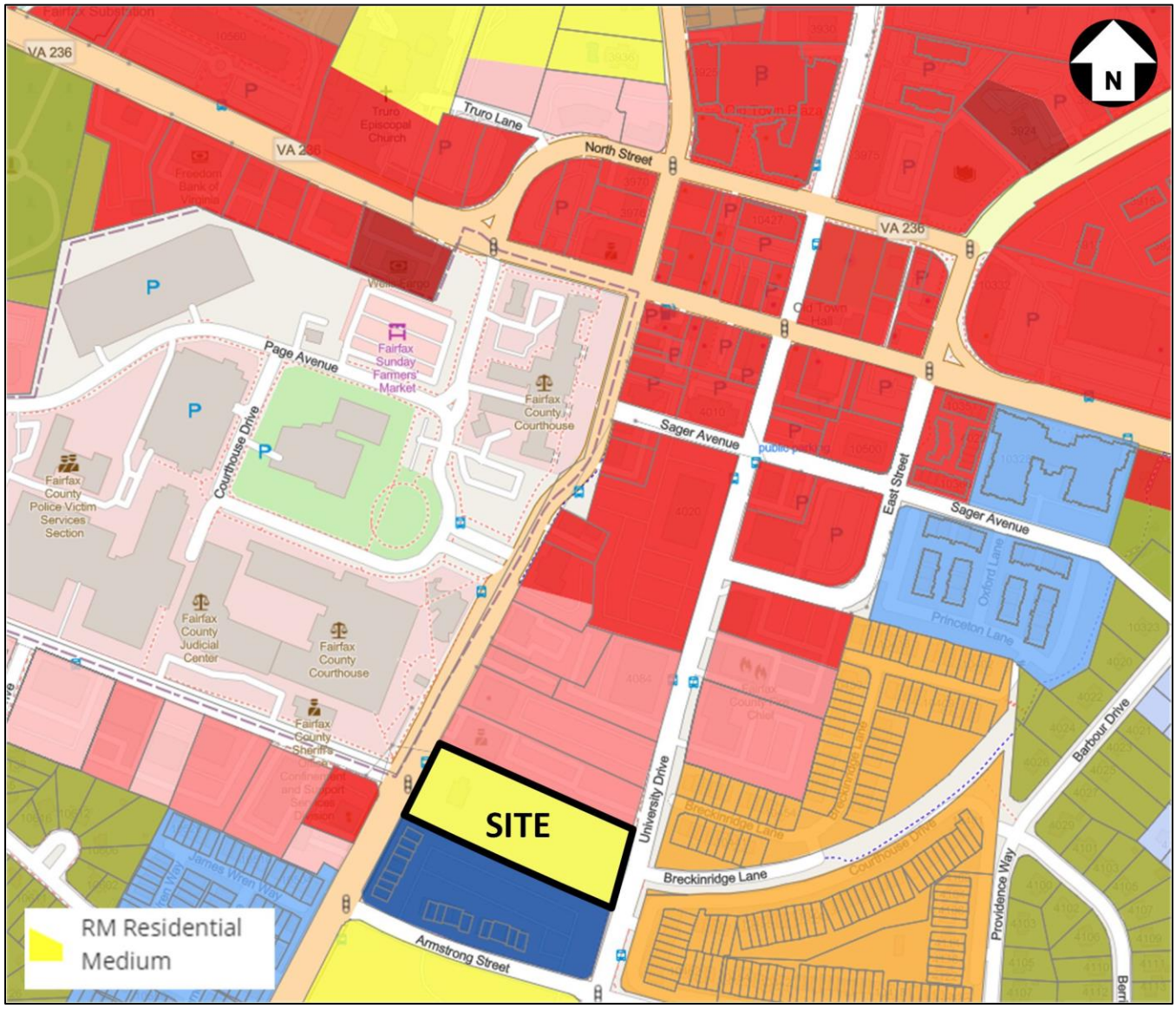


Figure 4: Zoning Map

Description of Geometric Scope and Limits of the Study Area

The geographic scope of the study area was developed in accordance with the City of Fairfax guidance.

Existing Roadways

The site is located between the eastern frontage of Chain Bridge Road (Route 123) at Judicial Drive and the western frontage of University Drive (Route 6627) at Breckinridge Lane, to the north of Armstrong Street, in the City of Fairfax, Virginia

The existing study area includes five existing intersections along Chain Bridge Road and University Drive.

Detailed roadway descriptions are provided in the 2023 Existing Conditions section of this study.

The vehicular study area includes the following existing intersections:

1. University Boulevard (Route 6627) at Breckinridge Lane
2. University Boulevard (Route 6627) at Armstrong Street
3. Chain Bridge Road (Route 123) at West Drive
4. Chain Bridge Road (Route 123) at Armstrong Street
5. Chain Bridge Road (Route 123) at Judicial Drive

Planned Future Transportation Improvements

South Street Extension

The City's recommended extension of South Street to West Street between University Drive and Chain Bridge Road will reroute traffic and relieve congestion on Main Street through Old Town. The extension will also permit the continuation of pedestrian facilities through Old Town. The proposed South Street Extension will provide access to the City Centre site, and as such, will be completed as part of the development of the City Centre site.

While the extension is aligned with the City's plans, the completion date remains uncertain pending funding allocation. The traffic volumes and analysis contained herein are based on the assumption that the South Street extension will be completed by 2026, consistent with the site access plans for the City Centre redevelopment.

Old Town Streetscape Plan & Standards and Main Street Streetscape Design

The Main Street Streetscape Design is part of an overall effort to prepare an Old Town Streetscape Plan and Standards that would improve the appearance and experience of Old Town Fairfax as a destination. These improvements are to be completed by others.

Transit Improvements

According to the City of Fairfax 2035 Comprehensive Plan, bus improvements and bus transfer improvements are proposed in the vicinity of the site. Figure 5 shows the City's proposed transit network enhancements.

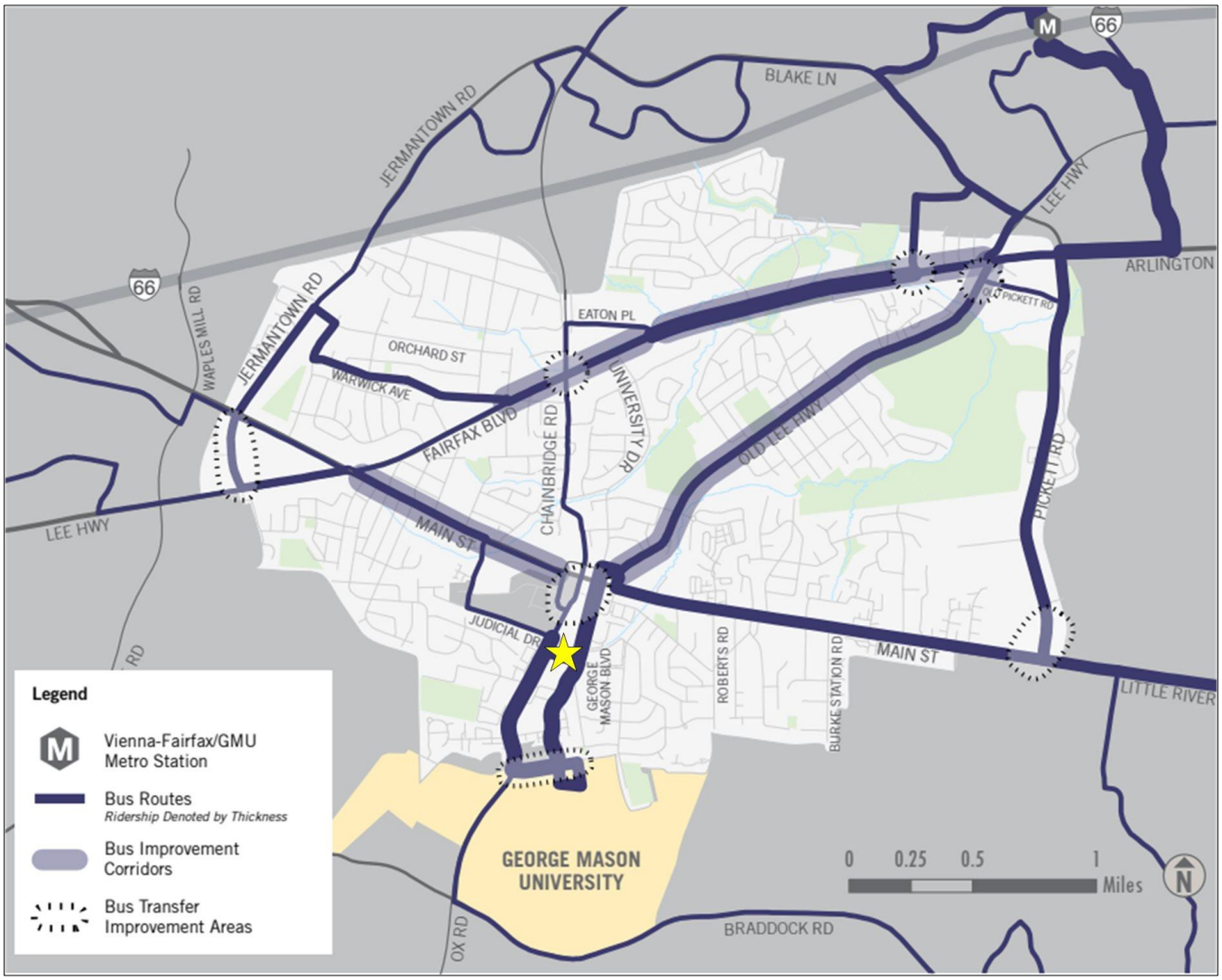


Figure 5: Proposed Transit Network Enhancements (Source: City of Fairfax 2035 Comprehensive Plan)

Bicycle and Pedestrian Improvements

According to the City of Fairfax 2035 Comprehensive Plan, on-street bike facilities and concentrated bicycle supportive infrastructure are proposed along and near Main Street and University Drive in the vicinity of the site. Figure 6 shows the City's proposed network for bicycle travel.

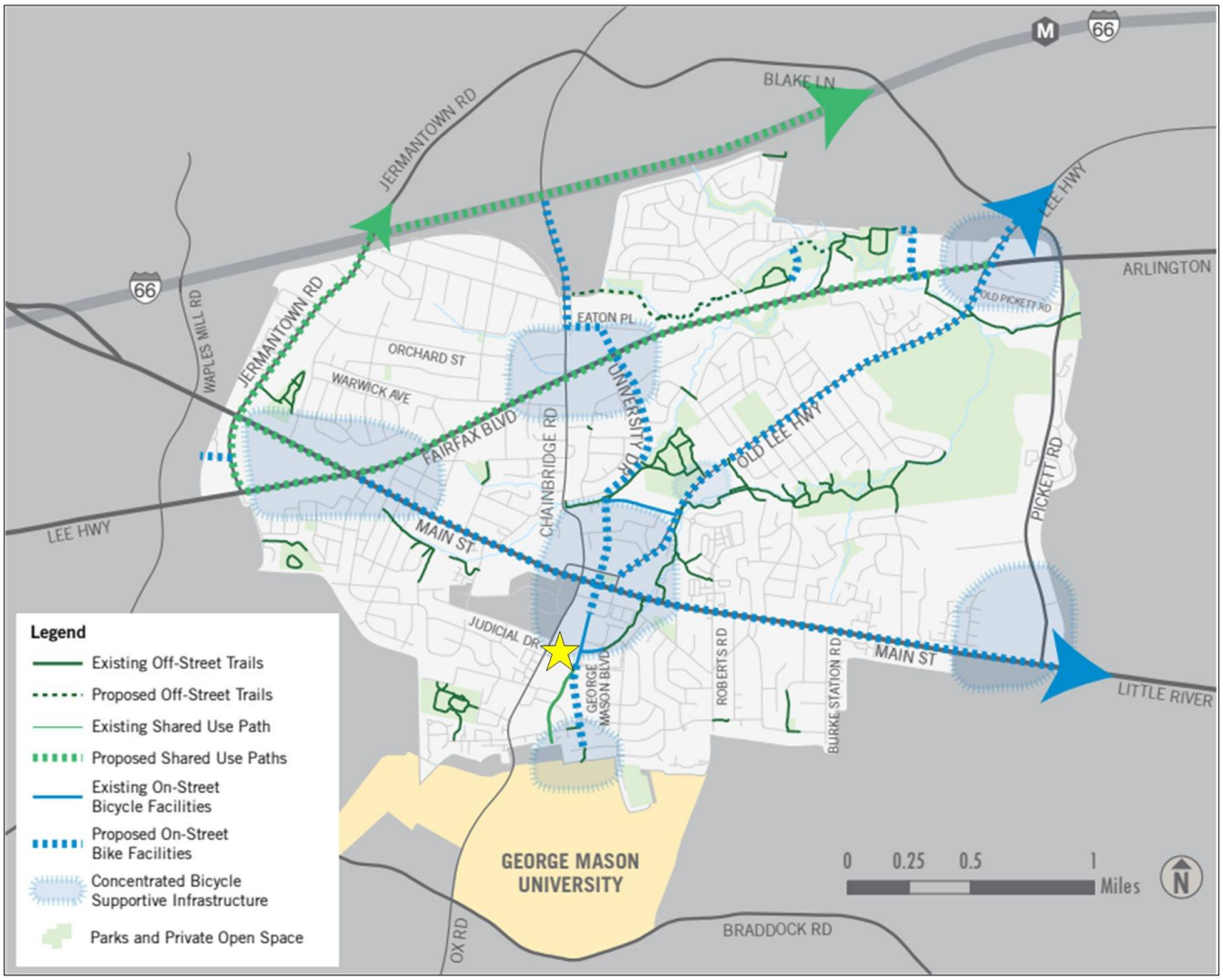


Figure 6: Proposed Network for Bicycle Travel (Source: City of Fairfax 2035 Comprehensive Plan)

Existing Conditions (2023)

In order to project future traffic conditions, it was necessary to create an existing scenario.

A site visit was conducted in order to capture existing conditions along the site perimeter and written descriptions of the conditions observed, noting any deficiencies and substandard conditions of the multimodal facilities present or lacking.

The site visit, which involved documenting elements within up to a half-mile radius in the vicinity of the site, occurred on Thursday, July 13, 2023.

The site visit indicates locations to improve the multimodal connectivity aspects in and around the site and provides suggestions to improve upon any discontinuous facility segments, lack of crosswalks, or other places with low levels of comfort in the vicinity of the site.

Existing Transit Service

Five bus routes currently serve the site area on Main Street, Chain Bridge Road (Route 123), and University Drive. Bus service is provided by the City of Fairfax CUE Gold and Green Routes, Metrobus Routes 29K and 17G, and Fairfax Connector Route 306. The existing bus routes are shown in Figure 7 through Figure 10.

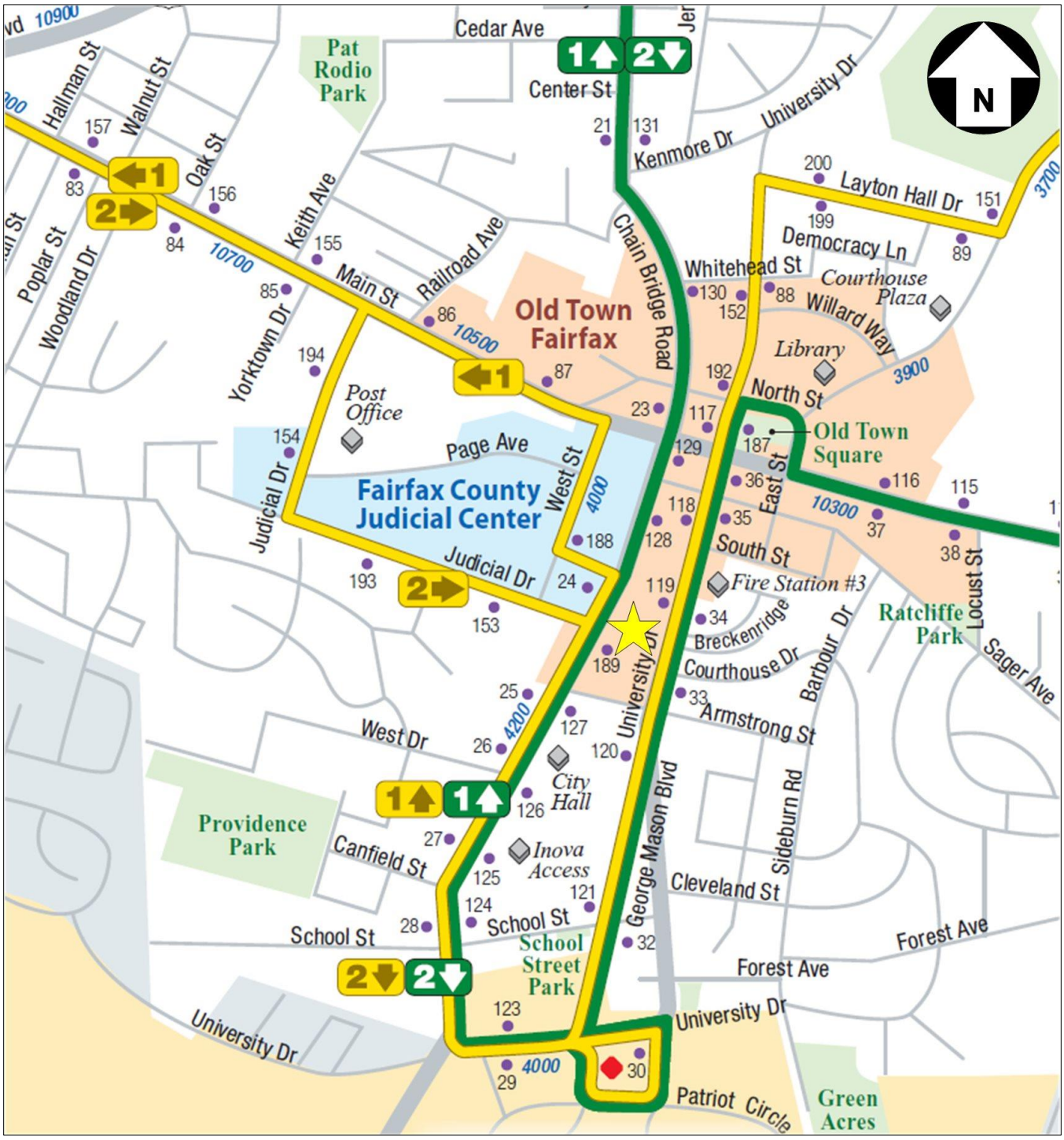


Figure 7: Existing CUE Bus Routes (Source: City of Fairfax)

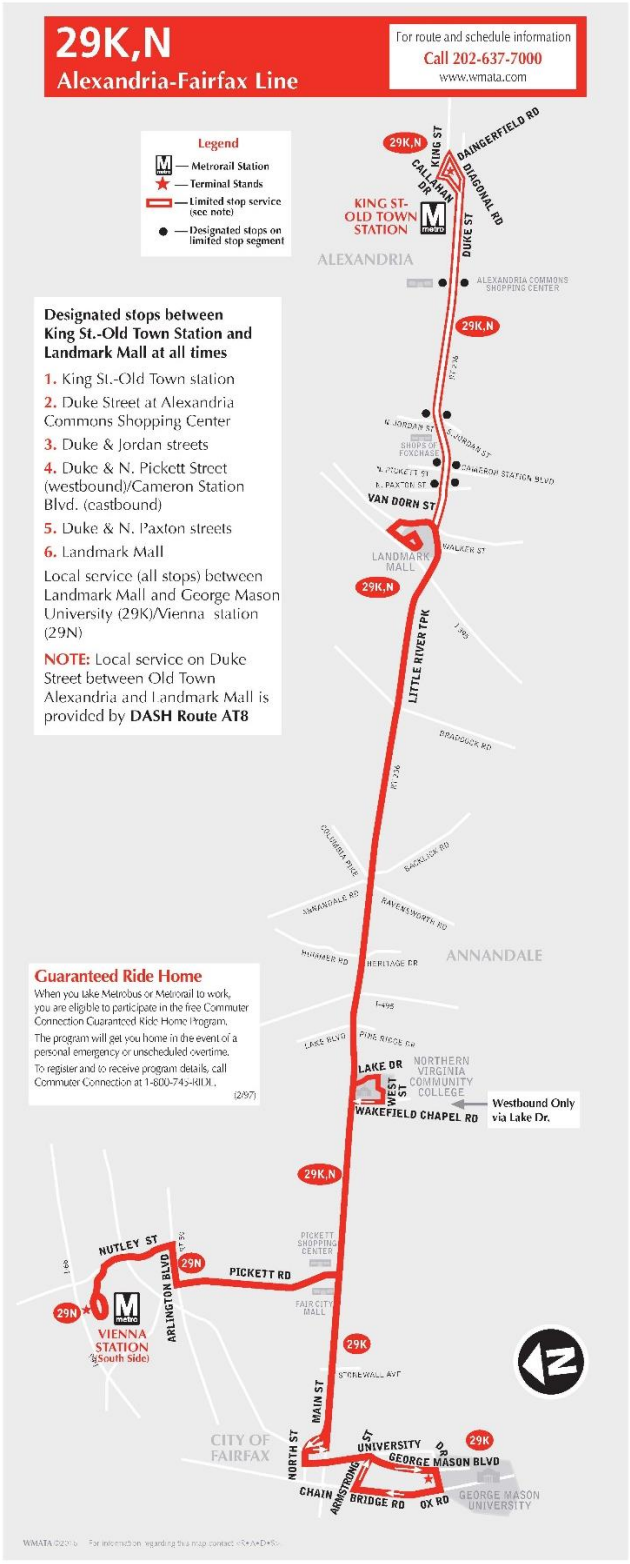


Figure 8: Existing Metrobus Route 29G (Source: WMATA)

Figure 9: Existing Metrobus Route 17G (Source: WMATA)

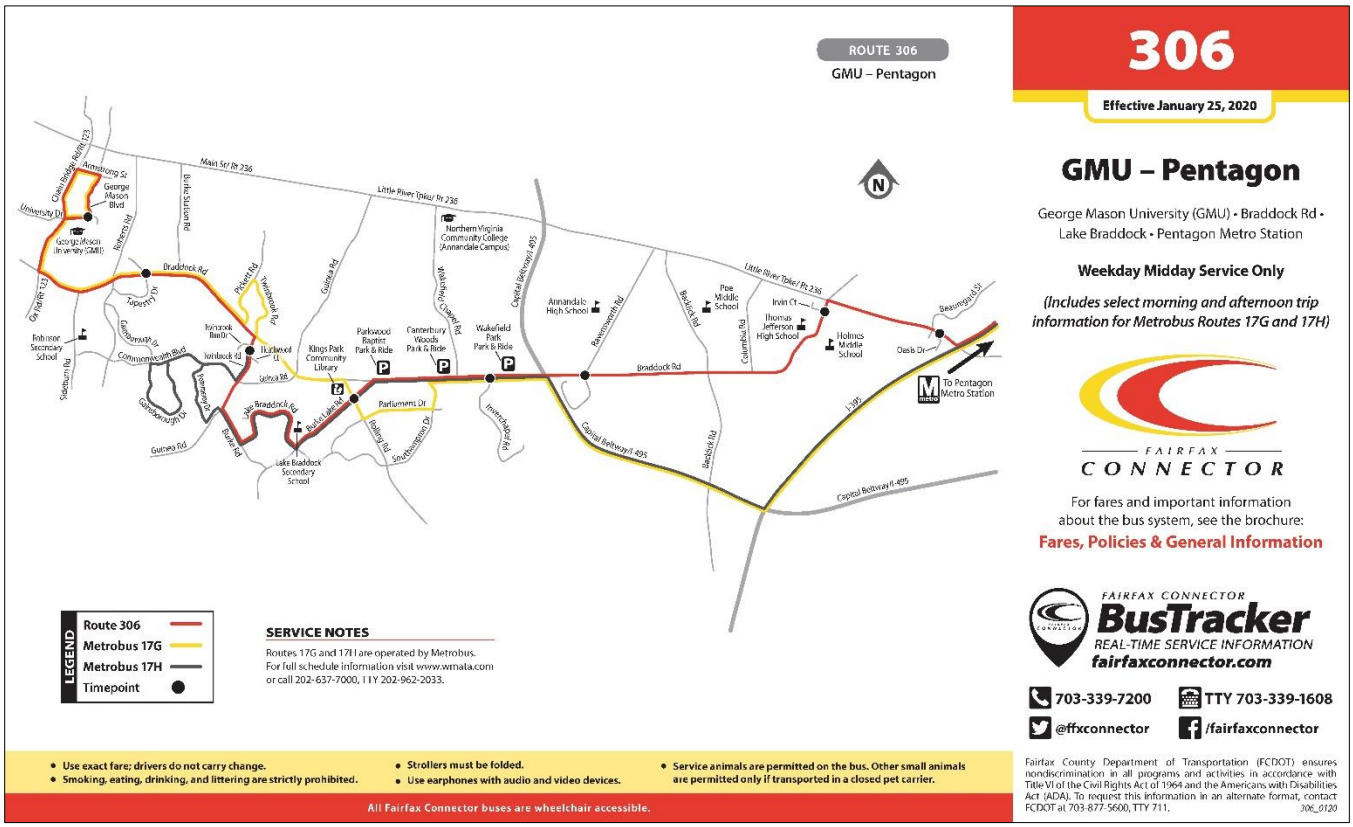


Figure 10: Existing Fairfax Connector Route 306 (Source: Fairfax Connector)

Existing Bicycle Facilities

The roadways adjacent to the site are considered comfortable bicycling routes per the Fairfax County Bicycle Map (which includes the City of Fairfax). Sager Avenue is considered "Most Comfortable", University Drive is considered "Somewhat Comfortable", and Chain Bridge Road is considered "Less Comfortable". Main Street is considered a "Use Caution" bicycling route.

The 10-minute, 20-minute, and 30-minute bicycle travel shed for the proposed development is shown in Figure 11. Within a 10-minute bicycle ride, the proposed development has access to several destinations including George Mason University, public transportation stops, residential neighborhoods, retail zones, and community amenities. Within a 20-minute bicycle ride, the proposed development has access to destinations in Fairfax County including residential neighborhoods and retail zones. Within a 30-minute bicycle ride, the proposed development has access to the Town of Vienna, the Mosaic District, and is accessible to the Vienna/Fairfax-GMU Metro Station served by the Orange Line and the Burke Centre Amtrak/VRE Station.

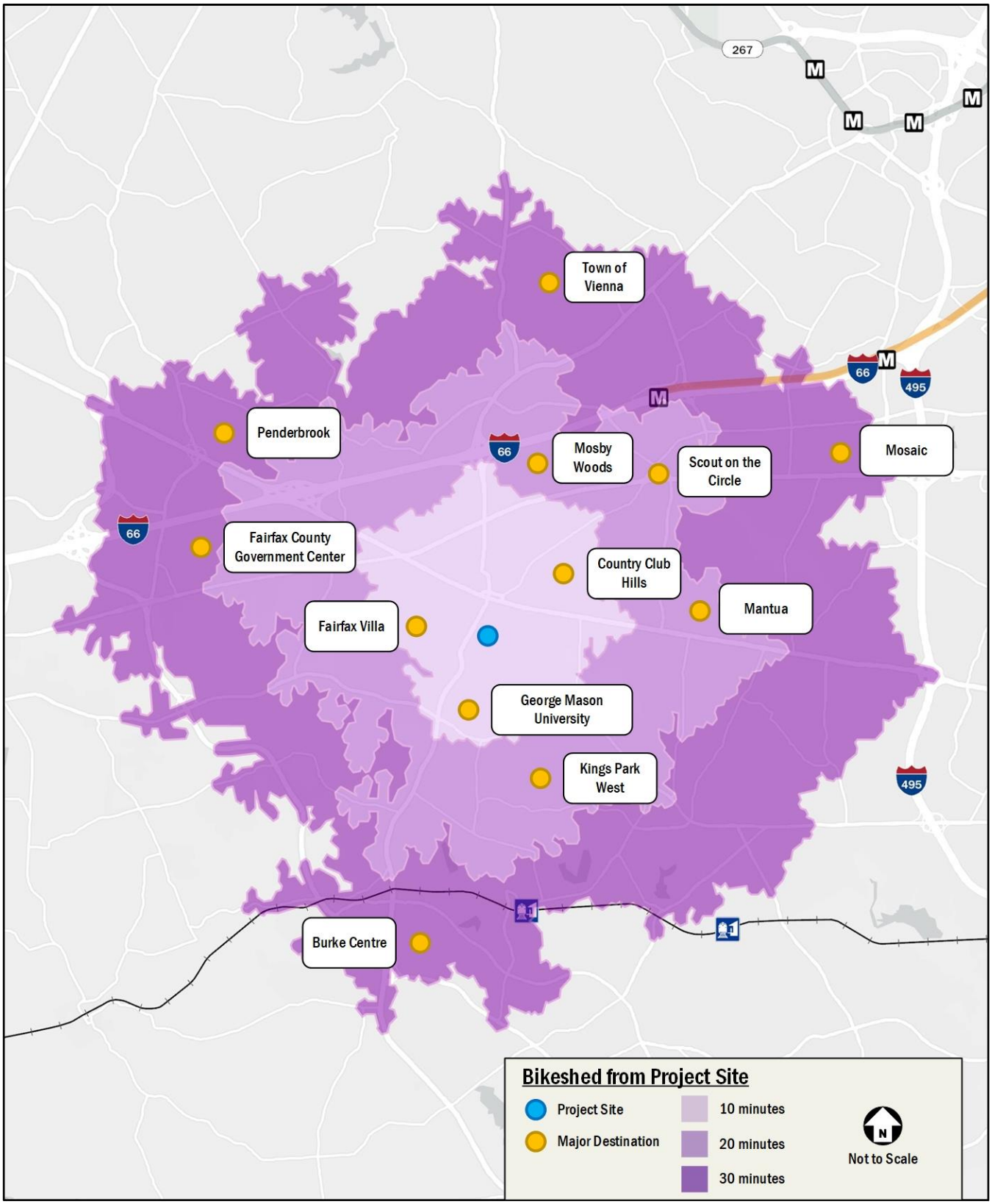


Figure 11: Approximate Bicycle Travel Times

Existing Pedestrian Facilities

Sidewalks and curb ramps generally exist along the corridors adjacent to and within the vicinity of the site. Sidewalks exist on one side of Chain Bridge Road and both sides of University Drive and Sager Avenue along the perimeter of the site, but most driveways lack crosswalks. The signalized intersection of University Drive & Sager Avenue has marked crosswalks with pedestrian signal heads and call buttons in place. The unsignalized intersections of Chain Bridge Road & Sager Avenue and University Drive & Fairfax Volunteer Fire Department Entrance have marked crosswalks in place.

The existing pedestrian infrastructure facilities, including curb ramps, marked striped crossings, and any observed deficiencies are depicted in Figure 12. Of note, this graphic includes these items within a quarter-mile radius walkshed of the site.

The 10-minute, 20-minute, and 30-minute walk travel shed for the proposed development is shown in Figure 13. Within a 10-minute walk, the proposed development has access to several destinations including the Fairfax County Judicial Center, the City of Fairfax Regional Library, public transportation stops, nearby residential neighborhoods, and retail zones. Within a 20-minute walk, the proposed development has access to destinations including City Hall, residential neighborhoods, and retail zones. Within a 30-minute walk, the proposed development has access to destinations including the Stacy C. Sherwood Community Center, United States Postal Service, and residential neighborhoods.

Figure 12: Existing Pedestrian Facilities

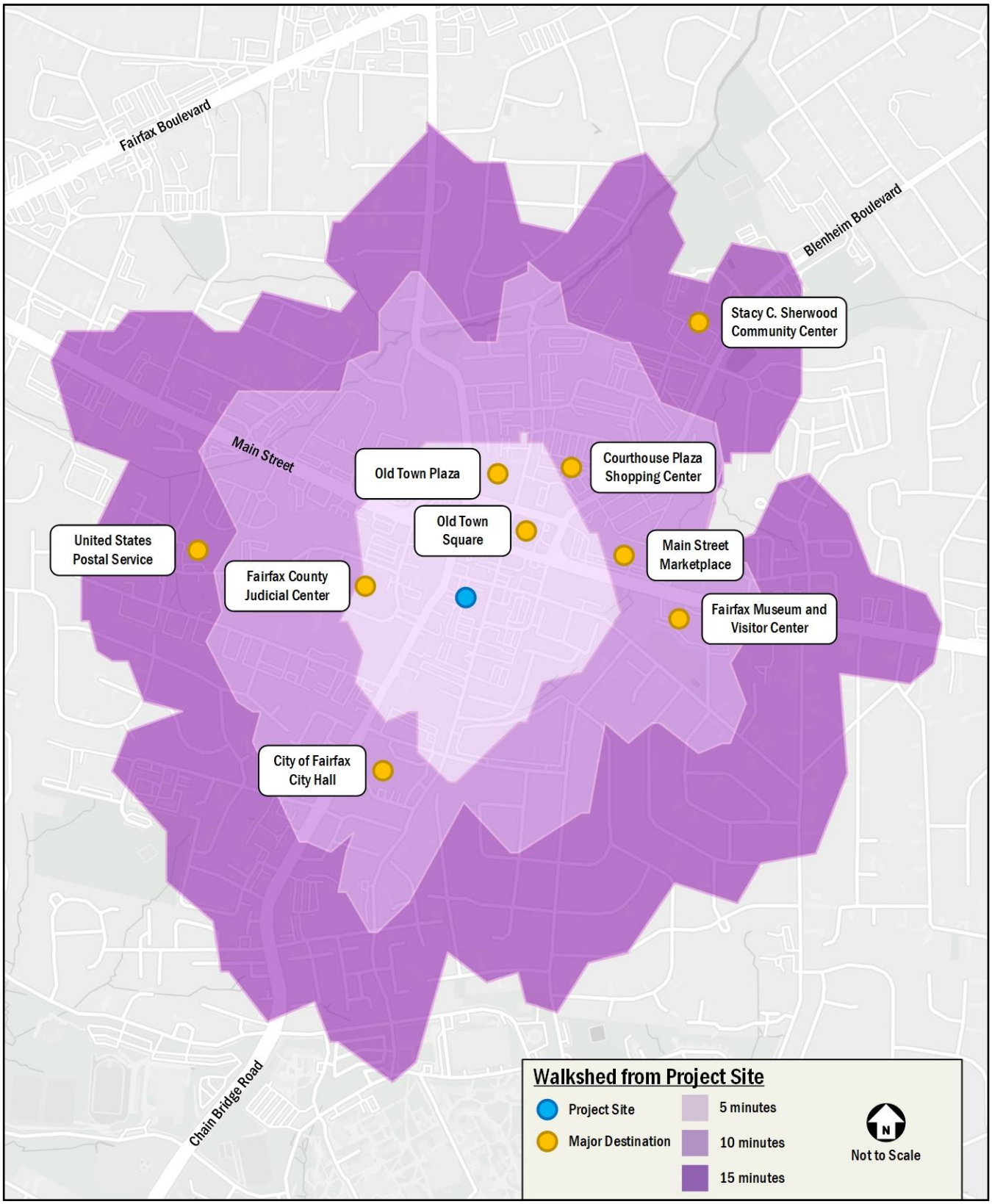


Figure 13: Approximate Pedestrian Travel Times

Existing Roadway Network

A description of the major roadways within the study area is presented in Table 1. The existing lane configurations and traffic control devices at the study intersections are shown in Figure 14.

Table 1: Existing Road Network

Roadway	From	To	VDOT Classification	Lanes	Speed (mph)	On-Street Parking	AADT (vpd)*
Chain Bridge Road	SCL Fairfax	Judicial Drive	Other Principal Arterial	4	30	No	28,000
Chain Bridge Road	Judicial Drive	Main Street	Other Principal Arterial	4	30	No	22,000
Judicial Drive	Page Avenue	Chain Bridge Road	Major Collector	2	25	No	9,000
University Drive	SCL Fairfax	Armstrong St	Major Collector	4	25	No	10,000
University Drive	Armstrong St	South St	Major Collector	4	25	No	15,000
University Drive	South St	SR 236 Main St	Major Collector	4	25	No	11,000

** VDOT 2019 Annual Average Daily Traffic (AADT) Data*

Existing Traffic Volumes

Turning movement counts were collected at the study area intersections on Tuesday, April 25, 2023. Analysis of the traffic data found the following system peak hours:

- Weekday Morning (AM) Peak Hour: 7:45 AM to 8:45 AM
- Weekday Afternoon (PM) Peak Hour: 4:15 AM to 5:15 PM

The existing peak hour traffic volumes for the study area intersections are presented in Figure 15. The raw existing turning movement counts are included in Appendix B.

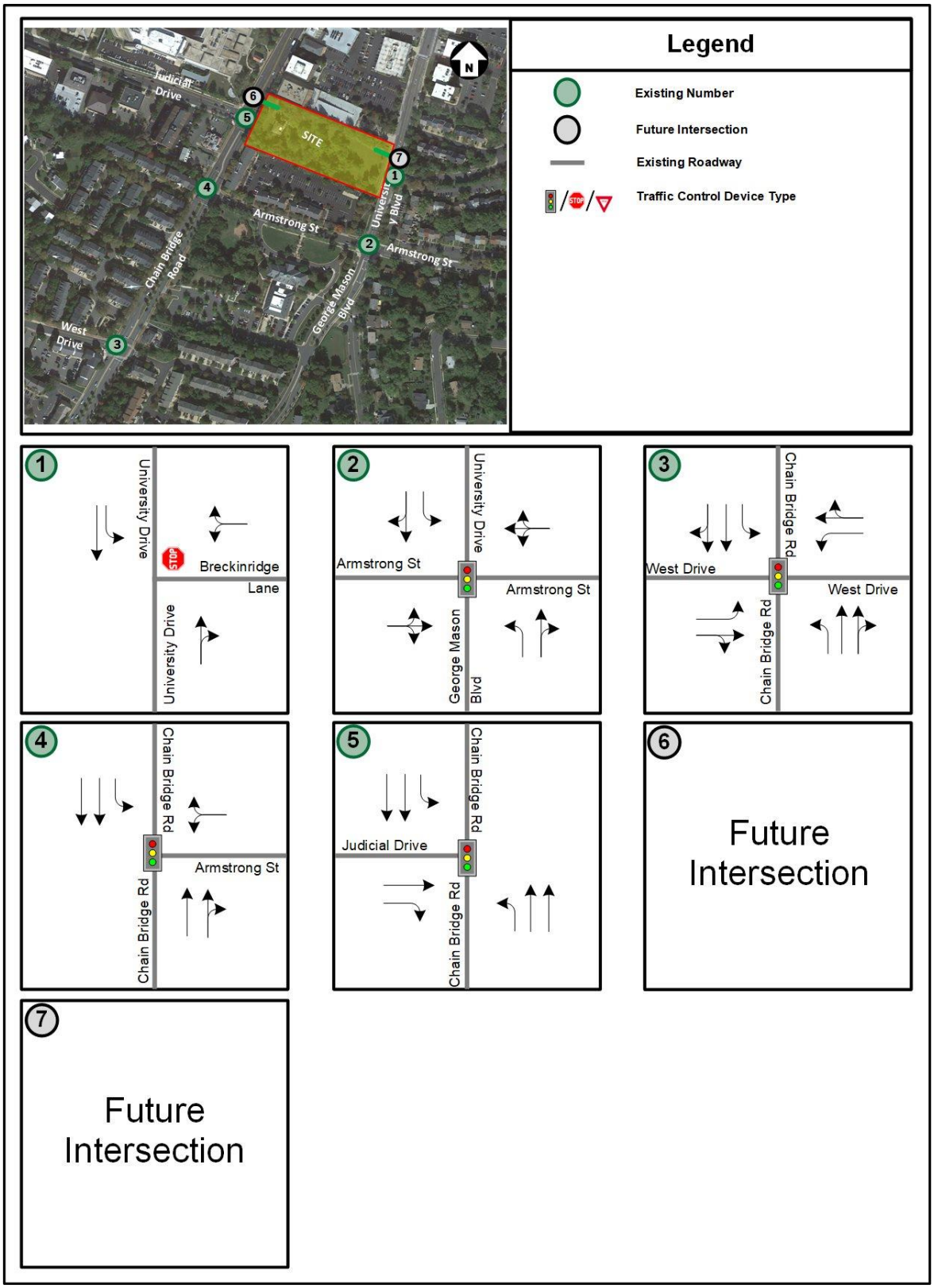


Figure 14: Existing (2023) – Lane Configuration

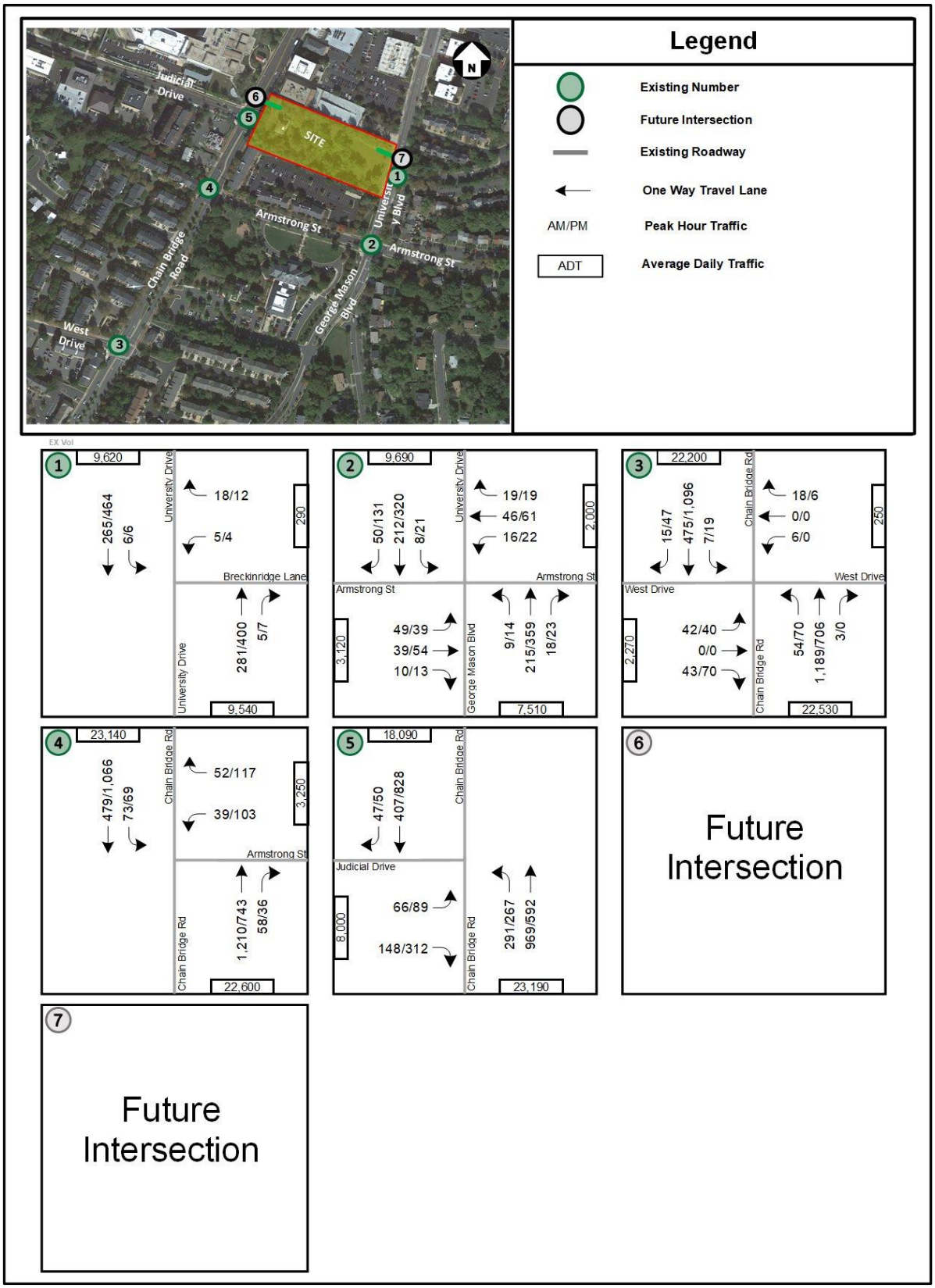


Figure 15: Existing (2023) – Peak Hour Traffic Volumes

Existing (2023) Intersection Analysis

Intersection capacity analysis was performed at the intersections within the study area during the weekday AM and weekday PM hours under Existing Conditions (2023). *Synchro Version 11* was used to analyze the study intersections based on the HCM 6th edition, and if the output is not available, HCM 2000 methodology presented in the Transportation Research Board's (TRB) Highway Capacity Manual (HCM) and analysis guidelines provided in VDOT's Traffic Operations and Safety Analysis Manual (TOSAM). The analysis herein includes level of service (LOS), delay, and queue length comparisons for the turning movements analyzed.

Existing signal timings were provided by the city and used as a base for the existing analysis. Existing peak hour factors found in the field were used, except where the field peak hour factor was lower than 0.85 in which case a minimum value of 0.85 was used, consistent with VDOT analysis guidelines. As discussed in the scope, the heavy vehicle percentages (HV%) were based on the existing counts and a default *Synchro* HV% of 2.0% was utilized for all other lane groups.

Per the scoping meeting with the City staff, it would be considered acceptable and/or desirable to achieve an approach LOS D or better for traffic operations using HCM methodology. The results of the intersection capacity analyses from *Synchro* are presented in Table 2 and graphically in Figure 16. The results are expressed in LOS and delay (seconds per vehicle) for overall signalized intersections and per approach and lane group for all study intersections. The overall signalized intersections and any approaches that operate at LOS E or F are displayed in red.

The 95th percentile queues were also determined from *Synchro* and are expressed in feet. The lane groups where the queue lengths exceeded the available effective storage capacity of existing turn lanes are displayed in red.

The description of different LOS and delay are included in Appendix C. The detailed analysis worksheets of 2026 Existing Conditions are contained in Appendix D.

Table 2: Existing (2023) – Intersection Analysis

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour			PM Peak Hour		
			LOS	Delay (sec/veh)	95th % Queue (ft.) [2] [3]	LOS	Delay (sec/veh)	95th % Queue [2] [3]
			Synchro			Synchro		
1	**University Drive (N/S) & Breckinridge Ln (E/W)**							
	Overall Intersection (Unsignalzed)		**B**	**11.1**		**B**	**13.1**	
	Westbound Approach		***B***	***11.1***		***B***	***13.1***	
	Westbound Left/Right		B	11.1	3	B	13.1	3
	Southbound Approach							
	Southbound Left/Thru		A	7.9	0	A	8.3	0
2	**Armstrong Street (E/W) & University drive/ George mason boulevard (N/S)**							
	Overall Intersection (Signalzed)		**B**	**11.6**		**B**	**13.5**	
	Eastbound Approach		***B***	***13.2***		***B***	***16.7***	
	Eastbound Left/Thru/Right		B	13.2	68	B	16.7	73
	Westbound Approach		***B***	***13.1***		***B***	***16.8***	
	Westbound Left/Thru/Right		B	13.1	52	B	16.8	68
	Northbound Approach		***B***	***10.7***		***B***	***11.4***	
	Northbound Left	160	A	8.6	6	A	8.8	8
	Northbound Thru/Right		B	10.8	120	B	11.5	206
	Southbound Approach		***B***	***11.4***		***B***	***13.7***	
	Southbound Left	230	A	8.5	6	A	8.0	11
	Southbound Thru/Right		B	11.5	134	B	13.9	#293
3	**Chain Bridge Road (N/S) & West Drive (E/W)**							
	Overall Intersection (Signalzed)		**B**	**12.6**		**C**	**22.4**	
	Eastbound Approach		***E***	***64.9***		***E***	***62.7***	
	Eastbound Left		E	67.5	83	E	64.9	78
	Eastbound Thru/Right		E	62.5	0	E	61.5	0
	Westbound Approach		***E***	***66.2***		***E***	***68.7***	
	Westbound Left		E	67.1	23	A	0.0	0
	Westbound Thru/Right		E	65.9	0	E	68.7	0
	Northbound Approach		***A***	***9.4***		***A***	***7.5***	
	Northbound Left	165	A	4.3	27	A	6.4	32
	Northbound Thru		A	9.6	424	A	7.6	200
	Southbound Approach		***A***	***9.2***		***B***	***28.2***	
	Southbound Left	110	A	7.8	m7	B	13.4	m25
	Southbound Thru		A	9.2	113	C	28.5	646
4	**Chain Bridge Road (N/S) & Armstrong Street (E/W)**							
	Overall Intersection (Signalzed)		**A**	**7.2**		**B**	**17.3**	
	Westbound Approach		***E***	***65.2***		***E***	***71.4***	
	Westbound Left/Right		E	65.2	110	E	71.4	262
	Northbound Approach		***A***	***5.4***		***B***	***13.5***	
	Northbound Thru/Right		A	5.4	129	B	13.5	356
	Southbound Approach		***A***	***1.6***		***A***	***9.4***	
	Southbound Left	80	A	5.4	13	A	7.6	0
	Southbound Thru		A	1.0	15	A	9.5	201
5	**Chain Bridge Road (N/S) & Judicial Drive (E/W)**							
	Overall Intersection (Signalzed)		**B**	**10.4**		**B**	**18.2**	
	Eastbound Approach		***E***	***58.8***		***D***	***53.8***	
	Eastbound Left	410	E	70.6	115	E	66.0	138
	Eastbound Right		D	53.6	98	D	50.3	181
	Northbound Approach		***A***	***3.4***		***A***	***8.4***	
	Northbound Left	160	A	3.4	125	B	18.3	132
	Northbound Thru		A	3.4	209	A	4.0	63
	Southbound Approach		***A***	***7.0***		***B***	***11.5***	
	Southbound Thru		A	7.1	117	B	11.7	250
	Southbound Right	240	A	6.2	17	A	8.7	20

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[3] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

The intersection capacity analysis results show that the following three intersections have one or more approaches that operate below acceptable levels of service during one or more peak hours under Existing Conditions (2023):

- Intersection 3: Chain Bridge Road and West Drive

  - Eastbound Approach (AM and PM Peaks)
  - Westbound Approach (AM and PM Peaks)
- Intersection 4: Chain Bridge Road and Armstrong Street
  - Westbound Approach (AM and PM Peaks)
- Intersection 5: Chain Bridge Road and Judicial Drive
  - Eastbound Approach (AM Peak)

Based on the queuing analysis performed for existing conditions, the turning movements at the study intersections are anticipated to have 95th percentile queues that can be accommodated within the available storage lengths of the turn bays.

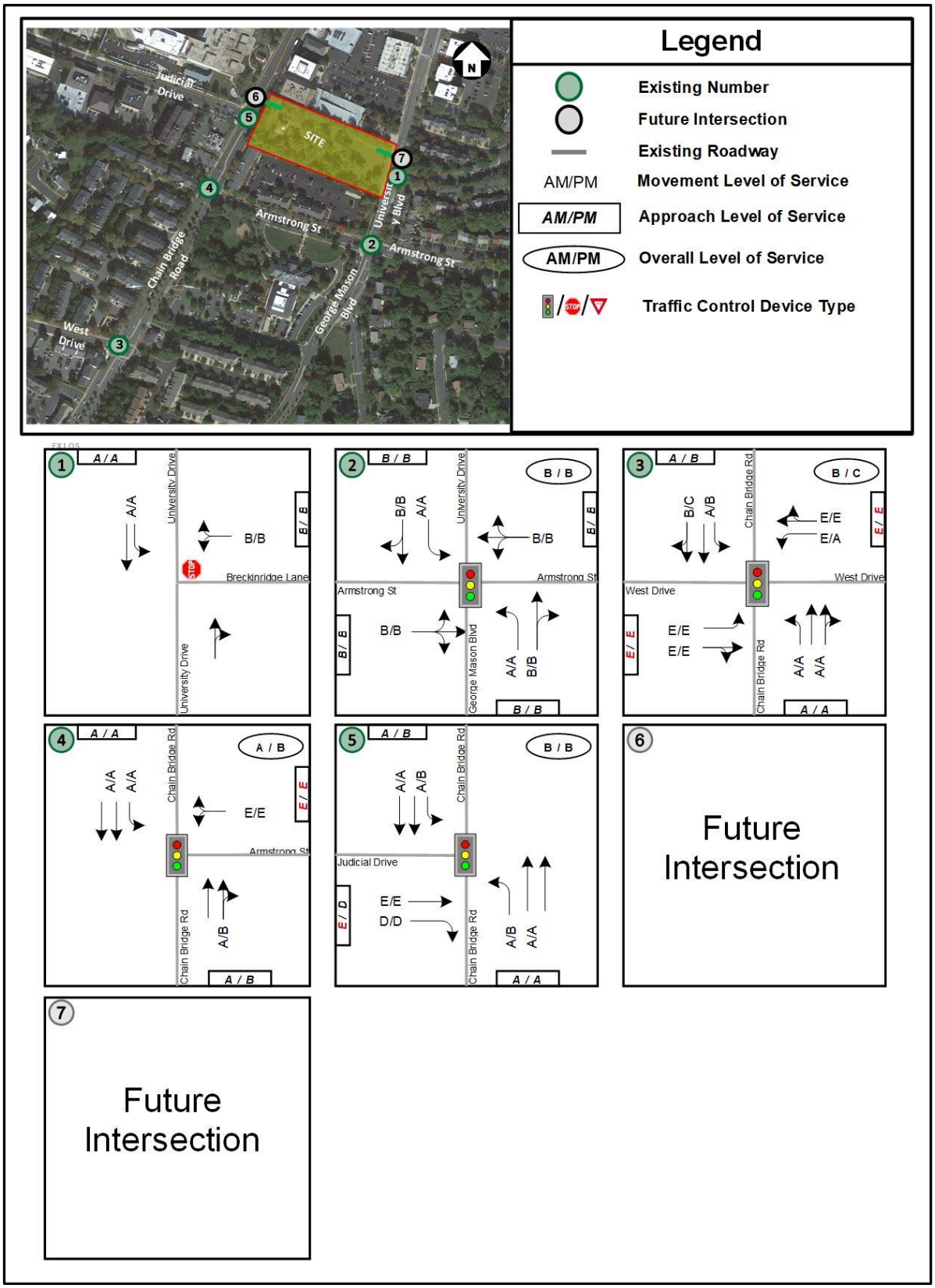


Figure 16: Existing (2023) – Levels of Service

Future Conditions without Development (2026)

Future Conditions without Development (2026) Traffic Volumes

The proposed 4131 Chain Bridge Road development is anticipated to be complete in 2026. The future background traffic volumes were projected by increasing the existing volumes to 2026 using an inherent growth rate. Historical ADT data is shown in Table 3. As determined based on discussions with the City, a 1.0% per year regional growth was applied to the Chain Bridge Road / University Drive mainline through movements at the intersection of Chain Bridge Road at Judicial Street as well as at the intersection of University Boulevard/George Mason Boulevard at Armstrong Street as shown in Figure 17.

Table 3: Historical Growth Rate

			AADT						Annual % Change (2015-2019)	Annual % Change (2015-2021)
Route	From	To	2015	2016	2017	2018	2019	2021		
Chain Bridge Road	SCL Fairfax	Judicial Drive	26,000	27,000	28,000	28,000	28,000	24,000	1.9%	-2.3%
Chain Bridge Road	Judicial Drive	Main Street	20,000	21,000	21,000	21,000	22,000	14,000	2.4%	-7.8%
Judicial Drive	Page Avenue	Chain Bridge Road	9,300	9,400	9,100	9,000	9,000	6,900	-0.8%	-6.0%
University Drive	SCL Fairfax	Armstrong St	11,000	11,000	10,000	10,000	10,000	4,500	-2.4%	-16.4%
University Drive	Armstrong St	South St	14,000	14,000	14,000	14,000	15,000	12,000	1.7%	-3.0%
University Drive	South St	SR 236 Main St	12,000	12,000	11,000	11,000	11,000	5,700	-2.2%	-13.8%

Source: VDOT Traffic Data (http://www.virginiadot.org/info/ct-trafficcounts.asp)

In addition to the regional background growth, two planned developments in the vicinity of the site were taken into consideration. As discussed at the scoping meeting, the following developments were included in the 2026 analysis:

- **One University** – One University is a 10.8-acre site located adjacent to the George Mason University campus in Fairfax County. For the purposes of this analysis, the One University site was anticipated to build 240 affordable senior independent dwelling units and 333 student housing dwelling units by 2026.
- **Fairfax County Judicial Complex** – The Judicial Complex is a 47.8-acre portion of Fairfax County surrounded by the City of Fairfax. A new Master Plan for the complex was completed in January 2021. Phase One of the redevelopment project was assumed to be in place by 2026. For the purposes of this analysis, Phase One was anticipated to include 43,605 SF of storage uses and 80,892 SF of office uses. It should be noted that traffic impact study for the Fairfax County Judicial Complex redevelopment has not yet been submitted. However, the land uses and sizes outlined in the Judicial Complex Master Plan were utilized to model projected traffic volumes from this site.

The background growth is shown in Figure 17 and the background development volumes for One University and Fairfax County Judicial Complex are shown in Figure 18 and Figure 19, respectively. The total background development volumes is shown in Figure 20. The details outlining the methodologies for volume calculation are provided in Appendix E.

The trips generated by background growth and background development were added to the existing volumes in order to generate Future Conditions without Development (2026) traffic volumes presented in Figure 21.

Figure 17: Background Growth (2023 - 2026)

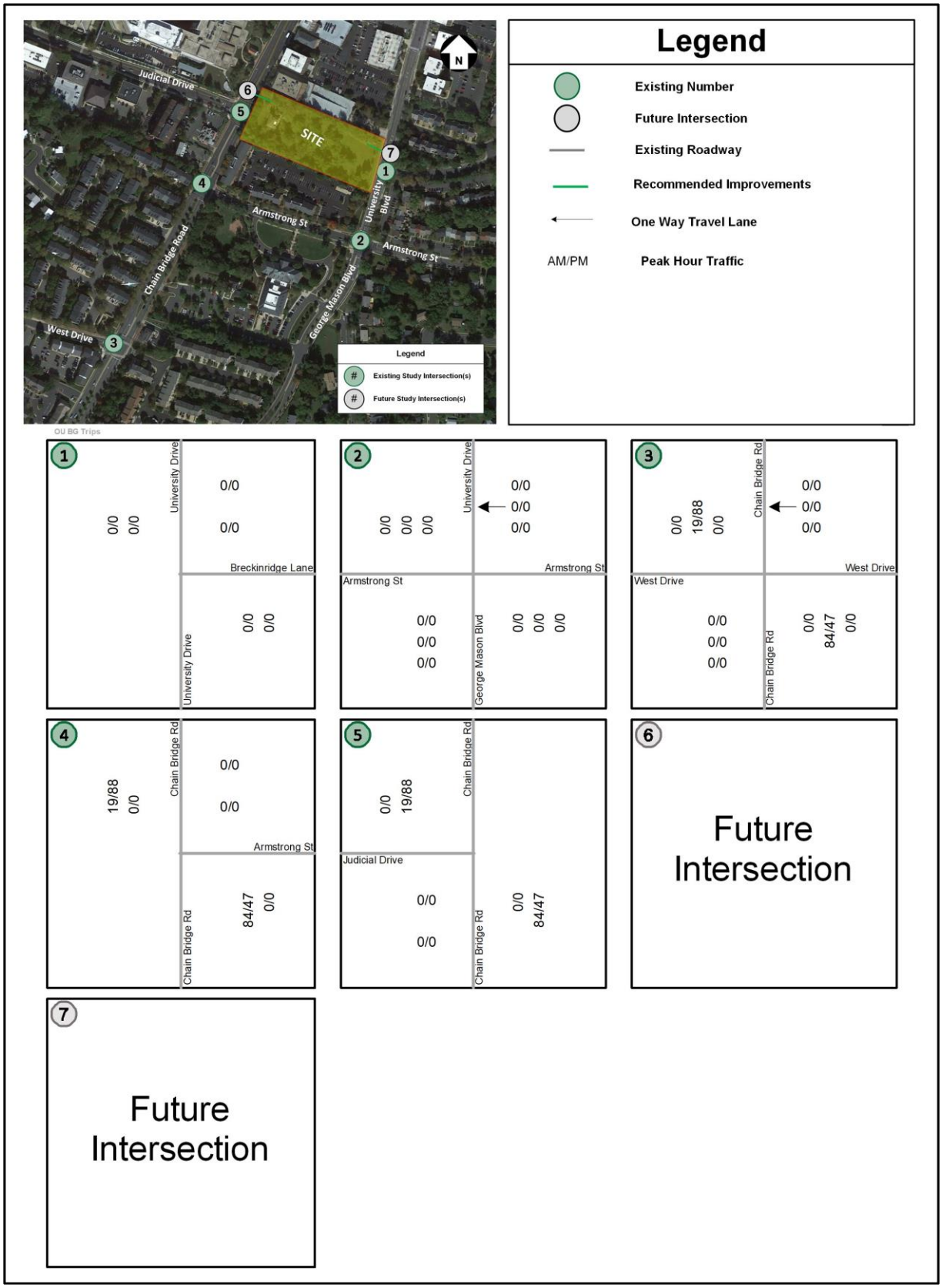


Figure 18: One University Background Development Net Trips

Figure 19: Phase 1 of FCJC Background Development Net Trips

Figure 20: Total Background Development Trips[1]

[1] *Note: The volumes above reflect a total of the rerouting of existing trips, addition of pass-by trips of the background developments, and addition of the background development site trips, consistent with methodology of the respective traffic studies; therefore, volumes presented above may be shown as negative. Detailed informations and assumptions are provided in the Appendix E..*

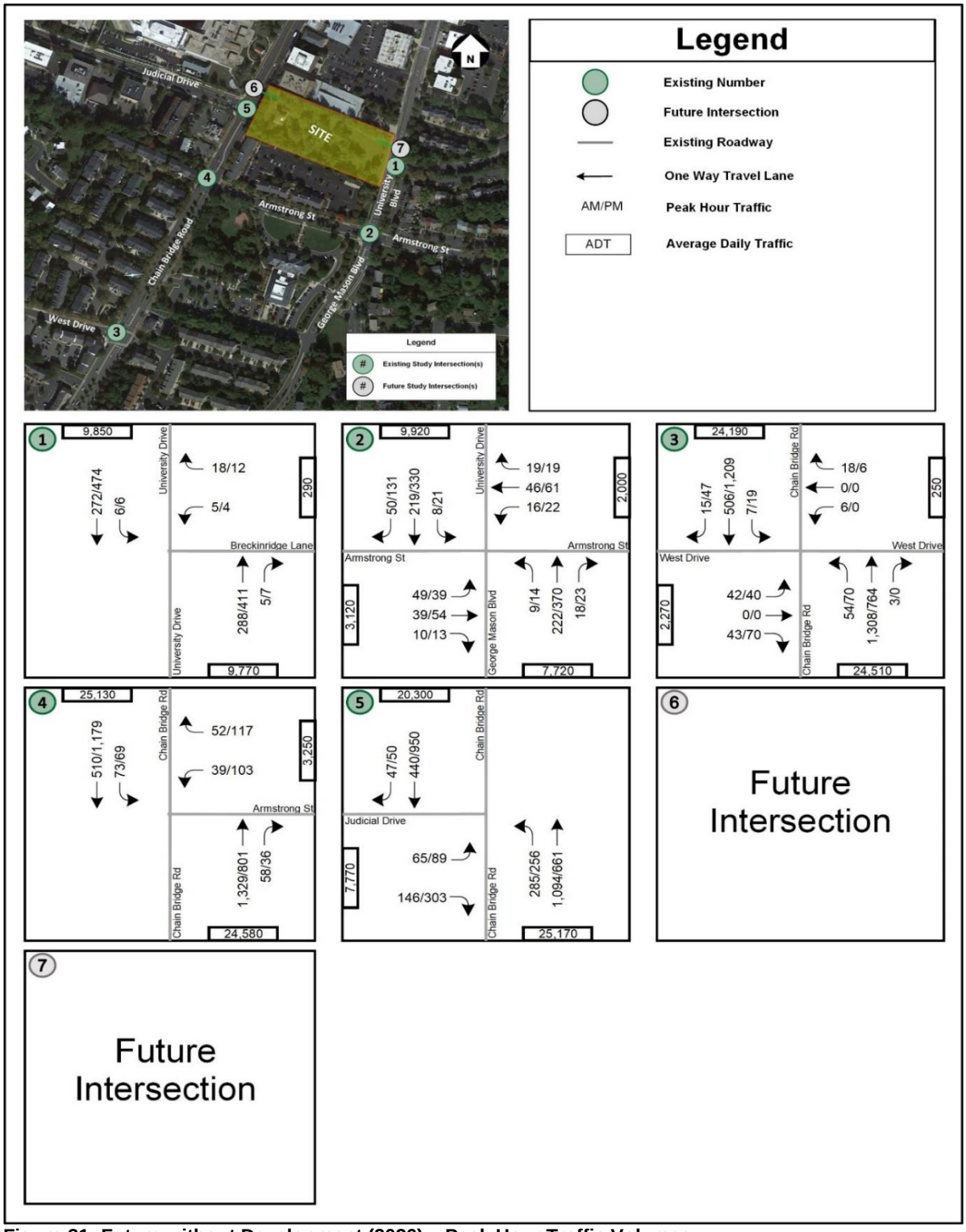


Figure 21: Future without Development (2026) – Peak Hour Traffic Volumes

Future without Development (2026) Intersection Analysis

Intersection capacity analysis was performed at the intersections within the study area during the weekday AM and weekday PM hours under Future Conditions without Development (2026). *Synchro Version 11* was used to analyze the study intersections based on the HCM 6th edition, and if the output is not available, the HCM 2000 methodology presented in the Transportation Research Board's (TRB) Highway Capacity Manual (HCM) and analysis guidelines provided in VDOT's Traffic Operations and Safety Analysis Manual (TOSAM). The analysis herein includes the level of service (LOS), delay, and queue length comparisons for the turning movements analyzed.

Signal phasing and timings were not changed from the existing conditions. A peak hour factor of 0.92 was used unless the peak hour collected in the field was higher. As discussed in the scope, the heavy vehicle percentages (HV%) were based on the existing counts and a default *Synchro* HV% of 2.0% was utilized for all other lane groups.

Per the scoping meeting with the City staff, it would be considered acceptable and/or desirable to achieve an approach LOS D or better for traffic operations using HCM methodology. The results of the intersection capacity analysis are presented in Table 4 and are expressed in LOS and delay (seconds per vehicle) per lane group. Level of service results are also presented in Figure 22. The detailed analysis worksheets are included in Appendix F.

Table 4: Future without Development (2026) – Intersection Analysis

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour			PM Peak Hour		
			LOS	Delay (sec/veh)	95th % Queue (ft.) [2] [3]	LOS	Delay (sec/veh)	95th % Queue [2] [3]
			Synchro			Synchro		
1	**University Drive (N/S) & Breckinridge Ln (E/W)**							
	Overall Intersection (Unsignalzed)		**B**	**10.8**		**B**	**13.0**	
	Westbound Approach		***B***	***10.8***		***B***	***13.0***	
	Westbound Left/Right		B	10.8	3	B	13.0	3
	Southbound Approach							
	Southbound Left/Thru		A	7.9	0	A	8.2	0
2	**Armstrong Street (E/W) & University drive/ George mason boulevard (N/S)**							
	Overall Intersection (Signalzed)		**B**	**11.5**		**B**	**13.0**	
	Eastbound Approach		***B***	***13.1***		***B***	***16.3***	
	Eastbound Left/Thru/Right		B	13.1	66	B	16.3	73
	Westbound Approach		***B***	***12.9***		***B***	***16.4***	
	Westbound Left/Thru/Right		B	12.9	51	B	16.4	68
	Northbound Approach		***B***	***10.6***		***B***	***11.3***	
	Northbound Left	160	A	8.5	6	A	8.7	8
	Northbound Thru/Right		B	10.7	121	B	11.4	208
	Southbound Approach		***B***	***11.3***		***B***	***12.9***	
	Southbound Left	230	A	8.4	6	A	8.0	11
	Southbound Thru/Right		B	11.4	134	B	13.2	#291
3	**Chain Bridge Road (N/S) & West Drive (E/W)**							
	Overall Intersection (Signalzed)		**B**	**12.7**		**C**	**23.1**	
	Eastbound Approach		***E***	***64.9***		***E***	***62.7***	
	Eastbound Left		E	67.5	83	E	64.9	78
	Eastbound Thru/Right		E	62.5	0	E	61.5	0
	Westbound Approach		***E***	***66.2***		***E***	***68.7***	
	Westbound Left		E	67.1	23	A	0.0	0
	Westbound Thru/Right		E	65.9	0	E	68.7	0
	Northbound Approach		***B***	***10.0***		***A***	***7.8***	
	Northbound Left	165	A	4.3	27	A	7.5	32
	Northbound Thru		B	10.3	487	A	7.9	220
	Southbound Approach		***A***	***8.8***		***B***	***29.5***	
	Southbound Left	110	A	7.8	7	B	12.3	m21
	Southbound Thru		A	8.8	111	C	29.7	711
4	**Chain Bridge Road (N/S) & Armstrong Street (E/W)**							
	Overall Intersection (Signalzed)		**A**	**7.1**		**B**	**16.5**	
	Westbound Approach		***E***	***65.3***		***E***	***71.4***	
	Westbound Left/Right		E	65.3	107	E	71.4	262
	Northbound Approach		***A***	***5.5***		***B***	***14.2***	
	Northbound Thru/Right		A	5.5	133	B	14.2	402
	Southbound Approach		***A***	***1.9***		***A***	***8.4***	
	Southbound Left	80	A	8.1	15	A	7.0	0
	Southbound Thru		A	1.0	14	A	8.5	174
5	**Chain Bridge Road (N/S) & Judicial Drive (E/W)**							
	Overall Intersection (Signalzed)		**B**	**10.1**		**B**	**18.7**	
	Eastbound Approach		***E***	***58.7***		***D***	***52.7***	
	Eastbound Left	410	E	70.4	113	E	66.0	138
	Eastbound Right		D	53.5	95	D	48.8	176
	Northbound Approach		***A***	***3.7***		***B***	***10.8***	
	Northbound Left	160	A	3.4	136	C	27.9	145
	Northbound Thru		A	3.8	253	A	4.1	66
	Southbound Approach		***A***	***7.1***		***B***	***12.7***	
	Southbound Thru		A	7.2	125	C	12.9	297
	Southbound Right	240	A	6.2	17	A	9.2	22

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[3] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

The intersection capacity analysis results show that the following three intersections have movements that operate below acceptable levels of service during one or more peak hours under Future Conditions without Development (2026):

- Intersection 3: Chain Bridge Road and West Drive
    - Eastbound Approach (AM and PM Peaks)
    - Westbound Approach (AM and PM Peaks)
- Intersection 4: Chain Bridge Road and Armstrong Street
    - Westbound Approach (AM and PM Peaks)
- Intersection 5: Chain Bridge Road and Judicial Drive
    - Eastbound Approach (AM Peak)

The intersection capacity analysis results are similar to existing conditions. The same three intersections that currently operate below acceptable levels of service are expected to continue to operate unacceptably under Future Conditions without Development (2026).

Based on the queuing analysis performed for the future conditions without development, the turning movements at the study intersections are anticipated to have 95th percentile queues that can be accommodated within the available storage lengths of the turn bays.

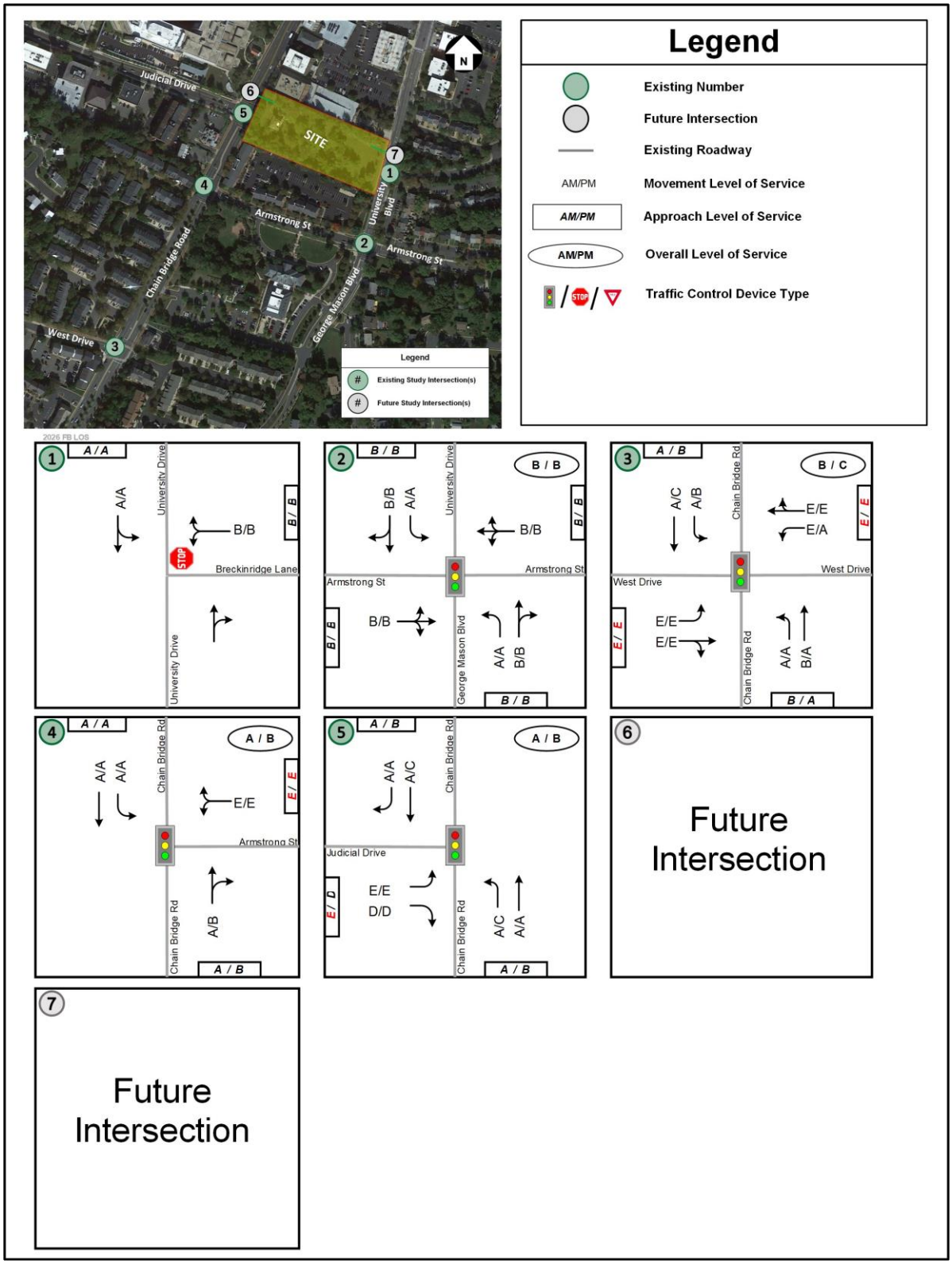


Figure 22: Future without Development (2026) – Levels of Service

Future Conditions with Development (2026)

Site Description

The proposed site is a mixed-use development consisting of approximately 355 multi-family residential apartment dwelling units, and approximately 4,810 square feet of retail use, along with an approximately 494-space multi-level structured garage. The development of the site is anticipated to be complete by 2026.

Site Access

Access to the site will be provided via two partial-movement right-in/right-out (RIRO) entrances, one along Chain Bridge Road and University Drive each, connected via an internal new service drive on-site.

Site Generated Traffic

The Institute of Transportation Engineers (ITE) Trip Generation, 11th Edition was used to determine the future trips generated by the proposed development as shown in aTable 5. A Mode Split/TDM reduction of 15 percent was applied to the residential uses along with a 10 percent reduction for internal capture between commercial and residential, based on guidance from City staff. It should be noted that the trips associated with the existing single-family home were not removed in the analysis.

aTable 5: Trip Generation for Full-Build, 2026 (ITE 11th Edition; Peak Hour of Adjacent Street)

Land Use	ITE Code	Size	Weekday						
			AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Existing									
Single-Family Detached Housing	210	1 DU	0	1	1	1	0	1	15
Proposed									
Residential									
Multifamily Housing (Mid-Rise) [1]	221	355 DU	33	112	145	85	54	139	1,647
Total Residential Trips without Reductions			33	112	145	85	54	139	1,647
Internal Trip Reduction (Residential to Commercial) [2]		*10% All Periods*	-1	-1	-2	-2	-2	-4	-44
Subtotal Residential Trips with Internal Capture Reductions			32	111	143	83	52	135	1,603
TDM / Mode Split Reduction		*15% All Periods*	-5	-17	-21	-12	-8	-20	-240
Subtotal Residential Trips with Internal Capture and TDM Reductions			27	94	122	71	44	115	1,363
Commercial									
Shopping Center (<40 kSF)[4]	822	5.034 kSF of GFA	11	7	18	24	24	48	442
Total Commercial Trips without Reductions			11	7	18	24	24	48	442
Internal Trip Reduction (Commercial to Residential) [2]		*10% All Periods*	-1	-1	-2	-2	-2	-4	-44
Subtotal Commercial Trips with Internal Trip Reduction			10	6	16	22	22	44	398
Pass-by Reductions - Shopping Center [3]		*24%/34%/24% AM/PM/DAY*	-2	-1	-4	-7	-7	-15	-96
Subtotal Commercial Trips with Internal Capture and Pass-by Reductions			8	5	12	15	15	29	302
Net Total Trips without Reductions (Proposed Minus Existing)			**44**	**118**	**162**	**108**	**78**	**186**	**2,074**
Net Total Trips with Reductions (Internal, Transit, Pass-By)			**35**	**98**	**133**	**85**	**59**	**143**	**1,650**

Notes:
[1]: For Multifamily Housing, ITE 11 does not differentiate between apartment, condo, and townhome; per ITE, subcategory of not near rail transit selected.
[2]: The internal trip reduction is based on the smaller of 5% of trips between residential and commercial uses.
[3]: Pass-by trips for Shopping Center as described in ITE Handbook, 3rd Edition. The AM peak hour and weekday daily trip rates were based on the PM peak hour rate minus 10%
[4]: The proposed retail use is 4,810 square feet, however in order to be conservative the proposed retail use is assumed to be 5,034 square feet.

As shown in the table above after reductions, the proposed development will generate approximately 133 new trips during the AM peak hour, 143 new trips during the PM peak hours, and 1,650 new daily trips on a typical weekday.

Site Trip Distribution

The distribution of site trips was based on the 2045 Metropolitan Council of Governments (MWCOG) model as well as existing and anticipated traffic patterns with guidance and input from the city staff. The directional distribution percentages are shown in Figure 23. The traffic assignment for the retail and commercial site trips at the study intersections are shown in Figure 24 and Figure 25 respectively. In addition, the pass-by trips associated with the commercial component of the proposed development is shown in Figure 26.

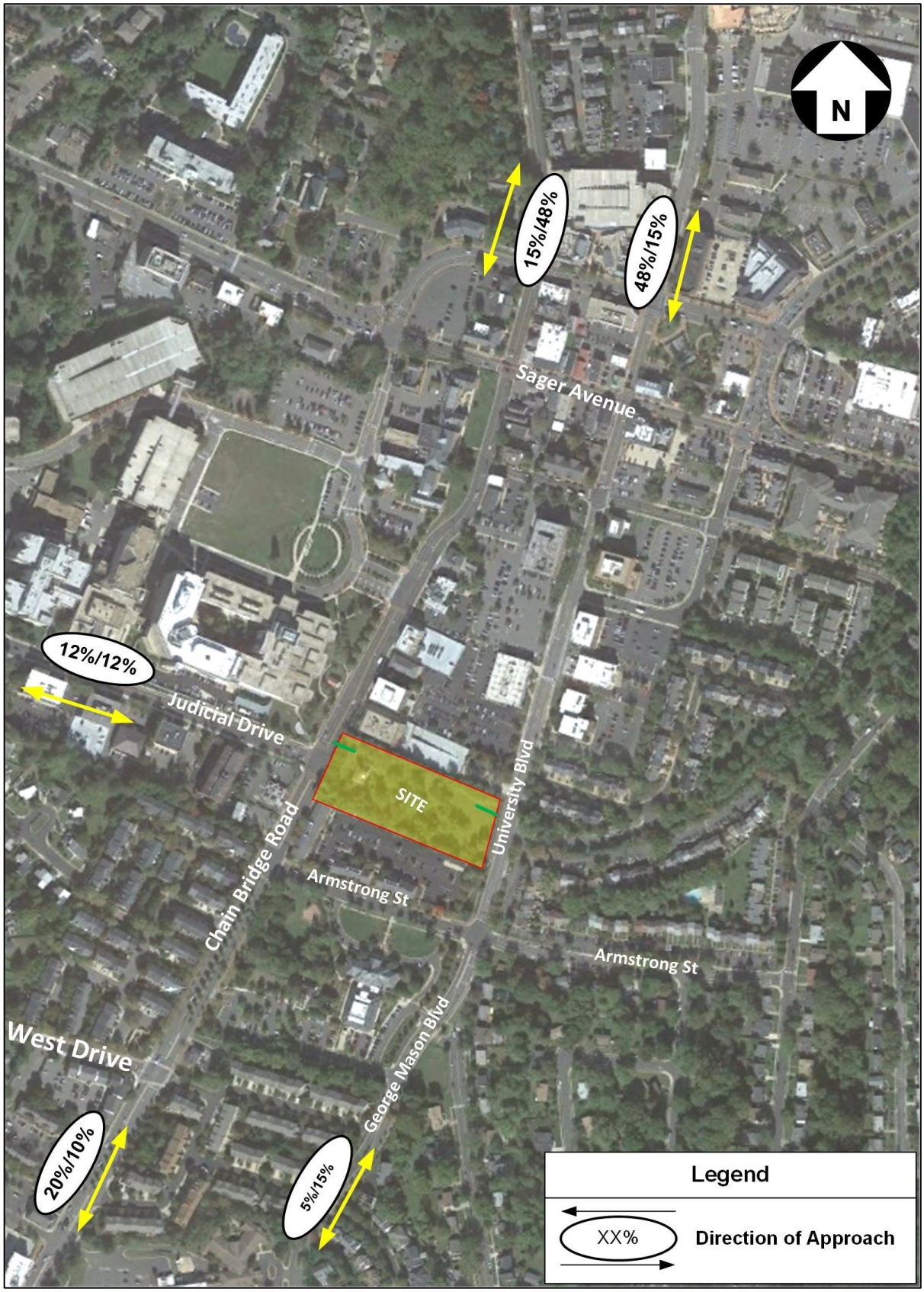


Figure 23: Directional Distribution

Future with Development (2026) Traffic Volumes

In order to determine the Future Conditions with Development (2026) traffic volumes, the site-generated traffic volumes and pass-by trips were added to the Future without Development (2026) traffic volumes. The Future with Development (2026) peak hour traffic volumes are presented in Figure 27.

Figure 24: Residential Site Trips (2026)

Figure 25: Commercial Site Trips (2026)

Figure 26: Commercial Pass-by Trips

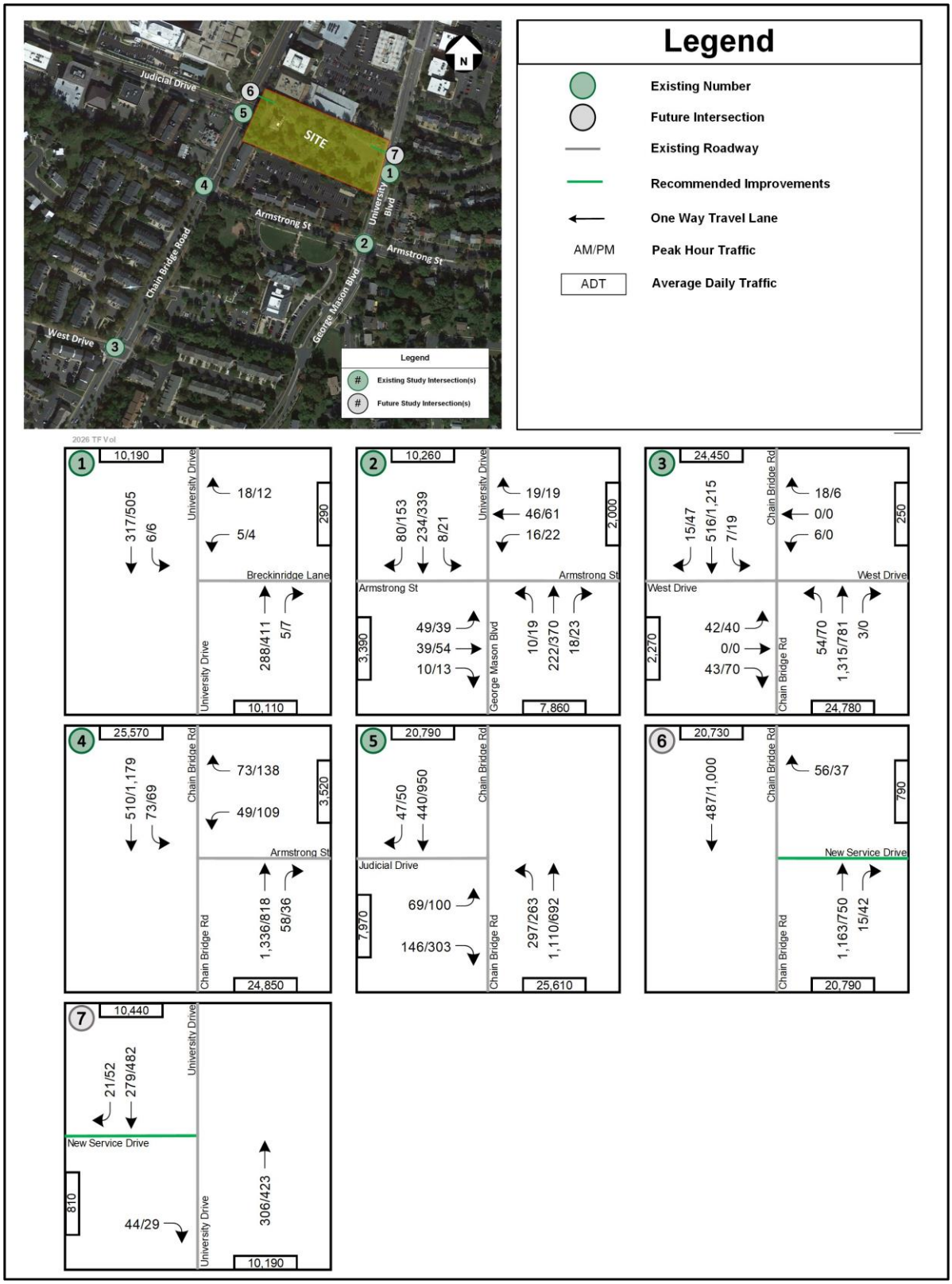


Figure 27: Future with Development (2026) – Peak Hour Traffic Volumes

Future with Development (2026) Intersection Analysis

Intersection capacity analysis was performed in a manner consistent with the methodology used for the Future Conditions without Development (2026) analysis. *Synchro Version 11* was used to analyze the study intersections based on the HCM 6th edition, and if the output is not available, the HCM 2000 methodology presented in the Transportation Research Board's (TRB) Highway Capacity Manual (HCM) and analysis guidelines provided in VDOT's Traffic Operations and Safety Analysis Manual (TOSAM). The analysis herein includes the level of service (LOS), delay, and queue length comparisons for the turning movements analyzed.

Signal phasing and timings were not changed from the future conditions without development. A peak hour factor of 0.92 was used unless the peak hour collected in the field was higher. As discussed in the scope, the heavy vehicle percentages (HV%) were based on the existing counts and a default *Synchro* HV% of 2.0% was utilized for all other lane groups

Per the scoping meeting with the City staff, it would be considered acceptable and/or desirable to achieve an approach LOS D or better for traffic operations using HCM methodology. The results of the intersection analysis are presented in

Table 6 and are expressed in LOS and delay (seconds per vehicle) per lane group. Level of service results are also presented in Figure 28. The detailed analysis worksheets are included in Appendix G.

Table 6: Future with Development (2026) – Intersection Analysis

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour			PM Peak Hour		
			LOS	Delay (sec/veh)	95th % Queue (ft.) [2] [3]	LOS	Delay (sec/veh)	95th % Queue [2] [3]
			Synchro			Synchro		
1	**University Drive (N/S) & Breckinridge Ln (E/W)**							
	Overall Intersection (Unsignalzed)							
	Westbound Approach		***B***	***11.0***		***B***	***13.1***	
	Westbound Left/Right		B	11.0	3	B	13.1	3
	Southbound Approach							
	Southbound Left/Thru		A	7.9	0	A	8.2	0
2	**Armstrong Street (E/W) & University drive/ George mason boulevard (N/S)**							
	Overall Intersection (Signalzed)		**B**	**11.6**		**B**	**13.6**	
	Eastbound Approach		***B***	***13.8***		***B***	***17.2***	
	Eastbound Left/Thru/Right		B	13.8	69	B	17.2	73
	Westbound Approach		***B***	***13.7***		***B***	***17.2***	
	Westbound Left/Thru/Right		B	13.7	54	B	17.2	68
	Northbound Approach		***B***	***10.1***		***B***	***10.9***	
	Northbound Left	160	A	8.4	6	A	8.6	10
	Northbound Thru/Right		B	10.2	120	B	11.0	208
	Southbound Approach		***B***	***11.6***		***B***	***14.4***	
	Southbound Left	230	A	8.2	6	A	7.7	11
	Southbound Thru/Right		B	11.7	156	B	14.7	#320
3	**Chain Bridge Road (N/S) & West Drive (E/W)**							
	Overall Intersection (Signalzed)		**B**	**12.7**		**C**	**23.5**	
	Eastbound Approach		***E***	***64.9***		***E***	***62.7***	
	Eastbound Left		E	67.5	83	E	64.9	78
	Eastbound Thru/Right		E	62.5	0	E	61.5	0
	Westbound Approach		***E***	***66.2***		***E***	***68.7***	
	Westbound Left		E	67.1	23	A	0.0	0
	Westbound Thru/Right		E	65.9	0	E	68.7	0
	Northbound Approach		***B***	***10.1***		***A***	***7.9***	
	Northbound Left	165	A	4.3	27	A	7.5	32
	Northbound Thru/Right		B	10.3	491	A	7.9	226
	Southbound Approach		***A***	***8.5***		***C***	***30.3***	
	Southbound Left	110	A	7.6	m6	B	12.1	m20
	Southbound Thru/Right		A	8.5	100	C	30.6	711
4	**Chain Bridge Road (N/S) & Armstrong Street (E/W)**							
	Overall Intersection (Signalzed)		**A**	**8.5**		**B**	**18.1**	
	Westbound Approach		***E***	***67.5***		***E***	***74.0***	
	Westbound Left/Right		E	67.5	141	E	74.0	293
	Northbound Approach		***A***	***6.1***		***B***	***15.1***	
	Northbound Thru/Right		A	6.1	135	B	15.1	411
	Southbound Approach		***A***	***2.0***		***A***	***9.1***	
	Southbound Left	80	A	8.1	14	A	7.5	0
	Southbound Thru		A	1.1	17	A	9.2	174
5	**Chain Bridge Road (N/S) & Judicial Drive (E/W)**							
	Overall Intersection (signalzed)		**B**	**10.2**		**B**	**19.0**	
	Eastbound Approach		***E***	***55.9***		***D***	***52.4***	
	Eastbound Left	410	E	65.3	117	E	66.7	150
	Eastbound Right		D	51.5	93	D	47.8	175
	Northbound Approach		***A***	***4.1***		***B***	***11.0***	
	Northbound Left	160	A	3.9	143	C	28.7	150
	Northbound Thru		A	4.2	254	A	4.2	66
	Southbound Approach		***A***	***7.8***		***B***	***13.2***	
	Southbound Thru		A	7.9	130	B	13.4	303
	Southbound Right	240	A	6.9	17	A	9.5	22
6	**Chain Bridge Road (N/S) & New Service Drive (East Access)**							
	Overall Intersection (Unsignalzed)							
	Westbound Approach		***B***	***15.0***		***B***	***11.8***	
	Westbound Right		B	15.0	13	B	11.8	5
7	**University Drive(N/S) & New Service Drive (West Access)**							
	Overall Intersection (Unsignalzed)							
	Eastbound Approach		***B***	***10.3***		***B***	***12.1***	
	Eastbound Right		B	10.3	5	B	12.1	5

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[3] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

The intersection capacity analysis results show that the following three intersections have movements that operate below acceptable levels of service during one or more peak hours under Future Conditions with Development (2026):

- Intersection 3: Chain Bridge Road and West Drive

  - Eastbound Approach (AM and PM Peaks)
  - Westbound Approach (AM and PM Peaks)
- Intersection 4: Chain Bridge Road and Armstrong Street
  - Westbound Approach (AM and PM Peaks)
- Intersection 5: Chain Bridge Road and Judicial Drive
  - Eastbound Approach (AM Peak)

The intersection capacity analysis results are similar to Existing and Future Conditions without Development. The same three intersections that currently operate below acceptable levels of service are expected to continue to operate unacceptably under Future Conditions with Development (2026).

Based on the queuing analysis performed for the Future Conditions with Development, the turning movements at the study intersections are anticipated to have 95th percentile queues that can be accommodated within the available storage lengths of the turn bays.

It is to be noted that no signal timings adjustment has been proposed as a mitigation measure for the signalized intersections along Chain Bridge Road. This is because all signals along Chain Bridge Road are coordinated and the side street movements run under split phasing. Any adjustment would impact the overall performance of the intersection and the corridor. These conditions are typical for commuter corridors in Northern Virginia and reflect the prioritization of traffic along the mainlines in order to accommodate the largest possible volume in the area. Therefore, it has a better overall traffic operation than prioritizing all movements equally.

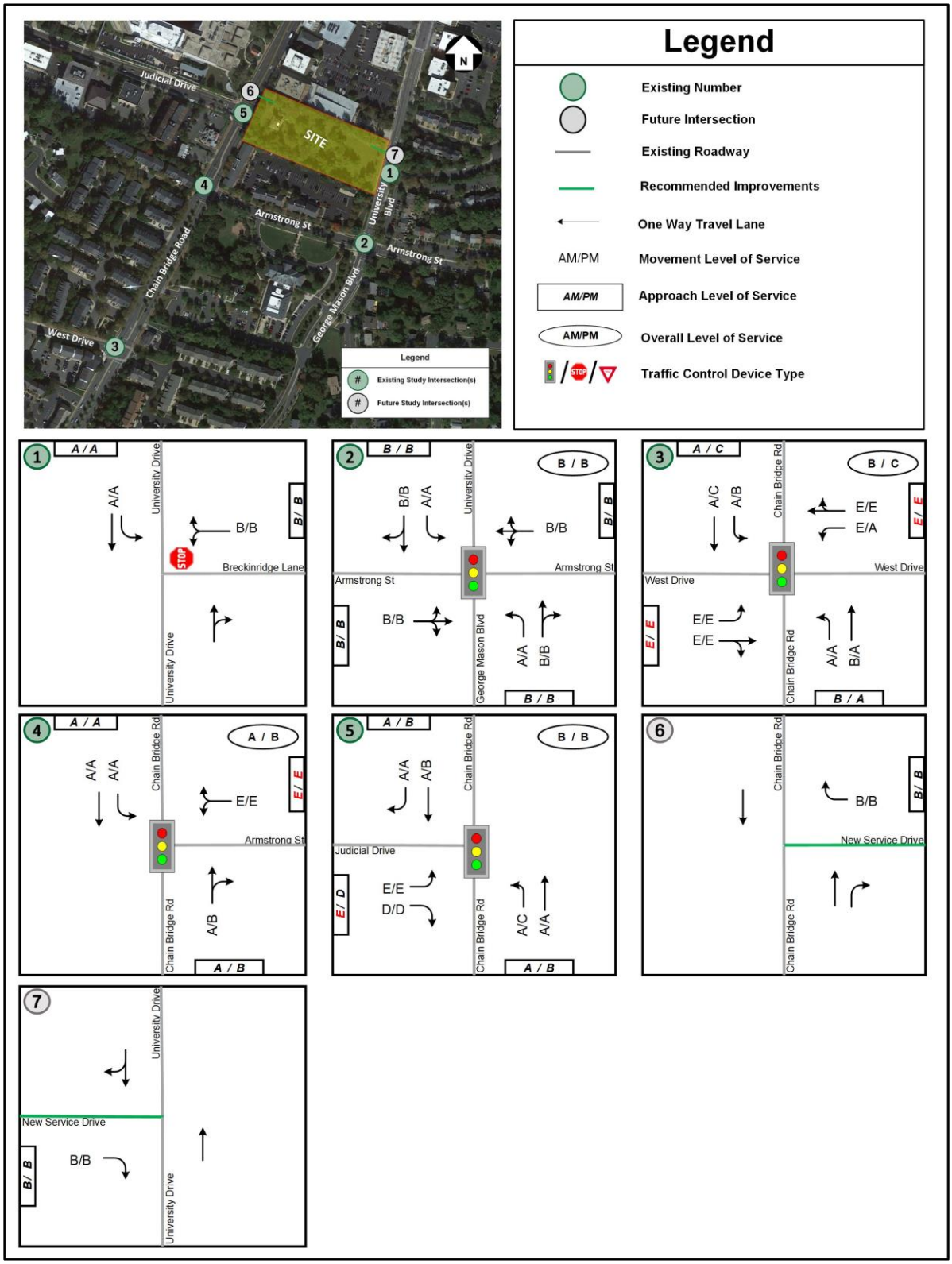


Figure 28: Future with Development (2026) – Levels of Service

Overall Comparison of Intersection Capacity and Queuing Analysis Results

As described in the previous sections, vehicular capacity analysis was performed for the following seven scenarios:

- **Existing (2023) Scenario** – assumes existing traffic volume based on the counts.
- **Future without Development (2026)** – assumes exiting traffic volume plus additional traffic due to a 1% annual growth rate plus traffic due to planned yet unbuilt two background developments.
- **Future with Development (2026)** – assumes existing traffic plus additional traffic due to a one percent annual growth rate plus traffic due to planned yet unbuilt background developments plus traffic generated by the 4131 Chain Bridge Road site.

A comparison of the delays and LOS results is presented in Table 7 and the queue comparison for the study scenarios is included in Table 8.

Table 7: Delay Comparison Table

No.	Intersection (Movement)	Level of Service (LOS) (Sec./Veh.)					
		AM Peak Hour			PM Peak Hour		
		2023 Existing	2026 FB	2026 TF	2023 Existing	2026 FB	2026 TF
1	**University Drive (N/S) & Breckinridge Ln (E/W)**						
	Overall Intersection (Unsignalzed)						
	Westbound Approach	*B (11.1)*	*B (10.8)*	*B (11)*	*B (13.1)*	*B (12.6)*	*B (13.1)*
	Westbound Left/Right	B (11.1)	B (10.8)	B (11)	B (13.1)	B (12.6)	B (13.1)
	Southbound Approach						
	Southbound Left/Thru	A (7.9)	A (7.9)	A (7.9)	A (8.3)	A (8.2)	A (8.2)
2	**Armstrong Street (E/W) & University drive/ George mason boulevard (N/S)**						
	Overall Intersection (Signalzed)	**B (11.6)**	**B (11.5)**	**B (11.6)**	**B (13.5)**	**B (13)**	**B (13.6)**
	Eastbound Approach	*B (13.2)*	*B (13.1)*	*B (13.8)*	*B (16.7)*	*B (16.3)*	*B (17.2)*
	Eastbound Left/Thru/Right	B (13.2)	B (13.1)	B (13.8)	B (16.7)	B (16.3)	B (17.2)
	Westbound Approach	*B (13.1)*	*B (12.9)*	*B (13.7)*	*B (16.8)*	*B (16.4)*	*B (17.2)*
	Westbound Left/Thru/Right	B (13.1)	B (12.9)	B (13.7)	B (16.8)	B (16.4)	B (17.2)
	Northbound Approach	*B (10.7)*	*B (10.6)*	*B (10.1)*	*B (11.4)*	*B (11.3)*	*B (10.9)*
	Northbound Left	A (8.6)	A (8.5)	A (8.4)	A (8.8)	A (8.7)	A (8.6)
	Northbound Thru/Right	B (10.8)	B (10.7)	B (10.2)	B (11.5)	B (11.4)	B (11)
	Southbound Approach	*B (11.4)*	*B (11.3)*	*B (11.6)*	*B (13.7)*	*B (12.9)*	*B (14.4)*
	Southbound Left	A (8.5)	A (8.4)	A (8.2)	A (8)	A (8)	A (7.7)
	Southbound Thru/Right	B (11.5)	B (11.4)	B (11.7)	B (13.9)	B (13.2)	B (14.7)
3	**Chain Bridge Road (N/S) & West Drive (E/W)**						
	Overall Intersection (Signalzed)	**B (12.6)**	**B (13)**	**B (12.7)**	**C (22.4)**	**C (21.7)**	**C (23.5)**
	Eastbound Approach	*E (64.9)*	*E (64.9)*	*E (64.9)*	*E (62.7)*	*E (62.7)*	*E (62.7)*
	Eastbound Left	E (67.5)	E (67.5)	E (67.5)	E (64.9)	E (64.9)	E (64.9)
	Eastbound Thru/Right	E (62.5)	E (62.5)	E (62.5)	E (61.5)	E (61.5)	E (61.5)
	Westbound Approach	*E (66.2)*	*E (66.2)*	*E (66.2)*	*E (68.7)*	*E (68.7)*	*E (68.7)*
	Westbound Left	E (67.1)	E (67.1)	E (67.1)	A (0)	A (0)	A (0)
	Westbound Thru/Right	E (65.9)	E (65.9)	E (65.9)	E (68.7)	E (68.7)	E (68.7)
	Northbound Approach	*A (9.4)*	*B (10)*	*B (10.1)*	*A (7.5)*	*A (7.8)*	*A (7.9)*
	Northbound Left	A (4.3)	A (4.3)	A (4.3)	A (6.4)	A (7.5)	A (7.5)
	Northbound Thru/Right	A (9.6)	B (10.3)	B (10.3)	A (7.6)	A (7.9)	A (7.9)
	Souhbound Approach	*A (9.2)*	*A (9.6)*	*A (8.5)*	*B (28.2)*	*C (27)*	*C (30.3)*
	Southbound Left	A (7.8)	A (8.7)	A (7.6)	B (13.4)	B (13.1)	B (12.1)
	Southbound Thru/Right	A (9.2)	A (9.6)	A (8.5)	C (28.5)	C (27.2)	C (30.6)
4	**Chain Bridge Road (N/S) & Armstrong Street (E/W)**						
	Overall Intersection (Signalzed)	**A (7.2)**	**A (6.9)**	**A (8.5)**	**B (17.3)**	**B (15.9)**	**B (18.1)**
	Westbound Approach	*E (65.2)*	*E (65.3)*	*E (67.5)*	*E (71.4)*	*E (71.4)*	*E (74)*
	Westbound Left/Right	E (65.2)	E (65.3)	E (67.5)	E (71.4)	E (71.4)	E (74)
	Northbound Approach	*A (5.4)*	*A (5.2)*	*A (6.1)*	*B (13.5)*	*B (13.1)*	*B (15.1)*
	Northbound Thru/Right	A (5.4)	A (5.2)	A (6.1)	B (13.5)	B (13.1)	B (15.1)
	Southbound Approach	*A (1.6)*	*A (1.9)*	*A (2)*	*A (9.4)*	*A (7.9)*	*A (9.1)*
	Southbound Left	A (5.4)	A (6.7)	A (8.1)	A (7.6)	A (6.5)	A (7.5)
	Southbound Thru	A (1)	A (1.2)	A (1.1)	A (9.5)	A (8)	A (9.2)
5	**Chain Bridge Road (N/S) & Judicial Drive (E/W)**						
	Overall Intersection (signalzed)	**B (10.4)**	**B (9.9)**	**B (10.2)**	**B (18.2)**	**B (18.7)**	**B (19)**
	Eastbound Approach	*E (58.8)*	*E (58.7)*	*E (55.9)*	*D (53.8)*	*D (52.7)*	*D (52.4)*
	Eastbound Left	E (70.6)	E (70.4)	E (65.3)	E (66)	E (66)	E (66.7)
	Eastbound Right	D (53.6)	D (53.5)	D (51.5)	D (50.3)	D (48.8)	D (47.8)
	Northbound Approach	*A (3.4)*	*A (3.4)*	*A (4.1)*	*A (8.4)*	*B (10.6)*	*B (11)*
	Northbound Left	A (3.4)	A (3.2)	A (3.9)	B (18.3)	C (26.8)	C (28.7)
	Northbound Thru	A (3.4)	A (3.5)	A (4.2)	A (4)	A (4.2)	A (4.2)
	Southbound Approach	*A (7)*	*A (7.1)*	*A (7.8)*	*B (11.5)*	*B (12.7)*	*B (13.2)*
	Southbound Thru	A (7.1)	A (7.2)	A (7.9)	B (11.7)	B (12.9)	B (13.4)
	Southbound Right	A (6.2)	A (6.2)	A (6.9)	A (8.7)	A (9.2)	A (9.5)
6	**Chain Bridge Road (N/S) & New Service drive (E/W)**						
	Overall Intersection (Unsignalzed)						
	Westbound Approach	-	-	*B (15)*	-	-	*B (11.8)*
	Westbound Right	-	-	B (15)	-	-	B (11.8)
7	**University Drive(N/S) & New Service drive (E/W)**						
	Overall Intersection (Unsignalzed)						
	Eastbound Approach	-	-	*B (10.3)*	-	-	*B (12.1)*
	Eastbound Right	-	-	B (10.3)	-	-	B (12.1)

Table 8: Queue Comparison Table

No.	Intersection (Movement)	95th Percentile Queues (ft.)						
		Effective Storage Length (ft.)	AM Peak Hour			PM Peak Hour		
			2023 Existing	2026 FB	2026 TF	2023 Existing	2026 FB	2026 TF
1	**University Drive (N/S) & Breckinridge Ln (E/W)**							
	Overall Intersection (Unsignalzed)							
	Westbound Approach							
	Westbound Left/Right		3	3	3	3	3	3
	Southbound Approach							
	Southbound Left/Thru		0	0	0	0	0	0
2	**Armstrong Street (E/W) & University drive/ George mason boulevard (N/S)**							
	Overall Intersection (Signalzed)							
	Eastbound Approach							
	Eastbound Left/Thru/Right		68	66	69	73	73	73
	Westbound Approach							
	Westbound Left/Thru/Right		52	51	54	68	68	68
	Northbound Approach							
	Northbound Left	160	6	6	6	8	8	10
	Northbound Thru/Right		120	121	120	206	208	208
	Southbound Approach							
	Southbound Left	230	6	6	6	11	11	11
	Southbound Thru/Right		134	134	156	293	291	320
3	**Chain Bridge Road (N/S) & West Drive (E/W)**							
	Overall Intersection (Signalzed)							
	Eastbound Approach							
	Eastbound Left		83	83	83	78	78	78
	Eastbound Thru/Right		0	0	0	0	0	0
	Westbound Approach							
	Westbound Left		23	23	23	0	0	0
	Westbound Thru/Right		0	0	0	0	0	0
	Northbound Approach							
	Northbound Left	165	27	27	27	32	32	32
	Northbound Thru/Right		424	487	491	200	220	226
	Souhbound Approach							
	Southbound Left	110	7	6	6	25	23	20
	Southbound Thru/Right		113	164	100	646	695	711
4	**Chain Bridge Road (N/S) & Armstrong Street (E/W)**							
	Overall Intersection (Signalzed)							
	Westbound Approach							
	Westbound Left/Right		110	107	141	262	262	293
	Northbound Approach							
	Northbound Thru/Right		129	113	135	356	360	411
	Southbound Approach							
	Southbound Left	80	13	11	14	0	28	0
	Southbound Thru		15	14	17	201	209	174
5	**Chain Bridge Road (N/S) & Judicial Drive (E/W)**							
	Overall Intersection (signalzed)							
	Eastbound Approach							
	Eastbound Left	410	115	113	117	138	138	150
	Eastbound Right		98	95	93	181	176	175
	Northbound Approach							
	Northbound Left	160	125	119	143	132	142	150
	Northbound Thru		209	222	254	63	98	66
	Southbound Approach							
	Southbound Thru		117	125	130	250	297	303
	Southbound Right	240	17	17	17	20	22	22
6	**Chain Bridge Road (N/S) & New Service drive (E/W)**							
	Overall Intersection (Unsignalzed)							
	Westbound Approach							
	Westbound Right		-	-	13	-	-	5
7	**University Drive(N/S) & New Service drive (E/W)**							
	Overall Intersection (Unsignalzed)							
	Eastbound Approach							
	Eastbound Right		-	-	5	-	-	5

Conclusions

This report presented the findings of a Transportation Impact Study (TIS) conducted for the proposed development of the 4131 Chain Bridge site in the City of Fairfax, Virginia.

The analysis presented in this report supports the following major finding:

- The intersection capacity analysis results for the Future Conditions wit Development are similar to Existing and Future Conditions without Development. Therefore, the development will have a minimal impact on the traffic operations and safety of the street network.

Additional assumptions, findings, and conclusions are as follows:

TIA Components

- As determined based on discussions with the City, 1.0% regional growth was applied to the Chain Bridge Road / University Drive mainline through movements at the intersection of Chain Bridge Road at Judicial Street as well as at the intersection of University Boulevard/George Mason Boulevard at Armstrong Street volumes.
- A mode split/TDM reduction of 15 percent was applied to the residential uses, as agreed upon with the City.
- The internal trip reduction is based on the smaller of 15 percent trips between residential and commercial uses, as agreed upon with the City.
- The proposed development is anticipated to generate approximately 133 new trips during the AM peak hour, 143 new trips during the PM peak hour, and 1,650 new daily trips on a typical weekday.

Infrastructure

- Existing vehicular access is provided via one driveway on Chain Bridge Road.
- Access to the site will be provided via two partial-movement right-in/right-out (RIRO) entrances, one along Chain Bridge Road and University Drive each, connected via an internal new service drive on-site.

Non-SOV Elements

- Five bus routes provide service in the vicinity of the site, providing regional access to the area.

Analysis Results

- Three intersections within the study area operate below acceptable levels of service under Existing Conditions (2023), and the same intersections continue to operate below acceptable levels of service under Future Conditions without Development (2026) and Future Conditions with Development (2026).
- The intersection capacity analysis results for the Future Conditions with and without Development are similar to Existing Conditions.
- Based on the queuing analysis performed for Future Conditions with Development, the turning movements at the study intersections are anticipated to have 95th percentile queues that can be accommodated within the available storage lengths of the turn bays for all the scenarios.
- It is to be noted that no signal timing adjustment has been proposed as a mitigation measure for the signalized intersections along Chain Bridge Road. This is because all signals along Chain Bridge Road are coordinated and the side street movements run under split phasing. Any adjustment would impact the overall performance of the adjacent intersection and the entire corridor. The side street delays are typical for commuter corridors in Northern Virginia and reflect the prioritization of traffic along the mainlines in order to accommodate the largest possible volume in the area. Therefore, the corridor has a better overall traffic operation than prioritizing all movements equally.

Transportation Technical Appendix

4131 Chain Bridge Road

City of Fairfax, Virginia

September 27, 2023

GOROVE SLADE
Transportation Planners and Engineers

CONTENTS

A. Signed Scoping Document

THIS IS NOT A CHAPTER 870 STUDY

VDOT Virginia Department of Transportation	PRE-SCOPE OF WORK MEETING FORM Information on the Project Traffic Impact Analysis Base Assumptions

The applicant is responsible for entering the relevant information and submitting the form to VDOT and the locality no less than three (3) business days prior to the meeting. If a form is not received by this deadline, the scope of work meeting may be postponed.

Contact Information			
Consultant Name: Tele: E-mail:	Kevin Sitzman, Gorove Slade Associates, Inc. 703.787.9595 ksitzman@goroveslade.com		
Developer/Owner Name: Tele: E-mail:	Greg Auger, Perseus – TDC 707.617.2146 Greg.auger@perseustdc.com		
Project Information			
Project Name:	4131 Chain Bridge Road	Locality/County:	City of Fairfax, VA
Project Location: (Attach regional and site specific location map)	The proposed redevelopment will be located between the eastern frontage of Chain Bridge Road (Route 123) at Judicial Drive (City Route 1) and the western frontage of University Drive (Route 6627) at Breckinridge Lane, to the north of Armstrong Street, in the City of Fairfax, Virginia. The existing address for the site is 4131 Chain Bridge Road.		
Submission Type	Comp Plan ☐	Rezoning/SUP ☒	Site Plan ☐ / Subd Plat ☐
Project Description: (Including details on the land use, acreage, phasing, access location, etc. Attach additional sheet if necessary)	The 4131 Chain Bridge Road site is situated on one approximately 2.67-acre parcel of land that can be identified on the City of Fairfax Real Estate Assessment Database with the following Tax Map #: 57-4-02-040. The parcel is currently zoned as RM Residential Medium with a Future Land Use of Activity Center, per the Future Land Use Map of the 2035 Comprehensive Plan. Currently, a single-family home is built on the parcel (Davies Property). The Applicant is proposing to rezone the parcel to CU Commercial Urban and apply for a Special Use Permit in order to demolish the existing single-family home and construct a mixed-use development consisting of approximately 350 multi-family residential apartment dwelling units, and approximately 5,034 square feet of shopping center use, along with an approximately 468-space multi-level structured garage. The redevelopment of the site is anticipated to be complete by 2026. Access to the site will be provided via two partial-movement right-in/right-out (RIRO) entrances, one along Chain Bridge Road and University Drive each, connected via an internal new service drive on-site.		
Proposed Use(s): (Check all that apply; attach additional pages as necessary)	Residential ☐ / Commercial ☐ / Mixed Use ☒ / Other ☐		
	Residential Use ITE LU Code: 221 Number of Units: 350 DU **Other Use(s)** ITE LU Code(s): Square Ft or Other Variable:	**Commercial Use(s)** ITE LU Code(s): 822 Square Ft or Other Variable: 5,034 SF	

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

Total Peak Hour Trip Projection:	Less than 100 ☐	100 – 499 ☒	500 – 999 ☐	1,000 or more ☐

Traffic Impact Analysis Assumptions

Study Period	Existing Year: 2023	Build-out Year: 2026	Design Year: N/A
Study Area Boundaries (Attach map)	North: Sager Avenue	South: Armstrong Street	
	West: Chain Bridge Road	East: University Boulevard	
External Factors That Could Affect Project (Planned road improvements, other nearby developments)	One University Phase 1 of FCJC		
Consistency With Comprehensive Plan (Land use, transportation plan)	Yes		
Available Traffic Data (Historical, forecasts)	VDOT Historical AADT Data **(See Table 1)** Other available traffic data to be discussed at scoping meeting.		
Trip Distribution **(Please refer to attached Figure 2 in Supplement)**	Road Name: N/A (to/from the North)	Road Name: N/A (to/from the South)	
	Road Name: N/A (to/from the West)	Road Name: N/A (to/from the East)	
Annual Vehicle Trip Growth Rate: **(See Note 3)**	1.0%/yr. (2023-2026)	Peak Period for Study (check all that apply)	☒ AM ☒ PM ☐ SAT
		Peak Hour of the Adj. (to be used in study)	130 AM / 141 PM / 1,629 Daily

Study Intersections and/or Road Segments (Attach additional sheets as necessary) **(Please refer to attached Figure 1.)**				
	1.	University Boulevard (Route 6627) at Breckinridge Lane	7.	University Boulevard (Route 6627) at Future New Service Drive
	2.	University Boulevard (Route 6627) at Armstrong Street	8.	
	3.	Chain Bridge Road (Route 123) at West Drive	9.	
	4.	Chain Bridge Road (Route 123) at Armstrong Street	10.	
	5.	Chain Bridge Road (Route 123) at Judicial Drive (City Route 1)	11.	
	6.	Chain Bridge Road (Route 123) at New Service Drive	12.	

Trip Adjustment Factors	Internal allowance Reduction: ☒ Yes ☐ No Smaller of 10% between residential and commercial uses.	Pass-by allowance Reduction: ☒ Yes ☐ No Commercial, per ITE Handbook, 3rd Edition
Software Methodology	☒ Synchro ☐ HCS (v.2000/+) ☐ SIDRA ☐ CORSIM ☐ Other ____	

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

Traffic Signal Proposed or Affected (Analysis software to be used, progression speed, cycle length)	Existing traffic signals that could be affected: 1. University Boulevard at Armstrong Street 2. Chain Bridge Road at Armstrong Street 3. Chain Bridge Road at Judicial Drive 4. Chain Bridge Road at West Drive Analysis Software: Synchro version 11 Results: HCM 6th Methodology **(See Note 8.)** Queue Lengths to be Reported: 95th Percentile
Improvement(s) Assumed or to be Considered	South Street Extension (rerouting consistent with City Center project will be applied, if any)
Background Traffic Studies Considered	One University – 240 affordable multifamily and senior housing units, 333 student housing units Phase 1 of FCJC
Plan Submission	☐ Master Development Plan (MDP) ☒ Generalized Development Plan (GDP) ☐ Preliminary/Sketch Plan ☐ Other Plan type (Final Site, Subd. Plan)
Additional Issues to be Addressed	☒ Queuing analysis ☐ Actuation/Coordination ☐ Weaving analysis ☐ Merge analysis ☒ Bike/Ped Accommodations ☒ Intersection(s) ☒ TDM Measures ☐ Other (_____)

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

NOTES on ASSUMPTIONS:

1. Synchro files/signal timings will be obtained from the City.
2. The scenarios to be included in the study are 2023 Existing Conditions, 2026 Future Conditions without Development and 2026 Future Conditions with Development. The study will analyze AM and PM peak hours.
3. In order to project future traffic volumes, a 1.0% regional growth will be applied to the Chain Bridge Road / University Drive mainline through movements at the intersection of Chain Bridge Road at Judicial Street as well as at the intersection of University Boulevard/George Mason Boulevard at Armstrong Street for the period between 2023 and 2026.
4. Existing peak hour factors will be based on the traffic counts and utilized on a by-intersection basis. Peak hour factors by intersection in the range of 0.85 to 1.00 will be used for existing scenario. Peak hour factors of 0.92 will be used for all future scenarios if the existing peak hour factor by intersection is less than 0.92. (Peak hour volumes and methodology attached)
5. Heavy vehicle percentages (HV%) will be based on existing counts. For any new intersection, the HV% will be based on a default *Synchro* value of 2.0% per movement.
6. For any approach, a level of service (LOS) D or better would be considered as acceptable/desirable traffic operation condition. For all approaches, the projected future conditions without development LOS and delay will be maintained in the future with development condition. Will show intersection, approach, and movement LOS.
7. 95th percentile queues will be provided from *Synchro*.
8. HCM 6th methodology will be utilized where applicable; HCM 2000 methodology will be utilized in the event that HCM 6th methodology is not applicable.
9. Transportation Demand Management (TDM) discussion will be provided as a separate document after the TIA.

SIGNED: _____ DATE: 08/30/2023
Applicant or Consultant

PRINT NAME: Kevin Sitzman, PE
Applicant or Consultant

SIGNED: _____ DATE: _____
VDOT Representative

PRINT NAME: _____
VDOT Representative

SIGNED: _____ DATE: _____
Local Government Representative

PRINT NAME: _____
Local Government Representative

Table 1: Historic Growth (Based on VDOT Traffic Data)

Road Segment:	From:	To:	Published VDOT AADT					Growth Rate			
			2015	2016	2017	2018	2019	2015 - 2019	2016 - 2019	2017 - 2019	2018 - 2019
Chain Bridge Road	SCL Fairfax	Judicial Drive	26,000	27,000	28,000	28,000	28,000	2%	1%	0%	0%
Chain Bridge Road	Judicial Drive	Main St Rte 236	20,000	21,000	21,000	21,000	22,000	2%	2%	2%	5%
University Drive (George Mason Blvd)	SCL Fairfax	Armstrong St	11,000	11,000	10,000	10,000	10,000	-2%	-3%	0%	0%
University Drive	Armstrong St	South St	14,000	14,000	14,000	14,000	15,000	2%	2%	4%	7%
University Drive	South St	Main St Rte 236	11,000	12,000	11,000	11,000	11,000	0%	-3%	0%	0%
Judicial Drive	Page Ave	Chain Bridge Rd	9,300	9,400	9,100	9,000	9,000	-1%	-1%	-1%	0%

Source: VDOT Traffic Data (http://www.virginiadot.org/info/ct-trafficcounts.asp)

Table 2: Trip Generation – Peak Hour of the Adjacent Street (ITE 11th Edition)

Land Use	ITE Code	Size	------ Weekday ------						
			AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Existing (to Be Removed)									
Single-Family Detached Housing	210	1 DU	0	1	1	1	0	1	15
Proposed									
Residential									
Multifamily Housing (Mid-Rise) [1]	221	350 DU	33	109	142	84	53	137	1,623
Total Residential Trips without Reductions			33	109	142	84	53	137	1,623
Internal Trip Reduction (Residential to Commercial) [2]		*10% All Periods*	-1	-1	-2	-2	-2	-4	-44
Subtotal Residential Trips with Internal Capture Reductions			32	108	140	82	51	133	1,579
TDM / Mode Split Reduction		*15% All Periods*	-5	-16	-21	-12	-8	-20	-237
Subtotal Residential Trips with Internal Capture and TDM Reductions			27	92	119	70	43	113	1,342
Commercial									
Shopping Center (<40 kSF)	822	5.034 kSF of GFA	11	7	18	24	24	48	442
Total Commercial Trips without Reductions			11	7	18	24	24	48	442
Internal Trip Reduction (Commercial to Residential) [2]		*10% All Periods*	-1	-1	-2	-2	-2	-4	-44
Subtotal Commercial Trips with Internal Trip Reduction			10	6	16	22	22	44	398
Pass-by Reductions - Shopping Center [3]		*24%/34%/24% AM/PM/DAY*	-2	-1	-4	-7	-7	-15	-96
Subtotal Commercial Trips with Internal Capture and Pass-by Reductions			8	5	12	15	15	29	302
Net Total Trips without Reductions (Proposed Minus Existing)			**44**	**115**	**159**	**107**	**77**	**184**	**2,050**
Net Total Trips with Reductions (Internal, Transit, Pass-By)			**35**	**96**	**130**	**84**	**58**	**141**	**1,629**

Notes:

[1]: For Multifamily Housing, ITE 11 does not differentiate between apartment, condo, and townhome; per ITE, subcategory of not near rail transit selected.

[2]: The internal trip reduction is based on the smaller of 5% of trips between residential and commercial uses.

[3]: Pass-by trips for Shopping Center as described in ITE Handbook, 3rd Edition. The AM peak hour and weekday daily trip rates were based on the PM peak hour rate minus 10%.

Figure 1: Site Location and Study Intersections

Figure 2: Direction of Approach

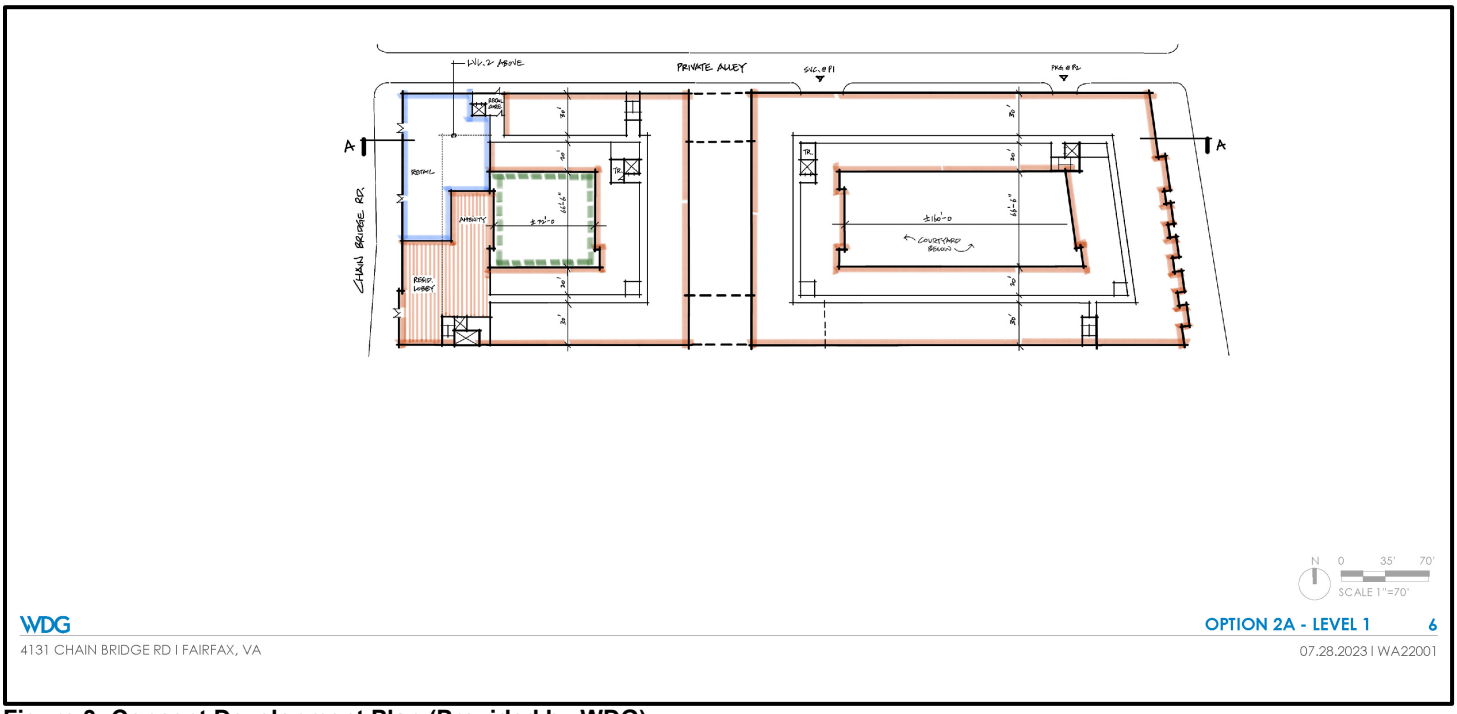


Figure 3: Concept Development Plan (Provided by WDG)

AM Peak

Time Period	Int 1 (University Dr and Breckinridge Ln)	Int 2 (University Dr and Armstrong St)	Int 3 (Chain Bridge Rd and West Dr)	Int 4 (Chain Bridge Rd and Armstrong St)	Int 5 (Chain Bridge Rd and Judicial Dr)	Sum of Hourly Volumes
	Hourly Volume	Hourly Volume	Hourly Volume	Hourly Volume	Hourly Volume	
6:00 AM - 7:00 AM	138	188	859	834	839	2858
6:15 AM - 7:15 AM	198	256	1042	1059	1068	3623
6:30 AM - 7:30 AM	255	317	1243	1250	1248	4313
6:45 AM - 7:45 AM	335	404	1439	1443	1433	5054
7:00 AM - 8:00 AM	425	515	1650	1683	1668	5941
7:15 AM - 8:15 AM	490	589	1794	1818	1804	6495
7:30 AM - 8:30 AM	530	640	1837	1866	1875	6748
7:45 AM - 8:45 AM	580	691	1852	1911	1928	6962
8:00 AM - 9:00 AM	614	730	1803	1859	1884	6890

Note: Highlighted represents the System peak hour

PM Peak

Time Period	Int 1 (University Dr and Breckinridge Ln)	Int 2 (University Dr and Armstrong St)	Int 3 (Chain Bridge Rd and West Dr)	Int 4 (Chain Bridge Rd and Armstrong St)	Int 5 (Chain Bridge Rd and Judicial Dr)	Sum of Hourly Volumes
	Hourly Volume	Hourly Volume	Hourly Volume	Hourly Volume	Hourly Volume	
4:00 PM - 5:00 PM	891	1080	2003	2095	2074	8143
4:15 PM - 5:15 PM	894	1076	2054	2134	2138	8296
4:30 PM - 5:30 PM	856	1022	1992	2105	2093	8068
4:45 PM - 5:45 PM	841	1011	1963	2053	2064	7932
5:00 PM - 6:00 PM	822	1001	1940	2018	2027	7808
5:15 PM - 6:15 PM	788	943	1900	1952	1930	7513
5:30 PM - 6:30 PM	746	899	1855	1880	1864	7244
5:45 PM - 6:45 PM	701	843	1743	1806	1779	6872
6:00 PM - 7:00 PM	687	819	1741	1751	1721	6719

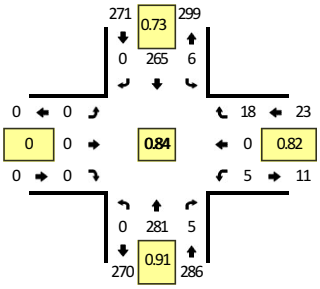
Note: Highlighted represents the System peak hour

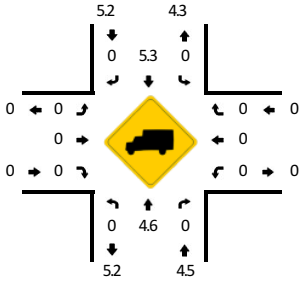
B. Existing Turning Movement Counts

Type of peak hour being reported: System-wide Peak | Method for determining peak hour: Total Entering Volume

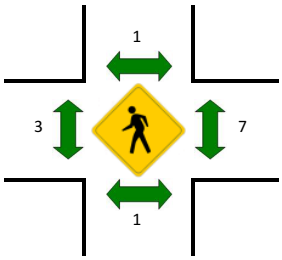
LOCATION: University Dr -- Breckinridge Ln | **QC JOB #:** 16199701
CITY/STATE: Fairfax, VA | **DATE:** Tue, Apr 25 2023

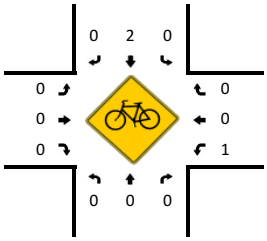
Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 8:30 AM -- 8:45 AM

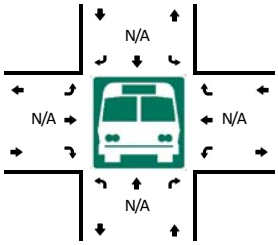


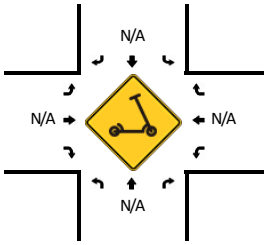


TRUE DATA TO IMPROVE MOBILITY









15-Min Count Period Beginning At	University Dr (Northbound)				University Dr (Southbound)				Breckinridge Ln (Eastbound)				Breckinridge Ln (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	13	0	0	0	4	0	0	0	0	0	0	1	0	1	0	19	
6:15 AM	0	17	0	0	0	10	0	0	0	0	0	0	0	0	0	0	27	
6:30 AM	0	24	0	0	0	16	0	0	0	0	0	0	1	0	1	0	42	
6:45 AM	0	27	1	0	0	22	0	0	0	0	0	0	0	0	0	0	50	138
7:00 AM	0	49	0	0	1	22	0	0	0	0	0	0	2	0	5	0	79	198
7:15 AM	0	46	0	0	1	32	0	0	0	0	0	0	0	0	5	0	84	255
7:30 AM	0	78	1	0	0	39	0	0	0	0	0	0	2	0	2	0	122	335
7:45 AM	0	77	2	0	0	57	0	0	0	0	0	0	3	0	1	0	140	425
8:00 AM	0	73	2	0	2	61	0	0	0	0	0	0	1	0	5	0	144	490
8:15 AM	0	59	0	0	2	56	0	0	0	0	0	0	1	0	6	0	124	530
8:30 AM	0	72	1	0	2	91	0	0	0	0	0	0	0	0	6	0	172	580
8:45 AM	0	85	0	0	3	85	0	0	0	0	0	0	0	0	1	0	174	614

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	288	4	0	8	364	0	0	0	0	0	0	0	0	24	0	688
Heavy Trucks	0	16	0		0	8	0		0	0	0		0	0	0		24
Buses																	
Pedestrians		0				0				4				8			12
Bicycles	0	0	0		0	4	0		0	0	0		0	0	0		4
Scooters																	

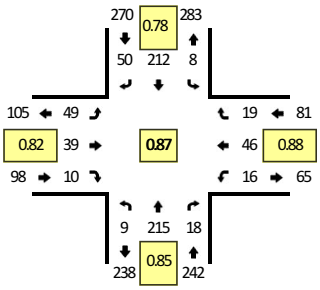
Comments:

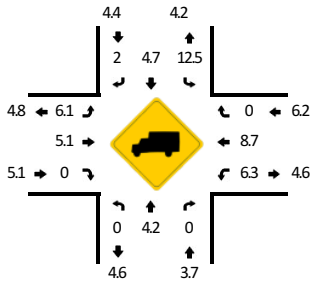
Report generated on 8/24/2023 11:29 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

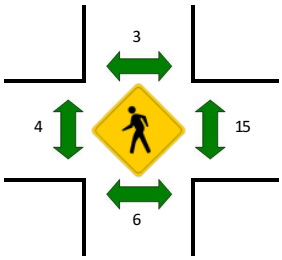
Type of peak hour being reported: System-wide Peak | Method for determining peak hour: Total Entering Volume

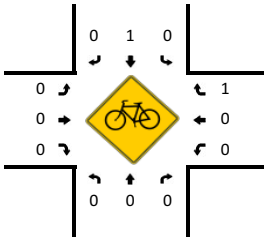
LOCATION: University Dr -- Armstrong St | **QC JOB #:** 16199703
CITY/STATE: Fairfax, VA | **DATE:** Tue, Apr 25 2023

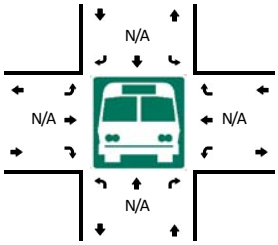
Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 8:30 AM -- 8:45 AM

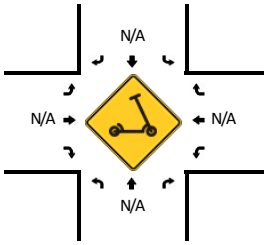












15-Min Count Period Beginning At	University Dr (Northbound)				University Dr (Southbound)				Armstrong St (Eastbound)				Armstrong St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	10	2	0	0	4	1	0	2	0	0	0	1	4	1	0	25	
6:15 AM	0	13	0	0	1	8	1	0	2	2	0	0	0	8	2	0	37	
6:30 AM	0	18	2	0	0	16	0	0	3	7	2	0	0	10	3	0	61	
6:45 AM	1	23	2	0	1	19	3	0	4	1	0	0	0	8	3	0	65	188
7:00 AM	3	28	1	0	0	19	6	0	10	3	5	0	2	10	6	0	93	256
7:15 AM	2	36	2	0	0	27	4	0	8	7	2	0	1	7	2	0	98	317
7:30 AM	1	59	3	0	2	25	12	0	13	9	3	0	3	11	7	0	148	404
7:45 AM	1	65	5	0	0	54	9	0	11	11	0	0	3	11	6	0	176	515
8:00 AM	5	49	5	0	5	41	17	0	14	10	3	0	3	11	4	0	167	589
8:15 AM	2	45	6	0	2	45	10	0	9	7	3	0	5	9	6	0	149	640
8:30 AM	1	56	2	0	1	72	14	0	15	11	4	0	5	15	3	0	199	691
8:45 AM	2	62	5	0	4	71	17	0	16	10	4	0	5	14	5	0	215	730

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	224	8	0	4	288	56	0	60	44	16	0	20	60	12	0	796
Heavy Trucks	0	12	0		0	4	0		0	0	0		0	8	0		24
Buses																	
Pedestrians		0				0				0				16			16
Bicycles	0	0	0		0	0	0		0	0	0		0	0	4		4
Scooters																	

Comments:

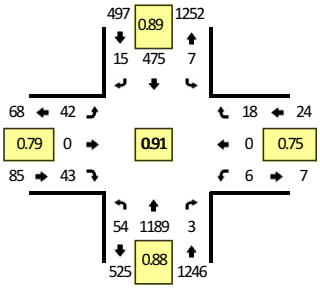
Report generated on 8/24/2023 11:29 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

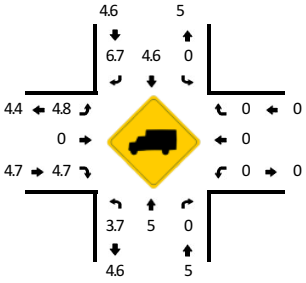
Type of peak hour being reported: System-wide Peak | Method for determining peak hour: Total Entering Volume

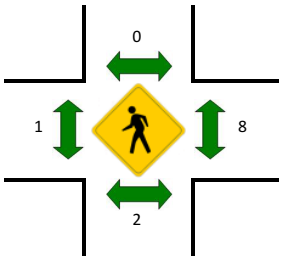
LOCATION: Chain Bridge Rd -- West Dr
CITY/STATE: Fairfax, VA

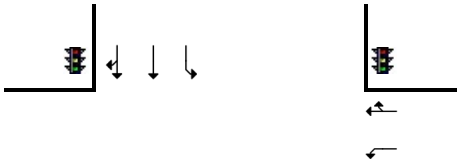
QC JOB #: 16199705
DATE: Tue, Apr 25 2023

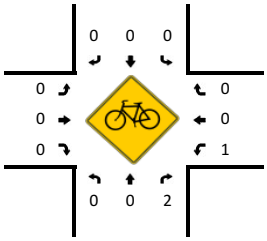
Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

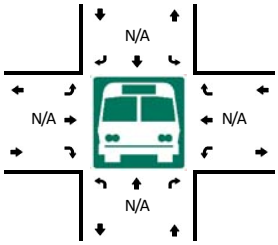


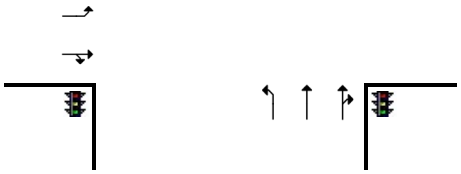


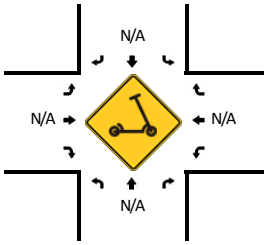












15-Min Count Period Beginning At	Chain Bridge Rd (Northbound)				Chain Bridge Rd (Southbound)				West Dr (Eastbound)				West Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	4	110	0	0	0	27	2	0	4	0	10	0	0	0	0	0	157	
6:15 AM	12	107	0	0	0	53	0	0	6	0	2	0	0	0	1	0	181	
6:30 AM	10	130	0	0	0	60	2	0	10	0	7	0	0	0	2	0	221	
6:45 AM	5	186	0	0	0	85	2	0	7	0	13	0	1	0	1	0	300	859
7:00 AM	7	229	0	0	0	80	3	0	8	0	11	0	0	0	2	0	340	1042
7:15 AM	9	270	0	0	2	71	7	0	9	0	11	0	1	0	2	0	382	1243
7:30 AM	8	281	0	0	0	85	3	0	13	0	21	1	0	0	5	0	417	1439
7:45 AM	12	340	3	0	0	122	4	0	14	0	8	0	1	0	7	0	511	1650
8:00 AM	9	319	0	1	3	113	4	1	13	0	14	0	2	0	5	0	484	1794
8:15 AM	13	278	0	0	0	104	5	2	5	0	12	0	2	0	4	0	425	1837
8:30 AM	19	252	0	0	1	136	2	0	10	0	9	0	1	0	2	0	432	1852
8:45 AM	13	266	0	1	1	148	5	0	10	0	11	0	3	0	4	0	462	1803

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	48	1360	12	0	0	488	16	0	56	0	32	0	4	0	28	0	2044
Heavy Trucks	0	76	0		0	16	0		0	0	4		0	0	0		96
Buses																	
Pedestrians		0				0				4				4			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

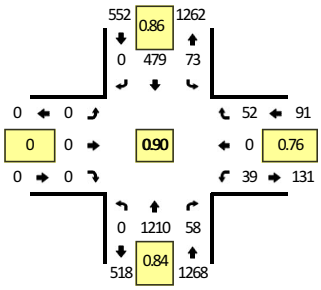
Report generated on 8/24/2023 11:29 AM

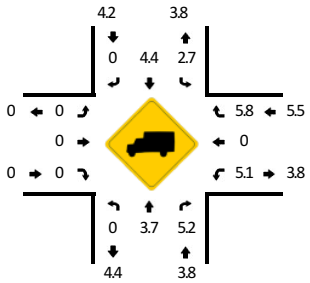
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System-wide Peak | Method for determining peak hour: Total Entering Volume

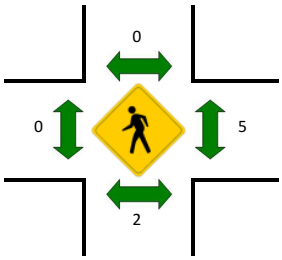
LOCATION: Chain Bridge Rd -- Armstrong St | **QC JOB #:** 16199707
CITY/STATE: Fairfax, VA | **DATE:** Tue, Apr 25 2023

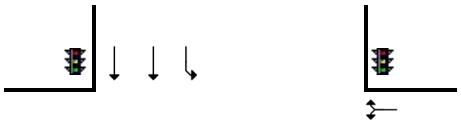
Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

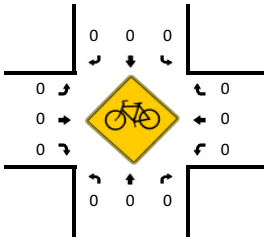


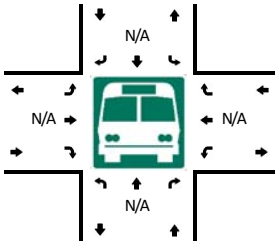


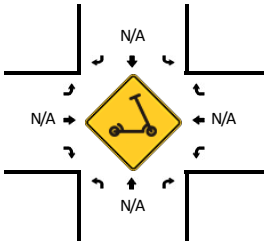
TRUE DATA TO IMPROVE MOBILITY











15-Min Count Period Beginning At	Chain Bridge Rd (Northbound)				Chain Bridge Rd (Southbound)				Armstrong St (Eastbound)				Armstrong St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	107	2	0	1	25	0	0	0	0	0	0	4	0	3	0	142	
6:15 AM	0	119	3	0	0	55	0	0	0	0	0	0	1	0	8	0	186	
6:30 AM	0	136	8	0	5	59	0	0	0	0	0	0	2	0	8	0	218	
6:45 AM	0	181	4	0	2	91	0	0	0	0	0	0	2	0	8	0	288	834
7:00 AM	0	248	7	0	11	82	0	0	0	0	0	0	4	0	15	0	367	1059
7:15 AM	0	263	15	0	9	78	0	0	0	0	0	0	3	0	9	0	377	1250
7:30 AM	0	285	16	0	10	80	0	0	0	0	0	0	8	0	12	0	411	1443
7:45 AM	0	363	15	0	8	124	0	0	0	0	0	0	7	0	11	0	528	1683
8:00 AM	0	327	15	0	18	112	0	0	0	0	0	0	14	0	16	0	502	1818
8:15 AM	0	270	11	0	22	107	0	0	0	0	0	0	6	0	9	0	425	1866
8:30 AM	0	250	17	0	25	136	0	0	0	0	0	0	12	0	16	0	456	1911
8:45 AM	0	271	10	0	24	139	0	0	0	0	0	0	12	0	20	0	476	1859

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1452	60	0	32	496	0	0	0	0	0	0	28	0	44	0	2112
Heavy Trucks	0	64	0		0	16	0		0	0	0		0	0	4		84
Buses																	
Pedestrians		4				0				0				4			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

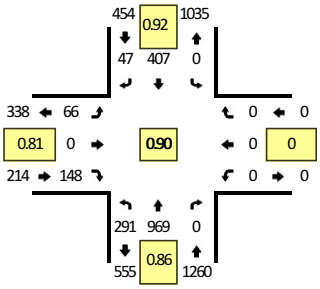
Report generated on 8/24/2023 11:29 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

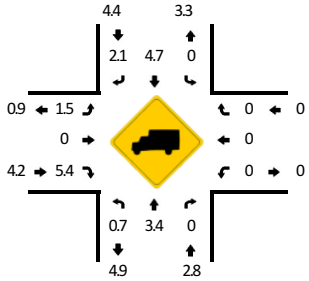
Type of peak hour being reported: System-wide Peak | Method for determining peak hour: Total Entering Volume

LOCATION: Chain Bridge Rd -- Judicial Dr
CITY/STATE: Fairfax, VA

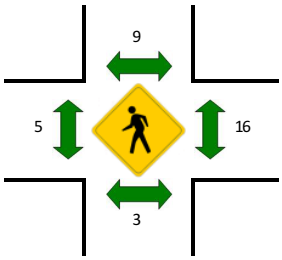
QC JOB #: 16199709
DATE: Tue, Apr 25 2023

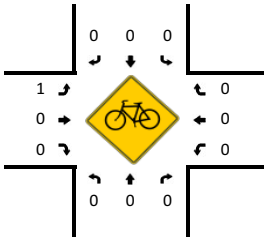
Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

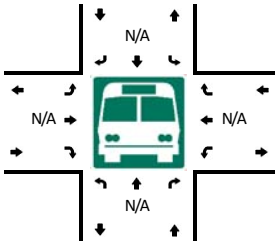


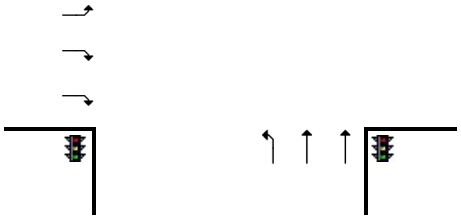


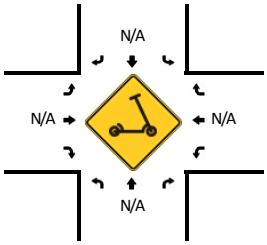
TRUE DATA TO IMPROVE MOBILITY











15-Min Count Period Beginning At	Chain Bridge Rd (Northbound)				Chain Bridge Rd (Southbound)				Judicial Dr (Eastbound)				Judicial Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	15	87	0	0	0	20	3	0	4	0	8	0	0	0	0	0	137	
6:15 AM	25	101	0	0	0	46	0	0	4	0	9	0	0	0	0	0	185	
6:30 AM	23	120	0	0	0	48	2	0	7	0	17	0	0	0	0	0	217	
6:45 AM	34	160	0	0	0	83	2	0	12	0	9	0	0	0	0	0	300	839
7:00 AM	42	215	0	0	0	66	2	0	14	0	27	0	0	0	0	0	366	1068
7:15 AM	36	228	0	0	0	68	2	0	5	0	26	0	0	0	0	0	365	1248
7:30 AM	54	243	0	0	0	52	3	0	15	0	35	0	0	0	0	0	402	1433
7:45 AM	81	285	0	0	0	110	8	0	21	0	30	0	0	0	0	0	535	1668
8:00 AM	65	286	0	0	0	101	12	0	16	0	22	0	0	0	0	0	502	1804
8:15 AM	73	198	0	0	0	86	13	0	19	0	47	0	0	0	0	0	436	1875
8:30 AM	72	200	0	0	0	110	14	0	10	0	49	0	0	0	0	0	455	1928
8:45 AM	79	216	0	0	0	117	18	0	14	0	47	0	0	0	0	0	491	1884

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	324	1140	0	0	0	440	32	0	84	0	120	0	0	0	0	0	2140
Heavy Trucks	0	44	0		0	12	0		4	0	12		0	0	0		72
Buses																	
Pedestrians		4				4				12				12			32
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

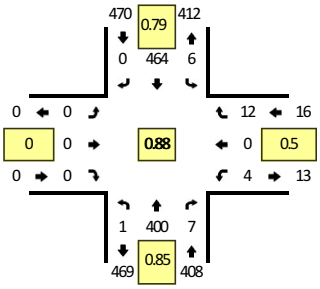
Report generated on 8/24/2023 11:29 AM

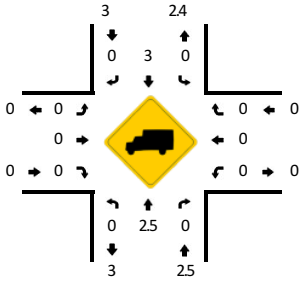
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System-wide Peak | Method for determining peak hour: Total Entering Volume

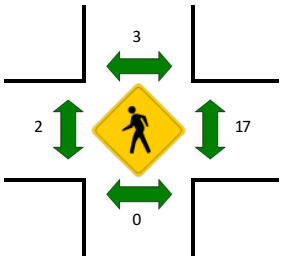
LOCATION: University Dr -- Breckinridge Ln | **QC JOB #:** 16199702
CITY/STATE: Fairfax, VA | **DATE:** Tue, Apr 25 2023

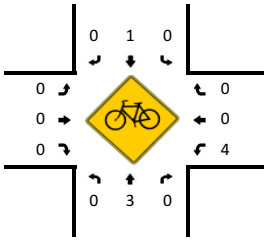
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 4:15 PM -- 4:30 PM

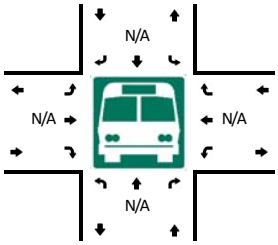


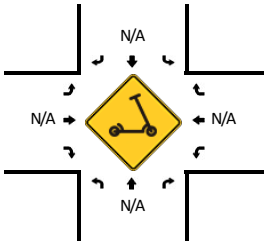


TRUE DATA TO IMPROVE MOBILITY









15-Min Count Period Beginning At	University Dr (Northbound)				University Dr (Southbound)				Breckinridge Ln (Eastbound)				Breckinridge Ln (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	89	3	0	4	110	0	0	0	0	0	0	1	0	4	0	211	
4:15 PM	0	101	3	0	1	147	0	0	0	0	0	0	0	0	2	0	254	
4:30 PM	0	119	1	0	2	95	0	0	0	0	0	0	1	0	2	0	220	
4:45 PM	0	87	3	0	1	112	0	0	0	0	0	0	0	0	3	0	206	891
5:00 PM	0	93	0	1	2	110	0	0	0	0	0	0	3	0	5	0	214	894
5:15 PM	0	94	1	0	4	113	0	0	0	0	0	0	2	0	2	0	216	856
5:30 PM	0	80	4	0	5	115	0	0	0	0	0	0	0	0	1	0	205	841
5:45 PM	0	82	2	0	3	97	0	0	0	0	0	0	1	0	2	0	187	822
6:00 PM	0	80	1	0	0	99	0	0	0	0	0	0	0	0	0	0	180	788
6:15 PM	0	58	2	0	2	109	0	0	0	0	0	0	2	0	1	0	174	746
6:30 PM	0	60	0	0	0	98	0	0	0	0	0	0	0	0	2	0	160	701
6:45 PM	0	72	0	0	1	98	0	0	0	0	0	0	0	0	2	0	173	687

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	404	12	0	4	588	0	0	0	0	0	0	0	0	8	0	1016
Heavy Trucks	0	8	0		0	20	0		0	0	0		0	0	0		28
Buses																	
Pedestrians		0				8				4				0			12
Bicycles	0	4	0		0	0	0		0	0	0		12	0	0		16
Scooters																	

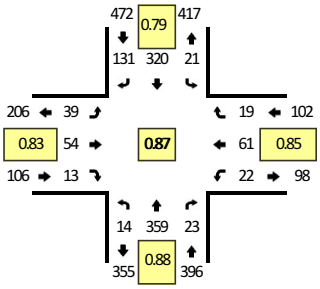
Comments:

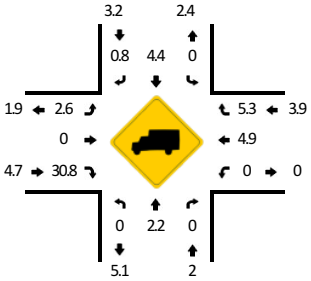
Report generated on 8/24/2023 11:30 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System-wide Peak | Method for determining peak hour: Total Entering Volume

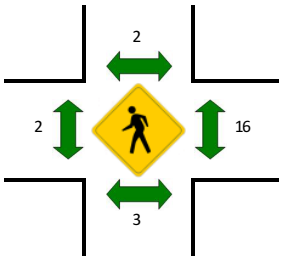
LOCATION: University Dr -- Armstrong St | **QC JOB #:** 16199704
CITY/STATE: Fairfax, VA | **DATE:** Tue, Apr 25 2023

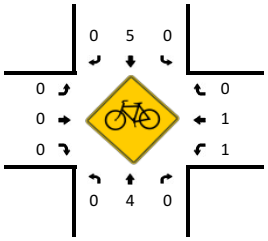
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 4:15 PM -- 4:30 PM

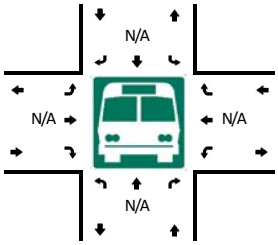


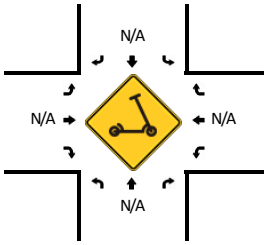


TRUE DATA TO IMPROVE MOBILITY









15-Min Count Period Beginning At	University Dr (Northbound)				University Dr (Southbound)				Armstrong St (Eastbound)				Armstrong St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	8	79	5	0	7	88	28	0	7	17	6	0	7	12	4	0	268	
4:15 PM	4	99	7	0	7	107	35	0	7	12	3	0	10	14	3	0	308	
4:30 PM	4	106	2	0	5	63	27	0	8	10	6	0	4	20	6	0	261	
4:45 PM	2	71	6	0	3	75	34	0	15	12	1	0	6	13	5	0	243	1080
5:00 PM	4	83	8	0	6	75	35	0	9	20	3	0	2	14	5	0	264	1076
5:15 PM	8	65	3	0	2	82	28	0	14	15	2	0	5	18	12	0	254	1022
5:30 PM	5	71	2	0	4	91	22	0	6	21	2	0	8	11	7	0	250	1011
5:45 PM	7	72	11	0	4	73	19	0	8	17	2	0	4	12	4	0	233	1001
6:00 PM	3	65	1	0	6	63	30	0	10	7	1	0	5	12	3	0	206	943
6:15 PM	4	46	1	0	2	78	31	0	10	17	3	0	4	11	3	0	210	899
6:30 PM	1	50	6	0	4	71	17	0	8	12	4	0	4	12	5	0	194	843
6:45 PM	5	60	5	0	3	78	23	0	7	10	4	0	6	7	1	0	209	819

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	16	396	28	0	28	428	140	0	28	48	12	0	40	56	12	0	1232
Heavy Trucks	0	8	0		0	20	0		0	0	8		0	8	4		48
Buses																	
Pedestrians		8				0				4				12			24
Bicycles	0	4	0		0	16	0		0	0	0		0	0	0		20
Scooters																	

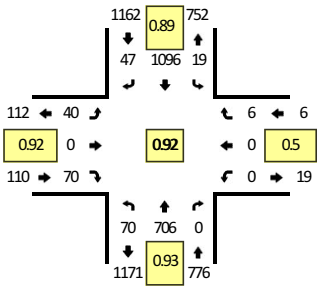
Comments:

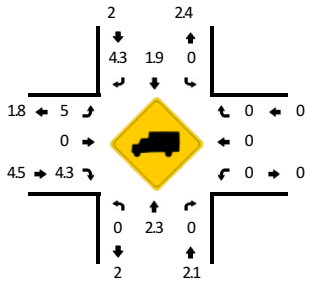
Report generated on 8/24/2023 11:30 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System-wide Peak | Method for determining peak hour: Total Entering Volume

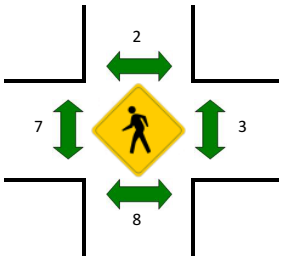
LOCATION: Chain Bridge Rd -- West Dr | **QC JOB #:** 16199706
CITY/STATE: Fairfax, VA | **DATE:** Tue, Apr 25 2023

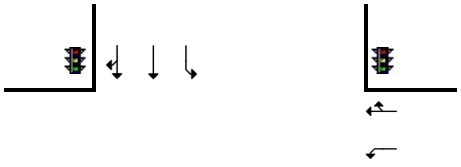
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 4:30 PM -- 4:45 PM

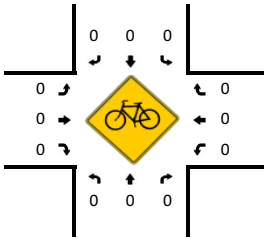


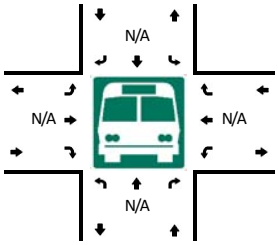


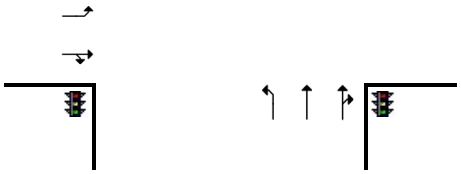
TRUE DATA TO IMPROVE MOBILITY

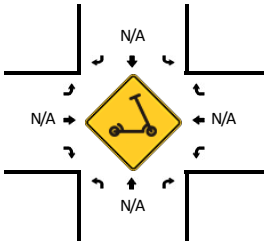












15-Min Count Period Beginning At	Chain Bridge Rd (Northbound)				Chain Bridge Rd (Southbound)				West Dr (Eastbound)				West Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	20	137	0	1	2	251	11	0	9	0	20	0	1	0	3	0	455	
4:15 PM	16	179	0	3	6	273	12	0	11	0	19	0	0	0	1	0	520	
4:30 PM	26	182	0	0	4	310	11	0	10	0	17	0	0	0	1	0	561	
4:45 PM	10	165	0	2	4	244	13	0	8	0	18	0	0	0	3	0	467	2003
5:00 PM	13	180	0	0	5	269	11	0	11	0	16	0	0	0	1	0	506	2054
5:15 PM	15	178	0	0	0	223	10	0	7	1	22	0	2	0	0	0	458	1992
5:30 PM	18	206	0	3	1	252	14	0	11	0	19	0	3	0	5	0	532	1963
5:45 PM	10	168	3	3	1	223	10	0	7	0	17	0	2	0	0	0	444	1940
6:00 PM	13	178	1	4	3	230	10	0	12	1	11	0	1	1	1	0	466	1900
6:15 PM	22	142	0	1	2	210	9	0	12	0	13	0	0	0	2	0	413	1855
6:30 PM	7	167	0	1	2	211	8	0	6	1	16	0	0	0	1	0	420	1743
6:45 PM	9	174	0	2	2	228	7	0	7	0	12	0	1	0	0	0	442	1741

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	104	728	0	0	16	1240	44	0	40	0	68	0	0	0	4	0	2244
Heavy Trucks	0	16	0		0	20	0		0	0	4		0	0	0		40
Buses																	
Pedestrians		16				0				4				4			24
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

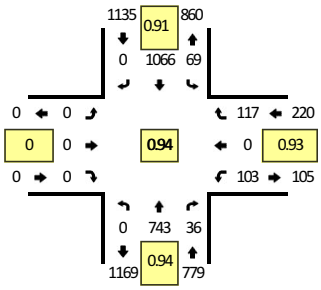
Report generated on 8/24/2023 11:30 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

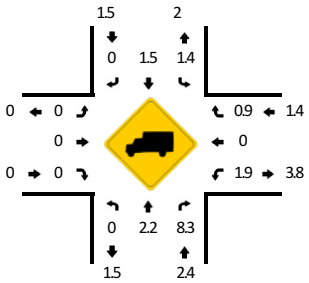
Type of peak hour being reported: System-wide Peak | Method for determining peak hour: Total Entering Volume

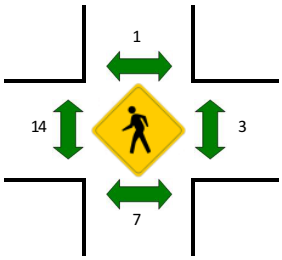
LOCATION: Chain Bridge Rd -- Armstrong St
CITY/STATE: Fairfax, VA

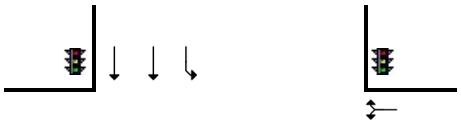
QC JOB #: 16199708
DATE: Tue, Apr 25 2023

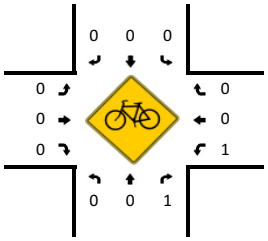
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 4:30 PM -- 4:45 PM

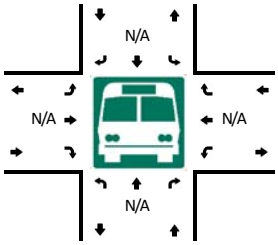


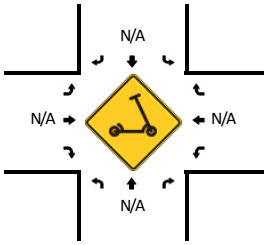












15-Min Count Period Beginning At	Chain Bridge Rd (Northbound)				Chain Bridge Rd (Southbound)				Armstrong St (Eastbound)				Armstrong St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	151	5	0	25	258	0	0	0	0	0	0	20	0	22	0	481	
4:15 PM	0	191	6	0	14	257	0	0	0	0	0	0	29	0	30	0	527	
4:30 PM	0	189	8	0	15	297	0	0	0	0	0	0	27	0	32	0	568	
4:45 PM	0	165	13	0	18	274	0	0	0	0	0	0	25	0	24	0	519	2095
5:00 PM	0	198	9	0	22	238	0	0	0	0	0	0	22	0	31	0	520	2134
5:15 PM	0	177	17	0	12	221	0	0	0	0	0	0	31	0	40	0	498	2105
5:30 PM	0	204	8	0	18	243	0	0	0	0	0	0	17	0	26	0	516	2053
5:45 PM	0	178	10	0	17	233	0	0	0	0	0	0	18	0	28	0	484	2018
6:00 PM	0	180	10	0	7	209	0	0	0	0	0	0	26	0	22	0	454	1952
6:15 PM	0	153	8	0	21	196	0	0	0	0	0	0	25	0	23	0	426	1880
6:30 PM	0	175	7	0	18	209	0	0	0	0	0	0	15	0	18	0	442	1806
6:45 PM	0	152	11	0	11	222	0	0	0	0	0	0	25	0	8	0	429	1751

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	756	32	0	60	1188	0	0	0	0	0	0	108	0	128	0	2272
Heavy Trucks	0	16	4		0	16	0		0	0	0		4	0	0		40
Buses																	
Pedestrians		4				4				12				4			24
Bicycles	0	0	4		0	0	0		0	0	0		0	0	0		4
Scooters																	

Comments:

Report generated on 8/24/2023 11:30 AM

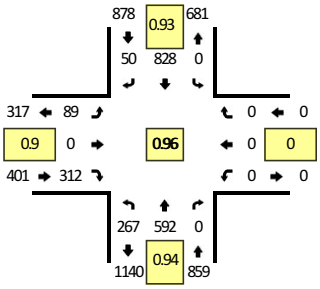
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

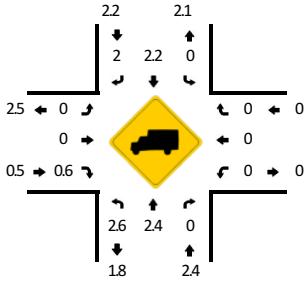
Type of peak hour being reported: System-wide Peak | Method for determining peak hour: Total Entering Volume

LOCATION: Chain Bridge Rd -- Judicial Dr
CITY/STATE: Fairfax, VA

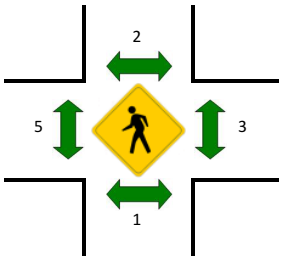
QC JOB #: 16199710
DATE: Tue, Apr 25 2023

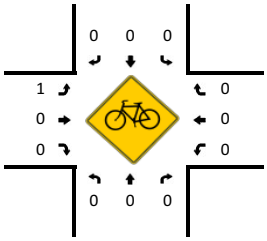
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 4:30 PM -- 4:45 PM

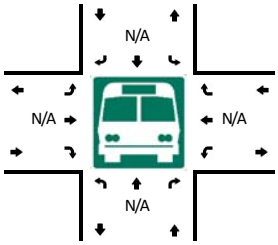


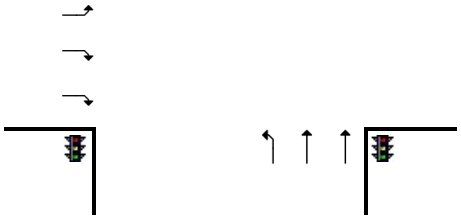


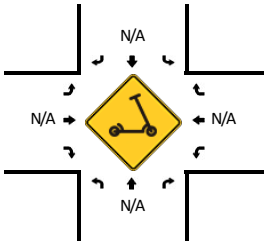
TRUE DATA TO IMPROVE MOBILITY











15-Min Count Period Beginning At	Chain Bridge Rd (Northbound)				Chain Bridge Rd (Southbound)				Judicial Dr (Eastbound)				Judicial Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	56	117	0	0	0	189	11	0	25	0	79	0	0	0	0	0	477	
4:15 PM	69	153	0	0	0	208	7	0	22	0	62	0	0	0	0	0	521	
4:30 PM	67	140	0	0	0	222	13	0	20	0	92	0	0	0	0	0	554	
4:45 PM	62	139	0	0	0	214	12	0	22	0	73	0	0	0	0	0	522	2074
5:00 PM	69	160	0	0	0	184	18	0	25	0	85	0	0	0	0	0	541	2138
5:15 PM	79	141	0	0	0	162	9	0	21	0	64	0	0	0	0	0	476	2093
5:30 PM	57	162	0	0	0	182	13	0	27	0	84	0	0	0	0	0	525	2064
5:45 PM	54	160	0	0	0	169	10	0	17	0	75	0	0	0	0	0	485	2027
6:00 PM	50	148	0	0	0	152	13	0	21	0	60	0	0	0	0	0	444	1930
6:15 PM	40	129	0	0	0	169	6	0	12	0	54	0	0	0	0	0	410	1864
6:30 PM	54	146	0	0	0	171	11	0	4	0	54	0	0	0	0	0	440	1779
6:45 PM	40	122	0	0	0	169	15	0	15	0	66	0	0	0	0	0	427	1721

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	268	560	0	0	0	888	52	0	80	0	368	0	0	0	0	0	2216
Heavy Trucks	4	20	0		0	16	4		0	0	4		0	0	0		48
Buses																	
Pedestrians		0				4				4				4			12
Bicycles	0	0	0		0	0	0		4	0	0		0	0	0		4
Scooters																	

Comments:

Report generated on 8/24/2023 11:30 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

C. LOS description

TECHNICAL MEMORANDUM

Subject: Level of Service Definitions

Introduction

The purpose of this memorandum is to define the level of service (LOS) metric that commonly used as a measure of effectiveness (MOE) for traffic operations.

All capacity analyses are based on the procedures specified by the Transportation Research Board's (TRB) Highway Capacity Manual (HCM), which is currently on its sixth edition. Level of service ranges from A to F. A brief description of each level of service for signalized and unsignalized intersections is provided below.

Signalized Intersections

Level of service is based upon the traffic volume present in each lane on the roadway, the capacity of each lane at the intersection and the delay associated with each directional movement. The levels of service for signalized intersections are defined below:

- **Level of Service A** describes operations with very low average delay per vehicle, i.e., less than 10.0 seconds. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop. Short signal cycle lengths may also contribute to low delay.
- **Level of Service B** describes operations with average delay in the range of 10.1 to 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
- **Level of Service C** describes operations with delay in the range of 20.1 to 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level although many still pass through the intersection without stopping. This is generally considered the lower end of the range of the acceptable level of service in rural areas.
- **Level of Service D** describes operations with delay in the range of 35.1 to 55.0 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and/or high traffic volumes as compared to the roadway capacity. Many vehicles are required to stop and the number of vehicles that do not have to stop declines. Individual signal cycle failures, where all waiting vehicles do not clear the intersection during a single green time, are noticeable. This is generally considered the lower end of the range of the acceptable level of service in urban areas.
- **Level of Service E** describes operations with delay in the range of 55.1 to 80.0 seconds per vehicle. These higher delay values generally indicate poor progression, long cycle lengths, and high traffic volumes. Individual cycle failures are frequent occurrences. LOS E has been set as the limit of acceptable conditions.
- **Level of Service F** describes operations with average delay in excess of 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over-saturation, i.e., when traffic arrives at a flow rate that exceeds the capacity of the intersection. It may also occur at high volumes with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such delays.

Unsignalized Intersections

At an unsignalized intersection, the major street through traffic and right-turns are assumed to operate unimpeded and therefore receive no level of service rating. The level of service for the minor street and the major street left-turn traffic is dependent on the volume and capacity of the available lanes, and, the number and frequency of acceptable gaps in the major street traffic to make a conflicting turn. The level of service grade is provided for each conflicting movement at an unsignalized intersection and is based on the total average delay experienced by each vehicle. The delay includes the time it takes a vehicle to move from the back of a queue through the intersection.

The unsignalized intersection level of service analysis does not account for variations in driver behavior or the effects of nearby traffic signals. Therefore, the results from this analysis usually indicate worse levels of service than may be experienced in the field. The unsignalized intersection level of service descriptions are provided below:

- **Level of Service A** describes operations where there is very little to no conflicting traffic for a minor side street movement, i.e., an average total delay of less than 10.0 seconds per vehicle.
- **Level of Service B** describes operations with average total delay in the range of 10.1 to 15.0 seconds per vehicle.
- **Level of Service C** describes operations with average total delay in the range of 15.1 to 25.0 second per vehicle.
- **Level of Service D** describes operations with average total delay in the range of 25.1 to 35.0 seconds per vehicle.
- **Level of Service E** describes operations with average total delay in the range of 35.1 to 50.0 seconds per vehicle.
- **Level of Service F** describes operations with average total delay of 50 seconds per vehicle. LOS F exists when there are insufficient gaps of suitable size to allow a side street demand to cross safely through or enter a major street traffic stream. This level of service is generally evident from extremely long total delays experienced by side street traffic and by queuing on the minor approaches. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal driver behavior.

D. Intersection Analysis Worksheets – Existing 2023 Conditions

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	18	281	5	6	265
Future Volume (Veh/h)	5	18	281	5	6	265
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	6	21	331	6	7	312
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)			357			
pX, platoon unblocked	0.95	0.95			0.95	
vC, conflicting volume	660	334			337	
vC1, stage 1 conf vol	334					
vC2, stage 2 conf vol	326					
vCu, unblocked vol	617	274			278	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	97			99	
cM capacity (veh/h)	619	732			1234	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	27	337	319
Volume Left	6	0	7
Volume Right	21	6	0
cSH	703	1700	1234
Volume to Capacity	0.04	0.20	0.01
Queue Length 95th (ft)	3	0	0
Control Delay (s)	10.3	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	10.3	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	28.8%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	18	281	5	6	265
Future Vol, veh/h	5	18	281	5	6	265
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	5	0	0	5
Mvmt Flow	6	21	331	6	7	312

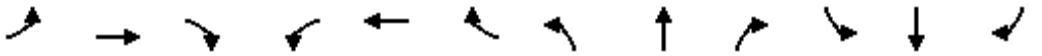
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	660	334	0	0	337	0
Stage 1	334	-	-	-	-	-
Stage 2	326	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	431	712	-	-	1234	-
Stage 1	730	-	-	-	-	-
Stage 2	736	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	428	712	-	-	1234	-
Mov Cap-2 Maneuver	428	-	-	-	-	-
Stage 1	730	-	-	-	-	-
Stage 2	731	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.1	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	622	1234	-
HCM Lane V/C Ratio	-	-	0.044	0.006	-
HCM Control Delay (s)	-	-	11.1	7.9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

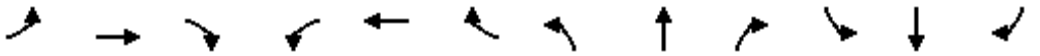
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	112	93	10	268	9	301
v/c Ratio	0.30	0.22	0.01	0.24	0.01	0.28
Control Delay	15.1	12.5	6.3	9.7	6.4	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.1	12.5	6.3	9.7	6.4	9.7
Queue Length 50th (ft)	13	9	1	30	1	34
Queue Length 95th (ft)	68	52	6	120	6	134
Internal Link Dist (ft)	628	415		180		277
Turn Bay Length (ft)			160		230	
Base Capacity (vph)	1095	1205	980	1326	895	1298
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.08	0.01	0.20	0.01	0.23

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	39	10	16	46	19	9	215	18	8	212	50
Future Volume (vph)	49	39	10	16	46	19	9	215	18	8	212	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.1	6.1		6.1	6.1	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.99	1.00	
Frt		0.99			0.97		1.00	0.99		1.00	0.97	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1732			1695		1767	1803		1602	1759	
Flt Permitted		0.79			0.90		0.58	1.00		0.59	1.00	
Satd. Flow (perm)		1410			1547		1072	1803		1002	1759	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	56	45	11	18	53	22	10	247	21	9	244	57
RTOR Reduction (vph)	0	6	0	0	17	0	0	3	0	0	8	0
Lane Group Flow (vph)	0	106	0	0	76	0	10	265	0	9	293	0
Confl. Peds. (#/hr)	3		6	6		3	4		15	15		4
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	6%	5%	2%	6%	9%	2%	2%	4%	2%	12%	5%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		5.3			5.3		18.8	18.0		18.8	18.0	
Effective Green, g (s)		5.3			5.3		18.8	18.0		18.8	18.0	
Actuated g/C Ratio		0.13			0.13		0.44	0.43		0.44	0.43	
Clearance Time (s)		6.0			6.0		6.1	6.1		6.1	6.1	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		176			193		489	767		456	748	
v/s Ratio Prot							c0.00	0.15		0.00	c0.17	
v/s Ratio Perm		c0.08			0.05		0.01			0.01		
v/c Ratio		0.60			0.39		0.02	0.35		0.02	0.39	
Uniform Delay, d1		17.5			17.0		6.6	8.2		6.6	8.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.7			1.3		0.0	0.3		0.0	0.3	
Delay (s)		23.2			18.3		6.6	8.5		6.6	8.7	
Level of Service		C			B		A	A		A	A	
Approach Delay (s)		23.2			18.3			8.4			8.7	
Approach LOS		C			B			A			A	

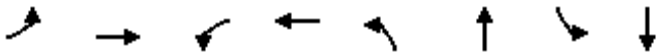
Intersection Summary			
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	42.3	Sum of lost time (s)	18.2
Intersection Capacity Utilization	38.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	39	10	16	46	19	9	215	18	8	212	50
Future Volume (veh/h)	49	39	10	16	46	19	9	215	18	8	212	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.96	0.99		0.97	0.99		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1826	1870	1811	1767	1870	1870	1841	1870	1722	1826	1870
Adj Flow Rate, veh/h	56	45	11	18	53	22	10	247	21	9	244	57
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	6	5	2	6	9	2	2	4	2	12	5	2
Cap, veh/h	258	120	24	158	158	58	393	478	41	407	404	94
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.02	0.29	0.29	0.02	0.28	0.28
Sat Flow, veh/h	633	788	155	193	1034	380	1781	1669	142	1640	1416	331
Grp Volume(v), veh/h	112	0	0	93	0	0	10	0	268	9	0	301
Grp Sat Flow(s),veh/h/ln	1576	0	0	1607	0	0	1781	0	1811	1640	0	1747
Q Serve(g_s), s	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	4.1	0.1	0.0	5.0
Cycle Q Clear(g_c), s	2.0	0.0	0.0	1.7	0.0	0.0	0.1	0.0	4.1	0.1	0.0	5.0
Prop In Lane	0.50		0.10	0.19		0.24	1.00		0.08	1.00		0.19
Lane Grp Cap(c), veh/h	402	0	0	373	0	0	393	0	519	407	0	498
V/C Ratio(X)	0.28	0.00	0.00	0.25	0.00	0.00	0.03	0.00	0.52	0.02	0.00	0.60
Avail Cap(c_a), veh/h	1280	0	0	1302	0	0	1159	0	1191	1115	0	1149
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.8	0.0	0.0	12.7	0.0	0.0	8.5	0.0	10.0	8.5	0.0	10.3
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.8	0.0	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.4	0.0	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.2	0.0	0.0	13.1	0.0	0.0	8.6	0.0	10.8	8.5	0.0	11.5
LnGrp LOS	B	A	A	B	A	A	A	A	B	A	A	B
Approach Vol, veh/h		112			93			278			310	
Approach Delay, s/veh		13.2			13.1			10.7			11.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.7	15.7		11.1	6.7	15.6		11.1				
Change Period (Y+Rc), s	6.1	6.1		6.0	6.1	6.1		6.0				
Max Green Setting (Gmax), s	15.0	22.0		25.0	15.0	22.0		25.0				
Max Q Clear Time (g_c+I1), s	2.1	6.1		4.0	2.1	7.0		3.7				
Green Ext Time (p_c), s	0.0	1.4		0.6	0.0	1.6		0.4				

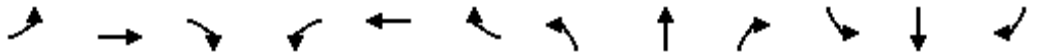
Intersection Summary												
HCM 6th Ctrl Delay			11.6									
HCM 6th LOS			B									



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	46	47	7	20	59	1310	8	538
v/c Ratio	0.40	0.08	0.08	0.05	0.09	0.48	0.02	0.21
Control Delay	72.1	0.3	65.3	0.2	4.9	8.3	5.9	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.1	0.3	65.3	0.2	4.9	8.3	5.9	9.7
Queue Length 50th (ft)	41	0	6	0	12	224	2	155
Queue Length 95th (ft)	83	0	23	0	27	424	m7	113
Internal Link Dist (ft)		1138		118		1225		681
Turn Bay Length (ft)					165		110	
Base Capacity (vph)	316	719	331	594	692	2730	380	2515
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.07	0.02	0.03	0.09	0.48	0.02	0.21

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	0	43	6	0	18	54	1189	3	7	475	15
Future Volume (vph)	42	0	43	6	0	18	54	1189	3	7	475	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.3	6.3		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	1538		1805	1615		1736	3437		1805	3421	
Flt Permitted	0.95	1.00		0.95	1.00		0.42	1.00		0.18	1.00	
Satd. Flow (perm)	1719	1538		1805	1615		774	3437		344	3421	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	46	0	47	7	0	20	59	1307	3	8	522	16
RTOR Reduction (vph)	0	44	0	0	19	0	0	0	0	0	1	0
Lane Group Flow (vph)	46	3	0	7	1	0	59	1310	0	8	537	0
Heavy Vehicles (%)	5%	0%	5%	0%	0%	0%	4%	5%	0%	0%	5%	7%
Turn Type	Split	NA		Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases							6			2		
Actuated Green, G (s)	8.0	8.0		4.3	4.3		106.9	101.0		97.9	96.5	
Effective Green, g (s)	8.0	8.0		4.3	4.3		106.9	101.0		97.9	96.5	
Actuated g/C Ratio	0.06	0.06		0.03	0.03		0.76	0.72		0.70	0.69	
Clearance Time (s)	6.2	6.2		6.3	6.3		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	98	87		55	49		631	2479		255	2358	
v/s Ratio Prot	c0.03	0.00		c0.00	0.00		c0.00	c0.38		0.00	0.16	
v/s Ratio Perm							0.07			0.02		
v/c Ratio	0.47	0.03		0.13	0.01		0.09	0.53		0.03	0.23	
Uniform Delay, d1	63.9	62.3		66.0	65.8		4.2	8.8		7.0	8.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.10	1.12	
Incremental Delay, d2	3.5	0.1		1.0	0.1		0.1	0.8		0.0	0.2	
Delay (s)	67.5	62.5		67.1	65.9		4.3	9.6		7.8	9.2	
Level of Service	E	E		E	E		A	A		A	A	
Approach Delay (s)		64.9			66.2			9.4			9.2	
Approach LOS		E			E			A			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)	140.0	Sum of lost time (s)	25.3
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

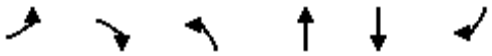
Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	101	1408	81	532
v/c Ratio	0.62	0.56	0.27	0.18
Control Delay	51.7	5.8	4.7	1.1
Queue Delay	0.0	0.0	0.0	0.2
Total Delay	51.7	5.8	4.7	1.3
Queue Length 50th (ft)	51	102	2	7
Queue Length 95th (ft)	110	129	13	15
Internal Link Dist (ft)	628	681		276
Turn Bay Length (ft)			80	
Base Capacity (vph)	364	2536	303	2886
Starvation Cap Reductn	0	0	0	1550
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.28	0.56	0.27	0.40

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	39	52	1210	58	73	479
Future Volume (vph)	39	52	1210	58	73	479
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6		6.4		6.4	6.4
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	1.00		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.92		0.99		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1626		3440		1752	3471
Flt Permitted	0.98		1.00		0.15	1.00
Satd. Flow (perm)	1626		3440		269	3471
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	43	58	1344	64	81	532
RTOR Reduction (vph)	41	0	1	0	0	0
Lane Group Flow (vph)	60	0	1407	0	81	532
Confl. Peds. (#/hr)	2			5	5	
Heavy Vehicles (%)	5%	6%	4%	5%	3%	4%
Turn Type	Prot		NA		pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases					6	
Actuated Green, G (s)	10.6		103.2		116.4	116.4
Effective Green, g (s)	10.6		103.2		116.4	116.4
Actuated g/C Ratio	0.08		0.74		0.83	0.83
Clearance Time (s)	6.6		6.4		6.4	6.4
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	123		2535		295	2885
v/s Ratio Prot	c0.04		c0.41		c0.01	0.15
v/s Ratio Perm					0.21	
v/c Ratio	0.49		0.56		0.27	0.18
Uniform Delay, d1	62.1		8.2		5.2	2.3
Progression Factor	1.00		0.57		0.96	0.37
Incremental Delay, d2	3.1		0.8		0.5	0.1
Delay (s)	65.2		5.4		5.4	1.0
Level of Service	E		A		A	A
Approach Delay (s)	65.2		5.4			1.6
Approach LOS	E		A			A

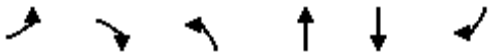
Intersection Summary			
HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.4
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



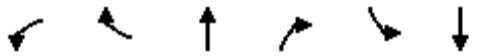
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	73	164	323	1077	452	52
v/c Ratio	0.52	0.38	0.40	0.36	0.18	0.05
Control Delay	74.3	48.7	4.6	3.7	7.9	2.5
Queue Delay	0.0	0.0	0.2	0.3	0.0	0.0
Total Delay	74.3	48.7	4.8	4.0	7.9	2.5
Queue Length 50th (ft)	65	72	46	94	66	0
Queue Length 95th (ft)	115	98	125	209	117	17
Internal Link Dist (ft)	431			276	288	
Turn Bay Length (ft)	410		160			240
Base Capacity (vph)	283	940	988	3004	2463	1108
Starvation Cap Reductn	0	0	197	1104	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.17	0.41	0.57	0.18	0.05

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	66	148	291	969	407	47
Future Volume (vph)	66	148	291	969	407	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.2	6.2	6.2	6.2	6.2
Lane Util. Factor	1.00	0.88	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	2669	1781	3505	3438	1526
Flt Permitted	0.95	1.00	0.46	1.00	1.00	1.00
Satd. Flow (perm)	1770	2669	866	3505	3438	1526
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	73	164	323	1077	452	52
RTOR Reduction (vph)	0	0	0	0	0	15
Lane Group Flow (vph)	73	164	323	1077	452	37
Confl. Peds. (#/hr)	9	3	5			5
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	2%	5%	1%	3%	5%	2%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	Perm
Protected Phases	3	1	1	6	2	
Permitted Phases		3	6			2
Actuated Green, G (s)	9.8	22.0	117.4	117.4	99.0	99.0
Effective Green, g (s)	9.8	22.0	117.4	117.4	99.0	99.0
Actuated g/C Ratio	0.07	0.16	0.84	0.84	0.71	0.71
Clearance Time (s)	6.6	6.2	6.2	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	123	419	805	2939	2431	1079
v/s Ratio Prot	c0.04	0.03	0.03	c0.31	0.13	
v/s Ratio Perm		0.03	c0.30			0.02
v/c Ratio	0.59	0.39	0.40	0.37	0.19	0.03
Uniform Delay, d1	63.2	53.0	2.4	2.6	6.9	6.2
Progression Factor	1.00	1.00	1.29	1.18	1.00	1.00
Incremental Delay, d2	7.5	0.6	0.3	0.3	0.2	0.1
Delay (s)	70.6	53.6	3.4	3.4	7.1	6.2
Level of Service	E	D	A	A	A	A
Approach Delay (s)	58.8			3.4	7.0	
Approach LOS	E			A	A	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	12	400	7	6	464
Future Volume (Veh/h)	4	12	400	7	6	464
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	5	14	455	8	7	527
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)			357			
pX, platoon unblocked	0.86	0.86			0.86	
vC, conflicting volume	1000	459			463	
vC1, stage 1 conf vol	459					
vC2, stage 2 conf vol	541					
vCu, unblocked vol	916	283			288	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	98			99	
cM capacity (veh/h)	485	651			1100	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	19	463	534
Volume Left	5	0	7
Volume Right	14	8	0
cSH	597	1700	1100
Volume to Capacity	0.03	0.27	0.01
Queue Length 95th (ft)	2	0	0
Control Delay (s)	11.2	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	11.2	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	12	400	7	6	464
Future Vol, veh/h	4	12	400	7	6	464
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	2	0	0	3
Mvmt Flow	5	14	455	8	7	527

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1000	459	0	0	463	0
Stage 1	459	-	-	-	-	-
Stage 2	541	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	272	606	-	-	1109	-
Stage 1	641	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	270	606	-	-	1109	-
Mov Cap-2 Maneuver	270	-	-	-	-	-
Stage 1	641	-	-	-	-	-
Stage 2	583	-	-	-	-	-

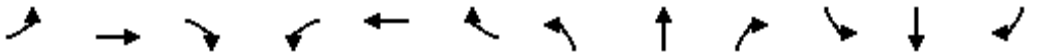
Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	462	1109	-
HCM Lane V/C Ratio	-	-	0.039	0.006	-
HCM Control Delay (s)	-	-	13.1	8.3	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	122	117	16	439	24	519
v/c Ratio	0.39	0.35	0.03	0.41	0.04	0.51
Control Delay	20.0	18.2	5.9	11.0	5.9	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.0	18.2	5.9	11.0	5.9	13.1
Queue Length 50th (ft)	24	21	2	58	2	70
Queue Length 95th (ft)	73	68	8	206	11	#293
Internal Link Dist (ft)	628	415		180		277
Turn Bay Length (ft)			160		230	
Base Capacity (vph)	831	889	785	1070	821	1021
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.13	0.02	0.41	0.03	0.51

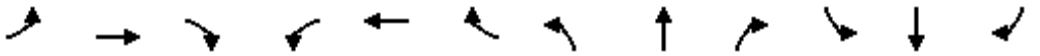
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	54	13	22	61	19	14	359	23	21	320	131
Future Volume (vph)	39	54	13	22	61	19	14	359	23	21	320	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.1	6.1		6.1	6.1	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.97		1.00	0.99		1.00	0.96	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1741			1751		1803	1844		1798	1746	
Flt Permitted		0.85			0.91		0.38	1.00		0.46	1.00	
Satd. Flow (perm)		1512			1611		725	1844		862	1746	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	45	62	15	25	70	22	16	413	26	24	368	151
RTOR Reduction (vph)	0	8	0	0	13	0	0	2	0	0	13	0
Lane Group Flow (vph)	0	114	0	0	104	0	16	437	0	24	506	0
Confl. Peds. (#/hr)	4		5	5		4	7		15	15		7
Confl. Bikes (#/hr)						3			3			3
Heavy Vehicles (%)	3%	0%	31%	0%	5%	5%	0%	2%	0%	0%	4%	1%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.8			7.8		26.8	25.7		26.8	25.7	
Effective Green, g (s)		7.8			7.8		26.8	25.7		26.8	25.7	
Actuated g/C Ratio		0.15			0.15		0.51	0.49		0.51	0.49	
Clearance Time (s)		6.0			6.0		6.1	6.1		6.1	6.1	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		223			237		390	897		457	849	
v/s Ratio Prot							0.00	0.24		c0.00	c0.29	
v/s Ratio Perm		c0.08			0.06		0.02			0.03		
v/c Ratio		0.51			0.44		0.04	0.49		0.05	0.60	
Uniform Delay, d1		20.7			20.5		6.7	9.1		6.6	9.8	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.0			1.3		0.0	0.4		0.0	1.1	
Delay (s)		22.7			21.8		6.7	9.5		6.6	10.9	
Level of Service		C			C		A	A		A	B	
Approach Delay (s)		22.7			21.8			9.4			10.7	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	12.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	52.8	Sum of lost time (s)	18.2
Intersection Capacity Utilization	46.7%	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 (veh/h)	39	54	13	22	61	19	14	359	23	21	320	131
Future Volume (veh/h)	39	54	13	22	61	19	14	359	23	21	320	131
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.96	0.99		0.96	0.99		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1900	1441	1900	1826	1826	1900	1870	1900	1900	1841	1885
Adj Flow Rate, veh/h	45	62	15	25	70	22	16	413	26	24	368	151
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	0	31	0	5	5	0	2	0	0	4	1
Cap, veh/h	188	145	30	139	160	45	336	649	41	420	472	194
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.03	0.37	0.37	0.04	0.39	0.39
Sat Flow, veh/h	476	1022	210	233	1126	315	1810	1736	109	1810	1223	502
Grp Volume(v), veh/h	122	0	0	117	0	0	16	0	439	24	0	519
Grp Sat Flow(s),veh/h/ln	1708	0	0	1673	0	0	1810	0	1845	1810	0	1725
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	8.0	0.3	0.0	10.8
Cycle Q Clear(g_c), s	2.5	0.0	0.0	2.5	0.0	0.0	0.2	0.0	8.0	0.3	0.0	10.8
Prop In Lane	0.37		0.12	0.21		0.19	1.00		0.06	1.00		0.29
Lane Grp Cap(c), veh/h	362	0	0	344	0	0	336	0	690	420	0	666
V/C Ratio(X)	0.34	0.00	0.00	0.34	0.00	0.00	0.05	0.00	0.64	0.06	0.00	0.78
Avail Cap(c_a), veh/h	1108	0	0	1095	0	0	945	0	989	1007	0	924
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.2	0.0	0.0	16.2	0.0	0.0	8.7	0.0	10.6	7.9	0.0	11.1
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.6	0.0	0.0	0.1	0.0	1.0	0.1	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.0	0.9	0.0	0.0	0.1	0.0	2.8	0.1	0.0	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.7	0.0	0.0	16.8	0.0	0.0	8.8	0.0	11.5	8.0	0.0	13.9
LnGrp LOS	B	A	A	B	A	A	A	A	B	A	A	B
Approach Vol, veh/h		122			117			455			543	
Approach Delay, s/veh		16.7			16.8			11.4			13.7	
Approach LOS		B			B			B			B	

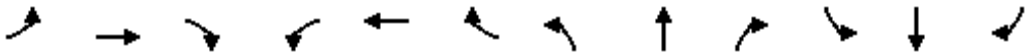
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.8	21.5		11.8	7.3	22.0		11.8				
Change Period (Y+Rc), s	6.1	6.1		6.0	6.1	6.1		6.0				
Max Green Setting (Gmax), s	15.0	22.0		25.0	15.0	22.0		25.0				
Max Q Clear Time (g_c+I1), s	2.3	10.0		4.5	2.2	12.8		4.5				
Green Ext Time (p_c), s	0.0	2.3		0.6	0.0	2.5		0.6				

Intersection Summary												
HCM 6th Ctrl Delay			13.5									
HCM 6th LOS			B									

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	43	76	7	76	767	21	1242
v/c Ratio	0.38	0.14	0.01	0.22	0.28	0.04	0.49
Control Delay	71.7	0.6	0.0	4.6	6.5	8.6	25.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.7	0.6	0.0	4.6	6.5	8.6	25.4
Queue Length 50th (ft)	38	0	0	9	103	7	427
Queue Length 95th (ft)	78	0	0	32	200	m25	646
Internal Link Dist (ft)		1138	118		1225		681
Turn Bay Length (ft)				165		110	
Base Capacity (vph)	316	656	628	380	2717	624	2538
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.12	0.01	0.20	0.28	0.03	0.49

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	0	70	0	0	6	70	706	0	19	1096	47
Future Volume (vph)	40	0	70	0	0	6	70	706	0	19	1096	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2			6.3		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.85			0.85		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	1553			1615		1805	3539		1805	3515	
Flt Permitted	0.95	1.00			1.00		0.17	1.00		0.36	1.00	
Satd. Flow (perm)	1719	1553			1615		331	3539		676	3515	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	0	76	0	0	7	76	767	0	21	1191	51
RTOR Reduction (vph)	0	71	0	0	7	0	0	0	0	0	1	0
Lane Group Flow (vph)	43	5	0	0	0	0	76	767	0	21	1241	0
Heavy Vehicles (%)	5%	0%	4%	0%	0%	0%	0%	2%	0%	0%	2%	4%
Turn Type	Split	NA		Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases							6			2		
Actuated Green, G (s)	9.2	9.2			1.4		108.0	99.9		100.2	96.0	
Effective Green, g (s)	9.2	9.2			1.4		108.0	99.9		100.2	96.0	
Actuated g/C Ratio	0.07	0.07			0.01		0.77	0.71		0.72	0.69	
Clearance Time (s)	6.2	6.2			6.3		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	112	102			16		340	2525		517	2410	
v/s Ratio Prot	c0.03	0.00			c0.00		c0.01	c0.22		0.00	c0.35	
v/s Ratio Perm							0.16			0.03		
v/c Ratio	0.38	0.05			0.00		0.22	0.30		0.04	0.51	
Uniform Delay, d1	62.7	61.3			68.6		6.0	7.3		5.7	10.7	
Progression Factor	1.00	1.00			1.00		1.00	1.00		2.33	2.60	
Incremental Delay, d2	2.2	0.2			0.1		0.3	0.3		0.0	0.7	
Delay (s)	64.9	61.5			68.7		6.4	7.6		13.4	28.5	
Level of Service	E	E			E		A	A		B	C	
Approach Delay (s)		62.7			68.7			7.5			28.2	
Approach LOS		E			E			A			C	

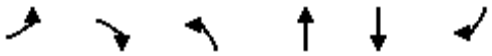
Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.3
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	234	828	73	1134
v/c Ratio	0.81	0.35	0.16	0.43
Control Delay	68.2	14.4	8.0	10.4
Queue Delay	0.0	0.0	0.0	0.2
Total Delay	68.2	14.4	8.0	10.6
Queue Length 50th (ft)	177	156	0	159
Queue Length 95th (ft)	262	356	0	201
Internal Link Dist (ft)	628	681		276
Turn Bay Length (ft)			80	
Base Capacity (vph)	370	2363	476	2664
Starvation Cap Reductn	0	0	0	663
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.63	0.35	0.15	0.57

Intersection Summary

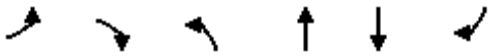
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	103	117	743	36	69	1066
Future Volume (vph)	103	117	743	36	69	1066
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6		6.4		6.4	6.4
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	0.99		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.93		0.99		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1685		3497		1784	3539
Flt Permitted	0.98		1.00		0.29	1.00
Satd. Flow (perm)	1685		3497		543	3539
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	110	124	790	38	73	1134
RTOR Reduction (vph)	30	0	1	0	0	0
Lane Group Flow (vph)	204	0	827	0	73	1134
Confl. Peds. (#/hr)	9			9	9	
Confl. Bikes (#/hr)		2				
Heavy Vehicles (%)	2%	1%	2%	8%	1%	2%
Turn Type	Prot		NA		pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases					6	
Actuated Green, G (s)	21.6		93.3		105.4	105.4
Effective Green, g (s)	21.6		93.3		105.4	105.4
Actuated g/C Ratio	0.15		0.67		0.75	0.75
Clearance Time (s)	6.6		6.4		6.4	6.4
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	259		2330		459	2664
v/s Ratio Prot	c0.12		0.24		0.01	c0.32
v/s Ratio Perm					0.11	
v/c Ratio	0.79		0.35		0.16	0.43
Uniform Delay, d1	57.0		10.2		5.4	6.3
Progression Factor	1.00		1.29		1.38	1.44
Incremental Delay, d2	14.5		0.4		0.2	0.5
Delay (s)	71.4		13.5		7.6	9.5
Level of Service	E		B		A	A
Approach Delay (s)	71.4		13.5			9.4
Approach LOS	E		B			A

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.4
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	93	325	278	617	863	52
v/c Ratio	0.57	0.54	0.49	0.21	0.37	0.05
Control Delay	74.4	46.9	14.8	4.3	12.4	3.6
Queue Delay	0.0	0.0	0.5	0.2	0.0	0.0
Total Delay	74.4	46.9	15.3	4.5	12.4	3.6
Queue Length 50th (ft)	83	139	93	108	185	2
Queue Length 95th (ft)	138	181	132	63	250	20
Internal Link Dist (ft)	431			276	288	
Turn Bay Length (ft)	410		160			240
Base Capacity (vph)	366	632	580	2897	2309	1009
Starvation Cap Reductn	0	0	82	1486	0	0
Spillback Cap Reductn	0	0	0	0	95	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.51	0.56	0.44	0.39	0.05

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	89	312	267	592	828	50
Future Volume (vph)	89	312	267	592	828	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.2	6.2	6.2	6.2	6.2
Lane Util. Factor	1.00	0.88	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1805	2782	1751	3539	3539	1524
Flt Permitted	0.95	1.00	0.27	1.00	1.00	1.00
Satd. Flow (perm)	1805	2782	503	3539	3539	1524
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	93	325	278	617	862	52
RTOR Reduction (vph)	0	0	0	0	0	16
Lane Group Flow (vph)	93	325	278	617	863	36
Confl. Peds. (#/hr)	1	3	5			5
Confl. Bikes (#/hr)						2
Heavy Vehicles (%)	0%	1%	3%	2%	2%	2%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	Perm
Protected Phases	3	1	1	6	2	
Permitted Phases		3	6			2
Actuated Green, G (s)	12.6	29.7	114.6	114.6	91.3	91.3
Effective Green, g (s)	12.6	29.7	114.6	114.6	91.3	91.3
Actuated g/C Ratio	0.09	0.21	0.82	0.82	0.65	0.65
Clearance Time (s)	6.6	6.2	6.2	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	162	590	564	2896	2307	993
v/s Ratio Prot	c0.05	c0.07	0.06	0.17	0.24	
v/s Ratio Perm		0.05	c0.34			0.02
v/c Ratio	0.57	0.55	0.49	0.21	0.37	0.04
Uniform Delay, d1	61.1	49.2	4.5	2.8	11.2	8.7
Progression Factor	1.00	1.00	3.91	1.37	1.00	1.00
Incremental Delay, d2	4.8	1.1	0.6	0.2	0.5	0.1
Delay (s)	66.0	50.3	18.3	4.0	11.7	8.7
Level of Service	E	D	B	A	B	A
Approach Delay (s)	53.8			8.4	11.5	
Approach LOS	D			A	B	

Intersection Summary			
HCM 2000 Control Delay	18.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

E. Excerpts from Background Traffic Studies

WELLS + ASSOCIATES

ONE UNIVERSITY

TRAFFIC IMPACT STUDY

November 16, 2018

SECTION 1
INTRODUCTION

Study Scope

This report presents a Traffic Impact Study (TIS) for the One University project in the Braddock District of Fairfax County, Virginia. The site is located on the north side of University Drive between Chancery Park Drive to the west and Ox Road (VA 123) to the east. The property is zoned PDH-5 and R-1 and is occupied by an existing office building, 46 affordable residential dwelling units (DU), and surface parking. Access is currently provided via five (5) curb cuts along University Drive.

The Applicants, SCG and RISE, is seeking to rezone the subject site and raze the existing uses and redevelop the site with three (3) residential buildings. From the west side to the east side of the property, a 100 affordable DU senior building, a 140 affordable DU building, and a 360 DU student housing building is proposed. Parking for the site would be provided in a combination of surface and structured. Access would be provided via two (2) of the existing curb-cuts thus resulting in the closure of three (3) curb cuts.

The scope of this traffic study was established in consultation with Fairfax County Department of Transportation (FCDOT) and Virginia Department of Transportation (VDOT). It includes an evaluation of existing 2018 conditions as well as future 2022 traffic conditions without and with the proposed development. Additionally, the study includes an analysis of 2040 design year conditions. A copy of the agreed scope is included in Appendix A.

Development proposals within Fairfax County are subject to the published *Requirements Regarding Traffic Impact Analysis Submittals*. In addition, as of July 2012, a project that is expected to generate more than 5,000 daily (24-hour) trips over existing entitlements would trigger a Chapter 870 traffic study and review by VDOT. Therefore, a trip generation compliance letter should be submitted to FCDOT for determination prior to a formal traffic study scoping meeting with FCDOT and VDOT staff. Based on our estimates, this development would not trigger a full Chapter 870 review as shown in the compliance letter contained in Appendix B.

Purpose

The purpose of this traffic study is to evaluate the potential impacts of the proposed redevelopment on the surrounding and adjacent transportation network and, where necessary, identify potential mitigation measures to mitigate possible impacts. For purposes of this study, a four-year horizon period (year 2022) was analyzed.

This study was conducted in accordance with both Fairfax County's *"Recommended Contents of Traffic Impact Studies"* and the VDOT T*raffic Impact Analysis Regulations Administrative Guidelines 24 VAC 30-155*. As mentioned previously, a formal scoping meeting was held with FCDOT and VDOT. A copy of the agreed upon scoping document is in Appendix A.

SECTION 2
BACKGROUND INFORMATION

Description of Proposed Development

The Applicant (RISE & SCG) proposes to redevelop the existing 46 residential units and 16,689 SF of office into 100 age-restricted affordable (62 years+) DU, 140 affordable housing DU, 362 DU and student housing building. The site is located within the Fairfax Planning District, specifically the George Mason Community Planning Sector, of the Fairfax County Comprehensive Plan. This planning sector is primarily composed of land owned by George Mason University (GMU) and established residential neighborhoods.

The subject property is bounded by primarily residential development to the west, north, and east sides. To the south of the site are the George Mason University athletic facilities. The site is located on the border between Fairfax County and the City of Fairfax. Development located north of the site falls within the City of Fairfax limits while south is located in Fairfax County. The site is immediately adjacent to the GMU campus and within walking distance of downtown Fairfax.

For purposes of this study, the development was assumed to be built and occupied by 2022.

Site Location

The subject site is bounded by University Drive to the south and Ox Road to the east, as shown in Figure 2-1. Access to the existing office uses is provided via the one (1) westernmost curb cut along University Drive. Access to the existing residential uses is provided via four (4) curb cuts to the east of the office along University Drive.

Description of Parcel

The subject site consists of two (2) parcels totaling approximately 10.77 acres. These parcels are identified as Tax Map Number 57-3 ((1)) 11A and 11B and 57-4((1)2B. The property is currently zoned PDH-5 and R-1. As proposed, the site would be rezoned to PRM (Planned Residential Mixed Use). A site plan reduction is shown on Figure 2-2.

Fairfax County Comprehensive Plan

As noted previously, the subject site is located within the Fairfax Planning District of Area II of the Fairfax County Comprehensive Plan. More specifically, the site is located within the George Mason Community Planning Sector. The George Mason Community Planning sector is located between the southwestern boundary of the City of Fairfax, Roberts Road, Braddock Road, and Shirley Gate Road.

The subject property is planned for public facilities, institutional, and governmental per the Plan map.

SECTION 5
TRIP GENERATION, TRAFFIC DISTRIBUTIONS & ASSIGNMENTS

Site Trip Generation

The number of weekday AM and PM peak hour trips would be generated by the proposed site were calculated based on the standard rates and equations published by ITE in the Trip Generation Manual, 9th Edition.

As shown in Table 5-1, the proposed development (602 residential units) is estimated to generate 260 AM peak hour trips (52 in and 208 out) and 327 PM peak hour trips (213 in and 115 out) upon completion and full occupancy by 2022. These estimates account for a non-auto mode split reduction.

It is noted that trip estimates assumed in this study provide a very conservative analysis. The residential portion of the development is comprised of student, senior affordable, and family affordable housing options. These uses generate less traffic versus standard market-rate housing during peak periods since they are very multimodal oriented. Table 5-1A provides additional data from the ITE Trip Generation Manual 10th Edition on expected trips associated with senior housing and student housing.

As shown Table 5-1A, when compared to market rate multi-family apartments housing senior housing would generate approximately 9% to 52% fewer trips and student housing would generate 62% to 64% fewer trips. Further, while no ITE rate currently exists for affordable housing, the trip generation characteristics of this type of housing also generally lower than market rate apartment developments.

VDOT Chapter 870. For determination of VDOT Chapter 870 compliance the published ITE rates are used without reductions for non-auto use. As shown on Table 5-1, the proposed development would generate approximately 4,238 unadjusted weekday daily (24-hour) trips and is below the 5,000 trip threshold that would trigger a full Chapter 870 review.

Non-Auto Mode Shares. For purposes of this study, residential peak hour trips are based on the ITE Land Use Code 220 with the typical non-auto mode shares that would be acceptable to FCDOT and VDOT. The Fairfax County non-auto mode share goal for non-Transit Orientated Development (TOD) is 15 to 20 percent. For purposes of this assessment a conservative 15% was assumed.

Site trips generated by the existing uses were removed from the network based on vehicle traffic counts conducted at each existing driveway and the peak hour directional splits of Ox Road. The resulting existing trips removed are shown on Figure 5-1.

Site Traffic Distribution & Assignments

Trip distributions for the proposed development are based on recent traffic counts, the surrounding road network, local knowledge and engineering judgement. The following trip distributions were assumed for the proposed residential development trips.

To/From the North on Ox Road:	43%
To/From the East on University Drive:	5%
To/From the West on University Drive:	2%
To/From the East on Braddock Road:	15%
To/From the South on Ox Road:	20%
To/From the West on Braddock Road:	15%
Total:	100%

The peak hour vehicle trips shown in Table 5-1 were assigned to the public roadway network according to the directional distribution described above. The resulting site generated trips are shown on Figure 5-2.

It is noted that additional pedestrians were also assigned to the intersection of University Drive/Ox Road to account for the increase in students traversing between the proposed student housing and GMU.

Site Access and Driveway Spacing

Access to/from the site is proposed to be provided via two (2) curb cuts along University Drive. The proposed development would result in the closure of three (3) curb cuts, thus consolidating access. The eastern site driveway (Intersection #5) would serve as the primary access location. The western site driveway (Intersection #2) would serve a small portion of residents of the age restricted building onsite and small surface parking lot intended for the conference room in the affordable building. Interparcel access would be provided connecting the four (4) buildings internally.

Driveway spacing from the signalized intersection of Ox Road/University Drive is shown on Figure 5-3. Adequate spacing exists, per Appendix F of the VDOT Road Design Manual.

Table 5-1
One University
Trip Generation Analysis for TIA [1]

Land Use	ITE Code	Size	Units	AM Peak Hour			PM Peak Hour		
				IN	OUT	TOTAL	IN	OUT	TOTAL
Proposed Conditions									
Residential (Affordable/62 years+)	220	100	DU	11	42	53	47	26	73
Residential (Affordable)	220	140	DU	14	58	72	62	33	95
Residential (Student Housing)	220	362	DU	36	145	181	141	76	217
Total Residential Proposed Trips				**61**	**245**	**306**	**250**	**135**	**385**
Non-Auto Adjustment (15%)				(9)	(37)	(46)	(38)	(20)	(58)
Total Proposed Trips w/ Adjustments				**52**	**208**	**260**	**213**	**115**	**327**

Notes:
1. Trips generated using Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition.

Table 5-1a
One University
Trip Generation Comparison - Student & Senior Housing vs General Apartments

Land Use	ITE Code	Size	Units	AM Peak Hour			PM Peak Hour		
				IN	OUT	TOTAL	IN	OUT	TOTAL
Proposed Conditions									
Residential (Student Housing) [1]	220	362	DU	36	145	181	141	76	217
Residential (Student Housing) [2]	225	814	Beds	36	51	87	99	99	198
Difference				-	(94)	(94)	(42)	23	(19)
Percent Difference				*0.0%*	*-64.8%*	***-51.9%***	*-29.8%*	*30.3%*	***-8.8%***
Residential (62years+)[1]	220	100	DU	11	42	53	47	26	73
Residential (62years+) [2]	252	100	DU	7	13	20	14	12	26
Difference				(4)	(29)	(33)	(33)	(14)	(47)
Percent Difference				*-36.4%*	*-69.0%*	***-62.3%***	*-70.2%*	*-53.8%*	***-64.4%***

Notes:
1. Trips generated using Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition.
2. Trips generated using Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition.

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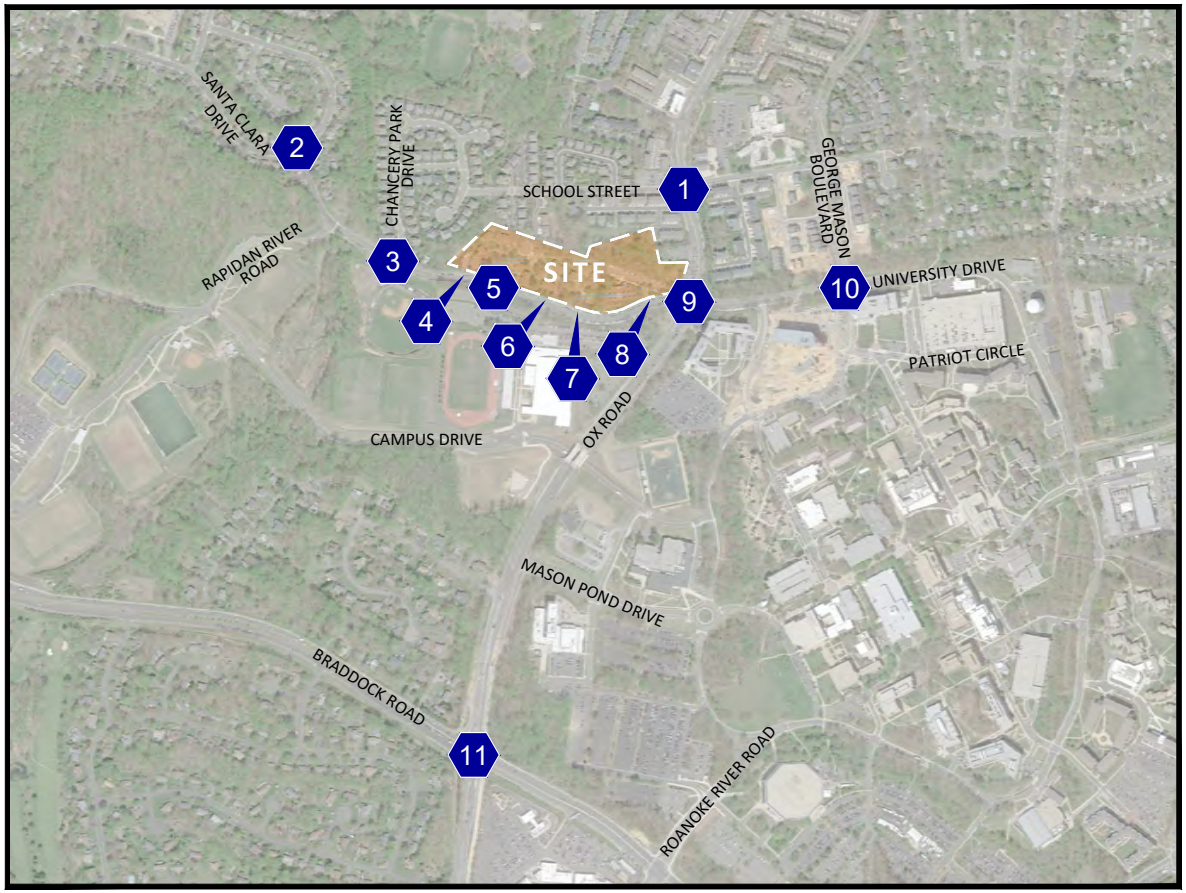

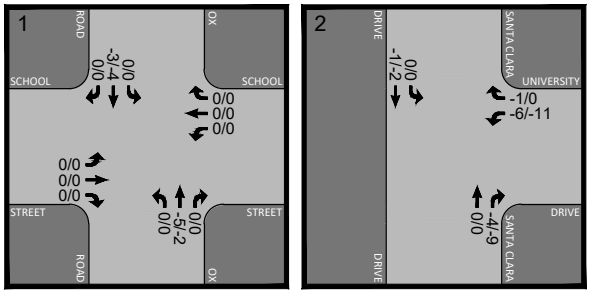

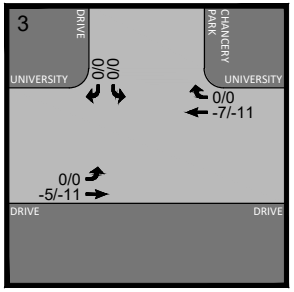

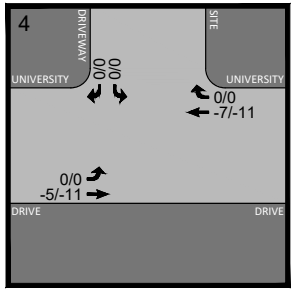

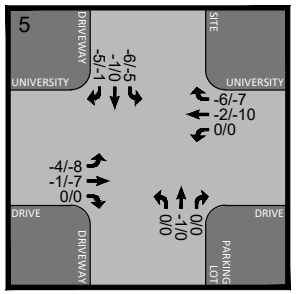

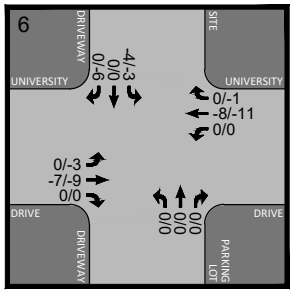

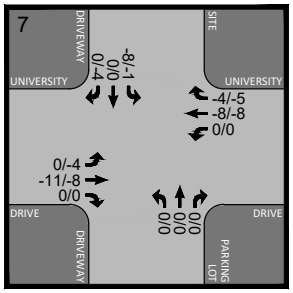

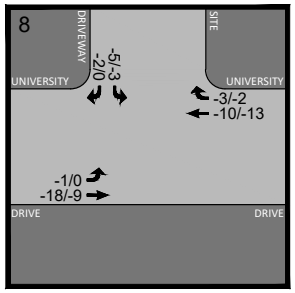

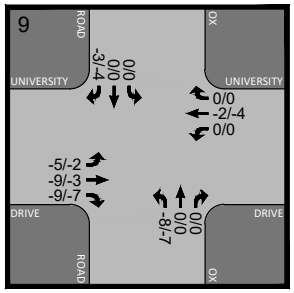

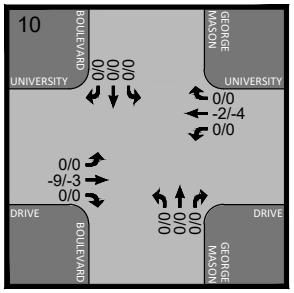

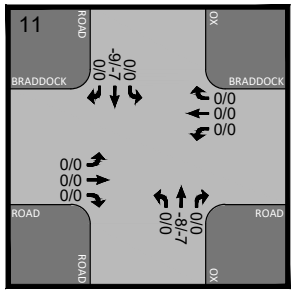

Figure 5-1
Existing Site Trips Removed

AM PEAK HOUR
PM PEAK HOUR
000 / 000

NORTH

One University
Fairfax County, Virginia

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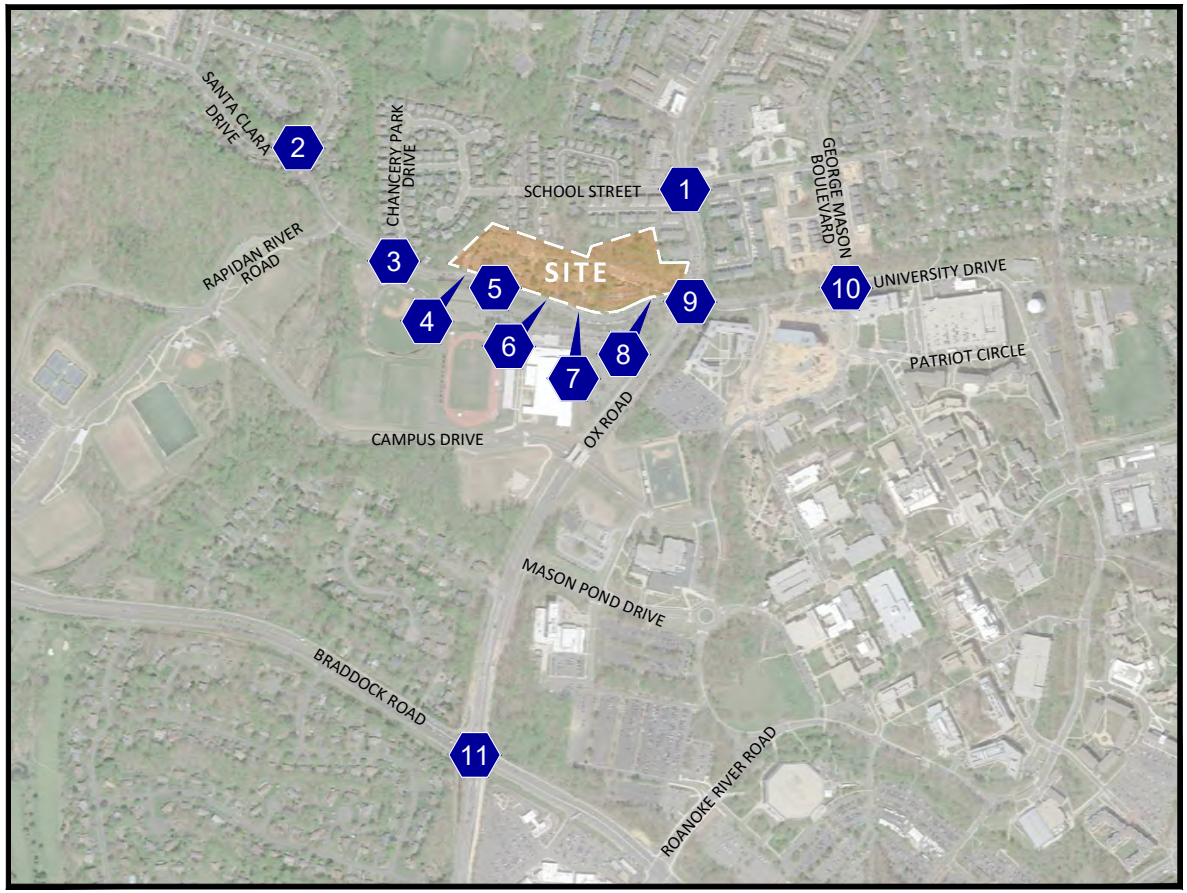
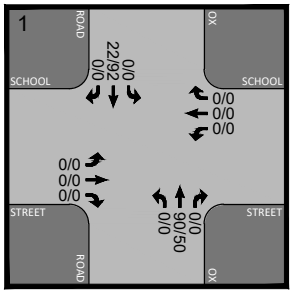
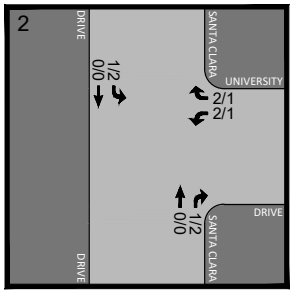
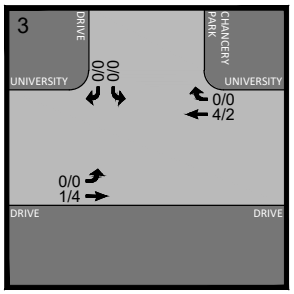
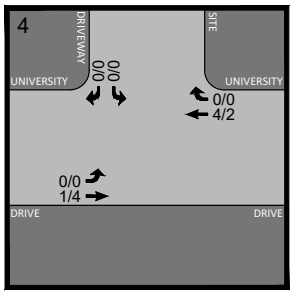
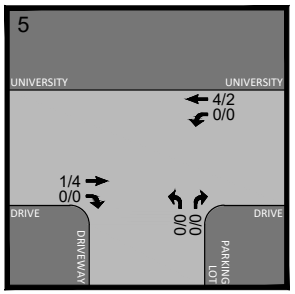


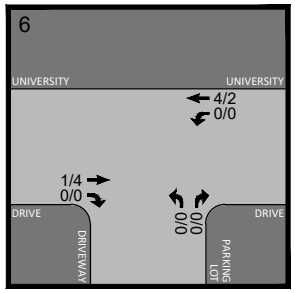


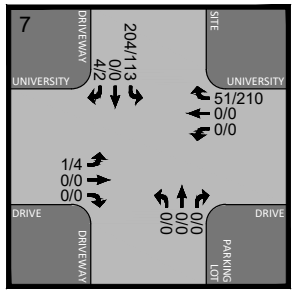


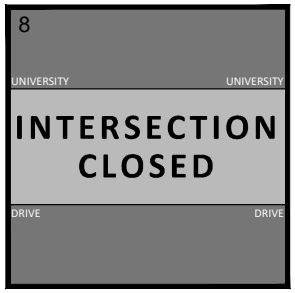


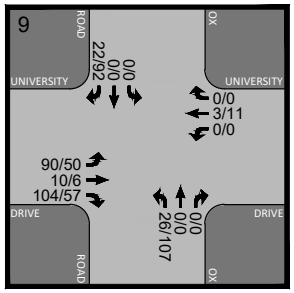


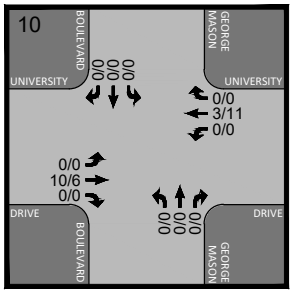












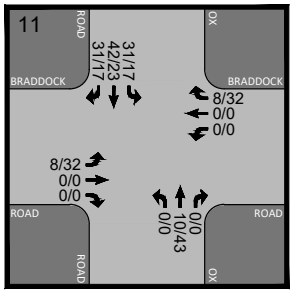


Figure 5-2
Site Generated Trips

AM PEAK HOUR
PM PEAK HOUR
000 / 000

NORTH

One University
Fairfax County, Virginia

Transportation Impact Study

Fairfax County Judicial Complex

Fairfax County, Virginia

January 30, 2023

Prepared for:

Fairfax County
12000 Government Center Parkway
Fairfax, Virginia 22035

GOROVE SLADE
Transportation Planners and Engineers

Executive Summary

The following report presents the findings of a Transportation Impact Study (TIS) conducted for the proposed redevelopment of the Fairfax County Judicial Complex site in Fairfax County, Virginia. This study was developed in accordance with guidelines and recommendations set forth by the Virginia Department of Transportation (VDOT) and Fairfax County Department of Transportation (FCDOT) and with input from the City of Fairfax.

This study was prepared in accordance with the best professional practices and standards in order to assess the impact of the proposed redevelopment on the surrounding transportation systems and recommend improvements to lessen or negate those impacts. This transportation impact study involves the evaluation of anticipated roadway conditions with and without the proposed redevelopment and recommends possible transportation improvements and strategies to offset both the impacts of the increase in future traffic demand and the changes in traffic operations and characteristics due to the redevelopment. This transportation impact study serves to assist public officials and developers to balance interrelations between efficient traffic movements with necessary access.

Site Location and Study Area

The site is located north of Judicial Drive, south of Main Street (Route 236), and west of Chain Bridge Road (Route 123) in Fairfax County, Virginia. The site is located in the county Government Center Community Planning Sector of the Fairfax Planning District.

For the purposes of this study, the analysis presented herein includes 15 existing study intersections (12 external intersections and three (3) internal intersections).

The study intersections are as follows:

1. Main Street and Judicial Drive
2. Main Street and West Street
3. Main Street and Chain Bridge Road
4. Chain Bridge Road and Sager Avenue
5. Chain Bridge Road and Fairfax County Judicial Center Entrance
6. Chain Bridge Road and Judicial Drive
7. Chain Bridge Road and Armstrong Street
8. Judicial Drive and Restricted Lot Entrance (ins only)
9. Judicial Drive and Restricted Lot Exit (outs only)
10. Judicial Drive and Leonard Drive
11. Judicial Drive and Jones Street
12. Judicial Drive and Page Avenue
13. Page Avenue and Massey Drive (internal)
14. Page Avenue and West Street (internal)
15. West Street and Fairfax County Judicial Center Entrance (internal)

Furthermore, the intersections of Main Street and Railroad Avenue, and Chain Bridge Road and North Street were included in the analysis network (*Synchro*) files for analysis purposes, but they are not study intersections and therefore are not included in this document.

Future Conditions with Development (2025)

Phase 1 of the Fairfax County Judicial Complex redevelopment is anticipated to be fully constructed and in operation by 2025.

Site Description

The Fairfax County Judicial Complex site will be redeveloped in two (2) phases: 2025 and 2041. Phase 1 (2025) is planned to consist of Building 1 only, which includes 80,892 SF of office uses and 43,605 SF of government related uses (records and evidence storage).

Figure 21 illustrates the final development plan for Phase 1.

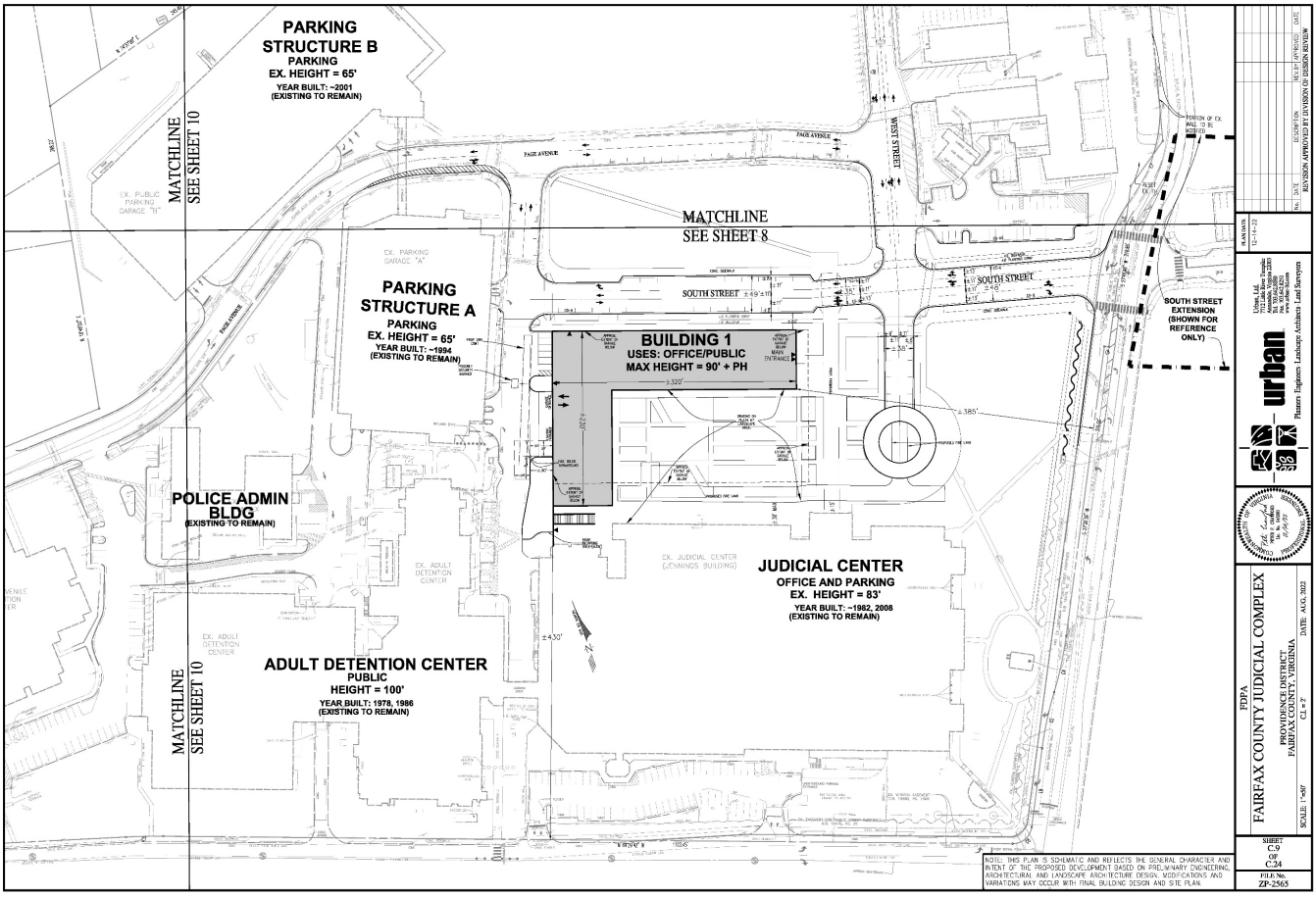


Figure 21: Fairfax County Judicial Complex Phase 1 Development Plan

Site Access

Site access will continue to be provided via three (3) full access driveways: one (1) on Judicial Drive, one (1) on Main Street, and one (1) on Chain Bridge Road. The site will continue to be accessed via the existing entrances on Judicial Drive and Main Street. The existing entrance along Chain Bridge Road will be shifted north to align with the proposed South Street extension. The South Street extension was not anticipated to be in place by 2025.

Site Generated Volumes

The Institute of Transportation Engineer's (ITE) *Trip Generation Manual*, 10th Edition, was used to determine the trips generated by the proposed development during the AM and PM peak hours, as well as the typical number of weekday daily trips associated with the site.

The proposed development's site trip generation for Phase 1 is shown in Table 8.

As discussed during the scoping meeting, a TDM/mode split reduction of 15 percent was applied to the trip generation as agreed upon by VDOT and FCDOT.

Table 8: Trip Generation

ITE Land Use Code *Trip Generation, 10th Ed.*			Quantity	------ Weekday ------						
				AM Peak Hour			PM Peak Hour			Daily
				In	*Out*	*Total*	*In*	*Out*	*Total*	*Total*
Existing Development (Proposed Building 1 Uses Only)										
Industrial	151	Mini-Warehouse	15,690 SF	1	1	2	1	2	3	24
Office	710	General Office Building	61,965 SF	73	12	85	12	60	72	667
Existing Development Site Trips				**74**	**13**	**87**	**13**	**62**	**75**	**691**
Proposed Development (Building 1 Only)										
Industrial	151	Mini-Warehouse	43,605 SF	2	2	4	3	4	7	66
Office	710	General Office Building	80,892 SF	89	14	103	15	78	93	864
Building 1 Site Trips Without Reductions				**91**	**16**	**107**	**18**	**82**	**100**	**930**
Mode Split/TDM Reduction			*15%*	*-14*	*-2*	*-16*	*-3*	*-12*	*-15*	*-140*
Building 1 Site Trips With Reductions				**77**	**14**	**91**	**15**	**70**	**85**	**790**
Difference (Proposed – Existing)				**3**	**1**	**4**	**2**	**8**	**10**	**99**

As shown, the proposed Phase 1 development is anticipated to generate approximately 91 trips during the AM peak hour, 85 trips during the PM peak hour, and 790 trips on a typical weekday after TDM reductions.

Site Trip Distribution

The distribution of site-generated trips was based on the 2045 Metropolitan Washington Council of Governments (MWCOG) model, the roadway network, site access, anticipated traffic patterns based on the proposed use, and input from VDOT and FCDOT staff and is shown in Figure 22.

Figure 22: Trip Distribution

Future with Development (2025) Traffic Volumes

The Future with Development (2025) traffic volumes were determined by removing existing trips associated with the current building uses and adding the site traffic volumes to the Future without Development (2025) traffic volumes. The removed trips are shown on Figure 23. In order to project future traffic volumes on the roadways in the vicinity of the development, site traffic was distributed to the roadway network. The site traffic volumes are shown on Figure 24. The Future with Development (2025) traffic volumes are shown on Figure 25. The Phase 1 percent site trips in terms of the 2025 total future volume are shown on Figure 26.

It should be noted that the Future with Development (2025) traffic volumes at the internal intersections (Intersections 13, 14, and 15) vary from the Future without Development (2025) traffic volume, as the internal configuration of the site will be modified with the redevelopment.

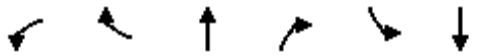
The lane configuration for the Future with Development (2025) scenario is shown in Figure 27.

Figure 23: Removed Existing Site Trips

Figure 24: Phase 1 Site Trips

Figure 25: Future with Development (2025) Traffic Volumes

F. Intersection Analysis Worksheets – Future without Development 2026



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	18	288	5	6	272
Future Volume (Veh/h)	5	18	288	5	6	272
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	20	313	5	7	296
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)			357			
pX, platoon unblocked	0.96	0.96			0.96	
vC, conflicting volume	626	316			318	
vC1, stage 1 conf vol	316					
vC2, stage 2 conf vol	310					
vCu, unblocked vol	585	261			263	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	97			99	
cM capacity (veh/h)	634	748			1255	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	25	318	303
Volume Left	5	0	7
Volume Right	20	5	0
cSH	722	1700	1255
Volume to Capacity	0.03	0.19	0.01
Queue Length 95th (ft)	3	0	0
Control Delay (s)	10.2	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	10.2	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	18	288	5	6	272
Future Vol, veh/h	5	18	288	5	6	272
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	5	0	0	5
Mvmt Flow	5	20	313	5	7	296

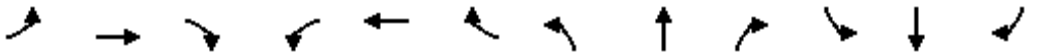
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	626	316	0	0	318	0
Stage 1	316	-	-	-	-	-
Stage 2	310	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	451	729	-	-	1253	-
Stage 1	744	-	-	-	-	-
Stage 2	748	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	448	729	-	-	1253	-
Mov Cap-2 Maneuver	448	-	-	-	-	-
Stage 1	744	-	-	-	-	-
Stage 2	743	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.8	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	642	1253	-
HCM Lane V/C Ratio	-	-	0.039	0.005	-
HCM Control Delay (s)	-	-	10.8	7.9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

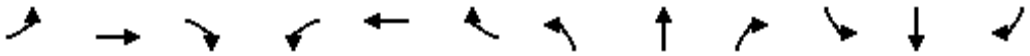
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	106	88	10	261	9	292
v/c Ratio	0.29	0.21	0.01	0.24	0.01	0.27
Control Delay	14.7	12.3	6.3	9.6	6.2	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	12.3	6.3	9.6	6.2	9.6
Queue Length 50th (ft)	12	8	1	29	1	32
Queue Length 95th (ft)	66	51	6	121	6	134
Internal Link Dist (ft)	628	415		180		277
Turn Bay Length (ft)			160		230	
Base Capacity (vph)	1110	1220	987	1326	901	1296
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.07	0.01	0.20	0.01	0.23

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	39	10	16	46	19	9	222	18	8	219	50
Future Volume (vph)	49	39	10	16	46	19	9	222	18	8	219	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.1	6.1		6.1	6.1	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.99	1.00	
Frt		0.99			0.97		1.00	0.99		1.00	0.97	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1731			1694		1767	1804		1602	1761	
Flt Permitted		0.80			0.91		0.58	1.00		0.60	1.00	
Satd. Flow (perm)		1414			1549		1081	1804		1009	1761	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	53	42	11	17	50	21	10	241	20	9	238	54
RTOR Reduction (vph)	0	7	0	0	18	0	0	3	0	0	8	0
Lane Group Flow (vph)	0	99	0	0	70	0	10	258	0	9	284	0
Confl. Peds. (#/hr)	3		6	6		3	4		15	15		4
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	6%	5%	2%	6%	9%	2%	2%	4%	2%	12%	5%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		5.2			5.2		18.6	17.8		18.6	17.8	
Effective Green, g (s)		5.2			5.2		18.6	17.8		18.6	17.8	
Actuated g/C Ratio		0.12			0.12		0.44	0.42		0.44	0.42	
Clearance Time (s)		6.0			6.0		6.1	6.1		6.1	6.1	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		175			191		491	764		458	746	
v/s Ratio Prot							c0.00	0.14		0.00	c0.16	
v/s Ratio Perm		c0.07			0.05		0.01			0.01		
v/c Ratio		0.57			0.37		0.02	0.34		0.02	0.38	
Uniform Delay, d1		17.3			16.9		6.6	8.1		6.6	8.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.1			1.2		0.0	0.3		0.0	0.3	
Delay (s)		21.5			18.1		6.6	8.4		6.6	8.6	
Level of Service		C			B		A	A		A	A	
Approach Delay (s)		21.5			18.1			8.3			8.6	
Approach LOS		C			B			A			A	

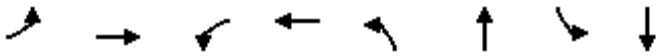
Intersection Summary			
HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	39	10	16	46	19	9	222	18	8	219	50
Future Volume (veh/h)	49	39	10	16	46	19	9	222	18	8	219	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.99	0.98		0.96	0.99		0.97	0.99		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1826	1870	1811	1767	1870	1870	1841	1870	1722	1826	1870
Adj Flow Rate, veh/h	53	42	11	17	50	21	10	241	20	9	238	54
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	5	2	6	9	2	2	4	2	12	5	2
Cap, veh/h	258	116	24	159	153	57	398	473	39	410	400	91
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.02	0.28	0.28	0.02	0.28	0.28
Sat Flow, veh/h	632	778	163	194	1028	383	1781	1672	139	1640	1425	323
Grp Volume(v), veh/h	106	0	0	88	0	0	10	0	261	9	0	292
Grp Sat Flow(s),veh/h/ln	1574	0	0	1605	0	0	1781	0	1811	1640	0	1749
Q Serve(g_s), s	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	4.0	0.1	0.0	4.8
Cycle Q Clear(g_c), s	1.8	0.0	0.0	1.6	0.0	0.0	0.1	0.0	4.0	0.1	0.0	4.8
Prop In Lane	0.50		0.10	0.19		0.24	1.00		0.08	1.00		0.18
Lane Grp Cap(c), veh/h	398	0	0	370	0	0	398	0	512	410	0	491
V/C Ratio(X)	0.27	0.00	0.00	0.24	0.00	0.00	0.03	0.00	0.51	0.02	0.00	0.59
Avail Cap(c_a), veh/h	1298	0	0	1319	0	0	1174	0	1207	1128	0	1166
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.7	0.0	0.0	12.6	0.0	0.0	8.5	0.0	9.9	8.4	0.0	10.2
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.8	0.0	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.3	0.0	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.1	0.0	0.0	12.9	0.0	0.0	8.5	0.0	10.7	8.4	0.0	11.4
LnGrp LOS	B	A	A	B	A	A	A	A	B	A	A	B
Approach Vol, veh/h		106			88			271			301	
Approach Delay, s/veh		13.1			12.9			10.6			11.3	
Approach LOS		B			B			B			B	

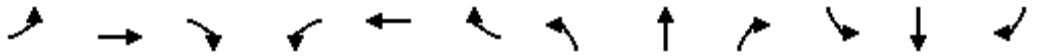
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.7	15.4		10.9	6.7	15.4		10.9				
Change Period (Y+Rc), s	6.1	6.1		6.0	6.1	6.1		6.0				
Max Green Setting (Gmax), s	15.0	22.0		25.0	15.0	22.0		25.0				
Max Q Clear Time (g_c+I1), s	2.1	6.0		3.8	2.1	6.8		3.6				
Green Ext Time (p_c), s	0.0	1.4		0.5	0.0	1.6		0.4				

Intersection Summary												
HCM 6th Ctrl Delay			11.5									
HCM 6th LOS			B									



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	46	47	7	20	59	1425	8	566
v/c Ratio	0.40	0.08	0.08	0.05	0.09	0.52	0.03	0.22
Control Delay	72.1	0.3	65.3	0.2	4.9	8.9	5.6	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.1	0.3	65.3	0.2	4.9	8.9	5.6	9.3
Queue Length 50th (ft)	41	0	6	0	12	257	2	161
Queue Length 95th (ft)	83	0	23	0	27	487	7	111
Internal Link Dist (ft)		1138		118		1225		681
Turn Bay Length (ft)					165		110	
Base Capacity (vph)	316	711	331	592	674	2730	344	2516
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.07	0.02	0.03	0.09	0.52	0.02	0.22

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	0	43	6	0	18	54	1308	3	7	506	15
Future Volume (vph)	42	0	43	6	0	18	54	1308	3	7	506	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.3	6.3		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	1538		1805	1615		1736	3437		1805	3422	
Flt Permitted	0.95	1.00		0.95	1.00		0.41	1.00		0.15	1.00	
Satd. Flow (perm)	1719	1538		1805	1615		749	3437		293	3422	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	46	0	47	7	0	20	59	1422	3	8	550	16
RTOR Reduction (vph)	0	44	0	0	19	0	0	0	0	0	1	0
Lane Group Flow (vph)	46	3	0	7	1	0	59	1425	0	8	565	0
Heavy Vehicles (%)	5%	0%	5%	0%	0%	0%	4%	5%	0%	0%	5%	7%
Turn Type	Split	NA		Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases							6			2		
Actuated Green, G (s)	8.0	8.0		4.3	4.3		106.9	101.0		97.9	96.5	
Effective Green, g (s)	8.0	8.0		4.3	4.3		106.9	101.0		97.9	96.5	
Actuated g/C Ratio	0.06	0.06		0.03	0.03		0.76	0.72		0.70	0.69	
Clearance Time (s)	6.2	6.2		6.3	6.3		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	98	87		55	49		613	2479		220	2358	
v/s Ratio Prot	c0.03	0.00		c0.00	0.00		c0.00	c0.41		0.00	0.17	
v/s Ratio Perm							0.07			0.03		
v/c Ratio	0.47	0.03		0.13	0.01		0.10	0.57		0.04	0.24	
Uniform Delay, d1	63.9	62.3		66.0	65.8		4.2	9.3		7.4	8.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.04	1.06	
Incremental Delay, d2	3.5	0.1		1.0	0.1		0.1	1.0		0.1	0.2	
Delay (s)	67.5	62.5		67.1	65.9		4.3	10.3		7.8	8.8	
Level of Service	E	E		E	E		A	B		A	A	
Approach Delay (s)		64.9			66.2			10.0			8.8	
Approach LOS		E			E			B			A	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.3
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

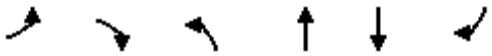
Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	99	1508	79	554
v/c Ratio	0.61	0.59	0.29	0.19
Control Delay	51.3	5.9	5.8	1.1
Queue Delay	0.0	0.0	0.0	0.2
Total Delay	51.3	5.9	5.8	1.3
Queue Length 50th (ft)	49	110	2	7
Queue Length 95th (ft)	107	133	15	14
Internal Link Dist (ft)	628	681		276
Turn Bay Length (ft)			80	
Base Capacity (vph)	364	2544	277	2890
Starvation Cap Reductn	0	0	0	1518
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.59	0.29	0.40

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	39	52	1329	58	73	510
Future Volume (vph)	39	52	1329	58	73	510
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6		6.4		6.4	6.4
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	1.00		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.92		0.99		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1625		3443		1752	3471
Flt Permitted	0.98		1.00		0.13	1.00
Satd. Flow (perm)	1625		3443		234	3471
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	57	1445	63	79	554
RTOR Reduction (vph)	41	0	1	0	0	0
Lane Group Flow (vph)	58	0	1507	0	79	554
Confl. Peds. (#/hr)	2			5	5	
Heavy Vehicles (%)	5%	6%	4%	5%	3%	4%
Turn Type	Prot		NA		pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases					6	
Actuated Green, G (s)	10.4		103.4		116.6	116.6
Effective Green, g (s)	10.4		103.4		116.6	116.6
Actuated g/C Ratio	0.07		0.74		0.83	0.83
Clearance Time (s)	6.6		6.4		6.4	6.4
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	120		2542		268	2890
v/s Ratio Prot	c0.04		c0.44		c0.01	0.16
v/s Ratio Perm					0.23	
v/c Ratio	0.49		0.59		0.29	0.19
Uniform Delay, d1	62.2		8.5		6.0	2.3
Progression Factor	1.00		0.55		1.24	0.37
Incremental Delay, d2	3.1		0.9		0.6	0.1
Delay (s)	65.3		5.5		8.1	1.0
Level of Service	E		A		A	A
Approach Delay (s)	65.3		5.5			1.9
Approach LOS	E		A			A

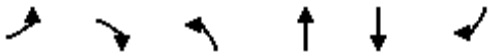
Intersection Summary			
HCM 2000 Control Delay	7.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.4
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



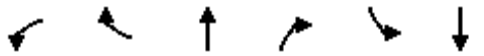
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	71	159	310	1189	478	51
v/c Ratio	0.51	0.37	0.39	0.40	0.19	0.05
Control Delay	74.1	48.3	4.5	4.1	8.0	2.6
Queue Delay	0.0	0.0	0.2	0.3	0.0	0.0
Total Delay	74.1	48.3	4.7	4.4	8.0	2.6
Queue Length 50th (ft)	63	70	44	108	70	0
Queue Length 95th (ft)	113	95	136	253	125	17
Internal Link Dist (ft)	431			276	288	
Turn Bay Length (ft)	410		160			240
Base Capacity (vph)	283	938	975	3007	2462	1107
Starvation Cap Reductn	0	0	215	1062	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.17	0.41	0.61	0.19	0.05

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	65	146	285	1094	440	47
Future Volume (vph)	65	146	285	1094	440	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.2	6.2	6.2	6.2	6.2
Lane Util. Factor	1.00	0.88	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	2670	1782	3505	3438	1526
Flt Permitted	0.95	1.00	0.45	1.00	1.00	1.00
Satd. Flow (perm)	1770	2670	841	3505	3438	1526
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	159	310	1189	478	51
RTOR Reduction (vph)	0	0	0	0	0	15
Lane Group Flow (vph)	71	159	310	1189	478	36
Confl. Peds. (#/hr)	9	3	5			5
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	2%	5%	1%	3%	5%	2%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	Perm
Protected Phases	3	1	1	6	2	
Permitted Phases		3	6			2
Actuated Green, G (s)	9.6	22.0	117.6	117.6	99.0	99.0
Effective Green, g (s)	9.6	22.0	117.6	117.6	99.0	99.0
Actuated g/C Ratio	0.07	0.16	0.84	0.84	0.71	0.71
Clearance Time (s)	6.6	6.2	6.2	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	121	419	789	2944	2431	1079
v/s Ratio Prot	c0.04	0.03	0.03	c0.34	0.14	
v/s Ratio Perm		0.03	0.29			0.02
v/c Ratio	0.59	0.38	0.39	0.40	0.20	0.03
Uniform Delay, d1	63.3	52.9	2.4	2.7	7.0	6.1
Progression Factor	1.00	1.00	1.32	1.26	1.00	1.00
Incremental Delay, d2	7.1	0.6	0.3	0.3	0.2	0.1
Delay (s)	70.4	53.5	3.4	3.8	7.2	6.2
Level of Service	E	D	A	A	A	A
Approach Delay (s)	58.7			3.7	7.1	
Approach LOS	E			A	A	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	53.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	12	411	7	6	474
Future Volume (Veh/h)	4	12	411	7	6	474
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	13	447	8	7	515
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)			357			
pX, platoon unblocked	0.86	0.86			0.86	
vC, conflicting volume	980	451			455	
vC1, stage 1 conf vol	451					
vC2, stage 2 conf vol	529					
vCu, unblocked vol	895	279			283	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	98			99	
cM capacity (veh/h)	492	657			1109	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	17	455	522
Volume Left	4	0	7
Volume Right	13	8	0
cSH	609	1700	1109
Volume to Capacity	0.03	0.27	0.01
Queue Length 95th (ft)	2	0	0
Control Delay (s)	11.1	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	11.1	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	12	411	7	6	474
Future Vol, veh/h	4	12	411	7	6	474
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	3
Mvmt Flow	4	13	447	8	7	515

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	980	451	0	0	455	0
Stage 1	451	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	279	613	-	-	1116	-
Stage 1	646	-	-	-	-	-
Stage 2	595	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	276	613	-	-	1116	-
Mov Cap-2 Maneuver	276	-	-	-	-	-
Stage 1	646	-	-	-	-	-
Stage 2	590	-	-	-	-	-

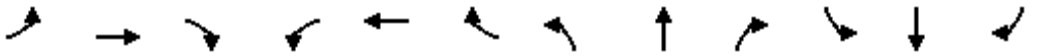
Approach	WB	NB	SB
HCM Control Delay, s	13	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	470	1116	-
HCM Lane V/C Ratio	-	-	0.037	0.006	-
HCM Control Delay (s)	-	-	13	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	115	111	15	427	23	501
v/c Ratio	0.38	0.34	0.03	0.40	0.04	0.49
Control Delay	19.9	18.0	5.7	10.8	5.8	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	18.0	5.7	10.8	5.8	12.5
Queue Length 50th (ft)	22	20	2	54	2	65
Queue Length 95th (ft)	73	68	8	208	11	#291
Internal Link Dist (ft)	628	415		180		277
Turn Bay Length (ft)			160		230	
Base Capacity (vph)	833	899	800	1079	833	1030
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.12	0.02	0.40	0.03	0.49

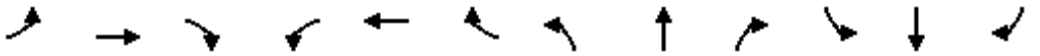
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	54	13	22	61	19	14	370	23	21	330	131
Future Volume (vph)	39	54	13	22	61	19	14	370	23	21	330	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.1	6.1		6.1	6.1	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.97		1.00	0.99		1.00	0.96	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1742			1750		1803	1844		1798	1748	
Flt Permitted		0.83			0.90		0.40	1.00		0.47	1.00	
Satd. Flow (perm)		1479			1592		756	1844		885	1748	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	59	14	24	66	21	15	402	25	23	359	142
RTOR Reduction (vph)	0	8	0	0	13	0	0	2	0	0	12	0
Lane Group Flow (vph)	0	107	0	0	98	0	15	425	0	23	489	0
Confl. Peds. (#/hr)	4		5	5		4	7		15	15		7
Confl. Bikes (#/hr)						3			3			3
Heavy Vehicles (%)	3%	0%	31%	0%	5%	5%	0%	2%	0%	0%	4%	1%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.5			7.5		26.1	25.0		26.1	25.0	
Effective Green, g (s)		7.5			7.5		26.1	25.0		26.1	25.0	
Actuated g/C Ratio		0.14			0.14		0.50	0.48		0.50	0.48	
Clearance Time (s)		6.0			6.0		6.1	6.1		6.1	6.1	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		214			230		403	889		465	843	
v/s Ratio Prot							0.00	0.23		c0.00	c0.28	
v/s Ratio Perm		c0.07			0.06		0.02			0.02		
v/c Ratio		0.50			0.43		0.04	0.48		0.05	0.58	
Uniform Delay, d1		20.4			20.2		6.6	9.0		6.5	9.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.8			1.3		0.0	0.4		0.0	1.0	
Delay (s)		22.3			21.5		6.6	9.4		6.6	10.6	
Level of Service		C			C		A	A		A	B	
Approach Delay (s)		22.3			21.5			9.3			10.4	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	51.8	Sum of lost time (s)	18.2
Intersection Capacity Utilization	47.2%	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 (veh/h)	39	54	13	22	61	19	14	370	23	21	330	131
Future Volume (veh/h)	39	54	13	22	61	19	14	370	23	21	330	131
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.96	0.99		0.96	0.99		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1900	1441	1900	1826	1826	1900	1870	1900	1900	1841	1885
Adj Flow Rate, veh/h	42	59	14	24	66	21	15	402	25	23	359	142
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	0	31	0	5	5	0	2	0	0	4	1
Cap, veh/h	188	144	29	142	156	44	342	638	40	422	470	186
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.03	0.37	0.37	0.04	0.38	0.38
Sat Flow, veh/h	467	1032	208	236	1118	316	1810	1737	108	1810	1238	490
Grp Volume(v), veh/h	115	0	0	111	0	0	15	0	427	23	0	501
Grp Sat Flow(s),veh/h/ln	1707	0	0	1669	0	0	1810	0	1845	1810	0	1727
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	7.6	0.3	0.0	10.2
Cycle Q Clear(g_c), s	2.3	0.0	0.0	2.3	0.0	0.0	0.2	0.0	7.6	0.3	0.0	10.2
Prop In Lane	0.37		0.12	0.22		0.19	1.00		0.06	1.00		0.28
Lane Grp Cap(c), veh/h	361	0	0	343	0	0	342	0	677	422	0	656
V/C Ratio(X)	0.32	0.00	0.00	0.32	0.00	0.00	0.04	0.00	0.63	0.05	0.00	0.76
Avail Cap(c_a), veh/h	1135	0	0	1119	0	0	970	0	1012	1027	0	947
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.8	0.0	0.0	15.8	0.0	0.0	8.6	0.0	10.5	7.9	0.0	10.9
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.5	0.0	0.0	0.1	0.0	1.0	0.1	0.0	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	0.9	0.0	0.0	0.1	0.0	2.6	0.1	0.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.3	0.0	0.0	16.4	0.0	0.0	8.7	0.0	11.4	8.0	0.0	13.2
LnGrp LOS	B	A	A	B	A	A	A	A	B	A	A	B
Approach Vol, veh/h		115			111			442			524	
Approach Delay, s/veh		16.3			16.4			11.3			12.9	
Approach LOS		B			B			B			B	

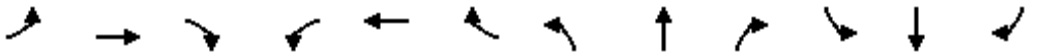
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.7	20.8		11.6	7.2	21.3		11.6				
Change Period (Y+Rc), s	6.1	6.1		6.0	6.1	6.1		6.0				
Max Green Setting (Gmax), s	15.0	22.0		25.0	15.0	22.0		25.0				
Max Q Clear Time (g_c+I1), s	2.3	9.6		4.3	2.2	12.2		4.3				
Green Ext Time (p_c), s	0.0	2.2		0.6	0.0	2.5		0.5				

Intersection Summary			
HCM 6th Ctrl Delay		13.0	
HCM 6th LOS		B	

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	43	76	7	76	830	21	1365
v/c Ratio	0.38	0.15	0.02	0.24	0.31	0.04	0.54
Control Delay	71.7	0.6	0.0	5.1	6.7	7.9	26.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.7	0.6	0.0	5.1	6.7	7.9	26.5
Queue Length 50th (ft)	38	0	0	9	114	6	493
Queue Length 95th (ft)	78	0	0	32	220	m21	711
Internal Link Dist (ft)		1138	118		1225		681
Turn Bay Length (ft)				165		110	
Base Capacity (vph)	316	654	621	340	2717	589	2538
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.12	0.01	0.22	0.31	0.04	0.54

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	0	70	0	0	6	70	764	0	19	1209	47
Future Volume (vph)	40	0	70	0	0	6	70	764	0	19	1209	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2			6.3		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.85			0.85		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	1553			1615		1805	3539		1805	3517	
Flt Permitted	0.95	1.00			1.00		0.15	1.00		0.33	1.00	
Satd. Flow (perm)	1719	1553			1615		277	3539		627	3517	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	0	76	0	0	7	76	830	0	21	1314	51
RTOR Reduction (vph)	0	71	0	0	7	0	0	0	0	0	1	0
Lane Group Flow (vph)	43	5	0	0	0	0	76	830	0	21	1364	0
Heavy Vehicles (%)	5%	0%	4%	0%	0%	0%	0%	2%	0%	0%	2%	4%
Turn Type	Split	NA		Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases							6			2		
Actuated Green, G (s)	9.2	9.2			1.4		108.0	99.9		100.2	96.0	
Effective Green, g (s)	9.2	9.2			1.4		108.0	99.9		100.2	96.0	
Actuated g/C Ratio	0.07	0.07			0.01		0.77	0.71		0.72	0.69	
Clearance Time (s)	6.2	6.2			6.3		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	112	102			16		302	2525		484	2411	
v/s Ratio Prot	c0.03	0.00			c0.00		c0.01	c0.23		0.00	c0.39	
v/s Ratio Perm							0.18			0.03		
v/c Ratio	0.38	0.05			0.00		0.25	0.33		0.04	0.57	
Uniform Delay, d1	62.7	61.3			68.6		7.0	7.5		5.7	11.3	
Progression Factor	1.00	1.00			1.00		1.00	1.00		2.14	2.55	
Incremental Delay, d2	2.2	0.2			0.1		0.4	0.3		0.0	0.9	
Delay (s)	64.9	61.5			68.7		7.5	7.9		12.3	29.7	
Level of Service	E	E			E		A	A		B	C	
Approach Delay (s)		62.7			68.7			7.8			29.5	
Approach LOS		E			E			A			C	

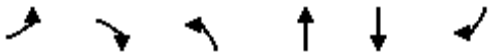
Intersection Summary			
HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.3
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	234	890	73	1254
v/c Ratio	0.81	0.38	0.17	0.47
Control Delay	68.2	15.1	7.3	9.2
Queue Delay	0.0	0.0	0.0	0.1
Total Delay	68.2	15.1	7.3	9.3
Queue Length 50th (ft)	177	172	0	155
Queue Length 95th (ft)	262	402	0	174
Internal Link Dist (ft)	628	681		276
Turn Bay Length (ft)			80	
Base Capacity (vph)	370	2366	447	2664
Starvation Cap Reductn	0	0	0	451
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.63	0.38	0.16	0.57

Intersection Summary

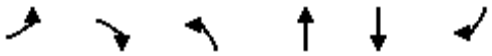
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	103	117	801	36	69	1179
Future Volume (vph)	103	117	801	36	69	1179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6		6.4		6.4	6.4
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	0.99		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.93		0.99		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1685		3500		1785	3539
Flt Permitted	0.98		1.00		0.27	1.00
Satd. Flow (perm)	1685		3500		502	3539
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	110	124	852	38	73	1254
RTOR Reduction (vph)	30	0	1	0	0	0
Lane Group Flow (vph)	204	0	889	0	73	1254
Confl. Peds. (#/hr)	9			9	9	
Confl. Bikes (#/hr)		2				
Heavy Vehicles (%)	2%	1%	2%	8%	1%	2%
Turn Type	Prot		NA		pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases					6	
Actuated Green, G (s)	21.6		93.3		105.4	105.4
Effective Green, g (s)	21.6		93.3		105.4	105.4
Actuated g/C Ratio	0.15		0.67		0.75	0.75
Clearance Time (s)	6.6		6.4		6.4	6.4
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	259		2332		430	2664
v/s Ratio Prot	c0.12		0.25		0.01	c0.35
v/s Ratio Perm					0.12	
v/c Ratio	0.79		0.38		0.17	0.47
Uniform Delay, d1	57.0		10.4		5.6	6.6
Progression Factor	1.00		1.31		1.23	1.20
Incremental Delay, d2	14.5		0.5		0.2	0.5
Delay (s)	71.4		14.2		7.0	8.5
Level of Service	E		B		A	A
Approach Delay (s)	71.4		14.2			8.4
Approach LOS	E		B			A

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.4
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	93	316	267	689	990	52
v/c Ratio	0.57	0.51	0.52	0.24	0.43	0.05
Control Delay	74.4	45.2	17.9	4.4	13.5	4.3
Queue Delay	0.0	0.0	0.6	0.2	0.0	0.0
Total Delay	74.4	45.2	18.5	4.6	13.5	4.3
Queue Length 50th (ft)	83	135	91	123	223	4
Queue Length 95th (ft)	138	176	145	66	297	22
Internal Link Dist (ft)	431			276	288	
Turn Bay Length (ft)	410		160			240
Base Capacity (vph)	366	632	524	2897	2280	994
Starvation Cap Reductn	0	0	68	1388	0	0
Spillback Cap Reductn	0	0	0	0	90	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.50	0.59	0.46	0.45	0.05

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	89	303	256	661	950	50
Future Volume (vph)	89	303	256	661	950	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.2	6.2	6.2	6.2	6.2
Lane Util. Factor	1.00	0.88	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1805	2784	1752	3539	3539	1524
Flt Permitted	0.95	1.00	0.23	1.00	1.00	1.00
Satd. Flow (perm)	1805	2784	421	3539	3539	1524
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	93	316	267	689	990	52
RTOR Reduction (vph)	0	0	0	0	0	14
Lane Group Flow (vph)	93	316	267	689	990	38
Confl. Peds. (#/hr)	1	3	5			5
Confl. Bikes (#/hr)						2
Heavy Vehicles (%)	0%	1%	3%	2%	2%	2%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	Perm
Protected Phases	3	1	1	6	2	
Permitted Phases		3	6			2
Actuated Green, G (s)	12.6	30.8	114.6	114.6	90.2	90.2
Effective Green, g (s)	12.6	30.8	114.6	114.6	90.2	90.2
Actuated g/C Ratio	0.09	0.22	0.82	0.82	0.64	0.64
Clearance Time (s)	6.6	6.2	6.2	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	162	612	517	2896	2280	981
v/s Ratio Prot	c0.05	0.07	c0.07	0.19	0.28	
v/s Ratio Perm		0.05	c0.35			0.02
v/c Ratio	0.57	0.52	0.52	0.24	0.43	0.04
Uniform Delay, d1	61.1	48.0	5.7	2.9	12.3	9.1
Progression Factor	1.00	1.00	4.79	1.37	1.00	1.00
Incremental Delay, d2	4.8	0.7	0.8	0.2	0.6	0.1
Delay (s)	66.0	48.8	27.9	4.1	12.9	9.2
Level of Service	E	D	C	A	B	A
Approach Delay (s)	52.7			10.8	12.7	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

G. Intersection Analysis Worksheets – Future with Development 2026

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	18	288	5	6	317
Future Volume (Veh/h)	5	18	288	5	6	317
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	20	313	5	7	345
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			357			
pX, platoon unblocked	0.96	0.96			0.96	
vC, conflicting volume	674	316			318	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	637	262			264	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	97			99	
cM capacity (veh/h)	423	748			1254	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	25	318	352
Volume Left	5	0	7
Volume Right	20	5	0
cSH	648	1700	1254
Volume to Capacity	0.04	0.19	0.01
Queue Length 95th (ft)	3	0	0
Control Delay (s)	10.8	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	10.8	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	31.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	18	288	5	6	317
Future Vol, veh/h	5	18	288	5	6	317
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	5	0	0	5
Mvmt Flow	5	20	313	5	7	345

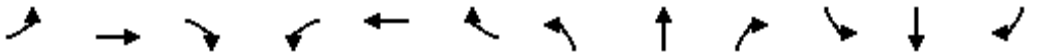
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	675	316	0	0	318	0
Stage 1	316	-	-	-	-	-
Stage 2	359	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	422	729	-	-	1253	-
Stage 1	744	-	-	-	-	-
Stage 2	711	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	419	729	-	-	1253	-
Mov Cap-2 Maneuver	419	-	-	-	-	-
Stage 1	744	-	-	-	-	-
Stage 2	706	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	628	1253	-
HCM Lane V/C Ratio	-	-	0.04	0.005	-
HCM Control Delay (s)	-	-	11	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

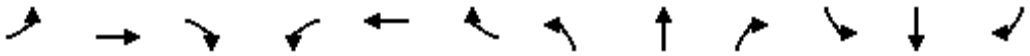
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	106	88	11	261	9	341
v/c Ratio	0.29	0.22	0.02	0.23	0.01	0.31
Control Delay	15.6	13.0	6.1	9.3	6.1	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.6	13.0	6.1	9.3	6.1	9.6
Queue Length 50th (ft)	13	9	1	29	1	38
Queue Length 95th (ft)	69	54	6	120	6	156
Internal Link Dist (ft)	628	415		180		277
Turn Bay Length (ft)			160		230	
Base Capacity (vph)	1078	1186	967	1289	889	1249
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.07	0.01	0.20	0.01	0.27

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	39	10	16	46	19	10	222	18	8	234	80
Future Volume (vph)	49	39	10	16	46	19	10	222	18	8	234	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.1	6.1		6.1	6.1	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.99	1.00	
Frt		0.99			0.97		1.00	0.99		1.00	0.96	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1731			1694		1767	1804		1602	1742	
Flt Permitted		0.80			0.91		0.56	1.00		0.60	1.00	
Satd. Flow (perm)		1413			1549		1034	1804		1008	1742	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	53	42	11	17	50	21	11	241	20	9	254	87
RTOR Reduction (vph)	0	7	0	0	18	0	0	3	0	0	12	0
Lane Group Flow (vph)	0	99	0	0	70	0	11	258	0	9	329	0
Confl. Peds. (#/hr)	3		6	6		3	4		15	15		4
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	6%	5%	2%	6%	9%	2%	2%	4%	2%	12%	5%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		5.3			5.3		19.8	19.0		19.8	19.0	
Effective Green, g (s)		5.3			5.3		19.8	19.0		19.8	19.0	
Actuated g/C Ratio		0.12			0.12		0.46	0.44		0.46	0.44	
Clearance Time (s)		6.0			6.0		6.1	6.1		6.1	6.1	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		172			189		486	791		471	764	
v/s Ratio Prot							c0.00	0.14		0.00	c0.19	
v/s Ratio Perm		c0.07			0.05		0.01			0.01		
v/c Ratio		0.58			0.37		0.02	0.33		0.02	0.43	
Uniform Delay, d1		17.9			17.5		6.4	8.0		6.4	8.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.6			1.2		0.0	0.2		0.0	0.4	
Delay (s)		22.5			18.7		6.4	8.2		6.4	8.8	
Level of Service		C			B		A	A		A	A	
Approach Delay (s)		22.5			18.7			8.1			8.7	
Approach LOS		C			B			A			A	

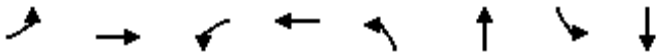
Intersection Summary			
HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	43.3	Sum of lost time (s)	18.2
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	39	10	16	46	19	10	222	18	8	234	80
Future Volume (veh/h)	49	39	10	16	46	19	10	222	18	8	234	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.99	0.98		0.96	0.99		0.98	0.99		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1826	1870	1811	1767	1870	1870	1841	1870	1722	1826	1870
Adj Flow Rate, veh/h	53	42	11	17	50	21	11	241	20	9	254	87
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	5	2	6	9	2	2	4	2	12	5	2
Cap, veh/h	248	114	24	152	151	56	385	520	43	434	395	135
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.02	0.31	0.31	0.02	0.31	0.31
Sat Flow, veh/h	631	781	163	192	1031	383	1781	1673	139	1640	1283	439
Grp Volume(v), veh/h	106	0	0	88	0	0	11	0	261	9	0	341
Grp Sat Flow(s),veh/h/ln	1575	0	0	1606	0	0	1781	0	1812	1640	0	1722
Q Serve(g_s), s	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	4.0	0.1	0.0	5.9
Cycle Q Clear(g_c), s	1.9	0.0	0.0	1.6	0.0	0.0	0.1	0.0	4.0	0.1	0.0	5.9
Prop In Lane	0.50		0.10	0.19		0.24	1.00		0.08	1.00		0.26
Lane Grp Cap(c), veh/h	387	0	0	359	0	0	385	0	564	434	0	530
V/C Ratio(X)	0.27	0.00	0.00	0.24	0.00	0.00	0.03	0.00	0.46	0.02	0.00	0.64
Avail Cap(c_a), veh/h	1238	0	0	1258	0	0	1120	0	1151	1117	0	1094
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.4	0.0	0.0	13.3	0.0	0.0	8.4	0.0	9.6	8.2	0.0	10.3
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.6	0.0	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	0.6	0.0	0.0	0.0	0.0	1.3	0.0	0.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.8	0.0	0.0	13.7	0.0	0.0	8.4	0.0	10.2	8.2	0.0	11.7
LnGrp LOS	B	A	A	B	A	A	A	A	B	A	A	B
Approach Vol, veh/h		106			88			272			350	
Approach Delay, s/veh		13.8			13.7			10.1			11.6	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.7	16.9		11.1	6.8	16.8		11.1				
Change Period (Y+Rc), s	6.1	6.1		6.0	6.1	6.1		6.0				
Max Green Setting (Gmax), s	15.0	22.0		25.0	15.0	22.0		25.0				
Max Q Clear Time (g_c+I1), s	2.1	6.0		3.9	2.1	7.9		3.6				
Green Ext Time (p_c), s	0.0	1.4		0.5	0.0	1.9		0.4				

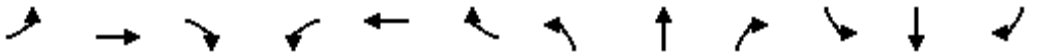
Intersection Summary												
HCM 6th Ctrl Delay			11.6									
HCM 6th LOS			B									



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	46	47	7	20	59	1432	8	577
v/c Ratio	0.40	0.08	0.08	0.05	0.09	0.52	0.03	0.23
Control Delay	72.1	0.3	65.3	0.2	4.9	9.0	5.4	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.1	0.3	65.3	0.2	4.9	9.0	5.4	8.9
Queue Length 50th (ft)	41	0	6	0	12	260	2	87
Queue Length 95th (ft)	83	0	23	0	27	491	m6	100
Internal Link Dist (ft)		1138		118		1225		681
Turn Bay Length (ft)					165		110	
Base Capacity (vph)	316	708	331	592	667	2730	343	2516
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.07	0.02	0.03	0.09	0.52	0.02	0.23

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	0	43	6	0	18	54	1315	3	7	516	15
Future Volume (vph)	42	0	43	6	0	18	54	1315	3	7	516	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.3	6.3		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	1538		1805	1615		1736	3437		1805	3422	
Flt Permitted	0.95	1.00		0.95	1.00		0.40	1.00		0.15	1.00	
Satd. Flow (perm)	1719	1538		1805	1615		740	3437		290	3422	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	46	0	47	7	0	20	59	1429	3	8	561	16
RTOR Reduction (vph)	0	44	0	0	19	0	0	0	0	0	1	0
Lane Group Flow (vph)	46	3	0	7	1	0	59	1432	0	8	576	0
Heavy Vehicles (%)	5%	0%	5%	0%	0%	0%	4%	5%	0%	0%	5%	7%
Turn Type	Split	NA		Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases							6			2		
Actuated Green, G (s)	8.0	8.0		4.3	4.3		106.9	101.0		97.9	96.5	
Effective Green, g (s)	8.0	8.0		4.3	4.3		106.9	101.0		97.9	96.5	
Actuated g/C Ratio	0.06	0.06		0.03	0.03		0.76	0.72		0.70	0.69	
Clearance Time (s)	6.2	6.2		6.3	6.3		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	98	87		55	49		607	2479		217	2358	
v/s Ratio Prot	c0.03	0.00		c0.00	0.00		c0.00	c0.42		0.00	0.17	
v/s Ratio Perm							0.07			0.03		
v/c Ratio	0.47	0.03		0.13	0.01		0.10	0.58		0.04	0.24	
Uniform Delay, d1	63.9	62.3		66.0	65.8		4.2	9.3		7.4	8.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.01	1.02	
Incremental Delay, d2	3.5	0.1		1.0	0.1		0.1	1.0		0.1	0.2	
Delay (s)	67.5	62.5		67.1	65.9		4.3	10.3		7.6	8.5	
Level of Service	E	E		E	E		A	B		A	A	
Approach Delay (s)		64.9			66.2			10.1			8.5	
Approach LOS		E			E			B			A	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.3
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

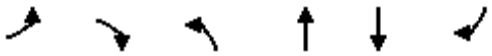
Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	132	1515	79	554
v/c Ratio	0.69	0.61	0.31	0.20
Control Delay	56.4	6.6	6.3	1.2
Queue Delay	0.0	0.0	0.0	0.2
Total Delay	56.4	6.6	6.3	1.4
Queue Length 50th (ft)	75	122	2	7
Queue Length 95th (ft)	141	135	14	17
Internal Link Dist (ft)	628	681		276
Turn Bay Length (ft)			80	
Base Capacity (vph)	366	2484	264	2830
Starvation Cap Reductn	0	0	0	1465
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.36	0.61	0.30	0.41

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	49	73	1336	58	73	510
Future Volume (vph)	49	73	1336	58	73	510
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6		6.4		6.4	6.4
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	1.00		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.92		0.99		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1621		3443		1752	3471
Flt Permitted	0.98		1.00		0.12	1.00
Satd. Flow (perm)	1621		3443		224	3471
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	53	79	1452	63	79	554
RTOR Reduction (vph)	44	0	1	0	0	0
Lane Group Flow (vph)	88	0	1514	0	79	554
Confl. Peds. (#/hr)	2			5	5	
Heavy Vehicles (%)	5%	6%	4%	5%	3%	4%
Turn Type	Prot		NA		pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases					6	
Actuated Green, G (s)	12.8		101.0		114.2	114.2
Effective Green, g (s)	12.8		101.0		114.2	114.2
Actuated g/C Ratio	0.09		0.72		0.82	0.82
Clearance Time (s)	6.6		6.4		6.4	6.4
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	148		2483		256	2831
v/s Ratio Prot	c0.05		c0.44		c0.01	0.16
v/s Ratio Perm					0.24	
v/c Ratio	0.60		0.61		0.31	0.20
Uniform Delay, d1	61.1		9.7		7.1	2.8
Progression Factor	1.00		0.53		1.05	0.33
Incremental Delay, d2	6.3		1.0		0.7	0.2
Delay (s)	67.5		6.1		8.1	1.1
Level of Service	E		A		A	A
Approach Delay (s)	67.5		6.1			2.0
Approach LOS	E		A			A

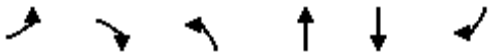
Intersection Summary			
HCM 2000 Control Delay	8.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.4
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	75	159	323	1207	478	51
v/c Ratio	0.53	0.34	0.42	0.42	0.20	0.05
Control Delay	74.3	45.8	4.9	4.5	8.8	2.7
Queue Delay	0.0	0.0	0.3	0.5	0.0	0.0
Total Delay	74.3	45.8	5.1	4.9	8.8	2.7
Queue Length 50th (ft)	67	70	46	111	71	0
Queue Length 95th (ft)	117	93	143	254	130	17
Internal Link Dist (ft)	431			276	42	
Turn Bay Length (ft)	410		160			240
Base Capacity (vph)	283	970	955	2901	2379	1071
Starvation Cap Reductn	0	0	213	1095	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.16	0.44	0.67	0.20	0.05

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	69	146	297	1110	440	47
Future Volume (vph)	69	146	297	1110	440	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.2	6.2	6.2	6.2	6.2
Lane Util. Factor	1.00	0.88	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	2668	1782	3505	3438	1526
Flt Permitted	0.95	1.00	0.45	1.00	1.00	1.00
Satd. Flow (perm)	1770	2668	837	3505	3438	1526
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	75	159	323	1207	478	51
RTOR Reduction (vph)	0	0	0	0	0	16
Lane Group Flow (vph)	75	159	323	1207	478	35
Confl. Peds. (#/hr)	9	3	5			5
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	2%	5%	1%	3%	5%	2%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	Perm
Protected Phases	3	1	1	6	2	
Permitted Phases		3	6			2
Actuated Green, G (s)	11.3	24.1	115.9	115.9	96.9	96.9
Effective Green, g (s)	11.3	24.1	115.9	115.9	96.9	96.9
Actuated g/C Ratio	0.08	0.17	0.83	0.83	0.69	0.69
Clearance Time (s)	6.6	6.2	6.2	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	142	459	779	2901	2379	1056
v/s Ratio Prot	c0.04	0.03	0.04	c0.34	0.14	
v/s Ratio Perm		0.03	0.31			0.02
v/c Ratio	0.53	0.35	0.41	0.42	0.20	0.03
Uniform Delay, d1	61.8	51.0	2.8	3.2	7.7	6.8
Progression Factor	1.00	1.00	1.27	1.21	1.00	1.00
Incremental Delay, d2	3.5	0.5	0.3	0.4	0.2	0.1
Delay (s)	65.3	51.5	3.9	4.2	7.9	6.9
Level of Service	E	D	A	A	A	A
Approach Delay (s)	55.9			4.1	7.8	
Approach LOS	E			A	A	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	55	1163	15	0	487
Future Volume (Veh/h)	0	55	1163	15	0	487
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	60	1264	16	0	529
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			122			
pX, platoon unblocked	0.91	0.91			0.91	
vC, conflicting volume	1536	640			1280	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1388	400			1105	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	89			100	
cM capacity (veh/h)	121	544			570	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	60	843	437	264	264
Volume Left	0	0	0	0	0
Volume Right	60	0	16	0	0
cSH	544	1700	1700	1700	1700
Volume to Capacity	0.11	0.50	0.26	0.16	0.16
Queue Length 95th (ft)	9	0	0	0	0
Control Delay (s)	12.4	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	12.4	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		

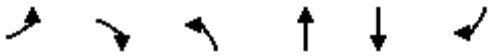
Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	55	1163	15	0	487
Future Vol, veh/h	0	55	1163	15	0	487
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	60	1264	16	0	529

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	640	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	418	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	418	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	418	-
HCM Lane V/C Ratio	-	-	0.143	-
HCM Control Delay (s)	-	-	15	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0.5	-



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	44	0	306	279	21
Future Volume (Veh/h)	0	44	0	306	279	21
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	48	0	333	303	23
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				467		
pX, platoon unblocked	0.99					
vC, conflicting volume	648	314	326			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	639	314	326			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	93	100			
cM capacity (veh/h)	436	726	1234			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	48	333	326
Volume Left	0	0	0
Volume Right	48	0	23
cSH	726	1700	1700
Volume to Capacity	0.07	0.20	0.19
Queue Length 95th (ft)	5	0	0
Control Delay (s)	10.3	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.3	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	26.0%	ICU Level of Service	A
Analysis Period (min)	15		

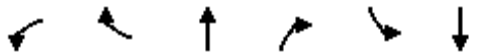
Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	44	0	306	279	21
Future Vol, veh/h	0	44	0	306	279	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	48	0	333	303	23

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	315	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	725	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	725	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	725	-	-
HCM Lane V/C Ratio	-	0.066	-	-
HCM Control Delay (s)	-	10.3	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.2	-	-



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	12	411	7	6	504
Future Volume (Veh/h)	4	12	411	7	6	504
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	13	447	8	7	548
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			357			
pX, platoon unblocked	0.86	0.86			0.86	
vC, conflicting volume	1013	451			455	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	934	281			285	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	98			99	
cM capacity (veh/h)	254	656			1108	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	17	455	555
Volume Left	4	0	7
Volume Right	13	8	0
cSH	478	1700	1108
Volume to Capacity	0.04	0.27	0.01
Queue Length 95th (ft)	3	0	0
Control Delay (s)	12.8	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	12.8	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	12	411	7	6	504
Future Vol, veh/h	4	12	411	7	6	504
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	3
Mvmt Flow	4	13	447	8	7	548

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1013	451	0	0	455	0
Stage 1	451	-	-	-	-	-
Stage 2	562	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	267	613	-	-	1116	-
Stage 1	646	-	-	-	-	-
Stage 2	575	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	265	613	-	-	1116	-
Mov Cap-2 Maneuver	265	-	-	-	-	-
Stage 1	646	-	-	-	-	-
Stage 2	570	-	-	-	-	-

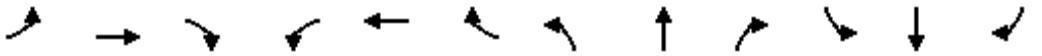
Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	461	1116	-
HCM Lane V/C Ratio	-	-	0.038	0.006	-
HCM Control Delay (s)	-	-	13.1	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	115	111	21	427	23	533
v/c Ratio	0.38	0.34	0.04	0.40	0.04	0.52
Control Delay	20.1	18.2	5.8	10.7	5.8	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.1	18.2	5.8	10.7	5.8	13.2
Queue Length 50th (ft)	22	20	2	54	2	71
Queue Length 95th (ft)	73	68	10	208	11	#320
Internal Link Dist (ft)	628	415		180		277
Turn Bay Length (ft)			160		230	
Base Capacity (vph)	821	885	783	1075	830	1023
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.13	0.03	0.40	0.03	0.52

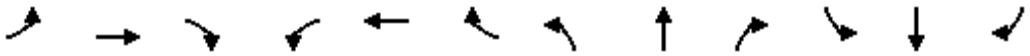
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	54	13	22	61	19	19	370	23	21	338	153
Future Volume (vph)	39	54	13	22	61	19	19	370	23	21	338	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.1	6.1		6.1	6.1	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.97		1.00	0.99		1.00	0.95	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1742			1750		1803	1844		1798	1741	
Flt Permitted		0.84			0.90		0.37	1.00		0.47	1.00	
Satd. Flow (perm)		1488			1597		704	1844		886	1741	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	59	14	24	66	21	21	402	25	23	367	166
RTOR Reduction (vph)	0	8	0	0	13	0	0	2	0	0	14	0
Lane Group Flow (vph)	0	107	0	0	98	0	21	425	0	23	519	0
Confl. Peds. (#/hr)	4		5	5		4	7		15	15		7
Confl. Bikes (#/hr)						3			3			3
Heavy Vehicles (%)	3%	0%	31%	0%	5%	5%	0%	2%	0%	0%	4%	1%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.6			7.6		26.8	25.7		26.8	25.7	
Effective Green, g (s)		7.6			7.6		26.8	25.7		26.8	25.7	
Actuated g/C Ratio		0.14			0.14		0.51	0.49		0.51	0.49	
Clearance Time (s)		6.0			6.0		6.1	6.1		6.1	6.1	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		214			230		381	900		470	850	
v/s Ratio Prot							c0.00	0.23		0.00	c0.30	
v/s Ratio Perm		c0.07			0.06		0.03			0.02		
v/c Ratio		0.50			0.43		0.06	0.47		0.05	0.61	
Uniform Delay, d1		20.8			20.5		6.7	8.9		6.5	9.8	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.8			1.3		0.1	0.4		0.0	1.3	
Delay (s)		22.6			21.8		6.7	9.3		6.5	11.1	
Level of Service		C			C		A	A		A	B	
Approach Delay (s)		22.6			21.8			9.2			10.9	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	52.6	Sum of lost time (s)	18.2
Intersection Capacity Utilization	49.0%	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 (veh/h)	39	54	13	22	61	19	19	370	23	21	338	153
Future Volume (veh/h)	39	54	13	22	61	19	19	370	23	21	338	153
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.96	0.99		0.96	0.99		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1900	1441	1900	1826	1826	1900	1870	1900	1900	1841	1885
Adj Flow Rate, veh/h	42	59	14	24	66	21	21	402	25	23	367	166
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	0	31	0	5	5	0	2	0	0	4	1
Cap, veh/h	182	142	29	137	153	43	342	676	42	441	463	210
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.04	0.39	0.39	0.04	0.39	0.39
Sat Flow, veh/h	468	1033	208	236	1119	316	1810	1737	108	1810	1182	535
Grp Volume(v), veh/h	115	0	0	111	0	0	21	0	427	23	0	533
Grp Sat Flow(s),veh/h/ln	1709	0	0	1671	0	0	1810	0	1845	1810	0	1717
Q Serve(g_s), s	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.0	7.7	0.3	0.0	11.5
Cycle Q Clear(g_c), s	2.4	0.0	0.0	2.4	0.0	0.0	0.3	0.0	7.7	0.3	0.0	11.5
Prop In Lane	0.37		0.12	0.22		0.19	1.00		0.06	1.00		0.31
Lane Grp Cap(c), veh/h	352	0	0	334	0	0	342	0	718	441	0	673
V/C Ratio(X)	0.33	0.00	0.00	0.33	0.00	0.00	0.06	0.00	0.59	0.05	0.00	0.79
Avail Cap(c_a), veh/h	1088	0	0	1073	0	0	924	0	970	1019	0	902
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.6	0.0	0.0	16.6	0.0	0.0	8.6	0.0	10.2	7.7	0.0	11.2
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.6	0.0	0.0	0.1	0.0	0.8	0.0	0.0	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.0	0.9	0.0	0.0	0.1	0.0	2.6	0.1	0.0	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.2	0.0	0.0	17.2	0.0	0.0	8.6	0.0	11.0	7.7	0.0	14.7
LnGrp LOS	B	A	A	B	A	A	A	A	B	A	A	B
Approach Vol, veh/h		115			111			448			556	
Approach Delay, s/veh		17.2			17.2			10.9			14.4	
Approach LOS		B			B			B			B	

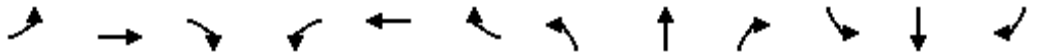
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.7	22.4		11.7	7.6	22.5		11.7				
Change Period (Y+Rc), s	6.1	6.1		6.0	6.1	6.1		6.0				
Max Green Setting (Gmax), s	15.0	22.0		25.0	15.0	22.0		25.0				
Max Q Clear Time (g_c+I1), s	2.3	9.7		4.4	2.3	13.5		4.4				
Green Ext Time (p_c), s	0.0	2.2		0.6	0.0	2.4		0.5				

Intersection Summary												
HCM 6th Ctrl Delay			13.6									
HCM 6th LOS			B									

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	43	76	7	76	849	21	1372
v/c Ratio	0.38	0.15	0.02	0.25	0.31	0.04	0.54
Control Delay	71.7	0.6	0.0	5.1	6.7	7.8	27.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.7	0.6	0.0	5.1	6.7	7.8	27.4
Queue Length 50th (ft)	38	0	0	9	117	6	531
Queue Length 95th (ft)	78	0	0	32	226	m20	711
Internal Link Dist (ft)		1138	118		1225		681
Turn Bay Length (ft)				165		110	
Base Capacity (vph)	316	654	619	338	2717	579	2538
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.12	0.01	0.22	0.31	0.04	0.54

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	0	70	0	0	6	70	781	0	19	1215	47
Future Volume (vph)	40	0	70	0	0	6	70	781	0	19	1215	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2			6.3		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.85			0.85		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	1553			1615		1805	3539		1805	3517	
Flt Permitted	0.95	1.00			1.00		0.14	1.00		0.32	1.00	
Satd. Flow (perm)	1719	1553			1615		274	3539		613	3517	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	0	76	0	0	7	76	849	0	21	1321	51
RTOR Reduction (vph)	0	71	0	0	7	0	0	0	0	0	1	0
Lane Group Flow (vph)	43	5	0	0	0	0	76	849	0	21	1371	0
Heavy Vehicles (%)	5%	0%	4%	0%	0%	0%	0%	2%	0%	0%	2%	4%
Turn Type	Split	NA		Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases							6			2		
Actuated Green, G (s)	9.2	9.2			1.4		108.0	99.9		100.2	96.0	
Effective Green, g (s)	9.2	9.2			1.4		108.0	99.9		100.2	96.0	
Actuated g/C Ratio	0.07	0.07			0.01		0.77	0.71		0.72	0.69	
Clearance Time (s)	6.2	6.2			6.3		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	112	102			16		299	2525		474	2411	
v/s Ratio Prot	c0.03	0.00			c0.00		c0.01	c0.24		0.00	c0.39	
v/s Ratio Perm							0.18			0.03		
v/c Ratio	0.38	0.05			0.00		0.25	0.34		0.04	0.57	
Uniform Delay, d1	62.7	61.3			68.6		7.1	7.6		5.8	11.3	
Progression Factor	1.00	1.00			1.00		1.00	1.00		2.10	2.63	
Incremental Delay, d2	2.2	0.2			0.1		0.5	0.4		0.0	0.9	
Delay (s)	64.9	61.5			68.7		7.5	7.9		12.1	30.6	
Level of Service	E	E			E		A	A		B	C	
Approach Delay (s)		62.7			68.7			7.9			30.3	
Approach LOS		E			E			A			C	

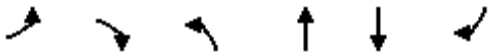
Intersection Summary			
HCM 2000 Control Delay	23.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.3
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	263	908	73	1254
v/c Ratio	0.84	0.39	0.17	0.48
Control Delay	70.3	15.9	7.6	9.8
Queue Delay	0.0	0.0	0.0	0.1
Total Delay	70.3	15.9	7.6	10.0
Queue Length 50th (ft)	199	186	0	155
Queue Length 95th (ft)	293	411	0	174
Internal Link Dist (ft)	628	681		276
Turn Bay Length (ft)			80	
Base Capacity (vph)	373	2327	430	2624
Starvation Cap Reductn	0	0	0	431
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.71	0.39	0.17	0.57

Intersection Summary

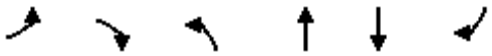
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	109	138	818	36	69	1179
Future Volume (vph)	109	138	818	36	69	1179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6		6.4		6.4	6.4
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	0.99		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.92		0.99		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1680		3501		1785	3539
Flt Permitted	0.98		1.00		0.26	1.00
Satd. Flow (perm)	1680		3501		485	3539
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	116	147	870	38	73	1254
RTOR Reduction (vph)	34	0	1	0	0	0
Lane Group Flow (vph)	229	0	907	0	73	1254
Confl. Peds. (#/hr)	9			9	9	
Confl. Bikes (#/hr)		2				
Heavy Vehicles (%)	2%	1%	2%	8%	1%	2%
Turn Type	Prot		NA		pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases					6	
Actuated Green, G (s)	23.2		91.7		103.8	103.8
Effective Green, g (s)	23.2		91.7		103.8	103.8
Actuated g/C Ratio	0.17		0.66		0.74	0.74
Clearance Time (s)	6.6		6.4		6.4	6.4
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	278		2293		412	2623
v/s Ratio Prot	c0.14		0.26		0.01	c0.35
v/s Ratio Perm					0.12	
v/c Ratio	0.82		0.40		0.18	0.48
Uniform Delay, d1	56.4		11.2		6.1	7.2
Progression Factor	1.00		1.30		1.20	1.18
Incremental Delay, d2	17.6		0.5		0.2	0.6
Delay (s)	74.0		15.1		7.5	9.2
Level of Service	E		B		A	A
Approach Delay (s)	74.0		15.1			9.1
Approach LOS	E		B			A

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.4
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



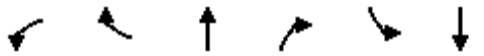
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	103	316	274	721	990	52
v/c Ratio	0.60	0.49	0.53	0.25	0.44	0.05
Control Delay	74.6	44.0	18.4	4.5	14.0	4.4
Queue Delay	0.0	0.0	0.7	0.2	0.0	0.0
Total Delay	74.6	44.0	19.1	4.8	14.0	4.4
Queue Length 50th (ft)	92	134	92	127	226	4
Queue Length 95th (ft)	150	175	150	66	303	22
Internal Link Dist (ft)	431			276	42	
Turn Bay Length (ft)	410		160			240
Base Capacity (vph)	366	647	519	2878	2254	984
Starvation Cap Reductn	0	0	68	1345	0	0
Spillback Cap Reductn	0	0	0	0	104	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.49	0.61	0.47	0.46	0.05

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	99	303	263	692	950	50
Future Volume (vph)	99	303	263	692	950	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.2	6.2	6.2	6.2	6.2
Lane Util. Factor	1.00	0.88	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1805	2783	1752	3539	3539	1524
Flt Permitted	0.95	1.00	0.23	1.00	1.00	1.00
Satd. Flow (perm)	1805	2783	418	3539	3539	1524
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	103	316	274	721	990	52
RTOR Reduction (vph)	0	0	0	0	0	15
Lane Group Flow (vph)	103	316	274	721	990	37
Confl. Peds. (#/hr)	1	3	5			5
Confl. Bikes (#/hr)						2
Heavy Vehicles (%)	0%	1%	3%	2%	2%	2%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	Perm
Protected Phases	3	1	1	6	2	
Permitted Phases		3	6			2
Actuated Green, G (s)	13.3	31.8	113.9	113.9	89.2	89.2
Effective Green, g (s)	13.3	31.8	113.9	113.9	89.2	89.2
Actuated g/C Ratio	0.10	0.23	0.81	0.81	0.64	0.64
Clearance Time (s)	6.6	6.2	6.2	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	171	632	516	2879	2254	971
v/s Ratio Prot	c0.06	0.07	c0.07	0.20	0.28	
v/s Ratio Perm		0.05	c0.36			0.02
v/c Ratio	0.60	0.50	0.53	0.25	0.44	0.04
Uniform Delay, d1	60.8	47.2	6.0	3.1	12.8	9.4
Progression Factor	1.00	1.00	4.61	1.31	1.00	1.00
Incremental Delay, d2	5.9	0.6	1.0	0.2	0.6	0.1
Delay (s)	66.7	47.8	28.7	4.2	13.4	9.5
Level of Service	E	D	C	A	B	A
Approach Delay (s)	52.4			11.0	13.2	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	19.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	37	750	41	0	1000
Future Volume (Veh/h)	0	37	750	41	0	1000
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	40	815	45	0	1087
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			122			
pX, platoon unblocked	0.95	0.95			0.95	
vC, conflicting volume	1381	430			860	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1301	303			754	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	94			100	
cM capacity (veh/h)	145	661			812	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	40	543	317	544	544
Volume Left	0	0	0	0	0
Volume Right	40	0	45	0	0
cSH	661	1700	1700	1700	1700
Volume to Capacity	0.06	0.32	0.19	0.32	0.32
Queue Length 95th (ft)	5	0	0	0	0
Control Delay (s)	10.8	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	10.8	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	32.0%	ICU Level of Service	A
Analysis Period (min)	15		

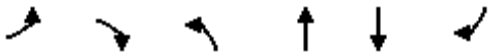
Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	37	750	41	0	1000
Future Vol, veh/h	0	37	750	41	0	1000
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	40	815	45	0	1087

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	430	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	573	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	573	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	573	-
HCM Lane V/C Ratio	-	-	0.07	-
HCM Control Delay (s)	-	-	11.8	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.2	-



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	28	0	423	482	51
Future Volume (Veh/h)	0	28	0	423	482	51
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	30	0	460	524	55
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				467		
pX, platoon unblocked	0.88					
vC, conflicting volume	1012	552	579			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	942	552	579			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	94	100			
cM capacity (veh/h)	255	534	995			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	30	460	579
Volume Left	0	0	0
Volume Right	30	0	55
cSH	534	1700	1700
Volume to Capacity	0.06	0.27	0.34
Queue Length 95th (ft)	4	0	0
Control Delay (s)	12.1	0.0	0.0
Lane LOS	B		
Approach Delay (s)	12.1	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	28	0	423	482	51
Future Vol, veh/h	0	28	0	423	482	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	30	0	460	524	55

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	552	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	533	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	533	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	533	-	-
HCM Lane V/C Ratio	-	0.057	-	-
HCM Control Delay (s)	-	12.2	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.2	-	-