

Transportation Impact Analysis

Courthouse Plaza Residential

City of Fairfax, Virginia

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Executive Summary

This report presents the findings of a Transportation Impact Analysis (NOT a Chapter 870 Study) conducted for the 10.4-acre Courthouse Plaza Residential site in Fairfax County, Virginia. This study was developed in accordance with VDOT and City of Fairfax guidelines.

The document is prepared in accordance with best professional practice and standards that assess the impact of a proposed development on the transportation system and recommends improvements to lessen or negate those impacts. Transportation Impact Analysis involves the evaluation of anticipated roadway conditions with and without the proposed development and recommendation of transportation improvements to offset both the impacts of the increase in future traffic volumes and the changes in traffic operations due to the proposed development. The analysis assists public officials and developers to balance interrelations between efficient traffic movements with necessary lane access.

Site Location and Study Area

Courthouse Plaza Residential is located west of Blenheim Boulevard (Old Lee Highway), east of University Drive and north of North Street in City of Fairfax, Virginia. The existing site is currently occupied by approximately 91,860 SF of retail (including a supermarket, defunct drive-thru, and pad site) and surface parking. The vehicular study area includes ten (10) intersections, of which eight (8) are existing. Site access is planned to be provided via two curb cuts along University Drive and three curb cuts along Blenheim Blvd.

Description of Proposed Development

It is anticipated by 2028, the development project is planned to replace approximately 25k SF of retail with approximately 315 multifamily units (Full-Build) in a single residential building on the west side of the property with approximately 67k SF of existing retail (including a supermarket and pad sites) to remain and up to 5,000 SF of ground floor retail introduced in the residential building that intends to serve building residents and other adjacent internal capture users from the shopping center and student housing. A separate SUP has been filed on the site to reinstate an existing building and drive thru with a Coffee Shop. For the purposes of this study, two buildout scenarios have been included with and without the SUP.

Principal Findings and Conclusions

Discussions regarding the study assumptions and relevant background information were held with City of Fairfax staff during the scoping meeting on Monday, May 22, 2023. A copy of the signed scoping document is included in Appendix A. Please note that the pre-application submission illustrated potential future phases are possible at the site that align with the overall Comprehensive Plan vision for this area. No future phases are included with the application submission.

The following analysis scenarios are included in this Transportation Impact Analysis:

- **Existing (2023) Scenario** – assumes existing traffic volume based on the counts.
- **Future without Development 2028** – assumes existing traffic volume plus additional traffic due to a 1% annual growth rate.
- **Future with Development 2028 (Full-Build without Coffee Shop SUP)** – assumes Future without Development 2028 traffic plus traffic generated by the proposed Courthouse Plaza Residential development (Full Build). Trips associated with the inline retail to be removed (approximately 25.2 kSF) were removed from the existing driveways based on proportion. Appendix E shows the trips removed from the existing driveways for the AM and PM peak hours.
- **Future with Development 2028 (Full-Build with Coffee Shop SUP)** – assumes Future with Development 2028 (Full Build without Coffee Shop SUP) volumes with the additional trips generated by the Coffee Shop with Drive-Thru SUP. It is noted that the proposed Coffee Shop with Drive-Thru is a separate Special Use Permit (SUP) application adjacent to the Courthouse Plaza Residential development site.

The analysis of the traffic operations for the proposed Courthouse Plaza Residential development supports the following major conclusions:

Analysis Components

- As determined based on discussions with City of Fairfax staff at the scoping meeting, the following growth was applied to the major movements to account for a regional increase in background traffic.
 - A 1.0 % per year growth rate from the year 2023 to 2028
- A TDM/mode split reduction of 15 percent was applied to the residential use, as agreed upon by City of Fairfax staff.
- At full build-out (2028), the proposed development (without Coffee Shop), will generate approximately 108 AM peak hour trips, 105 PM peak hour trips and 1,238 trips on a typical weekday per ITE Trip General Manual (11th Edition). The addition of up to 5,000 SF of retail in the residential building is anticipated to serve local residents and adjacent internal capture users from the shopping center and student housing and not attract destination trips.
- The Coffee Shop with Drive-Thru (part of separate SUP application) would generate approximately 229 trips in the AM peak hour, 83 trips in the PM peak hour, and 1,424 trips on a typical weekday after reductions. Please note that a Convenience Market could be implemented at this location by-right which would generate more PM peak and Daily trips than the Coffee Shop with Drive-Thru.

Multimodal Transportation Elements

- Sidewalks currently exist at all study intersections, with a minimum width of 5 feet and up to 10 feet. Further pedestrian safety and convenience will be enhanced by the proposed development, with additional pedestrian accommodations within the block.
- The analysis assumes the City Project 'University Drive Spine' as a background improvement for all Future (2028) scenarios.
- Four (4) bus routes operated by City of Fairfax: City-University Energysaver (CUE) system currently serve the site area. The system provides scheduled, low-cost transportation services to George Mason University, to shopping centers and other locations within the City of Fairfax as well as the Vienna/Fairfax GMU WMATA station.

Infrastructure

- The Courthouse Plaza Residential development in existing conditions is accessed via multiple entrances on Blenheim Boulevard and University Drive.
- During the proposed redevelopment (Full-Build 2028), two new roadways (Street 1 and Street 2) will be constructed adjacent to the new multifamily building.
- Primary access to the site will continue to be provided via University Drive, Blenheim Boulevard, and Democracy Lane.
- The City of Fairfax project 'University Drive Spine', which provides multimodal improvements along University Drive with conversion of existing four-lane configuration to a three-lane configuration with Two-Way Left Turn Lanes (TWLTLs) and bike lanes is included in the analysis for all future scenarios.

Analysis Results

- All the study intersections operate at acceptable levels of service during all the study periods and analysis conditions.
- 95th percentile queues are contained within the available storage at the turning movements during all the study periods/conditions.

- The location of the garage entrance and the westbound queue along Democracy Lane is not anticipated to cause operational issues. Analysis results show the 50th and 95th percentile queues are accommodated along all peak times, with the location of the garage gate allowing up to a two-car storage inside the garage.

Introduction

This report presents the findings of a Comprehensive Transportation Analysis conducted for the 10.4-acre Courthouse Plaza Residential in City of Fairfax, Virginia (“the City”).

The 10.4-acre site consists of two (2) parcels (Tax Map # 57-2-20-004 D and 57-2-20-003A). The existing site is currently occupied by 91,860 SF of retail and surface parking.

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

- A scoping meeting was conducted with City of Fairfax staff on May 22, 2023. This scope details the study assumptions 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.
- Traffic counts were conducted on Thursday, March 30, 2023 during the morning and afternoon peak periods.
- The future traffic volumes were developed by accounting for regional growth in the area. As determined based on discussions with the City, a growth rate of 1% per year compounded annually was applied to all major roadway intersections for the period between 2023 and 2028.
- Proposed site traffic volumes were generated based on the methodology outlined in ITE Trip Generation, 11th Edition.
- Vehicular traffic analysis for the study area intersections was performed using Synchro 11 based on Highway Capacity Manual (HCM) 6th methodology. Intersection analysis was performed for existing conditions (2023) and future without development (2028), and future with development (full-build, 2028). Alternative scenarios including the Coffee Shop with Drive-Thru were conducted for the Full-Build (2028) conditions.

Sources of data for this study include information provided by VDOT, City of Fairfax, and the office files and field reconnaissance efforts of Gorove Slade.

Background Information: Proposed Development (Site & Nearby)

Description of the Existing Site

General Location

The site is located in the City of Fairfax and is part of the City's Old Town Fairfax Transition Overlay District. It is located north of North Street, west of Blenheim Boulevard as shown in Figure 1. It is noted that the application area shown is for illustrative purposes only as the plan has evolved throughout the application process for the site. Please see the site plan for the most recent application area.

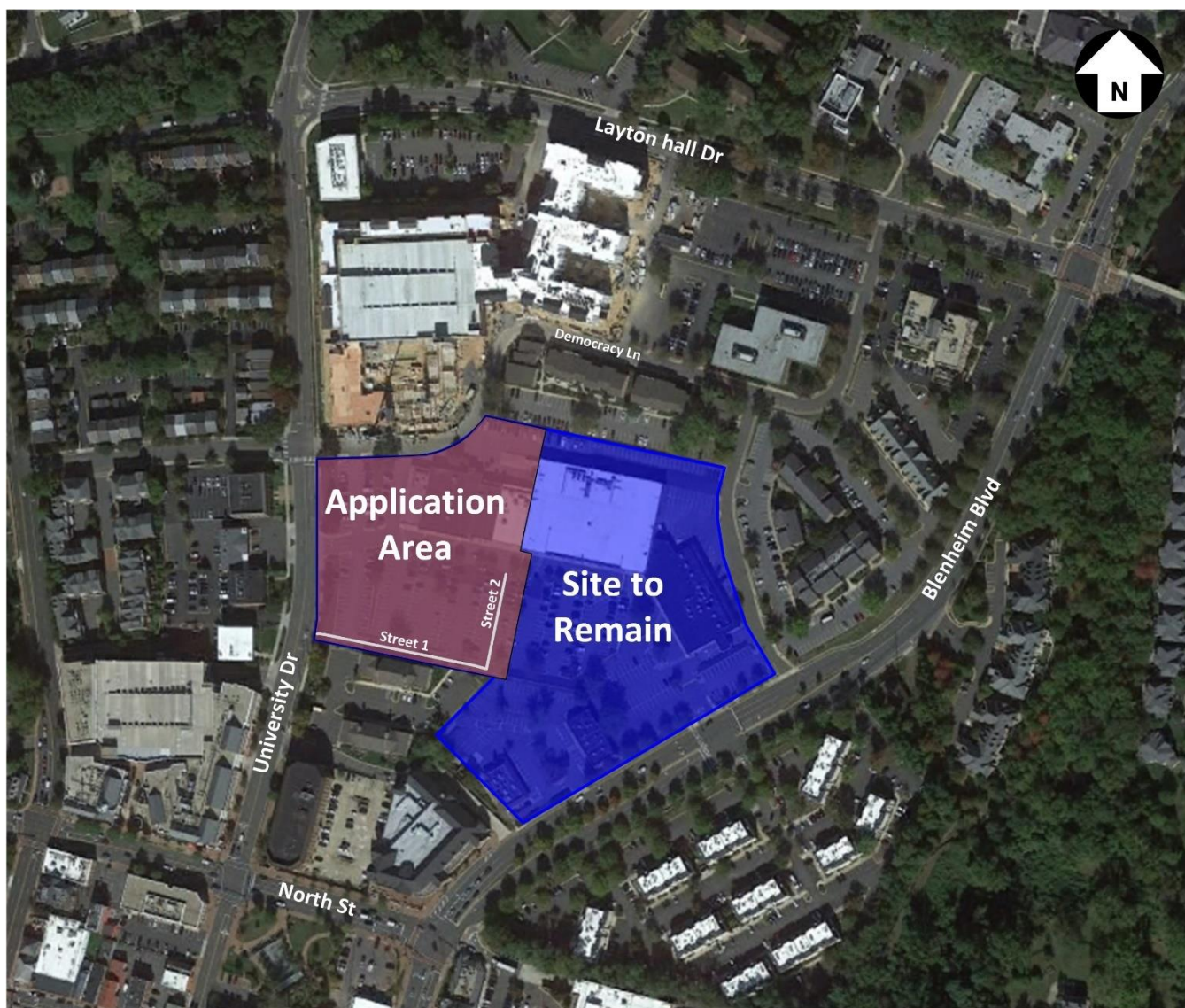


Figure 1: Site Location

Description of the Parcels

The proposed redevelopment of Courthouse Plaza Residential is composed of two (2) parcels. The parcels can be identified on City of Fairfax Maps with the parcel IDs: 57-2-20-004 D and 57-2-20-003 A.

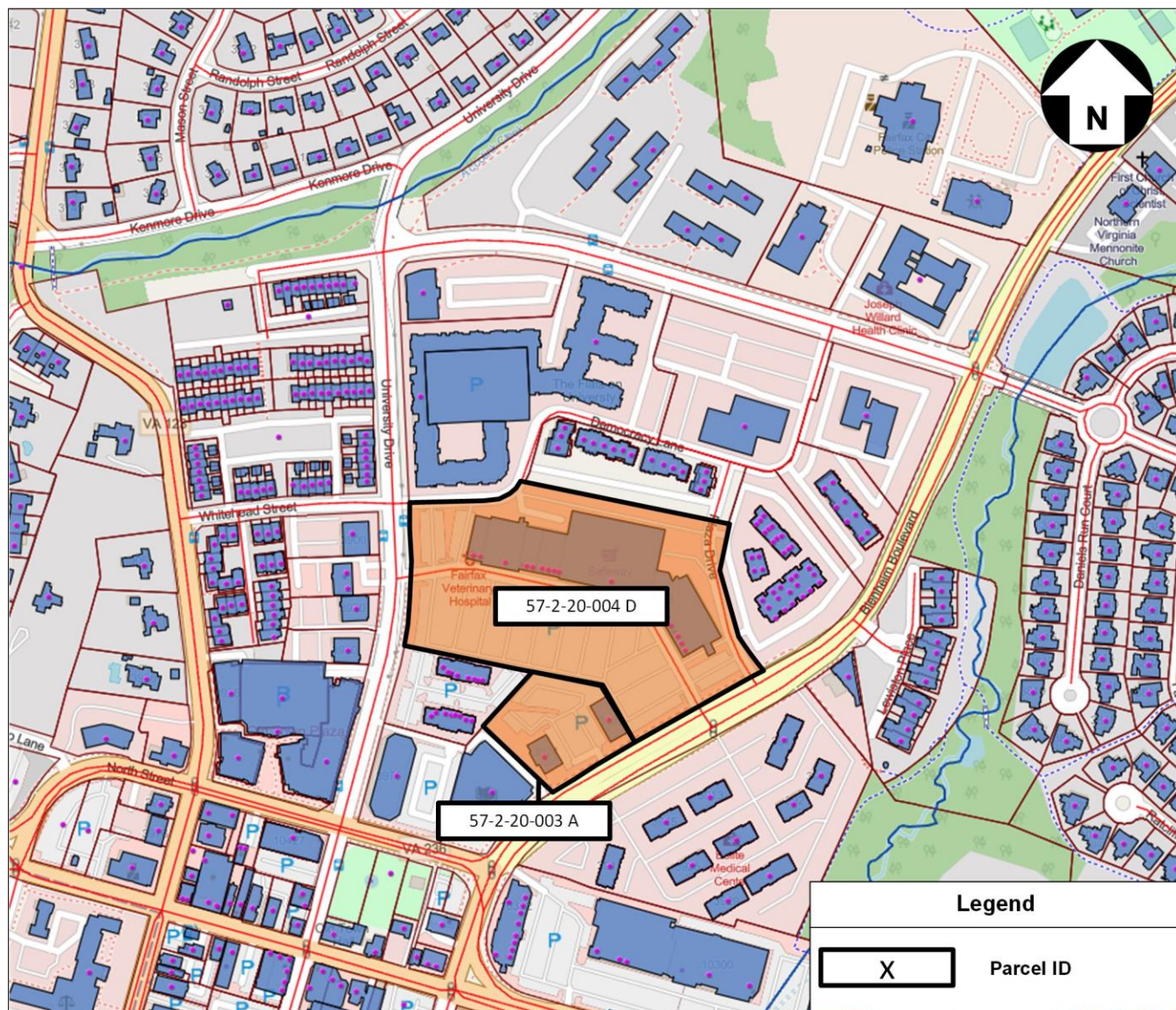


Figure 2: Parcel Map
Source: City of Fairfax Real Estate Database

Location within Jurisdiction and Region

As shown in Figure 3, the site is situated approximately 2 miles south of the closest I-66 interchange and approximately 1.5 miles north of George Mason University's main campus.

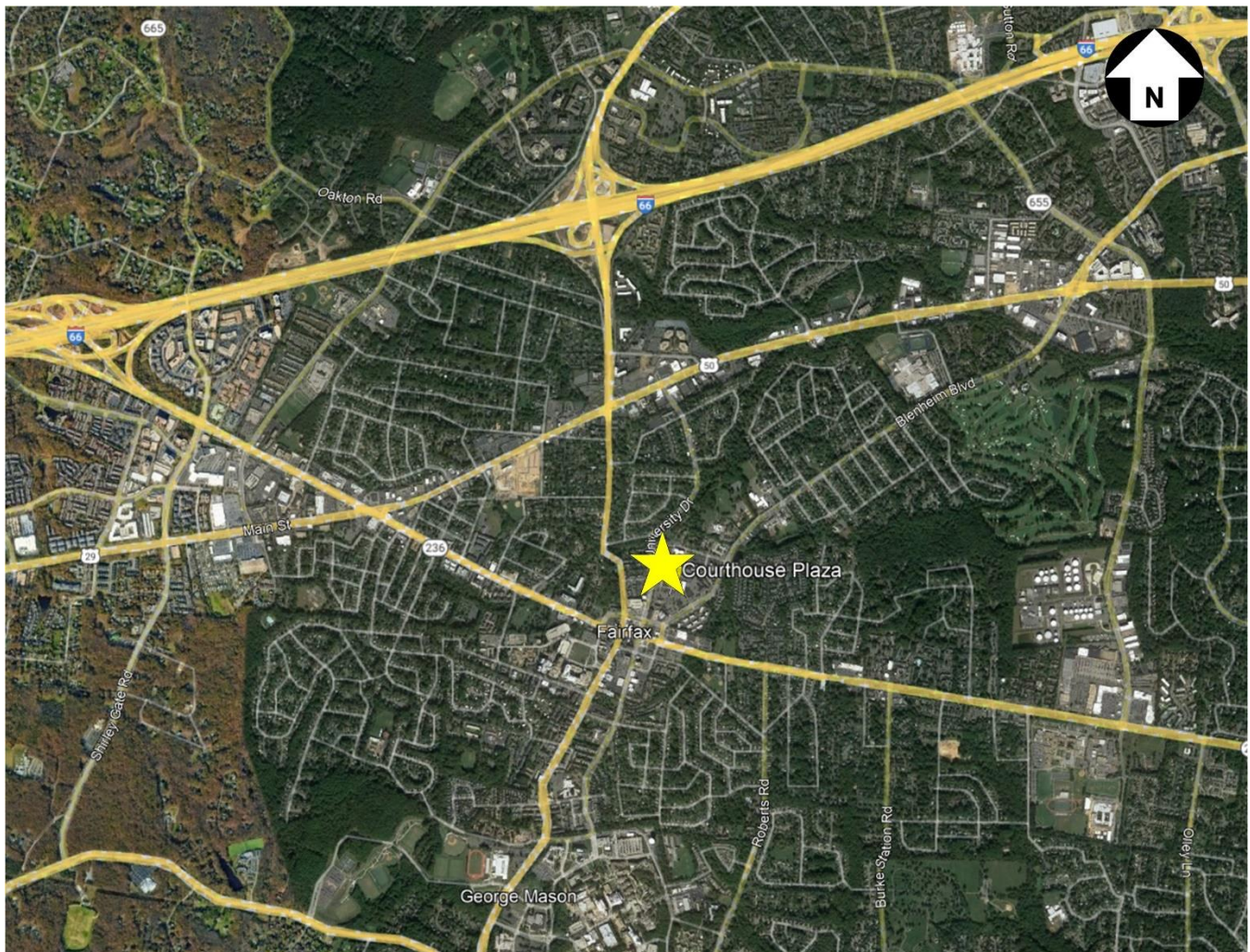


Figure 3: Regional Location

Comprehensive Plan Transportation Recommendations

The City of Fairfax Comprehensive Plan establishes goals and guiding principles for multimodal transportation for the City. The Comprehensive Plan envisions 'Active Streets' within the Old Town Fairfax Transition Overlay District. Figure 4 shows the proposed street typology for the City and Figure 5 shows the street hierarchy map from the Old Town Fairfax Small Area Plan. It is observed that University Drive and Layton Hall Drive are envisioned to be Active Streets.



Figure 4: Comprehensive Plan – Transportation Recommendations

Source: City of Fairfax 2035 Comprehensive Plan (Appendix B: Transportation)

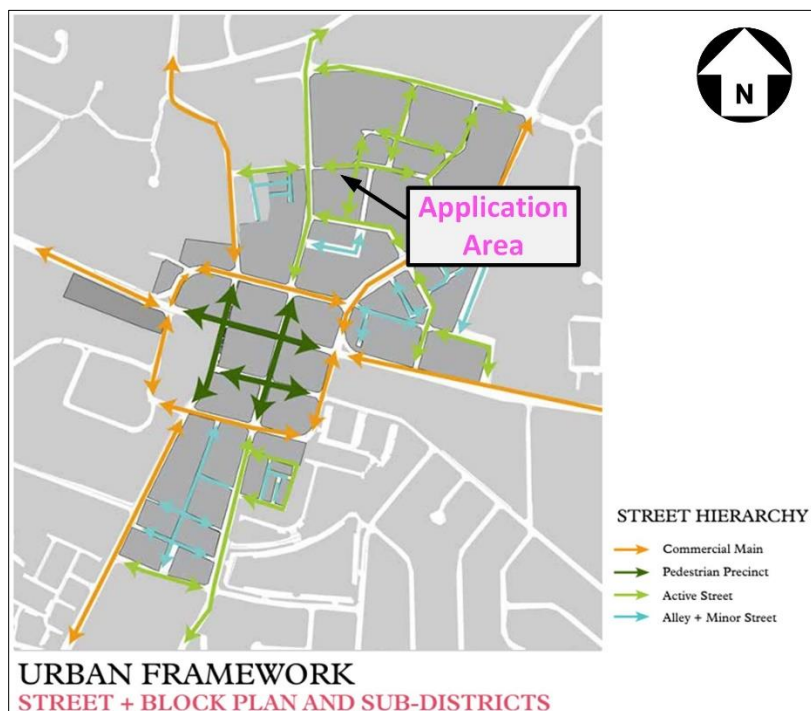
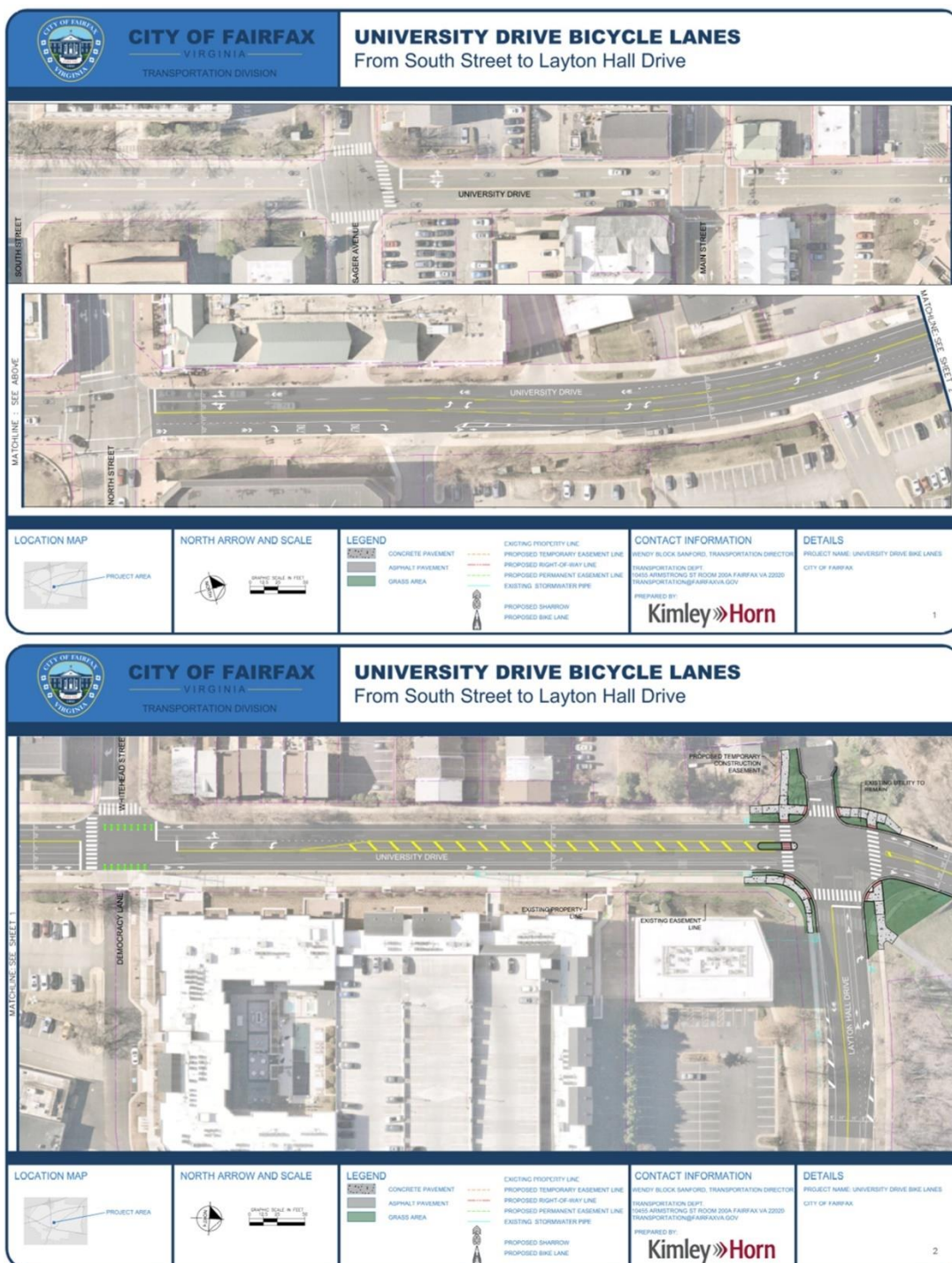


Figure 5: Street Hierarchy Map (City of Fairfax Old Town Small Area Plan)

Additionally, nearby multimodal improvements are planned in the area as outlined below.

- 1) University Drive Spine: To provide a 'complete street' environment for all road users by accommodating a variety of transportation modes, the existing four lane street is planned to be converted to a three-lane street with two travel lanes, one two-way left turn lane (TWLTL), and buffered bike lanes in both travel directions. It is anticipated that the improvements could be made within the existing ROW and the proposed development would not prevent this improvement from being implemented in the future. The estimated schedule for construction to be complete is end of 2025. Figure 6 shows the project plans with the three-lane configuration on University Drive with bicycle facilities.



- 2) Blenheim Boulevard: Plans for new bicycle facilities on Blenheim Boulevard from Layton Hall Drive to Ridge Avenue are currently in design per the Old Town Small Area Plan, as shown below. These facilities are not currently planned to the south of Layton Hall Drive.

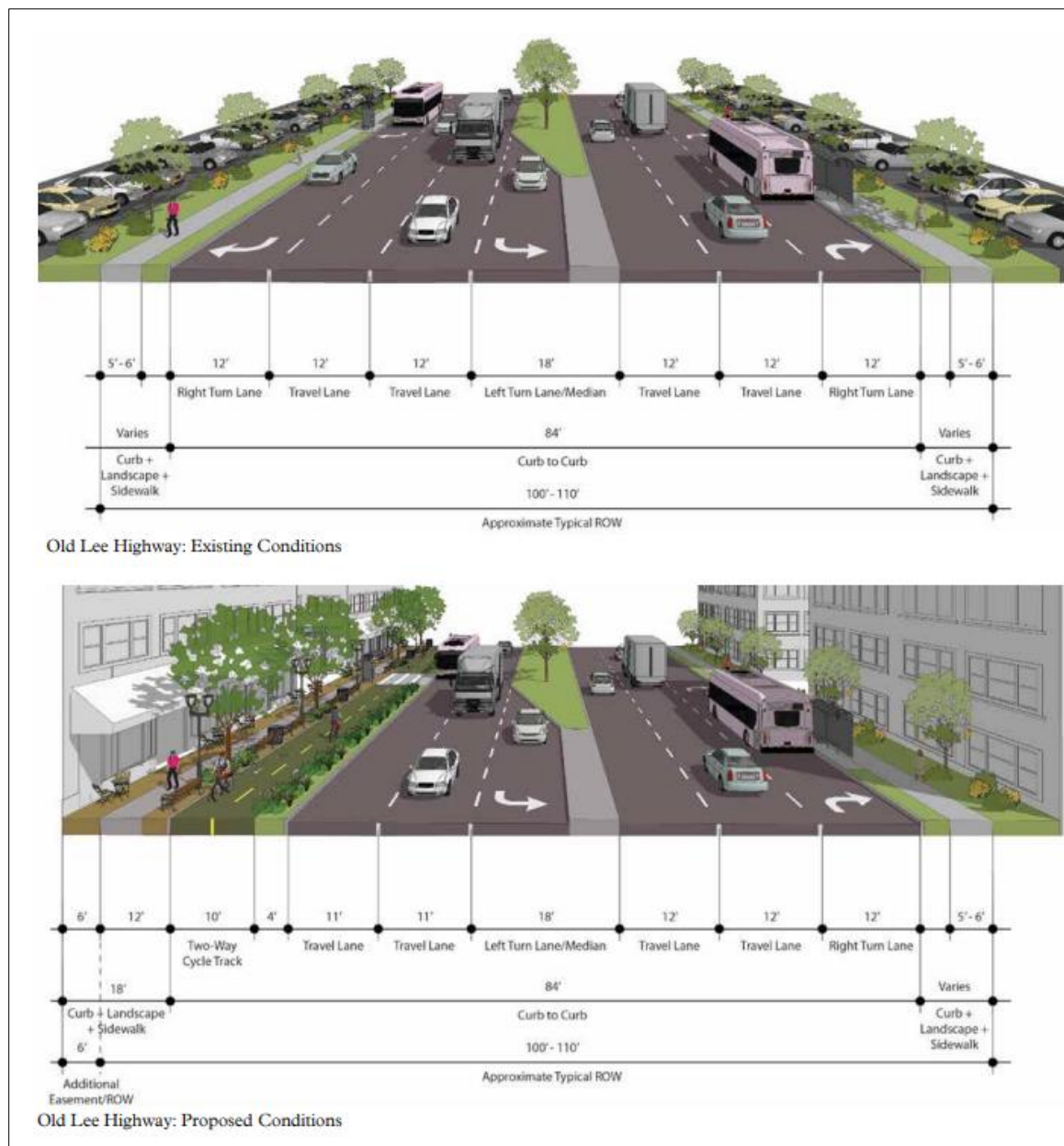


Figure 7: Blenheim Boulevard (Old Lee Highway) Multimodal Improvements (Source: Old Town Small Area Plan)

Zoning and Future Land Use for the Site and Nearby Uses

In existing conditions, the site parcels are zoned as CR Commercial Retail and CG Commercial General as shown in Figure 8.

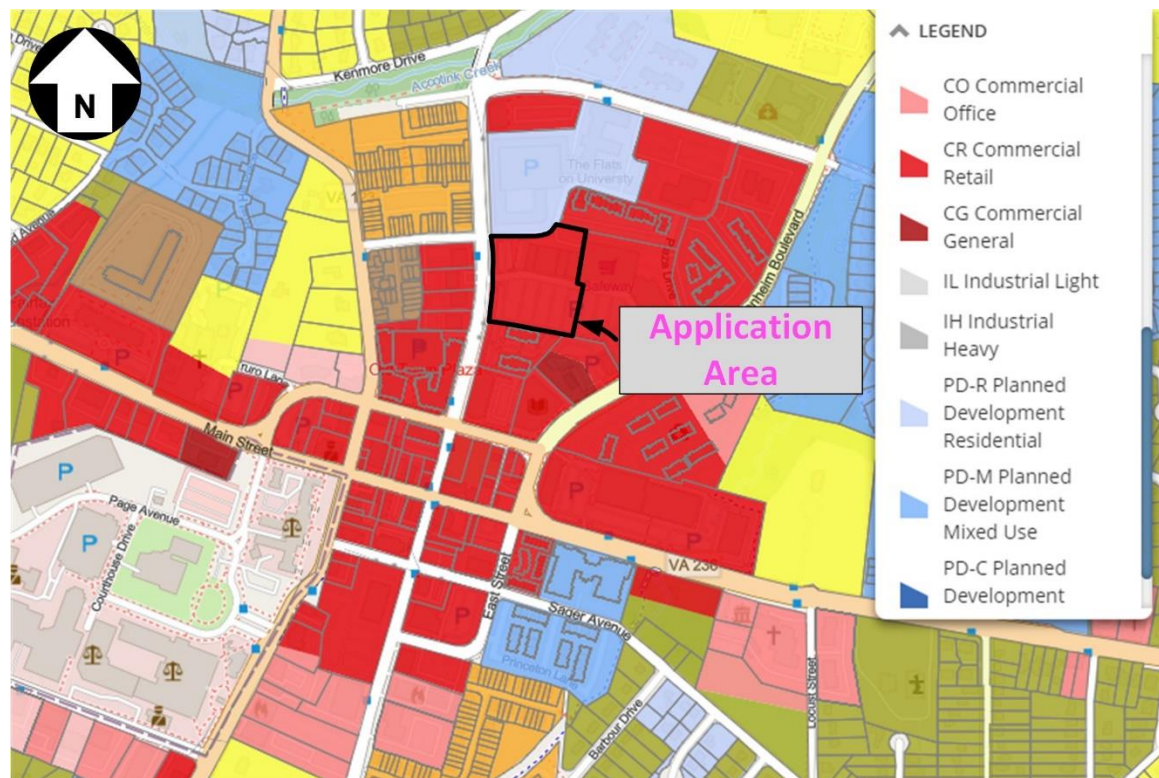


Figure 8: City of Fairfax Zoning Map

Future land use for the site parcels shows the area as 'Activity Center'. Activity Center per the City's Zoning Ordinance refers to area(s) designated for mixed-use environments. Future land use map is shown in Figure 9.

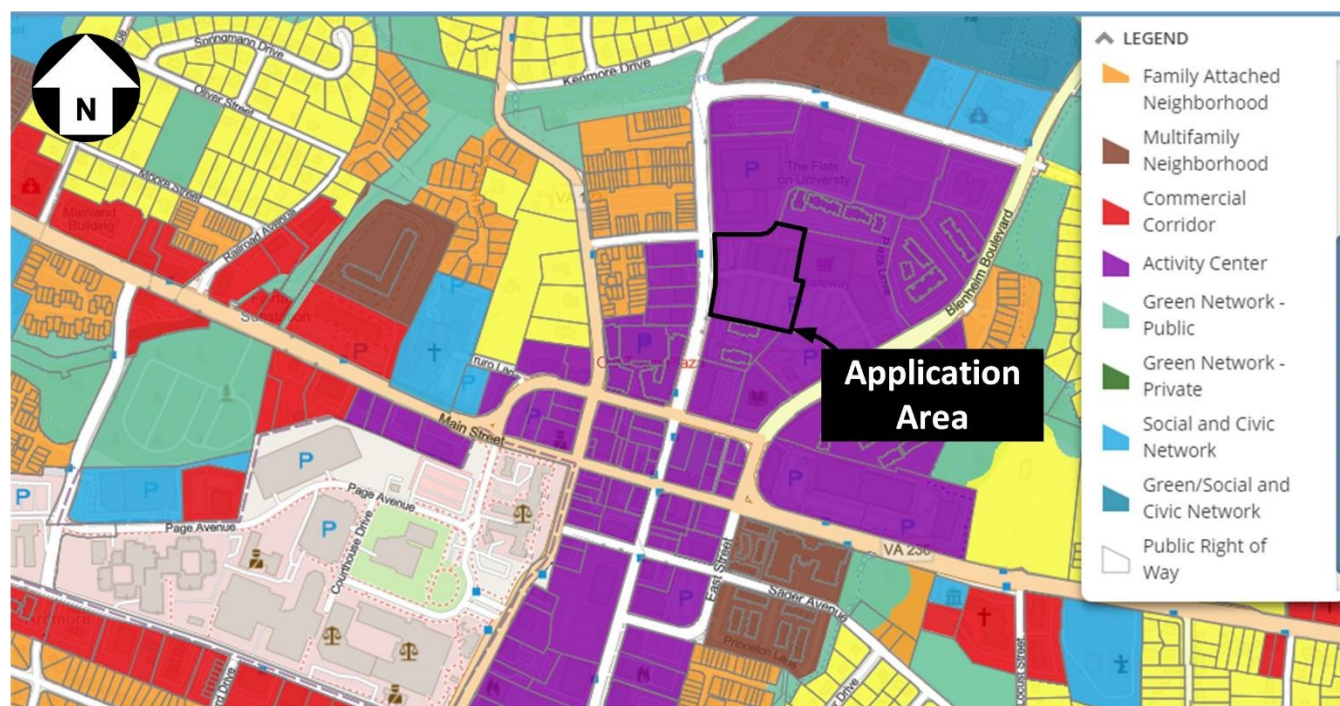


Figure 9: City of Fairfax Future Land Use

Descriptions of Geographic Scope and Limits of the Study Area

The geographic scope for the transportation study area was developed in accordance with the City's guidance.

The vehicular study area in the approved scope included the following intersections. Please note that Intersection 3 is no longer included as it is not required for the proposed development.

1. Blenheim Boulevard and Street 3 / Plaza Drive
2. Blenheim Boulevard and Fairfax Commons Entrance
3. Blenheim Boulevard and Street 1 (**Access No Longer Pursued**)
4. Blenheim Boulevard and Southern Entrance
5. University Drive and Street 1/ Existing Driveway
6. University Drive and Existing Courthouse Plaza Entrance/7-11 Entrance
7. University Drive and Democracy Lane/Whitehead Street
8. Democracy Lane and Garage Entrance
9. Democracy Lane and Layton Hall Drive
10. Blenheim Boulevard and Layton Hall Drive

Existing Roadways

The study area includes four (4) intersections along Blenheim Boulevard, three (3) intersections along University Drive, one (1) intersection on Democracy Lane and one (1) intersection along Layton Hall Drive. Figure 10 shows the study intersections. It is noted that access at Study Intersection 3 (Blenheim Boulevard and Street 1) is no longer pursued, and the intersection is shown in order to be consistent with the scoping document.

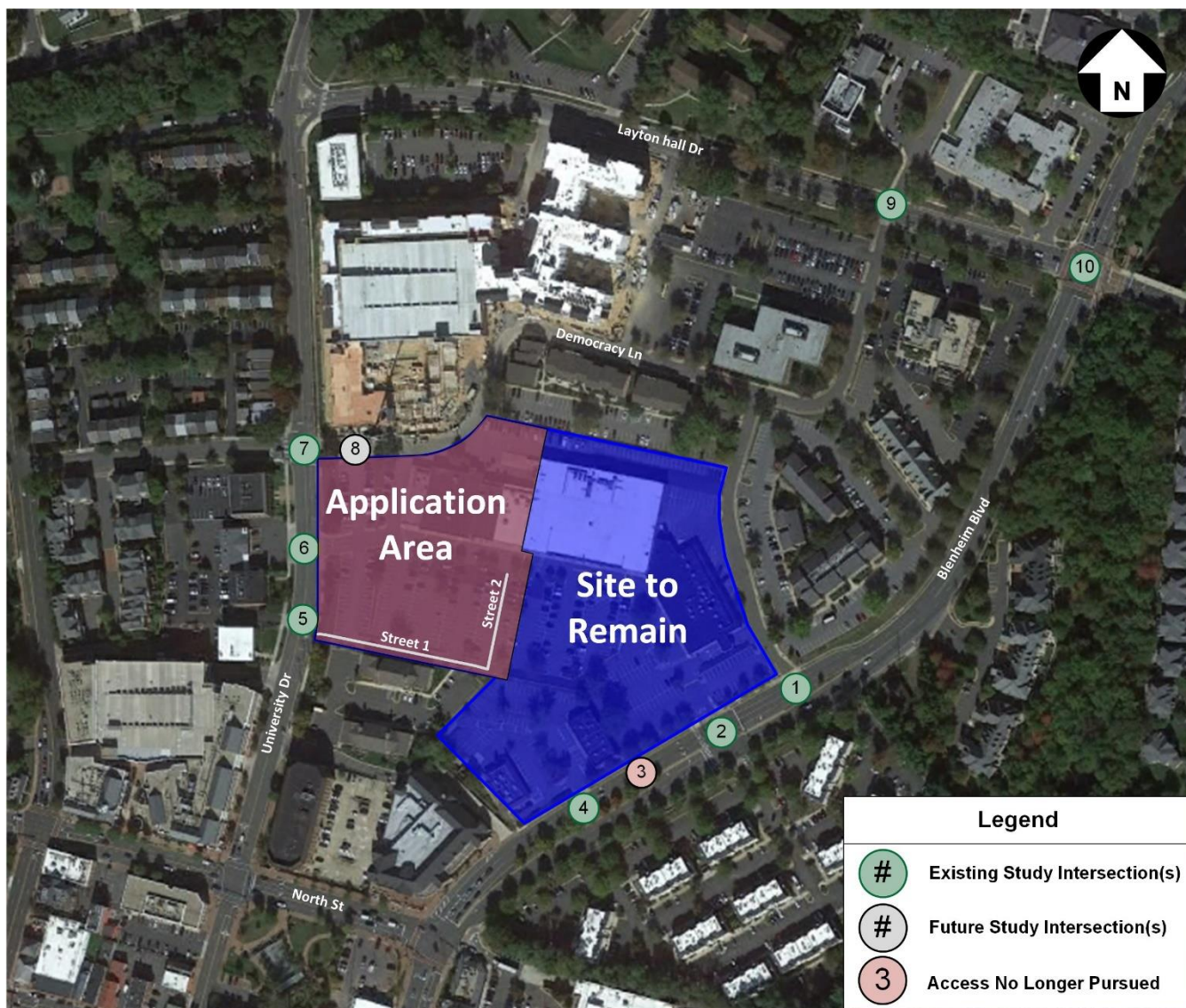


Figure 10: Study Intersections

Existing Conditions (2023)

Existing Transit Services

Four (4) bus routes operated by City of Fairfax: City-University Energysaver (CUE) system currently serve the site area. The system provides scheduled, low-cost transportation services to George Mason University, to shopping centers and other locations within the City of Fairfax as well as the Vienna/Fairfax GMU WMATA station. The existing bus routes are shown on Figure 11. It is noted that only the CUE system serves the immediate site area. WMATA bus route 29K originating from King Street-Old Town metro station serves the area via the University Drive & Main Street bus stop on Main Street.

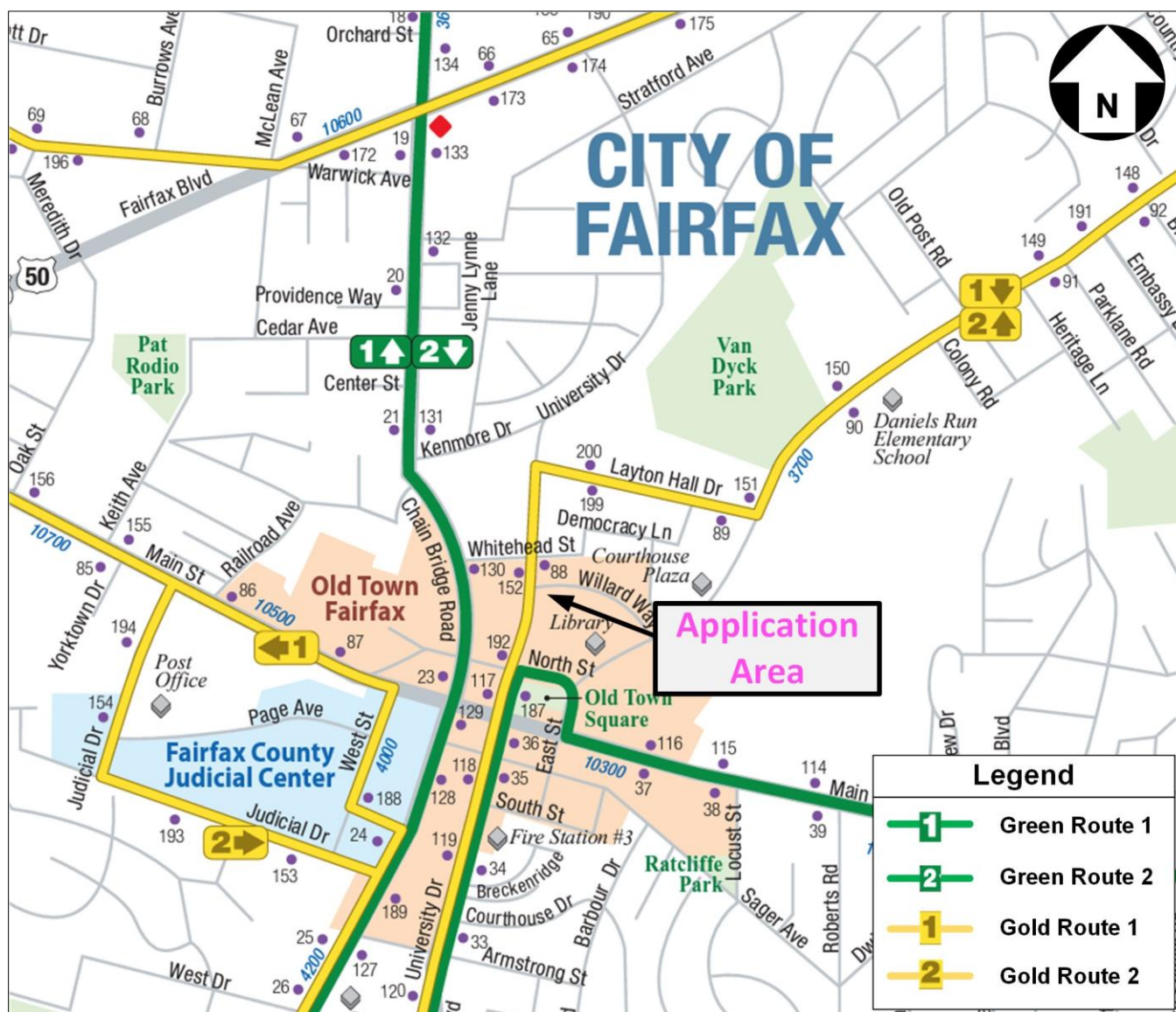


Figure 11: Existing CUE Bus Routes

Source: cuebus.org

The CUE system operates Monday-Friday for all four routes, with a typical headway of approximately 30 minutes during AM and PM peak periods. Special reduced service is also provided on Saturdays and Sundays with headways of approximately 60 minutes during the peak mid-day periods.

Information about the CUE bus schedules is included in Appendix B.

Bus Stop Assessment

A total of 11 bus stops currently exist along the frontage of the site and along Main Street towards the south of the site. Table 1 lists the available infrastructure at the bus stops. The provided infrastructure can include a sign and pole, with or without an information case, ADA landing pads and sidewalk, seating, shelter, and trash bins.

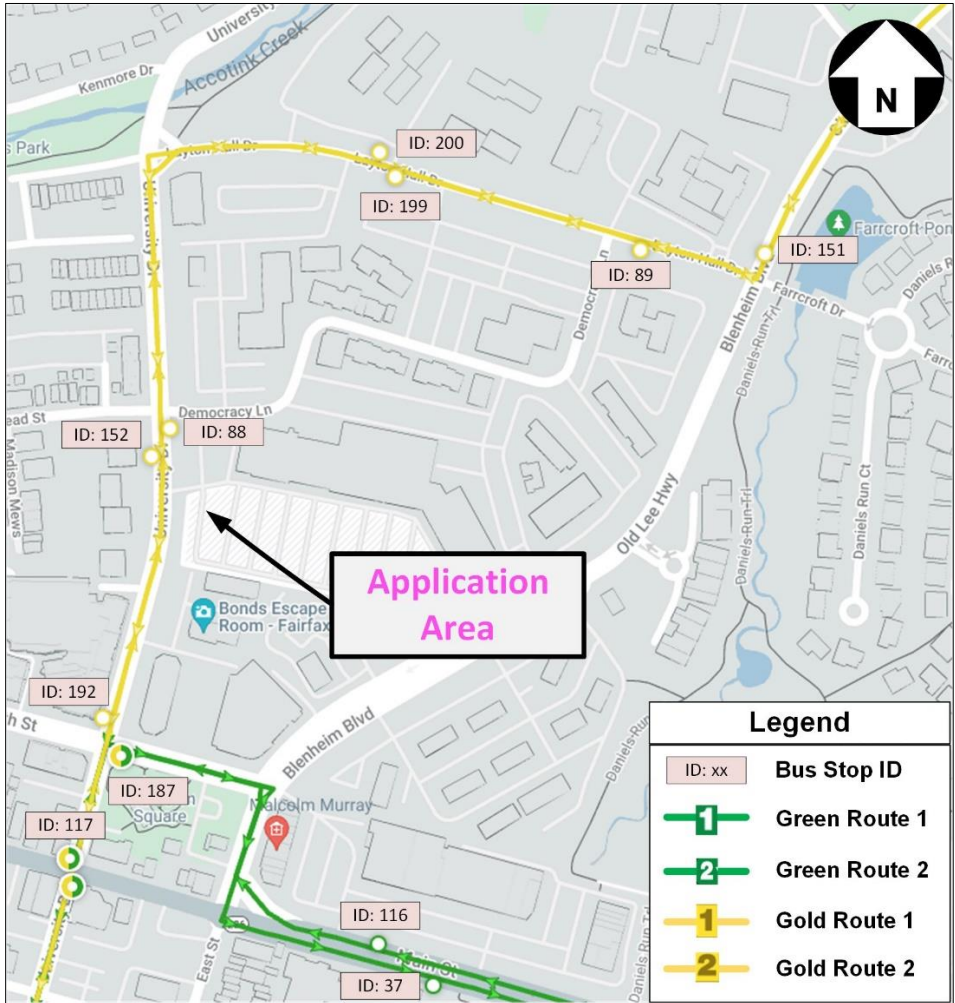


Figure 12: Bus Stops in Vicinity of the Site
Source: [cuebus.org](https://www.cuebus.org/)

Table 1: Bus Stop Facilities

Location	Stop ID	Routes Served	Infrastructure						
			Sign	ADA Landing Pad	Sidewalk	Route Info Case	Bench	Shelter	Trash
Old Lee Highway/Blenheim Boulevard at Layton Hall Dr (SB)	151	Gold 1	•	•	•	•	•	•	•
Layton Hall Drive at Old Lee Highway/Blenheim Boulevard (EB)	89	Gold 2	•	•	•	•	•	•	•
Layton Hall Drive at The Flats (EB)	199	Gold 2	•	•	•	•	•	•	•
Layton Hall Drive at Layton Hall Apartments (WB)	200	Gold 1	•	•	•	•	•	•	•
University Drive at Democracy Lane (NB)	88	Gold 2	•	•	•	•	•	•	•
University Drive at Whitehead Street (SB)	152	Gold 1	•	•	•	•	•	•	•
University Drive at North Street (SB)	192	Gold 1	•	•	•	•	•	•	•
University Dr & Main St	117	Green 1	•	•	•	•	•	•	•
University Dr at North St	187	Gold 2, Green 2, 29K	•	•	•	•	•	•	•
Main Street Market Place	116	29K, Green 1	•	•	•	•	•	•	•
Main St at East St	37	29K, Green 2	•	•	•	•	•	•	•

As shown in Table 1, all of the bus stops identified have a sign and a connected sidewalk. Depending on the location, some of the bus stops lack some additional facilities such as a shelter and route information cases with the map of the bus network.

Existing Bicycle Facilities

As shown in Figure 13, it is evident that dedicated bike lanes are limited on westbound Layton Hall Drive when traveling from Blenheim Boulevard to University Drive via Layton Hall Drive. Conversely, when traveling from University Drive to Blenheim Boulevard, a Bike Sharrow is available. It is worth noting that these bike facilities cater to cyclists along this specific route, offering designated spaces for safe and convenient biking. However, additional bike paths or lanes at other locations within the area may be necessary to further encourage cycling as a viable mode of transportation and promote connectivity for cyclists across the region. Lastly, three (3) Capital Bikeshare locations in the vicinity of the application area provide further opportunities for bicycle travel to/from the site.

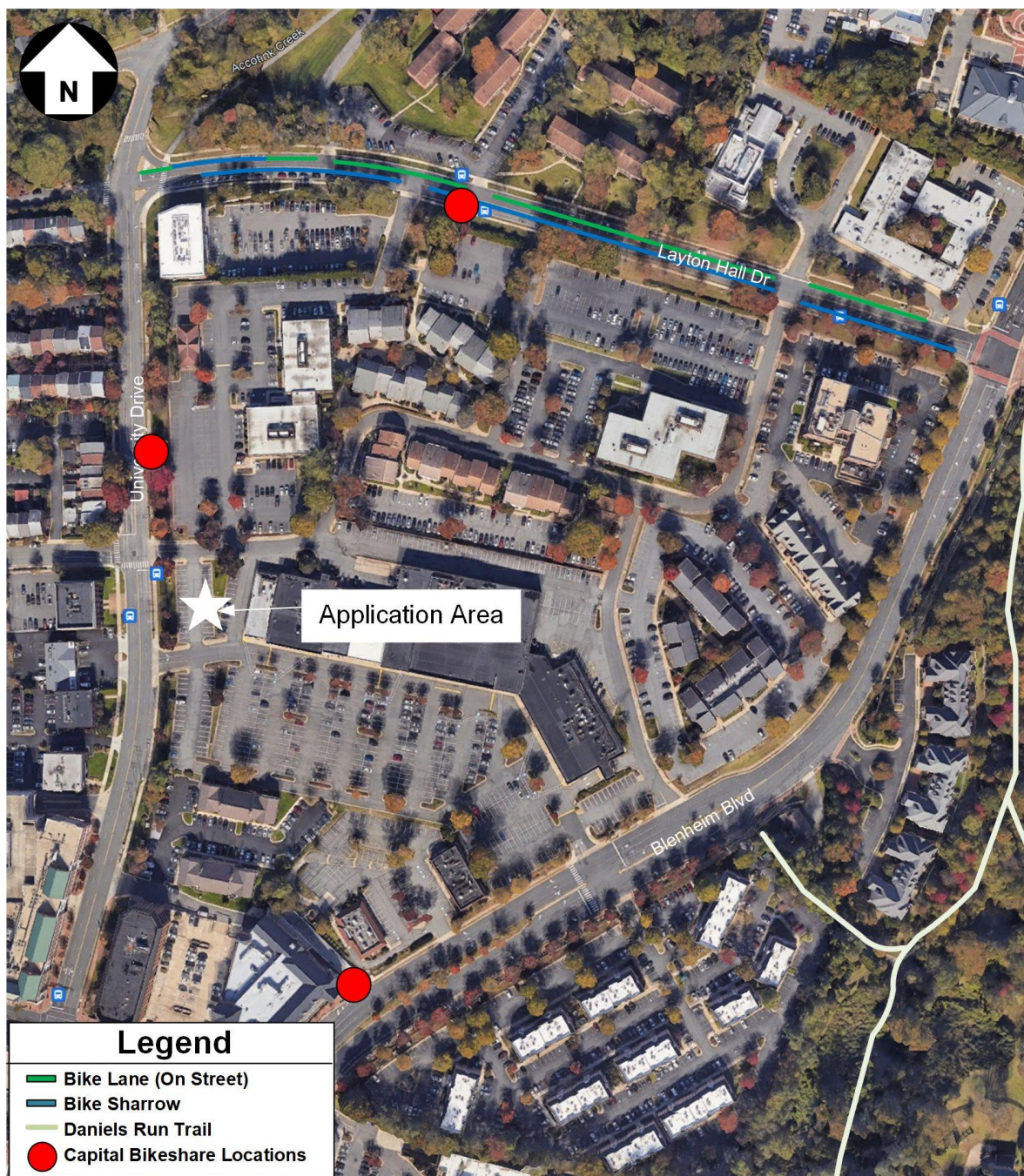


Figure 13: Existing Conditions – Bicycle Facilities

As observed, bicycle facilities currently exist on Layton Hall Drive which connects to Daniels Run Trail.

Existing Bicycle Volumes

Figure 14 depicts the existing bicyclist peak hour volumes, based on counts included with the conducted vehicular counts collected at the study intersections during the peak periods (conducted on Thursday, March 30, 2023). The peak hours for the system were determined to be 7:30 AM to 8:30 AM and 4:45 PM to 5:45 PM.

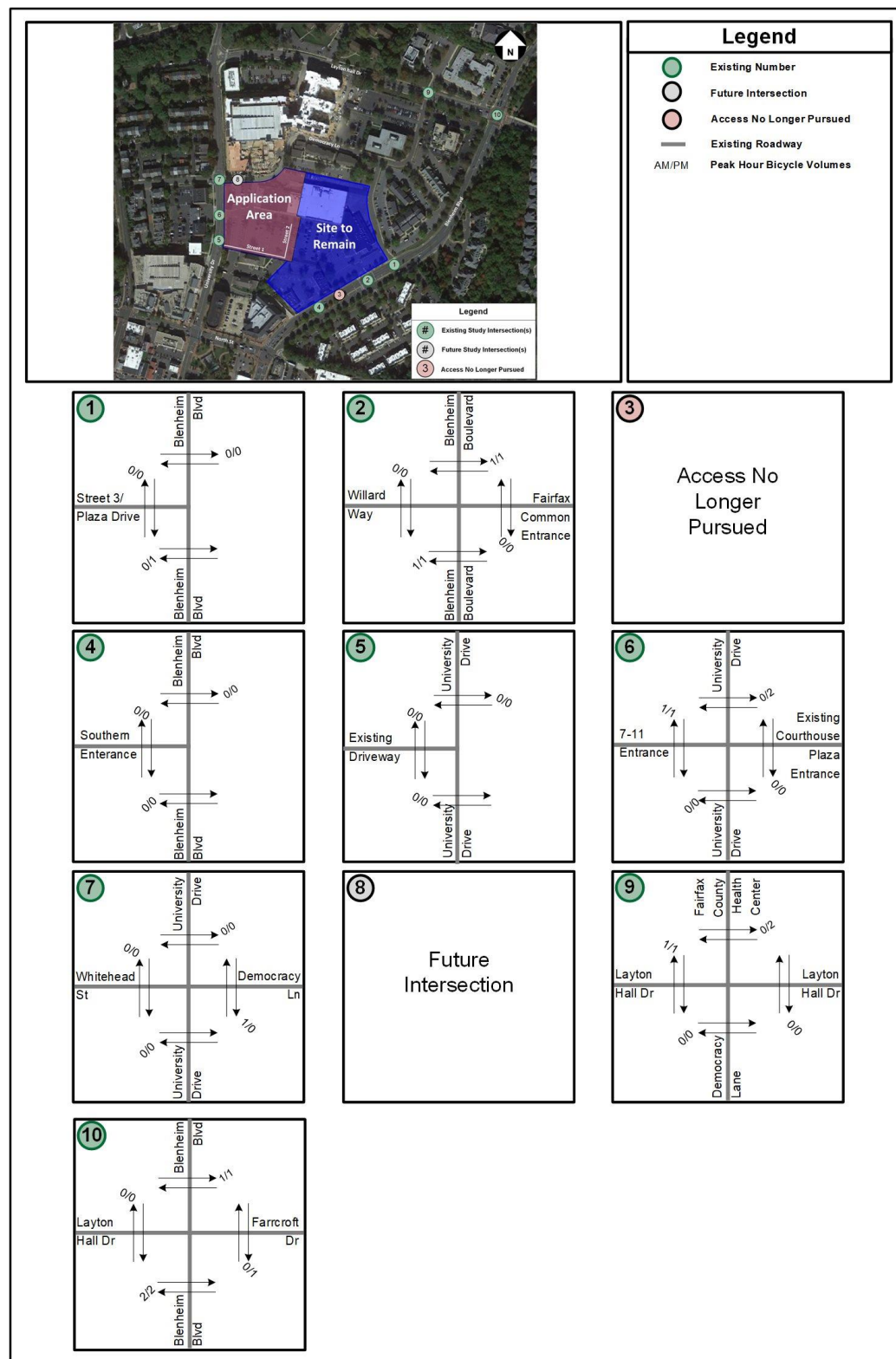


Figure 14: Existing Bike Volumes

Pedestrian Facilities

Existing Infrastructure

The site location benefits from well-established pedestrian facilities surrounding the site. Sidewalks currently exist at all study intersections, with a minimum width of 5 feet and up to 10 feet. Sidewalks exist on both sides of the streets on Blenheim Boulevard, University Drive, North Street and Layton Hall Drive. Further pedestrian safety and convenience can be enhanced by putting marked crosswalks at certain midblock locations and future signalized intersections if the necessary pedestrian demand is observed. Midblock crosswalks and future signals can better serve pedestrian demand if the anticipated pedestrian activity due to the various land uses is not adequately served by the existing pedestrian crosswalks. A midblock crosswalk is currently proposed on Democracy Lane on the north side of the Courthouse Plaza Residential Development, which would reduce pedestrian travel and crossing times for pedestrians anticipated from The Flats, the proposed Development, and the existing retail uses. Based on further engineering studies, appropriate crosswalk treatments would be recommended based on pedestrian demand and design constraints. Figure 15 shows the existing pedestrian facilities in the site study area.

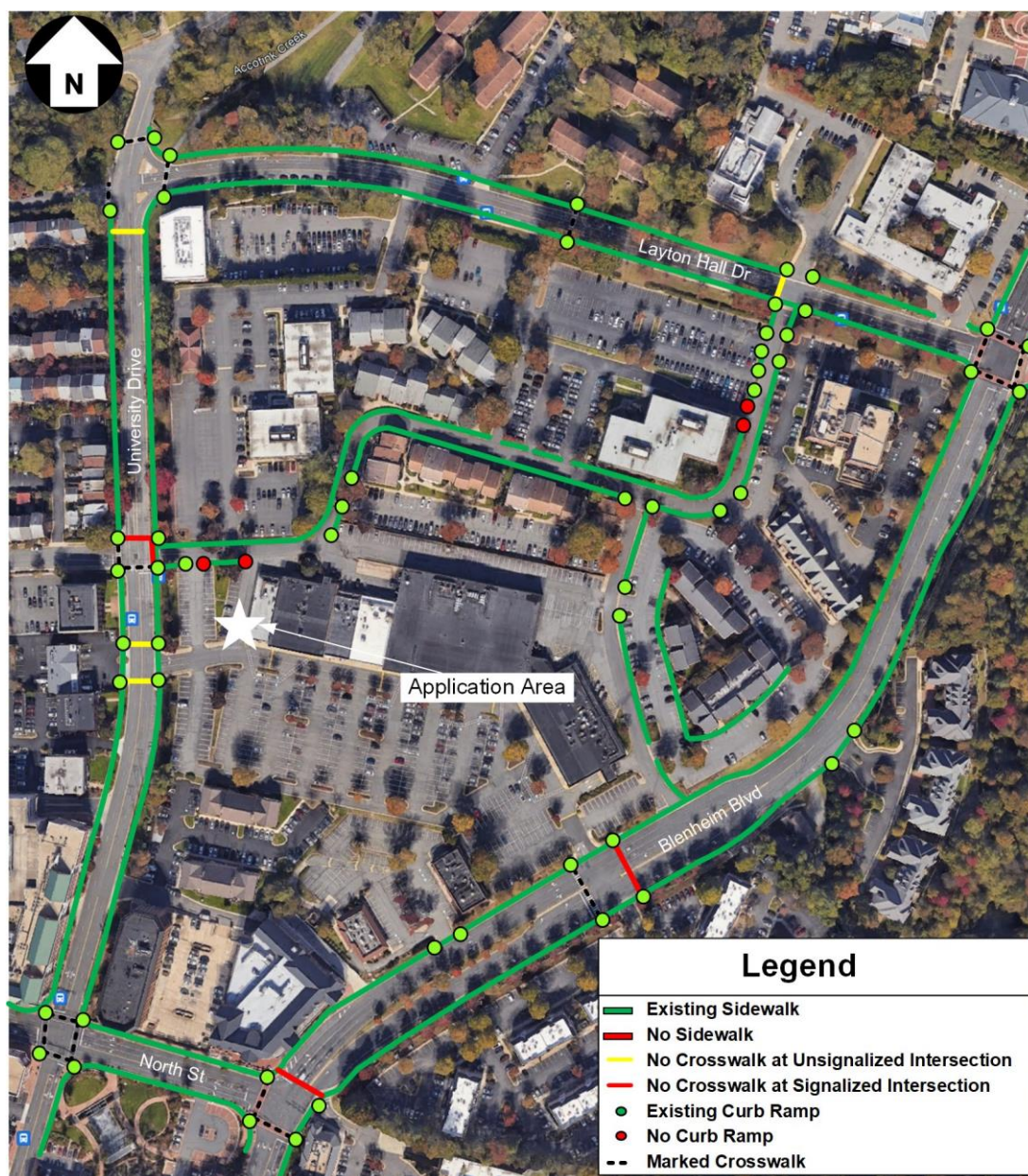


Figure 15: Existing Pedestrian Facilities

Existing Pedestrian Volumes

Figure 16 depicts the existing pedestrian peak hour volumes at the study intersections, based on counts included with the conducted vehicular counts collected at the study intersections during the peak periods (conducted on Thursday, March 30, 2023). For the purposes of this analysis, no inherent growth is assumed for pedestrian trips.

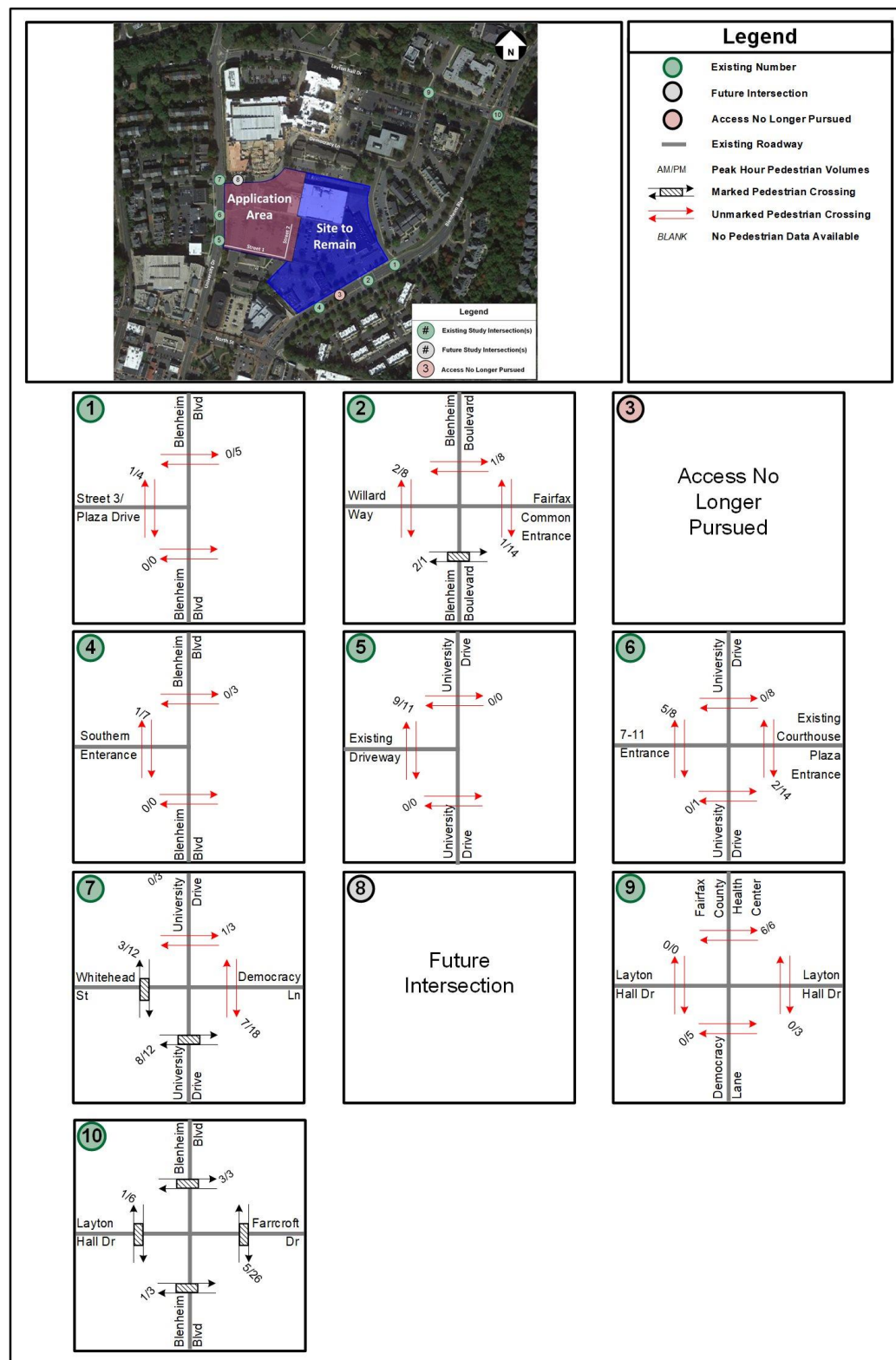


Figure 16: Peak Hour Pedestrian Volumes

Anticipated Pedestrian Activity

The proposed project intends to provide an internal pedestrian network that serves the demand between the residential and retail uses and in addition, provide connectivity to the existing pedestrian infrastructure surrounding the site. Figure 17 shows the pedestrian paths from the site to selected surrounding land uses in the vicinity of the site.

Figure 18 shows the pedestrian facilities proposed along the proposed development.



Figure 17: Pedestrian Paths to Selected Surrounding Land Uses

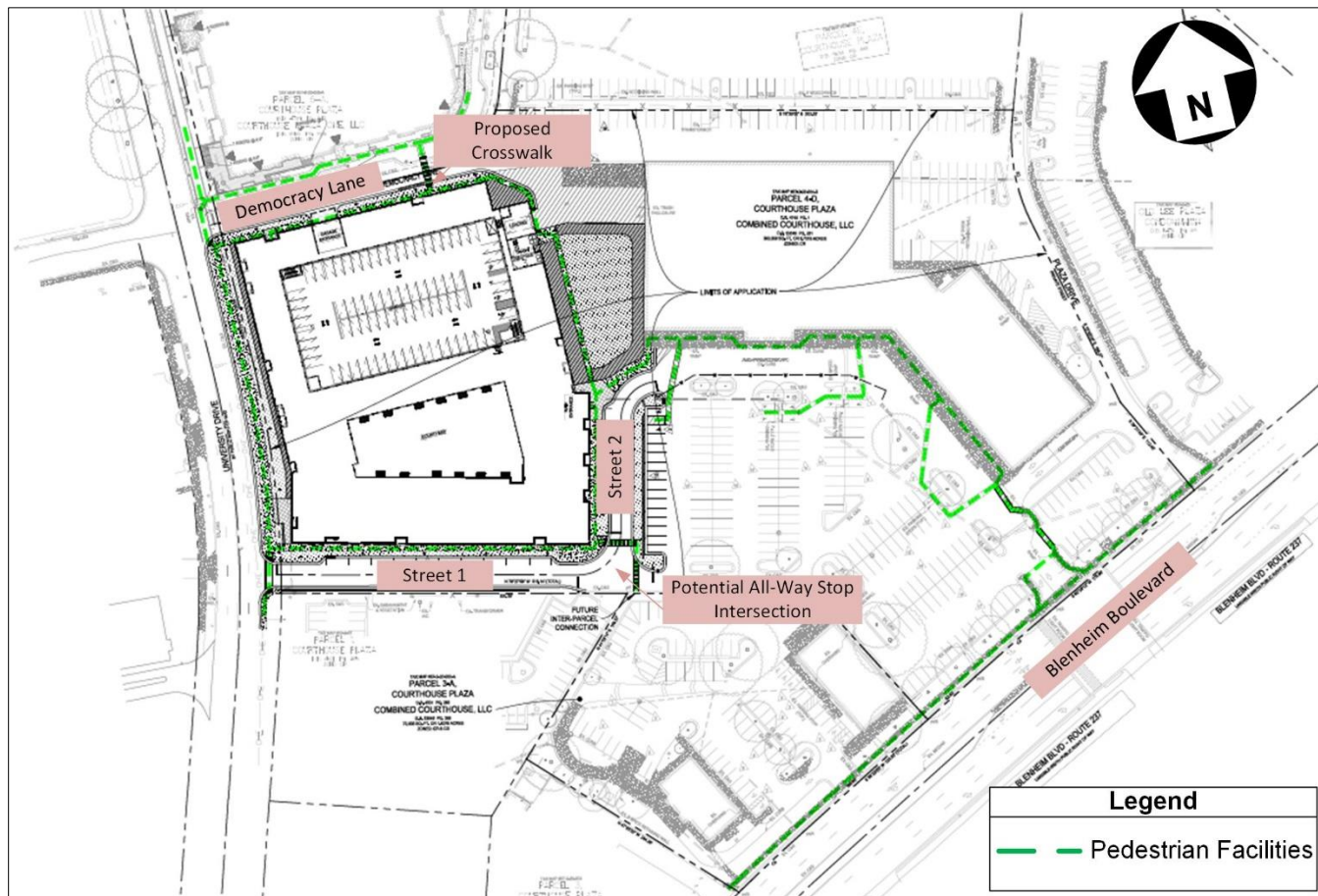


Figure 18: Proposed Pedestrian Facilities in the Vicinity of the Development

Figure 18 shows the proposed pedestrian facilities in the vicinity of the development. As mentioned previously, Street 1 and Street 2 intend to follow the City’s urban framework of achieving a grid street hierarchy. Additional pedestrian accommodations are proposed such as a crosswalk on Democracy Lane and a potential All-Way Stop Controlled intersection between Street 1 and Street 2 to enhance safer pedestrian walkability in the vicinity of the Site.

Planned Future Transportation Improvements

Roadway & Multimodal Improvements

As mentioned previously, the City of Fairfax Project ‘University Drive Spine’, which provides multimodal transportation improvements along University Drive, is included in all future (2028) analysis scenarios.

Existing Roadway Network

A description of the major roadways within the study area is presented in Table 2. The existing local roadway network, including lane configurations and traffic controls, is illustrated on Figure 19.

Table 2: Existing Road Network (Per published VDOT 2019 AADT Data)

Roadway	RTE #	VDOT Classification	Posted Speed Limit (mph)	AADT (vpd)	k-factor
University Drive	6627	Major Collector	25	11,000	8.8%
North St	236	Other Principal Arterial	25	20,000	9.0%
Blenheim Blvd	6628	Minor Arterial	30	17,000	9.7%

Historical Crash Data

Historical crash data was obtained from VDOT’s Crash Analysis Tool for the existing study intersections for a five-year period, from January 2018 to December 2022. The crash data from VDOT is provided in Appendix C.

The crash rate for the existing intersections were computed using the following formula:

$$\text{Crash Rate} = \frac{1,000,000 * \# \text{ of Crashes at an Intersection}}{365 * \# \text{ of Years} * \text{Intersection Approach ADT}}$$

The following section presents the crash analysis for all study intersections that had reported crashes during the five-year study period. Table 3 shows the summary of the crash analysis results. It is noted that there were no reported crashes at Study Intersection 5 (University Drive and Existing Driveway).

Table 3: Crash Data Analysis Summary Table

Intersection	Estimated ADT	PDO	Injury	Fatality	Total	Crash Rate (Per MEV)
2 Blenheim Blvd at Fairfax Commons Entrance	13,395	1	1	0	2	0.08
6 University Drive at Existing Courthouse Plaza Entrance/7-11 Entrance	9,510	2	1	0	3	0.17
7 University Drive at Democracy Ln/Whitehead St	9,390	6	1	0	7	0.41
9 Layton Hall Drive at Democracy Ln	4,450	3	0	0	3	0.37
10 Blenheim Blvd at Layton Hall Dr	14,210	6	2	0	8	0.31

It is noted that the ADT used for calculating the crash rates are based on existing collected PM peak hour volumes and the VDOT published k-factor or an assumed k-factor of 10%.

Table 4: VDOT Crash Data for the Intersection of Blenheim Blvd and Fairfax Commons Entrance (Intersection 2)

Intersection Crash Analysis	Crash Data for the Intersection of Blenheim Blvd and Fairfax Commons Entrance (January 2018 - December 2022)						Relative Frequency
	2018	2019	2020	2021	2022	Total	
<u>Crash Severity</u>							
Fatal Collision (Type K)							0.00%
Injury Collision (Type A, B, and C)		1				1	50.00%
Type A							
Type B		1				1	
Type C							
Property Damage Only (Type PDO)				1		1	50.00%
TOTAL*		1		1		2	100.00%
<u>Crash Type</u>							
Fixed Object/ Single-Vehicle Crash							0.00%
Head-On							0.00%
Sideswipe / Same Direction							0.00%
Sideswipe / Opposite Direction							0.00%
Rear-End Collision							0.00%
Angle Collision		1		1		2	100.00%
Backed Into							0.00%
Pedestrian Collision							0.00%
Deer/Animal							0.00%
Other							0.00%
TOTAL*		1		1		2	100.00%
<u>Other Factors</u>							
Distracted Driver							0.00%
Alcohol**							0.00%
Work-Zone							0.00%
Inclement Weather (Non-Dry)				1		1	50.00%
Speeding		1				1	50.00%
Pedestrian Injury***							N/A
Time of Day							
AM Peak Period (6 - 10 AM)							0.00%
Off Peak - Daytime (10 AM - 3 PM)							0.00%
PM Peak Period (3 - 7 PM)		1		1		2	100.00%
Off Peak - Nighttime (7 PM - 6 AM)							0.00%
CALCULATED CRASH RATE****						0.08	Crashes per MEV
* It should be noted that an intersection radius of 150 feet was used in this analysis. Crashes also thought to be caused by the intersection may have been added based on the description of the crash and engineering judgement.							
** Instances where the event was classified as "Unknown", "Not Known Whether Impaired", "Ability Not Impaired" were classified as alcohol related to provide a more conservative analysis.							
*** Pedestrian injuries are based on the number of pedestrians injured and may not be directly be related to the number of crash incidences (i.e., if one crash occurred injuring two pedestrians, the table would show a "2" instead of a "1").							
****Crash rate based on an approximated 13395 ADT.							

* It should be noted that an intersection radius of 150 feet was used in this analysis. Crashes also thought to be caused by the intersection may have been added based on the description of the crash and engineering judgement.

** Instances where the event was classified as "Unknown", "Not Known Whether Impaired", "Ability Not Impaired" were classified as alcohol related to provide a more conservative analysis.

*** Pedestrian injuries are based on the number of pedestrians injured and may not be directly be related to the number of crash incidences (i.e., if one crash occurred injuring two pedestrians, the table would show a "2" instead of a "1").

****Crash rate based on an approximated 13395 ADT.

*Estimated ADT = (12,200+11,250+2,290+1,050) /2 = 13,395

The intersection of Blenheim Blvd and Fairfax Commons Entrance experienced a total of 2 crashes during the five-year study period, as depicted in the table above. There was one "Injury Collision (IC) and one PDO crash "Property Damage Only (PDO)". Of those 2 crashes both were angle collisions. Of the 2 crashes, one crash occurred during inclement weather (non-dry conditions), and one caused by speeding. Both the accidents occurred during the PM Peak Period. The intersection had a crash rate of 0.08 MEV (million entering vehicles), and hence does not exhibit an elevated crash rate.

Table 5: VDOT Crash Data for the Intersection of University Drive and Existing Courthouse Plaza Entrance/7-11 Entrance (Intersection 6)

Crash Data for the Intersection of University Drive and Existing Courthouse Plaza Entrance/7-11 Entrance (January 2018 - December 2022)							
Intersection Crash Analysis	2018	2019	2020	2021	2022	Total	Relative Frequency
<u>Crash Severity</u>							
Fatal Collision (Type K)							0.00%
Injury Collision (Type A, B, and C)			1			1	33.33%
Type A							
Type B			1			1	
Type C							
Property Damage Only (Type PDO)	1		1			2	66.67%
TOTAL*	1		2			3	100.00%
<u>Crash Type</u>							
Fixed Object/ Single-Vehicle Crash							0.00%
Head-On							0.00%
Sideswipe / Same Direction							0.00%
Sideswipe / Opposite Direction							0.00%
Rear-End Collision							0.00%
Angle Collision	1		2			3	100.00%
Backed Into							0.00%
Pedestrian Collision							0.00%
Deer/Animal							0.00%
Other							0.00%
TOTAL*	1		2			3	100.00%
<u>Other Factors</u>							
Distracted Driver							0.00%
Alcohol**							0.00%
Work-Zone							0.00%
Inclement Weather (Non-Dry)			1			1	33.33%
Speeding							0.00%
Pedestrian Injury***							N/A
Time of Day							
AM Peak Period (6 - 10 AM)							0.00%
Off Peak - Daytime (10 AM - 3 PM)			1			1	33.33%
PM Peak Period (3 - 7 PM)	1		1			2	66.67%
Off Peak - Nighttime (7 PM - 6 AM)							0.00%
CALCULATED CRASH RATE****						0.17	Crashes per MEV
* It should be noted that an intersection radius of 150 feet was used in this analysis. Crashes also thought to be caused by the intersection may have been added based on the description of the crash and engineering judgement.							
** Instances where the event was classified as "Unknown", "Not Known Whether Impaired", "Ability Not Impaired" were classified as alcohol related to provide a more conservative analysis.							
*** Pedestrian injuries are based on the number of pedestrians injured and may not be directly be related to the number of crash incidences (i.e., if one crash occurred injuring two pedestrians, the table would show a "2" instead of a "1").							
****Crash rate based on an approximated 9510 ADT.							

*Estimated ADT = (7,910 + 8,420 + 790+ 1,900) / 2 = 9,510

The intersection of University Drive and Existing Courthouse Plaza Entrance/7-11 Entrance experienced a total of 3 crashes during the five-year study period, as depicted in the table above. There was one "Injury Collision (IC) and two PDO crashes "Property Damage Only (PDO)". All three crashes involved angled collisions. Of the 3 crashes, one crash occurred during inclement weather (non-dry conditions). Two out of the three crashes occurred during the PM peak period and one during Off Peak Daytime. The intersection had a crash rate of 0.17 MEV (million entering vehicles), and hence does not exhibit an elevated crash rate.

Table 6: VDOT Crash Data for the Intersection of University Drive and Democracy Lane/Whitehead Street (Intersection 7)

Crash Data for the Intersection of University Drive and Democracy Ln/Whitehead St (January 2018 - December 2022)							
Intersection Crash Analysis	2018	2019	2020	2021	2022	Total	Relative Frequency
<u>Crash Severity</u>							
Fatal Collision (Type K)							0.00%
Injury Collision (Type A, B, and C)					1	1	14.29%
Type A					1	1	
Type B							
Type C							
Property Damage Only (Type PDO)	1	3	1	1		6	85.71%
TOTAL*	1	3	1	1	1	7	100.00%
<u>Crash Type</u>							
Fixed Object/ Single-Vehicle Crash	1					1	14.29%
Head-On							0.00%
Sideswipe / Same Direction		1				1	14.29%
Sideswipe / Opposite Direction							0.00%
Rear-End Collision			1			1	14.29%
Angle Collision		2		1	1	4	57.14%
Backed Into							0.00%
Pedestrian Collision							0.00%
Deer/Animal							0.00%
Other							0.00%
TOTAL*	1	3	1	1	1	7	100.00%
<u>Other Factors</u>							
Distracted Driver							0.00%
Alcohol**							0.00%
Work-Zone							0.00%
Inclement Weather (Non-Dry)	1				1	2	28.57%
Speeding							0.00%
Pedestrian Injury***							N/A
Time of Day							
AM Peak Period (6 - 10 AM)	1					1	14.29%
Off Peak - Daytime (10 AM - 3 PM)		1				1	14.29%
PM Peak Period (3 - 7 PM)		2	1		1	4	57.14%
Off Peak - Nighttime (7 PM - 6 AM)				1		1	14.29%
CALCULATED CRASH RATE****						0.41	Crashes per MEV
* It should be noted that an intersection radius of 150 feet was used in this analysis. Crashes also thought to be caused by the intersection may have been added based on the description of the crash and engineering judgement.							
** Instances where the event was classified as "Unknown", "Not Known Whether Impaired", "Ability Not Impaired" were classified as alcohol related to provide a more conservative analysis.							
*** Pedestrian injuries are based on the number of pedestrians injured and may not be directly be related to the number of crash incidences (i.e., if one crash occurred injuring two pedestrians, the table would show a "2" instead of a "1").							
****Crash rate based on an approximated 9390 ADT.							

*Estimated ADT = (6,850+7,830+2,320+1,790) / 2 = 9,395

The intersection of University Drive and Democracy Ln/Whitehead St experienced a total of 7 crashes during the five-year study period, as depicted in the table above. There was one "Injury Collision (IC) and 6 PDO crashes "Property Damage Only (PDO)". Furthermore, 57.14% were angle collisions and 14.29% rear-end collisions and 14.29% were caused by a fixed object or single vehicle crash. Inclement weather was a factor for two of the crashes. Four out of the seven crashes occurred during the PM Peak Period, one crash occurred during the AM Peak Period, and two crashes occurred during the Off-Peak Period: one during the daytime and the other during nighttime. The intersection had a crash rate of 0.41 MEV (million entering vehicles), and hence does not exhibit an elevated crash rate.

Table 7: VDOT Crash Data for the Intersection of Layton Hall Drive and Democracy Lane (Intersection 9)

Crash Data for the Intersection of Layton Hall Drive and Democracy Ln (January 2018 - December 2022)							
Intersection Crash Analysis	2018	2019	2020	2021	2022	Total	Relative Frequency
Crash Severity							
Fatal Collision (Type K)						3	0.00%
Injury Collision (Type A, B, and C)						3	0.00%
Type A							
Type B							
Type C							
Property Damage Only (Type PDO)	2				1	3	100.00%
TOTAL*	2				1	3	100.00%
Crash Type							
Fixed Object/ Single-Vehicle Crash							0.00%
Head-On							0.00%
Sideswipe / Same Direction							0.00%
Sideswipe / Opposite Direction							0.00%
Rear-End Collision					1	1	33.33%
Angle Collision	1					1	33.33%
Backed Into							0.00%
Pedestrian Collision							0.00%
Deer/Animal							0.00%
Other	1					1	33.33%
TOTAL*	2				1	3	100.00%
Other Factors							
Distracted Driver							0.00%
Alcohol**							0.00%
Work-Zone							0.00%
Inclement Weather (Non-Dry)							0.00%
Speeding							0.00%
Pedestrian Injury***							N/A
Time of Day							
AM Peak Period (6 - 10 AM)	1					1	33.33%
Off Peak - Daytime (10 AM - 3 PM)							0.00%
PM Peak Period (3 - 7 PM)					1	1	33.33%
Off Peak - Nighttime (7 PM - 6 AM)	1					1	33.33%
CALCULATED CRASH RATE****						0.37	Crashes per MEV
* It should be noted that an intersection radius of 150 feet was used in this analysis. Crashes also thought to be caused by the intersection may have been added based on the description of the crash and engineering judgement.							
** Instances where the event was classified as "Unknown", "Not Known Whether Impaired", "Ability Not Impaired" were classified as alcohol related to provide a more conservative analysis.							
*** Pedestrian injuries are based on the number of pedestrians injured and may not be directly be related to the number of crash incidences (i.e., if one crash occurred injuring two pedestrians, the table would show a "2" instead of a "1").							
****Crash rate based on an approximated 4450 ADT.							

*Estimated ADT = (170+650+4,010+4,070) / 2 = 4,450

The intersection of Layton Hall Drive and Democracy Ln experienced a total of 3 crashes during the five-year study period, as depicted in the table above. All three crashes were classified as Property Damage Only (PDO) crashes. Among these crashes, one involved an angle collision, and one involved a rear-end collision. The intersection had a crash rate of 0.37 MEV (million entering vehicles), indicating that it does not exhibit an elevated crash rate.

Table 8: VDOT Crash Data for the Intersection of Blenheim Blvd and Layton Hall Drive (Intersection 10)

Crash Data for the Intersection of Blenheim Blvd and Layton Hall Dr (January 2018 - December 2022)							
Intersection Crash Analysis	2018	2019	2020	2021	2022	Total	Relative Frequency
Crash Severity							
Fatal Collision (Type K)							0.00%
Injury Collision (Type A, B, and C)	1	1				2	25.00%
Type A		1				1	
Type B	1					1	
Type C							
Property Damage Only (Type PDO)	1	3		2		6	75.00%
TOTAL*	2	4		2		8	100.00%
Crash Type							
Fixed Object/ Single-Vehicle Crash							0.00%
Head-On							0.00%
Sideswipe / Same Direction	1					1	12.50%
Sideswipe / Opposite Direction							0.00%
Rear-End Collision	1	2		2		5	62.50%
Angle Collision		2				2	25.00%
Backed Into							0.00%
Pedestrian Collision							0.00%
Deer/Animal							0.00%
Other							0.00%
TOTAL*	2	4		2		8	100.00%
Other Factors							
Distracted Driver							0.00%
Alcohol**							0.00%
Work-Zone							0.00%
Inclement Weather (Non-Dry)		1		1		2	25.00%
Speeding							0.00%
Pedestrian Injury***							N/A
Time of Day							
AM Peak Period (6 - 10 AM)	1			2		3	37.50%
Off Peak - Daytime (10 AM - 3 PM)	1	2				3	37.50%
PM Peak Period (3 - 7 PM)		2				2	25.00%
Off Peak - Nighttime (7 PM - 6 AM)							0.00%
CALCULATED CRASH RATE****						0.31	Crashes per MEV
* It should be noted that an intersection radius of 150 feet was used in this analysis. Crashes also thought to be caused by the intersection may have been added based on the description of the crash and engineering judgement.							
** Instances where the event was classified as "Unknown", "Not Known Whether Impaired", "Ability Not Impaired" were classified as alcohol related to provide a more conservative analysis.							
*** Pedestrian injuries are based on the number of pedestrians injured and may not be directly be related to the number of crash incidences (i.e., if one crash occurred injuring two pedestrians, the table would show a "2" instead of a "1").							
****Crash rate based on an approximated 14210 ADT.							

*Estimated ADT = (12,630 + 10,740 + 940 + 4,110) / 2 = 14,210

The intersection of Blenheim Blvd and Layton Hall Dr experienced a total of 8 crashes during the five-year study period, as depicted in the table above. There were two "Injury Collision (IC) and six PDO crashes "Property Damage Only (PDO)". Furthermore, 62.50% were rear-end collisions and 25% angle collisions. The other crash was categorized as a sideswipe: one in the same direction. Inclement weather was a factor for two of the crashes. Three crashes occurred during the AM Peak Period, two crashes occurred during the PM Peak Period, and three crashes occurred during the Off-Peak Daytime. The intersection had a crash rate of 0.31 MEV (million entering vehicles), and hence does not exhibit an elevated crash rate.

Intersection Analysis of Existing Conditions (2023)

The lane configuration observed at the existing study intersections within the study area is presented in Figure 19.

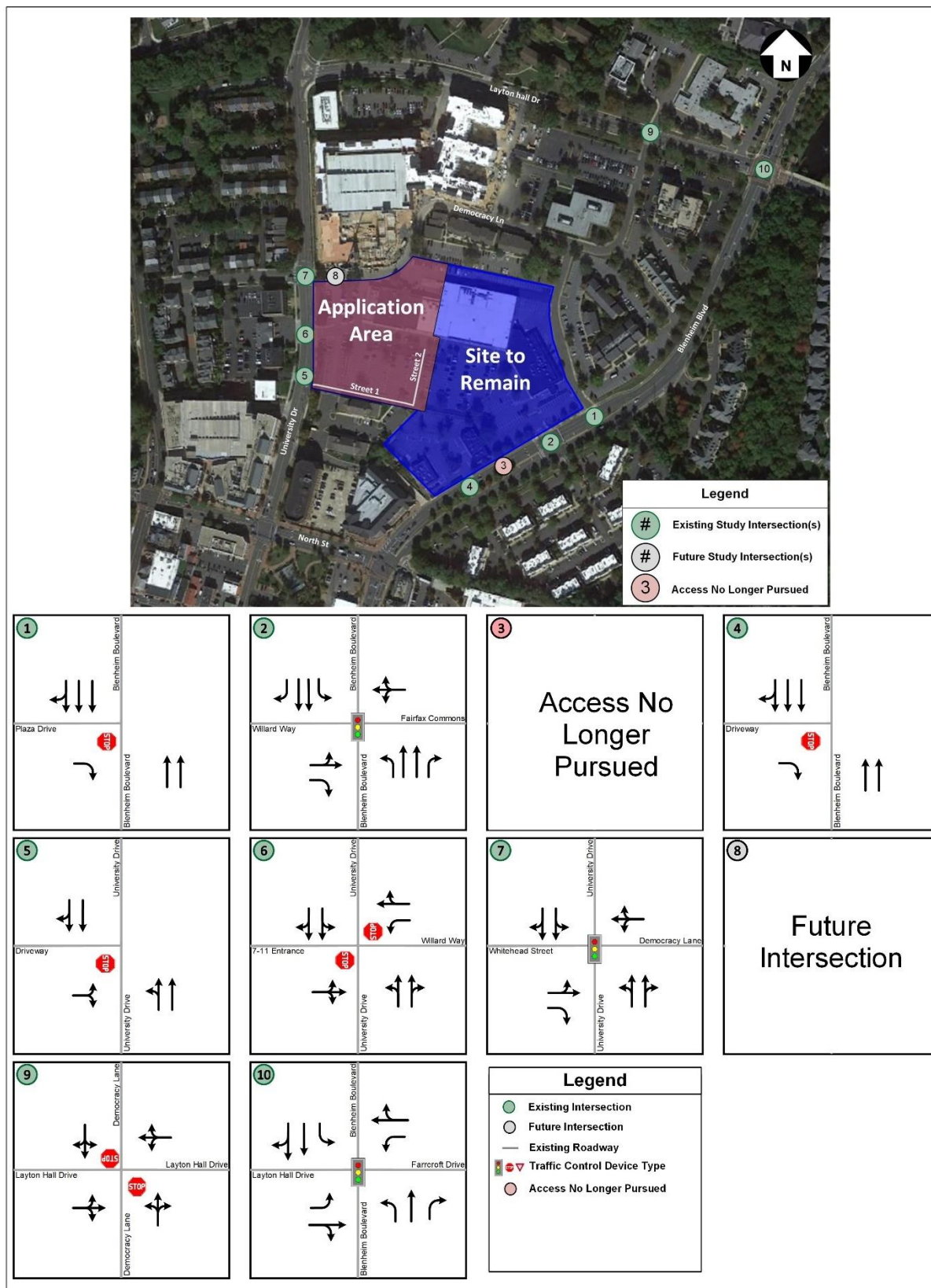


Figure 19: Existing 2023 – Lane Configuration

Existing Traffic Volumes

Turning movement counts were collected at the study area intersections on Thursday, March 30, 2023. The peak hours for the system were determined to be 7:30 AM to 8:30 AM and 4:45 PM to 5:45 PM.

The existing peak hour traffic volumes for the study area intersections are presented on Figure 20. The existing raw turning movement counts are included in Appendix D.

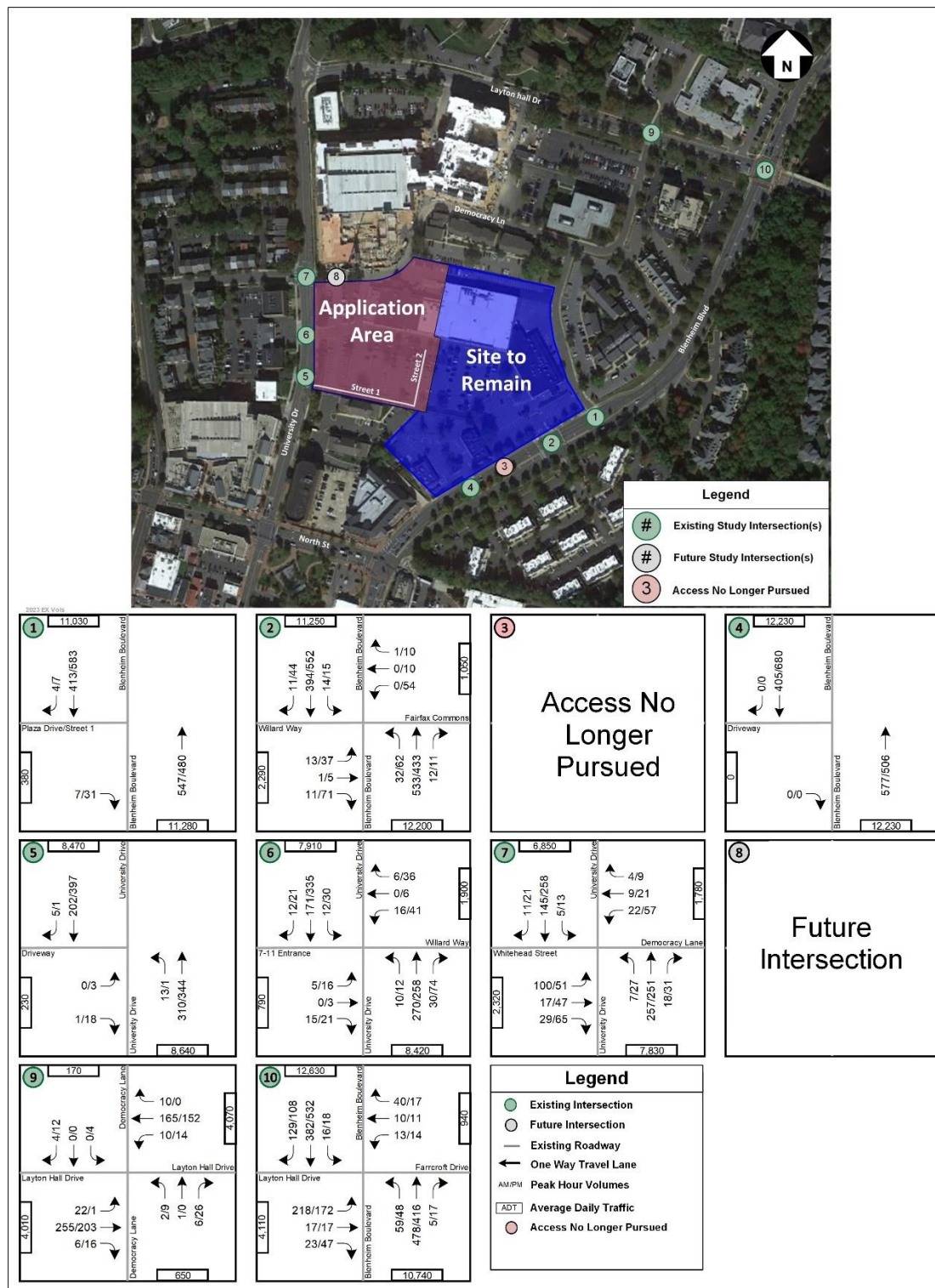


Figure 20: Existing 2023 - Traffic Volumes

Existing (2023) Intersection Capacity and Queuing Analysis

Capacity analysis was performed at the intersections within the study area during the weekday morning and evening peak hours under existing conditions. *Synchro Version 11* was used to analyze the study intersections based on the Highway Capacity Manual (HCM) 6th Edition methodology and includes level of service (LOS), delay, and queue length comparisons for the turning movements analyzed.

Synchro files with existing signal timings were provided by City staff 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. Heavy vehicle percentages determined by existing traffic counts were used for analysis. Pedestrian volumes were also collected during the intersection traffic counts and included in the analysis.

The results of the existing intersection analysis are presented in Table 9, and are expressed in LOS and delay (seconds per vehicle) per lane group. The 95th percentile queue results for each intersection are also presented in Table 9 and are expressed in feet, along with 50th percentile queues shown for signalized intersections. The detailed analysis worksheets are included in Appendix F.

Table 9: Existing 2023 – Intersection Capacity and Queuing Analysis

No.	Intersection (Movement)	Effective Storage Length (ft.) [3]	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec/veh)	50th % Queue (ft.) [2]	95th % Queue (ft.)	LOS	Delay (sec/veh)	50th % Queue (ft.) [2]	95th % Queue
1	Blenheim Boulevard (N/S) at Plaza Drive (EW) Overall Intersection (TWSC)									
	Eastbound Approach		B	10.9			B	11.7		
	Eastbound Right		B	10.9		0	B	11.7		5
2	Blenheim Boulevard (N/S) at Fairfax Commons (EW) Overall Intersection (Signalized)									
	Eastbound Approach		A	8.8			B	11.2		
	Eastbound Thru/Left		B	18.3			C	26.1		
	Eastbound Right		B	17.9	1	17	C	24.9	17	45
	Eastbound Right		B	18.7	0	0	C	26.8	0	18
	Westbound Approach		B	17.7			C	26.5		
	Westbound Left/Thru/Right		B	17.7	0	0	C	26.5	27	66
	Northbound Approach		A	8.4			A	7.6		
	Northbound Left	120	A	6.8	0	11	A	6.8	8	22
	Northbound Thru		A	8.6	0	108	A	7.7	32	94
	Northbound Right		A	6.9	0	0	A	6.7	0	0
	Southbound Approach		A	8.6			A	9.6		
	Southbound Left	120	A	7.2	1	6	A	7.2	2	8
	Southbound Thru		A	8.7	0	83	A	9.8	80	132
	Southbound Right		A	7.5	0	0	A	8.1	0	0
3	Access No Longer Pursued									
4	Blenheim Boulevard (N/S) at Existing Driveway (EW) Overall Intersection (TWSC)									
	Eastbound Approach		A	0.0			A	0.0		
	Eastbound Right		A	0.0		0	A	0.0		0
5	University Drive (N/S) at Existing Driveway (EW) Overall Intersection (TWSC)									
	Eastbound Approach		A	8.9			B	10.3		
	Eastbound Left/Right		A	8.9		0	B	10.3		3
	Northbound Approach									
	Northbound Left		A	7.7		0	A	8.2		0

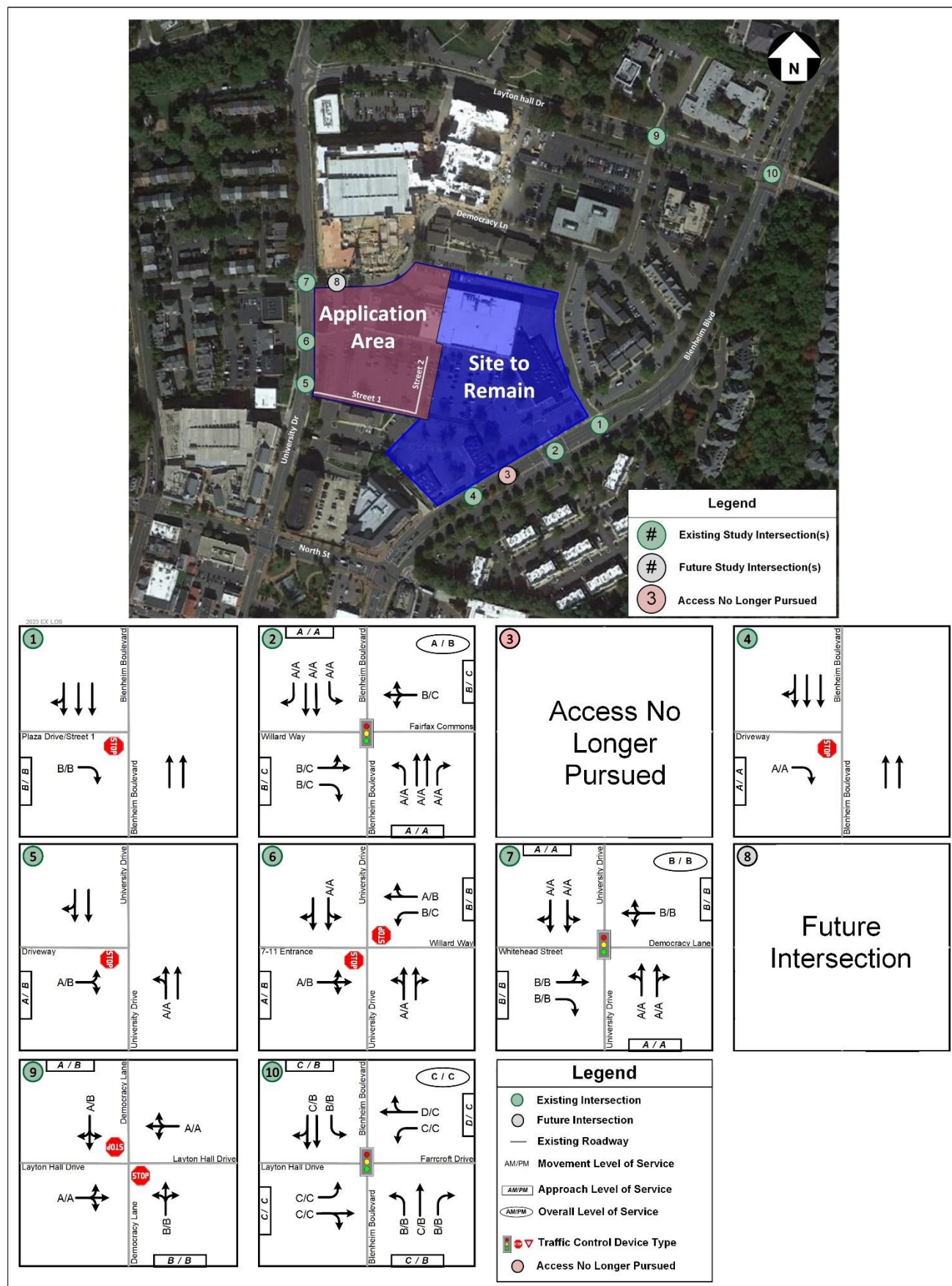
No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec/veh)	50th % Queue (ft.) [2]	95th % Queue (ft.)	LOS	Delay (sec/veh)	50th % Queue (ft.) [2]	95th % Queue (ft.)
6	University Drive (N/S) at 7-11 Driveway (EW)									
	Overall Intersection (TWSC)									
	Eastbound Approach		A	9.9			B	13.2		
	Eastbound Left/Thru/Right		A	9.9		3	B	13.2		8
	Westbound Approach		B	12.4			B	13.6		
	Westbound Left		B	13.5		3	C	16.4		10
	Westbound Thru/Right		A	9.3		0	B	10.8		5
	Northbound Approach									
	Northbound Thru/Left		A	7.8		0	A	8.1		0
	Southbound Approach									
	Southbound Thru/Left		A	8.0		0	A	8.1		3
7	University Drive (N/S) at Whitehead Street/Democracy Lane (EW)									
	Overall Intersection (Signalized)		B	10.4			B	10.3		
	Eastbound Approach		B	13.5			B	12.8		
	Eastbound Left/Thru		B	14.0	15	91	B	13.5	11	79
	Eastbound Right		B	11.3	0	9	B	11.7	0	28
	Westbound Approach		B	11.8			B	13.4		
	Westbound Left/Thru/Right		B	11.8	4	33	B	13.4	10	70
	Northbound Approach		A	9.5			A	9.2		
	Northbound Thru/Left		A	9.5	17	89	A	9.2	17	92
	Northbound Thru/Right		A	9.5	17	89	A	9.2	17	92
	Southbound Approach		A	9.1			A	9.1		
	Southbound Thru/Left		A	9.1	9	55	A	9.1	16	87
	Southbound Thru/Right		A	9.1	9	55	A	9.1	16	87
	Future Intersection									
9	Layton Hall Drive (EW) at Democracy Lane (N/S)									
	Overall Intersection (TWSC)									
	Eastbound Approach									
	Eastbound Left		A	7.7		3	A	7.6		0
	Westbound Approach									
	Westbound Left		A	7.9		0	A	7.8		0
	Northbound Approach		B	11.5			B	10.5		
	Northbound Left/Thru/Right		B	11.5		3	B	10.5		5
10	Southbound Approach		A	9.4			B	10.1		
	Southbound Left/Thru/Right		A	9.4		0	B	10.1		3
	Blenheim Boulevard (N/S) at Layton Hall Drive (EW)									
	Overall Intersection (Signalized)		C	24.9			C	20.7		
	Eastbound Approach		C	32.4			C	26.8		
	Eastbound Left		C	33.6	125	279	C	27.9	78	172
	Eastbound Thru/Right		C	25.8	8	44	C	23.8	7	46
	Westbound Approach		D	38.7			C	30.0		
	Westbound Left		C	33.9	8	34	C	28.6	6	29
	Westbound Thru/Right		D	39.9	6	50	C	30.7	5	35
	Northbound Approach		C	23.7			B	18.7		
	Northbound Left		B	15.9	22	49	B	14.4	12	35
	Northbound Thru		C	24.8	248	490	B	19.3	136	338
	Northbound Right	230	B	15.2	0	0	B	14.0	0	0
	Southbound Approach		C	20.9			B	19.3		
	Southbound Left	150	B	18.3	6	19	B	15.1	5	18
	Southbound Thru/Right		C	20.9	147	217	B	19.4	142	234

NOTES:

- [1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.
[2] 50th Percentile Queues are not reported for TWSC intersections under HCM Methodology.

For the purposes of this analysis, it is desirable to achieve a LOS of D or better for each lane group at the intersections. The capacity analysis results indicate that all movements operate at acceptable LOS under existing conditions.

The queueing analysis results indicate that none of the movements at the study intersections have 95th percentile queues exceeding available storage. The intersection capacity results are summarized below in Figure 21.



Future Conditions without Development (2028)

Future without Development (2028) Traffic Volumes

The Courthouse Plaza Residential redevelopment (Full-Build) is anticipated to be complete by the year 2028. To reflect inherent growth in the study area, existing volumes at the major movements within the study area were grown to reflect 2028 conditions. The future traffic volumes were projected to 2028 by using a 1 percent per year background growth rate. This rate was developed after discussions with the City staff during the scoping process for this transportation analysis. No approved additional background developments were identified within the study area.

The inherent growth volumes on the network shown in Figure 22 were added to the Existing (2023) traffic volumes shown in Figure 20 in order to generate the Future without Development (2028) volumes. The vehicular volumes for the Future (2028) without Development scenario are presented on Figure 23.

Assumed Background Improvements

University Drive Bicycle Facilities: To achieve the vision of the Small Area Plan, a multimodal ‘spine’ with enhanced pedestrian and bicycle facilities along University Drive are planned to be constructed by 2025. The proposed improvements include bicycle lanes or sharrows with a conversion of existing four-lane section of University Boulevard to a two-lane section with two-way left turn lanes. The lane configuration and the future without development Level of Service results are shown in Figure 24

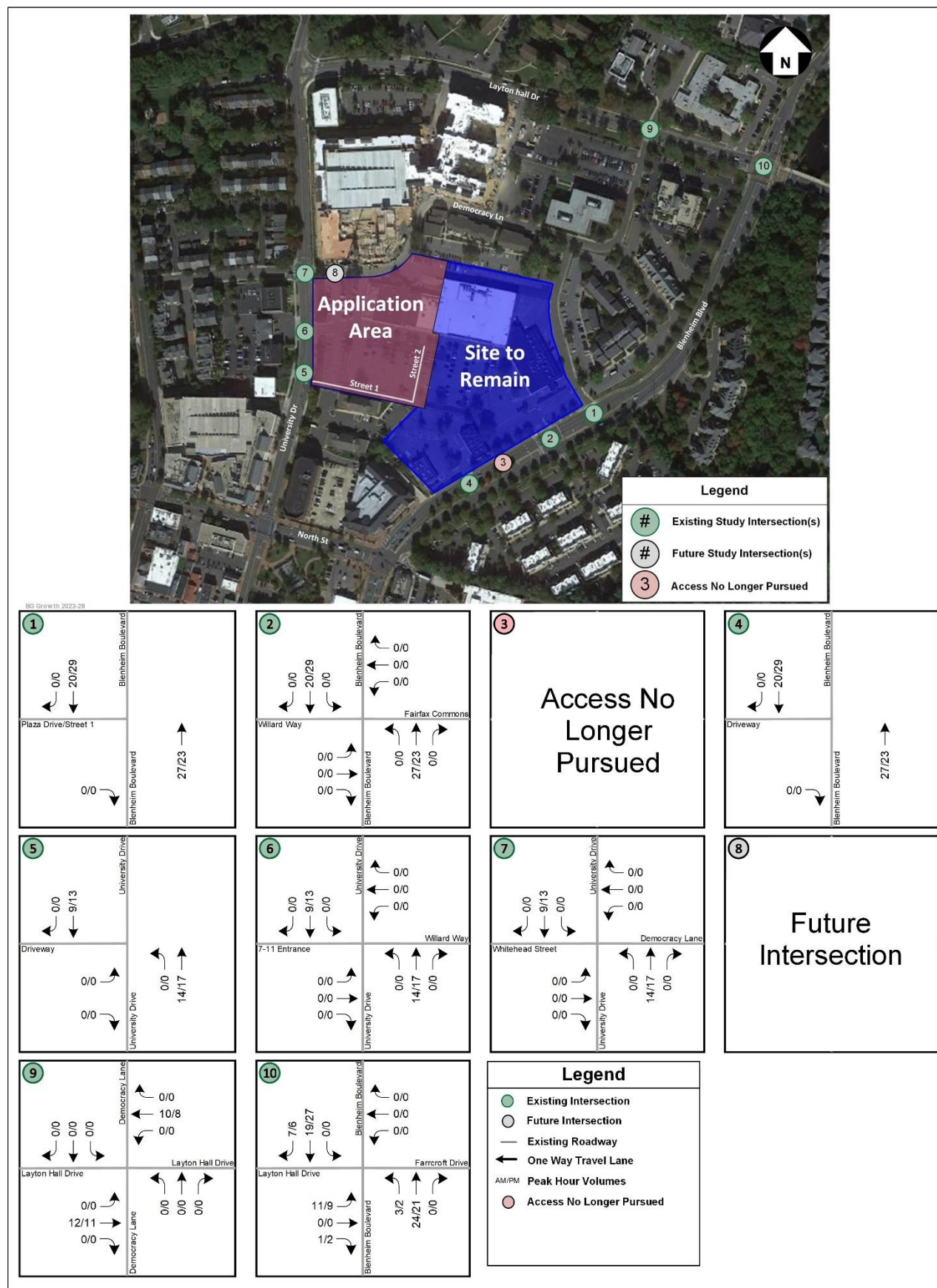


Figure 22: Inherent Growth Volumes (2023-2028)

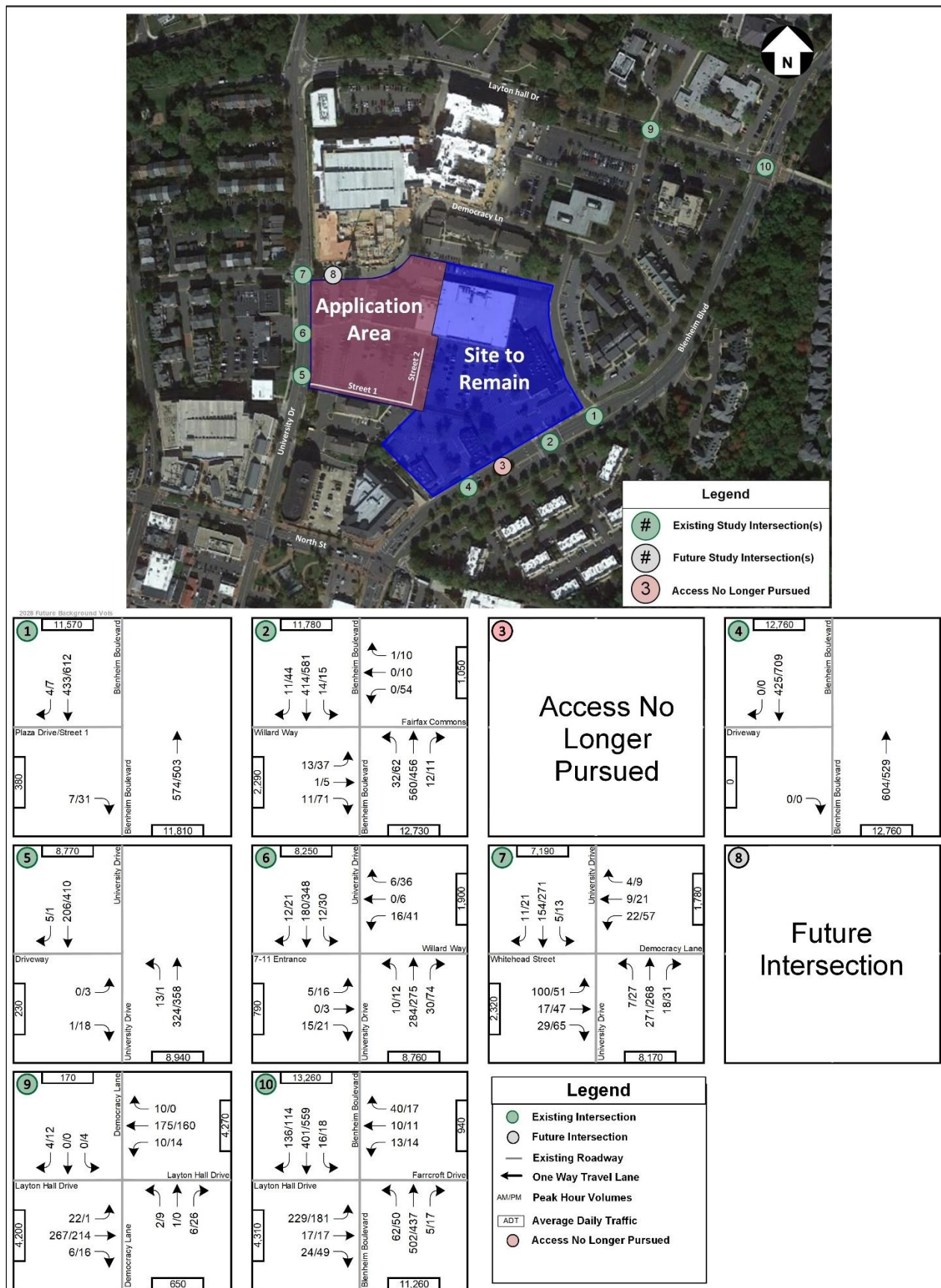


Figure 23: Future (2028) without Development Traffic Volumes

Future without Development (2028) Intersection Capacity and Queuing Analysis

Capacity and queuing analysis was performed at the intersections within the study area during the weekday morning and evening peak hours under Future without Development conditions. Synchro Version 11 was used to analyze the study intersections based on the Highway Capacity Manual (HCM) 6th methodology and includes level of service (LOS), delay, and queue length comparisons for the turning movements analyzed.

Existing peak hour factors found in the field were used, except where the field peak hour factor was lower than 0.92 in which case a minimum value of 0.92 was used, consistent with VDOT analysis guidelines.

The results of the intersection analysis are presented in Table 10 and are expressed in LOS and delay (seconds per vehicle) per lane group. The 95th percentile queue results for each intersection are also presented in Table 10 and are expressed in feet, along with 50th percentile queue results for signalized intersections. The detailed analysis worksheets are included in Appendix G.

Table 10: Future (2028) without Development Intersection Capacity and Queuing Analysis

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec/veh)	50th % Queue (ft.) [2]	95th % Queue (ft.)	LOS	Delay (sec/veh)	50th % Queue (ft.) [2]	95th % Queue
			Synchro				Synchro			
1	Blenheim Boulevard (N/S) at Plaza Drive (E/W) Overall Intersection (TWSC)									
	Eastbound Approach		B	10.0			B	10.7		
	Eastbound Right		B	10.0		0	B	10.7		5
2	Blenheim Boulevard (N/S) at Fairfax Commons (E/W) Overall Intersection (Signalized)		A	8.6			B	11.2		
	Eastbound Approach		B	18.3			C	26.1		
	Eastbound Thru/Left		B	17.9	1	17	C	24.9	17	45
	Eastbound Right		B	18.8	0	0	C	26.8	0	18
	Westbound Approach		B	17.7			C	26.5		
	Westbound Left/Thru/Right		B	17.7	0	0	C	26.5	27	66
	Northbound Approach		A	8.3			A	7.6		
	Northbound Left	120	A	6.7	0	11	A	6.8	8	22
	Northbound Thru		A	8.4	0	113	A	7.8	34	100
	Northbound Right		A	6.9	0	0	A	6.7	0	0
	Southbound Approach		A	8.5			A	9.7		
	Southbound Left	120	A	7.1	1	7	A	7.3	2	8
	Southbound Thru		A	8.5	0	86	A	9.9	85	140
	Southbound Right		A	7.4	0	0	A	8.1	0	0
3	Access No Longer Pursued									
4	Blenheim Boulevard (N/S) at Existing Driveway (E/W) Overall Intersection (TWSC)									
	Eastbound Approach		A	0.0			A	0.0		
	Eastbound Right		A	0.0		0	A	0.0		0
5	University Drive (N/S) at Existing Driveway (E/W) Overall Intersection (TWSC)									
	Eastbound Approach		A	9.4			B	11.4		
	Eastbound Left/Right		A	9.4		0	B	11.4		3
	Northbound Approach									
	Northbound Left		A	7.7		0	A	8.2		0
6	University Drive (N/S) at 7-11 Driveway (E/W) Overall Intersection (TWSC)									
	Eastbound Approach		B	10.6			C	15.7		
	Eastbound Left/Thru/Right		B	10.6		3	C	15.7		10
	Westbound Approach		B	13.1			C	16.4		
	Westbound Left		B	14.2		3	C	21.2		15
	Westbound Thru/Right		B	10.1		0	B	11.7		8
	Northbound Approach									
	Northbound Left		A	7.8		0	A	8.1		0
	Southbound Approach									
	Southbound Left		A	8.0		0	A	8.2		3

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec/veh)	50th % Queue (ft.) [2]	95th % Queue (ft.)	LOS	Delay (sec/veh)	50th % Queue (ft.) [2]	95th % Queue
7	University Drive (N/S) at Whitehead Street/Democracy Lane (EW) Overall Intersection (Signalized)		B	11.0			B	10.8		
	Eastbound Approach		B	14.9			B	14.2		
	Eastbound Left/Thru		B	15.5	16	105	B	14.9	13	88
	Eastbound Right		B	12.7	0	10	B	13.0	0	32
	Westbound Approach		B	13.2			B	14.9		
	Westbound Left/Thru/Right		B	13.2	4	38	B	14.9	11	79
	Northbound Approach		A	9.9			A	9.4		
	Northbound Left		A	7.9	1	12	A	9.5	3	27
	Northbound Thru/Right		A	9.9	36	200	A	9.5	35	193
	Southbound Approach		A	9.2			A	9.4		
	Southbound Left	150	A	7.9	1	9	A	9.5	1	16
	Southbound Thru/Right		A	9.2	19	118	A	9.5	34	189
8	Future Intersection									
9	Layton Hall Drive (EW) at Democracy Lane (N/S) Overall Intersection (TWSC)									
	Eastbound Approach									
	Eastbound Left		A	7.7		3	A	7.6		0
	Westbound Approach									
	Westbound Left		A	7.9		0	A	7.8		0
	Northbound Approach		B	11.3			B	10.5		
	Northbound Left/Thru/Right		B	11.3		3	B	10.5		5
	Southbound Approach		A	9.4			B	10.1		
	Southbound Left/Thru/Right		A	9.4		0	B	10.1		3
10	Blenheim Boulevard (N/S) at Layton Hall Drive (EW) Overall Intersection (Signalized)		C	24.3			C	21.2		
	Eastbound Approach		C	31.4			C	27.3		
	Eastbound Left		C	32.6	115	284	C	28.5	86	187
	Eastbound Thru/Right		C	25.1	7	44	C	24.2	7	47
	Westbound Approach		D	36.9			C	30.8		
	Westbound Left		C	32.8	7	33	C	29.4	7	29
	Westbound Thru/Right		D	37.9	5	52	C	31.5	5	36
	Northbound Approach		C	23.2			B	19.1		
	Northbound Left		B	15.7	20	51	B	14.6	14	38
	Northbound Thru		C	24.2	218	515	B	19.9	150	366
	Northbound Right	230	B	15.0	0	0	B	14.1	0	0
	Southbound Approach		C	20.6			B	19.8		
	Southbound Left	150	B	18.0	5	19	B	15.4	5	18
	Southbound Thru/Right		C	20.7	133	226	B	19.9	155	254

NOTES:
[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.
[2] 50th Percentile Queues are not reported for TWSC intersections under HCM Methodology.

For the purpose of this analysis, it is desirable to achieve a LOS of D or better for each lane group at the intersections. The capacity analysis results indicate that all movements operate at acceptable LOS under 2028 Future without Development scenario.

Based on the queuing analysis performed at the study intersections, no movements have 95th percentile queues that exceed the available storage at the turning movements. The results of the intersection capacity analysis for the 2028 Future without Development conditions are summarized below in Figure 24.

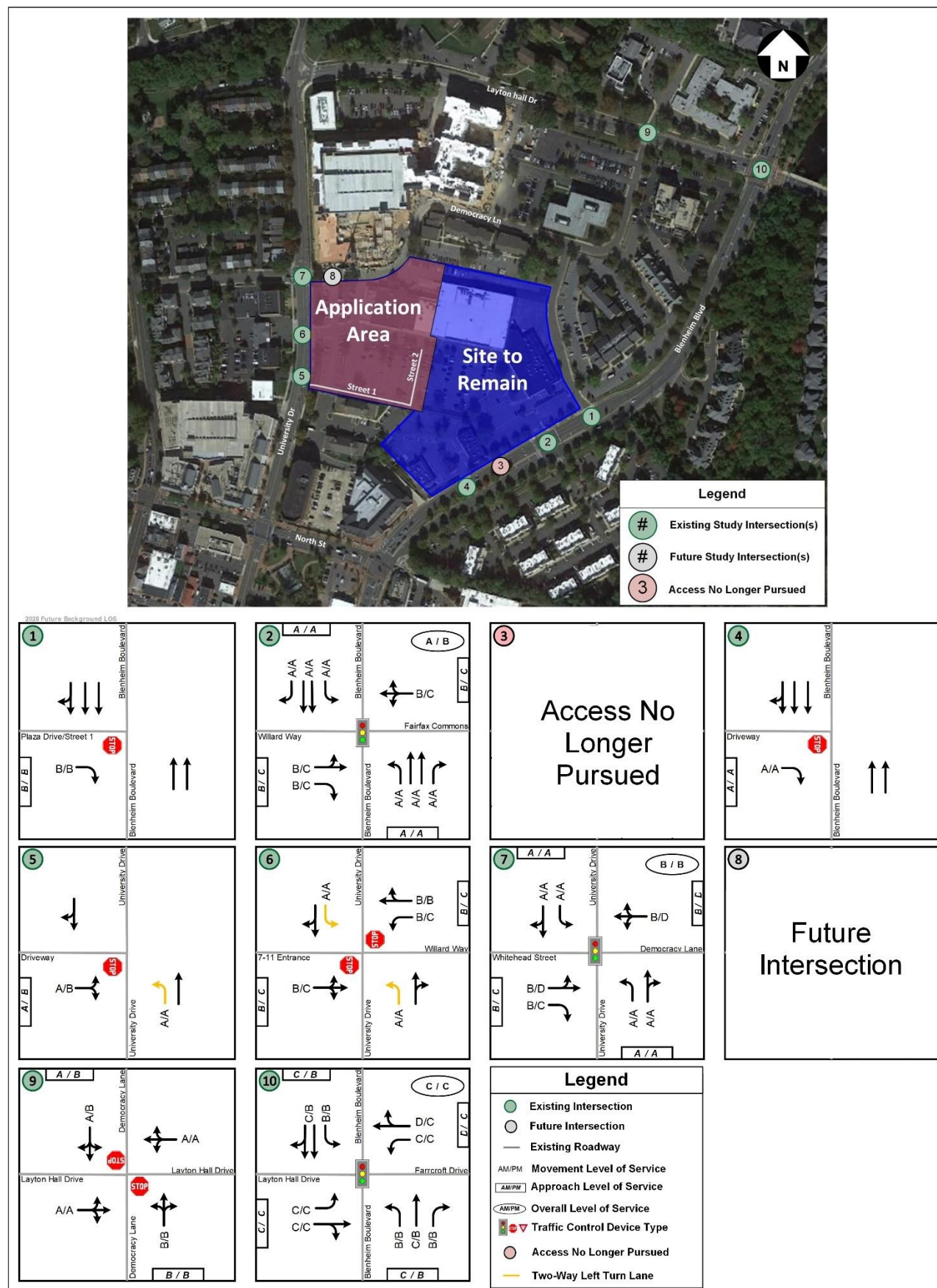


Figure 24: Future Without Development (2028) Level of Service

Future with Development (Full-Build 2028) – without Coffee Shop SUP

Project Description & Site Access

The Courthouse Plaza Residential development is currently accessed via multiple entrances on Blenheim Boulevard and University Drive.

The addition of 315 units at Courthouse Plaza Residential is anticipated to be complete and in operation by the year 2028. Approximately 25k SF of existing retail uses will be removed and replaced with the residential building leaving approximately 67k SF of existing retail remaining with the addition of some ground floor retail of up to 5,000 SF in the proposed building. The ground floor retail is not intended to be destination retail and will predominately serve residents and other internal capture users from the adjacent shopping center and student housing and therefore is not anticipated to generate additional trips consistent with the ground floor retail in the previous submission. This analysis scenario does not analyze the trips with the proposed Coffee Shop with Drive-Thru, which is a separate Special Use Permit (SUP) application and not included in the Application Area.

The plan for the development (subject to change) is shown below in Figure 25.

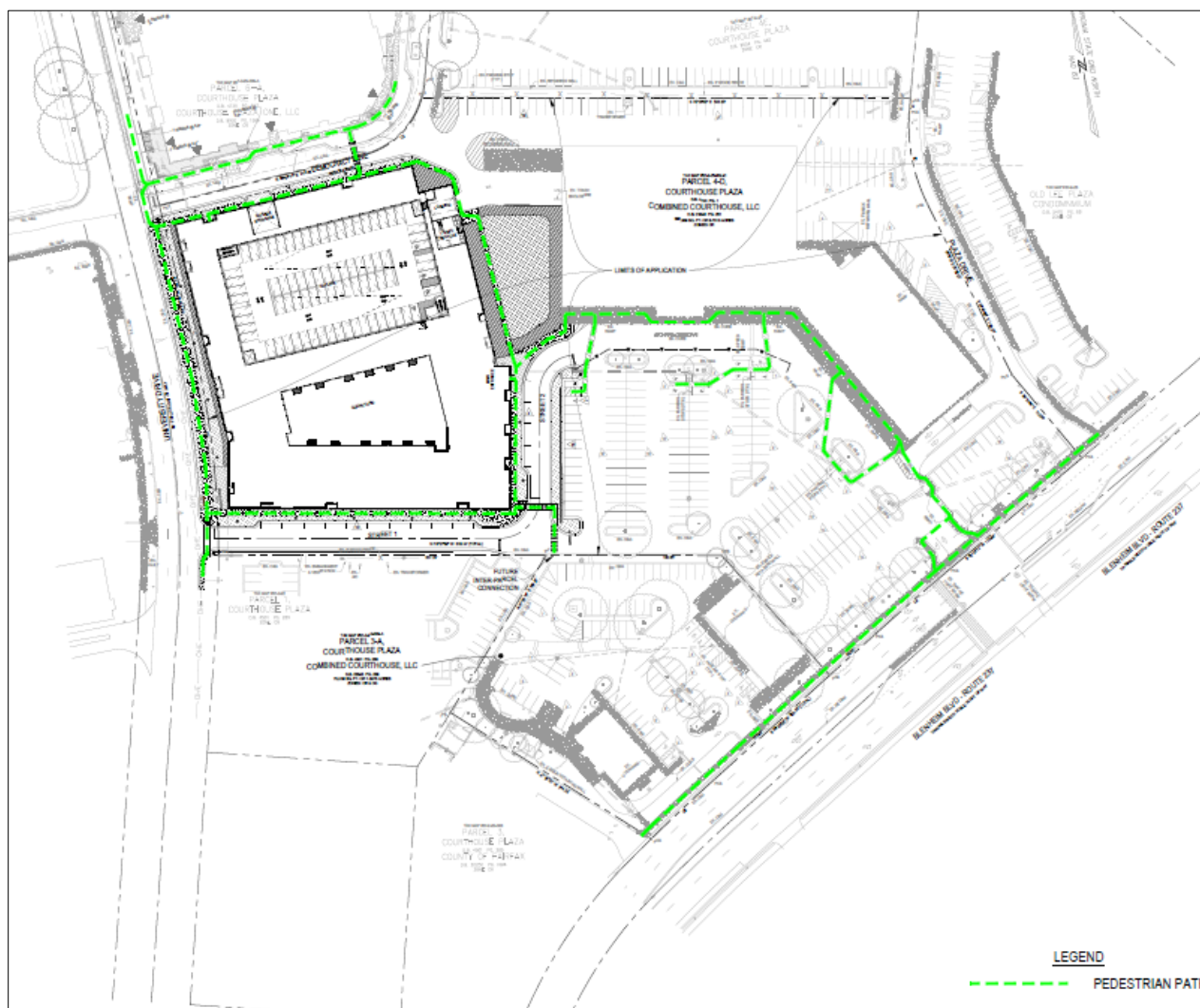


Figure 25: Overall Master Development Plan (Subject to Change)

With the redevelopment, two new roadways (Street 1 and Street 2) will be constructed adjacent to the new multifamily building which will provide additional vehicular and pedestrian paths. These roadways align with future plans in the Small Area Plan. The lane configuration for 2028 future conditions (Full-Build without Coffee Shop) are shown in Figure 26.

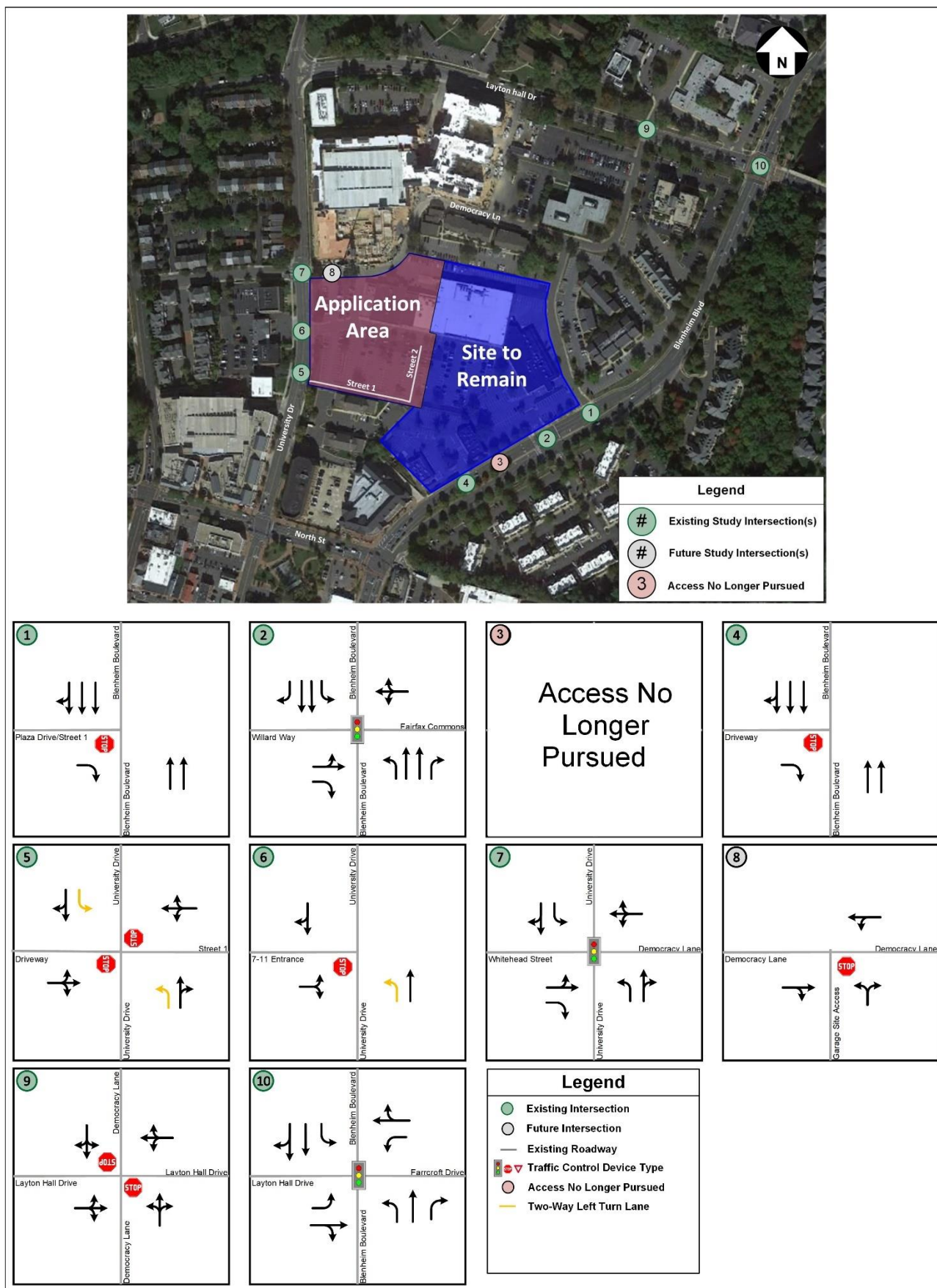


Figure 26: 2028 Future with Development (Full-Build) Lane Configuration

Existing Trips to be Removed

The Courthouse Plaza Residential redevelopment replaces a portion of the existing inline retail uses at the site. Currently there is approximately 58 kSF of inline retail (exclusive of pad sites) and approximately 25.17 kSF of the existing inline retail uses will be removed (43% removed). Based on ITE 11th Edition Trip Generation Manual, approximately 5,876 daily trips could be generated by the existing 58.0 KSF inline retail uses (with supermarket) and approximately 1,292 daily trips could be generated by the 25.17 kSF of existing inline retail uses to be removed. This represents an approximately 22% reduction in trips due to the removal of the portion of the existing inline retail. For the purposes of this analysis, and in order to be conservative, 20% of the existing site trips were assumed to be removed with the removal of the existing 25.17 kSF of inline retail. The comparison of trips associated with the existing inline retail and inline retail to be removed is included in Appendix E.

In order to remove the trips associated with the 25.17 kSF of inline retail proposed to be removed, the following assumptions were made:

- 20% of the inbound and outbound trips were removed at Intersection 1, Intersection 2, Intersection 6.
- The inbound and outbound trips removed from these intersections were distributed to the adjacent downstream intersections as appropriate.

Additionally, it noted that with the development, the westbound leg of Study Intersection 6 (University Drive and Existing Driveway/7-11 Driveway) would be closed, and the intersection would be converted to a 3-legged intersection. The turning volumes associated with the westbound leg of Study Intersection 6 have been added to Study Intersection 5 (University Drive and Street 1). The portion of the inline retail trips to be removed and the trips removed associated with the westbound approach at Study Intersection 6 are shown in Figure 27 and Figure 28.

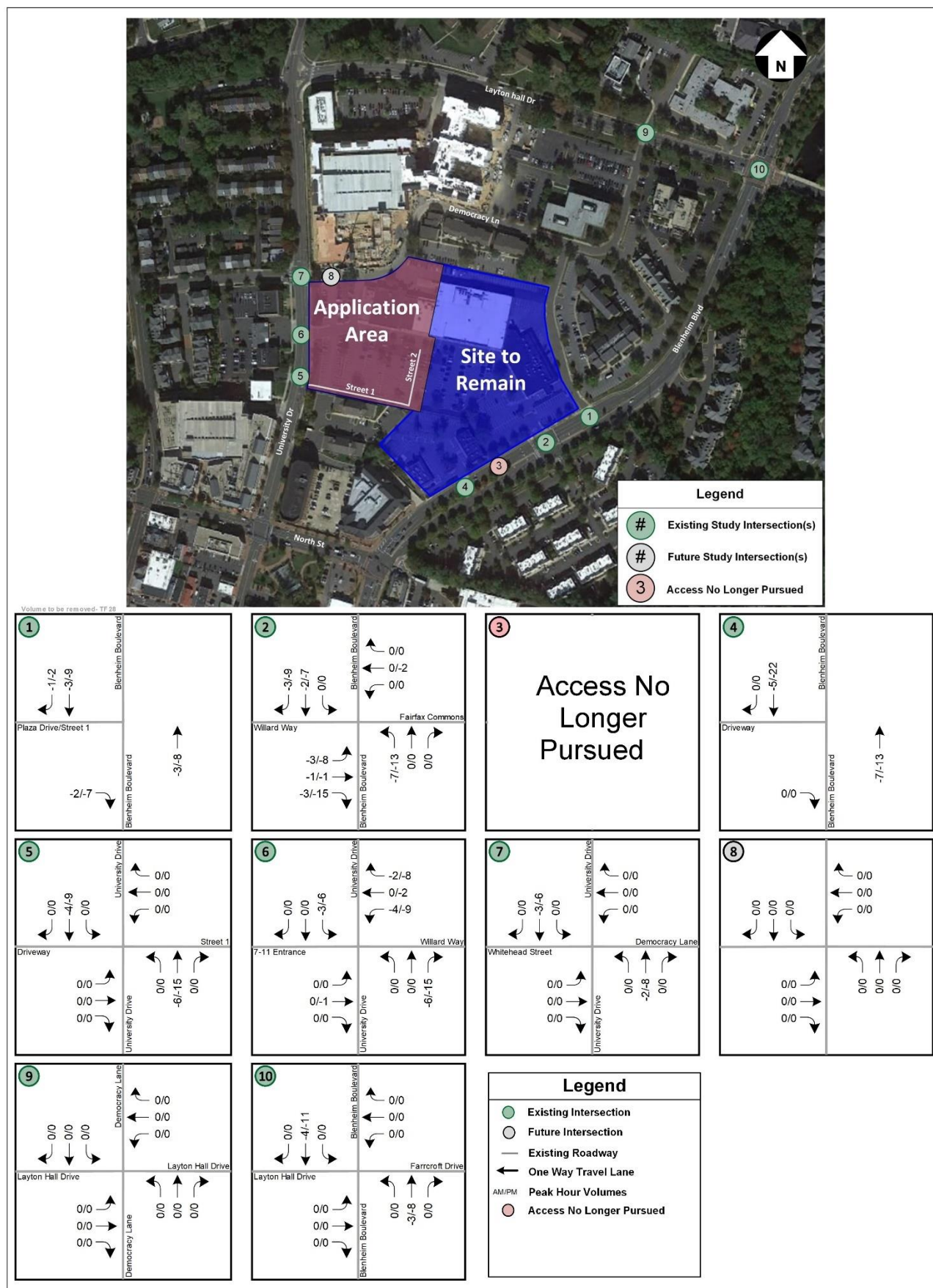


Figure 27: Existing Trips to be Removed

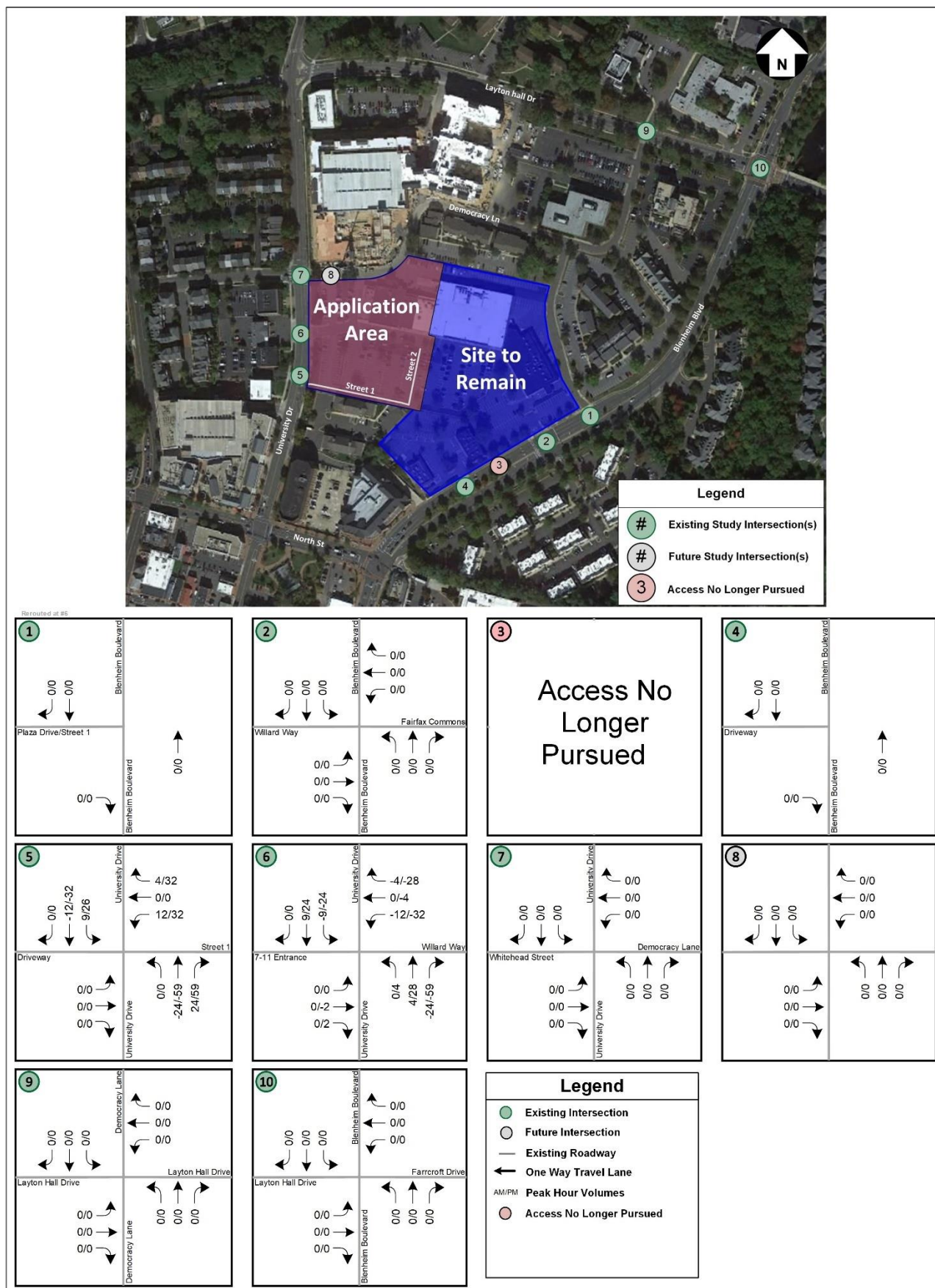


Figure 28: Trips Rerouted due to Removal of Westbound Leg at Intersection 6

Site Generated Traffic

The Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition was used to determine the future trips generated by the proposed residential development as shown in Table 11. As discussed during the scoping meeting, a TDM Reduction/Mode Split of 15 percent was applied to the residential use as agreed upon by the City officials. Similarly, Pass-By and Internal Capture reductions were applied based on ITE *Trip Generation Handbook*, 3rd Edition and after discussions with City officials. Please note that the proposed development has changed slightly from what was scoped and has been updated to be consistent with the proposed application. The addition of the 5,000 SF of retail space to the residential building is planned with uses to predominantly serve the building residents, residents of the adjacent student housing and other residential users in the vicinity. Trips generated by this retail space are anticipated to be internally captured within the area around the site and are not anticipated to be destination trips generating significant vehicular traffic.

Table 11: Trip Generation for Full-Build, 2028 (Without Coffee Shop) (ITE 11th Edition; Peak Hour of Adjacent Street)

Land Use	ITE Code	Size	----- W e e k d a y -----						
			AM Peak Hour			PM Peak Hour			Daily Total
			In	Out	Total	In	Out	Total	
Proposed A									
Multifamily Housing (Mid-Rise) (Apartments)	221	315 DU	29	98	127	75	48	123	1,456
	Mode Split/TDM Reduction 15%		-4	-15	-19	-11	-7	-18	-218
	Total Proposed Trips (with Reductions)		25	83	108	64	41	105	1,238

As shown, the proposed residential development will generate approximately 108 trips in the AM peak hour, 105 trips in the PM peak hour and 1,238 trips on a typical weekday, after reductions.

Site Trip Distribution

The distribution of site trips was based on historical data, observed turning movement volumes and guidance and input from the City staff. The directional distribution percentages are presented in Figure 29.

Transportation Demand Management

The Courthouse Plaza Residential redevelopment project aims to provide a vibrant and thriving mixed-use community compatible with surrounding land uses in the City. Transportation Demand Management (TDM) is an important goal for the applicant, with the intent of achieving reduced site generated peak hour vehicular trips generated by the residential and commercial uses proposed with the redevelopment. TDM is achieved by establishing measures to influence travel behavior by mode, frequency, time, route, or trip length in order to achieve a maximally efficient use of transportation facilities. TDM commitments and strategies for the project are included in a separate TDM Plan document for City review.

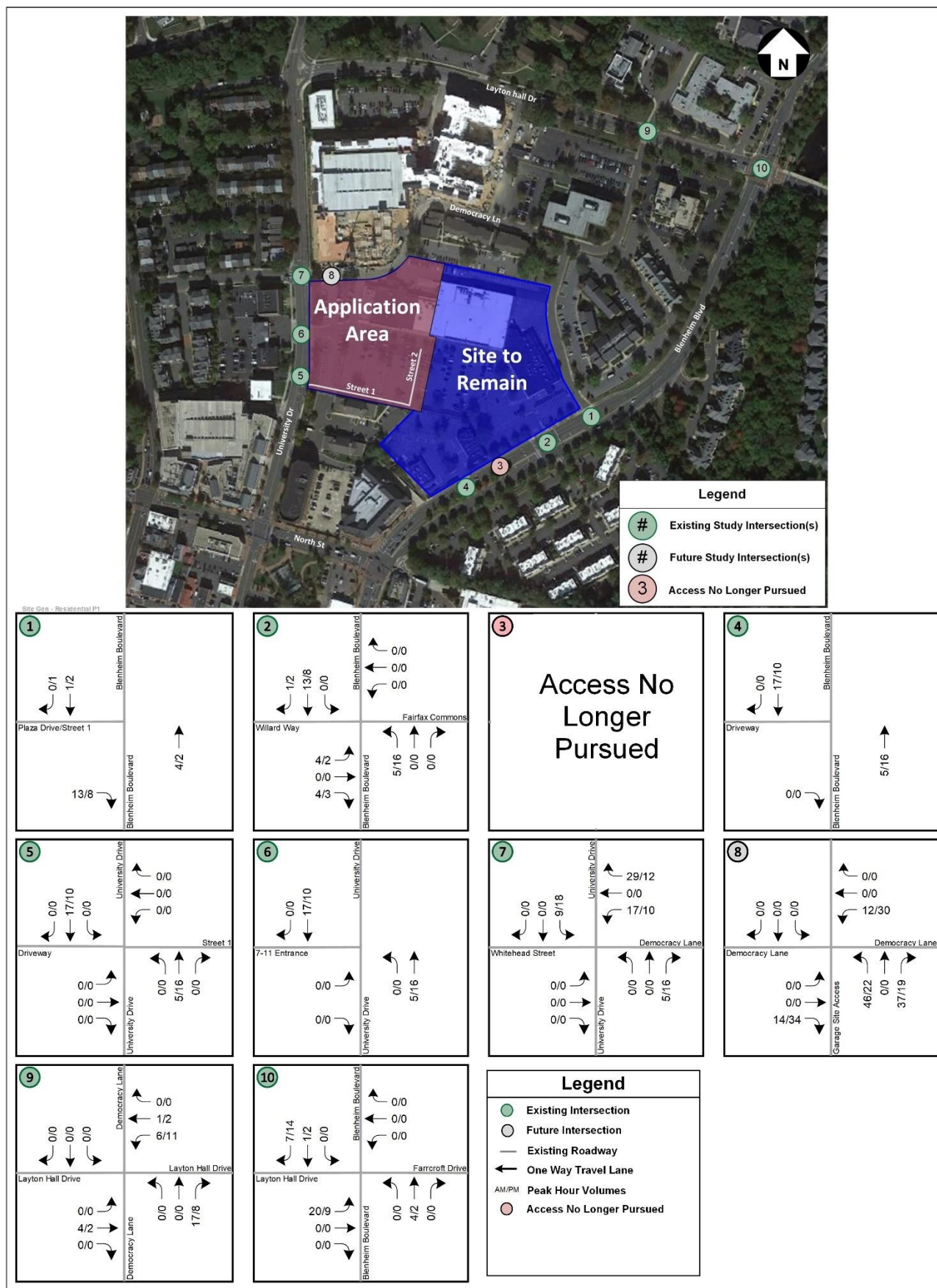


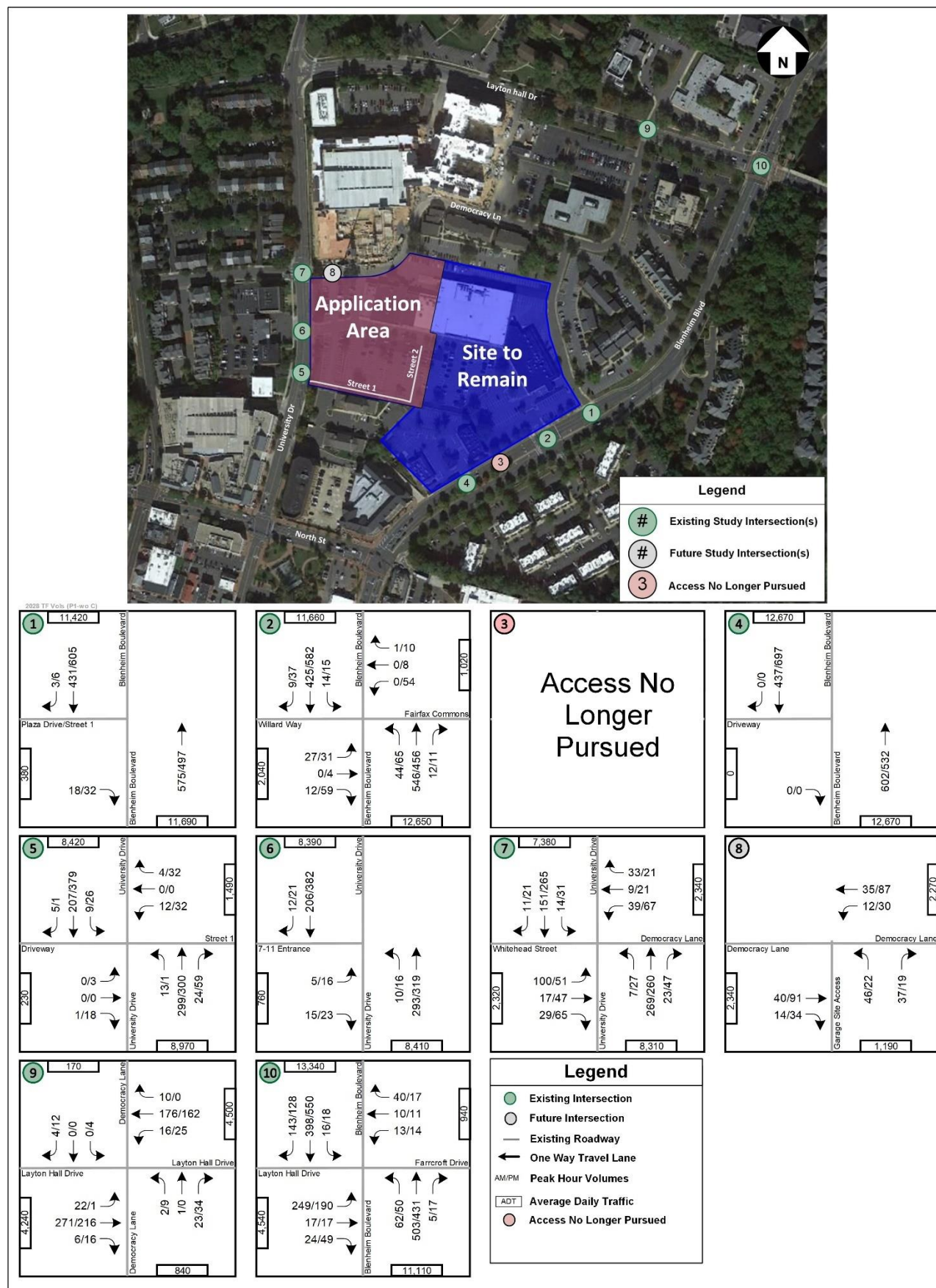
Figure 29: Site Trip Distribution/Direction of Approach (DOA)

Future with Development (Full Build without Coffee Shop SUP) Traffic Volumes

In order to determine the traffic volumes on the roadways in the vicinity of the development at full build (without Coffee Shop SUP), the site generated traffic volumes presented in Figure 30, the existing volumes removed presented in Figure 27 were added to the 2028 Future without Development traffic volumes presented in Figure 23.

The 2028 future with development (Full-Build – without Coffee Shop SUP) volumes are shown in Figure 31.





Future with Development (2028) Full-Build (without Coffee Shop SUP) Intersection Analysis

Capacity analysis was performed at the intersections within the study area during the weekday morning and evening peak hours under Future with Development conditions. *Synchro Version 11* was used to analyze the study intersections based on the Highway Capacity Manual (HCM) methodology and includes level of service (LOS), delay, and queue length comparisons for the turning movements analyzed.

Existing peak hour factors found in the field were used, except where the field peak hour factor was lower than 0.92 in which case a minimum value of 0.92 was used, consistent with VDOT analysis guidelines.

The results of the intersection analysis are presented in Table 12 and Figure 32 and are expressed in LOS and delay (seconds per vehicle) per lane group. The mitigation analysis results are shown in grey. The 95th percentile queue results for each intersection are also presented in Table 10 and are expressed in feet, along with the 50th percentile queue results for each of the signalized intersections. The detailed analysis worksheets are included in Appendix H.

Table 12: Future with Development Intersection Analysis (2028 Full-Build - without Coffee Shop SUP)

No.	Intersection (Movement)	Effective Storage Length (ft.) (1)	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec/veh)	50th % Queue (ft.) (2)	95th % Queue (ft.)	LOS	Delay (sec/veh)	50th % Queue (ft.) (2)	95th % Queue
1	Blenheim Boulevard (N/S) at Plaza Drive (EW) Overall Intersection (TWSC) Eastbound Approach Eastbound Right		B	10.1			B	10.7		
			B	10.1		3	B	10.7		5
2	Blenheim Boulevard (N/S) at Fairfax Commons (EW) Overall Intersection (Signalized) Eastbound Approach Eastbound Thru/Left Eastbound Right Westbound Approach Westbound Left/Thru/Right Northbound Approach Northbound Left Northbound Thru Northbound Right Southbound Approach Southbound Left Southbound Thru Southbound Right		A	8.7			B	10.9		
			B	18.3			C	25.7		
			B	17.9	1	17	C	24.8	14	39
			B	18.7	0	0	C	26.3	0	10
			B	17.6			C	26.4		
			B	17.6	0	0	C	26.4	27	65
			A	8.3			A	7.6		
		120	A	6.8	0	11	A	6.8	8	23
			A	8.5	0	114	A	7.7	33	99
			A	6.9	0	0	A	6.6	0	0
			A	8.5			A	9.7		
		120	A	7.1	1	7	A	7.2	2	8
			A	8.6	0	88	A	9.9	85	140
			A	7.3	0	0	A	8.0	0	0
3	Access No Longer Pursued									
4	Blenheim Boulevard (N/S) at Existing Driveway (EW) Overall Intersection (TWSC) Eastbound Approach Eastbound Right		A	0.0			A	0.0		
			A	0.0		0	A	0.0		0
5	University Drive (N/S) at Street 1(EW) Overall Intersection (TWSC) Eastbound Approach Eastbound Left/Thru/Right Westbound Approach Westbound Left/Thru/Right Northbound Approach Northbound Left Southbound Approach Southbound Left		A	9.4			B	12.1		
			A	9.4		0	B	12.1		3
			B	13.4			C	16.3		
			B	13.4		0	C	16.3		3
			A	7.7		0	A	8.1		0
			A	8.0		3	A	8.2		15

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec/veh)	50th % Queue (ft.) [2]	95th % Queue (ft.)	LOS	Delay (sec/veh)	50th % Queue (ft.) [2]	95th % Queue
6	University Drive (N/S) at 7-11 Driveway (N/S)									
	Overall Intersection (TWSC)									
	Eastbound Approach		B	10.1			B	12.1		
	Eastbound Left/Thru/Right		B	10.1		3	B	12.1		8
7	University Drive (N/S) at Whitehead Street/Democracy Lane (E/W)									
	Overall Intersection (Signalized)		B	11.3			B	11.0		
	Eastbound Approach		B	15.2			B	14.3		
	Eastbound Left/Thru		B	15.9	16	106	B	15.0	13	89
	Eastbound Right		B	12.7	0	10	B	13.2	0	32
	Westbound Approach		B	13.8			B	15.5		
	Westbound Left/Thru/Right		B	13.8	7	62	B	15.5	14	95
	Northbound Approach		A	9.9			A	9.6		
	Northbound Left		A	7.9	1	12	A	7.9	3	28
	Northbound Thru/Right		A	10.0	37	202	A	9.7	37	204
	Southbound Approach		A	9.1			A	9.4		
	Southbound Left	150	A	8.0	1	18	A	7.9	3	31
	Southbound Thru/Right		A	9.2	19	117	A	9.6	35	191
8	Democracy Lane (E/W) at Garage Entrance (N/S)									
	Overall Intersection (TWSC)									
	Westbound Approach									
	Westbound Left		A	7.3		0	A	7.5		3
	Northbound Approach		A	9.3			A	9.8		
	Northbound Left/Right		A	9.3		0.3	A	9.8		5
9	Layton Hall Drive (E/W) at Democracy Lane (N/S)									
	Overall Intersection (TWSC)									
	Eastbound Approach									
	Eastbound Left		A	7.7		3	A	7.6		0
	Westbound Approach									
	Westbound Left		A	7.9		0	A	7.9		3
	Northbound Approach		B	10.8			B	10.5		
	Northbound Left/Thru/Right		B	10.8		3	B	10.5		5
	Southbound Approach		A	9.4			B	10.3		
	Southbound Left/Thru/Right		A	9.4		0	B	10.3		3
10	Blenheim Boulevard (N/S) at Layton Hall Drive (E/W)									
	Overall Intersection (Signalized)		C	25.1			C	21.4		
	Eastbound Approach		C	32.0			C	27.5		
	Eastbound Left		C	33.1	128	311	C	28.7	90	194
	Eastbound Thru/Right		C	25.0	7	44	C	24.1	7	47
	Westbound Approach		D	37.9			C	31.1		
	Westbound Left		C	33.7	7	33	C	29.7	7	29
	Westbound Thru/Right		D	39.0	6	52	C	31.8	5	36
	Northbound Approach		C	23.9			B	19.2		
	Northbound Left	250	B	16.2	21	51	B	14.8	14	38
	Northbound Thru		C	24.9	231	516	B	19.9	148	363
	Northbound Right	230	B	15.5	0	0	B	14.2	0	0
	Southbound Approach		C	21.2			C	20.1		
	Southbound Left	150	B	18.5	5	19	B	15.5	5	18
	Southbound Thru/Right		C	21.3	139	227	C	20.2	156	258

NOTES:

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

[2] 50th Percentile Queues are not reported for TWSC intersections under HCM Methodology.

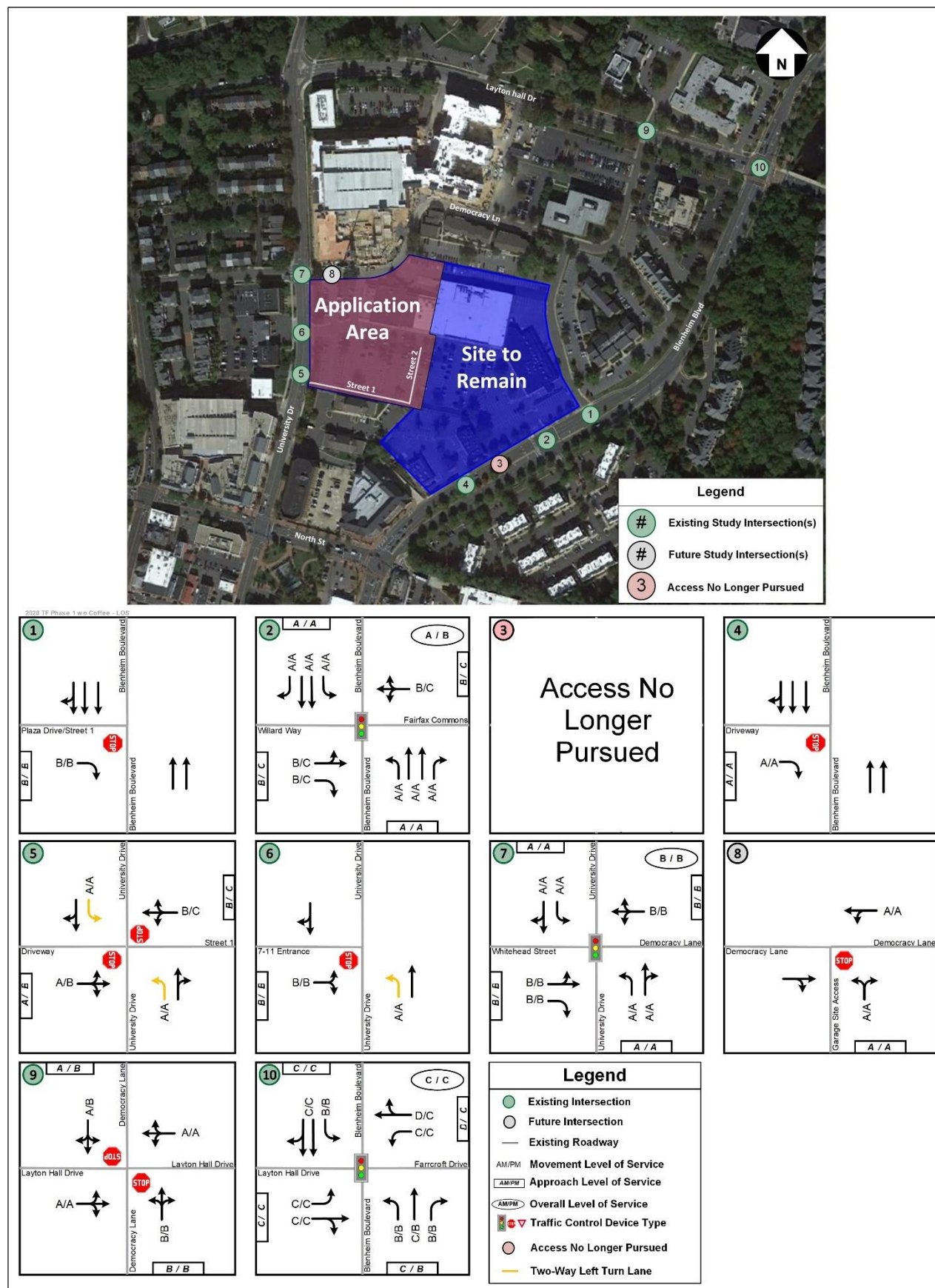


Figure 32: 2028 Future with Development Level of Service Results (Full-Build without Coffee Shop SUP)

For the purpose of this analysis, it is desirable to achieve a level of service (LOS) of D or better for each lane group at the intersections. The capacity analysis results indicate that **all movements operate at acceptable LOS** under Future (2028) with Development (Full-Build - without Coffee Shop SUP).

Queuing analysis results indicate that all study movements have 95th percentile queues accommodated in the available storage bays. Additionally, it was noted that the queueing on Democracy Lane is not anticipated to cause operational issues for the garage entrance for the development, which is located approximately 117 feet east of University Drive as the 50th and 95th percentile queues per Synchro analysis results for the westbound approach (Democracy Lane) are under 117 feet during both the AM and PM peak hours. With the development, the existing curb cut on Democracy Lane closest to University Drive (located about 90 feet from University Drive) will be closed and would mark an improvement upon the existing queuing conditions on Democracy Lane. Lastly, the garage entrance gate is also planned to be located 50 feet away from Democracy Lane into the garage structure and hence will provide an additional two car storage for vehicles to queue without blocking the intersection at Democracy Lane.

Future with Development (Full-Build 2028) – with Coffee Shop SUP

This alternate analysis scenario analyzes the Full-Build conditions of the development together with the proposed coffee shop that is planned within the study area. It is noted that the Coffee Shop is a separate Special Use Permit (SUP) application that intends to reinstate an existing vacant drive-thru restaurant into a coffee shop with drive-thru window.

Site Access For Coffee Shop

Primary access to the coffee shop will be provided on Blenheim Boulevard at Study Intersection 4 (Blenheim Boulevard and Driveway), which is an existing intersection. Alternative access points for the coffee shop will be via shared access points to the northern development which can be accessed via University Drive and Blenheim Boulevard.

Trip Generation (For Coffee Shop SUP – Separate Application)

Table 13 below shows the trips generated by the 3,559 kSF Coffee Shop with Drive-Thru proposed with the SUP. The trip reductions applied to the trip generation were determined after discussions and guidance given from the City officials.

Table 13: Coffee Shop with Drive Thru Trip Generation – (ITE 11th Edition; Peak Hour of Adjacent Street)

Land Use	ITE Code	Size	----- Week day -----						
			AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Coffee/Donut Shop with Drive-Thru Window	937	3,559 kSF of GFA	156	150	306	70	69	139	1,899
Coffee Shop w/Drive Thru Pass-By Reduction ¹	25%/40%/25% (AM/PM/Daily)		-39	-38	-77	-28	-28	-56	-475
Total Proposed Trips (with Reductions)			117	112	229	42	41	83	1,424

¹ Assumed since no data available in ITE Trip Generation Handbook; Consistent with the Scoping Document

¹ Assumed since no data available in ITE Trip Generation Handbook; Consistent with the Scoping Document

As observed from Table 13, Coffee Shop with Drive-Thru would generate approximately 229 trips in the AM peak hour, 83 trips in the PM peak hour and 1,424 trips over a typical weekday after pass-by reductions.

By-Right Trip Generation Comparison (For Illustrative Purposes Only)

Please note that the planned SUP application intends to reinstate an existing vacant drive-thru restaurant into a coffee shop with drive-thru window. The existing building could be occupied today by a number of different uses by-right, including a convenience market. A comparison between the trips generated by the Coffee Shop with Drive-Thru versus a By-Right use is shown in Figure 15.

Table 14: Comparison Between Proposed Coffee Shop with Drive Thru Use and By-Right Use

Land Use	ITE Code	Size	----- W e e k d a y -----						Daily Total	
			AM Peak Hour			PM Peak Hour				
			In	Out	Total	In	Out	Total		
Proposed Program										
Coffee/Donut Shop with Drive-Thru Window	937	3,559 kSF of GFA	156	150	306	69	70	139	1,899	
By-Right Program										
Convenience Market	851	3,559 kSF of GFA	111	112	223	89	86	175	2,712	
Difference (Proposed - By Right)			+45	+38	+83	-20	-16	-36	-813	

As can be seen from Table 14 above, the proposed development program for the site would generate 83 more trips in the AM peak hour, 36 fewer trips in the PM peak hour and 813 fewer trips on a typical weekday when compared to a By-Right use. These numbers are not used in the analysis but are provided to show that the proposed SUP does not significantly increase traffic volumes compared to what could be done by-right.

Site Generated Trips

Figure 33 shows the additional trips due to the coffee shop with drive-thru shown in Table 13 distributed to the study area network consistent with the Direction of Approach shown in the previous section. Figure 34 shows the pass-by trips associated with the Coffee-Shop with Drive Thru.

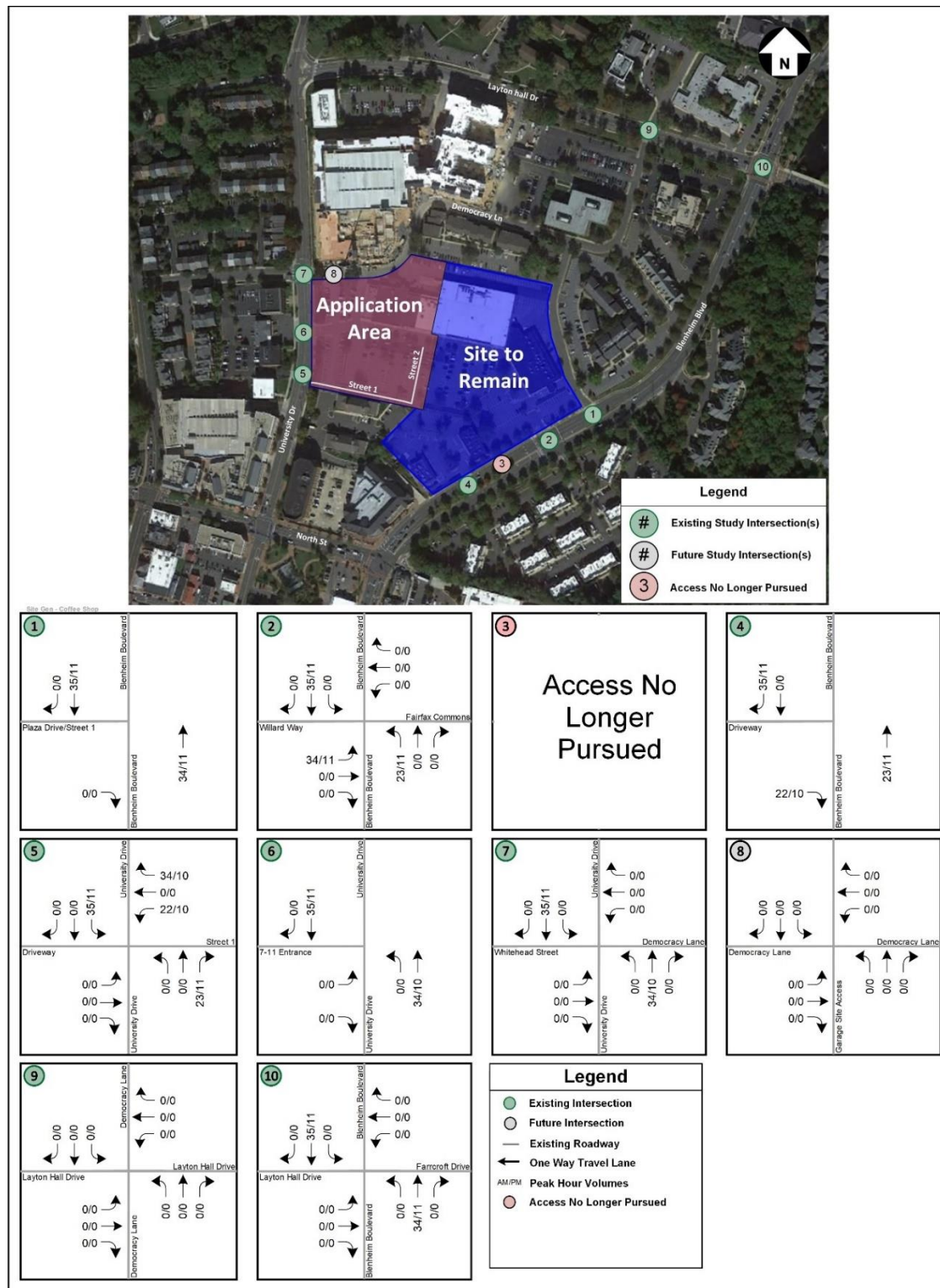


Figure 33: Site Trips Due to Addition of Coffee Shop with Drive Thru

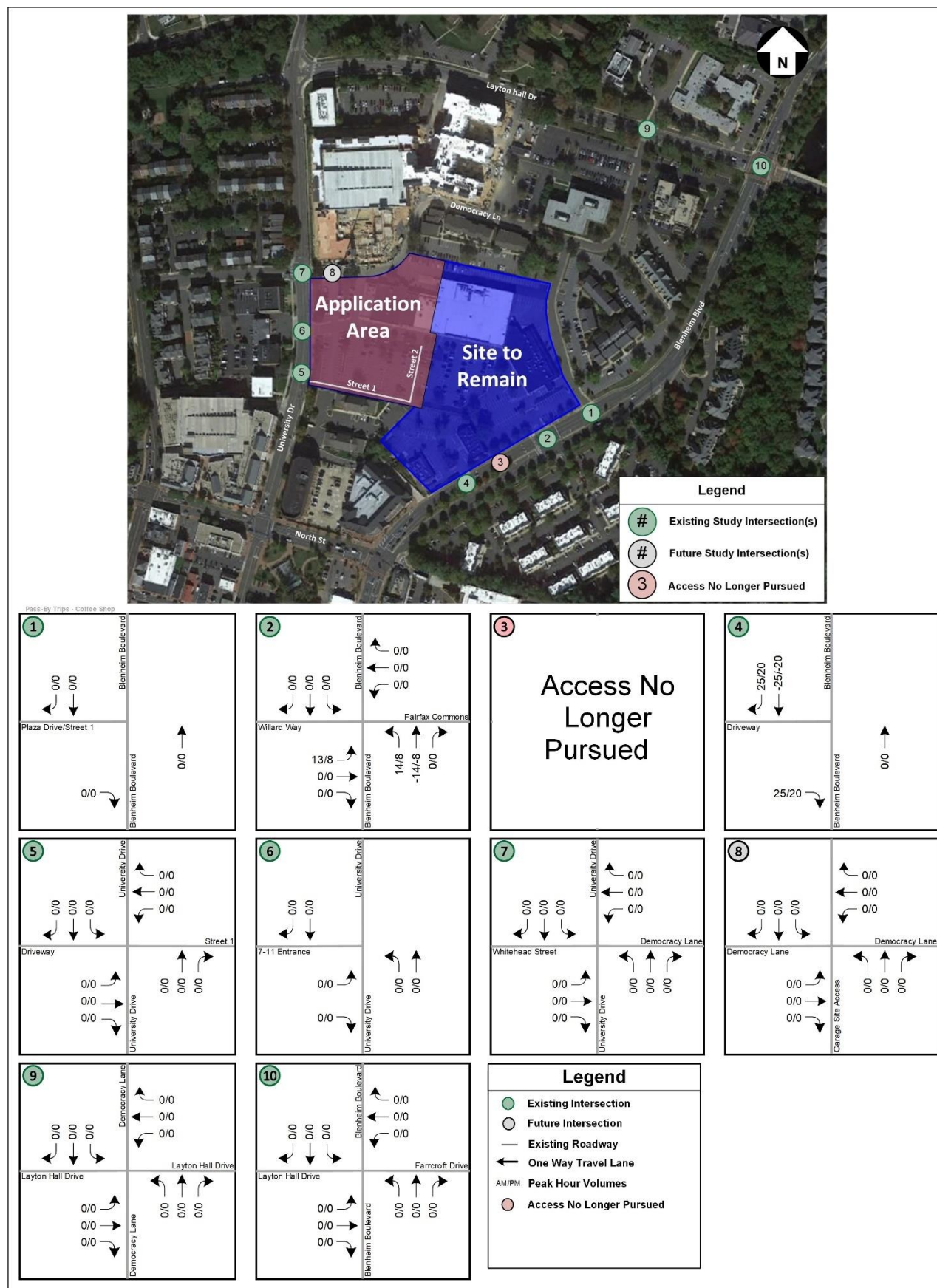


Figure 34: Pass-By Trips – Coffee Shop with Drive Thru

Future with Development Traffic Volumes (with Coffee Shop SUP)

In order to determine the vehicular volumes on the roadways in the vicinity of the development, the site generated traffic volumes by the Coffee Shop with Drive-Thru presented in Figure 33 and the pass-by trips associated with the coffee shop presented in Figure 34 were added to the 2028 Future with Development Full Build (without Coffee Shop) vehicular volumes presented in Figure 31. The 2028 Future with Development traffic volumes (with Coffee Shop) are presented in Figure 35.

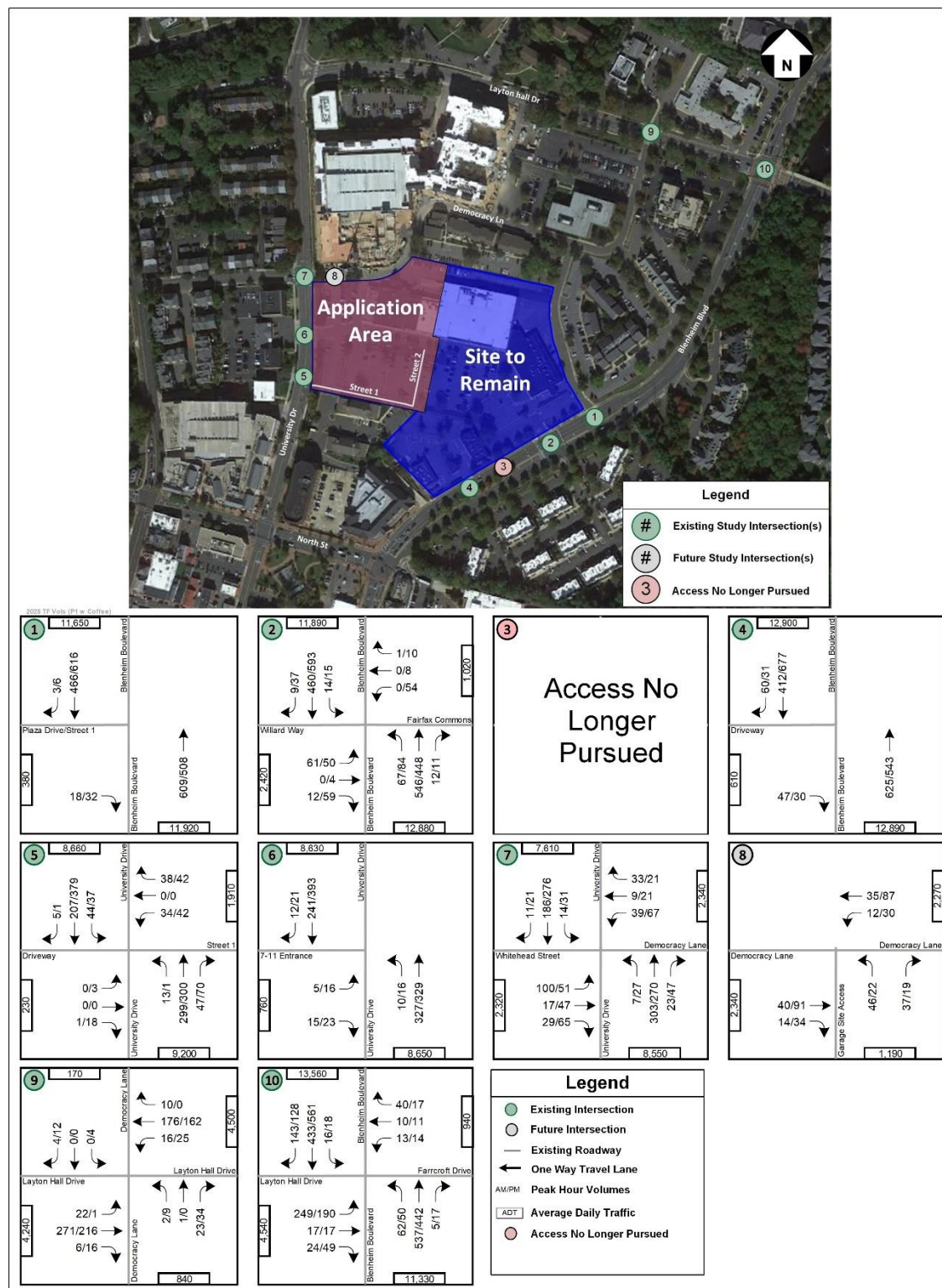


Figure 35: 2028 Future with Development Volumes (2028, Full-Build with Coffee Shop SUP)

Future with Development (2028) Full-Build (with Coffee Shop SUP) Intersection Analysis

Capacity analysis was performed at the intersections within the study area during the weekday morning and evening peak hours under 2028 Future with Development conditions (with Coffee Shop). *Synchro Version 11* was used to analyze the study intersections based on the Highway Capacity Manual (HCM) methodology and includes level of service (LOS), delay, and queue length comparisons for the turning movements analyzed.

Existing peak hour factors found in the field were used, except where the field peak hour factor was lower than 0.92 in which case a minimum value of 0.92 was used, consistent with VDOT analysis guidelines.

The results of the intersection analysis are presented in Table 15 and Figure 36 are expressed in LOS and delay (seconds per vehicle) per lane group. The 95th percentile queue results for each intersection are also presented in Table 15 and are expressed in feet, with 50th percentile queue results shown for all signalized intersections. The detailed analysis worksheets are included in Appendix I.

Table 15: Intersection Capacity Analysis and Queuing Results (2028 Full-Build with Coffee Shop SUP)

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec/veh)	50th % Queue (ft.) [2]	95th % Queue (ft.)	LOS	Delay (sec/veh)	50th % Queue (ft.) [2]	95th % Queue
1	Blenheim Boulevard (N/S) at Plaza Drive (EW) Overall Intersection (TWSC)									
	Eastbound Approach		B	10.2			B	10.7		
	Eastbound Right		B	10.2		3	B	10.7		5
2	Blenheim Boulevard (N/S) at Fairfax Commons (EW) Overall Intersection (Signalized)		B	10.3			B	11.3		
	Eastbound Approach		B	18.3			C	26.0		
	Eastbound Thru/Left		B	18.4	17	49	C	25.5	22	55
	Eastbound Right		B	17.6	0	0	C	26.4	0	10
	Westbound Approach		B	17.2			C	27.3		
	Westbound Left/Thru/Right		B	17.2	0	0	C	27.3	27	65
	Northbound Approach		A	9.2			A	7.5		
	Northbound Left	120	A	7.9	8	24	A	7.0	11	28
	Northbound Thru		A	9.4	40	124	A	7.7	33	97
	Northbound Right		A	7.7	0	0	A	6.6	0	0
	Southbound Approach		B	10.6			B	10.1		
	Southbound Left	120	A	8.6	2	8	A	7.4	2	8
	Southbound Thru		B	10.7	63	112	B	10.3	89	147
	Southbound Right		A	9.0	0	0	A	8.2	0	0
3	Access No Longer Pursued									
4	Blenheim Boulevard (N/S) at Existing Driveway (EW) Overall Intersection (TWSC)									
	Eastbound Approach		A	9.9			B	10.9		
	Eastbound Right		A	9.9		5	B	10.9		5
5	University Drive (N/S) at Street 1(EW) Overall Intersection (TWSC)									
	Eastbound Approach		A	9.4			B	12.3		
	Eastbound Left/Thru/Right		A	9.4		0	B	12.3		3
	Westbound Approach		B	14.4			C	17.8		
	Westbound Left/Thru/Right		B	14.4		15	C	17.8		23
	Northbound Approach									
	Northbound Left		A	7.7		0	A	8.1		0
	Southbound Approach									
	Southbound Left		A	8.2		3	A	8.2		3

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec/veh)	50th % Queue (ft.) [2]	95th % Queue (ft.)	LOS	Delay (sec/veh)	50th % Queue (ft.) [2]	95th % Queue
6	University Drive (N/S) at 7-11 Driveway (N/S)									
	Overall Intersection (TWSC)									
	Eastbound Approach		B	10.4			B	12.3		
	Eastbound Left/Thru/Right		B	10.4		3	B	12.3		8
	Northbound Approach									
	Northbound Left		A	7.9		0	A	8.3		0
7	University Drive (N/S) at Whitehead Street/Democracy Lane (EW)									
	Overall Intersection (Signalized)		B	11.4			B	11.1		
	Eastbound Approach		B	16.0			B	14.5		
	Eastbound Left/Thru		B	16.6	17	110	B	15.3	13	90
	Eastbound Right		B	13.3	0	10	B	13.4	0	32
	Westbound Approach		B	14.4			B	15.7		
	Westbound Left/Thru/Right		B	14.4	7	64	B	15.7	14	96
	Northbound Approach		A	10.0			A	9.6		
	Northbound Left		A	7.8	1	12	A	7.8	3	28
	Northbound Thru/Right		B	10.0	43	228	A	9.7	38	212
	Southbound Approach		A	9.2			A	9.4		
	Southbound Left		A	7.9	2	18	A	7.9	3	31
	Southbound Thru/Right		A	9.3	24	142	A	9.6	36	200
8	Democracy Lane (EW) at Garage Entrance (N/S)									
	Overall Intersection (TWSC)									
	Westbound Approach									
	Westbound Left		A	7.3		0	A	7.5		3
	Northbound Approach		A	9.3			A	9.8		
	Northbound Left/Right		A	9.3		8	A	9.8		5
9	Layton Hall Drive (EW) at Democracy Lane (N/S)									
	Overall Intersection (TWSC)									
	Eastbound Approach									
	Eastbound Left		A	7.7		3	A	7.6		0
	Westbound Approach									
	Westbound Left		A	7.9		0	A	7.9		3
	Northbound Approach		B	10.8			B	10.5		
	Northbound Left/Thru/Right		B	10.8		3	B	10.5		5
	Southbound Approach		A	9.4			B	10.3		
	Southbound Left/Thru/Right		A	9.4		0	B	10.3		3
10	Blenheim Boulevard (N/S) at Layton Hall Drive (EW)									
	Overall Intersection (Signalized)		C	25.4			C	21.5		
	Eastbound Approach		C	33.6			C	27.6		
	Eastbound Left		C	34.8	132	324	C	28.8	91	197
	Eastbound Thru/Right		C	26.2	7	46	C	24.2	8	47
	Westbound Approach		D	39.8			C	31.3		
	Westbound Left		D	35.3	7	35	C	29.8	7	30
	Westbound Thru/Right		D	41.0	6	52	C	32.0	5	37
	Northbound Approach		C	24.2			B	19.4		
	Northbound Left	250	B	16.0	21	50	B	14.8	14	38
	Northbound Thru		C	25.2	260	560	C	20.1	154	376
	Northbound Right	230	B	15.2	0	0	B	14.2	0	0
	Southbound Approach		C	21.1			C	20.2		
	Southbound Left	150	B	18.7	5	18	B	15.5	5	19
	Southbound Thru/Right		C	21.2	155	244	C	20.3	161	264

NOTES:

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

[2] 50th Percentile Queues are not reported for TWSC intersections under HCM Methodology.

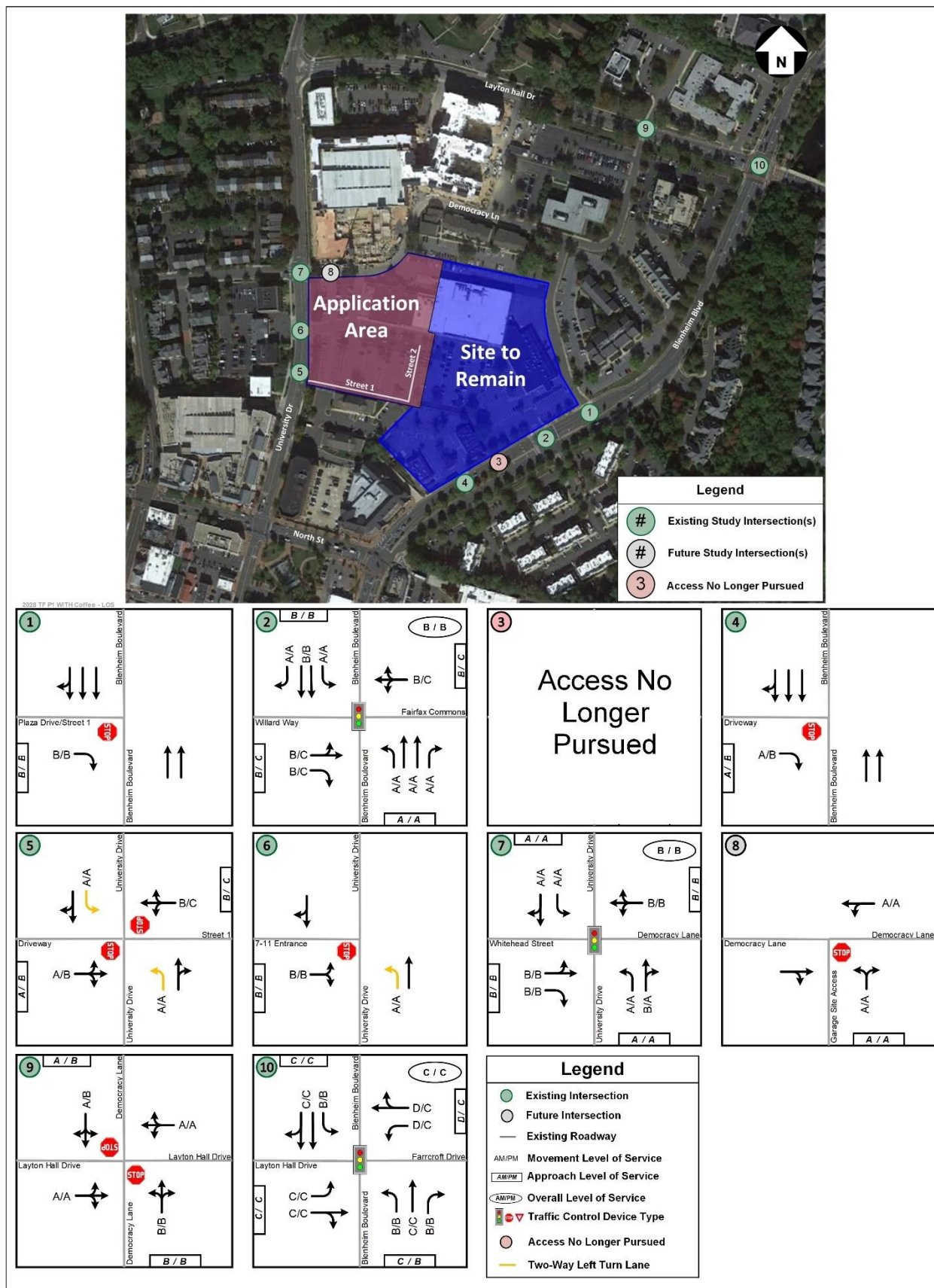


Figure 36: 2028 Future with Development (2028, Full-Build with Coffee Shop) Level of Service Results

For the purpose of this analysis, it is desirable to achieve a level of service (LOS) of D or better for each lane group at the intersections. The capacity analysis results indicate that all movements operate at acceptable LOS under Future (2028) with Development Full Build (with Coffee Shop with Drive-Thru).

Queuing analysis results indicate that all movements have 95th percentile queues accommodated in the available storage bays. Consistent with the previous analysis scenario, it is noted that the queueing on Democracy Lane is not anticipated to cause operational issues for the garage entrance for the development, which is located approximately 117 feet east of University Drive. The 50th and 95th percentile westbound queues on Democracy Lane per Synchro analysis results are under 117 feet during both the AM and PM peak hours. As previously mentioned, the garage entrance gate is planned to be located 50 feet away from Democracy Lane into the garage structure and hence will also provide an additional two car storage for vehicles to queue without blocking the intersection at Democracy Lane.

Overall Comparison of Intersection Capacity and Queuing Analysis Results

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

- **Existing (2023) Scenario** – assumes existing traffic volume based on the counts.
- **Future without Development 2028** – assumes existing traffic volume plus additional traffic due to a 1% annual growth rate.
- **Future with Development 2028 (Full-Build without Coffee Shop SUP)** – assumes Future without Development 2028 traffic plus traffic generated by the proposed Courthouse Plaza Residential development (Full Build). Trips associated with the inline retail to be removed (approximately 25.2 kSF) were removed from the existing driveways.
- **Future with Development 2028 (Full-Build with Coffee Shop SUP)** – assumes Future with Development 2028 (Full Build without Coffee Shop SUP) volumes with the additional trips generated by the Coffee Shop SUP. It is noted that the proposed Coffee Shop with Drive-Thru is a separate Special Use Permit (SUP) application adjacent to the Courthouse Plaza Residential development site.

A comparison of the delays and LOS results is presented in Table 16 and the queue comparison for the study scenarios is included in Table 17 and Table 18.

Table 16: Delay Comparison Table

No.	Intersection (Movement)	Level of Service (LOS) (Sec./Veh.)							
		AM Peak Hour				PM Peak Hour			
		2023 EX	2028 FB	2028 TF wo Coffee Shop	2028 TF w Coffee Shop	2023 EX	2028 FB	2028 TF wo Coffee Shop	2028 TF w Coffee Shop
1	Blenheim Boulevard (N/S) at Plaza Drive (E/W)								
	Overall Intersection (TWSC)								
	Eastbound Approach	B (10.9)	B (10)	B (10.1)	B (10.2)	B (11.7)	B (10.7)	B (10.7)	B (10.7)
2	Blenheim Boulevard (N/S) at Fairfax Commons (E/W)								
	Overall Intersection (Signalized)								
	Eastbound Approach	B (18.3)	B (18.3)	B (18.3)	B (18.3)	C (26.1)	C (26.1)	C (25.7)	C (26)
	Eastbound Thru/Left	B (17.9)	B (17.9)	B (17.9)	B (18.4)	C (24.9)	C (24.9)	C (24.8)	C (25.5)
	Eastbound Right	B (18.7)	B (18.8)	B (18.7)	B (17.6)	C (26.8)	C (26.8)	C (26.3)	C (26.4)
	Westbound Approach	B (17.7)	B (17.7)	B (17.6)	B (17.2)	C (26.5)	C (26.5)	C (26.4)	C (27.3)
	Westbound Left/Thru/Right	B (17.7)	B (17.7)	B (17.6)	B (17.2)	C (26.5)	C (26.5)	C (26.4)	C (27.3)
	Northbound Approach	A (8.4)	A (8.3)	A (8.3)	A (9.2)	A (7.6)	A (7.6)	A (7.6)	A (7.5)
	Northbound Left	A (6.8)	A (6.7)	A (6.8)	A (7.9)	A (6.8)	A (6.8)	A (6.8)	A (7)
	Northbound Thru	A (8.6)	A (8.4)	A (8.5)	A (9.4)	A (7.7)	A (7.8)	A (7.7)	A (7.7)
	Northbound Right	A (6.9)	A (6.9)	A (6.9)	A (7.7)	A (6.7)	A (6.7)	A (6.6)	A (6.6)
	Southbound Approach	A (8.6)	A (8.5)	A (8.5)	B (10.6)	A (9.6)	A (9.7)	A (9.7)	B (10.1)
	Southbound Left	A (7.2)	A (7.1)	A (7.1)	A (8.6)	A (7.2)	A (7.3)	A (7.2)	A (7.4)
	Southbound Thru	A (8.7)	A (8.5)	A (8.6)	B (10.7)	A (9.8)	A (9.9)	A (9.9)	B (10.3)
	Southbound Right	A (7.5)	A (7.4)	A (7.3)	A (9)	A (8.1)	A (8.1)	A (8)	A (8.2)
4	Blenheim Boulevard (N/S) at Existing Driveway (E/W)								
	Overall Intersection (TWSC)								
	Eastbound Approach	A (0)	A (0)	A (0)	A (9.9)	A (0)	A (0)	A (0)	B (10.9)
5	University Drive (N/S) at Existing Driveway (E/W) (3-Legged)								
	Overall Intersection (TWSC)								
	Eastbound Approach	A (8.9)	A (9.4)			B (10.3)	B (11.4)		
	Eastbound Left/Right	A (8.9)	A (9.4)			B (10.3)	B (11.4)		
	Northbound Approach								
5	University Drive (N/S) at Street 1(E/W) (4-Legged)								
	Overall Intersection (TWSC)								
	Eastbound Approach			A (9.4)	A (9.4)			B (12.1)	B (12.3)
	Eastbound Left/Thru/Right			A (9.4)	A (9.4)			B (12.1)	B (12.3)
	Westbound Approach			B (13.4)	B (14.4)			C (16.3)	C (17.8)
	Westbound Left/Thru/Right			B (13.4)	B (14.4)			C (16.3)	C (17.8)
	Northbound Approach								
	Northbound Left			A (7.7)	A (7.7)			A (8.1)	A (8.1)
5	Southbound Approach								
	Southbound Left			A (8)	A (8.2)			A (8.2)	A (8.2)

No.	Intersection (Movement)	Level of Service (LOS) (Sec./Veh.)							
		AM Peak Hour				PM Peak Hour			
		2023 EX	2028 FB	2028 TF wo Coffee Shop	2028 TF w Coffee Shop	2023 EX	2028 FB	2028 TF wo Coffee Shop	2028 TF w Coffee Shop
6	University Drive (N/S) at 7-11 Driveway (EW) (4-Legged) Overall Intersection (TWSC)								
	Eastbound Approach	A (9.9)	B (10.6)			B (13.2)	C (15.7)		
	Eastbound Left/Thru/Right	A (9.9)	B (10.6)			B (13.2)	C (15.7)		
	Westbound Approach	B (12.4)	B (13.1)			B (13.6)	C (16.4)		
	Westbound Left	B (13.5)	B (14.2)			C (16.4)	C (21.2)		
	Westbound Thru/Right	A (9.3)	B (10.1)			B (10.8)	B (11.7)		
	Northbound Approach								
	Northbound Thru/Left (Northbound Left in 2028)	A (7.8)	A (7.8)			A (8.1)	A (8.1)		
	Southbound Approach								
	Southbound Thru/Left (EX Only)	A (8)	A (8)			A (8.1)	A (8.2)		
6	University Drive (N/S) at 7-11 Driveway (N/S) (3-Legged) Overall Intersection (TWSC)								
	Eastbound Approach			B (10.1)	B (10.4)			B (12.1)	B (12.3)
	Eastbound Left/Thru/Right			B (10.1)	B (10.4)			B (12.1)	B (12.3)
	Northbound Approach								
	Northbound Thru/Left			A (7.8)	A (7.9)			A (8.3)	A (8.3)
7	University Drive (N/S) at Whitehead Street/Democracy Lane (EW) Overall Intersection (Signalized)	B (10.4)	B (11)	B (11.3)	B (11.4)	B (10.3)	B (10.8)	B (11)	B (11.1)
	Eastbound Approach	B (13.5)	B (14.9)	B (15.2)	B (16)	B (12.8)	B (14.2)	B (14.3)	B (14.5)
	Eastbound Left/Thru	B (14)	B (15.5)	B (15.9)	B (16.6)	B (13.5)	B (14.9)	B (15)	B (15.3)
	Eastbound Right	B (11.3)	B (12.7)	B (12.7)	B (13.3)	B (11.7)	B (13)	B (13.2)	B (13.4)
	Westbound Approach	B (11.8)	B (13.2)	B (13.8)	B (14.4)	B (13.4)	B (14.9)	B (15.5)	B (15.7)
	Westbound Left/Thru/Right	B (11.8)	B (13.2)	B (13.8)	B (14.4)	B (13.4)	B (14.9)	B (15.5)	B (15.7)
	Northbound Approach	A (9.5)	A (9.9)	A (9.9)	A (10)	A (9.2)	A (9.4)	A (9.6)	A (9.6)
	Northbound Thru/Left (Northbound Left in 2028)	A (9.5)	A (7.9)	A (7.9)	A (7.8)	A (9.2)	A (9.5)	A (7.9)	A (7.8)
	Northbound Thru/Right	A (9.5)	A (9.9)	A (10)	B (10)	A (9.2)	A (9.5)	A (9.7)	A (9.7)
	Southbound Approach	A (9.1)	A (9.2)	A (9.1)	A (9.2)	A (9.1)	A (9.4)	A (9.4)	A (9.4)
	Southbound Thru/Left (Southbound Left in 2028)	A (9.1)	A (7.9)	A (8)	A (7.9)	A (9.1)	A (9.5)	A (7.9)	A (7.9)
	Southbound Thru/Right	A (9.1)	A (9.2)	A (9.2)	A (9.3)	A (9.1)	A (9.5)	A (9.6)	A (9.6)
8	Future Intersection								
8	Democracy Lane (EW) at Garage Entrance (N/S) Overall Intersection (TWSC)								
	Westbound Approach								
	Westbound Left			A (7.3)	A (0)			A (7.5)	A (0)
	Northbound Approach			A (9.3)	A (9.3)			A (9.8)	A (9.8)
	Northbound Left/Right			A (9.3)	A (9.3)			A (9.8)	A (9.8)
9	Layton Hall Drive (EW) at Democracy Lane (N/S) Overall Intersection (TWSC)								
	Eastbound Approach								
	Eastbound Left	A (7.7)	A (7.7)	A (7.7)	A (7.7)	A (7.6)	A (7.6)	A (7.6)	A (7.6)
	Westbound Approach								
	Westbound Left	A (7.9)	A (7.9)	A (7.9)	A (7.9)	A (7.8)	A (7.8)	A (7.9)	A (7.9)
	Northbound Approach	B (11.5)	B (11.3)	B (10.8)	B (10.8)	B (10.5)	B (10.5)	B (10.5)	B (10.5)
	Northbound Left/Thru/Right	B (11.5)	B (11.3)	B (10.8)	B (10.8)	B (10.5)	B (10.5)	B (10.5)	B (10.5)
	Southbound Approach	A (9.4)	A (9.4)	A (9.4)	A (9.4)	B (10.1)	B (10.1)	B (10.3)	B (10.3)
	Southbound Left/Thru/Right	A (9.4)	A (9.4)	A (9.4)	A (9.4)	B (10.1)	B (10.1)	B (10.3)	B (10.3)

No.	Intersection (Movement)	Level of Service (LOS) (Sec./Veh.)							
		AM Peak Hour				PM Peak Hour			
		2023 EX	2028 FB	2028 TF wo Coffee Shop	2028 TF w Coffee Shop	2023 EX	2028 FB	2028 TF wo Coffee Shop	2028 TF w Coffee Shop
10	Blenheim Boulevard (NS) at Layton Hall Drive (EW)								
	Overall Intersection (Signalized)	C (24.9)	C (24.3)	C (25.1)	C (25.4)	C (20.7)	C (21.2)	C (21.4)	C (21.5)
	Eastbound Approach	C (32.4)	C (31.4)	C (32)	C (33.6)	C (26.8)	C (27.3)	C (27.5)	C (27.6)
	Eastbound Left	C (33.6)	C (32.6)	C (33.1)	C (34.8)	C (27.9)	C (28.5)	C (28.7)	C (28.8)
	Eastbound Thru/Right	C (25.8)	C (25.1)	C (25)	C (26.2)	C (23.8)	C (24.2)	C (24.1)	C (24.2)
	Westbound Approach	D (38.7)	D (36.9)	D (37.9)	D (39.8)	C (30)	C (30.8)	C (31.1)	C (31.3)
	Westbound Left	C (33.9)	C (32.8)	C (33.7)	D (35.3)	C (28.6)	C (29.4)	C (29.7)	C (29.8)
	Westbound Thru/Right	D (39.9)	D (37.9)	D (39)	D (41)	C (30.7)	C (31.5)	C (31.8)	C (32)
	Northbound Approach	C (23.7)	C (23.2)	C (23.9)	C (24.2)	B (18.7)	B (19.1)	B (19.2)	B (19.4)
	Northbound Left	B (15.9)	B (15.7)	B (16.2)	B (16)	B (14.4)	B (14.6)	B (14.8)	B (14.8)
	Northbound Thru	C (24.8)	C (24.2)	C (24.9)	C (25.2)	B (19.3)	B (19.9)	B (19.9)	C (20.1)
	Northbound Right	B (15.2)	B (15)	B (15.5)	B (15.2)	B (14)	B (14.1)	B (14.2)	B (14.2)
	Southbound Approach	C (20.9)	C (20.6)	C (21.2)	C (21.1)	B (19.3)	B (19.8)	C (20.1)	C (20.2)
	Southbound Left	B (18.3)	B (18)	B (18.5)	B (18.7)	B (15.1)	B (15.4)	B (15.5)	B (15.5)
	Southbound Thru/Right	C (20.9)	C (20.7)	C (21.3)	C (21.2)	B (19.4)	B (19.9)	C (20.2)	C (20.3)

Note: EX = Existing, FB = Future Background, TF = Total Future/Future with Development

As mentioned previously, it is desirable to achieve a level of service (LOS) of D or better for each lane group at the intersections. Table 16 shows that the capacity analysis results indicate that all movements operate at acceptable LOS under all analysis scenarios.

Table 17: Queue Comparison Table (50th Percentile – for Signalized Intersections Only)

No.	Intersection (Movement)	50th Percentile Queue (ft.)								
		Effective Storage Length (ft.)	AM Peak Hour				PM Peak Hour			
			2023 EX	2028 FB	2028 TF wo Coffee Shop	2028 TF w Coffee Shop	2023 EX	2028 FB	2028 TF wo Coffee Shop	2028 TF w Coffee Shop
2	Blenheim Boulevard (N/S) at Fairfax Commons (E/W)									
	Overall Intersection (Signalized)									
	Eastbound Approach									
	Eastbound Thru/Left		1	1	1	17	17	17	14	22
	Eastbound Right		0	0	0	0	0	0	0	0
	Westbound Approach									
	Westbound Left/Thru/Right		0	0	0	0	27	27	27	27
	Northbound Approach									
	Northbound Left	120	0	0	0	8	8	8	8	11
	Northbound Thru		0	0	0	40	32	34	33	33
	Northbound Right		0	0	0	0	0	0	0	0
	Southbound Approach									
Southbound Left	120	1	1	1	2	2	2	2	2	
Southbound Thru		0	0	0	63	80	85	85	89	
Southbound Right		0	0	0	0	0	0	0	0	
7	University Drive (N/S) at Whitehead Street/Democracy Lane (E/W)									
	Overall Intersection (Signalized)									
	Eastbound Approach									
	Eastbound Left/Thru		15	16	16	17	11	13	13	13
	Eastbound Right		0	0	0	0	0	0	0	0
	Westbound Approach									
	Westbound Left/Thru/Right		4	4	7	7	10	11	14	14
	Northbound Approach									
	Northbound Thru/Left (Northbound Left in 2028)	150	17	1	1	1	17	3	3	3
	Northbound Thru/Right		17	36	37	43	17	35	37	38
	Southbound Approach									
	Southbound Thru/Left (Southbound Left in 2028)		9	1	1	2	16	1	3	3
Southbound Thru/Right		9	19	19	24	16	34	35	36	
10	Blenheim Boulevard (N/S) at Layton Hall Drive (E/W)									
	Overall Intersection (Signalized)									
	Eastbound Approach									
	Eastbound Left		125	115	128	132	78	86	90	91
	Eastbound Thru/Right		8	7	7	7	7	7	7	8
	Westbound Approach									
	Westbound Left		8	7	7	7	6	7	7	7
	Westbound Thru/Right		6	5	6	6	5	5	5	5
	Northbound Approach									
	Northbound Left	250	22	20	21	21	12	14	14	14
	Northbound Thru		248	218	231	260	136	150	148	154
	Northbound Right	230	0	0	0	0	0	0	0	0
Southbound Approach										
Southbound Left	150	6	5	5	5	5	5	5	5	
Southbound Thru/Right		147	133	139	155	142	155	156	161	

Note: EX = Existing, FB = Future Background, TF = Total Future/Future with Development

Table 17 shows that all 50th percentile queues are accommodated within the available storage for all movements at the signalized intersections in the study area.

Table 18: Queue Comparison Table (95th Percentile)

No.	Intersection (Movement)	95th Percentile Queues (ft.)								
		Effective Storage Length (ft.)	AM Peak Hour				PM Peak Hour			
			2023 EX	2028 FB	2028 TF wo Coffee Shop	2028 TF w Coffee Shop	2023 EX	2028 FB	2028 TF wo Coffee Shop	2028 TF w Coffee Shop
1	Blenheim Boulevard (N/S) at Plaza Drive (E/W)									
	Overall Intersection (TWSC)									
	Eastbound Approach									
	Eastbound Right		0	0	3	3	5	5	5	5
2	Blenheim Boulevard (N/S) at Fairfax Commons (E/W)									
	Overall Intersection (Signalized)									
	Eastbound Approach									
	Eastbound Thru/Left		17	17	17	49	45	45	39	55
	Eastbound Right		0	0	0	0	18	18	10	10
	Westbound Approach									
	Westbound Left/Thru/Right		0	0	0	0	66	66	65	65
	Northbound Approach									
	Northbound Left	120	11	11	11	24	22	22	23	28
	Northbound Thru		108	113	114	124	94	100	99	97
	Northbound Right		0	0	0	0	0	0	0	0
	Southbound Approach									
	Southbound Left	120	6	7	7	8	8	8	8	8
	Southbound Thru		83	86	88	112	132	140	140	147
	Southbound Right		0	0	0	0	0	0	0	0
4	Blenheim Boulevard (N/S) at Existing Driveway (E/W)									
	Overall Intersection (TWSC)									
	Eastbound Approach									
	Eastbound Right		0	0	0	5	0	0	0	5
5	University Drive (N/S) at Existing Driveway (E/W) (3-Legged)									
	Overall Intersection (TWSC)									
	Eastbound Approach									
	Eastbound Left/Right		0	0			3	3		
	Northbound Approach									
	Northbound Left		0	0			0	0		
5	University Drive (N/S) at Street 1(E/W) (4-Legged)									
	Overall Intersection (TWSC)									
	Eastbound Approach									
	Eastbound Left/Thru/Right				0	0			3	3
	Westbound Approach									
	Westbound Left/Thru/Right				0	15			3	23
	Northbound Approach									
	Northbound Left				0	0			0	0
	Southbound Approach									
	Southbound Left				3	3			15	3

No.	Intersection (Movement)	95th Percentile Queues (ft.)								
		Effective Storage Length (ft.)	AM Peak Hour				PM Peak Hour			
			2023 EX	2028 FB	2028 TF wo Coffee Shop	2028 TF w Coffee Shop	2023 EX	2028 FB	2028 TF wo Coffee Shop	2028 TF w Coffee Shop
6	University Drive (N/S) at 7-11 Driveway (EW) (4-Legged)									
	Overall Intersection (TWSC)									
	Eastbound Approach									
	Eastbound Left/Thru/Right		3	3		8	10			
	Westbound Approach									
	Westbound Left		3	3		10	15			
	Westbound Thru/Right		0	0		5	8			
	Northbound Approach									
	Northbound Thru/Left (Northbound Left in 2028)		0	0		0	0			
Southbound Approach										
Southbound Thru/Left (EX Only)		0	0		3	3				
6	University Drive (N/S) at 7-11 Driveway (N/S) (3-Legged)									
	Overall Intersection (TWSC)									
	Eastbound Approach									
	Eastbound Left/Thru/Right			3	3			8	8	
	Northbound Approach									
Northbound Thru/Left			0	0			0	0		
7	University Drive (N/S) at Whitehead Street/Democracy Lane (EW)									
	Overall Intersection (Signalized)									
	Eastbound Approach									
	Eastbound Left/Thru		91	105	106	110	79	88	89	90
	Eastbound Right		9	10	10	10	28	32	32	32
	Westbound Approach									
	Westbound Left/Thru/Right		33	38	62	64	70	79	95	96
	Northbound Approach									
	Northbound Thru/Left (Northbound Left in 2028)	150	89	12	12	12	92	27	28	28
	Northbound Thru/Right		89	200	202	228	92	193	204	212
	Southbound Approach									
Southbound Thru/Left (Southbound Left in 2028)		55	9	18	18	87	16	31	31	
Southbound Thru/Right		55	118	117	142	87	189	191	200	
8	Future Intersection									
8	Democracy Lane (EW) at Garage Entrance (N/S)									
	Overall Intersection (TWSC)									
	Westbound Approach									
	Westbound Left			0	0			3	3	
	Northbound Approach									
Northbound Left/Right			0.3	8			5	5		
9	Layton Hall Drive (EW) at Democracy Lane (N/S)									
	Overall Intersection (TWSC)									
	Eastbound Approach									
	Eastbound Left		3	3	3	3	0	0	0	0
	Westbound Approach									
	Westbound Left		0	0	0	0	0	0	3	3
	Northbound Approach									
Northbound Left/Thru/Right		3	3	3	3	5	5	5	5	
Southbound Approach										
Southbound Left/Thru/Right		0	0	0	0	3	3	3	3	

No.	Intersection (Movement)	95th Percentile Queues (ft.)								
		Effective Storage Length (ft.)	AM Peak Hour				PM Peak Hour			
			2023 EX	2028 FB	2028 TF wo Coffee Shop	2028 TF w Coffee Shop	2023 EX	2028 FB	2028 TF wo Coffee Shop	2028 TF w Coffee Shop
10	Blenheim Boulevard (N/S) at Layton Hall Drive (E/W)									
	Overall Intersection (Signalized)									
	Eastbound Approach									
	Eastbound Left		279	284	311	324	172	187	194	197
	Eastbound Thru/Right		44	44	44	46	46	47	47	47
	Westbound Approach									
	Westbound Left		34	33	33	35	29	29	29	30
	Westbound Thru/Right		50	52	52	52	35	36	36	37
	Northbound Approach									
	Northbound Left	250	49	51	51	50	35	38	38	38
	Northbound Thru		490	515	516	560	338	366	363	376
	Northbound Right	230	0	0	0	0	0	0	0	0
	Southbound Approach									
	Southbound Left	150	19	19	19	18	18	18	18	19
	Southbound Thru/Right		217	226	227	244	234	254	258	264

Note: EX = Existing, FB = Future Background, TF = Total Future/Future with Development

Table 18 shows that the 95th percentile queues are accommodated in the available storage bays for all lane movements at the study intersections within the study area.

Conclusion

The analysis of the traffic operations for the proposed Courthouse Plaza Residential Project supports the following major conclusions:

Principal Findings and Conclusions

Discussions regarding the study assumptions and relevant background information were held with City of Fairfax staff during the scoping meeting held on Monday, May 22, 2023. A copy of the signed scoping document is included in Appendix A. Please note, the pre-application submission illustrated potential future phases are possible at the site that align with the overall Comprehensive Plan vision for this area, however, no future phases are included with the application submission.

The analysis of the traffic operations for the proposed Courthouse Plaza Residential development supports the following major conclusions:

Analysis Components

- As determined based on discussions with City of Fairfax staff at the scoping meeting, the following growth was applied to the major movements to account for a regional increase in background traffic.
 - A 1.0 % per year growth rate from the year 2023 to 2028
- A TDM/mode split reduction of 15 percent was applied to the residential use, as agreed upon by City of Fairfax staff.
- At full build-out (2028), the proposed development (without Coffee Shop), will generate approximately 108 AM peak hour trips, 105 PM peak hour trips and 1,238 trips on a typical weekday per ITE Trip General Manual (11th Edition). The addition of up to 5,000 SF of retail in the residential building is anticipated to serve local residents and adjacent internal capture users from the shopping center and student housing and not attract destination trips.
- The Coffee Shop with Drive-Thru (part of separate SUP application) would generate approximately 229 trips in the AM peak hour, 83 trips in the PM peak hour, and 1,424 trips on a typical weekday after reductions. Please note that a Convenience Market could be implemented at this location by-right which would generate more PM peak and Daily trips than the Coffee Shop with Drive-Thru.

Multimodal Transportation Elements

- Sidewalks currently exist at all study intersections, with a minimum width of 5 feet and up to 10 feet. Further pedestrian safety and convenience will be enhanced by the proposed development, with additional pedestrian accommodations within the block.
- The analysis assumes the City Project 'University Drive Spine' as a background improvement for all Future (2028) scenarios.
- Four (4) bus routes operated by City of Fairfax: City-University Energysaver (CUE) system currently serve the site area. The system provides scheduled, low-cost transportation services to George Mason University, to shopping centers and other locations within the City of Fairfax as well as the Vienna/Fairfax GMU WMATA station.

Infrastructure

- The Courthouse Plaza Residential development in existing conditions is accessed via multiple entrances on Blenheim Boulevard and University Drive.
- During the proposed redevelopment (Full-Build 2028), two new roadways (Street 1 and Street 2) will be constructed adjacent to the new multifamily building.

- Primary access to the site will continue to be provided via University Drive, Blenheim Boulevard, and Democracy Lane.
- The City of Fairfax project 'University Drive Spine', which provides multimodal improvements along University Drive with conversion of existing four-lane configuration to a three-lane configuration with Two-Way Left Turn Lanes (TWLTLs) and bike lanes is included in the analysis for all future scenarios.

Analysis Results

- All the study intersections operate at acceptable levels of service during all the study periods and analysis conditions.
- 95th percentile queues are contained within the available storage at the turning movements during all the study periods/conditions.
- The location of the garage entrance and the westbound queue along Democracy Lane is not anticipated to cause operational issues. Analysis results show the 50th and 95th percentile queues are accommodated along all peak times, with the location of the garage gate allowing up to a two-car storage inside the garage.

TECHNICAL ATTACHMENTS

Appendix A – Signed Scoping Document

Appendix B – CUE Bus Schedules

Appendix C – Crash Data

Appendix D – Existing Turning Movement Counts

Appendix E – Comparison of Existing Inline Retail Trips and Inline Retail Trips to be Removed

Appendix F – Intersection Analysis Worksheets – Existing 2023

Appendix G – Intersection Analysis Worksheets – 2028 Future without Development

Appendix H – Intersection Analysis Worksheets – 2028 Future with Development (Full-Build - without Coffee Shop)

Appendix I – Intersection Analysis Worksheets – 2028 Future with Development (Full-Build -with Coffee Shop)

Appendix J – Site Visit Photographs

Appendix A – Signed Scoping Document

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 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:	Kayla Ord, Gorove Slade
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E-mail:	kayla.ord@goroveslade.com
Developer/Owner Name:	Combined Properties, Inc
Tele:	
E-mail:	

Project Information

Project Name:	Courthouse Plaza			
Project Location: (Attach regional and site specific location map) PLEASE SEE FIGURE 1	The project is located north of North St, south of Democracy Ln, east of University Dr, and west of Blenheim Blvd in the City of Fairfax, VA. The site is located in the Old Town Fairfax Transition Overlay District.			
Submission Type	Comp Plan ☐	Rezoning ☒	Site Plan ☐	Subd Plat ☐
Project Description: Including type of application (rezoning, subdivision, site plan), acreage, business square ft, number of dwelling units, access location, etc. Attach additional sheet if necessary)	This rezoning application is for the Courthouse Plaza redevelopment. The 10.4-acre site consists of one (1) parcel (Tax Map # 57-2-20-004 D). The existing site is currently occupied by 91,860 SF of retail and surface parking. The proposed redevelopment is planned to be constructed in 2 phases; Phase 1 is planned to approximately consist of a new 300 multifamily units residential building on the west side of the property with approximately 64,000 SF of existing retail to remain. Phase 2 is planned to approximately consist of an additional 300 multifamily units (600 total units) along with approximately 62,000 SF of future retail which will replace the existing retail. Phase 1 is anticipated to be in place by 2028 and Phase 2 is anticipated to be completed by 2038 for the purposes of this analysis. Under both phases, the proposed trip differential between existing and proposed is considered negligible. An alternative scenario is also being included with Phase 1 which includes a Coffee Shop Drive-Thru which is being considered on the site in a separate application. Site access is planned to be provided via two curb cuts along University Drive and three curb cuts along Blenheim Blvd.			

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.

Locality/County:	City of Fairfax, VA			
Proposed Use: (Check all that apply; attach additional pages as necessary)	Residential ☐	Commercial ☐	Mixed Use ☒	Other ☐
	Residential # of Units: Commercial Use Sq Ft: ITE LU Code(s):		Mixed Use: (Ultimate Scenario) • 600 DU (ITE LUC 221) • 57,800 SF (ITE LUC 821) • 4,200 SF (ITE LUC 937)	
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: Phase 1 – 2028 Phase 2 - 2038		Design Year: N/A
Study Area Boundaries (Attach map) PLEASE SEE FIGURE 2	North: Democracy Lane		South: North St	
	East: Blenheim Road		West: University Drive	
External Factors That Could Affect Project (Planned road improvements, other nearby developments)	• Old Lee Highway Multimodal Improvements • University Drive Road Diet			
Consistency With Comprehensive Plan	The site is within the Old Town Fairfax Small Area Plan where pedestrian-oriented, mixed-use development is strongly encouraged. The proposed redevelopment of Courthouse Plaza (Mixed-Use development) is working to be consistent with the City of Fairfax Comprehensive Plan by providing new grid links and pedestrian friendly networks.			
Available Traffic Data (Historical, forecasts)	• VDOT AADT Data • Traffic Counts dated March 30, 2023			
Trip Distribution (Attach sketch) PLEASE SEE FIGURE 3	Please refer to Figure 3.			
Annual Vehicle Trip Growth Rate: PLEASE SEE TABLE 1	1.0% - 2023 to 2028 0.5% - 2029 to 2038 On all major roadways	Peak Period for Study (check all that apply)		☒ AM ☒ PM ☐ SAT

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.

Study Intersections and/or Road Segments (Attach additional sheets as necessary) PLEASE SEE FIGURE 2	1. Blenheim Blvd and Street 3 2. Blenheim Blvd and Fairfax Commons Entrance 3. Blenheim Blvd and Street 1 (future Intersection) 4. Blenheim Blvd and Southern Entrance 5. University Drive and Street 1 (future Intersection) 6. University Drive and Existing Courthouse Plaza Entrance/7-11 Entrance 7. University Drive and Democracy Ln/Whitehead St 8. Democracy Ln and Garage Entrance 9. Democracy Ln and Layton Hall Drive 10. Blenheim Blvd and Layton Hall Dr	
Trip Adjustment Factors PLEASE SEE TABLE 3	Internal allowance: ☒ Yes ☐ No	Pass-by allowance: ☒ Yes ☐ No
Software Methodology	☒ Synchro ☐ HCS (v.2000/+) ☐ SIDRA ☐ CORSIM ☐ VISSIM	
Traffic Signal Proposed or Affected (Analysis software to be used, progression speed, cycle length)	2. Blenheim Blvd and Fairfax Commons Entrance/Street 1 7. University Drive and Democracy Ln/Whitehead St 10. Blenheim Blvd and Layton Hall Dr	
Improvement(s) Assumed or to be Considered	• University Drive Bike Lanes (City of Fairfax Publication August 2021)	
Background Traffic Studies Considered	None	
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 11, HCM 6 methodology will be used for intersection analysis where applicable. HCM 2000 methodology will be used if HCM 6 is not applicable.
2. A vehicle classification count will be conducted to verify heavy vehicle percentages. The vehicle classification count will include pedestrian and bicycle counts.
3. Peak hour factors will be consistent with VDOT guidelines (VDOT TOSAM v2.0)
 - a. Existing peak hour factors by overall intersection (minimum of 0.85) will be used for existing year analysis.
 - b. For future year analysis, the PHF will be minimum 0.92 or existing, whichever is higher.
4. Analysis procedures consistent with the VDOT Traffic Operations And Safety Analysis Manual Version 2.0 will be used unless otherwise noted.
5. Old Synchro files and the latest signal timings will be obtained from the City of Fairfax.
6. LOS D or non-degradation from future without development scenario is considered to be an acceptable design standard for non-NHS roadways.
7. The site's traffic impact will be mitigated based on Synchro results.
8. Crash data at the existing study intersections for 2018 through 2022 will be obtained from VDOT.
9. Transportation Demand Management (TDM) discussion will be provided.
10. Relevant Pages on guidance from ITE and VDOT TIA Administrative Guidelines for Pass-By and Internal Capture percentages are included in the scoping document supplement.
11. Review of the garage entrance and the proximity to University Drive will be included in the study.

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.



SIGNED: _____ DATE: 07/11/2023
Applicant or Consultant

PRINT NAME: Kayla Ord, P.E., PTOE, Gorove Slade Associates, Inc.
Applicant or Consultant

SIGNED: Curt McCullough DATE: 7/14/23
City of Fairfax

PRINT NAME: Curt McCullough, PE
City of Fairfax

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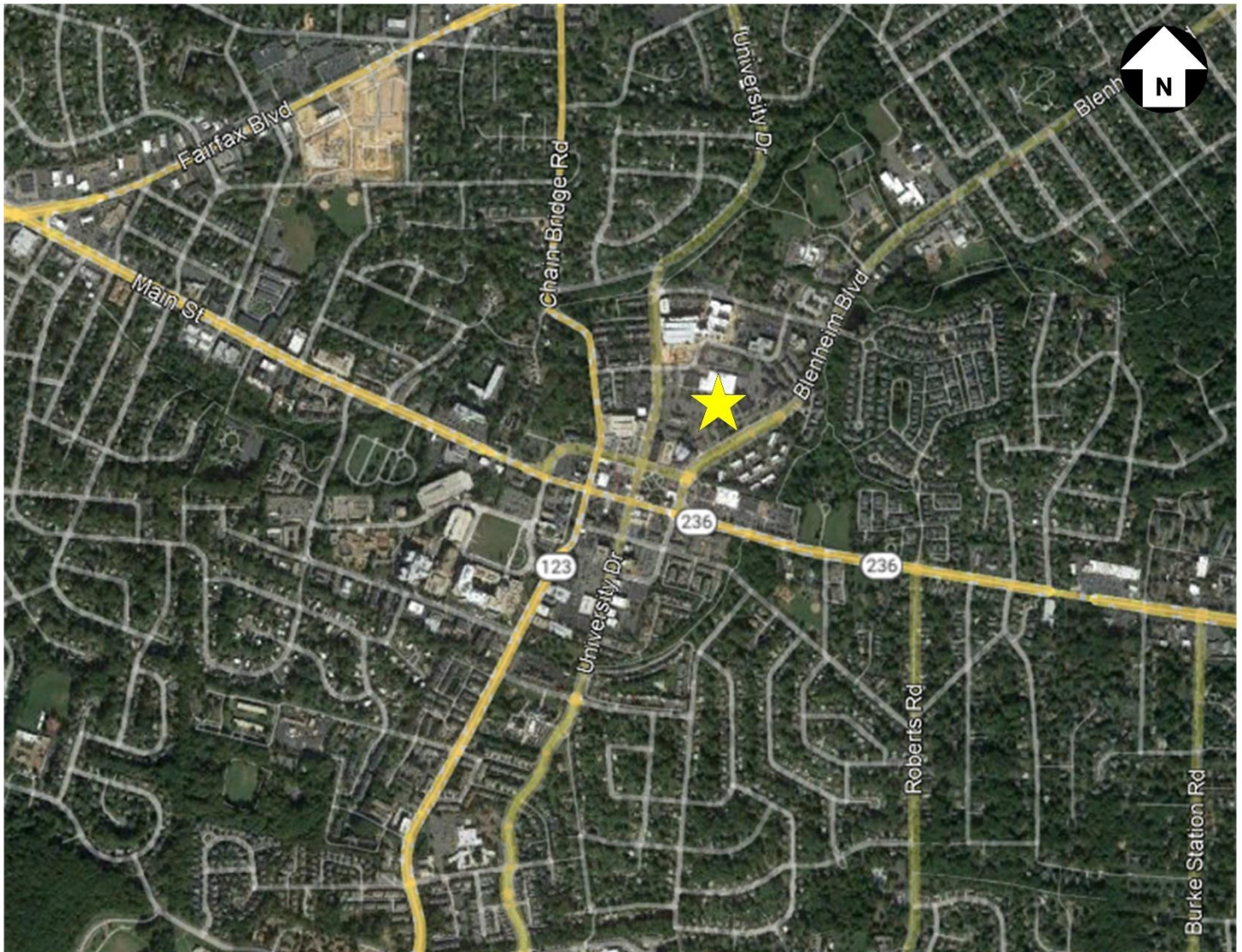


FIGURE 1: REGIONAL MAP

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.



FIGURE 2: STUDY INTERSECTIONS

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.



FIGURE 3: SITE TRIP DISTRIBUTION

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.

TABLE 1: HISTORICAL AADT COMPARISON

Road Segment:	From:	To:	Published VDOT AADT					Annual Growth Rate			
			2017	2018	2019	2020	2021	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021
University Dr	SR-236 Main St	Whitehead St	11,000	11,000	11,000	4,900	5,700	0%	0%	-55%	16%
North St	SR-236 W Main St	SR-236 E Main St	20,000	20,000	20,000	15,000	17,000	0%	0%	-25%	13%
Blenheim Blvd (Old Lee Hwy)	SR-236 Main St	Layton Hall Rd	16,000	16,000	17,000	8,300	9,600	0%	6%	-51%	16%
Democracy Ln	SR-236 Main St	Layton Hall Rd	840	840	840	590	670	0%	0%	-30%	14%

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

TABLE 2: TRIP GENERATION: EXISTING DEVELOPMENT

Land Use	ITE Code	Size	----- Week day -----						
			AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Existing Development									
Shopping Center (40 kSF<X<150 kSF) (with Supermarket)	821	91.9 kSF of GFA	201	123	324	395	428	823	8,482
Subtotal (Existing)			201	123	324	395	428	823	8,482

TABLE 3: TRIP GENERATION: PHASE 1 WITH NO REDUCTIONS

Land Use	ITE Code	Size	----- Week day -----						
			AM Peak Hour			PM Peak Hour			Daily Total
			In	Out	Total	In	Out	Total	
Proposed Development - Phase 1									
Multifamily Housing (Mid-Rise) (Apartments, Townhomes, Condo)	221	300 DU	28	92	120	71	46	117	1,385
Shopping Center (40 kSF<X<150 kSF) (with Supermarket)	821	64.0 kSF of GFA	140	86	226	293	317	610	6,338
Subtotal (Proposed Phase 1)			168	178	346	364	363	727	7,723

TABLE 4: TRIP GENERATION: PHASE 1 WITH REDUCTIONS

Land Use	ITE Code	Size	----- W e e k d a y -----						Daily	
			AM Peak Hour			PM Peak Hour				Total
			In	Out	Total	In	Out	Total		
Existing Development										
Shopping Center (40 kSF<X<150 kSF) (with Supermarket)	821	91.9 kSF of GFA	201	123	324	395	428	823	8,482	
Subtotal (Existing)			201	123	324	395	428	823	8,482	
Proposed Development - Proposed Concept (Phase 1)										
Multifamily Housing (Mid-Rise) (Apartments, Townhomes, Condo)	221	300 DU	28	92	120	71	46	117	1,385	
Internal Capture Residential - Retail ¹		(1)	-3	-9	-12	-7	-5	-12	-139	
Mode Split/TDM Reduction		15%	-4	-12	-16	-10	-6	-16	-187	
Residential Subtotal (with Reductions)			21	71	92	54	35	89	1,059	
Shopping Center (40 kSF<X<150 kSF) (with Supermarket)	821	64.0 kSF of GFA	140	86	226	293	317	610	6,338	
Internal Capture Retail - Residential ¹		(1)	-9	-3	-12	-5	-7	-12	-139	
Pass-By Reduction ² 25%/40%/25%			-27	-27	-54	-120	-119	-239	-1,550	
Retail Subtotal (with Reductions)			104	56	160	168	191	359	4,649	
Total Proposed Trips (with Reductions)			125	127	252	222	226	448	5,708	
Total Trips (Proposed - Existing)			-76	4	-72	-173	-202	-375	-2,774	

¹ Internal Capture rates consider site trips "captured" within a mixed-use development, recognising that trips from one land use can access another land use within a site development (1) residential / retail - smaller of 10% of residential trips or 10% of retail trips

² The pass by reduction for Shopping Center is based on the ITE Trip Generation methodology, as provided in the ITE Pass-By Tables for the ITE 11th Edition Trip Generation Handbook. The average rate for Shopping Centers is 40% for the PM Peak. For all other time periods, the default Pass-By rate of 25% is assumed

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.

TABLE 5: TRIP GENERATION: PHASE 1 WITH COFFEE SHOP ALTERNATIVE SCENARIO

Land Use	ITE Code	Size	----- Week day -----						Daily Total	
			AM Peak Hour			PM Peak Hour				
			In	Out	Total	In	Out	Total		
Proposed Development - Proposed Concept (Phase 1)										
Multifamily Housing (Mid-Rise) (Apartments, Townhomes, Condo)	221	300 DU	28	92	120	71	46	117	1,385	
Internal Capture Residential - Retail ¹		(1)	-3	-9	-12	-7	-5	-12	-139	
Mode Split/TDM Reduction		15%	-4	-12	-16	-10	-6	-16	-187	
Residential Subtotal (with Reductions)			21	71	92	54	35	89	1,059	
Shopping Center (40 kSF<X<150 kSF) (with Supermarket)	821	64.0 kSF of GFA	140	86	226	293	317	610	6,338	
Coffee/Donut Shop with Drive-Thru Window	937	4.2 kSF of GFA	191	183	374	91	91	182	3,446	
Internal Capture Retail - Residential ¹		(1)	-9	-3	-12	-5	-7	-12	-139	
Retail Pass-By Reduction ²	25%/40%/25%		-27	-27	-54	-120	-119	-239	-1,550	
Coffee Shop w/Drive Thru Pass-By Reduction ³	25%/40%/25%		-48	-46	-94	-36	-36	-73	-862	
Coffee Shop and Retail Subtotal (with Reductions)			247	193	440	223	246	468	7,233	
Total Proposed Trips (with Reductions)			268	264	532	277	281	557	8,292	

¹ Internal Capture rates consider site trips "captured" within a mixed-use development, recognising that trips from one land use can access another land use within a site development (1) residential / retail - smaller of 10% of residential trips or 10% of retail trips

² The pass by reduction for Shopping Center is based on the ITE Trip Generation methodology, as provided in the ITE Pass-By Tables for the ITE 11th Edition Trip Generation Handbook. The average rate for Shopping Centers is 40% for the PM Peak. For all other time periods, the default Pass-By rate of 25% is assumed

³ Assumed since no data available in ITE Trip Generation Handbook

TABLE 6: TRIP GENERATION: PHASE 2 WITH NO REDUCTIONS

Land Use	ITE Code	Size	----- Week day -----						
			AM Peak Hour			PM Peak Hour			Daily Total
			In	Out	Total	In	Out	Total	
Proposed Development - Phase 2									
Multifamily Housing (Mid-Rise) (Apartments, Townhomes, Condo)	221	600 DU	58	194	252	143	91	234	2,816
Shopping Center (40 kSF<X<150 kSF) (with Supermarket)	821	62.0 kSF of GFA	136	83	219	285	309	594	6,184
Subtotal (Proposed Phase 2)			194	277	471	428	400	828	9,000

TABLE 7: TRIP GENERATION: PHASE 2 WITH REDUCTIONS

Land Use	ITE Code	Size	----- Week day -----						Daily Total
			AM Peak Hour			PM Peak Hour			
			In	Out	Total	In	Out	Total	
Existing Development									
Shopping Center (40 kSF<X<150 kSF) (with Supermarket)	821	91.9 kSF of GFA	201	123	324	395	428	823	8,482
Subtotal (Existing)			201	123	324	395	428	823	8,482
Proposed Development - Proposed Concept (Phase 2)									
Multifamily Housing (Mid-Rise) (Apartments, Townhomes, Condo)	221	600 DU	58	194	252	143	91	234	2,816
	Internal Capture Residential - Retail ¹ (1)		-6	-19	-25	-14	-9	-23	-282
	Mode Split/TDM Reduction 15%		-8	-26	-34	-19	-12	-32	-380
	Residential Subtotal (with Reductions)		44	149	193	110	70	179	2,154
Shopping Center (40 kSF<X<150 kSF) (with Supermarket)	821	62.0 kSF of GFA	136	83	219	285	309	594	6,184
	Internal Capture Retail -Residential ¹ (1)		-19	-6	-25	-9	-14	-23	-282
	Retail Pass-By Reduction ² 25%/40%/25%		-25	-24	-49	-114	-114	-228	-1,476
	Retail Subtotal (with Reductions)		92	53	145	162	181	343	4,426
	Total Proposed Trips (with Reductions)		136	202	338	272	251	522	6,580
	Total Trips (Proposed - Existing)		-65	79	14	-123	-177	-301	-1,902

¹ Internal Capture rates consider site trips "captured" within a mixed-use development, recognising that trips from one land use can access another land use within a site development (1) residential / retail - smaller of 10% of residential trips or 10% of retail trips

² The pass by reduction for Shopping Center is based on the ITE Trip Generation methodology, as provided in the ITE Pass-By Tables for the ITE 11th Edition Trip Generation Handbook. The average rate for Shopping Centers is 40% for the PM Peak. For all other time periods, the default Pass-By rate of 25% is assumed

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.

TABLE 8: TRIP GENERATION: PHASE 2 WITH COFFEE SHOP ALTERNATIVE SCENARIO

Land Use	ITE Code	Size	----- W e e k d a y -----							
			AM Peak Hour			PM Peak Hour			Daily Total	
			In	Out	Total	In	Out	Total		
Proposed Development - Proposed Concept (Phase 2)										
Multifamily Housing (Mid-Rise) (Apartments, Townhomes, Condo)	221	600 DU	58	194	252	143	91	234	2,816	
Internal Capture Residential - Retail ¹		(1)	-6	-19	-25	-14	-9	-23	-282	
Mode Split/TDM Reduction		15%	-8	-26	-34	-19	-12	-32	-380	
Residential Subtotal (with Reductions)			44	149	193	110	70	179	2,154	
Shopping Center (40 kSF<X<150 kSF) (with Supermarket)	821	57.8 kSF of GFA	126	78	204	270	292	562	5,861	
Coffee/Donut Shop with Drive-Thru Window	937	4.2 kSF of GFA	191	183	374	91	91	182	3,446	
Internal Capture Coffee Shop + Retail and Residential ¹		(1)	-19	-6	-25	-9	-14	-23	-282	
Retail Pass-By Reduction ²		25%/40%/25%	-23	-22	-45	-108	-108	-216	-1,395	
Coffee Shop w/Drive Thru Pass-By Reduction ³		25%/40%/25%	-48	-46	-94	-36	-36	-73	-862	
Coffee Shop and Retail Subtotal (with Reductions)			227	187	414	208	225	432	6,768	
Total Proposed Trips (with Reductions)			271	336	607	318	295	611	8,922	

¹ Internal Capture rates consider site trips "captured" within a mixed-use development, recognising that trips from one land use can access another land use within a site development
(1) residential / retail - smaller of 10% of residential trips or 10% of retail trips

² The pass by reduction for Shopping Center is based on the ITE Trip Generation methodology, as provided in the Trip Generation Handbook, 3rd Edition. The average rate for Shopping Centers is 34% for the PM Peak. For all other time periods, the default pass by rate is 25%

³ Assumed since no data available in ITE Trip Generation Handbook

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.



FIGURE 4: MULTIMODAL ITEMS INCLUDED IN STUDY

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.



FIGURE 5: CONCEPT PLAN (PHASE 1)

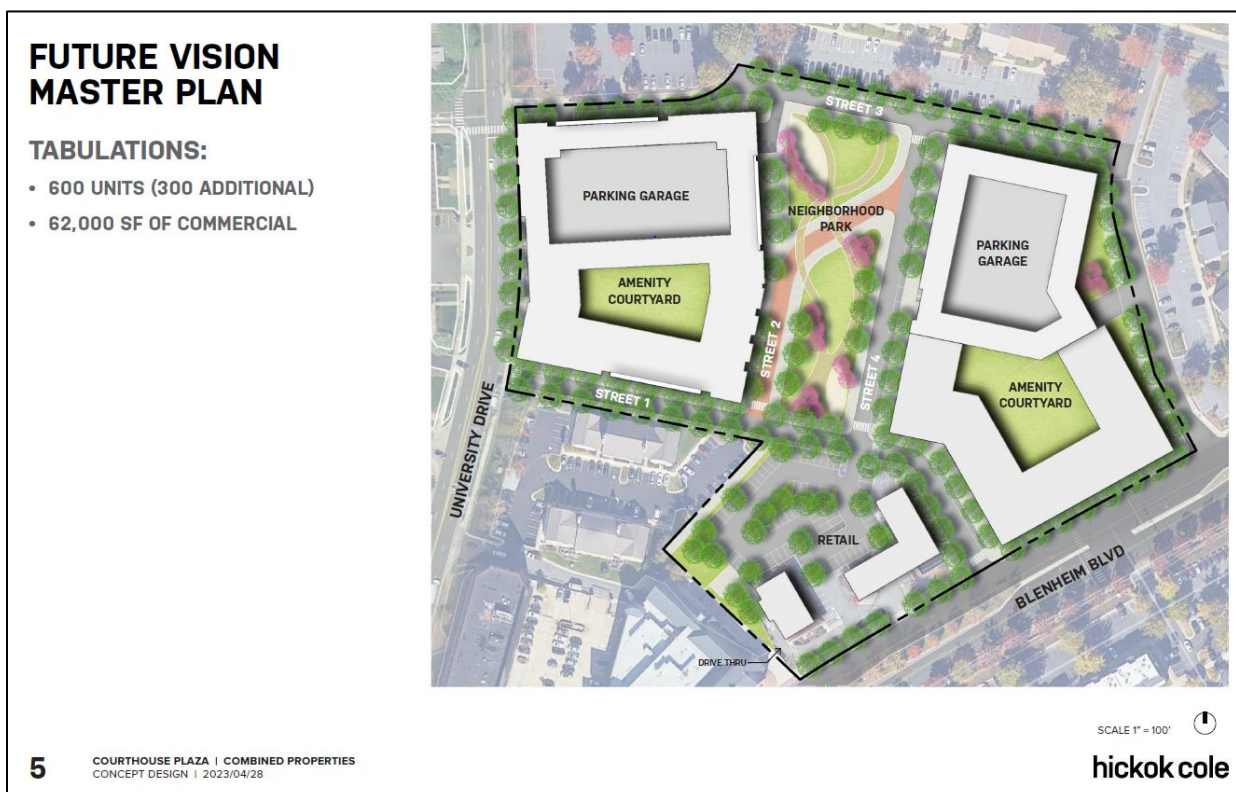


FIGURE 6: CONCEPT PLAN (FULL BUILDOUT)

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.

Appendix B – CUE Bus Schedules

Transit Guide

Bus Routes, Schedules & Rider Information



Effective August 1, 2022



703-385-7859
FREE TO RIDE
cuebus.org
Check cue.transloc.com for real-time arrivals!

Information for CUE BUS Riders

The CUE Bus service provides free transit service within the City of Fairfax and to the Vienna/Fairfax-GMU Metrorail Station and George Mason University. Buses operate seven days a week according to this schedule.

Información para viajeros de los buses CUE

El servicio de bus CUE ofrece servicio de transporte gratuito dentro de la ciudad de Fairfax y a la estación de Metrorail de Viena / Fairfax-GMU y la Universidad George Mason. Los buses operan siete días a la semana de acuerdo con este horario.



Contact Information

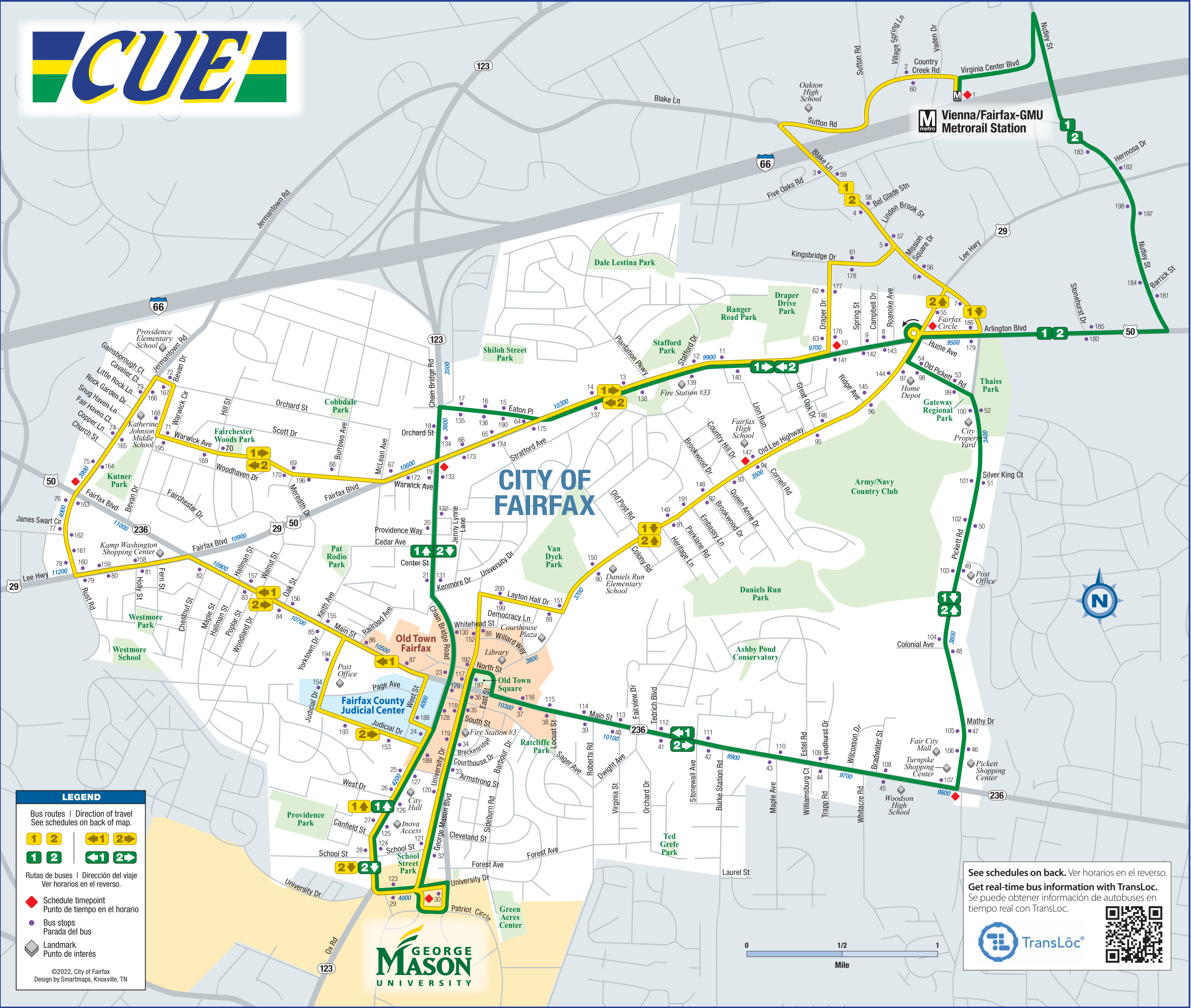
CUE Bus General Information703-385-7859; TTY: 711
City Wheels.....703-385-7859; TTY: 711
Metro Access.....301-562-5360; TTY: 711, 301-588-7535
Metro Disability ID202-962-2700; TTY: 711, 202-628-8973

Información de Contacto

Información sobre buses CUE703-385-7859; TTY: 711
City Wheels.....703-385-7859; TTY: 711
Metro Access.....301-562-5360; TTY: 711, 301-588-7535
Metro Disability ID202-962-2700; TTY: 711, 202-628-8973



Check cue.transloc.com for real-time arrivals!



Rider Guide

Routes

Four bus routes operate during weekdays and weekends according to the published schedules. The Green 1 and Gold 1 routes operate in a clockwise direction, while the Green 2 and Gold 2 routes run counterclockwise (see Route Map).

Bus Stops

CUE Bus stop signs are posted at convenient locations along all routes. Buses will only stop at designated bus stops.

Services for Persons with Disabilities

Specialized transportation services for individuals who are unable to use the CUE Bus because of a disability are provided through the City Wheels 703-385-7859; TTY: 711 and Metro Access 301-562-5360; TTY: 711, 301-588-7535 programs.

Accessibility

All CUE buses are wheelchair accessible. Service animals are welcome on board CUE buses. The information in this brochure is also available in alternative formats and may be obtained by calling 703-385-7859; TTY: 711.



Holiday Service

Holiday	Type of Service
New Year's Day	None
Martin Luther King Day	Modified Weekday**
Washington's Birthday	Modified Weekday**
Memorial Day	Saturday
Juneteenth	Modified Weekday**
Independence Day	Special*
Labor Day	Saturday
Columbus Day	Regular
Veterans Day	Modified Weekday**
Thanksgiving Day	None
Day after Thanksgiving	Modified Weekday**
Christmas Eve	Normal weekday schedule, except that all CUE service will end at 7:00 p.m.
Christmas Day	None

*CUE buses provide extensive special event service within the City during its Independence Day activities; therefore, no regular service is provided on that day.

**Modified weekday service consists of one bus on each route. Refer to the unshaded portion of the weekday schedule.

CUE is **FREE**
to ride for
everyone!

CUE

No ID or pass is
required, just hop on
and take your CUE!

1		Green Route 1 / Ruta 1 Verde									
		MONDAY-FRIDAY / LUNES-VIERNES									
		Departs									
		Veneta/ Fairfax-GMU	Fairfax Circle	Main Street & Pickett Road	GMU Campus	Fairfax Blvd & Chain Bridge Rd	Fairfax Circle	Veneta/ Fairfax-GMU	Arrives		
AM		—	—	—	5:30	5:38	5:46	6:00			
		—	—	—	6:05	6:13	6:21	6:35			
	6:15	6:26	6:33	6:47	6:54	7:02	7:14				
	6:45	6:56	7:03	7:17	7:24	7:32	7:44				
	7:19	7:30	7:37	7:51	8:01	8:11	8:23				
	7:49	8:00	8:07	8:21	8:31	8:41	8:53				
	8:28	8:40	8:47	9:01	9:11	9:19	9:31				
	8:58	9:10	9:17	9:31	9:41	9:49	10:01				
	9:36	9:48	9:55	10:09	10:19	10:27	10:39				
	10:06	10:18	10:25	10:39	10:49	10:57	11:09				
	10:44	10:56	11:03	11:17	11:27	11:35	11:47				
	11:14	11:26	11:33	11:47	11:57	12:05	12:17				
PM	11:52	12:04	12:11	12:25	12:35	12:43	12:55				
	12:22	12:34	12:41	12:55	1:05	1:13	1:25				
	1:00	1:12	1:19	1:33	1:43	1:51	2:03				
	1:30	1:42	1:49	2:03	2:13	2:21	2:33				
	2:08	2:20	2:27	2:41	2:51	2:59	3:11				
	2:38	2:50	2:57	3:11	3:21	3:29	3:41				
	3:16	3:28	3:35	3:49	4:01	4:09	4:21				
	3:46	3:58	4:05	4:19	4:31	4:39	4:51				
	4:26	4:38	4:45	4:59	5:11	5:19	5:31				
	4:56	5:08	5:15	5:29	5:41	5:49	6:01				
	5:36	5:48	5:55	6:09	6:21	6:29	6:41				
	6:06	6:18	6:25	6:39	6:51	6:59	7:11				
PM	6:46	6:58	7:05	7:19	7:31	7:39	7:51				
	7:56	8:08	8:15	8:29	8:39	8:46	8:58				
	9:03	9:15	9:22	9:36	9:44	9:51	10:03				
	10:08	10:18	10:25	10:35	10:43	10:50	11:00				

Shaded trips do not operate on Modified Weekdays. See Holiday Service for more information. / Los viajes marcados con color en sombra no operan en días de semana modificados. Para mayor información consulte la seccion Servicio en Días Festivos.

1		Green Route 1 / Ruta 1 Verde									
		SATURDAY / SÁBADO									
		Departs									
		Veneta/ Fairfax-GMU	Fairfax Circle	Main Street & Pickett Road	GMU Campus	Fairfax Blvd & Chain Bridge Rd	Fairfax Circle	Veneta/ Fairfax-GMU	Arrives		
AM		8:25	8:37	8:44	8:57	9:05	9:13	9:25			
		9:30	9:42	9:49	10:02	10:10	10:18	10:30			
	10:35	10:47	10:54	11:07	11:15	11:23	11:35				
	11:50	12:02	12:09	12:22	12:30	12:38	12:50				
	12:55	1:07	1:14	1:27	1:35	1:43	1:55				
	2:00	2:12	2:19	2:32	2:40	2:48	3:00				
	3:05	3:17	3:24	3:37	3:45	3:53	4:05				
	4:10	4:22	4:29	4:42	4:50	4:58	5:10				
	5:25	5:37	5:44	5:57	6:06	6:13	6:25				
	6:30	6:42	6:49	7:02	7:10	7:18	7:30				
	7:35	7:47	7:54	8:07	8:15	8:23	8:35				
PM											

1		Green Route 1 / Ruta 1 Verde									
		SUNDAY / DOMINGO									
		Departs									
		Veneta/ Fairfax-GMU	Fairfax Circle	Main Street & Pickett Road	GMU Campus	Fairfax Blvd & Chain Bridge Rd	Fairfax Circle	Veneta/ Fairfax-GMU	Arrives		
AM		10:00	10:12	10:19	10:32	10:40	10:48	11:00			
		11:05	11:17	11:24	11:37	11:45	11:53	12:05			
	12:10	12:22	12:29	12:42	12:50	12:58	1:10				
	1:40	1:52	1:59	2:12	2:20	2:28	2:40				
	2:45	2:57	3:04	3:17	3:25	3:33	3:45				
	3:50	4:02	4:09	4:22	4:30	4:38	4:50				
	4:55	5:07	5:14	5:27	5:35	5:43	5:55				
PM											

2		Green Route 2 / Ruta 2 Verde							
		MONDAY-FRIDAY / LUNES-VIERNES							
		Departs							
		Veneta/ Fairfax-GMU	Fairfax Circle	Fairfax Blvd & Chain Bridge Rd	GMU Campus	Main Street & Pickett Road	Fairfax Circle	Veneta/ Fairfax-GMU	Arrives
AM		—	—	—	5:15	5:28	5:35	5:49	
		—	—	—	5:50	6:03	6:10	6:24	
	6:00	6:11	6:19	6:29	6:43	6:50	7:03		
	6:30	6:41	6:49	6:59	7:13	7:20	7:32		
	7:07	7:18	7:26	7:36	7:50	7:57	8:09		
	7:37	7:49	7:57	8:07	8:21	8:28	8:40		
	8:14	8:26	8:34	8:44	8:58	9:05	9:17		
	8:45	8:57	9:05	9:15	9:29	9:36	9:48		
	9:22	9:34	9:42	9:52	10:06	10:13	10:25		
	9:53	10:05	10:13	10:23	10:37	10:44	10:56		
	10:30	10:42	10:50	11:00	11:14	11:21	11:33		
	11:01	11:13	11:21	11:31	11:45	11:52	12:04		
PM	11:38	11:50	11:58	12:08	12:22	12:29	12:41		
	12:09	12:21	12:29	12:39	12:53	1:00	1:12		
	12:46	12:58	1:06	1:16	1:30	1:37	1:49		
	1:17	1:29	1:37	1:47	2:01	2:08	2:20		
	1:54	2:06	2:14	2:24	2:38	2:45	2:57		
	2:25	2:37	2:45	2:55	3:09	3:16	3:28		
	3:02	3:14	3:22	3:32	3:46	3:53	4:05		
	3:33	3:45	3:53	4:03	4:17	4:24	4:36		
	4:10	4:22	4:32	4:42	4:56	5:03	5:15		
	4:41	4:53	5:01	5:11	5:25	5:32	5:44		
	5:20	5:32	5:42	5:52	6:06	6:13	6:25		
	5:49	6:01	6:09	6:19	6:33	6:40	6:52		
6:30	6:42	6:52	7:02	7:16	7:23	7:35			
7:40	7:52	8:00	8:10	8:24	8:31	8:43			

Appendix C – Crash Data

VDOT Crash Data Summary Table

Intersection Crash Analysis	Crash Data for the Intersection of Blenheim Blvd and Fairfax Commons Entrance (January 2018 - December 2022)						Total	Relative Frequency
	2018	2019	2020	2021	2022			
<u>Crash Severity</u>								
Fatal Collision (Type K)								0.00%
Injury Collision (Type A, B, and C)							1	50.00%
Type A								
Type B							1	
Type C								
Property Damage Only (Type PDO)							1	50.00%
TOTAL *							1	100.00%
<u>Crash Type</u>								
Fixed Object/ Single-Vehicle Crash								0.00%
Head-On								0.00%
Sideswipe / Same Direction								0.00%
Sideswipe / Opposite Direction								0.00%
Rear-End Collision								0.00%
Angle Collision							1	100.00%
Backed Into								0.00%
Pedestrian Collision								0.00%
Deer/Animal								0.00%
Other								0.00%
TOTAL *							1	100.00%
<u>Other Factors</u>								
Distracted Driver								0.00%
Alcohol**								0.00%
Work-Zone								0.00%
Inclement Weather (Non-Dry)							1	50.00%
Speeding							1	50.00%
Pedestrian Injury***								N/A
Time of Day								
AM Peak Period (6 - 10 AM)								0.00%
Off Peak - Daytime (10 AM - 3 PM)								0.00%
PM Peak Period (3 - 7 PM)							1	100.00%
Off Peak - Nighttime (7 PM - 6 AM)								0.00%
CALCULATED CRASH RATE****							0.08	Crashes per MEV

* It should be noted that an intersection radius of 150 feet was used in this analysis. Crashes also thought to be caused by the intersection may have been added based on the description of the crash and engineering judgement.

** Instances where the event was classified as "Unknown", "Not Known Whether Impaired", "Ability Not Impaired" were classified as alcohol related to provide a more conservative analysis.

*** Pedestrian injuries are based on the number of pedestrians injured and may not be directly be related to the number of crash incidences (i.e., if one crash occurred injuring two pedestrians, the table would show a "2" instead of a "1").

VDOT Crash Data Summary Table

Intersection Crash Analysis	Crash Data for the Intersection of University Drive and Existing Courthouse Plaza Entrance/7-11 Entrance (January 2018 - December 2022)						
	2018	2019	2020	2021	2022	Total	Relative Frequency
<u>Crash Severity</u>							
Fatal Collision (Type K)							0.00%
Injury Collision (Type A, B, and C)			1			1	33.33%
Type A							
Type B			1			1	
Type C							
Property Damage Only (Type PDO)	1		1			2	66.67%
TOTAL*	1		2			3	100.00%
<u>Crash Type</u>							
Fixed Object/ Single-Vehicle Crash							0.00%
Head-On							0.00%
Sideswipe / Same Direction							0.00%
Sideswipe / Opposite Direction							0.00%
Rear-End Collision							0.00%
Angle Collision	1		2			3	100.00%
Backed Into							0.00%
Pedestrian Collision							0.00%
Deer/Animal							0.00%
Other							0.00%
TOTAL*	1		2			3	100.00%
<u>Other Factors</u>							
Distracted Driver							0.00%
Alcohol**							0.00%
Work-Zone							0.00%
Inclement Weather (Non-Dry)			1			1	33.33%
Speeding							0.00%
Pedestrian Injury***							N/A
Time of Day							
AM Peak Period (6 - 10 AM)							0.00%
Off Peak - Daytime (10 AM - 3 PM)			1			1	33.33%
PM Peak Period (3 - 7 PM)	1		1			2	66.67%
Off Peak - Nighttime (7 PM - 6 AM)							0.00%
CALCULATED CRASH RATE****						0.17	Crashes per MEV

* It should be noted that an intersection radius of 150 feet was used in this analysis. Crashes also thought to be caused by the intersection may have been added based on the description of the crash and engineering judgement.

** Instances where the event was classified as "Unknown", "Not Known Whether Impaired", "Ability Not Impaired" were classified as alcohol related to provide a more conservative analysis.

*** Pedestrian injuries are based on the number of pedestrians injured and may not be directly be related to the number of crash incidences (i.e., if one crash occurred injuring two pedestrians, the table would show a "2" instead of a "1").

VDOT Crash Data Summary Table

Intersection Crash Analysis	Crash Data for the Intersection of University Drive and Democracy Ln/Whitehead St (January 2018 - December 2022)						
	2018	2019	2020	2021	2022	Total	Relative Frequency
Crash Severity							
Fatal Collision (Type K)							0.00%
Injury Collision (Type A, B, and C)					1	1	14.29%
Type A							
Type B					1	1	
Type C							
Property Damage Only (Type PDO)	1	3	1	1		6	85.71%
TOTAL*	1	3	1	1	1	7	100.00%
Crash Type							
Fixed Object/ Single-Vehicle Crash	1					1	14.29%
Head-On							0.00%
Sideswipe / Same Direction		1				1	14.29%
Sideswipe / Opposite Direction							0.00%
Rear-End Collision			1			1	14.29%
Angle Collision		2		1	1	4	57.14%
Backed Into							0.00%
Pedestrian Collision							0.00%
Deer/Animal							0.00%
Other							0.00%
TOTAL*	1	3	1	1	1	7	100.00%
Other Factors							
Distracted Driver							0.00%
Alcohol**							0.00%
Work-Zone							0.00%
Inclement Weather (Non-Dry)	1				1	2	28.57%
Speeding							0.00%
Pedestrian Injury***							N/A
Time of Day							
AM Peak Period (6 - 10 AM)	1					1	14.29%
Off Peak - Daytime (10 AM - 3 PM)		1				1	14.29%
PM Peak Period (3 - 7 PM)		2	1		1	4	57.14%
Off Peak - Nighttime (7 PM - 6 AM)				1		1	14.29%
CALCULATED CRASH RATE****						0.41	Crashes per MEV

* It should be noted that an intersection radius of 150 feet was used in this analysis. Crashes also thought to be caused by the intersection may have been added based on the description of the crash and engineering judgement.

** Instances where the event was classified as "Unknown", "Not Known Whether Impaired", "Ability Not Impaired" were classified as alcohol related to provide a more conservative analysis.

*** Pedestrian injuries are based on the number of pedestrians injured and may not be directly be related to the number of crash incidences (i.e., if one crash occurred injuring two pedestrians, the table would show a "2" instead of a "1").

VDOT Crash Data Summary Table

Intersection Crash Analysis	Crash Data for the Intersection of Layton Hall Drive and Democracy Ln (January 2018 - December 2022)						
	2018	2019	2020	2021	2022	Total	Relative Frequency
<u>Crash Severity</u>							
Fatal Collision (Type K)							0.00%
Injury Collision (Type A, B, and C)							0.00%
Type A							
Type B							
Type C							
Property Damage Only (Type PDO)	2				1	3	100.00%
TOTAL*	2				1	3	100.00%
<u>Crash Type</u>							
Fixed Object/ Single-Vehicle Crash							0.00%
Head-On							0.00%
Sideswipe / Same Direction							0.00%
Sideswipe / Opposite Direction							0.00%
Rear-End Collision					1	1	33.33%
Angle Collision	1					1	33.33%
Backed Into							0.00%
Pedestrian Collision							0.00%
Deer/Animal							0.00%
Other	1					1	33.33%
TOTAL*	2				1	3	100.00%
<u>Other Factors</u>							
Distracted Driver							0.00%
Alcohol**							0.00%
Work-Zone							0.00%
Inclement Weather (Non-Dry)							0.00%
Speeding							0.00%
Pedestrian Injury***							N/A
Time of Day							
AM Peak Period (6 - 10 AM)	1					1	33.33%
Off Peak - Daytime (10 AM - 3 PM)							0.00%
PM Peak Period (3 - 7 PM)					1	1	33.33%
Off Peak - Nighttime (7 PM - 6 AM)	1					1	33.33%
CALCULATED CRASH RATE****						0.37	Crashes per MEV

* It should be noted that an intersection radius of 150 feet was used in this analysis. Crashes also thought to be caused by the intersection may have been added based on the description of the crash and engineering judgement.

** Instances where the event was classified as "Unknown", "Not Known Whether Impaired", "Ability Not Impaired" were classified as alcohol related to provide a more conservative analysis.

*** Pedestrian injuries are based on the number of pedestrians injured and may not be directly be related to the number of crash incidences (i.e., if one crash occurred injuring two pedestrians, the table would show a "2" instead of a "1").

VDOT Crash Data Summary Table

Intersection Crash Analysis	Crash Data for the Intersection of Blenheim Blvd and Layton Hall Dr (January 2018 - December 2022)						Total	Relative Frequency
	2018	2019	2020	2021	2022			
<u>Crash Severity</u>								
Fatal Collision (Type K)								0.00%
Injury Collision (Type A, B, and C)	1	1					2	25.00%
Type A		1					1	
Type B	1						1	
Type C								
Property Damage Only (Type PDO)	1	3		2			6	75.00%
TOTAL *	2	4		2			8	100.00%
<u>Crash Type</u>								
Fixed Object/ Single-Vehicle Crash								0.00%
Head-On								0.00%
Sideswipe / Same Direction	1						1	12.50%
Sideswipe / Opposite Direction								0.00%
Rear-End Collision	1	2		2			5	62.50%
Angle Collision		2					2	25.00%
Backed Into								0.00%
Pedestrian Collision								0.00%
Deer/Animal								0.00%
Other								0.00%
TOTAL *	2	4		2			8	100.00%
<u>Other Factors</u>								
Distracted Driver								0.00%
Alcohol**								0.00%
Work-Zone								0.00%
Inclement Weather (Non-Dry)		1		1			2	25.00%
Speeding								0.00%
Pedestrian Injury***								N/A
Time of Day								
AM Peak Period (6 - 10 AM)	1			2			3	37.50%
Off Peak - Daytime (10 AM - 3 PM)	1	2					3	37.50%
PM Peak Period (3 - 7 PM)		2					2	25.00%
Off Peak - Nighttime (7 PM - 6 AM)								0.00%
CALCULATED CRASH RATE****							0.31	Crashes per MEV

* It should be noted that an intersection radius of 150 feet was used in this analysis. Crashes also thought to be caused by the intersection may have been added based on the description of the crash and engineering judgement.

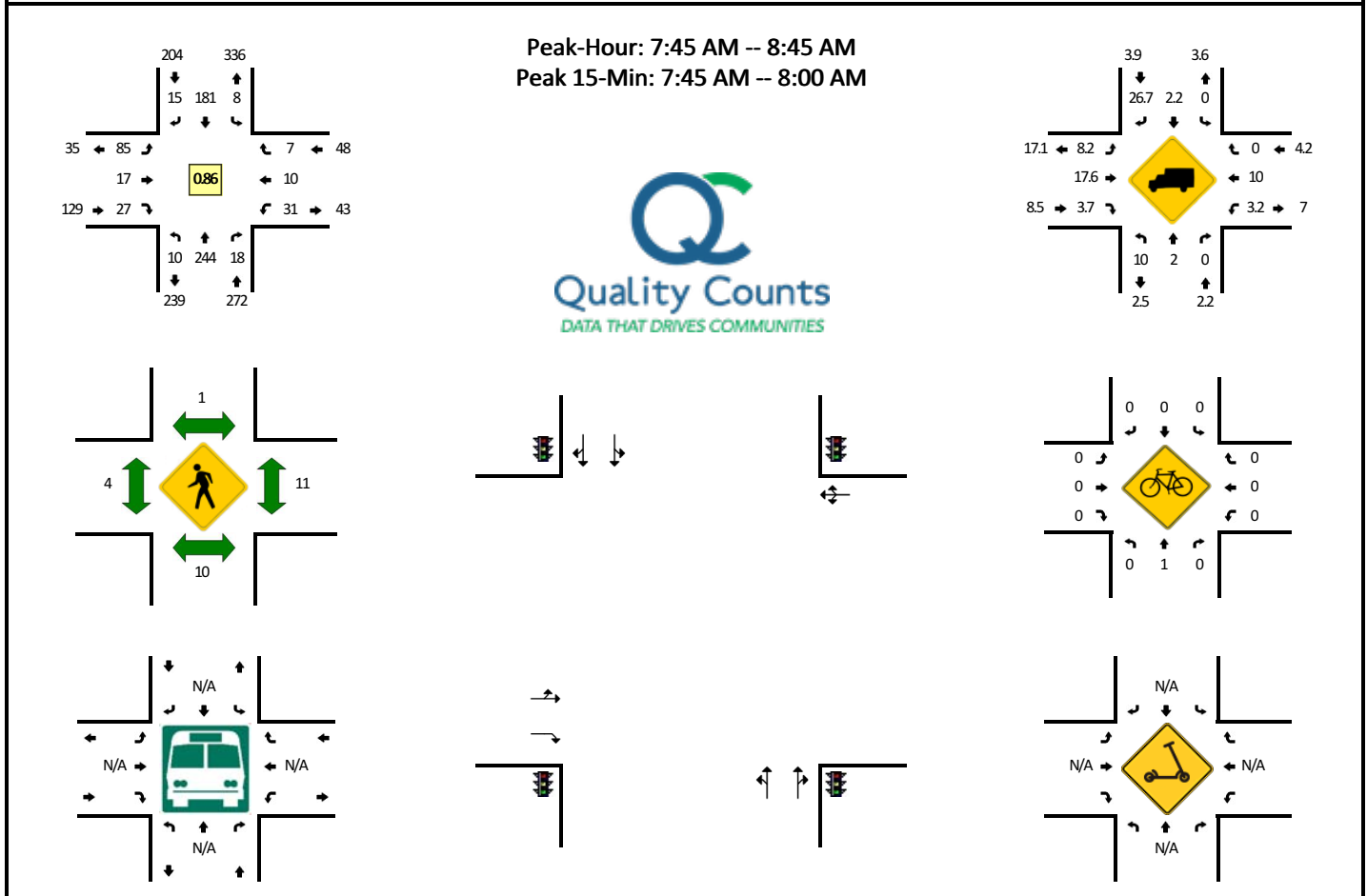
** Instances where the event was classified as "Unknown", "Not Known Whether Impaired", "Ability Not Impaired" were classified as alcohol related to provide a more conservative analysis.

*** Pedestrian injuries are based on the number of pedestrians injured and may not be directly be related to the number of crash incidences (i.e., if one crash occurred injuring two pedestrians, the table would show a "2" instead of a "1").

Appendix D – Existing Turning Movement Counts

LOCATION: University Dr -- Whitehead St/Democracy Ln
CITY/STATE: Fairfax, VA

QC JOB #: 16229801
DATE: Thu, Mar 30 2023

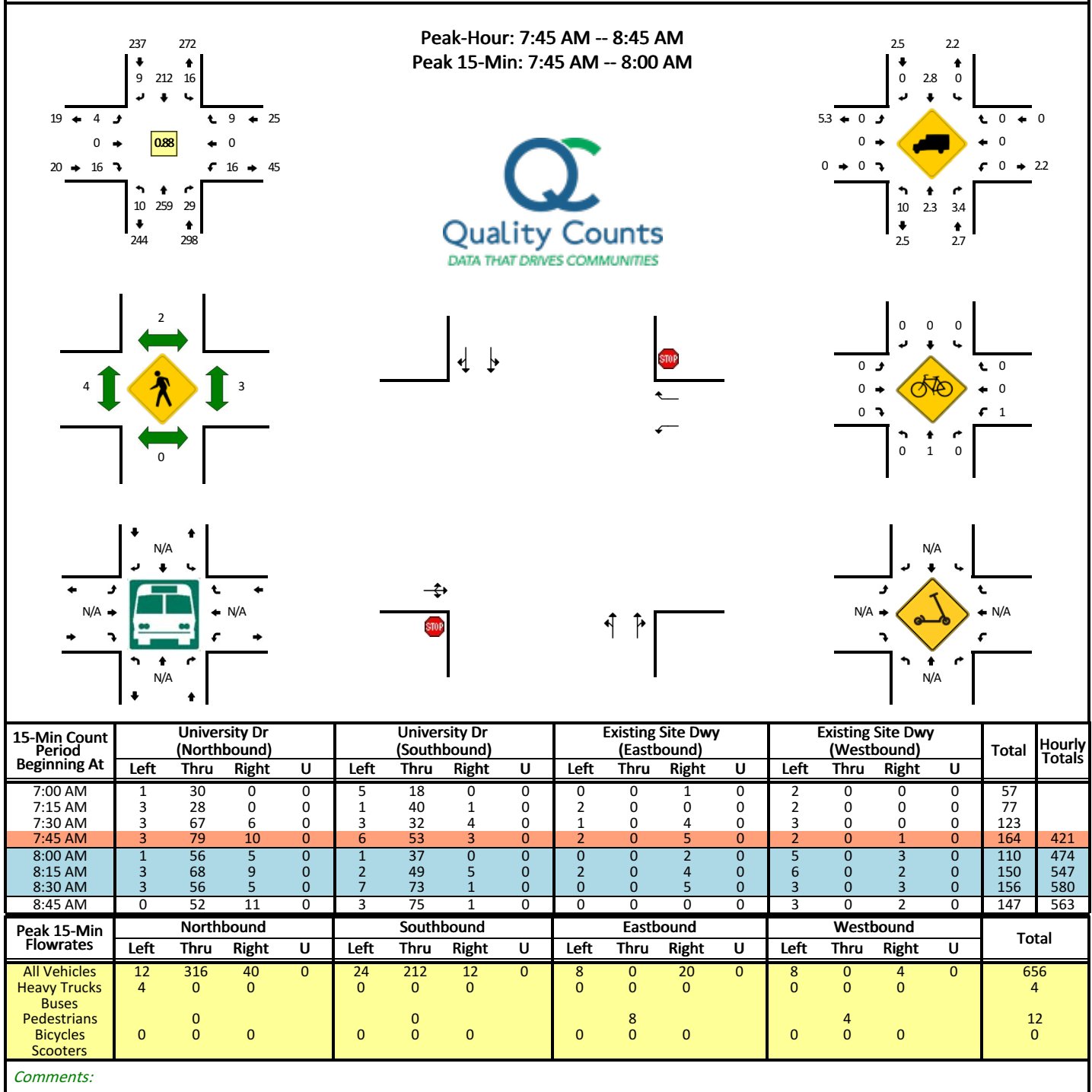


15-Min Count Period Beginning At	University Dr (Northbound)				University Dr (Southbound)				Whitehead St/Democracy Ln (Eastbound)				Whitehead St/Democracy Ln (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	2	25	2	0	0	18	2	0	10	1	3	0	2	1	1	0	67	
7:15 AM	2	26	2	0	0	28	4	0	20	6	10	0	2	1	0	0	101	
7:30 AM	3	64	3	0	0	26	1	0	25	2	9	0	5	2	0	0	140	
7:45 AM	2	77	3	0	2	51	2	0	31	6	10	0	3	1	2	0	190	498
8:00 AM	1	51	6	0	1	30	5	0	24	7	5	0	3	2	0	0	135	566
8:15 AM	1	65	6	0	2	38	3	0	20	2	5	0	11	4	2	0	159	624
8:30 AM	6	51	3	0	3	62	5	0	10	2	7	0	14	3	3	0	169	653
8:45 AM	4	46	4	0	5	56	4	0	21	11	11	0	10	5	1	0	178	641
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	8	308	12	0	8	204	8	0	124	24	40	0	12	4	8	0	760	
Heavy Trucks	0	0	0	0	0	0	4	0	20	4	0	0	0	0	0	0	28	
Buses																		
Pedestrians		0				4				12				8			24	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

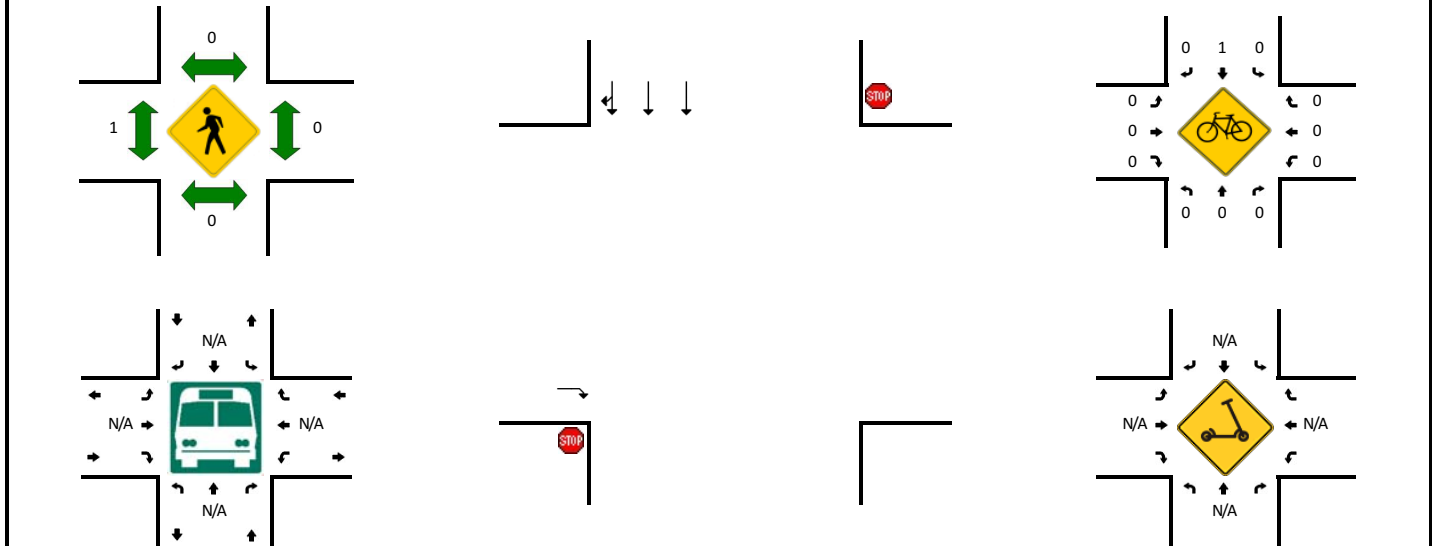
LOCATION: University Dr -- Existing Site Dwy
CITY/STATE: Fairfax, VA

QC JOB #: 16229802
DATE: Thu, Mar 30 2023



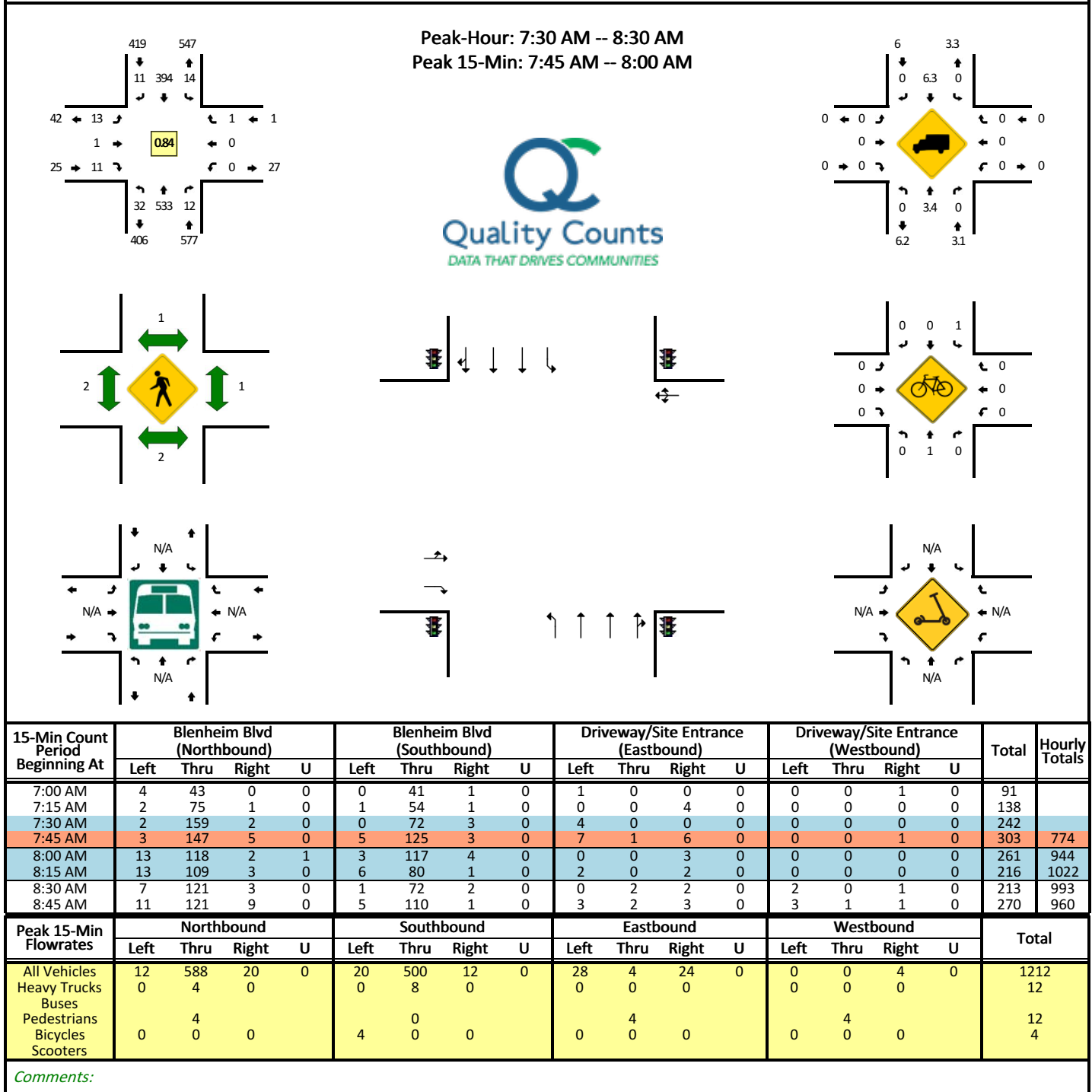
LOCATION: Blenheim Blvd -- Site Entrance 2**CITY/STATE:** Fairfax, VA**QC JOB #:** 16229803**DATE:** Thu, Mar 30 2023

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



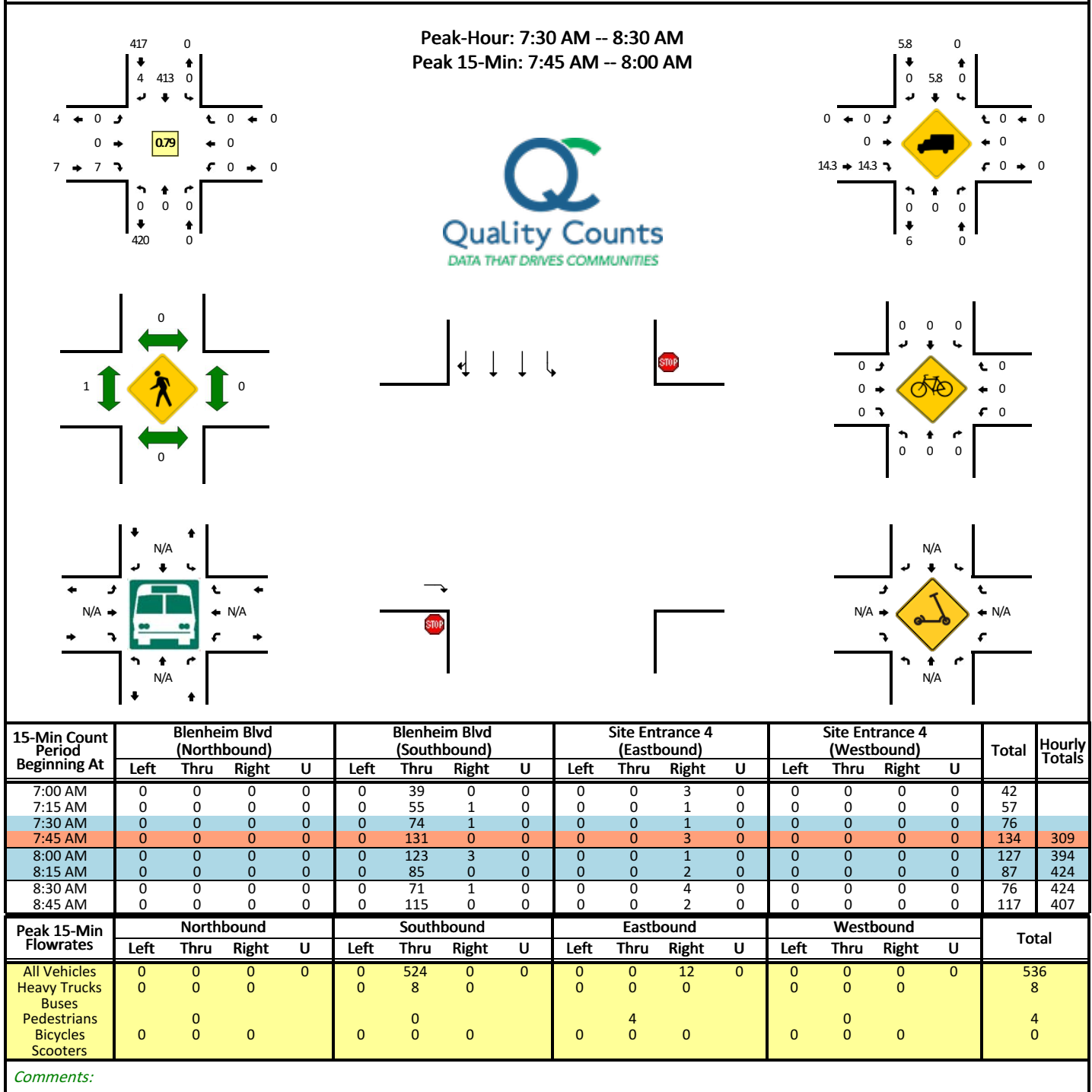
15-Min Count Period Beginning At	Blenheim Blvd (Northbound)				Blenheim Blvd (Southbound)				Site Entrance 2 (Eastbound)				Site Entrance 2 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	41	0	0	0	0	0	0	0	0	0	0	41	
7:15 AM	0	0	0	0	0	58	0	0	0	0	0	0	0	0	0	0	58	
7:30 AM	0	0	0	0	0	70	0	0	0	0	0	0	0	0	0	0	70	
7:45 AM	0	0	0	0	0	134	0	0	0	0	0	0	0	0	0	0	134	303
8:00 AM	0	0	0	0	0	121	0	0	0	0	0	0	0	0	0	0	121	383
8:15 AM	0	0	0	0	0	80	0	0	0	0	0	0	0	0	0	0	80	405
8:30 AM	0	0	0	0	0	77	0	0	0	0	0	0	0	0	0	0	77	412
8:45 AM	0	0	0	0	0	114	0	0	0	0	0	0	0	0	0	0	114	392
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	0	0	0	0	536	0	0	0	0	0	0	0	0	0	0	536	
Heavy Trucks	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	12	
Buses																		
Pedestrians		0				0				4				0			4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

LOCATION: Blenheim Blvd -- Driveway/Site Entrance**CITY/STATE:** Fairfax, VA**QC JOB #:** 16229804**DATE:** Thu, Mar 30 2023

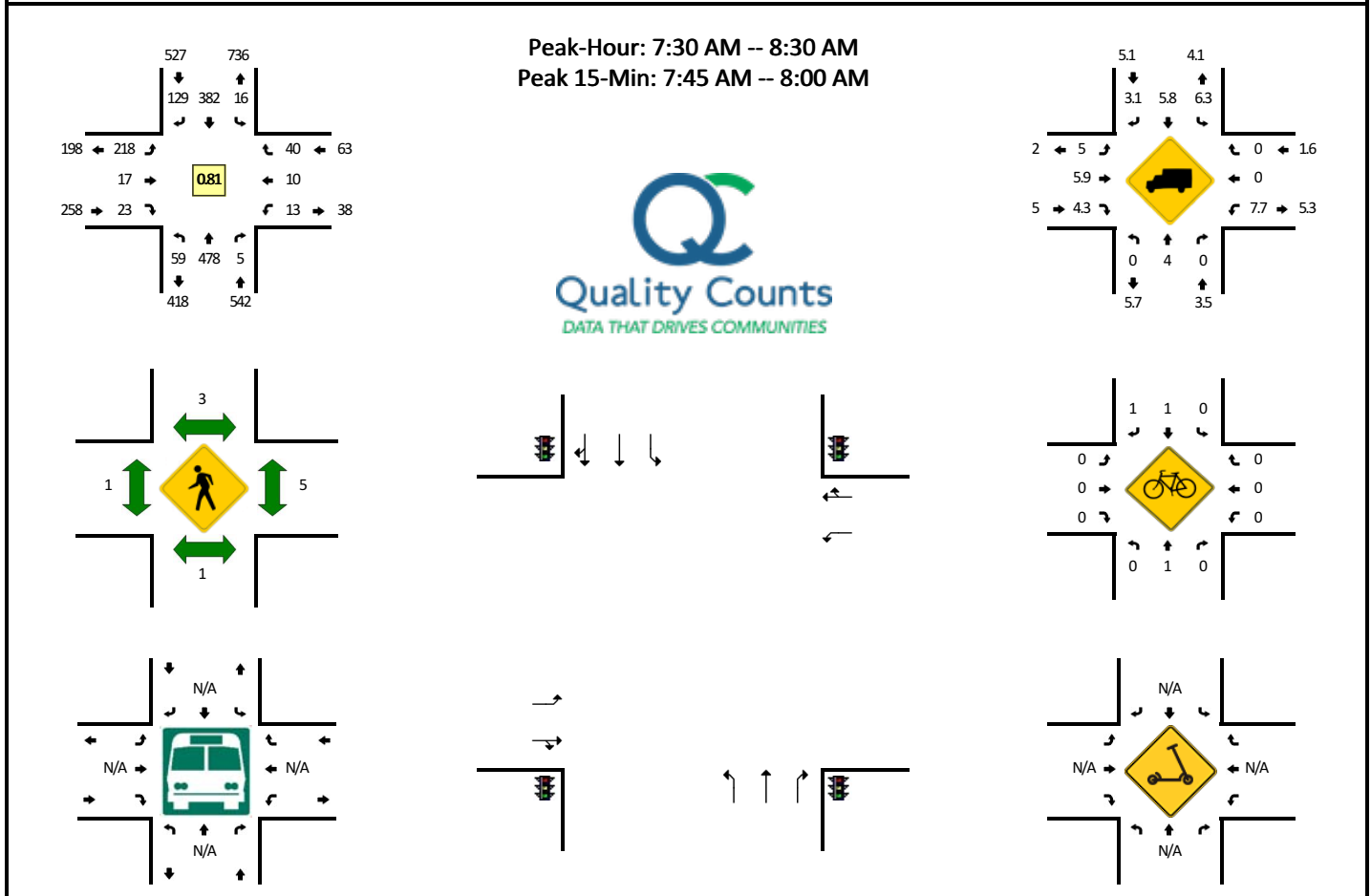
LOCATION: Blenheim Blvd -- Site Entrance 4
CITY/STATE: Fairfax, VA

QC JOB #: 16229805
DATE: Thu, Mar 30 2023



LOCATION: Blenheim Blvd -- Farrcroft Dr
CITY/STATE: Fairfax, VA

QC JOB #: 16229806
DATE: Thu, Mar 30 2023

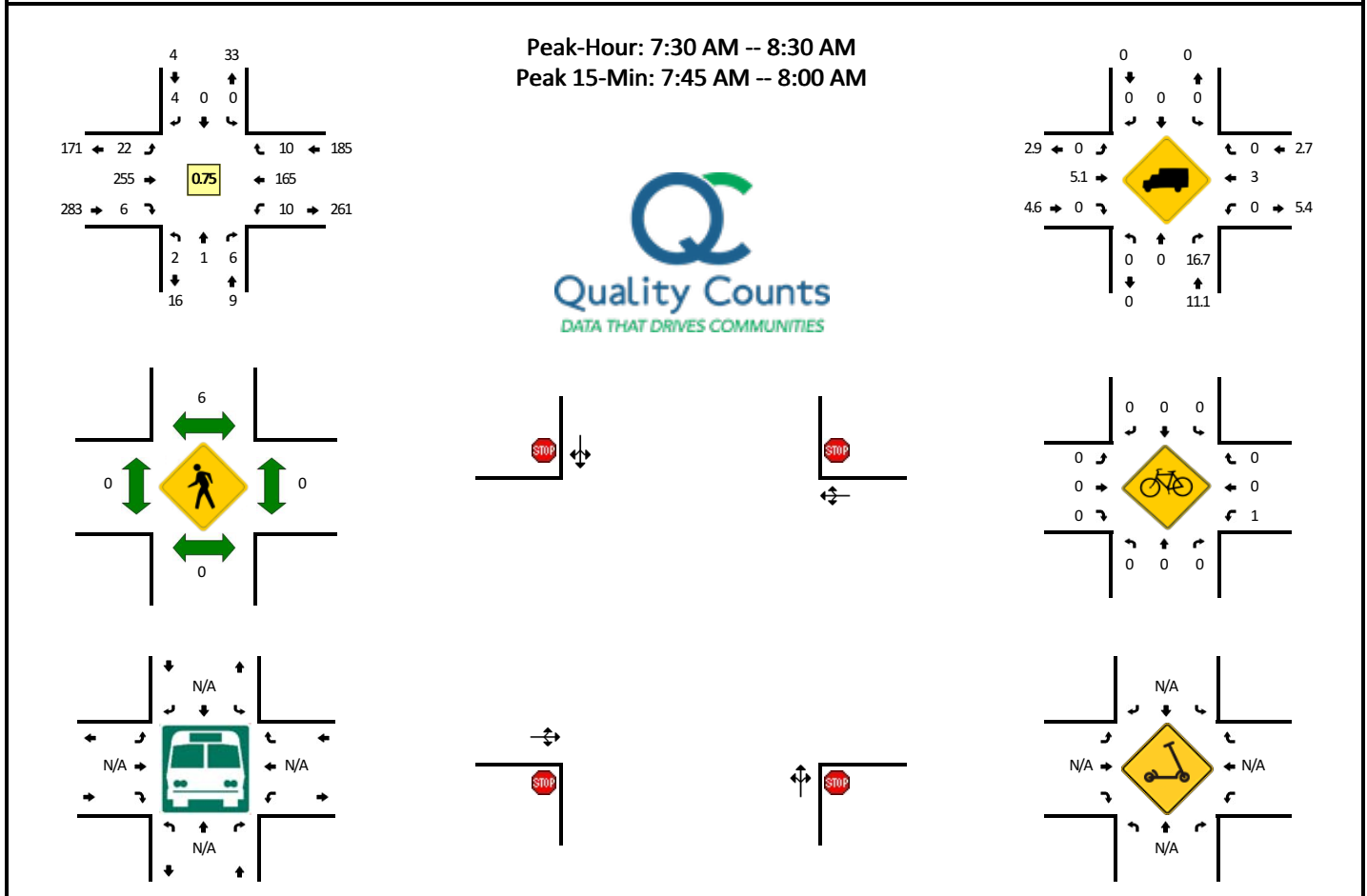


15-Min Count Period Beginning At	Blenheim Blvd (Northbound)				Blenheim Blvd (Southbound)				Farrcroft Dr (Eastbound)				Farrcroft Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	3	45	0	0	1	31	16	0	26	2	4	0	2	3	5	0	138	
7:15 AM	7	65	1	0	0	47	14	0	41	3	6	0	2	2	7	0	195	
7:30 AM	15	140	1	0	1	70	21	0	68	1	5	0	2	1	6	0	331	
7:45 AM	14	128	1	0	1	122	47	0	78	9	6	0	1	3	20	0	430	1094
8:00 AM	23	108	2	0	13	119	42	0	38	5	6	0	5	3	14	0	378	1334
8:15 AM	7	102	1	0	1	71	19	0	34	2	6	0	5	3	0	0	251	1390
8:30 AM	21	92	1	0	2	56	14	0	35	2	4	0	8	4	10	0	249	1308
8:45 AM	8	104	2	0	4	111	32	0	47	1	6	0	3	1	6	0	325	1203
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	56	512	4	0	4	488	188	0	312	36	24	0	4	12	80	0	1720	
Heavy Trucks	0	12	0	0	0	8	8	0	20	0	0	0	0	0	0	0	48	
Buses																		
Pedestrians	0	0			4				4				0				8	
Bicycles	0	0	0		4		0		0	0	0		0	0	0		4	
Scoters																		

Comments:

LOCATION: Democracy Ln -- Layton Hall Dr
CITY/STATE: Fairfax, VA

QC JOB #: 16229807
DATE: Thu, Mar 30 2023

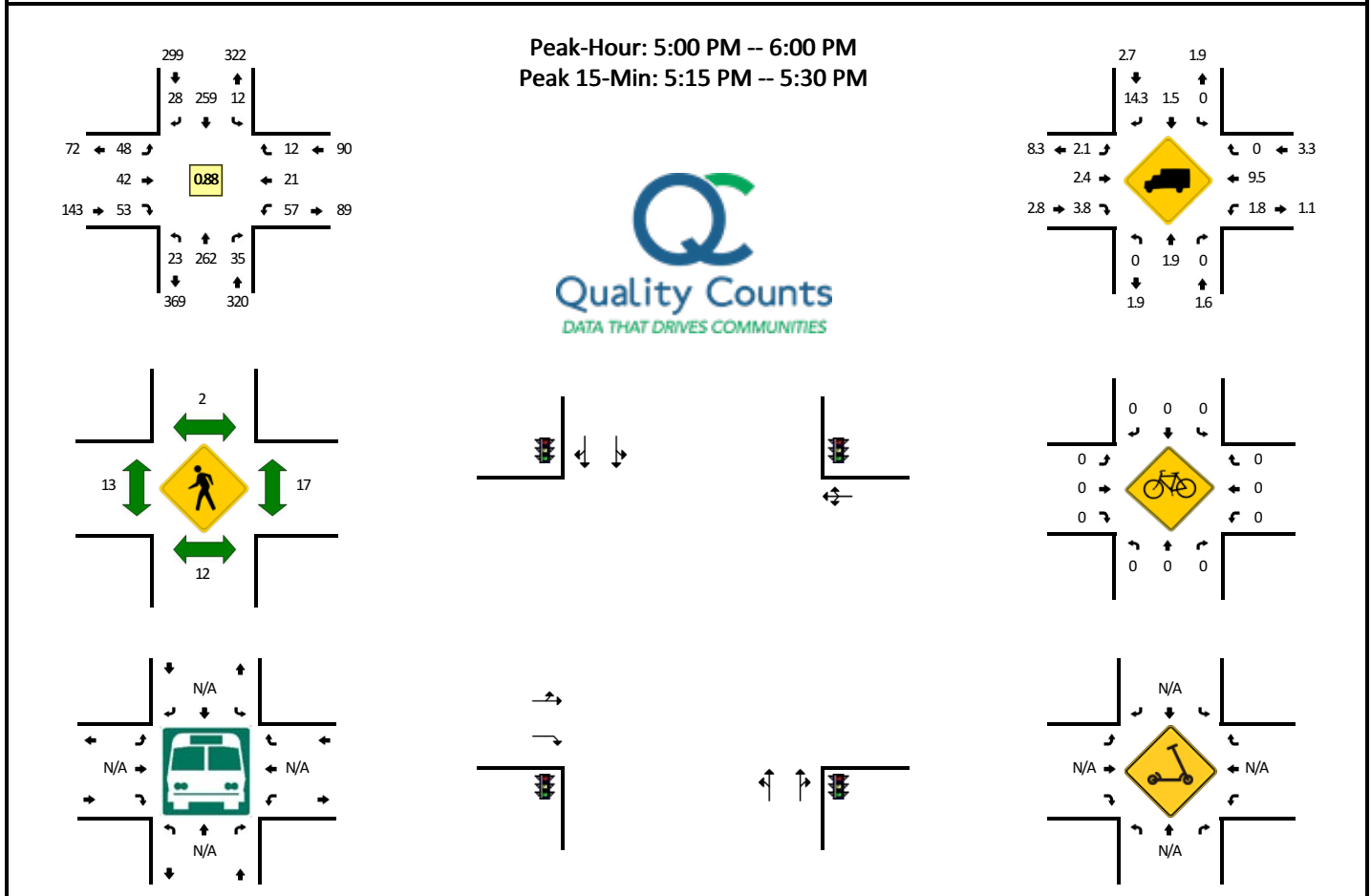


15-Min Count Period Beginning At	Democracy Ln (Northbound)				Democracy Ln (Southbound)				Layton Hall Dr (Eastbound)				Layton Hall Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	1	0	0	2	30	1	0	1	21	1	0	57	
7:15 AM	0	0	0	0	0	2	0	0	0	52	0	0	0	22	0	0	76	
7:30 AM	0	0	0	0	0	0	0	0	5	80	1	0	2	30	2	0	120	
7:45 AM	0	1	4	0	0	0	2	0	4	93	1	0	2	52	2	0	161	414
8:00 AM	1	0	2	0	0	0	1	0	8	39	0	0	4	59	4	0	118	475
8:15 AM	1	0	0	0	0	0	1	0	5	43	4	0	2	24	2	0	82	481
8:30 AM	0	0	1	0	0	0	0	0	4	35	5	0	4	29	4	0	82	443
8:45 AM	0	0	3	0	0	0	1	0	2	50	10	0	4	37	0	0	107	389
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	4	16	0	0	0	8	0	16	372	4	0	8	208	8	0	644	
Heavy Trucks	0	0	0	0	0	0	0	0	0	20	0	0	0	8	0	0	28	
Buses																		
Pedestrians		0				8				0				0			8	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: University Dr -- Whitehead St/Democracy Ln
CITY/STATE: Fairfax, VA

QC JOB #: 16229808
DATE: Thu, Mar 30 2023

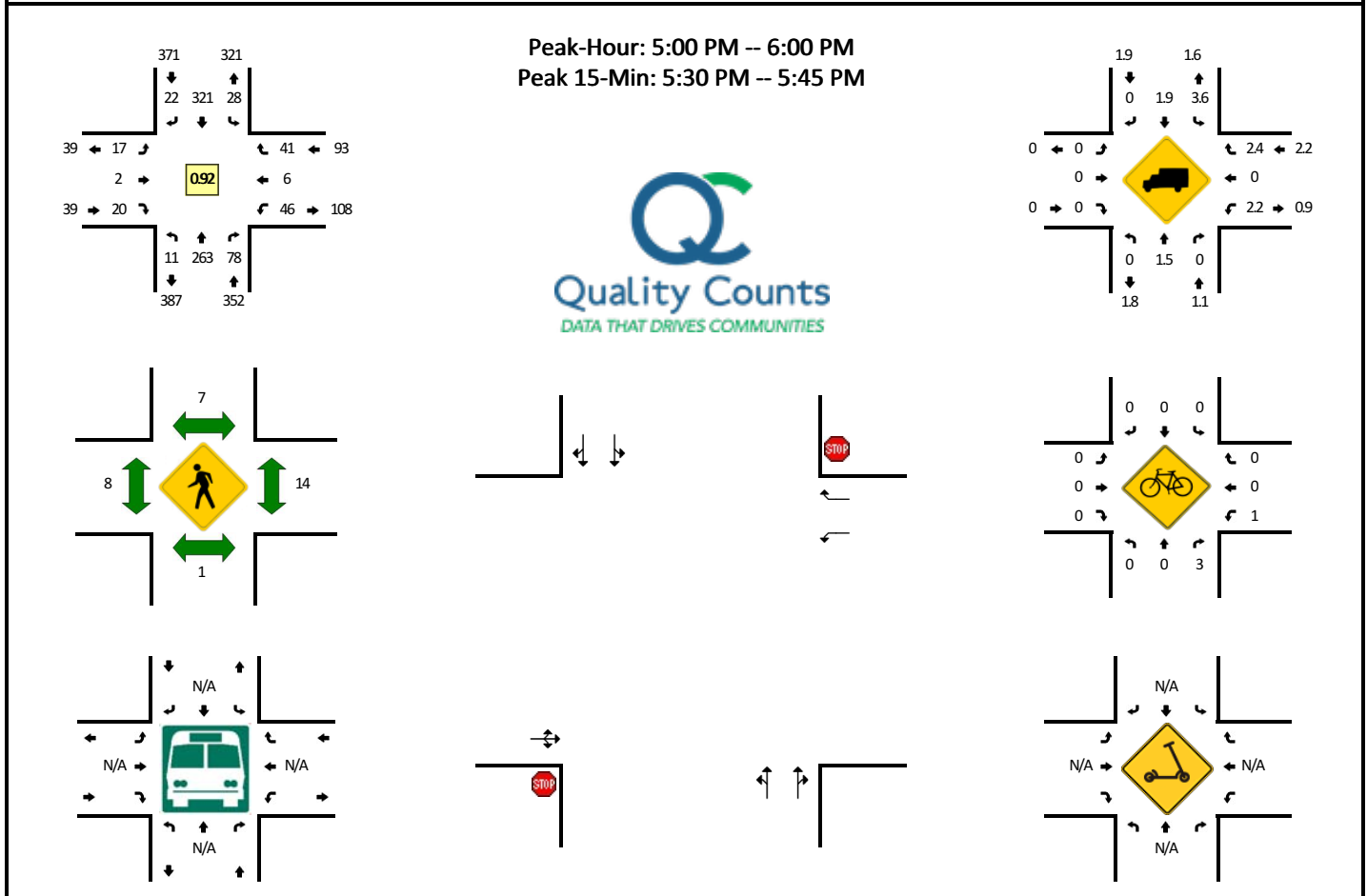


15-Min Count Period Beginning At	University Dr (Northbound)				University Dr (Southbound)				Whitehead St/Democracy Ln (Eastbound)				Whitehead St/Democracy Ln (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	6	40	5	0	1	86	10	0	11	5	7	0	17	3	5	0	196	
4:15 PM	9	78	6	0	2	72	4	0	16	8	13	0	13	3	3	0	227	
4:30 PM	12	41	10	0	3	89	3	0	14	9	18	0	10	3	2	0	214	
4:45 PM	9	45	5	0	3	48	2	0	15	10	22	0	6	2	1	0	168	805
5:00 PM	6	54	11	0	2	82	8	0	9	10	17	0	12	11	2	0	224	833
5:15 PM	5	76	8	0	6	62	8	0	19	16	19	0	15	4	4	0	242	848
5:30 PM	7	76	7	0	2	66	3	0	8	11	7	0	24	4	2	0	217	851
5:45 PM	5	56	9	0	2	49	9	0	12	5	10	0	6	2	4	0	169	852
6:00 PM	12	51	7	0	4	55	2	0	9	8	9	0	7	6	1	0	171	799
6:15 PM	8	38	10	0	2	46	5	0	6	7	6	0	12	8	2	0	150	707
6:30 PM	10	36	10	0	0	43	5	0	7	10	12	0	13	5	1	0	152	642
6:45 PM	6	35	10	0	3	40	2	0	11	5	10	0	12	2	2	0	138	611
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	20	304	32	0	24	248	32	0	76	64	76	0	60	16	16	0	968	
Heavy Trucks	0	4	0		0	4	8		0	4	4		0	0	0		24	
Buses																		
Pedestrians		16				0				28				20			64	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: University Dr -- Existing Site Dwy
CITY/STATE: Fairfax, VA

QC JOB #: 16229809
DATE: Thu, Mar 30 2023

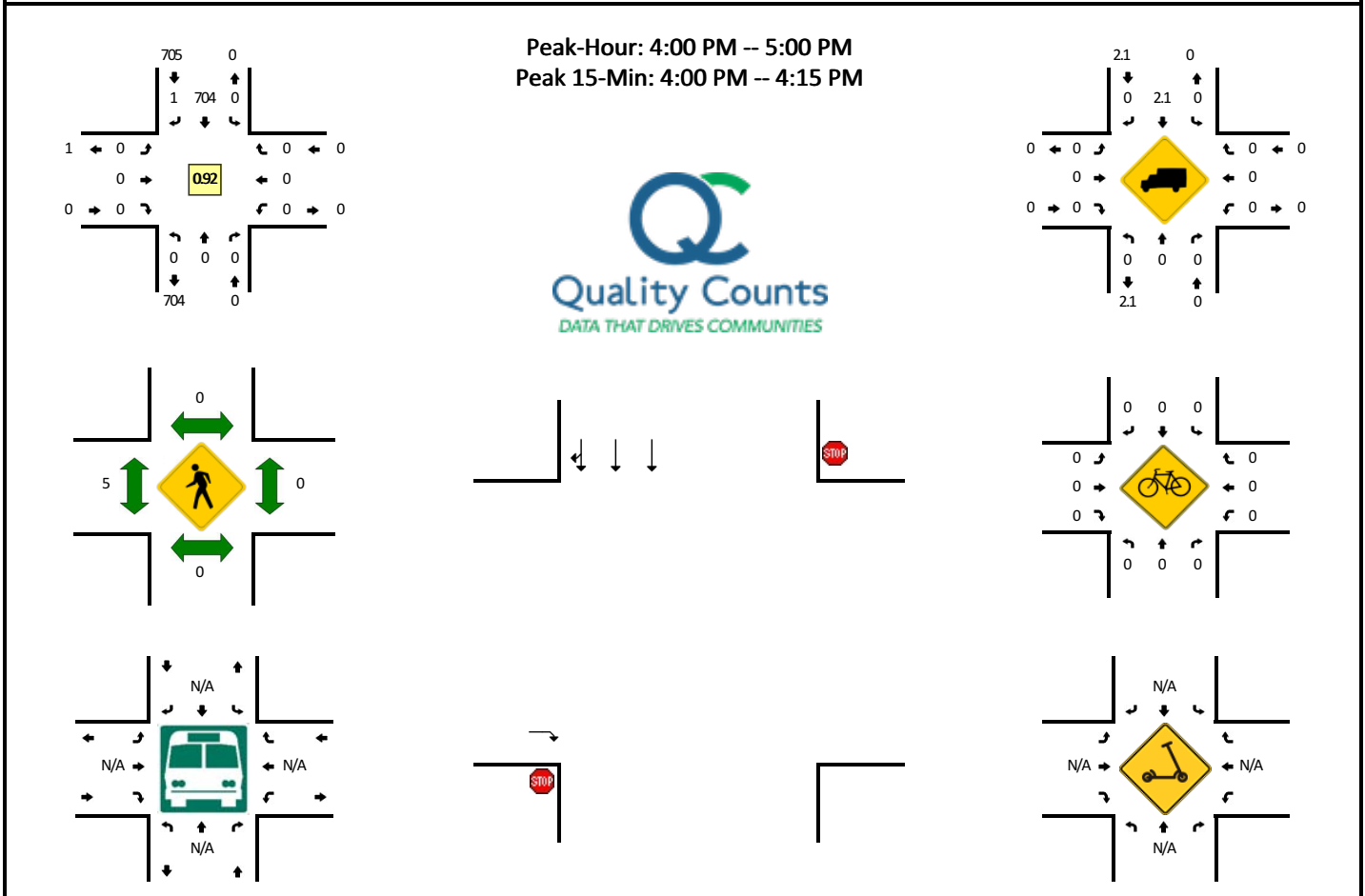


15-Min Count Period Beginning At	University Dr (Northbound)				University Dr (Southbound)				Existing Site Dwy (Eastbound)				Existing Site Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	4	44	11	0	8	100	3	0	0	1	4	0	8	0	8	0	191	
4:15 PM	4	78	20	0	7	84	6	0	4	0	5	0	9	0	10	0	227	
4:30 PM	3	57	14	0	8	107	4	0	0	1	8	0	14	3	7	0	226	
4:45 PM	2	51	17	0	9	68	3	0	1	1	6	0	9	0	6	0	173	817
5:00 PM	4	57	15	0	6	93	7	0	5	1	6	0	7	3	11	0	215	841
5:15 PM	3	81	14	0	7	90	6	0	3	1	5	0	12	1	9	0	232	846
5:30 PM	3	69	28	0	8	84	5	0	7	0	4	0	13	2	10	0	233	853
5:45 PM	1	56	21	0	7	54	4	0	2	0	5	0	14	0	11	0	175	855
6:00 PM	1	63	22	0	6	60	4	0	1	0	3	0	18	1	6	0	185	825
6:15 PM	1	49	15	0	6	57	2	0	1	0	5	0	10	1	6	0	153	746
6:30 PM	3	48	13	0	7	60	2	0	2	0	3	0	19	0	7	0	164	677
6:45 PM	4	39	6	0	4	53	5	0	3	0	2	0	15	0	9	0	140	642
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	12	276	112	0	32	336	20	0	28	0	16	0	52	8	40	0	932	
Heavy Trucks	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	12	
Buses																		
Pedestrians	0	0			0	0			8				16				24	
Bicycles	0	0	4		0	0	0		0	0	0		4	0	0		8	
Scooters																		

Comments:

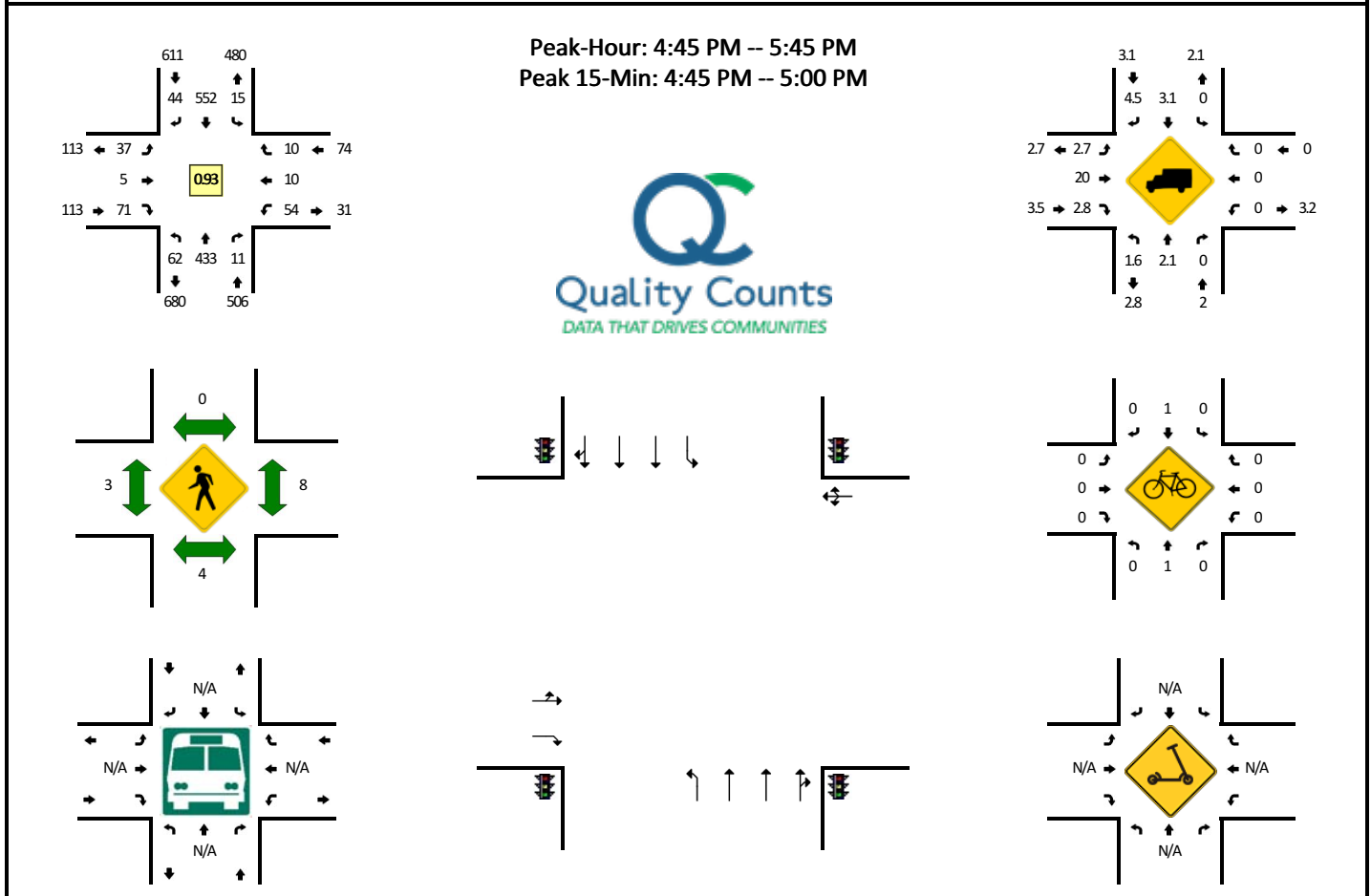
LOCATION: Blenheim Blvd -- Site Entrance 2**CITY/STATE:** Fairfax, VA**QC JOB #:** 16229810**DATE:** Thu, Mar 30 2023

Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:00 PM -- 4:15 PM



15-Min Count Period Beginning At	Blenheim Blvd (Northbound)				Blenheim Blvd (Southbound)				Site Entrance 2 (Eastbound)				Site Entrance 2 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	192	0	0	0	0	0	0	0	0	0	0	192	
4:15 PM	0	0	0	0	0	163	0	0	0	0	0	0	0	0	0	0	163	
4:30 PM	0	0	0	0	0	170	1	0	0	0	0	0	0	0	0	0	171	
4:45 PM	0	0	0	0	0	179	0	0	0	0	0	0	0	0	0	0	179	705
5:00 PM	0	0	0	0	0	175	1	0	0	0	0	0	0	0	0	0	176	689
5:15 PM	0	0	0	0	0	159	0	0	0	0	0	0	0	0	0	0	159	685
5:30 PM	0	0	0	0	0	167	0	0	0	0	0	0	0	0	0	0	167	681
5:45 PM	0	0	0	0	0	174	0	0	0	0	0	0	0	0	0	0	174	676
6:00 PM	0	0	0	0	0	146	0	0	0	0	0	0	0	0	0	0	146	646
6:15 PM	0	0	0	0	0	144	0	0	0	0	0	0	0	0	0	0	144	631
6:30 PM	0	0	0	0	0	152	1	0	0	0	0	0	0	0	0	0	153	617
6:45 PM	0	0	0	0	0	148	0	0	0	0	0	0	0	0	0	0	148	591
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	0	0	0	0	768	0	0	0	0	0	0	0	0	0	0	768	
Heavy Trucks	0	0	0	0	0	24	0	0	0	0	0	0	0	0	0	0	24	
Buses																		
Pedestrians		0				0				8				0			8	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

LOCATION: Blenheim Blvd -- Driveway/Site Entrance**CITY/STATE:** Fairfax, VA**QC JOB #:** 16229811**DATE:** Thu, Mar 30 2023

15-Min Count Period Beginning At	Blenheim Blvd (Northbound)				Blenheim Blvd (Southbound)				Driveway/Site Entrance (Eastbound)				Driveway/Site Entrance (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	13	77	8	0	5	170	9	0	4	0	7	0	15	1	5	0	314	
4:15 PM	18	79	6	3	1	134	7	0	4	0	17	0	14	0	7	0	290	
4:30 PM	12	77	3	0	4	145	10	0	8	1	7	0	12	2	2	0	283	
4:45 PM	16	122	4	0	5	158	7	0	8	1	12	0	16	2	1	0	352	1239
5:00 PM	16	100	3	1	3	133	13	0	12	1	19	0	19	6	6	0	332	1257
5:15 PM	13	104	2	1	2	129	13	0	6	3	16	0	9	1	1	0	300	1267
5:30 PM	14	107	2	1	5	132	11	0	11	0	24	0	10	1	2	0	320	1304
5:45 PM	16	115	2	1	4	139	10	1	13	2	21	0	12	3	4	0	343	1295
6:00 PM	15	110	1	2	3	107	2	0	6	1	19	0	18	2	5	0	291	1254
6:15 PM	10	117	2	0	1	118	2	0	4	0	14	0	24	1	3	0	296	1250
6:30 PM	7	103	4	1	1	130	11	1	2	0	10	0	10	3	5	0	288	1218
6:45 PM	16	90	4	1	3	127	12	0	21	0	11	0	11	1	3	0	300	1175
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	64	488	16	0	20	632	28	0	32	4	48	0	64	8	4	0	1408	
Heavy Trucks	0	8	0	0	0	20	0	0	0	0	0	0	0	0	0	0	28	
Buses																		
Pedestrians	0	4			0	0			0	4			0	0			8	
Bicycles	0	4	0		0	0	0		0	0	0		0	0	0		4	
Scooters																		

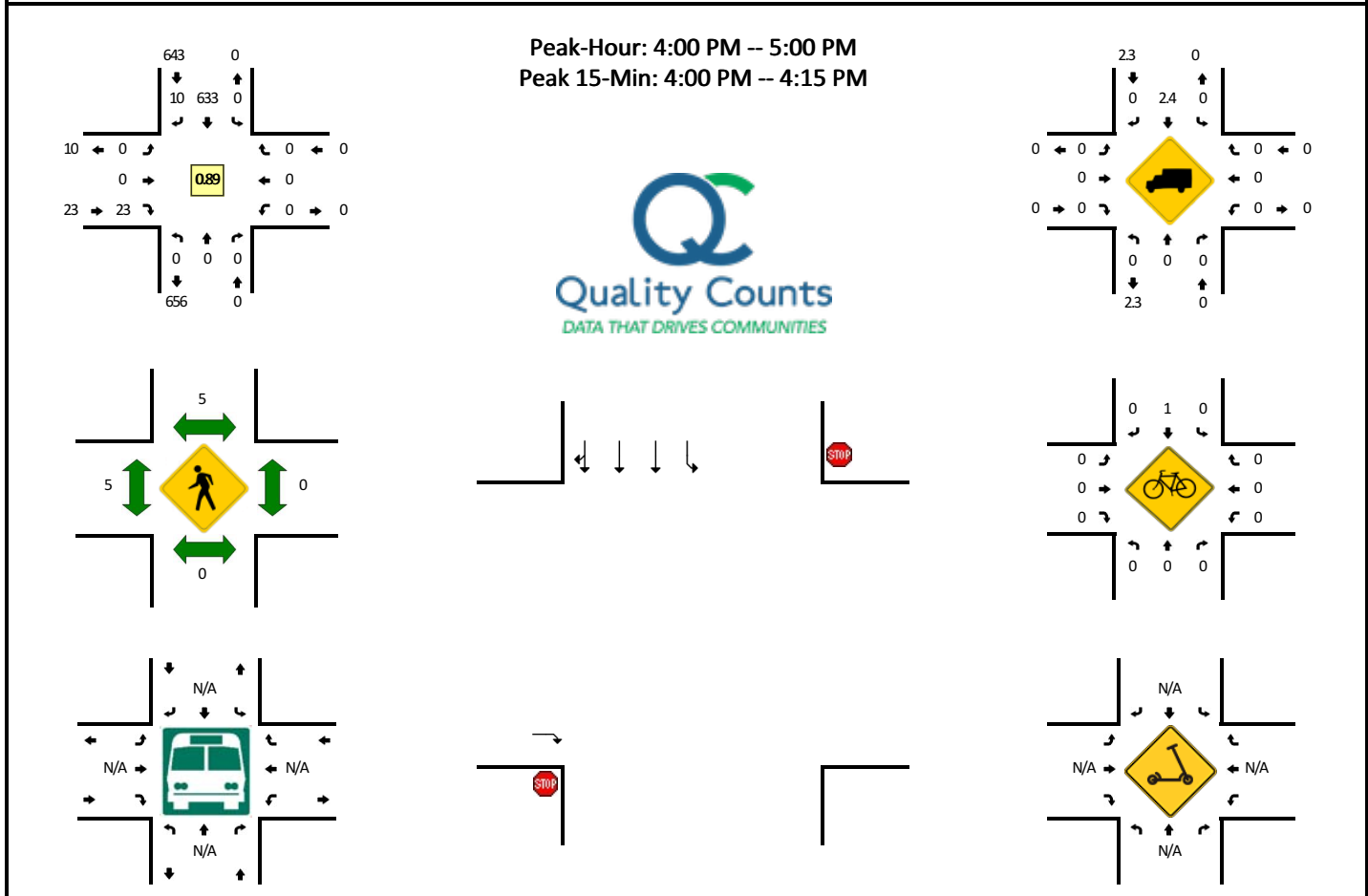
Comments:

Report generated on 5/26/2023 11:26 AM

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

LOCATION: Blenheim Blvd -- Site Entrance 4**CITY/STATE:** Fairfax, VA**QC JOB #:** 16229812**DATE:** Thu, Mar 30 2023

Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:00 PM -- 4:15 PM



15-Min Count Period Beginning At	Blenheim Blvd (Northbound)				Blenheim Blvd (Southbound)				Site Entrance 4 (Eastbound)				Site Entrance 4 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	178	3	0	0	0	7	0	0	0	0	0	188	
4:15 PM	0	0	0	0	0	140	1	0	0	0	4	0	0	0	0	0	145	
4:30 PM	0	0	0	0	0	154	1	0	0	0	6	0	0	0	0	0	161	
4:45 PM	0	0	0	0	0	161	5	0	0	0	6	0	0	0	0	0	172	666
5:00 PM	0	0	0	0	0	140	0	0	0	0	10	0	0	0	0	0	150	628
5:15 PM	0	0	0	0	0	137	0	0	0	0	8	0	0	0	0	0	145	628
5:30 PM	0	0	0	0	0	145	2	0	0	0	7	0	0	0	0	0	154	621
5:45 PM	0	0	0	0	0	136	2	0	0	0	13	0	0	0	0	0	151	600
6:00 PM	0	0	0	0	0	110	1	0	0	0	6	0	0	0	0	0	117	567
6:15 PM	0	0	0	0	0	113	1	0	0	0	4	0	0	0	0	0	118	540
6:30 PM	0	0	0	0	0	130	1	0	0	0	12	0	0	0	0	0	143	529
6:45 PM	0	0	0	0	0	133	1	0	0	0	11	0	0	0	0	0	145	523
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	0	0	0	0	712	12	0	0	0	28	0	0	0	0	0	752	
Heavy Trucks	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	20	
Buses																		
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scooters																		

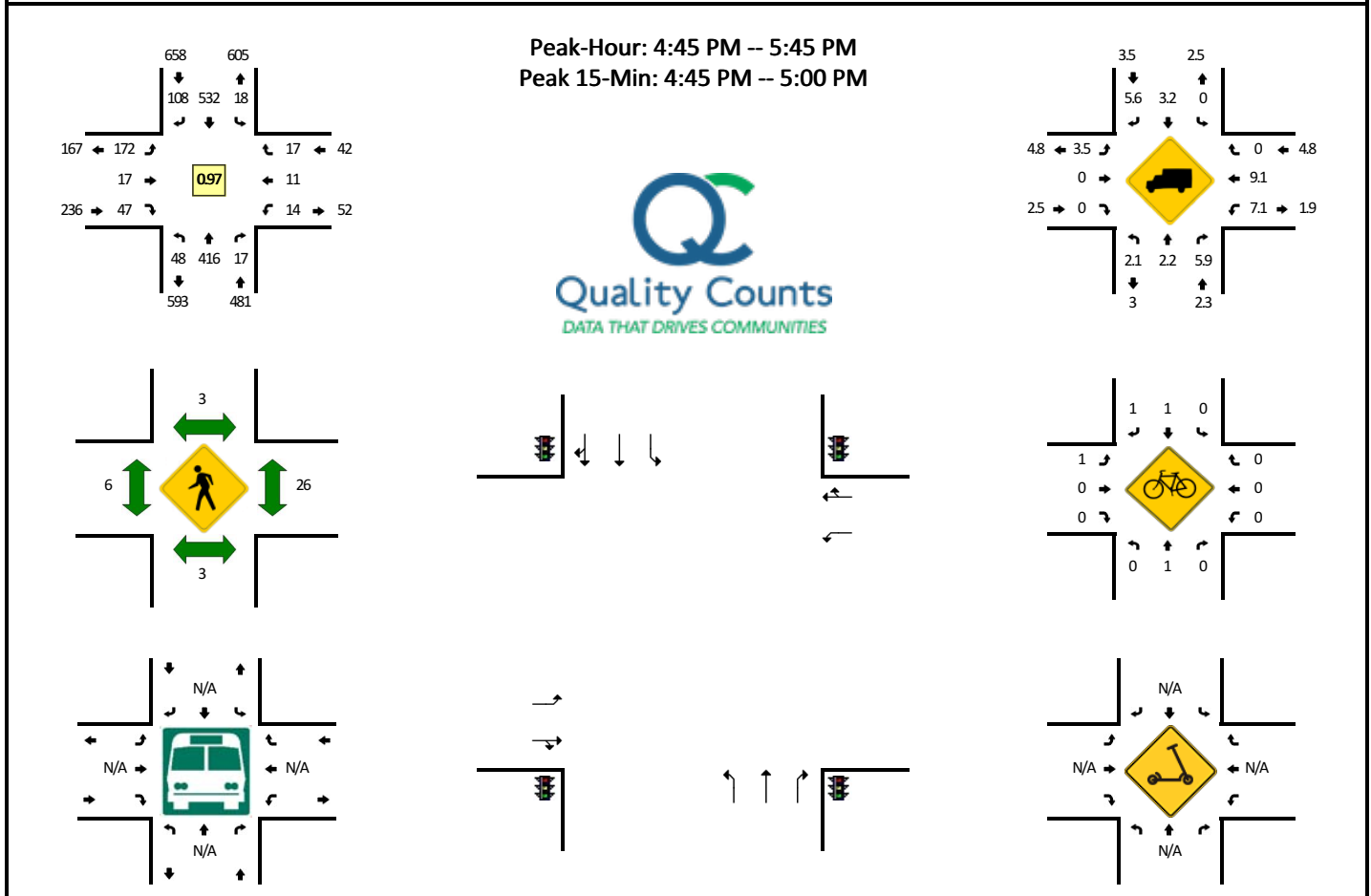
Comments:

Report generated on 5/26/2023 11:26 AM

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

LOCATION: Blenheim Blvd -- Farrcroft Dr
CITY/STATE: Fairfax, VA

QC JOB #: 16229813
DATE: Thu, Mar 30 2023

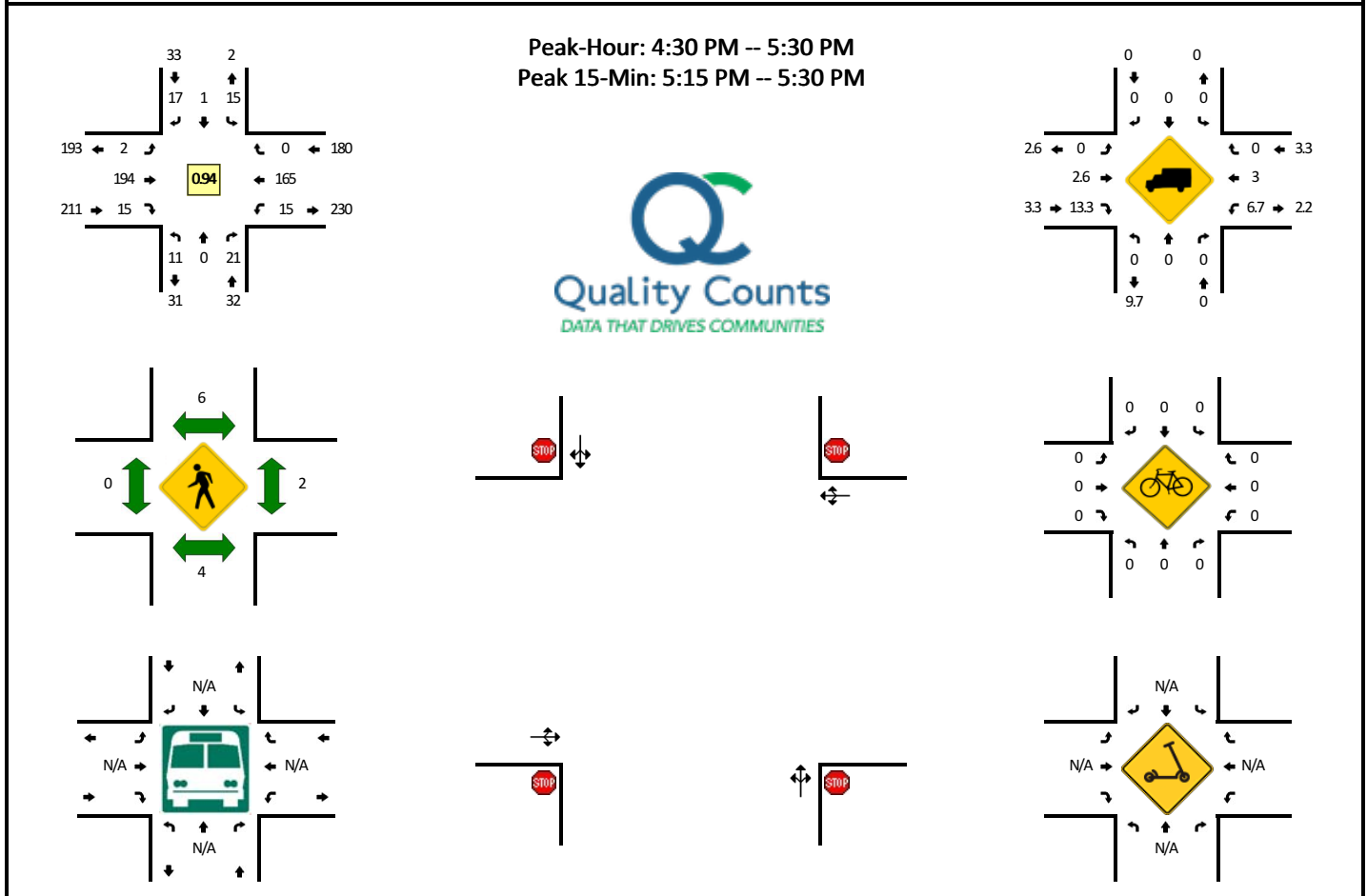


15-Min Count Period Beginning At	Blenheim Blvd (Northbound)				Blenheim Blvd (Southbound)				Farrcroft Dr (Eastbound)				Farrcroft Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	14	69	4	0	8	155	46	0	26	3	14	0	7	2	2	0	350	
4:15 PM	8	80	2	0	11	137	25	0	39	1	7	0	6	1	4	0	321	
4:30 PM	8	78	2	0	2	112	22	0	39	1	27	0	4	2	4	0	301	
4:45 PM	20	96	8	0	7	148	22	0	43	3	12	0	1	1	5	0	366	1338
5:00 PM	11	115	3	0	5	127	40	0	32	3	12	0	4	5	3	0	360	1348
5:15 PM	8	97	5	0	5	117	28	0	49	4	13	0	8	5	4	0	343	1370
5:30 PM	9	108	1	0	1	140	18	0	48	7	10	0	1	0	5	0	348	1417
5:45 PM	15	120	2	0	6	125	19	0	52	7	4	0	3	1	6	0	360	1411
6:00 PM	9	109	4	0	7	106	20	0	50	3	3	0	2	1	6	0	320	1371
6:15 PM	13	110	7	0	6	114	21	0	45	3	8	0	3	3	4	0	337	1365
6:30 PM	11	94	2	0	5	118	19	0	25	1	5	0	6	1	4	0	291	1308
6:45 PM	9	104	4	0	4	117	14	0	35	2	7	0	2	2	3	0	303	1251
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	80	384	32	0	28	592	88	0	172	12	48	0	4	4	20	0	1464	
Heavy Trucks	0	4	4	0	0	16	0	0	4	0	0	0	0	0	0	0	28	
Buses																		
Pedestrians	0	8			0	8			0	8			0	28			52	
Bicycles		4	0		0	0	0		0	0	0		0	0	0		4	
Scooters																		

Comments:

LOCATION: Democracy Ln -- Layton Hall Dr
CITY/STATE: Fairfax, VA

QC JOB #: 16229814
DATE: Thu, Mar 30 2023

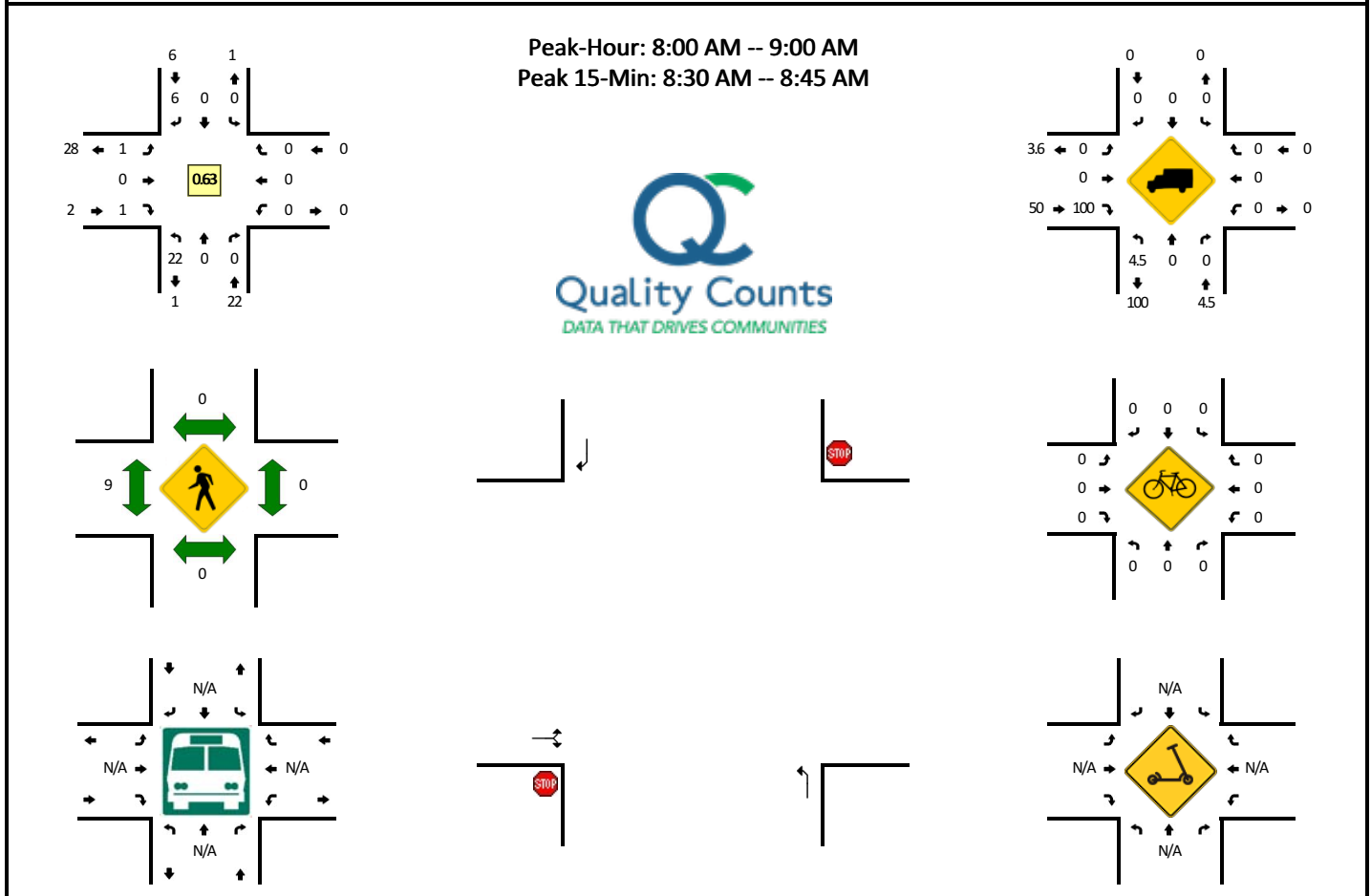


15-Min Count Period Beginning At	Democracy Ln (Northbound)				Democracy Ln (Southbound)				Layton Hall Dr (Eastbound)				Layton Hall Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	7	0	7	0	1	0	1	0	0	34	1	0	4	59	0	0	114	
4:15 PM	4	0	6	0	0	0	1	0	2	42	3	0	5	29	0	0	92	
4:30 PM	2	0	5	0	11	1	5	0	1	48	1	0	1	39	0	0	114	
4:45 PM	3	0	3	0	1	0	0	0	0	48	5	0	5	40	0	0	105	425
5:00 PM	2	0	6	0	2	0	5	0	1	40	4	0	5	51	0	0	116	427
5:15 PM	4	0	7	0	1	0	7	0	0	58	5	0	4	35	0	0	121	456
5:30 PM	0	0	10	0	0	0	0	0	0	57	2	0	0	26	0	0	95	437
5:45 PM	3	0	5	0	0	0	0	0	0	53	5	0	2	33	0	0	101	433
6:00 PM	4	0	5	0	0	0	0	0	0	54	2	0	5	25	0	0	95	412
6:15 PM	9	0	10	0	0	0	0	0	0	43	0	0	5	32	0	0	99	390
6:30 PM	2	0	3	0	0	0	1	0	0	29	1	0	4	28	0	0	68	363
6:45 PM	5	0	5	0	0	0	0	0	0	37	1	0	0	25	0	0	73	335
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	0	28	0	4	0	28	0	0	232	20	0	16	140	0	0	484	
Heavy Trucks	0	0	0		0	0	0		0	4	0		4	0	0		8	
Buses																		
Pedestrians		8				4				0				0			12	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: University Dr -- TEEL Dwy
CITY/STATE: Fairfax, VA

QC JOB #: 16282301
DATE: Thu, Mar 30 2023

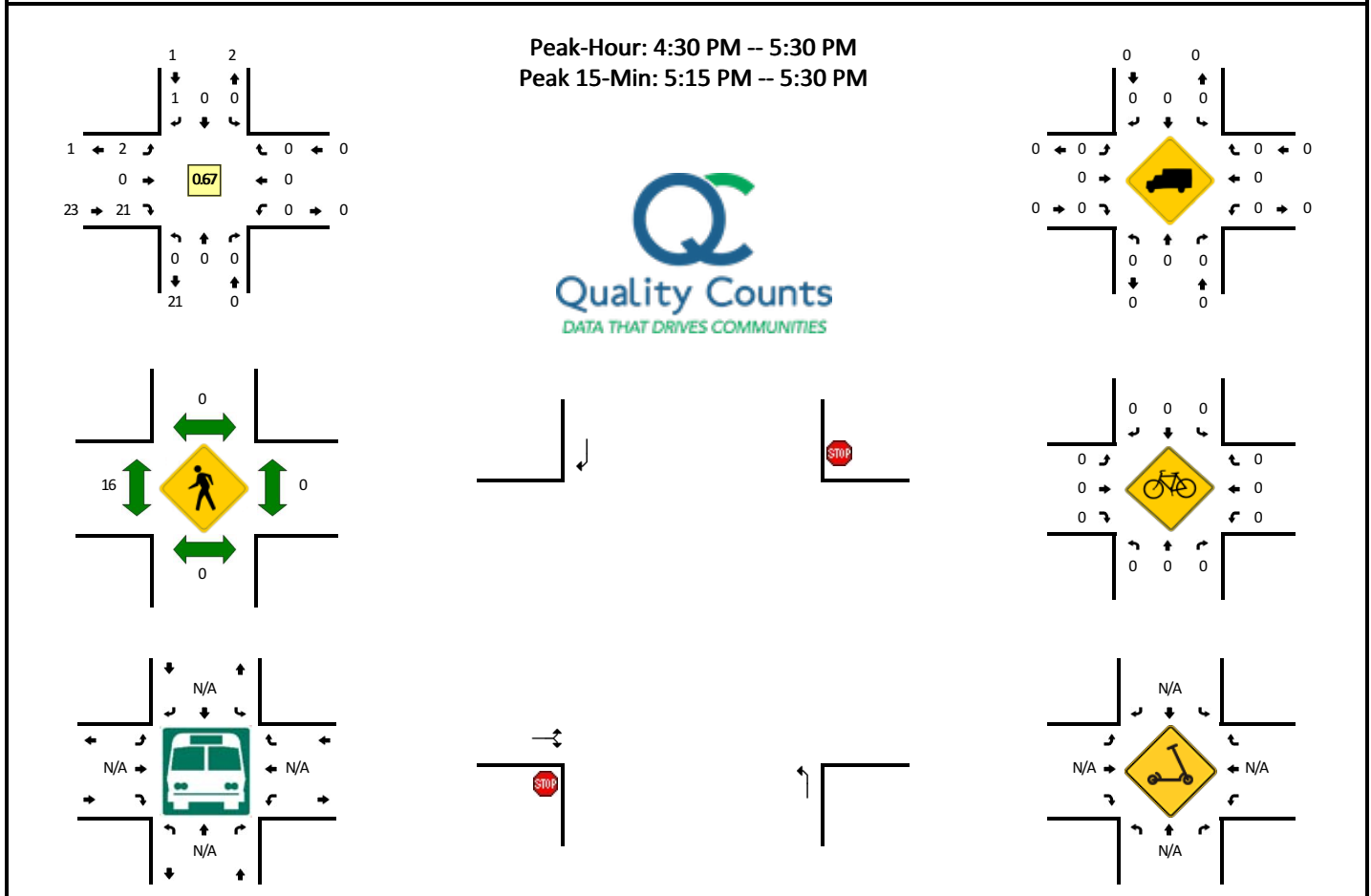


15-Min Count Period Beginning At	University Dr (Northbound)				University Dr (Southbound)				TEEL Dwy (Eastbound)				TEEL Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
7:15 AM	1	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	4	
7:30 AM	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	
7:45 AM	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	5	13
8:00 AM	2	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	4	15
8:15 AM	6	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	8	19
8:30 AM	10	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	12	29
8:45 AM	4	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	6	30
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	40	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	48	
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Buses																		
Pedestrians		0				0				12				0			12	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

LOCATION: University Dr -- TEEL Dwy
CITY/STATE: Fairfax, VA

QC JOB #: 16282302
DATE: Thu, Mar 30 2023



15-Min Count Period Beginning At	University Dr (Northbound)				University Dr (Southbound)				TEEL Dwy (Eastbound)				TEEL Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
4:15 PM	0	0	0	0	0	0	1	0	1	0	4	0	0	0	0	0	6	
4:30 PM	0	0	0	0	0	0	1	0	1	0	4	0	0	0	0	0	6	
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	14
5:00 PM	0	0	0	0	0	0	0	0	1	0	7	0	0	0	0	0	8	21
5:15 PM	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0	9	24
5:30 PM	1	0	0	0	0	0	1	0	2	0	1	0	0	0	0	0	5	23
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	23
6:00 PM	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2	17
6:15 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	9
6:30 PM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2	6
6:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	6
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	0	0	0	0	0	0	0	0	0	36	0	0	0	0	0	36	
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Buses																		
Pedestrians		0				0				8				0			8	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

Appendix E – Comparison of Existing Inline Retail Trips and Inline Retail Trips to be Removed

Land Use	ITE Code	Size	----- W e e k d a y -----						
			AM Peak Hour			PM Peak Hour			Daily Total
			In	Out	Total	In	Out	Total	
Existing Inline Retail									
Shopping Center (40 kSF<X<150 kSF) (with Supermarket) (1)	821	58.000 kSF of GFA	127	78	205	271	293	564	5,876
Inline Retail to be Removed									
Shopping Center (<40 kSF) (2)	822	25.2 kSF of GFA	32	21	53	75	75	150	1,292
% Comparison (2) / (1)					25.9%		26.6%		22.0%

Appendix F – Intersection Analysis Worksheets – Existing 2023

HCM 6th TWSC
1: Old Lee Highway & Plaza Drive

Timing Plan: AM Peak

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑↑	
Traffic Vol, veh/h	0	7	0	547	413	4
Future Vol, veh/h	0	7	0	547	413	4
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	-	-	-	120
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	14	2	2	6	2
Mvmt Flow	0	8	0	644	486	5
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	246	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.38	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.04	-	-	-	-
Pot Cap-1 Maneuver	0	616	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	616	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	10.9	0	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	616	-	-		
HCM Lane V/C Ratio	-	0.013	-	-		
HCM Control Delay (s)	-	10.9	-	-		
HCM Lane LOS	-	B	-	-		
HCM 95th %tile Q(veh)	-	0	-	-		

Queues

2: Old Lee Highway & FFX Commons

Timing Plan: AM Peak

	→	↘	←	↙	↑	↗	↘	↓	↙
Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	16	13	1	38	627	14	16	464	13
v/c Ratio	0.03	0.03	0.00	0.05	0.23	0.01	0.02	0.19	0.01
Control Delay	17.7	0.1	0.0	4.0	5.6	0.0	4.4	8.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	0.1	0.0	4.0	5.6	0.0	4.4	8.0	0.0
Queue Length 50th (ft)	1	0	0	0	0	0	1	0	0
Queue Length 95th (ft)	17	0	0	11	108	0	6	83	0
Internal Link Dist (ft)	124		135		259			157	
Turn Bay Length (ft)				120			120		
Base Capacity (vph)	1568	1351	1431	1320	2923	1339	1313	2841	1339
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.01	0.00	0.03	0.21	0.01	0.01	0.16	0.01
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

2: Old Lee Highway & FFX Commons

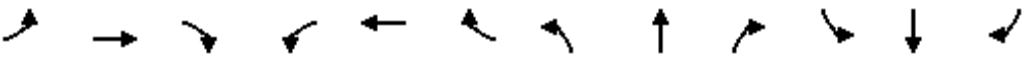
Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔		↖	↕	↗	↖	↕	↗
Traffic Volume (vph)	13	1	11	0	0	1	32	533	12	14	394	11
Future Volume (vph)	13	1	11	0	0	1	32	533	12	14	394	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8		6.8		6.8	6.8	6.8	6.8	6.8	6.8
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		0.86		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1779	1583		1611		1770	3505	1583	1770	3406	1583
Flt Permitted		1.00	1.00		1.00		0.46	1.00	1.00	0.41	1.00	1.00
Satd. Flow (perm)		1863	1583		1611		860	3505	1583	771	3406	1583
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	15	1	13	0	0	1	38	627	14	16	464	13
RTOR Reduction (vph)	0	0	12	0	1	0	0	0	7	0	0	7
Lane Group Flow (vph)	0	16	1	0	0	0	38	627	7	16	464	6
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	6%	2%
Turn Type	Perm	NA	Perm		NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4			2		2	6		6
Actuated Green, G (s)		1.9	1.9		1.9		22.1	20.3	20.3	20.1	19.3	19.3
Effective Green, g (s)		1.9	1.9		1.9		22.1	20.3	20.3	20.1	19.3	19.3
Actuated g/C Ratio		0.04	0.04		0.04		0.51	0.47	0.47	0.46	0.44	0.44
Clearance Time (s)		6.8	6.8		6.8		6.8	6.8	6.8	6.8	6.8	6.8
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		81	69		70		475	1639	740	375	1514	703
v/s Ratio Prot					0.00		c0.00	c0.18		0.00	0.14	
v/s Ratio Perm		c0.01	0.00				0.04		0.00	0.02		0.00
v/c Ratio		0.20	0.01		0.00		0.08	0.38	0.01	0.04	0.31	0.01
Uniform Delay, d1		20.0	19.8		19.8		5.4	7.5	6.2	6.3	7.7	6.7
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		1.2	0.0		0.0		0.1	0.1	0.0	0.0	0.1	0.0
Delay (s)		21.2	19.9		19.8		5.4	7.6	6.2	6.4	7.9	6.7
Level of Service		C	B		B		A	A	A	A	A	A
Approach Delay (s)		20.6			19.8			7.5			7.8	
Approach LOS		C			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			7.9									
HCM 2000 Volume to Capacity ratio			0.36									
Actuated Cycle Length (s)			43.4							20.4		
Intersection Capacity Utilization			43.3%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: Old Lee Highway & FFX Commons

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↩	↩		↩		↩	↩	↩	↩	↩	↩
Traffic Volume (veh/h)	13	1	11	0	0	1	32	533	12	14	394	11
Future Volume (veh/h)	13	1	11	0	0	1	32	533	12	14	394	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1870	1870	1870	1870	1870	1870	1870	1856	1870	1870	1811	1870
Adj Flow Rate, veh/h	15	1	13	0	0	1	38	627	14	16	464	13
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	3	2	2	6	2
Cap, veh/h	245	4	79	0	0	79	526	1435	645	441	1322	609
Arrive On Green	0.05	0.05	0.05	0.00	0.00	0.05	0.04	0.41	0.41	0.02	0.38	0.38
Sat Flow, veh/h	1332	89	1585	0	0	1585	1781	3526	1585	1781	3441	1585
Grp Volume(v), veh/h	16	0	13	0	0	1	38	627	14	16	464	13
Grp Sat Flow(s),veh/h/ln	1421	0	1585	0	0	1585	1781	1763	1585	1781	1721	1585
Q Serve(g_s), s	0.4	0.0	0.3	0.0	0.0	0.0	0.5	5.0	0.2	0.2	3.7	0.2
Cycle Q Clear(g_c), s	0.4	0.0	0.3	0.0	0.0	0.0	0.5	5.0	0.2	0.2	3.7	0.2
Prop In Lane	0.94		1.00	0.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	249	0	79	0	0	79	526	1435	645	441	1322	609
V/C Ratio(X)	0.06	0.00	0.16	0.00	0.00	0.01	0.07	0.44	0.02	0.04	0.35	0.02
Avail Cap(c_a), veh/h	1320	0	1259	0	0	1259	1362	2710	1218	1317	2645	1218
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	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.8	0.0	17.8	0.0	0.0	17.6	6.7	8.3	6.9	7.2	8.6	7.5
Incr Delay (d2), s/veh	0.1	0.0	1.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.2	0.0
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	0.1	0.0	0.1	0.0	0.0	0.0	0.1	1.4	0.1	0.1	1.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.9	0.0	18.7	0.0	0.0	17.7	6.8	8.6	6.9	7.2	8.7	7.5
LnGrp LOS	B	A	B	A	A	B	A	A	A	A	A	A
Approach Vol, veh/h	29				1				679			
Approach Delay, s/veh	18.3				17.7				8.4			
Approach LOS	B				B				A			
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	22.7		8.7	8.5	21.8		8.7				
Change Period (Y+Rc), s	* 6.8	* 6.8		* 6.8	* 6.8	* 6.8		* 6.8				
Max Green Setting (Gmax), s	* 20	* 30		* 31	* 20	* 30		* 31				
Max Q Clear Time (g_c+I1), s	2.2	7.0		2.0	2.5	5.7		2.4				
Green Ext Time (p_c), s	0.0	4.5		0.0	0.1	3.2		0.1				

Intersection Summary

HCM 6th Ctrl Delay 8.8

HCM 6th LOS A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
4: Old Lee Highway

Timing Plan: AM Peak

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑↑	
Traffic Vol, veh/h	0	0	0	577	405	0
Future Vol, veh/h	0	0	0	577	405	0
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, %	2	2	2	2	6	2
Mvmt Flow	0	0	0	679	476	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	238	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	650	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	650	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	-	-	-	-		
HCM Lane V/C Ratio	-	-	-	-		
HCM Control Delay (s)	-	0	-	-		
HCM Lane LOS	-	A	-	-		
HCM 95th %tile Q(veh)	-	-	-	-		

HCM 6th TWSC
5: University Drive & Driveway

Timing Plan: AM Peak

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	13	310	197	5
Future Vol, veh/h	0	1	13	310	197	5
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	1	14	337	214	5
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	414	110	219	0	-	0
Stage 1	217	-	-	-	-	-
Stage 2	197	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	566	922	1348	-	-	-
Stage 1	798	-	-	-	-	-
Stage 2	817	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	559	922	1348	-	-	-
Mov Cap-2 Maneuver	559	-	-	-	-	-
Stage 1	788	-	-	-	-	-
Stage 2	817	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.9	0.3		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1348	-	922	-	-	
HCM Lane V/C Ratio	0.01	-	0.001	-	-	
HCM Control Delay (s)	7.7	0	8.9	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

HCM 6th TWSC
6: University Drive & 7-11 Entrance

Timing Plan: AM Peak

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕		↕		↕		↕		
Traffic Vol, veh/h	5	0	15	16	0	6	10	270	30	12	171	12
Future Vol, veh/h	5	0	15	16	0	6	10	270	30	12	171	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	10	2	3	2	4	2
Mvmt Flow	6	0	18	19	0	7	12	318	35	14	201	14

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	419	613	108	489	-	177	215	0	0	353	0	0
Stage 1	236	236	-	360	-	-	-	-	-	-	-	-
Stage 2	183	377	-	129	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	-	6.94	4.3	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	-	3.32	2.3	-	-	2.22	-	-
Pot Cap-1 Maneuver	518	406	925	462	0	835	1296	-	-	1202	-	-
Stage 1	746	708	-	631	0	-	-	-	-	-	-	-
Stage 2	801	614	-	861	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	504	396	925	444	-	835	1296	-	-	1202	-	-
Mov Cap-2 Maneuver	504	396	-	444	-	-	-	-	-	-	-	-
Stage 1	737	699	-	623	-	-	-	-	-	-	-	-
Stage 2	785	607	-	834	-	-	-	-	-	-	-	-

Approach	EB		WB		NB			SB				
HCM Control Delay, s	9.9		12.4		0.3			0.5				
HCM LOS	A		B									

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1296	-	-	765	444	835	1202	-	-
HCM Lane V/C Ratio	0.009	-	-	0.031	0.042	0.008	0.012	-	-
HCM Control Delay (s)	7.8	0	-	9.9	13.5	9.3	8	0	-
HCM Lane LOS	A	A	-	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	0	-	-

Queues

7: University Drive & Whitehead Street/Democracy Lane

Timing Plan: AM Peak

	→	↘	←	↑	↓
Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	138	34	42	331	190
v/c Ratio	0.31	0.06	0.09	0.29	0.20
Control Delay	15.7	3.2	12.8	12.5	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	3.2	12.8	12.5	12.5
Queue Length 50th (ft)	15	0	4	17	9
Queue Length 95th (ft)	91	9	33	89	55
Internal Link Dist (ft)	232		226	114	218
Turn Bay Length (ft)					
Base Capacity (vph)	1021	1244	1029	3128	2547
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.14	0.03	0.04	0.11	0.07
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

7: University Drive & Whitehead Street/Democracy Lane

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	17	29	22	9	4	7	257	18	5	145	11
Future Volume (vph)	100	17	29	22	9	4	7	257	18	5	145	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0			5.0			5.0	
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95	
Frpb, ped/bikes		1.00	0.98		1.00			1.00			1.00	
Flpb, ped/bikes		1.00	1.00		0.99			1.00			1.00	
Frt		1.00	0.85		0.98			0.99			0.99	
Flt Protected		0.96	1.00		0.97			1.00			1.00	
Satd. Flow (prot)		1676	1532		1695			3495			2860	
Flt Permitted		0.73	1.00		0.73			0.95			0.94	
Satd. Flow (perm)		1271	1532		1279			3311			2692	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	118	20	34	26	11	5	8	302	21	6	171	13
RTOR Reduction (vph)	0	0	27	0	4	0	0	5	0	0	6	0
Lane Group Flow (vph)	0	138	7	0	38	0	0	326	0	0	184	0
Confl. Peds. (#/hr)	1		8	8		1	3		7	7		3
Heavy Vehicles (%)	7%	18%	3%	5%	11%	2%	2%	2%	2%	3%	27%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		
Actuated Green, G (s)		7.7	7.7		7.7			11.5			11.5	
Effective Green, g (s)		7.7	7.7		7.7			11.5			11.5	
Actuated g/C Ratio		0.21	0.21		0.21			0.32			0.32	
Clearance Time (s)		6.0	6.0		6.0			5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		271	326		272			1054			857	
v/s Ratio Prot												
v/s Ratio Perm		c0.11	0.00		0.03			c0.10			0.07	
v/c Ratio		0.51	0.02		0.14			0.31			0.21	
Uniform Delay, d1		12.5	11.2		11.5			9.3			9.0	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		1.5	0.0		0.2			0.2			0.1	
Delay (s)		14.0	11.3		11.8			9.5			9.1	
Level of Service		B	B		B			A			A	
Approach Delay (s)		13.5			11.8			9.5			9.1	
Approach LOS		B			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			10.4									
HCM 2000 Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			36.1									
Intersection Capacity Utilization			32.5%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology does not support exclusive ped or hold phases.

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	22	255	6	10	165	10	2	1	6	0	0	4
Future Vol, veh/h	22	255	6	10	165	10	2	1	6	0	0	4
Conflicting Peds, #/hr	9	0	0	0	0	9	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	5	2	2	3	2	2	2	17	2	2	2
Mvmt Flow	26	300	7	12	194	12	2	1	7	0	0	5
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	215	0	0	307	0	0	583	595	304	593	592	209
Stage 1	-	-	-	-	-	-	356	356	-	233	233	-
Stage 2	-	-	-	-	-	-	227	239	-	360	359	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.37	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.453	3.518	4.018	3.318
Pot Cap-1 Maneuver	1355	-	-	1254	-	-	424	417	702	417	419	831
Stage 1	-	-	-	-	-	-	661	629	-	770	712	-
Stage 2	-	-	-	-	-	-	776	708	-	658	627	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1343	-	-	1254	-	-	411	399	702	398	401	824
Mov Cap-2 Maneuver	-	-	-	-	-	-	411	399	-	398	401	-
Stage 1	-	-	-	-	-	-	646	615	-	746	698	-
Stage 2	-	-	-	-	-	-	763	694	-	635	613	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.6			0.4			11.5			9.4		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	565	1343	-	-	1254	-	-	824				
HCM Lane V/C Ratio	0.019	0.019	-	-	0.009	-	-	0.006				
HCM Control Delay (s)	11.5	7.7	0	-	7.9	0	-	9.4				
HCM Lane LOS	B	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0				

Queues

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: AM Peak



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	256	47	15	59	69	562	6	19	601
v/c Ratio	0.61	0.11	0.10	0.33	0.18	0.74	0.01	0.07	0.52
Control Delay	43.8	20.8	53.5	25.9	15.7	31.7	0.0	15.0	26.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.8	20.8	53.5	25.9	15.7	31.7	0.0	15.0	26.0
Queue Length 50th (ft)	125	8	8	6	22	248	0	6	147
Queue Length 95th (ft)	279	44	34	50	49	490	0	19	217
Internal Link Dist (ft)		305		220		842			355
Turn Bay Length (ft)							230	150	
Base Capacity (vph)	669	656	542	551	502	1252	1081	451	2259
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.07	0.03	0.11	0.14	0.45	0.01	0.04	0.27
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	218	17	23	13	10	40	59	478	5	16	382	129
Future Volume (vph)	218	17	23	13	10	40	59	478	5	16	382	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		7.3	7.3		6.9	6.9	6.9	6.9	6.9	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00	0.97	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.91		1.00	0.88		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1719	1643		1671	1606		1769	1827	1533	1702	3282	
Flt Permitted	0.95	1.00		0.95	1.00		0.32	1.00	1.00	0.25	1.00	
Satd. Flow (perm)	1719	1643		1671	1606		587	1827	1533	447	3282	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	256	20	27	15	12	47	69	562	6	19	449	152
RTOR Reduction (vph)	0	21	0	0	44	0	0	0	4	0	22	0
Lane Group Flow (vph)	256	26	0	15	15	0	69	562	2	19	579	0
Confl. Peds. (#/hr)	3		1	1		3	1		5	5		1
Heavy Vehicles (%)	5%	6%	4%	8%	2%	2%	2%	4%	2%	6%	6%	3%
Turn Type	Split	NA		Split	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases							6		6	2		
Actuated Green, G (s)	22.2	22.2		5.4	5.4		44.0	38.1	38.1	36.6	34.4	
Effective Green, g (s)	22.2	22.2		5.4	5.4		44.0	38.1	38.1	36.6	34.4	
Actuated g/C Ratio	0.23	0.23		0.06	0.06		0.46	0.40	0.40	0.38	0.36	
Clearance Time (s)	6.5	6.5		7.3	7.3		6.9	6.9	6.9	6.9	6.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	399	381		94	90		343	728	611	200	1182	
v/s Ratio Prot	c0.15	0.02		0.01	c0.01		c0.01	c0.31		0.00	0.18	
v/s Ratio Perm							0.08		0.00	0.03		
v/c Ratio	0.64	0.07		0.16	0.16		0.20	0.77	0.00	0.10	0.49	
Uniform Delay, d1	33.1	28.6		42.9	42.9		15.0	24.9	17.3	19.6	23.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.5	0.1		0.8	0.9		0.3	5.1	0.0	0.2	0.3	
Delay (s)	36.6	28.7		43.7	43.8		15.3	30.0	17.3	19.9	24.1	
Level of Service	D	C		D	D		B	C	B	B	C	
Approach Delay (s)		35.3			43.7			28.3			23.9	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			28.6			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			95.5			Sum of lost time (s)			27.6			
Intersection Capacity Utilization			65.1%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	218	17	23	13	10	40	59	478	5	16	382	129
Future Volume (veh/h)	218	17	23	13	10	40	59	478	5	16	382	129
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1826	1811	1841	1781	1870	1870	1870	1841	1870	1811	1811	1856
Adj Flow Rate, veh/h	256	20	27	15	12	47	69	562	6	19	449	152
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	5	6	4	8	2	2	2	4	2	6	6	3
Cap, veh/h	321	128	173	103	20	78	341	669	572	202	844	283
Arrive On Green	0.18	0.18	0.18	0.06	0.06	0.06	0.05	0.36	0.36	0.02	0.33	0.33
Sat Flow, veh/h	1739	695	938	1697	329	1289	1781	1841	1574	1725	2524	847
Grp Volume(v), veh/h	256	0	47	15	0	59	69	562	6	19	305	296
Grp Sat Flow(s),veh/h/ln	1739	0	1633	1697	0	1618	1781	1841	1574	1725	1721	1651
Q Serve(g_s), s	10.5	0.0	1.8	0.6	0.0	2.7	1.9	20.9	0.2	0.5	10.7	10.9
Cycle Q Clear(g_c), s	10.5	0.0	1.8	0.6	0.0	2.7	1.9	20.9	0.2	0.5	10.7	10.9
Prop In Lane	1.00		0.57	1.00		0.80	1.00		1.00	1.00		0.51
Lane Grp Cap(c), veh/h	321	0	302	103	0	98	341	669	572	202	575	552
V/C Ratio(X)	0.80	0.00	0.16	0.15	0.00	0.60	0.20	0.84	0.01	0.09	0.53	0.54
Avail Cap(c_a), veh/h	698	0	655	567	0	541	608	1477	1263	510	1380	1325
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.1	0.0	25.6	33.3	0.0	34.2	15.6	21.8	15.2	18.1	20.1	20.2
Incr Delay (d2), s/veh	4.5	0.0	0.2	0.6	0.0	5.7	0.3	2.9	0.0	0.2	0.8	0.8
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	4.7	0.0	0.7	0.3	0.0	1.2	0.7	8.9	0.1	0.2	4.2	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.6	0.0	25.8	33.9	0.0	39.9	15.9	24.8	15.2	18.3	20.9	21.0
LnGrp LOS	C	A	C	C	A	D	B	C	B	B	C	C
Approach Vol, veh/h	303			74			637			620		
Approach Delay, s/veh	32.4			38.7			23.7			20.9		
Approach LOS	C			D			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.7	31.9		20.3	8.5	34.1		11.9				
Change Period (Y+Rc), s	* 6.9	* 6.9		6.5	* 6.9	* 6.9		7.3				
Max Green Setting (Gmax), s	* 15	* 60		30.0	* 15	* 60		25.0				
Max Q Clear Time (g_c+I1), s	3.9	12.9		12.5	2.5	22.9		4.7				
Green Ext Time (p_c), s	0.1	4.3		1.0	0.0	4.3		0.3				

Intersection Summary

HCM 6th Ctrl Delay	24.9
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
1: Old Lee Highway

Timing Plan: PM Peak

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑↑	
Traffic Vol, veh/h	0	31	0	480	583	7
Future Vol, veh/h	0	31	0	480	583	7
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	-	-	-	120
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	3	2
Mvmt Flow	0	34	0	527	641	8
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	325	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	572	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	572	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	11.7	0	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	572	-	-		
HCM Lane V/C Ratio	-	0.06	-	-		
HCM Control Delay (s)	-	11.7	-	-		
HCM Lane LOS	-	B	-	-		
HCM 95th %tile Q(veh)	-	0.2	-	-		

Queues

2: Old Lee Highway

Timing Plan: PM Peak

									
Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	45	76	80	67	466	12	16	594	47
v/c Ratio	0.25	0.23	0.38	0.11	0.20	0.01	0.03	0.29	0.05
Control Delay	29.3	4.4	29.7	5.0	6.8	0.0	5.1	11.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.3	4.4	29.7	5.0	6.8	0.0	5.1	11.3	0.1
Queue Length 50th (ft)	17	0	27	8	32	0	2	80	0
Queue Length 95th (ft)	45	18	66	22	94	0	8	132	0
Internal Link Dist (ft)	173		199		207			142	
Turn Bay Length (ft)				120			120		
Base Capacity (vph)	641	856	710	840	2383	1103	902	2027	938
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.09	0.11	0.08	0.20	0.01	0.02	0.29	0.05
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

2: Old Lee Highway

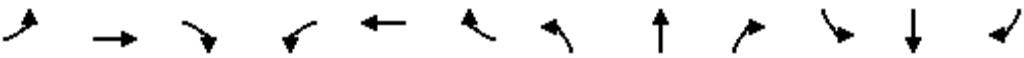
Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔		↖	↗	↗	↖	↗	↗
Traffic Volume (vph)	37	5	71	54	10	10	62	433	11	15	552	44
Future Volume (vph)	37	5	71	54	10	10	62	433	11	15	552	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8		6.8		6.8	6.8	6.8	6.8	6.8	6.8
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.97		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1734	1568		1764		1770	3539	1583	1770	3505	1538
Flt Permitted		0.69	1.00		0.76		0.39	1.00	1.00	0.48	1.00	1.00
Satd. Flow (perm)		1256	1568		1384		729	3539	1583	902	3505	1538
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	40	5	76	58	11	11	67	466	12	16	594	47
RTOR Reduction (vph)	0	0	68	0	7	0	0	0	5	0	0	22
Lane Group Flow (vph)	0	45	8	0	73	0	67	466	7	16	594	25
Heavy Vehicles (%)	3%	20%	3%	2%	2%	2%	2%	2%	2%	2%	3%	5%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4			2		2	6		6
Actuated Green, G (s)		7.3	7.3		7.3		44.6	40.1	40.1	37.8	36.7	36.7
Effective Green, g (s)		7.3	7.3		7.3		44.6	40.1	40.1	37.8	36.7	36.7
Actuated g/C Ratio		0.11	0.11		0.11		0.65	0.58	0.58	0.55	0.53	0.53
Clearance Time (s)		6.8	6.8		6.8		6.8	6.8	6.8	6.8	6.8	6.8
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		133	166		146		539	2059	921	508	1866	819
v/s Ratio Prot							c0.01	c0.13		0.00	c0.17	
v/s Ratio Perm		0.04	0.01		c0.05		0.07		0.00	0.02		0.02
v/c Ratio		0.34	0.05		0.50		0.12	0.23	0.01	0.03	0.32	0.03
Uniform Delay, d1		28.6	27.7		29.1		4.5	6.9	6.0	7.1	9.1	7.6
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		1.5	0.1		2.7		0.1	0.1	0.0	0.0	0.4	0.1
Delay (s)		30.1	27.8		31.7		4.6	7.0	6.0	7.1	9.5	7.7
Level of Service		C	C		C		A	A	A	A	A	A
Approach Delay (s)		28.6			31.7			6.7			9.3	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			11.2				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.33									
Actuated Cycle Length (s)			68.9				Sum of lost time (s)			20.4		
Intersection Capacity Utilization			47.2%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: Old Lee Highway

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↩	↩		↔		↩	↕	↩	↩	↕	↩
Traffic Volume (veh/h)	37	5	71	54	10	10	62	433	11	15	552	44
Future Volume (veh/h)	37	5	71	54	10	10	62	433	11	15	552	44
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1604	1856	1870	1870	1870	1870	1870	1870	1870	1856	1826
Adj Flow Rate, veh/h	40	5	76	58	11	11	67	466	12	16	594	47
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	20	3	2	2	2	2	2	2	2	3	5
Cap, veh/h	246	23	176	189	36	20	528	1890	843	576	1747	767
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.06	0.53	0.53	0.02	0.50	0.50
Sat Flow, veh/h	1199	209	1572	777	322	175	1781	3554	1585	1781	3526	1547
Grp Volume(v), veh/h	45	0	76	80	0	0	67	466	12	16	594	47
Grp Sat Flow(s),veh/h/ln	1408	0	1572	1274	0	0	1781	1777	1585	1781	1763	1547
Q Serve(g_s), s	0.0	0.0	2.7	2.3	0.0	0.0	1.1	4.3	0.2	0.3	6.2	1.0
Cycle Q Clear(g_c), s	1.6	0.0	2.7	3.9	0.0	0.0	1.1	4.3	0.2	0.3	6.2	1.0
Prop In Lane	0.89		1.00	0.72		0.14	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	270	0	176	245	0	0	528	1890	843	576	1747	767
V/C Ratio(X)	0.17	0.00	0.43	0.33	0.00	0.00	0.13	0.25	0.01	0.03	0.34	0.06
Avail Cap(c_a), veh/h	761	0	805	808	0	0	1017	1890	843	1130	1747	767
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	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.6	0.0	25.1	25.7	0.0	0.0	6.7	7.6	6.7	7.2	9.3	7.9
Incr Delay (d2), s/veh	0.3	0.0	1.7	0.8	0.0	0.0	0.1	0.1	0.0	0.0	0.5	0.2
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	1.1	1.1	0.0	0.0	0.3	1.4	0.1	0.1	2.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.9	0.0	26.8	26.5	0.0	0.0	6.8	7.7	6.7	7.2	9.8	8.1
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		121			80			545			657	
Approach Delay, s/veh		26.1			26.5			7.6			9.6	
Approach LOS		C			C			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	39.0		13.6	10.2	36.8		13.6				
Change Period (Y+Rc), s	* 6.8	* 6.8		* 6.8	* 6.8	* 6.8		* 6.8				
Max Green Setting (Gmax), s	* 20	* 30		* 31	* 20	* 30		* 31				
Max Q Clear Time (g_c+I1), s	2.3	6.3		5.9	3.1	8.2		4.7				
Green Ext Time (p_c), s	0.0	3.2		0.4	0.1	4.3		0.5				

Intersection Summary

HCM 6th Ctrl Delay	11.2
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
4: Old Lee Highway

Timing Plan: PM Peak

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑↑	
Traffic Vol, veh/h	0	0	0	506	680	0
Future Vol, veh/h	0	0	0	506	680	0
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	3	3	2
Mvmt Flow	0	0	0	533	716	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	358	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	545	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	545	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	-	-	-		
HCM Lane V/C Ratio	-	-	-	-		
HCM Control Delay (s)	-	0	-	-		
HCM Lane LOS	-	A	-	-		
HCM 95th %tile Q(veh)	-	-	-	-		

HCM 6th TWSC
5: University Drive & Driveway

Timing Plan: PM Peak

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	18	1	341	397	1
Future Vol, veh/h	3	18	1	341	397	1
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	3	20	1	371	432	1

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	621	217	433	0	-	0
Stage 1	433	-	-	-	-	-
Stage 2	188	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	419	787	1123	-	-	-
Stage 1	621	-	-	-	-	-
Stage 2	825	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	419	787	1123	-	-	-
Mov Cap-2 Maneuver	419	-	-	-	-	-
Stage 1	620	-	-	-	-	-
Stage 2	825	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1123	-	699	-	-
HCM Lane V/C Ratio	0.001	-	0.033	-	-
HCM Control Delay (s)	8.2	0	10.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 6th TWSC
6: University Drive

Timing Plan: PM Peak

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔			↔	
Traffic Vol, veh/h	16	3	21	41	6	36	12	258	74	30	335	21
Future Vol, veh/h	16	3	21	41	6	36	12	258	74	30	335	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	3	2	2
Mvmt Flow	17	3	23	45	7	39	13	280	80	33	364	23

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	612	828	194	596	799	180	387	0	0	360	0	0
Stage 1	442	442	-	346	346	-	-	-	-	-	-	-
Stage 2	170	386	-	250	453	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.16	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.23	-	-
Pot Cap-1 Maneuver	377	305	815	387	317	832	1168	-	-	1188	-	-
Stage 1	564	575	-	643	634	-	-	-	-	-	-	-
Stage 2	815	609	-	732	568	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	340	290	815	359	301	832	1168	-	-	1188	-	-
Mov Cap-2 Maneuver	340	290	-	359	301	-	-	-	-	-	-	-
Stage 1	556	555	-	634	625	-	-	-	-	-	-	-
Stage 2	758	600	-	683	548	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.2		13.6		0.4		0.7	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1168	-	-	481 359 665	1188	-	-
HCM Lane V/C Ratio	0.011	-	-	0.09 0.124 0.069	0.027	-	-
HCM Control Delay (s)	8.1	0.1	-	13.2 16.4 10.8	8.1	0.1	-
HCM Lane LOS	A	A	-	B C B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3 0.4 0.2	0.1	-	-

Queues

7: University Drive & Whitehead Street/Democracy Lane

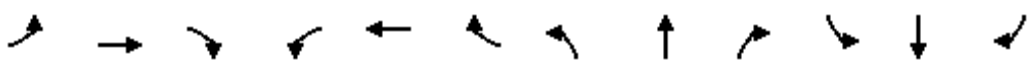
Timing Plan: PM Peak

	→	↘	←	↑	↓
Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	111	74	99	351	332
v/c Ratio	0.24	0.13	0.23	0.26	0.23
Control Delay	15.3	6.0	14.9	11.3	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	15.3	6.0	14.9	11.3	11.3
Queue Length 50th (ft)	11	0	10	17	16
Queue Length 95th (ft)	79	28	70	92	87
Internal Link Dist (ft)	245		249	117	232
Turn Bay Length (ft)					
Base Capacity (vph)	1169	1285	1074	2963	3046
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.09	0.06	0.09	0.12	0.11
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

7: University Drive & Whitehead Street/Democracy Lane

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↩	↩		↩			↩			↩	↩
Traffic Volume (vph)	51	47	65	57	21	9	27	251	31	13	258	21
Future Volume (vph)	51	47	65	57	21	9	27	251	31	13	258	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0			5.0			5.0	
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95	
Frpb, ped/bikes		1.00	0.97		1.00			1.00			1.00	
Flpb, ped/bikes		1.00	1.00		0.99			1.00			1.00	
Frt		1.00	0.85		0.99			0.99			0.99	
Flt Protected		0.97	1.00		0.97			1.00			1.00	
Satd. Flow (prot)		1759	1535		1708			3455			3442	
Flt Permitted		0.78	1.00		0.74			0.90			0.93	
Satd. Flow (perm)		1414	1535		1298			3123			3203	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	58	53	74	65	24	10	31	285	35	15	293	24
RTOR Reduction (vph)	0	0	60	0	4	0	0	9	0	0	7	0
Lane Group Flow (vph)	0	111	14	0	95	0	0	342	0	0	325	0
Confl. Peds. (#/hr)	3		12	12		3	12		18	18		12
Heavy Vehicles (%)	6%	4%	2%	2%	14%	2%	2%	2%	2%	2%	2%	19%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		
Actuated Green, G (s)		6.7	6.7		6.7			11.4			11.4	
Effective Green, g (s)		6.7	6.7		6.7			11.4			11.4	
Actuated g/C Ratio		0.19	0.19		0.19			0.32			0.32	
Clearance Time (s)		6.0	6.0		6.0			5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		269	293		247			1014			1040	
v/s Ratio Prot												
v/s Ratio Perm		c0.08	0.01		0.07			c0.11			0.10	
v/c Ratio		0.41	0.05		0.38			0.34			0.31	
Uniform Delay, d1		12.5	11.6		12.4			9.0			8.9	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		1.0	0.1		1.0			0.2			0.2	
Delay (s)		13.5	11.7		13.4			9.2			9.1	
Level of Service		B	B		B			A			A	
Approach Delay (s)		12.8			13.4			9.2			9.1	
Approach LOS		B			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			10.3									
HCM 2000 Volume to Capacity ratio			0.33									
Actuated Cycle Length (s)			35.1									
Intersection Capacity Utilization			46.3%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology does not support exclusive ped or hold phases.

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	203	16	14	152	0	9	0	26	4	0	12
Future Vol, veh/h	1	203	16	14	152	0	9	0	26	4	0	12
Conflicting Peds, #/hr	2	0	0	0	0	2	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	13	7	3	2	2	2	2	2	2	2
Mvmt Flow	1	226	18	16	169	0	10	0	29	4	0	13
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	171	0	0	244	0	0	446	440	235	455	449	172
Stage 1	-	-	-	-	-	-	237	237	-	203	203	-
Stage 2	-	-	-	-	-	-	209	203	-	252	246	-
Critical Hdwy	4.12	-	-	4.17	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.263	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1406	-	-	1293	-	-	523	511	804	515	505	872
Stage 1	-	-	-	-	-	-	766	709	-	799	733	-
Stage 2	-	-	-	-	-	-	793	733	-	752	703	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1403	-	-	1293	-	-	508	502	804	490	496	870
Mov Cap-2 Maneuver	-	-	-	-	-	-	508	502	-	490	496	-
Stage 1	-	-	-	-	-	-	765	708	-	797	721	-
Stage 2	-	-	-	-	-	-	769	721	-	724	702	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.7			10.5			10.1		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	699	1403	-	-	1293	-	-	729				
HCM Lane V/C Ratio	0.056	0.001	-	-	0.012	-	-	0.024				
HCM Control Delay (s)	10.5	7.6	0	-	7.8	0	-	10.1				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1				

Queues

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: PM Peak



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	177	66	14	29	49	429	18	19	659
v/c Ratio	0.47	0.17	0.08	0.16	0.13	0.57	0.03	0.05	0.53
Control Delay	34.8	15.3	41.5	27.4	13.0	23.4	0.1	12.8	22.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.8	15.3	41.5	27.4	13.0	23.4	0.1	12.8	22.2
Queue Length 50th (ft)	78	7	6	5	12	136	0	5	142
Queue Length 95th (ft)	172	46	29	35	35	338	0	18	234
Internal Link Dist (ft)		305		220		864			293
Turn Bay Length (ft)							230	150	
Base Capacity (vph)	884	851	710	690	566	1501	1103	597	2724
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.08	0.02	0.04	0.09	0.29	0.02	0.03	0.24
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	172	17	47	14	11	17	48	416	17	18	532	108
Future Volume (vph)	172	17	47	14	11	17	48	416	17	18	532	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		7.3	7.3		6.9	6.9	6.9	6.9	6.9	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00	0.93	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	
Frt	1.00	0.89		1.00	0.91		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1752	1642		1687	1621		1768	1863	1419	1755	3382	
Flt Permitted	0.95	1.00		0.95	1.00		0.31	1.00	1.00	0.39	1.00	
Satd. Flow (perm)	1752	1642		1687	1621		574	1863	1419	716	3382	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	177	18	48	14	11	18	49	429	18	19	548	111
RTOR Reduction (vph)	0	39	0	0	17	0	0	0	11	0	11	0
Lane Group Flow (vph)	177	27	0	14	12	0	49	429	7	19	648	0
Confl. Peds. (#/hr)	3		3	3		3	6		26	26		6
Heavy Vehicles (%)	3%	2%	2%	7%	9%	2%	2%	2%	6%	2%	3%	6%
Turn Type	Split	NA		Split	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases							6		6	2		
Actuated Green, G (s)	15.0	15.0		3.4	3.4		31.9	28.3	28.3	28.7	26.7	
Effective Green, g (s)	15.0	15.0		3.4	3.4		31.9	28.3	28.3	28.7	26.7	
Actuated g/C Ratio	0.20	0.20		0.04	0.04		0.42	0.37	0.37	0.38	0.35	
Clearance Time (s)	6.5	6.5		7.3	7.3		6.9	6.9	6.9	6.9	6.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	344	322		75	72		296	690	526	296	1183	
v/s Ratio Prot	c0.10	0.02		c0.01	0.01		c0.01	c0.23		0.00	0.19	
v/s Ratio Perm							0.06		0.00	0.02		
v/c Ratio	0.51	0.09		0.19	0.16		0.17	0.62	0.01	0.06	0.55	
Uniform Delay, d1	27.4	25.0		35.1	35.1		13.6	19.6	15.2	15.3	19.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.3	0.1		1.2	1.1		0.3	1.7	0.0	0.1	0.5	
Delay (s)	28.7	25.2		36.3	36.2		13.9	21.4	15.2	15.4	20.5	
Level of Service	C	C		D	D		B	C	B	B	C	
Approach Delay (s)		27.7			36.2			20.4			20.3	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			22.1			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			76.3			Sum of lost time (s)			27.6			
Intersection Capacity Utilization			59.6%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	172	17	47	14	11	17	48	416	17	18	532	108
Future Volume (veh/h)	172	17	47	14	11	17	48	416	17	18	532	108
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.99		0.96	0.98		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	1870	1870	1796	1767	1870	1870	1870	1811	1870	1856	1811
Adj Flow Rate, veh/h	177	18	48	14	11	18	49	429	18	19	548	111
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	2	2	7	9	2	2	2	6	2	3	6
Cap, veh/h	259	66	175	88	31	50	309	615	484	277	884	178
Arrive On Green	0.15	0.15	0.15	0.05	0.05	0.05	0.05	0.33	0.33	0.02	0.31	0.31
Sat Flow, veh/h	1767	448	1193	1711	598	979	1781	1870	1474	1781	2898	584
Grp Volume(v), veh/h	177	0	66	14	0	29	49	429	18	19	332	327
Grp Sat Flow(s),veh/h/ln	1767	0	1641	1711	0	1578	1781	1870	1474	1781	1763	1720
Q Serve(g_s), s	5.8	0.0	2.2	0.5	0.0	1.1	1.1	12.2	0.5	0.4	9.9	10.0
Cycle Q Clear(g_c), s	5.8	0.0	2.2	0.5	0.0	1.1	1.1	12.2	0.5	0.4	9.9	10.0
Prop In Lane	1.00		0.73	1.00		0.62	1.00		1.00	1.00		0.34
Lane Grp Cap(c), veh/h	259	0	241	88	0	81	309	615	484	277	538	525
V/C Ratio(X)	0.68	0.00	0.27	0.16	0.00	0.36	0.16	0.70	0.04	0.07	0.62	0.62
Avail Cap(c_a), veh/h	866	0	804	699	0	644	663	1833	1445	674	1728	1685
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.8	0.0	23.2	27.8	0.0	28.1	14.1	17.9	14.0	15.0	18.2	18.3
Incr Delay (d2), s/veh	3.2	0.0	0.6	0.8	0.0	2.7	0.2	1.4	0.0	0.1	1.2	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	2.6	0.0	0.9	0.2	0.0	0.5	0.4	5.0	0.2	0.2	3.8	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.9	0.0	23.8	28.6	0.0	30.7	14.4	19.3	14.0	15.1	19.4	19.5
LnGrp LOS	C	A	C	C	A	C	B	B	B	B	B	B
Approach Vol, veh/h	243			43			496			678		
Approach Delay, s/veh	26.8			30.0			18.7			19.3		
Approach LOS	C			C			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.7	25.6		15.5	8.3	27.0		10.4				
Change Period (Y+Rc), s	* 6.9	* 6.9		6.5	* 6.9	* 6.9		7.3				
Max Green Setting (Gmax), s	* 15	* 60		30.0	* 15	* 60		25.0				
Max Q Clear Time (g_c+I1), s	3.1	12.0		7.8	2.4	14.2		3.1				
Green Ext Time (p_c), s	0.1	4.8		0.9	0.0	3.1		0.1				

Intersection Summary

HCM 6th Ctrl Delay	20.7
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Appendix G – Intersection Analysis Worksheets – 2028 Future without Development

HCM 6th TWSC
1: Old Lee Highway & Plaza Drive

Timing Plan: AM Peak

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗	↗	↗
Traffic Vol, veh/h	0	7	0	574	433	4
Future Vol, veh/h	0	7	0	574	433	4
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	-	-	-	120
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	14	2	2	6	2
Mvmt Flow	0	8	0	624	471	4
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	236	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.18	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.44	-	-	-	-
Pot Cap-1 Maneuver	0	730	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	730	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 730		-	-		
HCM Lane V/C Ratio	- 0.01		-	-		
HCM Control Delay (s)	- 10		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0		-	-		

Queues

2: Old Lee Highway & FFX Commons

Timing Plan: AM Peak

									
Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	15	12	1	35	609	13	15	450	12
v/c Ratio	0.03	0.02	0.00	0.04	0.20	0.01	0.02	0.18	0.01
Control Delay	15.4	0.1	0.0	2.8	4.2	0.0	3.3	6.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.4	0.1	0.0	2.8	4.2	0.0	3.3	6.2	0.0
Queue Length 50th (ft)	1	0	0	0	0	0	1	0	0
Queue Length 95th (ft)	17	0	0	11	113	0	7	86	0
Internal Link Dist (ft)	124		135		259			157	
Turn Bay Length (ft)				120			120		
Base Capacity (vph)	1663	1425	1489	1389	3095	1411	1382	3008	1411
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.01	0.00	0.03	0.20	0.01	0.01	0.15	0.01
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

2: Old Lee Highway & FFX Commons

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔		↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	13	1	11	0	0	1	32	560	12	14	414	11
Future Volume (vph)	13	1	11	0	0	1	32	560	12	14	414	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8		6.8		6.8	6.8	6.8	6.8	6.8	6.8
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		0.86		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1780	1583		1611		1770	3505	1583	1770	3406	1583
Flt Permitted		1.00	1.00		1.00		0.46	1.00	1.00	0.42	1.00	1.00
Satd. Flow (perm)		1863	1583		1611		857	3505	1583	785	3406	1583
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)	14	1	12	0	0	1	35	609	13	15	450	12
RTOR Reduction (vph)	0	0	12	0	1	0	0	0	7	0	0	7
Lane Group Flow (vph)	0	15	0	0	0	0	35	609	6	15	450	5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	6%	2%
Turn Type	Perm	NA	Perm		NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4			2		2	6		6
Actuated Green, G (s)		0.8	0.8		0.8		21.9	19.9	19.9	19.3	18.6	18.6
Effective Green, g (s)		0.8	0.8		0.8		21.9	19.9	19.9	19.3	18.6	18.6
Actuated g/C Ratio		0.02	0.02		0.02		0.52	0.48	0.48	0.46	0.44	0.44
Clearance Time (s)		6.8	6.8		6.8		6.8	6.8	6.8	6.8	6.8	6.8
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		35	30		30		492	1668	753	378	1515	704
v/s Ratio Prot					0.00		c0.00	c0.17		0.00	0.13	
v/s Ratio Perm		c0.01	0.00				0.03		0.00	0.02		0.00
v/c Ratio		0.43	0.01		0.00		0.07	0.37	0.01	0.04	0.30	0.01
Uniform Delay, d1		20.3	20.1		20.1		4.9	6.9	5.8	6.1	7.4	6.5
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		8.2	0.1		0.0		0.1	0.1	0.0	0.0	0.1	0.0
Delay (s)		28.5	20.2		20.1		4.9	7.1	5.8	6.2	7.5	6.5
Level of Service		C	C		C		A	A	A	A	A	A
Approach Delay (s)		24.8			20.1			6.9			7.5	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			7.6									
HCM 2000 Volume to Capacity ratio			0.36									
Actuated Cycle Length (s)			41.8							20.4		
Intersection Capacity Utilization			44.1%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: Old Lee Highway & FFX Commons

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↩	↩		↩		↩	↩	↩	↩	↩	↩
Traffic Volume (veh/h)	13	1	11	0	0	1	32	560	12	14	414	11
Future Volume (veh/h)	13	1	11	0	0	1	32	560	12	14	414	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1870	1870	1870	1870	1870	1870	1870	1856	1870	1870	1811	1870
Adj Flow Rate, veh/h	14	1	12	0	0	1	35	609	13	15	450	12
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, %	2	2	2	2	2	2	2	3	2	2	6	2
Cap, veh/h	242	4	74	0	0	74	532	1438	647	448	1330	613
Arrive On Green	0.05	0.05	0.05	0.00	0.00	0.05	0.04	0.41	0.41	0.02	0.39	0.39
Sat Flow, veh/h	1326	95	1585	0	0	1585	1781	3526	1585	1781	3441	1585
Grp Volume(v), veh/h	15	0	12	0	0	1	35	609	13	15	450	12
Grp Sat Flow(s),veh/h/ln	1421	0	1585	0	0	1585	1781	1763	1585	1781	1721	1585
Q Serve(g_s), s	0.4	0.0	0.3	0.0	0.0	0.0	0.4	4.8	0.2	0.2	3.6	0.2
Cycle Q Clear(g_c), s	0.4	0.0	0.3	0.0	0.0	0.0	0.4	4.8	0.2	0.2	3.6	0.2
Prop In Lane	0.93		1.00	0.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	246	0	74	0	0	74	532	1438	647	448	1330	613
V/C Ratio(X)	0.06	0.00	0.16	0.00	0.00	0.01	0.07	0.42	0.02	0.03	0.34	0.02
Avail Cap(c_a), veh/h	1329	0	1267	0	0	1267	1378	2726	1226	1332	2661	1226
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	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.8	0.0	17.8	0.0	0.0	17.6	6.7	8.2	6.9	7.1	8.4	7.4
Incr Delay (d2), s/veh	0.1	0.0	1.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.1	0.0
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	0.1	0.0	0.1	0.0	0.0	0.0	0.1	1.3	0.0	0.1	1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.9	0.0	18.8	0.0	0.0	17.7	6.7	8.4	6.9	7.1	8.5	7.4
LnGrp LOS	B	A	B	A	A	B	A	A	A	A	A	A
Approach Vol, veh/h		27			1			657			477	
Approach Delay, s/veh		18.3			17.7			8.3			8.5	
Approach LOS		B			B			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	22.6		8.6	8.4	21.8		8.6				
Change Period (Y+Rc), s	* 6.8	* 6.8		* 6.8	* 6.8	* 6.8		* 6.8				
Max Green Setting (Gmax), s	* 20	* 30		* 31	* 20	* 30		* 31				
Max Q Clear Time (g_c+I1), s	2.2	6.8		2.0	2.4	5.6		2.4				
Green Ext Time (p_c), s	0.0	4.4		0.0	0.0	3.1		0.1				

Intersection Summary

HCM 6th Ctrl Delay	8.6
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
4: Old Lee Highway

Timing Plan: AM Peak

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗	↗↗	↗
Traffic Vol, veh/h	0	0	0	604	425	0
Future Vol, veh/h	0	0	0	604	425	0
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	-	-	-	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	6	2
Mvmt Flow	0	0	0	657	462	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	231	-	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	771	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	771	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	-	-	-	-		
HCM Lane V/C Ratio	-	-	-	-		
HCM Control Delay (s)	-	0	-	-		
HCM Lane LOS	-	A	-	-		
HCM 95th %tile Q(veh)	-	-	-	-		

HCM 6th TWSC
5: University Drive & Driveway

Timing Plan: AM Peak

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	13	324	206	5
Future Vol, veh/h	0	1	13	324	206	5
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	-	50	-	-	-
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	1	14	352	224	5
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	607	227	229	0	-	0
Stage 1	227	-	-	-	-	-
Stage 2	380	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	460	812	1339	-	-	-
Stage 1	811	-	-	-	-	-
Stage 2	691	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	455	812	1339	-	-	-
Mov Cap-2 Maneuver	544	-	-	-	-	-
Stage 1	803	-	-	-	-	-
Stage 2	691	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.4	0.3		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1339	-	812	-	-	
HCM Lane V/C Ratio	0.011	-	0.001	-	-	
HCM Control Delay (s)	7.7	-	9.4	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

HCM 6th TWSC
6: University Drive & 7-11 Entrance

Timing Plan: AM Peak

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕		↕	↕	
Traffic Vol, veh/h	5	0	15	16	0	6	10	284	30	12	180	12
Future Vol, veh/h	5	0	15	16	0	6	10	284	30	12	180	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	10	2	3	2	4	2
Mvmt Flow	5	0	16	17	0	7	11	309	33	13	196	13

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	580	593	203	585	583	326	209	0	0	342	0	0
Stage 1	229	229	-	348	348	-	-	-	-	-	-	-
Stage 2	351	364	-	237	235	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.2	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.29	-	-	2.218	-	-
Pot Cap-1 Maneuver	426	418	838	422	424	715	1316	-	-	1217	-	-
Stage 1	774	715	-	668	634	-	-	-	-	-	-	-
Stage 2	666	624	-	766	710	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	416	410	838	408	416	715	1316	-	-	1217	-	-
Mov Cap-2 Maneuver	416	410	-	408	416	-	-	-	-	-	-	-
Stage 1	768	707	-	663	629	-	-	-	-	-	-	-
Stage 2	654	619	-	743	702	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.6		13.1		0.2		0.5	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1316	-	-	668 408 715 1217	-	-	-
HCM Lane V/C Ratio	0.008	-	-	0.033 0.043 0.009 0.011	-	-	-
HCM Control Delay (s)	7.8	-	-	10.6 14.2 10.1 8	-	-	-
HCM Lane LOS	A	-	-	B B B A	-	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1 0.1 0 0	-	-	-

Queues

7: University Drive & Whitehead Street/Democracy Lane

Timing Plan: AM Peak

							
Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	127	32	38	8	315	5	179
v/c Ratio	0.31	0.06	0.09	0.02	0.43	0.01	0.30
Control Delay	18.3	3.0	15.4	12.9	14.1	13.0	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.3	3.0	15.4	12.9	14.1	13.0	13.5
Queue Length 50th (ft)	16	0	4	1	36	1	19
Queue Length 95th (ft)	105	10	38	12	200	9	118
Internal Link Dist (ft)	232		226		127		218
Turn Bay Length (ft)				50		150	
Base Capacity (vph)	947	1138	952	1104	1706	944	1389
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	0.13	0.03	0.04	0.01	0.18	0.01	0.13
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

7: University Drive & Whitehead Street/Democracy Lane

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	17	29	22	9	4	7	271	18	5	154	11
Future Volume (vph)	100	17	29	22	9	4	7	271	18	5	154	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.96		1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00		0.99		1.00	1.00		0.99	1.00	
Frt		1.00	0.85		0.99		1.00	0.99		1.00	0.99	
Flt Protected		0.96	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1675	1506		1687		1765	1842		1743	1498	
Flt Permitted		0.73	1.00		0.73		0.64	1.00		0.56	1.00	
Satd. Flow (perm)		1274	1506		1277		1197	1842		1023	1498	
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)	109	18	32	24	10	4	8	295	20	5	167	12
RTOR Reduction (vph)	0	0	25	0	3	0	0	3	0	0	3	0
Lane Group Flow (vph)	0	127	7	0	35	0	8	312	0	5	176	0
Confl. Peds. (#/hr)	1		8	8		1	3		7	7		3
Heavy Vehicles (%)	7%	18%	3%	5%	11%	2%	2%	2%	2%	3%	27%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		
Actuated Green, G (s)		8.1	8.1		8.1		14.8	14.8		14.8	14.8	
Effective Green, g (s)		8.1	8.1		8.1		14.8	14.8		14.8	14.8	
Actuated g/C Ratio		0.20	0.20		0.20		0.37	0.37		0.37	0.37	
Clearance Time (s)		6.0	6.0		6.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		259	306		259		445	684		380	557	
v/s Ratio Prot							c0.17				0.12	
v/s Ratio Perm		c0.10	0.00		0.03		0.01			0.00		
v/c Ratio		0.49	0.02		0.13		0.02	0.46		0.01	0.32	
Uniform Delay, d1		14.0	12.7		13.0		7.9	9.5		7.9	8.9	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.5	0.0		0.2		0.0	0.5		0.0	0.3	
Delay (s)		15.5	12.7		13.2		7.9	9.9		7.9	9.2	
Level of Service		B	B		B		A	A		A	A	
Approach Delay (s)		14.9			13.2			9.9			9.2	
Approach LOS		B			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			11.0									
HCM 2000 Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			39.8									
Intersection Capacity Utilization			35.1%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology does not support exclusive ped or hold phases.

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	22	267	6	10	175	10	2	1	6	0	0	4
Future Vol, veh/h	22	267	6	10	175	10	2	1	6	0	0	4
Conflicting Peds, #/hr	9	0	0	0	0	9	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	5	2	2	3	2	2	2	17	2	2	2
Mvmt Flow	24	290	7	11	190	11	2	1	7	0	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	210	0	0	297	0	0	562	574	294	573	572	205
Stage 1	-	-	-	-	-	-	342	342	-	227	227	-
Stage 2	-	-	-	-	-	-	220	232	-	346	345	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.37	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.453	3.518	4.018	3.318
Pot Cap-1 Maneuver	1361	-	-	1264	-	-	438	429	711	430	430	836
Stage 1	-	-	-	-	-	-	673	638	-	776	716	-
Stage 2	-	-	-	-	-	-	782	713	-	670	636	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1349	-	-	1264	-	-	425	412	711	412	413	829
Mov Cap-2 Maneuver	-	-	-	-	-	-	425	412	-	412	413	-
Stage 1	-	-	-	-	-	-	659	625	-	753	702	-
Stage 2	-	-	-	-	-	-	770	699	-	649	623	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.6			0.4			11.3			9.4		
HCM LOS							B			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	578	1349	-	-	1264	-	-	829
HCM Lane V/C Ratio	0.017	0.018	-	-	0.009	-	-	0.005
HCM Control Delay (s)	11.3	7.7	0	-	7.9	0	-	9.4
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0

Queues

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: AM Peak



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	249	44	14	54	67	546	5	17	584
v/c Ratio	0.61	0.11	0.10	0.30	0.18	0.73	0.01	0.06	0.52
Control Delay	42.9	20.1	51.7	25.4	15.3	30.9	0.0	14.8	25.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.9	20.1	51.7	25.4	15.3	30.9	0.0	14.8	25.6
Queue Length 50th (ft)	115	7	7	5	20	218	0	5	133
Queue Length 95th (ft)	284	44	33	52	51	515	0	19	226
Internal Link Dist (ft)		305		220		842			355
Turn Bay Length (ft)							230	150	
Base Capacity (vph)	698	680	565	570	512	1290	1110	466	2327
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.06	0.02	0.09	0.13	0.42	0.00	0.04	0.25
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	229	17	24	13	10	40	62	502	5	16	401	136
Future Volume (vph)	229	17	24	13	10	40	62	502	5	16	401	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		7.3	7.3		6.9	6.9	6.9	6.9	6.9	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00	0.97	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.91		1.00	0.88		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1719	1639		1671	1607		1769	1827	1534	1701	3281	
Flt Permitted	0.95	1.00		0.95	1.00		0.32	1.00	1.00	0.27	1.00	
Satd. Flow (perm)	1719	1639		1671	1607		600	1827	1534	478	3281	
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)	249	18	26	14	11	43	67	546	5	17	436	148
RTOR Reduction (vph)	0	20	0	0	41	0	0	0	3	0	22	0
Lane Group Flow (vph)	249	24	0	14	13	0	67	546	2	17	562	0
Confl. Peds. (#/hr)	3		1	1		3	1		5	5		1
Heavy Vehicles (%)	5%	6%	4%	8%	2%	2%	2%	4%	2%	6%	6%	3%
Turn Type	Split	NA		Split	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases							6		6	2		
Actuated Green, G (s)	20.8	20.8		5.3	5.3		42.1	36.2	36.2	34.5	32.4	
Effective Green, g (s)	20.8	20.8		5.3	5.3		42.1	36.2	36.2	34.5	32.4	
Actuated g/C Ratio	0.23	0.23		0.06	0.06		0.46	0.39	0.39	0.38	0.35	
Clearance Time (s)	6.5	6.5		7.3	7.3		6.9	6.9	6.9	6.9	6.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	388	370		96	92		349	718	603	207	1155	
v/s Ratio Prot	c0.14	0.01		0.01	c0.01		c0.01	c0.30		0.00	0.17	
v/s Ratio Perm							0.08		0.00	0.03		
v/c Ratio	0.64	0.06		0.15	0.15		0.19	0.76	0.00	0.08	0.49	
Uniform Delay, d1	32.2	28.0		41.2	41.2		14.6	24.1	16.9	19.2	23.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.6	0.1		0.7	0.7		0.3	4.8	0.0	0.2	0.3	
Delay (s)	35.8	28.0		41.9	41.9		14.8	28.9	16.9	19.3	23.6	
Level of Service	D	C		D	D		B	C	B	B	C	
Approach Delay (s)		34.7			41.9			27.3			23.5	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			27.8			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			92.0			Sum of lost time (s)			27.6			
Intersection Capacity Utilization			66.9%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	229	17	24	13	10	40	62	502	5	16	401	136
Future Volume (veh/h)	229	17	24	13	10	40	62	502	5	16	401	136
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1826	1811	1841	1781	1870	1870	1870	1841	1870	1811	1811	1856
Adj Flow Rate, veh/h	249	18	26	14	11	43	67	546	5	17	436	148
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, %	5	6	4	8	2	2	2	4	2	6	6	3
Cap, veh/h	316	121	175	102	20	77	342	655	560	204	820	276
Arrive On Green	0.18	0.18	0.18	0.06	0.06	0.06	0.05	0.36	0.36	0.02	0.32	0.32
Sat Flow, veh/h	1739	666	962	1697	330	1289	1781	1841	1574	1725	2523	848
Grp Volume(v), veh/h	249	0	44	14	0	54	67	546	5	17	296	288
Grp Sat Flow(s),veh/h/ln	1739	0	1628	1697	0	1618	1781	1841	1574	1725	1721	1651
Q Serve(g_s), s	9.9	0.0	1.6	0.6	0.0	2.3	1.8	19.6	0.1	0.5	10.1	10.3
Cycle Q Clear(g_c), s	9.9	0.0	1.6	0.6	0.0	2.3	1.8	19.6	0.1	0.5	10.1	10.3
Prop In Lane	1.00		0.59	1.00		0.80	1.00		1.00	1.00		0.51
Lane Grp Cap(c), veh/h	316	0	296	102	0	97	342	655	560	204	559	536
V/C Ratio(X)	0.79	0.00	0.15	0.14	0.00	0.56	0.20	0.83	0.01	0.08	0.53	0.54
Avail Cap(c_a), veh/h	722	0	676	587	0	560	620	1529	1307	528	1429	1371
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(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.2	0.0	24.8	32.2	0.0	33.0	15.4	21.3	15.0	17.8	19.9	19.9
Incr Delay (d2), s/veh	4.3	0.0	0.2	0.6	0.0	4.9	0.3	2.9	0.0	0.2	0.8	0.8
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	4.4	0.0	0.6	0.2	0.0	1.0	0.7	8.3	0.1	0.2	3.9	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.6	0.0	25.1	32.8	0.0	37.9	15.7	24.2	15.0	18.0	20.7	20.8
LnGrp LOS	C	A	C	C	A	D	B	C	B	B	C	C
Approach Vol, veh/h	293			68			618			601		
Approach Delay, s/veh	31.4			36.9			23.2			20.6		
Approach LOS	C			D			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.6	30.4		19.6	8.3	32.6		11.6				
Change Period (Y+Rc), s	* 6.9	* 6.9		6.5	* 6.9	* 6.9		7.3				
Max Green Setting (Gmax), s	* 15	* 60		30.0	* 15	* 60		25.0				
Max Q Clear Time (g_c+I1), s	3.8	12.3		11.9	2.5	21.6		4.3				
Green Ext Time (p_c), s	0.1	4.2		0.9	0.0	4.1		0.3				

Intersection Summary

HCM 6th Ctrl Delay	24.3
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
1: Old Lee Highway

Timing Plan: PM Peak

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗	↗↗	↗
Traffic Vol, veh/h	0	31	0	503	612	7
Future Vol, veh/h	0	31	0	503	612	7
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	-	-	-	120
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	3	2
Mvmt Flow	0	34	0	547	665	8
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	333	-	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	663	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	663	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.7	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 663		-	-		
HCM Lane V/C Ratio	- 0.051		-	-		
HCM Control Delay (s)	- 10.7		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0.2		-	-		

Queues

2: Old Lee Highway

Timing Plan: PM Peak

									
Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	45	76	80	67	490	12	16	625	47
v/c Ratio	0.25	0.23	0.38	0.11	0.21	0.01	0.03	0.31	0.05
Control Delay	29.3	4.4	29.7	5.0	6.8	0.0	5.1	11.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.3	4.4	29.7	5.0	6.8	0.0	5.1	11.4	0.1
Queue Length 50th (ft)	17	0	27	8	34	0	2	85	0
Queue Length 95th (ft)	45	18	66	22	100	0	8	140	0
Internal Link Dist (ft)	173		199		207			142	
Turn Bay Length (ft)				120			120		
Base Capacity (vph)	641	857	710	831	2382	1103	895	2028	938
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.09	0.11	0.08	0.21	0.01	0.02	0.31	0.05
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

2: Old Lee Highway

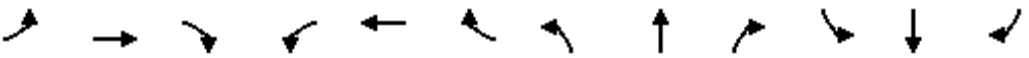
Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	5	71	54	10	10	62	456	11	15	581	44
Future Volume (vph)	37	5	71	54	10	10	62	456	11	15	581	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8		6.8		6.8	6.8	6.8	6.8	6.8	6.8
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.97		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1734	1568		1764		1770	3539	1583	1770	3505	1538
Flt Permitted		0.69	1.00		0.76		0.38	1.00	1.00	0.47	1.00	1.00
Satd. Flow (perm)		1256	1568		1384		702	3539	1583	881	3505	1538
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	40	5	76	58	11	11	67	490	12	16	625	47
RTOR Reduction (vph)	0	0	68	0	7	0	0	0	5	0	0	22
Lane Group Flow (vph)	0	45	8	0	73	0	67	490	7	16	625	25
Heavy Vehicles (%)	3%	20%	3%	2%	2%	2%	2%	2%	2%	2%	3%	5%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4			2		2	6		6
Actuated Green, G (s)		7.3	7.3		7.3		44.5	40.1	40.1	37.9	36.8	36.8
Effective Green, g (s)		7.3	7.3		7.3		44.5	40.1	40.1	37.9	36.8	36.8
Actuated g/C Ratio		0.11	0.11		0.11		0.65	0.58	0.58	0.55	0.53	0.53
Clearance Time (s)		6.8	6.8		6.8		6.8	6.8	6.8	6.8	6.8	6.8
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		133	166		146		521	2059	921	498	1872	821
v/s Ratio Prot							c0.01	c0.14		0.00	c0.18	
v/s Ratio Perm		0.04	0.01		c0.05		0.07		0.00	0.02		0.02
v/c Ratio		0.34	0.05		0.50		0.13	0.24	0.01	0.03	0.33	0.03
Uniform Delay, d1		28.6	27.7		29.1		4.6	7.0	6.0	7.0	9.1	7.6
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		1.5	0.1		2.7		0.1	0.1	0.0	0.0	0.5	0.1
Delay (s)		30.1	27.8		31.7		4.7	7.0	6.0	7.1	9.6	7.7
Level of Service		C	C		C		A	A	A	A	A	A
Approach Delay (s)		28.6			31.7			6.8			9.4	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			11.2				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.34									
Actuated Cycle Length (s)			68.9				Sum of lost time (s)			20.4		
Intersection Capacity Utilization			48.0%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: Old Lee Highway

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↩	↩		↩		↩	↩	↩	↩	↩	↩
Traffic Volume (veh/h)	37	5	71	54	10	10	62	456	11	15	581	44
Future Volume (veh/h)	37	5	71	54	10	10	62	456	11	15	581	44
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1604	1856	1870	1870	1870	1870	1870	1870	1870	1856	1826
Adj Flow Rate, veh/h	40	5	76	58	11	11	67	490	12	16	625	47
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	20	3	2	2	2	2	2	2	2	3	5
Cap, veh/h	246	23	176	189	36	20	515	1890	843	563	1747	767
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.06	0.53	0.53	0.02	0.50	0.50
Sat Flow, veh/h	1199	209	1572	777	322	175	1781	3554	1585	1781	3526	1547
Grp Volume(v), veh/h	45	0	76	80	0	0	67	490	12	16	625	47
Grp Sat Flow(s),veh/h/ln	1408	0	1572	1274	0	0	1781	1777	1585	1781	1763	1547
Q Serve(g_s), s	0.0	0.0	2.7	2.3	0.0	0.0	1.1	4.5	0.2	0.3	6.6	1.0
Cycle Q Clear(g_c), s	1.6	0.0	2.7	3.9	0.0	0.0	1.1	4.5	0.2	0.3	6.6	1.0
Prop In Lane	0.89		1.00	0.72		0.14	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	270	0	176	245	0	0	515	1890	843	563	1747	767
V/C Ratio(X)	0.17	0.00	0.43	0.33	0.00	0.00	0.13	0.26	0.01	0.03	0.36	0.06
Avail Cap(c_a), veh/h	761	0	805	808	0	0	1004	1890	843	1117	1747	767
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(l)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.6	0.0	25.1	25.7	0.0	0.0	6.7	7.7	6.7	7.2	9.4	7.9
Incr Delay (d2), s/veh	0.3	0.0	1.7	0.8	0.0	0.0	0.1	0.1	0.0	0.0	0.6	0.2
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	1.1	1.1	0.0	0.0	0.3	1.4	0.1	0.1	2.3	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.9	0.0	26.8	26.5	0.0	0.0	6.8	7.8	6.7	7.3	9.9	8.1
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		121			80			569			688	
Approach Delay, s/veh		26.1			26.5			7.6			9.7	
Approach LOS		C			C			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	39.0		13.6	10.2	36.8		13.6				
Change Period (Y+Rc), s	* 6.8	* 6.8		* 6.8	* 6.8	* 6.8		* 6.8				
Max Green Setting (Gmax), s	* 20	* 30		* 31	* 20	* 30		* 31				
Max Q Clear Time (g_c+I1), s	2.3	6.5		5.9	3.1	8.6		4.7				
Green Ext Time (p_c), s	0.0	3.4		0.4	0.1	4.5		0.5				

Intersection Summary

HCM 6th Ctrl Delay 11.2

HCM 6th LOS B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
4: Old Lee Highway

Timing Plan: PM Peak

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗	↗	↗
Traffic Vol, veh/h	0	0	0	529	709	0
Future Vol, veh/h	0	0	0	529	709	0
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	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	3	3	2
Mvmt Flow	0	0	0	557	746	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	373	-	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	624	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	624	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	-		-	-		
HCM Lane V/C Ratio	-		-	-		
HCM Control Delay (s)	-		0	-		
HCM Lane LOS	-		A	-		
HCM 95th %tile Q(veh)	-		-	-		

HCM 6th TWSC
5: University Drive & Driveway

Timing Plan: PM Peak

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	18	1	358	410	1
Future Vol, veh/h	3	18	1	358	410	1
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	-	50	-	-	-
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	3	20	1	389	446	1

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	838	447	447	0	-	0
Stage 1	447	-	-	-	-	-
Stage 2	391	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	336	612	1113	-	-	-
Stage 1	644	-	-	-	-	-
Stage 2	683	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	336	612	1113	-	-	-
Mov Cap-2 Maneuver	455	-	-	-	-	-
Stage 1	643	-	-	-	-	-
Stage 2	683	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1113	-	583	-	-
HCM Lane V/C Ratio	0.001	-	0.039	-	-
HCM Control Delay (s)	8.2	-	11.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 6th TWSC
6: University Drive

Timing Plan: PM Peak

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕		↕	↕	
Traffic Vol, veh/h	16	3	21	41	6	36	12	275	74	30	348	21
Future Vol, veh/h	16	3	21	41	6	36	12	275	74	30	348	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	3	2	2
Mvmt Flow	17	3	23	45	7	39	13	299	80	33	378	23

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	844	861	390	834	832	339	401	0	0	379	0	0
Stage 1	456	456	-	365	365	-	-	-	-	-	-	-
Stage 2	388	405	-	469	467	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.13	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.227	-	-
Pot Cap-1 Maneuver	283	293	658	288	305	703	1158	-	-	1174	-	-
Stage 1	584	568	-	654	623	-	-	-	-	-	-	-
Stage 2	636	598	-	575	562	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	255	282	658	267	293	703	1158	-	-	1174	-	-
Mov Cap-2 Maneuver	255	282	-	267	293	-	-	-	-	-	-	-
Stage 1	578	552	-	647	616	-	-	-	-	-	-	-
Stage 2	588	591	-	536	546	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	15.7		16.4		0.3		0.6	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1158	-	-	380 267 586	1174	-	-
HCM Lane V/C Ratio	0.011	-	-	0.114 0.167 0.078	0.028	-	-
HCM Control Delay (s)	8.1	-	-	15.7 21.2 11.7	8.2	-	-
HCM Lane LOS	A	-	-	C C B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4 0.6 0.3	0.1	-	-

Queues

7: University Drive & Whitehead Street/Democracy Lane

Timing Plan: PM Peak

							
Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	106	71	95	29	325	14	318
v/c Ratio	0.24	0.14	0.24	0.06	0.37	0.03	0.36
Control Delay	17.6	6.9	17.1	12.0	12.5	11.9	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.6	6.9	17.1	12.0	12.5	11.9	12.5
Queue Length 50th (ft)	13	0	11	3	35	1	34
Queue Length 95th (ft)	88	32	79	27	193	16	189
Internal Link Dist (ft)	245		249		117		232
Turn Bay Length (ft)				50		150	
Base Capacity (vph)	1092	1179	999	962	1700	937	1695
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	0.10	0.06	0.10	0.03	0.19	0.01	0.19
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

7: University Drive & Whitehead Street/Democracy Lane

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	47	65	57	21	9	27	268	31	13	271	21
Future Volume (vph)	51	47	65	57	21	9	27	268	31	13	271	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.95		1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00		0.98		0.99	1.00		0.99	1.00	
Frt		1.00	0.85		0.99		1.00	0.98		1.00	0.99	
Flt Protected		0.97	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1757	1501		1692		1754	1826		1747	1816	
Flt Permitted		0.79	1.00		0.74		0.56	1.00		0.55	1.00	
Satd. Flow (perm)		1418	1501		1292		1039	1826		1018	1816	
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)	55	51	71	62	23	10	29	291	34	14	295	23
RTOR Reduction (vph)	0	0	58	0	4	0	0	4	0	0	3	0
Lane Group Flow (vph)	0	106	13	0	91	0	29	321	0	14	315	0
Confl. Peds. (#/hr)	3		12	12		3	12		18	18		12
Heavy Vehicles (%)	6%	4%	2%	2%	14%	2%	2%	2%	2%	2%	2%	19%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		
Actuated Green, G (s)		7.0	7.0		7.0		14.5	14.5		14.5	14.5	
Effective Green, g (s)		7.0	7.0		7.0		14.5	14.5		14.5	14.5	
Actuated g/C Ratio		0.18	0.18		0.18		0.38	0.38		0.38	0.38	
Clearance Time (s)		6.0	6.0		6.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		258	273		235		392	689		384	685	
v/s Ratio Prot							c0.18				0.17	
v/s Ratio Perm		c0.07	0.01		0.07		0.03			0.01		
v/c Ratio		0.41	0.05		0.39		0.07	0.47		0.04	0.46	
Uniform Delay, d1		13.9	12.9		13.8		7.7	9.0		7.5	9.0	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.1	0.1		1.1		0.1	0.5		0.0	0.5	
Delay (s)		14.9	13.0		14.9		7.7	9.5		7.6	9.5	
Level of Service		B	B		B		A	A		A	A	
Approach Delay (s)		14.2			14.9			9.4			9.4	
Approach LOS		B			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			10.8				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			38.4				Sum of lost time (s)			15.0		
Intersection Capacity Utilization			43.1%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology does not support exclusive ped or hold phases.

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	214	16	14	160	0	9	0	26	4	0	12
Future Vol, veh/h	1	214	16	14	160	0	9	0	26	4	0	12
Conflicting Peds, #/hr	2	0	0	0	0	2	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	13	7	3	2	2	2	2	2	2	2
Mvmt Flow	1	233	17	15	174	0	10	0	28	4	0	13
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	176	0	0	250	0	0	456	450	242	464	458	177
Stage 1	-	-	-	-	-	-	244	244	-	206	206	-
Stage 2	-	-	-	-	-	-	212	206	-	258	252	-
Critical Hdwy	4.12	-	-	4.17	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.263	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1400	-	-	1287	-	-	515	504	797	508	499	866
Stage 1	-	-	-	-	-	-	760	704	-	796	731	-
Stage 2	-	-	-	-	-	-	790	731	-	747	698	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1397	-	-	1287	-	-	501	496	797	484	491	864
Mov Cap-2 Maneuver	-	-	-	-	-	-	501	496	-	484	491	-
Stage 1	-	-	-	-	-	-	759	703	-	794	720	-
Stage 2	-	-	-	-	-	-	767	720	-	720	697	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.6			10.5			10.1		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	692	1397	-	-	1287	-	-	722				
HCM Lane V/C Ratio	0.055	0.001	-	-	0.012	-	-	0.024				
HCM Control Delay (s)	10.5	7.6	0	-	7.8	0	-	10.1				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1				

Queues

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: PM Peak



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	187	69	14	29	52	451	18	19	694
v/c Ratio	0.52	0.18	0.09	0.17	0.14	0.56	0.03	0.05	0.58
Control Delay	37.3	15.0	43.4	28.0	13.0	23.1	0.1	12.9	24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.3	15.0	43.4	28.0	13.0	23.1	0.1	12.9	24.1
Queue Length 50th (ft)	86	7	7	5	14	150	0	5	155
Queue Length 95th (ft)	187	47	29	36	38	366	0	18	254
Internal Link Dist (ft)		305		220		864			293
Turn Bay Length (ft)							230	150	
Base Capacity (vph)	872	839	650	633	540	1475	1086	600	2675
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.08	0.02	0.05	0.10	0.31	0.02	0.03	0.26
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	17	49	14	11	17	50	437	17	18	559	114
Future Volume (vph)	181	17	49	14	11	17	50	437	17	18	559	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		7.3	7.3		6.9	6.9	6.9	6.9	6.9	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00	0.93	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	
Frt	1.00	0.89		1.00	0.91		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1752	1638		1687	1621		1768	1863	1414	1754	3381	
Flt Permitted	0.95	1.00		0.95	1.00		0.27	1.00	1.00	0.40	1.00	
Satd. Flow (perm)	1752	1638		1687	1621		507	1863	1414	733	3381	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	187	18	51	14	11	18	52	451	18	19	576	118
RTOR Reduction (vph)	0	41	0	0	17	0	0	0	11	0	12	0
Lane Group Flow (vph)	187	28	0	14	12	0	52	451	7	19	682	0
Confl. Peds. (#/hr)	3		3	3		3	6		26	26		6
Heavy Vehicles (%)	3%	2%	2%	7%	9%	2%	2%	2%	6%	2%	3%	6%
Turn Type	Split	NA		Split	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases							6		6	2		
Actuated Green, G (s)	15.6	15.6		3.6	3.6		38.0	32.6	32.6	31.4	29.3	
Effective Green, g (s)	15.6	15.6		3.6	3.6		38.0	32.6	32.6	31.4	29.3	
Actuated g/C Ratio	0.19	0.19		0.04	0.04		0.47	0.40	0.40	0.39	0.36	
Clearance Time (s)	6.5	6.5		7.3	7.3		6.9	6.9	6.9	6.9	6.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	335	313		74	71		319	745	565	308	1215	
v/s Ratio Prot	c0.11	0.02		c0.01	0.01		c0.01	c0.24		0.00	0.20	
v/s Ratio Perm							0.06		0.01	0.02		
v/c Ratio	0.56	0.09		0.19	0.17		0.16	0.61	0.01	0.06	0.56	
Uniform Delay, d1	29.8	27.1		37.5	37.5		12.6	19.4	14.7	15.8	20.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.0	0.1		1.2	1.1		0.2	1.4	0.0	0.1	0.6	
Delay (s)	31.8	27.2		38.8	38.6		12.8	20.8	14.8	15.9	21.5	
Level of Service	C	C		D	D		B	C	B	B	C	
Approach Delay (s)		30.6			38.7			19.8			21.4	
Approach LOS		C			D			B			C	
Intersection Summary												
HCM 2000 Control Delay			22.9			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			81.5			Sum of lost time (s)			27.6			
Intersection Capacity Utilization			61.2%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	181	17	49	14	11	17	50	437	17	18	559	114
Future Volume (veh/h)	181	17	49	14	11	17	50	437	17	18	559	114
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.99		0.96	0.98		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	1870	1870	1796	1767	1870	1870	1870	1811	1870	1856	1811
Adj Flow Rate, veh/h	187	18	51	14	11	18	52	451	18	19	576	118
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	2	2	7	9	2	2	2	6	2	3	6
Cap, veh/h	269	65	184	87	30	50	301	626	494	267	896	183
Arrive On Green	0.15	0.15	0.15	0.05	0.05	0.05	0.05	0.33	0.33	0.02	0.31	0.31
Sat Flow, veh/h	1767	427	1211	1711	598	979	1781	1870	1475	1781	2891	590
Grp Volume(v), veh/h	187	0	69	14	0	29	52	451	18	19	350	344
Grp Sat Flow(s),veh/h/ln	1767	0	1638	1711	0	1577	1781	1870	1475	1781	1763	1719
Q Serve(g_s), s	6.3	0.0	2.3	0.5	0.0	1.1	1.2	13.3	0.5	0.5	10.7	10.8
Cycle Q Clear(g_c), s	6.3	0.0	2.3	0.5	0.0	1.1	1.2	13.3	0.5	0.5	10.7	10.8
Prop In Lane	1.00		0.74	1.00		0.62	1.00		1.00	1.00		0.34
Lane Grp Cap(c), veh/h	269	0	249	87	0	80	301	626	494	267	546	533
V/C Ratio(X)	0.70	0.00	0.28	0.16	0.00	0.36	0.17	0.72	0.04	0.07	0.64	0.65
Avail Cap(c_a), veh/h	845	0	783	681	0	628	642	1788	1410	653	1685	1643
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.2	0.0	23.6	28.5	0.0	28.8	14.4	18.3	14.1	15.3	18.7	18.7
Incr Delay (d2), s/veh	3.2	0.0	0.6	0.9	0.0	2.7	0.3	1.6	0.0	0.1	1.3	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	2.8	0.0	0.9	0.2	0.0	0.5	0.5	5.4	0.2	0.2	4.2	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.5	0.0	24.2	29.4	0.0	31.5	14.6	19.9	14.1	15.4	19.9	20.0
LnGrp LOS	C	A	C	C	A	C	B	B	B	B	B	C
Approach Vol, veh/h	256			43			521			713		
Approach Delay, s/veh	27.3			30.8			19.1			19.8		
Approach LOS	C			C			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.9	26.3		16.0	8.3	27.9		10.5				
Change Period (Y+Rc), s	* 6.9	* 6.9		6.5	* 6.9	* 6.9		7.3				
Max Green Setting (Gmax), s	* 15	* 60		30.0	* 15	* 60		25.0				
Max Q Clear Time (g_c+I1), s	3.2	12.8		8.3	2.5	15.3		3.1				
Green Ext Time (p_c), s	0.1	5.1		0.9	0.0	3.3		0.1				

Intersection Summary

HCM 6th Ctrl Delay	21.2
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Appendix H – Intersection Analysis Worksheets – 2028 Future with Development (Full-Build - without Coffee Shop)

HCM 6th TWSC
1: Old Lee Highway & Plaza Drive

Timing Plan: AM Peak

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗	↗↗	↗
Traffic Vol, veh/h	0	18	0	575	431	3
Future Vol, veh/h	0	18	0	575	431	3
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	-	-	-	120
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	14	2	2	6	2
Mvmt Flow	0	20	0	625	468	3
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	234	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.18	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.44	-	-	-	-
Pot Cap-1 Maneuver	0	732	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	732	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	10.1	0	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	732	-	-		
HCM Lane V/C Ratio	-	0.027	-	-		
HCM Control Delay (s)	-	10.1	-	-		
HCM Lane LOS	-	B	-	-		
HCM 95th %tile Q(veh)	-	0.1	-	-		

Queues

2: Old Lee Highway & FFX Commons

Timing Plan: AM Peak

	→	↘	←	↙	↑	↗	↘	↓	↙
Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	15	13	1	33	609	13	15	462	10
v/c Ratio	0.03	0.03	0.00	0.05	0.23	0.01	0.02	0.18	0.01
Control Delay	15.5	0.1	0.0	4.6	6.2	0.0	4.8	6.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.5	0.1	0.0	4.6	6.2	0.0	4.8	6.2	0.0
Queue Length 50th (ft)	1	0	0	0	0	0	1	0	0
Queue Length 95th (ft)	17	0	0	11	114	0	7	88	0
Internal Link Dist (ft)	124		135		259			157	
Turn Bay Length (ft)				120			120		
Base Capacity (vph)	1659	1422	1487	1347	3088	1408	1342	3001	1408
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.01	0.00	0.02	0.20	0.01	0.01	0.15	0.01
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

2: Old Lee Highway & FFX Commons

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	0	12	0	0	1	30	560	12	14	425	9
Future Volume (vph)	14	0	12	0	0	1	30	560	12	14	425	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8		6.8		6.8	6.8	6.8	6.8	6.8	6.8
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		0.86		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.95	1.00		1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1770	1583		1611		1770	3505	1583	1770	3406	1583
Flt Permitted		1.00	1.00		1.00		0.48	1.00	1.00	0.42	1.00	1.00
Satd. Flow (perm)		1863	1583		1611		901	3505	1583	785	3406	1583
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)	15	0	13	0	0	1	33	609	13	15	462	10
RTOR Reduction (vph)	0	0	12	0	1	0	0	0	7	0	0	6
Lane Group Flow (vph)	0	15	1	0	0	0	33	609	6	15	462	4
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	6%	2%
Turn Type	Perm	NA	Perm		NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4			2		2	6		6
Actuated Green, G (s)		2.1	2.1		2.1		18.4	17.6	17.6	18.2	17.5	17.5
Effective Green, g (s)		2.1	2.1		2.1		18.4	17.6	17.6	18.2	17.5	17.5
Actuated g/C Ratio		0.05	0.05		0.05		0.45	0.43	0.43	0.45	0.43	0.43
Clearance Time (s)		6.8	6.8		6.8		6.8	6.8	6.8	6.8	6.8	6.8
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		95	81		82		423	1511	682	367	1460	678
v/s Ratio Prot					0.00		c0.00	c0.17		0.00	0.14	
v/s Ratio Perm		c0.01	0.00				0.03		0.00	0.02		0.00
v/c Ratio		0.16	0.01		0.00		0.08	0.40	0.01	0.04	0.32	0.01
Uniform Delay, d1		18.5	18.4		18.4		6.3	8.0	6.6	6.3	7.7	6.7
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.8	0.0		0.0		0.1	0.2	0.0	0.0	0.1	0.0
Delay (s)		19.3	18.4		18.4		6.3	8.2	6.6	6.4	7.8	6.7
Level of Service		B	B		B		A	A	A	A	A	A
Approach Delay (s)		18.9			18.4			8.0			7.8	
Approach LOS		B			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			8.2		HCM 2000 Level of Service					A		
HCM 2000 Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			40.8		Sum of lost time (s)					20.4		
Intersection Capacity Utilization			43.7%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: Old Lee Highway & FFX Commons

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	0	12	0	0	1	30	560	12	14	425	9
Future Volume (veh/h)	14	0	12	0	0	1	30	560	12	14	425	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1870	1870	1870	1870	1870	1870	1870	1856	1870	1870	1811	1870
Adj Flow Rate, veh/h	15	0	13	0	0	1	33	609	13	15	462	10
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, %	2	2	2	2	2	2	2	3	2	2	6	2
Cap, veh/h	253	0	77	0	0	77	523	1432	644	446	1331	613
Arrive On Green	0.05	0.00	0.05	0.00	0.00	0.05	0.04	0.41	0.41	0.02	0.39	0.39
Sat Flow, veh/h	1399	0	1585	0	0	1585	1781	3526	1585	1781	3441	1585
Grp Volume(v), veh/h	15	0	13	0	0	1	33	609	13	15	462	10
Grp Sat Flow(s),veh/h/ln	1399	0	1585	0	0	1585	1781	1763	1585	1781	1721	1585
Q Serve(g_s), s	0.4	0.0	0.3	0.0	0.0	0.0	0.4	4.8	0.2	0.2	3.7	0.2
Cycle Q Clear(g_c), s	0.4	0.0	0.3	0.0	0.0	0.0	0.4	4.8	0.2	0.2	3.7	0.2
Prop In Lane	1.00		1.00	0.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	253	0	77	0	0	77	523	1432	644	446	1331	613
V/C Ratio(X)	0.06	0.00	0.17	0.00	0.00	0.01	0.06	0.43	0.02	0.03	0.35	0.02
Avail Cap(c_a), veh/h	1317	0	1267	0	0	1267	1373	2728	1226	1331	2662	1226
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(l)	1.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.8	0.0	17.7	0.0	0.0	17.6	6.7	8.3	6.9	7.1	8.4	7.3
Incr Delay (d2), s/veh	0.1	0.0	1.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.2	0.0
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	0.1	0.0	0.1	0.0	0.0	0.0	0.1	1.3	0.0	0.1	1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.9	0.0	18.7	0.0	0.0	17.6	6.8	8.5	6.9	7.1	8.6	7.3
LnGrp LOS	B	A	B	A	A	B	A	A	A	A	A	A
Approach Vol, veh/h		28			1			655			487	
Approach Delay, s/veh		18.3			17.6			8.3			8.5	
Approach LOS		B			B			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	22.5		8.7	8.3	21.8		8.7				
Change Period (Y+Rc), s	* 6.8	* 6.8		* 6.8	* 6.8	* 6.8		* 6.8				
Max Green Setting (Gmax), s	* 20	* 30		* 31	* 20	* 30		* 31				
Max Q Clear Time (g_c+I1), s	2.2	6.8		2.0	2.4	5.7		2.4				
Green Ext Time (p_c), s	0.0	4.4		0.0	0.0	3.2		0.1				
Intersection Summary												
HCM 6th Ctrl Delay			8.7									
HCM 6th LOS			A									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th TWSC
4: Old Lee Highway

Timing Plan: AM Peak

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗	↗↗	↗
Traffic Vol, veh/h	0	0	0	602	437	0
Future Vol, veh/h	0	0	0	602	437	0
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	-	-	-	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	6	2
Mvmt Flow	0	0	0	654	475	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	238	-	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	763	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	763	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	-	-	-	-		
HCM Lane V/C Ratio	-	-	-	-		
HCM Control Delay (s)	-	0	-	-		
HCM Lane LOS	-	A	-	-		
HCM 95th %tile Q(veh)	-	-	-	-		

HCM 6th TWSC
5: University Drive & Street 1

Timing Plan: AM Peak

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	0	0	1	12	0	4	13	299	24	9	207	5
Future Vol, veh/h	0	0	1	12	0	4	13	299	24	9	207	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	1	13	0	4	14	325	26	10	225	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	616	627	228	614	616	338	230	0	0	351	0	0
Stage 1	248	248	-	366	366	-	-	-	-	-	-	-
Stage 2	368	379	-	248	250	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	403	400	811	404	406	704	1338	-	-	1208	-	-
Stage 1	756	701	-	653	623	-	-	-	-	-	-	-
Stage 2	652	615	-	756	700	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	395	393	811	398	399	704	1338	-	-	1208	-	-
Mov Cap-2 Maneuver	395	393	-	398	399	-	-	-	-	-	-	-
Stage 1	748	695	-	646	617	-	-	-	-	-	-	-
Stage 2	641	609	-	749	694	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.4	13.4	0.3	0.3
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1338	-	-	811	447	1208	-
HCM Lane V/C Ratio	0.011	-	-	0.001	0.039	0.008	-
HCM Control Delay (s)	7.7	-	-	9.4	13.4	8	-
HCM Lane LOS	A	-	-	A	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-

HCM 6th TWSC
6: University Drive & 7-11 Entrance

Timing Plan: AM Peak

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	15	10	293	206	12
Future Vol, veh/h	5	15	10	293	206	12
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	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	10	2	4	2
Mvmt Flow	5	16	11	318	224	13

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	571	231	237	0	-	0
Stage 1	231	-	-	-	-	-
Stage 2	340	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.2	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.29	-	-	-
Pot Cap-1 Maneuver	482	808	1284	-	-	-
Stage 1	807	-	-	-	-	-
Stage 2	721	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	478	808	1284	-	-	-
Mov Cap-2 Maneuver	563	-	-	-	-	-
Stage 1	800	-	-	-	-	-
Stage 2	721	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1284	-	729	-	-
HCM Lane V/C Ratio	0.008	-	0.03	-	-
HCM Control Delay (s)	7.8	-	10.1	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Queues

7: University Drive & Whitehead Street/Democracy Lane

Timing Plan: AM Peak

							
Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	127	32	88	8	317	15	176
v/c Ratio	0.33	0.06	0.20	0.02	0.43	0.04	0.29
Control Delay	18.7	3.0	13.1	12.9	14.2	12.9	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.7	3.0	13.1	12.9	14.2	12.9	13.5
Queue Length 50th (ft)	16	0	7	1	37	1	19
Queue Length 95th (ft)	106	10	62	12	202	18	117
Internal Link Dist (ft)	232		266		127		218
Turn Bay Length (ft)				50		150	
Base Capacity (vph)	899	1134	991	1107	1699	936	1388
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	0.03	0.09	0.01	0.19	0.02	0.13
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

7: University Drive & Whitehead Street/Democracy Lane

Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↱		↰	↱	
Traffic Volume (vph)	100	17	29	39	9	33	7	269	23	14	151	11
Future Volume (vph)	100	17	29	39	9	33	7	269	23	14	151	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.96		0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00		0.99		1.00	1.00		0.99	1.00	
Frt		1.00	0.85		0.94		1.00	0.99		1.00	0.99	
Flt Protected		0.96	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1675	1507		1650		1765	1837		1743	1499	
Flt Permitted		0.70	1.00		0.78		0.65	1.00		0.55	1.00	
Satd. Flow (perm)		1215	1507		1326		1200	1837		1017	1499	
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)	109	18	32	42	10	36	8	292	25	15	164	12
RTOR Reduction (vph)	0	0	25	0	23	0	0	3	0	0	3	0
Lane Group Flow (vph)	0	127	7	0	65	0	8	314	0	15	173	0
Confl. Peds. (#/hr)	1		8	8		1	3		7	7		3
Heavy Vehicles (%)	7%	18%	3%	5%	11%	2%	2%	2%	2%	3%	27%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		
Actuated Green, G (s)		8.2	8.2		8.2		14.9	14.9		14.9	14.9	
Effective Green, g (s)		8.2	8.2		8.2		14.9	14.9		14.9	14.9	
Actuated g/C Ratio		0.20	0.20		0.20		0.37	0.37		0.37	0.37	
Clearance Time (s)		6.0	6.0		6.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		249	308		271		447	684		378	558	
v/s Ratio Prot							c0.17				0.12	
v/s Ratio Perm		c0.10	0.00		0.05		0.01			0.01		
v/c Ratio		0.51	0.02		0.24		0.02	0.46		0.04	0.31	
Uniform Delay, d1		14.1	12.7		13.3		7.9	9.5		8.0	8.9	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.8	0.0		0.5		0.0	0.5		0.0	0.3	
Delay (s)		15.9	12.7		13.8		7.9	10.0		8.0	9.2	
Level of Service		B	B		B		A	A		A	A	
Approach Delay (s)		15.2			13.8			9.9			9.1	
Approach LOS		B			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			11.3				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			40.0				Sum of lost time (s)			15.0		
Intersection Capacity Utilization			36.1%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology does not support exclusive ped or hold phases.

Intersection

Int Delay, s/veh 4.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	40	14	12	35	46	37
Future Vol, veh/h	40	14	12	35	46	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
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	43	15	13	38	50	40

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	58
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1546
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1546
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	932	-	-	1546	-
HCM Lane V/C Ratio	0.097	-	-	0.008	-
HCM Control Delay (s)	9.3	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	22	271	6	16	176	10	2	1	23	0	0	4
Future Vol, veh/h	22	271	6	16	176	10	2	1	23	0	0	4
Conflicting Peds, #/hr	9	0	0	0	0	9	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	5	2	2	3	2	2	2	17	2	2	2
Mvmt Flow	24	295	7	17	191	11	2	1	25	0	0	4
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	211	0	0	302	0	0	580	592	299	600	590	206
Stage 1	-	-	-	-	-	-	347	347	-	240	240	-
Stage 2	-	-	-	-	-	-	233	245	-	360	350	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.37	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.453	3.518	4.018	3.318
Pot Cap-1 Maneuver	1360	-	-	1259	-	-	426	419	707	413	420	835
Stage 1	-	-	-	-	-	-	669	635	-	763	707	-
Stage 2	-	-	-	-	-	-	770	703	-	658	633	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1348	-	-	1259	-	-	412	401	707	383	402	828
Mov Cap-2 Maneuver	-	-	-	-	-	-	412	401	-	383	402	-
Stage 1	-	-	-	-	-	-	655	622	-	741	690	-
Stage 2	-	-	-	-	-	-	754	686	-	620	620	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.6			0.6			10.8			9.4		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	652	1348	-	-	1259	-	-	828				
HCM Lane V/C Ratio	0.043	0.018	-	-	0.014	-	-	0.005				
HCM Control Delay (s)	10.8	7.7	0	-	7.9	0	-	9.4				
HCM Lane LOS	B	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0				

Queues

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: AM Peak



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	271	44	14	54	67	547	5	17	588
v/c Ratio	0.63	0.10	0.10	0.31	0.18	0.73	0.01	0.06	0.53
Control Delay	42.8	19.8	52.3	25.8	16.0	32.1	0.0	15.2	26.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.8	19.8	52.3	25.8	16.0	32.1	0.0	15.2	26.3
Queue Length 50th (ft)	128	7	7	6	21	231	0	5	139
Queue Length 95th (ft)	311	44	33	52	51	516	0	19	227
Internal Link Dist (ft)		305		220		842			355
Turn Bay Length (ft)							230	150	
Base Capacity (vph)	673	657	545	551	499	1267	1092	451	2281
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.07	0.03	0.10	0.13	0.43	0.00	0.04	0.26
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	249	17	24	13	10	40	62	503	5	16	398	143
Future Volume (vph)	249	17	24	13	10	40	62	503	5	16	398	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		7.3	7.3		6.9	6.9	6.9	6.9	6.9	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00	0.97	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.91		1.00	0.88		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1719	1639		1671	1607		1769	1827	1533	1702	3276	
Flt Permitted	0.95	1.00		0.95	1.00		0.32	1.00	1.00	0.26	1.00	
Satd. Flow (perm)	1719	1639		1671	1607		590	1827	1533	461	3276	
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)	271	18	26	14	11	43	67	547	5	17	433	155
RTOR Reduction (vph)	0	20	0	0	41	0	0	0	3	0	24	0
Lane Group Flow (vph)	271	24	0	14	13	0	67	547	2	17	564	0
Confl. Peds. (#/hr)	3		1	1		3	1		5	5		1
Heavy Vehicles (%)	5%	6%	4%	8%	2%	2%	2%	4%	2%	6%	6%	3%
Turn Type	Split	NA		Split	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases							6		6	2		
Actuated Green, G (s)	22.6	22.6		5.3	5.3		42.5	36.6	36.6	34.9	32.8	
Effective Green, g (s)	22.6	22.6		5.3	5.3		42.5	36.6	36.6	34.9	32.8	
Actuated g/C Ratio	0.24	0.24		0.06	0.06		0.45	0.39	0.39	0.37	0.35	
Clearance Time (s)	6.5	6.5		7.3	7.3		6.9	6.9	6.9	6.9	6.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	412	393		94	90		340	709	595	198	1140	
v/s Ratio Prot	c0.16	0.01		c0.01	0.01		c0.01	c0.30		0.00	0.17	
v/s Ratio Perm							0.08		0.00	0.03		
v/c Ratio	0.66	0.06		0.15	0.15		0.20	0.77	0.00	0.09	0.49	
Uniform Delay, d1	32.3	27.6		42.3	42.3		15.3	25.1	17.6	20.0	24.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.8	0.1		0.7	0.8		0.3	5.2	0.0	0.2	0.3	
Delay (s)	36.1	27.7		43.0	43.1		15.6	30.4	17.6	20.2	24.5	
Level of Service	D	C		D	D		B	C	B	C	C	
Approach Delay (s)		34.9			43.1			28.7			24.4	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			28.9			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			94.2			Sum of lost time (s)			27.6			
Intersection Capacity Utilization			68.0%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	249	17	24	13	10	40	62	503	5	16	398	143
Future Volume (veh/h)	249	17	24	13	10	40	62	503	5	16	398	143
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1826	1811	1841	1781	1870	1870	1870	1841	1870	1811	1811	1856
Adj Flow Rate, veh/h	271	18	26	14	11	43	67	547	5	17	433	155
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, %	5	6	4	8	2	2	2	4	2	6	6	3
Cap, veh/h	337	129	186	101	20	76	336	654	559	200	806	286
Arrive On Green	0.19	0.19	0.19	0.06	0.06	0.06	0.05	0.36	0.36	0.02	0.32	0.32
Sat Flow, veh/h	1739	666	963	1697	330	1288	1781	1841	1574	1725	2485	881
Grp Volume(v), veh/h	271	0	44	14	0	54	67	547	5	17	299	289
Grp Sat Flow(s),veh/h/ln	1739	0	1629	1697	0	1618	1781	1841	1574	1725	1721	1645
Q Serve(g_s), s	11.0	0.0	1.7	0.6	0.0	2.4	1.8	20.2	0.2	0.5	10.5	10.7
Cycle Q Clear(g_c), s	11.0	0.0	1.7	0.6	0.0	2.4	1.8	20.2	0.2	0.5	10.5	10.7
Prop In Lane	1.00		0.59	1.00		0.80	1.00		1.00	1.00		0.54
Lane Grp Cap(c), veh/h	337	0	315	101	0	96	336	654	559	200	558	534
V/C Ratio(X)	0.81	0.00	0.14	0.14	0.00	0.56	0.20	0.84	0.01	0.09	0.53	0.54
Avail Cap(c_a), veh/h	704	0	659	572	0	546	606	1490	1274	514	1392	1331
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.6	0.0	24.8	33.1	0.0	33.9	15.9	21.9	15.5	18.3	20.5	20.5
Incr Delay (d2), s/veh	4.5	0.0	0.2	0.6	0.0	5.1	0.3	2.9	0.0	0.2	0.8	0.9
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	4.9	0.0	0.6	0.3	0.0	1.1	0.7	8.6	0.1	0.2	4.1	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.1	0.0	25.0	33.7	0.0	39.0	16.2	24.9	15.5	18.5	21.3	21.4
LnGrp LOS	C	A	C	C	A	D	B	C	B	B	C	C
Approach Vol, veh/h	315			68			619			605		
Approach Delay, s/veh	32.0			37.9			23.9			21.2		
Approach LOS	C			D			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.6	31.0		20.8	8.4	33.2		11.7				
Change Period (Y+Rc), s	* 6.9	* 6.9		6.5	* 6.9	* 6.9		7.3				
Max Green Setting (Gmax), s	* 15	* 60		30.0	* 15	* 60		25.0				
Max Q Clear Time (g_c+I1), s	3.8	12.7		13.0	2.5	22.2		4.4				
Green Ext Time (p_c), s	0.1	4.2		1.0	0.0	4.1		0.3				

Intersection Summary

HCM 6th Ctrl Delay	25.1
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
1: Old Lee Highway

Timing Plan: PM Peak

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗	↗↗	↗
Traffic Vol, veh/h	0	32	0	497	605	6
Future Vol, veh/h	0	32	0	497	605	6
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	-	-	-	120
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	3	2
Mvmt Flow	0	35	0	540	658	7
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	329	-	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	667	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	667	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.7	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 667		-	-		
HCM Lane V/C Ratio	- 0.052		-	-		
HCM Control Delay (s)	- 10.7		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0.2		-	-		

Queues

2: Old Lee Highway

Timing Plan: PM Peak

									
Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	37	63	78	70	490	12	16	626	40
v/c Ratio	0.21	0.20	0.39	0.12	0.20	0.01	0.03	0.32	0.04
Control Delay	29.1	3.1	30.7	4.9	6.6	0.0	5.1	12.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.1	3.1	30.7	4.9	6.6	0.0	5.1	12.4	0.1
Queue Length 50th (ft)	14	0	27	8	33	0	2	85	0
Queue Length 95th (ft)	39	10	65	23	99	0	8	140	0
Internal Link Dist (ft)	173		199		207			142	
Turn Bay Length (ft)				120			120		
Base Capacity (vph)	611	820	675	815	2447	1130	896	1942	903
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.08	0.12	0.09	0.20	0.01	0.02	0.32	0.04
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

2: Old Lee Highway

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔		↖	↗	↗	↖	↗	↗
Traffic Volume (vph)	31	4	59	54	8	10	65	456	11	15	582	37
Future Volume (vph)	31	4	59	54	8	10	65	456	11	15	582	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8		6.8		6.8	6.8	6.8	6.8	6.8	6.8
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1735	1568		1762		1770	3539	1583	1770	3505	1538
Flt Permitted		0.69	1.00		0.76		0.36	1.00	1.00	0.47	1.00	1.00
Satd. Flow (perm)		1258	1568		1384		671	3539	1583	881	3505	1538
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	33	4	63	58	9	11	70	490	12	16	626	40
RTOR Reduction (vph)	0	0	57	0	7	0	0	0	5	0	0	19
Lane Group Flow (vph)	0	37	6	0	71	0	70	490	7	16	626	21
Heavy Vehicles (%)	3%	20%	3%	2%	2%	2%	2%	2%	2%	2%	3%	5%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4			2		2	6		6
Actuated Green, G (s)		7.2	7.2		7.2		49.0	43.0	43.0	39.2	38.1	38.1
Effective Green, g (s)		7.2	7.2		7.2		49.0	43.0	43.0	39.2	38.1	38.1
Actuated g/C Ratio		0.10	0.10		0.10		0.68	0.60	0.60	0.55	0.53	0.53
Clearance Time (s)		6.8	6.8		6.8		6.8	6.8	6.8	6.8	6.8	6.8
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		126	157		138		550	2122	949	495	1862	817
v/s Ratio Prot							c0.01	c0.14		0.00	c0.18	
v/s Ratio Perm		0.03	0.00		c0.05		0.08		0.00	0.02		0.01
v/c Ratio		0.29	0.04		0.51		0.13	0.23	0.01	0.03	0.34	0.03
Uniform Delay, d1		29.9	29.1		30.6		4.0	6.7	5.8	7.4	9.6	8.0
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		1.3	0.1		3.2		0.1	0.1	0.0	0.0	0.5	0.1
Delay (s)		31.2	29.2		33.8		4.1	6.7	5.8	7.5	10.1	8.0
Level of Service		C	C		C		A	A	A	A	B	A
Approach Delay (s)		30.0			33.8			6.4			9.9	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			11.2				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			71.7				Sum of lost time (s)			20.4		
Intersection Capacity Utilization			47.9%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: Old Lee Highway

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	4	59	54	8	10	65	456	11	15	582	37
Future Volume (veh/h)	31	4	59	54	8	10	65	456	11	15	582	37
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1604	1856	1870	1870	1870	1870	1870	1870	1870	1856	1826
Adj Flow Rate, veh/h	33	4	63	58	9	11	70	490	12	16	626	40
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	20	3	2	2	2	2	2	2	2	3	5
Cap, veh/h	244	22	173	196	32	20	519	1896	846	565	1748	767
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.06	0.53	0.53	0.02	0.50	0.50
Sat Flow, veh/h	1194	203	1572	842	291	186	1781	3554	1585	1781	3526	1547
Grp Volume(v), veh/h	37	0	63	78	0	0	70	490	12	16	626	40
Grp Sat Flow(s),veh/h/ln	1397	0	1572	1319	0	0	1781	1777	1585	1781	1763	1547
Q Serve(g_s), s	0.0	0.0	2.2	2.3	0.0	0.0	1.1	4.5	0.2	0.3	6.6	0.8
Cycle Q Clear(g_c), s	1.3	0.0	2.2	3.6	0.0	0.0	1.1	4.5	0.2	0.3	6.6	0.8
Prop In Lane	0.89		1.00	0.74		0.14	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	266	0	173	249	0	0	519	1896	846	565	1748	767
V/C Ratio(X)	0.14	0.00	0.36	0.31	0.00	0.00	0.13	0.26	0.01	0.03	0.36	0.05
Avail Cap(c_a), veh/h	760	0	806	817	0	0	1006	1896	846	1119	1748	767
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(l)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.6	0.0	25.0	25.6	0.0	0.0	6.7	7.6	6.6	7.2	9.4	7.9
Incr Delay (d2), s/veh	0.2	0.0	1.3	0.7	0.0	0.0	0.1	0.1	0.0	0.0	0.6	0.1
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	0.5	0.0	0.9	1.1	0.0	0.0	0.3	1.4	0.1	0.1	2.3	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.8	0.0	26.3	26.4	0.0	0.0	6.8	7.7	6.6	7.2	9.9	8.0
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h	100		78			572			682			
Approach Delay, s/veh	25.7		26.4			7.6			9.7			
Approach LOS	C		C			A			A			
Timer - Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	8.0	39.1	13.4		10.3	36.8	13.4					
Change Period (Y+Rc), s	* 6.8	* 6.8	* 6.8		* 6.8	* 6.8	* 6.8					
Max Green Setting (Gmax), s	* 20	* 30	* 31		* 20	* 30	* 31					
Max Q Clear Time (g_c+l1), s	2.3	6.5	5.6		3.1	8.6	4.2					
Green Ext Time (p_c), s	0.0	3.4	0.4		0.1	4.5	0.4					

Intersection Summary

HCM 6th Ctrl Delay 10.9

HCM 6th LOS B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
4: Old Lee Highway

Timing Plan: PM Peak

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗	↗↗	↗
Traffic Vol, veh/h	0	0	0	532	697	0
Future Vol, veh/h	0	0	0	532	697	0
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	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	3	3	2
Mvmt Flow	0	0	0	560	734	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	367	-	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	630	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	630	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	-	-	-	-		
HCM Lane V/C Ratio	-	-	-	-		
HCM Control Delay (s)	-	0	-	-		
HCM Lane LOS	-	A	-	-		
HCM 95th %tile Q(veh)	-	-	-	-		

HCM 6th TWSC
5: University Drive & Street 1

Timing Plan: PM Peak

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	3	0	18	32	0	32	1	300	59	26	379	1
Future Vol, veh/h	3	0	18	32	0	32	1	300	59	26	379	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	20	35	0	35	1	326	64	28	412	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	847	861	413	839	829	358	413	0	0	390	0	0
Stage 1	469	469	-	360	360	-	-	-	-	-	-	-
Stage 2	378	392	-	479	469	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	282	293	639	285	306	686	1146	-	-	1169	-	-
Stage 1	575	561	-	658	626	-	-	-	-	-	-	-
Stage 2	644	606	-	568	561	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	263	286	639	271	298	686	1146	-	-	1169	-	-
Mov Cap-2 Maneuver	263	286	-	271	298	-	-	-	-	-	-	-
Stage 1	574	548	-	657	625	-	-	-	-	-	-	-
Stage 2	611	605	-	537	548	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.1		16.3		0		0.5	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1146	-	-	531	389	1169	-	-
HCM Lane V/C Ratio	0.001	-	-	0.043	0.179	0.024	-	-
HCM Control Delay (s)	8.1	-	-	12.1	16.3	8.2	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.6	0.1	-	-

HCM 6th TWSC
6: University Drive

Timing Plan: PM Peak

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	23	16	319	382	21
Future Vol, veh/h	16	23	16	319	382	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	-	50	-	-	-
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	17	25	17	347	415	23

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	808	427	438	0	-	0
Stage 1	427	-	-	-	-	-
Stage 2	381	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	350	628	1122	-	-	-
Stage 1	658	-	-	-	-	-
Stage 2	691	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	345	628	1122	-	-	-
Mov Cap-2 Maneuver	462	-	-	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	691	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.1	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1122	-	547	-	-
HCM Lane V/C Ratio	0.016	-	0.077	-	-
HCM Control Delay (s)	8.3	-	12.1	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Queues

7: University Drive & Whitehead Street/Democracy Lane

Timing Plan: PM Peak

							
Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	106	71	119	29	334	34	311
v/c Ratio	0.24	0.14	0.28	0.06	0.38	0.07	0.35
Control Delay	17.6	6.8	17.2	12.3	12.9	12.4	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.6	6.8	17.2	12.3	12.9	12.4	12.8
Queue Length 50th (ft)	13	0	14	3	37	3	35
Queue Length 95th (ft)	89	32	95	28	204	31	191
Internal Link Dist (ft)	245		267		117		232
Turn Bay Length (ft)				50		150	
Base Capacity (vph)	1048	1151	983	961	1670	905	1682
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	0.10	0.06	0.12	0.03	0.20	0.04	0.18
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

7: University Drive & Whitehead Street/Democracy Lane

Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↱		↰	↱	
Traffic Volume (vph)	51	47	65	67	21	21	27	260	47	31	265	21
Future Volume (vph)	51	47	65	67	21	21	27	260	47	31	265	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.95		0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00	1.00		0.98		0.99	1.00		0.99	1.00	
Frt		1.00	0.85		0.97		1.00	0.98		1.00	0.99	
Flt Protected		0.97	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1757	1503		1683		1754	1809		1747	1815	
Flt Permitted		0.77	1.00		0.75		0.57	1.00		0.54	1.00	
Satd. Flow (perm)		1396	1503		1304		1046	1809		989	1815	
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)	55	51	71	73	23	23	29	283	51	34	288	23
RTOR Reduction (vph)	0	0	57	0	8	0	0	7	0	0	3	0
Lane Group Flow (vph)	0	106	14	0	111	0	29	327	0	34	308	0
Confl. Peds. (#/hr)	3		12	12		3	12		18	18		12
Heavy Vehicles (%)	6%	4%	2%	2%	14%	2%	2%	2%	2%	2%	2%	19%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		
Actuated Green, G (s)		7.6	7.6		7.6		15.2	15.2		15.2	15.2	
Effective Green, g (s)		7.6	7.6		7.6		15.2	15.2		15.2	15.2	
Actuated g/C Ratio		0.19	0.19		0.19		0.38	0.38		0.38	0.38	
Clearance Time (s)		6.0	6.0		6.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		267	287		249		400	692		378	694	
v/s Ratio Prot							c0.18				0.17	
v/s Ratio Perm		0.08	0.01		c0.09		0.03			0.03		
v/c Ratio		0.40	0.05		0.45		0.07	0.47		0.09	0.44	
Uniform Delay, d1		14.0	13.1		14.2		7.8	9.2		7.8	9.1	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.0	0.1		1.3		0.1	0.5		0.1	0.5	
Delay (s)		15.0	13.2		15.5		7.9	9.7		7.9	9.6	
Level of Service		B	B		B		A	A		A	A	
Approach Delay (s)		14.3			15.5			9.6			9.4	
Approach LOS		B			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			11.0				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			39.7				Sum of lost time (s)			15.0		
Intersection Capacity Utilization			47.8%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology does not support exclusive ped or hold phases.

HCM 6th TWSC
8: Garage Access & Democracy Lane

Timing Plan: PM Peak

Intersection						
Int Delay, s/veh	2.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	91	34	30	87	22	19
Future Vol, veh/h	91	34	30	87	22	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
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	99	37	33	95	24	21
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	136	0	279	118
Stage 1	-	-	-	-	118	-
Stage 2	-	-	-	-	161	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1448	-	711	934
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	868	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1448	-	694	934
Mov Cap-2 Maneuver	-	-	-	-	694	-
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	847	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	1.9		9.8		
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	788	-	-	1448	-	
HCM Lane V/C Ratio	0.057	-	-	0.023	-	
HCM Control Delay (s)	9.8	-	-	7.5	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-	

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	216	16	25	162	0	9	0	34	4	0	12
Future Vol, veh/h	1	216	16	25	162	0	9	0	34	4	0	12
Conflicting Peds, #/hr	2	0	0	0	0	2	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	13	7	3	2	2	2	2	2	2	2
Mvmt Flow	1	235	17	27	176	0	10	0	37	4	0	13
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	178	0	0	252	0	0	484	478	244	496	486	179
Stage 1	-	-	-	-	-	-	246	246	-	232	232	-
Stage 2	-	-	-	-	-	-	238	232	-	264	254	-
Critical Hdwy	4.12	-	-	4.17	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.263	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1398	-	-	1285	-	-	493	486	795	484	481	864
Stage 1	-	-	-	-	-	-	758	703	-	771	713	-
Stage 2	-	-	-	-	-	-	765	713	-	741	697	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1395	-	-	1285	-	-	476	473	795	452	468	862
Mov Cap-2 Maneuver	-	-	-	-	-	-	476	473	-	452	468	-
Stage 1	-	-	-	-	-	-	757	702	-	769	695	-
Stage 2	-	-	-	-	-	-	735	695	-	706	696	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.1			10.5			10.3		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	697	1395	-	-	1285	-	-	703				
HCM Lane V/C Ratio	0.067	0.001	-	-	0.021	-	-	0.025				
HCM Control Delay (s)	10.5	7.6	0	-	7.9	0	-	10.3				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.1				

Queues

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: PM Peak



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	196	69	14	29	52	444	18	19	699
v/c Ratio	0.53	0.18	0.09	0.17	0.14	0.55	0.03	0.05	0.59
Control Delay	37.4	14.8	43.6	28.1	13.2	23.1	0.1	13.2	24.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.4	14.8	43.6	28.1	13.2	23.1	0.1	13.2	24.3
Queue Length 50th (ft)	90	7	7	5	14	148	0	5	156
Queue Length 95th (ft)	194	47	29	36	38	363	0	18	258
Internal Link Dist (ft)		305		220		864			293
Turn Bay Length (ft)							230	150	
Base Capacity (vph)	802	776	643	628	536	1468	1082	600	2654
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.09	0.02	0.05	0.10	0.30	0.02	0.03	0.26
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	190	17	49	14	11	17	50	431	17	18	550	128
Future Volume (vph)	190	17	49	14	11	17	50	431	17	18	550	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		7.3	7.3		6.9	6.9	6.9	6.9	6.9	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00	0.93	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	
Frt	1.00	0.89		1.00	0.91		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1752	1638		1687	1621		1768	1863	1414	1753	3367	
Flt Permitted	0.95	1.00		0.95	1.00		0.27	1.00	1.00	0.40	1.00	
Satd. Flow (perm)	1752	1638		1687	1621		502	1863	1414	746	3367	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	196	18	51	14	11	18	52	444	18	19	567	132
RTOR Reduction (vph)	0	41	0	0	17	0	0	0	11	0	13	0
Lane Group Flow (vph)	196	28	0	14	12	0	52	444	7	19	686	0
Confl. Peds. (#/hr)	3		3	3		3	6		26	26		6
Heavy Vehicles (%)	3%	2%	2%	7%	9%	2%	2%	2%	6%	2%	3%	6%
Turn Type	Split	NA		Split	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases							6		6	2		
Actuated Green, G (s)	15.9	15.9		3.6	3.6		38.2	32.8	32.8	31.6	29.5	
Effective Green, g (s)	15.9	15.9		3.6	3.6		38.2	32.8	32.8	31.6	29.5	
Actuated g/C Ratio	0.19	0.19		0.04	0.04		0.47	0.40	0.40	0.39	0.36	
Clearance Time (s)	6.5	6.5		7.3	7.3		6.9	6.9	6.9	6.9	6.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	339	317		74	71		317	745	565	313	1211	
v/s Ratio Prot	c0.11	0.02		c0.01	0.01		c0.01	c0.24		0.00	0.20	
v/s Ratio Perm							0.07		0.01	0.02		
v/c Ratio	0.58	0.09		0.19	0.17		0.16	0.60	0.01	0.06	0.57	
Uniform Delay, d1	30.0	27.1		37.8	37.8		12.7	19.4	14.8	15.9	21.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.4	0.1		1.2	1.1		0.2	1.3	0.0	0.1	0.6	
Delay (s)	32.4	27.2		39.0	38.9		12.9	20.7	14.8	16.0	21.7	
Level of Service	C	C		D	D		B	C	B	B	C	
Approach Delay (s)		31.0			38.9			19.7			21.6	
Approach LOS		C			D			B			C	
Intersection Summary												
HCM 2000 Control Delay			23.1			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			82.0			Sum of lost time (s)			27.6			
Intersection Capacity Utilization			61.3%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	17	49	14	11	17	50	431	17	18	550	128
Future Volume (veh/h)	190	17	49	14	11	17	50	431	17	18	550	128
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.99		0.96	0.98		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	1870	1870	1796	1767	1870	1870	1870	1811	1870	1856	1811
Adj Flow Rate, veh/h	196	18	51	14	11	18	52	444	18	19	567	132
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	2	2	7	9	2	2	2	6	2	3	6
Cap, veh/h	277	67	190	87	30	50	297	626	494	271	873	202
Arrive On Green	0.16	0.16	0.16	0.05	0.05	0.05	0.05	0.33	0.33	0.02	0.31	0.31
Sat Flow, veh/h	1767	427	1211	1711	598	979	1781	1870	1475	1781	2815	653
Grp Volume(v), veh/h	196	0	69	14	0	29	52	444	18	19	354	345
Grp Sat Flow(s),veh/h/ln	1767	0	1639	1711	0	1577	1781	1870	1475	1781	1763	1704
Q Serve(g_s), s	6.7	0.0	2.4	0.5	0.0	1.1	1.2	13.1	0.5	0.5	11.0	11.1
Cycle Q Clear(g_c), s	6.7	0.0	2.4	0.5	0.0	1.1	1.2	13.1	0.5	0.5	11.0	11.1
Prop In Lane	1.00		0.74	1.00		0.62	1.00		1.00	1.00		0.38
Lane Grp Cap(c), veh/h	277	0	257	87	0	80	297	626	494	271	547	528
V/C Ratio(X)	0.71	0.00	0.27	0.16	0.00	0.36	0.17	0.71	0.04	0.07	0.65	0.65
Avail Cap(c_a), veh/h	836	0	775	674	0	621	634	1769	1395	652	1667	1612
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.4	0.0	23.5	28.8	0.0	29.1	14.5	18.4	14.2	15.4	18.9	18.9
Incr Delay (d2), s/veh	3.3	0.0	0.6	0.9	0.0	2.7	0.3	1.5	0.0	0.1	1.3	1.4
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	2.9	0.0	0.9	0.2	0.0	0.5	0.5	5.4	0.2	0.2	4.3	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.7	0.0	24.1	29.7	0.0	31.8	14.8	19.9	14.2	15.5	20.2	20.3
LnGrp LOS	C	A	C	C	A	C	B	B	B	B	C	C
Approach Vol, veh/h	265			43			514			718		
Approach Delay, s/veh	27.5			31.1			19.2			20.1		
Approach LOS	C			C			B			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.9	26.6		16.4	8.3	28.2		10.5				
Change Period (Y+Rc), s	* 6.9	* 6.9		6.5	* 6.9	* 6.9		7.3				
Max Green Setting (Gmax), s	* 15	* 60		30.0	* 15	* 60		25.0				
Max Q Clear Time (g_c+I1), s	3.2	13.1		8.7	2.5	15.1		3.1				
Green Ext Time (p_c), s	0.1	5.2		1.0	0.0	3.2		0.1				

Intersection Summary

HCM 6th Ctrl Delay	21.4
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
1: Old Lee Highway & Plaza Drive

Timing Plan: AM Peak

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗	↗	↗
Traffic Vol, veh/h	0	18	0	575	431	3
Future Vol, veh/h	0	18	0	575	431	3
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	-	-	-	120
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	14	2	2	6	2
Mvmt Flow	0	20	0	625	468	3
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	234	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.18	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.44	-	-	-	-
Pot Cap-1 Maneuver	0	732	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	732	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	10.1	0	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	732	-	-		
HCM Lane V/C Ratio	-	0.027	-	-		
HCM Control Delay (s)	-	10.1	-	-		
HCM Lane LOS	-	B	-	-		
HCM 95th %tile Q(veh)	-	0.1	-	-		

Queues

2: Old Lee Highway & FFX Commons

Timing Plan: AM Peak

	→	↘	←	↙	↑	↗	↘	↓	↙
Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	15	13	1	33	609	13	15	462	10
v/c Ratio	0.03	0.03	0.00	0.05	0.23	0.01	0.02	0.18	0.01
Control Delay	15.5	0.1	0.0	4.6	6.2	0.0	4.8	6.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.5	0.1	0.0	4.6	6.2	0.0	4.8	6.2	0.0
Queue Length 50th (ft)	1	0	0	0	0	0	1	0	0
Queue Length 95th (ft)	17	0	0	11	114	0	7	88	0
Internal Link Dist (ft)	124		135		259			157	
Turn Bay Length (ft)				120			120		
Base Capacity (vph)	1659	1422	1487	1347	3088	1408	1342	3001	1408
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.01	0.00	0.02	0.20	0.01	0.01	0.15	0.01
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

2: Old Lee Highway & FFX Commons

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	0	12	0	0	1	30	560	12	14	425	9
Future Volume (vph)	14	0	12	0	0	1	30	560	12	14	425	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8		6.8		6.8	6.8	6.8	6.8	6.8	6.8
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		0.86		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.95	1.00		1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1770	1583		1611		1770	3505	1583	1770	3406	1583
Flt Permitted		1.00	1.00		1.00		0.48	1.00	1.00	0.42	1.00	1.00
Satd. Flow (perm)		1863	1583		1611		901	3505	1583	785	3406	1583
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)	15	0	13	0	0	1	33	609	13	15	462	10
RTOR Reduction (vph)	0	0	12	0	1	0	0	0	7	0	0	6
Lane Group Flow (vph)	0	15	1	0	0	0	33	609	6	15	462	4
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	6%	2%
Turn Type	Perm	NA	Perm		NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4			2		2	6		6
Actuated Green, G (s)		2.1	2.1		2.1		18.4	17.6	17.6	18.2	17.5	17.5
Effective Green, g (s)		2.1	2.1		2.1		18.4	17.6	17.6	18.2	17.5	17.5
Actuated g/C Ratio		0.05	0.05		0.05		0.45	0.43	0.43	0.45	0.43	0.43
Clearance Time (s)		6.8	6.8		6.8		6.8	6.8	6.8	6.8	6.8	6.8
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		95	81		82		423	1511	682	367	1460	678
v/s Ratio Prot					0.00		c0.00	c0.17		0.00	0.14	
v/s Ratio Perm		c0.01	0.00				0.03		0.00	0.02		0.00
v/c Ratio		0.16	0.01		0.00		0.08	0.40	0.01	0.04	0.32	0.01
Uniform Delay, d1		18.5	18.4		18.4		6.3	8.0	6.6	6.3	7.7	6.7
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.8	0.0		0.0		0.1	0.2	0.0	0.0	0.1	0.0
Delay (s)		19.3	18.4		18.4		6.3	8.2	6.6	6.4	7.8	6.7
Level of Service		B	B		B		A	A	A	A	A	A
Approach Delay (s)		18.9			18.4			8.0			7.8	
Approach LOS		B			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			8.2				HCM 2000 Level of Service				A	
HCM 2000 Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			40.8				Sum of lost time (s)			20.4		
Intersection Capacity Utilization			43.7%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: Old Lee Highway & FFX Commons

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	0	12	0	0	1	30	560	12	14	425	9
Future Volume (veh/h)	14	0	12	0	0	1	30	560	12	14	425	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1870	1870	1870	1870	1870	1870	1870	1856	1870	1870	1811	1870
Adj Flow Rate, veh/h	15	0	13	0	0	1	33	609	13	15	462	10
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, %	2	2	2	2	2	2	2	3	2	2	6	2
Cap, veh/h	253	0	77	0	0	77	523	1432	644	446	1331	613
Arrive On Green	0.05	0.00	0.05	0.00	0.00	0.05	0.04	0.41	0.41	0.02	0.39	0.39
Sat Flow, veh/h	1399	0	1585	0	0	1585	1781	3526	1585	1781	3441	1585
Grp Volume(v), veh/h	15	0	13	0	0	1	33	609	13	15	462	10
Grp Sat Flow(s),veh/h/ln	1399	0	1585	0	0	1585	1781	1763	1585	1781	1721	1585
Q Serve(g_s), s	0.4	0.0	0.3	0.0	0.0	0.0	0.4	4.8	0.2	0.2	3.7	0.2
Cycle Q Clear(g_c), s	0.4	0.0	0.3	0.0	0.0	0.0	0.4	4.8	0.2	0.2	3.7	0.2
Prop In Lane	1.00		1.00	0.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	253	0	77	0	0	77	523	1432	644	446	1331	613
V/C Ratio(X)	0.06	0.00	0.17	0.00	0.00	0.01	0.06	0.43	0.02	0.03	0.35	0.02
Avail Cap(c_a), veh/h	1317	0	1267	0	0	1267	1373	2728	1226	1331	2662	1226
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	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.8	0.0	17.7	0.0	0.0	17.6	6.7	8.3	6.9	7.1	8.4	7.3
Incr Delay (d2), s/veh	0.1	0.0	1.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.2	0.0
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	0.1	0.0	0.1	0.0	0.0	0.0	0.1	1.3	0.0	0.1	1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.9	0.0	18.7	0.0	0.0	17.6	6.8	8.5	6.9	7.1	8.6	7.3
LnGrp LOS	B	A	B	A	A	B	A	A	A	A	A	A
Approach Vol, veh/h		28			1			655			487	
Approach Delay, s/veh		18.3			17.6			8.3			8.5	
Approach LOS		B			B			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	22.5		8.7	8.3	21.8		8.7				
Change Period (Y+Rc), s	* 6.8	* 6.8		* 6.8	* 6.8	* 6.8		* 6.8				
Max Green Setting (Gmax), s	* 20	* 30		* 31	* 20	* 30		* 31				
Max Q Clear Time (g_c+I1), s	2.2	6.8		2.0	2.4	5.7		2.4				
Green Ext Time (p_c), s	0.0	4.4		0.0	0.0	3.2		0.1				
Intersection Summary												
HCM 6th Ctrl Delay			8.7									
HCM 6th LOS			A									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th TWSC
4: Old Lee Highway

Timing Plan: AM Peak

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗	↗↗	↗
Traffic Vol, veh/h	0	0	0	602	437	0
Future Vol, veh/h	0	0	0	602	437	0
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	-	-	-	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	6	2
Mvmt Flow	0	0	0	654	475	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	238	-	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	763	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	763	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	-	-	-	-		
HCM Lane V/C Ratio	-	-	-	-		
HCM Control Delay (s)	-	0	-	-		
HCM Lane LOS	-	A	-	-		
HCM 95th %tile Q(veh)	-	-	-	-		

HCM 6th TWSC
5: University Drive & Street 1

Timing Plan: AM Peak

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	0	0	1	12	0	4	13	299	24	9	207	5
Future Vol, veh/h	0	0	1	12	0	4	13	299	24	9	207	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	1	13	0	4	14	325	26	10	225	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	616	627	228	614	616	338	230	0	0	351	0	0
Stage 1	248	248	-	366	366	-	-	-	-	-	-	-
Stage 2	368	379	-	248	250	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	403	400	811	404	406	704	1338	-	-	1208	-	-
Stage 1	756	701	-	653	623	-	-	-	-	-	-	-
Stage 2	652	615	-	756	700	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	395	393	811	398	399	704	1338	-	-	1208	-	-
Mov Cap-2 Maneuver	395	393	-	398	399	-	-	-	-	-	-	-
Stage 1	748	695	-	646	617	-	-	-	-	-	-	-
Stage 2	641	609	-	749	694	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	9.4			13.4			0.3			0.3		
HCM LOS	A			B								

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1338	-	-	811	447	1208	-
HCM Lane V/C Ratio	0.011	-	-	0.001	0.039	0.008	-
HCM Control Delay (s)	7.7	-	-	9.4	13.4	8	-
HCM Lane LOS	A	-	-	A	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-

HCM 6th TWSC
6: University Drive & 7-11 Entrance

Timing Plan: AM Peak

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	15	10	289	206	12
Future Vol, veh/h	5	15	10	289	206	12
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	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	10	2	4	2
Mvmt Flow	5	16	11	314	224	13

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	567	231	237	0	-	0
Stage 1	231	-	-	-	-	-
Stage 2	336	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.2	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.29	-	-	-
Pot Cap-1 Maneuver	485	808	1284	-	-	-
Stage 1	807	-	-	-	-	-
Stage 2	724	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	481	808	1284	-	-	-
Mov Cap-2 Maneuver	565	-	-	-	-	-
Stage 1	800	-	-	-	-	-
Stage 2	724	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1284	-	730	-	-
HCM Lane V/C Ratio	0.008	-	0.03	-	-
HCM Control Delay (s)	7.8	-	10.1	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Queues

7: University Drive & Whitehead Street/Democracy Lane

Timing Plan: AM Peak

							
Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	127	32	88	8	317	15	176
v/c Ratio	0.33	0.06	0.20	0.02	0.43	0.04	0.29
Control Delay	18.7	3.0	13.1	12.9	14.2	12.9	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.7	3.0	13.1	12.9	14.2	12.9	13.5
Queue Length 50th (ft)	16	0	7	1	37	1	19
Queue Length 95th (ft)	106	10	62	12	202	18	117
Internal Link Dist (ft)	232		266		127		218
Turn Bay Length (ft)				50		150	
Base Capacity (vph)	899	1134	991	1107	1699	936	1388
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	0.03	0.09	0.01	0.19	0.02	0.13
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

7: University Drive & Whitehead Street/Democracy Lane

Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↱		↰	↱	
Traffic Volume (vph)	100	17	29	39	9	33	7	269	23	14	151	11
Future Volume (vph)	100	17	29	39	9	33	7	269	23	14	151	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.96		0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00		0.99		1.00	1.00		0.99	1.00	
Frt		1.00	0.85		0.94		1.00	0.99		1.00	0.99	
Flt Protected		0.96	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1675	1507		1650		1765	1837		1743	1499	
Flt Permitted		0.70	1.00		0.78		0.65	1.00		0.55	1.00	
Satd. Flow (perm)		1215	1507		1326		1200	1837		1017	1499	
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)	109	18	32	42	10	36	8	292	25	15	164	12
RTOR Reduction (vph)	0	0	25	0	23	0	0	3	0	0	3	0
Lane Group Flow (vph)	0	127	7	0	65	0	8	314	0	15	173	0
Confl. Peds. (#/hr)	1		8	8		1	3		7	7		3
Heavy Vehicles (%)	7%	18%	3%	5%	11%	2%	2%	2%	2%	3%	27%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		
Actuated Green, G (s)		8.2	8.2		8.2		14.9	14.9		14.9	14.9	
Effective Green, g (s)		8.2	8.2		8.2		14.9	14.9		14.9	14.9	
Actuated g/C Ratio		0.20	0.20		0.20		0.37	0.37		0.37	0.37	
Clearance Time (s)		6.0	6.0		6.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		249	308		271		447	684		378	558	
v/s Ratio Prot							c0.17				0.12	
v/s Ratio Perm		c0.10	0.00		0.05		0.01			0.01		
v/c Ratio		0.51	0.02		0.24		0.02	0.46		0.04	0.31	
Uniform Delay, d1		14.1	12.7		13.3		7.9	9.5		8.0	8.9	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.8	0.0		0.5		0.0	0.5		0.0	0.3	
Delay (s)		15.9	12.7		13.8		7.9	10.0		8.0	9.2	
Level of Service		B	B		B		A	A		A	A	
Approach Delay (s)		15.2			13.8			9.9			9.1	
Approach LOS		B			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			11.3			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			40.0			Sum of lost time (s)				15.0		
Intersection Capacity Utilization			36.1%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology does not support exclusive ped or hold phases.

Intersection

Int Delay, s/veh 4.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	40	14	12	35	46	37
Future Vol, veh/h	40	14	12	35	46	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
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	43	15	13	38	50	40

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	58
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1546
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1546
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	932	-	-	1546	-
HCM Lane V/C Ratio	0.097	-	-	0.008	-
HCM Control Delay (s)	9.3	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	22	271	6	16	176	10	2	1	23	0	0	4
Future Vol, veh/h	22	271	6	16	176	10	2	1	23	0	0	4
Conflicting Peds, #/hr	9	0	0	0	0	9	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	5	2	2	3	2	2	2	17	2	2	2
Mvmt Flow	24	295	7	17	191	11	2	1	25	0	0	4
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	211	0	0	302	0	0	580	592	299	600	590	206
Stage 1	-	-	-	-	-	-	347	347	-	240	240	-
Stage 2	-	-	-	-	-	-	233	245	-	360	350	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.37	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.453	3.518	4.018	3.318
Pot Cap-1 Maneuver	1360	-	-	1259	-	-	426	419	707	413	420	835
Stage 1	-	-	-	-	-	-	669	635	-	763	707	-
Stage 2	-	-	-	-	-	-	770	703	-	658	633	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1348	-	-	1259	-	-	412	401	707	383	402	828
Mov Cap-2 Maneuver	-	-	-	-	-	-	412	401	-	383	402	-
Stage 1	-	-	-	-	-	-	655	622	-	741	690	-
Stage 2	-	-	-	-	-	-	754	686	-	620	620	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.6			0.6			10.8			9.4		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	652	1348	-	-	1259	-	-	828				
HCM Lane V/C Ratio	0.043	0.018	-	-	0.014	-	-	0.005				
HCM Control Delay (s)	10.8	7.7	0	-	7.9	0	-	9.4				
HCM Lane LOS	B	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0				

Queues

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: AM Peak



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	271	44	14	54	67	547	5	17	588
v/c Ratio	0.49	0.08	0.06	0.29	0.19	0.74	0.01	0.07	0.53
Control Delay	23.6	15.3	25.2	23.8	15.6	30.6	0.0	14.9	24.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.6	15.3	25.2	23.8	15.6	30.6	0.0	14.9	24.2
Queue Length 50th (ft)	82	5	4	5	19	217	0	5	127
Queue Length 95th (ft)	230	41	21	50	50	491	0	19	211
Internal Link Dist (ft)		305		220		842			355
Turn Bay Length (ft)							230	150	
Base Capacity (vph)	814	712	717	594	357	1546	1307	249	2757
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.06	0.02	0.09	0.19	0.35	0.00	0.07	0.21
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	249	17	24	13	10	40	62	503	5	16	398	143
Future Volume (vph)	249	17	24	13	10	40	62	503	5	16	398	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	6.5		7.3	7.3		6.9	6.9	6.9	6.9	6.9	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00	0.97	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.91		1.00	0.88		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1715	1639		1670	1607		1769	1827	1534	1702	3276	
Flt Permitted	0.50	1.00		0.73	1.00		0.32	1.00	1.00	0.23	1.00	
Satd. Flow (perm)	899	1639		1280	1607		592	1827	1534	408	3276	
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)	271	18	26	14	11	43	67	547	5	17	433	155
RTOR Reduction (vph)	0	18	0	0	39	0	0	0	3	0	28	0
Lane Group Flow (vph)	271	26	0	14	15	0	67	547	2	17	560	0
Confl. Peds. (#/hr)	3		1	1		3	1		5	5		1
Heavy Vehicles (%)	5%	6%	4%	8%	2%	2%	2%	4%	2%	6%	6%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4			8			6		6	2		
Actuated Green, G (s)	35.4	27.1		10.2	9.2		37.4	32.9	32.9	31.4	29.9	
Effective Green, g (s)	35.4	27.1		10.2	9.2		37.4	32.9	32.9	31.4	29.9	
Actuated g/C Ratio	0.39	0.30		0.11	0.10		0.42	0.37	0.37	0.35	0.33	
Clearance Time (s)	4.5	6.5		7.3	7.3		6.9	6.9	6.9	6.9	6.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	542	492		149	164		304	667	560	163	1087	
v/s Ratio Prot	c0.12	0.02		0.00	0.01		c0.01	c0.30		0.00	0.17	
v/s Ratio Perm	c0.08			0.01			0.08		0.00	0.03		
v/c Ratio	0.50	0.05		0.09	0.09		0.22	0.82	0.00	0.10	0.52	
Uniform Delay, d1	19.9	22.4		35.7	36.7		16.5	25.9	18.2	20.6	24.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	0.0		0.3	0.2		0.4	8.0	0.0	0.3	0.4	
Delay (s)	20.6	22.4		36.0	36.9		16.8	33.9	18.2	20.9	24.7	
Level of Service	C	C		D	D		B	C	B	C	C	
Approach Delay (s)		20.8			36.7			31.9			24.6	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			27.2			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			90.1			Sum of lost time (s)			27.6			
Intersection Capacity Utilization			68.0%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	249	17	24	13	10	40	62	503	5	16	398	143
Future Volume (veh/h)	249	17	24	13	10	40	62	503	5	16	398	143
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	0.98		0.99	1.00		0.99	1.00		0.99
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	1826	1811	1841	1781	1870	1870	1870	1841	1870	1811	1811	1856
Adj Flow Rate, veh/h	271	18	26	14	11	43	67	547	5	17	433	155
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, %	5	6	4	8	2	2	2	4	2	6	6	3
Cap, veh/h	466	93	135	327	26	103	348	662	566	212	814	289
Arrive On Green	0.17	0.14	0.14	0.07	0.08	0.08	0.05	0.36	0.36	0.02	0.33	0.33
Sat Flow, veh/h	1739	665	961	1697	330	1291	1781	1841	1574	1725	2485	881
Grp Volume(v), veh/h	271	0	44	14	0	54	67	547	5	17	299	289
Grp Sat Flow(s),veh/h/ln	1739	0	1626	1697	0	1621	1781	1841	1574	1725	1721	1645
Q Serve(g_s), s	9.3	0.0	1.7	0.5	0.0	2.2	1.7	18.8	0.1	0.5	9.8	10.0
Cycle Q Clear(g_c), s	9.3	0.0	1.7	0.5	0.0	2.2	1.7	18.8	0.1	0.5	9.8	10.0
Prop In Lane	1.00		0.59	1.00		0.80	1.00		1.00	1.00		0.54
Lane Grp Cap(c), veh/h	466	0	228	327	0	129	348	662	566	212	564	539
V/C Ratio(X)	0.58	0.00	0.19	0.04	0.00	0.42	0.19	0.83	0.01	0.08	0.53	0.54
Avail Cap(c_a), veh/h	929	0	596	871	0	566	412	1908	1631	304	1758	1681
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(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.7	0.0	26.4	25.3	0.0	30.5	14.7	20.3	14.3	17.0	19.0	19.1
Incr Delay (d2), s/veh	1.2	0.0	0.4	0.1	0.0	2.1	0.3	2.7	0.0	0.2	0.8	0.8
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	3.8	0.0	0.7	0.2	0.0	0.9	0.7	7.9	0.0	0.2	3.8	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.8	0.0	26.8	25.3	0.0	32.6	14.9	23.0	14.3	17.1	19.8	19.9
LnGrp LOS	C	A	C	C	A	C	B	C	B	B	B	B
Approach Vol, veh/h	315			68			619			605		
Approach Delay, s/veh	23.4			31.1			22.0			19.8		
Approach LOS	C			C			C			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.5	29.7	12.3	17.1	8.3	31.9	16.5	12.8				
Change Period (Y+Rc), s	* 6.9	* 6.9	* 7.3	* 7.3	* 6.9	* 6.9	4.5	* 7.3				
Max Green Setting (Gmax), s	* 6.1	* 71	* 27	* 26	* 5.1	* 72	30.5	* 24				
Max Q Clear Time (g_c+l1), s	3.7	12.0	2.5	3.7	2.5	20.8	11.3	4.2				
Green Ext Time (p_c), s	0.0	4.3	0.0	0.2	0.0	4.2	0.8	0.2				

Intersection Summary

HCM 6th Ctrl Delay	21.8
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗	↗↗	↗
Traffic Vol, veh/h	0	32	0	497	605	6
Future Vol, veh/h	0	32	0	497	605	6
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	-	-	-	120
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	3	2
Mvmt Flow	0	35	0	540	658	7
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	329	-	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	667	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	667	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.7	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 667		-	-		
HCM Lane V/C Ratio	- 0.052		-	-		
HCM Control Delay (s)	- 10.7		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0.2		-	-		

Queues

2: Old Lee Highway

03/04/2024

	→	↘	←	↙	↑	↗	↘	↓	↙
Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	37	63	78	70	490	12	16	626	40
v/c Ratio	0.21	0.20	0.39	0.12	0.20	0.01	0.03	0.32	0.04
Control Delay	29.1	3.1	30.7	4.9	6.6	0.0	5.1	12.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.1	3.1	30.7	4.9	6.6	0.0	5.1	12.4	0.1
Queue Length 50th (ft)	14	0	27	8	33	0	2	85	0
Queue Length 95th (ft)	39	10	65	23	99	0	8	140	0
Internal Link Dist (ft)	173		199		207			142	
Turn Bay Length (ft)				120			120		
Base Capacity (vph)	611	820	675	815	2447	1130	896	1942	903
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.08	0.12	0.09	0.20	0.01	0.02	0.32	0.04
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

2: Old Lee Highway

03/04/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	4	59	54	8	10	65	456	11	15	582	37
Future Volume (vph)	31	4	59	54	8	10	65	456	11	15	582	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8		6.8		6.8	6.8	6.8	6.8	6.8	6.8
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1735	1568		1762		1770	3539	1583	1770	3505	1538
Flt Permitted		0.69	1.00		0.76		0.36	1.00	1.00	0.47	1.00	1.00
Satd. Flow (perm)		1258	1568		1384		671	3539	1583	881	3505	1538
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	33	4	63	58	9	11	70	490	12	16	626	40
RTOR Reduction (vph)	0	0	57	0	7	0	0	0	5	0	0	19
Lane Group Flow (vph)	0	37	6	0	71	0	70	490	7	16	626	21
Heavy Vehicles (%)	3%	20%	3%	2%	2%	2%	2%	2%	2%	2%	3%	5%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4			2		2	6		6
Actuated Green, G (s)		7.2	7.2		7.2		49.0	43.0	43.0	39.2	38.1	38.1
Effective Green, g (s)		7.2	7.2		7.2		49.0	43.0	43.0	39.2	38.1	38.1
Actuated g/C Ratio		0.10	0.10		0.10		0.68	0.60	0.60	0.55	0.53	0.53
Clearance Time (s)		6.8	6.8		6.8		6.8	6.8	6.8	6.8	6.8	6.8
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		126	157		138		550	2122	949	495	1862	817
v/s Ratio Prot							c0.01	c0.14		0.00	c0.18	
v/s Ratio Perm		0.03	0.00		c0.05		0.08		0.00	0.02		0.01
v/c Ratio		0.29	0.04		0.51		0.13	0.23	0.01	0.03	0.34	0.03
Uniform Delay, d1		29.9	29.1		30.6		4.0	6.7	5.8	7.4	9.6	8.0
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		1.3	0.1		3.2		0.1	0.1	0.0	0.0	0.5	0.1
Delay (s)		31.2	29.2		33.8		4.1	6.7	5.8	7.5	10.1	8.0
Level of Service		C	C		C		A	A	A	A	B	A
Approach Delay (s)		30.0			33.8			6.4			9.9	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			11.2				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			71.7				Sum of lost time (s)			20.4		
Intersection Capacity Utilization			47.9%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: Old Lee Highway

03/04/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								 			 	
Traffic Volume (veh/h)	31	4	59	54	8	10	65	456	11	15	582	37
Future Volume (veh/h)	31	4	59	54	8	10	65	456	11	15	582	37
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1604	1856	1870	1870	1870	1870	1870	1870	1870	1856	1826
Adj Flow Rate, veh/h	33	4	63	58	9	11	70	490	12	16	626	40
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	20	3	2	2	2	2	2	2	2	3	5
Cap, veh/h	244	22	173	196	32	20	519	1896	846	565	1748	767
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.06	0.53	0.53	0.02	0.50	0.50
Sat Flow, veh/h	1194	203	1572	842	291	186	1781	3554	1585	1781	3526	1547
Grp Volume(v), veh/h	37	0	63	78	0	0	70	490	12	16	626	40
Grp Sat Flow(s),veh/h/ln	1397	0	1572	1319	0	0	1781	1777	1585	1781	1763	1547
Q Serve(g_s), s	0.0	0.0	2.2	2.3	0.0	0.0	1.1	4.5	0.2	0.3	6.6	0.8
Cycle Q Clear(g_c), s	1.3	0.0	2.2	3.6	0.0	0.0	1.1	4.5	0.2	0.3	6.6	0.8
Prop In Lane	0.89		1.00	0.74		0.14	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	266	0	173	249	0	0	519	1896	846	565	1748	767
V/C Ratio(X)	0.14	0.00	0.36	0.31	0.00	0.00	0.13	0.26	0.01	0.03	0.36	0.05
Avail Cap(c_a), veh/h	760	0	806	817	0	0	1006	1896	846	1119	1748	767
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(l)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.6	0.0	25.0	25.6	0.0	0.0	6.7	7.6	6.6	7.2	9.4	7.9
Incr Delay (d2), s/veh	0.2	0.0	1.3	0.7	0.0	0.0	0.1	0.1	0.0	0.0	0.6	0.1
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	0.5	0.0	0.9	1.1	0.0	0.0	0.3	1.4	0.1	0.1	2.3	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.8	0.0	26.3	26.4	0.0	0.0	6.8	7.7	6.6	7.2	9.9	8.0
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		100			78			572			682	
Approach Delay, s/veh		25.7			26.4			7.6			9.7	
Approach LOS		C			C			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	39.1		13.4	10.3	36.8		13.4				
Change Period (Y+Rc), s	* 6.8	* 6.8		* 6.8	* 6.8	* 6.8		* 6.8				
Max Green Setting (Gmax), s	* 20	* 30		* 31	* 20	* 30		* 31				
Max Q Clear Time (g_c+l1), s	2.3	6.5		5.6	3.1	8.6		4.2				
Green Ext Time (p_c), s	0.0	3.4		0.4	0.1	4.5		0.4				

Intersection Summary

HCM 6th Ctrl Delay	10.9
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
4: Old Lee Highway

03/04/2024

Intersection

Int Delay, s/veh 0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗	↗↗	↗
Traffic Vol, veh/h	0	0	0	532	697	0
Future Vol, veh/h	0	0	0	532	697	0
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	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	3	3	2
Mvmt Flow	0	0	0	560	734	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 367	- 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	0 630	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %			- -
Mov Cap-1 Maneuver	- 630	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- -	- -	
HCM Lane V/C Ratio	- -	- -	
HCM Control Delay (s)	- 0	- -	
HCM Lane LOS	- A	- -	
HCM 95th %tile Q(veh)	- -	- -	

HCM 6th TWSC
5: University Drive & Street 1

03/04/2024

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Vol, veh/h	3	0	18	32	0	32	1	300	59	26	379	1
Future Vol, veh/h	3	0	18	32	0	32	1	300	59	26	379	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	20	35	0	35	1	326	64	28	412	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	847	861	413	839	829	358	413	0	0	390	0	0
Stage 1	469	469	-	360	360	-	-	-	-	-	-	-
Stage 2	378	392	-	479	469	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	282	293	639	285	306	686	1146	-	-	1169	-	-
Stage 1	575	561	-	658	626	-	-	-	-	-	-	-
Stage 2	644	606	-	568	561	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	263	286	639	271	298	686	1146	-	-	1169	-	-
Mov Cap-2 Maneuver	263	286	-	271	298	-	-	-	-	-	-	-
Stage 1	574	548	-	657	625	-	-	-	-	-	-	-
Stage 2	611	605	-	537	548	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.1		16.3		0		0.5	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1146	-	-	531 389	1169	-	-
HCM Lane V/C Ratio	0.001	-	-	0.043 0.179	0.024	-	-
HCM Control Delay (s)	8.1	-	-	12.1 16.3	8.2	-	-
HCM Lane LOS	A	-	-	B C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1 0.6	0.1	-	-

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	23	16	319	382	21
Future Vol, veh/h	16	23	16	319	382	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	-	50	-	-	-
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	17	25	17	347	415	23
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	808	427	438	0	-	0
Stage 1	427	-	-	-	-	-
Stage 2	381	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	350	628	1122	-	-	-
Stage 1	658	-	-	-	-	-
Stage 2	691	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	345	628	1122	-	-	-
Mov Cap-2 Maneuver	462	-	-	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	691	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	12.1	0.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1122	-	547	-	-	
HCM Lane V/C Ratio	0.016	-	0.077	-	-	
HCM Control Delay (s)	8.3	-	12.1	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.3	-	-	

Queues

7: University Drive & Whitehead Street/Democracy Lane

03/04/2024



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	106	71	119	29	334	34	311
v/c Ratio	0.49	0.25	0.58	0.04	0.28	0.05	0.26
Control Delay	39.8	10.9	41.5	9.1	8.8	9.2	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.8	10.9	41.5	9.1	8.8	9.2	8.8
Queue Length 50th (ft)	44	0	45	3	45	4	42
Queue Length 95th (ft)	116	38	124	27	206	30	193
Internal Link Dist (ft)	245		267		117		232
Turn Bay Length (ft)				50		150	
Base Capacity (vph)	455	524	418	677	1201	651	1208
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	0.23	0.14	0.28	0.04	0.28	0.05	0.26
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

7: University Drive & Whitehead Street/Democracy Lane

03/04/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↰		↰		↰	↰		↰	↰	
Traffic Volume (vph)	51	47	65	67	21	21	27	260	47	31	265	21
Future Volume (vph)	51	47	65	67	21	21	27	260	47	31	265	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.94		0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00	1.00		0.98		0.98	1.00		0.97	1.00	
Frt		1.00	0.85		0.97		1.00	0.98		1.00	0.99	
Flt Protected		0.97	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1756	1487		1673		1737	1802		1723	1813	
Flt Permitted		0.80	1.00		0.75		0.56	1.00		0.54	1.00	
Satd. Flow (perm)		1444	1487		1296		1019	1802		979	1813	
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)	55	51	71	73	23	23	29	283	51	34	288	23
RTOR Reduction (vph)	0	0	61	0	9	0	0	4	0	0	2	0
Lane Group Flow (vph)	0	106	10	0	110	0	29	330	0	34	309	0
Confl. Peds. (#/hr)	3		12	12		3	12		18	18		12
Heavy Vehicles (%)	6%	4%	2%	2%	14%	2%	2%	2%	2%	2%	2%	19%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		
Actuated Green, G (s)		12.2	12.2		12.2		54.0	54.0		54.0	54.0	
Effective Green, g (s)		12.2	12.2		12.2		54.0	54.0		54.0	54.0	
Actuated g/C Ratio		0.14	0.14		0.14		0.64	0.64		0.64	0.64	
Clearance Time (s)		6.0	6.0		6.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		208	215		187		652	1154		627	1161	
v/s Ratio Prot								c0.18			0.17	
v/s Ratio Perm		0.07	0.01		c0.09		0.03			0.03		
v/c Ratio		0.51	0.05		0.59		0.04	0.29		0.05	0.27	
Uniform Delay, d1		33.3	31.0		33.7		5.6	6.7		5.6	6.6	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.0	0.1		4.9		0.0	0.1		0.2	0.6	
Delay (s)		35.2	31.1		38.6		5.6	6.8		5.8	7.1	
Level of Service		D	C		D		A	A		A	A	
Approach Delay (s)		33.6			38.6			6.7			7.0	
Approach LOS		C			D			A			A	
Intersection Summary												
HCM 2000 Control Delay		15.3			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.33										
Actuated Cycle Length (s)		84.3			Sum of lost time (s)			15.0				
Intersection Capacity Utilization		47.8%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Edition methodology does not support exclusive ped or hold phases.

HCM 6th TWSC

8: Garage Access & Democracy Lane

03/04/2024

Intersection						
Int Delay, s/veh	2.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	91	34	30	87	22	19
Future Vol, veh/h	91	34	30	87	22	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
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	99	37	33	95	24	21
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	136	0	279	118
Stage 1	-	-	-	-	118	-
Stage 2	-	-	-	-	161	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1448	-	711	934
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	868	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1448	-	694	934
Mov Cap-2 Maneuver	-	-	-	-	694	-
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	847	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.9		9.8	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	788	-	-	1448	-	
HCM Lane V/C Ratio	0.057	-	-	0.023	-	
HCM Control Delay (s)	9.8	-	-	7.5	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-	

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	216	16	25	162	0	9	0	34	4	0	12
Future Vol, veh/h	1	216	16	25	162	0	9	0	34	4	0	12
Conflicting Peds, #/hr	2	0	0	0	0	2	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	13	7	3	2	2	2	2	2	2	2
Mvmt Flow	1	235	17	27	176	0	10	0	37	4	0	13
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	178	0	0	252	0	0	484	478	244	496	486	179
Stage 1	-	-	-	-	-	-	246	246	-	232	232	-
Stage 2	-	-	-	-	-	-	238	232	-	264	254	-
Critical Hdwy	4.12	-	-	4.17	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.263	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1398	-	-	1285	-	-	493	486	795	484	481	864
Stage 1	-	-	-	-	-	-	758	703	-	771	713	-
Stage 2	-	-	-	-	-	-	765	713	-	741	697	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1395	-	-	1285	-	-	476	473	795	452	468	862
Mov Cap-2 Maneuver	-	-	-	-	-	-	476	473	-	452	468	-
Stage 1	-	-	-	-	-	-	757	702	-	769	695	-
Stage 2	-	-	-	-	-	-	735	695	-	706	696	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.1			10.5			10.3		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	697	1395	-	-	1285	-	-	703				
HCM Lane V/C Ratio	0.067	0.001	-	-	0.021	-	-	0.025				
HCM Control Delay (s)	10.5	7.6	0	-	7.9	0	-	10.3				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.1				

Queues

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

03/04/2024

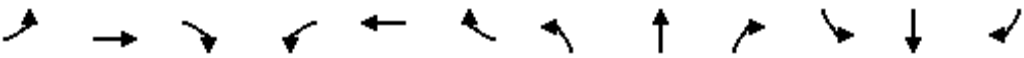


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	196	69	14	29	52	444	18	19	699
v/c Ratio	0.42	0.13	0.06	0.16	0.15	0.61	0.03	0.05	0.59
Control Delay	22.2	11.7	22.0	27.3	13.8	25.2	0.1	13.5	23.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	11.7	22.0	27.3	13.8	25.2	0.1	13.5	23.6
Queue Length 50th (ft)	66	5	4	5	14	147	0	5	155
Queue Length 95th (ft)	145	44	19	35	38	358	0	18	253
Internal Link Dist (ft)		305		220		864			293
Turn Bay Length (ft)							230	150	
Base Capacity (vph)	912	871	770	699	548	1502	1105	573	2715
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.08	0.02	0.04	0.09	0.30	0.02	0.03	0.26
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

03/04/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	190	17	49	14	11	17	50	431	17	18	550	128
Future Volume (vph)	190	17	49	14	11	17	50	431	17	18	550	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		7.3	7.3		6.9	6.9	6.9	6.9	6.9	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00	0.93	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	
Frt	1.00	0.89		1.00	0.91		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1750	1638		1684	1621		1768	1863	1417	1758	3367	
Flt Permitted	0.37	1.00		0.71	1.00		0.27	1.00	1.00	0.34	1.00	
Satd. Flow (perm)	680	1638		1262	1621		502	1863	1417	630	3367	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	196	18	51	14	11	18	52	444	18	19	567	132
RTOR Reduction (vph)	0	38	0	0	17	0	0	0	12	0	14	0
Lane Group Flow (vph)	196	31	0	14	12	0	52	444	6	19	685	0
Confl. Peds. (#/hr)	3		3	3		3	6		26	26		6
Heavy Vehicles (%)	3%	2%	2%	7%	9%	2%	2%	2%	6%	2%	3%	6%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4			8			6		6	2		
Actuated Green, G (s)	28.8	20.6		6.6	5.7		30.5	27.0	27.0	27.5	25.5	
Effective Green, g (s)	28.8	20.6		6.6	5.7		30.5	27.0	27.0	27.5	25.5	
Actuated g/C Ratio	0.37	0.26		0.08	0.07		0.39	0.35	0.35	0.35	0.33	
Clearance Time (s)	6.5	6.5		7.3	7.3		6.9	6.9	6.9	6.9	6.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	467	432		111	118		252	644	489	250	1099	
v/s Ratio Prot	c0.08	0.02		0.00	0.01		c0.01	c0.24		0.00	0.20	
v/s Ratio Perm	c0.07			0.01			0.07		0.00	0.02		
v/c Ratio	0.42	0.07		0.13	0.10		0.21	0.69	0.01	0.08	0.62	
Uniform Delay, d1	17.8	21.6		33.0	33.8		15.4	21.9	16.8	17.0	22.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	0.1		0.5	0.4		0.4	3.1	0.0	0.1	1.1	
Delay (s)	18.5	21.7		33.5	34.2		15.8	25.0	16.8	17.2	23.3	
Level of Service	B	C		C	C		B	C	B	B	C	
Approach Delay (s)		19.3			34.0			23.8			23.2	
Approach LOS		B			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			23.0			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			78.1			Sum of lost time (s)			27.6			
Intersection Capacity Utilization			61.3%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

03/04/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	17	49	14	11	17	50	431	17	18	550	128
Future Volume (veh/h)	190	17	49	14	11	17	50	431	17	18	550	128
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	0.98		0.99	0.99		0.96	0.98		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	1870	1870	1796	1767	1870	1870	1870	1811	1870	1856	1811
Adj Flow Rate, veh/h	196	18	51	14	11	18	52	444	18	19	567	132
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	2	2	7	9	2	2	2	6	2	3	6
Cap, veh/h	441	56	158	347	50	82	292	620	489	264	864	200
Arrive On Green	0.14	0.13	0.13	0.08	0.08	0.08	0.05	0.33	0.33	0.02	0.31	0.31
Sat Flow, veh/h	1767	427	1209	1711	598	979	1781	1870	1475	1781	2814	653
Grp Volume(v), veh/h	196	0	69	14	0	29	52	444	18	19	354	345
Grp Sat Flow(s),veh/h/ln	1767	0	1636	1711	0	1578	1781	1870	1475	1781	1763	1704
Q Serve(g_s), s	6.3	0.0	2.5	0.4	0.0	1.1	1.3	13.4	0.5	0.5	11.3	11.4
Cycle Q Clear(g_c), s	6.3	0.0	2.5	0.4	0.0	1.1	1.3	13.4	0.5	0.5	11.3	11.4
Prop In Lane	1.00		0.74	1.00		0.62	1.00		1.00	1.00		0.38
Lane Grp Cap(c), veh/h	441	0	213	347	0	131	292	620	489	264	541	523
V/C Ratio(X)	0.44	0.00	0.32	0.04	0.00	0.22	0.18	0.72	0.04	0.07	0.65	0.66
Avail Cap(c_a), veh/h	1021	0	759	878	0	610	622	1736	1369	638	1636	1582
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.2	0.0	25.5	23.0	0.0	27.7	15.0	18.9	14.6	15.8	19.4	19.5
Incr Delay (d2), s/veh	0.7	0.0	0.9	0.0	0.0	0.8	0.3	1.6	0.0	0.1	1.3	1.4
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	2.6	0.0	1.0	0.2	0.0	0.4	0.5	5.6	0.2	0.2	4.4	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.9	0.0	26.4	23.1	0.0	28.5	15.3	20.5	14.6	15.9	20.8	20.9
LnGrp LOS	C	A	C	C	A	C	B	C	B	B	C	C
Approach Vol, veh/h	265		43				514				718	
Approach Delay, s/veh	23.8		26.7				19.8				20.7	
Approach LOS	C		C				B				C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.9	26.8	12.2	15.7	8.3	28.3	15.3	12.7				
Change Period (Y+Rc), s	* 6.9	* 6.9	* 7.3	* 7.3	* 6.9	* 6.9	6.5	* 7.3				
Max Green Setting (Gmax), s	* 15	* 60	* 25	* 30	* 15	* 60	30.0	* 25				
Max Q Clear Time (g_c+I1), s	3.3	13.4	2.4	4.5	2.5	15.4	8.3	3.1				
Green Ext Time (p_c), s	0.1	5.2	0.0	0.3	0.0	3.2	0.5	0.1				
Intersection Summary												
HCM 6th Ctrl Delay			21.1									
HCM 6th LOS			C									
Notes												

Appendix I – Intersection Analysis Worksheets – 2028 Future with Development (Full-Build -with Coffee Shop)

HCM 6th TWSC
1: Old Lee Highway & Plaza Drive

Timing Plan: AM Peak

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗	↗↗	↗
Traffic Vol, veh/h	0	18	0	609	466	3
Future Vol, veh/h	0	18	0	609	466	3
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	-	-	-	120
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	14	2	2	6	2
Mvmt Flow	0	20	0	662	507	3
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	254	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.18	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.44	-	-	-	-
Pot Cap-1 Maneuver	0	710	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	710	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	10.2	0	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	710	-	-		
HCM Lane V/C Ratio	-	0.028	-	-		
HCM Control Delay (s)	-	10.2	-	-		
HCM Lane LOS	-	B	-	-		
HCM 95th %tile Q(veh)	-	0.1	-	-		

Queues

2: Old Lee Highway & FFX Commons

Timing Plan: AM Peak

	→	↘	←	↙	↑	↗	↘	↓	↙
Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	66	13	1	73	593	13	15	500	10
v/c Ratio	0.16	0.03	0.00	0.11	0.24	0.01	0.03	0.25	0.01
Control Delay	19.6	0.1	0.0	5.5	7.5	0.0	6.1	12.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.6	0.1	0.0	5.5	7.5	0.0	6.1	12.5	0.0
Queue Length 50th (ft)	17	0	0	8	40	0	2	63	0
Queue Length 95th (ft)	49	0	0	24	124	0	8	112	0
Internal Link Dist (ft)	124		135		259			157	
Turn Bay Length (ft)				120			120		
Base Capacity (vph)	1292	1210	1324	1137	2576	1193	1140	2503	1193
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.01	0.00	0.06	0.23	0.01	0.01	0.20	0.01
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

2: Old Lee Highway & FFX Commons

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔		↖	↗	↗	↖	↗	↗
Traffic Volume (vph)	61	0	12	0	0	1	67	546	12	14	460	9
Future Volume (vph)	61	0	12	0	0	1	67	546	12	14	460	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8		6.8		6.8	6.8	6.8	6.8	6.8	6.8
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		0.86		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.95	1.00		1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1770	1583		1611		1770	3505	1583	1770	3406	1583
Flt Permitted		0.93	1.00		1.00		0.42	1.00	1.00	0.43	1.00	1.00
Satd. Flow (perm)		1733	1583		1611		773	3505	1583	797	3406	1583
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)	66	0	13	0	0	1	73	593	13	15	500	10
RTOR Reduction (vph)	0	0	12	0	1	0	0	0	7	0	0	6
Lane Group Flow (vph)	0	66	1	0	0	0	73	593	6	15	500	4
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	6%	2%
Turn Type	Perm	NA	Perm		NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4			2		2	6		6
Actuated Green, G (s)		4.3	4.3		4.3		27.2	23.6	23.6	21.8	20.9	20.9
Effective Green, g (s)		4.3	4.3		4.3		27.2	23.6	23.6	21.8	20.9	20.9
Actuated g/C Ratio		0.09	0.09		0.09		0.55	0.48	0.48	0.44	0.42	0.42
Clearance Time (s)		6.8	6.8		6.8		6.8	6.8	6.8	6.8	6.8	6.8
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		151	138		140		500	1681	759	370	1446	672
v/s Ratio Prot					0.00		c0.01	c0.17		0.00	0.15	
v/s Ratio Perm		c0.04	0.00				0.07		0.00	0.02		0.00
v/c Ratio		0.44	0.01		0.00		0.15	0.35	0.01	0.04	0.35	0.01
Uniform Delay, d1		21.3	20.5		20.5		5.2	8.0	6.7	7.7	9.5	8.2
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		2.0	0.0		0.0		0.1	0.1	0.0	0.0	0.1	0.0
Delay (s)		23.3	20.5		20.5		5.3	8.1	6.7	7.7	9.7	8.2
Level of Service		C	C		C		A	A	A	A	A	A
Approach Delay (s)		22.9			20.5			7.8			9.6	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			9.5				HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			49.2				Sum of lost time (s)			20.4		
Intersection Capacity Utilization			46.3%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: Old Lee Highway & FFX Commons

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	0	12	0	0	1	67	546	12	14	460	9
Future Volume (veh/h)	61	0	12	0	0	1	67	546	12	14	460	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1870	1870	1870	1870	1870	1870	1870	1856	1870	1870	1811	1870
Adj Flow Rate, veh/h	66	0	13	0	0	1	73	593	13	15	500	10
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, %	2	2	2	2	2	2	2	3	2	2	6	2
Cap, veh/h	311	0	159	0	0	159	506	1414	636	431	1212	558
Arrive On Green	0.10	0.00	0.10	0.00	0.00	0.10	0.07	0.40	0.40	0.02	0.35	0.35
Sat Flow, veh/h	1408	0	1585	0	0	1585	1781	3526	1585	1781	3441	1585
Grp Volume(v), veh/h	66	0	13	0	0	1	73	593	13	15	500	10
Grp Sat Flow(s),veh/h/ln	1408	0	1585	0	0	1585	1781	1763	1585	1781	1721	1585
Q Serve(g_s), s	1.9	0.0	0.3	0.0	0.0	0.0	1.1	5.2	0.2	0.2	4.7	0.2
Cycle Q Clear(g_c), s	1.9	0.0	0.3	0.0	0.0	0.0	1.1	5.2	0.2	0.2	4.7	0.2
Prop In Lane	1.00		1.00	0.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	311	0	159	0	0	159	506	1414	636	431	1212	558
V/C Ratio(X)	0.21	0.00	0.08	0.00	0.00	0.01	0.14	0.42	0.02	0.03	0.41	0.02
Avail Cap(c_a), veh/h	1200	0	1154	0	0	1154	1221	2484	1117	1234	2425	1117
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	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.1	0.0	17.4	0.0	0.0	17.2	7.7	9.2	7.7	8.6	10.4	9.0
Incr Delay (d2), s/veh	0.3	0.0	0.2	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.2	0.0
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	0.1	0.0	0.0	0.0	0.3	1.5	0.1	0.1	1.4	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.4	0.0	17.6	0.0	0.0	17.2	7.9	9.4	7.7	8.6	10.7	9.0
LnGrp LOS	B	A	B	A	A	B	A	A	A	A	B	A
Approach Vol, veh/h	79			1				679			525	
Approach Delay, s/veh	18.3			17.2				9.2			10.6	
Approach LOS	B			B				A			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	23.9		11.1	9.7	21.8		11.1				
Change Period (Y+Rc), s	* 6.8	* 6.8		* 6.8	* 6.8	* 6.8		* 6.8				
Max Green Setting (Gmax), s	* 20	* 30		* 31	* 20	* 30		* 31				
Max Q Clear Time (g_c+I1), s	2.2	7.2		2.0	3.1	6.7		3.9				
Green Ext Time (p_c), s	0.0	4.2		0.0	0.1	3.5		0.4				
Intersection Summary												
HCM 6th Ctrl Delay			10.3									
HCM 6th LOS			B									
Notes												

HCM 6th TWSC
4: Old Lee Highway

Timing Plan: AM Peak

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗	↗↗	↗
Traffic Vol, veh/h	0	47	0	625	412	60
Future Vol, veh/h	0	47	0	625	412	60
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	-	-	-	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	6	2
Mvmt Flow	0	51	0	679	448	65
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	224	-	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	779	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	779	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.9	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 779		-	-		
HCM Lane V/C Ratio	- 0.066		-	-		
HCM Control Delay (s)	- 9.9		-	-		
HCM Lane LOS	- A		-	-		
HCM 95th %tile Q(veh)	- 0.2		-	-		

HCM 6th TWSC
5: University Drive & Street 1

Timing Plan: AM Peak

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	0	0	1	34	0	38	13	299	47	44	207	5
Future Vol, veh/h	0	0	1	34	0	38	13	299	47	44	207	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	1	37	0	41	14	325	51	48	225	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	723	728	228	703	705	351	230	0	0	376	0	0
Stage 1	324	324	-	379	379	-	-	-	-	-	-	-
Stage 2	399	404	-	324	326	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	342	350	811	352	361	692	1338	-	-	1182	-	-
Stage 1	688	650	-	643	615	-	-	-	-	-	-	-
Stage 2	627	599	-	688	648	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	309	332	811	338	343	692	1338	-	-	1182	-	-
Mov Cap-2 Maneuver	309	332	-	338	343	-	-	-	-	-	-	-
Stage 1	681	623	-	637	609	-	-	-	-	-	-	-
Stage 2	583	593	-	659	621	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.4		14.4		0.3		1.4	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1338	-	-	811	463	1182	-
HCM Lane V/C Ratio	0.011	-	-	0.001	0.169	0.04	-
HCM Control Delay (s)	7.7	-	-	9.4	14.4	8.2	-
HCM Lane LOS	A	-	-	A	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.6	0.1	-

HCM 6th TWSC
6: University Drive & 7-11 Entrance

Timing Plan: AM Peak

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	15	10	327	241	12
Future Vol, veh/h	5	15	10	327	241	12
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	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	10	2	4	2
Mvmt Flow	5	16	11	355	262	13

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	646	269	275	0	-	0
Stage 1	269	-	-	-	-	-
Stage 2	377	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.2	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.29	-	-	-
Pot Cap-1 Maneuver	436	770	1243	-	-	-
Stage 1	776	-	-	-	-	-
Stage 2	694	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	432	770	1243	-	-	-
Mov Cap-2 Maneuver	529	-	-	-	-	-
Stage 1	769	-	-	-	-	-
Stage 2	694	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1243	-	691	-	-
HCM Lane V/C Ratio	0.009	-	0.031	-	-
HCM Control Delay (s)	7.9	-	10.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Queues

7: University Drive & Whitehead Street/Democracy Lane

Timing Plan: AM Peak

							
Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	127	32	88	8	354	15	214
v/c Ratio	0.33	0.06	0.20	0.01	0.39	0.03	0.29
Control Delay	19.4	3.0	13.6	12.6	13.4	12.7	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	3.0	13.6	12.6	13.4	12.7	13.1
Queue Length 50th (ft)	17	0	7	1	43	2	24
Queue Length 95th (ft)	110	10	64	12	228	18	142
Internal Link Dist (ft)	232		266		127		218
Turn Bay Length (ft)				50		150	
Base Capacity (vph)	878	1109	969	1064	1693	857	1381
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	0.03	0.09	0.01	0.21	0.02	0.15
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

7: University Drive & Whitehead Street/Democracy Lane

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	17	29	39	9	33	7	303	23	14	186	11
Future Volume (vph)	100	17	29	39	9	33	7	303	23	14	186	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.96		0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00		0.99		1.00	1.00		0.99	1.00	
Frt		1.00	0.85		0.94		1.00	0.99		1.00	0.99	
Flt Protected		0.96	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1675	1506		1650		1765	1839		1744	1498	
Flt Permitted		0.70	1.00		0.78		0.62	1.00		0.51	1.00	
Satd. Flow (perm)		1215	1506		1326		1160	1839		934	1498	
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)	109	18	32	42	10	36	8	329	25	15	202	12
RTOR Reduction (vph)	0	0	26	0	23	0	0	3	0	0	2	0
Lane Group Flow (vph)	0	127	6	0	65	0	8	351	0	15	212	0
Confl. Peds. (#/hr)	1		8	8		1	3		7	7		3
Heavy Vehicles (%)	7%	18%	3%	5%	11%	2%	2%	2%	2%	3%	27%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		
Actuated Green, G (s)		8.4	8.4		8.4		16.3	16.3		16.3	16.3	
Effective Green, g (s)		8.4	8.4		8.4		16.3	16.3		16.3	16.3	
Actuated g/C Ratio		0.20	0.20		0.20		0.39	0.39		0.39	0.39	
Clearance Time (s)		6.0	6.0		6.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		245	304		267		454	720		365	586	
v/s Ratio Prot							c0.19				0.14	
v/s Ratio Perm		c0.10	0.00		0.05		0.01			0.02		
v/c Ratio		0.52	0.02		0.24		0.02	0.49		0.04	0.36	
Uniform Delay, d1		14.8	13.3		13.9		7.7	9.5		7.8	9.0	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.9	0.0		0.5		0.0	0.5		0.0	0.4	
Delay (s)		16.6	13.3		14.4		7.8	10.0		7.9	9.3	
Level of Service		B	B		B		A	B		A	A	
Approach Delay (s)		16.0			14.4			10.0			9.2	
Approach LOS		B			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			11.4			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			41.6			Sum of lost time (s)				15.0		
Intersection Capacity Utilization			37.9%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology does not support exclusive ped or hold phases.

Intersection

Int Delay, s/veh 4.7

Movement EBT EBR WBL WBT NBL NBRLane Configurations 

Traffic Vol, veh/h 40 14 12 35 46 37

Future Vol, veh/h 40 14 12 35 46 37

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

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 43 15 13 38 50 40

Major/Minor Major1 Major2 Minor1

Conflicting Flow All 0 0 58 0 115 51

Stage 1 - - - - 51 -

Stage 2 - - - - 64 -

Critical Hdwy - - 4.12 - 6.42 6.22

Critical Hdwy Stg 1 - - - - 5.42 -

Critical Hdwy Stg 2 - - - - 5.42 -

Follow-up Hdwy - - 2.218 - 3.518 3.318

Pot Cap-1 Maneuver - - 1546 - 881 1017

Stage 1 - - - - 971 -

Stage 2 - - - - 959 -

Platoon blocked, % - - -

Mov Cap-1 Maneuver - - 1546 - 873 1017

Mov Cap-2 Maneuver - - - - 873 -

Stage 1 - - - - 971 -

Stage 2 - - - - 950 -

Approach EB WB NB

HCM Control Delay, s 0 1.9 9.3

HCM LOS A

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

Capacity (veh/h) 932 - - 1546 -

HCM Lane V/C Ratio 0.097 - - 0.008 -

HCM Control Delay (s) 9.3 - - 7.3 0

HCM Lane LOS A - - A A

HCM 95th %tile Q(veh) 0.3 - - 0 -

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	22	271	6	16	176	10	2	1	23	0	0	4
Future Vol, veh/h	22	271	6	16	176	10	2	1	23	0	0	4
Conflicting Peds, #/hr	9	0	0	0	0	9	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	5	2	2	3	2	2	2	17	2	2	2
Mvmt Flow	24	295	7	17	191	11	2	1	25	0	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	211	0	0	302	0	0	580	592	299	600	590	206
Stage 1	-	-	-	-	-	-	347	347	-	240	240	-
Stage 2	-	-	-	-	-	-	233	245	-	360	350	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.37	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.453	3.518	4.018	3.318
Pot Cap-1 Maneuver	1360	-	-	1259	-	-	426	419	707	413	420	835
Stage 1	-	-	-	-	-	-	669	635	-	763	707	-
Stage 2	-	-	-	-	-	-	770	703	-	658	633	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1348	-	-	1259	-	-	412	401	707	383	402	828
Mov Cap-2 Maneuver	-	-	-	-	-	-	412	401	-	383	402	-
Stage 1	-	-	-	-	-	-	655	622	-	741	690	-
Stage 2	-	-	-	-	-	-	754	686	-	620	620	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.6			0.6			10.8			9.4		
HCM LOS							B			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	652	1348	-	-	1259	-	-	828
HCM Lane V/C Ratio	0.043	0.018	-	-	0.014	-	-	0.005
HCM Control Delay (s)	10.8	7.7	0	-	7.9	0	-	9.4
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0

Queues

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: AM Peak



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	271	44	14	54	67	584	5	17	626
v/c Ratio	0.63	0.10	0.10	0.32	0.18	0.75	0.01	0.06	0.54
Control Delay	44.8	20.9	54.8	26.9	15.7	32.5	0.0	15.0	26.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.8	20.9	54.8	26.9	15.7	32.5	0.0	15.0	26.3
Queue Length 50th (ft)	132	7	7	6	21	260	0	5	155
Queue Length 95th (ft)	324	46	35	52	50	560	0	18	244
Internal Link Dist (ft)		305		220		842			355
Turn Bay Length (ft)							230	150	
Base Capacity (vph)	645	630	522	530	489	1237	1069	433	2233
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.07	0.03	0.10	0.14	0.47	0.00	0.04	0.28
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	249	17	24	13	10	40	62	537	5	16	433	143
Future Volume (vph)	249	17	24	13	10	40	62	537	5	16	433	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		7.3	7.3		6.9	6.9	6.9	6.9	6.9	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00	0.97	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.91		1.00	0.88		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1719	1639		1671	1606		1769	1827	1533	1702	3284	
Flt Permitted	0.95	1.00		0.95	1.00		0.30	1.00	1.00	0.23	1.00	
Satd. Flow (perm)	1719	1639		1671	1606		562	1827	1533	412	3284	
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)	271	18	26	14	11	43	67	584	5	17	471	155
RTOR Reduction (vph)	0	20	0	0	41	0	0	0	3	0	21	0
Lane Group Flow (vph)	271	24	0	14	13	0	67	584	2	17	605	0
Confl. Peds. (#/hr)	3		1	1		3	1		5	5		1
Heavy Vehicles (%)	5%	6%	4%	8%	2%	2%	2%	4%	2%	6%	6%	3%
Turn Type	Split	NA		Split	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases							6		6	2		
Actuated Green, G (s)	23.2	23.2		5.3	5.3		45.5	39.6	39.6	37.9	35.8	
Effective Green, g (s)	23.2	23.2		5.3	5.3		45.5	39.6	39.6	37.9	35.8	
Actuated g/C Ratio	0.24	0.24		0.05	0.05		0.47	0.40	0.40	0.39	0.37	
Clearance Time (s)	6.5	6.5		7.3	7.3		6.9	6.9	6.9	6.9	6.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	407	388		90	87		334	739	620	187	1202	
v/s Ratio Prot	c0.16	0.01		c0.01	0.01		c0.01	c0.32		0.00	0.18	
v/s Ratio Perm							0.08		0.00	0.03		
v/c Ratio	0.67	0.06		0.16	0.15		0.20	0.79	0.00	0.09	0.50	
Uniform Delay, d1	33.8	28.9		44.1	44.1		15.2	25.5	17.3	20.1	24.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.1	0.1		0.8	0.8		0.3	5.8	0.0	0.2	0.3	
Delay (s)	37.9	28.9		44.9	44.9		15.5	31.2	17.3	20.3	24.4	
Level of Service	D	C		D	D		B	C	B	C	C	
Approach Delay (s)		36.6			44.9			29.5			24.3	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			29.5			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			97.8			Sum of lost time (s)			27.6			
Intersection Capacity Utilization			69.8%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	249	17	24	13	10	40	62	537	5	16	433	143
Future Volume (veh/h)	249	17	24	13	10	40	62	537	5	16	433	143
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1826	1811	1841	1781	1870	1870	1870	1841	1870	1811	1811	1856
Adj Flow Rate, veh/h	271	18	26	14	11	43	67	584	5	17	471	155
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, %	5	6	4	8	2	2	2	4	2	6	6	3
Cap, veh/h	334	128	185	98	19	75	336	689	589	194	877	286
Arrive On Green	0.19	0.19	0.19	0.06	0.06	0.06	0.05	0.37	0.37	0.02	0.34	0.34
Sat Flow, veh/h	1739	666	963	1697	329	1288	1781	1841	1574	1725	2544	831
Grp Volume(v), veh/h	271	0	44	14	0	54	67	584	5	17	317	309
Grp Sat Flow(s),veh/h/ln	1739	0	1629	1697	0	1617	1781	1841	1574	1725	1721	1654
Q Serve(g_s), s	11.6	0.0	1.7	0.6	0.0	2.5	1.8	22.5	0.2	0.5	11.5	11.6
Cycle Q Clear(g_c), s	11.6	0.0	1.7	0.6	0.0	2.5	1.8	22.5	0.2	0.5	11.5	11.6
Prop In Lane	1.00		0.59	1.00		0.80	1.00		1.00	1.00		0.50
Lane Grp Cap(c), veh/h	334	0	312	98	0	94	336	689	589	194	593	570
V/C Ratio(X)	0.81	0.00	0.14	0.14	0.00	0.58	0.20	0.85	0.01	0.09	0.54	0.54
Avail Cap(c_a), veh/h	673	0	631	547	0	522	593	1425	1219	494	1332	1281
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(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.0	0.0	26.0	34.7	0.0	35.6	15.7	22.2	15.2	18.5	20.4	20.5
Incr Delay (d2), s/veh	4.8	0.0	0.2	0.7	0.0	5.5	0.3	3.0	0.0	0.2	0.8	0.8
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	5.2	0.0	0.7	0.3	0.0	1.1	0.7	9.6	0.1	0.2	4.5	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.8	0.0	26.2	35.3	0.0	41.0	16.0	25.2	15.2	18.7	21.2	21.3
LnGrp LOS	C	A	C	D	A	D	B	C	B	B	C	C
Approach Vol, veh/h	315			68			656			643		
Approach Delay, s/veh	33.6			39.8			24.2			21.1		
Approach LOS	C			D			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.7	33.6		21.4	8.4	35.9		11.8				
Change Period (Y+Rc), s	* 6.9	* 6.9		6.5	* 6.9	* 6.9		7.3				
Max Green Setting (Gmax), s	* 15	* 60		30.0	* 15	* 60		25.0				
Max Q Clear Time (g_c+l1), s	3.8	13.6		13.6	2.5	24.5		4.5				
Green Ext Time (p_c), s	0.1	4.5		1.0	0.0	4.5		0.3				

Intersection Summary

HCM 6th Ctrl Delay	25.4
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
1: Old Lee Highway

Timing Plan: PM Peak

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗	↗↗	↗
Traffic Vol, veh/h	0	32	0	508	616	6
Future Vol, veh/h	0	32	0	508	616	6
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	-	-	-	120
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	3	2
Mvmt Flow	0	35	0	552	670	7
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	335	-	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	661	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	661	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.7	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 661		-	-		
HCM Lane V/C Ratio	- 0.053		-	-		
HCM Control Delay (s)	- 10.7		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0.2		-	-		

Queues

2: Old Lee Highway

Timing Plan: PM Peak

									
Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	58	63	78	90	482	12	16	638	40
v/c Ratio	0.34	0.20	0.40	0.15	0.20	0.01	0.03	0.33	0.04
Control Delay	32.6	3.1	31.4	5.0	6.5	0.0	5.2	12.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	3.1	31.4	5.0	6.5	0.0	5.2	12.8	0.1
Queue Length 50th (ft)	22	0	27	11	33	0	2	89	0
Queue Length 95th (ft)	55	10	65	28	97	0	8	147	0
Internal Link Dist (ft)	173		199		207			142	
Turn Bay Length (ft)				120			120		
Base Capacity (vph)	601	813	658	804	2457	1133	899	1927	897
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.08	0.12	0.11	0.20	0.01	0.02	0.33	0.04
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

2: Old Lee Highway

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔		↖	↗	↗	↖	↗	↗
Traffic Volume (vph)	50	4	59	54	8	10	84	448	11	15	593	37
Future Volume (vph)	50	4	59	54	8	10	84	448	11	15	593	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8		6.8		6.8	6.8	6.8	6.8	6.8	6.8
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1743	1568		1762		1770	3539	1583	1770	3505	1538
Flt Permitted		0.68	1.00		0.74		0.35	1.00	1.00	0.48	1.00	1.00
Satd. Flow (perm)		1249	1568		1359		648	3539	1583	888	3505	1538
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	54	4	63	58	9	11	90	482	12	16	638	40
RTOR Reduction (vph)	0	0	57	0	7	0	0	0	5	0	0	19
Lane Group Flow (vph)	0	58	6	0	71	0	90	482	7	16	638	21
Heavy Vehicles (%)	3%	20%	3%	2%	2%	2%	2%	2%	2%	2%	3%	5%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4			2		2	6		6
Actuated Green, G (s)		7.3	7.3		7.3		50.2	43.6	43.6	39.2	38.1	38.1
Effective Green, g (s)		7.3	7.3		7.3		50.2	43.6	43.6	39.2	38.1	38.1
Actuated g/C Ratio		0.10	0.10		0.10		0.69	0.60	0.60	0.54	0.53	0.53
Clearance Time (s)		6.8	6.8		6.8		6.8	6.8	6.8	6.8	6.8	6.8
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		125	158		137		551	2131	953	494	1844	809
v/s Ratio Prot							c0.01	c0.14		0.00	c0.18	
v/s Ratio Perm		0.05	0.00		c0.05		0.10		0.00	0.02		0.01
v/c Ratio		0.46	0.04		0.52		0.16	0.23	0.01	0.03	0.35	0.03
Uniform Delay, d1		30.7	29.4		30.9		3.9	6.6	5.8	7.7	9.9	8.2
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		2.7	0.1		3.3		0.1	0.1	0.0	0.0	0.5	0.1
Delay (s)		33.4	29.5		34.1		4.1	6.7	5.8	7.7	10.4	8.3
Level of Service		C	C		C		A	A	A	A	B	A
Approach Delay (s)		31.4			34.1			6.3			10.3	
Approach LOS		C			C			A			B	
Intersection Summary												
HCM 2000 Control Delay			11.7				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.36									
Actuated Cycle Length (s)			72.4				Sum of lost time (s)			20.4		
Intersection Capacity Utilization			48.7%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: Old Lee Highway

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	4	59	54	8	10	84	448	11	15	593	37
Future Volume (veh/h)	50	4	59	54	8	10	84	448	11	15	593	37
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	1604	1856	1870	1870	1870	1870	1870	1870	1870	1856	1826
Adj Flow Rate, veh/h	54	4	63	58	9	11	90	482	12	16	638	40
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	20	3	2	2	2	2	2	2	2	3	5
Cap, veh/h	254	14	174	181	30	18	521	1904	849	571	1732	760
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.06	0.54	0.54	0.02	0.49	0.49
Sat Flow, veh/h	1266	129	1572	707	268	160	1781	3554	1585	1781	3526	1547
Grp Volume(v), veh/h	58	0	63	78	0	0	90	482	12	16	638	40
Grp Sat Flow(s),veh/h/ln	1395	0	1572	1135	0	0	1781	1777	1585	1781	1763	1547
Q Serve(g_s), s	0.0	0.0	2.3	2.4	0.0	0.0	1.4	4.4	0.2	0.3	6.9	0.8
Cycle Q Clear(g_c), s	2.2	0.0	2.3	4.6	0.0	0.0	1.4	4.4	0.2	0.3	6.9	0.8
Prop In Lane	0.93		1.00	0.74		0.14	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	268	0	174	228	0	0	521	1904	849	571	1732	760
V/C Ratio(X)	0.22	0.00	0.36	0.34	0.00	0.00	0.17	0.25	0.01	0.03	0.37	0.05
Avail Cap(c_a), veh/h	750	0	798	789	0	0	990	1904	849	1119	1732	760
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	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.1	0.0	25.2	26.5	0.0	0.0	6.8	7.6	6.6	7.4	9.7	8.1
Incr Delay (d2), s/veh	0.4	0.0	1.3	0.9	0.0	0.0	0.2	0.1	0.0	0.0	0.6	0.1
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	0.8	0.0	0.9	1.1	0.0	0.0	0.5	1.4	0.1	0.1	2.4	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.5	0.0	26.4	27.3	0.0	0.0	7.0	7.7	6.6	7.4	10.3	8.2
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	B	A
Approach Vol, veh/h	121			78			584			694		
Approach Delay, s/veh	26.0			27.3			7.5			10.1		
Approach LOS	C			C			A			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	39.5		13.6	10.7	36.8		13.6				
Change Period (Y+Rc), s	* 6.8	* 6.8		* 6.8	* 6.8	* 6.8		* 6.8				
Max Green Setting (Gmax), s	* 20	* 30		* 31	* 20	* 30		* 31				
Max Q Clear Time (g_c+I1), s	2.3	6.4		6.6	3.4	8.9		4.3				
Green Ext Time (p_c), s	0.0	3.3		0.4	0.2	4.6		0.5				

Intersection Summary

HCM 6th Ctrl Delay 11.3

HCM 6th LOS B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
4: Old Lee Highway

Timing Plan: PM Peak

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗	↗↗	↗
Traffic Vol, veh/h	0	30	0	543	677	31
Future Vol, veh/h	0	30	0	543	677	31
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	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	3	3	2
Mvmt Flow	0	32	0	572	713	33
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	357	-	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	639	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	639	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.9	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 639		-	-		
HCM Lane V/C Ratio	- 0.049		-	-		
HCM Control Delay (s)	- 10.9		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0.2		-	-		

HCM 6th TWSC
5: University Drive & Street 1

Timing Plan: PM Peak

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	3	0	18	42	0	42	1	300	70	37	379	1
Future Vol, veh/h	3	0	18	42	0	42	1	300	70	37	379	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	20	46	0	46	1	326	76	40	412	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	882	897	413	869	859	364	413	0	0	402	0	0
Stage 1	493	493	-	366	366	-	-	-	-	-	-	-
Stage 2	389	404	-	503	493	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	267	279	639	272	294	681	1146	-	-	1157	-	-
Stage 1	558	547	-	653	623	-	-	-	-	-	-	-
Stage 2	635	599	-	551	547	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	242	269	639	256	283	681	1146	-	-	1157	-	-
Mov Cap-2 Maneuver	242	269	-	256	283	-	-	-	-	-	-	-
Stage 1	557	528	-	652	622	-	-	-	-	-	-	-
Stage 2	592	598	-	516	528	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.3		17.8		0		0.7	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1146	-	-	518	372	1157	-	-
HCM Lane V/C Ratio	0.001	-	-	0.044	0.245	0.035	-	-
HCM Control Delay (s)	8.1	-	-	12.3	17.8	8.2	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.9	0.1	-	-

HCM 6th TWSC
6: University Drive

Timing Plan: PM Peak

Intersection

Int Delay, s/veh 0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	23	16	329	393	21
Future Vol, veh/h	16	23	16	329	393	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	-	50	-	-	-
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	17	25	17	358	427	23

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	831	439	450
Stage 1	439	-	-
Stage 2	392	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	340	618	1110
Stage 1	650	-	-
Stage 2	683	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	335	618	1110
Mov Cap-2 Maneuver	454	-	-
Stage 1	640	-	-
Stage 2	683	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.3	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1110	-	538	-	-
HCM Lane V/C Ratio	0.016	-	0.079	-	-
HCM Control Delay (s)	8.3	-	12.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Queues

7: University Drive & Whitehead Street/Democracy Lane

Timing Plan: PM Peak

							
Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	106	71	119	29	344	34	323
v/c Ratio	0.24	0.14	0.29	0.06	0.38	0.07	0.36
Control Delay	18.0	6.9	17.6	12.2	12.8	12.3	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	6.9	17.6	12.2	12.8	12.3	12.7
Queue Length 50th (ft)	13	0	14	3	38	3	36
Queue Length 95th (ft)	90	32	96	28	212	31	200
Internal Link Dist (ft)	245		267		117		232
Turn Bay Length (ft)				50		150	
Base Capacity (vph)	1036	1138	971	933	1670	884	1681
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	0.10	0.06	0.12	0.03	0.21	0.04	0.19
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

7: University Drive & Whitehead Street/Democracy Lane

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↱		↰	↱	
Traffic Volume (vph)	51	47	65	67	21	21	27	270	47	31	276	21
Future Volume (vph)	51	47	65	67	21	21	27	270	47	31	276	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.95		0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00	1.00		0.98		0.99	1.00		0.99	1.00	
Frt		1.00	0.85		0.97		1.00	0.98		1.00	0.99	
Flt Protected		0.97	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1757	1503		1683		1754	1810		1747	1817	
Flt Permitted		0.77	1.00		0.75		0.55	1.00		0.53	1.00	
Satd. Flow (perm)		1396	1503		1304		1018	1810		966	1817	
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)	55	51	71	73	23	23	29	293	51	34	300	23
RTOR Reduction (vph)	0	0	57	0	8	0	0	6	0	0	3	0
Lane Group Flow (vph)	0	106	14	0	111	0	29	338	0	34	320	0
Confl. Peds. (#/hr)	3		12	12		3	12		18	18		12
Heavy Vehicles (%)	6%	4%	2%	2%	14%	2%	2%	2%	2%	2%	2%	19%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		
Actuated Green, G (s)		7.7	7.7		7.7		15.7	15.7		15.7	15.7	
Effective Green, g (s)		7.7	7.7		7.7		15.7	15.7		15.7	15.7	
Actuated g/C Ratio		0.19	0.19		0.19		0.39	0.39		0.39	0.39	
Clearance Time (s)		6.0	6.0		6.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		266	287		249		396	705		376	707	
v/s Ratio Prot							c0.19				0.18	
v/s Ratio Perm		0.08	0.01		c0.09		0.03			0.04		
v/c Ratio		0.40	0.05		0.45		0.07	0.48		0.09	0.45	
Uniform Delay, d1		14.3	13.3		14.4		7.7	9.2		7.8	9.1	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.0	0.1		1.3		0.1	0.5		0.1	0.5	
Delay (s)		15.3	13.4		15.7		7.8	9.7		7.9	9.6	
Level of Service		B	B		B		A	A		A	A	
Approach Delay (s)		14.5			15.7			9.6			9.4	
Approach LOS		B			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			11.1				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			40.3				Sum of lost time (s)			15.0		
Intersection Capacity Utilization			47.8%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology does not support exclusive ped or hold phases.

Intersection

Int Delay, s/veh 2.2

Movement EBT EBR WBL WBT NBL NBRLane Configurations 

Traffic Vol, veh/h 91 34 30 87 22 19

Future Vol, veh/h 91 34 30 87 22 19

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

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 99 37 33 95 24 21

Major/Minor Major1 Major2 Minor1

Conflicting Flow All 0 0 136 0 279 118

Stage 1 - - - - 118 -

Stage 2 - - - - 161 -

Critical Hdwy - - 4.12 - 6.42 6.22

Critical Hdwy Stg 1 - - - - 5.42 -

Critical Hdwy Stg 2 - - - - 5.42 -

Follow-up Hdwy - - 2.218 - 3.518 3.318

Pot Cap-1 Maneuver - - 1448 - 711 934

Stage 1 - - - - 907 -

Stage 2 - - - - 868 -

Platoon blocked, % - - - - -

Mov Cap-1 Maneuver - - 1448 - 694 934

Mov Cap-2 Maneuver - - - - 694 -

Stage 1 - - - - 907 -

Stage 2 - - - - 847 -

Approach EB WB NB

HCM Control Delay, s 0 1.9 9.8

HCM LOS A

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

Capacity (veh/h) 788 - - 1448 -

HCM Lane V/C Ratio 0.057 - - 0.023 -

HCM Control Delay (s) 9.8 - - 7.5 0

HCM Lane LOS A - - A A

HCM 95th %tile Q(veh) 0.2 - - 0.1 -

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	216	16	25	162	0	9	0	34	4	0	12
Future Vol, veh/h	1	216	16	25	162	0	9	0	34	4	0	12
Conflicting Peds, #/hr	2	0	0	0	0	2	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	13	7	3	2	2	2	2	2	2	2
Mvmt Flow	1	235	17	27	176	0	10	0	37	4	0	13
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	178	0	0	252	0	0	484	478	244	496	486	179
Stage 1	-	-	-	-	-	-	246	246	-	232	232	-
Stage 2	-	-	-	-	-	-	238	232	-	264	254	-
Critical Hdwy	4.12	-	-	4.17	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.263	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1398	-	-	1285	-	-	493	486	795	484	481	864
Stage 1	-	-	-	-	-	-	758	703	-	771	713	-
Stage 2	-	-	-	-	-	-	765	713	-	741	697	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1395	-	-	1285	-	-	476	473	795	452	468	862
Mov Cap-2 Maneuver	-	-	-	-	-	-	476	473	-	452	468	-
Stage 1	-	-	-	-	-	-	757	702	-	769	695	-
Stage 2	-	-	-	-	-	-	735	695	-	706	696	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.1			10.5			10.3		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	697	1395	-	-	1285	-	-	703				
HCM Lane V/C Ratio	0.067	0.001	-	-	0.021	-	-	0.025				
HCM Control Delay (s)	10.5	7.6	0	-	7.9	0	-	10.3				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.1				

Queues

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: PM Peak



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	196	69	14	29	52	456	18	19	710
v/c Ratio	0.53	0.18	0.09	0.17	0.14	0.56	0.03	0.05	0.59
Control Delay	37.8	15.0	44.2	28.4	13.3	23.4	0.1	13.2	24.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.8	15.0	44.2	28.4	13.3	23.4	0.1	13.2	24.4
Queue Length 50th (ft)	91	8	7	5	14	154	0	5	161
Queue Length 95th (ft)	197	47	30	37	38	376	0	19	264
Internal Link Dist (ft)		305		220		864			293
Turn Bay Length (ft)							230	150	
Base Capacity (vph)	796	770	639	623	532	1457	1075	593	2635
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.09	0.02	0.05	0.10	0.31	0.02	0.03	0.27
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	190	17	49	14	11	17	50	442	17	18	561	128
Future Volume (vph)	190	17	49	14	11	17	50	442	17	18	561	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		7.3	7.3		6.9	6.9	6.9	6.9	6.9	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00	0.93	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	
Frt	1.00	0.89		1.00	0.91		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1752	1638		1687	1621		1768	1863	1413	1754	3369	
Flt Permitted	0.95	1.00		0.95	1.00		0.26	1.00	1.00	0.39	1.00	
Satd. Flow (perm)	1752	1638		1687	1621		493	1863	1413	721	3369	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	196	18	51	14	11	18	52	456	18	19	578	132
RTOR Reduction (vph)	0	41	0	0	17	0	0	0	11	0	13	0
Lane Group Flow (vph)	196	28	0	14	12	0	52	456	7	19	697	0
Confl. Peds. (#/hr)	3		3	3		3	6		26	26		6
Heavy Vehicles (%)	3%	2%	2%	7%	9%	2%	2%	2%	6%	2%	3%	6%
Turn Type	Split	NA		Split	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases							6		6	2		
Actuated Green, G (s)	16.2	16.2		3.6	3.6		38.8	33.4	33.4	32.2	30.1	
Effective Green, g (s)	16.2	16.2		3.6	3.6		38.8	33.4	33.4	32.2	30.1	
Actuated g/C Ratio	0.20	0.20		0.04	0.04		0.47	0.40	0.40	0.39	0.36	
Clearance Time (s)	6.5	6.5		7.3	7.3		6.9	6.9	6.9	6.9	6.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	342	320		73	70		313	750	569	306	1223	
v/s Ratio Prot	c0.11	0.02		c0.01	0.01		c0.01	c0.24		0.00	0.21	
v/s Ratio Perm							0.07		0.01	0.02		
v/c Ratio	0.57	0.09		0.19	0.17		0.17	0.61	0.01	0.06	0.57	
Uniform Delay, d1	30.2	27.3		38.2	38.2		12.8	19.6	14.9	15.9	21.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.3	0.1		1.3	1.1		0.3	1.4	0.0	0.1	0.6	
Delay (s)	32.5	27.4		39.5	39.3		13.0	21.0	14.9	16.0	21.8	
Level of Service	C	C		D	D		B	C	B	B	C	
Approach Delay (s)		31.2			39.4			20.0			21.7	
Approach LOS		C			D			B			C	
Intersection Summary												
HCM 2000 Control Delay			23.2			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			82.9			Sum of lost time (s)			27.6			
Intersection Capacity Utilization			61.9%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

10: Old Lee Highway & Layton Hall Drive/Farrcroft Drive

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	17	49	14	11	17	50	442	17	18	561	128
Future Volume (veh/h)	190	17	49	14	11	17	50	442	17	18	561	128
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.99		0.96	0.98		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	1870	1870	1796	1767	1870	1870	1870	1811	1870	1856	1811
Adj Flow Rate, veh/h	196	18	51	14	11	18	52	456	18	19	578	132
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	2	2	7	9	2	2	2	6	2	3	6
Cap, veh/h	277	67	190	87	30	50	295	630	497	264	882	201
Arrive On Green	0.16	0.16	0.16	0.05	0.05	0.05	0.05	0.34	0.34	0.02	0.31	0.31
Sat Flow, veh/h	1767	427	1211	1711	598	979	1781	1870	1476	1781	2826	643
Grp Volume(v), veh/h	196	0	69	14	0	29	52	456	18	19	360	350
Grp Sat Flow(s),veh/h/ln	1767	0	1639	1711	0	1577	1781	1870	1476	1781	1763	1707
Q Serve(g_s), s	6.7	0.0	2.4	0.5	0.0	1.1	1.2	13.6	0.5	0.5	11.2	11.3
Cycle Q Clear(g_c), s	6.7	0.0	2.4	0.5	0.0	1.1	1.2	13.6	0.5	0.5	11.2	11.3
Prop In Lane	1.00		0.74	1.00		0.62	1.00		1.00	1.00		0.38
Lane Grp Cap(c), veh/h	277	0	257	87	0	80	295	630	497	264	550	533
V/C Ratio(X)	0.71	0.00	0.27	0.16	0.00	0.36	0.18	0.72	0.04	0.07	0.65	0.66
Avail Cap(c_a), veh/h	832	0	772	671	0	619	631	1762	1390	644	1660	1608
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.5	0.0	23.6	28.9	0.0	29.2	14.5	18.5	14.2	15.4	18.9	19.0
Incr Delay (d2), s/veh	3.3	0.0	0.6	0.9	0.0	2.7	0.3	1.6	0.0	0.1	1.3	1.4
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	3.0	0.0	0.9	0.2	0.0	0.5	0.5	5.6	0.2	0.2	4.4	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.8	0.0	24.2	29.8	0.0	32.0	14.8	20.1	14.2	15.5	20.3	20.4
LnGrp LOS	C	A	C	C	A	C	B	C	B	B	C	C
Approach Vol, veh/h		265			43			526			729	
Approach Delay, s/veh		27.6			31.3			19.4			20.2	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.9	26.8		16.5	8.3	28.4		10.5				
Change Period (Y+Rc), s	* 6.9	* 6.9		6.5	* 6.9	* 6.9		7.3				
Max Green Setting (Gmax), s	* 15	* 60		30.0	* 15	* 60		25.0				
Max Q Clear Time (g_c+I1), s	3.2	13.3		8.7	2.5	15.6		3.1				
Green Ext Time (p_c), s	0.1	5.3		1.0	0.0	3.3		0.1				

Intersection Summary

HCM 6th Ctrl Delay	21.5
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Appendix J – Site Visit Photographs

**Intersection 1: Blenheim Blvd and Street 3/
Plaza Dr**



Photograph taken at Intersection 1, looking North

**Intersection 1: Blenheim Blvd and Street 3/
Plaza Dr**



Photograph taken at Intersection 1, looking South

**Intersection 2: Blenheim Blvd and Fairfax
Commons Entrance**



Photograph taken at Intersection 2, looking North

**Intersection 2: Blenheim Blvd and Fairfax
Commons Entrance**



Photograph taken at Intersection 2, looking East

Intersection 2: Blenheim Blvd and Fairfax Commons Entrance



Photograph taken at Intersection 2, looking South

Intersection 4: Blenheim Blvd and Southern Entrance



Photograph taken at Intersection 4, looking North

Intersection 4: Blenheim Blvd and Southern Entrance



Photograph taken at Intersection 4, looking South

Intersection 4: Blenheim Blvd and Southern Entrance



Photograph taken at Intersection 4, looking West

Intersection 4: Blenheim Blvd and Southern Entrance



Intersection 6: University Drive and Existing Courthouse Plaza Entrance/7-11 Entrance



Intersection 6: University Drive and Existing Courthouse Plaza Entrance/7-11 Entrance



Intersection 6: University Drive and Existing Courthouse Plaza Entrance/7-11 Entrance



Intersection 7: University Drive and Democracy Ln/Whitehead St



Photograph taken at Intersection 7, looking South

Intersection 7: University Drive and Democracy Ln/Whitehead St



Photograph taken at Intersection 7, looking West

Intersection 7: University Drive and Democracy Ln/Whitehead St



Photograph taken at Intersection 7, looking North and East

Intersection 7: University Drive and Democracy Ln/Whitehead St



Photograph taken at Intersection 7, looking North

Intersection 9: Democracy Ln and Layton Hall Drive



Photograph taken at Intersection 9, looking West

Intersection 9: Democracy Ln and Layton Hall Drive



Photograph taken at Intersection 9, looking East

Intersection 9: Democracy Ln and Layton Hall Drive



Photograph taken at Intersection 9, looking West

Intersection 9: Democracy Ln and Layton Hall Drive



Photograph taken at Intersection 9, looking East

Intersection 10: Blenheim Blvd and Layton Hall Dr



Photograph taken at Intersection 10, looking North

Intersection 10: Blenheim Blvd and Layton Hall Dr



Photograph taken at Intersection 10, looking East

Intersection 10: Blenheim Blvd and Layton Hall Dr



Photograph taken at Intersection 10, looking West

Intersection 10: Blenheim Blvd and Layton Hall Dr



Photograph taken at Intersection 10, looking East

Intersection 10: Blenheim Blvd and Layton Hall Dr



Photograph taken at Intersection 10, looking North

Intersection 10: Blenheim Blvd and Layton Hall Dr



Photograph taken at Intersection 10, looking East