WELLS + ASSOCIATES

THE LAMB CENTER

MULTIMODAL TRANSPORTATION ASSESSMENT

November 7, 2022

The Lamb Center

Multimodal Transportation Assessment

City of Fairfax, Virginia

November 7, 2022

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SECTION 1
INTRODUCTION

This report presents the results of a traffic impact study conducted in support of the proposed redevelopment of a site in the City of Fairfax currently developed with the 12-room Hy-Way Motel and presents an evaluation of the existing and future transportation network.

This study was conducted in accordance with a scoping agreement developed with City of Fairfax staff. The study scope was determined with City staff based on a review of key study intersections and roadways that would potentially be affected by the implementation of the proposed redevelopment and the number of new trips expected to be generated.

The subject site is located north of Fairfax Boulevard, east of Campbell Drive and west of Roanoke Street, in the City of Fairfax, Virginia, as shown on Figure 1-1.

The site consists of one (1) land parcel within the City of Fairfax:

Property ID	Address	Acreage
48-3-09-020	9640 Fairfax Blvd.	.41 acres

The applicant, The Lamb Center, plans to develop the site with 54 permanent supportive housing units and 1,400 SF of office space. The site plan is shown on Figure 1-2.

According to the 24VAC30-155 ("Chapter 870") regulations, all development proposals which meet certain specific trip generation thresholds are subject to the regulations as outlined in the Virginia Department of Transportation's (VDOT) Traffic Impact Analysis Regulations Administrative Guidelines ("Administrative Guidelines"). In January 2012, an amendment to the Administrative Guidelines took effect, which determined a development proposal is considered to substantially impact the transportation network if it generates 5,000 or more net new daily vehicle trips located on, or within 3,000 feet of, a VDOT maintained roadway. Based on the trips anticipated to be generated by the subject development, the development would not require a VDOT Chapter 870 compliant traffic study.

Although a traffic impact analysis is not required per 24VAC30-155, the City of Fairfax has requested the submission of a traffic study in conjunction with this development application.

This traffic study was completed in accordance with the City of Fairfax policies and guidelines and is intended to address the following issues:

1. Estimation of the net new vehicle trip ends generated by the planned land uses during the AM and PM commuter peak hours and during the PM school peak hour.
2. Determination of the effects of the proposed development on the surrounding local roadway network.

3. Identification of potential road and/or operational improvements necessary to accommodate the project.

Based on the traffic study scoping form provided in Appendix A, tasks undertaken to prepare this study included the following:

1. Reviewed the applicant's conceptual plans for the subject site.
2. Field reviewed the subject site in order to determine existing roadway and intersection geometrics and traffic controls, access opportunities and/or constraints, and general traffic conditions.
3. Conducted peak hour turning movement counts obtained at the following study intersection:
   - Fairfax Boulevard/Campbell Drive
   - Fairfax Boulevard/Fairfax Circle (West)
   - Fairfax Boulevard/Fairfax Circle (East)
4. Calculated existing AM and PM commuter peak hour intersection levels of service at the study intersections.
5. Identified the number of net new peak hour trips that would be generated by the proposed mixed-use development less trips currently generated by the existing land uses based on standard Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition equations and weighted average rates.
6. Determined future background traffic forecasts based on regional traffic growth and estimates of traffic that would be generated by other approved/planned developments in the site vicinity.
7. Calculated future levels of service with and without the proposed development at the key study intersections for a proposed build-out year of 2026.

Sources of data for this analysis include traffic counts conducted by Wells + Associates Inc., information obtained from the City of Fairfax, the Institute of Transportation Engineers (ITE), VDOT, the Highway Capacity Manual 2000 (Synchro software, version 10), The Lamb Center and the files and library of Wells + Associates.

Conclusions

Based on the results of this traffic impact study, the following may be concluded:

1. The Fairfax Boulevard/Fairfax Circle signalized intersections currently operate at an overall LOS "C" or better during the AM and PM commuter peak periods based on Highway Capacity Manual calculations. The approaches at the unsignalized intersection of Fairfax Boulevard/Campbell Drive currently operate at LOS "C" or better during the peak periods.

Estimated queues would generally be accommodated within the available storage areas. The eastbound queue towards the intersection of Fairfax Boulevard would potentially extend back to Campbell Avenue during the peak periods. Commuters would be required to utilize gaps in traffic recorded by field observations to occur several times per cycle length.

2. A review of VDOT AADT volumes along Fairfax Boulevard in the vicinity of the site indicates a reduction in traffic volumes from 2016 to 2019. AADT volumes along Fairfax Boulevard east of Draper Drive fell from 42,000 vehicles in 2016 to 35,000 vehicles in 2019.

3. The approved pipeline development Wawa site at 9700 Fairfax Boulevard is anticipated to generate a net new 399 AM peak hour trips and 327 PM peak hour trips at full buildout.

4. Under future 2026 traffic conditions, minimal increases in delay at the study intersections are expected due to the trips generated by approved pipeline developments in the vicinity of the site and overall levels of service would remain generally consistent with existing conditions with the exception of the northbound approach at the intersection of Fairfax Boulevard/Fairfax Circle (East) which would degrade from LOS “D” to LOS “E” during the AM peak hour.

5. The site is currently developed with the 12-room Motel. The Applicant proposes to redevelop the site with 54 residential units and up to 1,400 SF of office.

6. The project is estimated to generate 23 AM peak hour trips and 29 PM peak commuter hour trips upon buildout.

7. Under future 2026 traffic conditions, with the development of the subject site, intersection levels of service would remain generally consistent with existing and background conditions. The analyses show that the Fairfax Boulevard signalized intersections will continue to operate at LOS “C” or better during the AM and PM peak periods. The site is estimated to have a minimal impact on network queueing. Commuters would continue to be able to utilize gaps in traffic on Fairfax Boulevard during the peak periods.

8. All unsignalized intersection and access drive approaches will operate at LOS “D” or better during each of the studied peak periods.

9. Access to the site and parking garage will be via one (1) full access driveway along Campbell Drive.

10. Access to the existing Motel is currently provided at two locations along Campbell Drive and one right-in/right-out driveway along Fairfax Boulevard. The Applicant intends to consolidate these access drives to a single location providing enhanced access management.

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Study Intersection

NORTH

Figure 1-1
Site Location

The Lamb Center
City of Fairfax, Virginia

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Plan Provided by: Walter Phillips

Figure 1-2
Site Plan

NORTH

The Lamb Center
City of Fairfax, Virginia

SECTION 2
BACKGROUND INFORMATION

Location and Surrounding Uses

As shown in Figure 1-1, the site is located along Campbell Drive and Fairfax Boulevard in the City of Fairfax. Regional Access is provided by I-66 via Blake Lane, Old Lee Highway, and Lee Highway. Fairfax Boulevard/Arlington Boulevard provides access to/from I-495 (the Capital Beltway).

Properties predominantly along Fairfax Boulevard are generally commercial in nature while to the north and south of Fairfax Boulevard is mostly residential.

Comprehensive Plan Land Use Recommendations

The City's Comprehensive Plan shows the subject parcel as Commercial Corridor on the Future Land Use Map as shown on Figure 2-1.

Existing Transportation Network

Existing Road Network. The following are descriptions of the roadways in the vicinity of the proposed development.

Fairfax Boulevard is classified as an arterial roadway according to the City of Fairfax Comprehensive Plan. Within the vicinity of the subject site, Fairfax Boulevard is constructed as a six-lane, median divided roadway and a posted speed limit of 35 miles per hour. Traffic signals are provided at major cross-streets including Route 29. Based on 2019 VDOT average annual daily traffic (AADT) data, Fairfax Boulevard carries approximately 35,000 vehicles per day (vpd). This roadway currently provides access to the Hy-Way Motel via one driveway.

Blake Lane is classified by the Comprehensive Plan as an arterial roadway and is constructed as a four-lane, median-divided roadway with a posted speed limit of 35 miles per hour.

Lee Highway (Route 29) is classified by the Comprehensive Plan as an arterial roadway and is constructed as a four-lane, median-divided roadway with a posted speed limit of 35 miles per hour. Based on 2019 VDOT AADT data, Lee Highway carries approximately 35,000 vpd.

Old Lee Highway is classified by the Comprehensive Plan as an arterial roadway and is constructed as a four-lane, median-divided roadway with a posted speed limit of 30 miles per hour. Based on 2019 VDOT AADT data, Lee Highway carries approximately 15,000 vpd.

Campbell Drive is a two-lane north-south roadway. Campbell Drive currently provides access to the existing motel via two existing driveways and will continue to provide direct access to general site traffic for the proposed development via one (1) central driveway.

Existing lane use and traffic control at each of the study intersections is shown on Figure 2-2.

Public Transit Service. The site is served by the City of Fairfax's City-University Energysaver (CUE) Bus "Green Route", as shown on Figure 2-3, which provides service between the GMU campus, Old Town Fairfax, and the Vienna/Fairfax-GMU metrorail station via University Drive, Chain Bridge Road, Eaton Place, Fairfax Boulevard, Fairfax Circle, Arlington Boulevard, Nutley Street, Virginia Center Boulevard, Old Pickett Road, Pickett Road, Main Street, North Street, and George Mason Boulevard. Approximately .20 miles west of the site the City of Fairfax's City-University Energysaver (CUE) Bus "Gold Route" stop is located at the intersection of Fairfax Boulevard & Draper Drive, which provides service between the GMU campus, Old Town Fairfax, and the Vienna/Fairfax-GMU metrorail station. West of the site at the intersection of Spring Street and Fairfax Drive, there is a bus stop that provides access to the WMATA 1C bus route which runs between the Fair Oaks Mall and the Dunn Loring Metro Station.

Pedestrian Facilities. Concrete sidewalks are provided along both sides of Fairfax Boulevard and only on the west side of Campbell Drive. Marked crosswalks are provided across all legs of the Fairfax Boulevard/Fairfax Circle signalized intersections.

Future Transportation Network

The City of Fairfax's Comprehensive Plan provides recommended strategies for the improvement of the City's transportation network. In general, the Plan recommends strategies that will improve the operation and safety of the City's transportation system in order to achieve the larger community objectives for a vital, vibrant, and livable City. The Multimodal Transportation section of the Comprehensive plan lists a total of four (4) long-term goals for the City of Fairfax. These goals include, connecting with the region, providing viable and attractive mobility choices, integrating transportation with land use, and adopting policies and procedures for strategic transportation decision making. The plan envisions for improved safety for all users at Fairfax Circle which is located east of the site.

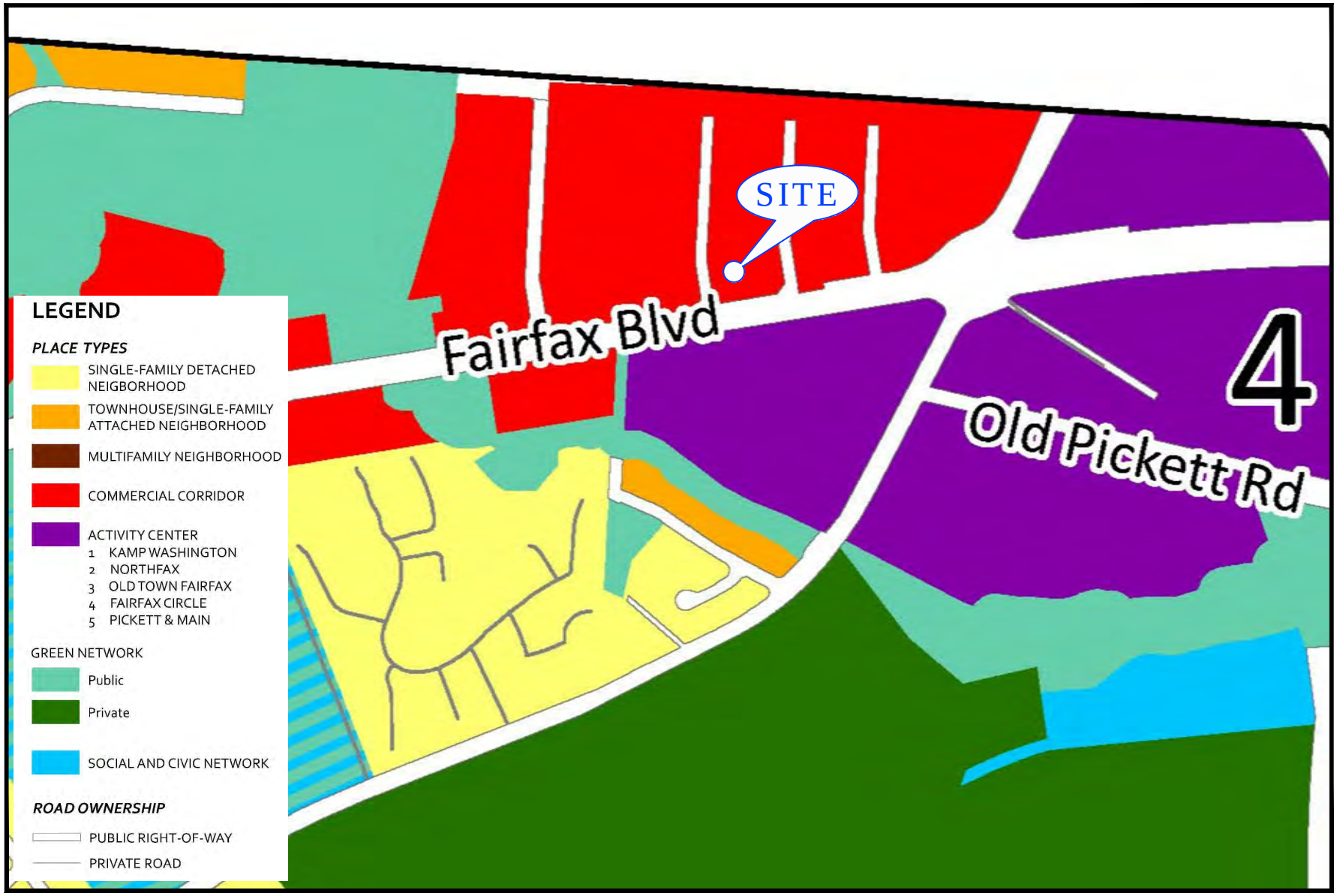

Figure 2-1
Land Use Map

NORTH

The Lamb Center
City of Fairfax, Virginia

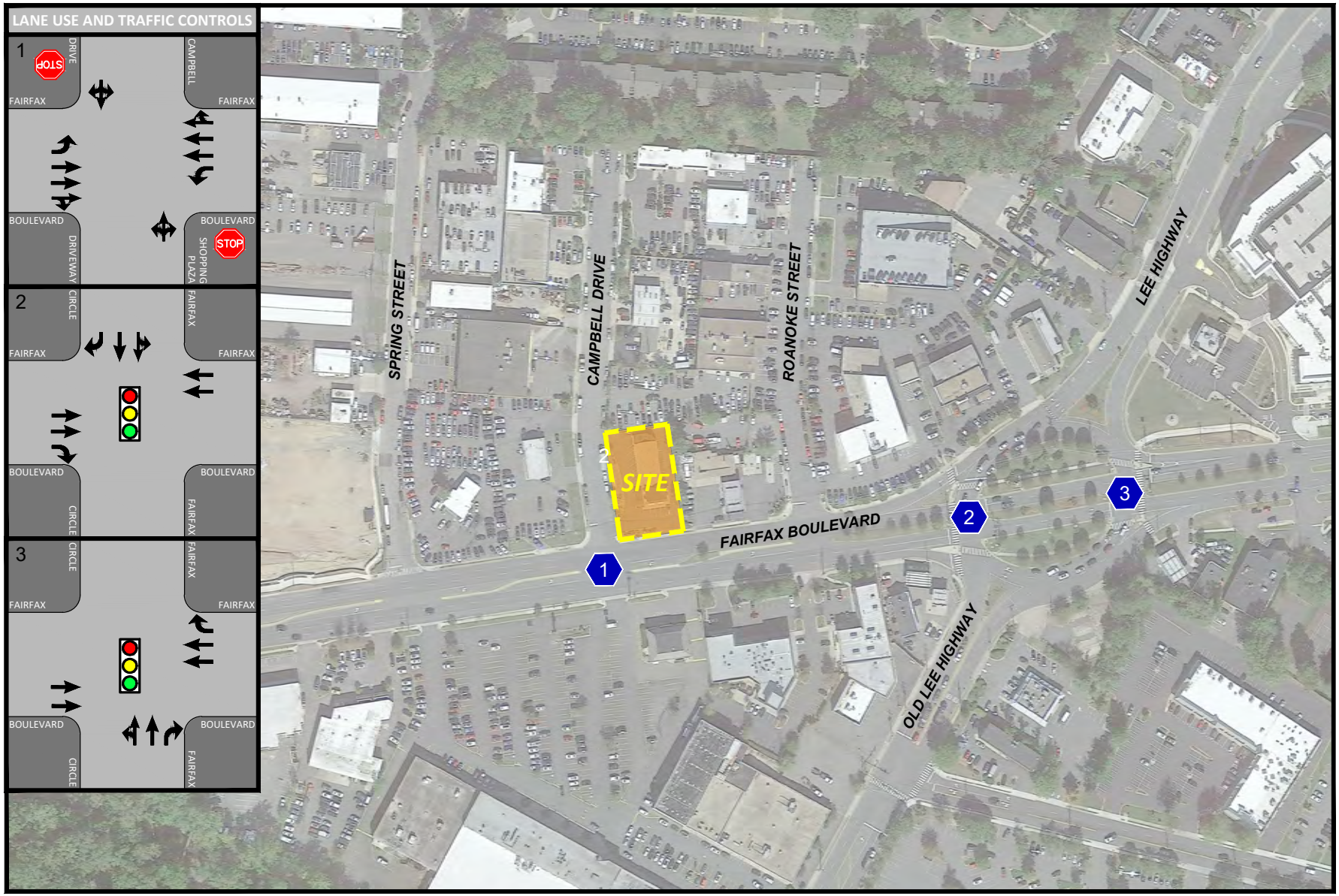

Figure 2-2
Existing Lane Use and Traffic Control

Study Intersection
Signalized Intersection
Represents One Travel Lane
Stop Sign

NORTH

The Lamb Center
City of Fairfax, Virginia

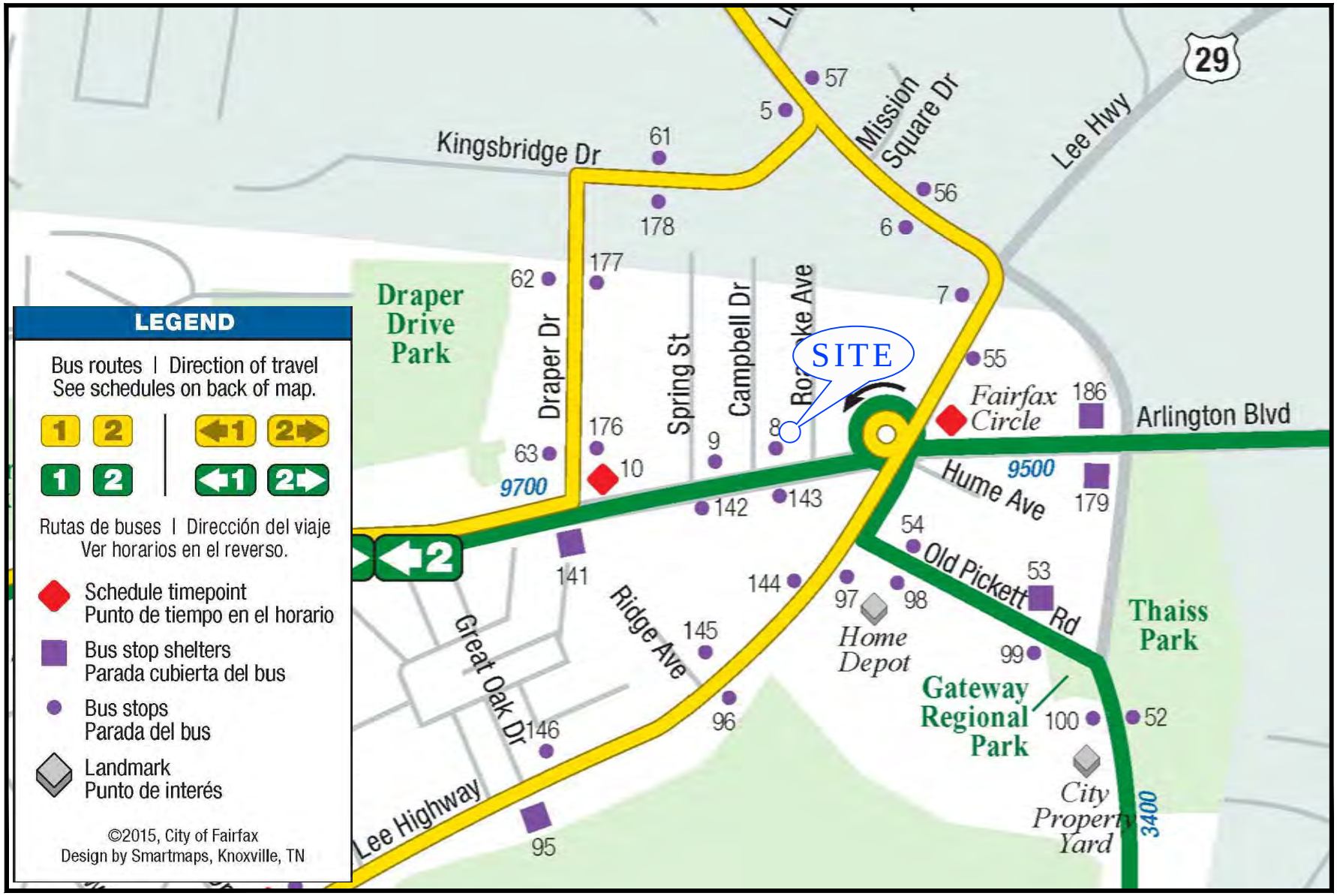

Figure 2-3
Transit Routes

NORTH

The Lamb Center
City of Fairfax, Virginia

SECTION 3
STUDY SCOPE AND ANALYSIS PARAMETERS

Overview

The subject site is located north of Fairfax Boulevard, east of Campbell Street, and west of Roanoke Street in the City of Fairfax, Virginia. The subject property is comprised of one parcel totaling .41 acres. The parcel with the existing Motel is zoned CR (Commercial Retail).

The primary objective of this study is to assess the impacts of the proposed development plan on the surrounding street system.

This traffic study was conducted in accordance with the scoping document and discussions with Wells + Associates, City staff, and the Applicant. A traffic study scoping meeting was held on June 6, 2022, and resulted in a scoping form dated June 16, 2022 that is provided in Appendix A. As previously noted, the revised development plan includes 54 permanent supportive housing units and up to 1,400 SF of office space. Additionally, the proposed site access is located along Campbell Drive and connects to the sites parking.

Study Area

The study area was determined based on the intersections and roadways that potentially would be affected by implementation of the proposed development plan. The following intersections were selected for analysis and evaluation:

- Fairfax Boulevard/Campbell Drive
- Fairfax Boulevard/Fairfax Circle (West)
- Fairfax Boulevard/Fairfax Circle (East)

The intersections within the study area were analyzed under AM and PM commuter peak hour conditions.

Site Development Program

The Applicant is proposing to redevelop the property with 54 permanent supportive housing residential units as well as office space up to 1,400 SF.

Existing Traffic Volumes

Existing AM and PM commuter peak hour turning movements and pedestrian counts were conducted on Tuesday, April 12, 2022, at the study intersections from 6:00 AM to 9:00 AM and from 4:00 PM to 7:00 PM. Counts were also taken from the Wawa – 9700 Fairfax Boulevard Traffic Impact Study, dated June 26th, 2019. Existing AM and PM commuter peak hour turning movements and pedestrian counts were conducted on May 2, 2019, at the study intersections of Fairfax Boulevard/Fairfax Circle from 6:30 AM to 9:30 AM and from 4:00 PM to 7:00 PM. An annual growth rate of 0.5% per year was applied to the 2019 existing volumes, to reach a baseline 2022 existing traffic volume count. The 2019 counts were compared to the 2022 counts to show that little to no impacts were observed due to the pandemic. Based on this, the baseline data and future forecasts including regional growth are considered conservative

The existing vehicular traffic volumes as described above are provided on Figure 3-1. All existing count data is included in Appendix B.

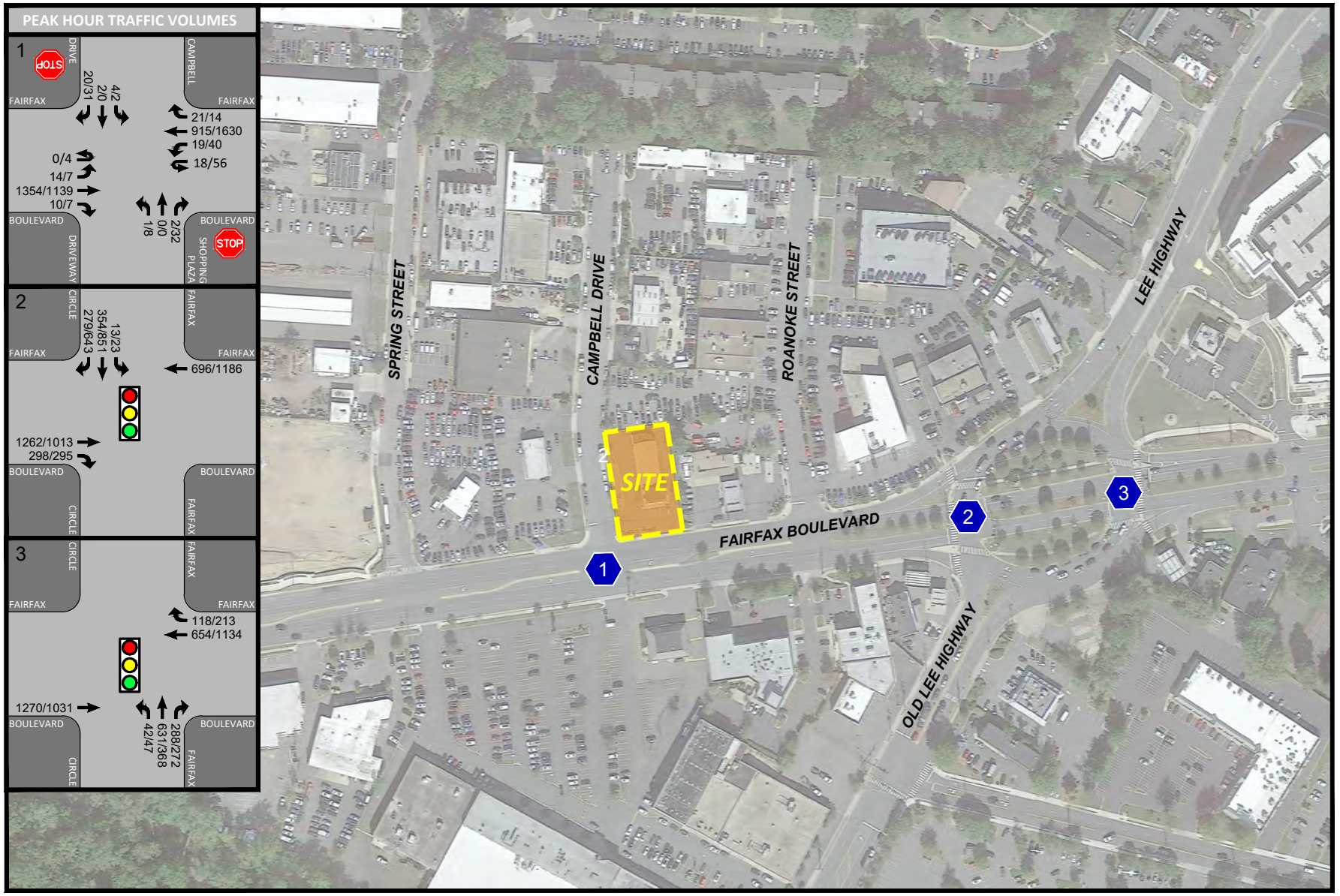

Figure 3-1
Existing Peak Hour Traffic Volumes

Study Intersection
Signalized Intersection
Represents One Travel Lane
Stop Sign

NORTH

The Lamb Center
City of Fairfax, Virginia

SECTION 4
EXISTING CONDITIONS ANALYSIS

Existing Intersection Levels of Service

Peak hour levels of service were calculated for the study intersections based on the existing lane use and traffic controls shown on Figure 2-1, the existing traffic volumes shown on Figure 3-1, and the 2000 Highway Capacity Manual (HCM) analysis procedures for signalized and unsignalized intersections. The results are presented in Appendix C and summarized on Table 4-1.

The analyses shows that the signalized intersections at Fairfax Boulevard/Fairfax Circle currently operate at level of service "C" (LOS "C") or better during the AM and PM peak commuter periods. The unsignalized intersection of Fairfax Boulevard/Campbell Drive approaches operate at LOS "C" or better during the AM and PM peak hours.

Existing Queue Analysis

Existing peak hour queues for study intersection were determined using the 50th and 95th percentile queues estimated by Synchro. The 50th and 95th percentile queues of existing conditions are used to establish a datum against which to compare future conditions. The 50th percentile (or average) queue is defined as the maximum back of queue associated with a typical signal cycle. The 95th percentile queue is defined as the maximum back of queue with 95th percentile traffic volumes. The 95th percentile queue is not necessarily ever observed, it is simply based on statistical calculations. The results are presented in Appendix C and summarized in Table 4-2.

The analyses show all 95th percentile queues are adequately accommodated within the available turn-lane storage lanes. However, the eastbound through at the intersection of Fairfax Boulevard/Fairfax Circle (West) shows a queue of approximately 615 feet during the AM peak hour, this would extend back to block the southbound left turn at the intersection of Fairfax Boulevard/Campbell Drive. Commuters will have to utilize gaps in traffic to perform the southbound left turn onto Fairfax Boulevard. Field observations indicate that gaps in traffic are become several times throughout each adjacent cycle length of 220 seconds.

Table 4-1
The Lamb Center
Existing Conditions Intersection Level of Service Summary [1, 2]

Approach/ Lane Group	Existing Conditions			
	AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)
1. Fairfax Boulevard/Campbell Drive - Unsignalized				
EB Approach	A	0.1	A	0.1
WB Approach	A	0.2	A	0.3
NB Approach	C	24.4	C	17.9
SB Approach	C	20.4	B	14.2
2. Fairfax Boulevard/Fairfax Circle (West) - Signalized				
EB Approach	B	16.5	B	10.7
WB Approach	A	3.7	A	3.5
SB Approach	D	36.2	C	29.4
Overall	**B**	**18.0**	**B**	**15.6**
3. Fairfax Boulevard/Fairfax Circle (East) - Signalized				
EB Approach	A	2.6	A	2.9
WB Approach	B	11.5	A	6.6
NB Approach	D	54.9	B	17.6
Overall	**C**	**21.7**	**A**	**8.0**

Note(s):
1. Capacity analysis based on Highway Capacity Manual methodology, using Synchro 10.
2. Highting denotes that the Level of Service is at or beyond capacity.

Table 4-2
The Lamb Center
Existing Conditions Intersection Queuing Summary [1, 2, 3, 4]

Approach/ Lane Group	Storage Length (ft)	Existing Conditions			
		AM Peak Hour		PM Peak Hour	
		50th Pecentile	95th Pecentile	50th Pecentile	95th Pecentile
1. Fairfax Boulevard/Campbell Drive - Unsignalized					
EBL	100	-	1	-	1
EBTR	-	-	0	-	0
WBL	80	-	3	-	5
WBTR	-	-	0	-	0
NBLTR	-	-	1	-	12
SBLTR	-	-	10	-	7
2. Fairfax Boulevard/Fairfax Circle (West) - Signalized					
EBT	-	484	615	190	213
EBR	-	169	256	92	122
WBT	-	47	53	65	66
SBT	-	244	285	330	#412
SBR	-	0	0	0	0
3. Fairfax Boulevard/Fairfax Circle (East) - Signalized					
EBT	-	40	45	30	m32
WBT	-	153	181	142	m211
WBR	200	51	77	51	m76
NBT	-	541	591	126	m142
NBR	-	0	0	0	m0

Note(s):
1. ~ Volume exceeds capacity, queue is theoretically infinite.
2. # 95th percentile volume exceeds capacity, queue may be longer.
3. m Volume for 95th percentile queue is metered by upstream signal.
4. Highting denotes that the 95th percentile queue exceeds the available storage.

SECTION 5
ANALYSIS OF FUTURE CONDITIONS WITHOUT SITE DEVELOPMENT

Overview

Forecasts for traffic conditions without the redevelopment of The Lamb Center were estimated at the study intersection based on a composite of existing traffic regional traffic growth as described below. Future levels of service under these forecasted conditions were evaluated at the study intersections.

Regional Traffic Growth

A review of VDOT AADT volumes along Fairfax Boulevard in the vicinity of the site indicates a reduction in traffic volumes from 2016 to 2019. AADT volumes along Fairfax Boulevard east of Draper Drive fell from 42,000 vehicles in 2016 to 35,000 vehicles in 2019.

In order to be conservative, existing traffic volumes were increased by 0.5% per year to the anticipated build-out of the site in 2026 as shown on Figure 5-1.

Traffic from Other Approved/Pending Developments

At the request of City staff, the following approved/pending developments were included as approved (i.e., "pipeline") developments:

- Wawa –9700 Fairfax Boulevard
    - 6,049 SF Grocery Store
    - 12 Fueling Stations

As shown in Table 5-1, these pipeline developments are anticipated to generate 135 AM peak primary hour trips and 97 PM primary peak hour trips at full buildout. The pipeline development trips are shown on Figure 5-2. The proposed pass-by trips are already on the traffic network and would not impact the subject study intersections.

Background Traffic Forecasts

The existing traffic volumes depicted on Figure 3-1, regional traffic growth shown on Figure 5-1, and pipeline development trips shown on Figure 5-2 were added together to yield the background future traffic forecasts at the study intersection, shown on Figure 5-3.

Table 5-1
The Lamb Center
Pipeline Trip Generation [1]

Land Use	ITE Land Use Code	Size	Units/SF	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Weekday ADT
Existing Land Use										
Motel	320	55	Rooms	8	13	21	11	10	21	170
Wawa - 9700 Fairfax Boulevard										
Super Convenience Market/Gas Station	960	6,049	SF	252	251	503	210	209	419	5,067
Super Convenience Market/Gas Station	960	12	Fueling Positions	169	168	337	138	138	276	2,766
Average of trips based on square footage amd fueling positons				210	210	420	174	174	348	3,917
Pass-by Trips (63% AM/66% PM/63% daily)				-132	-132	-264	-115	-115	-230	-2,468
Primary Trips (Total minus Pass-by)				**78**	**78**	**156**	**59**	**59**	**118**	**1,449**
Net New Trips (Proposed Land Use minus Existing Land Use)										
Net New Total Trips				202	197	399	163	164	327	3,747
Net New Primary trips				**70**	**65**	**135**	**48**	**49**	**97**	**1,279**

Background Future Levels of Service

Peak hour levels of service were calculated for the study intersections based on the existing lane use and traffic controls, background future traffic forecasts, and the 2000 Highway Capacity Manual (HCM) analysis procedures for signalized and unsignalized intersections. The results are provided in Appendix D, shown on Figure 5-3, and summarized in Table 5-2.

The analyses show that the signalized intersections at Fairfax Boulevard/Fairfax Circle will continue to operate at level of service "C" (LOS "C") or better during the AM and PM peak commuter periods. The approaches to the signalized intersections will continue to operate at LOS "C" or better with the exception of the northbound approach at the intersection of Fairfax Boulevard/Fairfax Circle (East) which will degrade from an LOS "D" to an LOS "E" during the AM peak hour. All approaches at the unsignalized intersection of Fairfax Boulevard/Campbell Drive will continue to operate at LOS "C" or better during each of the peak periods.

Background Future Queue Analysis

The results are presented in Appendix D and summarized in Table 5-3. With the addition of the pipeline development and regional growth would result in nominal increases (two (2) vehicles or less) in the estimated 50th and 95th percentile queues. Peak hour queues would continue to be adequately accommodated, within the available turn lane storages. The eastbound through at the intersection of Fairfax Boulevard/Fairfax Circle (West) would continue to block the southbound left movement at the intersection of Fairfax Boulevard/Fairfax Circle (West) during the AM peak hour.

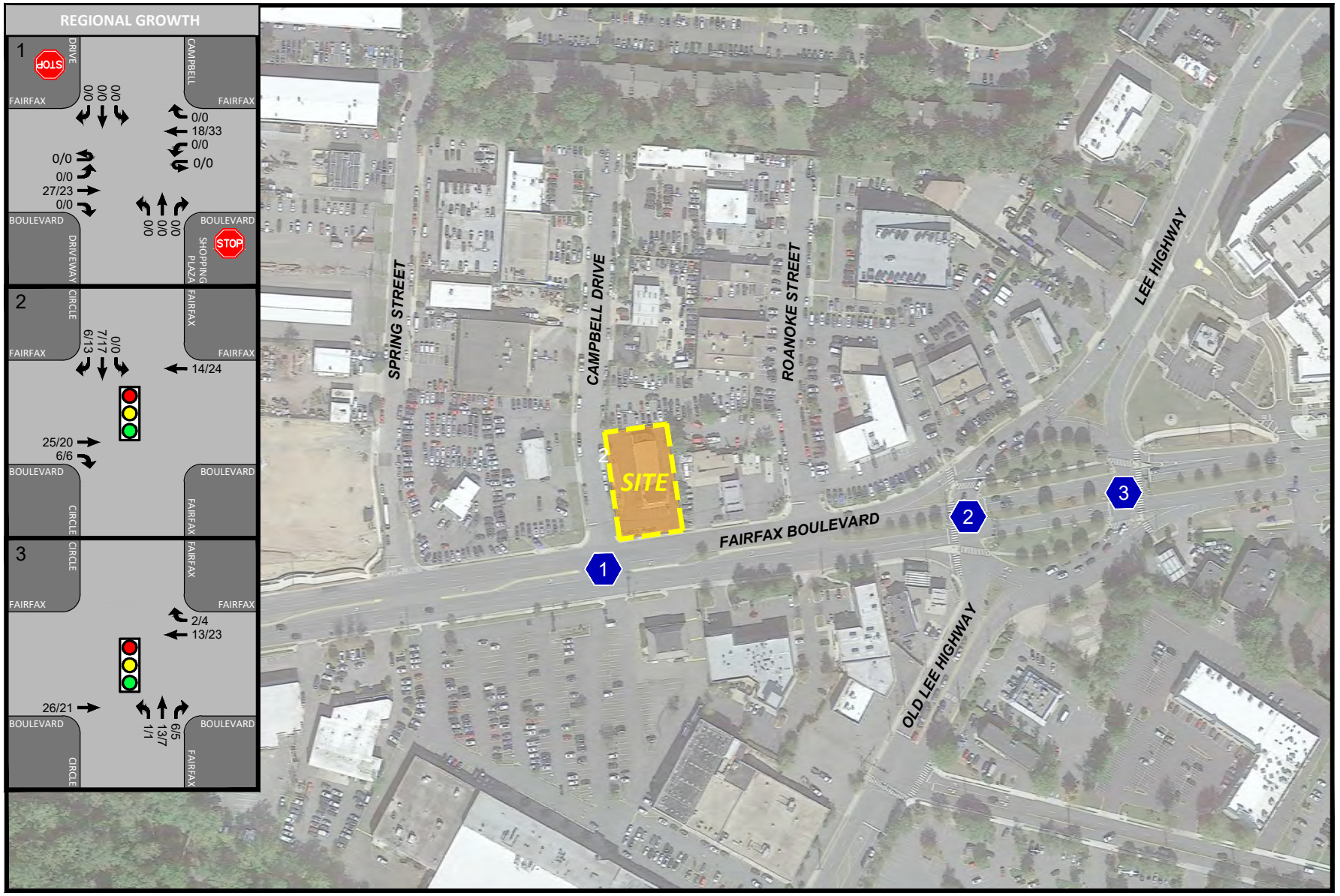

Figure 5-1
Regional Growth (2022-2026)

Study Intersection
Signalized Intersection
Represents One Travel Lane
Stop Sign

NORTH

The Lamb Center
City of Fairfax, Virginia

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Figure 5-2
Pipeline Development Trips (Wawa - 9700 Fairfax Blvd)

Study Intersection
Signalized Intersection
Represents One Travel Lane
Stop Sign

NORTH

The Lamb Center
City of Fairfax, Virginia

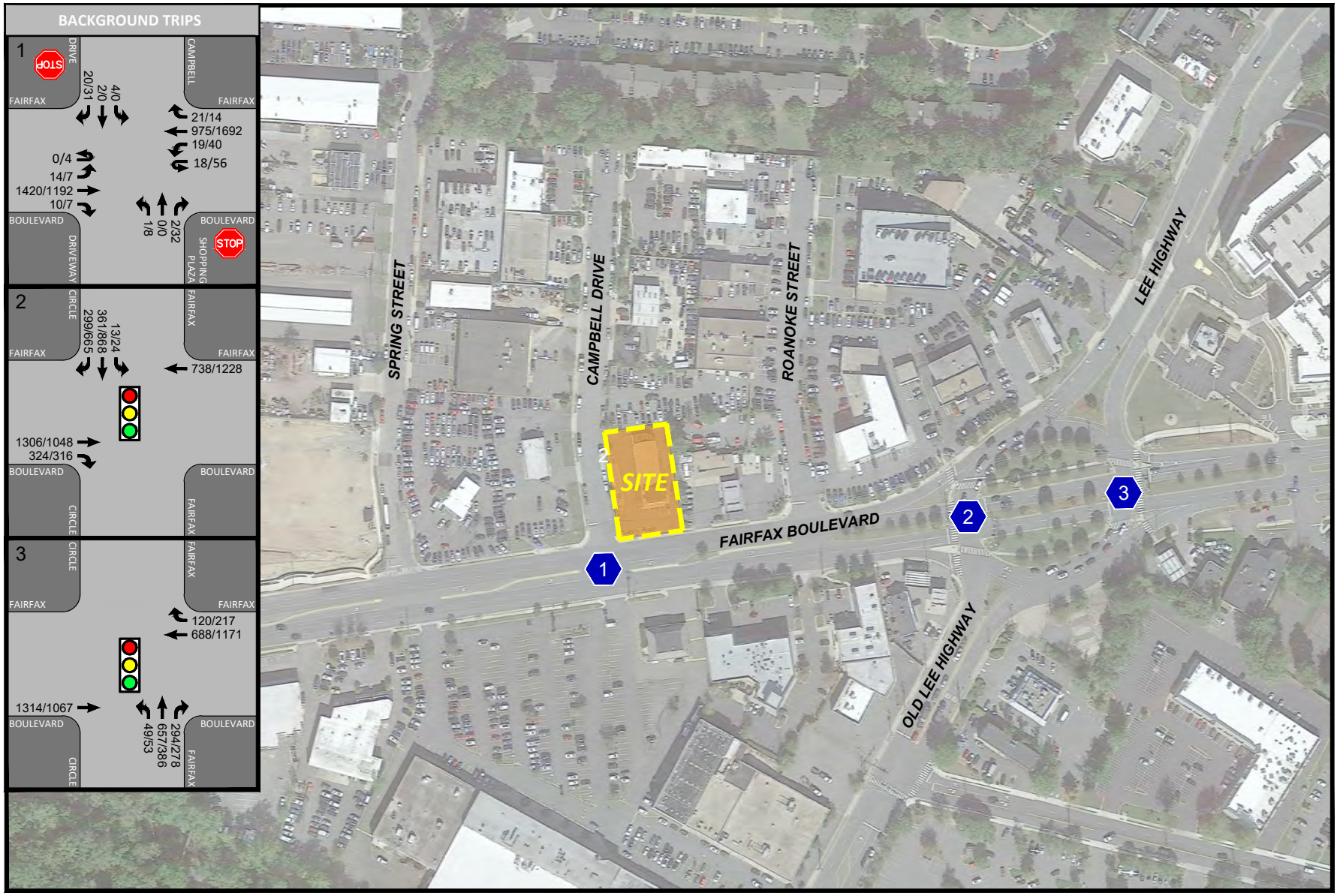

Figure 5-3
Future Conditions without Development
Peak Hour Traffic Volumes

Study Intersection
Signalized Intersection
Represents One Travel Lane
Stop Sign

NORTH
The Lamb Center
City of Fairfax, Virginia

Table 5-2
The Lamb Center
Future Conditions without Development Intersection Level of Service Summary [1, 2]

Approach/ Lane Group	Existing Conditions				Future Conditions without Development (2026)			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)
1. Fairfax Boulevard/Campbell Drive - Unsignalized								
EB Approach	A	0.1	A	0.1	A	0.1	A	0.1
WB Approach	A	0.2	A	0.3	A	0.2	A	0.3
NB Approach	C	24.4	C	17.9	C	23.7	C	18.8
SB Approach	C	20.4	B	14.2	C	20.0	B	14.5
2. Fairfax Boulevard/Fairfax Circle (West) - Signalized								
EB Approach	B	16.5	B	10.7	B	17.8	B	10.9
WB Approach	A	3.7	A	3.5	A	4.0	A	3.7
SB Approach	D	36.2	C	29.4	C	34.8	C	31.2
Overall	**B**	**18.0**	**B**	**15.6**	**B**	**18.4**	**B**	**16.3**
3. Fairfax Boulevard/Fairfax Circle (East) - Signalized								
EB Approach	A	2.6	A	2.9	A	2.5	A	2.9
WB Approach	B	11.5	A	6.6	B	12.2	A	6.7
NB Approach	D	54.9	B	17.6	E	55.3	B	17.9
Overall	**C**	**21.7**	**A**	**8.0**	**C**	**22.0**	**A**	**7.9**

Note(s):
1. Capacity analysis based on Highway Capacity Manual methodology, using Synchro 10.
2. Highting denotes that the Level of Service is at or beyond capacity.

Table 5-3
The Lamb Center
Future Conditions without Development Intersection Queuing Summary [1, 2, 3, 4]

Approach/ Lane Group	Storage Length (ft)	Existing Conditions				Future Conditions without Development (2026)			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		50th Pecentile	95th Pecentile	50th Pecentile	95th Pecentile	50th Pecentile	95th Pecentile	50th Pecentile	95th Pecentile
1. Fairfax Boulevard/Campbell Drive - Unsignalized									
EBL	100	-	1	-	1	-	2	-	1
EBTR	-	-	0	-	0	-	0	-	0
WBL	80	-	3	-	5	-	3	-	6
WBTR	-	-	0	-	0	-	0	-	0
NBLTR	-	-	1	-	12	-	1	-	12
SBLTR	-	-	10	-	7	-	9	-	7
2. Fairfax Boulevard/Fairfax Circle (West) - Signalized									
EBT	-	484	615	190	213	527	665	199	223
EBR	-	169	256	92	122	194	290	100	132
WBT	-	47	53	65	66	53	60	67	68
SBT	-	244	285	330	#412	245	284	338	#441
SBR	-	0	0	0	0	0	0	0	0
3. Fairfax Boulevard/Fairfax Circle (East) - Signalized									
EBT	-	40	45	30	m32	34	37	30	m31
WBT	-	153	181	142	m211	165	195	146	m220
WBR	200	51	77	51	m76	53	79	52	m77
NBT	-	541	591	126	m142	561	612	124	m147
NBR	-	0	0	0	m0	0	0	0	m0

Note(s):
1. ~ Volume exceeds capacity, queue is theoretically infinite.
2. # 95th percentile volume exceeds capacity, queue may be longer.
3. m Volume for 95th percentile queue is metered by upstream signal.
4. Highting denotes that the 95th percentile queue exceeds the available storage.

SECTION 6
SITE ANALYSIS

Overview

Trips anticipated to be generated by the proposed development plan were forecasted and assigned to the surrounding roadway network. The generation, distribution, and assignment of site trips were based on the proposed redevelopment plan and program, as well as the locations of the future site entrance in relation to the surrounding roadway network.

Existing Site Trips

As stated previously, the site is currently developed with the 12-room Motel. The redevelopment plan calls for the elimination of the Motel. The existing trips associated with the site were removed from the network as summarized on Figure 6-1 based on existing traffic patterns.

Proposed Site Access

The site plan provided on Figure 1-2 shows that access is proposed via one (1) driveway along Campbell Drive and connects to the sites parking.

Trip Generation

Overview. Trip generation estimates for the AM and PM peak hours, as well as the average daily traffic, were derived from the standard Institute of Transportation Engineers (ITE) trip generation rates, as published in the Trip Generation Manual, 11th edition. The "Affordable Housing" (223) land use code was used for the proposed residential units. For purposes of this assessment, the "Small Office Building" (712) land use code was used for the office component. Affordable Housing was used because there was not an applicable land use code for the proposed permanent supportive housing type. Permanent supportive housing would generate fewer trips compared to standard affordable housing, so the analysis completed herein should be considered conservative.

The trip generation analysis for the existing and proposed uses is presented in Table 6-1. When compared to the existing use on site, the proposed development plan would result in an overall increase of 19 additional AM peak hour trips, an overall increase of approximately 25 additional trips during the PM peak hour and approximately 240 additional daily trips. For purposes of this study, the existing trips that were counted at the existing site driveways were removed throughout the study intersections as shown on Figure 6-1, and the total 23 AM peak hour trips and 29 PM peak hour trips for the proposed uses were added to the road network.

It should be noted that no reduction in site generated trips due to transit mode split was taken in this analysis. However, it is anticipated that the project would take advantage of public transit opportunities available in the proximity of the site. The Applicant currently subsidizes transit use for users of The Lamb Center.

Table 6-1
The Lamb Center
Trip Generation [1]

Land Use	ITE Land Use Code	Size	Units/SF	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Weekday ADT
Existing Program										
Motel - General Urban/Suburban	320	12	Rooms	1	3	4	2	2	4	40
Proposed Program										
Affordable Housing - General Urban/Suburban	223	54	DU	6	13	19	15	10	25	260
Small Office Building - General Urban/Suburban	712	1,400	SF	2	2	4	2	2	4	20
Difference: Proposed minus Existing				7	12	19	15	10	25	240

Notes:
1. Trip Generation based on the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 11th Edition.

Site Trip Distribution

As agreed upon in the scope with City staff, site trip distribution used in the analysis was based on existing travel patterns and engineering judgment. For purposes of this analysis, the following distribution was used in the forecasting of future site traffic:

To/From:	AM/PM
North on Lee Highway:	20%/10%
East on Fairfax Boulevard:	35%/20%
South on Old Lee Highway:	10%/5%
West on Fairfax Boulevard:	35%/65%
TOTAL	100%/100%

Figure 6-2 graphically illustrates this trip distribution.

Site Trip Assignments

The assignments of the total vehicle trips generated upon the future build-out of The Lamb Center redevelopment was based on the above distribution and are depicted on Figure 6-2.

Parking Assessment

Per the Zoning Ordinance, the following parking requirements are applicable to the site:

- 1.25 spaces per efficiency unit
- 1.5 space per 1-bedroom unit
- 2 spaces per 2-bedroom unit
- 1 space per 300 SF of office

Based on the following chart, the proposed 54 permanent supportive housing units and 1,400 SF of office would require approximately 77 parking spaces.

Type	Proposed	Required Spaces
Efficient Units	41 units	51.25 spaces
1-Bedroom	10 units	15 spaces
2-Bedroom	3 units	6 spaces
Office	1,400 SF	4.67 spaces
Subtotal		*77 spaces*
Proposed		**18 spaces**

As shown on the plan, 18 parking spaces are proposed. The following information supports the reduction request of supplied parking spaces on the site.

Affordable Housing. Affordable units provide a reduced likelihood of vehicle ownership. Other nearby jurisdictions and national urban areas have provided for a standard parking reduction for affordable housing uses ranging from 30-50% from the standard market rate requirements depending on the level of affordability, typically between 30 and 60% AMI.

Vehicle ownership declines consistently with the level of AMI. The proposed permanent supportive housing type typically houses residents between 0 and 30% AMI, with the majority of residents designated towards the lower end of the AMI range. The Lamb Center serves poor and chronically homeless individuals in Fairfax City and surrounding jurisdictions.

Permanent Supportive Housing. The proposed site is unique to Northern Virginia and the City of Fairfax as an exclusively permanent supportive housing residential type. The parking ratios outlined in the Zoning Ordinance were based on research, data, and analysis associated with market rate developments. Based on information from other similar sites, approximately 10 percent of residents are anticipated to own a vehicle. This is consistent with the decline of vehicle parking requirements in other areas based on a linear decline of parking demand based on AMI level.

With the office uses supplying the required 5 parking spaces, approximately 13 spaces would be designated for the residential uses. Ten percent of the 54 proposed units would require 6 parking spaces, totaling 11 spaces to meet the parking demand.

Age-Restricted Housing Calculations. By nature of the population, many of the residents will be older adults. Based on the Institute of Transportation Engineers (ITE) Parking Generation, 5th Edition, Senior Adult Housing would require 0.61 spaces per unit and Mid-Rise Multifamily would require 1.31 spaces per unit. This is a reduction of 0.7 spaces per unit, or approximately 53%, from standard multifamily to senior adult housing. Therefore, estimates based on a multifamily zoning classification would provide significantly more parking than the demand of the age-restricted units. The Lamb Center will serve many older residents. Similar to the reduced likelihood of vehicle ownership of solely affordable units, affordable and age-restricted units would result in a combined reduced parking demand at the subject site.

Transportation Demand Management (TDM). The Applicant currently subsidizes bus fare for specific purposes (such as medical appointments and interviews), as required at the bus stop adjacent to the site and connecting transit services. Most residents currently and will continue to utilize public transit subsidized by the Applicant. The Applicant will continue to serve its residents with increased comprehensive transportation options and subsidies, reducing the need and the likelihood of vehicle ownership. In addition, the Fairfax City CUE bus is free of charge within the City. The Lamb Center also recommends a bench with an armrest divider, bollard lighting, and a garbage receptable at the adjacent CUE bus stop to help further promote and encourage bus transit use.

Short-Term Parking. Based on discussions with the fire department, the approximately three (3) to four (4) street frontage parking spaces along Campbell Street will be designated as public short-term parking. The on-street short-term parking could serve visitors to both office and residential uses on the site, in addition to being open to the general public.

Similar Housing Sites. Based on the information provided below in table 6-2, it shows that for six (6) similar affordable & supportive housing sites within the region, that the maximum amount of parking spaces occupied compared to the total amount of units within the building, results in an average parking occupancy of 0.24. The proposed site contains 54 units with a total supply of 13 parking spaces for residents, resulting in a 0.24 parking ratio for the site. This further supports that with the site fully occupied that the maximum amount of parking spaces needed for residents would have to be, at most, 13 parking spaces, in order to be in line with similar parking occupancies for affordable & supportive housing sites within the region. The applicant will continue to seek offsite parking spaces.

Table 6-2
The Lamb Center
Similar Site Average Parking Occupancy

Property	Average Max Parking	Total Units	Bus Stop	Total
Cloverleaf 2011	12	60	Adjacent Bus Stop	0.19
Cloverleaf 2020	6			0.10
Crescent Square 2020	15	80	No Adjacent Bus Stop	0.18
Crescent Square 2021	28			0.36
Crossings 2020	13	60	No Adjacent Bus Stop	0.22
Church Street Stations 2021	20	80	Adjacent Bus Stop	0.26
Gosnold Apartments 2011	13	60	Adjacent Bus Stop	0.22
Gosnold Apartments 2021	27			0.45
South Bay 2011	13	60	Adjacent Bus Stop	0.22
Average				**0.24**

Summary. Based on the information provided above for the proposed residential type, it is anticipated that the proposed parking supply will adequately accommodate the parking demand of future residents and office users. The 18 proposed parking spaces and short-term on-street parking spaces will serve the site users based on the reduced AMI level of residents, serving many older adult residents, and commitment to TDM measures to reduce the need to own a vehicle.

TRANSPORTATION DEMAND MANAGEMENT (TDM)

The proposed permanent supportive housing and office uses are anticipated to utilize the nearby pedestrian, bicycle, and transit options surrounding the site. Further, the interior building amenities are designed to support the residents who are likely to utilize transit and not own a vehicle.

TDM Strategies

TDM is a general term for strategies that result in more efficient use of transportation resources. There are many different TDM strategies with a variety of impacts. Some improve the transportation options available to consumers, while others provide an incentive to choose more efficient travel patterns. Some reduce the need for physical travel through mobility substitutes or more efficient land use. TDM strategies can change travel timing, route, destination, or mode.

Such measures which may be appropriate to The Lamb Center development could include the following:

A. Designate a Transportation Management Coordinator (TMC) to implement the TDM program and advise residents and employees of the availability and location of the TDM coordinator and program. The position may be part of other duties assigned to the individual. Duties of the Transportation Management Coordinator would include the following:

    1. Assist residents and employees in making effective and efficient commuting choices.

    2. Disseminate Metrorail, Metrobus, ridesharing, and other relevant transit options to new residents and employees.

    3. Solicit support from the Metropolitan Washington Council of Governments (MWCOG) Commuter Connections program, the Washington Metropolitan Area Transit Authority (WMATA), the Fairfax County government, and others.

    4. Provide on-site assistance to residents and employees in forming and maintaining carpools and vanpools.

    5. Encourage residents and employees to ride bikes or walk to work. Let residents know that they are welcome to use the bike racks that located in the bike room and on the exterior of the building.

    6. Market and promote the TDM Program among residents and employees through printed materials and web sites (if available). Display transit, vanpool, carpool, GRH, etc. brochures and flyers in lobby areas. Other promotions include, potentially, telework and transportation fairs.

B. Incentives to use transit, including:

    1. Provide information on Metrorail, Metrobus, and other public transportation facilities, services, routes, schedules, and fares.

    2. Disseminate information to transit users regarding free guaranteed rides home in cases of emergency.

3. Provide safe, convenient, and attractive pedestrian connections on and off-site.

4. Provide ample bicycle parking/storage facilities. Bike racks are being incorporated into the design in a bike room and exterior to the building.

These strategies in addition to the transit subsidy program are anticipated to reduce the number of vehicle trips generated by the proposed uses.

Other TDM Strategies

In response to staff comments the applicant has reviewed additional TDM strategies including:

Provide plan for Transportation Demand Management (TDM) and affordable transportation options. Potential elements could include (but are not limited to):

a. Active parking management - Resident and employee vehicles will require registration and parking pass.

b. Transportation information center - Bus schedules and assistance with directions will be available to residents and their guests from a 24-7 staffed front desk.

c. The Lamb Center partners with the Fairfax City-based Shepherd's Heart Anglican Church Bike Ministry to provide its clients with refurbished bikes and bike repair services.

d. The Lamb Center will support and promote regional resources, including the Commuter Connections Guaranteed Ride Home program.

e. Transit subsidies - Bus tokens will be provided free of charge to residents obtaining healthcare, employment, and other services. Most residents will be Medicaid recipients and thus entitled to use Medicaid Transportation Services for any form of healthcare or other Medicaid-approved services.

These proposed Transportation Demand Management (TDM) strategies will reinforce the parking reduction that is requested by the applicant given the projects proximity to transit, bicycle, and other multimodal facilities near the site which minimizes the projects vehicle traffic impacts and need for parking.

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Figure 6-1
Site Trips Removed

Study Intersection
Signalized Intersection
Represents One Travel Lane
Stop Sign

NORTH

The Lamb Center
City of Fairfax, Virginia

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Figure 6-2
Site Generated Trips

Study Intersection
Signalized Intersection
Represents One Travel Lane
Stop Sign

NORTH

The Lamb Center
City of Fairfax, Virginia

SECTION 7
ANALYSIS OF FUTURE CONDITIONS WITH SITE DEVELOPMENT

Total Future Traffic Forecasts

Site trips removed as shown on Figure 6-1 and trip assignments as shown on Figure 6-2 were added to the background traffic forecasts to yield 2026 total future traffic forecasts, as shown on Figure 7-1.

Proposed Improvements

Additionally, access to the existing Motel is currently provided at three (3) locations, two (2) along Campbell Drive and one (1) right-in/right-out driveway along Fairfax Boulevard. The Applicant intends to consolidate these access drives to a single location providing enhanced access management along Campbell Drive.

Lane use and traffic control at each of the study intersections for 2026 total future conditions is shown on Figure 7-2.

Total Future Levels of Service with Proposed Development Plan

Future levels of service with the proposed development plan were determined at the study intersection based on the future traffic volumes shown on Figures 7-1, future lane use and traffic control shown on Figures 7-2, and the 2000 HCM methodologies for signalized and unsignalized intersections calculated using the Synchro 10 traffic analysis software. The results of these analyses are provided in Appendix E and summarized in Table 7-1.

As shown in Table 7-1, levels of service under future site development conditions would remain generally consistent with future background conditions (i.e., without site development).

The analyses show that the signalized intersections at Fairfax Boulevard/Fairfax Circle will continue to operate at level of service “C” (LOS “C”) or better during the AM and PM peak commuter periods. The approaches to the signalized intersections will continue to operate at LOS “C” or better with the exception of the northbound approach at the intersection of Fairfax Boulevard/Fairfax Circle (East) which will continue to operate at LOS “E” during the AM peak hour.

All approaches at the unsignalized intersections of Fairfax Boulevard/Campbell Drive and Campbell Drive/Site Driveway will operate at LOS “D” or better during the AM and PM peak periods.

Total Future Queue Analysis

The results are presented in Appendix E and summarized in Table 7-2. With the addition of the proposed development the projected 50th and 95th percentile queues would remain generally consistent to future conditions without development. When compared to future conditions without development estimate per hour queuing would increase by one (1) vehicle or less. The eastbound through at the intersection of Fairfax Boulevard/Fairfax Circle (West) would continue to block the southbound left movement at the intersection of Fairfax Boulevard/Fairfax Circle (West) during the AM peak hour. Residents, employees, and visitors of the site will have to utilize gaps in traffic to perform the southbound left turn onto Fairfax Boulevard from Campbell Drive. Field observations indicate that gaps in traffic are become several times throughout each adjacent cycle length of 220 seconds. Outbound traffic from the proposed development would be able to access Fairfax Boulevard without an unacceptable amount of delay by utilizing gaps in traffic.

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Figure 7-1
Future Conditions with Development
Peak Hour Traffic Volumes

Study Intersection
Signalized Intersection
Represents One Travel Lane
Stop Sign

NORTH

The Lamb Center
City of Fairfax, Virginia

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Study Intersection
Signalized Intersection
Represents One Travel Lane
Stop Sign

NORTH

Figure 7-2
Future Conditions with Development
Lane Use and Traffic Control

The Lamb Center
City of Fairfax, Virginia

Table 7-1
The Lamb Center
Future Conditions with Development Intersection Level of Service Summary [1, 2]

Approach/ Lane Group	Existing Conditions				Future Conditions without Development (2026)				Future Conditions with Development (2026)			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)
1. Fairfax Boulevard/Campbell Drive - Unsignalized												
EB Approach	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.2
WB Approach	A	0.2	A	0.3	A	0.2	A	0.3	A	0.2	A	0.3
NB Approach	C	24.4	C	17.9	C	23.7	C	18.8	C	24.0	C	19.8
SB Approach	C	20.4	B	14.2	C	20.0	B	14.5	C	23.4	D	26.3
2. Fairfax Boulevard/Fairfax Circle (West) - Signalized												
EB Approach	B	16.5	B	10.7	B	17.8	B	10.9	B	18.0	B	10.9
WB Approach	A	3.7	A	3.5	A	4.0	A	3.7	A	4.1	A	3.7
SB Approach	D	36.2	C	29.4	C	34.8	C	31.2	C	34.6	C	31.1
Overall	**B**	**18.0**	**B**	**15.6**	**B**	**18.4**	**B**	**16.3**	**B**	**18.4**	**B**	**16.3**
3. Fairfax Boulevard/Fairfax Circle (East) - Signalized												
EB Approach	A	2.6	A	2.9	A	2.5	A	2.9	A	2.6	A	2.9
WB Approach	B	11.5	A	6.6	B	12.2	A	6.7	B	12.3	A	6.7
NB Approach	D	54.9	B	17.6	E	55.3	B	17.9	E	55.3	B	18.0
Overall	**C**	**21.7**	**A**	**8.0**	**C**	**22.0**	**A**	**7.9**	**C**	**22.0**	**A**	**8.0**
4. Future Site Driveway/Campbell Drive - Unsignalized												
WB Approach	-	-	-	-	-	-	-	-	A	8.9	A	8.9
NB Approach	-	-	-	-	-	-	-	-	A	0.0	A	0.0
SB Approach	-	-	-	-	-	-	-	-	A	0.0	A	0.0

Note(s):
1. Capacity analysis based on Highway Capacity Manual methodology, using Synchro 10.
2. Highting denotes that the Level of Service is at or beyond capacity.

Table 7-2
The Lamb Center
Future Conditions with Development Intersection Queuing Summary[1, 2, 3, 4]

Approach/ Lane Group	Storage Length (ft)	Existing Conditions				Future Conditions without Development (2026)				Future Conditions with Development (2026)			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		50th Pecentile	95th Pecentile	50th Pecentile	95th Pecentile	50th Pecentile	95th Pecentile	50th Pecentile	95th Pecentile	50th Pecentile	95th Pecentile	50th Pecentile	95th Pecentile
1. Fairfax Boulevard/Campbell Drive - Unsignalized													
EBL	100	-	1	-	1	-	2	-	1	-	2	-	4
EBTR	-	-	0	-	0	-	0	-	0	-	0	-	0
WBL	80	-	3	-	5	-	3	-	6	-	3	-	6
WBTR	-	-	0	-	0	-	0	-	0	-	0	-	0
NBLTR	-	-	1	-	12	-	1	-	12	-	1	-	13
SBLTR	-	-	10	-	7	-	9	-	7	-	16	-	21
2. Fairfax Boulevard/Fairfax Circle (West) - Signalized													
EBT	-	484	615	190	213	527	665	199	223	533	673	200	224
EBR	-	169	256	92	122	194	290	100	132	198	296	101	133
WBT	-	47	53	65	66	53	60	67	68	53	60	67	68
SBT	-	244	285	330	#412	245	284	338	#441	244	284	339	#441
SBR	-	0	0	0	0	0	0	0	0	0	0	0	0
3. Fairfax Boulevard/Fairfax Circle (East) - Signalized													
EBT	-	40	45	30	m32	34	37	30	m31	34	38	30	m31
WBT	-	153	181	142	m211	165	195	146	m220	166	195	147	m221
WBR	200	51	77	51	m76	53	79	52	m77	53	80	52	m77
NBT	-	541	591	126	m142	561	612	124	m147	564	615	124	m148
NBR	-	0	0	0	m0	0	0	0	m0	0	0	0	m0
4. Future Site Driveway/Campbell Drive - Unsignalized													
WBLR	-	-	-	-	-	-	-	-	-	-	1	-	1
NBTR	-	-	-	-	-	-	-	-	-	-	0	-	0
SBLT	-	-	-	-	-	-	-	-	-	-	0	-	0

Note(s):
1. ~ Volume exceeds capacity, queue is theoretically infinite.
2. # 95th percentile volume exceeds capacity, queue may be longer.
3. m Volume for 95th percentile queue is metered by upstream signal.
4. Highting denotes that the 95th percentile queue exceeds the available storage.

SECTION 8
CONCLUSIONS

Based on the results of this revised traffic impact study, the following may be concluded:

1. The Fairfax Boulevard/Fairfax Circle signalized intersections currently operate at an overall LOS "C" or better during the AM and PM commuter peak periods based on Highway Capacity Manual calculations. The approaches at the unsignalized intersection of Fairfax Boulevard/Campbell Drive currently operate at LOS "C" or better during the peak periods.

   Estimated queues would generally be accommodated within the available storage areas. The eastbound queue towards the intersection of Fairfax Boulevard would potentially extend back to Campbell Avenue during the peak periods. Commuters would be required to utilize gaps in traffic recorded by field observations to occur several times per cycle length.

2. A review of VDOT AADT volumes along Fairfax Boulevard in the vicinity of the site indicates a reduction in traffic volumes from 2016 to 2019. AADT volumes along Fairfax Boulevard east of Draper Drive fell from 42,000 vehicles in 2016 to 35,000 vehicles in 2019.

3. The approved pipeline development Wawa site at 9700 Fairfax Boulevard is anticipated to generate a net new 399 AM peak hour trips and 327 PM peak hour trips at full buildout.

4. Under future 2026 traffic conditions, minimal increases in delay at the study intersections are expected due to the trips generated by approved pipeline developments in the vicinity of the site and overall levels of service would remain generally consistent with existing conditions with the exception of the northbound approach at the intersection of Fairfax Boulevard/Fairfax Circle (East) which would degrade from LOS "D" to LOS "E" during the AM peak hour.

5. The site is currently developed with the 12-room Motel. The Applicant proposes to redevelop the site with 54 residential units and up to 1,400 SF of office.

6. The project is estimated to generate 23 AM peak hour trips and 29 PM peak commuter hour trips upon buildout.

7. Under future 2026 traffic conditions, with the development of the subject site, intersection levels of service would remain generally consistent with existing and background conditions. The analyses show that the Fairfax Boulevard signalized intersections will continue to operate at LOS "C" or better during the AM and PM peak periods. The site is estimated to have a minimal impact on network queueing. Commuters would continue to be able to utilize gaps in traffic on Fairfax Boulevard during the peak periods.

8. All unsignalized intersection and access drive approaches will operate at LOS “D” or better during each of the studied peak periods.

9. Access to the site and parking garage will be via one (1) full access driveway along Campbell Drive.

10. Access to the existing Motel is currently provided at two locations along Campbell Drive and one right-in/right-out driveway along Fairfax Boulevard. The Applicant intends to consolidate these access drives to a single location providing enhanced access management.

APPENDIX A

City of Fairfax Scoping Agreement

SCOPE OF WORK MEETING FORM

Information on the Project
Traffic Impact Analysis Base Assumptions

THE LAMB CENTER PROPERTY
CITY OF FAIRFAX, VIRGINIA
June 16, 2022

Contact Information			
Consultant Name: Tele: E-mail:	Grady P. Vaughan, P.E., PTOE, PTP, - Wells + Associates, Inc. 703.676.3627 gpvaughan@wellsandassociates.com		
Developer/Owner Name: Tele: E-mail:	Judith Cabelli 703.642.3830 x242 jcabelli@whdc.org		
Project Information			
Project Name:	The Lamb Center TIS	Locality/County:	City of Fairfax
Project Location: (Attach regional and site specific location map)	The site is located on the north side of Fairfax Boulevard (Route 50) and east of Campbell Drive. See Figure 1 for the site location.		
Submission Type	Comp Plan ☐	Rezoning ☒ (SUP)	Site Plan ☐	Subd Plat ☐
Project Description: (Including details on the land use, acreage, phasing, access location, etc. Attach additional sheet if necessary)	The Applicant is proposing to raze the existing motel uses and redevelop with a 54-unit permanent supportive housing project and a 1,400 office space served by 18 on-site parking spaces. The office space is envisioned to provide additional space for similar services provided by the current Lamb Center location. The office space will likely provide services to residents of the building, reducing the potential vehicle trips generated. The Site Layout is provided as Figure 2.		
Proposed Use(s): (Check all that apply; attach additional pages as necessary)	Residential ☐	Commercial ☐	Mixed Use ☒	Other ☐
(See Table 1)	**Existing Lodging Uses(s)** Number of Units: 12 ITE LU Code(s): 320 **Proposed Uses(s)** Number of Housing Units: 54 ITE LU Code(s): 223 SF of Office Space: 1,400 ITE LU Code(s): 712 Parking Spaces: 18		**Other Use(s)** ITE LU Code(s): _____ _____ _____ Independent Variable(s): _____ _____ _____	

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

Traffic Impact Analysis Assumptions			
Study Period	Existing Year: 2022	Build-out Year: 2026	Design Year: n/a
Study Area Boundaries	North: Northern Site Boundary	South: Fairfax Boulevard (US Route 50)	
	East: Roanoke Street	West: Campbell Drive	
External Factors That Could Affect Project (Planned road improvements, other nearby developments)	N/A		
Consistency With Comprehensive Plan (Land use, transportation plan)	The proposed development conforms with the City's 2035 Comprehensive Plan that identifies the site along Fairfax Boulevard as "Commercial Corridor". The current CR (Commercial Retail) would permit the proposed land uses.		
Available Traffic Data (Historical, forecasts)	VDOT historical traffic count data indicates: 2020 VDOT Average Annual Daily Traffic (AADT): Fairfax Boulevard (US Route 50): 28,000 2019 VDOT Average Annual Daily Traffic (AADT): Fairfax Boulevard (US Route 50): 35,000 2018 VDOT Average Annual Daily Traffic (AADT): Fairfax Boulevard (US Route 50): 35,000 2017 VDOT Average Annual Daily Traffic (AADT): Fairfax Boulevard (US Route 50): 35,000 2016 VDOT Average Annual Daily Traffic (AADT): Fairfax Boulevard (US Route 50): 42,000		
Trip Distribution (AM/PM) (Pending data from existing traffic counts)(See Figure 1)	From the West: 35%/65%	From the South: 10%/5%	
	From the North: 20%/10%	From the East: 35%/20%	
Annual Vehicle Trip Growth Rate:	0.5% or per VDOT AADT counts	Peak Period for Study (check all that apply)	☒ AM ☒ PM ☐ SAT
		Peak Hour of the Generator	N/A
Study Intersections and/or Road Segments (See Figure 1)	1. Fairfax Boulevard/Campbell Drive	3. Fairfax Boulevard/Fairfax Circle (East)	
	2. Fairfax Boulevard/Fairfax Circle (West)	4. Proposed Site Driveway/Campbell Drive	
Trip Adjustment Factors	Internal allowance: ☐ Yes ☒ No Reduction: _____% trips	Pass-by allowance: ☐ Yes ☒ No Reduction: _____% trips	
Software Methodology	☒ Synchro ☐ HCS (v.2000/+) ☐ aaSIDRA ☐ CORSIM ☐ Other Synchro Version 10		

Traffic Signal Proposed or Affected (Analysis software to be used, progression speed, cycle length)	None
Improvement(s) Assumed or to be Considered	None
Background Traffic Studies Considered	Wawa – 9700 Fairfax Boulevard – 6,049 SF Grocery Store, 12 Fueling Stations
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 Parking Reduction Study

NOTES on ASSUMPTIONS:

1. Synchro 10 will be used to conduct capacity analysis with peak hour factors measured in the field for existing conditions (0.85<PHF). Under background and total future conditions, a minimum PHF of 0.92 will be used for all movements.
2. Existing Synchro (signal timing) files to be provided by the city.
3. Additional information supporting the parking reduction request is attached to this scope. This information will summarize the reduced parking demand of the proposes residential type and justify the proposed supply.
4. Similar permanent supportive housing locations will be counted during peak hours to compare to the proposed trip generation for the Lamb Center site.
5. Traffic counts collected in 2022 will be reviewed and balanced with turning movement or VDOT data provided prior to the COVID-19 pandemic.

SCOPE OF WORK MEETING

ADDITIONS TO THE REQUIRED ELEMENTS, CHANGES TO THE METHODOLOGY OR STANDARD ASSUMPTIONS, AND SIGNATURE PAGE

Any additions to the Required Elements or changes to the Methodology or Standard Assumptions due to special circumstances that are approved by the City of Fairfax:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

AGREED: _____ DATE: _____
Consultant

PRINT NAME: Grady P. Vaughan, PE, PTOE, PTP
Consultant

SIGNED: _____ DATE: _____

PRINT NAME: _____

Attachments:
Figure 1 – Site Location, Study Intersections, and Directional Distributions
Figure 2 – Site Layout
Table 1 – Trip Generation

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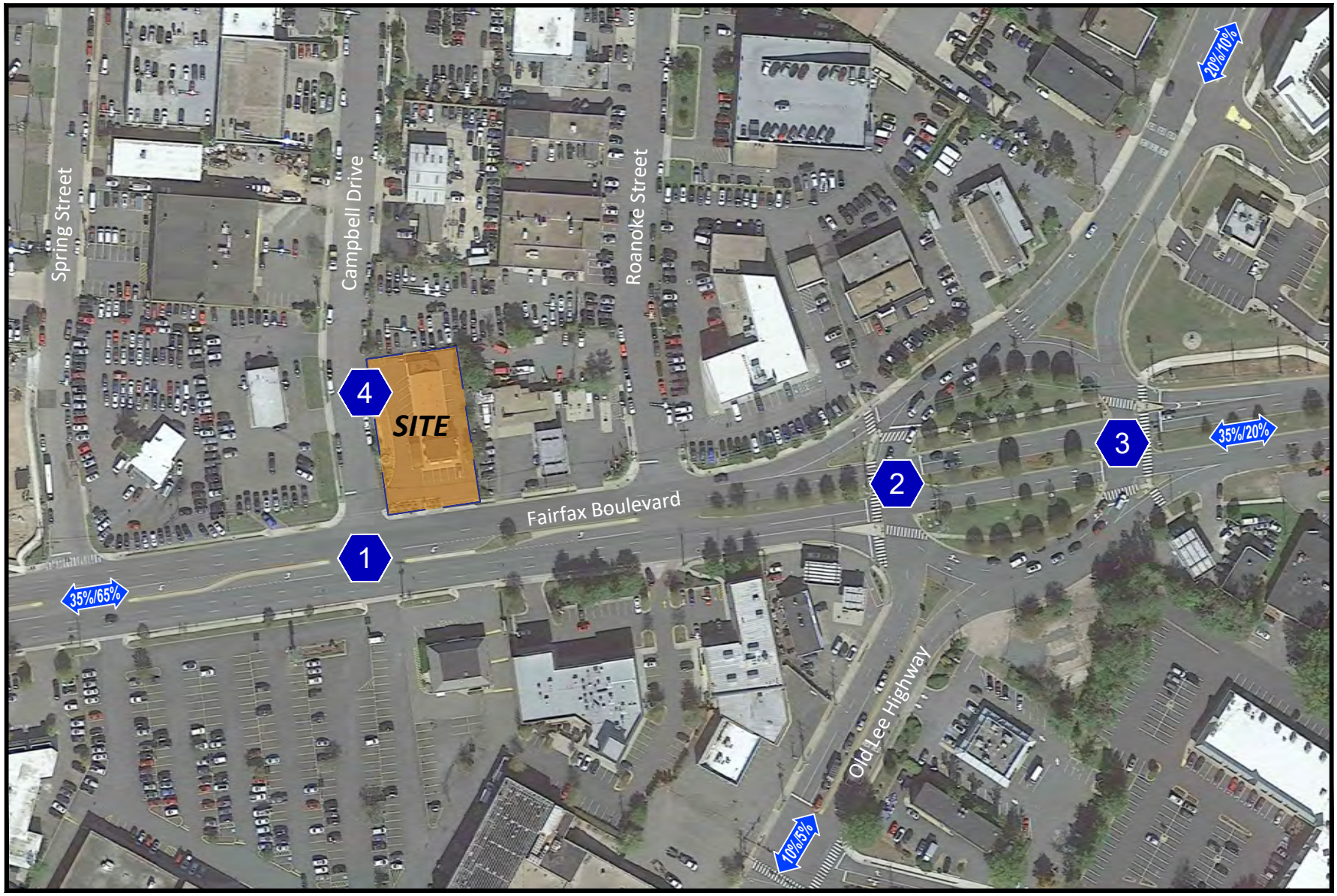

Figure 1

Site, Intersection Location, and Directional Distributuions

X Study Intersection

AM/PM Directional Distributions

NORTH

The Lamb Center
City of Fairfax, Virginia

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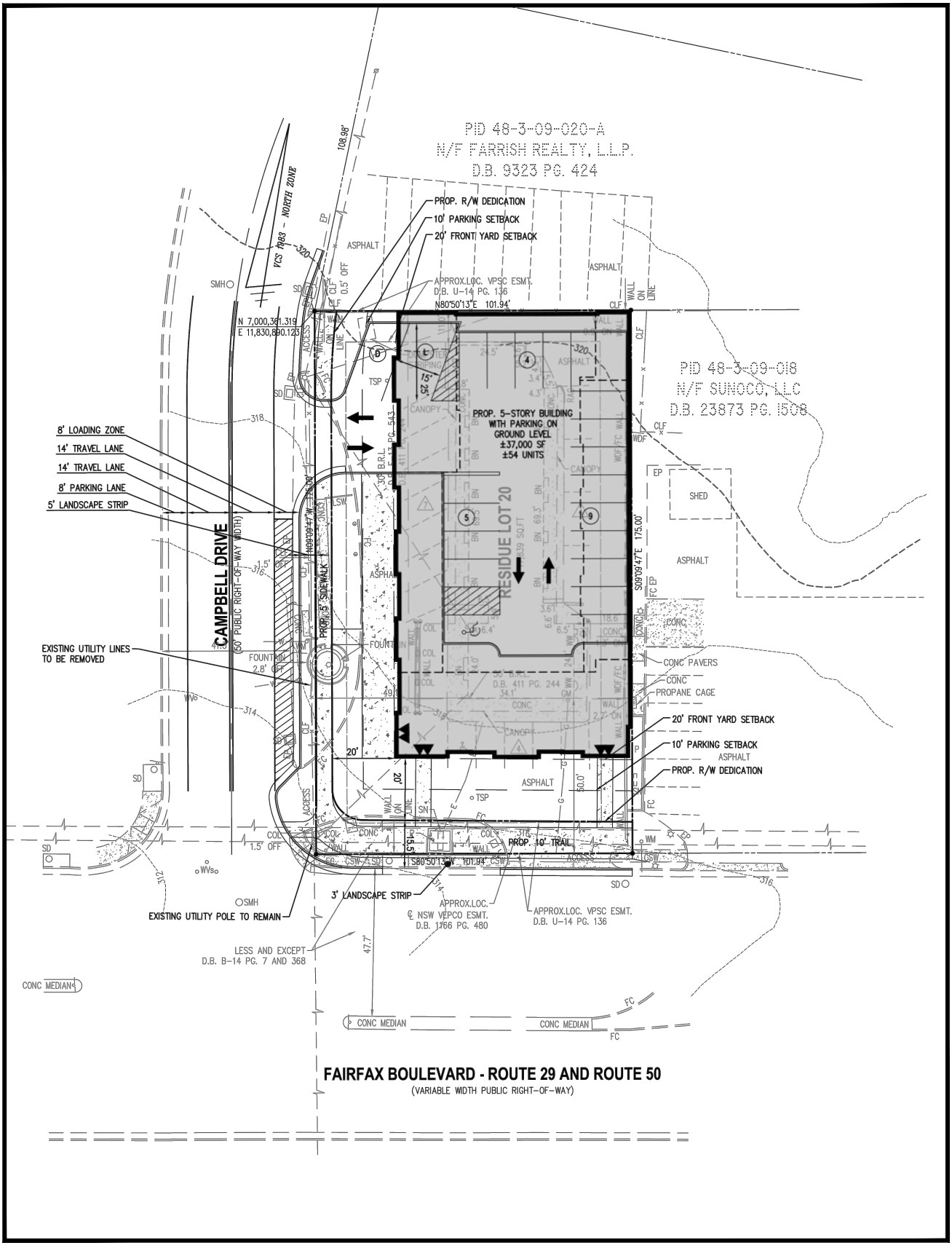

Figure 2
Site Plan

NORTH
The Lamb Center
City of Fairfax, Virginia

Table 1
The Lamb Center
Trip Generation [1]

Land Use	ITE Land Use Code	Size	Units/SF	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Weekday ADT
Existing Program										
Motel - General Urban/Suburban	320	12	Rooms	1	3	4	2	2	4	40
Proposed Program										
Affordable Housing - General Urban/Suburban	223	54	DU	6	13	19	15	10	25	260
Small Office Building - General Urban/Suburban	712	1,400	SF	2	2	4	2	2	4	20
Difference: Proposed minus Existing				7	12	19	15	10	25	240

Notes:
1. Trip Generation based on the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 11th Edition.

WELLS + ASSOCIATES

MEMORANDUM

1420 Spring Hill Road,
Suite 610,
Tysons, VA 22102
703-917-6620
WellsandAssociates.com

To: Tara Ruszkowski
The Lamb Center

Copy: Aaron Vinson, P.E.
Walter L. Phillips

From: Michael J. Workosky, PTP, TOPS, TSOS
Evan S. Gittelman

Date: May 3, 2022

Re: The Lamb Center
Parking Reduction Study Approach
Fairfax, Virginia

INTRODUCTION

This memorandum summarizes the approach to prepare a parking reduction study for the proposed redevelopment of the 9640 Fairfax Boulevard property, located in the City of Fairfax, Virginia. The subject site is bounded by Campbell Drive to the west, Fairfax Boulevard to the south, and Roanoke Street to the east. The Applicant proposes to demolish the existing 12-room Hy-Way Motel building and redevelop the site with 54 affordable residential dwelling units and 1,400 SF of office uses. Nearly all of the units (51 units) are studio or one-bedroom units. The proposed uses would be served a ground-level parking garage with a total of 18 parking spaces.

The building would require a total of 77 parking spaces based on the City of Fairfax Zoning Ordinance. Thus, based on the proposed parking supply, a parking reduction of 59 spaces would be required.

PARKING REDUCTION STUDY APPROACH

The building is planned to primarily serve as permanent supportive housing for those that fall into the 60% of the Average Median Income (AMI) category. Many of the residents do not own a car or create the need for a parking space. The office space will serve administrative staff and provide space for job interviews or other training services for residents of the building. Therefore, the parking supply is likely to be primarily used by office visitors and staff, with only limited use by residents.

The proposed parking reduction will be evaluated through a review of the anticipated operations of the proposed building, a survey or review of comparable buildings if available, or through other published sources such as the Institute of Transportation Engineers (ITE) or surrounding jurisdictions. The study will also document the multiple bus lines that provide direct access to the nearby Vienna/Fairfax George Mason University metro station and other services.

The results of the study will be documented in a summary report for review by the City.

Questions regarding this document should be directed to Wells + Associates.

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APPENDIX B

Existing Traffic Volumes

Wells + Associates,Inc

Tysons, Virginia

Turning Movement Count - Total Vehicles

PROJECT: The Lamb Center TIS
W+A JOB NO: p8779
INTERSECTION: Campbell Dr. & Site Entr.- North
LOCATION: City of Fairfax,VA

DATE: 4/12/2022
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: agan

SOUTHBOUND ROAD: Campbell Drive
NORTHBOUND ROAD: Campbell Drive
WESTBOUND ROAD: Site Entrance - North
EASTBOUND ROAD: 0

Time	Southbound Campbell Drive					Westbound Site Entrance - North					Northbound Campbell Drive					Eastbound 0					North & South	East & West	Total
Period	Right	Thru	Left	U-Turn	Total PHF	Right	Thru	Left	U-Turn	Total PHF	Right	Thru	Left	U-Turn	Total PHF	Right	Thru	Left	U-Turn	Total PHF			
15 Minute Volumes																							
6:00 AM - 6:15 AM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4	0	4
6:15 AM - 6:30 AM	0	1	0	0	1	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	5	0	5
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	6	0	6
6:45 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	8	0	8
7:00 AM - 7:15 AM	0	4	0	0	4	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	7	0	7
7:15 AM - 7:30 AM	0	5	0	0	5	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	11	0	11
7:30 AM - 7:45 AM	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	9	0	9
7:45 AM - 8:00 AM	0	9	0	0	9	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	17	0	17
8:00 AM - 8:15 AM	0	3	0	0	3	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	9	0	9
8:15 AM - 8:30 AM	0	7	0	0	7	0	0	0	0	0	1	13	0	0	14	0	0	0	0	0	21	0	21
8:30 AM - 8:45 AM	0	4	0	0	4	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	7	0	7
8:45 AM - 9:00 AM	0	3	0	0	3	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	13	0	13
4:00 PM - 4:15 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3	0	3
4:15 PM - 4:30 PM	0	11	0	0	11	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	20	0	20
4:30 PM - 4:45 PM	0	8	0	0	8	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	10	0	10
4:45 PM - 5:00 PM	0	6	0	0	6	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	13	0	13
5:00 PM - 5:15 PM	0	11	0	0	11	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	16	0	16
5:15 PM - 5:30 PM	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5	0	5
5:30 PM - 5:45 PM	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
5:45 PM - 6:00 PM	0	4	0	0	4	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	7	0	7
6:00 PM - 6:15 PM	0	4	0	0	4	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	5	0	5
6:15 PM - 6:30 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
6:30 PM - 6:45 PM	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	6	0	6
6:45 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM - 4:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 AM - 4:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 AM - 4:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 AM - 5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM - 5:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 AM - 5:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 AM - 5:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 AM - 6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	97	0	0	97	0	0	0	0	0	1	109	0	0	110	0	0	0	0	0	207	0	207
One Hour Volumes																							
6:00 AM - 7:00 AM	0	2	0	0	2 0.5	0	0	0	0	0	0	21	0	0	21 0.7	0	0	0	0	0	23	0	23
6:15 AM - 7:15 AM	0	5	0	0	5 0.3	0	0	0	0	0	0	21	0	0	21 0.7	0	0	0	0	0	26	0	26
6:30 AM - 7:30 AM	0	9	0	0	9 0.5	0	0	0	0	0	0	23	0	0	23 0.7	0	0	0	0	0	32	0	32
6:45 AM - 7:45 AM	0	13	0	0	13 0.7	0	0	0	0	0	0	22	0	0	22 0.7	0	0	0	0	0	35	0	35
7:00 AM - 8:00 AM	0	22	0	0	22 0.6	0	0	0	0	0	0	22	0	0	22 0.7	0	0	0	0	0	44	0	44
7:15 AM - 8:15 AM	0	21	0	0	21 0.6	0	0	0	0	0	0	25	0	0	25 0.8	0	0	0	0	0	46	0	46
7:30 AM - 8:30 AM	0	23	0	0	23 0.6	0	0	0	0	0	1	32	0	0	33 0.6	0	0	0	0	0	56	0	56
7:45 AM - 8:45 AM	0	23	0	0	23 0.6	0	0	0	0	0	1	30	0	0	31 0.6	0	0	0	0	0	54	0	54
8:00 AM - 9:00 AM	0	17	0	0	17 0.6	0	0	0	0	0	1	32	0	0	33 0.6	0	0	0	0	0	50	0	50
4:00 PM - 5:00 PM	0	26	0	0	26 0.6	0	0	0	0	0	0	20	0	0	20 0.6	0	0	0	0	0	46	0	46
4:15 PM - 5:15 PM	0	36	0	0	36 0.8	0	0	0	0	0	0	23	0	0	23 0.6	0	0	0	0	0	59	0	59
4:30 PM - 5:30 PM	0	28	0	0	28 0.6	0	0	0	0	0	0	16	0	0	16 0.6	0	0	0	0	0	44	0	44
4:45 PM - 5:45 PM	0	23	0	0	23 0.5	0	0	0	0	0	0	14	0	0	14 0.5	0	0	0	0	0	37	0	37
5:00 PM - 6:00 PM	0	21	0	0	21 0.5	0	0	0	0	0	0	10	0	0	10 0.5	0	0	0	0	0	31	0	31
5:15 PM - 6:15 PM	0	14	0	0	14 0.9	0	0	0	0	0	0	6	0	0	6 0.5	0	0	0	0	0	20	0	20
5:30 PM - 6:30 PM	0	13	0	0	13 0.8	0	0	0	0	0	0	4	0	0	4 0.3	0	0	0	0	0	17	0	17
5:45 PM - 6:45 PM	0	13	0	0	13 0.8	0	0	0	0	0	0	7	0	0	7 0.6	0	0	0	0	0	20	0	20
6:00 PM - 7:00 PM	0	9	0	0	9 0.6	0	0	0	0	0	0	4	0	0	4 0.3	0	0	0	0	0	13	0	13

Wells + Associates,Inc

Tysons, Virginia

Turning Movement Count - Total Vehicles

PROJECT: The Lamb Center TIS
W+A JOB NO: p8779
INTERSECTION: Campbell Dr. & Site Entr.- South
LOCATION: City of Fairfax,VA

DATE: 4/12/2022
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: agan

SOUTHBOUND ROAD: Campbell Drive
NORTHBOUND ROAD: Campbell Drive
WESTBOUND ROAD: Site Entrance - South
EASTBOUND ROAD: 0

Time Period	Southbound Campbell Drive					Westbound Site Entrance - South					Northbound Campbell Drive					Eastbound 0					North & South	East & West	Total
	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF			
15 Minute Volumes																											
6:00 AM - 6:15 AM	0	1	0	0	1		0	0	0	0	0		0	3	0	0	3		0	0	0	0	0		4	0	4
6:15 AM - 6:30 AM	0	1	0	0	1		0	0	0	0	0		0	4	0	0	4		0	0	0	0	0		5	0	5
6:30 AM - 6:45 AM	0	0	0	0	0		0	0	0	0	0		0	7	0	0	7		0	0	0	0	0		7	0	7
6:45 AM - 7:00 AM	0	0	0	0	0		0	0	0	0	0		0	8	0	0	8		0	0	0	0	0		8	0	8
7:00 AM - 7:15 AM	0	6	0	0	6		0	0	0	0	0		0	5	0	0	5		0	0	0	0	0		11	0	11
7:15 AM - 7:30 AM	0	4	0	0	4		0	0	0	0	0		0	6	0	0	6		0	0	0	0	0		10	0	10
7:30 AM - 7:45 AM	0	4	0	0	4		0	0	0	0	0		0	5	0	0	5		0	0	0	0	0		9	0	9
7:45 AM - 8:00 AM	0	10	0	0	10		0	0	0	0	0		0	8	0	0	8		0	0	0	0	0		18	0	18
8:00 AM - 8:15 AM	0	3	0	0	3		0	0	0	0	0		0	7	0	0	7		0	0	0	0	0		10	0	10
8:15 AM - 8:30 AM	0	8	0	0	8		0	0	0	0	0		0	11	0	0	11		0	0	0	0	0		19	0	19
8:30 AM - 8:45 AM	0	5	0	0	5		0	0	0	0	0		0	3	0	0	3		0	0	0	0	0		8	0	8
8:45 AM - 9:00 AM	0	3	0	0	3		0	0	0	0	0		0	9	0	0	9		0	0	0	0	0		12	0	12
4:00 PM - 4:15 PM	0	2	0	0	2		0	0	0	0	0		0	3	0	0	3		0	0	0	0	0		5	0	5
4:15 PM - 4:30 PM	0	11	0	0	11		0	0	0	0	0		0	7	0	0	7		0	0	0	0	0		18	0	18
4:30 PM - 4:45 PM	0	8	0	0	8		0	0	0	0	0		0	2	0	0	2		0	0	0	0	0		10	0	10
4:45 PM - 5:00 PM	0	6	0	0	6		0	0	0	0	0		0	7	0	0	7		0	0	0	0	0		13	0	13
5:00 PM - 5:15 PM	0	12	0	0	12		0	0	0	0	0		0	6	0	0	6		0	0	0	0	0		18	0	18
5:15 PM - 5:30 PM	0	3	0	0	3		0	0	0	0	0		0	2	0	0	2		0	0	0	0	0		5	0	5
5:30 PM - 5:45 PM	0	3	0	0	3		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		3	0	3
5:45 PM - 6:00 PM	0	4	0	0	4		0	0	0	0	0		0	3	0	0	3		0	0	0	0	0		7	0	7
6:00 PM - 6:15 PM	0	4	0	0	4		0	0	0	0	0		0	1	0	0	1		0	0	0	0	0		5	0	5
6:15 PM - 6:30 PM	0	2	0	0	2		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		2	0	2
6:30 PM - 6:45 PM	0	3	0	0	3		0	0	0	0	0		0	3	0	0	3		0	0	0	0	0		6	0	6
6:45 PM - 7:00 PM	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
Total	0	103	0	0	103		0	0	0	0	0		0	110	0	0	110		0	0	0	0	0		213	0	213
One Hour Volumes																											
6:00 AM - 7:00 AM	0	2	0	0	2	0.5	0	0	0	0	0		0	22	0	0	22	0.7	0	0	0	0	0		24	0	24
6:15 AM - 7:15 AM	0	7	0	0	7	0.3	0	0	0	0	0		0	24	0	0	24	0.8	0	0	0	0	0		31	0	31
6:30 AM - 7:30 AM	0	10	0	0	10	0.4	0	0	0	0	0		0	26	0	0	26	0.8	0	0	0	0	0		36	0	36
6:45 AM - 7:45 AM	0	14	0	0	14	0.6	0	0	0	0	0		0	24	0	0	24	0.8	0	0	0	0	0		38	0	38
7:00 AM - 8:00 AM	0	24	0	0	24	0.6	0	0	0	0	0		0	24	0	0	24	0.8	0	0	0	0	0		48	0	48
7:15 AM - 8:15 AM	0	21	0	0	21	0.5	0	0	0	0	0		0	26	0	0	26	0.8	0	0	0	0	0		47	0	47
7:30 AM - 8:30 AM	0	25	0	0	25	0.6	0	0	0	0	0		0	31	0	0	31	0.7	0	0	0	0	0		56	0	56
7:45 AM - 8:45 AM	0	26	0	0	26	0.7	0	0	0	0	0		0	29	0	0	29	0.7	0	0	0	0	0		55	0	55
8:00 AM - 9:00 AM	0	19	0	0	19	0.6	0	0	0	0	0		0	30	0	0	30	0.7	0	0	0	0	0		49	0	49
4:00 PM - 5:00 PM	0	27	0	0	27	0.6	0	0	0	0	0		0	19	0	0	19	0.7	0	0	0	0	0		46	0	46
4:15 PM - 5:15 PM	0	37	0	0	37	0.8	0	0	0	0	0		0	22	0	0	22	0.8	0	0	0	0	0		59	0	59
4:30 PM - 5:30 PM	0	29	0	0	29	0.6	0	0	0	0	0		0	17	0	0	17	0.6	0	0	0	0	0		46	0	46
4:45 PM - 5:45 PM	0	24	0	0	24	0.5	0	0	0	0	0		0	15	0	0	15	0.5	0	0	0	0	0		39	0	39
5:00 PM - 6:00 PM	0	22	0	0	22	0.5	0	0	0	0	0		0	11	0	0	11	0.5	0	0	0	0	0		33	0	33
5:15 PM - 6:15 PM	0	14	0	0	14	0.9	0	0	0	0	0		0	6	0	0	6	0.5	0	0	0	0	0		20	0	20
5:30 PM - 6:30 PM	0	13	0	0	13	0.8	0	0	0	0	0		0	4	0	0	4	0.3	0	0	0	0	0		17	0	17
5:45 PM - 6:45 PM	0	13	0	0	13	0.8	0	0	0	0	0		0	7	0	0	7	0.6	0	0	0	0	0		20	0	20
6:00 PM - 7:00 PM	0	9	0	0	9	0.6	0	0	0	0	0		0	4	0	0	4	0.3	0	0	0	0	0		13	0	13

Wells + Associates,Inc

Tysons, Virginia

Turning Movement Count - Total Vehicles

PROJECT: The Lamb Center TIS
W+A JOB NO: p8779
INTERSECTION: Fairfax Blvd. & Campbell Dr.
LOCATION: City of Fairfax,VA

DATE: 4/12/2022
DAY: Tuesday
WEATHER: clear
COUNTED BY: Majda & Ramiz
INPUTED BY: agan

SOUTHBOUND ROAD: Campbell Drive
NORTHBOUND ROAD: Campbell Drive
WESTBOUND ROAD: Fairfax Boulevard
EASTBOUND ROAD: Fairfax Boulevard

Time Period	Southbound Campbell Drive						Westbound Fairfax Boulevard						Northbound Campbell Drive						Eastbound Fairfax Boulevard						North & South	East & West	Total
	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF			
15 Minute Volumes																											
6:00 AM - 6:15 AM	0	0	1	0	1		2	86	1	0	89		0	0	2	0	2		2	129	1	0	132		3	221	224
6:15 AM - 6:30 AM	1	0	1	0	2		4	95	2	5	106		0	0	0	0	0		0	202	0	0	202		2	308	310
6:30 AM - 6:45 AM	0	0	0	0	0		3	108	4	2	117		0	0	0	0	0		0	221	4	0	225		0	342	342
6:45 AM - 7:00 AM	0	0	0	0	0		4	181	2	2	189		1	0	1	0	2		1	210	5	0	216		2	405	407
7:00 AM - 7:15 AM	2	0	4	0	6		4	158	2	5	169		1	0	1	0	2		0	266	0	1	267		8	436	444
7:15 AM - 7:30 AM	2	0	2	0	4		3	177	2	5	187		0	0	0	0	0		0	318	2	0	320		4	507	511
7:30 AM - 7:45 AM	2	2	0	0	4		2	203	2	7	214		0	0	0	0	0		1	300	3	0	304		4	518	522
7:45 AM - 8:00 AM	9	1	0	0	10		6	257	10	3	276		0	0	1	0	1		2	310	3	0	315		11	591	602
8:00 AM - 8:15 AM	1	1	2	0	4		4	199	4	7	214		1	0	0	0	1		5	364	5	0	374		5	588	593
8:15 AM - 8:30 AM	6	0	1	0	7		8	223	2	6	239		0	0	0	0	0		3	371	6	0	380		7	619	626
8:30 AM - 8:45 AM	4	0	1	0	5		3	236	3	2	244		1	0	0	0	1		0	309	0	0	309		6	553	559
8:45 AM - 9:00 AM	2	0	0	0	2		4	248	6	12	270		2	0	0	0	2		1	269	6	0	276		4	546	550
4:00 PM - 4:15 PM	3	0	1	0	4		2	382	10	7	401		7	0	2	0	9		1	309	0	1	311		13	712	725
4:15 PM - 4:30 PM	7	0	2	0	9		6	434	6	6	452		14	0	4	0	18		3	238	3	0	244		27	696	723
4:30 PM - 4:45 PM	9	0	0	0	9		2	408	12	13	435		10	0	2	0	12		2	297	0	0	299		21	734	755
4:45 PM - 5:00 PM	8	0	1	0	9		3	431	8	24	466		6	0	4	0	10		1	256	4	1	262		19	728	747
5:00 PM - 5:15 PM	10	0	0	0	10		7	393	9	9	418		8	0	0	0	8		2	296	3	0	301		18	719	737
5:15 PM - 5:30 PM	4	0	1	0	5		2	398	11	10	421		8	0	2	0	10		2	290	0	3	295		15	716	731
5:30 PM - 5:45 PM	1	0	0	0	1		0	395	8	14	417		10	0	2	0	12		3	279	0	2	284		13	701	714
5:45 PM - 6:00 PM	5	0	0	0	5		1	404	9	13	427		10	0	0	0	10		2	263	2	3	270		15	697	712
6:00 PM - 6:15 PM	2	0	0	0	2		1	399	9	16	425		7	0	5	0	12		5	273	1	0	279		14	704	718
6:15 PM - 6:30 PM	3	0	0	0	3		0	351	12	20	383		3	0	2	0	5		3	232	0	1	236		8	619	627
6:30 PM - 6:45 PM	2	0	1	0	3		3	354	13	15	385		6	0	0	0	6		2	231	0	2	235		9	620	629
6:45 PM - 7:00 PM	0	0	0	0	0		0	315	13	17	345		7	0	4	0	11		1	215	0	1	217		11	562	573
Total	83	4	18	0	105		74	6835	160	220	7289		102	0	32	0	134		42	6448	48	15	6553		239	13842	14081
One Hour Volumes																											
6:00 AM - 7:00 AM	1	0	2	0	3	0.4	13	470	9	9	501	0.7	1	0	3	0	4	0.5	3	762	10	0	775	0.9	7	1276	1283
6:15 AM - 7:15 AM	3	0	5	0	8	0.3	15	542	10	14	581	0.8	2	0	2	0	4	0.5	1	899	9	1	910	0.9	12	1491	1503
6:30 AM - 7:30 AM	4	0	6	0	10	0.4	14	624	10	14	662	0.9	2	0	2	0	4	0.5	1	1015	11	1	1028	0.8	14	1690	1704
6:45 AM - 7:45 AM	6	2	6	0	14	0.6	13	719	8	19	759	0.9	2	0	2	0	4	0.5	2	1094	10	1	1107	0.9	18	1866	1884
7:00 AM - 8:00 AM	15	3	6	0	24	0.6	15	795	16	20	846	0.8	1	0	2	0	3	0.4	3	1194	8	1	1206	0.9	27	2052	2079
7:15 AM - 8:15 AM	14	4	4	0	22	0.6	15	836	18	22	891	0.8	1	0	1	0	2	0.5	8	1292	13	0	1313	0.9	24	2204	2228
7:30 AM - 8:30 AM	18	4	3	0	25	0.6	20	882	18	23	943	0.9	1	0	1	0	2	0.5	11	1345	17	0	1373	0.9	27	2316	2343
7:45 AM - 8:45 AM	20	2	4	0	26	0.7	21	915	19	18	973	0.9	2	0	1	0	3	0.8	10	1354	14	0	1378	0.9	29	2351	2380
8:00 AM - 9:00 AM	13	1	4	0	18	0.6	19	906	15	27	967	0.9	4	0	0	0	4	0.5	9	1313	17	0	1339	0.9	22	2306	2328
4:00 PM - 5:00 PM	27	0	4	0	31	0.9	13	1655	36	50	1754	0.9	37	0	12	0	49	0.7	7	1100	7	2	1116	0.9	80	2870	2950
4:15 PM - 5:15 PM	34	0	3	0	37	0.9	18	1666	35	52	1771	1	38	0	10	0	48	0.7	8	1087	10	1	1106	0.9	85	2877	2962
4:30 PM - 5:30 PM	31	0	2	0	33	0.8	14	1630	40	56	1740	0.9	32	0	8	0	40	0.8	7	1139	7	4	1157	1	73	2897	2970
4:45 PM - 5:45 PM	23	0	2	0	25	0.6	12	1617	36	57	1722	0.9	32	0	8	0	40	0.8	8	1121	7	6	1142	0.9	65	2864	2929
5:00 PM - 6:00 PM	20	0	1	0	21	0.5	10	1590	37	46	1683	1	36	0	4	0	40	0.8	9	1128	5	8	1150	1	61	2833	2894
5:15 PM - 6:15 PM	12	0	1	0	13	0.7	4	1596	37	53	1690	1	35	0	9	0	44	0.9	12	1105	3	8	1128	1	57	2818	2875
5:30 PM - 6:30 PM	11	0	0	0	11	0.6	2	1549	38	63	1652	1	30	0	9	0	39	0.8	13	1047	3	6	1069	0.9	50	2721	2771
5:45 PM - 6:45 PM	12	0	1	0	13	0.7	5	1508	43	64	1620	0.9	26	0	7	0	33	0.7	12	999	3	6	1020	0.9	46	2640	2686
6:00 PM - 7:00 PM	7	0	1	0	8	0.7	4	1419	47	68	1538	0.9	23	0	11	0	34	0.7	11	951	1	4	967	0.9	42	2505	2547

Wells + Associates,Inc

Tysons, Virginia

Turning Movement Count - Total Vehicles

PROJECT: The Lamb Center TIS
W+A JOB NO: p8779
INTERSECTION: Fairfax Blvd. & Site Entr.
LOCATION: City of Fairfax,VA

DATE: 4/12/2022
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: agan

SOUTHBOUND ROAD: Site Entrance
NORTHBOUND ROAD: 0
WESTBOUND ROAD: Fairfax Boulevard
EASTBOUND ROAD: Fairfax Boulevard

Time	Southbound Site Entrance						Westbound Fairfax Boulevard						Northbound 0						Eastbound Fairfax Boulevard						North & South	East & West	Total
Period	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF			
15 Minute Volumes																											
6:00 AM - 6:15 AM	0	0	0	0	0		0	91	0	0	91		0	0	0	0	0		0	0	0	0	0		0	91	91
6:15 AM - 6:30 AM	0	0	0	0	0		0	107	0	0	107		0	0	0	0	0		0	0	0	0	0		0	107	107
6:30 AM - 6:45 AM	0	0	0	0	0		0	116	0	0	116		0	0	0	0	0		0	0	0	0	0		0	116	116
6:45 AM - 7:00 AM	0	0	0	0	0		0	195	0	0	195		0	0	0	0	0		0	0	0	0	0		0	195	195
7:00 AM - 7:15 AM	0	0	0	0	0		0	168	0	0	168		0	0	0	0	0		0	0	0	0	0		0	168	168
7:15 AM - 7:30 AM	0	0	0	0	0		0	193	0	0	193		0	0	0	0	0		0	0	0	0	0		0	193	193
7:30 AM - 7:45 AM	0	0	0	0	0		0	209	0	0	209		0	0	0	0	0		0	0	0	0	0		0	209	209
7:45 AM - 8:00 AM	0	0	0	0	0		0	281	0	0	281		0	0	0	0	0		0	0	0	0	0		0	281	281
8:00 AM - 8:15 AM	0	0	0	0	0		0	216	0	0	216		0	0	0	0	0		0	0	0	0	0		0	216	216
8:15 AM - 8:30 AM	0	0	0	0	0		0	232	0	0	232		0	0	0	0	0		0	0	0	0	0		0	232	232
8:30 AM - 8:45 AM	0	0	0	0	0		0	239	0	0	239		0	0	0	0	0		0	0	0	0	0		0	239	239
8:45 AM - 9:00 AM	0	0	0	0	0		0	266	0	0	266		0	0	0	0	0		0	0	0	0	0		0	266	266
4:00 PM - 4:15 PM	0	0	0	0	0		1	408	0	0	409		0	0	0	0	0		0	0	0	0	0		0	409	409
4:15 PM - 4:30 PM	0	0	0	0	0		0	451	0	0	451		0	0	0	0	0		0	0	0	0	0		0	451	451
4:30 PM - 4:45 PM	1	0	0	0	1		0	437	0	0	437		0	0	0	0	0		0	0	0	0	0		1	437	438
4:45 PM - 5:00 PM	0	0	0	0	0		1	457	0	0	458		0	0	0	0	0		0	0	0	0	0		0	458	458
5:00 PM - 5:15 PM	0	0	0	0	0		0	407	0	0	407		0	0	0	0	0		0	0	0	0	0		0	407	407
5:15 PM - 5:30 PM	0	0	0	0	0		0	445	0	0	445		0	0	0	0	0		0	0	0	0	0		0	445	445
5:30 PM - 5:45 PM	0	0	0	0	0		0	405	0	0	405		0	0	0	0	0		0	0	0	0	0		0	405	405
5:45 PM - 6:00 PM	0	0	0	0	0		0	444	0	0	444		0	0	0	0	0		0	0	0	0	0		0	444	444
6:00 PM - 6:15 PM	0	0	0	0	0		0	418	0	0	418		0	0	0	0	0		0	0	0	0	0		0	418	418
6:15 PM - 6:30 PM	0	0	0	0	0		0	406	0	0	406		0	0	0	0	0		0	0	0	0	0		0	406	406
6:30 PM - 6:45 PM	0	0	0	0	0		0	387	0	0	387		0	0	0	0	0		0	0	0	0	0		0	387	387
6:45 PM - 7:00 PM	0	0	0	0	0		0	333	0	0	333		0	0	0	0	0		0	0	0	0	0		0	333	333
Total	1	0	0	0	1		2	7311	0	0	7313		0	0	0	0	0		0	0	0	0	0		1	7313	7314
One Hour Volumes																											
6:00 AM - 7:00 AM	0	0	0	0	0		0	509	0	0	509	0.7	0	0	0	0	0		0	0	0	0	0		0	509	509
6:15 AM - 7:15 AM	0	0	0	0	0		0	586	0	0	586	0.8	0	0	0	0	0		0	0	0	0	0		0	586	586
6:30 AM - 7:30 AM	0	0	0	0	0		0	672	0	0	672	0.9	0	0	0	0	0		0	0	0	0	0		0	672	672
6:45 AM - 7:45 AM	0	0	0	0	0		0	765	0	0	765	0.9	0	0	0	0	0		0	0	0	0	0		0	765	765
7:00 AM - 8:00 AM	0	0	0	0	0		0	851	0	0	851	0.8	0	0	0	0	0		0	0	0	0	0		0	851	851
7:15 AM - 8:15 AM	0	0	0	0	0		0	899	0	0	899	0.8	0	0	0	0	0		0	0	0	0	0		0	899	899
7:30 AM - 8:30 AM	0	0	0	0	0		0	938	0	0	938	0.8	0	0	0	0	0		0	0	0	0	0		0	938	938
7:45 AM - 8:45 AM	0	0	0	0	0		0	968	0	0	968	0.9	0	0	0	0	0		0	0	0	0	0		0	968	968
8:00 AM - 9:00 AM	0	0	0	0	0		0	953	0	0	953	0.9	0	0	0	0	0		0	0	0	0	0		0	953	953
4:00 PM - 5:00 PM	1	0	0	0	1	0.3	2	1753	0	0	1755	1	0	0	0	0	0		0	0	0	0	0		1	1755	1756
4:15 PM - 5:15 PM	1	0	0	0	1	0.3	1	1752	0	0	1753	1	0	0	0	0	0		0	0	0	0	0		1	1753	1754
4:30 PM - 5:30 PM	1	0	0	0	1	0.3	1	1746	0	0	1747	1	0	0	0	0	0		0	0	0	0	0		1	1747	1748
4:45 PM - 5:45 PM	0	0	0	0	0		1	1714	0	0	1715	0.9	0	0	0	0	0		0	0	0	0	0		0	1715	1715
5:00 PM - 6:00 PM	0	0	0	0	0		0	1701	0	0	1701	1	0	0	0	0	0		0	0	0	0	0		0	1701	1701
5:15 PM - 6:15 PM	0	0	0	0	0		0	1712	0	0	1712	1	0	0	0	0	0		0	0	0	0	0		0	1712	1712
5:30 PM - 6:30 PM	0	0	0	0	0		0	1673	0	0	1673	0.9	0	0	0	0	0		0	0	0	0	0		0	1673	1673
5:45 PM - 6:45 PM	0	0	0	0	0		0	1655	0	0	1655	0.9	0	0	0	0	0		0	0	0	0	0		0	1655	1655
6:00 PM - 7:00 PM	0	0	0	0	0		0	1544	0	0	1544	0.9	0	0	0	0	0		0	0	0	0	0		0	1544	1544

APPENDIX C

Existing Capacity Analysis Worksheets

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	14	1354	10	18	19	915	21	1	0	2	4	2
Future Volume (Veh/h)	14	1354	10	18	19	915	21	1	0	2	4	2
Sign Control		Free				Free			Stop			Stop
Grade		0%				0%			0%			0%
Peak Hour Factor	0.91	0.91	0.91	0.88	0.88	0.88	0.88	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	15	1488	11	0	22	1040	24	1	0	2	5	2
Pedestrians		3							1			5
Lane Width (ft)		12.0							12.0			12.0
Walking Speed (ft/s)		4.0							4.0			4.0
Percent Blockage		0							0			0
Right turn flare (veh)												
Median type		None				None						
Median storage veh)												
Upstream signal (ft)		993				589						
pX, platoon unblocked	0.96			0.00	0.92			0.94	0.94	0.92	0.94	0.94
vC, conflicting volume	1069			0	1500			1943	2638	502	1629	2631
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	912			0	1228			1463	2202	141	1128	2195
tC, single (s)	4.1			0.0	4.1			7.5	6.5	6.9	7.5	6.5
tC, 2 stage (s)												
tF (s)	2.2			0.0	2.2			3.5	4.0	3.3	3.5	4.0
p0 queue free %	98			0	96			99	100	100	96	95
cM capacity (veh/h)	707			0	516			74	39	808	141	39

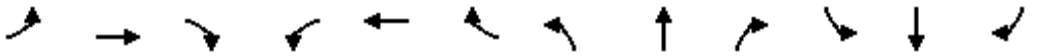
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	15	595	595	309	22	416	416	232	3	31
Volume Left	15	0	0	0	22	0	0	0	1	5
Volume Right	0	0	0	11	0	0	0	24	2	24
cSH	707	1700	1700	1700	516	1700	1700	1700	188	265
Volume to Capacity	0.02	0.35	0.35	0.18	0.04	0.24	0.24	0.14	0.02	0.12
Queue Length 95th (ft)	2	0	0	0	3	0	0	0	1	10
Control Delay (s)	10.2	0.0	0.0	0.0	12.3	0.0	0.0	0.0	24.4	20.4
Lane LOS	B				B				C	C
Approach Delay (s)	0.1				0.2				24.4	20.4
Approach LOS									C	C

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	41.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	20
Future Volume (Veh/h)	20
Sign Control	
Grade	
Peak Hour Factor	0.85
Hourly flow rate (vph)	24
Pedestrians	
Lane Width (ft)	
Walking Speed (ft/s)	
Percent Blockage	
Right turn flare (veh)	
Median type	
Median storage veh)	
Upstream signal (ft)	
pX, platoon unblocked	0.96
vC, conflicting volume	367
vC1, stage 1 conf vol	
vC2, stage 2 conf vol	
vCu, unblocked vol	178
tC, single (s)	6.9
tC, 2 stage (s)	
tF (s)	3.3
p0 queue free %	97
cM capacity (veh/h)	793
Direction, Lane #	

Lane Group	EBT	EBR	WBT	SBT	SBR
Lane Group Flow (vph)	1343	317	725	403	307
v/c Ratio	0.55	0.30	0.31	0.48	0.22
Control Delay	18.0	14.3	3.9	64.5	0.4
Queue Delay	0.0	0.0	0.2	0.0	0.0
Total Delay	18.0	14.3	4.1	64.5	0.4
Queue Length 50th (ft)	484	169	47	244	0
Queue Length 95th (ft)	615	256	53	285	0
Internal Link Dist (ft)	509		176	192	
Turn Bay Length (ft)					
Base Capacity (vph)	2446	1063	2354	1014	1411
Starvation Cap Reductn	0	0	850	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.55	0.30	0.48	0.40	0.22

Intersection Summary

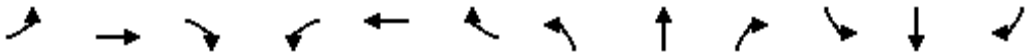


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1262	298	0	696	0	0	0	0	13	354	279
Future Volume (vph)	0	1262	298	0	696	0	0	0	0	13	354	279
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5		3.5						4.8	4.0
Lane Util. Factor		0.95	1.00		0.95						0.95	1.00
Frpb, ped/bikes		1.00	1.00		1.00						1.00	0.99
Flpb, ped/bikes		1.00	1.00		1.00						1.00	1.00
Frt		1.00	0.85		1.00						1.00	0.85
Flt Protected		1.00	1.00		1.00						1.00	1.00
Satd. Flow (prot)		3505	1524		3374						3180	1411
Flt Permitted		1.00	1.00		1.00						1.00	1.00
Satd. Flow (perm)		3505	1524		3374						3180	1411
Peak-hour factor, PHF	0.94	0.94	0.94	0.96	0.96	0.96	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	1343	317	0	725	0	0	0	0	14	389	307
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1343	317	0	725	0	0	0	0	0	403	307
Confl. Peds. (#/hr)	2		3	3		2	2					2
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	3%	6%	0%	7%	0%	0%	0%	0%	50%	12%	13%
Turn Type		NA	Prot		NA					Split	NA	Free
Protected Phases		2	2		2					4	4	
Permitted Phases												Free
Actuated Green, G (s)		151.9	151.9		151.9						55.5	220.0
Effective Green, g (s)		153.5	153.5		153.5						58.2	220.0
Actuated g/C Ratio		0.70	0.70		0.70						0.26	1.00
Clearance Time (s)		5.1	5.1		5.1						7.5	
Vehicle Extension (s)		3.0	3.0		3.0						3.0	
Lane Grp Cap (vph)		2445	1063		2354						841	1411
v/s Ratio Prot		c0.38	0.21		0.21						c0.13	
v/s Ratio Perm												0.22
v/c Ratio		0.55	0.30		0.31						0.48	0.22
Uniform Delay, d1		16.3	12.7		12.8						68.1	0.0
Progression Factor		1.00	1.00		0.26						0.93	1.00
Incremental Delay, d2		0.9	0.7		0.3						0.4	0.4
Delay (s)		17.2	13.4		3.7						63.6	0.4
Level of Service		B	B		A						E	A
Approach Delay (s)		16.5			3.7			0.0			36.2	
Approach LOS		B			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	18.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	220.0	Sum of lost time (s)	8.3
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	1411	688	124	739	316
v/c Ratio	0.56	0.29	0.12	0.82	0.20
Control Delay	2.7	12.2	11.5	80.1	0.3
Queue Delay	1.0	0.0	0.0	0.0	0.1
Total Delay	3.7	12.2	11.5	80.1	0.4
Queue Length 50th (ft)	40	153	51	541	0
Queue Length 95th (ft)	45	181	77	591	0
Internal Link Dist (ft)	176	1252		171	
Turn Bay Length (ft)			200		
Base Capacity (vph)	2519	2354	1009	1087	1561
Starvation Cap Reductn	22	0	0	0	0
Spillback Cap Reductn	767	0	0	0	331
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.81	0.29	0.12	0.68	0.26

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1270	0	0	654	118	42	631	288	0	0	0
Future Volume (vph)	0	1270	0	0	654	118	42	631	288	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5			3.5	3.5		4.8	4.0			
Lane Util. Factor		0.95			0.95	1.00		0.95	1.00			
Frpb, ped/bikes		1.00			1.00	0.98		1.00	0.99			
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)		3610			3374	1446		3407	1561			
Flt Permitted		1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)		3610			3374	1446		3407	1561			
Peak-hour factor, PHF	0.90	0.90	0.90	0.95	0.95	0.95	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	0	1411	0	0	688	124	46	693	316	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1411	0	0	688	124	0	739	316	0	0	0
Confl. Peds. (#/hr)	1		1	1		1			7			
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	0%	0%	0%	7%	10%	15%	5%	2%	0%	0%	0%
Turn Type		NA			NA	Perm	Split	NA	Free			
Protected Phases		2			2		4	4				
Permitted Phases						2			Free			
Actuated Green, G (s)		151.9			151.9	151.9		55.5	220.0			
Effective Green, g (s)		153.5			153.5	153.5		58.2	220.0			
Actuated g/C Ratio		0.70			0.70	0.70		0.26	1.00			
Clearance Time (s)		5.1			5.1	5.1		7.5				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		2518			2354	1008		901	1561			
v/s Ratio Prot		c0.39			0.20			c0.22				
v/s Ratio Perm						0.09			0.20			
v/c Ratio		0.56			0.29	0.12		0.82	0.20			
Uniform Delay, d1		16.5			12.6	11.0		76.0	0.0			
Progression Factor		0.11			0.90	0.94		0.95	1.00			
Incremental Delay, d2		0.8			0.3	0.2		6.0	0.3			
Delay (s)		2.6			11.7	10.6		78.3	0.3			
Level of Service		A			B	B		E	A			
Approach Delay (s)		2.6			11.5			54.9			0.0	
Approach LOS		A			B			D			A	

Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	220.0	Sum of lost time (s)	8.3
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (veh/h)	4	7	1139	7	56	40	1630	14	8	0	32	2
Future Volume (Veh/h)	4	7	1139	7	56	40	1630	14	8	0	32	2
Sign Control			Free				Free			Stop		
Grade			0%				0%			0%		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.93	0.93	0.93	0.93	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	0	7	1186	7	0	43	1753	15	9	0	38	2
Pedestrians										4		
Lane Width (ft)										12.0		
Walking Speed (ft/s)										4.0		
Percent Blockage										0		
Right turn flare (veh)												
Median type			None				None					
Median storage veh)												
Upstream signal (ft)			999				583					
pX, platoon unblocked	0.00	0.89			0.00	0.95			0.91	0.91	0.95	0.91
vC, conflicting volume	0	1777			0	1197			1914	3070	403	2303
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	1432			0	1030			1307	2576	196	1733
tC, single (s)	0.0	4.1			0.0	4.1			7.5	6.5	6.9	7.5
tC, 2 stage (s)												
tF (s)	0.0	2.2			0.0	2.2			3.5	4.0	3.3	3.5
p0 queue free %	0	98			0	93			90	100	95	96
cM capacity (veh/h)	0	414			0	636			95	21	771	45

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	7	474	474	244	43	701	701	366	47	38
Volume Left	7	0	0	0	43	0	0	0	9	2
Volume Right	0	0	0	7	0	0	0	15	38	36
cSH	414	1700	1700	1700	636	1700	1700	1700	326	429
Volume to Capacity	0.02	0.28	0.28	0.14	0.07	0.41	0.41	0.22	0.14	0.09
Queue Length 95th (ft)	1	0	0	0	5	0	0	0	12	7
Control Delay (s)	13.8	0.0	0.0	0.0	11.1	0.0	0.0	0.0	17.9	14.2
Lane LOS	B				B				C	B
Approach Delay (s)	0.1				0.3				17.9	14.2
Approach LOS									C	B

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	50.2%	ICU Level of Service	A	
Analysis Period (min)	15			

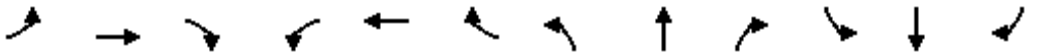
Movement	SBT	SBR
Lane Configurations		
Traffic Volume (veh/h)	0	31
Future Volume (Veh/h)	0	31
Sign Control	Stop	
Grade	0%	
Peak Hour Factor	0.85	0.85
Hourly flow rate (vph)	0	36
Pedestrians	9	
Lane Width (ft)	12.0	
Walking Speed (ft/s)	4.0	
Percent Blockage	1	
Right turn flare (veh)		
Median type		
Median storage veh)		
Upstream signal (ft)		
pX, platoon unblocked	0.91	0.89
vC, conflicting volume	3066	601
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol	2571	107
tC, single (s)	6.5	6.9
tC, 2 stage (s)		
tF (s)	4.0	3.3
p0 queue free %	100	96
cM capacity (veh/h)	21	816

Direction, Lane #

Lane Group	EBT	EBR	WBT	SBT	SBR
Lane Group Flow (vph)	1101	321	1275	940	691
v/c Ratio	0.50	0.34	0.57	0.93	0.44
Control Delay	11.0	9.9	3.5	52.0	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.0	9.9	3.5	52.0	0.9
Queue Length 50th (ft)	190	92	65	330	0
Queue Length 95th (ft)	213	122	66	#412	0
Internal Link Dist (ft)	503		176	192	
Turn Bay Length (ft)					
Base Capacity (vph)	2223	957	2223	1007	1559
Starvation Cap Reductn	0	0	1	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.50	0.34	0.57	0.93	0.44

Intersection Summary

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



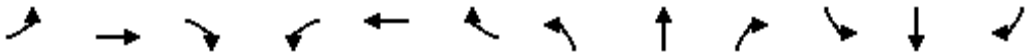
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1013	295	0	1186	0	0	0	0	23	851	643
Future Volume (vph)	0	1013	295	0	1186	0	0	0	0	23	851	643
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.4	3.4		3.4						4.8	4.0
Lane Util. Factor		0.95	1.00		0.95						0.95	1.00
Frpb, ped/bikes		1.00	1.00		1.00						1.00	0.98
Flpb, ped/bikes		1.00	1.00		1.00						1.00	1.00
Frt		1.00	0.85		1.00						1.00	0.85
Flt Protected		1.00	1.00		1.00						1.00	1.00
Satd. Flow (prot)		3505	1509		3505						3503	1559
Flt Permitted		1.00	1.00		1.00						1.00	1.00
Satd. Flow (perm)		3505	1509		3505						3503	1559
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	0	1101	321	0	1275	0	0	0	0	25	915	691
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1101	321	0	1275	0	0	0	0	0	940	691
Confl. Peds. (#/hr)	9		9	9		9	10					10
Confl. Bikes (#/hr)												3
Heavy Vehicles (%)	0%	3%	7%	0%	3%	0%	0%	0%	0%	0%	3%	2%
Turn Type		NA	Prot		NA					Split	NA	Free
Protected Phases		2	2		2					4	4	
Permitted Phases												Free
Actuated Green, G (s)		65.0	65.0		65.0						27.5	105.0
Effective Green, g (s)		66.6	66.6		66.6						30.2	105.0
Actuated g/C Ratio		0.63	0.63		0.63						0.29	1.00
Clearance Time (s)		5.0	5.0		5.0						7.5	
Vehicle Extension (s)		3.0	3.0		3.0						3.0	
Lane Grp Cap (vph)		2223	957		2223						1007	1559
v/s Ratio Prot		0.31	0.21		c0.36						c0.27	
v/s Ratio Perm												0.44
v/c Ratio		0.50	0.34		0.57						0.93	0.44
Uniform Delay, d1		10.2	8.9		11.0						36.4	0.0
Progression Factor		0.99	0.99		0.24						0.97	1.00
Incremental Delay, d2		0.8	0.9		0.9						14.9	0.9
Delay (s)		10.9	9.8		3.5						50.3	0.9
Level of Service		B	A		A						D	A
Approach Delay (s)		10.7			3.5			0.0			29.4	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	8.2
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	1133	1233	232	488	320
v/c Ratio	0.50	0.55	0.23	0.49	0.20
Control Delay	2.9	6.8	5.7	30.5	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.9	6.8	5.7	30.5	0.3
Queue Length 50th (ft)	30	142	51	126	0
Queue Length 95th (ft)	m32	m211	m76	m142	m0
Internal Link Dist (ft)	176	1252		171	
Turn Bay Length (ft)			200		
Base Capacity (vph)	2266	2244	1004	996	1592
Starvation Cap Reductn	48	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.51	0.55	0.23	0.49	0.20

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1031	0	0	1134	213	47	368	272	0	0	0
Future Volume (vph)	0	1031	0	0	1134	213	47	368	272	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.4			3.4	3.4		4.8	4.0			
Lane Util. Factor		0.95			0.95	1.00		0.95	1.00			
Frpb, ped/bikes		1.00			1.00	1.00		1.00	0.99			
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)		3574			3539	1583		3467	1592			
Flt Permitted		1.00			1.00	1.00		0.99	1.00			
Satd. Flow (perm)		3574			3539	1583		3467	1592			
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.92	0.92
Adj. Flow (vph)	0	1133	0	0	1233	232	55	433	320	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1133	0	0	1233	232	0	488	320	0	0	0
Confl. Peds. (#/hr)									8			
Heavy Vehicles (%)	0%	1%	0%	0%	2%	2%	0%	4%	0%	0%	0%	0%
Turn Type		NA			NA	Perm	Split	NA	Free			
Protected Phases		2			2		4	4				
Permitted Phases						2			Free			
Actuated Green, G (s)		65.0			65.0	65.0		27.5	105.0			
Effective Green, g (s)		66.6			66.6	66.6		30.2	105.0			
Actuated g/C Ratio		0.63			0.63	0.63		0.29	1.00			
Clearance Time (s)		5.0			5.0	5.0		7.5				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		2266			2244	1004		997	1592			
v/s Ratio Prot		0.32			c0.35			c0.14				
v/s Ratio Perm						0.15			0.20			
v/c Ratio		0.50			0.55	0.23		0.49	0.20			
Uniform Delay, d1		10.3			10.8	8.2		31.0	0.0			
Progression Factor		0.21			0.59	0.66		0.92	1.00			
Incremental Delay, d2		0.7			0.4	0.2		0.4	0.3			
Delay (s)		2.9			6.7	5.6		29.0	0.3			
Level of Service		A			A	A		C	A			
Approach Delay (s)		2.9			6.6			17.6			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	8.2
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX D

2026 Background Future Capacity Analysis Worksheets

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	14	1420	10	18	19	975	21	1	0	2	4	2
Future Volume (Veh/h)	14	1420	10	18	19	975	21	1	0	2	4	2
Sign Control		Free				Free			Stop			Stop
Grade		0%				0%			0%			0%
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
Hourly flow rate (vph)	15	1543	11	0	21	1060	23	1	0	2	4	2
Pedestrians		3							1			5
Lane Width (ft)		12.0							12.0			12.0
Walking Speed (ft/s)		4.0							4.0			4.0
Percent Blockage		0							0			0
Right turn flare (veh)												
Median type		None				None						
Median storage veh)												
Upstream signal (ft)		993				589						
pX, platoon unblocked	0.95			0.00	0.91			0.93	0.93	0.91	0.93	0.93
vC, conflicting volume	1088			0	1555			2001	2710	521	1665	2704
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	897			0	1254			1441	2200	115	1081	2193
tC, single (s)	4.1			0.0	4.1			7.5	6.5	6.9	7.5	6.5
tC, 2 stage (s)												
tF (s)	2.2			0.0	2.2			3.5	4.0	3.3	3.5	4.0
p0 queue free %	98			0	96			99	100	100	97	95
cM capacity (veh/h)	710			0	499			77	39	831	152	39

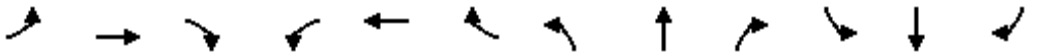
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	15	617	617	320	21	424	424	235	3	28
Volume Left	15	0	0	0	21	0	0	0	1	4
Volume Right	0	0	0	11	0	0	0	23	2	22
cSH	710	1700	1700	1700	499	1700	1700	1700	195	268
Volume to Capacity	0.02	0.36	0.36	0.19	0.04	0.25	0.25	0.14	0.02	0.10
Queue Length 95th (ft)	2	0	0	0	3	0	0	0	1	9
Control Delay (s)	10.2	0.0	0.0	0.0	12.5	0.0	0.0	0.0	23.7	20.0
Lane LOS	B				B				C	C
Approach Delay (s)	0.1				0.2				23.7	20.0
Approach LOS									C	C

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	41.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	20
Future Volume (Veh/h)	20
Sign Control	
Grade	
Peak Hour Factor	0.92
Hourly flow rate (vph)	22
Pedestrians	
Lane Width (ft)	
Walking Speed (ft/s)	
Percent Blockage	
Right turn flare (veh)	
Median type	
Median storage veh)	
Upstream signal (ft)	
pX, platoon unblocked	0.95
vC, conflicting volume	373
vC1, stage 1 conf vol	
vC2, stage 2 conf vol	
vCu, unblocked vol	142
tC, single (s)	6.9
tC, 2 stage (s)	
tF (s)	3.3
p0 queue free %	97
cM capacity (veh/h)	828
Direction, Lane #	

Lane Group	EBT	EBR	WBT	SBT	SBR
Lane Group Flow (vph)	1389	345	769	406	325
v/c Ratio	0.57	0.33	0.33	0.47	0.23
Control Delay	19.4	15.5	4.2	63.2	0.4
Queue Delay	0.0	0.0	0.2	0.0	0.0
Total Delay	19.4	15.5	4.4	63.2	0.4
Queue Length 50th (ft)	527	194	53	245	0
Queue Length 95th (ft)	665	290	60	284	0
Internal Link Dist (ft)	509		176	192	
Turn Bay Length (ft)					
Base Capacity (vph)	2416	1050	2325	1014	1411
Starvation Cap Reductn	0	0	758	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.57	0.33	0.49	0.40	0.23

Intersection Summary

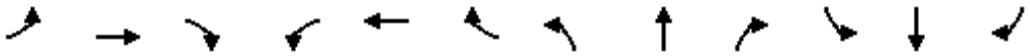


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1306	324	0	738	0	0	0	0	13	361	299
Future Volume (vph)	0	1306	324	0	738	0	0	0	0	13	361	299
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5		3.5						4.8	4.0
Lane Util. Factor		0.95	1.00		0.95						0.95	1.00
Frpb, ped/bikes		1.00	1.00		1.00						1.00	0.99
Flpb, ped/bikes		1.00	1.00		1.00						1.00	1.00
Frt		1.00	0.85		1.00						1.00	0.85
Flt Protected		1.00	1.00		1.00						1.00	1.00
Satd. Flow (prot)		3505	1524		3374						3180	1411
Flt Permitted		1.00	1.00		1.00						1.00	1.00
Satd. Flow (perm)		3505	1524		3374						3180	1411
Peak-hour factor, PHF	0.94	0.94	0.94	0.96	0.96	0.96	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1389	345	0	769	0	0	0	0	14	392	325
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1389	345	0	769	0	0	0	0	0	406	325
Confl. Peds. (#/hr)	2		3	3		2	2					2
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	3%	6%	0%	7%	0%	0%	0%	0%	50%	12%	13%
Turn Type		NA	Prot		NA					Split	NA	Free
Protected Phases		2	2		2					4	4	
Permitted Phases												Free
Actuated Green, G (s)		150.1	150.1		150.1						57.3	220.0
Effective Green, g (s)		151.7	151.7		151.7						60.0	220.0
Actuated g/C Ratio		0.69	0.69		0.69						0.27	1.00
Clearance Time (s)		5.1	5.1		5.1						7.5	
Vehicle Extension (s)		3.0	3.0		3.0						3.0	
Lane Grp Cap (vph)		2416	1050		2326						867	1411
v/s Ratio Prot		c0.40	0.23		0.23						c0.13	
v/s Ratio Perm												0.23
v/c Ratio		0.57	0.33		0.33						0.47	0.23
Uniform Delay, d1		17.6	13.7		13.7						66.7	0.0
Progression Factor		1.00	1.00		0.27						0.93	1.00
Incremental Delay, d2		1.0	0.8		0.4						0.4	0.4
Delay (s)		18.6	14.5		4.0						62.4	0.4
Level of Service		B	B		A						E	A
Approach Delay (s)		17.8			4.0			0.0			34.8	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	220.0	Sum of lost time (s)	8.3
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

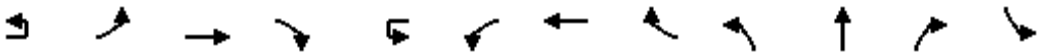
Lane Group	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	1428	724	126	767	320
v/c Ratio	0.57	0.31	0.13	0.83	0.20
Control Delay	2.6	12.9	12.1	79.9	0.3
Queue Delay	1.1	0.0	0.0	0.0	0.1
Total Delay	3.7	12.9	12.1	79.9	0.4
Queue Length 50th (ft)	34	165	53	561	0
Queue Length 95th (ft)	37	195	79	612	0
Internal Link Dist (ft)	176	1252		171	
Turn Bay Length (ft)			200		
Base Capacity (vph)	2488	2325	996	1086	1561
Starvation Cap Reductn	40	0	0	0	0
Spillback Cap Reductn	752	0	0	0	325
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.82	0.31	0.13	0.71	0.26

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1314	0	0	688	120	49	657	294	0	0	0
Future Volume (vph)	0	1314	0	0	688	120	49	657	294	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5			3.5	3.5		4.8	4.0			
Lane Util. Factor		0.95			0.95	1.00		0.95	1.00			
Frpb, ped/bikes		1.00			1.00	0.98		1.00	0.99			
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)		3610			3374	1446		3404	1561			
Flt Permitted		1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)		3610			3374	1446		3404	1561			
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1428	0	0	724	126	53	714	320	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1428	0	0	724	126	0	767	320	0	0	0
Confl. Peds. (#/hr)	1		1	1		1			7			
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	0%	0%	0%	7%	10%	15%	5%	2%	0%	0%	0%
Turn Type		NA			NA	Perm	Split	NA	Free			
Protected Phases		2			2		4	4				
Permitted Phases						2			Free			
Actuated Green, G (s)		150.1			150.1	150.1		57.3	220.0			
Effective Green, g (s)		151.7			151.7	151.7		60.0	220.0			
Actuated g/C Ratio		0.69			0.69	0.69		0.27	1.00			
Clearance Time (s)		5.1			5.1	5.1		7.5				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		2489			2326	997		928	1561			
v/s Ratio Prot		c0.40			0.21			c0.23				
v/s Ratio Perm						0.09			0.21			
v/c Ratio		0.57			0.31	0.13		0.83	0.20			
Uniform Delay, d1		17.5			13.5	11.6		75.1	0.0			
Progression Factor		0.10			0.89	0.94		0.96	1.00			
Incremental Delay, d2		0.8			0.3	0.3		6.1	0.3			
Delay (s)		2.5			12.4	11.1		78.2	0.3			
Level of Service		A			B	B		E	A			
Approach Delay (s)		2.5			12.2			55.3			0.0	
Approach LOS		A			B			E			A	

Intersection Summary			
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	220.0	Sum of lost time (s)	8.3
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (veh/h)	4	7	1192	7	56	40	1692	14	8	0	32	2
Future Volume (Veh/h)	4	7	1192	7	56	40	1692	14	8	0	32	2
Sign Control			Free				Free			Stop		
Grade			0%				0%			0%		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.93	0.93	0.93	0.93	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	7	1242	7	0	43	1819	15	9	0	35	2
Pedestrians										4		
Lane Width (ft)										12.0		
Walking Speed (ft/s)										4.0		
Percent Blockage										0		
Right turn flare (veh)												
Median type			None				None					
Median storage veh)												
Upstream signal (ft)			999				583					
pX, platoon unblocked	0.00	0.87			0.00	0.95			0.90	0.90	0.95	0.90
vC, conflicting volume	0	1843			0	1253			1990	3192	422	2384
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	1460			0	1074			1320	2656	197	1759
tC, single (s)	0.0	4.1			0.0	4.1			7.5	6.5	6.9	7.5
tC, 2 stage (s)												
tF (s)	0.0	2.2			0.0	2.2			3.5	4.0	3.3	3.5
p0 queue free %	0	98			0	93			90	100	95	95
cM capacity (veh/h)	0	398			0	609			91	18	766	43

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	7	497	497	255	43	728	728	379	44	36
Volume Left	7	0	0	0	43	0	0	0	9	2
Volume Right	0	0	0	7	0	0	0	15	35	34
cSH	398	1700	1700	1700	609	1700	1700	1700	305	415
Volume to Capacity	0.02	0.29	0.29	0.15	0.07	0.43	0.43	0.22	0.14	0.09
Queue Length 95th (ft)	1	0	0	0	6	0	0	0	12	7
Control Delay (s)	14.2	0.0	0.0	0.0	11.4	0.0	0.0	0.0	18.8	14.5
Lane LOS	B				B				C	B
Approach Delay (s)	0.1				0.3				18.8	14.5
Approach LOS									C	B

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	51.4%	ICU Level of Service	A	
Analysis Period (min)	15			

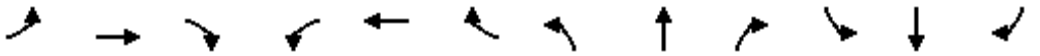
Movement	SBT	SBR
Lane Configurations		
Traffic Volume (veh/h)	0	31
Future Volume (Veh/h)	0	31
Sign Control	Stop	
Grade	0%	
Peak Hour Factor	0.92	0.92
Hourly flow rate (vph)	0	34
Pedestrians	9	
Lane Width (ft)	12.0	
Walking Speed (ft/s)	4.0	
Percent Blockage	1	
Right turn flare (veh)		
Median type		
Median storage veh)		
Upstream signal (ft)		
pX, platoon unblocked	0.90	0.87
vC, conflicting volume	3188	623
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol	2652	65
tC, single (s)	6.5	6.9
tC, 2 stage (s)		
tF (s)	4.0	3.3
p0 queue free %	100	96
cM capacity (veh/h)	18	856

Direction, Lane #

Lane Group	EBT	EBR	WBT	SBT	SBR
Lane Group Flow (vph)	1139	343	1320	959	715
v/c Ratio	0.51	0.36	0.59	0.95	0.46
Control Delay	11.2	10.2	3.7	55.1	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.2	10.2	3.7	55.1	1.0
Queue Length 50th (ft)	199	100	67	338	0
Queue Length 95th (ft)	223	132	68	#441	0
Internal Link Dist (ft)	503		176	192	
Turn Bay Length (ft)					
Base Capacity (vph)	2223	957	2223	1007	1559
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	0.51	0.36	0.59	0.95	0.46

Intersection Summary

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



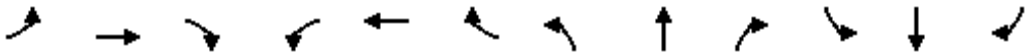
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1048	316	0	1228	0	0	0	0	24	868	665
Future Volume (vph)	0	1048	316	0	1228	0	0	0	0	24	868	665
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.4	3.4		3.4						4.8	4.0
Lane Util. Factor		0.95	1.00		0.95						0.95	1.00
Frpb, ped/bikes		1.00	1.00		1.00						1.00	0.98
Flpb, ped/bikes		1.00	1.00		1.00						1.00	1.00
Frt		1.00	0.85		1.00						1.00	0.85
Flt Protected		1.00	1.00		1.00						1.00	1.00
Satd. Flow (prot)		3505	1509		3505						3503	1559
Flt Permitted		1.00	1.00		1.00						1.00	1.00
Satd. Flow (perm)		3505	1509		3505						3503	1559
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	0	1139	343	0	1320	0	0	0	0	26	933	715
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1139	343	0	1320	0	0	0	0	0	959	715
Confl. Peds. (#/hr)	9		9	9		9	10					10
Confl. Bikes (#/hr)												3
Heavy Vehicles (%)	0%	3%	7%	0%	3%	0%	0%	0%	0%	0%	3%	2%
Turn Type		NA	Prot		NA					Split	NA	Free
Protected Phases		2	2		2					4	4	
Permitted Phases												Free
Actuated Green, G (s)		65.0	65.0		65.0						27.5	105.0
Effective Green, g (s)		66.6	66.6		66.6						30.2	105.0
Actuated g/C Ratio		0.63	0.63		0.63						0.29	1.00
Clearance Time (s)		5.0	5.0		5.0						7.5	
Vehicle Extension (s)		3.0	3.0		3.0						3.0	
Lane Grp Cap (vph)		2223	957		2223						1007	1559
v/s Ratio Prot		0.32	0.23		c0.38						c0.27	
v/s Ratio Perm												0.46
v/c Ratio		0.51	0.36		0.59						0.95	0.46
Uniform Delay, d1		10.4	9.1		11.3						36.7	0.0
Progression Factor		0.99	0.99		0.24						0.97	1.00
Incremental Delay, d2		0.8	1.0		1.0						17.9	1.0
Delay (s)		11.1	10.1		3.7						53.7	1.0
Level of Service		B	B		A						D	A
Approach Delay (s)		10.9			3.7			0.0			31.2	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	8.2
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	1160	1273	236	478	302
v/c Ratio	0.51	0.57	0.24	0.48	0.19
Control Delay	2.9	6.9	5.7	30.5	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.9	6.9	5.7	30.5	0.3
Queue Length 50th (ft)	30	146	52	124	0
Queue Length 95th (ft)	m31	m220	m77	m147	m0
Internal Link Dist (ft)	176	1252		171	
Turn Bay Length (ft)			200		
Base Capacity (vph)	2266	2244	1004	997	1592
Starvation Cap Reductn	42	0	0	0	0
Spillback Cap Reductn	0	6	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.52	0.57	0.24	0.48	0.19

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1067	0	0	1171	217	53	386	278	0	0	0
Future Volume (vph)	0	1067	0	0	1171	217	53	386	278	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.4			3.4	3.4		4.8	4.0			
Lane Util. Factor		0.95			0.95	1.00		0.95	1.00			
Frpb, ped/bikes		1.00			1.00	1.00		1.00	0.99			
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)		3574			3539	1583		3466	1592			
Flt Permitted		1.00			1.00	1.00		0.99	1.00			
Satd. Flow (perm)		3574			3539	1583		3466	1592			
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)	0	1160	0	0	1273	236	58	420	302	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1160	0	0	1273	236	0	478	302	0	0	0
Confl. Peds. (#/hr)									8			
Heavy Vehicles (%)	0%	1%	0%	0%	2%	2%	0%	4%	0%	0%	0%	0%
Turn Type		NA			NA	Perm	Split	NA	Free			
Protected Phases		2			2		4	4				
Permitted Phases						2			Free			
Actuated Green, G (s)		65.0			65.0	65.0		27.5	105.0			
Effective Green, g (s)		66.6			66.6	66.6		30.2	105.0			
Actuated g/C Ratio		0.63			0.63	0.63		0.29	1.00			
Clearance Time (s)		5.0			5.0	5.0		7.5				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		2266			2244	1004		996	1592			
v/s Ratio Prot		0.32			c0.36			c0.14				
v/s Ratio Perm						0.15			0.19			
v/c Ratio		0.51			0.57	0.24		0.48	0.19			
Uniform Delay, d1		10.4			11.0	8.3		30.9	0.0			
Progression Factor		0.21			0.59	0.66		0.93	1.00			
Incremental Delay, d2		0.7			0.4	0.2		0.4	0.3			
Delay (s)		2.9			6.9	5.7		29.1	0.3			
Level of Service		A			A	A		C	A			
Approach Delay (s)		2.9			6.7			17.9			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	7.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	8.2
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX E

2026 Total Future Capacity Analysis Worksheets

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	16	1420	10	18	19	975	26	1	0	2	14	2
Future Volume (Veh/h)	16	1420	10	18	19	975	26	1	0	2	14	2
Sign Control		Free				Free			Stop			Stop
Grade		0%				0%			0%			0%
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
Hourly flow rate (vph)	17	1543	11	0	21	1060	28	1	0	2	15	2
Pedestrians		3							1			5
Lane Width (ft)		12.0							12.0			12.0
Walking Speed (ft/s)		4.0							4.0			4.0
Percent Blockage		0							0			0
Right turn flare (veh)												
Median type		None				None						
Median storage veh)												
Upstream signal (ft)		993				589						
pX, platoon unblocked	0.95			0.00	0.91			0.93	0.93	0.91	0.93	0.93
vC, conflicting volume	1093			0	1555			2010	2718	521	1671	2710
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	899			0	1254			1445	2204	115	1083	2195
tC, single (s)	4.1			0.0	4.1			7.5	6.5	6.9	7.5	6.5
tC, 2 stage (s)												
tF (s)	2.2			0.0	2.2			3.5	4.0	3.3	3.5	4.0
p0 queue free %	98			0	96			99	100	100	90	95
cM capacity (veh/h)	708			0	499			76	38	831	151	39

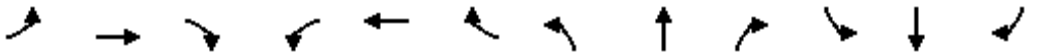
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	17	617	617	320	21	424	424	240	3	44
Volume Left	17	0	0	0	21	0	0	0	1	15
Volume Right	0	0	0	11	0	0	0	28	2	27
cSH	708	1700	1700	1700	499	1700	1700	1700	192	240
Volume to Capacity	0.02	0.36	0.36	0.19	0.04	0.25	0.25	0.14	0.02	0.18
Queue Length 95th (ft)	2	0	0	0	3	0	0	0	1	16
Control Delay (s)	10.2	0.0	0.0	0.0	12.5	0.0	0.0	0.0	24.0	23.4
Lane LOS	B				B				C	C
Approach Delay (s)	0.1				0.2				24.0	23.4
Approach LOS									C	C

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	41.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	25
Future Volume (Veh/h)	25
Sign Control	
Grade	
Peak Hour Factor	0.92
Hourly flow rate (vph)	27
Pedestrians	
Lane Width (ft)	
Walking Speed (ft/s)	
Percent Blockage	
Right turn flare (veh)	
Median type	
Median storage veh)	
Upstream signal (ft)	
pX, platoon unblocked	0.95
vC, conflicting volume	375
vC1, stage 1 conf vol	
vC2, stage 2 conf vol	
vCu, unblocked vol	140
tC, single (s)	6.9
tC, 2 stage (s)	
tF (s)	3.3
p0 queue free %	97
cM capacity (veh/h)	829
Direction, Lane #	

Lane Group	EBT	EBR	WBT	SBT	SBR
Lane Group Flow (vph)	1395	350	772	406	327
v/c Ratio	0.58	0.33	0.33	0.47	0.23
Control Delay	19.6	15.7	4.2	63.0	0.4
Queue Delay	0.0	0.0	0.2	0.0	0.0
Total Delay	19.6	15.7	4.4	63.0	0.4
Queue Length 50th (ft)	533	198	53	244	0
Queue Length 95th (ft)	673	296	60	284	0
Internal Link Dist (ft)	509		176	192	
Turn Bay Length (ft)					
Base Capacity (vph)	2411	1048	2322	1014	1411
Starvation Cap Reductn	0	0	751	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.58	0.33	0.49	0.40	0.23

Intersection Summary

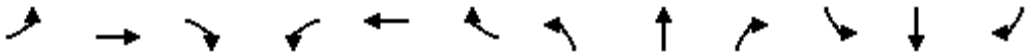


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1311	329	0	741	0	0	0	0	13	361	301
Future Volume (vph)	0	1311	329	0	741	0	0	0	0	13	361	301
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5		3.5						4.8	4.0
Lane Util. Factor		0.95	1.00		0.95						0.95	1.00
Frpb, ped/bikes		1.00	1.00		1.00						1.00	0.99
Flpb, ped/bikes		1.00	1.00		1.00						1.00	1.00
Frt		1.00	0.85		1.00						1.00	0.85
Flt Protected		1.00	1.00		1.00						1.00	1.00
Satd. Flow (prot)		3505	1524		3374						3180	1411
Flt Permitted		1.00	1.00		1.00						1.00	1.00
Satd. Flow (perm)		3505	1524		3374						3180	1411
Peak-hour factor, PHF	0.94	0.94	0.94	0.96	0.96	0.96	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1395	350	0	772	0	0	0	0	14	392	327
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1395	350	0	772	0	0	0	0	0	406	327
Confl. Peds. (#/hr)	2		3	3		2	2					2
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	3%	6%	0%	7%	0%	0%	0%	0%	50%	12%	13%
Turn Type		NA	Prot		NA					Split	NA	Free
Protected Phases		2	2		2					4	4	
Permitted Phases												Free
Actuated Green, G (s)		149.8	149.8		149.8						57.6	220.0
Effective Green, g (s)		151.4	151.4		151.4						60.3	220.0
Actuated g/C Ratio		0.69	0.69		0.69						0.27	1.00
Clearance Time (s)		5.1	5.1		5.1						7.5	
Vehicle Extension (s)		3.0	3.0		3.0						3.0	
Lane Grp Cap (vph)		2412	1048		2321						871	1411
v/s Ratio Prot		c0.40	0.23		0.23						c0.13	
v/s Ratio Perm												0.23
v/c Ratio		0.58	0.33		0.33						0.47	0.23
Uniform Delay, d1		17.8	13.9		13.9						66.5	0.0
Progression Factor		1.00	1.00		0.27						0.93	1.00
Incremental Delay, d2		1.0	0.9		0.4						0.4	0.4
Delay (s)		18.8	14.7		4.1						62.2	0.4
Level of Service		B	B		A						E	A
Approach Delay (s)		18.0			4.1			0.0			34.6	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	220.0	Sum of lost time (s)	8.3
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

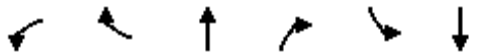
Lane Group	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	1434	727	126	771	320
v/c Ratio	0.58	0.31	0.13	0.83	0.20
Control Delay	2.6	13.0	12.1	79.9	0.3
Queue Delay	1.2	0.0	0.0	0.0	0.1
Total Delay	3.8	13.0	12.1	79.9	0.4
Queue Length 50th (ft)	34	166	53	564	0
Queue Length 95th (ft)	38	195	80	615	0
Internal Link Dist (ft)	176	1252		171	
Turn Bay Length (ft)			200		
Base Capacity (vph)	2484	2322	995	1086	1561
Starvation Cap Reductn	40	0	0	0	0
Spillback Cap Reductn	749	0	0	0	324
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.83	0.31	0.13	0.71	0.26

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1319	0	0	691	120	49	661	294	0	0	0
Future Volume (vph)	0	1319	0	0	691	120	49	661	294	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5			3.5	3.5		4.8	4.0			
Lane Util. Factor		0.95			0.95	1.00		0.95	1.00			
Frpb, ped/bikes		1.00			1.00	0.98		1.00	0.99			
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)		3610			3374	1446		3404	1561			
Flt Permitted		1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)		3610			3374	1446		3404	1561			
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1434	0	0	727	126	53	718	320	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1434	0	0	727	126	0	771	320	0	0	0
Confl. Peds. (#/hr)	1		1	1		1			7			
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	0%	0%	0%	7%	10%	15%	5%	2%	0%	0%	0%
Turn Type		NA			NA	Perm	Split	NA	Free			
Protected Phases		2			2		4	4				
Permitted Phases						2			Free			
Actuated Green, G (s)		149.8			149.8	149.8		57.6	220.0			
Effective Green, g (s)		151.4			151.4	151.4		60.3	220.0			
Actuated g/C Ratio		0.69			0.69	0.69		0.27	1.00			
Clearance Time (s)		5.1			5.1	5.1		7.5				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		2484			2321	995		933	1561			
v/s Ratio Prot		c0.40			0.22			c0.23				
v/s Ratio Perm						0.09			0.21			
v/c Ratio		0.58			0.31	0.13		0.83	0.20			
Uniform Delay, d1		17.7			13.6	11.7		74.9	0.0			
Progression Factor		0.10			0.89	0.94		0.96	1.00			
Incremental Delay, d2		0.8			0.3	0.3		6.1	0.3			
Delay (s)		2.6			12.5	11.2		78.1	0.3			
Level of Service		A			B	B		E	A			
Approach Delay (s)		2.6			12.3			55.3			0.0	
Approach LOS		A			B			E			A	

Intersection Summary			
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	220.0	Sum of lost time (s)	8.3
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	15	0	34	8	0	26
Future Volume (Veh/h)	15	0	34	8	0	26
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	0	37	9	0	28
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	70	42			46	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	70	42			46	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			100	
cM capacity (veh/h)	935	1029			1562	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	16	46	28
Volume Left	16	0	0
Volume Right	0	9	0
cSH	935	1700	1562
Volume to Capacity	0.02	0.03	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	8.9	0.0	0.0
Lane LOS	A		
Approach Delay (s)	8.9	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (veh/h)	4	18	1192	7	56	40	1692	20	8	0	32	6
Future Volume (Veh/h)	4	18	1192	7	56	40	1692	20	8	0	32	6
Sign Control			Free				Free			Stop		
Grade			0%				0%			0%		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.93	0.93	0.93	0.93	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	19	1242	7	0	43	1819	22	9	0	35	7
Pedestrians										4		
Lane Width (ft)										12.0		
Walking Speed (ft/s)										4.0		
Percent Blockage										0		
Right turn flare (veh)												
Median type			None				None					
Median storage veh)												
Upstream signal (ft)			999				583					
pX, platoon unblocked	0.00	0.87			0.00	0.95			0.90	0.90	0.95	0.90
vC, conflicting volume	0	1850			0	1253			2022	3224	422	2412
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	1463			0	1074			1351	2688	197	1785
tC, single (s)	0.0	4.1			0.0	4.1			7.5	6.5	6.9	7.5
tC, 2 stage (s)												
tF (s)	0.0	2.2			0.0	2.2			3.5	4.0	3.3	3.5
p0 queue free %	0	95			0	93			89	100	95	82
cM capacity (veh/h)	0	396			0	609			84	17	766	40

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	19	497	497	255	43	728	728	386	44	49
Volume Left	19	0	0	0	43	0	0	0	9	7
Volume Right	0	0	0	7	0	0	0	22	35	42
cSH	396	1700	1700	1700	609	1700	1700	1700	288	217
Volume to Capacity	0.05	0.29	0.29	0.15	0.07	0.43	0.43	0.23	0.15	0.23
Queue Length 95th (ft)	4	0	0	0	6	0	0	0	13	21
Control Delay (s)	14.5	0.0	0.0	0.0	11.4	0.0	0.0	0.0	19.8	26.3
Lane LOS	B				B				C	D
Approach Delay (s)	0.2				0.3				19.8	26.3
Approach LOS									C	D

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	50.2%	ICU Level of Service	A
Analysis Period (min)	15		

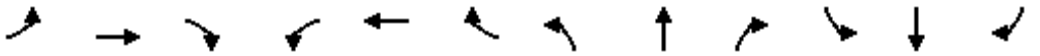
Movement	SBT	SBR
Lane Configurations		
Traffic Volume (veh/h)	0	39
Future Volume (Veh/h)	0	39
Sign Control	Stop	
Grade	0%	
Peak Hour Factor	0.92	0.92
Hourly flow rate (vph)	0	42
Pedestrians	9	
Lane Width (ft)	12.0	
Walking Speed (ft/s)	4.0	
Percent Blockage	1	
Right turn flare (veh)		
Median type		
Median storage veh)		
Upstream signal (ft)		
pX, platoon unblocked	0.90	0.87
vC, conflicting volume	3216	626
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol	2679	61
tC, single (s)	6.5	6.9
tC, 2 stage (s)		
tF (s)	4.0	3.3
p0 queue free %	100	95
cM capacity (veh/h)	17	858

Direction, Lane #

Lane Group	EBT	EBR	WBT	SBT	SBR
Lane Group Flow (vph)	1141	346	1322	959	718
v/c Ratio	0.51	0.36	0.59	0.95	0.46
Control Delay	11.2	10.2	3.7	55.1	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.2	10.2	3.7	55.1	1.0
Queue Length 50th (ft)	200	101	67	339	0
Queue Length 95th (ft)	224	133	68	#441	0
Internal Link Dist (ft)	503		176	192	
Turn Bay Length (ft)					
Base Capacity (vph)	2223	957	2223	1007	1559
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	0.51	0.36	0.59	0.95	0.46

Intersection Summary

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



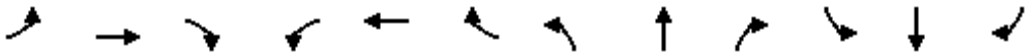
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1050	318	0	1229	0	0	0	0	24	868	668
Future Volume (vph)	0	1050	318	0	1229	0	0	0	0	24	868	668
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.4	3.4		3.4						4.8	4.0
Lane Util. Factor		0.95	1.00		0.95						0.95	1.00
Frpb, ped/bikes		1.00	1.00		1.00						1.00	0.98
Flpb, ped/bikes		1.00	1.00		1.00						1.00	1.00
Frt		1.00	0.85		1.00						1.00	0.85
Flt Protected		1.00	1.00		1.00						1.00	1.00
Satd. Flow (prot)		3505	1509		3505						3503	1559
Flt Permitted		1.00	1.00		1.00						1.00	1.00
Satd. Flow (perm)		3505	1509		3505						3503	1559
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	0	1141	346	0	1322	0	0	0	0	26	933	718
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1141	346	0	1322	0	0	0	0	0	959	718
Confl. Peds. (#/hr)	9		9	9		9	10					10
Confl. Bikes (#/hr)												3
Heavy Vehicles (%)	0%	3%	7%	0%	3%	0%	0%	0%	0%	0%	3%	2%
Turn Type		NA	Prot		NA					Split	NA	Free
Protected Phases		2	2		2					4	4	
Permitted Phases												Free
Actuated Green, G (s)		65.0	65.0		65.0						27.5	105.0
Effective Green, g (s)		66.6	66.6		66.6						30.2	105.0
Actuated g/C Ratio		0.63	0.63		0.63						0.29	1.00
Clearance Time (s)		5.0	5.0		5.0						7.5	
Vehicle Extension (s)		3.0	3.0		3.0						3.0	
Lane Grp Cap (vph)		2223	957		2223						1007	1559
v/s Ratio Prot		0.33	0.23		c0.38						c0.27	
v/s Ratio Perm												0.46
v/c Ratio		0.51	0.36		0.59						0.95	0.46
Uniform Delay, d1		10.4	9.1		11.3						36.7	0.0
Progression Factor		0.99	0.99		0.24						0.97	1.00
Incremental Delay, d2		0.9	1.1		1.0						17.9	1.0
Delay (s)		11.1	10.1		3.7						53.7	1.0
Level of Service		B	B		A						D	A
Approach Delay (s)		10.9			3.7			0.0			31.1	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	8.2
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	1162	1274	236	480	302
v/c Ratio	0.51	0.57	0.24	0.48	0.19
Control Delay	2.9	6.9	5.7	30.5	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.9	6.9	5.7	30.5	0.3
Queue Length 50th (ft)	30	147	52	124	0
Queue Length 95th (ft)	m31	m221	m77	m148	m0
Internal Link Dist (ft)	176	1252		171	
Turn Bay Length (ft)			200		
Base Capacity (vph)	2266	2244	1004	996	1592
Starvation Cap Reductn	42	0	0	0	0
Spillback Cap Reductn	0	6	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.52	0.57	0.24	0.48	0.19

Intersection Summary

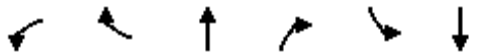
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1069	0	0	1172	217	53	388	278	0	0	0
Future Volume (vph)	0	1069	0	0	1172	217	53	388	278	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.4			3.4	3.4		4.8	4.0			
Lane Util. Factor		0.95			0.95	1.00		0.95	1.00			
Frpb, ped/bikes		1.00			1.00	1.00		1.00	0.99			
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)		3574			3539	1583		3466	1592			
Flt Permitted		1.00			1.00	1.00		0.99	1.00			
Satd. Flow (perm)		3574			3539	1583		3466	1592			
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)	0	1162	0	0	1274	236	58	422	302	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1162	0	0	1274	236	0	480	302	0	0	0
Confl. Peds. (#/hr)									8			
Heavy Vehicles (%)	0%	1%	0%	0%	2%	2%	0%	4%	0%	0%	0%	0%
Turn Type		NA			NA	Perm	Split	NA	Free			
Protected Phases		2			2		4	4				
Permitted Phases						2			Free			
Actuated Green, G (s)		65.0			65.0	65.0		27.5	105.0			
Effective Green, g (s)		66.6			66.6	66.6		30.2	105.0			
Actuated g/C Ratio		0.63			0.63	0.63		0.29	1.00			
Clearance Time (s)		5.0			5.0	5.0		7.5				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		2266			2244	1004		996	1592			
v/s Ratio Prot		0.33			c0.36			c0.14				
v/s Ratio Perm						0.15			0.19			
v/c Ratio		0.51			0.57	0.24		0.48	0.19			
Uniform Delay, d1		10.4			11.0	8.3		30.9	0.0			
Progression Factor		0.21			0.59	0.66		0.93	1.00			
Incremental Delay, d2		0.7			0.4	0.2		0.4	0.3			
Delay (s)		2.9			6.9	5.7		29.1	0.3			
Level of Service		A			A	A		C	A			
Approach Delay (s)		2.9			6.7			18.0			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	8.2
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	12	0	21	17	0	33
Future Volume (Veh/h)	12	0	21	17	0	33
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	0	23	18	0	36
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	68	32			41	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	68	32			41	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	937	1042			1568	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	13	41	36
Volume Left	13	0	0
Volume Right	0	18	0
cSH	937	1700	1568
Volume to Capacity	0.01	0.02	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	8.9	0.0	0.0
Lane LOS	A		
Approach Delay (s)	8.9	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		