



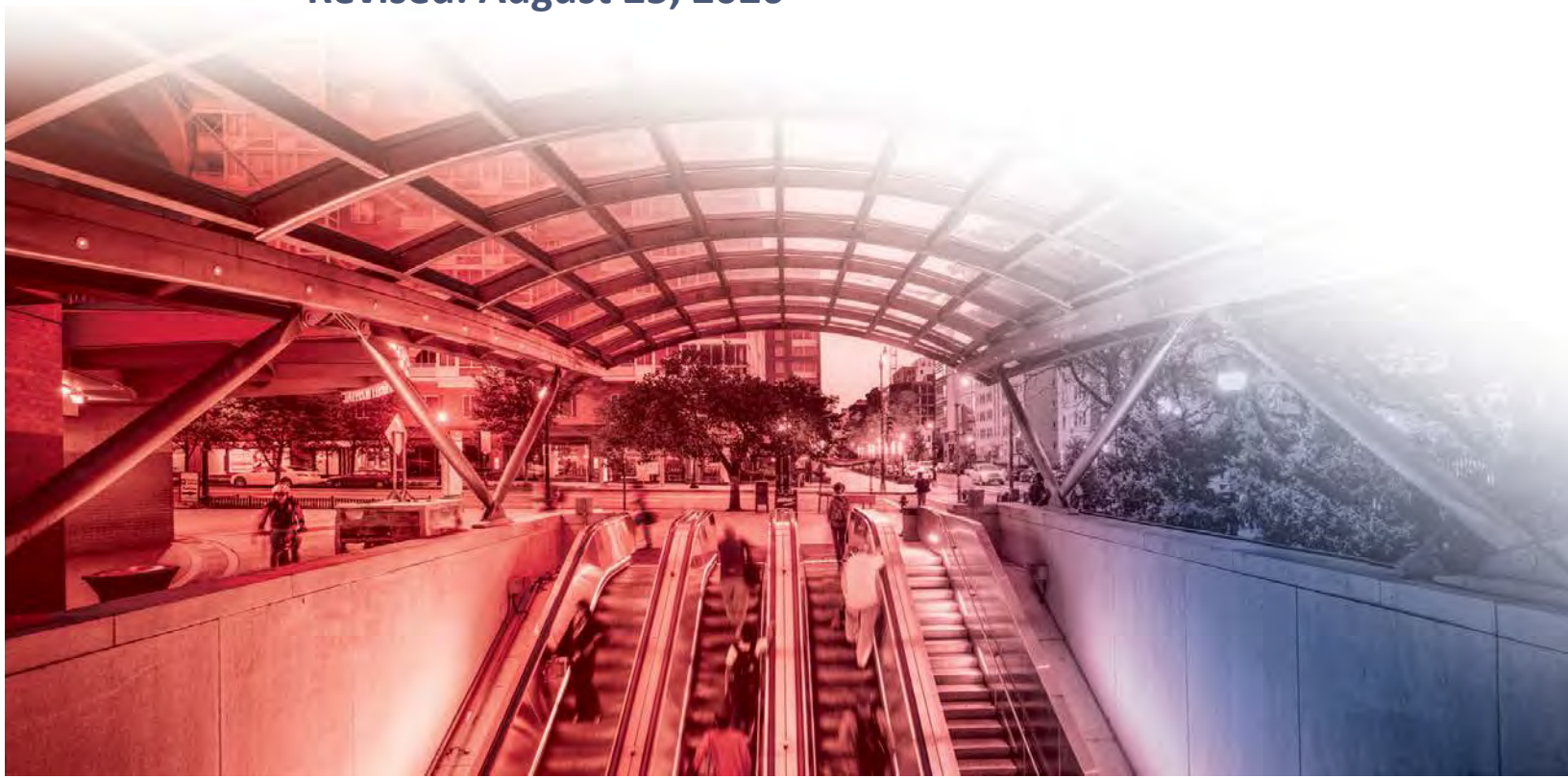
WELLS + ASSOCIATES

# BREEZEWAY PROPERTY

## TRAFFIC IMPACT STUDY CITY OF FAIRFAX, VIRGINIA

**1st Submission: August 8, 2019**

**Revised: August 25, 2020**





# **BREEZEWAY PROPERTY**

## Transportation Impact Study

1<sup>st</sup> Submission: August 8, 2019

**Revised: August 25, 2020**

Prepared by:

Wells + Associates

William Zeid

Christopher Turnbull

703/917-6620

[www.WellsAndAssociates.com](http://www.WellsAndAssociates.com)





**BREEZEWAY PROPERTY  
TRAFFIC IMPACT STUDY  
CITY OF FAIRFAX, VIRGINIA**

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**SECTION 1  
INTRODUCTION**

This report presents the results of a revised traffic impact study conducted in support of the proposed redevelopment of a site in the City of Fairfax currently developed with the 50-room Breezeway Motel, the 38-unit Fairfax Garden Apartments, and four (4) single family homes 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. **This study revision includes removal of the previously proposed commercial component along Fairfax Boulevard and inclusion of a 32-unit senior adult housing building. This results in fewer AM, PM and daily (24-hour) trips for the overall site. Updated trip generation and analyses are included in this report.**

The subject site is located south of Fairfax Boulevard, east of Walnut Street and west of Oak Street, in the City of Fairfax, Virginia, as shown on Figure 1-1.

The site consists of six (6) land parcels within the City of Fairfax. These parcels include:

<u>Property ID</u>	<u>Address</u>	<u>Acreage</u>
57-1-14-043	10829 Fairfax Blvd.	1.15 acres
57-1-14-055A	10807 - 10818 Cedar Ave	2.08 acres
57-1-14-083	3937 Walnut Street	0.56 acres
57-1-14-075A	3934 Oak Street	0.34 acres
57-1-14-076A	3932 Oak Street	0.25 acres
57-1-14-077A	3930 Oak Street	<u>0.25 acres</u>
	Total	4.63 acres

The applicant, Pulte Home Company, LLC. plans to develop 65 residential townhomes and a 32-unit senior adult housing building on this property. 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. A review of the applicant's conceptual plans for the subject site.
2. A field review of 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. Peak hour turning movement counts obtained at the following study intersections:
  - Fairfax Boulevard/Fairchester Drive, Walnut Street
  - Fairfax Boulevard/Meredith Drive/Oak Street
  - Walnut Street/Cedar Avenue
  - Oak Street/Cedar Avenue
  - Walnut Street/2<sup>nd</sup> Street
  - Oak Street/2<sup>nd</sup> Street
4. Calculation of existing AM and PM commuter peak hour intersection levels of service at the study intersections.
5. Identification of 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, 10th Edition equations and weighted average rates.
6. Determination of 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. Calculation of future levels of service with and without the proposed development at the key study intersections for a proposed build-out year of 2024.

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), Pulte Home Company, LLC., 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/Oak Street – Meredith Drive and Fairfax Boulevard/Walnut Street – Fairchester Drive 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 using the Synchro 10 traffic analysis software. Side street approaches at these intersections currently operate at LOS “E” or “F” during the peak periods due to long cycle lengths and the assignment of most of the green time to the Fairfax Boulevard approaches.
2. Historic VDOT traffic data indicates that average daily traffic counts along Fairfax Boulevard have increased by approximately 0.55% per year between 2013 and 2018.
3. The Novus Fairfax Gateway and Paul VI Redevelopment pipeline developments are anticipated to generate 543 AM commuter peak hour trips, 912 PM commuter peak hour trips at full buildout.
4. Under future 2024 traffic conditions minimal increases in delay at the study intersections are expected due to the trips generated by pipeline developments in the vicinity of the site and overall levels of service would remain generally consistent with existing conditions.
5. The site is currently developed with the 50-room Breezeway Motel, the 38-unit Fairfax Garden Apartments, and four (4) single family homes.
6. The Applicant proposes to redevelop the site with a mix of residential uses including 65 residential townhouse units and a 32-unit senior adult housing building.
7. The project is estimated to generate 38 AM peak commuter hour trips and 53 PM peak commuter hour trips upon buildout.
8. Under future 2024 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 commuter peak periods.

9. All unsignalized intersection and access drive approaches will operate at LOS "B" or better during each of the studied peak periods.
10. Access to the site will be via one full access driveway along Fairfax Boulevard, one full access driveway along Walnut Street, one full access drivewas along Oak Street.
11. The Applicant intends to improve the roadway geometrics at the Walnut Street/Cedar Avenue intersection by reconstructing the intersection to provide a typical four-legged stop sign controlled intersection in order to enhance vehicular, pedestrian and bicycle safety by reducing crossing widths and providing conventional design features recognized by the average motorist.
12. The Applicant intends to consolidate these access drives along Fairfax Boulevard from two locations currently serving the Breezeway Motel to a single location providing enhanced access management along this arterial roadway.



Figure 1-1  
 Site Location  
 PulteGroup, Inc.  
 Breezeway Property  
 City of Fairfax, Virginia

 - Study Intersection





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Figure 1-2  
Concept Plan  
PulteGroup, Inc.  
Breezeway Property  
City of Fairfax, Virginia

Illustrative Layout by:  
ATCS, P.L.C.  
08.19.20



## SECTION 2 BACKGROUND INFORMATION

### Location and Surrounding Uses

As shown in Figure 1-1, the site is regionally located approximately 1/3 mile east of Main Street on Fairfax Boulevard in the City of Fairfax. Regional Access is provided by I-66 via Lee Jackson Memorial Highway/Main Street and Chain Bridge Road. Fairfax Boulevard/Arlington Boulevard provides access to/from I-495 (the Capital Beltway).

Properties immediately south of the site are generally residential in nature while commercial uses are predominant along Fairfax Boulevard.

### Comprehensive Plan Land Use Recommendations

The City's Comprehensive Plan shows the subject parcels as Commercial Corridor and Multifamily Neighborhood on the Future Land Use Map.

### 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 five-lane, undivided roadway with a center two-way left turn lane and a posted speed limit of 35 miles per hour. Traffic signals are provided at major cross-streets including Main Street, Fairchester Drive/Walnut Street, and Meredith Drive/Oak Street. Based on 2018 VDOT average annual daily traffic (AADT) data, Fairfax Boulevard east of Main Street carries approximately 37,000 vehicles per day (vpd). This roadway currently provides access to the Breezeway Motel via two driveways.

Main Street is also 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 2018 VDOT AADT data, Main Street east of the Kamp Washington intersection carries approximately 38,000 vpd.

Walnut Street is a two-lane north-south undivided roadway with a width of approximately 33 feet. Walnut Street currently provides access to residential and commercial properties south of Fairfax Boulevard and will provide access to the proposed development.

Cedar Avenue is a two-lane east-west discontinuous roadway. The section of Cedar Avenue west of Oak Street is approximately 30 feet in width. Cedar Avenue currently provides access to



the Fairfax Garden Apartments but will not provide direct access to general site traffic for the proposed development.

Oak Street is a two-lane north-south undivided roadway with a width of approximately 33 feet. Oak Street provides access to residential and commercial properties south of Fairfax Boulevard and to Paul VI Catholic High School via Cedar Avenue. Oak Street will provide access to the proposed development.

Second Street is a two-lane east-west undivided roadway with a width of between 24 and 36 feet. Second Street is approximately two (2) blocks in length and connects Fairfax Boulevard to the west with Oak Street to the east.

Existing lane use and traffic control at each of the study intersections is shown on Figure 2-1.

**Public Transit Service.** The site is served by the City of Fairfax's City-University Energysaver (CUE) Bus "Gold Route" along Main Street and Warwick Avenue. This service provides access between the George Mason University (GMU) campus and the Vienna/Fairfax-GMU metrorail station, via University Drive, Chain Bridge Road, West Street, Main Street, Lee Highway, Jermantown Road, Orchard Street, Bevan Drive, Warwick Avenue and Fairfax Boulevard. Additionally, the site is served by the "Green Route" 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.

**Pedestrian Facilities.** Concrete sidewalks are provided along both sides of Fairfax Boulevard, Walnut Street, Oak Street, and Cedar Avenue site frontages. Marked crosswalks are provided across the north, south, and east legs of the Fairfax Boulevard/Meredith Drive/Oak Street and the Fairfax Boulevard/Walnut Street/Fairchester Drive signalized intersections; and across all legs of the Cedar Avenue/Oak Street/Panther Place unsignalized intersection. A mid-block crosswalk is provided along Oak Street between Cedar Avenue and Second Street.

### **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 that the City should strive to achieve a balance between allowing for the efficient movement of traffic and providing safe and convenient access to City businesses and residences for vehicles, pedestrians, bicycles, and other modes of transport. In terms of roadway operational improvements, the Plan recommends that through traffic should be encouraged to utilize the City's arterial system (cf. Comprehensive Plan, Strategy T-7.4.1). Therefore, no specific capacity improvements (i.e., roadway widening) are recommended for the collector streets that

immediately surround the subject site. Any improvements to these streets should focus on enhancing safety and the mobility of pedestrians, bicycles, and public transit.

The design of the existing Walnut Street/Cedar Avenue intersection is not conventional. The Walnut Street and Cedar Avenue approaches are separated by a triangular median island. Two-way traffic is permitted along each side of the median island that results in multiple conflict points and is potentially confusing to drivers as to who has right-of-way when traversing the intersection. The Applicant intends to improve this situation by reconstructing the intersection to provide a typical four-legged stop sign controlled intersection with Walnut Street operating as the major (uncontrolled) approach. Cedar Avenue (the east approach) and the existing commercial driveway (the west approach) will be stop sign controlled. This redesign will enhance vehicular, pedestrian and bicycle safety by reducing crossing widths and providing conventional design features recognized by the average motorist.



Figure 2-1  
Existing Lane Use, Traffic Control and Levels of Service  
Breezeway Property

- Approach LOS - AM/PM     Represents One Travel Lane  
 - Intersection LOS - AM/PM     Signalized Intersection  
 Stop Sign



NORTH

Pulte Group, Inc.  
City of Fairfax, Virginia



## SECTION 3 STUDY SCOPE AND ANALYSIS PARAMETERS

### Overview

The subject site is located south of Fairfax Boulevard, east of Walnut Street, and west of Oak Street in the City of Fairfax, Virginia. The subject property is comprised of five parcels totaling 4.63 acres north and south of Cedar Avenue. The parcel developed with the existing Breezeway Motel is zoned DR (Commercial Retail) and the parcels developed with existing residential uses are zoned RMF (Residential Multifamily) and RH (Residential High).

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 25, 2019 and resulted in a scoping form dated July 3, 2019 that is provided in Appendix A. As previously noted, the previously proposed commercial component along Fairfax Boulevard has been replaced with a 32-unit senior adult housing building in this study revision. Additionally, site access has been further consolidated in this revision.

### 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/Meredith Drive/Oak Street
- Fairfax Boulevard/Fairchester Drive, Walnut Street
- Walnut Street/Cedar Avenue
- Walnut Street/Second Street
- Oak Street/Second Street
- Oak Street/Cedar Avenue-Panther Place
- All Site Access Drives

### Site Development Program

The Applicant is proposing to redevelop the property with 65 residential units to include townhomes and stacked condos. A 32-unit senior adult housing building is proposed along Fairfax Boulevard.

### Analysis Study Periods

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

## Existing Traffic Volumes

Existing AM and PM commuter peak hour turning movements and pedestrian counts were conducted on Thursday, July 11, 2019, at the study intersections from 6:00 AM to 9:00 AM and from 4:00 PM to 7:00 PM. These counts were compared to counts at the Fairfax Boulevard study intersection conducted when school was in session on Wednesday, February 3, 2016 and Thursday, March 1, 2018 after deducting traffic generated by the soon to be closed Paul VI Catholic High School. This comparison indicates that the current (July 11, 2019) counts were between 7% and 23% higher than counts collected during the school year (adjusted to reflect the closure of Paul VI) during the AM peak hour and between 3% and 6% higher than counts collected during the school year (adjusted to reflect the closure of Paul VI) during the PM peak hour.

Based on this comparison, the higher current (July 11, 2019) counts were utilized in this traffic analysis. Additionally, counts along Fairfax Boulevard were balanced between the Walnut Street/Faichester Drive and Oak Street/Meredith Drive intersections in both directions by choosing the higher of the entering and exiting volumes at each intersection.

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

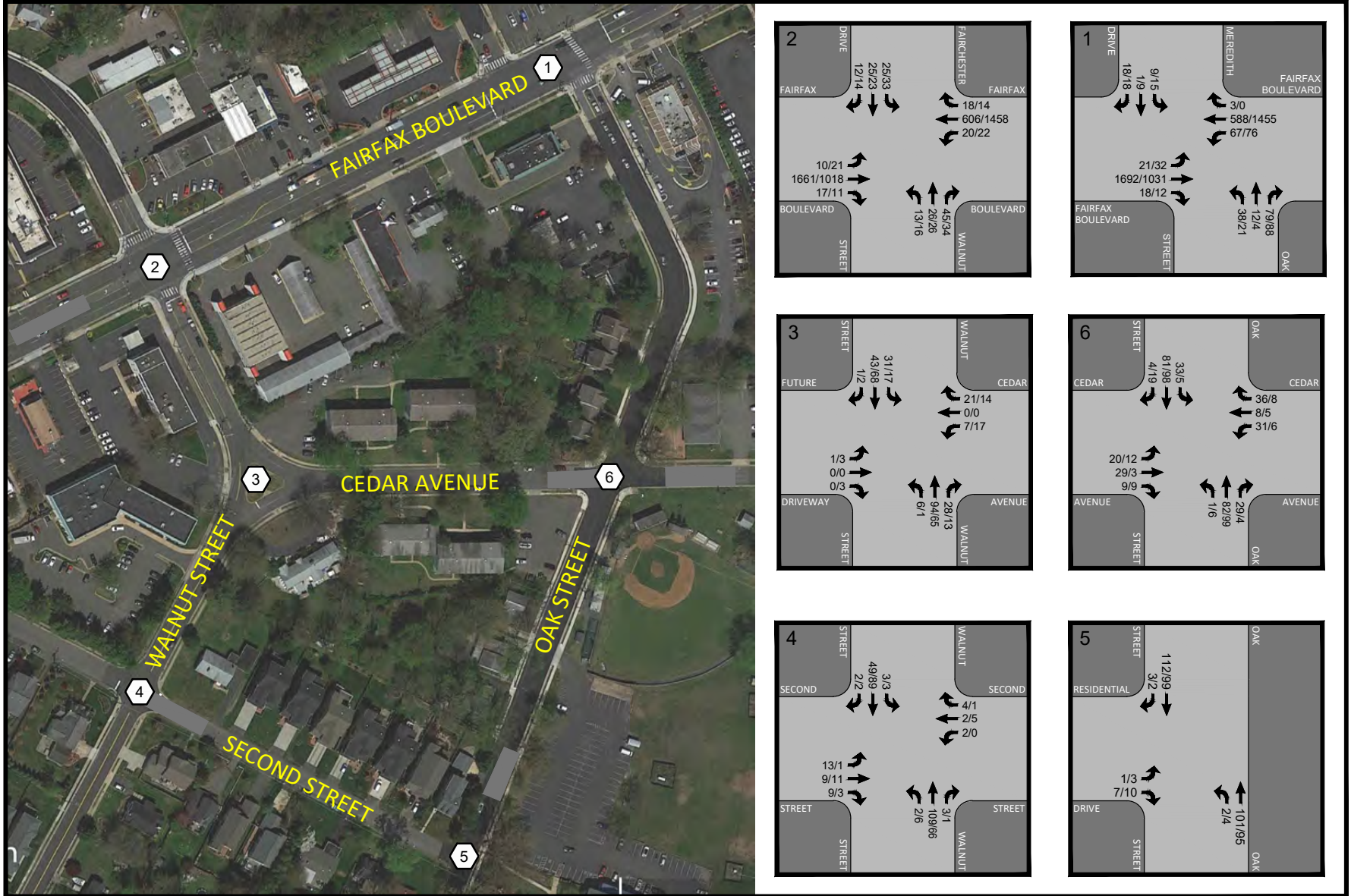


Figure 3-1  
Existing Peak Hour Traffic Volumes  
Breezeway Property

— AM PEAK HOUR  
 — PM PEAK HOUR  
 000 / 000



NORTH

Pulte Group, Inc.  
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 show that the signalized intersections along Fairfax Boulevard currently operate at level of service "C" (LOS "C") or better during the AM and PM peak commuter periods. The side street approaches to the signalized intersections operate at LOS "E" and "F" with average delays between 76.5 seconds and 105.7 seconds. However, the volume-to-capacity (v/c) ratios for the side street approaches at intersections along Fairfax Boulevard are well below 1.0, indicating that the lengthy delays are the result of long cycle lengths (190 seconds during the AM commuter peak hour and 220 seconds during the PM commuter peak hours) and the assignment of the predominance of the green time to the Fairfax Boulevard approaches, rather than insufficient capacity.

All approaches at the unsignalized intersections of Walnut Street/Cedar Avenue, Walnut Street/Second Street, Oak Street/Second Street, and Oak Street/Cedar Avenue – Panther Place operate at LOS "A" during each of the peak periods.

**Table 4-1**  
 Breezeway Property  
 Existing Intersection Capacity Analysis Summary

Intersection	Intersection Control	Approach	Existing	
			AM Peak	PM Peak
1. Fairfax Boulevard & Meredith Drive/Oak Street	Signal	EB Appr	B (17.8)	A (8.8)
		WB Appr	B (14.9)	B (17.3)
		NB Appr	F (87.1)	F (100.2)
		SB Appr	F (88.4)	F (102.4)
		<b>Overall</b>	<b>C (21.2)</b>	<b>B (18.7)</b>
2. Fairfax Boulevard & Fairchester Drive/Walnut Street	Signal	EB Appr	B (13.0)	A (8.0)
		WB Appr	A (3.0)	A (1.7)
		NB Appr	E (76.5)	F (90.3)
		SB Appr	F (92.7)	F (105.7)
		<b>Overall</b>	<b>B (14.6)</b>	<b>A (9.4)</b>
3. Walnut Street/Cedar Avenue	Stop	EB Appr	A (0.0)	A (9.4)
		WB Appr	A (9.4)	A (9.6)
		NB Appr	A (0.4)	A (0.1)
		SB Appr	A (3.2)	A (1.5)
		<b>Overall</b>	<b>A (2.4)</b>	<b>A (2.5)</b>
4. Walnut Street/Second Street	Stop	EB Appr	A (7.5)	A (7.3)
		WB Appr	A (7.2)	A (7.3)
		NB Appr	A (7.8)	A (7.5)
		SB Appr	A (7.5)	A (7.7)
		<b>Overall</b>	<b>A (7.7)</b>	<b>A (7.6)</b>
5. Oak Street/Second Street	Stop	EB Appr	A (7.0)	A (7.1)
		NB Appr	A (7.7)	A (7.7)
		SB Appr	A (7.8)	A (7.7)
		<b>Overall</b>	<b>A (7.7)</b>	<b>A (7.7)</b>
6. Oak Street/Cedar Avenue/Panther Place	Stop	EB Appr	A (8.1)	A (7.6)
		WB Appr	A (8.0)	A (7.5)
		NB Appr	A (8.1)	A (7.9)
		SB Appr	A (8.4)	A (7.9)
		<b>Overall</b>	<b>A (8.2)</b>	<b>A (7.8)</b>



## SECTION 5 ANALYSIS OF FUTURE CONDITIONS WITHOUT SITE DEVELOPMENT

### Overview

Forecasts for traffic conditions without the redevelopment of the Breezeway Property were estimated at the study intersections based on a composite of existing traffic regional traffic growth, and pipeline development trips 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 and Main Street in the vicinity of the site indicates modest growth in traffic volumes over the past five (5) years. AADT volumes along Fairfax Boulevard east of Main Street rose from 36,000 vehicles in 2013 to 37,000 vehicles in 2018, an average annual increase of approximately 0.55% per year.

Based on these findings, existing traffic volumes were increased by 0.55% per year to the anticipated build-out of the site in 2024.

### 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:

- Novus Fairfax Gateway
  - 4,000 SF Office
  - 5,000 SF Quality Restaurant
  - 7,400 SF High Turn-Over Sit-Down Restaurant
  - 12,600 SF Shopping Center
  - 395 Residential Apartments
  
- Paul VI Redevelopment
  - 259 Residential Condominiums/Townhouses
  - 7 Single Family Dwelling Units
  - 24,000 SF of Community Space
  - 20,000 SF of Retail Space

As shown in Table 5-1, these pipeline developments are anticipated to generate 543 AM peak commuter hour trips, and 912 PM commuter peak hour trips at full buildout. It is noted that not all of these trips will utilize the study intersections along Fairfax Boulevard, Walnut Street and Oak Street.

**Table 5-1**  
**Breezeway Property - City of Fairfax**  
**Background Development Trip Generation**

Use	ITE			AM Peak Hour			PM Peak Hour			ADT
	Land Use	Amount	Units							
	Code			In	Out	Total	In	Out	Total	
<b><u>Novus Fairfax Gateway</u></b>										
Office	710	4,000	SF	5	1	6	1	5	6	44
Quality Restaurant	931	5,000	SF	2	2	4	25	12	37	450
High Turnover Restaurant	932	7,400	SF	44	36	80	44	29	73	941
Shopping Center	820	12,600	SF	27	17	44	72	78	150	1,767
Apartments	220	395	DU	<u>39</u>	<u>158</u>	<u>197</u>	<u>153</u>	<u>82</u>	<u>235</u>	<u>2,517</u>
<b>Total Novus Fairfax Gateway Trips</b>	--			<b>117</b>	<b>214</b>	<b>331</b>	<b>295</b>	<b>206</b>	<b>501</b>	<b>5,719</b>
<b><u>Paul VI - Redevelopment</u></b>										
Condominiums	232	144	DU	13	58	71	40	24	64	767
Single Family Homes	210	7	DU	4	11	15	6	4	10	91
Townhomes	230	115	DU	<u>10</u>	<u>48</u>	<u>58</u>	<u>45</u>	<u>22</u>	<u>67</u>	<u>726</u>
Subtotal Residential		266	DU	27	117	144	91	50	141	1,584
Community Space	495	24,000	SF	32	17	49	32	34	66	812
Local Serving Retail	820	20,000	SF	<u>12</u>	<u>7</u>	<u>19</u>	<u>98</u>	<u>106</u>	<u>204</u>	<u>2,386</u>
Subtotal Commercial		44,000	SF	44	24	68	130	140	270	3,198
<b>Total Paul VI Redevelopment</b>				<b>71</b>	<b>141</b>	<b>212</b>	<b>221</b>	<b>190</b>	<b>411</b>	<b>4,782</b>
<b>TOTAL BACKGROUND DEVELOPMENT TRIP GENERATION</b>				<b>188</b>	<b>355</b>	<b>543</b>	<b>516</b>	<b>396</b>	<b>912</b>	<b>10,501</b>

Notes: (1) Based on Trip Generation from Development Traffic Impact Studies

### Background Traffic Forecasts

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

### 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 along Fairfax Boulevard will continue to operate at level of service “C” (LOS “C”) or better during the AM and PM peak commuter periods. The side street approaches to the signalized intersections will continue to operate at LOS “E” and “F” with average delays between 76.6 seconds and 104.7 seconds. However, the volume-to-capacity (v/c) ratios for the side street approaches at intersections along Fairfax Boulevard will be well below 1.0, indicating that the lengthy delays will be the result of long cycle lengths (190 seconds during the AM commuter peak hour and 220 seconds during the PM

commuter peak hours) and the assignment of the predominance of the green time to the Fairfax Boulevard approaches, rather than insufficient capacity.

All approaches at the unsignalized intersections of Walnut Street/Cedar Avenue, Walnut Street/Second Street, Oak Street/Second Street, and Oak Street/Cedar Avenue – Panther Place will operate at LOS “B” or better during each of the peak periods.

**Table 5-2**  
**Breezeway Property**  
 Background Future Intersection Capacity Analysis Summary

Intersection	Intersection Control	Approach	Existing		Background Future	
			AM Peak	PM Peak	AM Peak	PM Peak
1. Fairfax Boulevard & Meredith Drive/Oak Street	Signal	EB Appr	B (17.8)	A (8.8)	B (17.1)	A (8.1)
		WB Appr	B (14.9)	B (17.3)	B (13.8)	A (17.2)
		NB Appr	F (87.1)	F (100.2)	F (84.4)	F (100.3)
		SB Appr	F (88.4)	F (102.4)	F (88.3)	F (104.7)
		<b>Overall</b>	<b>C (21.2)</b>	<b>B (18.7)</b>	<b>C (20.3)</b>	<b>B (17.9)</b>
2. Fairfax Boulevard & Fairchester Drive/Walnut Street	Signal	EB Appr	B (13.0)	A (8.0)	B (12.8)	A (8.3)
		WB Appr	A (3.0)	A (1.7)	A (2.8)	A (1.7)
		NB Appr	E (76.5)	F (90.3)	E (76.6)	F (90.4)
		SB Appr	F (92.7)	F (105.7)	F (91.7)	F (103.9)
		<b>Overall</b>	<b>B (14.6)</b>	<b>A (9.4)</b>	<b>B (14.0)</b>	<b>A (8.9)</b>
3. Walnut Street/Cedar Avenue	Stop	EB Appr	A (0.0)	A (9.4)	B (10.7)	A (9.4)
		WB Appr	A (9.4)	A (9.6)	A (9.4)	A (9.5)
		NB Appr	A (0.4)	A (0.1)	A (0.4)	A (0.1)
		SB Appr	A (3.2)	A (1.5)	A (3.3)	A (1.7)
		<b>Overall</b>	<b>A (2.4)</b>	<b>A (2.5)</b>	<b>A (2.6)</b>	<b>A (2.5)</b>
4. Walnut Street/Second Street	Stop	EB Appr	A (7.5)	A (7.3)	A (7.4)	A (7.3)
		WB Appr	A (7.2)	A (7.3)	A (7.2)	A (7.3)
		NB Appr	A (7.8)	A (7.5)	A (7.8)	A (7.5)
		SB Appr	A (7.5)	A (7.7)	A (7.4)	A (7.6)
		<b>Overall</b>	<b>A (7.7)</b>	<b>A (7.6)</b>	<b>A (7.6)</b>	<b>A (7.5)</b>
5. Oak Street/Second Street	Stop	EB Appr	A (7.0)	A (7.1)	A (7.0)	A (7.1)
		NB Appr	A (7.7)	A (7.7)	A (7.8)	A (7.8)
		SB Appr	A (7.8)	A (7.7)	A (7.9)	A (7.8)
		<b>Overall</b>	<b>A (7.7)</b>	<b>A (7.7)</b>	<b>A (7.8)</b>	<b>A (7.8)</b>
6. Oak Street/Cedar Avenue/Panther Place	Stop	EB Appr	A (8.1)	A (7.6)	A (8.1)	A (7.6)
		WB Appr	A (8.0)	A (7.5)	A (8.3)	A (7.8)
		NB Appr	A (8.1)	A (7.9)	A (8.2)	A (8.0)
		SB Appr	A (8.4)	A (7.9)	A (8.5)	A (8.0)
		<b>Overall</b>	<b>A (8.2)</b>	<b>A (7.8)</b>	<b>A (8.3)</b>	<b>A (7.9)</b>



Figure 5-1  
 Pipeline Development Traffic Assignments  
 Breezeway Property

AM PEAK HOUR  
 PM PEAK HOUR  
 000 / 000



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Figure 5-2  
2024 Background Future Peak Hour Traffic Forecasts  
Breezeway Property



Figure 5-3  
2024 Background Lane Use, Traffic Control and Levels of Service  
Breezeway Property

**B/B**

- Approach LOS - AM/PM

**B/B**

- Intersection LOS - AM/PM

← Represents One Travel Lane

🚦 Signalized Intersection

🛑 Stop Sign



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City of Fairfax, Virginia



## 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 future site entrances in relation to the surrounding roadway network.

### Existing Site Trips

As stated previously, the site is currently developed with the 50-room Breezeway Motel, the 38-unit Fairfax Garden Apartments, and four (4) single family homes. The redevelopment plan calls for the elimination of these uses and the construction of a mix of residential uses to include 65 residential townhouse units and a 32-unit senior adult housing building. Additionally, while traffic counts were conducted during the summer, Paul VI Catholic School generated some traffic as exhibited by the traffic counts at the Oak Street/Cedar Avenue – Panther Place intersection. To provide a conservative analysis of future traffic conditions with the site, trips generated by the existing site uses and the activities at Paul VI Catholic School were not eliminated from the existing roadway network.

### Proposed Site Access

The site plan provided on Figure 1-2 shows that access to the northern portion of the site is proposed at two locations, one full-movement driveway along Fairfax Boulevard approximately 250' east of Walnut Street – Fairchester Drive and a full-movement driveway along Walnut Street approximately 210' south of Fairfax Boulevard.

Access to the southern residential parcel will be provided along Oak Street approximately 300' south of Cedar Avenue – Panther Place.

### 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, 10<sup>th</sup> edition. The “Multi-family Housing – Low-rise” (220) land use code was used for the proposed townhomes units, and the “Senior Adult Housing – Attached” (252) land use code was used for the senior adult housing building. No commercial component is included in the currently proposed site plan.

The trip generation analysis for the existing uses and the proposed uses is presented in Table 6-1 and reflects a reduction in peak hour and daily trips from the previous study submission. When compared to the existing uses on site, the proposed development plan would result in an overall equivalent AM peak hour trip generation, an increase of approximately 22 additional trips during the PM peak hour and approximately 105 additional daily trips. For purposes of

this study, existing trips were not removed from the road network, and the total 38 AM peak hour trips and 53 PM peak hour trips for the proposed uses were added to the road network.

**Table 6-1**  
**Breezeway Property**  
 ITE Trip Generation, 10th Edition

Land Use	Ref	Size	Units	AM Peak Hour			PM Peak Hour			Daily Total
				In	Out	Total	In	Out	Total	
<b>Existing Site Uses</b>										
Motel	320	50	Rooms	8	13	21	11	10	21	152
Multifamily (Low Rise)	220	6	DU's	1	2	3	1	1	2	44
Multifamily (Mid-Rise)	221	32	DU's	3	8	11	2	2	4	173
<u>Single-Family Detached</u>	210	<u>4</u>	<u>DU's</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>3</u>	<u>1</u>	<u>4</u>	<u>38</u>
<b>Subtotal Existing Uses</b>				<b>13</b>	<b>25</b>	<b>38</b>	<b>17</b>	<b>14</b>	<b>31</b>	<b>407</b>
<b>Proposed Development Plan</b>										
Town Homes - North Land Bay	220	20	D.U.	2	8	10	9	5	14	110
Town Homes - South Land Bay	220	45	D.U.	5	17	22	18	11	29	299
<u>Senior Adult Housing - Attached</u>	252	<u>32</u>	<u>DU</u>	<u>2</u>	<u>4</u>	<u>6</u>	<u>6</u>	<u>4</u>	<u>10</u>	<u>103</u>
<b>Subtotal Proposed Uses</b>				<b>9</b>	<b>29</b>	<b>38</b>	<b>33</b>	<b>20</b>	<b>53</b>	<b>512</b>
<b>Net Difference: Approved vs. Proposed</b>				<b>-4</b>	<b>4</b>	<b>0</b>	<b>16</b>	<b>6</b>	<b>22</b>	<b>105</b>

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.

**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:	Residential
West on Lee Highway/Fairfax Boulevard:	35%
Northeast on Fairfax Boulevard:	50%
Southeast on Main Street:	15%
North on Fairchester Drive/Meredith Drive	<u>0%</u>
TOTAL	100%

Figure 6-1 graphically illustrates this trip distribution.

**Site Trip Assignments**

The assignments of the total vehicle trips generated upon the future build-out of the Breezeway Property redevelopment was based on the above distribution, and are depicted on Figures 6-2A and 6-2B.



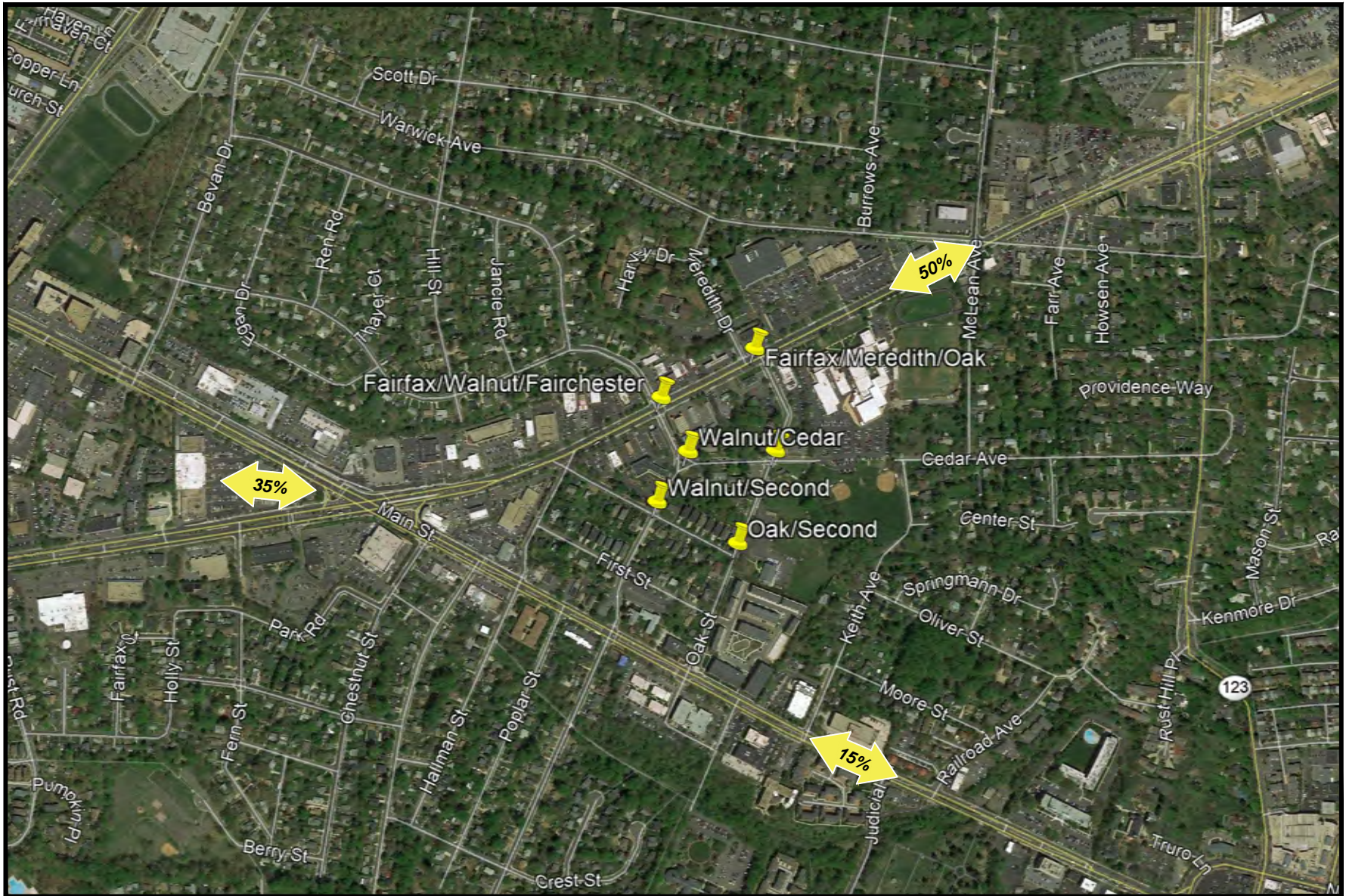



Figure 6-1  
Directions of Approach  
Breezeway Property

 - Residential



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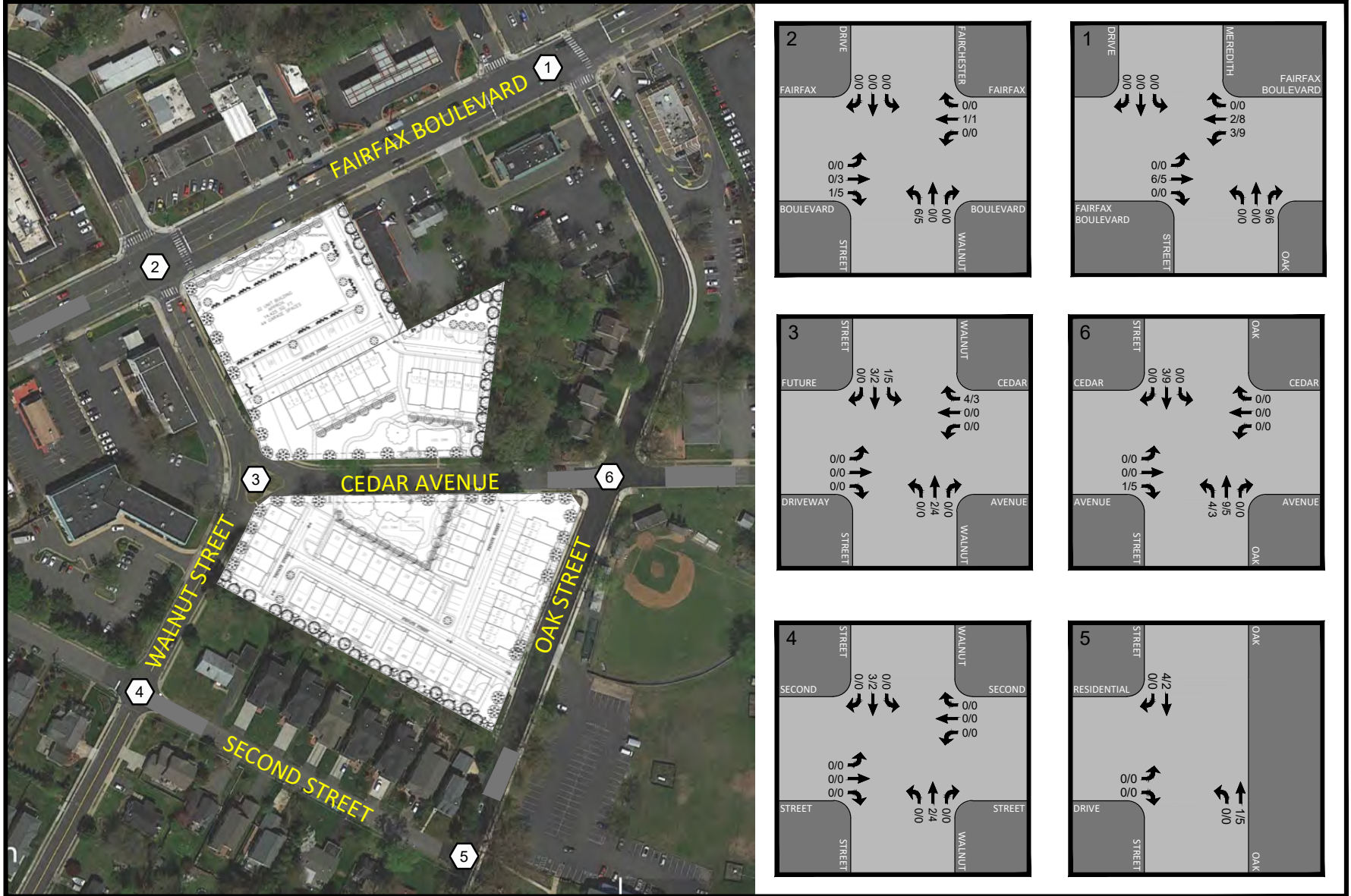


Figure 6-2A  
2024 Site Traffic Assignments  
Breezeway Property

AM PEAK HOUR  
PM PEAK HOUR  
000 / 000



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Figure 6-2B  
Site Traffic Assignments  
Breezeway Property

AM PEAK HOUR  
PM PEAK HOUR  
000 / 000



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## SECTION 7

### ANALYSIS OF FUTURE CONDITIONS WITH SITE DEVELOPMENT

#### Total Future Traffic Forecasts

Site trip assignments shown on Figures 6-2A and 6-2B were added to the background traffic forecasts to yield 2024 total future traffic forecasts, shown on Figures 7-1A and 7-1B.

#### Proposed Improvements

The design of the existing Walnut Street/Cedar Avenue intersection is not conventional. The Walnut Street and Cedar Avenue approaches are separated by a triangular median island. Two-way traffic is permitted along each side of the median island that results in multiple conflict points and is potentially confusing to drivers as to who has right-of-way when traversing the intersection. The Applicant intends to improve this situation by reconstructing the intersection to provide a typical four-legged stop sign controlled intersection with Walnut Street operating and the major (uncontrolled) approach. Cedar Avenue (the east approach) and the existing commercial driveway (the west approach) will be stop sign controlled. This redesign will enhance vehicular, pedestrian and bicycle safety by reducing crossing widths and providing conventional design features recognized by the average motorist.

Additionally, access to the existing Breezeway Motel is currently provided at two locations along Fairfax Boulevard. The Applicant intends to consolidate these access drives to a single location providing enhanced access management along this arterial roadway.

Lane use and traffic control at each of the study intersections for 2024 total future conditions is shown on Figure 7-2A and 7-2B.

#### Total Future Levels of Service with Proposed Development Plan

Future levels of service with the proposed development plan were determined at the study intersections based on the future traffic volumes shown on Figures 7-1A and 7-1B, future lane use and traffic control shown on Figures 7-2A and 7-2B, 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 along Fairfax Boulevard will continue to operate at level of service "C" (LOS "C") or better during the AM and PM peak commuter periods. The side street approaches to the signalized intersections will continue to operate at LOS "E" and "F" with average delays between 76.6 seconds and 104.7 seconds. However, the volume-to-capacity (v/c) ratios for the side street approaches at intersections along Fairfax Boulevard will be well below 1.0, indicating that the lengthy delays will be the result of long cycle lengths (190 seconds during the AM commuter peak hour and 220 seconds during the PM commuter peak hours) and the assignment of the predominance of the green time to the Fairfax Boulevard approaches, rather than insufficient capacity.

All approaches at the unsignalized intersections of Walnut Street/Cedar Avenue, Walnut Street/Second Street, Oak Street/Second Street, and Oak Street/Cedar Avenue – Panther Place will continue to operate at LOS "B" or better during each of the peak periods.

**Table 7-1**  
**Breezeway Property**  
 Total Future Intersection Capacity Analysis Summary

Intersection	Intersection Control	Approach	Existing		Background		Total Future	
			AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
1. Fairfax Boulevard & Meredith Drive/Oak Street	Signal	EB Appr	B (17.8)	A (8.8)	B (17.1)	A (8.1)	B (18.6)	A (9.2)
		WB Appr	B (14.9)	B (17.3)	B (13.8)	B (17.2)	B (14.3)	B (17.4)
		NB Appr	F (87.1)	F (100.2)	F (84.4)	F (100.3)	F (84.3)	F (100.2)
		SB Appr	F (88.4)	F (102.4)	F (88.3)	F (104.7)	F (88.3)	F (104.7)
		<b>Overall</b>	<b>C (21.2)</b>	<b>B (18.7)</b>	<b>C (20.3)</b>	<b>B (17.9)</b>	<b>C (21.5)</b>	<b>B (18.5)</b>
2. Fairfax Boulevard & Fairchester Drive/Walnut Street	Signal	EB Appr	B (13.0)	A (8.0)	B (12.8)	A (8.3)	B (12.8)	A (8.4)
		WB Appr	A (3.0)	A (1.7)	A (2.8)	A (1.7)	A (2.6)	A (2.8)
		NB Appr	E (76.5)	F (90.3)	E (76.6)	F (90.4)	E (76.6)	F (90.4)
		SB Appr	F (92.7)	F (105.7)	F (91.7)	F (103.9)	F (91.7)	F (103.9)
		<b>Overall</b>	<b>B (14.6)</b>	<b>A (9.4)</b>	<b>B (14.0)</b>	<b>A (8.9)</b>	<b>B (14.1)</b>	<b>A (9.8)</b>
3. Walnut Street/Cedar Avenue	Stop	EB Appr	A (0.0)	A (9.4)	B (10.7)	A (9.4)	B (10.8)	A (9.5)
		WB Appr	A (9.4)	A (9.6)	A (9.4)	A (9.5)	A (9.4)	A (9.6)
		NB Appr	A (0.4)	A (0.1)	A (0.4)	A (0.1)	A (0.4)	A (0.1)
		SB Appr	A (3.2)	A (1.5)	A (3.3)	A (1.7)	A (3.3)	A (2.0)
		<b>Overall</b>	<b>A (2.4)</b>	<b>A (2.5)</b>	<b>A (2.6)</b>	<b>A (2.5)</b>	<b>A (2.6)</b>	<b>A (2.7)</b>
4. Walnut Street/Second Street	Stop	EB Appr	A (7.5)	A (7.3)	A (7.4)	A (7.3)	A (7.4)	A (7.3)
		WB Appr	A (7.2)	A (7.3)	A (7.2)	A (7.3)	A (7.2)	A (7.3)
		NB Appr	A (7.8)	A (7.5)	A (7.8)	A (7.5)	A (7.8)	A (7.5)
		SB Appr	A (7.5)	A (7.7)	A (7.4)	A (7.6)	A (7.5)	A (7.6)
		<b>Overall</b>	<b>A (7.7)</b>	<b>A (7.6)</b>	<b>A (7.6)</b>	<b>A (7.5)</b>	<b>A (7.6)</b>	<b>A (7.6)</b>
5. Oak Street/Second Street	Stop	EB Appr	A (7.0)	A (7.1)	A (7.0)	A (7.1)	A (7.1)	A (7.1)
		NB Appr	A (7.7)	A (7.7)	A (7.8)	A (7.8)	A (7.8)	A (7.9)
		SB Appr	A (7.8)	A (7.7)	A (7.9)	A (7.8)	A (7.9)	A (7.8)
		<b>Overall</b>	<b>A (7.7)</b>	<b>A (7.7)</b>	<b>A (7.8)</b>	<b>A (7.8)</b>	<b>A (7.8)</b>	<b>A (7.8)</b>
6. Oak Street/Cedar Avenue/Panther Place	Stop	EB Appr	A (8.1)	A (7.6)	A (8.1)	A (7.6)	A (8.2)	A (7.6)
		WB Appr	A (8.0)	A (7.5)	A (8.3)	A (7.8)	A (8.3)	A (7.8)
		NB Appr	A (8.1)	A (7.9)	A (8.2)	A (8.0)	A (8.3)	A (8.0)
		SB Appr	A (8.4)	A (7.9)	A (8.5)	A (8.0)	A (8.5)	A (8.1)
		<b>Overall</b>	<b>A (8.2)</b>	<b>A (7.8)</b>	<b>A (8.3)</b>	<b>A (7.9)</b>	<b>A (8.4)</b>	<b>A (8.0)</b>
A. Fairfax Boulevard/ Site Driveway	Stop	EB Appr	Future Intersection	Future Intersection	A (0.0)	A (0.0)		
		WB Appr			A (0.0)	A (0.1)		
		NB Appr			B (14.5)	B (13.0)		
		<b>Overall</b>			<b>B (0.1)</b>	<b>A (0.1)</b>		
B. Walnut Street/ Site Driveway	Stop	WB Appr	Future Intersection	Future Intersection	A (9.4)	A (9.2)		
		NB Appr			A (0.0)	A (0.0)		
		SB Appr			A (0.0)	A (0.1)		
		<b>Overall</b>			<b>A (0.2)</b>	<b>A (0.2)</b>		
C. Oak Street/ Residential Driveway	Stop	EB Appr	Future Intersection	Future Intersection	B (10.1)	B (10.1)		
		NB Appr			A (0.1)	A (0.3)		
		SB Appr			A (0.0)	A (0.0)		
		<b>Overall</b>			<b>A (0.6)</b>	<b>A (0.5)</b>		

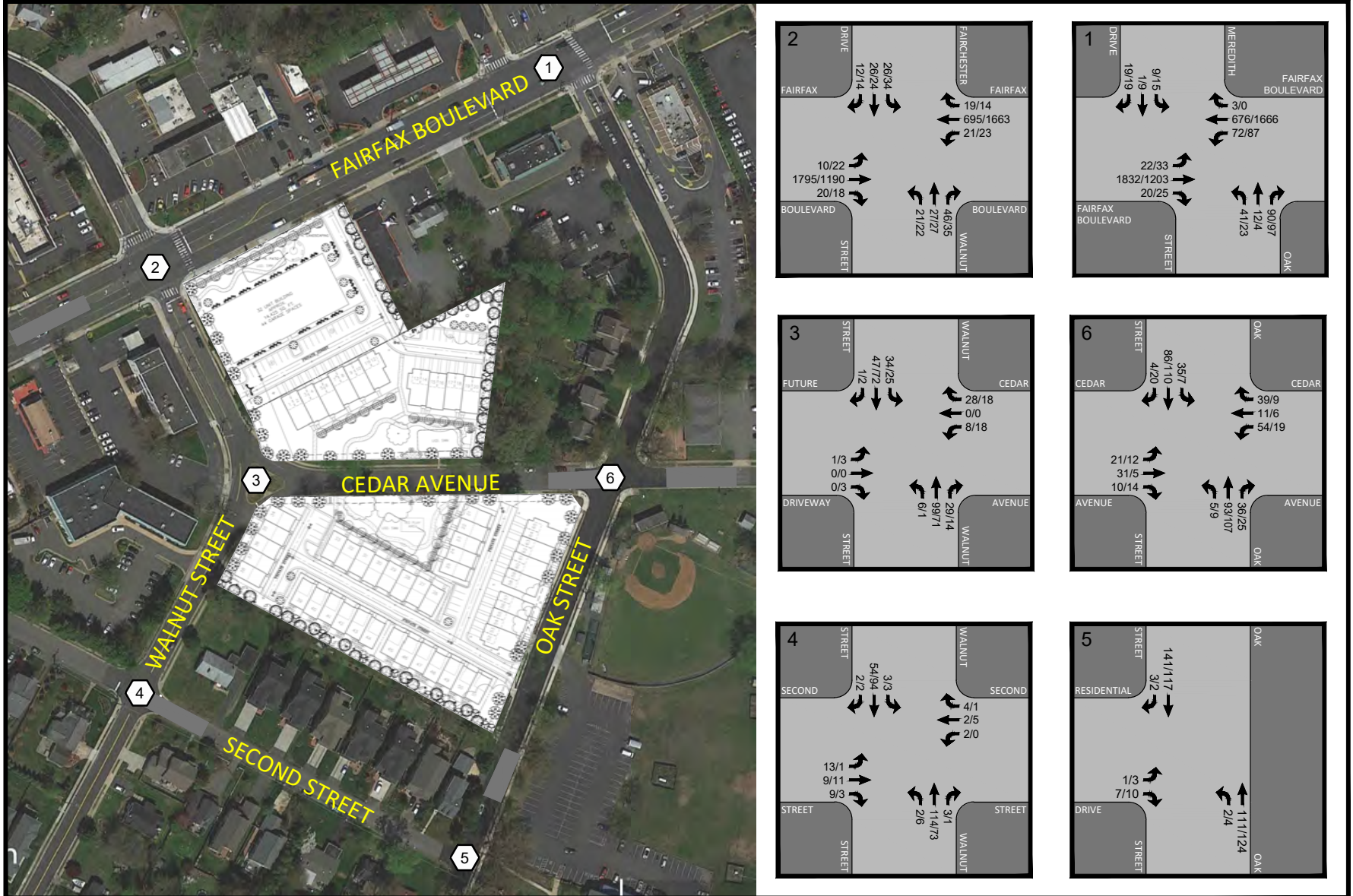


Figure 7-1A  
2024 Total Future Peak Hour Traffic Forecasts  
Breezeway Property

AM PEAK HOUR  
PM PEAK HOUR  
000 / 000



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Figure 7-1B  
2024 Total Future Peak hour Traffic Forecasts  
Breezeway Property

AM PEAK HOUR  
PM PEAK HOUR  
000 / 000



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Figure 7-2A  
2024 Total Future Lane Use, Traffic Control and Levels of Service  
Breezeway Property

**B/B** - Approach LOS - AM/PM  
**B/B** - Intersection LOS - AM/PM

← Represents One Travel Lane  
🚦 Signalized Intersection  
🛑 Stop Sign



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Figure 7-2B  
 2024 Total Future Lane Use, Traffic Control and Levels of Service  
 Breezeway Property

- Approach LOS - AM/PM  
 - Intersection LOS - AM/PM

Represents One Travel Lane  
 Signalized Intersection  
 Stop Sign



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 City of Fairfax, Virginia



## SECTION 8 CONCLUSIONS

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

1. The Fairfax Boulevard/Oak Street – Meredith Drive and Fairfax Boulevard/Walnut Street – Fairchester Drive 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 using the Synchro 10 traffic analysis software. Side street approaches at these intersections currently operate at LOS “E” or “F” during the peak periods due to long cycle lengths and the assignment of most of the green time to the Fairfax Boulevard approaches.
2. Historic VDOT traffic data indicates that average daily traffic counts along Fairfax Boulevard have increased by approximately 0.55% per year between 2013 and 2018.
3. The Novus Fairfax Gateway and Paul VI Redevelopment pipeline developments are anticipated to generate 543 AM commuter peak hour trips, 912 PM commuter peak hour trips at full buildout.
4. Under future 2024 traffic conditions minimal increases in delay at the study intersections are expected due to the trips generated by pipeline developments in the vicinity of the site and overall levels of service would remain generally consistent with existing conditions.
5. The site is currently developed with the 50-room Breezeway Motel, the 38-unit Fairfax Garden Apartments, and four (4) single family homes.
6. The Applicant proposes to redevelop the site with a mix of residential uses including 65 residential townhouse units and a 32-unit senior adult housing building.
7. The project is estimated to generate 38 AM peak commuter hour trips and 53 PM peak commuter hour trips upon buildout.
8. Under future 2024 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 commuter peak periods.
9. All unsignalized intersection and access drive approaches will operate at LOS “B” or better during each of the studied peak periods.
10. Access to the site will be via one full access driveway along Fairfax Boulevard, one full access driveway along Walnut Street, one full access drivewas along Oak Street.

11. The Applicant intends to improve the roadway geometrics at the Walnut Street/Cedar Avenue intersection by reconstructing the intersection to provide a typical four-legged stop sign controlled intersection in order to enhance vehicular, pedestrian and bicycle safety by reducing crossing widths and providing conventional design features recognized by the average motorist.
12. The Applicant intends to consolidate these access drives along Fairfax Boulevard from two locations currently serving the Breezeway Motel to a single location providing enhanced access management along this arterial roadway.

**APPENDIX A**  
**SCOPING AGREEMENT**







# SCOPE OF WORK MEETING FORM

## Information on the Project

### Traffic Impact Analysis Base Assumptions

**ROUTE 50 BREEZEWAY PROPERTY**  
**CITY OF FAIRFAX, VIRGINIA**  
**July 3, 2019**  
**Scoping Meeting Held June 25, 2019**

<b>Contact Information</b>				
Consultant Name: Tele: E-mail:	Christopher Turnbull - Wells + Associates, Inc. 703-917-6620 cturnbull@wellsandassociates.com			
Developer/Owner Name: Tele: E-mail:	Stephen S. Collins, Jr. P.E. 703.934.9369 Stephen.Collins@Pultegroup.com			
<b>Project Information</b>				
Project Name:	Route 50 Breezeway Property	Locality/County:	City of Fairfax	
Project Location: <small>(Attach regional and site specific location map)</small>	The project is generally located south of Fairfax Boulevard, between Main Street and Chain Bridge Road. See <a href="#">Attachment 1</a> for the site location.			
Submission Type	Comp Plan <input type="checkbox"/>	Rezoning <input checked="" type="checkbox"/> (SUP)	Site Plan <input type="checkbox"/>	Subd Plat <input type="checkbox"/>
Project Description: <small>(Including details on the land use, acreage, phasing, access location, etc. Attach additional sheet if necessary)</small>	The Applicant is proposing to redevelop the property with 62 residential units to include townhomes and stacked condos. And up to 10,920 square feet of commercial space. The Site Layout is provided as <a href="#">Attachment 2</a> .			
Proposed Use(s): <small>(Check all that apply; attach additional pages as necessary)</small>	Residential <input type="checkbox"/>	Commercial <input type="checkbox"/>	Mixed Use <input checked="" type="checkbox"/>	Other <input type="checkbox"/>
(See Attachment – 3)	<b>Residential Uses(s)</b> Number of Units:        62 ITE LU Code(s):        221  <b>Commercial Use(s)</b> ITE LU Code(s):        TBD  Square Ft or Other Variable: <u>10,920</u> _____		<b>Other Use(s)</b> ITE LU Code(s):        _____ _____ _____  Independent Variable(s): _____ _____ _____	
Total Peak Hour Trip Projection:	Less than 100 <input type="checkbox"/>	100 – 499 <input checked="" type="checkbox"/>	500 – 999 <input type="checkbox"/>	1,000 or more <input type="checkbox"/>

<b>Traffic Impact Analysis Assumptions</b>			
Study Period	Existing Year: 2019	Build-out Year: 2024	Design Year: n/a
Study Area Boundaries	North: Fairfax Boulevard (US Route 50)	South: Second Street	
	East: Oak Street	West: Walnut Street	
External Factors That Could Affect Project (Planned road improvements, other nearby developments)	<ul style="list-style-type: none"> <li>• Novus Fairfax Gateway redevelopment</li> <li>• Paul VI Redevelopment</li> </ul>		
Consistency With Comprehensive Plan (Land use, transportation plan)	The proposed development conforms with the City’s 2035 Comprehensive Plan that identifies the northers portion of the site along Fairfax Boulevard as “Commercial Corridor” and the remainder of the site “Multifamily Neighborhood.” The current CR (Commercial Retail) and RMF (Residential Multifamily) would permit the proposed land uses. The roadway network is consistent with the intent of the City Transportation Plan.		
Available Traffic Data (Historical, forecasts)	<p>VDOT historical traffic count data indicates:</p> <p><u>2018 VDOT Average Annual Daily Traffic (AADT):</u> Fairfax Boulevard (US Route 50): 37,000 vpd (Main Street to Chain Bridge Road)</p> <p><u>2017 VDOT Average Annual Daily Traffic (AADT):</u> Fairfax Boulevard (US Route 50): 36,000 vpd (Main Street to Chain Bridge Road)</p> <p><u>2016 VDOT Average Annual Daily Traffic (AADT):</u> Fairfax Boulevard (US Route 50): 36,000 vpd (Main Street to Chain Bridge Road)</p> <p><u>2015 VDOT Average Annual Daily Traffic (AADT):</u> Fairfax Boulevard (US Route 50): 35,000 vpd (Main Street to Chain Bridge Road)</p> <p><u>2014 VDOT Average Annual Daily Traffic (AADT):</u> Fairfax Boulevard (US Route 50): 36,000 vpd (Main Street to Chain Bridge Road)</p> <p><u>2013 VDOT Average Annual Daily Traffic (AADT):</u> Fairfax Boulevard (US Route 50): 36,000 vpd (Main Street to Chain Bridge Road)</p>		
Trip Distribution (Pending data from existing traffic counts)(See Attachment 4)	From the West: 35%	From the Northeast: 50% Resid./45% Commercial	
	From the North: 0% Resid./5% Comm.	From the Southeast: 15%	
Annual Vehicle Trip Growth Rate:	1% or per VDOT AADT counts	Peak Period for Study (check all that apply)	<input checked="" type="checkbox"/> AM <input checked="" type="checkbox"/> PM <input type="checkbox"/> SAT
		Peak Hour of the Generator	N/A
Study Intersections and/or Road Segments (See Attachment 1)	1. Fairfax Boulevard/Meredith Drive, Oak Street	6. Oak Street/Cedar Avenue/Panther Place	
	2. Fairfax Blvd/Fairchester Drive, Walnut Street	7. Site Access Drives	
	3. Walnut Street/Cedar Avenue		
	4. Walnut Street/Second Street		
	5. Oak Street/Second Street		

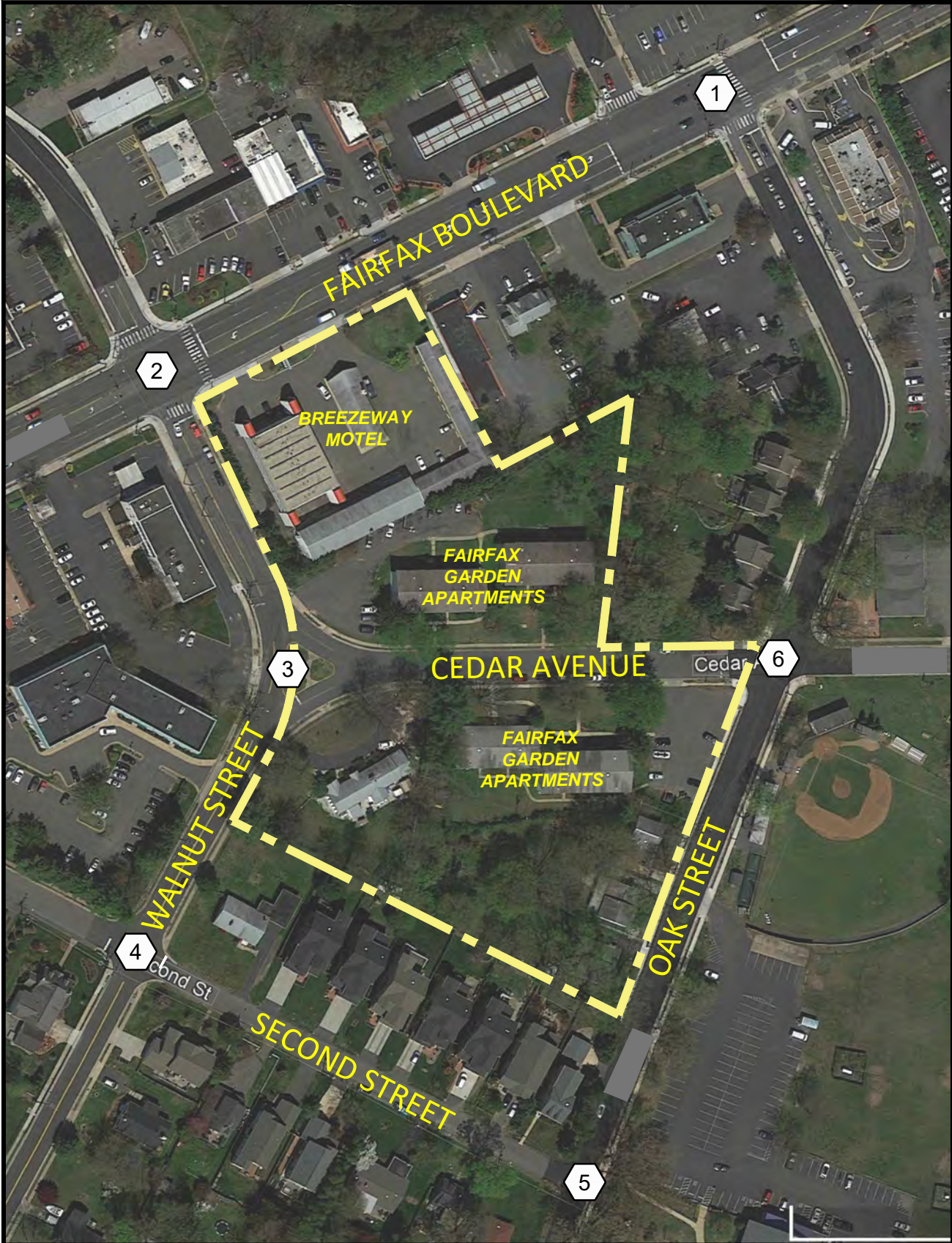


Trip Adjustment Factors	Internal allowance: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Reduction: _____% trips	Pass-by allowance: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Reduction: _____%trips
Software Methodology	<input checked="" type="checkbox"/> Synchro <input type="checkbox"/> HCS (v.2000/+) <input type="checkbox"/> aaSIDRA <input type="checkbox"/> CORSIM <input type="checkbox"/> Other <u>Synchro Version 8</u>	
Traffic Signal Proposed or Affected (Analysis software to be used, progression speed, cycle length)	None	
Improvement(s) Assumed or to be Considered	Reconfigure Walnut Street/Cedar Avenue intersection to a conventional design.	
Background Traffic Studies Considered	<ul style="list-style-type: none"> <li>• Avalon</li> <li>• Novus Fairfax Gateway Traffic Impact Analysis</li> <li>• Paul VI Redevelopment</li> </ul>	
Plan Submission	<input checked="" type="checkbox"/> Master Development Plan (MDP) <input type="checkbox"/> Generalized Development Plan (GDP) <input type="checkbox"/> Preliminary/Sketch Plan <input type="checkbox"/> Other Plan type (Final Site, Subd. Plan)	
Additional Issues to be Addressed	<input type="checkbox"/> Queuing analysis <input type="checkbox"/> Actuation/Coordination <input type="checkbox"/> Weaving analysis <input type="checkbox"/> Merge analysis <input checked="" type="checkbox"/> Bike/Ped Accommodations <input type="checkbox"/> Intersection(s) <input type="checkbox"/> TDM Measures <input type="checkbox"/> Other _____	

NOTES on ASSUMPTIONS:

1. Synchro 8 will be used to conduct capacity analysis with peak hour factors measured in the field for existing conditions ( $0.85 < PHF < 0.92$ ). Under background and total future conditions a PHF of 0.92 will be used for all movements.
2. Existing Synchro (signal timing) files to be provided by the city.





Attachment 1  
 Site Location  
 PulteGroup, Inc.  
 Breezeway Property  
 City of Fairfax, Virginia

ⓧ - Study Intersection





**Attachment 3**

**Breezeway Property - City of Fairfax**

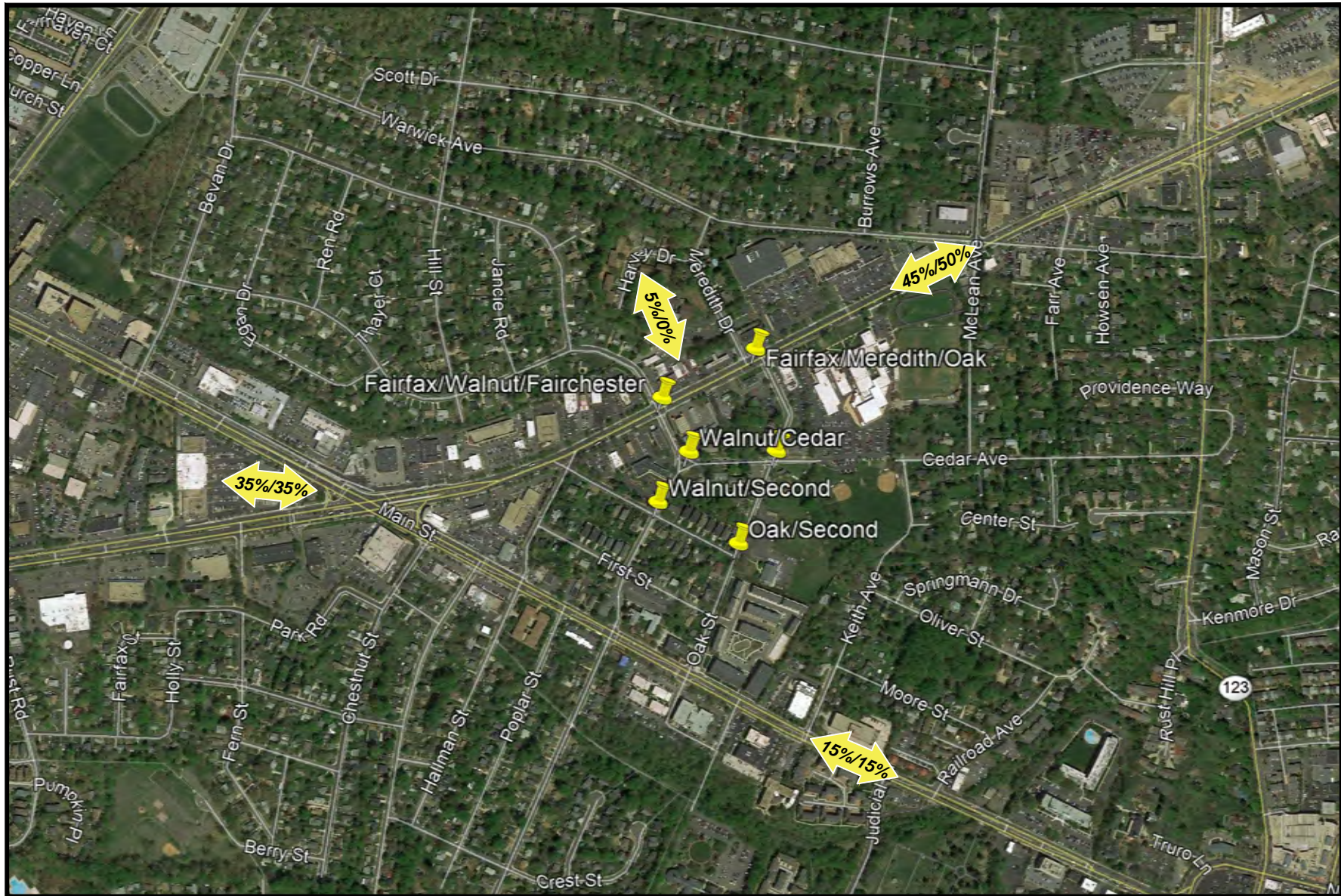
**Trip Generation Comparison Existing Residential Uses Vs. Proposed Residential Uses (1)**

Use	ITE Land Use Code	Amount	Units	AM Peak Hour			PM Peak Hour			ADT
				In	Out	Total	In	Out	Total	
<b>Existing Residential Uses</b>										
Multifamily (Low Rise) Apartments	220	6	DU's	1	2	3	3	2	5	44
Multifamily (Mid-Rise) Apartments	221	32	DU's	3	8	11	9	6	15	173
Single-Family Detached Houses	210	4	DU's	1	2	3	3	1	4	38
<b>Total Existing Uses</b>		42		5	12	17	15	9	24	255
<b>Proposed Residential Use</b>										
Residential (Mid-Rise) Town Homes	221	62	DU's	5	16	21	17	11	28	336
<b>Difference Proposed Uses Less Existing Uses</b>				0	4	4	2	2	4	81

**Trip Generation Comparison Potential Commercial Uses Vs. Existing and By-Right Commercial Uses(1)**

Use	ITE Land Use Code	Amount	Units	AM Peak Hour			PM Peak Hour			ADT
				In	Out	Total	In	Out	Total	
<b>Existing Commercial Use</b>										
Motel	320	50	Rooms	8	13	21	11	10	21	152
<b>Potential By-Right Commercial Uses (2)</b>										
<u>Allowed CR Zone Use</u>	<u>Most Similar ITE Land Use</u>									
Art Gallery or Studio	Retail Shopping Center	820	10,920 SF	6	4	10	51	55	106	1,334
Catering or Delivery Service			8,800 SF	5	3	8	43	47	90	1,152
Retail General			8,800 SF	5	3	8	43	47	90	1,152
Retail large Format			8,800 SF	5	3	8	43	47	90	1,152
Shopping Centers			8,800 SF	5	3	8	43	47	90	1,152
Tobacco and Smoke Shop			8,800 SF	5	3	8	43	47	90	1,152
Services General			8,800 SF	5	3	8	43	47	90	1,152
Services Personal			8,800 SF	5	3	8	43	47	90	1,152
Building Supplies and Lumber Sales	Building Materials and Lumber Store	812	10,920 SF	11	6	17	11	11	22	N/A
Furniture, Appliance or carpeting/flooring store	Furniture Store	890	10,920 SF	3	1	4	3	3	6	103
Office, General	General Office	710	10,920 SF	11	2	13	2	12	14	106
Office, Medical	Medical-Dental Office	720	8,800 SF	20	6	26	9	23	32	250
Schools, technical, trade, business	Junior/Community College	540	10,920 SF	47	14	61	10	10	20	221
Brew Pub	Drinking Place	925	10,920 SF	0	0	0	82	42	124	N/A
Restaurant or Food Service	Quality Restaurant	931	8,800 SF	3	3	6	46	23	69	738
	High-Turnover Restaurant	932	8,800 SF	48	39	87	53	33	86	987
Day Care/Nursery School	Day Care Center	565	8,800 SF	51	46	97	46	52	98	419

Notes: (1) Based on Institute of Transportation Engineers', Trip Generation, 10th Edition  
 (2) Square footage based on ability to surface park use.



Attachment 4  
 Directions of Approach  
 Breezeway Property



- Commercial / Residential



NORTH

Pulte Group, Inc.  
 City of Fairfax, Virginia



**APPENDIX B  
EXISTING TRAFFIC COUNTS**







# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - All Vehicles

Time Period		Southbound Meredith Drive					Westbound Fairfax Boulevard					Northbound Oak Street					Eastbound Fairfax Boulevard					North & South	East & West	Total																			
		Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF																						
<b>PROJECT:</b> Pulte Homes Breezeway - City of Fairfax																						<b>DATE:</b> 7/11/2019					<b>SOUTHBOUND ROAD:</b> Meredith Drive																
<b>W+A JOB NO:</b> 7476																						<b>DAY:</b> Thursday					<b>NORTHBOUND ROAD:</b> Oak Street																
<b>INTERSECTION:</b> Fairfax Boulevard & Meredith Drive/Oak Street																						<b>WEATHER:</b> clear					<b>WESTBOUND ROAD:</b> Fairfax Boulevard																
<b>LOCATION:</b> City of Fairfax, VA																						<b>COUNTED BY:</b> Halid & Salih					<b>EASTBOUND ROAD:</b> Fairfax Boulevard																
<b>INPUTED BY:</b> Dyron																																											
<b>AM 15 Minute Volumes</b>																																											
6:00 AM - 6:15 AM		0	0	0	0		1	46	7	54		8	0	0	8		2	220	3	225		8	279	287																			
6:15 AM - 6:30 AM		5	0	4	9		1	44	5	50		5	0	1	6		3	345	4	352		15	402	417																			
6:30 AM - 6:45 AM		3	0	2	5		0	65	2	67		8	1	5	14		0	396	1	397		19	464	483																			
6:45 AM - 7:00 AM		2	0	1	3		0	82	4	86		11	0	3	14		3	406	1	410		17	496	513																			
7:00 AM - 7:15 AM		4	0	3	7		0	99	3	102		17	1	4	22		2	393	4	399		29	501	530																			
7:15 AM - 7:30 AM		3	0	0	3		0	117	10	127		9	1	6	16		0	412	3	415		19	542	561																			
7:30 AM - 7:45 AM		4	0	2	6		0	122	10	132		21	0	7	28		2	399	4	405		34	537	571																			
7:45 AM - 8:00 AM		8	1	3	12		0	133	16	149		14	1	4	19		2	386	3	391		31	540	571																			
8:00 AM - 8:15 AM		3	0	1	4		0	131	17	148		21	4	7	32		0	448	7	455		36	603	639																			
8:15 AM - 8:30 AM		4	0	2	6		1	150	21	172		17	3	6	26		1	400	5	406		32	578	610																			
8:30 AM - 8:45 AM		9	0	0	9		2	132	17	151		20	4	9	33		5	468	5	478		42	629	671																			
8:45 AM - 9:00 AM		2	1	6	9		0	143	12	155		21	1	16	38		12	370	4	386		47	541	588																			
<b>Total</b>		<b>47</b>	<b>2</b>	<b>24</b>	<b>73</b>		<b>5</b>	<b>1264</b>	<b>124</b>	<b>1393</b>		<b>172</b>	<b>16</b>	<b>68</b>	<b>256</b>		<b>32</b>	<b>4643</b>	<b>44</b>	<b>4719</b>		<b>329</b>	<b>6112</b>	<b>6441</b>																			
<b>AM One Hour Volumes</b>																																											
6:00 AM - 7:00 AM		10	0	7	17	0.47	2	237	18	257	0.75	32	1	9	42	0.75	8	1367	9	1384	0.84	59	1641	1700																			
6:15 AM - 7:15 AM		14	0	10	24	0.67	1	290	14	305	0.75	41	2	13	56	0.64	8	1540	10	1558	0.95	80	1863	1943																			
6:30 AM - 7:30 AM		12	0	6	18	0.64	0	363	19	382	0.75	45	3	18	66	0.75	5	1607	9	1621	0.98	84	2003	2087																			
6:45 AM - 7:45 AM		13	0	6	19	0.68	0	420	27	447	0.85	58	2	20	80	0.71	7	1610	12	1629	0.98	99	2076	2175																			
7:00 AM - 8:00 AM		19	1	8	28	0.58	0	471	39	510	0.86	61	3	21	85	0.76	6	1590	14	1610	0.97	113	2120	2233																			
7:15 AM - 8:15 AM		18	1	6	25	0.52	0	503	53	556	0.93	65	6	24	95	0.74	4	1645	17	1666	0.92	120	2222	2342																			
7:30 AM - 8:30 AM		19	1	8	28	0.58	1	536	64	601	0.87	73	8	24	105	0.82	5	1633	19	1657	0.91	133	2258	2391																			
7:45 AM - 8:45 AM		24	1	6	31	0.65	3	546	71	620	0.90	72	12	26	110	0.83	8	1702	20	1730	0.90	141	2350	2491																			
<b>8:00 AM - 9:00 AM</b>		<b>18</b>	<b>1</b>	<b>9</b>	<b>28</b>	<b>0.78</b>	<b>3</b>	<b>556</b>	<b>67</b>	<b>626</b>	<b>0.91</b>	<b>79</b>	<b>12</b>	<b>38</b>	<b>129</b>	<b>0.85</b>	<b>18</b>	<b>1686</b>	<b>21</b>	<b>1725</b>	<b>0.90</b>	<b>157</b>	<b>2351</b>	<b>2508</b>																			
<b>PM 15 Minute Volumes</b>																																											
4:00 PM - 4:15 PM		3	0	5	8		0	338	14	352		21	2	3	26		7	377	4	388		34	740	774																			
4:15 PM - 4:30 PM		2	0	0	2		0	311	13	324		27	0	7	34		7	229	11	247		36	571	607																			
4:30 PM - 4:45 PM		6	3	6	15		0	336	21	357		27	2	7	36		5	199	8	212		51	569	620																			
4:45 PM - 5:00 PM		7	6	4	17		0	310	28	338		13	0	4	17		3	226	9	238		34	576	610																			
5:00 PM - 5:15 PM		13	2	4	19		1	201	16	218		20	0	6	26		5	202	6	213		45	431	476																			
5:15 PM - 5:30 PM		3	2	4	9		3	195	14	212		19	1	7	27		7	192	7	206		36	418	454																			
5:30 PM - 5:45 PM		1	3	2	6		1	327	19	347		22	2	6	30		13	170	2	185		36	532	568																			
5:45 PM - 6:00 PM		13	5	5	23		1	313	20	334		19	2	3	24		3	156	7	166		47	500	547																			
6:00 PM - 6:15 PM		11	1	5	17		1	310	18	329		15	2	2	19		7	150	6	163		36	492	528																			
6:15 PM - 6:30 PM		8	4	6	18		3	318	17	338		6	3	4	13		0	198	10	208		31	546	577																			
6:30 PM - 6:45 PM		19	2	2	23		3	272	11	286		12	0	2	14		3	194	11	208		37	494	531																			
6:45 PM - 7:00 PM		19	1	7	27		0	253	16	269		10	0	5	15		6	162	5	173		42	442	484																			
<b>Total</b>		<b>105</b>	<b>29</b>	<b>50</b>	<b>184</b>		<b>13</b>	<b>3484</b>	<b>207</b>	<b>3704</b>		<b>211</b>	<b>14</b>	<b>56</b>	<b>281</b>		<b>66</b>	<b>2455</b>	<b>86</b>	<b>2607</b>		<b>465</b>	<b>6311</b>	<b>6776</b>																			
<b>PM One Hour Volumes</b>																																											
4:00 PM - 5:00 PM		18	9	15	42	0.62	0	1295	76	1371	0.96	88	4	21	113	0.78	22	1031	32	1085	0.70	155	2456	2611																			
4:15 PM - 5:15 PM		28	11	14	53	0.70	1	1158	78	1237	0.87	87	2	24	113	0.78	20	856	34	910	0.92	166	2147	2313																			
4:30 PM - 5:30 PM		29	13	18	60	0.79	4	1042	79	1125	0.79	79	3	24	106	0.74	20	819	30	869	0.91	166	1994	2160																			
4:45 PM - 5:45 PM		24	13	14	51	0.67	5	1033	77	1115	0.80	74	3	23	100	0.83	28	790	24	842	0.88	151	1957	2108																			
5:00 PM - 6:00 PM		30	12	15	57	0.62	6	1036	69	1111	0.80	80	5	22	107	0.89	28	720	22	770	0.90	164	1881	2045																			
5:15 PM - 6:15 PM		28	11	16	55	0.60	6	1145	71	1222	0.88	75	7	18	100	0.83	30	668	22	720	0.87	155	1942	2097																			
5:30 PM - 6:30 PM		33	13	18	64	0.70	6	1268	74	1348	0.97	62	9	15	86	0.72	23	674	25	722	0.87	150	2070	2220																			
5:45 PM - 6:45 PM		51	12	18	81	0.88	8	1213	66	1287	0.95	52	7	11	70	0.73	13	698	34	745	0.90	151	2032	2183																			
6:00 PM - 7:00 PM		57	8	20	85	0.79	7	1153	62	1222	0.90	43	5	13	61	0.80	16	704	32	752	0.90	146	1974	2120																			

# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - All Vehicles

Time Period		Southbound Fairchester Drive					Westbound Fairfax Boulevard					Northbound Walnut Street					Eastbound Fairfax Boulevard					North & South	East & West	Total																								
		Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF																											
<b>PROJECT:</b> Pulte Homes Breezeway - City of Fairfax																						<b>DATE:</b> 7/11/2019					<b>SOUTHBOUND ROAD:</b> Fairchester Drive																					
<b>W+A JOB NO:</b> 7476																						<b>DAY:</b> Thursday					<b>NORTHBOUND ROAD:</b> Walnut Street																					
<b>INTERSECTION:</b> Fairfax Boulevard & Fairchester Drive/Walnut Street																						<b>WEATHER:</b> clear					<b>WESTBOUND ROAD:</b> Fairfax Boulevard																					
<b>LOCATION:</b> City of Fairfax, VA																						<b>COUNTED BY:</b> James & Inita					<b>EASTBOUND ROAD:</b> Fairfax Boulevard																					
																						<b>INPUTED BY:</b> Dyron																										
<b>AM 15 Minute Volumes</b>																																																
6:00 AM - 6:15 AM		3	0	4	7		4	41	0	45		7	0	0	7		1	219	1	221		14	266	280																								
6:15 AM - 6:30 AM		5	4	5	14		4	57	0	61		4	1	2	7		0	329	1	330		21	391	412																								
6:30 AM - 6:45 AM		6	0	5	11		4	56	1	61		9	1	2	12		1	390	3	394		23	455	478																								
6:45 AM - 7:00 AM		8	34	6	48		3	74	3	80		15	1	0	16		1	271	70	342		64	422	486																								
7:00 AM - 7:15 AM		11	3	6	20		3	76	3	82		10	2	2	14		2	384	2	388		34	470	504																								
7:15 AM - 7:30 AM		5	2	6	13		3	127	12	142		15	4	2	21		0	348	1	349		34	491	525																								
7:30 AM - 7:45 AM		2	8	6	16		3	119	3	125		13	0	1	14		0	414	2	416		30	541	571																								
7:45 AM - 8:00 AM		8	4	4	16		8	174	6	188		8	5	2	15		8	363	2	373		31	561	592																								
8:00 AM - 8:15 AM		0	3	3	6		3	142	5	150		10	8	5	23		1	452	0	453		29	603	632																								
8:15 AM - 8:30 AM		3	14	9	26		5	131	3	139		18	4	3	25		4	416	1	421		51	560	611																								
8:30 AM - 8:45 AM		1	4	9	14		2	159	6	167		9	9	3	21		4	430	7	441		35	608	643																								
8:45 AM - 9:00 AM		0	7	7	14		6	155	5	166		11	5	8	24		29	308	6	343		38	509	547																								
<b>Total</b>		52	83	70	205		48	1311	47	1406		129	40	30	199		51	4324	96	4471		404	5877	6281																								
<b>AM One Hour Volumes</b>																																																
6:00 AM - 7:00 AM		22	38	20	80	0.42	15	228	4	247	0.77	35	3	4	42	0.66	3	1209	75	1287	0.82	122	1534	1656																								
6:15 AM - 7:15 AM		30	41	22	93	0.48	14	263	7	284	0.87	38	5	6	49	0.77	4	1374	76	1454	0.92	142	1738	1880																								
6:30 AM - 7:30 AM		30	39	23	92	0.48	13	333	19	365	0.64	49	8	6	63	0.75	4	1393	76	1473	0.93	155	1838	1993																								
6:45 AM - 7:45 AM		26	47	24	97	0.51	12	396	21	429	0.76	53	7	5	65	0.77	3	1417	75	1495	0.90	162	1924	2086																								
7:00 AM - 8:00 AM		26	17	22	65	0.81	17	496	24	537	0.71	46	11	7	64	0.76	10	1509	7	1526	0.92	129	2063	2192																								
7:15 AM - 8:15 AM		15	17	19	51	0.80	17	562	26	605	0.80	46	17	10	73	0.79	9	1577	5	1591	0.88	124	2196	2320																								
7:30 AM - 8:30 AM		13	29	22	64	0.62	19	566	17	602	0.80	49	17	11	77	0.77	13	1645	5	1663	0.92	141	2265	2406																								
7:45 AM - 8:45 AM		12	25	25	62	0.60	18	606	20	644	0.86	45	26	13	84	0.84	17	1661	10	1688	0.93	146	2332	2478																								
8:00 AM - 9:00 AM		4	28	28	60	0.58	16	587	19	622	0.93	48	26	19	93	0.93	38	1606	14	1658	0.92	153	2280	2433																								
<b>PM 15 Minute Volumes</b>																																																
4:00 PM - 4:15 PM		3	4	13	20		2	382	6	390		9	8	3	20		1	272	7	280		40	670	710																								
4:15 PM - 4:30 PM		4	4	1	9		4	344	5	353		8	4	4	16		3	218	10	231		25	584	609																								
4:30 PM - 4:45 PM		2	9	14	25		3	347	4	354		8	7	6	21		2	163	3	168		46	522	569																								
4:45 PM - 5:00 PM		5	6	5	16		5	385	7	397		9	7	3	19		5	171	1	177		35	574	608																								
5:00 PM - 5:15 PM		3	7	6	16		4	355	11	370		12	4	4	20		6	164	7	177		36	547	583																								
5:15 PM - 5:30 PM		7	7	4	18		6	327	6	339		7	16	0	23		2	185	12	199		41	538	579																								
5:30 PM - 5:45 PM		6	8	5	19		6	318	3	327		5	5	4	14		22	153	2	177		33	504	537																								
5:45 PM - 6:00 PM		3	4	9	16		6	337	5	348		3	5	7	15		0	151	5	156		31	504	535																								
6:00 PM - 6:15 PM		11	11	9	31		5	335	3	343		12	4	5	21		2	140	5	147		52	490	542																								
6:15 PM - 6:30 PM		11	6	8	25		4	337	11	352		6	6	1	13		4	193	1	198		38	550	588																								
6:30 PM - 6:45 PM		4	0	3	7		4	341	5	350		9	9	1	19		3	175	7	185		26	535	561																								
6:45 PM - 7:00 PM		4	6	14	24		7	330	7	344		6	3	3	12		1	142	3	146		36	490	526																								
<b>Total</b>		63	72	91	226		56	4138	73	4267		94	78	41	213		51	2127	63	2241		439	6508	6947																								
<b>PM One Hour Volumes</b>																																																
4:00 PM - 5:00 PM		14	23	33	70	0.70	14	1458	22	1494	0.94	34	26	16	76	0.90	11	824	21	856	0.76	146	2350	2496																								
4:15 PM - 5:15 PM		14	26	26	66	0.66	16	1431	27	1474	0.93	37	22	17	76	0.90	16	716	21	753	0.81	142	2227	2369																								
4:30 PM - 5:30 PM		17	29	29	75	0.75	18	1414	28	1460	0.92	36	34	13	83	0.90	15	683	23	721	0.91	158	2181	2339																								
4:45 PM - 5:45 PM		21	28	20	69	0.91	21	1385	27	1433	0.90	33	32	11	76	0.83	35	673	22	730	0.92	145	2163	2308																								
5:00 PM - 6:00 PM		19	26	24	69	0.91	22	1337	25	1384	0.94	27	30	15	72	0.78	30	653	26	709	0.89	141	2093	2234																								
5:15 PM - 6:15 PM		27	30	27	84	0.68	23	1317	17	1357	0.97	27	30	16	73	0.79	26	629	24	679	0.85	157	2036	2193																								
5:30 PM - 6:30 PM		31	29	31	91	0.73	21	1327	22	1370	0.97	26	20	17	63	0.75	28	637	13	678	0.86	154	2048	2202																								
5:45 PM - 6:45 PM		29	21	29	79	0.64	19	1350	24	1393	0.99	30	24	14	68	0.81	9	659	18	686	0.87	147	2079	2226																								
6:00 PM - 7:00 PM		30	23	34	87	0.70	20	1343	26	1389	0.99	33	22	10	65	0.77	10	650	16	676	0.85	152	2065	2217																								

# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - All Vehicles

Time Period		Southbound Walnut Street					Westbound Cedar Avenue					Northbound Walnut Street					Eastbound Driveway					North & South	East & West	Total
		Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF			
<b>AM 15 Minute Volumes</b>																								
6:00 AM - 6:15 AM		0	1	2	3		1	0	0	1		0	9	0	9		0	0	0	0		12	1	13
6:15 AM - 6:30 AM		0	3	2	5		1	0	0	1		0	8	0	8		0	0	0	0		13	1	14
6:30 AM - 6:45 AM		0	1	1	2		2	0	1	3		2	14	0	16		0	0	0	0		18	3	21
6:45 AM - 7:00 AM		0	4	1	5		1	0	0	1		4	17	0	21		0	0	0	0		26	1	27
7:00 AM - 7:15 AM		0	6	1	7		1	0	1	2		1	13	0	14		0	0	0	0		21	2	23
7:15 AM - 7:30 AM		0	12	2	14		8	0	0	8		6	18	0	24		0	0	0	0		38	8	46
7:30 AM - 7:45 AM		0	13	2	15		2	0	1	3		9	19	0	28		0	0	0	0		43	3	46
7:45 AM - 8:00 AM		0	17	5	22		7	0	1	8		16	13	0	29		0	0	0	0		51	8	59
8:00 AM - 8:15 AM		0	8	2	10		5	0	1	6		10	18	0	28		0	0	0	0		38	6	44
8:15 AM - 8:30 AM		1	12	9	22		2	0	2	4		8	25	4	37		0	0	1	1		59	5	64
8:30 AM - 8:45 AM		0	9	4	13		5	0	1	6		6	23	2	31		0	0	0	0		44	6	50
8:45 AM - 9:00 AM		0	14	16	30		9	0	3	12		4	28	0	32		0	0	0	0		62	12	74
<b>Total</b>		1	100	47	148		44	0	11	55		66	205	6	277		0	0	1	1		425	56	481
<b>AM One Hour Volumes</b>																								
6:00 AM - 7:00 AM		0	9	6	15	0.75	5	0	1	6	0.50	6	48	0	54	0.64	0	0	0	0	0.00	69	6	75
6:15 AM - 7:15 AM		0	14	5	19	0.68	5	0	2	7	0.58	7	52	0	59	0.70	0	0	0	0	0.00	78	7	85
6:30 AM - 7:30 AM		0	23	5	28	0.50	12	0	2	14	0.44	13	62	0	75	0.78	0	0	0	0	0.00	103	14	117
6:45 AM - 7:45 AM		0	35	6	41	0.68	12	0	2	14	0.44	20	67	0	87	0.78	0	0	0	0	0.00	128	14	142
7:00 AM - 8:00 AM		0	48	10	58	0.66	18	0	3	21	0.66	32	63	0	95	0.82	0	0	0	0	0.00	153	21	174
7:15 AM - 8:15 AM		0	50	11	61	0.69	22	0	3	25	0.78	41	68	0	109	0.94	0	0	0	0	0.00	170	25	195
7:30 AM - 8:30 AM		1	50	18	69	0.78	16	0	5	21	0.66	43	75	4	122	0.82	0	0	1	1	0.25	191	22	213
7:45 AM - 8:45 AM		1	46	20	67	0.76	19	0	5	24	0.75	40	79	6	125	0.84	0	0	1	1	0.25	192	25	217
<b>8:00 AM - 9:00 AM</b>		1	43	31	75	0.63	21	0	7	28	0.58	28	94	6	128	0.86	0	0	1	1	0.25	203	29	232
<b>PM 15 Minute Volumes</b>																								
4:00 PM - 4:15 PM		0	11	1	12		2	0	7	9		1	21	0	22		0	0	0	0		34	9	43
4:15 PM - 4:30 PM		1	16	6	23		5	0	3	8		4	16	0	20		1	0	0	1		43	9	52
4:30 PM - 4:45 PM		1	13	3	17		5	0	8	13		3	16	0	19		1	0	2	3		36	16	52
4:45 PM - 5:00 PM		0	17	5	22		1	0	2	3		2	18	1	21		0	0	1	1		43	4	47
5:00 PM - 5:15 PM		0	22	3	25		3	0	4	7		4	15	0	19		1	0	0	1		44	8	52
5:15 PM - 5:30 PM		0	17	1	18		2	0	5	7		4	10	0	14		0	0	0	0		32	7	39
5:30 PM - 5:45 PM		0	12	4	16		4	0	9	13		3	16	0	19		0	0	0	0		35	13	48
5:45 PM - 6:00 PM		1	12	2	15		8	0	4	12		1	11	1	13		0	0	0	0		28	12	40
6:00 PM - 6:15 PM		0	14	4	18		2	0	5	7		0	18	0	18		3	0	1	4		36	11	47
6:15 PM - 6:30 PM		0	17	6	23		2	1	4	7		2	15	0	17		0	0	1	1		40	8	48
6:30 PM - 6:45 PM		0	13	0	13		2	0	1	3		1	17	0	18		0	0	0	0		31	3	34
6:45 PM - 7:00 PM		0	15	3	18		0	0	5	5		0	10	0	10		0	0	0	0		28	5	33
<b>Total</b>		3	179	38	220		36	1	57	94		25	183	2	210		6	0	5	11		430	105	535
<b>PM One Hour Volumes</b>																								
4:00 PM - 5:00 PM		2	57	15	74	0.80	13	0	20	33	0.63	10	71	1	82	0.93	2	0	3	5	0.42	156	38	194
<b>4:15 PM - 5:15 PM</b>		2	68	17	87	0.87	14	0	17	31	0.60	13	65	1	79	0.94	3	0	3	6	0.50	166	37	203
4:30 PM - 5:30 PM		1	69	12	82	0.82	11	0	19	30	0.58	13	59	1	73	0.87	2	0	3	5	0.42	155	35	190
4:45 PM - 5:45 PM		0	68	13	81	0.81	10	0	20	30	0.58	13	59	1	73	0.87	1	0	1	2	0.50	154	32	186
5:00 PM - 6:00 PM		1	63	10	74	0.74	17	0	22	39	0.75	12	52	1	65	0.86	1	0	0	1	0.25	139	40	179
5:15 PM - 6:15 PM		1	55	11	67	0.93	16	0	23	39	0.75	8	55	1	64	0.84	3	0	1	4	0.25	131	43	174
5:30 PM - 6:30 PM		1	55	16	72	0.78	16	1	22	39	0.75	6	60	1	67	0.88	3	0	2	5	0.31	139	44	183
5:45 PM - 6:45 PM		1	56	12	69	0.75	14	1	14	29	0.60	4	61	1	66	0.92	3	0	2	5	0.31	135	34	169
6:00 PM - 7:00 PM		0	59	13	72	0.78	6	1	15	22	0.79	3	60	0	63	0.88	3	0	2	5	0.31	135	27	162

# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - All Vehicles

Time Period		Southbound Walnut Street					Westbound Second Street					Northbound Walnut Street					Eastbound Second Street					North & South	East & West	Total
		Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF			
<b>AM 15 Minute Volumes</b>																								
6:00 AM - 6:15 AM		1	1	0	2		1	0	0	1		0	9	0	9		0	0	0	0		11	1	12
6:15 AM - 6:30 AM		0	2	1	3		0	0	0	0		0	10	0	10		1	0	0	1		13	1	14
6:30 AM - 6:45 AM		0	1	0	1		0	1	0	1		0	14	0	14		0	0	0	0		15	1	16
6:45 AM - 7:00 AM		0	3	0	3		0	2	0	2		1	21	0	22		1	0	1	2		25	4	29
7:00 AM - 7:15 AM		0	7	0	7		1	1	0	2		0	20	0	20		0	3	1	4		27	6	33
7:15 AM - 7:30 AM		0	15	0	15		1	0	0	1		0	11	3	14		0	0	3	3		29	4	33
7:30 AM - 7:45 AM		0	10	0	10		0	0	0	0		0	26	0	26		2	3	3	8		36	8	44
7:45 AM - 8:00 AM		0	18	0	18		1	1	0	2		2	23	2	27		3	4	5	12		45	14	59
8:00 AM - 8:15 AM		0	7	1	8		3	0	1	4		0	29	0	29		1	0	3	4		37	8	45
8:15 AM - 8:30 AM		1	11	2	14		0	1	1	2		0	32	0	32		2	3	0	5		46	7	53
8:30 AM - 8:45 AM		1	13	0	14		0	0	0	0		1	25	0	26		3	2	5	10		40	10	50
8:45 AM - 9:00 AM		2	10	0	12		2	0	2	4		0	23	1	24		3	3	5	11		36	15	51
<b>Total</b>		<b>5</b>	<b>98</b>	<b>4</b>	<b>107</b>		<b>9</b>	<b>6</b>	<b>4</b>	<b>19</b>		<b>4</b>	<b>243</b>	<b>6</b>	<b>253</b>		<b>16</b>	<b>18</b>	<b>26</b>	<b>60</b>		<b>360</b>	<b>79</b>	<b>439</b>
<b>AM One Hour Volumes</b>																								
6:00 AM - 7:00 AM		1	7	1	9	0.75	1	3	0	4	0.50	1	54	0	55	0.63	2	0	1	3	0.38	64	7	71
6:15 AM - 7:15 AM		0	13	1	14	0.50	1	4	0	5	0.63	1	65	0	66	0.75	2	3	2	7	0.44	80	12	92
6:30 AM - 7:30 AM		0	26	0	26	0.43	2	4	0	6	0.75	1	66	3	70	0.80	1	3	5	9	0.56	96	15	111
6:45 AM - 7:45 AM		0	35	0	35	0.58	2	3	0	5	0.63	1	78	3	82	0.79	3	6	8	17	0.53	117	22	139
7:00 AM - 8:00 AM		0	50	0	50	0.69	3	2	0	5	0.63	2	80	5	87	0.81	5	10	12	27	0.56	137	32	169
7:15 AM - 8:15 AM		0	50	1	51	0.71	5	1	1	7	0.44	2	89	5	96	0.83	6	7	14	27	0.56	147	34	181
7:30 AM - 8:30 AM		1	46	3	50	0.69	4	2	2	8	0.50	2	110	2	114	0.89	8	10	11	29	0.60	164	37	201
<b>7:45 AM - 8:45 AM</b>		<b>2</b>	<b>49</b>	<b>3</b>	<b>54</b>	<b>0.75</b>	<b>4</b>	<b>2</b>	<b>2</b>	<b>8</b>	<b>0.50</b>	<b>3</b>	<b>109</b>	<b>2</b>	<b>114</b>	<b>0.89</b>	<b>9</b>	<b>9</b>	<b>13</b>	<b>31</b>	<b>0.65</b>	<b>168</b>	<b>39</b>	<b>207</b>
8:00 AM - 9:00 AM		4	41	3	48	0.86	5	1	4	10	0.63	1	109	1	111	0.87	9	8	13	30	0.68	159	40	199
<b>PM 15 Minute Volumes</b>																								
4:00 PM - 4:15 PM		1	20	0	21		0	0	1	1		0	22	1	23		1	1	0	2		44	3	47
4:15 PM - 4:30 PM		0	21	1	22		0	0	0	0		0	14	1	15		1	2	4	7		37	7	44
4:30 PM - 4:45 PM		4	17	1	22		0	0	1	1		0	15	0	15		2	1	0	3		37	4	41
4:45 PM - 5:00 PM		1	19	0	20		0	2	0	2		0	19	2	21		1	1	1	3		41	5	46
5:00 PM - 5:15 PM		1	25	1	27		0	0	0	0		1	17	3	21		1	4	0	5		48	5	53
5:15 PM - 5:30 PM		0	22	2	24		1	0	0	1		0	14	0	14		0	5	0	5		38	6	44
5:30 PM - 5:45 PM		0	23	0	23		0	3	0	3		0	16	1	17		1	1	0	2		40	5	45
5:45 PM - 6:00 PM		0	14	0	14		0	1	1	2		1	13	0	14		2	3	0	5		28	7	35
6:00 PM - 6:15 PM		1	18	2	21		0	1	0	1		2	17	0	19		2	4	0	6		40	7	47
6:15 PM - 6:30 PM		1	21	0	22		1	0	0	1		0	13	1	14		0	3	0	3		36	4	40
6:30 PM - 6:45 PM		0	14	0	14		0	0	1	1		0	20	1	21		0	2	0	2		35	3	38
6:45 PM - 7:00 PM		1	19	0	20		0	1	0	1		0	10	0	10		2	0	1	3		30	4	34
<b>Total</b>		<b>10</b>	<b>233</b>	<b>7</b>	<b>250</b>		<b>2</b>	<b>8</b>	<b>4</b>	<b>14</b>		<b>4</b>	<b>190</b>	<b>10</b>	<b>204</b>		<b>13</b>	<b>27</b>	<b>6</b>	<b>46</b>		<b>454</b>	<b>60</b>	<b>514</b>
<b>PM One Hour Volumes</b>																								
4:00 PM - 5:00 PM		6	77	2	85	0.97	0	2	2	4	0.50	0	70	4	74	0.80	5	5	5	15	0.54	159	19	178
4:15 PM - 5:15 PM		6	82	3	91	0.84	0	2	1	3	0.38	1	65	6	72	0.86	5	8	5	18	0.64	163	21	184
4:30 PM - 5:30 PM		6	83	4	93	0.86	1	2	1	4	0.50	1	65	5	71	0.85	4	11	1	16	0.80	164	20	184
<b>4:45 PM - 5:45 PM</b>		<b>2</b>	<b>89</b>	<b>3</b>	<b>94</b>	<b>0.87</b>	<b>1</b>	<b>5</b>	<b>0</b>	<b>6</b>	<b>0.50</b>	<b>1</b>	<b>66</b>	<b>6</b>	<b>73</b>	<b>0.87</b>	<b>3</b>	<b>11</b>	<b>1</b>	<b>15</b>	<b>0.75</b>	<b>167</b>	<b>21</b>	<b>188</b>
5:00 PM - 6:00 PM		1	84	3	88	0.81	1	4	1	6	0.50	2	60	4	66	0.79	4	13	0	17	0.85	154	23	177
5:15 PM - 6:15 PM		1	77	4	82	0.85	1	5	1	7	0.58	3	60	1	64	0.84	5	13	0	18	0.75	146	25	171
5:30 PM - 6:30 PM		2	76	2	80	0.87	1	5	1	7	0.58	3	59	2	64	0.84	5	11	0	16	0.67	144	23	167
5:45 PM - 6:45 PM		2	67	2	71	0.81	1	2	2	5	0.63	3	63	2	68	0.81	4	12	0	16	0.67	139	21	160
6:00 PM - 7:00 PM		3	72	2	77	0.88	1	2	1	4	1.00	2	60	2	64	0.76	4	9	1	14	0.58	141	18	159

# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - All Vehicles

Time Period		Southbound Oak Street					Westbound N/A					Northbound Oak Street					Eastbound Second Street					North & South	East & West	Total
		Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF			
<b>AM 15 Minute Volumes</b>																								
6:00 AM - 6:15 AM		0	8	0	8		0	0	0	0		0	9	0	9		0	0	0	0		17	0	17
6:15 AM - 6:30 AM		0	5	0	5		0	0	0	0		0	8	0	8		1	0	0	1		13	1	14
6:30 AM - 6:45 AM		0	3	0	3		0	0	0	0		0	13	0	13		0	0	0	0		16	0	16
6:45 AM - 7:00 AM		1	4	0	5		0	0	0	0		0	14	0	14		2	0	0	2		19	2	21
7:00 AM - 7:15 AM		0	5	0	5		0	0	0	0		0	19	0	19		1	0	1	2		24	2	26
7:15 AM - 7:30 AM		0	11	0	11		0	0	0	0		0	15	0	15		0	0	0	0		26	0	26
7:30 AM - 7:45 AM		1	14	0	15		0	0	0	0		0	19	0	19		3	0	0	3		34	3	37
7:45 AM - 8:00 AM		0	20	0	20		0	0	0	0		0	19	0	19		4	0	2	6		39	6	45
8:00 AM - 8:15 AM		2	23	0	25		0	0	0	0		0	23	1	24		0	0	0	0		49	0	49
8:15 AM - 8:30 AM		1	36	0	37		0	0	0	0		0	23	0	23		5	0	0	5		60	5	65
8:30 AM - 8:45 AM		0	20	0	20		0	0	0	0		0	27	0	27		2	0	0	2		47	2	49
8:45 AM - 9:00 AM		0	33	0	33		0	0	0	0		0	28	1	29		0	0	1	1		62	1	63
<b>Total</b>		5	182	0	187		0	0	0	0		0	217	2	219		18	0	4	22		406	22	428
<b>AM One Hour Volumes</b>																								
6:00 AM - 7:00 AM		1	20	0	21	0.66	0	0	0	0	0.00	0	44	0	44	0.79	3	0	0	3	0.38	65	3	68
6:15 AM - 7:15 AM		1	17	0	18	0.90	0	0	0	0	0.00	0	54	0	54	0.71	4	0	1	5	0.63	72	5	77
6:30 AM - 7:30 AM		1	23	0	24	0.55	0	0	0	0	0.00	0	61	0	61	0.80	3	0	1	4	0.50	85	4	89
6:45 AM - 7:45 AM		2	34	0	36	0.60	0	0	0	0	0.00	0	67	0	67	0.88	6	0	1	7	0.58	103	7	110
7:00 AM - 8:00 AM		1	50	0	51	0.64	0	0	0	0	0.00	0	72	0	72	0.95	8	0	3	11	0.46	123	11	134
7:15 AM - 8:15 AM		3	68	0	71	0.71	0	0	0	0	0.00	0	76	1	77	0.80	7	0	2	9	0.38	148	9	157
7:30 AM - 8:30 AM		4	93	0	97	0.66	0	0	0	0	0.00	0	84	1	85	0.89	12	0	2	14	0.58	182	14	196
7:45 AM - 8:45 AM		3	99	0	102	0.69	0	0	0	0	0.00	0	92	1	93	0.86	11	0	2	13	0.54	195	13	208
<b>8:00 AM - 9:00 AM</b>		3	112	0	115	0.78	0	0	0	0	0.00	0	101	2	103	0.89	7	0	1	8	0.40	218	8	226
<b>PM 15 Minute Volumes</b>																								
4:00 PM - 4:15 PM		1	16	0	17		0	0	0	0		0	21	1	22		0	0	0	0		39	0	39
4:15 PM - 4:30 PM		0	16	0	16		0	0	0	0		0	20	0	20		1	0	0	1		36	1	37
4:30 PM - 4:45 PM		1	25	0	26		0	0	0	0		0	25	0	25		1	0	0	1		51	1	52
4:45 PM - 5:00 PM		0	31	0	31		0	0	0	0		0	17	3	20		1	0	1	2		51	2	53
5:00 PM - 5:15 PM		0	21	0	21		0	0	0	0		0	23	0	23		4	0	1	5		44	5	49
5:15 PM - 5:30 PM		1	22	0	23		0	0	0	0		0	30	1	31		4	0	1	5		54	5	59
5:30 PM - 5:45 PM		2	25	0	27		0	0	0	0		0	17	1	18		0	0	0	0		45	0	45
5:45 PM - 6:00 PM		3	15	0	18		0	0	0	0		0	30	1	31		3	0	0	3		49	3	52
6:00 PM - 6:15 PM		4	16	0	20		0	0	0	0		0	15	0	15		4	0	2	6		35	6	41
6:15 PM - 6:30 PM		0	26	0	26		0	0	0	0		0	7	1	8		2	0	1	3		34	3	37
6:30 PM - 6:45 PM		0	17	0	17		0	0	0	0		0	14	0	14		1	0	0	1		31	1	32
6:45 PM - 7:00 PM		0	18	0	18		0	0	0	0		0	14	1	15		2	0	1	3		33	3	36
<b>Total</b>		12	248	0	260		0	0	0	0		0	233	9	242		23	0	7	30		502	30	532
<b>PM One Hour Volumes</b>																								
4:00 PM - 5:00 PM		2	88	0	90	0.73	0	0	0	0	0.00	0	83	4	87	0.87	3	0	1	4	0.50	177	4	181
4:15 PM - 5:15 PM		1	93	0	94	0.76	0	0	0	0	0.00	0	85	3	88	0.88	7	0	2	9	0.45	182	9	191
<b>4:30 PM - 5:30 PM</b>		2	99	0	101	0.81	0	0	0	0	0.00	0	95	4	99	0.80	10	0	3	13	0.65	200	13	213
4:45 PM - 5:45 PM		3	99	0	102	0.82	0	0	0	0	0.00	0	87	5	92	0.74	9	0	3	12	0.60	194	12	206
5:00 PM - 6:00 PM		6	83	0	89	0.82	0	0	0	0	0.00	0	100	3	103	0.83	11	0	2	13	0.65	192	13	205
5:15 PM - 6:15 PM		10	78	0	88	0.81	0	0	0	0	0.00	0	92	3	95	0.77	11	0	3	14	0.58	183	14	197
5:30 PM - 6:30 PM		9	82	0	91	0.84	0	0	0	0	0.00	0	69	3	72	0.58	9	0	3	12	0.50	163	12	175
5:45 PM - 6:45 PM		7	74	0	81	0.78	0	0	0	0	0.00	0	66	2	68	0.55	10	0	3	13	0.54	149	13	162
6:00 PM - 7:00 PM		4	77	0	81	0.78	0	0	0	0	0.00	0	50	2	52	0.87	9	0	4	13	0.54	133	13	146

# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - All Vehicles

Time Period		Southbound Oak Street					Westbound Panther Place					Northbound Oak Street					Eastbound Cedar Avenue					North & South	East & West	Total
		Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF			
<b>AM 15 Minute Volumes</b>																								
6:00 AM - 6:15 AM		2	9	1	12		0	1	0	1		0	8	0	8		1	1	1	3		20	4	24
6:15 AM - 6:30 AM		0	5	2	7		0	0	0	0		0	8	1	9		1	1	0	2		16	2	18
6:30 AM - 6:45 AM		1	3	0	4		0	0	0	0		1	12	0	13		0	1	2	3		17	3	20
6:45 AM - 7:00 AM		0	6	1	7		0	0	0	0		1	12	1	14		0	2	4	6		21	6	27
7:00 AM - 7:15 AM		2	6	1	9		1	1	1	3		3	16	0	19		1	0	2	3		28	6	34
7:15 AM - 7:30 AM		2	10	0	12		1	0	0	1		2	14	1	17		2	0	5	7		29	8	37
7:30 AM - 7:45 AM		0	13	1	14		1	0	0	1		4	13	0	17		1	5	7	13		31	14	45
7:45 AM - 8:00 AM		2	21	6	29		1	2	2	5		4	15	1	20		1	12	5	18		49	23	72
8:00 AM - 8:15 AM		0	19	5	24		6	2	7	15		8	22	0	30		0	7	7	14		54	29	83
8:15 AM - 8:30 AM		2	26	1	29		8	1	5	14		7	16	0	23		2	4	6	12		52	26	78
8:30 AM - 8:45 AM		1	14	11	26		5	2	6	13		5	22	1	28		4	4	5	13		54	26	80
8:45 AM - 9:00 AM		1	22	16	39		17	3	13	33		9	22	0	31		3	14	2	19		70	52	122
<b>Total</b>		13	154	45	212		40	12	34	86		44	180	5	229		16	51	46	113		441	199	640
<b>AM One Hour Volumes</b>																								
6:00 AM - 7:00 AM		3	23	4	30	0.63	0	1	0	1	0.25	2	40	2	44	0.79	2	5	7	14	0.58	74	15	89
6:15 AM - 7:15 AM		3	20	4	27	0.75	1	1	1	3	0.25	5	48	2	55	0.72	2	4	8	14	0.58	82	17	99
6:30 AM - 7:30 AM		5	25	2	32	0.67	2	1	1	4	0.33	7	54	2	63	0.83	3	3	13	19	0.68	95	23	118
6:45 AM - 7:45 AM		4	35	3	42	0.75	3	1	1	5	0.42	10	55	2	67	0.88	4	7	18	29	0.56	109	34	143
7:00 AM - 8:00 AM		6	50	8	64	0.55	4	3	3	10	0.50	13	58	2	73	0.91	5	17	19	41	0.57	137	51	188
7:15 AM - 8:15 AM		4	63	12	79	0.68	9	4	9	22	0.37	18	64	2	84	0.70	4	24	24	52	0.72	163	74	237
7:30 AM - 8:30 AM		4	79	13	96	0.83	16	5	14	35	0.58	23	66	1	90	0.75	4	28	25	57	0.79	186	92	278
7:45 AM - 8:45 AM		5	80	23	108	0.93	20	7	20	47	0.78	24	75	2	101	0.84	7	27	23	57	0.79	209	104	313
<b>8:00 AM - 9:00 AM</b>		<b>4</b>	<b>81</b>	<b>33</b>	<b>118</b>	<b>0.76</b>	<b>36</b>	<b>8</b>	<b>31</b>	<b>75</b>	<b>0.57</b>	<b>29</b>	<b>82</b>	<b>1</b>	<b>112</b>	<b>0.90</b>	<b>9</b>	<b>29</b>	<b>20</b>	<b>58</b>	<b>0.76</b>	<b>230</b>	<b>133</b>	<b>363</b>
<b>PM 15 Minute Volumes</b>																								
4:00 PM - 4:15 PM		7	20	3	30		1	2	1	4		4	20	1	25		0	0	1	1		55	5	60
4:15 PM - 4:30 PM		5	20	0	25		4	4	2	10		1	17	0	18		4	4	3	11		43	21	64
4:30 PM - 4:45 PM		8	25	3	36		3	3	3	9		1	27	2	30		3	1	2	6		66	15	81
4:45 PM - 5:00 PM		2	30	0	32		1	1	0	2		1	18	1	20		3	0	4	7		52	9	61
5:00 PM - 5:15 PM		5	23	1	29		1	0	2	3		1	24	2	27		2	1	3	6		56	9	65
5:15 PM - 5:30 PM		4	20	1	25		1	1	3	5		1	30	1	32		2	1	3	5		57	10	67
5:30 PM - 5:45 PM		8	28	0	36		0	1	1	2		0	18	1	19		2	1	2	5		55	7	62
5:45 PM - 6:00 PM		4	19	2	25		1	2	1	4		0	32	3	35		1	1	1	3		60	7	67
6:00 PM - 6:15 PM		3	20	1	24		0	0	2	2		0	19	2	21		3	0	0	3		45	5	50
6:15 PM - 6:30 PM		4	19	1	24		0	1	1	2		0	8	0	8		3	0	2	5		32	7	39
6:30 PM - 6:45 PM		2	22	0	24		0	0	0	0		0	15	1	16		0	0	1	1		40	1	41
6:45 PM - 7:00 PM		5	20	0	25		0	0	0	0		0	11	0	11		1	0	0	1		36	1	37
<b>Total</b>		<b>57</b>	<b>266</b>	<b>12</b>	<b>335</b>		<b>12</b>	<b>15</b>	<b>16</b>	<b>43</b>		<b>9</b>	<b>239</b>	<b>14</b>	<b>262</b>		<b>23</b>	<b>9</b>	<b>22</b>	<b>54</b>		<b>597</b>	<b>97</b>	<b>694</b>
<b>PM One Hour Volumes</b>																								
4:00 PM - 5:00 PM		22	95	6	123	0.85	9	10	6	25	0.63	7	82	4	93	0.78	10	5	10	25	0.57	216	50	266
4:15 PM - 5:15 PM		20	98	4	122	0.85	9	8	7	24	0.60	4	86	5	95	0.79	12	6	12	30	0.68	217	54	271
<b>4:30 PM - 5:30 PM</b>		<b>19</b>	<b>98</b>	<b>5</b>	<b>122</b>	<b>0.85</b>	<b>6</b>	<b>5</b>	<b>8</b>	<b>19</b>	<b>0.53</b>	<b>4</b>	<b>99</b>	<b>6</b>	<b>109</b>	<b>0.85</b>	<b>9</b>	<b>3</b>	<b>12</b>	<b>24</b>	<b>0.86</b>	<b>231</b>	<b>43</b>	<b>274</b>
4:45 PM - 5:45 PM		19	101	2	122	0.85	3	3	6	12	0.60	3	90	5	98	0.77	8	3	12	23	0.82	220	35	255
5:00 PM - 6:00 PM		21	90	4	115	0.80	3	4	7	14	0.70	2	104	7	113	0.81	6	4	9	19	0.79	228	33	261
5:15 PM - 6:15 PM		19	87	4	110	0.76	2	4	7	13	0.65	1	99	7	107	0.76	7	3	6	16	0.80	217	29	246
5:30 PM - 6:30 PM		19	86	4	109	0.76	1	4	5	10	0.63	0	77	6	83	0.59	9	2	5	16	0.80	192	26	218
5:45 PM - 6:45 PM		13	80	4	97	0.97	1	3	4	8	0.50	0	74	6	80	0.57	7	1	4	12	0.60	177	20	197
6:00 PM - 7:00 PM		14	81	2	97	0.97	0	1	3	4	0.50	0	53	3	56	0.67	7	0	3	10	0.50	153	14	167

**APPENDIX C**  
**EXISTING CAPACITY ANALYSIS WORKSHEETS**







# HCM Signalized Intersection Capacity Analysis

## 1: Oak Street/Meredith Drive & Fairfax Boulevard

07/29/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	21	1692	18	67	588	3	38	12	79	9	1	18	
Future Volume (vph)	21	1692	18	67	588	3	38	12	79	9	1	18	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	4.6		5.6	4.6			4.5	4.5		4.5		
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00		
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.91		
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.98		
Satd. Flow (prot)	1597	3500		1805	3404			1830	1615		1708		
Flt Permitted	0.37	1.00		0.03	1.00			0.96	1.00		0.98		
Satd. Flow (perm)	621	3500		66	3404			1830	1615		1708		
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	
Adj. Flow (vph)	25	1991	21	79	692	4	45	14	93	11	1	21	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	86	0	20	0	
Lane Group Flow (vph)	25	2012	0	79	696	0	0	59	7	0	13	0	
Heavy Vehicles (%)	13%	3%	0%	0%	6%	0%	0%	0%	0%	0%	0%	0%	
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Perm	Split	NA		
Protected Phases	5	2		1	6		4	4		7	7		
Permitted Phases	2			6					4				
Actuated Green, G (s)	132.5	126.7		140.9	130.9			11.6	11.6		6.5		
Effective Green, g (s)	134.5	128.7		142.9	132.9			13.6	13.6		8.5		
Actuated g/C Ratio	0.71	0.68		0.75	0.70			0.07	0.07		0.04		
Clearance Time (s)	6.6	6.6		6.6	6.6			6.5	6.5		6.5		
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0		
Lane Grp Cap (vph)	474	2370		150	2381			130	115		76		
v/s Ratio Prot	0.00	c0.57		c0.03	0.20			c0.03			c0.01		
v/s Ratio Perm	0.04			0.36					0.00				
v/c Ratio	0.05	0.85		0.53	0.29			0.45	0.06		0.17		
Uniform Delay, d1	8.3	23.3		44.6	10.8			84.6	82.2		87.4		
Progression Factor	0.83	0.64		1.00	1.00			1.00	1.00		1.00		
Incremental Delay, d2	0.0	3.0		3.3	0.3			2.5	0.2		1.1		
Delay (s)	6.9	17.9		47.9	11.1			87.1	82.4		88.4		
Level of Service	A	B		D	B			F	F		F		
Approach Delay (s)		17.8			14.9			84.3			88.4		
Approach LOS		B			B			F			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			21.2									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.74										
Actuated Cycle Length (s)			190.0									Sum of lost time (s)	24.2
Intersection Capacity Utilization			71.6%									ICU Level of Service	C
Analysis Period (min)			15										
c	Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 2: Walnut Street/Fairchester Drive & Fairfax Boulevard

07/29/2019



















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (vph)	10	1661	17	20	606	18	13	26	45	25	25	12
Future Volume (vph)	10	1661	17	20	606	18	13	26	45	25	25	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6		5.6	5.6		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1671	3501		1805	3397		1805	1572		1752	1771	
Flt Permitted	0.36	1.00		0.07	1.00		0.73	1.00		0.47	1.00	
Satd. Flow (perm)	636	3501		127	3397		1385	1572		871	1771	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	12	1954	20	24	713	21	15	31	53	29	29	14
RTOR Reduction (vph)	0	0	0	0	1	0	0	40	0	0	10	0
Lane Group Flow (vph)	12	1974	0	24	733	0	15	44	0	29	33	0
Heavy Vehicles (%)	8%	3%	0%	0%	6%	0%	0%	5%	12%	3%	3%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			7				3
Permitted Phases	2			6			7			3		
Actuated Green, G (s)	148.5	145.7		151.3	147.1		20.4	20.4		9.3	9.3	
Effective Green, g (s)	150.5	146.7		153.3	148.1		22.4	22.4		11.3	11.3	
Actuated g/C Ratio	0.79	0.77		0.81	0.78		0.12	0.12		0.06	0.06	
Clearance Time (s)	6.6	6.6		6.6	6.6		6.5	6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	524	2703		148	2647		163	185		51	105	
v/s Ratio Prot	0.00	c0.56		c0.00	0.22			c0.03			0.02	
v/s Ratio Perm	0.02			0.13			0.01			c0.03		
v/c Ratio	0.02	0.73		0.16	0.28		0.09	0.24		0.57	0.31	
Uniform Delay, d1	4.2	11.3		12.6	5.9		74.7	76.1		87.0	85.6	
Progression Factor	1.00	1.00		0.98	0.42		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	1.8		0.5	0.3		0.2	0.7		13.7	1.7	
Delay (s)	4.2	13.1		12.9	2.7		75.0	76.7		100.7	87.3	
Level of Service	A	B		B	A		E	E		F	F	
Approach Delay (s)		13.0			3.0			76.5			92.7	
Approach LOS		B			A			E			F	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			14.6				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			190.0				Sum of lost time (s)			20.7		
Intersection Capacity Utilization			62.9%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Unsignalized Intersection Capacity Analysis

















## 3: Walnut Street & Cedar Avenue

07/29/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	7	0	21	6	94	28	31	43	1
Future Volume (Veh/h)	0	0	0	7	0	21	6	94	28	31	43	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	0	0	0	8	0	25	7	111	33	36	51	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)											366	
pX, platoon unblocked												
vC, conflicting volume	290	282	52	265	266	128	52			144		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	290	282	52	265	266	128	52			144		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	99	100	97	100			97		
cM capacity (veh/h)	630	609	1016	672	621	923	1554			1438		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	33	151	88								
Volume Left	0	8	7	36								
Volume Right	0	25	33	1								
cSH	1700	846	1554	1438								
Volume to Capacity	0.00	0.04	0.00	0.03								
Queue Length 95th (ft)	0	3	0	2								
Control Delay (s)	0.0	9.4	0.4	3.2								
Lane LOS	A	A	A	A								
Approach Delay (s)	0.0	9.4	0.4	3.2								
Approach LOS	A	A										
<b>Intersection Summary</b>												
Average Delay			2.4									
Intersection Capacity Utilization			24.4%		ICU Level of Service				A			
Analysis Period (min)			15									

















HCM Unsignalized Intersection Capacity Analysis  
4: Walnut Street & Second Street

07/29/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	13	9	9	2	2	4	2	109	3	3	49	2
Future Volume (vph)	13	9	9	2	2	4	2	109	3	3	49	2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	15	11	11	2	2	5	2	128	4	4	58	2
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	37	9	134	64								
Volume Left (vph)	15	2	2	4								
Volume Right (vph)	11	5	4	2								
Hadj (s)	-0.06	-0.25	0.02	0.03								
Departure Headway (s)	4.3	4.1	4.1	4.2								
Degree Utilization, x	0.04	0.01	0.15	0.07								
Capacity (veh/h)	801	828	860	847								
Control Delay (s)	7.5	7.2	7.8	7.5								
Approach Delay (s)	7.5	7.2	7.8	7.5								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.7									
Level of Service			A									
Intersection Capacity Utilization			16.5%	ICU Level of Service								A
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 5: Oak Street & Second Street/Driveway

















07/29/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	1	0	7	0	0	0	2	101	0	0	112	3
Future Volume (vph)	1	0	7	0	0	0	2	101	0	0	112	3
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1	0	8	0	0	0	2	119	0	0	132	4
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	9	0	121	136								
Volume Left (vph)	1	0	2	0								
Volume Right (vph)	8	0	0	4								
Hadj (s)	-0.48	0.00	0.04	0.02								
Departure Headway (s)	4.0	4.5	4.1	4.0								
Degree Utilization, x	0.01	0.00	0.14	0.15								
Capacity (veh/h)	848	771	864	879								
Control Delay (s)	7.0	7.5	7.7	7.8								
Approach Delay (s)	7.0	0.0	7.7	7.8								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.7									
Level of Service			A									
Intersection Capacity Utilization			16.9%	ICU Level of Service	A							
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 6: Oak Street & Cedar Avenue

07/29/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	20	29	9	31	8	36	1	82	29	33	81	4
Future Volume (vph)	20	29	9	31	8	36	1	82	29	33	81	4
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	24	34	11	36	9	42	1	96	34	39	95	5
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	69	87	131	139								
Volume Left (vph)	24	36	1	39								
Volume Right (vph)	11	42	34	5								
Hadj (s)	0.01	-0.17	-0.12	0.07								
Departure Headway (s)	4.6	4.4	4.3	4.5								
Degree Utilization, x	0.09	0.11	0.16	0.17								
Capacity (veh/h)	719	753	796	762								
Control Delay (s)	8.1	8.0	8.1	8.4								
Approach Delay (s)	8.1	8.0	8.1	8.4								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.2									
Level of Service			A									
Intersection Capacity Utilization			25.8%	ICU Level of Service	A							
Analysis Period (min)			15									

# HCM Signalized Intersection Capacity Analysis

## 1: Oak Street/Meredith Drive & Fairfax Boulevard

07/29/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕	↗		↕	↗
Traffic Volume (vph)	32	1031	22	76	1455	0	21	4	88	15	9	18
Future Volume (vph)	32	1031	22	76	1455	0	21	4	88	15	9	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.6		5.6	4.6			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1597	3496		1805	3406			1824	1615		1761	
Flt Permitted	0.09	1.00		0.18	1.00			0.96	1.00		0.98	
Satd. Flow (perm)	156	3496		342	3406			1824	1615		1761	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	38	1213	26	89	1712	0	25	5	104	18	11	21
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	99	0	12	0
Lane Group Flow (vph)	38	1239	0	89	1712	0	0	30	5	0	38	0
Heavy Vehicles (%)	13%	3%	0%	0%	6%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		7	7	
Permitted Phases	2			6					4			
Actuated Green, G (s)	162.9	156.7		166.9	158.7			9.4	9.4		10.5	
Effective Green, g (s)	164.9	158.7		168.9	160.7			11.4	11.4		12.5	
Actuated g/C Ratio	0.75	0.72		0.77	0.73			0.05	0.05		0.06	
Clearance Time (s)	6.6	6.6		6.6	6.6			6.5	6.5		6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	164	2521		323	2487			94	83		100	
v/s Ratio Prot	0.01	0.35		c0.01	c0.50			c0.02			c0.02	
v/s Ratio Perm	0.17			0.20					0.00			
v/c Ratio	0.23	0.49		0.28	0.69			0.32	0.06		0.38	
Uniform Delay, d1	14.6	13.2		9.2	16.1			100.6	99.2		100.0	
Progression Factor	0.81	0.61		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.7	0.6		0.5	1.6			2.0	0.3		2.4	
Delay (s)	12.5	8.7		9.7	17.7			102.5	99.6		102.4	
Level of Service	B	A		A	B			F	F		F	
Approach Delay (s)		8.8			17.3			100.2			102.4	
Approach LOS		A			B			F			F	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			18.7	HCM 2000 Level of Service				B				
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			220.0	Sum of lost time (s)				24.2				
Intersection Capacity Utilization			67.4%	ICU Level of Service				C				
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 2: Walnut Street/Fairchester Drive & Fairfax Boulevard

07/29/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	1018	11	22	1458	14	16	26	34	33	23	14
Future Volume (vph)	21	1018	11	22	1458	14	16	26	34	33	23	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6		5.6	5.6		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.92		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1671	3500		1805	3403		1805	1597		1752	1761	
Flt Permitted	0.10	1.00		0.21	1.00		0.71	1.00		0.54	1.00	
Satd. Flow (perm)	183	3500		390	3403		1355	1597		995	1761	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	25	1198	13	26	1715	16	19	31	40	39	27	16
RTOR Reduction (vph)	0	0	0	0	0	0	0	25	0	0	10	0
Lane Group Flow (vph)	25	1211	0	26	1731	0	19	46	0	39	33	0
Heavy Vehicles (%)	8%	3%	0%	0%	6%	0%	0%	5%	12%	3%	3%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			7			3	
Permitted Phases	2			6			7			3		
Actuated Green, G (s)	178.2	172.5		178.2	172.5		22.1	22.1		12.7	12.7	
Effective Green, g (s)	180.2	173.5		180.2	173.5		24.1	24.1		14.7	14.7	
Actuated g/C Ratio	0.82	0.79		0.82	0.79		0.11	0.11		0.07	0.07	
Clearance Time (s)	6.6	6.6		6.6	6.6		6.5	6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	195	2760		362	2683		148	174		66	117	
v/s Ratio Prot	c0.00	0.35		0.00	c0.51			c0.03			0.02	
v/s Ratio Perm	0.10			0.06			0.01			c0.04		
v/c Ratio	0.13	0.44		0.07	0.65		0.13	0.26		0.59	0.28	
Uniform Delay, d1	8.1	7.5		4.6	10.0		88.5	89.8		99.7	97.6	
Progression Factor	1.00	1.00		0.15	0.07		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.5		0.1	0.9		0.4	0.8		13.4	1.3	
Delay (s)	8.4	8.0		0.7	1.6		88.9	90.6		113.1	98.9	
Level of Service	A	A		A	A		F	F		F	F	
Approach Delay (s)		8.0			1.6			90.3			105.7	
Approach LOS		A			A			F			F	

















Intersection Summary			
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	220.0	Sum of lost time (s)	20.7
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



# HCM Unsignalized Intersection Capacity Analysis

















## 3: Walnut Street & Cedar Avenue

07/29/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	0	3	17	0	14	1	65	13	17	68	2
Future Volume (Veh/h)	3	0	3	17	0	14	1	65	13	17	68	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	4	0	4	20	0	16	1	76	15	20	80	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)											366	
pX, platoon unblocked												
vC, conflicting volume	222	214	81	210	208	84	82			91		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	222	214	81	210	208	84	82			91		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	100	97	100	98	100			99		
cM capacity (veh/h)	714	674	979	736	680	976	1515			1504		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	8	36	92	102								
Volume Left	4	20	1	20								
Volume Right	4	16	15	2								
cSH	825	826	1515	1504								
Volume to Capacity	0.01	0.04	0.00	0.01								
Queue Length 95th (ft)	1	3	0	1								
Control Delay (s)	9.4	9.6	0.1	1.5								
Lane LOS	A	A	A	A								
Approach Delay (s)	9.4	9.6	0.1	1.5								
Approach LOS	A	A										
Intersection Summary												
Average Delay			2.5									
Intersection Capacity Utilization			21.3%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 4: Walnut Street & Second Street

















07/29/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	1	11	3	0	5	1	6	66	1	3	89	2
Future Volume (vph)	1	11	3	0	5	1	6	66	1	3	89	2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1	13	4	0	6	1	7	78	1	4	105	2
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	18	7	86	111								
Volume Left (vph)	1	0	7	4								
Volume Right (vph)	4	1	1	2								
Hadj (s)	-0.09	-0.05	0.04	0.03								
Departure Headway (s)	4.2	4.3	4.1	4.1								
Degree Utilization, x	0.02	0.01	0.10	0.13								
Capacity (veh/h)	806	797	857	872								
Control Delay (s)	7.3	7.3	7.5	7.7								
Approach Delay (s)	7.3	7.3	7.5	7.7								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.6									
Level of Service			A									
Intersection Capacity Utilization			16.2%	ICU Level of Service	A							
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

















## 5: Oak Street & Second Street/Driveway

07/29/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	3	0	10	0	0	0	4	95	0	0	99	2
Future Volume (vph)	3	0	10	0	0	0	4	95	0	0	99	2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	4	0	12	0	0	0	5	112	0	0	116	2
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	16	0	117	118								
Volume Left (vph)	4	0	5	0								
Volume Right (vph)	12	0	0	2								
Hadj (s)	-0.37	0.00	0.04	0.02								
Departure Headway (s)	4.0	4.4	4.1	4.1								
Degree Utilization, x	0.02	0.00	0.13	0.13								
Capacity (veh/h)	839	780	862	873								
Control Delay (s)	7.1	7.4	7.7	7.7								
Approach Delay (s)	7.1	0.0	7.7	7.7								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.7									
Level of Service			A									
Intersection Capacity Utilization			18.2%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
6: Oak Street & Cedar Avenue

07/29/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	12	3	9	6	5	8	6	99	4	5	98	19
Future Volume (vph)	12	3	9	6	5	8	6	99	4	5	98	19
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	14	4	11	7	6	9	7	116	5	6	115	22
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	29	22	128	143								
Volume Left (vph)	14	7	7	6								
Volume Right (vph)	11	9	5	22								
Hadj (s)	-0.10	-0.15	0.02	-0.05								
Departure Headway (s)	4.4	4.4	4.2	4.1								
Degree Utilization, x	0.04	0.03	0.15	0.16								
Capacity (veh/h)	754	761	838	861								
Control Delay (s)	7.6	7.5	7.9	7.9								
Approach Delay (s)	7.6	7.5	7.9	7.9								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.8									
Level of Service			A									
Intersection Capacity Utilization			17.9%	ICU Level of Service	A							
Analysis Period (min)			15									

**APPENDIX D**  
**2024 BACKGROUND TRAFFIC ANALYSIS WORKSHEETS**





# HCM Signalized Intersection Capacity Analysis

## 1: Oak Street/Meredith Drive & Fairfax Boulevard

07/29/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	1826	20	69	674	3	41	12	81	9	1	19
Future Volume (vph)	22	1826	20	69	674	3	41	12	81	9	1	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.6		5.6	4.6			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.91	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1597	3500		1805	3404			1829	1615		1705	
Flt Permitted	0.36	1.00		0.04	1.00			0.96	1.00		0.98	
Satd. Flow (perm)	599	3500		68	3404			1829	1615		1705	
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)	24	1985	22	75	733	3	45	13	88	10	1	21
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	82	0	20	0
Lane Group Flow (vph)	24	2007	0	75	736	0	0	58	6	0	12	0
Heavy Vehicles (%)	13%	3%	0%	0%	6%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		7	7	
Permitted Phases	2			6					4			
Actuated Green, G (s)	131.6	127.2		142.0	132.4			11.5	11.5		6.5	
Effective Green, g (s)	133.6	129.2		144.0	134.4			13.5	13.5		8.5	
Actuated g/C Ratio	0.70	0.68		0.76	0.71			0.07	0.07		0.04	
Clearance Time (s)	6.6	6.6		6.6	6.6			6.5	6.5		6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	449	2380		148	2407			129	114		76	
v/s Ratio Prot	0.00	c0.57		c0.03	0.22			c0.03			c0.01	
v/s Ratio Perm	0.04			0.35					0.00			
v/c Ratio	0.05	0.84		0.51	0.31			0.45	0.05		0.16	
Uniform Delay, d1	8.6	22.8		40.9	10.4			84.7	82.3		87.3	
Progression Factor	0.82	0.63		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.0	2.9		2.7	0.3			2.5	0.2		1.0	
Delay (s)	7.1	17.3		43.6	10.7			87.2	82.5		88.3	
Level of Service	A	B		D	B			F	F		F	
Approach Delay (s)		17.2			13.8			84.4			88.3	
Approach LOS		B			B			F			F	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			20.3	HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			190.0	Sum of lost time (s)				24.2				
Intersection Capacity Utilization			74.1%	ICU Level of Service				D				
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 2: Walnut Street/Fairchester Drive & Fairfax Boulevard

07/29/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1795	19	21	694	19	15	27	46	26	26	12
Future Volume (vph)	10	1795	19	21	694	19	15	27	46	26	26	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6		5.6	5.6		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1671	3500		1805	3397		1805	1571		1752	1773	
Flt Permitted	0.35	1.00		0.07	1.00		0.73	1.00		0.50	1.00	
Satd. Flow (perm)	608	3500		129	3397		1388	1571		918	1773	
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)	11	1951	21	23	754	21	16	29	50	28	28	13
RTOR Reduction (vph)	0	0	0	0	0	0	0	40	0	0	9	0
Lane Group Flow (vph)	11	1972	0	23	775	0	16	39	0	28	32	0
Heavy Vehicles (%)	8%	3%	0%	0%	6%	0%	0%	5%	12%	3%	3%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			7				3
Permitted Phases	2			6			7			3		
Actuated Green, G (s)	148.9	146.1		151.7	147.5		20.0	20.0		8.9	8.9	
Effective Green, g (s)	150.9	147.1		153.7	148.5		22.0	22.0		10.9	10.9	
Actuated g/C Ratio	0.79	0.77		0.81	0.78		0.12	0.12		0.06	0.06	
Clearance Time (s)	6.6	6.6		6.6	6.6		6.5	6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	504	2709		150	2655		160	181		52	101	
v/s Ratio Prot	0.00	c0.56		c0.00	0.23			c0.02			0.02	
v/s Ratio Perm	0.02			0.12			0.01			c0.03		
v/c Ratio	0.02	0.73		0.15	0.29		0.10	0.22		0.54	0.31	
Uniform Delay, d1	4.1	11.1		12.2	5.9		75.1	76.2		87.1	86.0	
Progression Factor	1.00	1.00		0.86	0.40		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	1.8		0.5	0.3		0.3	0.6		10.3	1.8	
Delay (s)	4.1	12.8		11.0	2.6		75.4	76.8		97.4	87.7	
Level of Service	A	B		B	A		E	E		F	F	
Approach Delay (s)		12.8			2.8			76.6			91.7	
Approach LOS		B			A			E			F	

### Intersection Summary

















HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	190.0	Sum of lost time (s)	20.7
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



# HCM Unsignalized Intersection Capacity Analysis

















## 3: Walnut Street & Cedar Avenue

07/29/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	0	0	8	0	24	6	97	29	33	44	1
Future Volume (Veh/h)	1	0	0	8	0	24	6	97	29	33	44	1
Sign Control		Stop			Stop			Free			Free	
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)	1	0	0	9	0	26	7	105	32	36	48	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)											366	
pX, platoon unblocked												
vC, conflicting volume	282	272	48	256	256	121	49			137		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	282	272	48	256	256	121	49			137		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	99	100	97	100			98		
cM capacity (veh/h)	637	617	1020	682	629	930	1558			1447		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	1	35	144	85								
Volume Left	1	9	7	36								
Volume Right	0	26	32	1								
cSH	637	851	1558	1447								
Volume to Capacity	0.00	0.04	0.00	0.02								
Queue Length 95th (ft)	0	3	0	2								
Control Delay (s)	10.7	9.4	0.4	3.3								
Lane LOS	B	A	A	A								
Approach Delay (s)	10.7	9.4	0.4	3.3								
Approach LOS	B	A										
Intersection Summary												
Average Delay			2.6									
Intersection Capacity Utilization			24.7%		ICU Level of Service				A			
Analysis Period (min)			15									

















HCM Unsignalized Intersection Capacity Analysis  
 4: Walnut Street & Second Street

07/29/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	13	9	9	2	2	4	2	112	3	3	51	2
Future Volume (vph)	13	9	9	2	2	4	2	112	3	3	51	2
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)	14	10	10	2	2	4	2	122	3	3	55	2
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	34	8	127	60								
Volume Left (vph)	14	2	2	3								
Volume Right (vph)	10	4	3	2								
Hadj (s)	-0.06	-0.22	0.02	0.02								
Departure Headway (s)	4.2	4.1	4.1	4.1								
Degree Utilization, x	0.04	0.01	0.14	0.07								
Capacity (veh/h)	807	828	863	852								
Control Delay (s)	7.4	7.2	7.8	7.4								
Approach Delay (s)	7.4	7.2	7.8	7.4								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.6									
Level of Service			A									
Intersection Capacity Utilization			16.7%	ICU Level of Service	A							
Analysis Period (min)			15									

















HCM Unsignalized Intersection Capacity Analysis  
 5: Oak Street & Second Street/Driveway

07/29/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	1	0	7	0	0	0	2	110	0	0	137	3
Future Volume (vph)	1	0	7	0	0	0	2	110	0	0	137	3
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)	1	0	8	0	0	0	2	120	0	0	149	3
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	9	0	122	152								
Volume Left (vph)	1	0	2	0								
Volume Right (vph)	8	0	0	3								
Hadj (s)	-0.48	0.00	0.04	0.02								
Departure Headway (s)	4.0	4.5	4.1	4.1								
Degree Utilization, x	0.01	0.00	0.14	0.17								
Capacity (veh/h)	838	763	861	878								
Control Delay (s)	7.0	7.5	7.8	7.9								
Approach Delay (s)	7.0	0.0	7.8	7.9								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.8									
Level of Service			A									
Intersection Capacity Utilization			17.4%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
6: Oak Street & Cedar Avenue

07/29/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	21	31	9	54	11	39	1	84	36	35	83	4
Future Volume (vph)	21	31	9	54	11	39	1	84	36	35	83	4
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)	23	34	10	59	12	42	1	91	39	38	90	4
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	67	113	131	132								
Volume Left (vph)	23	59	1	38								
Volume Right (vph)	10	42	39	4								
Hadj (s)	0.01	-0.08	-0.14	0.07								
Departure Headway (s)	4.7	4.5	4.3	4.6								
Degree Utilization, x	0.09	0.14	0.16	0.17								
Capacity (veh/h)	714	744	786	747								
Control Delay (s)	8.1	8.3	8.2	8.5								
Approach Delay (s)	8.1	8.3	8.2	8.5								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.3									
Level of Service			A									
Intersection Capacity Utilization			29.3%	ICU Level of Service	A							
Analysis Period (min)			15									

# HCM Signalized Intersection Capacity Analysis

## 1: Oak Street/Meredith Drive & Fairfax Boulevard

07/29/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	1198	25	78	1658	0	23	4	91	15	9	19
Future Volume (vph)	33	1198	25	78	1658	0	23	4	91	15	9	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.6		5.6	4.6			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1597	3496		1805	3406			1821	1615		1756	
Flt Permitted	0.08	1.00		0.16	1.00			0.96	1.00		0.98	
Satd. Flow (perm)	138	3496		307	3406			1821	1615		1756	
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)	36	1302	27	85	1802	0	25	4	99	16	10	21
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	94	0	14	0
Lane Group Flow (vph)	36	1329	0	85	1802	0	0	29	5	0	33	0
Heavy Vehicles (%)	13%	3%	0%	0%	6%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		7	7	
Permitted Phases	2			6					4			
Actuated Green, G (s)	165.0	158.9		169.0	160.9			9.3	9.3		8.5	
Effective Green, g (s)	167.0	160.9		171.0	162.9			11.3	11.3		10.5	
Actuated g/C Ratio	0.76	0.73		0.78	0.74			0.05	0.05		0.05	
Clearance Time (s)	6.6	6.6		6.6	6.6			6.5	6.5		6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	151	2556		300	2521			93	82		83	
v/s Ratio Prot	0.01	0.38		c0.01	c0.53			c0.02			c0.02	
v/s Ratio Perm	0.17			0.21					0.00			
v/c Ratio	0.24	0.52		0.28	0.71			0.31	0.06		0.39	
Uniform Delay, d1	15.4	12.8		9.3	15.7			100.6	99.3		101.7	
Progression Factor	0.82	0.57		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.7	0.7		0.5	1.8			1.9	0.3		3.1	
Delay (s)	13.4	8.0		9.8	17.5			102.5	99.6		104.7	
Level of Service	B	A		A	B			F	F		F	
Approach Delay (s)		8.1			17.2			100.3			104.7	
Approach LOS		A			B			F			F	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			17.9			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			220.0			Sum of lost time (s)		24.2				
Intersection Capacity Utilization			73.0%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 2: Walnut Street/Fairchester Drive & Fairfax Boulevard

07/29/2019



















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕		↖	↕		↖	↕	
Traffic Volume (vph)	22	1187	13	23	1662	14	17	27	35	34	24	14
Future Volume (vph)	22	1187	13	23	1662	14	17	27	35	34	24	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6		5.6	5.6		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1671	3500		1805	3403		1805	1595		1752	1762	
Flt Permitted	0.09	1.00		0.18	1.00		0.72	1.00		0.56	1.00	
Satd. Flow (perm)	160	3500		349	3403		1370	1595		1032	1762	
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)	24	1290	14	25	1807	15	18	29	38	37	26	15
RTOR Reduction (vph)	0	0	0	0	0	0	0	25	0	0	10	0
Lane Group Flow (vph)	24	1304	0	25	1822	0	18	42	0	37	31	0
Heavy Vehicles (%)	8%	3%	0%	0%	6%	0%	0%	5%	12%	3%	3%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			7			3	
Permitted Phases	2			6			7			3		
Actuated Green, G (s)	178.7	173.0		178.5	172.9		21.7	21.7		12.3	12.3	
Effective Green, g (s)	180.7	174.0		180.5	173.9		23.7	23.7		14.3	14.3	
Actuated g/C Ratio	0.82	0.79		0.82	0.79		0.11	0.11		0.07	0.07	
Clearance Time (s)	6.6	6.6		6.6	6.6		6.5	6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	177	2768		330	2689		147	171		67	114	
v/s Ratio Prot	c0.00	0.37		0.00	c0.54			c0.03			0.02	
v/s Ratio Perm	0.11			0.06			0.01			c0.04		
v/c Ratio	0.14	0.47		0.08	0.68		0.12	0.25		0.55	0.27	
Uniform Delay, d1	9.2	7.7		4.8	10.4		88.7	90.0		99.7	97.9	
Progression Factor	1.00	1.00		0.14	0.07		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.6		0.1	1.0		0.4	0.8		9.5	1.3	
Delay (s)	9.6	8.2		0.8	1.7		89.1	90.7		109.2	99.2	
Level of Service	A	A		A	A		F	F		F	F	
Approach Delay (s)		8.3			1.7			90.4			103.9	
Approach LOS		A			A			F			F	

Intersection Summary		
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.64	A
Actuated Cycle Length (s)	220.0	Sum of lost time (s)
Intersection Capacity Utilization	63.4%	20.7
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		B

# HCM Unsignalized Intersection Capacity Analysis

















## 3: Walnut Street & Cedar Avenue

07/29/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	0	3	18	0	15	1	67	14	20	70	2
Future Volume (Veh/h)	3	0	3	18	0	15	1	67	14	20	70	2
Sign Control		Stop			Stop			Free			Free	
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)	3	0	3	20	0	16	1	73	15	22	76	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)											366	
pX, platoon unblocked												
vC, conflicting volume	220	211	77	206	204	80	78			88		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	220	211	77	206	204	80	78			88		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	97	100	98	100			99		
cM capacity (veh/h)	716	676	984	740	681	980	1520			1508		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	6	36	89	100								
Volume Left	3	20	1	22								
Volume Right	3	16	15	2								
cSH	829	830	1520	1508								
Volume to Capacity	0.01	0.04	0.00	0.01								
Queue Length 95th (ft)	1	3	0	1								
Control Delay (s)	9.4	9.5	0.1	1.7								
Lane LOS	A	A	A	A								
Approach Delay (s)	9.4	9.5	0.1	1.7								
Approach LOS	A	A										
Intersection Summary												
Average Delay			2.5									
Intersection Capacity Utilization			21.6%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 4: Walnut Street & Second Street

07/29/2019

















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	1	11	3	0	5	1	6	69	1	3	92	2
Future Volume (vph)	1	11	3	0	5	1	6	69	1	3	92	2
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)	1	12	3	0	5	1	7	75	1	3	100	2
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	16	6	83	105								
Volume Left (vph)	1	0	7	3								
Volume Right (vph)	3	1	1	2								
Hadj (s)	-0.07	-0.07	0.04	0.03								
Departure Headway (s)	4.2	4.3	4.1	4.1								
Degree Utilization, x	0.02	0.01	0.09	0.12								
Capacity (veh/h)	808	805	860	876								
Control Delay (s)	7.3	7.3	7.5	7.6								
Approach Delay (s)	7.3	7.3	7.5	7.6								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.5									
Level of Service			A									
Intersection Capacity Utilization			16.4%	ICU Level of Service	A							
Analysis Period (min)			15									



# HCM Unsignalized Intersection Capacity Analysis

## 5: Oak Street & Second Street/Driveway

















07/29/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	3	0	10	0	0	0	4	119	0	0	115	2
Future Volume (vph)	3	0	10	0	0	0	4	119	0	0	115	2
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)	3	0	11	0	0	0	4	129	0	0	125	2
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	14	0	133	127								
Volume Left (vph)	3	0	4	0								
Volume Right (vph)	11	0	0	2								
Hadj (s)	-0.39	0.00	0.04	0.02								
Departure Headway (s)	4.1	4.5	4.1	4.1								
Degree Utilization, x	0.02	0.00	0.15	0.14								
Capacity (veh/h)	830	768	862	871								
Control Delay (s)	7.1	7.5	7.8	7.8								
Approach Delay (s)	7.1	0.0	7.8	7.8								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.8									
Level of Service			A									
Intersection Capacity Utilization			19.5%	ICU Level of Service	A							
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 6: Oak Street & Cedar Avenue

07/29/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	12	5	9	19	6	9	6	102	25	7	101	20
Future Volume (vph)	12	5	9	19	6	9	6	102	25	7	101	20
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)	13	5	10	21	7	10	7	111	27	8	110	22
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	28	38	145	140								
Volume Left (vph)	13	21	7	8								
Volume Right (vph)	10	10	27	22								
Hadj (s)	-0.09	-0.01	-0.07	-0.05								
Departure Headway (s)	4.5	4.5	4.1	4.2								
Degree Utilization, x	0.03	0.05	0.17	0.16								
Capacity (veh/h)	742	734	846	847								
Control Delay (s)	7.6	7.8	8.0	8.0								
Approach Delay (s)	7.6	7.8	8.0	8.0								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.9									
Level of Service			A									
Intersection Capacity Utilization			19.1%	ICU Level of Service								A
Analysis Period (min)			15									

**APPENDIX E**  
**2024 TOTAL FUTURE TRAFFIC ANALYSIS WORKSHEETS**





# HCM Signalized Intersection Capacity Analysis

## 1: Oak Street/Meredith Drive & Fairfax Boulevard

08/24/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	1832	20	72	676	3	41	12	90	9	1	19
Future Volume (vph)	22	1832	20	72	676	3	41	12	90	9	1	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.6		5.6	4.6			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.91	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1597	3500		1805	3404			1829	1615		1705	
Flt Permitted	0.36	1.00		0.03	1.00			0.96	1.00		0.98	
Satd. Flow (perm)	599	3500		66	3404			1829	1615		1705	
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)	24	1991	22	78	735	3	45	13	98	10	1	21
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	91	0	20	0
Lane Group Flow (vph)	24	2013	0	78	738	0	0	58	7	0	12	0
Heavy Vehicles (%)	13%	3%	0%	0%	6%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		7	7	
Permitted Phases	2			6					4			
Actuated Green, G (s)	131.3	126.9		142.3	132.4			11.5	11.5		6.5	
Effective Green, g (s)	133.3	128.9		144.3	134.4			13.5	13.5		8.5	
Actuated g/C Ratio	0.70	0.68		0.76	0.71			0.07	0.07		0.04	
Clearance Time (s)	6.6	6.6		6.6	6.6			6.5	6.5		6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	448	2374		149	2407			129	114		76	
v/s Ratio Prot	0.00	c0.58		c0.03	0.22			c0.03			c0.01	
v/s Ratio Perm	0.04			0.37					0.00			
v/c Ratio	0.05	0.85		0.52	0.31			0.45	0.06		0.16	
Uniform Delay, d1	8.7	23.1		44.5	10.4			84.7	82.3		87.3	
Progression Factor	1.00	0.68		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.0	3.0		3.3	0.3			2.5	0.2		1.0	
Delay (s)	8.7	18.7		47.8	10.7			87.2	82.6		88.3	
Level of Service	A	B		D	B			F	F		F	
Approach Delay (s)		18.6			14.3			84.3			88.3	
Approach LOS		B			B			F			F	

### Intersection Summary

HCM 2000 Control Delay	21.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	190.0	Sum of lost time (s)	24.2
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 2: Walnut Street/Fairchester Drive & Fairfax Boulevard

08/24/2020



















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (vph)	10	1795	20	21	695	19	21	27	46	26	26	12
Future Volume (vph)	10	1795	20	21	695	19	21	27	46	26	26	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6		5.6	5.6		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1671	3500		1805	3397		1805	1571		1752	1773	
Flt Permitted	0.35	1.00		0.07	1.00		0.73	1.00		0.50	1.00	
Satd. Flow (perm)	607	3500		129	3397		1388	1571		918	1773	
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)	11	1951	22	23	755	21	23	29	50	28	28	13
RTOR Reduction (vph)	0	0	0	0	0	0	0	40	0	0	9	0
Lane Group Flow (vph)	11	1973	0	23	776	0	23	39	0	28	32	0
Heavy Vehicles (%)	8%	3%	0%	0%	6%	0%	0%	5%	12%	3%	3%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			7			3	
Permitted Phases	2			6			7			3		
Actuated Green, G (s)	148.9	146.1		151.7	147.5		20.0	20.0		8.9	8.9	
Effective Green, g (s)	150.9	147.1		153.7	148.5		22.0	22.0		10.9	10.9	
Actuated g/C Ratio	0.79	0.77		0.81	0.78		0.12	0.12		0.06	0.06	
Clearance Time (s)	6.6	6.6		6.6	6.6		6.5	6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	503	2709		150	2655		160	181		52	101	
v/s Ratio Prot	0.00	c0.56		c0.00	0.23			c0.02			0.02	
v/s Ratio Perm	0.02			0.12			0.02			c0.03		
v/c Ratio	0.02	0.73		0.15	0.29		0.14	0.22		0.54	0.31	
Uniform Delay, d1	4.1	11.1		12.3	5.9		75.5	76.2		87.1	86.0	
Progression Factor	1.00	1.00		0.80	0.36		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	1.8		0.5	0.3		0.4	0.6		10.3	1.8	
Delay (s)	4.1	12.9		10.3	2.4		75.9	76.8		97.4	87.7	
Level of Service	A	B		B	A		E	E		F	F	
Approach Delay (s)		12.8			2.6			76.6			91.7	
Approach LOS		B			A			E			F	

Intersection Summary		
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service B
HCM 2000 Volume to Capacity ratio	0.68	
Actuated Cycle Length (s)	190.0	Sum of lost time (s) 20.7
Intersection Capacity Utilization	66.8%	ICU Level of Service C
Analysis Period (min)	15	
c Critical Lane Group		

# HCM Unsignalized Intersection Capacity Analysis

## 3: Walnut Street & Cedar Avenue

















08/24/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	0	0	8	0	28	6	99	29	34	47	1
Future Volume (Veh/h)	1	0	0	8	0	28	6	99	29	34	47	1
Sign Control		Stop			Stop			Free			Free	
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)	1	0	0	9	0	30	7	108	32	37	51	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)											366	
pX, platoon unblocked												
vC, conflicting volume	294	280	52	264	264	124	52			140		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	294	280	52	264	264	124	52			140		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	99	100	97	100			97		
cM capacity (veh/h)	623	610	1016	673	622	927	1554			1443		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	1	39	147	89								
Volume Left	1	9	7	37								
Volume Right	0	30	32	1								
cSH	623	853	1554	1443								
Volume to Capacity	0.00	0.05	0.00	0.03								
Queue Length 95th (ft)	0	4	0	2								
Control Delay (s)	10.8	9.4	0.4	3.3								
Lane LOS	B	A	A	A								
Approach Delay (s)	10.8	9.4	0.4	3.3								
Approach LOS	B	A										
Intersection Summary												
Average Delay			2.6									
Intersection Capacity Utilization			25.1%		ICU Level of Service				A			
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 4: Walnut Street & Second Street

















08/24/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	13	9	9	2	2	4	2	114	3	3	54	2
Future Volume (vph)	13	9	9	2	2	4	2	114	3	3	54	2
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)	14	10	10	2	2	4	2	124	3	3	59	2
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	34	8	129	64								
Volume Left (vph)	14	2	2	3								
Volume Right (vph)	10	4	3	2								
Hadj (s)	-0.06	-0.22	0.02	0.02								
Departure Headway (s)	4.3	4.1	4.1	4.1								
Degree Utilization, x	0.04	0.01	0.15	0.07								
Capacity (veh/h)	803	825	862	852								
Control Delay (s)	7.4	7.2	7.8	7.5								
Approach Delay (s)	7.4	7.2	7.8	7.5								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.6									
Level of Service			A									
Intersection Capacity Utilization			16.8%	ICU Level of Service	A							
Analysis Period (min)			15									



HCM Unsignalized Intersection Capacity Analysis  
 5: Oak Street & Second Street/Driveway

















08/24/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	1	0	7	0	0	0	2	111	0	0	141	3
Future Volume (vph)	1	0	7	0	0	0	2	111	0	0	141	3
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)	1	0	8	0	0	0	2	121	0	0	153	3
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	9	0	123	156								
Volume Left (vph)	1	0	2	0								
Volume Right (vph)	8	0	0	3								
Hadj (s)	-0.48	0.00	0.04	0.02								
Departure Headway (s)	4.0	4.5	4.1	4.1								
Degree Utilization, x	0.01	0.00	0.14	0.18								
Capacity (veh/h)	835	761	860	877								
Control Delay (s)	7.1	7.5	7.8	7.9								
Approach Delay (s)	7.1	0.0	7.8	7.9								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.8									
Level of Service			A									
Intersection Capacity Utilization			17.6%	ICU Level of Service	A							
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 6: Oak Street & Cedar Avenue

08/24/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	21	31	10	54	11	39	5	93	36	35	86	4
Future Volume (vph)	21	31	10	54	11	39	5	93	36	35	86	4
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)	23	34	11	59	12	42	5	101	39	38	93	4
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	68	113	145	135								
Volume Left (vph)	23	59	5	38								
Volume Right (vph)	11	42	39	4								
Hadj (s)	0.00	-0.08	-0.12	0.07								
Departure Headway (s)	4.7	4.6	4.4	4.6								
Degree Utilization, x	0.09	0.14	0.18	0.17								
Capacity (veh/h)	707	735	781	743								
Control Delay (s)	8.2	8.3	8.3	8.5								
Approach Delay (s)	8.2	8.3	8.3	8.5								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.4									
Level of Service			A									
Intersection Capacity Utilization			33.6%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 101: Site Driveway A & Fairfax Boulevard

08/24/2020



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	
Traffic Volume (veh/h)	1866	0	2	733	1	6
Future Volume (Veh/h)	1866	0	2	733	1	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2028	0	2	797	1	7
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (ft)	250		387			
pX, platoon unblocked			0.68		0.72	0.68
vC, conflicting volume			2028		2430	1014
vC1, stage 1 conf vol					2028	
vC2, stage 2 conf vol					402	
vCu, unblocked vol			1581		1724	101
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		99	99
cM capacity (veh/h)			282		103	641
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1352	676	2	398	398	8
Volume Left	0	0	2	0	0	1
Volume Right	0	0	0	0	0	7
cSH	1700	1700	282	1700	1700	388
Volume to Capacity	0.80	0.40	0.01	0.23	0.23	0.02
Queue Length 95th (ft)	0	0	1	0	0	2
Control Delay (s)	0.0	0.0	17.8	0.0	0.0	14.5
Lane LOS	C			B		
Approach Delay (s)	0.0		0.0			14.5
Approach LOS				B		
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			61.6%	ICU Level of Service		B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 102: Walnut Street & Site Driveway B

08/24/2020



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	2	125	2	0	79
Future Volume (Veh/h)	3	2	125	2	0	79
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)	3	2	136	2	0	86
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	209					
pX, platoon unblocked	0.99					
vC, conflicting volume	223	69			138	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	213	69			138	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	750	980			1443	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>		
Volume Total	5	91	47	86		
Volume Left	3	0	0	0		
Volume Right	2	0	2	0		
cSH	828	1700	1700	1443		
Volume to Capacity	0.01	0.05	0.03	0.00		
Queue Length 95th (ft)	0	0	0	0		
Control Delay (s)	9.4	0.0	0.0	0.0		
Lane LOS	A					
Approach Delay (s)	9.4	0.0			0.0	
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			14.2%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 103: Oak Street & Site Driveway C

08/24/2020



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	4	1	121	147	4
Future Volume (Veh/h)	13	4	1	121	147	4
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)	14	4	1	132	160	4
<b>Pedestrians</b>						
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	296	162	164			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	296	162	164			
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)	695	883	1414			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	18	133	164			
Volume Left	14	1	0			
Volume Right	4	0	4			
cSH	729	1414	1700			
Volume to Capacity	0.02	0.00	0.10			
Queue Length 95th (ft)	2	0	0			
Control Delay (s)	10.1	0.1	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.1	0.1	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay	0.6					
Intersection Capacity Utilization	18.0%			ICU Level of Service	A	
Analysis Period (min)	15					

# HCM Signalized Intersection Capacity Analysis

## 1: Oak Street/Meredith Drive & Fairfax Boulevard

08/25/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	1203	25	87	1666	0	23	4	97	15	9	19
Future Volume (vph)	33	1203	25	87	1666	0	23	4	97	15	9	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.6		5.6	4.6			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1597	3496		1805	3406			1821	1615		1756	
Flt Permitted	0.08	1.00		0.16	1.00			0.96	1.00		0.98	
Satd. Flow (perm)	135	3496		303	3406			1821	1615		1756	
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)	36	1308	27	95	1811	0	25	4	105	16	10	21
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	100	0	14	0
Lane Group Flow (vph)	36	1335	0	95	1811	0	0	29	5	0	33	0
Heavy Vehicles (%)	13%	3%	0%	0%	6%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		7	7	
Permitted Phases	2			6					4			
Actuated Green, G (s)	164.7	158.5		169.1	160.7			9.4	9.4		8.5	
Effective Green, g (s)	166.7	160.5		171.1	162.7			11.4	11.4		10.5	
Actuated g/C Ratio	0.76	0.73		0.78	0.74			0.05	0.05		0.05	
Clearance Time (s)	6.6	6.6		6.6	6.6			6.5	6.5		6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	150	2550		299	2518			94	83		83	
v/s Ratio Prot	0.01	0.38		c0.01	c0.53			c0.02			c0.02	
v/s Ratio Perm	0.17			0.23					0.00			
v/c Ratio	0.24	0.52		0.32	0.72			0.31	0.07		0.39	
Uniform Delay, d1	15.7	13.0		9.6	15.9			100.5	99.2		101.7	
Progression Factor	0.93	0.64		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.8	0.7		0.6	1.8			1.9	0.3		3.1	
Delay (s)	15.4	9.0		10.2	17.7			102.4	99.6		104.7	
Level of Service	B	A		B	B			F	F		F	
Approach Delay (s)		9.2			17.4			100.2			104.7	
Approach LOS		A			B			F			F	

### Intersection Summary

HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	220.0	Sum of lost time (s)	24.2
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 2: Walnut Street/Fairchester Drive & Fairfax Boulevard

08/25/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (vph)	33	1203	25	23	1663	14	22	27	35	34	24	14
Future Volume (vph)	33	1203	25	23	1663	14	22	27	35	34	24	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6		5.6	5.6		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1671	3496		1805	3403		1805	1595		1752	1762	
Flt Permitted	0.09	1.00		0.18	1.00		0.72	1.00		0.56	1.00	
Satd. Flow (perm)	160	3496		336	3403		1370	1595		1032	1762	
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)	36	1308	27	25	1808	15	24	29	38	37	26	15
RTOR Reduction (vph)	0	0	0	0	0	0	0	25	0	0	10	0
Lane Group Flow (vph)	36	1335	0	25	1823	0	24	42	0	37	31	0
Heavy Vehicles (%)	8%	3%	0%	0%	6%	0%	0%	5%	12%	3%	3%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			7			3	
Permitted Phases	2			6			7			3		
Actuated Green, G (s)	178.8	173.0		178.4	172.8		21.7	21.7		12.3	12.3	
Effective Green, g (s)	180.8	174.0		180.4	173.8		23.7	23.7		14.3	14.3	
Actuated g/C Ratio	0.82	0.79		0.82	0.79		0.11	0.11		0.07	0.07	
Clearance Time (s)	6.6	6.6		6.6	6.6		6.5	6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	178	2765		319	2688		147	171		67	114	
v/s Ratio Prot	c0.01	0.38		0.00	c0.54			c0.03			0.02	
v/s Ratio Perm	0.16			0.06			0.02			c0.04		
v/c Ratio	0.20	0.48		0.08	0.68		0.16	0.25		0.55	0.27	
Uniform Delay, d1	9.7	7.8		5.0	10.4		89.1	90.0		99.7	97.9	
Progression Factor	1.00	1.00		0.07	0.18		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.6		0.1	1.0		0.5	0.8		9.5	1.3	
Delay (s)	10.2	8.4		0.4	2.9		89.7	90.7		109.2	99.2	
Level of Service	B	A		A	A		F	F		F	F	
Approach Delay (s)		8.4			2.8			90.4			103.9	
Approach LOS		A			A			F			F	

















### Intersection Summary

HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	220.0	Sum of lost time (s)	20.7
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Unsignalized Intersection Capacity Analysis

## 3: Walnut Street & Cedar Avenue

08/25/2020

















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	0	3	18	0	18	1	71	14	25	72	2
Future Volume (Veh/h)	3	0	3	18	0	18	1	71	14	25	72	2
Sign Control		Stop			Stop			Free			Free	
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)	3	0	3	20	0	20	1	77	15	27	78	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)											367	
pX, platoon unblocked												
vC, conflicting volume	240	227	79	222	220	84	80			92		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	240	227	79	222	220	84	80			92		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	97	100	98	100			98		
cM capacity (veh/h)	690	660	981	721	665	975	1518			1503		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	6	40	93	107								
Volume Left	3	20	1	27								
Volume Right	3	20	15	2								
cSH	810	829	1518	1503								
Volume to Capacity	0.01	0.05	0.00	0.02								
Queue Length 95th (ft)	1	4	0	1								
Control Delay (s)	9.5	9.6	0.1	2.0								
Lane LOS	A	A	A	A								
Approach Delay (s)	9.5	9.6	0.1	2.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay			2.7									
Intersection Capacity Utilization			22.0%		ICU Level of Service				A			
Analysis Period (min)			15									



# HCM Unsignalized Intersection Capacity Analysis

















## 4: Walnut Street & Second Street

08/25/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	1	11	3	0	5	1	6	73	1	3	94	2
Future Volume (vph)	1	11	3	0	5	1	6	73	1	3	94	2
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)	1	12	3	0	5	1	7	79	1	3	102	2
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	16	6	87	107								
Volume Left (vph)	1	0	7	3								
Volume Right (vph)	3	1	1	2								
Hadj (s)	-0.07	-0.07	0.04	0.03								
Departure Headway (s)	4.3	4.3	4.1	4.1								
Degree Utilization, x	0.02	0.01	0.10	0.12								
Capacity (veh/h)	804	802	860	875								
Control Delay (s)	7.3	7.3	7.5	7.6								
Approach Delay (s)	7.3	7.3	7.5	7.6								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.6									
Level of Service			A									
Intersection Capacity Utilization			16.6%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 5: Oak Street & Second Street/Driveway

















08/25/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	3	0	10	0	0	0	4	124	0	0	117	2
Future Volume (vph)	3	0	10	0	0	0	4	124	0	0	117	2
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)	3	0	11	0	0	0	4	135	0	0	127	2
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	14	0	139	129								
Volume Left (vph)	3	0	4	0								
Volume Right (vph)	11	0	0	2								
Hadj (s)	-0.39	0.00	0.04	0.02								
Departure Headway (s)	4.1	4.5	4.1	4.1								
Degree Utilization, x	0.02	0.00	0.16	0.15								
Capacity (veh/h)	825	765	862	869								
Control Delay (s)	7.1	7.5	7.9	7.8								
Approach Delay (s)	7.1	0.0	7.9	7.8								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.8									
Level of Service			A									
Intersection Capacity Utilization			19.8%	ICU Level of Service	A							
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 6: Oak Street & Cedar Avenue

08/25/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	12	5	14	19	6	9	6	107	25	7	110	20
Future Volume (vph)	12	5	14	19	6	9	6	107	25	7	110	20
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)	13	5	15	21	7	10	7	116	27	8	120	22
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	33	38	150	150								
Volume Left (vph)	13	21	7	8								
Volume Right (vph)	15	10	27	22								
Hadj (s)	-0.16	-0.01	-0.06	-0.04								
Departure Headway (s)	4.4	4.6	4.2	4.2								
Degree Utilization, x	0.04	0.05	0.17	0.17								
Capacity (veh/h)	745	725	840	841								
Control Delay (s)	7.6	7.8	8.0	8.1								
Approach Delay (s)	7.6	7.8	8.0	8.1								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.0									
Level of Service			A									
Intersection Capacity Utilization			19.6%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 101: Site Driveway A & Fairfax Boulevard

08/25/2020



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	
Traffic Volume (veh/h)	1254	3	7	1699	1	5
Future Volume (Veh/h)	1254	3	7	1699	1	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1363	3	8	1847	1	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (ft)	250		387			
pX, platoon unblocked			0.87		0.76	0.87
vC, conflicting volume			1366		2304	683
vC1, stage 1 conf vol					1364	
vC2, stage 2 conf vol					940	
vCu, unblocked vol			1120		1303	335
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			538		228	575
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	909	457	8	924	924	6
Volume Left	0	0	8	0	0	1
Volume Right	0	3	0	0	0	5
cSH	1700	1700	538	1700	1700	458
Volume to Capacity	0.53	0.27	0.01	0.54	0.54	0.01
Queue Length 95th (ft)	0	0	1	0	0	1
Control Delay (s)	0.0	0.0	11.8	0.0	0.0	13.0
Lane LOS			B			B
Approach Delay (s)	0.0		0.1			13.0
Approach LOS						B
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			57.0%	ICU Level of Service	B	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 102: Walnut Street & Site Driveway B

08/25/2020



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↕↔			↕
Traffic Volume (veh/h)	2	2	88	4	2	97
Future Volume (Veh/h)	2	2	88	4	2	97
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)	2	2	96	4	2	105
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (ft)						199
pX, platoon unblocked	0.99					
vC, conflicting volume	207	50			100	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	199	50			100	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	765	1008			1490	
<b>Direction, Lane #</b>						
	WB 1	NB 1	NB 2	SB 1		
Volume Total	4	64	36	107		
Volume Left	2	0	0	2		
Volume Right	2	0	4	0		
cSH	870	1700	1700	1490		
Volume to Capacity	0.00	0.04	0.02	0.00		
Queue Length 95th (ft)	0	0	0	0		
Control Delay (s)	9.2	0.0	0.0	0.1		
Lane LOS	A			A		
Approach Delay (s)	9.2	0.0			0.1	
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			16.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 103: Oak Street & Site Driveway C

08/25/2020



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	2	5	133	129	14
Future Volume (Veh/h)	8	2	5	133	129	14
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)	9	2	5	145	140	15
<b>Pedestrians</b>						
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	302	148	155			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	302	148	155			
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)	687	899	1425			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	11	150	155			
Volume Left	9	5	0			
Volume Right	2	0	15			
cSH	718	1425	1700			
Volume to Capacity	0.02	0.00	0.09			
Queue Length 95th (ft)	1	0	0			
Control Delay (s)	10.1	0.3	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.1	0.3	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay				0.5		
Intersection Capacity Utilization				21.0%	ICU Level of Service	A
Analysis Period (min)				15		