TECHNICAL MEMORANDUM

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Date:	June 17, 2020	
Subject:	American Legion Post 177 Redevelopment – Transportation Operational Assessment	

Introduction

This memorandum presents the results of a roadway network assessment / transportation operational assessment with respect to the proposed redevelopment of the American Legion Post 177 along Oak Street in the City of Fairfax, Virginia. This assessment consists of an operational analysis, preliminary impact assessment, a trip generation assessment, a review of intersection spacing requirements, a review of turn lane requirements, and a historic intersection safety assessment. Due to recent events and the timeline for this application, this assessment was performed without a scoping agreement and utilized factored existing traffic counts. If it is determined that a scoping agreement is required, a meeting will be requested.

Project Information

The existing American Legion Post 177 at 3939 Oak Street plans to expand operation through redevelopment of site to include multifamily units (76 affordable and 66 market-rate two-over-two's), a new building for Legion operations and events (approximately 17,523 SF), and a telecommunications tower; and would retain approximately 2.5-acres of open space (including the Chicott Stadium). The site is located on one parcel of land, totaling 7.75 acres, which can be identified by the following Tax Map ID 57-1-02-115. Future site access will be provided by two existing full-movement access points along Oak Street.

To accommodate the redevelopment, a portion of the property is planned to be rezoned from Residential High (RH) to Planned Development Mixed Use (PD-M). A comprehensive plan amendment would also be required to change a portion of the Social and Civic Network Place Type designation to Multifamily Neighborhood Place Type on account of the residential use, and to correct the Green Network – Public designation to Green Network – Private, per the Future Land Use Map of the 2035 Comprehensive Plan. In addition to the rezoning and amendment, SUPs would be required as a portion of the property is located within the 100-Year Floodplain boundary and Resource Protection Area (RPA) boundary (the latter per the Chesapeake Bay Preservation Act), SUPs would also be required for the stormwater management and parking within a floodplain aspects of the project. A Board of Architectural Review (BAR) application is also to be submitted.

The redevelopment of the site is anticipated to be complete and in operation nearing 2025. A concept plan illustrating the redevelopment of the site is provided in Figure 1.

Roadway Information

The study area consists of six major existing intersections. The major intersections are as follows:

1. Main Street at Oak Street (signalized, full movement),
2. Oak Street at First Street (unsignalized, full movement),
3. Oak Street at Second Street / Site Entrance 1 (unsignalized, full movement),
4. Oak Street at Site Entrance 2 (unsignalized, full movement),
5. Oak Street at Cedar Avenue / Panther Place (unsignalized, full movement),
6. Fairfax Boulevard (Rte. 29/50) at Oak Street / Meredith Drive (signalized, full movement).

A graphic illustration the location of the site, the overall study area, and the study intersections is provided in Figure 2. The existing lane configuration and traffic controls for the study intersections are shown in Figure 4.

A description of the major roadways within the immediate vicinity are presented below.

Fairfax Boulevard (Rte. 29/50) is a four-lane undivided roadway with a two-way left turn lane (TWLTL) and dedicated left turn lanes at major intersections within the vicinity of the study area. The roadway is classified as an “Other Principal Arterial” and has a posted speed limit of 35 mph in the vicinity of the area. According to the Virginia Department of Transportation’s (VDOT) published historical data, the roadway carried approximately 37,000 vehicles per day (vpd) between Lee Highway (Rte. 29)/ Lee Jackson Highway (Rte. 50) / Main Street (Rte. 236) and Chain Bridge Road (Rte. 123) in 2018.

Main Street (Rte. 236) is a four-lane divided roadway with dedicated left turn lanes at major intersections within the vicinity of the study area. The roadway is classified as an “Other Principal Arterial” and has a posted speed limit of 35 mph. According to the VDOT’s published historical data, the roadway carried approximately 38,000 vpd between Lee Highway (Rte. 29)/ Lee Jackson Highway (Rte. 50) / Fairfax Boulevard (Rte. 29/50) and West Street in 2018.

Oak Street is a two-lane undivided “local” roadway that runs approximately 0.36 miles between Fairfax Boulevard and Main Street. The roadway is posted 25 mph. VDOT does not have published daily traffic data for the roadway.

Figure 1: Concept Development Plan (Provided by Toll Brothers)

Figure 2: Site Location and Study Intersections

Historic Roadway Safety Assessment

Historical crash data was obtained from VDOT's Crash Analysis Tool for the existing intersections for an approximate five-year period, between January 2015 and December 2019. The reported crash data from VDOT is provided in the Appendix. A crash map, illustrating the approximate location of reported crashes, is provided in Figure 3. A summary of the crashes (by intersection) is provided in Table 1 and is classified by severity. Detailed tables illustrating the reported crashes by severity, crash type, and time of day are provided in the Appendix for individual intersections. Of note, based on the crash data, crashes were not reported to have occurred at the intersections of Oak Street at Second Street / Site Entrance 1, Oak Street at Site Entrance 2, and Oak Street at Cedar Avenue / Panther Place during the study period.

The crash rate for the existing intersection, as shown in the table, were computed using the following formula:

$$Rate_{intersection} = \frac{1{,}000{,}000 * \ \#\ of\ Crashes}{\#\ of\ Years * 365\ \left(\frac{days}{year}\right) * ADT_{approach}}.$$

According to the Institute of Transportation Engineers' (ITE's) Transportation Impact Analysis for Site Development, a crash rate of 1.0 MEV or higher is an indication that further study is required. A rate over 1.0 MEV does not necessarily mean there is a significant problem at an intersection, but rather it is a threshold used to identify which intersections may have an elevated crash rates due to operational, geometric, or other deficiencies. Additionally, the crash data does not provide detailed location information. In some cases, the crashes were located near an intersection but not necessarily associated with or caused by the intersection.

Based on the crash rates, none of the study intersections were high crash locations.

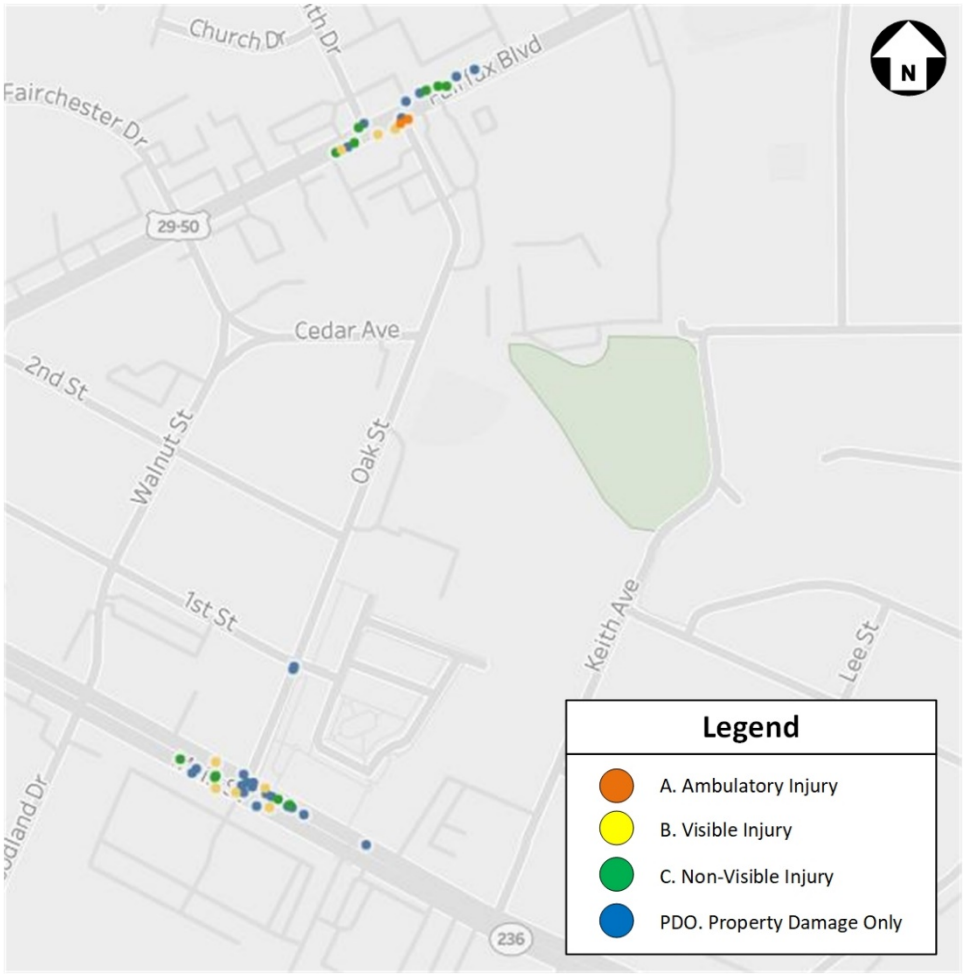


Figure 3: Crash Map

Table 1: Summary of Crashes by Intersection

Intersection		PDO	IC	Fatality	Total	Crash Rate (Per MEV)
1	Main Street at Oak Street	15	10	0	25	0.31
2	Oak Street at W 1st Street	2	0	0	2	0.38
6	Fairfax Blvd at Oak Street	7	11	0	18	0.32

2020 Existing Conditions

Existing Traffic Volumes

In order to determine the weekday peak hour turning movement traffic volumes, traffic counts were conducted at the study intersections on Tuesday, March 10, 2020. Analysis of the traffic data found the following peak hours:

- AM Peak Hour: 7:15 AM to 8:15 AM
- PM Peak Hour: 4:45 PM to 5:45 PM

Of note, the counts were performed on Tuesday, March 10, 2020 while George Mason University was on spring break; therefore, this assessment was conducted utilizing factored traffic counts.

The traffic counts collected on Tuesday, March 10, 2020 were factored based on existing counts collected at nearby intersections when schools were in session. Traffic counts were collected at the intersection of Main Street at Judicial Drive on Tuesday, September 10, 2019 and at the intersection of Fairfax Boulevard (Rte. 29/50) at McLean Avenue on Wednesday, March 20, 2019.

Due to the presence of commercial entrances and driveways between the intersections, the road network was not balanced. The existing weekday AM and PM peak hour traffic volumes are shown in Figure 5. In addition, Figure 5 shows the estimated average daily traffic (ADT), which were based of the k-factors from the 2018 VDOT historical data and the PM peak hour volumes. If data was not available for a given roadway segment, it was assumed to have a k-factor of 0.10.

The raw turning count movements are provided in the Appendix.

Figure 4: Existing Lane Use and Traffic Control Devices (2020)

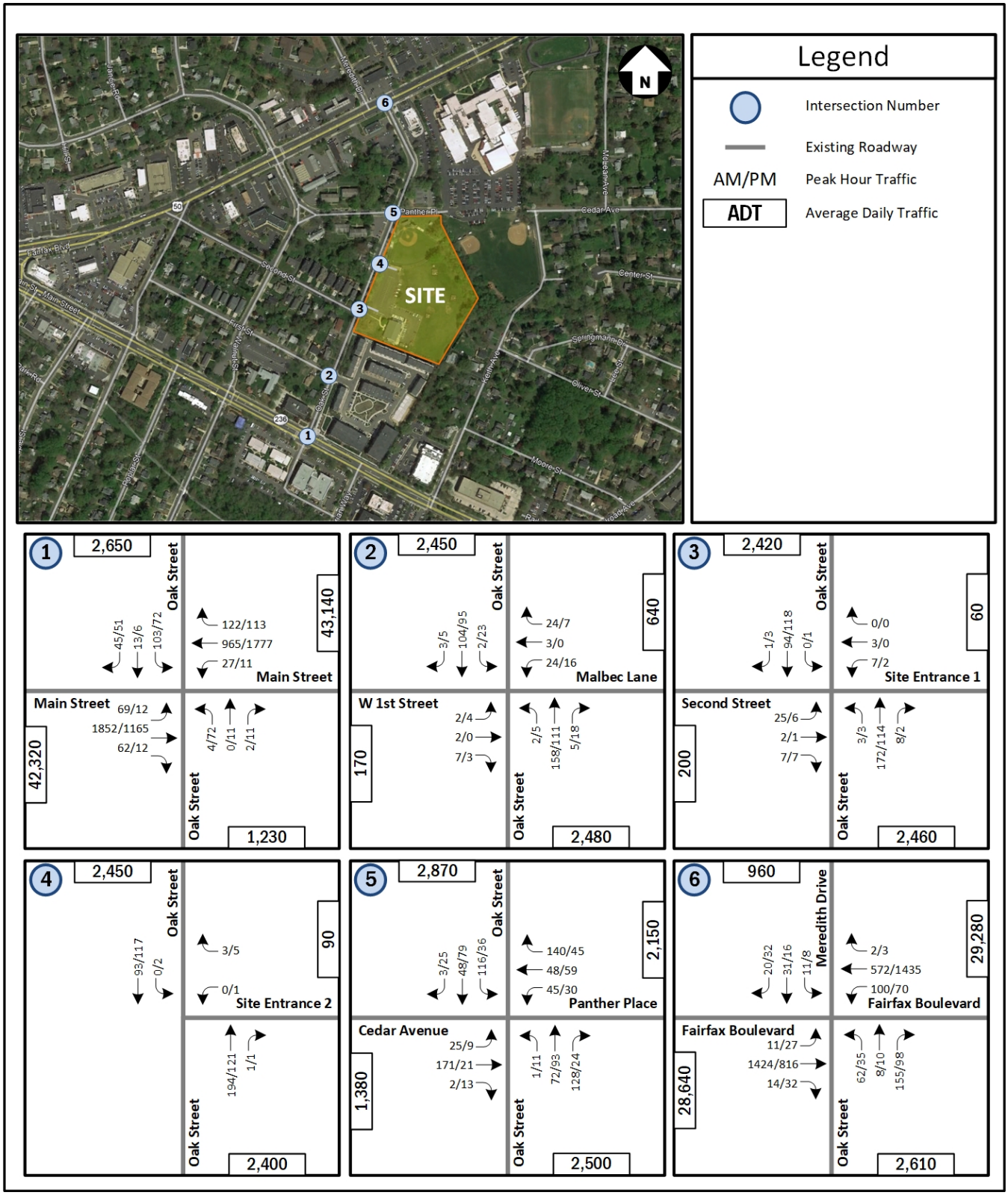


Figure 5: Existing (2020) Traffic Volumes

Existing Capacity Analysis

Intersection capacity analyses were performed for the Existing Conditions (2020) scenario at the study area intersections during AM and PM peak hours. Synchro, version 10, was used to analyze the study intersections with results based on the Highway Capacity Manual (HCM) 2010 methodology and includes level of service (LOS), delay, and queue length comparisons for the turning movements analyzed. Synchro files and existing signal timings sheets were provided by VDOT staff and used as a base for the existing analysis.

The existing peak hour factors (by intersection) acquired from the traffic counts, with a minimum of 0.85, were used in the analysis of existing conditions. The heavy vehicle percentages utilized in the analysis were based on traffic data collected in the field per movement and by intersection.

Consistent with previous traffic studies and assessments conducted within the City of Fairfax, for the purposes of this assessment it would be considered acceptable and/or desirable to achieve an approach level of service (LOS) D or better for traffic operations using HCM methodology. The results of the intersection capacity analyses from *Synchro* are presented in Table 2. The results are expressed in LOS and delay (seconds per vehicle) for overall signalized intersections and per approach and lane group for all study intersections. The overall signalized intersections and any approaches that operate at LOS E or F are displayed in red.

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

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

Table 2: Existing Conditions - Intersection Capacity Analysis Results

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour LOS	AM Peak Hour Delay [2] (s/veh)	AM Peak Hour 95th % Queue [3][4] (ft.)	PM Peak Hour LOS	PM Peak Hour Delay [2] (s/veh)	PM Peak Hour 95th % Queue [3][4] (ft.)
			Synchro			Synchro		
1	**Oak Street (N/S) at Main Street (E/W)**							
	Overall Intersection (Signalized)		**B**	**14.1**		**B**	**16.0**	
	Eastbound Approach		***B***	***11.8***		***A***	***7.7***	
	Eastbound Left	105	A	4.8	30	B	12.5	9
	Eastbound Thru		B	12.3	794	A	7.6	376
	Eastbound Right	80	A	5.3	19	A	4.7	0
	Westbound Approach		***A***	***8.6***		***B***	***12.6***	
	Westbound Left	140	B	11.3	15	A	5.0	8
	Westbound Thru-Right		A	8.5	331	B	12.7	909
	Northbound Approach		***E***	***77.5***		***F***	***99.9***	
	Northbound Left-Thru-Right		E	77.5	0	F	99.9	188
	Southbound Approach		***F***	***85.6***		***F***	***80.0***	
	Southbound Left		F	89.7	181	F	82.1	150
	Southbound Thru-Right	90	E	78.7	64	E	77.3	56
2	**Oak Street (N/S) at W 1st Street / Malbec Lane (E/W)**							
	Overall Intersection (TWSC)							
	Eastbound Approach		***A***	***9.8***		***B***	***10.0***	
	Eastbound Left-Thru-Right		A	9.8	3	B	10.0	0
	Westbound Approach		***B***	***10.7***		***B***	***10.5***	
	Westbound Left-Thru-Right		B	10.7	8	B	10.5	3
	Northbound Approach							
	Northbound Left-Thru-Right		A	7.5	0	A	7.4	0
	Southbound Approach							
	Southbound Left-Thru-Right		A	7.6	0	A	7.6	3
3	**Oak Street (N/S) at Second Street / Site Entrance 1 (E/W)**							
	Overall Intersection (TWSC)							
	Eastbound Approach		***B***	***10.8***		***A***	***9.7***	
	Eastbound Left-Thru-Right		B	10.8	5	A	9.7	3
	Westbound Approach		***B***	***11.1***		***B***	***10.4***	
	Westbound Left-Thru-Right		B	11.1	3	B	10.4	0
	Northbound Approach							
	Northbound Left-Thru-Right		A	7.4	0	A	7.5	0
	Southbound Approach							
	Southbound Left-Thru-Right		A	0.0	0	A	7.5	0
4	**Oak Street (N/S) at Site Entrance 2 (E/W)**							
	Overall Intersection (TWSC)							
	Westbound Approach		***A***	***9.5***		***A***	***9.2***	
	Westbound Left-Right		A	9.5	0	A	9.2	0
	Northbound Approach							
	Northbound Thru-Right							
	Southbound Approach							
	Southbound Left-Thru		A	0.0	0	A	7.5	0
5	**Oak Street (N/S) at Cedar Avenue / Panther Place (E/W)**							
	Overall Intersection (AWSC)		**B**	**11.6**		**A**	**8.6**	
	Eastbound Approach		***B***	***11.9***		***A***	***8.1***	
	Eastbound Left-Thru-Right		B	11.9	43	A	8.1	5
	Westbound Approach		***B***	***11.7***		***A***	***8.7***	
	Westbound Left-Thru-Right		B	11.7	48	A	8.7	18
	Northbound Approach		***B***	***11.2***		***A***	***8.6***	
	Northbound Left-Thru-Right		B	11.2	40	A	8.6	18
	Southbound Approach		***B***	***11.7***		***A***	***8.8***	
	Southbound Left-Thru-Right		B	11.7	35	A	8.8	20
6	**Oak Street / Meredith Drive (N/S) at Fairfax Boulevard (E/W)**							
	Overall Intersection (Signalized)		**D**	**35.5**		**C**	**24.7**	
	Eastbound Approach		***C***	***33.0***		***B***	***17.0***	
	Eastbound Left	100	B	15.1	18	B	16.0	30
	Eastbound Thru-Right		C	33.1	#1216	B	17.0	447
	Westbound Approach		***B***	***18.6***		***C***	***20.9***	
	Westbound Left	120	D	35.5	137	B	10.5	64
	Westbound Thru-Right		B	15.6	315	C	21.4	920
	Northbound Approach		***F***	***87.1***		***F***	***87.0***	
	Northbound Left-Thru	70	F	95.8	158	F	90.4	107
	Northbound Right		F	83.1	81	F	85.5	18
	Southbound Approach		***F***	***91.9***		***F***	***90.1***	
	Southbound Left-Thru-Right		F	91.9	129	F	90.1	92

NOTES:

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

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

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

As depicted in Table 2, the following two (2) intersections have approaches that operate at unacceptable levels of service during one or more peak hours under existing conditions:

- Oak Street at Main Street – The northbound and southbound approaches operate below acceptable LOS criteria during both peak hours.
- Oak Street / Meredith Drive at Fairfax Boulevard – The northbound and southbound approaches operate below acceptable LOS criteria during both peak hours. Multiple lane groups that have turning movement queues that are not anticipated to fit within the available storage during one or more peak hours.

2025 Future without Development Conditions

Inherent Growth

The development is anticipated to be complete in 2025.

In order to account for 2025 future conditions, a 1.0% annual growth rate, compounded annually and totaling 5.101%, was applied to the existing mainline through movements at the intersection of Main Street at Oak Street as well as at the intersection of Fairfax Boulevard at Oak Street / Meredith Drive for the period between 2020 and 2025.

The inherent regional growth volumes (for the period between 2020 and 2025) are shown in Figure 6.

Nearby Background Developments

The following approved background development was included in the background conditions (2025):

- Paul VI Redevelopment
    - The redevelopment is located south of Fairfax Boulevard, east of Oak Street, and west of McLean Avenue. The site will consist of 184 residential condominium units, 137 townhomes, 20,000 square feet of local serving retail, and 24,000 square feet of community center space.

The trips associated with the Paul VI Redevelopment were based on the results of a traffic study conducted by Wells & Associates. Excerpts from the study are provided in the Appendix. A map showing the background development location is shown in Figure 7. The background development trips associated with the Paul VI Redevelopment are also shown in Figure 7.

The inherent growth volumes and background volumes were added to the existing (2020) traffic volumes in order to project the future without development (2025) traffic volumes. The future without development (2025) traffic volumes are shown in Figure 8.

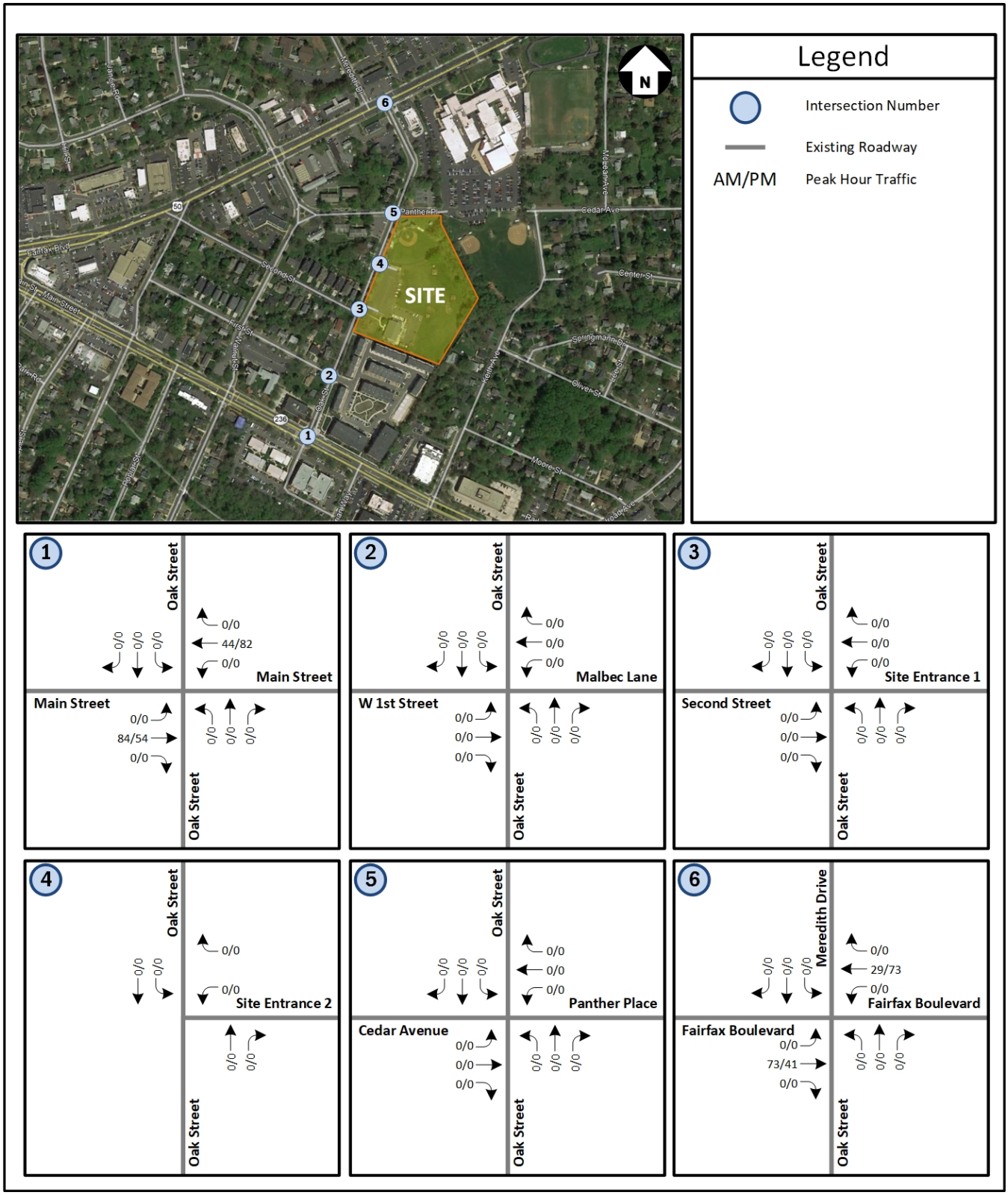


Figure 6: Projected Inherent Regional Growth Traffic Volumes (2020 to 2025)

Figure 7: Paul VI Redevelopment Background Development Trips

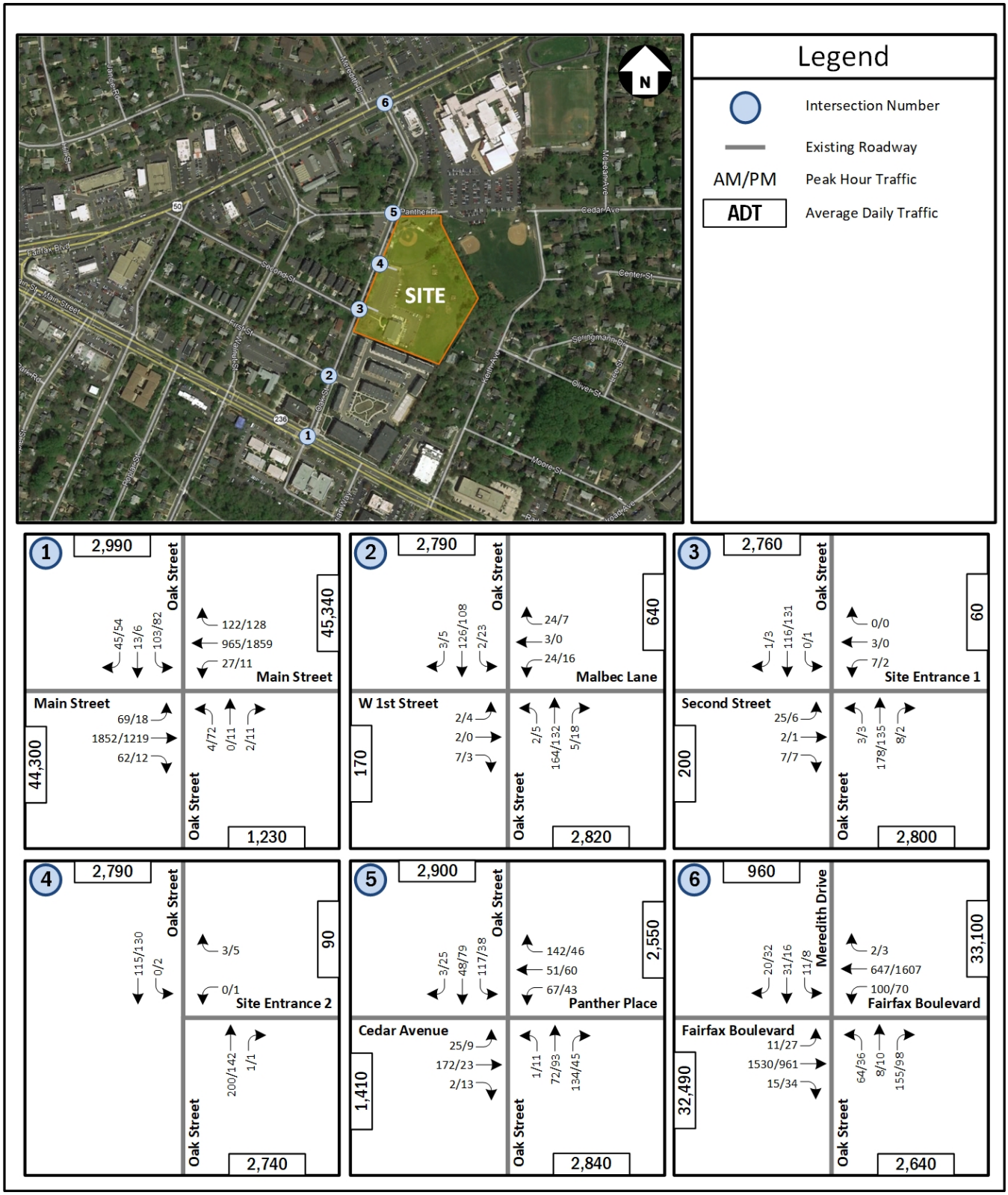


Figure 8: Future without Development (2025) Traffic Volumes

2025 Future with Development Conditions

Site Description

The existing American Legion Post 177 plans to expand operation through redevelopment of site to include multifamily units (76 affordable and 66 market-rate two-over-two's), and a new building for Legion operations and events (approximately 17,523 SF). Future site access will be provided by two existing full-movement access points along Oak Street.

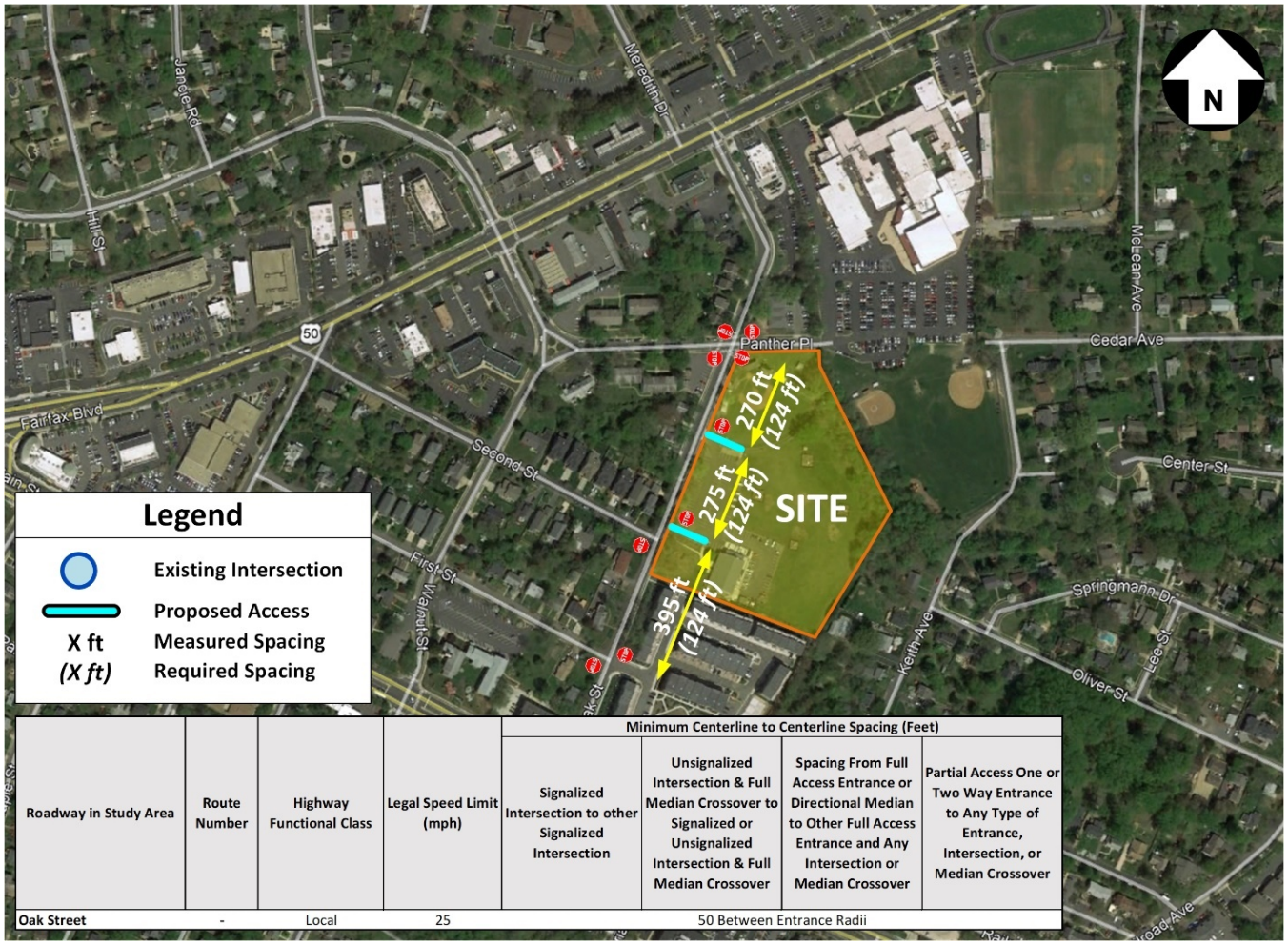
Site Access

Future site access will be provided by two existing full-movement access points along Oak Street that are to remain in the same location.

Preliminary Access Management Assessment of Site Entrances

The guidelines for minimum required signalized and unsignalized intersection spacing are specified in VDOT's Roadway Design Manual (RDM), Appendix F, Table 2-2, and are typically based on a roadways speed limits and functional classification (Principle Arterial, Minor Arterial, and Collector). For local streets, Table 2-2 states, "a spacing distance of 50 feet between entrance radii is separation to assure minimum separation." Further information regarding intersection spacing on local streets is provided in Figure 4-11 of the RDM, signifying that the minimum centerline-to-centerline intersection spacing on a local roadway is 124 feet (based on an assumed 24-foot minimum entrance width and a minimum 25-foot radii).

Figure 9 illustrates the approximate distances between the existing study intersections and the corresponding required distances with the proposed access in place. As can be seen, all the study intersections will continue to meet the required intersection spacings.



Roadway in Study Area	Route Number	Highway Functional Class	Legal Speed Limit (mph)	Minimum Centerline to Centerline Spacing (Feet)			
				Signalized Intersection to other Signalized Intersection	Unsignalized Intersection & Full Median Crossover to Signalized or Unsignalized Intersection & Full Median Crossover	Spacing From Full Access Entrance or Directional Median to Other Full Access Entrance and Any Intersection or Median Crossover	Partial Access One or Two Way Entrance to Any Type of Entrance, Intersection, or Median Crossover
Oak Street	-	Local	25	50 Between Entrance Radii			

Figure 9: Proposed Intersection Spacing

Site Trip Generation

In order to determine the added traffic that the redevelopment would generate with the residential components, the Institute of Transportation Engineers' (ITE's) Trip Generation Manual, 10th Edition publication, was utilized in determining the approximate total number of anticipated inbound and outbound trips generated during the weekday morning (AM) and weekday afternoon (PM) peak hours as well as the total daily trips anticipated on a typical weekday. The trip generation is presented in Table 3 and include existing traffic generated by the site under existing conditions.

Of note, ITE 10 does not contain a land use code (LUC) that would closely reflect the anticipated traffic generation associated with Post activities. In order to estimate future traffic generation, existing trips associated with the Post were collected via turning movement counts at the site entrances and grown proportionally to the square-footage increase anticipated with the redevelopment.

Table 3: Site Trip Generation (ITE 10th Ed., Peak Hour of the Adjacent Street)

Land Use	ITE Code	Size	------ Weekday ------						
			AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Existing Development - Trip to Remain									
American Legion (Existing Size: 7,360 SF)			10	9	19	7	7	14	140
Proposed Development									
Residential Portion									
Multifamily Housing (Mid-Rise)	221	142 DU	12	36	48	38	24	62	772
Other Portion									
American Legion (Proposed Size: 17,523 SF)			24	21	45	17	16	33	330
Total Net New Trips			26	48	74	48	33	81	962

Note: Daily trips for American Legion Post 177 is estimated as 10 times the PM Peak Hour Volume

As depicted in Table 3, the redevelopment of the site is anticipated to generate approximately 74 total trips during the AM peak hour, 81 total trips during the PM peak hour, and approximately 962 daily trips during a typical weekday.

Global Direction of Approach and Site Traffic Assignment

The distribution and assignment of the site generated trips was based on the existing traffic patterns, engineering judgement, and the nature of the proposed development. The site direction of approach and trip distribution for the weekday is illustrated in Figure 10.

The site traffic assignment for the development's site trips is illustrated for the weekday peak hours in Figure 11.

The inherent growth volumes, the background trips associated with the Paul VI Redevelopment, and the proposed site generated trips were added to the existing (2020) traffic volumes in order to project the future with development (2025) traffic volumes. The future with development (2025) traffic volumes are illustrated in Figure 12.

Figure 10: Global Vehicular Direction of Approach (Trip Distribution)

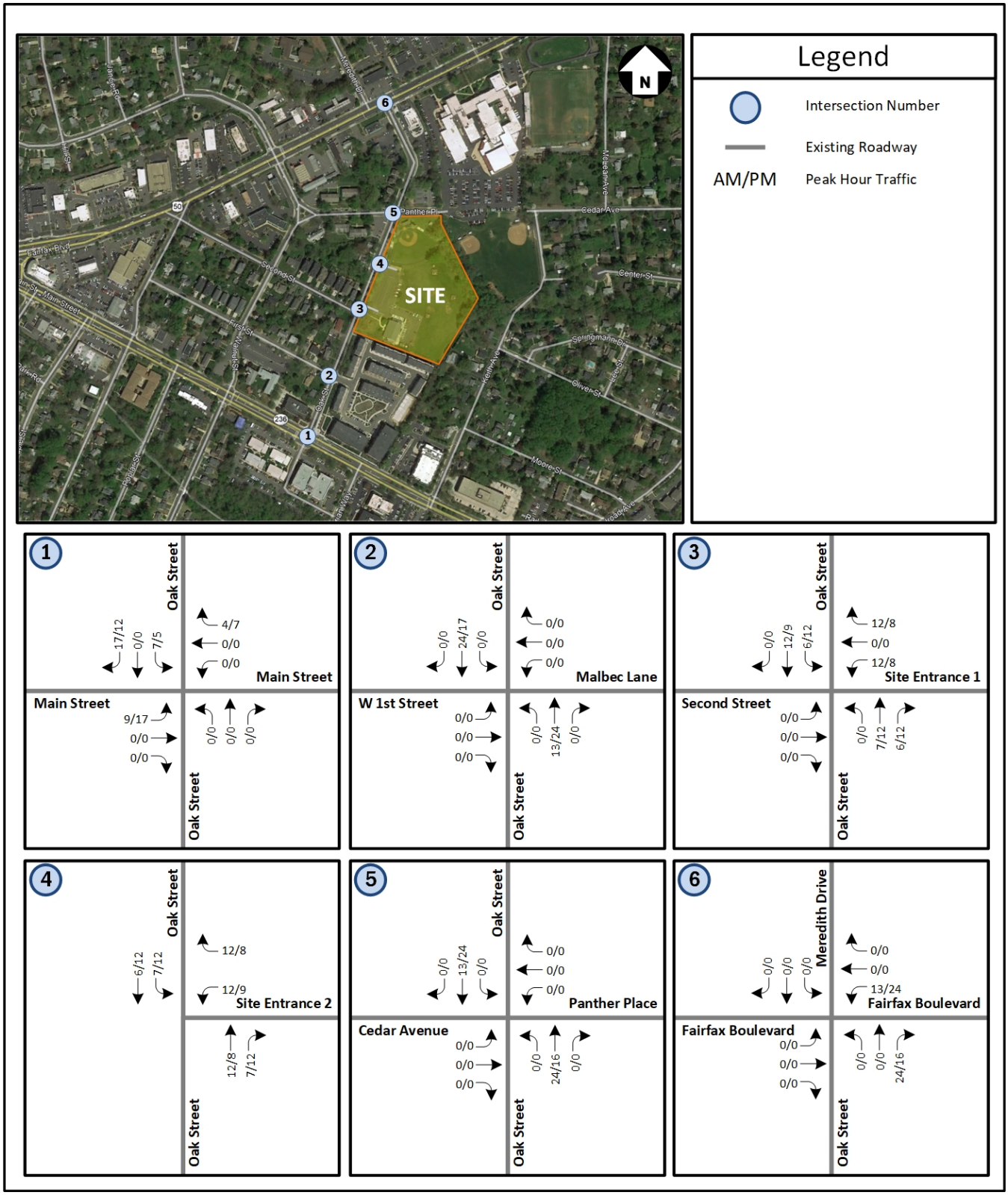


Figure 11: Site Generated Trip Assignment

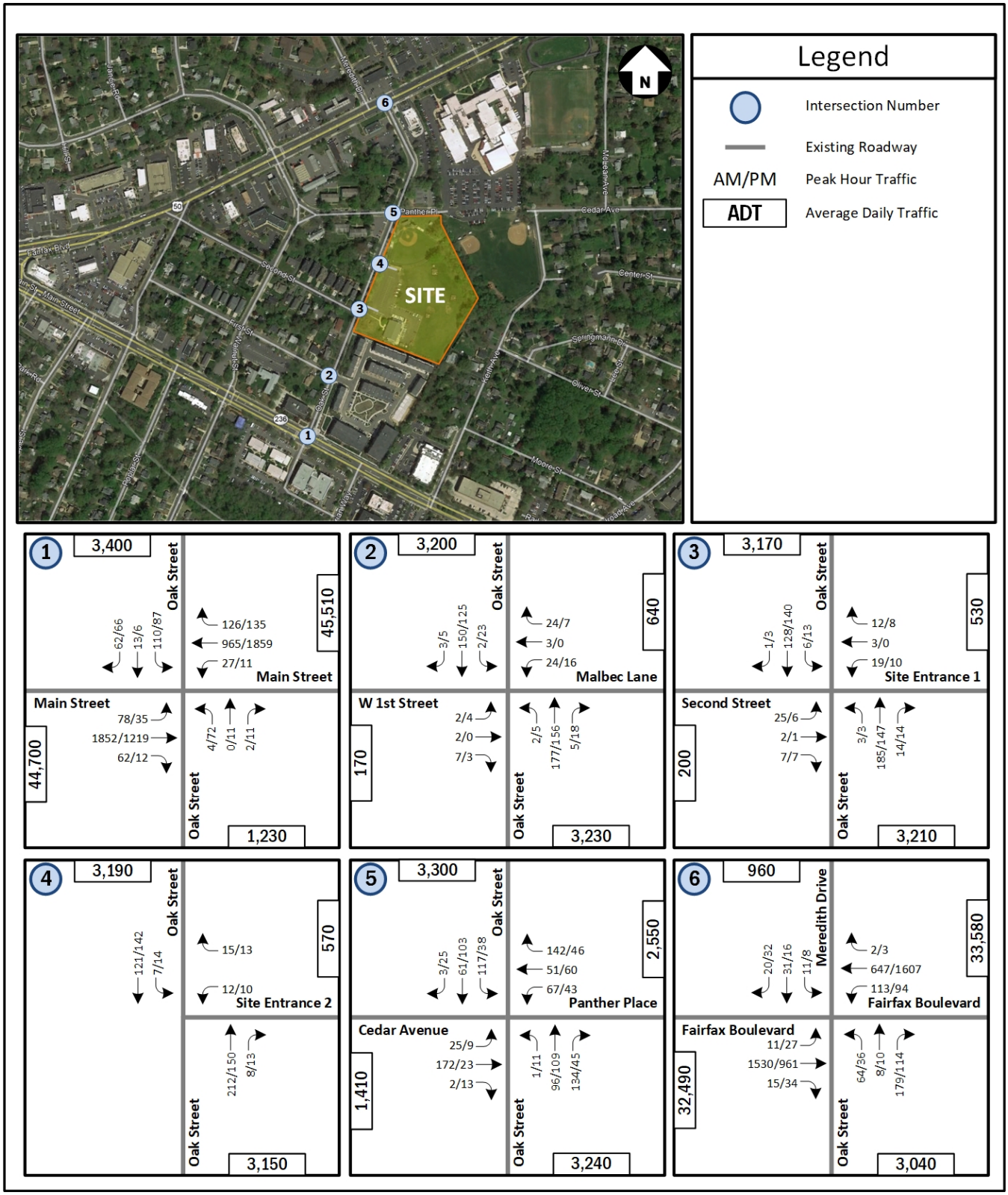


Figure 12: Future with Development (2025) Traffic Volumes

Preliminary Turn Lane Warrant Assessment

Left and right turn lane warrants are based off VDOT's Road Design Manual (RDM), Appendix F. In order to determine the need for exclusive left or right turn lanes at the planned site entrances along Oak Street, VDOT historical traffic data and the anticipated development program were utilized.

The following turning movements by intersection were analyzed:

- Oak Street at Second Street / Site Entrance 1
  - Southbound Left
  - Northbound Right
- Oak Street at Site Entrance 2
  - Southbound Left
  - Northbound Right

Oak Street at Second Street / Site Entrance 1

Left Turn Lane Warrant

Warrants for left-turn storage lanes on two-lane highways at unsignalized intersections are based on Figure 3-5 to Figure 3-22 in Appendix F of VDOT's RDM. The figures provide graphical representations for determining the necessity of a left turn lane by comparing the advancing volumes of a given approach and the respective opposing volumes with respect to the percentage of left turning vehicles of the advancing volumes. Figure 13 and Figure 14 illustrate RDM Appendix F Figure 3-5 and 3-6, with respect to the southbound left turning movement at the Second Street / Site Entrance 1 intersection along Oak Street during the respective peak hours. As illustrated in the figures, from a volume standpoint, the entrance would not warrant a left-turn lane nor taper during any peak hour.

Right Turn Lane Warrant

Warrants for right-turn storage lanes on two- and four-lane highways at intersections are based on Figures 3-26 and 3-27 in Appendix F of VDOT's RDM. These figures provide a graphical representation for determining the necessity of a right turn lane by comparing the total volumes of a given approach with their respective right turn volumes. Figure 15 illustrates RDM Appendix F Figure 3-26 with respect to the northbound right turning movement at the Second Street / Site Entrance 1 intersection along Oak Street during the respective peak hours. As illustrated in the figure, from a volume standpoint, the entrance would not warrant a right-turn lane nor taper during any peak hour.

Study Scenario	Opposing Vol. (VPH)	Advancing Vol. (VPH)	Left Turn Vol. (VPH)	Left Turn %	VDOT Figure	Treatment
TF AM Peak	202	135	6	4.4%	Fig. 3-5	Not Warranted
TF PM Peak	164	156	13	8.3%	Fig. 3-6	Not Warranted

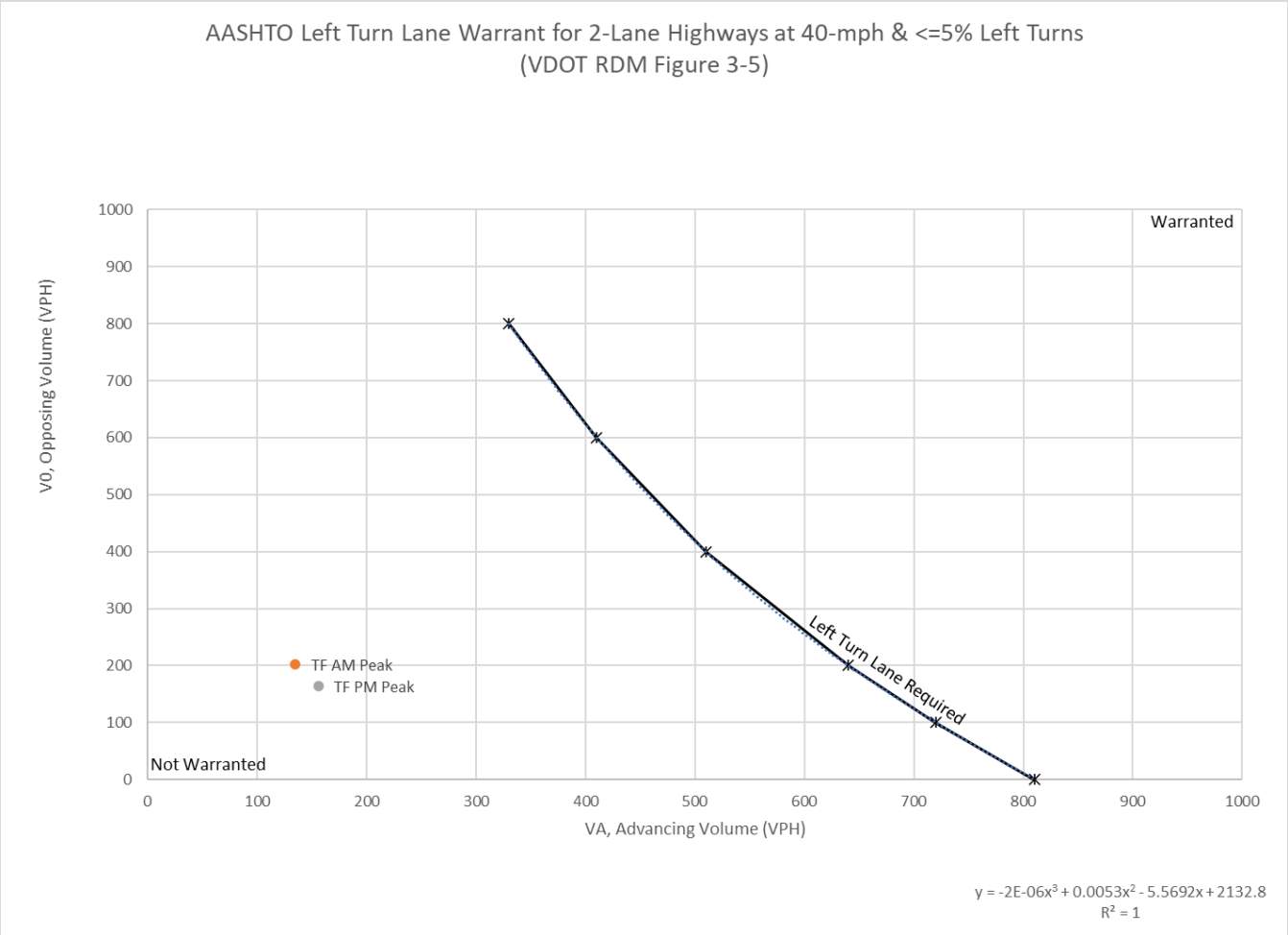


Figure 13: Southbound Left Turn Lane Assessment at the Intersection of Oak Street and Second Street / Site Entrance 1 (Based on RDM Appendix F Figure 3-5)

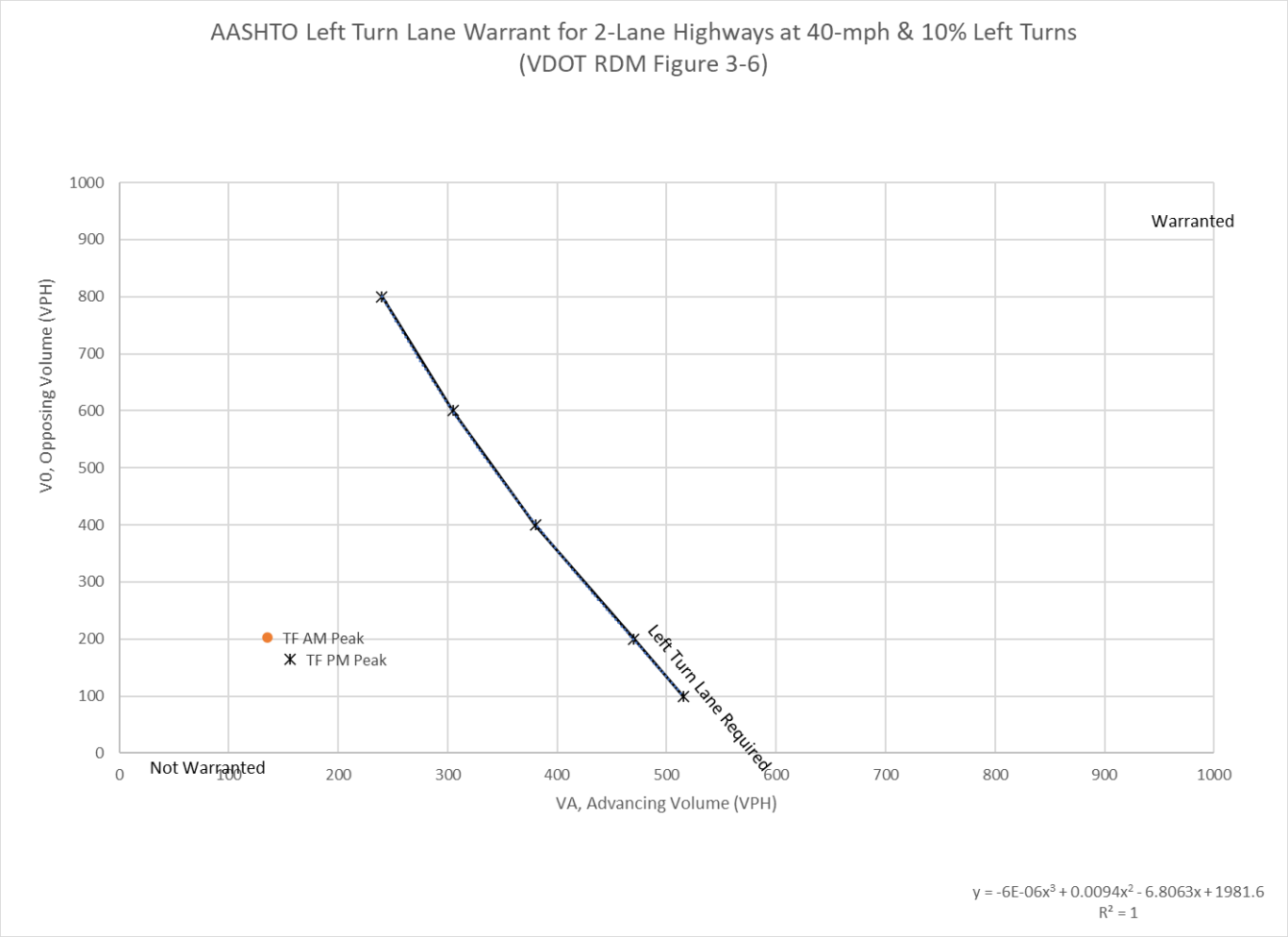


Figure 14: Southbound Left Turn Lane Assessment at the Intersection of Oak Street and Second Street / Site Entrance 1 (Based on RDM Appendix F Figure 3-6)

Study Scenario	Approach Volume	Right Turn Volume	Taper Threshold	Full Lane Threshold	Treatment
TF AM Peak	202	14	50	92	Not Warranted
TF PM Peak	164	14	54	97	Not Warranted

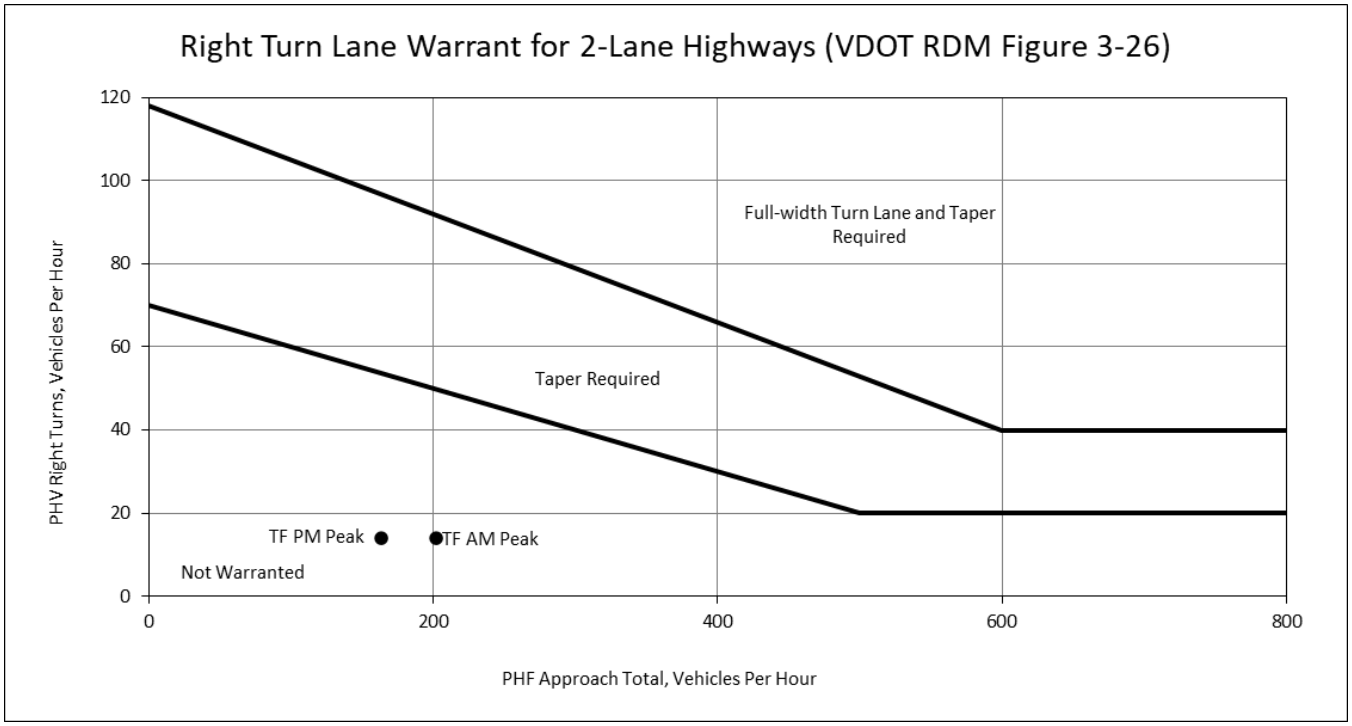


Figure 15: Northbound Right Turn Lane Assessment at the Intersection of Oak Street and Second Street / Site Entrance 1 (Based on RDM Appendix F Figure 3-26)

Oak Street at Site Entrance 2

Left Turn Lane Warrant

As previously stated, warrants for left-turn storage lanes on two-lane highways at unsignalized intersections are based on Figure 3-5 to Figure 3-22 in Appendix F of VDOT's RDM. The figures provide graphical representations for determining the necessity of a left turn lane by comparing the advancing volumes of a given approach and the respective opposing volumes with respect to the percentage of left turning vehicles of the advancing volumes. Figure 16 illustrates RDM Appendix F Figure 3-6, with respect to the southbound left turning movement at the Site Entrance 2 intersection along Oak Street during the respective peak hours. As illustrated in the figure, from a volume standpoint, the entrance would not warrant a left-turn lane nor taper during any peak hour.

Right Turn Lane Warrant

Warrants for right-turn storage lanes on two- and four-lane highways at intersections are based on Figures 3-26 and 3-27 in Appendix F of VDOT's RDM. These figures provide a graphical representation for determining the necessity of a right turn lane by comparing the total volumes of a given approach with their respective right turn volumes. Figure 17 illustrates RDM Appendix F Figure 3-26 with respect to the northbound right turning movement at the Site Entrance 2 intersection along Oak Street during the respective peak hours. As illustrated in the figure, from a volume standpoint, the entrance would not warrant a right-turn lane nor taper during any peak hour.

Study Scenario	Opposing Vol. (VPH)	Advancing Vol. (VPH)	Left Turn Vol. (VPH)	Left Turn %	VDOT Figure	Treatment
TF AM Peak	220	128	7	5.5%	Fig. 3-6	Not Warranted
TF PM Peak	163	156	14	9.0%	Fig. 3-6	Not Warranted

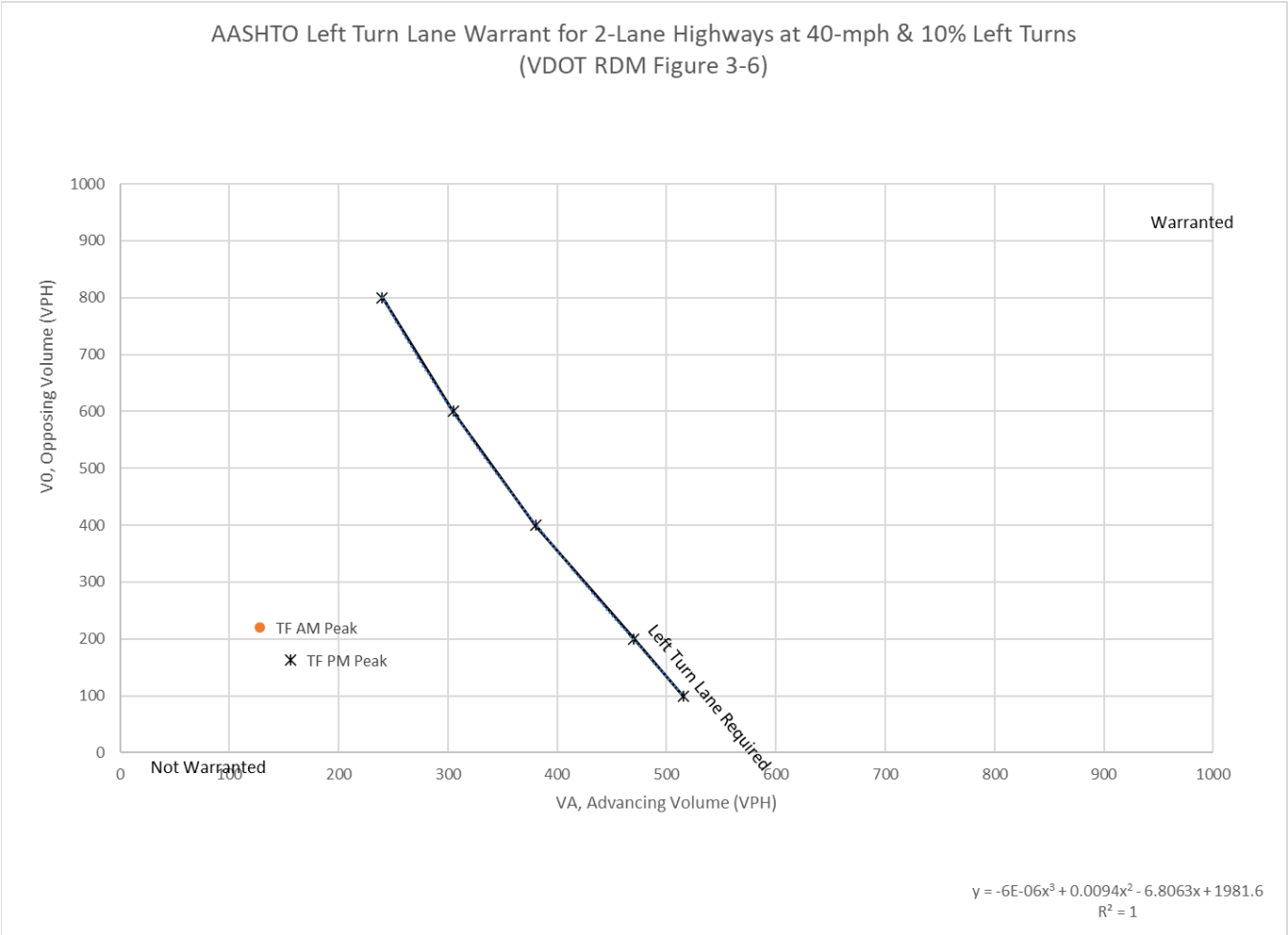


Figure 16: Southbound Left Turn Lane Assessment at the Intersection of Oak Street and Site Entrance 2 (Based on RDM Appendix F Figure 3-6)

Study Scenario	Approach Volume	Right Turn Volume	Taper Threshold	Full Lane Threshold	Treatment
TF AM Peak	220	8	48	89	Not Warranted
TF PM Peak	163	13	54	97	Not Warranted

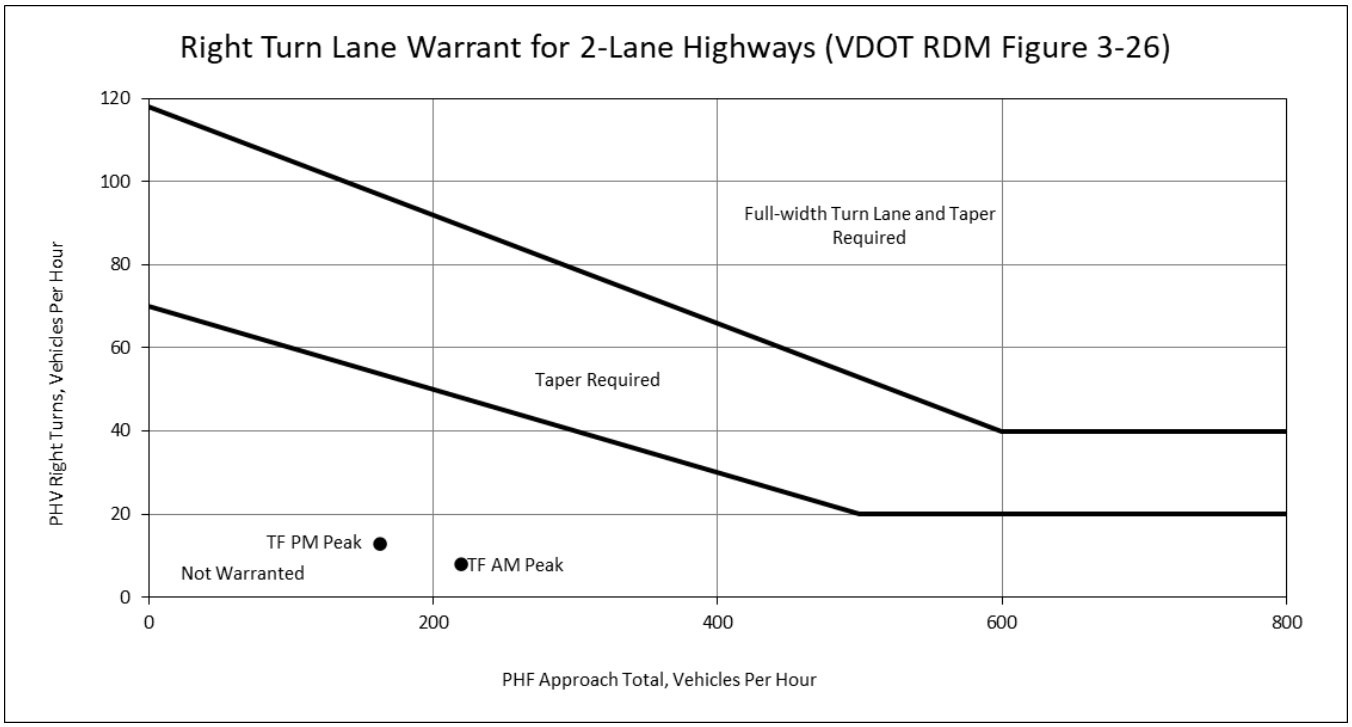


Figure 17: Northbound Right Turn Lane Assessment at the Intersection of Oak Street and Site Entrance 2 (Based on RDM Appendix F Figure 3-26)

Capacity Analysis Assessment

Intersection capacity analysis was performed for the assumed Conditions without Development scenario and for the Conditions with Development scenarios at intersection of the study intersections during the AM and PM peak hours. *Synchro*, version 10, was utilized to analyze the intersection with results based on the Highway Capacity Manual (HCM) 2010 methodology where applicable; HCM 2000 methodology will be utilized if HCM 2010 methodology is not applicable.

Conditions without Development

The results of the intersection capacity and queuing analyses are presented in Table 4 for the Conditions without Development scenario, and are expressed in level of service (LOS) and delay (seconds per vehicle) per lane group. The 95th percentile queue lengths were also determined from *Synchro* and are expressed in feet. The detailed analysis worksheets for the Conditions without Development are contained in the Appendix.

Table 4: Conditions without Development Intersection Capacity Analysis Results

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour LOS	AM Peak Hour Delay [2] (s/veh)	AM Peak Hour 95th % Queue [3][4] (ft.)	PM Peak Hour LOS	PM Peak Hour Delay [2] (s/veh)	PM Peak Hour 95th % Queue [3][4] (ft.)
			Synchro			Synchro		
1	**Oak Street (N/S) at Main Street (E/W)**							
	Overall Intersection (Signalized)		**B**	**16.1**		**B**	**17.3**	
	Eastbound Approach		***B***	***13.9***		***A***	***8.0***	
	Eastbound Left	105	A	5.6	33	B	16.9	11
	Eastbound Thru		B	14.5	920	A	7.9	403
	Eastbound Right	80	A	5.8	19	A	4.7	0
	Westbound Approach		***A***	***9.7***		***B***	***14.7***	
	Westbound Left	140	B	14.9	16	A	5.3	8
	Westbound Thru-Right		A	9.6	373	B	14.7	1035
	Northbound Approach		***E***	***75.6***		***F***	***99.9***	
	Northbound Left-Thru-Right		E	75.6	0	F	99.9	188
	Southbound Approach		***F***	***85.2***		***F***	***81.9***	
	Southbound Left		F	90.0	202	F	85.2	167
	Southbound Thru-Right	90	E	76.8	65	E	77.3	57
2	**Oak Street (N/S) at W 1st Street / Malbec Lane (E/W)**							
	Overall Intersection (TWSC)							
	Eastbound Approach		***A***	***9.8***		***B***	***10.1***	
	Eastbound Left-Thru-Right		A	9.8	0	B	10.1	0
	Westbound Approach		***B***	***10.6***		***B***	***10.6***	
	Westbound Left-Thru-Right		B	10.6	8	B	10.6	3
	Northbound Approach							
	Northbound Left-Thru-Right		A	7.5	0	A	7.5	0
	Southbound Approach							
	Southbound Left-Thru-Right		A	7.6	0	A	7.6	3
3	**Oak Street (N/S) at Second Street / Site Entrance 1 (E/W)**							
	Overall Intersection (TWSC)							
	Eastbound Approach		***B***	***10.8***		***A***	***9.9***	
	Eastbound Left-Thru-Right		B	10.8	5	A	9.9	3
	Westbound Approach		***B***	***11.1***		***B***	***10.7***	
	Westbound Left-Thru-Right		B	11.1	3	B	10.7	0
	Northbound Approach							
	Northbound Left-Thru-Right		A	7.5	0	A	7.5	0
	Southbound Approach							
	Southbound Left-Thru-Right		A	0.0	0	A	7.5	0
4	**Oak Street (N/S) at Site Entrance 2 (E/W)**							
	Overall Intersection (TWSC)							
	Westbound Approach		***A***	***9.4***		***A***	***9.4***	
	Westbound Left-Right		A	9.4	0	A	9.4	0
	Northbound Approach							
	Northbound Thru-Right							
	Southbound Approach							
	Southbound Left-Thru		A	0.0	0	A	7.6	0
5	**Oak Street (N/S) at Cedar Avenue / Panther Place (E/W)**							
	Overall Intersection (AWSC)		**B**	**11.3**		**A**	**8.6**	
	Eastbound Approach		***B***	***11.3***		***A***	***8.1***	
	Eastbound Left-Thru-Right		B	11.3	38	A	8.1	5
	Westbound Approach		***B***	***11.7***		***A***	***8.8***	
	Westbound Left-Thru-Right		B	11.7	50	A	8.8	20
	Northbound Approach		***B***	***10.8***		***A***	***8.6***	
	Northbound Left-Thru-Right		B	10.8	35	A	8.6	18
	Southbound Approach		***B***	***11.2***		***A***	***8.7***	
	Southbound Left-Thru-Right		B	11.2	30	A	8.7	18
6	**Oak Street / Meredith Drive (N/S) at Fairfax Boulevard (E/W)**							
	Overall Intersection (Signalized)		**D**	**36.0**		**C**	**26.1**	
	Eastbound Approach		***C***	***34.1***		***B***	***18.3***	
	Eastbound Left	100	B	14.9	18	B	19.8	30
	Eastbound Thru-Right		C	34.3	#1325	B	18.3	552
	Westbound Approach		***B***	***19.8***		***C***	***23.5***	
	Westbound Left	120	D	44.4	#148	B	11.5	64
	Westbound Thru-Right		B	16.0	354	C	24.1	1126
	Northbound Approach		***F***	***87.2***		***F***	***87.0***	
	Northbound Left-Thru	70	F	95.8	161	F	90.6	109
	Northbound Right		F	83.1	83	F	85.3	18
	Southbound Approach		***F***	***91.9***		***F***	***90.1***	
	Southbound Left-Thru-Right		F	91.9	129	F	90.1	92

NOTES:

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

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

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

As depicted in Table 4, the following two (2) intersections have approaches that continue operate at unacceptable levels of service during one or more peak hours under future without development conditions:

- Oak Street at Main Street – The northbound and southbound approaches operate below acceptable LOS criteria during both peak hours.
- Oak Street / Meredith Drive at Fairfax Boulevard – The northbound and southbound approaches operate below acceptable LOS criteria during both peak hours. Multiple lane groups that have turning movement queues that are not anticipated to fit within the available storage during one or more peak hours.

Both intersections also operate at unacceptable levels of service under existing conditions.

Conditions with Development

The results of the intersection capacity and queuing analyses are presented in Table 5 for the Conditions with Development scenario, and are expressed in level of service (LOS) and delay (seconds per vehicle) per lane group. The 95th percentile queue lengths were also determined from *Synchro* and are expressed in feet. The detailed analysis worksheets for the Conditions with Development are contained in the Appendix.

Table 5: Conditions with Development Intersection Capacity Analysis Results

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour LOS	AM Peak Hour Delay [2] (s/veh)	AM Peak Hour 95th % Queue [3][4] (ft.)	PM Peak Hour LOS	PM Peak Hour Delay [2] (s/veh)	PM Peak Hour 95th % Queue [3][4] (ft.)
			Synchro			Synchro		
1	**Oak Street (N/S) at Main Street (E/W)**							
	Overall Intersection (Signalized)		**B**	**17.0**		**B**	**18.7**	
	Eastbound Approach		***B***	***14.4***		***A***	***8.3***	
	Eastbound Left	105	A	6.0	37	C	21.5	19
	Eastbound Thru		B	15.0	943	A	8.0	407
	Eastbound Right	80	A	6.0	20	A	4.7	0
	Westbound Approach		***B***	***10.2***		***B***	***16.1***	
	Westbound Left	140	B	15.6	16	A	5.6	8
	Westbound Thru-Right		B	10.1	386	B	16.2	1080
	Northbound Approach		***E***	***74.8***		***F***	***104.7***	
	Northbound Left-Thru-Right		E	74.8	0	F	104.7	189
	Southbound Approach		***F***	***84.7***		***F***	***82.5***	
	Southbound Left		F	90.6	213	F	86.8	176
	Southbound Thru-Right	90	E	76.1	72	E	77.2	61
2	**Oak Street (N/S) at W 1st Street / Malbec Lane (E/W)**							
	Overall Intersection (TWSC)							
	Eastbound Approach		***B***	***10.1***		***B***	***10.4***	
	Eastbound Left-Thru-Right		B	10.1	3	B	10.4	0
	Westbound Approach		***B***	***10.9***		***B***	***11.0***	
	Westbound Left-Thru-Right		B	10.9	8	B	11.0	3
	Northbound Approach							
	Northbound Left-Thru-Right		A	7.6	0	A	7.5	0
	Southbound Approach							
	Southbound Left-Thru-Right		A	7.6	0	A	7.7	3
3	**Oak Street (N/S) at Second Street / Site Entrance 1 (E/W)**							
	Overall Intersection (TWSC)							
	Eastbound Approach		***B***	***11.3***		***B***	***10.2***	
	Eastbound Left-Thru-Right		B	11.3	5	B	10.2	3
	Westbound Approach		***B***	***11.0***		***B***	***10.4***	
	Westbound Left-Thru-Right		B	11.0	5	B	10.4	3
	Northbound Approach							
	Northbound Left-Thru-Right		A	7.5	0	A	7.5	0
	Southbound Approach							
	Southbound Left-Thru-Right		A	7.7	0	A	7.6	0
4	**Oak Street (N/S) at Site Entrance 2 (E/W)**							
	Overall Intersection (TWSC)							
	Westbound Approach		***B***	***10.3***		***B***	***10.0***	
	Westbound Left-Right		B	10.3	3	B	10.0	3
	Northbound Approach							
	Northbound Thru-Right							
	Southbound Approach							
	Southbound Left-Thru		A	7.7	0	A	7.6	0
5	**Oak Street (N/S) at Cedar Avenue / Panther Place (E/W)**							
	Overall Intersection (AWSC)		**B**	**11.8**		**A**	**8.9**	
	Eastbound Approach		***B***	***11.7***		***A***	***8.2***	
	Eastbound Left-Thru-Right		B	11.7	38	A	8.2	5
	Westbound Approach		***B***	***12.1***		***A***	***9.0***	
	Westbound Left-Thru-Right		B	12.1	53	A	9.0	20
	Northbound Approach		***B***	***11.5***		***A***	***8.8***	
	Northbound Left-Thru-Right		B	11.5	43	A	8.8	23
	Southbound Approach		***B***	***11.7***		***A***	***9.0***	
	Southbound Left-Thru-Right		B	11.7	35	A	9.0	23
6	**Oak Street / Meredith Drive (N/S) at Fairfax Boulevard (E/W)**							
	Overall Intersection (Signalized)		**D**	**38.1**		**C**	**26.5**	
	Eastbound Approach		***D***	***36.0***		***B***	***18.7***	
	Eastbound Left	100	B	15.7	18	B	19.9	30
	Eastbound Thru-Right		D	36.2	#1325	B	18.7	563
	Westbound Approach		***C***	***21.7***		***C***	***23.4***	
	Westbound Left	120	D	54.3	#203	B	11.9	82
	Westbound Thru-Right		B	16.0	354	C	24.1	1126
	Northbound Approach		***F***	***86.9***		***F***	***86.9***	
	Northbound Left-Thru	70	F	95.8	161	F	90.6	109
	Northbound Right		F	83.3	90	F	85.4	42
	Southbound Approach		***F***	***91.9***		***F***	***90.1***	
	Southbound Left-Thru-Right		F	91.9	129	F	90.1	92

NOTES:

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

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

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

As depicted in Table 5, the following two (2) intersections have approaches that continue operate at unacceptable levels of service during one or more peak hours under future with development conditions:

- Oak Street at Main Street – The northbound and southbound approaches operate below acceptable LOS criteria during both peak hours.
- Oak Street / Meredith Drive at Fairfax Boulevard – The northbound and southbound approaches operate below acceptable LOS criteria during both peak hours. Multiple lane groups that have turning movement queues that are not anticipated to fit within the available storage during one or more peak hours.

Both intersections also operate at unacceptable levels of service under future without development conditions.

Conclusion

This memorandum provides an assessment of the proposed redevelopment of the American Legion Post 177 along Oak Street in the City of Fairfax, Virginia. The memorandum indicates the following:

- The proposed development is anticipated to generate approximately 74 total trips during the AM peak hour, 81 total trips during the PM peak hour, and approximately 962 daily trips during a typical weekday.
- With the current intersection spacing, it is anticipated that the proposed development's entrance would not require an access management exception as part of the site plan submission.
- It is anticipated that the site entrances would not warrant a left-turn lane or right-turn lane during any peak hour.
- Based on the capacity analysis under Conditions with Development, the following two (2) intersections have approaches that continue operate at unacceptable levels of service during one or more peak hours under future with development conditions:
    - Oak Street at Main Street – The northbound and southbound approaches operate below acceptable LOS criteria during both peak hours.
    - Oak Street / Meredith Drive at Fairfax Boulevard – The northbound and southbound approaches operate below acceptable LOS criteria during both peak hours. Multiple lane groups that have turning movement queues that are not anticipated to fit within the available storage during one or more peak hours.
    - Both intersections also operate at unacceptable levels of service under existing and future without development conditions.
- The existing intersections do not exhibit a high crash rate.

Overall, the proposed American Legion Post 177 redevelopment is not anticipated to negatively impact traffic conditions or safety within the study area.

TECHNICAL APPENDIX

VDOT Crash Data Summary Table

	Crash Data for the Intersection of Main Street and Oak Street (2015 - 2019)						
	2015	**2016**	**2017**	**2018**	**2019**	**Total**	**Relative Frequency**
Crash Severity							
Fatal Collision							0.00%
Injury Collision	1	3	1	1	4	10	40.00%
Type A							
Type B	*1*				*4*	*5*	
Type C		*3*	*1*	*1*		*5*	
Property Damage Only	1		2	5	7	15	60.00%
TOTAL*	2	3	3	6	11	25	100.00%
Crash Type							
Fixed Object/ Single-Vehicle Crash							0.00%
Head-On					1	1	4.00%
Sideswipe / Same Direction							0.00%
Sideswipe / Opposite Direction							0.00%
Rear-End Collision	2	3	3	3	5	16	64.00%
Angle Collision				3	5	8	32.00%
Backed Into							0.00%
Pedestrian Collision							0.00%
Deer/Animal							0.00%
Other							0.00%
TOTAL*	2	3	3	6	11	25	100.00%
Other Factors							
Distracted Driver		2	1	2	3	8	32.00%
Alcohol Related**					1	1	4.00%
Work-Zone Related							0.00%
Inclement Weather (Non-Dry)					3	3	12.00%
Speeding							0.00%
Disregard of Traffic Control Device				1	4	5	20.00%
Pedestrian Injury***							N/A
Time of Day							
AM Peak Period (6 - 10 AM)				2	2	4	16.00%
Off Peak - Daytime (10 AM - 3 PM)	1	2	2	1	5	11	44.00%
PM Peak Period (3 - 7 PM)	1	1	1	2	4	9	36.00%
Off Peak - Nighttime (7 PM - 6 AM)				1		1	4.00%
CALCULATED CRASH RATE						***0.31***	***Crashes per MEV***

* It should be noted that an intersection radius of 100 feet was used in this analysis. Crashes also thought to be caused by the intersection may have been added based on the description of the crash and engineering judgement.

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

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

Crash Data for the Intersection of Main Street and Oak Street (2015 - 2019)

Document Number	Date	Crash Severity	Collsion Type	Pedestrain Injury	Persons Injured	Fatalities	Direction of Travel	Work Zone Related	Adverse Weather Conditions	Distracted Driver
183305264	11/19/2018	PDO.Property Damage Only	1. Rear End	0	0	0	West,West,West	no	no	no
182065262	7/13/2018	PDO.Property Damage Only	1. Rear End	0	0	0	West,West	no	no	no
190435297	2/12/2019	PDO.Property Damage Only	1. Rear End	0	0	0	West,West	no	yes	yes
170895160	3/29/2017	PDO.Property Damage Only	1. Rear End	0	0	0	West,West	no	no	no
171975249	3/22/2017	PDO.Property Damage Only	1. Rear End	0	0	0	West,West,West	no	no	no
182605159	6/20/2018	PDO.Property Damage Only	2. Angle	0	0	0	East,East,East,East	no	no	yes
190045230	1/4/2019	PDO.Property Damage Only	2. Angle	0	0	0	West,West	no	no	no
190315142	12/20/2018	PDO.Property Damage Only	2. Angle	0	0	0	West,North,South	no	no	no
180755245	2/19/2018	PDO.Property Damage Only	2. Angle	0	0	0	West,South	no	no	no
190935105	3/13/2019	PDO.Property Damage Only	2. Angle	0	0	0	East,North	no	no	no
190985222	3/11/2019	PDO.Property Damage Only	2. Angle	0	0	0	West,South	no	no	no
190435115	2/12/2019	PDO.Property Damage Only	1. Rear End	0	0	0	East,East	no	yes	no
153625355	12/3/2015	PDO.Property Damage Only	1. Rear End	0	0	0	East,East	no	no	no
193375409	12/2/2019	PDO.Property Damage Only	1. Rear End	0	0	0	West,West	no	yes	yes
191575216	5/30/2019	PDO.Property Damage Only	2. Angle	0	0	0	West,South	no	no	yes
163215162	10/21/2016	C.Nonvisible Injury	1. Rear End	0	1	0	West,East,West,West	no	no	yes
180325115	7/21/2017	C.Nonvisible Injury	1. Rear End	0	2	0	West,West	no	no	yes
160835548	3/21/2016	C.Nonvisible Injury	1. Rear End	0	1	0	East,East	no	no	no
180755231	3/13/2018	C.Nonvisible Injury	1. Rear End	0	1	0	East,East	no	no	yes

161975222	7/13/2016	C.Nonvisible Injury	1. Rear End	0	1	0	East,East	no	no	yes
191325031	4/28/2019	B.Visible Injury	3. Head On	0	9	0	West,East,East	no	no	no
193395248	12/4/2019	B.Visible Injury	2. Angle	0	4	0	East,South	no	no	no
152675102	9/17/2015	B.Visible Injury	1. Rear End	0	1	0	East,East	no	no	no
200015016	12/30/2019	B.Visible Injury	1. Rear End	0	1	0	West,West	no	no	no
191875124	7/2/2019	B.Visible Injury	1. Rear End	0	1	0	West,West	no	no	no

VDOT Crash Data Summary Table

	Crash Data for the Intersection of Oak Street and W 1st Street (2015 - 2019)						
	2015	**2016**	**2017**	**2018**	**2019**	**Total**	**Relative Frequency**
Crash Severity							
Fatal Collision							0.00%
Injury Collision							0.00%
Type A							
Type B							
Type C							
Property Damage Only			1		1	2	100.00%
TOTAL*			1		1	2	100.00%
Crash Type							
Fixed Object/ Single-Vehicle Crash							0.00%
Head-On							0.00%
Sideswipe / Same Direction					1	1	50.00%
Sideswipe / Opposite Direction							0.00%
Rear-End Collision							0.00%
Angle Collision			1			1	50.00%
Backed Into							0.00%
Pedestrian Collision							0.00%
Deer/Animal							0.00%
Other							0.00%
TOTAL*	0	0	1	0	1	2	100.00%
Other Factors							
Distracted Driver							0.00%
Alcohol Related**					1	1	50.00%
Work-Zone Related							0.00%
Inclement Weather (Non-Dry)			1			1	50.00%
Speeding							0.00%
Disregard of Traffic Control Device							0.00%
Pedestrian Injury***							N/A
Time of Day							
AM Peak Period (6 - 10 AM)					1	1	50.00%
Off Peak - Daytime (10 AM - 3 PM)			1			1	50.00%
PM Peak Period (3 - 7 PM)							0.00%
Off Peak - Nighttime (7 PM - 6 AM)							0.00%
CALCULATED CRASH RATE						***0.38***	***Crashes per MEV***

* It should be noted that an intersection radius of 100 feet was used in this analysis. Crashes also thought to be caused by the intersection may have been added based on the description of the crash and engineering judgement.

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

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

Crash Data for the Intersection of Oak Street and W 1st Street (2015 - 2019)

Document Number	Date	Crash Severity	Collsion Type	Pedestrain Injury	Persons Injured	Fatalities	Direction of Travel	Work Zone Related	Adverse Weather Conditions	Distracted Driver
190555217	2/18/2019	PDO.Property Damage Only	4. Sideswipe - Same Direction	0	0	0	South,South	no	no	no
173635216	12/15/2017	PDO.Property Damage Only	2. Angle	0	0	0	East,South	no	yes	no

VDOT Crash Data Summary Table

	Crash Data for the Intersection of Fairfax Blvd and Oak Street (2015 - 2019)						
	2015	**2016**	**2017**	**2018**	**2019**	**Total**	**Relative Frequency**
Crash Severity							
Fatal Collision							0.00%
Injury Collision	4	3	2	1	1	11	61.11%
Type A		*1*		*1*		*2*	
Type B	*2*				*1*	*3*	
Type C	*2*	*2*	*2*			*6*	
Property Damage Only	1	1	1	3	1	7	38.89%
TOTAL*	5	4	3	4	2	18	100.00%
Crash Type							
Fixed Object/ Single-Vehicle Crash							0.00%
Head-On							0.00%
Sideswipe / Same Direction			1		1	2	11.11%
Sideswipe / Opposite Direction							0.00%
Rear-End Collision	3	2	2	2	1	10	55.56%
Angle Collision	1	2		1		4	22.22%
Backed Into							0.00%
Pedestrian Collision	1			1		2	11.11%
Deer/Animal							0.00%
Other							0.00%
TOTAL*	5	4	3	4	2	18	100.00%
Other Factors							
Distracted Driver		2		1		3	16.67%
Alcohol Related**							0.00%
Work-Zone Related							0.00%
Inclement Weather (Non-Dry)	1			1		2	11.11%
Speeding							0.00%
Disregard of Traffic Control Device							0.00%
Pedestrian Injury***	1			1		2	N/A
Time of Day							
AM Peak Period (6 - 10 AM)	1		1	1		3	16.67%
Off Peak - Daytime (10 AM - 3 PM)	2	2	1		2	7	38.89%
PM Peak Period (3 - 7 PM)	1	2		2		5	27.78%
Off Peak - Nighttime (7 PM - 6 AM)	1		1	1		3	16.67%
CALCULATED CRASH RATE						***0.32***	***Crashes per MEV***

* It should be noted that an intersection radius of 100 feet was used in this analysis. Crashes also thought to be caused by the intersection may have been added based on the description of the crash and engineering judgement.

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

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

Crash Data for the Intersection of Fairfax Blvd and Oak Street (2015 - 2019)

Document Number	Date	Crash Severity	Collsion Type	Pedestrain Injury	Persons Injured	Fatalities	Direction of Travel	Work Zone Related	Adverse Weather Conditions	Distracted Driver
173345301	11/28/2017	PDO.Property Damage Only	4. Sideswipe - Same Direction	0	0	0	West,West	no	no	no
170125271	12/24/2016	PDO.Property Damage Only	1. Rear End	0	0	0	West,West	no	no	yes
190425255	2/7/2019	PDO.Property Damage Only	4. Sideswipe - Same Direction	0	0	0	West,West	no	no	no
181015165	4/9/2018	PDO.Property Damage Only	1. Rear End	0	0	0	West,West	no	no	yes
181805113	4/13/2018	PDO.Property Damage Only	2. Angle	0	0	0	North,East	no	no	no
180775227	1/9/2018	PDO.Property Damage Only	1. Rear End	0	0	0	West,West,West	no	no	no
151195110	4/14/2015	PDO.Property Damage Only	1. Rear End	0	0	0	East,East	no	yes	no
162885174	10/12/2016	C.Nonvisible Injury	2. Angle	0	1	0	West,West,West	no	no	yes
162935286	8/12/2016	C.Nonvisible Injury	1. Rear End	0	3	0	West,West,West,West	no	no	no
180265150	2/3/2017	C.Nonvisible Injury	1. Rear End	0	1	0	West,West	no	no	no
151345117	5/13/2015	C.Nonvisible Injury	1. Rear End	0	1	0	East,East	no	no	no
152455093	9/1/2015	C.Nonvisible Injury	12. Ped	1	1	0	West	no	no	no
173325294	11/15/2017	C.Nonvisible Injury	1. Rear End	0	2	0	East,East	no	no	no
150285127	1/24/2015	B.Visible Injury	2. Angle	0	2	0	North,East	no	no	no
151775158	6/16/2015	B.Visible Injury	1. Rear End	0	2	0	East,East	no	no	no
191905182	7/9/2019	B.Visible Injury	1. Rear End	0	1	0	East,East	no	no	no
181475139	5/15/2018	A.Severe Injury	12. Ped	1	1	0	East	no	yes	no
161045175	4/7/2016	A.Severe Injury	2. Angle	0	2	0	North,East	no	no	no

National Data & Surveying Services

Intersection Turning Movement Count

Location: Oak St & Main St
City: Fairfax
Control: Signalized

Project ID: 20-11018-001
Date: 3/10/2020

Total

NS/EW Streets:	Oak St				Oak St				Main St				Main St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	1	0.5	0.5	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:30 AM	0	0	0	0	3	0	1	0	2	182	5	0	1	120	13	0	327
6:45 AM	1	1	0	0	8	0	1	0	12	239	4	0	1	165	12	0	444
7:00 AM	0	0	0	0	16	0	5	0	26	283	5	0	1	154	31	0	521
7:15 AM	0	0	0	0	20	2	8	0	32	325	10	1	1	191	55	1	646
7:30 AM	0	0	0	0	28	0	11	0	13	412	10	0	5	205	31	0	715
7:45 AM	2	0	1	0	20	8	8	0	6	442	18	0	12	229	7	1	754
8:00 AM	2	0	1	0	14	2	8	0	11	464	20	0	5	231	16	0	774
8:15 AM	2	0	0	0	16	0	6	0	11	399	18	0	5	232	24	0	713
8:30 AM	2	2	0	0	24	8	3	0	3	370	12	0	6	239	17	2	688
8:45 AM	6	2	4	0	23	4	5	0	2	371	16	0	4	249	18	2	706
9:00 AM	2	2	3	0	20	4	6	0	4	410	9	0	5	267	11	0	743
9:15 AM	25	1	2	0	15	0	2	0	2	315	6	0	5	230	22	2	627
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	42	8	11	0	207	28	64	0	124	4212	133	1	51	2512	257	8	7658
APPROACH %'s :	68.85%	13.11%	18.03%	0.00%	69.23%	9.36%	21.40%	0.00%	2.77%	94.23%	2.98%	0.02%	1.80%	88.83%	9.09%	0.28%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	6	0	2	0	78	10	33	0	41	1717	66	0	27	897	78	1	2956
PEAK HR FACTOR :	0.750	0.000	0.500	0.000	0.696	0.313	0.750	0.000	0.788	0.925	0.825	0.000	0.563	0.967	0.629	0.250	0.955
	0.667				0.776				0.921				0.961				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	1	0.5	0.5	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
3:30 PM	11	1	6	0	19	4	7	0	4	245	1	0	4	372	20	6	700
3:45 PM	14	2	4	0	17	1	4	0	7	247	2	0	1	416	18	1	734
4:00 PM	19	3	1	0	11	1	13	0	2	242	5	1	2	414	24	3	741
4:15 PM	10	5	5	0	23	1	10	0	3	270	7	0	1	406	19	3	763
4:30 PM	19	4	3	0	10	1	11	0	15	248	2	0	0	375	22	0	710
4:45 PM	15	4	2	0	18	2	10	0	4	268	5	1	1	372	25	1	728
5:00 PM	20	4	3	0	22	0	12	0	4	254	3	0	2	395	25	2	746
5:15 PM	14	1	2	0	14	2	12	0	2	278	1	0	1	437	34	0	798
5:30 PM	16	1	3	0	11	1	12	0	0	258	2	0	1	410	19	2	736
5:45 PM	5	3	3	0	17	0	14	0	4	280	1	0	1	398	14	0	740
6:00 PM	11	2	1	0	12	0	12	0	9	251	5	0	1	428	19	1	752
6:15 PM	16	2	7	0	9	0	9	0	11	211	0	0	0	359	19	0	643
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	170	32	40	0	183	13	126	0	65	3052	34	2	15	4782	258	19	8791
APPROACH %'s :	70.25%	13.22%	16.53%	0.00%	56.83%	4.04%	39.13%	0.00%	2.06%	96.80%	1.08%	0.06%	0.30%	94.25%	5.08%	0.37%	
PEAK HR :	05:15 PM - 06:15 PM																TOTAL
PEAK HR VOL :	46	7	9	0	54	3	50	0	15	1067	9	0	4	1673	86	3	3026
PEAK HR FACTOR :	0.719	0.583	0.750	0.000	0.794	0.375	0.893	0.000	0.417	0.953	0.450	0.000	1.000	0.957	0.632	0.375	0.948
	0.775				0.863				0.957				0.935				

Prepared by National Data & Surveying Services

Oak St & Main St

Peak Hour Turning Movement Count

ID: 20-11018-001
City: Fairfax

Day: Tuesday
Date: 03/10/2020

	PEAK HOURS	COUNT PERIODS
AM	07:30 AM - 08:30 AM	06:30 AM - 09:30 AM
NOON	NONE	NONE
PM	05:15 PM - 06:15 PM	03:30 PM - 06:30 PM

Oak St — SOUTHBOUND

	Right	Through	Left	U-Turn	Departing
AM	33	10	78	0	119
NOON	0	0	0	0	0
PM	50	3	54	0	108
Lanes	0.5	0.5	1	0	

Main St — EASTBOUND

	AM	NOON	PM	Lanes
Departing	936	0	1769	
U-Turn	0	0	0	0
Left	41	0	15	1
Through	1717	0	1067	2
Right	66	0	9	1

Main St — WESTBOUND

	Lanes	PM	NOON	AM
Right	0	86	0	78
Through	2	1673	0	897
Left	1	4	0	27
U-Turn	0	3	0	1
Departing		1133	0	1798

Oak St — NORTHBOUND

	Departing	U-Turn	Left	Through	Right
Lanes		0	0	1	0
PM	16	0	46	7	9
NOON	0	0	0	0	0
AM	103	0	6	0	2

CONTROL

Signalized

	AM	NOON	PM
TEV	2956	0	3026
PHF	0.95		0.95

Cars (AM)

	Right	Through	Left
Southbound	33	10	77
Eastbound	66	1687	40
Westbound	76	875	27
Northbound	2	0	5

HT (AM)

	Right	Through	Left
Southbound	0	0	1
Eastbound	0	30	1
Westbound	2	22	0
Northbound	0	0	1

Cars (NOON)

	Right	Through	Left
Southbound	N/A	N/A	N/A
Eastbound	N/A	N/A	N/A
Westbound	N/A	N/A	N/A
Northbound	N/A	N/A	N/A

HT (NOON)

	Right	Through	Left
Southbound	N/A	N/A	N/A
Eastbound	N/A	N/A	N/A
Westbound	N/A	N/A	N/A
Northbound	N/A	N/A	N/A

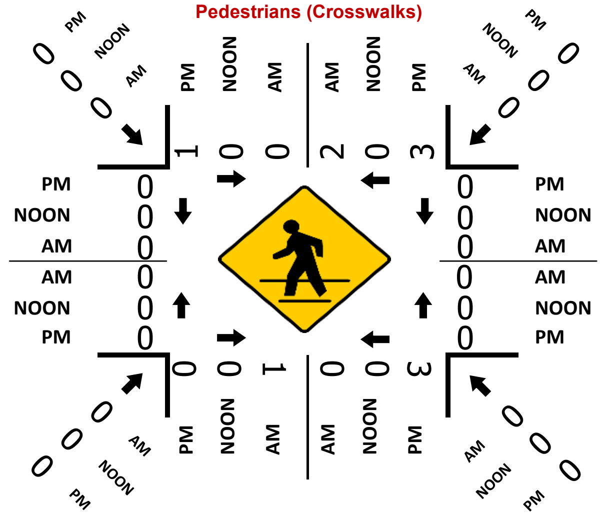
Cars (PM)

	Right	Through	Left
Southbound	50	3	53
Eastbound	9	1064	15
Westbound	86	1662	4
Northbound	8	7	46

HT (PM)

	Right	Through	Left
Southbound	0	0	1
Eastbound	0	3	0
Westbound	0	11	0
Northbound	1	0	0

Pedestrians (Crosswalks)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Oak St & W 1st St/Malbec Ln
City: Fairfax
Control: 2-Way Stop (EB/WB)

Project ID: 20-11018-002
Date: 3/10/2020

Total

NS/EW Streets:	Oak St				Oak St				W 1st St/Malbec Ln				W 1st St/Malbec Ln				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:30 AM	0	15	0	0	0	3	0	0	1	1	0	0	2	2	5	0	29
6:45 AM	1	22	1	0	1	4	0	0	0	0	1	0	4	0	2	0	36
7:00 AM	0	52	2	0	0	17	0	0	0	0	3	0	4	0	5	0	83
7:15 AM	2	82	0	0	1	20	0	0	0	1	0	0	8	2	7	0	123
7:30 AM	0	42	1	0	1	28	1	0	1	0	2	0	9	1	5	0	91
7:45 AM	0	12	0	0	0	27	0	0	1	0	3	0	4	0	5	0	52
8:00 AM	0	18	4	0	0	27	2	0	0	1	2	0	2	0	6	0	62
8:15 AM	1	26	3	0	2	20	1	0	0	0	1	0	4	0	1	0	59
8:30 AM	0	23	0	0	1	30	0	0	0	0	3	0	3	0	3	0	63
8:45 AM	0	18	2	1	1	26	0	0	1	0	2	0	3	0	3	0	57
9:00 AM	0	11	3	0	0	27	0	0	0	1	1	0	7	1	2	0	53
9:15 AM	2	24	0	0	1	7	0	0	2	0	0	0	9	0	5	0	50
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	6	345	16	1	8	236	4	0	6	4	18	0	59	6	49	0	758
APPROACH %'s :	1.63%	93.75%	4.35%	0.27%	3.23%	95.16%	1.61%	0.00%	21.43%	14.29%	64.29%	0.00%	51.75%	5.26%	42.98%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	2	188	3	0	2	92	1	0	2	1	8	0	25	3	22	0	349
PEAK HR FACTOR :	0.250	0.573	0.375	0.000	0.500	0.821	0.250	0.000	0.500	0.250	0.667	0.000	0.694	0.375	0.786	0.000	0.709
		0.574				0.792				0.688				0.735			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
3:30 PM	1	21	3	0	1	30	1	0	0	0	1	0	2	1	2	0	63
3:45 PM	0	16	11	0	1	15	0	0	0	0	1	0	3	1	3	0	51
4:00 PM	1	23	4	0	3	21	1	0	0	0	1	0	6	0	0	0	60
4:15 PM	0	25	2	0	2	23	1	0	0	0	2	1	3	0	1	0	60
4:30 PM	0	33	9	0	5	17	2	0	0	0	2	0	2	0	2	0	72
4:45 PM	0	31	4	0	6	29	2	0	1	0	0	0	3	0	1	0	77
5:00 PM	1	29	5	1	4	24	1	0	1	0	1	0	5	0	1	0	73
5:15 PM	2	27	6	0	5	18	0	0	1	0	2	0	4	0	4	0	69
5:30 PM	1	18	2	0	7	19	2	0	1	0	0	0	3	0	1	0	54
5:45 PM	0	19	2	0	6	26	0	0	0	0	1	0	2	0	1	0	57
6:00 PM	0	26	4	0	9	18	3	0	1	1	1	0	1	0	2	0	66
6:15 PM	1	22	9	0	3	17	2	0	0	0	0	0	4	0	3	0	61
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	7	290	61	1	52	257	15	0	5	1	12	1	38	2	21	0	763
APPROACH %'s :	1.95%	80.78%	16.99%	0.28%	16.05%	79.32%	4.63%	0.00%	26.32%	5.26%	63.16%	5.26%	62.30%	3.28%	34.43%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	3	120	24	1	20	88	5	0	3	0	5	0	14	0	8	0	291
PEAK HR FACTOR :	0.375	0.909	0.667	0.250	0.833	0.759	0.625	0.000	0.750	0.000	0.625	0.000	0.700	0.000	0.500	0.000	0.945
		0.881				0.764				0.667				0.688			

Prepared by National Data & Surveying Services

Oak St & W 1st St/Malbec Ln

Peak Hour Turning Movement Count

ID: 20-11018-002
City: Fairfax

Day: Tuesday
Date: 03/10/2020

PEAK HOURS		COUNT PERIODS
AM	07:00 AM - 08:00 AM	06:30 AM - 09:30 AM
NOON	NONE	NONE
PM	04:30 PM - 05:30 PM	03:30 PM - 06:30 PM

SOUTHBOUND (Oak St)

AM	1	92	2	0	212	AM
NOON	0	0	0	0	0	NOON
PM	5	88	20	0	131	PM
	0	1	0	0		

EASTBOUND (W 1st St/Malbec Ln)

AM	NOON	PM	
6	0	8	
0	0	0	0
2	0	3	0
1	0	0	1
8	0	5	0

WESTBOUND (W 1st St/Malbec Ln)

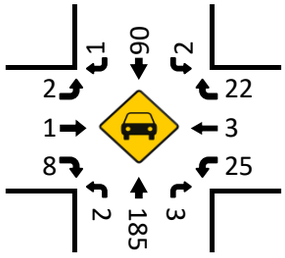
	PM	NOON	AM
0	8	0	22
1	0	0	3
0	14	0	25
0	0	0	0
	44	0	6

NORTHBOUND (Oak St)

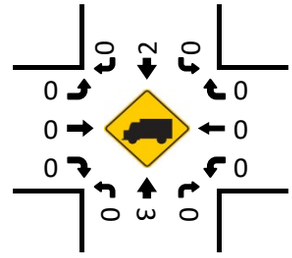
PM	108	1	3	120	24	PM
NOON	0	0	0	0	0	NOON
AM	125	0	2	188	3	AM
		0	0	1	0	

CONTROL			
2-Way Stop (EB/WB)			
TEV	349	0	291
	AM	NOON	PM
PHF	0.71		0.94

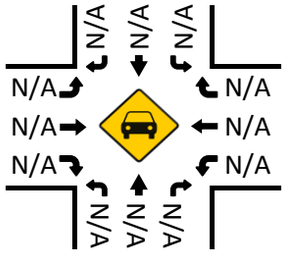
Cars (AM)



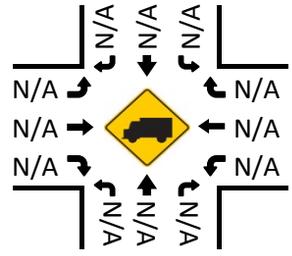
HT (AM)



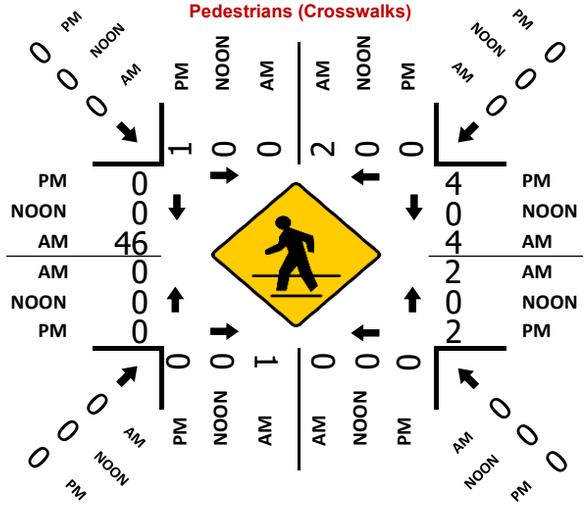
Cars (NOON)



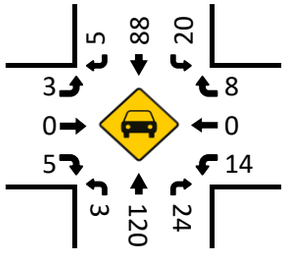
HT (NOON)



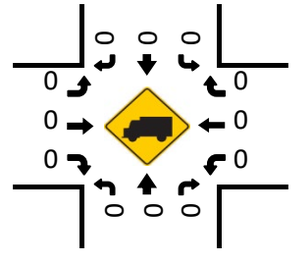
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Oak St & Second St
City: Fairfax
Control: 2-Way Stop (EB/WB)

Project ID: 20-11018-003
Date: 3/10/2020

Total

NS/EW Streets:	Oak St				Oak St				Second St				Second St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:30 AM	0	21	0	0	0	3	0	0	1	0	0	0	0	0	0	0	25
6:45 AM	0	24	0	0	0	4	0	0	1	0	1	0	0	0	0	0	30
7:00 AM	0	57	0	0	0	17	0	0	2	1	1	0	0	1	0	0	79
7:15 AM	0	81	6	0	0	19	0	0	11	1	2	0	0	1	0	0	121
7:30 AM	2	47	1	0	0	29	0	0	10	0	3	0	1	0	0	0	93
7:45 AM	0	18	0	0	0	21	0	0	2	0	0	0	2	2	0	0	45
8:00 AM	1	22	1	0	0	23	1	0	1	1	2	0	4	0	0	0	56
8:15 AM	0	27	0	0	0	21	1	0	1	1	2	0	0	1	0	0	54
8:30 AM	0	25	1	0	0	30	1	0	0	1	1	0	0	0	0	0	59
8:45 AM	1	18	3	0	0	23	2	0	0	0	3	0	1	0	0	0	51
9:00 AM	0	13	0	0	0	25	0	0	0	0	1	0	1	0	0	0	40
9:15 AM	0	30	1	0	0	6	1	0	2	2	2	0	1	0	0	0	45
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	4	383	13	0	0	221	6	0	31	7	18	0	10	5	0	0	698
APPROACH %'s :	1.00%	95.75%	3.25%	0.00%	0.00%	97.36%	2.64%	0.00%	55.36%	12.50%	32.14%	0.00%	66.67%	33.33%	0.00%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	2	203	7	0	0	86	0	0	25	2	6	0	3	4	0	0	338
PEAK HR FACTOR :	0.250	0.627	0.292	0.000	0.000	0.741	0.000	0.000	0.568	0.500	0.500	0.000	0.375	0.500	0.000	0.000	0.698
		0.609				0.741				0.589				0.438			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
3:30 PM	2	20	1	0	0	31	0	0	2	1	1	0	1	0	0	0	59
3:45 PM	1	18	1	0	0	14	1	0	1	1	2	0	0	0	0	0	39
4:00 PM	0	19	0	0	0	23	1	0	1	0	2	0	0	0	0	0	46
4:15 PM	0	26	1	0	0	23	2	0	1	1	2	0	1	0	0	0	57
4:30 PM	1	32	2	0	0	25	0	0	1	0	2	0	0	0	0	0	63
4:45 PM	0	28	1	0	0	32	1	0	2	0	3	0	1	0	0	0	68
5:00 PM	2	29	0	0	0	28	0	0	0	0	2	0	0	0	0	0	61
5:15 PM	0	32	0	0	0	24	1	0	3	0	2	0	0	0	0	0	62
5:30 PM	1	19	1	0	1	28	1	0	1	1	0	0	1	0	0	0	54
5:45 PM	1	19	0	0	0	30	0	0	1	0	3	0	0	0	0	0	54
6:00 PM	0	29	0	0	0	26	1	0	0	0	3	0	0	0	1	0	60
6:15 PM	1	25	2	0	0	23	1	0	0	0	0	0	2	0	0	0	54
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	9	296	9	0	1	307	9	0	13	4	22	0	6	0	1	0	677
APPROACH %'s :	2.87%	94.27%	2.87%	0.00%	0.32%	96.85%	2.84%	0.00%	33.33%	10.26%	56.41%	0.00%	85.71%	0.00%	14.29%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	3	121	3	0	0	109	2	0	6	0	9	0	1	0	0	0	254
PEAK HR FACTOR :	0.375	0.945	0.375	0.000	0.000	0.852	0.500	0.000	0.500	0.000	0.750	0.000	0.250	0.000	0.000	0.000	0.934
		0.907				0.841				0.750				0.250			

Prepared by National Data & Surveying Services

Oak St & Second St

Peak Hour Turning Movement Count

ID: 20-11018-003
City: Fairfax

Day: Tuesday
Date: 03/10/2020

PEAK HOURS		COUNT PERIODS
07:00 AM - 08:00 AM		06:30 AM - 09:30 AM
NONE		NONE
04:30 PM - 05:30 PM		03:30 PM - 06:30 PM

SOUTHBOUND (Oak St)

	U-Turn	Left	Thru	Right		
AM	0	86	0	0	228	AM
NOON	0	0	0	0	0	NOON
PM	2	109	0	0	127	PM
	0	1	0	0		

EASTBOUND (Second St)

AM	NOON	PM		
6	0	5		
0	0	0		0
25	0	6		0
2	0	0		1
6	0	9		0

WESTBOUND (Second St)

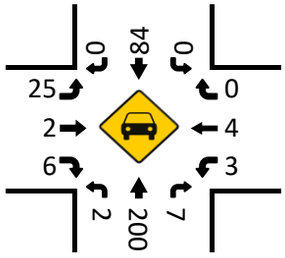
		PM	NOON	AM
	0	0	0	0
	1	0	0	4
	0	1	0	3
	0	0	0	0
		3	0	9

NORTHBOUND (Oak St)

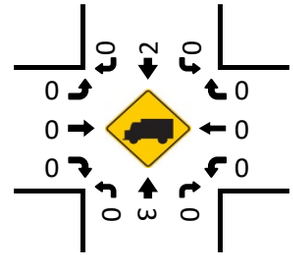
	U-Turn	Left	Thru	Right		
PM	119	0	3	121	3	PM
NOON	0	0	0	0	0	NOON
AM	95	0	2	203	7	AM
		0	0	1	0	

CONTROL			
2-Way Stop (EB/WB)			
TEV	338	0	254
	AM	NOON	PM
PHF	0.70		0.93

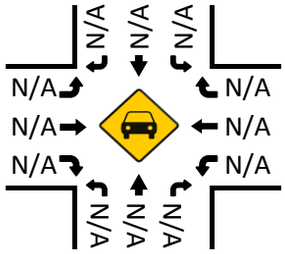
Cars (AM)



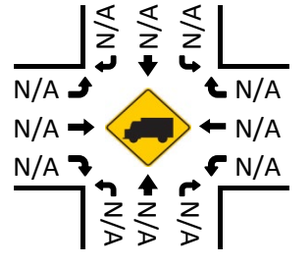
HT (AM)



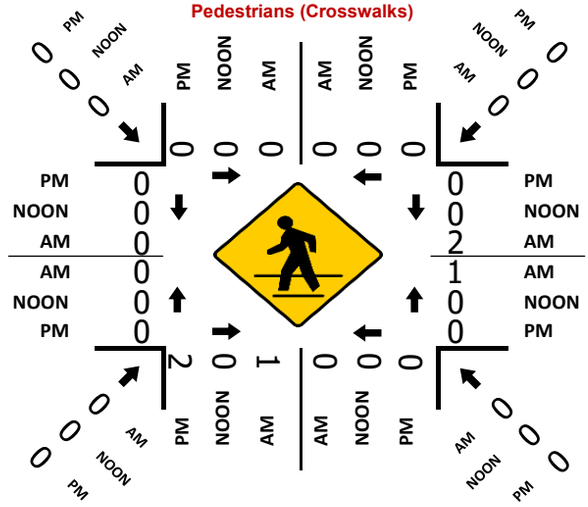
Cars (NOON)



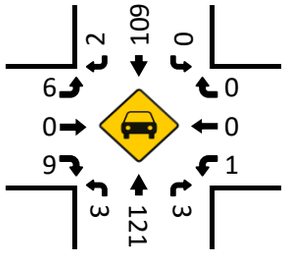
HT (NOON)



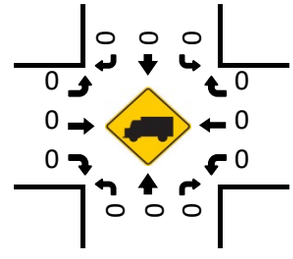
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Oak St & Entrance to Baseball Parking Lot
City: Fairfax
Control: 1-Way Stop (WB)

Project ID: 20-11018-006
Date: 3/10/2020

Total

NS/EW Streets:	Oak St				Oak St				Entrance to Baseball Parking Lot				Entrance to Baseball Parking Lot				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:30 AM	0	21	0	0	1	2	0	0	0	0	0	0	0	0	0	0	24
6:45 AM	0	26	0	0	1	4	0	0	0	0	0	0	0	0	0	0	31
7:00 AM	0	56	0	0	1	16	1	0	1	0	0	0	0	0	0	0	75
7:15 AM	1	82	0	0	0	19	0	0	0	0	0	0	0	0	2	0	104
7:30 AM	0	67	0	0	0	28	0	0	0	0	1	0	0	0	0	0	96
7:45 AM	0	20	0	0	0	20	0	0	0	0	1	0	0	0	0	0	41
8:00 AM	0	20	1	0	0	24	1	0	2	0	0	0	0	1	1	0	50
8:15 AM	0	29	0	0	1	21	0	0	0	0	0	0	1	0	1	0	53
8:30 AM	0	24	0	0	0	32	0	0	0	0	0	0	0	0	0	0	56
8:45 AM	0	18	0	0	1	25	1	0	0	0	0	0	0	0	0	0	45
9:00 AM	0	14	0	0	0	25	1	0	1	0	0	0	0	0	0	0	41
9:15 AM	0	31	0	0	3	7	0	0	0	0	0	0	0	0	1	0	42
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	408	1	0	8	223	4	0	4	0	2	0	1	1	5	0	658
APPROACH %'s :	0.24%	99.51%	0.24%	0.00%	3.40%	94.89%	1.70%	0.00%	66.67%	0.00%	33.33%	0.00%	14.29%	14.29%	71.43%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	1	225	0	0	1	83	1	0	1	0	2	0	0	0	2	0	316
PEAK HR FACTOR :	0.250	0.686	0.000	0.000	0.250	0.741	0.250	0.000	0.250	0.000	0.500	0.000	0.000	0.000	0.250	0.000	0.760
	0.681				0.759				0.750				0.250				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
3:30 PM	0	19	0	0	1	31	0	0	0	0	0	0	0	0	1	0	52
3:45 PM	0	17	0	0	2	15	0	0	0	0	0	0	0	0	1	0	35
4:00 PM	1	24	0	0	2	25	0	0	0	0	0	0	0	0	0	0	52
4:15 PM	0	24	0	0	1	25	1	0	1	0	0	0	0	0	1	0	53
4:30 PM	0	33	0	0	1	25	1	0	0	0	0	0	0	0	2	0	62
4:45 PM	0	33	1	0	0	31	0	0	0	0	1	0	0	0	2	0	68
5:00 PM	0	30	0	0	2	28	1	0	1	0	1	0	0	0	0	0	63
5:15 PM	0	34	0	0	0	24	1	0	0	0	1	0	0	0	1	0	61
5:30 PM	0	18	0	0	0	28	0	0	0	0	0	0	1	0	2	0	49
5:45 PM	0	22	0	0	0	30	0	0	0	0	0	0	0	0	1	0	53
6:00 PM	0	30	0	0	0	29	0	0	0	0	0	0	0	0	2	0	61
6:15 PM	0	22	0	0	1	20	0	0	0	0	0	0	0	0	1	0	44
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	306	1	0	10	311	4	0	2	0	3	0	1	0	14	0	653
APPROACH %'s :	0.32%	99.35%	0.32%	0.00%	3.08%	95.69%	1.23%	0.00%	40.00%	0.00%	60.00%	0.00%	6.67%	0.00%	93.33%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	130	1	0	3	108	3	0	1	0	3	0	0	0	5	0	254
PEAK HR FACTOR :	0.000	0.956	0.250	0.000	0.375	0.871	0.750	0.000	0.250	0.000	0.750	0.000	0.000	0.000	0.625	0.000	0.934
	0.963				0.919				0.500				0.625				

Prepared by National Data & Surveying Services

Oak St & Entrance to Baseball Parking Lot

Peak Hour Turning Movement Count

ID: 20-11018-006
City: Fairfax

Day: Tuesday
Date: 03/10/2020

PEAK HOURS	
AM	07:00 AM - 08:00 AM
NOON	NONE
PM	04:30 PM - 05:30 PM

COUNT PERIODS	
AM	06:30 AM - 09:30 AM
NOON	NONE
PM	03:30 PM - 06:30 PM

SOUTHBOUND (Oak St)

AM	1	83	1	0	228
NOON	0	0	0	0	0
PM	3	108	3	0	136

EASTBOUND (Entrance to Baseball Parking Lot)

AM	NOON	PM
2	0	3
0	0	0
1	0	1
0	0	0
2	0	3

WESTBOUND (Entrance to Baseball Parking Lot)

PM	NOON	AM
5	0	2
0	0	0
0	0	0
0	0	0
4	0	1

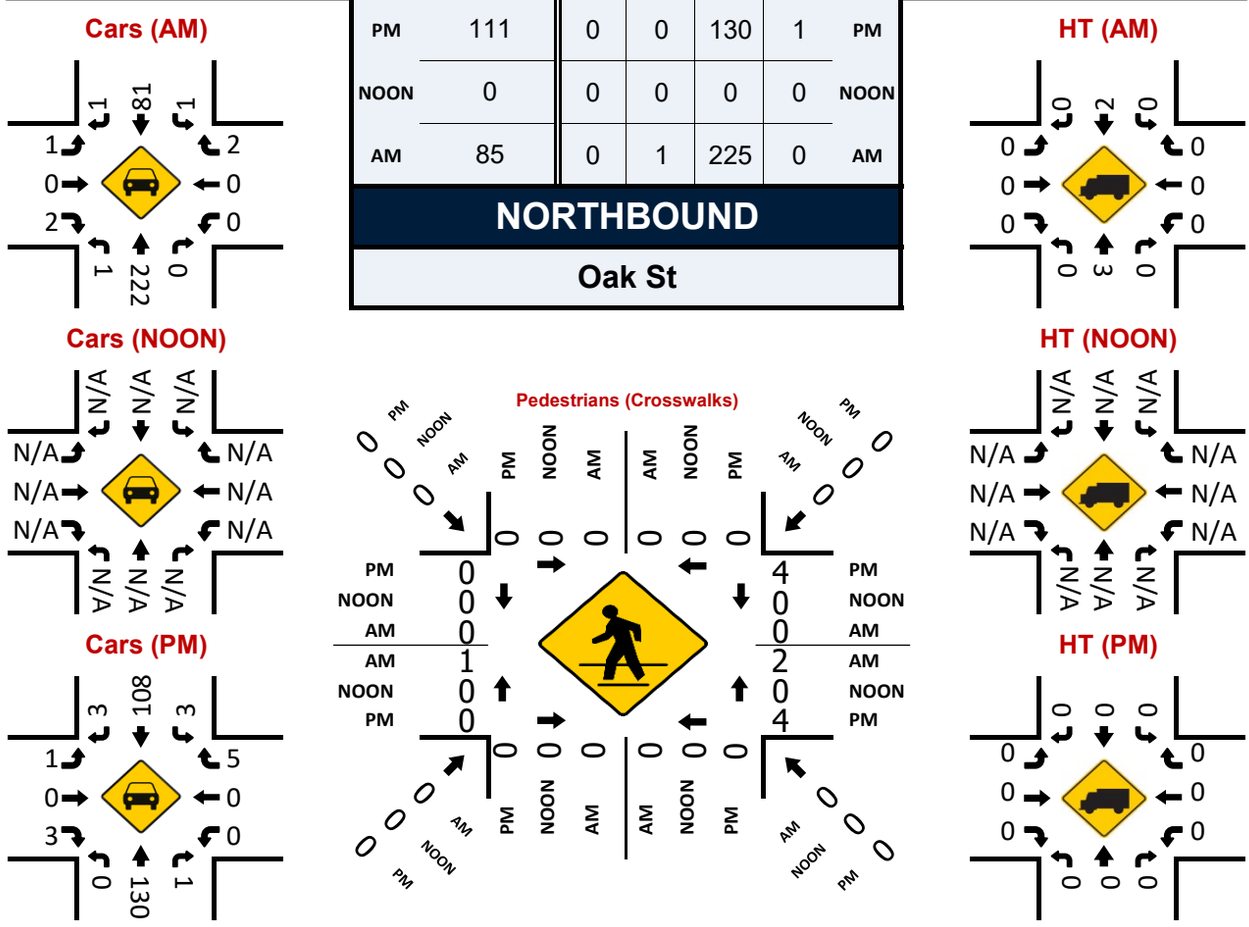
NORTHBOUND (Oak St)

PM	111	0	0	130	1
NOON	0	0	0	0	0
AM	85	0	1	225	0

Turning movements (red):

0	1	0	0	
0				0
1				0
0				0
0				1
0				0
	0	0	1	0

CONTROL			
1-Way Stop (WB)			
TEV	316	0	254
	AM	NOON	PM
PHF	0.76		0.93



National Data & Surveying Services

Intersection Turning Movement Count

Location: Oak St & Cedar Ave/Panther Pl
City: Fairfax
Control: 4-Way Stop

Project ID: 20-11018-004
Date: 3/10/2020

Total

NS/EW Streets:	Oak St				Oak St				Cedar Ave/Panther Pl				Cedar Ave/Panther Pl				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:30 AM	0	9	10	0	1	3	1	0	3	6	0	0	0	3	1	0	37
6:45 AM	1	14	13	0	8	3	0	0	4	26	1	0	1	2	8	0	81
7:00 AM	1	16	39	0	30	7	5	0	4	61	4	0	9	11	14	0	201
7:15 AM	0	17	64	0	56	3	0	0	3	86	0	0	16	16	55	0	316
7:30 AM	0	15	58	0	48	6	2	0	6	71	1	0	22	24	75	0	328
7:45 AM	0	20	0	0	3	13	0	0	8	2	1	0	4	5	5	0	61
8:00 AM	1	18	3	0	6	25	1	0	7	8	0	0	2	2	2	0	75
8:15 AM	0	21	9	0	1	21	5	0	2	5	1	0	1	3	3	0	72
8:30 AM	0	21	4	0	5	29	2	0	2	2	2	1	2	4	4	0	78
8:45 AM	1	14	3	0	5	20	2	0	3	3	4	0	3	2	2	0	62
9:00 AM	1	14	0	0	3	26	0	0	1	1	0	0	2	2	2	0	52
9:15 AM	1	26	4	0	2	7	1	0	6	3	1	0	1	3	1	0	56
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	6	205	207	0	168	163	19	0	49	274	15	1	63	77	172	0	1419
APPROACH %'s :	1.44%	49.04%	49.52%	0.00%	48.00%	46.57%	5.43%	0.00%	14.45%	80.83%	4.42%	0.29%	20.19%	24.68%	55.13%	0.00%	
PEAK HR :	06:45 AM - 07:45 AM																TOTAL
PEAK HR VOL :	2	62	174	0	142	19	7	0	17	244	6	0	48	53	152	0	926
PEAK HR FACTOR :	0.500	0.912	0.680	0.000	0.634	0.679	0.350	0.000	0.708	0.709	0.375	0.000	0.545	0.552	0.507	0.000	0.706
	0.735				0.712				0.750				0.523				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
3:30 PM	1	14	5	0	6	19	7	0	2	5	1	0	11	15	11	0	97
3:45 PM	2	14	2	0	7	12	4	0	1	5	2	0	6	13	15	0	83
4:00 PM	0	20	4	0	4	19	5	0	2	5	2	0	5	4	9	0	79
4:15 PM	1	22	3	0	4	21	6	0	3	4	3	0	1	6	2	0	76
4:30 PM	0	32	3	0	4	21	3	0	3	2	2	0	4	9	5	0	88
4:45 PM	4	22	7	0	7	23	2	0	3	6	3	0	5	11	7	0	100
5:00 PM	2	22	7	0	9	13	7	0	3	5	6	0	14	26	14	0	128
5:15 PM	1	28	7	0	9	17	8	0	2	6	2	0	5	10	14	0	109
5:30 PM	3	16	2	0	9	22	7	0	1	3	1	0	4	9	8	0	85
5:45 PM	5	12	6	0	4	28	3	1	1	4	0	0	2	6	10	0	82
6:00 PM	0	29	4	0	6	27	6	0	0	7	0	0	2	3	9	0	93
6:15 PM	0	16	7	0	19	19	2	0	2	13	0	0	3	2	8	0	91
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	19	247	57	0	88	241	60	1	23	65	22	0	62	114	112	0	1111
APPROACH %'s :	5.88%	76.47%	17.65%	0.00%	22.56%	61.79%	15.38%	0.26%	20.91%	59.09%	20.00%	0.00%	21.53%	39.58%	38.89%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	7	104	24	0	29	74	20	0	11	19	13	0	28	56	40	0	425
PEAK HR FACTOR :	0.438	0.813	0.857	0.000	0.806	0.804	0.625	0.000	0.917	0.792	0.542	0.000	0.500	0.538	0.714	0.000	0.830
	0.938				0.904				0.768				0.574				

Prepared by National Data & Surveying Services

Oak St & Cedar Ave/Panther Pl

Peak Hour Turning Movement Count

ID: 20-11018-004
City: Fairfax

Day: Tuesday
Date: 03/10/2020

PEAK HOURS

AM	06:45 AM - 07:45 AM
NOON	NONE
PM	04:30 PM - 05:30 PM

COUNT PERIODS

AM	06:30 AM - 09:30 AM
NOON	NONE
PM	03:30 PM - 06:30 PM

SOUTHBOUND (Oak St)

	Left	Thru	Right	U-Turn	Total
AM	7	19	142	0	231
NOON	0	0	0	0	0
PM	20	74	29	0	155

EASTBOUND (Cedar Ave/Panther Pl)

	AM	NOON	PM
Left	0	0	0
Thru	17	0	11
Right	244	0	19
U-Turn	6	0	13
Total	62	0	83

WESTBOUND (Cedar Ave/Panther Pl)

	PM	NOON	AM
U-Turn	0	0	0
Left	1	0	0
Thru	0	0	1
Right	0	0	0
Total	72	0	560

NORTHBOUND (Oak St)

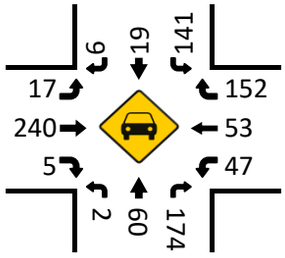
	U-Turn	Left	Thru	Right	Total
PM	115	0	7	104	24
NOON	0	0	0	0	0
AM	73	0	2	62	174

CONTROL

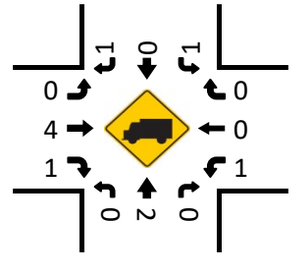
4-Way Stop

TEV	926	0	425
	AM	NOON	PM
PHF	0.71		0.83

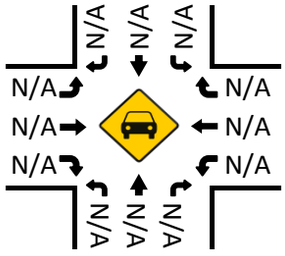
Cars (AM)



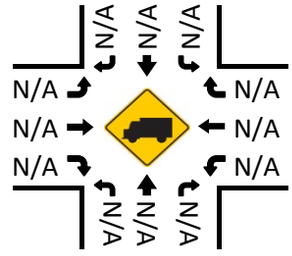
HT (AM)



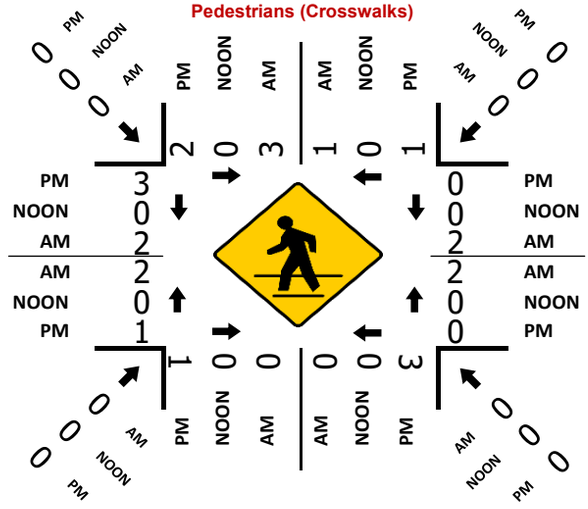
Cars (NOON)



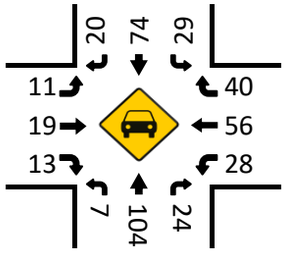
HT (NOON)



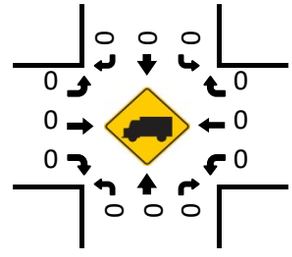
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Oak St/Meredith Dr & Fairfax Blvd/Lee Hwy
City: Fairfax
Control: Signalized

Project ID: 20-11018-005
Date: 3/10/2020

Total

NS/EW Streets:	Oak St/Meredith Dr				Oak St/Meredith Dr				Fairfax Blvd/Lee Hwy				Fairfax Blvd/Lee Hwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	0	1	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:30 AM	3	0	13	0	1	1	1	0	1	393	0	0	2	64	1	0	480
6:45 AM	1	0	22	0	0	0	2	0	5	391	3	0	10	92	0	0	526
7:00 AM	11	0	13	0	5	9	7	0	0	393	6	0	18	89	0	0	551
7:15 AM	19	2	53	0	1	20	4	0	2	402	11	0	32	93	0	0	639
7:30 AM	24	2	50	0	4	8	5	0	4	401	1	0	34	141	0	0	674
7:45 AM	12	2	33	0	3	2	4	0	1	291	0	0	12	169	1	0	530
8:00 AM	7	2	19	0	3	1	7	0	4	330	2	0	22	169	1	0	567
8:15 AM	6	2	11	0	3	0	10	0	3	378	2	0	12	140	0	0	567
8:30 AM	6	1	19	0	3	2	5	0	5	423	1	0	27	154	1	0	647
8:45 AM	4	0	19	0	2	1	0	0	5	332	5	0	18	175	0	0	561
9:00 AM	7	0	15	0	1	1	8	0	6	328	4	0	21	132	1	0	524
9:15 AM	5	3	21	0	4	1	5	0	4	316	2	0	8	156	1	0	526
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	105	14	288	0	30	46	58	0	40	4378	37	0	216	1574	6	0	6792
APPROACH %'s :	25.80%	3.44%	70.76%	0.00%	22.39%	34.33%	43.28%	0.00%	0.90%	98.27%	0.83%	0.00%	12.03%	87.64%	0.33%	0.00%	
PEAK HR :	**07:15 am - 08:15 am**																TOTAL
PEAK HR VOL :	62	8	155	0	11	31	20	0	11	1424	14	0	100	572	2	0	2410
PEAK HR FACTOR :	0.646	1.000	0.731	0.000	0.688	0.388	0.714	0.000	0.688	0.886	0.318	0.000	0.735	0.846	0.500	0.000	0.894
	0.740				0.620				0.873				0.878				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	0	1	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
3:30 PM	11	1	16	0	0	0	2	0	7	187	7	0	20	353	0	0	604
3:45 PM	7	0	23	0	3	2	8	0	3	179	7	0	13	365	2	0	612
4:00 PM	15	1	19	0	1	2	7	0	4	166	7	0	17	358	1	0	598
4:15 PM	8	0	21	0	0	1	8	0	6	213	4	0	24	365	1	1	652
4:30 PM	3	3	30	0	3	1	7	0	3	171	6	0	4	353	4	0	588
4:45 PM	7	1	20	0	3	4	10	0	10	199	11	0	4	356	1	0	626
5:00 PM	9	5	23	0	0	3	8	0	3	204	7	0	18	371	1	0	652
5:15 PM	11	3	32	0	3	4	7	0	10	210	2	0	24	359	0	0	665
5:30 PM	8	1	22	0	2	5	7	0	4	196	10	0	23	337	1	0	616
5:45 PM	9	1	19	0	2	3	5	0	6	183	7	0	24	356	0	0	615
6:00 PM	4	3	25	0	4	7	6	0	7	204	8	0	20	359	0	0	647
6:15 PM	8	2	17	0	4	4	4	0	8	175	13	0	21	371	1	0	628
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	100	21	267	0	25	36	79	0	71	2287	89	0	212	4303	12	1	7503
APPROACH %'s :	25.77%	5.41%	68.81%	0.00%	17.86%	25.71%	56.43%	0.00%	2.90%	93.46%	3.64%	0.00%	4.68%	95.03%	0.27%	0.02%	
PEAK HR :	**04:45 pm - 05:45 pm**																TOTAL
PEAK HR VOL :	35	10	97	0	8	16	32	0	27	809	30	0	69	1423	3	0	2559
PEAK HR FACTOR :	0.795	0.500	0.758	0.000	0.667	0.800	0.800	0.000	0.675	0.963	0.682	0.000	0.719	0.959	0.750	0.000	0.962
	0.772				0.824				0.975				0.958				

Prepared by National Data & Surveying Services

Oak St/Meredith Dr & Fairfax Blvd/Lee Hwy

Peak Hour Turning Movement Count

ID: 20-11018-005
City: Fairfax

Day: Tuesday
Date: 03/10/2020

PEAK HOURS	COUNT PERIODS
07:15 am - 08:15 am	06:30 am - 09:30 am
NONE	NONE
04:45 pm - 05:45 pm	03:30 pm - 06:30 pm

SOUTHBOUND (Oak St/Meredith Dr)

AM	20	31	11	0	21	AM
NOON	0	0	0	0	0	NOON
PM	32	16	8	0	40	PM

EASTBOUND (Fairfax Blvd/Lee Hwy)

AM	NOON	PM	
654	0	1490	⇦
0	0	0	↶ 0
11	0	27	↱ 1
1424	0	809	→ 2
14	0	30	↳ 0

WESTBOUND (Fairfax Blvd/Lee Hwy)

	PM	NOON	AM
0 ↰	3	0	2
2 ←	1423	0	572
1 ↰	69	0	100
0 ↶	0	0	0
⇨	914	0	1590

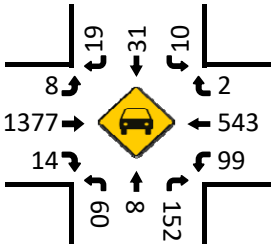
NORTHBOUND (Oak St/Meredith Dr)

PM	115	0	35	10	97	PM
NOON	0	0	0	0	0	NOON
AM	145	0	62	8	155	AM

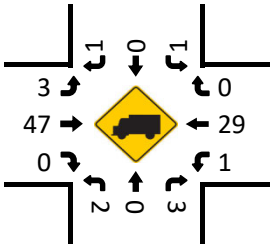
	↶	↰	↑	↱
	0	1	0	1

CONTROL			
Signalized			
TEV	2410 AM	0 NOON	2559 PM
PHF	0.89		0.96

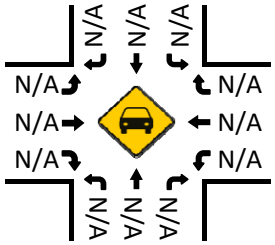
Cars (AM)



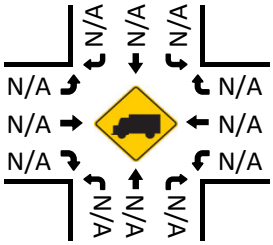
HT (AM)



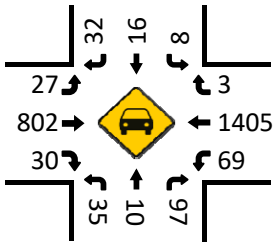
Cars (NOON)



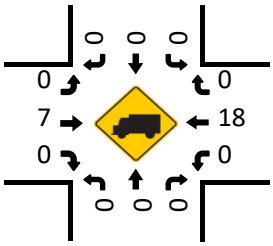
HT (NOON)



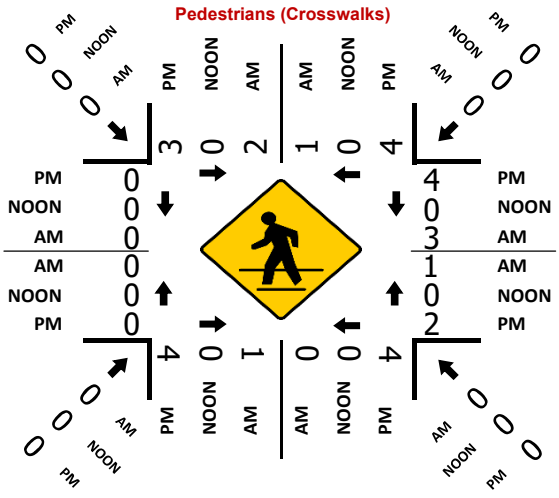
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)



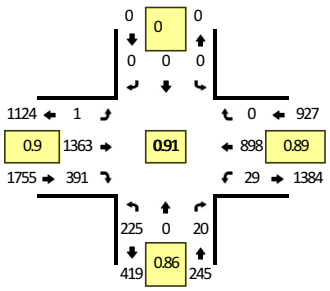
Type of peak hour being reported: User-Defined

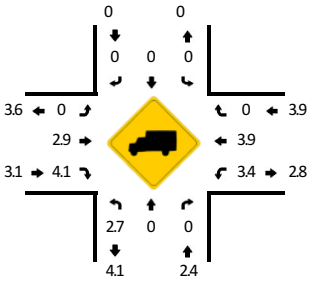
Method for determining peak hour: Total Entering Volume

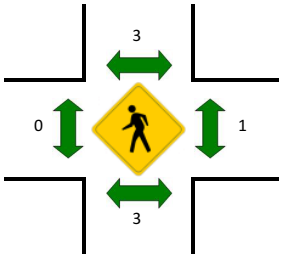
LOCATION: Judicial Dr -- Main St
CITY/STATE: Fairfax, VA

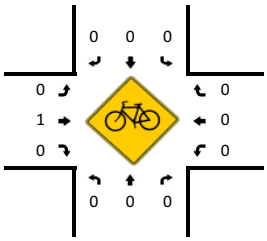
QC JOB #: 15056201
DATE: Tue, Sep 10 2019

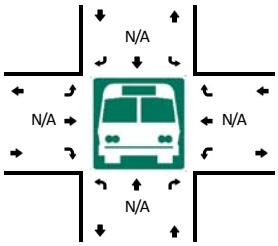
Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

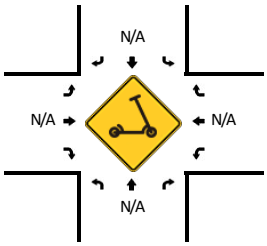












15-Min Count Period Beginning At	Judicial Dr (Northbound)				Judicial Dr (Southbound)				Main St (Eastbound)				Main St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:30 AM	36	0	6	0	0	0	0	0	0	196	44	1	3	99	0	0	385	
6:45 AM	26	0	5	0	0	0	0	0	0	266	57	1	3	174	0	0	532	
7:00 AM	58	0	6	0	0	0	0	0	0	264	58	2	0	176	0	0	564	
7:15 AM	51	0	6	0	0	0	0	0	0	287	87	0	11	212	0	0	654	2135
7:30 AM	63	0	8	0	0	0	0	0	0	392	80	1	2	189	0	1	736	2486
7:45 AM	58	0	1	0	0	0	0	0	0	368	119	0	8	251	0	0	805	2759
8:00 AM	53	0	5	0	0	0	0	0	0	316	105	0	7	246	0	0	732	2927
8:15 AM	52	0	11	0	0	0	0	0	0	291	131	0	9	248	0	0	742	3015
8:30 AM	67	0	8	0	0	0	0	0	0	362	145	1	10	210	0	0	803	3082
8:45 AM	66	0	11	0	0	0	0	0	0	331	128	1	13	193	0	0	743	3020
9:00 AM	90	0	13	0	0	0	0	0	0	321	146	0	12	222	0	0	804	3092
9:15 AM	78	0	11	0	0	0	0	0	0	292	116	0	14	204	0	0	715	3065

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	232	0	4	0	0	0	0	0	0	1472	476	0	32	1004	0	0	3220
Heavy Trucks	4	0	0		0	0	0		0	44	4		0	16	0		68
Buses																	
Pedestrians		0				8				0				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 4/30/2020 3:17 PM

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

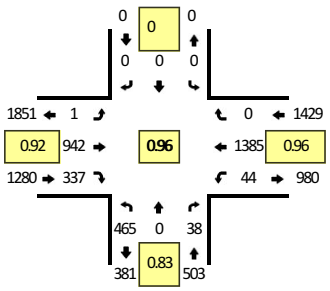
Type of peak hour being reported: User-Defined

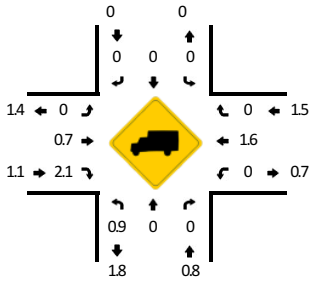
Method for determining peak hour: Total Entering Volume

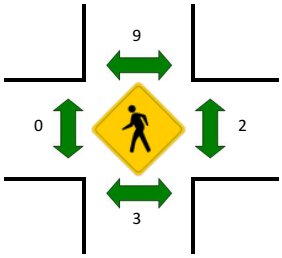
LOCATION: Judicial Dr -- Main St
CITY/STATE: Fairfax, VA

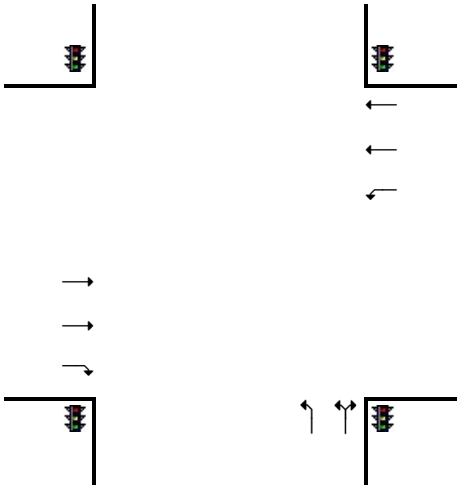
QC JOB #: 15056202
DATE: Tue, Sep 10 2019

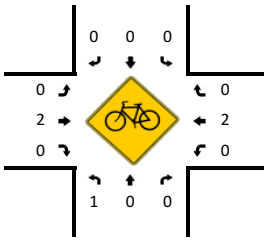
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 4:45 PM -- 5:00 PM

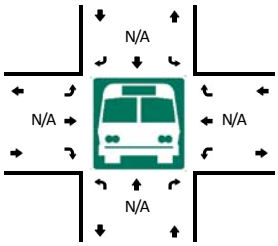


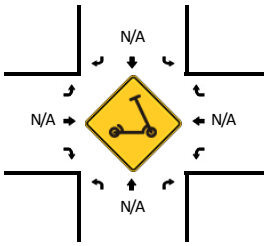












15-Min Count Period Beginning At	Judicial Dr (Northbound)				Judicial Dr (Southbound)				Main St (Eastbound)				Main St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	102	0	13	0	0	0	0	0	0	194	97	0	16	349	0	0	771	
4:15 PM	111	0	8	0	0	0	0	0	0	205	88	0	10	331	0	1	754	
4:30 PM	125	0	10	0	0	0	0	0	0	230	88	0	5	351	0	1	810	
4:45 PM	138	0	14	0	0	0	0	0	0	263	84	0	8	333	0	0	840	3175
5:00 PM	138	0	9	0	0	0	0	0	0	236	82	0	12	352	0	0	829	3233
5:15 PM	95	0	7	0	0	0	0	0	0	212	83	1	8	342	0	0	748	3227
5:30 PM	94	0	8	0	0	0	0	0	0	231	88	0	16	358	0	0	795	3212
5:45 PM	70	0	7	0	0	0	0	0	0	256	79	0	5	300	0	1	718	3090
6:00 PM	81	0	5	0	0	0	0	0	0	218	78	0	13	340	0	1	736	2997
6:15 PM	67	0	4	0	0	0	0	0	0	204	77	0	9	317	0	1	679	2928
6:30 PM	67	0	4	0	0	0	0	0	0	194	75	0	12	295	0	0	647	2780
6:45 PM	71	0	4	0	0	0	0	0	0	179	72	0	7	309	0	0	642	2704

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	552	0	56	0	0	0	0	0	0	1052	336	0	32	1332	0	0	3360
Heavy Trucks	8	0	0		0	0	0		0	8	8		0	20	0		44
Buses																	
Pedestrians		4				12				0				8			24
Bicycles	0	0	0		0	0	0		0	4	0		0	4	0		8
Scooters																	

Comments:

Report generated on 4/30/2020 3:18 PM

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

National Data & Surveying Services

Intersection Turning Movement Count

Location: Mclean Ave/United Bank Dwy & Fairfax Blvd/Warwick Ave
City: Fairfax
Control: Signalized

Project ID: 19-11036-005
Date: 3/20/2019

Total

AM

NS/EW Streets:	Mclean Ave/United Bank Dwy							Mclean Ave/United Bank Dwy						
AM	NORTHBOUND							SOUTHBOUND						
	0	1	0	0	0	0	0	0	1	0	0	0	0	0
	NL	NT	NR	NU	NL2	NR2	NU2	SL	ST	SR	SU	SL2	ST2	SR2
6:00 AM	0	0	1	0	0	0	0	0	0	1	0	2	0	0
6:15 AM	1	0	2	0	0	0	0	1	0	0	0	0	0	0
6:30 AM	0	0	3	0	0	0	0	2	0	0	0	0	0	0
6:45 AM	0	1	3	0	1	0	0	1	0	1	0	1	0	0
7:00 AM	4	1	12	0	5	0	0	1	1	0	0	0	0	0
7:15 AM	1	0	2	0	2	0	0	4	0	0	0	1	0	0
7:30 AM	1	3	7	0	1	0	0	13	1	0	0	1	0	0
7:45 AM	3	4	14	0	4	0	0	16	4	1	0	1	0	0
8:00 AM	2	1	9	0	4	0	0	8	2	1	0	2	0	0
8:15 AM	3	1	4	0	1	0	0	2	1	0	0	2	0	0
8:30 AM	1	1	4	0	1	0	0	2	3	1	0	2	0	0
8:45 AM	1	2	7	0	1	2	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	NL2	NR2	NU2	SL	ST	SR	SU	SL2	ST2	SR2
TOTAL VOLUMES :	17	14	68	0	20	2	0	50	12	5	0	12	0	0
APPROACH %'s :	14.05%	11.57%	56.20%	0.00%	16.53%	1.65%	0.00%	63.29%	15.19%	6.33%	0.00%	15.19%	0.00%	0.00%
PEAK HR :	07:45 AM - 08:45 AM													
PEAK HR VOL :	9	7	31	0	10	0	0	28	10	3	0	7	0	0
PEAK HR FACTOR :	0.750	0.438	0.554	0.000	0.625	0.000	0.000	0.438	0.625	0.750	0.000	0.875	0.000	0.000
				0.570							0.545			

NS/EW Streets:	Fairfax Blvd/Warwick Ave							Fairfax Blvd/Warwick Ave						
AM	EASTBOUND							WESTBOUND						
	1	2	0	0	0	0	0	1	2	0	0	0	0	0
	EL	ET	ER	EU	ET2	ER2	EU2	WL	WT	WR	WU	WL2	WT2	WU2
6:00 AM	0	194	1	0	5	0	1	0	38	0	0	0	3	2
6:15 AM	0	343	1	0	7	0	0	3	68	1	0	0	3	1
6:30 AM	1	419	0	0	8	0	0	4	65	0	0	0	2	0
6:45 AM	0	384	2	0	9	0	0	3	87	0	0	0	9	2
7:00 AM	1	408	0	0	4	1	1	0	117	3	0	1	8	2
7:15 AM	1	407	1	0	10	0	0	4	151	2	0	0	12	4
7:30 AM	0	393	0	0	12	0	0	5	140	1	1	0	8	4
7:45 AM	0	342	3	0	9	1	0	7	170	2	0	0	11	4
8:00 AM	0	353	3	0	8	1	0	7	187	2	0	0	7	0
8:15 AM	0	369	4	0	8	1	0	4	164	1	0	0	17	1
8:30 AM	0	377	1	0	18	1	0	3	173	1	0	0	6	5
8:45 AM	1	349	3	0	19	3	1	5	187	2	0	0	5	7
	EL	ET	ER	EU	ET2	ER2	EU2	WL	WT	WR	WU	WL2	WT2	WU2
TOTAL VOLUMES :	4	4338	19	0	117	8	3	45	1547	15	1	1	91	32
APPROACH %'s :	0.09%	96.64%	0.42%	0.00%	2.61%	0.18%	0.07%	2.60%	89.32%	0.87%	0.06%	0.06%	5.25%	1.85%
PEAK HR VOL :	0	1441	11	0	43	4	0	21	694	6	0	0	41	10
PEAK HR FACTOR :	0.000	0.956	0.688	0.000	0.597	1.000	0.000	0.750	0.928	0.750	0.000	0.000	0.603	0.500
				0.944							0.951			

NS/EW Streets:														
AM	NORTHBOUND2													
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	N2L	N2R	N2U	N2L2	N2T2	N2R2	N2U2	E2T	E2R	E2U	E2L2	E2T2	E2R2	E2U2
6:00 AM	0	0	0	0	0	0	0	1	0	0	0	4	0	0
6:15 AM	0	0	0	0	0	0	0	2	0	0	0	6	1	0
6:30 AM	0	0	0	0	0	0	0	1	0	0	0	9	0	0
6:45 AM	0	0	0	0	0	0	0	3	0	0	0	8	0	0
7:00 AM	0	0	0	0	0	1	0	6	1	0	0	11	1	0
7:15 AM	0	0	0	0	0	0	0	11	0	0	0	24	1	0
7:30 AM	0	0	0	0	0	1	0	6	0	0	1	29	0	0
7:45 AM	0	0	0	0	0	1	0	6	0	0	0	49	0	0
8:00 AM	0	0	0	0	0	0	0	7	0	0	0	36	0	0
8:15 AM	0	1	0	0	0	1	0	10	0	0	1	18	0	3
8:30 AM	0	0	0	0	0	2	0	5	1	0	1	15	1	0
8:45 AM	0	0	0	0	0	0	0	7	0	0	0	12	1	0
	N2L	N2R	N2U	N2L2	N2T2	N2R2	N2U2	E2T	E2R	E2U	E2L2	E2T2	E2R2	E2U2
TOTAL VOLUMES :	0	1	0	0	0	6	0	65	2	0	3	221	5	3
APPROACH %'s :	0.00%	14.29%	0.00%	0.00%	0.00%	85.71%	0.00%	21.74%	0.67%	0.00%	1.00%	73.91%	1.67%	1.00%
PEAK HR VOL :	0	1	0	0	0	4	0	28	1	0	2	118	1	3
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.500	0.000	0.700	0.250	0.000	0.500	0.602	0.250	0.250
				0.625										

NS/EW Streets:								
AM	WESTBOUND2							
	0	0	0	0	0	0	0	
	W2L	W2T	W2U	W2L2	W2T2	W2R2	W2U2	TOTAL
6:00 AM	0	0	0	1	2	0	0	256
6:15 AM	0	2	0	0	1	0	0	443
6:30 AM	0	0	0	0	2	0	0	516
6:45 AM	0	4	0	0	6	0	0	525
7:00 AM	0	1	0	0	4	0	1	596
7:15 AM	0	3	0	0	3	1	0	645
7:30 AM	0	1	0	0	1	0	0	630
7:45 AM	0	4	0	0	5	0	0	661
8:00 AM	0	4	0	0	4	0	0	648
8:15 AM	0	2	0	1	3	0	0	623
8:30 AM	0	2	0	0	3	0	0	630
8:45 AM	0	2	0	0	4	0	1	622
	W2L	W2T	W2U	W2L2	W2T2	W2R2	W2U2	TOTAL
TOTAL VOLUMES :	0	25	0	2	38	1	2	6795
APPROACH %'s :	0.00%	36.76%	0.00%	2.94%	55.88%	1.47%	2.94%	
PEAK HR :								TOTAL
PEAK HR VOL :	0	12	0	1	15	0	0	2562
PEAK HR FACTOR :	0.000	0.750	0.000	0.250	0.750	0.000	0.000	0.969
				0.778				

PM

	NORTHBOUND							SOUTHBOUND						
PM	0	1	0	0	0	0	0	0	1	0	0	0	0	0
	NL	NT	NR	NU	NL2	NR2	NU2	SL	ST	SR	SU	SL2	ST2	SR2
4:00 PM	4	0	1	0	5	0	0	2	0	1	0	0	0	0
4:15 PM	2	4	3	0	5	0	0	1	1	0	0	0	0	0
4:30 PM	6	1	2	0	1	0	0	2	1	1	0	0	0	0
4:45 PM	3	4	7	0	0	1	0	1	0	1	0	1	0	0
5:00 PM	3	2	9	0	7	0	0	6	3	0	0	1	0	0
5:15 PM	7	2	4	0	8	1	0	4	0	2	0	1	0	0
5:30 PM	9	7	5	0	8	0	0	5	0	0	0	0	0	2
5:45 PM	5	2	3	0	4	1	0	0	1	0	0	1	0	2
6:00 PM	6	2	3	0	7	0	0	7	1	0	0	1	0	0
6:15 PM	3	1	5	0	2	0	0	2	0	1	0	1	0	0
6:30 PM	1	1	7	0	2	0	0	1	1	0	0	2	0	0
6:45 PM	4	0	3	0	3	0	0	1	0	1	0	1	0	0
	NL	NT	NR	NU	NL2	NR2	NU2	SL	ST	SR	SU	SL2	ST2	SR2
TOTAL VOLUMES :	53	26	52	0	52	3	0	32	8	7	0	9	0	4
APPROACH %'s :	28.49%	13.98%	27.96%	0.00%	27.96%	1.61%	0.00%	53.33%	13.33%	11.67%	0.00%	15.00%	0.00%	6.67%
PEAK HR :	05:00 PM - 06:00 PM													
PEAK HR VOL :	24	13	21	0	27	2	0	15	4	2	0	3	0	4
PEAK HR FACTOR :	0.667	0.464	0.583	0.000	0.844	0.500	0.000	0.625	0.333	0.250	0.000	0.750	0.000	0.500
				0.750							0.700			

	EASTBOUND							WESTBOUND						
PM	1	2	0	0	0	0	0	1	2	0	0	0	0	0
	EL	ET	ER	EU	ET2	ER2	EU2	WL	WT	WR	WU	WL2	WT2	WU2
4:00 PM	1	215	3	0	11	0	0	9	377	0	0	1	20	7
4:15 PM	3	204	5	0	17	0	0	4	401	1	0	0	17	8
4:30 PM	1	199	3	0	10	0	0	10	382	1	0	0	28	6
4:45 PM	0	229	7	0	17	0	2	6	356	1	0	0	30	4
5:00 PM	0	225	3	0	20	0	1	9	394	0	0	0	28	4
5:15 PM	0	196	1	0	16	1	1	2	364	2	0	0	29	6
5:30 PM	0	194	3	0	17	0	2	7	346	3	0	1	38	6
5:45 PM	0	194	2	0	20	0	2	6	415	2	0	0	33	6
6:00 PM	0	209	4	0	11	0	1	9	350	1	0	0	32	5
6:15 PM	0	207	5	0	7	0	1	10	360	2	0	0	38	1
6:30 PM	0	177	3	0	20	0	0	10	367	3	0	1	28	5
6:45 PM	2	183	0	0	12	0	1	6	353	1	0	1	14	8
	EL	ET	ER	EU	ET2	ER2	EU2	WL	WT	WR	WU	WL2	WT2	WU2
TOTAL VOLUMES :	7	2432	39	0	178	1	11	88	4465	17	0	4	335	66
APPROACH %'s :	0.26%	91.15%	1.46%	0.00%	6.67%	0.04%	0.41%	1.77%	89.75%	0.34%	0.00%	0.08%	6.73%	1.33%
PEAK HR VOL :	0	809	9	0	73	1	6	24	1519	7	0	1	128	22
PEAK HR FACTOR :	0.000	0.899	0.750	0.000	0.913	0.250	0.750	0.667	0.915	0.583	0.000	0.250	0.842	0.917
				0.902							0.920			

	NORTHBOUND2													
PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	N2L	N2R	N2U	N2L2	N2T2	N2R2	N2U2	E2T	E2R	E2U	E2L2	E2T2	E2R2	E2U2
4:00 PM	0	0	0	0	0	1	0	3	0	0	0	21	2	2
4:15 PM	0	0	0	0	0	1	0	7	0	0	0	18	1	2
4:30 PM	0	2	0	0	0	0	0	10	0	0	0	16	4	2
4:45 PM	1	1	0	1	0	1	0	10	0	0	1	12	1	0
5:00 PM	0	1	0	0	0	2	0	8	0	0	0	20	0	1
5:15 PM	0	0	0	0	0	2	0	15	0	0	0	23	0	0
5:30 PM	0	1	0	0	0	0	0	8	0	0	0	13	4	0
5:45 PM	0	0	0	0	0	1	0	13	0	0	0	20	0	1
6:00 PM	0	0	0	0	0	1	0	11	0	0	0	7	1	0
6:15 PM	0	0	0	0	0	0	0	4	0	0	0	17	3	0
6:30 PM	0	0	0	0	0	2	0	9	0	0	2	10	0	0
6:45 PM	0	0	0	1	0	0	0	8	0	0	0	15	2	0
	N2L	N2R	N2U	N2L2	N2T2	N2R2	N2U2	E2T	E2R	E2U	E2L2	E2T2	E2R2	E2U2
TOTAL VOLUMES :	1	5	0	2	0	11	0	106	0	0	3	192	18	8
APPROACH %'s :	5.26%	26.32%	0.00%	10.53%	0.00%	57.89%	0.00%	32.42%	0.00%	0.00%	0.92%	58.72%	5.50%	2.45%
PEAK HR VOL :	0	2	0	0	0	5	0	44	0	0	0	76	4	2
PEAK HR FACTOR :	0.000	0.500	0.000	0.000	0.000	0.625	0.000	0.733	0.000	0.000	0.000	0.826	0.250	0.500
				0.583										

	WESTBOUND2							
PM	0	0	0	0	0	0	0	
	W2L	W2T	W2U	W2L2	W2T2	W2R2	W2U2	TOTAL
4:00 PM	0	3	0	0	5	0	3	697
4:15 PM	0	0	0	0	7	0	2	714
4:30 PM	0	3	0	0	8	0	0	699
4:45 PM	0	1	0	0	4	0	0	703
5:00 PM	0	4	0	0	5	1	1	758
5:15 PM	0	3	0	0	4	0	2	696
5:30 PM	0	6	0	0	6	1	0	692
5:45 PM	0	5	0	0	4	0	1	744
6:00 PM	0	2	0	1	3	1	0	676
6:15 PM	0	4	0	1	4	0	0	679
6:30 PM	0	1	0	0	3	0	2	658
6:45 PM	0	5	0	0	5	1	0	631
	W2L	W2T	W2U	W2L2	W2T2	W2R2	W2U2	TOTAL
TOTAL VOLUMES :	0	37	0	2	58	4	11	8347
APPROACH %'s :	0.00%	33.04%	0.00%	1.79%	51.79%	3.57%	9.82%	
PEAK HR :								TOTAL
PEAK HR VOL :	0	18	0	0	19	2	4	2890
PEAK HR FACTOR :	0.000	0.750	0.000	0.000	0.792	0.500	0.500	0.953
				0.827				

Prepared by National Data & Surveying Services

Mclean Ave/United Bank Dwy & Fairfax Blvd/Warwick Ave

Peak Hour Turning Movement Count

ID: 19-11036-005
City: Fairfax

Day: Wednesday
Date: 03/20/2019

PEAK HOURS	COUNT PERIODS
07:45 AM - 08:45 AM	06:00 AM - 09:00 AM
NONE	NONE
05:00 PM - 06:00 PM	04:00 PM - 07:00 PM

Mclean Ave/United Bank Dwy — SOUTHBOUND

AM	3	10	28	0	13	AM
NOON	0	0	0	0	0	NOON
PM	2	4	15	0	20	PM

Fairfax Blvd/Warwick Ave — EASTBOUND

AM	NOON	PM	
706	0	1545	
0	0	0	0
0	0	0	1
1441	0	809	2
11	0	9	0

Fairfax Blvd/Warwick Ave — WESTBOUND

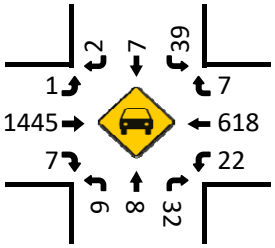
	PM	NOON	AM
0	7	0	6
2	1519	0	694
1	24	0	21
0	0	0	0
	845	0	1500

Mclean Ave/United Bank Dwy — NORTHBOUND

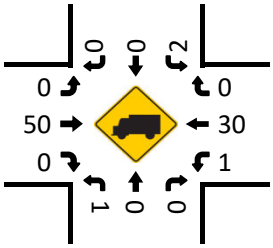
PM	37	0	24	13	21	PM
NOON	0	0	0	0	0	NOON
AM	42	0	9	7	31	AM

CONTROL			
Signalized			
TEV	2261	0	2447
	AM	NOON	PM
PHF	0.97		0.95

Cars (AM)



HT (AM)



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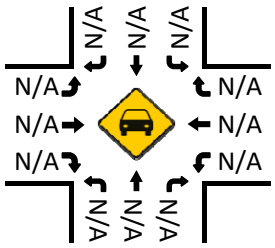

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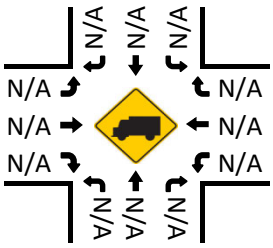
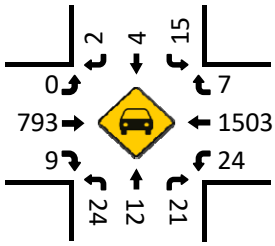
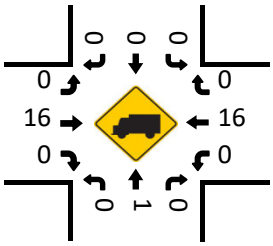


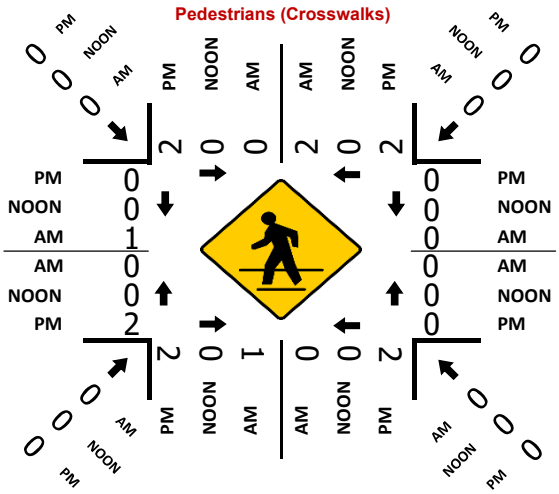
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)



LEVEL OF SERVICE DEFINITIONS

All capacity analyses are based on the procedures specified by the Transportation Research Board, Special Report 209: Highway Capacity Manual (HCM), 2000. Levels of service (LOS) range from A to F. A brief description of each level of service for signalized and unsignalized intersections is provided below.

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

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

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

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

- Level of Service A. Describes operations where there is very little to no conflicting traffic for a minor side street movement, i.e., an average total delay of less than 10.0 seconds per vehicle.
- Level of Service B. Describes operations with average total delay in the range of 10.1 to 15.0 seconds per vehicle.

- Level of Service C. Describes operations with average total delay in the range of 15.1 to 25.0 second per vehicle.
- Level of Service D. Describes operations with average total delay in the range of 25.1 to 35.0 seconds per vehicle.
- Level of Service E. Describes operations with average total delay in the range of 35.1 to 50.0 seconds per vehicle.
- Level of Service F. Describes operations with average total delay of 50 seconds per vehicle. LOS F exists when there are insufficient gaps of suitable size to allow a side street demand to cross safely through or enter a major street traffic stream. This level of service is generally evident from extremely long total delays experienced by side street traffic and by queuing on the minor approaches. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal driver behavior.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	73	1901	67	29	1116	6	95	55
v/c Ratio	0.19	0.69	0.06	0.17	0.43	0.03	0.63	0.28
Control Delay	4.5	13.2	2.0	5.8	9.0	0.3	98.5	30.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.5	13.2	2.0	5.8	9.0	0.3	98.5	30.7
Queue Length 50th (ft)	14	578	2	5	234	0	116	16
Queue Length 95th (ft)	30	794	19	15	331	0	181	64
Internal Link Dist (ft)		298			293	120		275
Turn Bay Length (ft)	105		80	140				
Base Capacity (vph)	544	2751	1212	362	2615	315	261	324
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.69	0.06	0.08	0.43	0.02	0.36	0.17

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	1768	62	27	921	117	4	0	2	88	13	38
Future Volume (vph)	68	1768	62	27	921	117	4	0	2	88	13	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7			6.6		4.6	6.6	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98			0.95		1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97		0.95	1.00	
Satd. Flow (prot)	1752	3539	1543	1770	3435			1722		1770	1654	
Flt Permitted	0.23	1.00	1.00	0.08	1.00			0.85		0.75	1.00	
Satd. Flow (perm)	416	3539	1543	146	3435			1514		1404	1654	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	73	1901	67	29	990	126	4	0	2	95	14	41
RTOR Reduction (vph)	0	0	14	0	3	0	0	5	0	0	37	0
Lane Group Flow (vph)	73	1901	53	29	1113	0	0	1	0	95	18	0
Confl. Peds. (#/hr)	3		1	1		3						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	3%	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			4	
Permitted Phases	2		2	6			4			4		
Actuated Green, G (s)	153.4	146.4	146.4	149.8	144.6			18.4		18.4	18.4	
Effective Green, g (s)	153.4	146.4	146.4	149.8	144.6			18.4		20.4	18.4	
Actuated g/C Ratio	0.81	0.77	0.77	0.79	0.76			0.10		0.11	0.10	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7			6.6		6.6	6.6	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	385	2726	1188	159	2614			146		150	160	
v/s Ratio Prot	c0.01	c0.54		0.00	0.32						0.01	
v/s Ratio Perm	0.15		0.03	0.14				0.00		c0.07		
v/c Ratio	0.19	0.70	0.05	0.18	0.43			0.00		0.63	0.11	
Uniform Delay, d1	4.6	10.8	5.2	10.8	8.0			77.5		81.2	78.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.2	1.5	0.1	0.6	0.5			0.0		8.4	0.3	
Delay (s)	4.8	12.3	5.3	11.3	8.5			77.5		89.7	78.7	
Level of Service	A	B	A	B	A			E		F	E	
Approach Delay (s)		11.8			8.6			77.5			85.6	
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)	20.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 Research does not support Non-NEMA phasing.

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	2	7	24	3	24	2	158	5	2	104	3
Future Vol, veh/h	2	2	7	24	3	24	2	158	5	2	104	3
Conflicting Peds, #/hr	2	0	1	1	0	2	0	0	6	6	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	3	2	2	2	2
Mvmt Flow	2	2	8	28	4	28	2	186	6	2	122	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	339	330	125	333	329	197	126	0	0	198	0	0
Stage 1	128	128	-	199	199	-	-	-	-	-	-	-
Stage 2	211	202	-	134	130	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	615	589	926	620	590	844	1460	-	-	1375	-	-
Stage 1	876	790	-	803	736	-	-	-	-	-	-	-
Stage 2	791	734	-	869	789	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	589	584	925	607	585	838	1460	-	-	1368	-	-
Mov Cap-2 Maneuver	589	584	-	607	585	-	-	-	-	-	-	-
Stage 1	874	788	-	797	731	-	-	-	-	-	-	-
Stage 2	758	729	-	856	787	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	10.7	0.1	0.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1460	-	-	765	696	1368	-	-
HCM Lane V/C Ratio	0.002	-	-	0.017	0.086	0.002	-	-
HCM Control Delay (s)	7.5	0	-	9.8	10.7	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	2	7	7	3	0	3	172	8	0	94	1
Future Vol, veh/h	25	2	7	7	3	0	3	172	8	0	94	1
Conflicting Peds, #/hr	0	0	2	2	0	0	1	0	3	3	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	13	2	2	2
Mvmt Flow	29	2	8	8	4	0	4	202	9	0	111	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	330	335	115	337	331	210	113	0	0	214	0	0
Stage 1	113	113	-	218	218	-	-	-	-	-	-	-
Stage 2	217	222	-	119	113	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	623	585	937	617	588	830	1476	-	-	1356	-	-
Stage 1	892	802	-	784	723	-	-	-	-	-	-	-
Stage 2	785	720	-	885	802	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	618	581	935	606	584	828	1475	-	-	1353	-	-
Mov Cap-2 Maneuver	618	581	-	606	584	-	-	-	-	-	-	-
Stage 1	888	801	-	780	719	-	-	-	-	-	-	-
Stage 2	779	716	-	873	801	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.8	11.1	0.1	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1475	-	-	662	599	1353	-	-
HCM Lane V/C Ratio	0.002	-	-	0.06	0.02	-	-	-
HCM Control Delay (s)	7.4	0	-	10.8	11.1	0	-	-
HCM Lane LOS	A	A	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	3	194	1	0	93
Future Vol, veh/h	0	3	194	1	0	93
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	4	228	1	0	109

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	340	231	0	0	231	0
Stage 1	231	-	-	-	-	-
Stage 2	109	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	656	808	-	-	1337	-
Stage 1	807	-	-	-	-	-
Stage 2	916	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	655	807	-	-	1335	-
Mov Cap-2 Maneuver	655	-	-	-	-	-
Stage 1	805	-	-	-	-	-
Stage 2	916	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	807	1335	-
HCM Lane V/C Ratio	-	-	0.004	-	-
HCM Control Delay (s)	-	-	9.5	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Intersection Delay, s/veh	11.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	171	2	45	48	140	1	72	128	116	48	3
Future Vol, veh/h	25	171	2	45	48	140	1	72	128	116	48	3
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.88	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	4	2	2	2	2
Mvmt Flow	29	201	2	53	56	165	1	85	151	136	56	4
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.9	11.7	11.2	11.7
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	13%	19%	69%
Vol Thru, %	36%	86%	21%	29%
Vol Right, %	64%	1%	60%	2%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	201	198	233	167
LT Vol	1	25	45	116
Through Vol	72	171	48	48
RT Vol	128	2	140	3
Lane Flow Rate	236	233	274	196
Geometry Grp	1	1	1	1
Degree of Util (X)	0.348	0.363	0.398	0.319
Departure Headway (Hd)	5.295	5.614	5.227	5.847
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	676	638	685	613
Service Time	3.355	3.674	3.285	3.91
HCM Lane V/C Ratio	0.349	0.365	0.4	0.32
HCM Control Delay	11.2	11.9	11.7	11.7
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1.6	1.7	1.9	1.4

Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	12	1616	112	645	79	174	69
v/c Ratio	0.03	0.76	0.59	0.28	0.63	0.64	0.58
Control Delay	13.2	32.0	33.1	15.3	106.7	21.0	92.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.2	32.0	33.1	15.3	106.7	21.0	92.6
Queue Length 50th (ft)	4	716	37	127	98	0	73
Queue Length 95th (ft)	18	#1216	137	315	158	81	129
Internal Link Dist (ft)		239		615	524		220
Turn Bay Length (ft)	100		120				
Base Capacity (vph)	451	2131	197	2344	162	299	168
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.76	0.57	0.28	0.49	0.58	0.41

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1424	14	100	572	2	62	8	155	11	31	20
Future Volume (vph)	11	1424	14	100	572	2	62	8	155	11	31	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.1	7.1		7.1	7.1			8.6	8.6		8.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.97		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1418	3499		1770	3436			1768	1533		1730	
Flt Permitted	0.41	1.00		0.06	1.00			0.96	1.00		0.99	
Satd. Flow (perm)	607	3499		118	3436			1768	1533		1730	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	12	1600	16	112	643	2	70	9	174	12	35	22
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	162	0	9	0
Lane Group Flow (vph)	12	1616	0	112	645	0	0	79	12	0	60	0
Confl. Peds. (#/hr)	3		1	1		3			4	4		
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	27%	3%	2%	2%	5%	2%	3%	2%	2%	9%	2%	5%
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)	114.6	111.7		131.3	121.3			13.5	13.5		12.0	
Effective Green, g (s)	114.6	111.7		131.3	121.3			13.5	13.5		12.0	
Actuated g/C Ratio	0.60	0.59		0.69	0.64			0.07	0.07		0.06	
Clearance Time (s)	7.1	7.1		7.1	7.1			8.6	8.6		8.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	378	2057		190	2193			125	108		109	
v/s Ratio Prot	0.00	c0.46		c0.04	0.19			c0.04			c0.03	
v/s Ratio Perm	0.02			0.37					0.01			
v/c Ratio	0.03	0.79		0.59	0.29			0.63	0.11		0.55	
Uniform Delay, d1	15.1	30.0		30.9	15.3			85.8	82.7		86.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.0	3.1		4.6	0.3			10.0	0.5		5.5	
Delay (s)	15.1	33.1		35.5	15.6			95.8	83.1		91.9	
Level of Service	B	C		D	B			F	F		F	
Approach Delay (s)		33.0			18.6			87.1			91.9	
Approach LOS		C			B			F			F	

Intersection Summary			
HCM 2000 Control Delay	35.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	190.0	Sum of lost time (s)	36.3
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 methodology does not support exclusive ped or hold phases.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	13	1239	13	12	2010	101	77	60
v/c Ratio	0.09	0.44	0.01	0.04	0.72	0.73	0.51	0.28
Control Delay	4.9	7.4	0.0	4.1	12.5	107.4	89.9	22.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.9	7.4	0.0	4.1	12.5	107.4	89.9	22.6
Queue Length 50th (ft)	2	186	0	2	460	121	92	7
Queue Length 95th (ft)	9	376	0	8	909	188	150	56
Internal Link Dist (ft)		298			293	120		275
Turn Bay Length (ft)	105		80	140				
Base Capacity (vph)	347	2834	1100	439	2800	238	250	327
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.44	0.01	0.03	0.72	0.42	0.31	0.18

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	1165	12	11	1777	113	72	11	11	72	6	51
Future Volume (vph)	12	1165	12	11	1777	113	72	11	11	72	6	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7			6.6		4.6	6.6	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99			0.98		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96		0.95	1.00	
Satd. Flow (prot)	1770	3539	1359	1503	3495			1749		1770	1611	
Flt Permitted	0.07	1.00	1.00	0.20	1.00			0.74		0.72	1.00	
Satd. Flow (perm)	123	3539	1359	316	3495			1340		1346	1611	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	13	1239	13	12	1890	120	77	12	12	77	6	54
RTOR Reduction (vph)	0	0	3	0	1	0	0	3	0	0	48	0
Lane Group Flow (vph)	13	1239	10	12	2009	0	0	98	0	77	12	0
Confl. Peds. (#/hr)	7		12	12		7						
Confl. Bikes (#/hr)			1			4						
Heavy Vehicles (%)	2%	2%	9%	20%	2%	2%	2%	2%	10%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			4	
Permitted Phases	2		2	6			4			4		
Actuated Green, G (s)	150.6	148.1	148.1	150.6	148.1			19.4		19.4	19.4	
Effective Green, g (s)	150.6	148.1	148.1	150.6	148.1			19.4		21.4	19.4	
Actuated g/C Ratio	0.79	0.78	0.78	0.79	0.78			0.10		0.11	0.10	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7			6.6		6.6	6.6	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	119	2758	1059	266	2724			136		151	164	
v/s Ratio Prot	c0.00	0.35		0.00	c0.57						0.01	
v/s Ratio Perm	0.09		0.01	0.04				c0.07		0.06		
v/c Ratio	0.11	0.45	0.01	0.05	0.74			0.72		0.51	0.07	
Uniform Delay, d1	12.1	7.1	4.7	4.9	10.9			82.7		79.4	77.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.5	0.0	0.1	1.8			17.2		2.7	0.2	
Delay (s)	12.5	7.6	4.7	5.0	12.7			99.9		82.1	77.3	
Level of Service	B	A	A	A	B			F		F	E	
Approach Delay (s)		7.7			12.6			99.9			80.0	
Approach LOS		A			B			F			E	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	190.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 Research does not support Non-NEMA phasing.

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	0	3	16	0	7	5	111	18	23	95	5
Future Vol, veh/h	4	0	3	16	0	7	5	111	18	23	95	5
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	6	6	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	3	18	0	8	6	125	20	26	107	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	314	325	110	317	318	142	113	0	0	151	0	0
Stage 1	162	162	-	153	153	-	-	-	-	-	-	-
Stage 2	152	163	-	164	165	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	639	593	943	636	598	906	1476	-	-	1430	-	-
Stage 1	840	764	-	849	771	-	-	-	-	-	-	-
Stage 2	850	763	-	838	762	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	621	576	943	619	581	901	1476	-	-	1423	-	-
Mov Cap-2 Maneuver	621	576	-	619	581	-	-	-	-	-	-	-
Stage 1	837	749	-	841	764	-	-	-	-	-	-	-
Stage 2	839	756	-	818	747	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	10.5	0.3	1.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1476	-	-	727	684	1423	-	-
HCM Lane V/C Ratio	0.004	-	-	0.011	0.038	0.018	-	-
HCM Control Delay (s)	7.4	0	-	10	10.5	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	1	7	2	0	0	3	114	2	1	118	3
Future Vol, veh/h	6	1	7	2	0	0	3	114	2	1	118	3
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	1	8	2	0	0	3	127	2	1	131	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	269	270	134	274	270	128	134	0	0	129	0	0
Stage 1	135	135	-	134	134	-	-	-	-	-	-	-
Stage 2	134	135	-	140	136	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	684	636	915	678	636	922	1451	-	-	1457	-	-
Stage 1	868	785	-	869	785	-	-	-	-	-	-	-
Stage 2	869	785	-	863	784	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	683	634	914	669	634	922	1451	-	-	1457	-	-
Mov Cap-2 Maneuver	683	634	-	669	634	-	-	-	-	-	-	-
Stage 1	866	784	-	867	783	-	-	-	-	-	-	-
Stage 2	867	783	-	853	783	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	10.4	0.2	0.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1451	-	-	777	669	1457	-	-
HCM Lane V/C Ratio	0.002	-	-	0.02	0.003	0.001	-	-
HCM Control Delay (s)	7.5	0	-	9.7	10.4	7.5	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	5	121	1	2	117
Future Vol, veh/h	1	5	121	1	2	117
Conflicting Peds, #/hr	0	0	0	9	9	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	6	136	1	2	131

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	281	146	0	0	146	0
Stage 1	146	-	-	-	-	-
Stage 2	135	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	709	901	-	-	1436	-
Stage 1	881	-	-	-	-	-
Stage 2	891	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	703	894	-	-	1425	-
Mov Cap-2 Maneuver	703	-	-	-	-	-
Stage 1	875	-	-	-	-	-
Stage 2	889	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	0.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	855	1425	-
HCM Lane V/C Ratio	-	-	0.008	0.002	-
HCM Control Delay (s)	-	-	9.2	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	21	13	30	59	45	11	93	24	36	79	25
Future Vol, veh/h	9	21	13	30	59	45	11	93	24	36	79	25
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.88	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	25	15	35	69	53	13	109	28	42	93	29
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.1	8.7	8.6	8.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	9%	21%	22%	26%
Vol Thru, %	73%	49%	44%	56%
Vol Right, %	19%	30%	34%	18%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	128	43	134	140
LT Vol	11	9	30	36
Through Vol	93	21	59	79
RT Vol	24	13	45	25
Lane Flow Rate	150	51	158	165
Geometry Grp	1	1	1	1
Degree of Util (X)	0.188	0.066	0.2	0.208
Departure Headway (Hd)	4.518	4.711	4.561	4.541
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	793	758	787	791
Service Time	2.55	2.751	2.594	2.571
HCM Lane V/C Ratio	0.189	0.067	0.201	0.209
HCM Control Delay	8.6	8.1	8.7	8.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.7	0.2	0.7	0.8

Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	28	883	73	1498	46	102	58
v/c Ratio	0.14	0.38	0.18	0.62	0.47	0.47	0.52
Control Delay	11.4	17.3	10.1	21.4	101.5	9.6	64.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.4	17.3	10.1	21.4	101.5	9.6	64.9
Queue Length 50th (ft)	7	224	20	490	57	0	37
Queue Length 95th (ft)	30	447	64	920	107	18	92
Internal Link Dist (ft)		239		615	524		220
Turn Bay Length (ft)	100		120				
Base Capacity (vph)	241	2319	441	2409	164	269	182
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.38	0.17	0.62	0.28	0.38	0.32

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	816	32	70	1435	3	35	10	98	8	16	32
Future Volume (vph)	27	816	32	70	1435	3	35	10	98	8	16	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.1	7.1		7.1	7.1			8.6	8.6		8.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.95		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1770	3511		1770	3538			1793	1508		1708	
Flt Permitted	0.11	1.00		0.27	1.00			0.96	1.00		0.99	
Satd. Flow (perm)	212	3511		507	3538			1793	1508		1708	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	28	850	33	73	1495	3	36	10	102	8	17	33
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	96	0	27	0
Lane Group Flow (vph)	28	883	0	73	1498	0	0	46	6	0	31	0
Confl. Peds. (#/hr)	7		8	8		7			6	6		
Confl. Bikes (#/hr)			4						1			
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)	127.3	121.5		132.1	123.9			10.5	10.5		9.5	
Effective Green, g (s)	127.3	121.5		132.1	123.9			10.5	10.5		9.5	
Actuated g/C Ratio	0.67	0.64		0.70	0.65			0.06	0.06		0.05	
Clearance Time (s)	7.1	7.1		7.1	7.1			8.6	8.6		8.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	189	2245		407	2307			99	83		85	
v/s Ratio Prot	0.00	0.25		c0.01	c0.42			c0.03			c0.02	
v/s Ratio Perm	0.09			0.12					0.00			
v/c Ratio	0.15	0.39		0.18	0.65			0.46	0.07		0.37	
Uniform Delay, d1	15.6	16.5		10.3	19.9			87.0	85.1		87.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.4	0.5		0.2	1.4			3.4	0.3		2.7	
Delay (s)	16.0	17.0		10.5	21.4			90.4	85.5		90.1	
Level of Service	B	B		B	C			F	F		F	
Approach Delay (s)		17.0			20.9			87.0			90.1	
Approach LOS		B			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	190.0	Sum of lost time (s)	36.3
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 methodology does not support exclusive ped or hold phases.

Table 6-1

Paul VI Redevelopment

Site Trip Generation Analysis

Development	ITE Land Use Code[1]	Amount	Units	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM School Peak (2:45-3:45) In	PM School Peak (2:45-3:45) Out	PM School Peak (2:45-3:45) Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Average Daily Trips
Existing													
Private High School[2,3]			Actual Trips	671	334	1,005	174	389	563	46	86	132	3,270
Proposed[4]													
Condominiums	232	184	DU	16	66	82	37	29	66	48	30	78	917
Townhomes	230	137	DU	11	55	66	44	38	82	52	26	78	846
Subtotal Residential		321	DU	27	121	148	81	67	148	100	56	156	1,763
Community Center	495	24,000	SF	32	17	49	28	41	69	32	34	66	812
Local Serving Retail	820	20,000	SF	12	7	19	93	105	198	98	106	204	2,386
Total Proposed Trips				**71**	**145**	**216**	**202**	**213**	**415**	**230**	**196**	**426**	**4,961**
Comparison													
Proposed vs. Existing				**-600**	**-189**	**-789**	**28**	**-176**	**-148**	**184**	**110**	**294**	**1,691**

Notes: 1. Institute of Transportation Engineer's (ITE), Trip Generation Manual, 9th Edition

2. Based on traffic counts completed on February 3, 2016.

3. Actual ADT estimated based on ITE ADT and PM school peak ratio.

4. PM School Peak trips based on residential and retail diurnal rates compiled from ITE and Wells + Associates files.

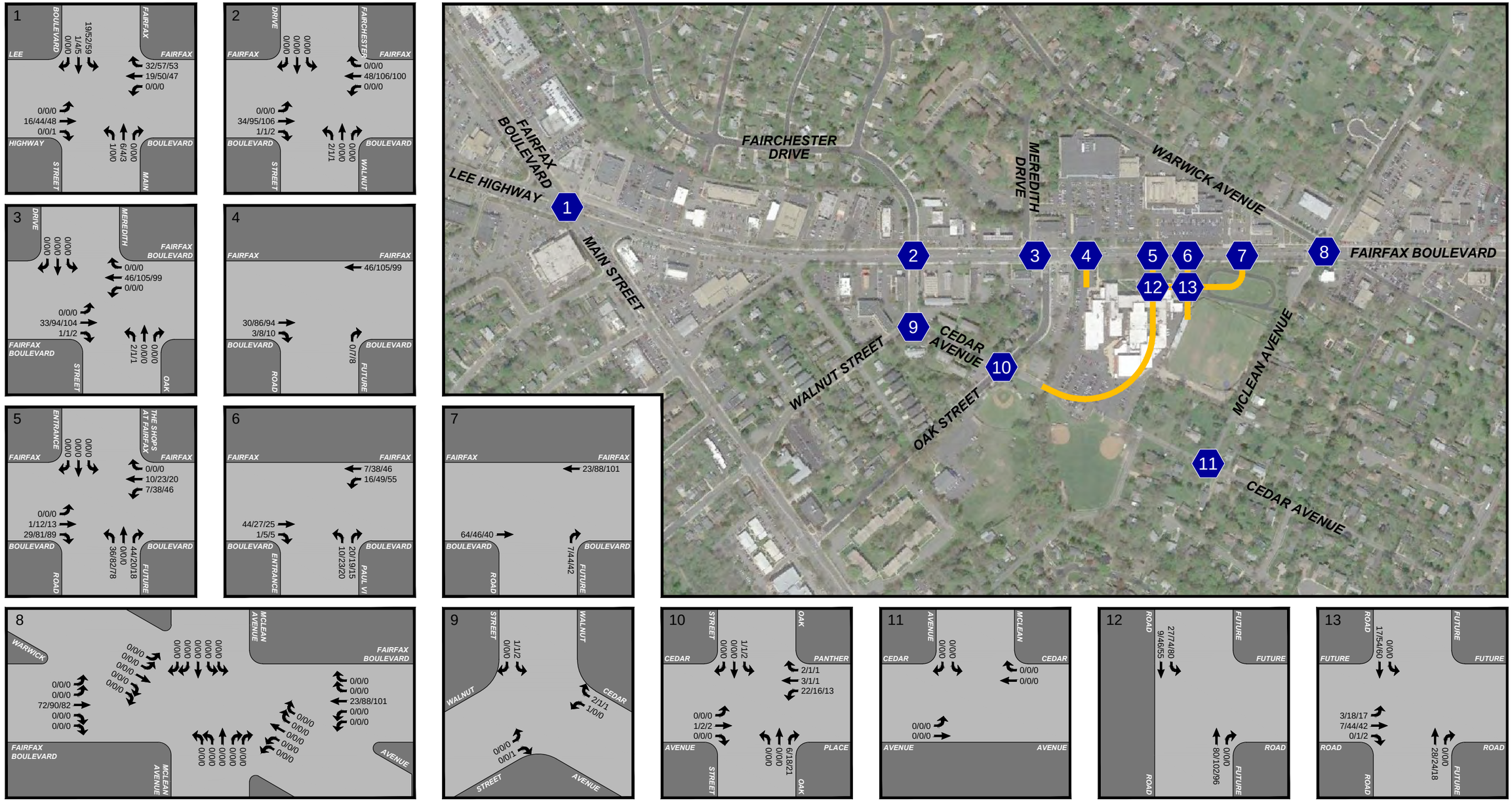


Figure 6-2
Site Trip Assignments

Paul VI Redevelopment

Fairfax County, Virginia

AM PEAK HOUR
SCHOOL PM PEAK HOUR
PM PEAK HOUR
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NORTH

L:\PROJECTS\6501 - 7000\6709 - PAUL VI DEVELOPMENT\GRAPHICS\6709 - RPT GRAPHICS - 2017 OCT 24.DWG

JCP

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	74	1991	67	29	1169	6	111	62
v/c Ratio	0.21	0.73	0.06	0.20	0.45	0.03	0.67	0.28
Control Delay	5.1	15.4	2.1	7.0	10.1	0.2	98.7	27.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.1	15.4	2.1	7.0	10.1	0.2	98.7	27.6
Queue Length 50th (ft)	15	676	2	6	265	0	135	16
Queue Length 95th (ft)	33	920	19	16	373	0	202	65
Internal Link Dist (ft)		298			293	120		275
Turn Bay Length (ft)	105		80	140				
Base Capacity (vph)	520	2713	1196	343	2577	317	261	329
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.73	0.06	0.08	0.45	0.02	0.43	0.19

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	1852	62	27	965	122	4	0	2	103	13	45
Future Volume (vph)	69	1852	62	27	965	122	4	0	2	103	13	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7			6.6		4.6	6.6	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98			0.95		1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97		0.95	1.00	
Satd. Flow (prot)	1752	3539	1543	1770	3436			1722		1770	1646	
Flt Permitted	0.21	1.00	1.00	0.06	1.00			0.86		0.75	1.00	
Satd. Flow (perm)	385	3539	1543	120	3436			1525		1404	1646	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	74	1991	67	29	1038	131	4	0	2	111	14	48
RTOR Reduction (vph)	0	0	14	0	3	0	0	5	0	0	43	0
Lane Group Flow (vph)	74	1991	53	29	1166	0	0	1	0	111	19	0
Confl. Peds. (#/hr)	3		1	1		3						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	3%	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			4	
Permitted Phases	2		2	6			4			4		
Actuated Green, G (s)	151.4	144.3	144.3	147.6	142.4			20.5		20.5	20.5	
Effective Green, g (s)	151.4	144.3	144.3	147.6	142.4			20.5		22.5	20.5	
Actuated g/C Ratio	0.80	0.76	0.76	0.78	0.75			0.11		0.12	0.11	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7			6.6		6.6	6.6	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	357	2687	1171	138	2575			164		166	177	
v/s Ratio Prot	c0.01	c0.56		0.01	0.34						0.01	
v/s Ratio Perm	0.16		0.03	0.16				0.00		c0.08		
v/c Ratio	0.21	0.74	0.05	0.21	0.45			0.00		0.67	0.11	
Uniform Delay, d1	5.3	12.6	5.7	14.2	9.0			75.6		80.2	76.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.3	1.9	0.1	0.8	0.6			0.0		9.8	0.3	
Delay (s)	5.6	14.5	5.8	14.9	9.6			75.6		90.0	76.8	
Level of Service	A	B	A	B	A			E		F	E	
Approach Delay (s)		13.9			9.7			75.6			85.2	
Approach LOS		B			A			E			F	

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	190.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 Research does not support Non-NEMA phasing.

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	2	7	24	3	24	2	164	5	2	126	3
Future Vol, veh/h	2	2	7	24	3	24	2	164	5	2	126	3
Conflicting Peds, #/hr	2	0	1	1	0	2	0	0	6	6	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	3	2	2	2	2
Mvmt Flow	2	2	8	26	3	26	2	178	5	2	137	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	344	336	140	340	335	189	140	0	0	189	0	0
Stage 1	143	143	-	191	191	-	-	-	-	-	-	-
Stage 2	201	193	-	149	144	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	610	585	908	614	585	853	1443	-	-	1385	-	-
Stage 1	860	779	-	811	742	-	-	-	-	-	-	-
Stage 2	801	741	-	854	778	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	586	580	907	602	580	847	1443	-	-	1378	-	-
Mov Cap-2 Maneuver	586	580	-	602	580	-	-	-	-	-	-	-
Stage 1	858	777	-	805	737	-	-	-	-	-	-	-
Stage 2	770	736	-	842	776	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	10.6	0.1	0.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1443	-	-	755	695	1378	-	-
HCM Lane V/C Ratio	0.002	-	-	0.016	0.08	0.002	-	-
HCM Control Delay (s)	7.5	0	-	9.8	10.6	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	2	7	7	3	0	3	178	8	0	116	1
Future Vol, veh/h	25	2	7	7	3	0	3	178	8	0	116	1
Conflicting Peds, #/hr	0	0	2	2	0	0	1	0	3	3	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	13	2	2	2
Mvmt Flow	27	2	8	8	3	0	3	193	9	0	126	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	333	339	130	341	335	201	128	0	0	205	0	0
Stage 1	128	128	-	207	207	-	-	-	-	-	-	-
Stage 2	205	211	-	134	128	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	620	582	920	613	585	840	1458	-	-	1366	-	-
Stage 1	876	790	-	795	731	-	-	-	-	-	-	-
Stage 2	797	728	-	869	790	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	616	579	918	603	582	838	1457	-	-	1363	-	-
Mov Cap-2 Maneuver	616	579	-	603	582	-	-	-	-	-	-	-
Stage 1	873	789	-	792	728	-	-	-	-	-	-	-
Stage 2	792	725	-	858	789	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.8	11.1	0.1	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1457	-	-	658	597	1363	-	-
HCM Lane V/C Ratio	0.002	-	-	0.056	0.018	-	-	-
HCM Control Delay (s)	7.5	0	-	10.8	11.1	0	-	-
HCM Lane LOS	A	A	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	3	200	1	0	115
Future Vol, veh/h	0	3	200	1	0	115
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	3	217	1	0	125

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	345	220	0	0	220	0
Stage 1	220	-	-	-	-	-
Stage 2	125	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	652	820	-	-	1349	-
Stage 1	817	-	-	-	-	-
Stage 2	901	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	651	819	-	-	1347	-
Mov Cap-2 Maneuver	651	-	-	-	-	-
Stage 1	815	-	-	-	-	-
Stage 2	901	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	819	1347	-
HCM Lane V/C Ratio	-	-	0.004	-	-
HCM Control Delay (s)	-	-	9.4	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Intersection Delay, s/veh	11.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	172	2	67	51	142	1	72	134	117	48	3
Future Vol, veh/h	25	172	2	67	51	142	1	72	134	117	48	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
Heavy Vehicles, %	2	2	2	2	2	2	2	4	2	2	2	2
Mvmt Flow	27	187	2	73	55	154	1	78	146	127	52	3
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.3	11.7	10.8	11.2
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	13%	26%	70%
Vol Thru, %	35%	86%	20%	29%
Vol Right, %	65%	1%	55%	2%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	207	199	260	168
LT Vol	1	25	67	117
Through Vol	72	172	51	48
RT Vol	134	2	142	3
Lane Flow Rate	225	216	283	183
Geometry Grp	1	1	1	1
Degree of Util (X)	0.326	0.333	0.404	0.293
Departure Headway (Hd)	5.218	5.534	5.152	5.781
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	686	649	698	619
Service Time	3.268	3.584	3.199	3.835
HCM Lane V/C Ratio	0.328	0.333	0.405	0.296
HCM Control Delay	10.8	11.3	11.7	11.2
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1.4	1.5	2	1.2

Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	12	1679	109	705	79	168	68
v/c Ratio	0.03	0.78	0.61	0.30	0.63	0.63	0.58
Control Delay	13.2	32.8	40.0	15.6	106.7	21.0	92.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.2	32.8	40.0	15.6	106.7	21.0	92.3
Queue Length 50th (ft)	4	763	43	142	98	0	72
Queue Length 95th (ft)	18	#1325	#148	354	161	83	129
Internal Link Dist (ft)		239		615	524		220
Turn Bay Length (ft)	100		120				
Base Capacity (vph)	427	2139	184	2345	162	293	168
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.78	0.59	0.30	0.49	0.57	0.40

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1530	15	100	647	2	64	8	155	11	31	20
Future Volume (vph)	11	1530	15	100	647	2	64	8	155	11	31	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.1	7.1		7.1	7.1			8.6	8.6		8.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.97		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1418	3499		1770	3437			1768	1533		1728	
Flt Permitted	0.38	1.00		0.05	1.00			0.96	1.00		0.99	
Satd. Flow (perm)	565	3499		100	3437			1768	1533		1728	
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)	12	1663	16	109	703	2	70	9	168	12	34	22
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	156	0	9	0
Lane Group Flow (vph)	12	1679	0	109	705	0	0	79	12	0	59	0
Confl. Peds. (#/hr)	3		1	1		3			4	4		
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	27%	3%	2%	2%	5%	2%	3%	2%	2%	9%	2%	5%
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)	115.1	112.2		131.4	121.4			13.5	13.5		11.9	
Effective Green, g (s)	115.1	112.2		131.4	121.4			13.5	13.5		11.9	
Actuated g/C Ratio	0.61	0.59		0.69	0.64			0.07	0.07		0.06	
Clearance Time (s)	7.1	7.1		7.1	7.1			8.6	8.6		8.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	355	2066		175	2196			125	108		108	
v/s Ratio Prot	0.00	c0.48		c0.04	0.21			c0.04			c0.03	
v/s Ratio Perm	0.02			0.39					0.01			
v/c Ratio	0.03	0.81		0.62	0.32			0.63	0.11		0.54	
Uniform Delay, d1	14.9	30.6		37.7	15.6			85.8	82.6		86.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.0	3.6		6.7	0.4			10.0	0.5		5.5	
Delay (s)	14.9	34.3		44.4	16.0			95.8	83.1		91.9	
Level of Service	B	C		D	B			F	F		F	
Approach Delay (s)		34.1			19.8			87.2			91.9	
Approach LOS		C			B			F			F	

Intersection Summary			
HCM 2000 Control Delay	36.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	190.0	Sum of lost time (s)	36.3
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 methodology does not support exclusive ped or hold phases.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	19	1297	13	12	2114	101	87	63
v/c Ratio	0.15	0.46	0.01	0.04	0.77	0.73	0.58	0.29
Control Delay	6.1	7.7	0.0	4.1	15.4	107.7	93.9	22.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.1	7.7	0.0	4.1	15.4	107.7	93.9	22.1
Queue Length 50th (ft)	4	200	0	2	767	121	105	7
Queue Length 95th (ft)	11	403	0	8	1035	188	167	57
Internal Link Dist (ft)		298			293	120		275
Turn Bay Length (ft)	105		80	140				
Base Capacity (vph)	329	2834	1100	424	2749	237	250	329
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.46	0.01	0.03	0.77	0.43	0.35	0.19

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	1219	12	11	1859	128	72	11	11	82	6	54
Future Volume (vph)	18	1219	12	11	1859	128	72	11	11	82	6	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7			6.6		4.6	6.6	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99			0.98		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96		0.95	1.00	
Satd. Flow (prot)	1770	3539	1359	1503	3492			1749		1770	1610	
Flt Permitted	0.05	1.00	1.00	0.19	1.00			0.74		0.72	1.00	
Satd. Flow (perm)	97	3539	1359	296	3492			1336		1346	1610	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	19	1297	13	12	1978	136	77	12	12	87	6	57
RTOR Reduction (vph)	0	0	3	0	1	0	0	3	0	0	51	0
Lane Group Flow (vph)	19	1297	10	12	2113	0	0	98	0	87	12	0
Confl. Peds. (#/hr)	7		12	12		7						
Confl. Bikes (#/hr)			1			4						
Heavy Vehicles (%)	2%	2%	9%	20%	2%	2%	2%	2%	10%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			4	
Permitted Phases	2		2	6			4			4		
Actuated Green, G (s)	151.8	148.1	148.1	149.4	146.9			19.4		19.4	19.4	
Effective Green, g (s)	151.8	148.1	148.1	149.4	146.9			19.4		21.4	19.4	
Actuated g/C Ratio	0.80	0.78	0.78	0.79	0.77			0.10		0.11	0.10	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7			6.6		6.6	6.6	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	110	2758	1059	248	2699			136		151	164	
v/s Ratio Prot	c0.00	0.37		0.00	c0.60						0.01	
v/s Ratio Perm	0.13		0.01	0.04				c0.07		0.06		
v/c Ratio	0.17	0.47	0.01	0.05	0.78			0.72		0.58	0.07	
Uniform Delay, d1	16.1	7.3	4.7	5.2	12.4			82.7		80.0	77.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.6	0.0	0.1	2.3			17.2		5.2	0.2	
Delay (s)	16.9	7.9	4.7	5.3	14.7			99.9		85.2	77.3	
Level of Service	B	A	A	A	B			F		F	E	
Approach Delay (s)		8.0			14.7			99.9			81.9	
Approach LOS		A			B			F			F	

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	190.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 Research does not support Non-NEMA phasing.

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	0	3	16	0	7	5	132	18	23	108	5
Future Vol, veh/h	4	0	3	16	0	7	5	132	18	23	108	5
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	6	6	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	3	17	0	8	5	143	20	25	117	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	338	349	120	340	341	160	122	0	0	169	0	0
Stage 1	170	170	-	169	169	-	-	-	-	-	-	-
Stage 2	168	179	-	171	172	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	616	575	931	614	581	885	1465	-	-	1409	-	-
Stage 1	832	758	-	833	759	-	-	-	-	-	-	-
Stage 2	834	751	-	831	756	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	599	559	931	598	565	880	1465	-	-	1402	-	-
Mov Cap-2 Maneuver	599	559	-	598	565	-	-	-	-	-	-	-
Stage 1	829	744	-	826	752	-	-	-	-	-	-	-
Stage 2	823	744	-	812	742	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	10.6	0.2	1.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1465	-	-	707	663	1402	-	-
HCM Lane V/C Ratio	0.004	-	-	0.011	0.038	0.018	-	-
HCM Control Delay (s)	7.5	0	-	10.1	10.6	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	1	7	2	0	0	3	135	2	1	131	3
Future Vol, veh/h	6	1	7	2	0	0	3	135	2	1	131	3
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	1	8	2	0	0	3	147	2	1	142	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	300	301	145	305	301	148	145	0	0	149	0	0
Stage 1	146	146	-	154	154	-	-	-	-	-	-	-
Stage 2	154	155	-	151	147	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	652	612	902	647	612	899	1437	-	-	1432	-	-
Stage 1	857	776	-	848	770	-	-	-	-	-	-	-
Stage 2	848	769	-	851	775	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	651	610	901	639	610	899	1437	-	-	1432	-	-
Mov Cap-2 Maneuver	651	610	-	639	610	-	-	-	-	-	-	-
Stage 1	855	775	-	846	768	-	-	-	-	-	-	-
Stage 2	846	767	-	841	774	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	10.7	0.2	0.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1437	-	-	752	639	1432	-	-
HCM Lane V/C Ratio	0.002	-	-	0.02	0.003	0.001	-	-
HCM Control Delay (s)	7.5	0	-	9.9	10.7	7.5	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	5	142	1	2	130
Future Vol, veh/h	1	5	142	1	2	130
Conflicting Peds, #/hr	0	0	0	9	9	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	5	154	1	2	141

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	309	164	0	0	164	0
Stage 1	164	-	-	-	-	-
Stage 2	145	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	683	881	-	-	1414	-
Stage 1	865	-	-	-	-	-
Stage 2	882	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	677	874	-	-	1403	-
Mov Cap-2 Maneuver	677	-	-	-	-	-
Stage 1	859	-	-	-	-	-
Stage 2	880	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	0.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	834	1403	-
HCM Lane V/C Ratio	-	-	0.008	0.002	-
HCM Control Delay (s)	-	-	9.4	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	23	13	43	60	46	11	93	45	38	79	25
Future Vol, veh/h	9	23	13	43	60	46	11	93	45	38	79	25
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	25	14	47	65	50	12	101	49	41	86	27
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.1	8.8	8.6	8.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	20%	29%	27%
Vol Thru, %	62%	51%	40%	56%
Vol Right, %	30%	29%	31%	18%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	149	45	149	142
LT Vol	11	9	43	38
Through Vol	93	23	60	79
RT Vol	45	13	46	25
Lane Flow Rate	162	49	162	154
Geometry Grp	1	1	1	1
Degree of Util (X)	0.2	0.064	0.206	0.196
Departure Headway (Hd)	4.444	4.721	4.587	4.562
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	807	756	781	786
Service Time	2.476	2.764	2.622	2.594
HCM Lane V/C Ratio	0.201	0.065	0.207	0.196
HCM Control Delay	8.6	8.1	8.8	8.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.7	0.2	0.8	0.7

Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	28	1036	73	1677	48	102	58
v/c Ratio	0.17	0.45	0.21	0.70	0.48	0.46	0.52
Control Delay	12.3	18.6	10.6	23.7	101.8	9.5	64.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.3	18.6	10.6	23.7	101.8	9.5	64.9
Queue Length 50th (ft)	8	280	20	603	59	0	37
Queue Length 95th (ft)	30	552	64	1126	109	18	92
Internal Link Dist (ft)		239		615	524		220
Turn Bay Length (ft)	100		120				
Base Capacity (vph)	199	2319	376	2405	164	269	182
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.45	0.19	0.70	0.29	0.38	0.32

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	961	34	70	1607	3	36	10	98	8	16	32
Future Volume (vph)	27	961	34	70	1607	3	36	10	98	8	16	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.1	7.1		7.1	7.1			8.6	8.6		8.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.95		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1770	3513		1770	3538			1792	1509		1708	
Flt Permitted	0.08	1.00		0.22	1.00			0.96	1.00		0.99	
Satd. Flow (perm)	149	3513		410	3538			1792	1509		1708	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	28	1001	35	73	1674	3	38	10	102	8	17	33
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	96	0	27	0
Lane Group Flow (vph)	28	1036	0	73	1677	0	0	48	6	0	31	0
Confl. Peds. (#/hr)	7		8	8		7			6	6		
Confl. Bikes (#/hr)			4						1			
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)	127.1	121.3		131.9	123.7			10.7	10.7		9.5	
Effective Green, g (s)	127.1	121.3		131.9	123.7			10.7	10.7		9.5	
Actuated g/C Ratio	0.67	0.64		0.69	0.65			0.06	0.06		0.05	
Clearance Time (s)	7.1	7.1		7.1	7.1			8.6	8.6		8.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	149	2242		343	2303			100	84		85	
v/s Ratio Prot	0.01	0.29		c0.01	c0.47			c0.03			c0.02	
v/s Ratio Perm	0.12			0.14					0.00			
v/c Ratio	0.19	0.46		0.21	0.73			0.48	0.07		0.37	
Uniform Delay, d1	19.2	17.6		11.2	22.0			87.0	84.9		87.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.6	0.7		0.3	2.1			3.6	0.3		2.7	
Delay (s)	19.8	18.3		11.5	24.1			90.6	85.3		90.1	
Level of Service	B	B		B	C			F	F		F	
Approach Delay (s)		18.3			23.5			87.0			90.1	
Approach LOS		B			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	190.0	Sum of lost time (s)	36.3
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 methodology does not support exclusive ped or hold phases.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	83	1991	67	29	1172	6	118	80
v/c Ratio	0.23	0.74	0.06	0.20	0.46	0.03	0.68	0.33
Control Delay	5.5	16.1	2.2	7.4	10.7	0.2	98.4	23.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.5	16.1	2.2	7.4	10.7	0.2	98.4	23.8
Queue Length 50th (ft)	17	691	2	6	274	0	144	16
Queue Length 95th (ft)	37	943	20	16	385	0	213	72
Internal Link Dist (ft)		298			293	120		275
Turn Bay Length (ft)	105		80	140				
Base Capacity (vph)	514	2695	1189	341	2554	316	261	341
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.74	0.06	0.09	0.46	0.02	0.45	0.23

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	84	1991	67	29	1173	6	118	81
v/c Ratio	0.24	0.74	0.06	0.20	0.46	0.03	0.68	0.33
Control Delay	5.6	16.1	2.2	7.4	10.7	0.2	98.4	23.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.6	16.1	2.2	7.4	10.7	0.2	98.4	23.8
Queue Length 50th (ft)	18	691	2	6	274	0	144	16
Queue Length 95th (ft)	37	943	20	16	386	0	213	72
Internal Link Dist (ft)		298			293	120		275
Turn Bay Length (ft)	105		80	140				
Base Capacity (vph)	514	2695	1189	341	2554	316	261	342
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.74	0.06	0.09	0.46	0.02	0.45	0.24

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	1852	62	27	965	126	4	0	2	110	13	62
Future Volume (vph)	78	1852	62	27	965	126	4	0	2	110	13	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7			6.6		4.6	6.6	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98			0.95		1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97		0.95	1.00	
Satd. Flow (prot)	1752	3539	1543	1770	3434			1722		1770	1632	
Flt Permitted	0.21	1.00	1.00	0.06	1.00			0.85		0.75	1.00	
Satd. Flow (perm)	380	3539	1543	118	3434			1519		1404	1632	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	84	1991	67	29	1038	135	4	0	2	118	14	67
RTOR Reduction (vph)	0	0	14	0	3	0	0	5	0	0	59	0
Lane Group Flow (vph)	84	1991	53	29	1170	0	0	1	0	118	22	0
Confl. Peds. (#/hr)	3		1	1		3						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	3%	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			4	
Permitted Phases	2		2	6			4			4		
Actuated Green, G (s)	150.8	143.4	143.4	146.4	141.2			21.4		21.4	21.4	
Effective Green, g (s)	150.8	143.4	143.4	146.4	141.2			21.4		23.4	21.4	
Actuated g/C Ratio	0.79	0.75	0.75	0.77	0.74			0.11		0.12	0.11	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7			6.6		6.6	6.6	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	355	2671	1164	136	2552			171		172	183	
v/s Ratio Prot	c0.01	c0.56		0.01	0.34						0.01	
v/s Ratio Perm	0.18		0.03	0.16				0.00		c0.08		
v/c Ratio	0.24	0.75	0.05	0.21	0.46			0.00		0.69	0.12	
Uniform Delay, d1	5.7	13.1	5.9	14.8	9.5			74.8		79.8	75.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.3	1.9	0.1	0.8	0.6			0.0		10.8	0.3	
Delay (s)	6.0	15.0	6.0	15.6	10.1			74.8		90.6	76.1	
Level of Service	A	B	A	B	B			E		F	E	
Approach Delay (s)		14.4			10.2			74.8			84.7	
Approach LOS		B			B			E			F	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	190.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 Research does not support Non-NEMA phasing.

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	2	7	24	3	24	2	177	5	2	150	3
Future Vol, veh/h	2	2	7	24	3	24	2	177	5	2	150	3
Conflicting Peds, #/hr	2	0	1	1	0	2	0	0	6	6	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	3	2	2	2	2
Mvmt Flow	2	2	8	26	3	26	2	192	5	2	163	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	384	376	166	380	375	203	166	0	0	203	0	0
Stage 1	169	169	-	205	205	-	-	-	-	-	-	-
Stage 2	215	207	-	175	170	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	574	555	878	578	556	838	1412	-	-	1369	-	-
Stage 1	833	759	-	797	732	-	-	-	-	-	-	-
Stage 2	787	731	-	827	758	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	551	550	877	566	551	832	1412	-	-	1362	-	-
Mov Cap-2 Maneuver	551	550	-	566	551	-	-	-	-	-	-	-
Stage 1	831	757	-	791	727	-	-	-	-	-	-	-
Stage 2	756	726	-	815	756	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	10.9	0.1	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1412	-	-	721	665	1362	-	-
HCM Lane V/C Ratio	0.002	-	-	0.017	0.083	0.002	-	-
HCM Control Delay (s)	7.6	0	-	10.1	10.9	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0	-	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	2	7	19	3	12	3	185	14	6	128	1
Future Vol, veh/h	25	2	7	19	3	12	3	185	14	6	128	1
Conflicting Peds, #/hr	0	0	2	2	0	0	1	0	3	3	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	13	2	2	2
Mvmt Flow	27	2	8	21	3	13	3	201	15	7	139	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	378	380	143	379	373	212	141	0	0	219	0	0
Stage 1	155	155	-	218	218	-	-	-	-	-	-	-
Stage 2	223	225	-	161	155	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	580	552	905	579	557	828	1442	-	-	1350	-	-
Stage 1	847	769	-	784	723	-	-	-	-	-	-	-
Stage 2	780	718	-	841	769	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	564	546	903	566	551	826	1441	-	-	1347	-	-
Mov Cap-2 Maneuver	564	546	-	566	551	-	-	-	-	-	-	-
Stage 1	844	764	-	781	720	-	-	-	-	-	-	-
Stage 2	763	715	-	825	764	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.3	11	0.1	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1441	-	-	610	635	1347	-	-
HCM Lane V/C Ratio	0.002	-	-	0.061	0.058	0.005	-	-
HCM Control Delay (s)	7.5	0	-	11.3	11	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	15	212	8	7	121
Future Vol, veh/h	12	15	212	8	7	121
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	16	230	9	8	132

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	385	237	0	0	241	0
Stage 1	237	-	-	-	-	-
Stage 2	148	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	618	802	-	-	1326	-
Stage 1	802	-	-	-	-	-
Stage 2	880	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	612	801	-	-	1324	-
Mov Cap-2 Maneuver	612	-	-	-	-	-
Stage 1	800	-	-	-	-	-
Stage 2	874	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	704	1324	-
HCM Lane V/C Ratio	-	-	0.042	0.006	-
HCM Control Delay (s)	-	-	10.3	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Intersection Delay, s/veh	11.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	172	2	67	51	142	1	96	134	117	61	3
Future Vol, veh/h	25	172	2	67	51	142	1	96	134	117	61	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
Heavy Vehicles, %	2	2	2	2	2	2	2	4	2	2	2	2
Mvmt Flow	27	187	2	73	55	154	1	104	146	127	66	3
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.7	12.1	11.5	11.7
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	13%	26%	65%
Vol Thru, %	42%	86%	20%	34%
Vol Right, %	58%	1%	55%	2%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	231	199	260	181
LT Vol	1	25	67	117
Through Vol	96	172	51	61
RT Vol	134	2	142	3
Lane Flow Rate	251	216	283	197
Geometry Grp	1	1	1	1
Degree of Util (X)	0.371	0.341	0.416	0.32
Departure Headway (Hd)	5.321	5.683	5.295	5.858
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	673	629	678	610
Service Time	3.383	3.746	3.352	3.924
HCM Lane V/C Ratio	0.373	0.343	0.417	0.323
HCM Control Delay	11.5	11.7	12.1	11.7
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1.7	1.5	2.1	1.4

Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	12	1679	123	705	79	195	68
v/c Ratio	0.03	0.80	0.65	0.30	0.63	0.67	0.58
Control Delay	13.3	34.3	47.4	15.6	106.7	21.1	92.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.3	34.3	47.4	15.6	106.7	21.1	92.3
Queue Length 50th (ft)	4	793	68	142	98	0	72
Queue Length 95th (ft)	18	#1325	#203	354	161	90	129
Internal Link Dist (ft)		239		615	524		220
Turn Bay Length (ft)	100		120				
Base Capacity (vph)	426	2105	191	2345	162	318	168
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.80	0.64	0.30	0.49	0.61	0.40

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1530	15	113	647	2	64	8	179	11	31	20
Future Volume (vph)	11	1530	15	113	647	2	64	8	179	11	31	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.1	7.1		7.1	7.1			8.6	8.6		8.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.97		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1418	3499		1770	3437			1768	1533		1728	
Flt Permitted	0.38	1.00		0.05	1.00			0.96	1.00		0.99	
Satd. Flow (perm)	573	3499		93	3437			1768	1533		1728	
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)	12	1663	16	123	703	2	70	9	195	12	34	22
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	181	0	9	0
Lane Group Flow (vph)	12	1679	0	123	705	0	0	79	14	0	59	0
Confl. Peds. (#/hr)	3		1	1		3			4	4		
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	27%	3%	2%	2%	5%	2%	3%	2%	2%	9%	2%	5%
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)	113.2	110.3		131.4	121.4			13.5	13.5		11.9	
Effective Green, g (s)	113.2	110.3		131.4	121.4			13.5	13.5		11.9	
Actuated g/C Ratio	0.60	0.58		0.69	0.64			0.07	0.07		0.06	
Clearance Time (s)	7.1	7.1		7.1	7.1			8.6	8.6		8.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	354	2031		187	2196			125	108		108	
v/s Ratio Prot	0.00	c0.48		c0.05	0.21			c0.04			c0.03	
v/s Ratio Perm	0.02			0.40					0.01			
v/c Ratio	0.03	0.83		0.66	0.32			0.63	0.13		0.54	
Uniform Delay, d1	15.7	32.1		46.2	15.6			85.8	82.7		86.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.0	4.0		8.1	0.4			10.0	0.5		5.5	
Delay (s)	15.7	36.2		54.3	16.0			95.8	83.3		91.9	
Level of Service	B	D		D	B			F	F		F	
Approach Delay (s)		36.0			21.7			86.9			91.9	
Approach LOS		D			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	38.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	190.0	Sum of lost time (s)	36.3
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 methodology does not support exclusive ped or hold phases.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	37	1297	13	12	2122	101	93	76
v/c Ratio	0.29	0.46	0.01	0.04	0.79	0.76	0.61	0.33
Control Delay	9.4	7.8	0.0	4.3	17.4	112.1	95.6	20.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	7.8	0.0	4.3	17.4	112.1	95.6	20.6
Queue Length 50th (ft)	7	202	0	2	789	121	113	7
Queue Length 95th (ft)	19	407	0	8	1080	189	176	61
Internal Link Dist (ft)		298			293	120		275
Turn Bay Length (ft)	105		80	140				
Base Capacity (vph)	323	2828	1097	426	2689	223	250	340
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.46	0.01	0.03	0.79	0.45	0.37	0.22

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	1219	12	11	1859	135	72	11	11	87	6	66
Future Volume (vph)	35	1219	12	11	1859	135	72	11	11	87	6	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7			6.6		4.6	6.6	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99			0.98		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96		0.95	1.00	
Satd. Flow (prot)	1770	3539	1359	1503	3489			1749		1770	1605	
Flt Permitted	0.05	1.00	1.00	0.19	1.00			0.69		0.72	1.00	
Satd. Flow (perm)	90	3539	1359	299	3489			1260		1345	1605	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	37	1297	13	12	1978	144	77	12	12	93	6	70
RTOR Reduction (vph)	0	0	3	0	2	0	0	3	0	0	63	0
Lane Group Flow (vph)	37	1297	10	12	2120	0	0	98	0	93	13	0
Confl. Peds. (#/hr)	7		12	12		7						
Confl. Bikes (#/hr)			1			4						
Heavy Vehicles (%)	2%	2%	9%	20%	2%	2%	2%	2%	10%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			4	
Permitted Phases	2		2	6			4			4		
Actuated Green, G (s)	153.1	147.8	147.8	147.5	145.0			19.7		19.7	19.7	
Effective Green, g (s)	153.1	147.8	147.8	147.5	145.0			19.7		21.7	19.7	
Actuated g/C Ratio	0.81	0.78	0.78	0.78	0.76			0.10		0.11	0.10	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7			6.6		6.6	6.6	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	119	2752	1057	247	2662			130		153	166	
v/s Ratio Prot	c0.01	c0.37		0.00	c0.61						0.01	
v/s Ratio Perm	0.24		0.01	0.04				c0.08		0.07		
v/c Ratio	0.31	0.47	0.01	0.05	0.80			0.76		0.61	0.08	
Uniform Delay, d1	20.0	7.4	4.7	5.5	13.6			82.8		80.1	77.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	1.5	0.6	0.0	0.1	2.6			21.9		6.7	0.2	
Delay (s)	21.5	8.0	4.7	5.6	16.2			104.7		86.8	77.2	
Level of Service	C	A	A	A	B			F		F	E	
Approach Delay (s)		8.3			16.1			104.7			82.5	
Approach LOS		A			B			F			F	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	190.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	78.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 Research does not support Non-NEMA phasing.

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	0	3	16	0	7	5	156	18	23	125	5
Future Vol, veh/h	4	0	3	16	0	7	5	156	18	23	125	5
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	6	6	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	3	17	0	8	5	170	20	25	136	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	384	395	139	386	387	187	141	0	0	196	0	0
Stage 1	189	189	-	196	196	-	-	-	-	-	-	-
Stage 2	195	206	-	190	191	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	574	542	909	573	547	855	1442	-	-	1377	-	-
Stage 1	813	744	-	806	739	-	-	-	-	-	-	-
Stage 2	807	731	-	812	742	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	558	526	909	558	531	850	1442	-	-	1370	-	-
Mov Cap-2 Maneuver	558	526	-	558	531	-	-	-	-	-	-	-
Stage 1	810	729	-	799	732	-	-	-	-	-	-	-
Stage 2	796	724	-	793	727	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	11	0.2	1.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1442	-	-	669	623	1370	-	-
HCM Lane V/C Ratio	0.004	-	-	0.011	0.04	0.018	-	-
HCM Control Delay (s)	7.5	0	-	10.4	11	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	1	7	10	0	8	3	147	14	13	140	3
Future Vol, veh/h	6	1	7	10	0	8	3	147	14	13	140	3
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	1	8	11	0	9	3	160	15	14	152	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	360	363	155	361	357	168	155	0	0	175	0	0
Stage 1	182	182	-	174	174	-	-	-	-	-	-	-
Stage 2	178	181	-	187	183	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	596	565	891	595	569	876	1425	-	-	1401	-	-
Stage 1	820	749	-	828	755	-	-	-	-	-	-	-
Stage 2	824	750	-	815	748	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	584	558	890	583	562	876	1425	-	-	1401	-	-
Mov Cap-2 Maneuver	584	558	-	583	562	-	-	-	-	-	-	-
Stage 1	818	741	-	826	753	-	-	-	-	-	-	-
Stage 2	814	749	-	797	740	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	10.4	0.1	0.6
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1425	-	-	702	685	1401	-	-
HCM Lane V/C Ratio	0.002	-	-	0.022	0.029	0.01	-	-
HCM Control Delay (s)	7.5	0	-	10.2	10.4	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	13	150	13	14	142
Future Vol, veh/h	10	13	150	13	14	142
Conflicting Peds, #/hr	0	0	0	9	9	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	14	163	14	15	154

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	363	179	0	0	186	0
Stage 1	179	-	-	-	-	-
Stage 2	184	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	636	864	-	-	1388	-
Stage 1	852	-	-	-	-	-
Stage 2	848	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	624	858	-	-	1378	-
Mov Cap-2 Maneuver	624	-	-	-	-	-
Stage 1	846	-	-	-	-	-
Stage 2	838	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	738	1378	-
HCM Lane V/C Ratio	-	-	0.034	0.011	-
HCM Control Delay (s)	-	-	10	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	23	13	43	60	46	11	109	45	38	103	25
Future Vol, veh/h	9	23	13	43	60	46	11	109	45	38	103	25
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	25	14	47	65	50	12	118	49	41	112	27
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.2	9	8.8	9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	20%	29%	23%
Vol Thru, %	66%	51%	40%	62%
Vol Right, %	27%	29%	31%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	165	45	149	166
LT Vol	11	9	43	38
Through Vol	109	23	60	103
RT Vol	45	13	46	25
Lane Flow Rate	179	49	162	180
Geometry Grp	1	1	1	1
Degree of Util (X)	0.224	0.066	0.211	0.231
Departure Headway (Hd)	4.499	4.831	4.69	4.599
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	796	738	763	779
Service Time	2.539	2.884	2.733	2.639
HCM Lane V/C Ratio	0.225	0.066	0.212	0.231
HCM Control Delay	8.8	8.2	9	9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.9	0.2	0.8	0.9

Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	28	1036	98	1677	48	119	58
v/c Ratio	0.17	0.45	0.28	0.70	0.48	0.54	0.52
Control Delay	12.4	19.1	11.0	23.7	101.8	14.9	64.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.4	19.1	11.0	23.7	101.8	14.9	64.9
Queue Length 50th (ft)	8	284	27	603	59	0	37
Queue Length 95th (ft)	30	563	82	1126	109	42	92
Internal Link Dist (ft)		239		615	524		220
Turn Bay Length (ft)	100		120				
Base Capacity (vph)	199	2306	376	2405	164	269	182
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.45	0.26	0.70	0.29	0.44	0.32

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	961	34	94	1607	3	36	10	114	8	16	32
Future Volume (vph)	27	961	34	94	1607	3	36	10	114	8	16	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.1	7.1		7.1	7.1			8.6	8.6		8.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.95		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1770	3513		1770	3538			1792	1509		1708	
Flt Permitted	0.08	1.00		0.22	1.00			0.96	1.00		0.99	
Satd. Flow (perm)	150	3513		406	3538			1792	1509		1708	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	28	1001	35	98	1674	3	38	10	119	8	17	33
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	112	0	27	0
Lane Group Flow (vph)	28	1036	0	98	1677	0	0	48	7	0	31	0
Confl. Peds. (#/hr)	7		8	8		7			6	6		
Confl. Bikes (#/hr)			4						1			
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)	126.4	120.6		132.6	123.7			10.7	10.7		9.5	
Effective Green, g (s)	126.4	120.6		132.6	123.7			10.7	10.7		9.5	
Actuated g/C Ratio	0.67	0.63		0.70	0.65			0.06	0.06		0.05	
Clearance Time (s)	7.1	7.1		7.1	7.1			8.6	8.6		8.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	149	2229		347	2303			100	84		85	
v/s Ratio Prot	0.01	0.29		c0.01	c0.47			c0.03			c0.02	
v/s Ratio Perm	0.12			0.18					0.00			
v/c Ratio	0.19	0.46		0.28	0.73			0.48	0.08		0.37	
Uniform Delay, d1	19.2	18.0		11.4	22.0			87.0	85.0		87.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.6	0.7		0.4	2.1			3.6	0.4		2.7	
Delay (s)	19.9	18.7		11.9	24.1			90.6	85.4		90.1	
Level of Service	B	B		B	C			F	F		F	
Approach Delay (s)		18.7			23.4			86.9			90.1	
Approach LOS		B			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	26.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	190.0	Sum of lost time (s)	36.3
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 methodology does not support exclusive ped or hold phases.