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**ALFRED STREET BAPTIST CHURCH  
TRAFFIC IMPACT STUDY  
CITY OF ALEXANDRIA, VIRGINIA**

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INNOVATION + SOLUTIONS



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# Alfred Street Baptist Church

## SECTION 1 INTRODUCTION

### Study Scope

This report presents a Traffic Impact Study (TIS) for the Alfred Street Baptist Church project located in the City of Alexandria, Virginia.

The site is located within the Old Town Small Area Plan and is bounded by Duke Street to the north, Wolfe Street to the south, South Patrick Street to the west and South Alfred Street to the east. The subject site is currently occupied by a 43,784 SF church with an observed attendance of approximately 1,208 parishioners per service. Additionally, 22 affordable townhouses are located on the southern portion of the site that are currently built and occupied. The site location is shown generally on Figure 1-1.

The applicant proposes to raze the townhomes and redevelop and expand the existing church with approximately 232,368 total square feet of church space (from 1,208 to 2,163 seats) and a structured parking garage. The number of seats included in the church space consists of the proposed main sanctuary and restored main chapel with their corresponding balconies. Of the total, 1,906 seats would be located in the proposed main sanctuary 257 seats would be located in the restored chapel. Parking would be provided via a proposed two level below-grade parking garage on site (216 spaces), a two level below-grade parking garage across South Patrick Street from the site (190 spaces), and a surface lot across of South Patrick Street (52 spots) totaling 458 spaces. A total of 34 bicycle parking spaces will be provided at grade and/or within the below grade parking garage. Access to the proposed parking garage would be located on the opposite side of South Patrick Street from the existing Alexandria Gateway garage just north of the U-turn connection between South Henry Street and South Patrick Street. An additional entrance to the below-grade garage under the church would be located on Wolfe Street, with an internal connection to the site entrance on S. Patrick Street. Exiting vehicles would be able to exit the site from both the S. Patrick Street and Wolfe Street access points during the weekday peak hours. On Sunday, vehicles exiting onto Wolfe Street would be restricted to making a right onto S. Alfred Street to head south. A service entrance and exit will also be located along Wolfe Street to the south of the site.

The scope of this traffic study was established in consultation with the City of Alexandria Transportation & Environmental Services (T&ES) staff, and the study evaluates existing 2015 conditions and future 2022 traffic conditions without and with the proposed development, and build-out plus six (6) years with the proposed development.

Based on the trip generation analyses, the development would not meet the 5,000 daily vehicle trip threshold for a formal Virginia Department of Transportation (VDOT) Chapter 870 review.

### **Purpose**

The purpose of this traffic study is to evaluate the adequacy of the existing transportation network in conjunction with the proposed development and identify potential mitigation measures to offset the development's traffic impacts.

This study was conducted in accordance with guidelines set forth in the City of Alexandria's Zoning Ordinance, Section 11-700. The proposed development is classified as a Large Development per the *Transportation Planning Administrative Guidelines, Multi-modal Transportation Studies*, dated March 25, 2013. The study area and scope was determined with City staff based on a review of key study intersections and roadways that potentially would be affected by the proposed development and accounting for the number of new trips expected to be generated by the site. The approved study agreement is included as Appendix A.

Based on discussions with City staff, the project is exempt from creating a Transportation Demand Management (TDM) in order to satisfy the need for the Transportation Management Plan (TMP).

### **Study Objective/Methodology**

Tasks undertaken in this study included the following:

- Confirmation of the traffic study scope and parameters from the City of Alexandria Transportation & Environmental Services (T&ES) that must be addressed in this study.
- Review of the proposed development plans, development schedule, parking plans, and other background materials.
- A field reconnaissance of the subject site, adjacent properties, surrounding public roadways, and traffic conditions.
- Collection of AM and PM peak hour traffic counts on a typical weekday from 6:30 to 9:30 AM and from 4:30 AM to 7:30 PM at key off-site intersections. Peak hour traffic counts were also conducted on a typical Sunday from 7:00AM-3:00PM.
- Collection of the on-street parking occupancy from 4:30 to 7:30 PM on one (1) typical weekday (Tuesday, Wednesday or Thursday), and on two (2) Sundays from 7:00 AM to 3:00 PM within a two (2) block radius of the site.

- Collection of various other field observations and measurements as are required to provide additional support for recommendations and conclusions.
- Obtained existing traffic signal phasing/timing plans and electronic analysis files from T&ES.
- Compiled an inventory of transit services and other non-auto facilities in the site vicinity.
- Calculation of the existing weekday AM, weekday PM, and Sunday midday peak hour levels of service and 50<sup>th</sup> and 95<sup>th</sup> percentile queues at key study intersections.
- Estimated of the number of weekday AM, weekday PM, and Sunday midday peak hour trips that would be generated by the pipeline developments and the proposed development based on standard Institute of Transportation Engineers (ITE), Trip Generation Manual, 9<sup>th</sup> Edition rates and equations.
- Identification of near-term background traffic volumes for the study area based on the existing traffic counts, ambient traffic growth, and un-built developments (pipeline developments) adjacent to the site.
- Analysis of future intersection levels of service and 50<sup>th</sup> and 95<sup>th</sup> percentile queues in 2022 without and with the proposed development.
- Analysis of future intersection levels of service and 50<sup>th</sup> and 95<sup>th</sup> percentile queues in 2028 with the proposed development (buildout plus six (6) years).
- Identification of traffic operations and potential road improvements required to adequately accommodate total future traffic forecasts in 2022.
- Identification of the number of parking spaces required based on the proposed development and a parking demand study based on the surrounding street network as agreed during the scoping process.

Sources of data for this study included information provided by the City of Alexandria; VDOT; traffic data collected and field surveys conducted by Wells + Associates Inc.; Institute of Traffic Engineers (ITE); the Highway Capacity Manual (HCM); Alfred Street Baptist Church, Christopher Consultants, Kerns Group Architects, and the files of Wells + Associates Inc.

## Study Area

This traffic study includes the following existing and planned intersections listed below. The traffic impacts were evaluated for existing conditions, at project buildout in 2022 and in 2028 (project buildout plus 6 years).

1. Cameron Street/S. Alfred Street
2. S. Henry Street/King Street
3. S. Patrick Street/King Street
4. S. Alfred Street/King St.
5. S. Washington Street/King Street
6. S. Henry Street/Prince Street
7. S. Alfred Street/Prince Street
8. S. Henry Street/Duke Street
9. S. Patrick Street/Duke Street
10. S. Alfred Street/Duke Street
11. S. Columbus Street/Duke Street
12. S. Washington Street/Duke Street
13. Turn Movements from S. Henry Street/South Patrick Street
14. S. Alfred Street/Wolfe Street
15. S. Patrick Street/Gibbon Street
16. S. Alfred Street/Gibbon Street
17. S. Patrick Street/Franklin Street
18. S. Patrick St./one (1) existing garage driveway/one (1) proposed driveway, and
19. One (1) proposed garage driveway/Wolfe Street
20. S. Columbus Street/Wolfe Street



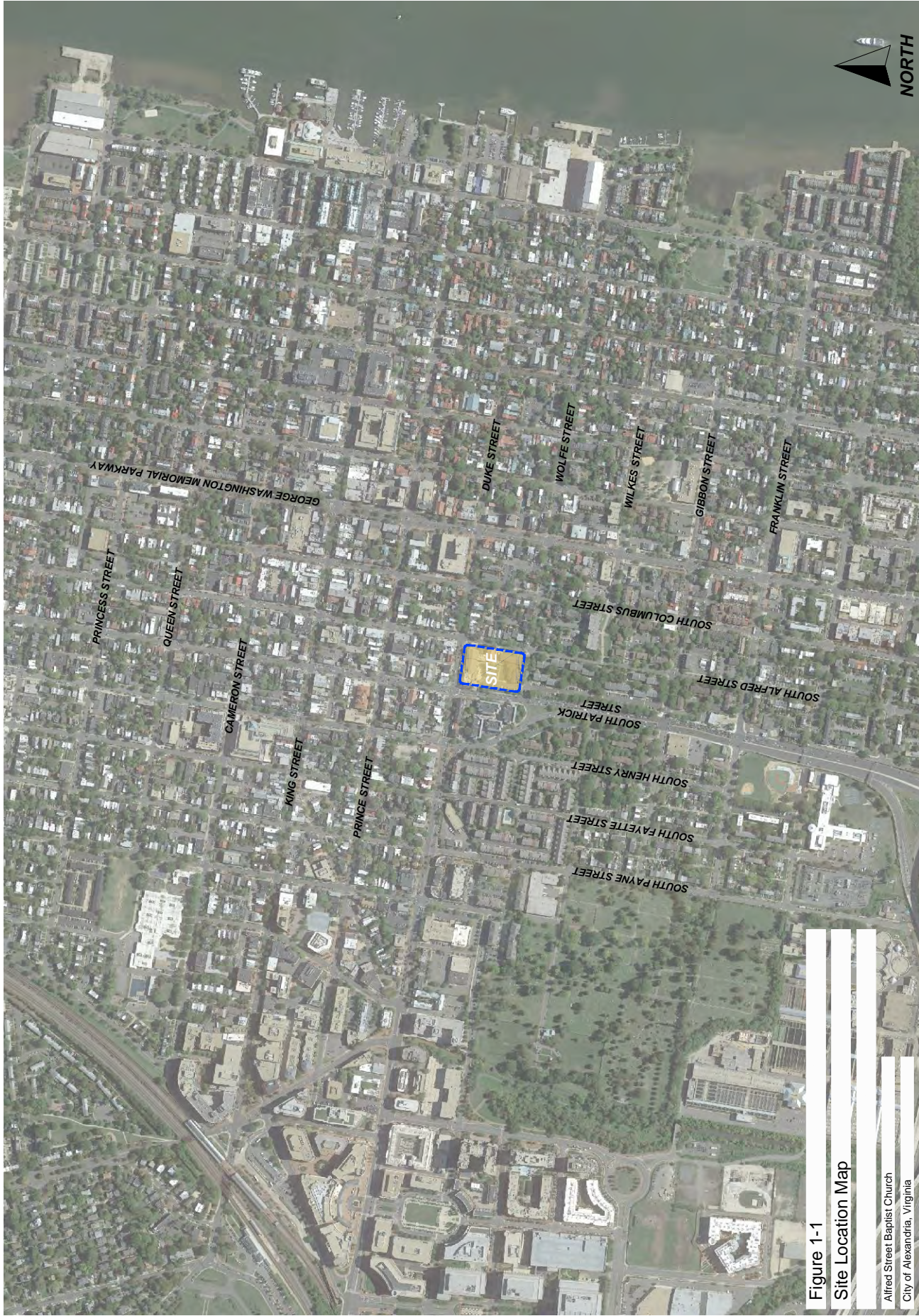


Figure 1-1

Site Location Map

Alfred Street Baptist Church  
City of Alexandria, Virginia



## SECTION 2 BACKGROUND INFORMATION

### Description of Proposed Development

The Applicant (Alfred Street Baptist Church) proposes to redevelop an existing 43,784 GSF church and 22 affordable townhomes into a 232,368 GSF church facility and parking structure. The site is generally located in the southeast quadrant of the S. Patrick Street/Duke Street intersection in the Old Town area of the City of Alexandria, Virginia.

The site would be served by approximately 406 below-grade parking spaces and 52 above grade parking spaces for church use. A total of 34 bicycle parking spaces will be provided at grade and within the below grade parking garage. Vehicular access to parking and the site would be provided via S. Patrick Street, directly opposite of the existing parking garage utilized on the western side of the roadway, and S. Alfred Street with an internal connecting driveway segment between the two curb cuts.

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

### Site Location

The existing site is bounded by Duke Street to the north, Wolfe Street to the south, S. Patrick Street to the west and S. Alfred Street to the east, as shown on Figure 1-1. The existing site is currently occupied by a 43,784 SF church and 22 townhomes.

### Description of Parcel

The parcels are identified as Tax Map Numbers 074.03-04-01 and 074.03-04-02. The site is currently zoned RM (Townhouse Zone). As proposed, the site would be expanded and redeveloped. The Concept II Plan is shown on Figure 2-2.

### Old Town Small Area Plan

The Old Town Small Area Plan (OT SAP) is located in Planning District I in the central third of the City and is bound by the Potomac River on the east, Oronoco Street to the north, Washington Street generally to the west with an extension along King and Duke Streets to West Street, and the Capitol Beltway (I-395) to the south. The OT SAP was adopted in 1992 (Ordinance 3576) and has been amended through November 15, 2014. Old Town consists of primarily residential uses.

Washington Street, Henry Street, and Patrick Street are the major north/south roadways which connect Alexandria to National Airport and Washington D.C. and serve regional traffic from other Northern Virginia jurisdictions and Maryland. As noted, it is planned that most north/south traffic utilize these roadways and carpool traffic uses the HOV lanes on all three of the roadways. As a result, Washington Street, Henry Street, and Patrick Street are all heavily traveled in the morning and evening by commuters.

### Roadway Network

Regional access to the subject site is provided by Washington Street, US Route 1 (S. Henry Street and S. Patrick Street), King Street and Duke Street which provide connections to Interstate 495/95 and Interstate 395 to the north, west and south. Local access to the site is provided via signalized intersections along Duke Street at S. Patrick Street and S. Alfred Street. Direct access to the existing and proposed parking garages is provided along S. Patrick Street and S. Alfred Street.

**US Route 1 (Henry Street/ Patrick Street)** are south/north one-way urban principal arterial roads typically with three (3) lanes in their respective directions. The roads have posted speed limits of 25 mph.

**Washington Street** is a four-lane urban principal arterial with a posted speed limit of 25 mph that serves local land uses with traffic signals located at major intersections. The curb lane in the northbound direction from 7:00 to 9:00 AM and in the southbound direction from 4:00 to 6:00 PM is restricted to HOV 2+ only. On-street parking is permitted in northbound curb lanes except between 7:00 to 9:00 AM and in the southbound curb lanes except for between 4:00 to 6:00 PM.

**Alfred Street** is a local two-way street with one travel lane in both the northbound and southbound directions. It has a posted speed limit of 25 mph. On-street parking is permitted along the east side of the street from Duke Street to Gibbon Street but is restricted to two-hour parking between Duke Street and Wolfe Street Monday through Saturday from 8:00 AM to 11:00 PM except for “holders of dist 4 permits.” Parking is not permitted on the west side of Alfred Street from Duke Street to Gibbon Street except for Sundays from 7:30 AM to 9:00 PM.

**Wolfe Street** is a local road that operates one lane in each direction near the proposed site. It has a posted speed limit of 25 mph. Parking is allowed on both sides of Wolfe Street between Alfred Street to its termination point at S. Patrick Street. Two-hour parking exists only on only the north side of the street from Alfred Street to Columbus Street from 8:00 AM to 6:00 PM except for “holders of dist 4 permits.”

The existing lane use and traffic control are shown on Figure 2-3. The following study intersections currently operate under signal control:

- Cameron Street/S. Alfred Street
- S. Henry Street/King Street
- S. Patrick Street/King Street
- Alfred Street/King Street
- S. Washington Street/King Street
- S. Henry Street/Prince Street
- S. Alfred Street/Prince Street
- S. Henry Street/Duke Street
- S. Patrick Street/Duke Street
- S. Alfred Street/Duke Street
- S. Columbus Street/Duke Street
- S. Washington Street/Duke Street
- S. Patrick Street/Gibbon Street
- S. Alfred Street/Gibbon Street
- S. Patrick Street/Franklin Street

**Special Event Operations (Funerals and Weddings)**

The Alfred Street Baptist Church has a detailed operations plan for special events which includes parking attendants and Alexandria police officers for implementation. The parking attendants and police officers are instructed to direct traffic, provide information as to where members or visitors may park, as well as monitor for possible violators and advise them of proper operations. Staff is notified prior to events which parking areas are available for that time period. The amount of available parking varies, with the most parking available outside of typical work hours and on weekends. Table 2-1 below summarizes the available parking for special events based on time, Sunday parking totals are discussed in Section 8.

Table 2-1  
 Alfred Street Baptist Church  
 Existing Special Event Parking Spaces

Time of Day	Alexandria Gateway Garage	Church Garage	Old Town West	Bedford Townhouse Comm.	Total
Monday-Friday 9AM-5PM	38	21	27	-	86
Monday-Friday 5PM-10PM	190	21	27	52	290
Saturday (All Day)	190	21	27	52	290



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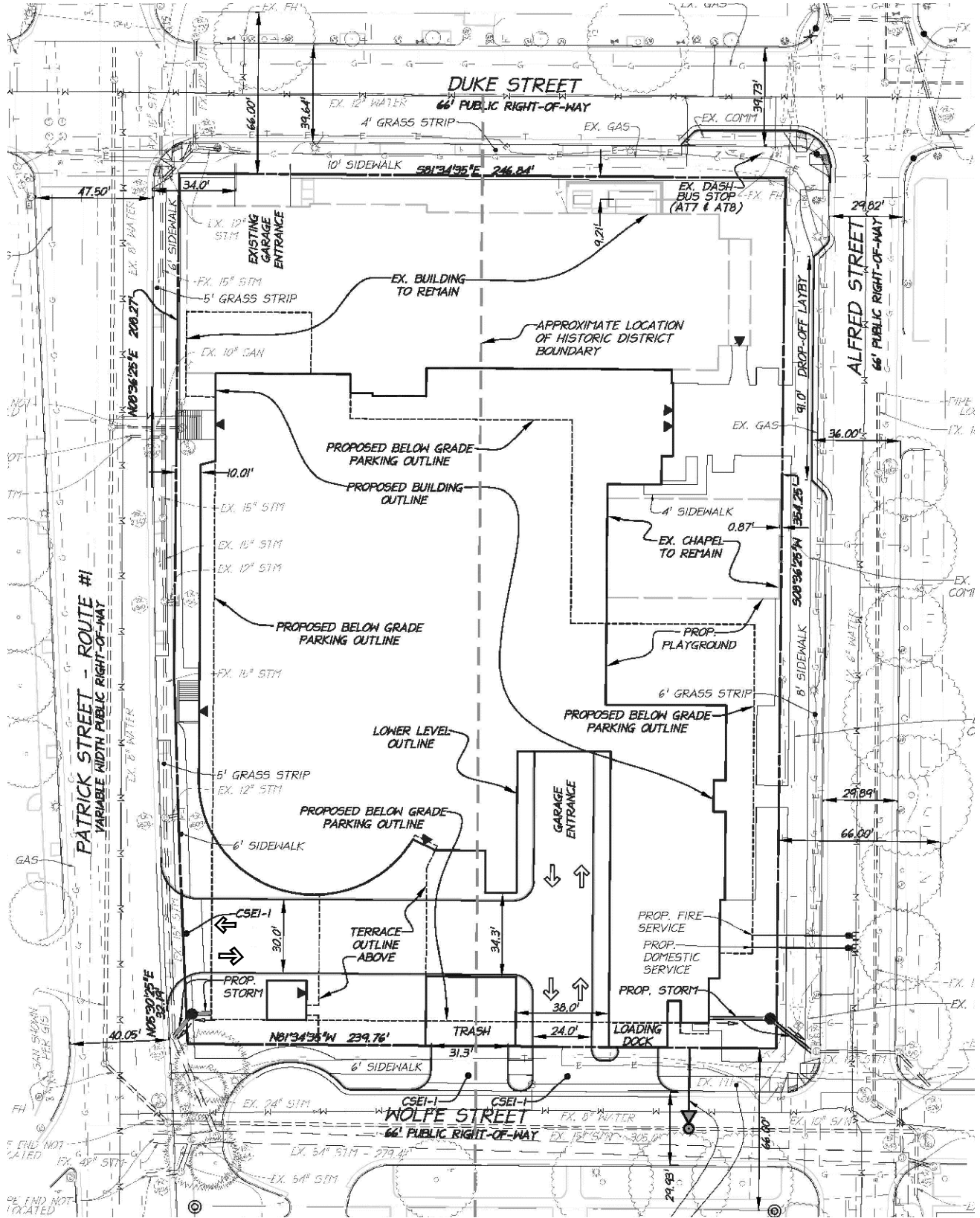


Figure 2-1  
Conceptual Development Plan

Alfred Street Baptist Church  
City of Alexandria





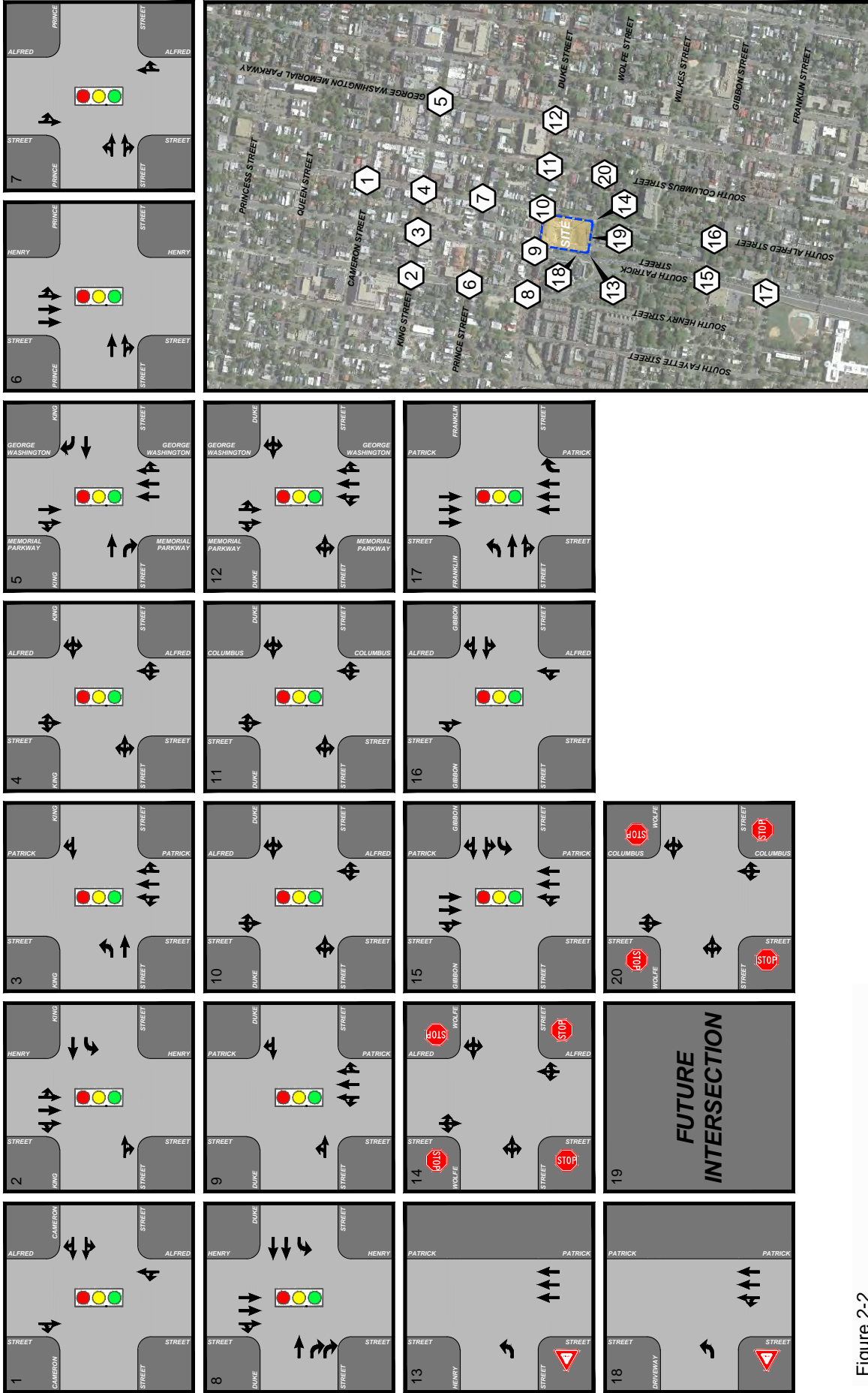


Figure 2-2  
Existing Lane Use and Traffic Controls

Alfred Street Baptist Church  
City of Alexandria, Virginia

### SECTION 3 ANALYSIS OF EXISTING CONDITIONS

#### Traffic Volumes

Wells + Associates conducted weekday vehicular, pedestrian and bicycle counts on Tuesday, May 19, 2015 and Wednesday May 20, 2015 from 6:30 to 9:30 AM and 4:30 to 7:30 PM and on Sunday May 31, 2015 from 7:00 AM to 3:00 PM at the following intersections listed below. In addition, the S. Columbus Street/Wolfe Street intersection was counted on Wednesday, February 24, 2016 from 6:30 AM to 9:30 AM and on Sunday, February 28, 2016 from 7:00 AM to 3:00 PM.

- Cameron Street/S. Alfred Street
- S. Henry Street/King Street
- S. Patrick Street/King Street
- Alfred Street/King St.
- S. Washington Street/King Street
- S. Henry Street/Prince Street
- S. Alfred Street/Prince Street
- S. Henry Street/Duke Street
- S. Patrick Street/Duke Street
- S. Alfred Street/Duke Street
- S. Columbus Street/Duke Street
- S. Washington Street/Duke Street
- Turn Movements from S. Henry Street/South Patrick Street
- S. Alfred Street/Wolfe Street
- S. Patrick Street/Gibbon Street
- S. Alfred Street/Gibbon Street
- S. Patrick Street/Franklin Street
- S Columbus Street/Wolfe Street

The existing peak hour vehicular volumes are shown in Figure 3-1 and 3-2. The peak hour pedestrian and bicycle volumes are shown in Section 7 of the report. The count worksheets are included in Appendix B. For purposes of this traffic analysis and in the interest of conservatism, the peak hours of individual intersections were utilized. Intersections without gaps or other development were balanced up so that the total segment traffic volumes were within 10%.

Figure 3-1 indicates that S. Alfred Street south Duke Street presently carries 428 AM peak hour trips, 384 PM peak hour trips, and 192 Sunday peak hour trips. Duke Street east of South Patrick Street presently carries 920 AM peak hour trips, 930 PM peak hour trips, and 984 Sunday peak hour Trips.

S. Patrick Street which runs only in the northbound direction carries approximately 2,204 AM peak hour trips, 1,559 PM peak hour trips, and 1,815 Sunday peak hour trips south of Duke Street. South Henry Street, which runs only in the southbound direction presently carries 1,530 AM peak hour trips, 2,316 PM peak hour trips, and 2,016 Sunday peak hour trips south of Duke Street. The count data shows that the majority of traffic regionally traveling northbound into Alexandria during the AM peak hour, southbound out of Alexandria during the PM peak hour, and relatively equally northbound and southbound during the Sunday peak hour.

### Operational Analysis

Existing peak hour levels of service (LOS) and the 50<sup>th</sup> and 95<sup>th</sup> percentile queues were calculated at key study intersections based on the existing lane use and traffic control shown on Figure 2-3; existing traffic signal phasing/timings obtained from T&ES; peak hour traffic, pedestrian and bicycle volumes shown in Figures 7-7 and 7-8, the Highway Capacity Manual (HCM) 2000 methodologies, and HCM 2010 methodologies, as reported by Synchro 9.1. The base Synchro files were provided by T&ES. The files were reviewed and account for the effects of the HOV lane on N. Washington Street, on-street parking maneuvers, bus blockages, and lane restrictions during the peak periods. Additionally, peak hour factors between 0.85 and 0.92 were used based on the existing peak hour traffic counts.

In addition, it is noted that the Central Business District (CBD) factor was used for the analysis for weekday AM and PM conditions to accurately reflect conditions experienced along the heavily traveled corridors in the study area. Field observations indicate that queueing between the closely spaced intersections reduces capacity during the weekday AM and PM periods. The CBD factor reduces the saturated flow rate and better accounts for the delay and queuing effects of closely spaced signalized intersections.

**Levels of Service.** The existing LOS results are summarized in Table 3-1 and indicate the following:

- All signalized study intersections currently operate at overall acceptable LOS “D” or better during the weekday AM and PM peak hours except Patrick Street/King Street and S. Washington Street/Duke Street during the AM peak hour, and Henry Street/King Street during the PM peak hour which all operate near capacity at LOS “E”. Some specific turning movements along U.S. Route 1 (S. Patrick Street and S. Henry Street) currently operate at near or at capacity (LOS “E” or LOS “F”) during the weekday AM and PM peak hours.
- All of the approaches at the stop controlled study intersections currently operate at acceptable levels of service (LOS “D” or better) during the AM and PM hours.



- All signalized study intersections currently operate at acceptable levels of service (LOS “D” or better) during the Sunday midday peak hour.

The existing LOS Synchro worksheets are included in Appendix C.

**Queues.** The 50<sup>th</sup> and 95<sup>th</sup> percentile queues of existing conditions are used to establish a datum against which to compare future conditions. The 50<sup>th</sup> percentile (or average) queue is defined as the maximum back of queue associated with a typical signal cycle. The 95<sup>th</sup> percentile queue is defined as the maximum back of queue with 95<sup>th</sup> percentile traffic volumes. The 95<sup>th</sup> percentile queue is not necessarily ever observed, it is simply based on statistical calculations.

As shown on Table 3-2, peak hour queueing along both S. Henry Street and S. Patrick Street for thru movements at study intersections is consistent with commuter travel patterns. Longer queues were observed in the northbound direction during the AM peak hour and in the southbound direction during the PM peak hour. The estimated 95<sup>th</sup> percentile queue exceeded available storage for the eastbound right movement on Duke Street at S. Henry Street (weekday PM Peak Hour).



Table 3-1  
 Alfred Street Baptist Church  
 Total Future with Development Intersection Level of Service Summary <sup>(1)</sup>

Intersection	Intersection Control	Approach/Movement	Existing Conditions					
			AM Peak Hour		PM Peak Hour		Sunday Peak Hour	
			LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)
1. Alfred Street/Cameron Street	Signalized	WBLTR	B	14.5	B	19.6	B	15.4
		NBLT	A	6.0	A	7.7	A	7.9
		SBTR	B	12.4	C	21.5	B	11.7
		<b>Overall</b>	<b>A</b>	<b>9.6</b>	<b>B</b>	<b>18.8</b>	<b>B</b>	<b>12.5</b>
2. Henry Street/King Street	Signalized	EBTR	C	26.6	D	50.3	D	36.1
		WBL	A	9.0	B	15.3	B	17.5
		WBT	B	10.9	B	17.1	B	16.2
		SBLTR	D	46.4	F	87.0	C	23.5
		<b>Overall</b>	<b>D</b>	<b>38.7</b>	<b>E</b>	<b>72.3</b>	<b>C</b>	<b>23.9</b>
3. Patrick Street/King Street	Signalized	EBL	C	22.2	B	10.4	B	14.7
		EBT	B	18.9	B	14.0	B	15.4
		WBTR	C	21.6	C	22.1	C	21.3
		NBLTR	F	92.0	B	12.8	A	9.9
		<b>Overall</b>	<b>E</b>	<b>78.8</b>	<b>B</b>	<b>14.4</b>	<b>B</b>	<b>12.4</b>
4. Alfred Street/King Street	Signalized	EBLTR	A	6.4	A	6.9	B	11.8
		WBLTR	A	9.8	B	15.3	B	11.2
		NBLTR	B	18.5	A	9.8	A	4.8
		SBLTR	B	11.6	C	21.5	B	11.9
		<b>Overall</b>	<b>B</b>	<b>13.6</b>	<b>B</b>	<b>14.9</b>	<b>B</b>	<b>10.6</b>
5. Washington Street/King Street	Signalized	EBT	D	35.1	C	32.4	C	27.6
		EBR	C	31.1	C	28.7	C	22.4
		WBT	C	33.8	D	36.1	C	26.6
		WBR	C	30.9	C	28.1	C	23.2
		NBTR	A	3.3	A	9.3	B	16.9
		SBTR	A	9.6	C	34.5	C	28.4
		<b>Overall</b>	<b>A</b>	<b>6.7</b>	<b>C</b>	<b>27.3</b>	<b>C</b>	<b>23.3</b>
6. Henry Street/Prince Street	Signalized	EBTR	B	14.8	E	55.9	B	16.9
		SBLT	A	4.4	A	4.3	A	4.5
		<b>Overall</b>	<b>A</b>	<b>7.7</b>	<b>C</b>	<b>27.5</b>	<b>A</b>	<b>7.0</b>
7. Alfred Street/Prince Street	Signalized	EBLTR	A	1.3	A	3.9	A	1.5
		NBTR	B	11.2	B	12.6	B	13.9
		SBLT	B	14.9	C	26.5	B	11.2
		<b>Overall</b>	<b>A</b>	<b>6.5</b>	<b>B</b>	<b>12.8</b>	<b>A</b>	<b>6.4</b>
8. Henry Street/Duke Street <i>*Southbound left turn only available on Sunday</i>	Signalized	EBT	C	24.8	D	44.7	D	40.3
		EBR	B	18.6	E	65.3	C	29.2
		WBL	A	6.9	B	17.6	B	18.7
		WBT	A	6.6	B	12.9	B	12.7
		SBLTR*	B	16.6	D	35.8	A	5.0
		<b>Overall</b>	<b>B</b>	<b>15.7</b>	<b>D</b>	<b>37.0</b>	<b>B</b>	<b>13.3</b>
9. Patrick Street/Duke Street	Signalized	EBT	C	28.3	B	19.9	B	17.3
		WBTR	E	73.7	C	23.6	C	24.1
		NBLTR	D	45.3	D	43.1	B	19.0
		<b>Overall</b>	<b>D</b>	<b>47.5</b>	<b>D</b>	<b>35.3</b>	<b>B</b>	<b>19.9</b>
10. Alfred Street/Duke Street	Signalized	EBLTR	B	12.8	A	7.5	A	8.4
		WBLTR	A	9.2	A	9.4	A	9.6
		NBLTR	D	52.9	B	19.6	B	19.8
		SBLTR	A	6.8	C	28.8	B	14.7
		<b>Overall</b>	<b>C</b>	<b>23.8</b>	<b>B</b>	<b>15.0</b>	<b>B</b>	<b>10.9</b>
11. Columbus Street/Duke Street	Signalized	EBLTR	A	9.0	B	18.3	B	16.2
		WBLTR	C	21.4	C	23.9	B	15.9
		NBLTR	D	39.9	B	15.4	C	20.7
		SBLTR	A	5.2	C	26.5	B	14.1
		<b>Overall</b>	<b>C</b>	<b>24.5</b>	<b>C</b>	<b>22.6</b>	<b>B</b>	<b>16.6</b>
12. Washington Street/Duke Street	Signalized	EBLTR	F	98.9	D	45.2	C	32.8
		WBLTR	D	36.2	C	32.8	C	28.9
		NBTR	E	65.1	B	18.7	E	57.5
		SBLTR	A	7.0	B	10.6	C	22.2
		<b>Overall</b>	<b>E</b>	<b>57.1</b>	<b>B</b>	<b>17.3</b>	<b>D</b>	<b>36.9</b>
13. Patrick Street/U-Turns from Henry Street	Unsignalized	EBL	B	10.9	A	9.7	B	10.2
		NBT	A	0.0	A	0.0	A	0.0
14. Alfred Street/Wolfe Street	Unsignalized	EBLTR	A	8.2	A	8.2	A	7.7
		WBLTR	A	7.9	A	9.3	A	7.6
		NBLTR	B	10.6	A	8.1	A	7.8
		SBLTR	A	7.9	B	10.3	A	8.0
15. Patrick Street/Gibbon Street	Signalized	WBL	F	82.0	F	126.0	C	27.5
		WBLTR	D	49.7	C	25.6	C	20.4
		NBLT	B	10.2	B	18.6	B	11.8
		SBTR	A	5.6	C	30.3	A	5.3
		<b>Overall</b>	<b>B</b>	<b>15.3</b>	<b>D</b>	<b>36.9</b>	<b>B</b>	<b>10.4</b>
16. Alfred Street/Gibbon Street	Signalized	WBLTR	B	15.6	B	12.0	A	8.9
		NBLT	C	23.0	D	49.3	B	12.5
		SBTR	B	12.5	B	14.8	A	9.4
		<b>Overall</b>	<b>B</b>	<b>19.0</b>	<b>B</b>	<b>19.2</b>	<b>A</b>	<b>9.7</b>
17. Patrick Street/Franklin Street	Signalized	EBLT	E	65.3	E	63.1	E	65.5
		EBR	E	67.7	E	67.0	E	67.5
		NBT	A	7.7	A	4.2	A	2.9
		NBR	E	57.8	A	5.4	A	3.2
		SBT	A	2.5	C	26.1	A	3.3
		<b>Overall</b>	<b>B</b>	<b>19.1</b>	<b>B</b>	<b>19.1</b>	<b>A</b>	<b>4.5</b>
18. Existing Garage Driveway/Patrick Street/ <i>*Northbound right future movement only</i>	Unsignalized	EBL	A	9.9	A	9.5	D	25.4
		NBLTR*	A	0.0	A	0.0	A	0.0
19. Proposed Site Driveway/S. Alfred Street	Unsignalized	SBLR	Proposed Site Driveway					
20. S. Columbus Street/Wolfe Street	Unsignalized	EBLTR	A	8.9	A	9.6	A	8.5
		WBLTR	A	9.0	B	12.2	A	8.4
		NBLTR	B	14.5	A	9.9	A	9.3
		SBLTR	A	8.5	C	21.0	A	8.8

Notes:

(1) Capacity analysis based on Highway Capacity Manual methodology, using Synchro 9.

Table 3-2  
Alfred Street Baptist Church  
Intersection Queue Summary <sup>(1)</sup>

Intersection	Intersection Control	Approach/Movement	Storage Length (ft)	Existing Conditions					
				AM Peak Hour		PM Peak Hour		Sunday Peak Hour	
				50th	95th	50th	95th	50th	95th
1. Alfred Street/Cameron Street	Signalized	WBLTR NBLT SBTR	- - -	48 19 13	72 m22 37	134 25 173	187 m39 291	45 29 21	72 m46 46
2. Henry Street/King Street	Signalized	EBTR WBL WBT SBLTR	- 100 - -	143 16 89 ~284	221 m15 m104 #394	179 47 127 ~532	#357 m53 m159 #586	131 44 121 310	#238 m52 m162 383
3. Patrick Street/King Street	Signalized	EBL EBT WBTR NBLTR	100 - - -	55 92 80 ~1310	m77 m136 m56 m#827	17 140 42 55	m18 m150 #235 #358	30 123 99 43	m34 m173 138 76
4. Alfred Street/King Street	Signalized	EBLTR WBLTR NBLTR SBLTR	- - - -	23 41 32 9	m28 m58 m#457 21	26 70 21 102	m36 m98 34 197	62 49 13 23	m78 76 21 41
5. Washington Street/King Street	Signalized	EBT EBR WBT WBR NBTR SBTR	- 100 - - - -	68 0 50 0 30 88	111 17 93 8 m25 108	89 10 141 0 98 604	143 34 205 24 146 #789	153 2 128 16 150 376	221 23 195 43 172 482
6. Henry Street/Prince Street	Signalized	EBTR SBLT	- -	111 15	156 m15	~351 35	#478 m30	78 26	115 30
7. Alfred Street/Prince Street	Signalized	EBLTR NBTR SBLT	- - -	7 68 26	m7 m71 49	25 26 150	31 m49 226	4 32 40	7 60 m63
8. Henry Street/Duke Street	Signalized	EBT EBR WBL WBT SBLTR*	- 125 - - -	178 79 8 60 36	267 113 m8 m55 m#320	155 ~177 40 81 ~440	#261 #252 m44 m90 m#496	160 79 43 82 24	#285 m173 m54 m106 31
*Southbound left turn only available on Sunday									
9. Patrick Street/Duke Street	Signalized	EBT WBTR NBLTR	- - -	94 ~287 ~654	184 m#449 #739	98 140 330	m140 #458 #415	75 112 213	m134 #482 273
10. Alfred Street/Duke Street	Signalized	EBLTR WBLTR NBLTR SBLTR	- - - -	50 78 226 3	m65 m132 #419 10	36 90 30 88	m42 m128 60 #295	53 90 38 11	m49 117 73 36
11. Columbus Street/Duke Street	Signalized	EBLTR WBLTR NBLTR SBLTR	- - - -	51 120 268 8	m103 189 #489 28	73 150 57 180	m83 226 100 m242	106 145 77 19	114 211 128 46
12. Washington Street/Duke Street	Signalized	EBLTR WBLTR NBTR SBLTR	- - - -	~282 123 ~851 38	#428 183 #925 50	187 154 217 37	#325 221 261 m#54	212 210 ~394 118	324 283 #499 #638
13. Patrick Street/U-Turns from Henry Street	Unsignalized	EBL NBTR	115 -	- 0	15 -	- -	6 0	- -	14 0
14. Alfred Street/Wolfe Street	Unsignalized	EBLTR WBLTR NBLTR SBLTR	- - - -	- - 55 8	3 5 - 8	- - - -	3 23 5 45	- - - -	3 5 10 15
15. Patrick Street/Gibbon Street	Signalized	WBL WBT NBLT SBTR	- - - -	297 139 720 106	#470 201 13 112	~467 159 230 ~205	m#643 m#246 392 m26	127 70 198 26	209 99 334 520
16. Alfred Street/Gibbon Street	Signalized	WBLTR NBLT SBTR	- - -	81 193 5	118 295 21	76 55 46	125 #159 106	49 33 5	81 67 29
17. Patrick Street/Franklin Street	Signalized	EBL EBTR NBT NBR SBT	- - - - -	5 49 358 ~1585 71	16 68 951 #1831 270	22 95 140 0 ~1494	47 122 260 22 m#1465	8 51 92 0 65	22 68 229 20 612
18. Existing Garage Driveway/Patrick Street	Unsignalized	EBL NBLTR	- -	- -	3 1	- -	2 1	- -	70 0
*Northbound right movement in future conditions only.									
19. Proposed Site Driveway/S. Alfred Street	Unsignalized	SBLR	-			Proposed Site Driveway			
20. S. Columbus Street/Wolfe Street	Unsignalized	EBLTR WBLTR NBLTR SBLTR	- - - -	- - - -	5 18 105 8	- - - -	10 43 18 158	- - - -	10 13 28 20

Notes:

- (1) Queue length is based on the 50th and 95th percentile queues in feet as reported by Synchro, Version 9.
- (2) "~" - 50th percentile volume exceeds capacity, queue may be longer than shown.
- (3) "#" - 95th percentile volume exceeds capacity, queue may be longer than shown.
- (4) "m" - Volume for 95th percentile queue is metered by upstream signal.

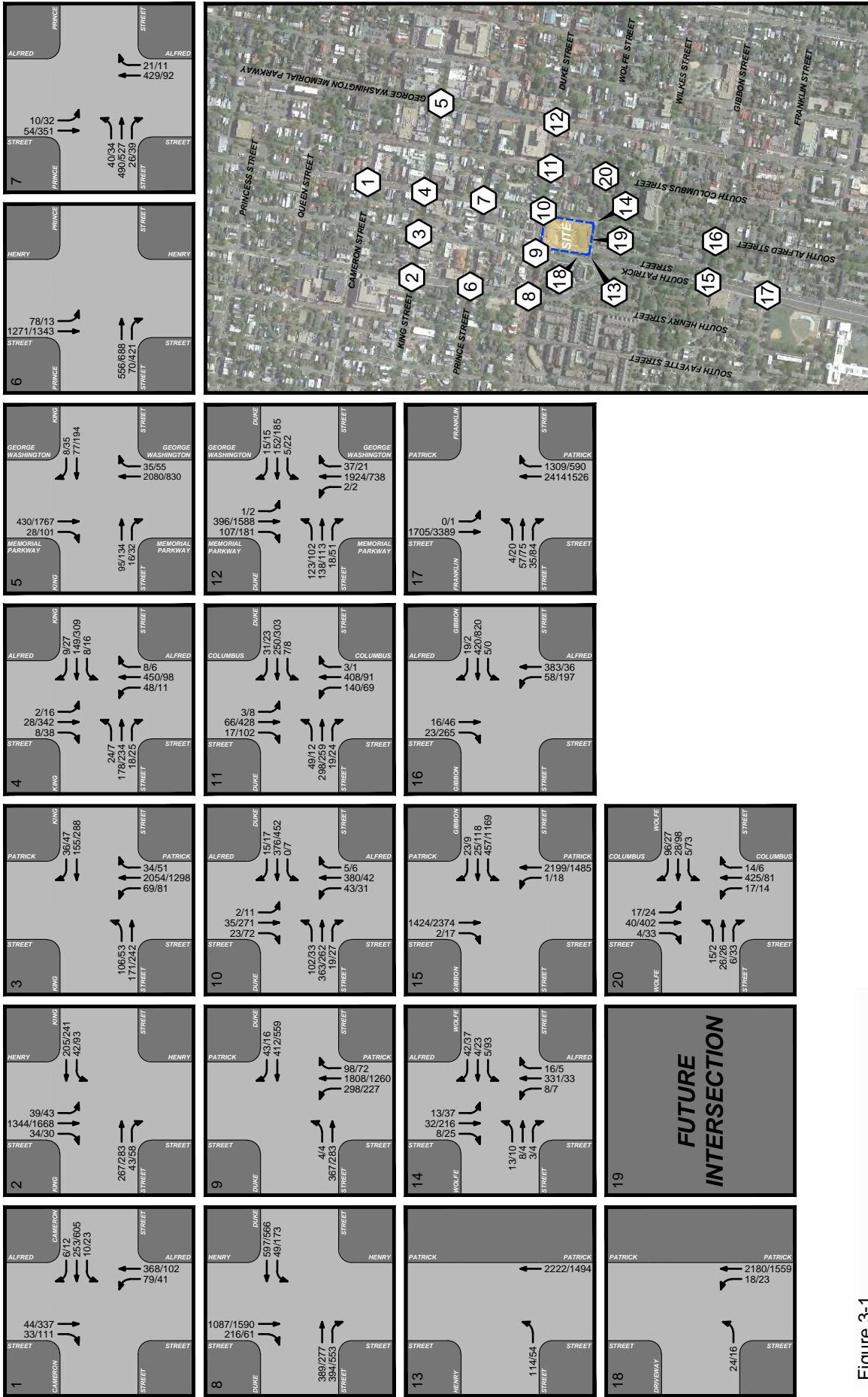
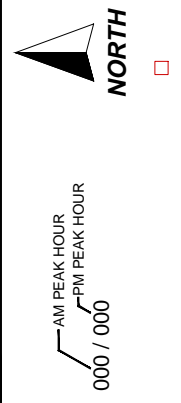


Figure 3-1 Existing Peak Hour Vehicular Traffic Volumes (Weekday)



Alfred Street Baptist Church  
City of Alexandria, Virginia

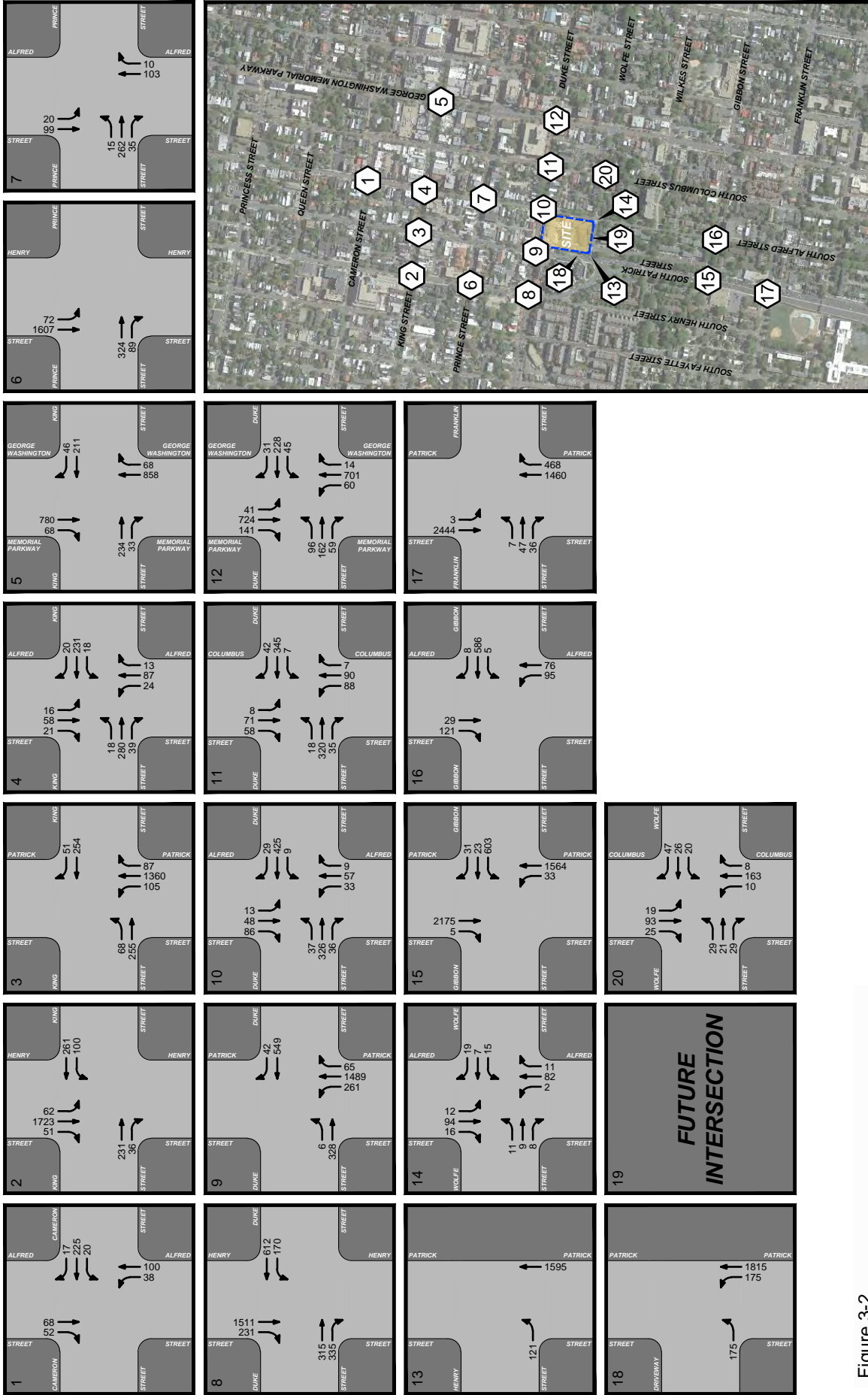


Figure 3-2  
Existing Peak Hour Vehicular Traffic Volumes (Sunday)

Alfred Street Baptist Church  
City of Alexandria, Virginia



## SECTION 4 ANALYSIS OF FUTURE CONDITIONS WITHOUT DEVELOPMENT

### Traffic Volumes

This section presents an analysis of future transportation conditions including projections of 2022 and 2028 future traffic forecasts without the proposed development, as well as capacity and queuing analyses.

**Methodology/Assumptions.** It was assumed that the proposed development would be complete and fully occupied by 2022 as specified in the traffic scoping document. Future traffic forecasts without the proposed development were derived based on baseline traffic counts, regional traffic growth and traffic generated by two (2) pipeline projects.

**Regional Growth.** An increase in traffic associated with regional growth from 2015 to 2022 was estimated at 0.5 percent per year compounded annually for all roadways. This conservative growth rate was applied to all turning movements and accounts for increases in traffic resulting from potential development and influences outside of the immediate study area. Baseline volumes were grown for seven (7) years, with the resultant growth in trips are shown on Figure 4-1 and 4-2. Baseline Traffic Volumes were grown for thirteen years at 0.5 percent per year for the 2028 total future condition and the resulting growth is shown on Figure 4-3 and 4-4.

**Pipeline Developments.** Traffic expected to be generated by the two (2) pipeline developments was included as part of this study and is shown on Figure 4-5. The two (2) pipeline developments included herein are:

- Carr Hotel (220 S. Union Street)
- Robinson Terminal South

As shown in Table 4-1, the two (2) pipeline developments are expected to generate a total of 160 AM peak hour trips, 171 PM peak hour trips and 211 Sunday peak hour trips upon completion. The peak hour traffic forecasts of the combined developments are shown on Figure 4-6 and 4-7. The peak hour traffic forecasts for each pipeline development are included in Appendix D.

**2022 Future Traffic Volumes without Development.** Future traffic forecasts without the proposed development were prepared for 2022 based on existing traffic counts, regional traffic growth (2015 to 2022), and the two (2) pipeline developments. The future traffic forecasts without development are shown on Figure 4-8 and 4-9.

## Operational Analysis

Future peak hour levels of service without the proposed development in 2022 were calculated at the key study intersections based on the existing lane use and traffic control shown on Figure 2-3; the future traffic forecasts without the proposed development shown on Figure 4-3; the existing traffic signal phasings/timings obtained from the City of Alexandria T&ES; and the Highway Capacity Manual (HCM) 2000 methodology, HCM 2010 methodology, using Synchro 9.

**Levels of Service.** The 2022 LOS results without the proposed development and the addition of regional growth and the two (2) pipeline developments are summarized in Table 4-2 and indicate the following:

All signalized study intersections would continue to operate at overall acceptable LOS “D” or better during the AM, PM, and Sunday peak hours except for the following intersections:

- S. Henry Street/King Street operates at LOS “E” during the weekday PM peak hour
- S. Patrick Street/King Street operates at LOS “F” during the weekday AM peak hour
- S. Patrick Street/Duke Street operates at LOS “E” during the weekday AM peak hour
- Washington Street/Duke Street operates at LOS “E” during the weekday AM peak hour

Some turning movements along U.S. Route 1 (S. Patrick Street and S. Henry Street) currently operate at LOS “E” or “F” during the AM, PM, and/or Sunday peak hours. Additionally, the northbound left, right, and thru movements drop to an LOS “E”.

- All signalized study intersections continue to operate at acceptable levels of service (LOS “D” or better) during the Sunday midday peak hour.
- All of the approaches at the stop controlled study intersections would continue to operate at acceptable levels of service (LOS “D” or better) during the weekday AM, PM, and Sunday peak hours.

Capacity analysis worksheets for the future conditions without the proposed development are included in Appendix E.

**Queues.** The future peak hour queue results without the proposed development for the turning movements are presented in Appendix E and summarized in Table 4-3. As shown in Table 4-3, the estimated 50<sup>th</sup> and 95<sup>th</sup> percentile queues at study intersections would increase marginally with the addition of the two (2) pipeline developments and regional growth. Consistent with existing conditions, the estimated 95<sup>th</sup> percentile queues for the eastbound right turns at Henry Street/Duke Street would extend beyond the available storage during the PM peak hour. Consistent with the existing condition, peak hour queueing along both S. Henry Street and S. Patrick Street for thru movements at study intersections is consistent with commuter travel patterns. Longer queues were observed in the northbound direction during the AM peak hour and in the southbound direction during the PM peak hour.

Table 4-1  
Alfred Street Church  
Pipeline Trip Generation Analysis <sup>1</sup>

Land Use (ITE Code)	ITE Land Use Code	Size	Units	AM Peak Hour		PM Peak Hour		ADT Total	Sunday		Sunday ADT Total	
				In	Out	In	Out		In	Out		Total
<b>220 South Union Street</b>												
Hotel	310	120	Rooms	46	34	41	43	84	45	45	90	714
<b>220 South Union Street Total Trips</b>				<b>46</b>	<b>34</b>	<b>41</b>	<b>43</b>	<b>84</b>	<b>45</b>	<b>45</b>	<b>90</b>	<b>714</b>
<b>Robinson Terminal South</b>												
<b>Existing Uses</b>												
Office	710	4,750	SF	6	1	1	6	7	1	0	1	5
Warehouse	150	89,650	SF	21	6	7	22	29	3	3	6	70
<b>Total Existing Trips</b>				<b>27</b>	<b>7</b>	<b>8</b>	<b>28</b>	<b>36</b>	<b>4</b>	<b>3</b>	<b>7</b>	<b>75</b>
<b>Proposed Uses</b>												
Residential Condominium/Townhouse	230	96	DU	9	41	39	19	58	29	30	59	658
<i>Residential Non-Auto Mode Adjustment - 10%</i>				<i>-1</i>	<i>-4</i>	<i>-4</i>	<i>-2</i>	<i>-6</i>	<i>-3</i>	<i>-3</i>	<i>-6</i>	<i>-66</i>
Net New Residential				8	37	35	17	52	26	27	53	592
Specialty Retail	826	5,299	SF	18	2	15	19	34	5	6	11	108
High-Turnover Sit Down Restaurant	932	6,174	SF	37	30	37	24	61	63	51	114	814
<i>Retail Non-Auto Mode Adjustment - 25% Weekday &amp; 40% Sunday</i>				<i>-14</i>	<i>-8</i>	<i>-13</i>	<i>-11</i>	<i>-24</i>	<i>-27</i>	<i>-23</i>	<i>-50</i>	<i>-204</i>
Net New Retail Trips				41	24	39	32	71	41	34	75	718
<b>Total Proposed Trips</b>				<b>49</b>	<b>61</b>	<b>74</b>	<b>49</b>	<b>123</b>	<b>67</b>	<b>61</b>	<b>128</b>	<b>1,310</b>
<b>Robinson Terminal Net New Trips</b>				<b>22</b>	<b>54</b>	<b>66</b>	<b>21</b>	<b>87</b>	<b>63</b>	<b>58</b>	<b>121</b>	<b>644</b>
<b>Total Pipeline Trips</b>				<b>68</b>	<b>88</b>	<b>107</b>	<b>64</b>	<b>171</b>	<b>108</b>	<b>103</b>	<b>211</b>	<b>1,358</b>

Notes:

(1) All trip number were taken from the Robinson Terminal South TIA, dated October 21, 2014 by Wells + Associates.



Table 4-2  
Alfred Street Baptist Church  
Total Future with Development Intersection Level of Service Summary<sup>(1)</sup>

Intersection	Intersection Control	Approach/Movement	Existing Conditions						2022 Future Conditions without Development					
			AM Peak Hour		PM Peak Hour		Sunday Peak Hour		AM Peak Hour		PM Peak Hour		Sunday Peak Hour	
			LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)
1. Alfred Street/Cameron Street	Signalized	WBLTR	B	14.5	B	19.6	B	15.4	B	14.4	B	19.9	B	15.5
		NBLT	A	6.0	A	7.7	A	7.9	A	6.0	A	7.8	A	8.0
		SBTR	B	12.4	C	21.5	B	11.7	B	12.5	C	21.9	B	11.7
		<b>Overall</b>	<b>A</b>	<b>9.6</b>	<b>B</b>	<b>18.8</b>	<b>B</b>	<b>12.5</b>	<b>A</b>	<b>9.5</b>	<b>B</b>	<b>19.2</b>	<b>B</b>	<b>12.6</b>
2. Henry Street/King Street	Signalized	EBTR	C	26.6	D	50.3	D	36.1	C	25.6	D	54.2	D	36.1
		WBL	A	9.0	B	15.3	B	17.5	A	9.1	B	15.3	B	18.0
		WBT	B	10.9	B	17.1	B	16.2	B	11.0	B	16.8	B	16.5
		SBLTR	D	46.4	F	87.0	C	23.5	D	54.4	E	76.2	C	26.2
		<b>Overall</b>	<b>D</b>	<b>38.7</b>	<b>E</b>	<b>72.3</b>	<b>C</b>	<b>23.9</b>	<b>D</b>	<b>44.5</b>	<b>E</b>	<b>65.0</b>	<b>C</b>	<b>25.9</b>
3. Patrick Street/King Street	Signalized	EBL	C	22.2	B	10.4	B	14.7	C	22.6	B	10.2	B	14.8
		EBT	B	18.9	B	14.0	B	15.4	B	19.3	B	13.7	B	15.7
		WBTR	C	21.6	C	22.1	C	21.3	C	21.1	C	21.8	B	19.1
		NBLTR	F	92.0	B	12.8	A	9.9	F	107.0	B	14.5	B	11.8
		<b>Overall</b>	<b>E</b>	<b>78.8</b>	<b>B</b>	<b>14.4</b>	<b>B</b>	<b>12.4</b>	<b>F</b>	<b>91.6</b>	<b>B</b>	<b>15.5</b>	<b>B</b>	<b>13.3</b>
4. Alfred Street/King Street	Signalized	EBLTR	A	6.4	A	6.9	B	11.8	A	5.8	A	7.4	B	10.9
		WBLTR	A	9.8	B	15.3	B	11.2	A	9.6	B	15.2	B	11.3
		NBLTR	B	18.5	A	9.8	A	4.8	C	26.6	B	10.1	A	4.8
		SBLTR	B	11.6	C	21.5	B	11.9	B	11.5	C	22.3	B	11.8
		<b>Overall</b>	<b>B</b>	<b>13.6</b>	<b>B</b>	<b>14.9</b>	<b>B</b>	<b>10.6</b>	<b>B</b>	<b>18.0</b>	<b>B</b>	<b>15.3</b>	<b>B</b>	<b>10.2</b>
5. Washington Street/King Street	Signalized	EBT	D	35.1	C	32.4	C	27.6	C	34.8	C	32.4	C	27.5
		EBR	C	31.1	C	28.7	C	22.4	C	31.1	C	28.7	C	22.4
		WBT	C	33.8	D	36.1	C	26.6	C	34.0	D	35.6	C	26.8
		WBR	C	30.9	C	28.1	C	23.2	C	31.0	C	28.1	C	23.7
		NBTR	A	3.3	A	9.3	B	16.9	B	10.6	A	9.1	B	17.5
		SBTR	A	9.6	C	34.5	C	28.4	A	9.6	D	42.7	C	30.4
		<b>Overall</b>	<b>A</b>	<b>6.7</b>	<b>C</b>	<b>27.3</b>	<b>C</b>	<b>23.3</b>	<b>B</b>	<b>12.1</b>	<b>C</b>	<b>31.9</b>	<b>C</b>	<b>24.3</b>
6. Henry Street/Prince Street	Signalized	EBTR	B	14.8	E	55.9	B	16.9	B	15.0	E	64.5	B	16.9
		SBLT	A	4.4	A	4.3	A	4.5	A	3.6	A	4.8	A	4.9
		<b>Overall</b>	<b>A</b>	<b>7.7</b>	<b>C</b>	<b>27.5</b>	<b>A</b>	<b>7.0</b>	<b>A</b>	<b>7.2</b>	<b>C</b>	<b>31.5</b>	<b>A</b>	<b>7.2</b>
7. Alfred Street/Prince Street	Signalized	EBLTR	A	1.3	A	3.9	A	1.5	A	1.2	A	5.0	A	1.6
		NBTR	B	11.2	B	12.6	B	13.9	A	9.4	B	12.7	B	14.1
		SBLT	B	14.9	C	26.5	B	11.2	B	14.9	C	25.6	B	11.0
		<b>Overall</b>	<b>A</b>	<b>6.5</b>	<b>B</b>	<b>12.8</b>	<b>A</b>	<b>6.4</b>	<b>A</b>	<b>5.4</b>	<b>B</b>	<b>12.9</b>	<b>A</b>	<b>6.1</b>
8. Henry Street/Duke Street <i>*Southbound left turn only available on Sunday</i>	Signalized	EBT	C	24.8	D	44.7	D	40.3	C	25.0	D	44.7	D	44.8
		EBR	B	18.6	E	65.3	C	29.2	B	18.5	E	57.6	C	29.6
		WBL	A	6.9	B	17.6	B	18.7	A	6.8	B	18.8	C	21.9
		WBT	A	6.6	B	12.9	B	12.7	A	6.4	B	13.5	B	12.9
		SBLTR*	B	16.6	D	35.8	A	5.0	C	21.0	C	32.0	A	5.3
		<b>Overall</b>	<b>B</b>	<b>15.7</b>	<b>D</b>	<b>37.0</b>	<b>B</b>	<b>13.3</b>	<b>B</b>	<b>17.7</b>	<b>C</b>	<b>33.5</b>	<b>B</b>	<b>14.3</b>
9. Patrick Street/Duke Street	Signalized	EBT	C	28.3	B	19.9	B	17.3	D	36.1	B	20.0	B	19.9
		WBTR	E	73.7	C	23.6	C	24.1	F	97.8	C	21.3	C	34.2
		NBLTR	D	45.3	D	43.1	B	19.0	E	56.0	D	49.1	C	20.1
		<b>Overall</b>	<b>D</b>	<b>47.5</b>	<b>D</b>	<b>35.3</b>	<b>B</b>	<b>19.9</b>	<b>E</b>	<b>60.1</b>	<b>D</b>	<b>38.8</b>	<b>C</b>	<b>23.2</b>
10. Alfred Street/Duke Street	Signalized	EBLTR	B	12.8	A	7.5	A	8.4	B	14.4	A	7.5	A	8.3
		WBLTR	A	9.2	A	9.4	A	9.6	A	9.4	A	9.9	A	9.2
		NBLTR	D	52.9	B	19.6	B	19.8	E	57.2	B	19.5	B	19.6
		SBLTR	A	6.8	C	28.8	B	14.7	A	6.4	C	30.4	B	14.2
		<b>Overall</b>	<b>C</b>	<b>23.8</b>	<b>B</b>	<b>15.0</b>	<b>B</b>	<b>10.9</b>	<b>C</b>	<b>25.7</b>	<b>B</b>	<b>15.6</b>	<b>B</b>	<b>10.4</b>
11. Columbus Street/Duke Street	Signalized	EBLTR	A	9.0	B	18.3	B	16.2	B	10.2	B	19.6	B	15.7
		WBLTR	C	21.4	C	23.9	B	15.9	C	22.1	C	24.1	B	16.2
		NBLTR	D	39.9	B	15.4	C	20.7	D	45.0	B	19.1	C	20.4
		SBLTR	A	5.2	C	26.5	B	14.1	A	4.0	C	25.8	B	13.6
		<b>Overall</b>	<b>C</b>	<b>24.5</b>	<b>C</b>	<b>22.6</b>	<b>B</b>	<b>16.6</b>	<b>C</b>	<b>27.0</b>	<b>C</b>	<b>24.3</b>	<b>B</b>	<b>16.4</b>
12. Washington Street/Duke Street	Signalized	EBLTR	F	98.9	D	45.2	C	32.8	F	123.6	D	54.7	D	36.7
		WBLTR	D	36.2	C	32.8	C	28.9	D	39.7	D	35.7	C	32.1
		NBTR	E	65.1	B	18.7	E	57.5	E	63.4	B	18.3	D	54.6
		SBLTR	A	7.0	B	10.6	C	22.2	A	7.2	B	15.7	C	28.2
		<b>Overall</b>	<b>E</b>	<b>57.1</b>	<b>B</b>	<b>17.3</b>	<b>D</b>	<b>36.9</b>	<b>E</b>	<b>57.7</b>	<b>C</b>	<b>21.5</b>	<b>D</b>	<b>38.5</b>
13. Patrick Street/U-Turns from Henry Street	Unsignalized	EBL	B	10.9	A	9.7	B	10.2	B	10.9	A	9.8	A	9.9
		NBT	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0
14. Alfred Street/Wolfe Street	Unsignalized	EBLTR	A	8.2	A	8.2	A	7.7	A	8.3	A	8.2	A	7.6
		WBLTR	A	7.9	A	9.3	A	7.6	A	7.8	A	9.2	A	7.5
		NBLTR	B	10.6	A	8.1	A	7.8	B	10.7	A	8.1	A	7.8
		SBLTR	A	7.9	B	10.3	A	8.0	A	7.9	B	10.2	A	7.9
15. Patrick Street/Gibbon Street	Signalized	WBL	F	82.0	F	126.0	C	27.5	F	81.3	F	139.6	C	27.7
		WBLTR	D	49.7	C	25.6	C	20.4	D	49.0	C	27.1	C	20.0
		NBLT	B	10.2	B	18.6	B	11.8	B	11.8	C	20.6	B	13.7
		SBTR	A	5.6	C	30.3	A	5.3	A	5.0	D	41.8	A	7.1
		<b>Overall</b>	<b>B</b>	<b>15.3</b>	<b>D</b>	<b>36.9</b>	<b>B</b>	<b>10.4</b>	<b>B</b>	<b>15.8</b>	<b>D</b>	<b>44.6</b>	<b>B</b>	<b>11.9</b>
16. Alfred Street/Gibbon Street	Signalized	WBLTR	B	15.6	B	12.0	A	8.9	B	15.7	B	12.6	A	9.0
		NBLT	C	23.0	D	49.3	B	12.5	C	22.8	D	53.3	B	12.1
		SBTR	B	12.5	B	14.8	A	9.4	B	12.4	B	15.5	A	9.3
		<b>Overall</b>	<b>B</b>	<b>19.0</b>	<b>B</b>	<b>19.2</b>	<b>A</b>	<b>9.7</b>	<b>B</b>	<b>18.9</b>	<b>C</b>	<b>20.2</b>	<b>A</b>	<b>9.6</b>
17. Patrick Street/Franklin Street	Signalized	EBLT	E	65.3	E	63.1	E	65.5	E	65.3	E	63.1	E	65.6
		EBR	E	67.7	E	67.0	E	67.5	E	67.7	E	67.0	E	67.5
		NBT	A	7.7	A	4.2	A	2.9	A	8.2	A	4.2	A	2.8
		NBR	E	57.8	A	5.4	A	3.2	E	66.4	A	5.4	A	3.2
		SBT	A	2.5	C	26.1	A	3.3	A	2.4	D	37.1	A	3.5
		<b>Overall</b>	<b>B</b>	<b>19.1</b>	<b>B</b>	<b>19.1</b>	<b>A</b>	<b>4.5</b>	<b>C</b>	<b>21.2</b>	<b>C</b>	<b>25.8</b>	<b>A</b>	<b>4.5</b>
18. Existing Garage Driveway/Patrick Street/ <i>*Northbound right future movement only</i>	Unsignalized	EBL	A	9.9	A	9.5	D	25.4	B	10.0	A	9.6	C	24.8
		NBLTR*	A	0.0	A	0.0	A	0.0	A	0.4	A	0.6	A	3.3
19. Proposed Site Driveway/S. Alfred Street	Unsignalized	SBLR	Proposed Site Driveway											
20. S. Columbus Street/Wolfe Street	Unsignalized	EBLTR	A	8.9	A	9.6	A	8.5	A	8.9	A	9.2	A	8.3
		WBLTR	A	9.0	B	12.2	A	8.4	A	9.0	B	11.4	A	8.3
		NBLTR	B	14.5	A	9.9	A	9.3	B	14.5	A	9.5	A	9.1
		SBLTR	A	8.5	C	21.0	A	8.8	A	8.5	C	17.3	A	8.6

Notes:

(1) Capacity analysis based on Highway Capacity Manual methodology, using Synchro 9.

Table 4-3  
Alfred Street Baptist Church  
Intersection Queue Summary <sup>(1)</sup>

Intersection	Intersection Control	Approach/Movement	Storage Length (ft)	Existing Conditions						2022 Future Conditions without Development					
				AM Peak Hour		PM Peak Hour		Sunday Peak Hour		AM Peak Hour		PM Peak Hour		Sunday Peak Hour	
				50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th
1. Alfred Street/Cameron Street	Signalized	WBLTR	-	48	72	134	187	45	72	47	73	140	194	46	73
		NBLTR	-	19	m22	25	m39	29	m46	19	m20	25	m40	29	m48
		SBTR	-	13	37	173	291	21	46	13	38	177	298	19	49
2. Henry Street/King Street	Signalized	EBTR	-	143	221	179	#357	131	#238	134	228	~195	#371	131	#243
		WBL	100	16	m15	47	m53	44	m52	16	m16	45	m49	46	m55
		WBTR	-	89	m104	127	m159	121	m162	89	m108	122	m149	123	m170
3. Patrick Street/King Street	Signalized	EBL	100	55	m77	17	m18	30	m34	56	m85	16	m17	31	m36
		EBT	-	92	m136	140	m150	123	m173	93	m142	135	m141	127	m176
		WBTR	-	80	m56	42	#235	99	138	77	m58	42	m#304	92	#140
4. Alfred Street/King Street	Signalized	NBLTR	-	~1310	m#827	55	#358	43	76	~1395	m#822	54	#383	63	#90
		EBLTR	-	23	m28	26	m36	62	m78	20	m26	28	m40	54	m72
		WBLTR	-	41	m58	70	m98	49	76	39	m58	63	89	50	77
5. Washington Street/King Street	Signalized	NBLTR	-	32	m#457	21	34	13	21	51	#507	20	35	12	22
		SBLTR	-	9	21	102	197	23	41	8	22	109	206	22	43
		EBT	-	68	111	89	143	153	221	64	114	88	147	151	225
6. Henry Street/Prince Street	Signalized	EBC	100	0	17	10	34	2	23	0	18	10	36	1	24
		WBT	-	50	93	141	205	128	195	51	96	134	211	133	202
		WBR	-	0	8	0	24	16	43	0	18	0	26	23	54
7. Alfred Street/Prince Street	Signalized	NBTR	-	30	m25	98	146	150	172	~50	m26	100	142	166	190
		SBTR	-	88	108	604	#789	376	482	88	117	~746	#857	419	534
		EBTR	-	111	156	~351	#478	78	115	116	164	~375	#504	80	117
8. Henry Street/Duke Street	Signalized	SBLT	-	15	m15	35	m30	26	30	15	m14	38	m33	27	m30
		EBLTR	-	7	m7	25	31	4	7	5	m6	32	42	6	8
		NBTR	-	68	m71	26	m49	32	60	65	m67	25	m50	31	m62
9. Patrick Street/Duke Street	Signalized	SBLT	-	26	49	150	226	40	63	25	51	139	233	39	m64
		EBT	-	178	267	155	#261	160	#285	181	286	155	#289	176	#320
		EBC	125	79	113	~177	#252	79	120	77	115	155	#260	82	124
*Southbound left turn only available on Sunday		WBL	-	8	m8	40	m44	43	m54	9	m8	44	m48	49	m55
		WBTR	-	60	m55	81	m90	82	m106	60	m51	91	m100	92	m100
		SBLTR*	-	36	m#320	~440	m#496	24	31	41	m#121	~432	m#480	25	32
10. Alfred Street/Duke Street	Signalized	EBT	-	94	184	98	m140	75	m134	102	#341	98	m140	91	m134
		WBTR	-	~287	m#449	140	#458	112	#482	~334	m#496	131	m#490	129	#545
		NBLTR	-	~654	#739	330	#415	213	273	~734	#644	~354	#465	202	276
11. Columbus Street/Duke Street	Signalized	EBLTR	-	50	m65	36	m42	53	m49	52	m83	36	m46	53	m41
		WBLTR	-	78	m132	90	m128	90	117	78	m148	97	m137	87	119
		NBLTR	-	226	#419	30	60	38	73	235	#435	29	63	36	74
12. Washington Street/Duke Street	Signalized	SBLTR	-	3	10	88	#295	11	36	3	10	97	#310	10	38
		EBLTR	-	51	m103	73	m83	106	114	59	m100	80	m92	105	112
		WBLTR	-	120	189	150	226	145	211	129	215	152	250	150	240
13. Patrick Street/U-Turns from Henry Street	Unsignalized	NBLTR	-	268	#489	57	100	77	128	287	#515	54	103	73	131
		SBLTR	-	8	28	180	m242	19	46	6	21	183	m#406	18	41
		EBLTR	-	~282	#428	187	#325	212	324	~305	#492	216	#388	242	372
14. Alfred Street/Wolfe Street	Unsignalized	WBLTR	-	123	183	154	221	210	283	161	250	186	285	261	378
		NBTR	-	~851	#925	217	261	~394	#499	~841	#953	207	268	372	#530
		SBLTR	-	38	50	37	m#54	118	#638	44	57	~49	m#715	139	#705
15. Patrick Street/Gibbon Street	Signalized	EBL	115	-	15	-	6	-	14	-	16	-	6	-	14
		WBTR	-	-	0	-	0	-	0	-	0	-	0	-	0
		NBTR	-	-	0	-	0	-	0	-	0	-	0	-	0
16. Alfred Street/Gibbon Street	Signalized	EBLTR	-	3	-	3	-	3	-	3	-	3	-	3	
		WBLTR	-	-	5	-	23	-	5	-	5	-	23	-	
		NBLTR	-	-	55	-	5	-	10	-	60	-	5	-	
17. Patrick Street/Franklin Street	Signalized	SBLTR	-	-	8	-	45	-	15	-	5	-	45	-	
		WBL	-	297	#470	~467	m#643	127	209	298	#490	~494	m#672	129	234
		WBTR	-	139	201	159	m#246	70	99	136	206	166	m#292	72	102
18. Existing Garage Driveway/Patrick Street	Unsignalized	NBLT	-	720	13	230	392	198	334	800	13	257	426	227	364
		SBTR	-	106	112	~205	m26	26	520	89	96	~244	m39	311	541
		WBLTR	-	81	118	76	125	49	81	84	123	80	133	50	83
19. Proposed Site Driveway/S. Alfred Street	Unsignalized	NBLT	-	193	295	55	#159	33	67	190	303	55	#165	31	70
		SBTR	-	5	21	46	106	5	29	5	22	50	#120	5	31
		EBL	-	5	16	22	47	8	22	4	15	22	47	8	23
20. S. Columbus Street/Wolfe Street	Unsignalized	EBTR	-	49	68	95	122	51	68	47	71	95	125	49	70
		NBT	-	358	951	140	260	92	229	382	1029	135	267	86	234
		NBR	-	~1585	#1831	0	22	0	20	~1672	#1915	0	30	0	28
*Northbound right movement in future conditions only.	Unsignalized	SBT	-	71	270	~1494	m#1465	65	612	64	264	~1603	m#1480	83	688
		EBL	-	-	3	-	2	-	70	-	3	-	2	-	
		NBLTR	-	-	1	-	1	-	0	-	1	-	1	-	
Proposed Site Driveway	Unsignalized	SBLR	-	-	-	-	-	-	-	-	-	-	-	-	
		EBLTR	-	-	5	-	10	-	10	-	5	-	8	-	
		WBLTR	-	-	18	-	43	-	13	-	18	-	38	-	
		NBLTR	-	-	105	-	18	-	28	-	105	-	15	-	
Proposed Site Driveway	Unsignalized	SBLTR	-	-	8	-	158	-	20	-	8	-	120	-	

Notes:  
 (1) Queue length is based on the 50th and 95th percentile queues in feet as reported by Synchro, Version 9  
 (2) "~" - 50th percentile volume exceeds capacity, queue may be longer than shown  
 (3) "#" - 95th percentile volume exceeds capacity, queue may be longer than shown  
 (4) "m" - Volume for 95th percentile queue is metered by upstream signal

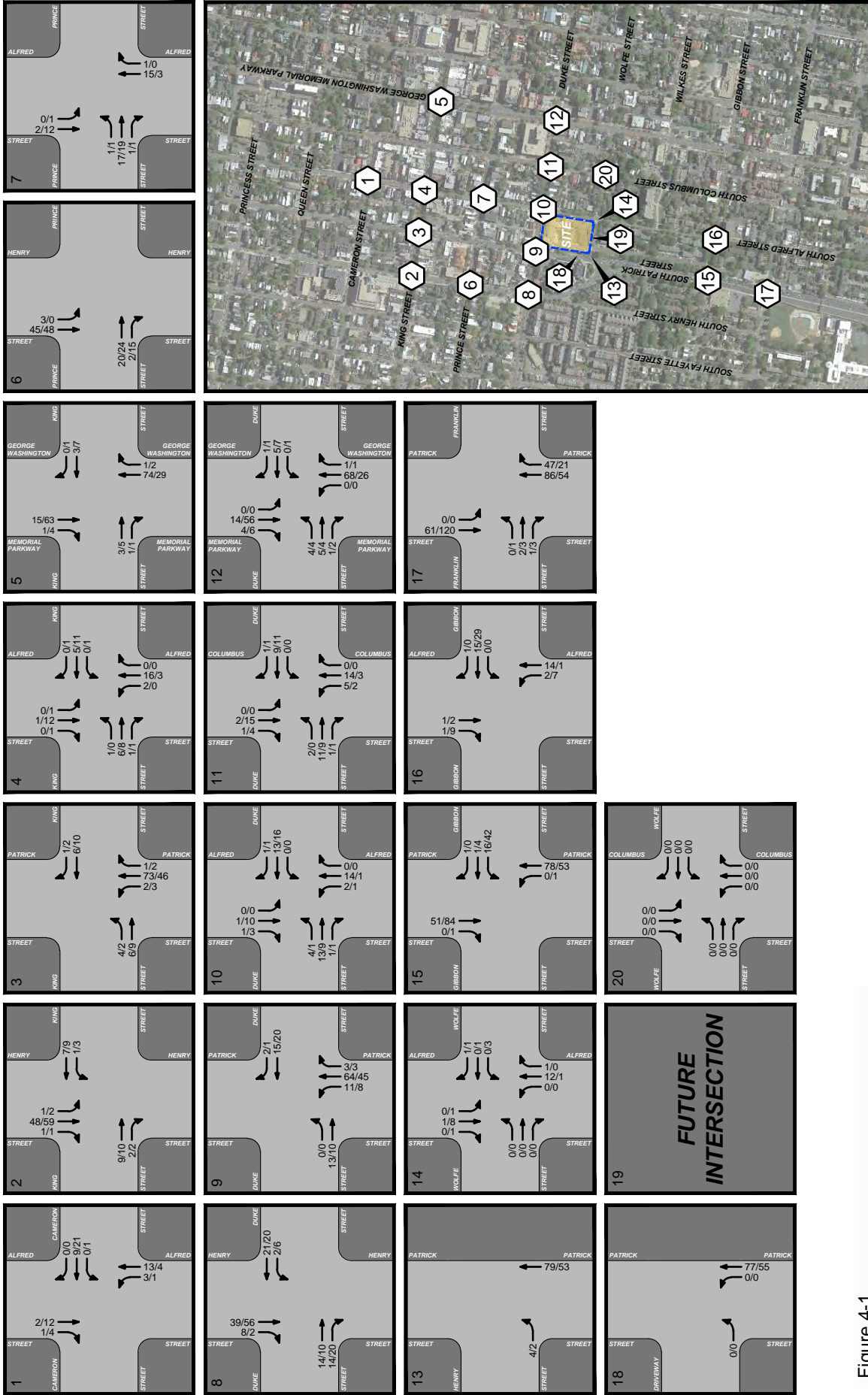
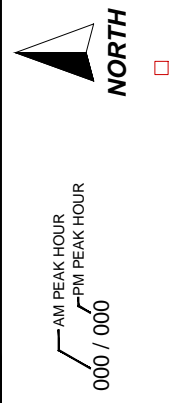
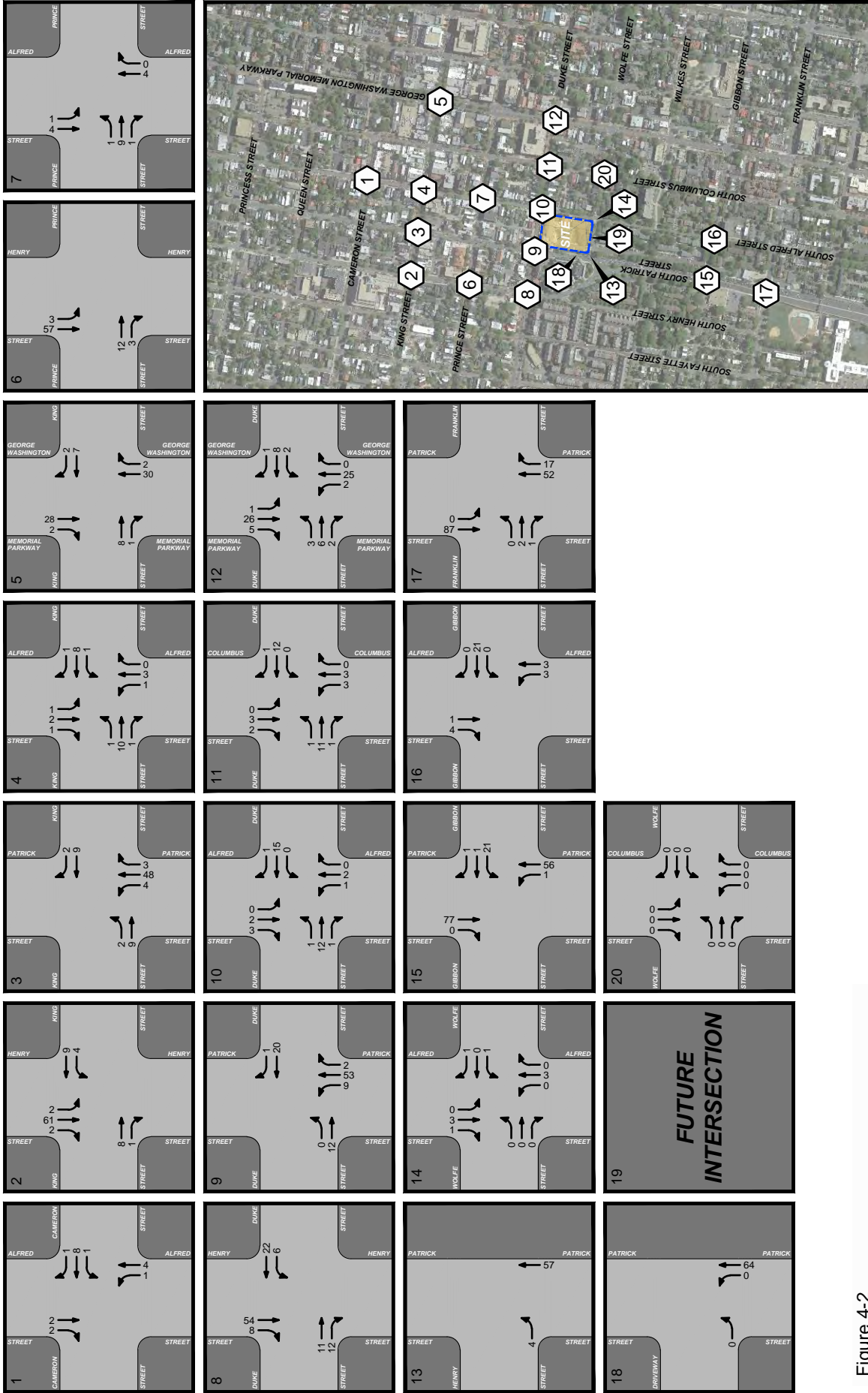


Figure 4-1  
Regional Growth 1 (2015 - 2022) (Weekday)

Alfred Street Baptist Church  
City of Alexandria, Virginia





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**Figure 4-2**  
Regional Growth 1 (2015 - 2022) (Sunday)

Alfred Street Baptist Church  
City of Alexandria, Virginia



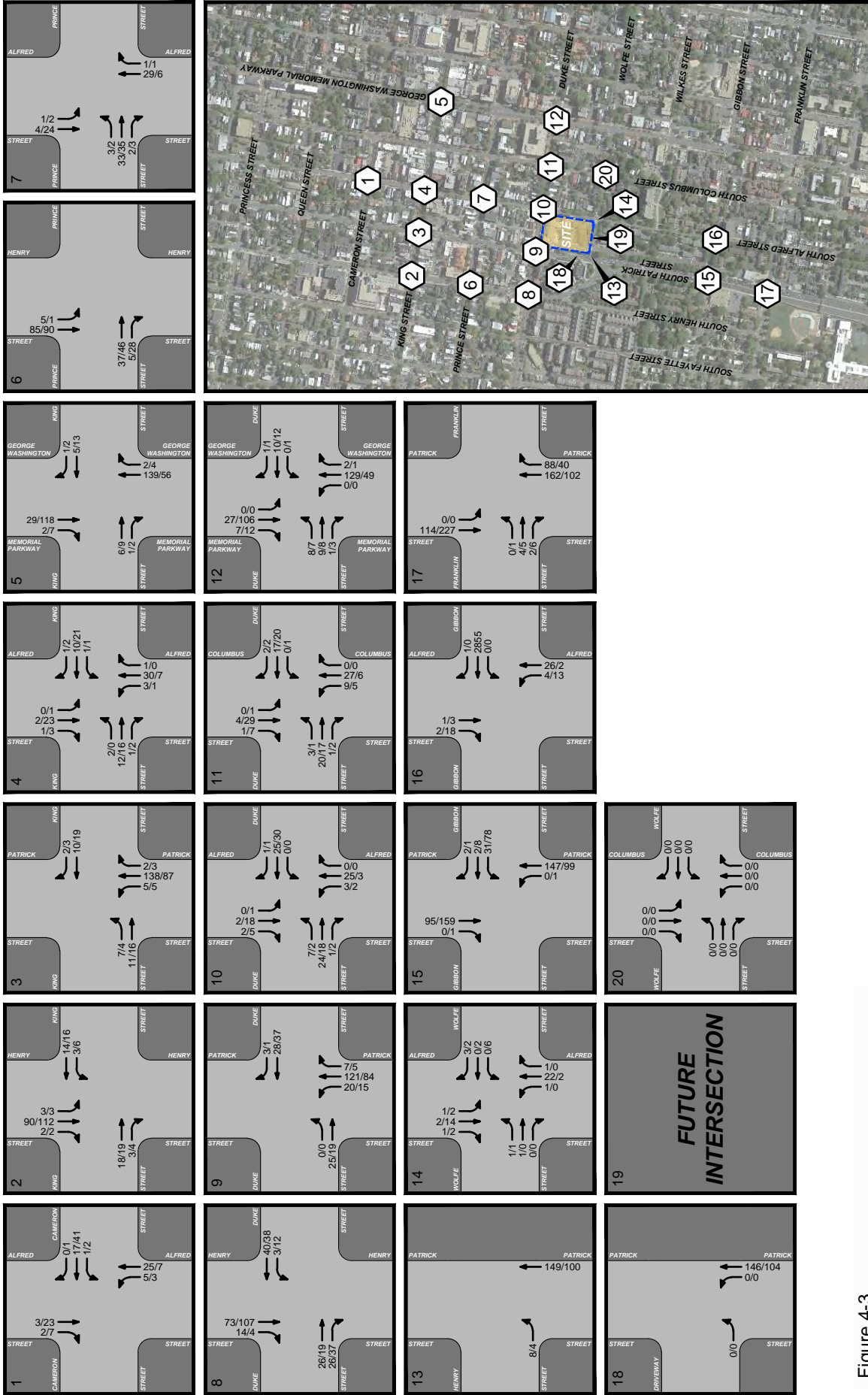


Figure 4-3  
Regional Growth 2 (2015 - 2028) (Weekday)



Alfred Street Baptist Church  
City of Alexandria, Virginia

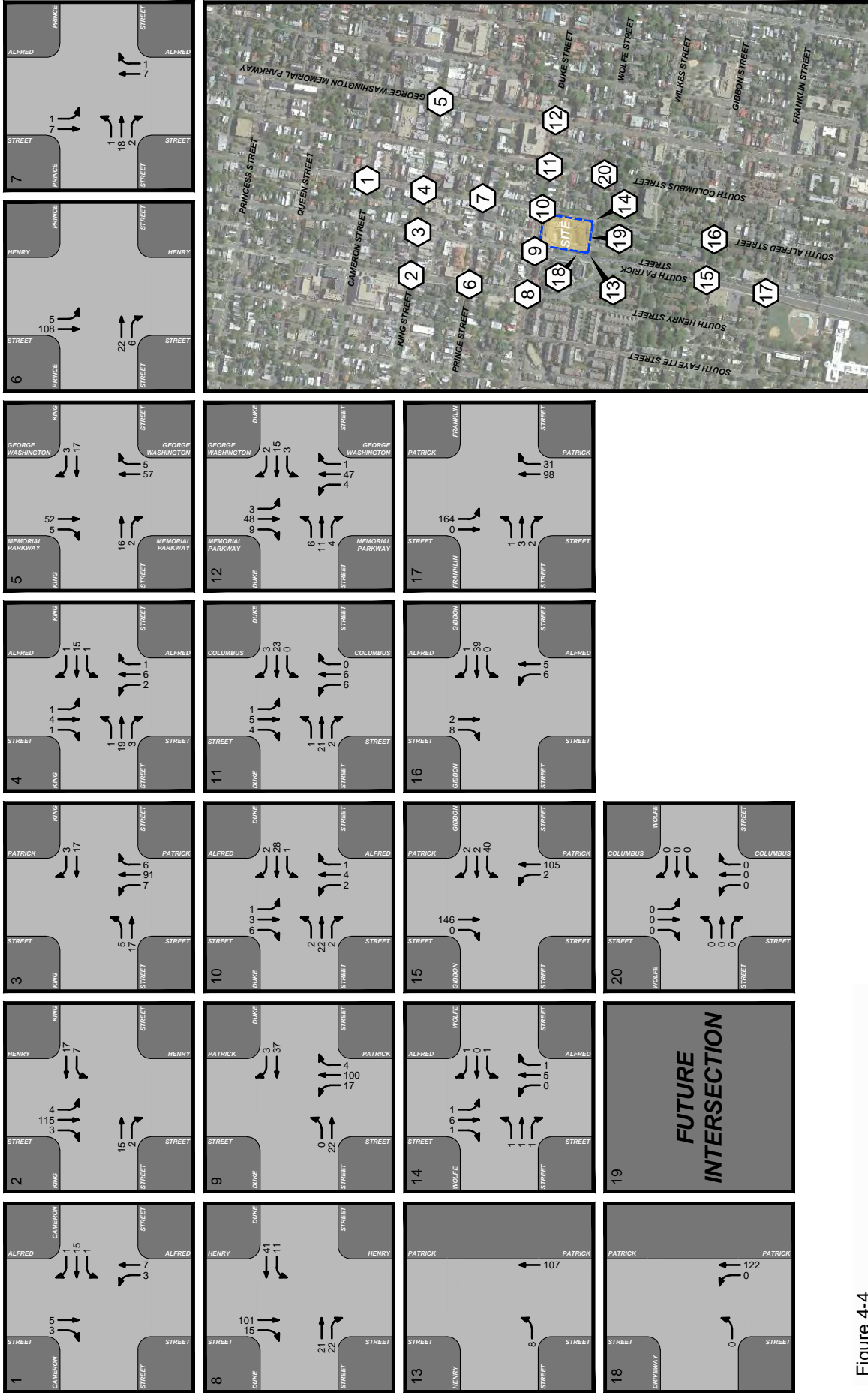


Figure 4-4  
Regional Growth 2 (2015 - 2028) (Sunday)

Alfred Street Baptist Church  
City of Alexandria, Virginia



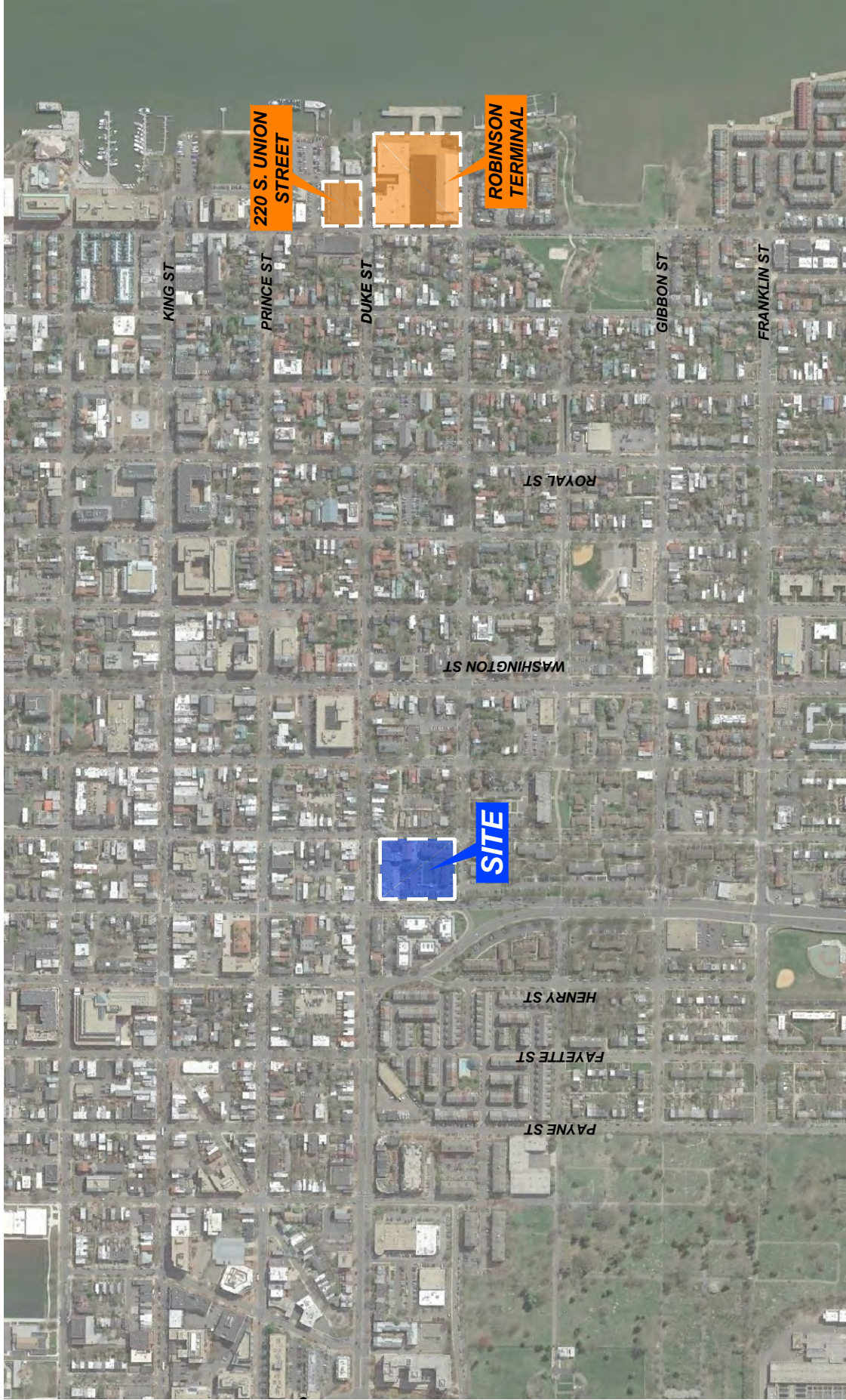


Figure 4-5  
 Pipeline Development Locations

Alfred Street Baptist Church  
 City of Alexandria, Virginia





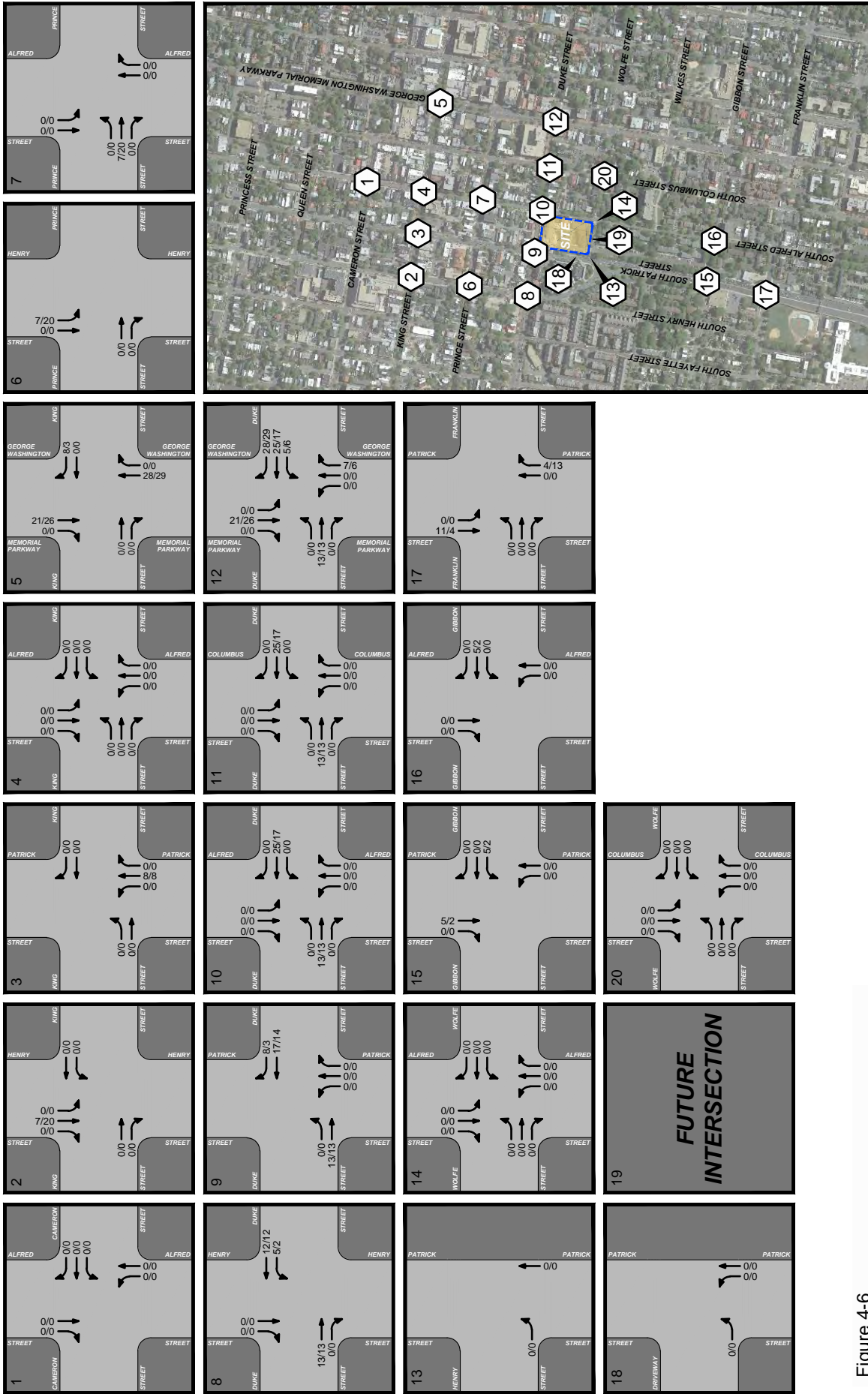
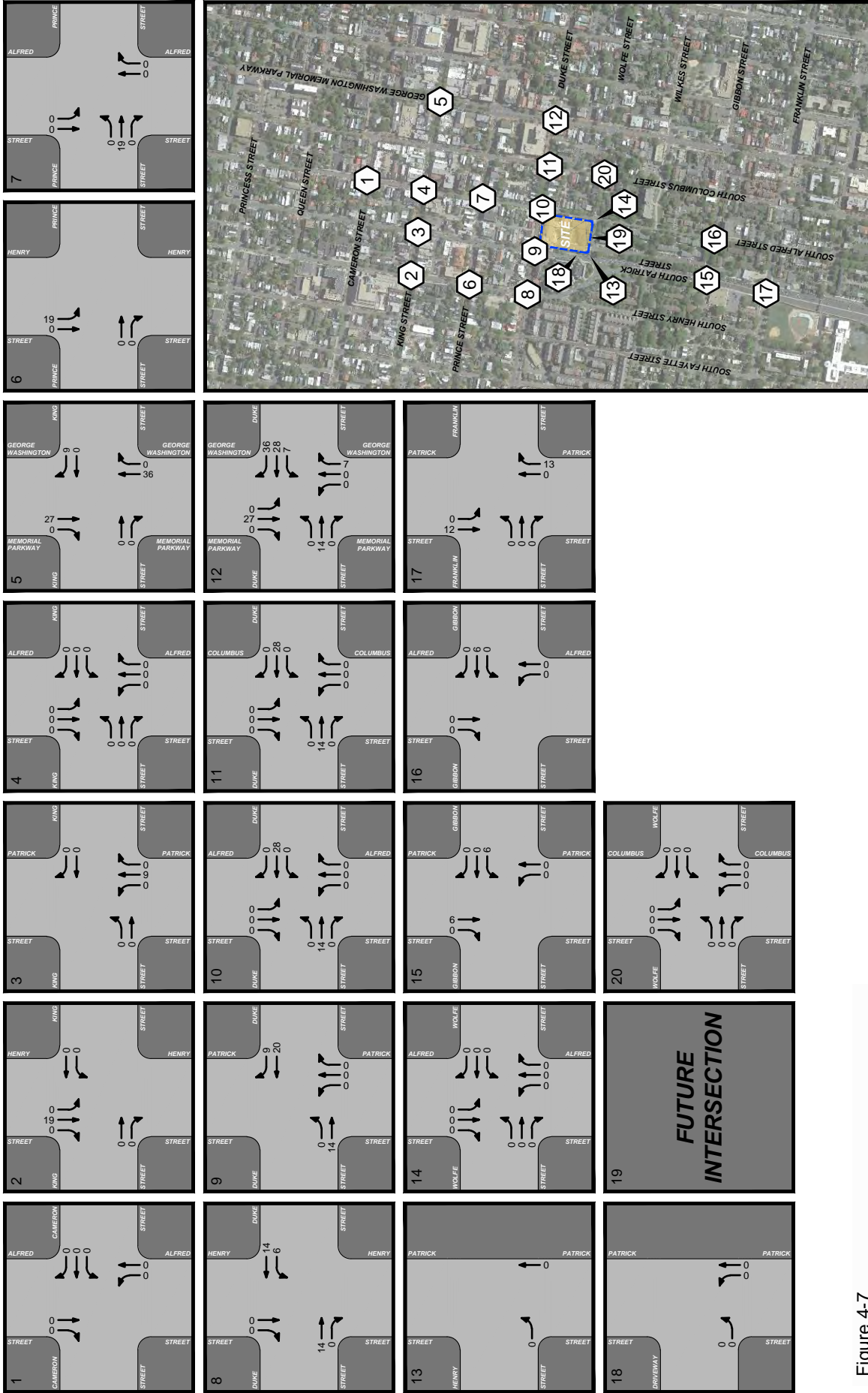


Figure 4-6  
Total Pipeline Development Peak Hour Traffic Forecasts (Weekday)

Alfred Street Baptist Church  
City of Alexandria, Virginia





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Figure 4-7  
Total Pipeline Development Peak Hour Traffic Forecasts (Sunday)

Alfred Street Baptist Church  
City of Alexandria, Virginia

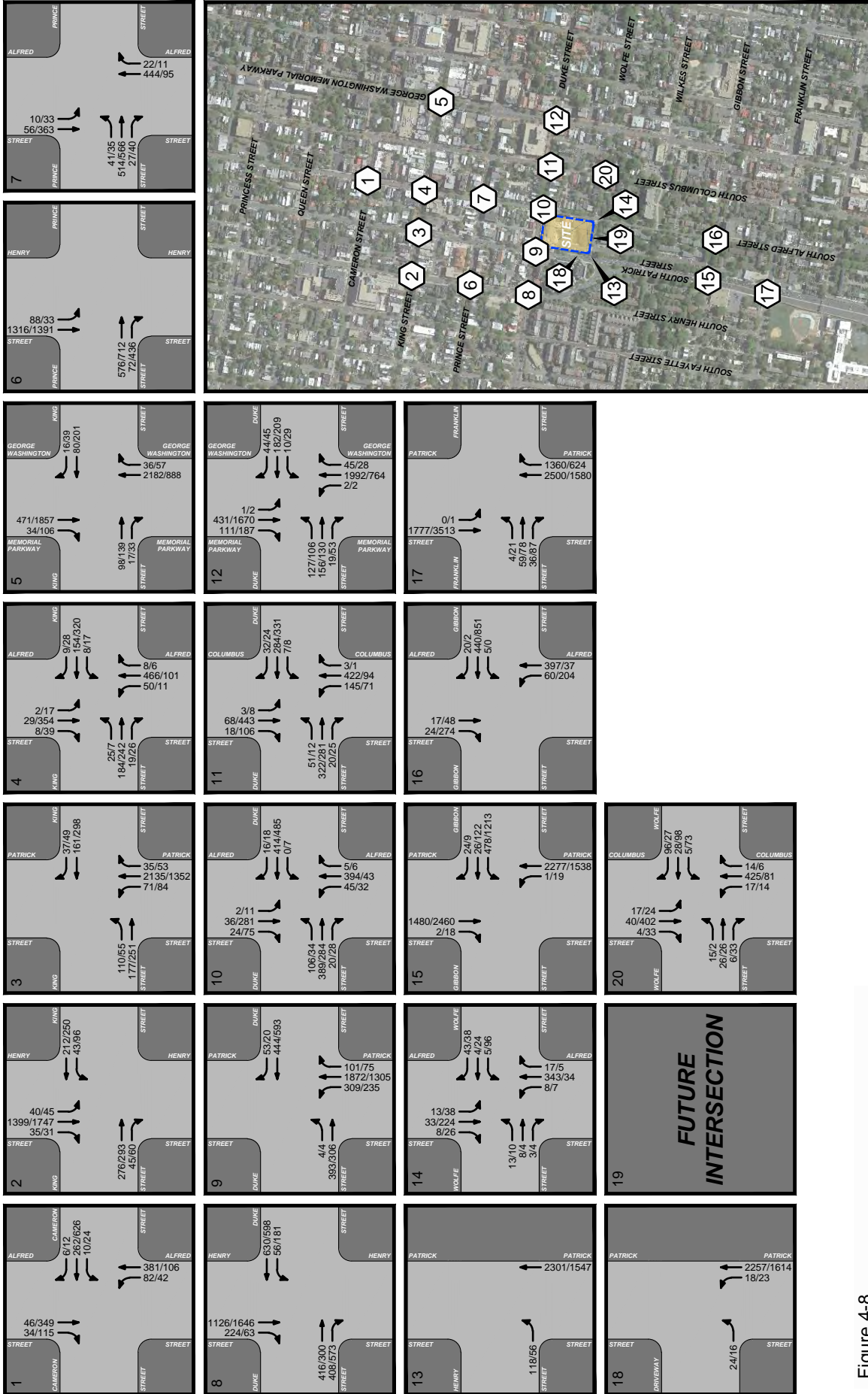


Figure 4-8  
 Future Peak Hour Traffic Forecasts  
 Without Development (2022) - Weekday  
 Alfred Street Baptist Church  
 City of Alexandria, Virginia

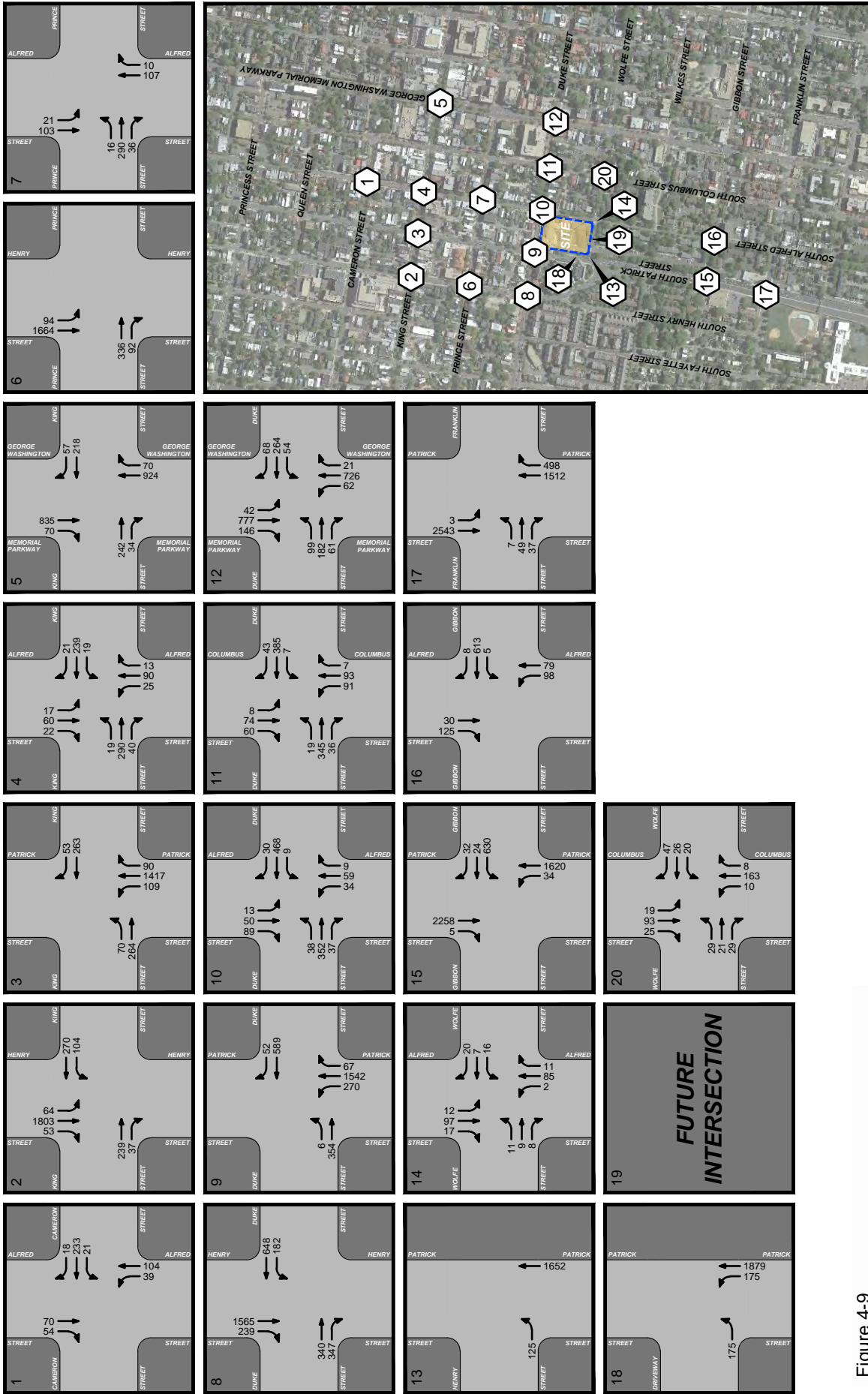


Figure 4-9  
 Future Peak Hour Traffic Forecasts  
 Without Development (2022) - Sunday  
 Alfred Street Baptist Church  
 City of Alexandria, Virginia



**SECTION 5  
TRIP GENERATION, DISTRIBUTION AND ASSIGNMENT**

**Trip Generation**

The number of AM, PM, and Sunday peak hour trips that would be generated by the proposed development were estimated based on the Institute of Transportation Engineers Trip Generation Manual, 9<sup>th</sup> Edition trip rates and equations.

As shown in Table 5-1, the proposed development (232,368 GSF Church with 2,163 seats) is expected to generate 65 weekday AM peak hour trips, 44 weekday PM peak hour trips, 1,188 Sunday peak hour trips, 1,057 weekday daily (24-hour) trips, and 3,602 total Sunday (24-hour) trips upon completion and full occupancy by 2022. These estimates account for a 10 percent non-auto mode split reduction as agreed during the scoping process. The non-auto reduction was based on the subject site’s distance to King Street Metro station, shuttle service available to the church, and the primarily residential area surrounding the church facilities.

**Site Trip Distribution**

The distribution of peak hour trips generated by the proposed development was based on information provided by church staff, a review of existing traffic patterns in the study area, local knowledge, previously prepared traffic studies in the vicinity, and input from City staff. The following distributions, as agreed upon during the scoping process, were used in this study:

<u>Direction (To/From)</u>	<u>Residential</u>
North via S. Washington Street	30%
North via U.S. Route 1 (S. Patrick Street)	5%
West via Duke Street	10%
East via Duke Street	5%
South via S. Washington Street	10%
South via U.S. Route 1 (S. Henry Street)	40%
Total	100%

Patrons will be able to take advantage of the grid street system in Old Town North in order to access the site from the north and south. Depending on the time of day, patrons will need to take slightly different routes to available parking in due to turning movement restrictions along S. Washington Street and S. Patrick Street.



### Site Access

The subject site is bounded by Duke Street to the north, Wolfe Street to the south, S. Patrick Street to the west and S. Alfred Street to the east. Direct access to the below grade parking garage is proposed on S. Patrick Street and at Wolfe Street as shown on Figure 2-2. Access to the loading area is proposed on Wolfe Street, to the south of the proposed site. A truck would enter Wolfe Street, a dead-end street, and back into the designated service entrance. Trucks would exit the property onto S. Alfred Street by turning right and heading southbound, then turn right onto Gibbon Street and use U.S. Route 1 to head either north or south.

### Rerouted Traffic Volumes

Traffic volumes were rerouted to the proposed garage entrance and exit from the garage across S. Patrick Street in order to reflect proper traffic flow once the development has been completed. All weekday vehicle trips will utilize the proposed garage underneath the site during weekday peak hours. Rerouted weekday AM and PM peak hour traffic volumes are shown on Figure 5-1. Sunday site trips that currently utilize the existing spaces that are to be removed with the proposed development were rerouted to other available parking facilities for the Sunday midday peak hour and are shown on Figure 5-2. Sunday traffic will continue to utilize the existing Alexandria Gateway garage in the future conditions.

### Site Trip Assignments

The peak hour vehicle-trips shown in Table 5-1 were assigned to the public road network according to the directional distribution described above. All new trips were directed to the proposed on-site garage, as the number of net-new trips would fill the proposed garage to capacity. The existing trips would remain on the network and utilize the several available off-site parking locations as under current conditions. These net-new site generated traffic assignments for the proposed development are shown on Figures 5-3 and 5-4. Figures 5-5 to 5-7 show the traffic routes to and from the church during the AM and PM weekday peak hours and Sunday peak hours, respectively.

The synergy that would occur between the proposed development and adjacent mix of uses in Old Town was included in the 10% non-auto reduction. Additionally, the non-auto reduction accounted for the shuttle service provided to the metro and local residences and bus routes adjacent to the church. The shuttle service records, on average, approximately 370 trips per month, and runs on a continuous loop. It is noted that the majority of trips are requested during the peak service on Sunday. A covered bicycle parking area is proposed within the new parking structure. Therefore, the results of this study should be considered conservative.

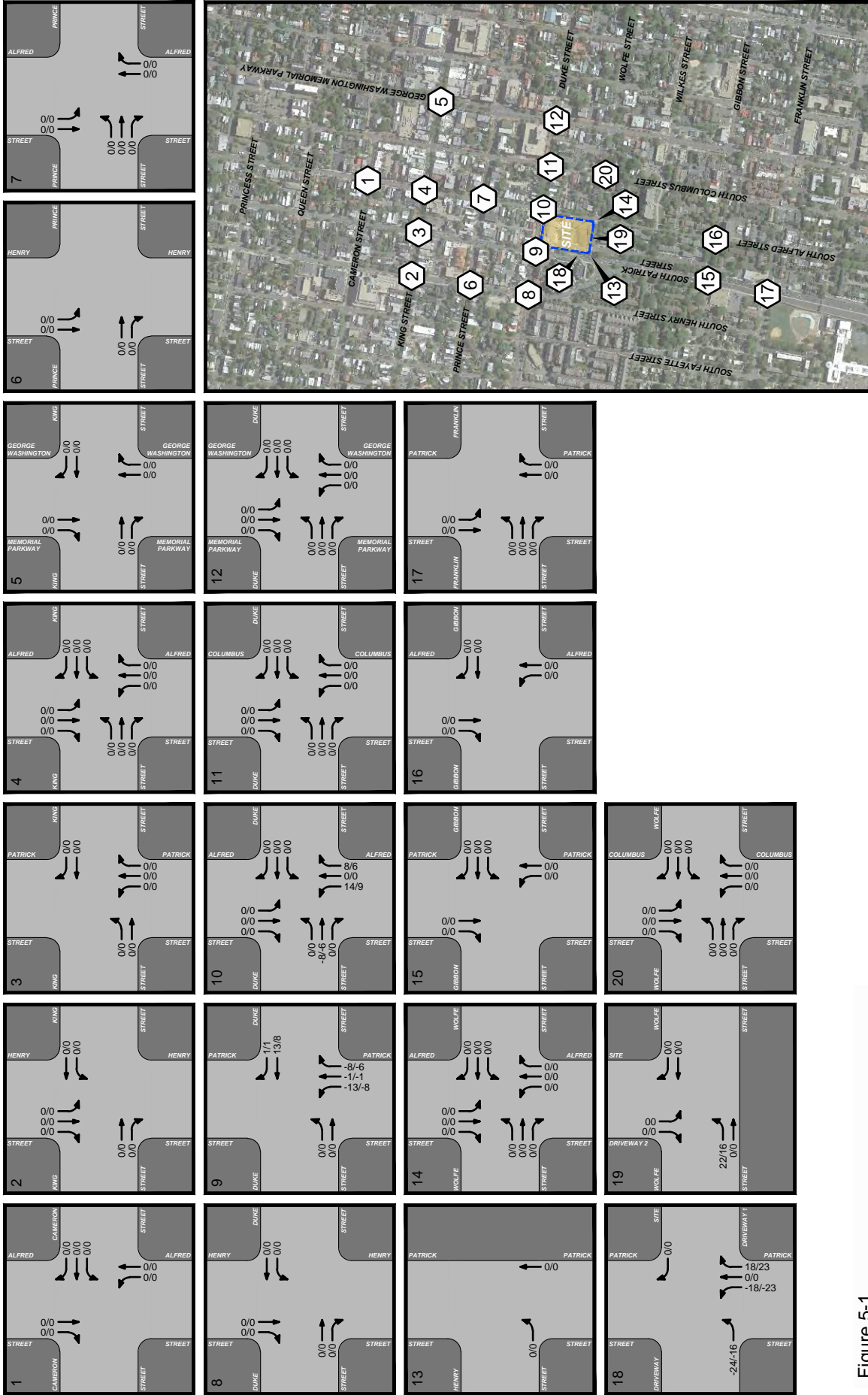
Table 5-1  
 Alfred Street Baptist Church  
 Site Trip Generation Analysis<sup>(1)</sup>

Land Use	ITE Land Use Code	Size	Units	AM Peak Hour		PM Peak Hour		Weekday ADT <sup>(2)</sup>		Sunday Peak Hour		Sunday ADT
				In	Out	In	Out	In	Out	In	Out	
<b>Existing<sup>(2)</sup></b>												
Church	560	43,784	SF	14	11	10	10	399	369	369	737	2,235
Townhomes	230	1,208	seats	3	12	11	6	172	27	28	55	106
		22	DU	17	23	21	16	571	396	397	792	2,341
Existing Subtotal				48	29	15	24	1,334	199	198	396	1,261
<b>Proposed Development</b>												
Church	560	232,368	SF	72	58	40	44	2,117	660	660	1,320	4,002
10% Non-auto Reduction		2,163	seats <sup>(3)</sup>	(7)	(6)	(4)	(4)	(212)	(66)	(66)	(132)	(400)
Total Proposed Site Trips				65	52	36	40	1,905	594	594	1,188	3,602
<b>NET NEW TRIPS (Proposed vs. Existing)</b>				<b>48</b>	<b>29</b>	<b>15</b>	<b>24</b>	<b>1,334</b>	<b>199</b>	<b>198</b>	<b>396</b>	<b>1,261</b>

Notes: (1) Traffic estimates based on Institute of Transportation Engineers (ITE) Trip Generation, Ninth Edition.

(2) Existing seat count was quantified using attendance recorded during a typical Sunday service.

(3) Proposed seat number includes both seats in the main sanctuary and overflow seating in the chapel.



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Figure 5-1  
Existing Rerouted Weekday Traffic (Weekday)

Alfred Street Baptist Church  
City of Alexandria, Virginia

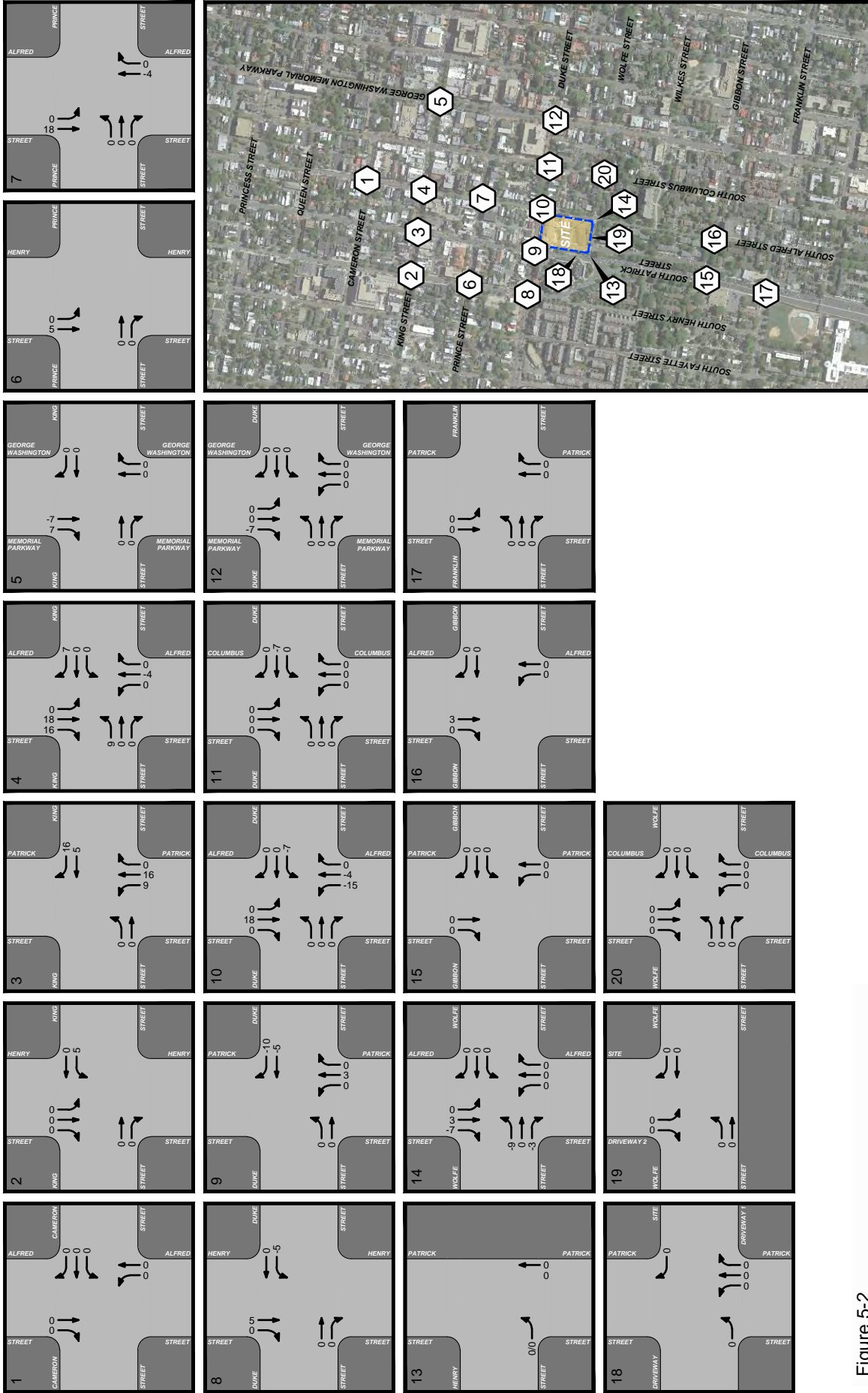


Figure 5-2  
Existing Rerouted  
Traffic (Sunday)

Alfred Street Baptist Church  
City of Alexandria, Virginia



AM PEAK HOUR  
PM PEAK HOUR  
000 / 000



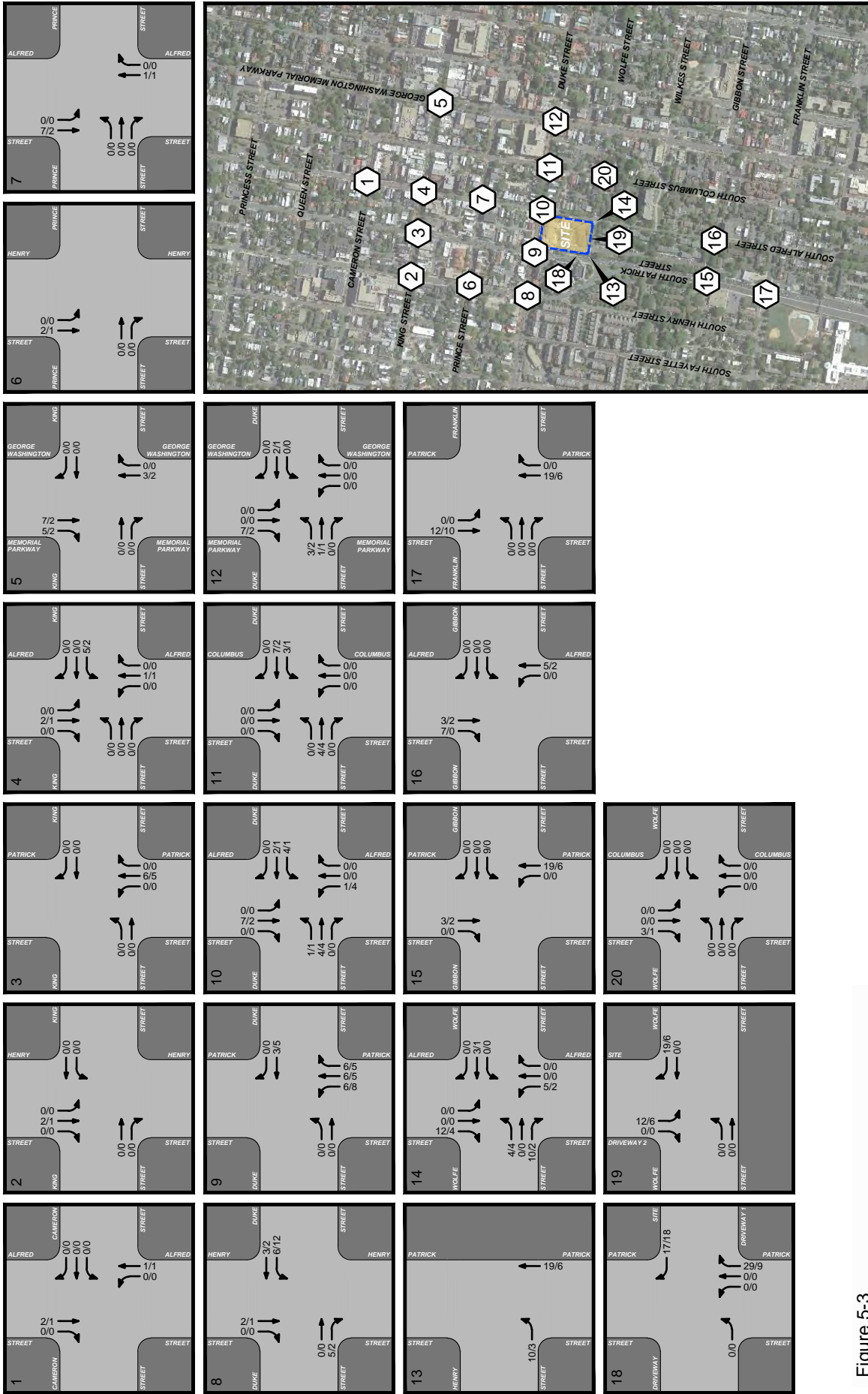
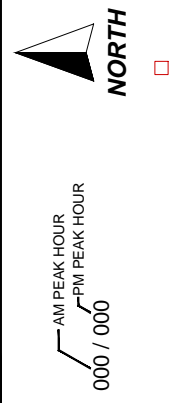


Figure 5-3  
Site Generated Peak Hour Traffic Forecasts (Weekday)



Alfred Street Baptist Church  
 City of Alexandria, Virginia

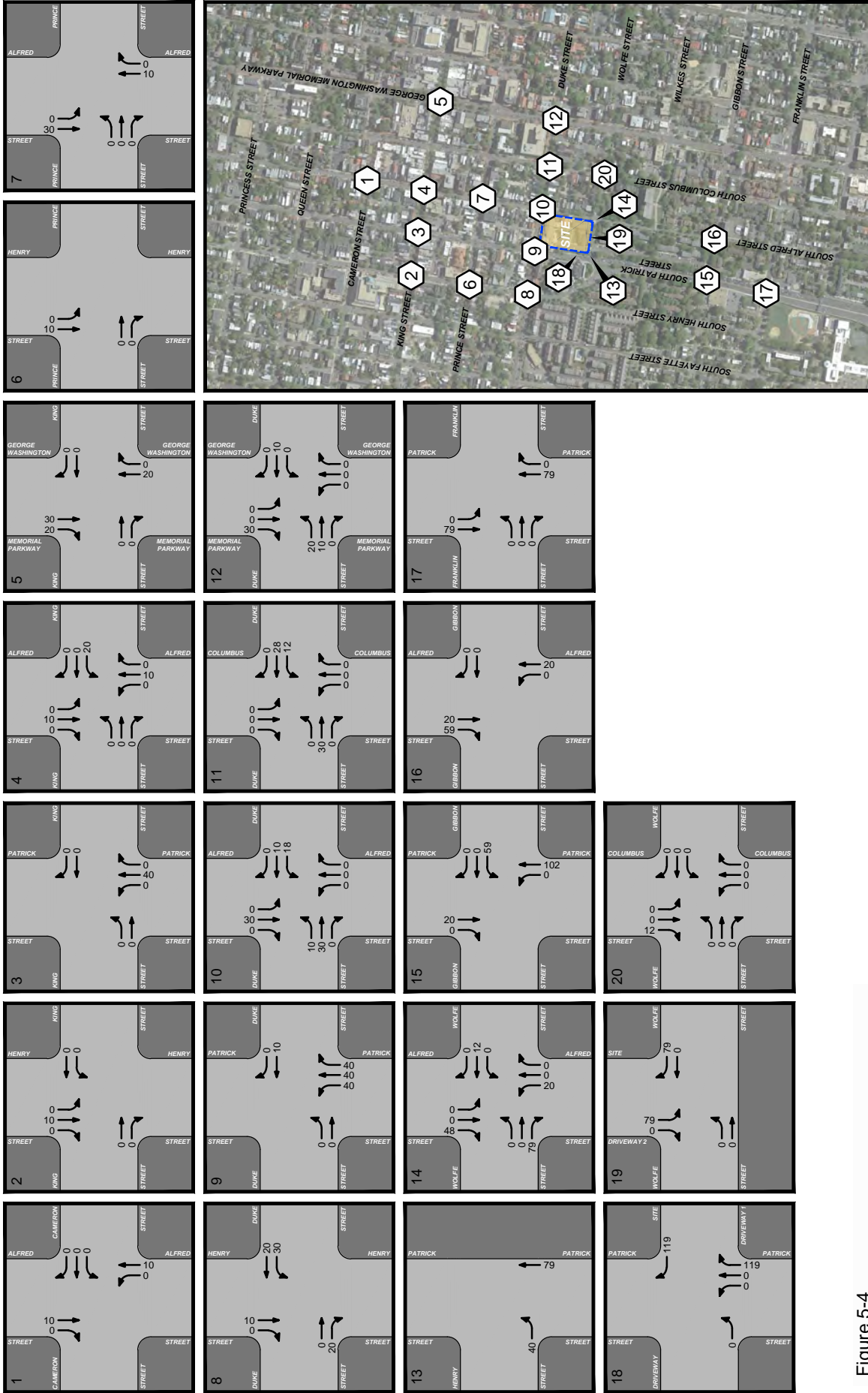
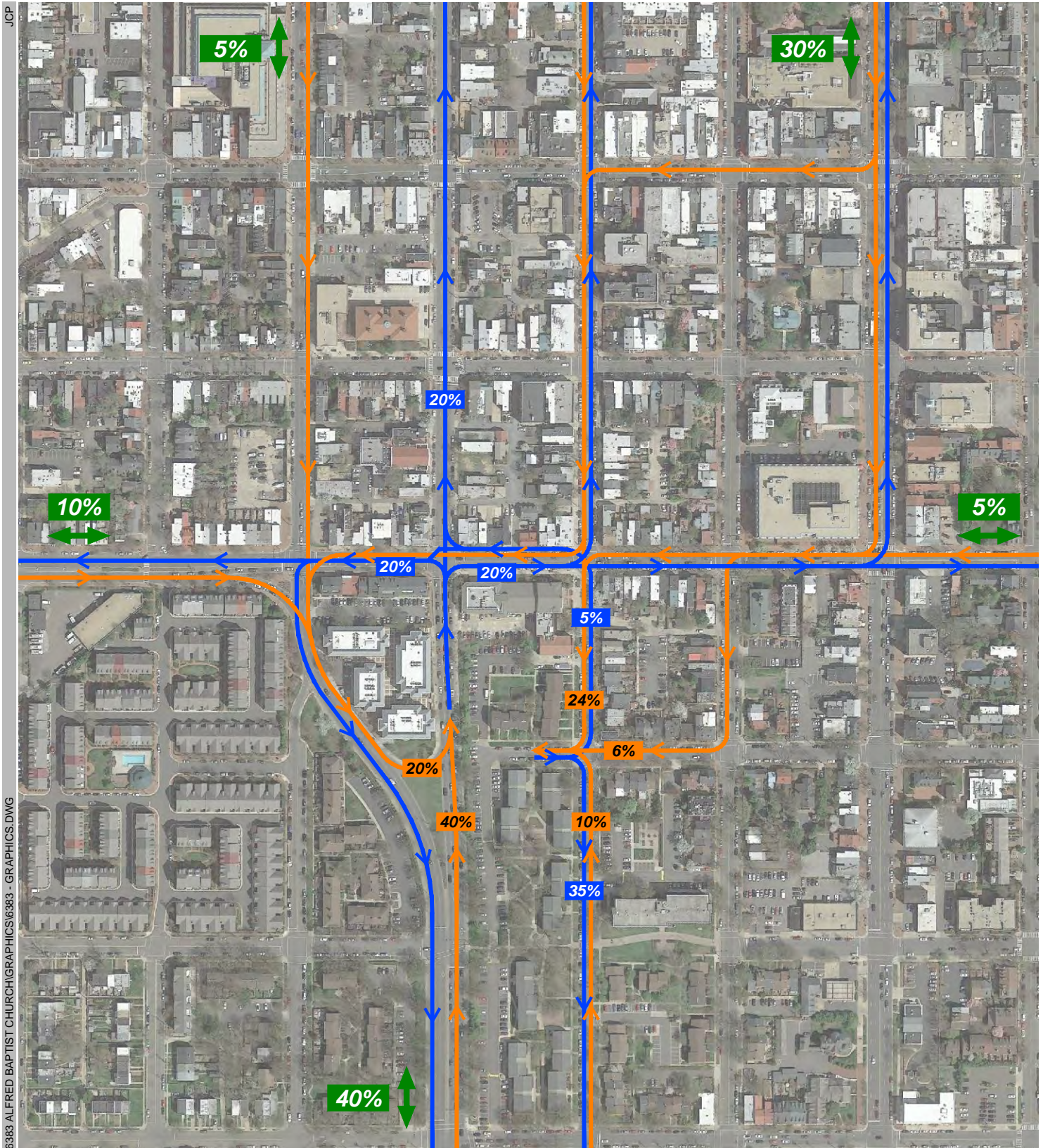


Figure 5-4 Site Generated Peak Hour Traffic Forecasts (Sunday)

Alfred Street Baptist Church  
City of Alexandria, Virginia







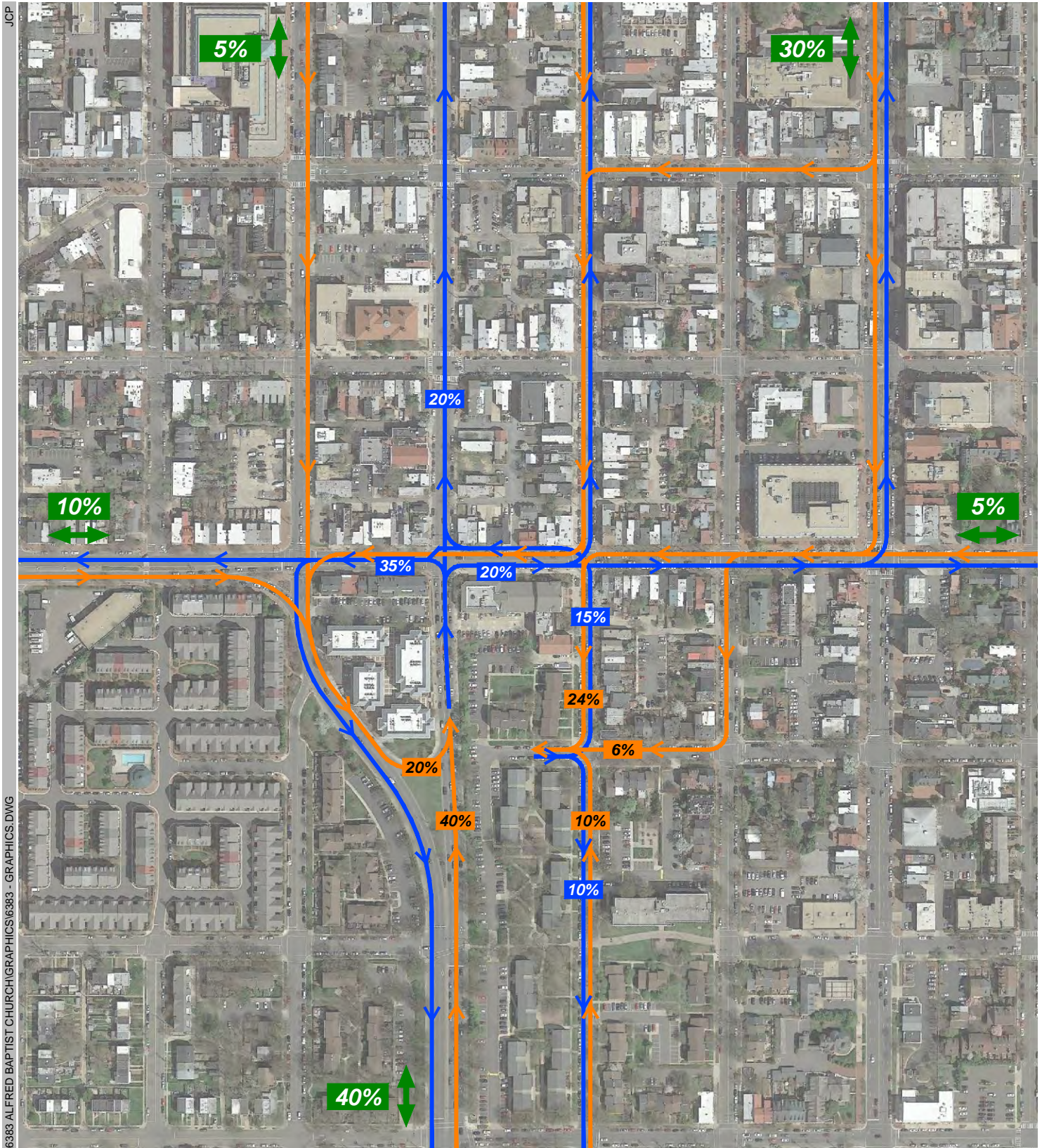
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Figure 5-5  
AM Peak Hour Site Trip Routes

Alfred Street Baptist Church  
City of Alexandria







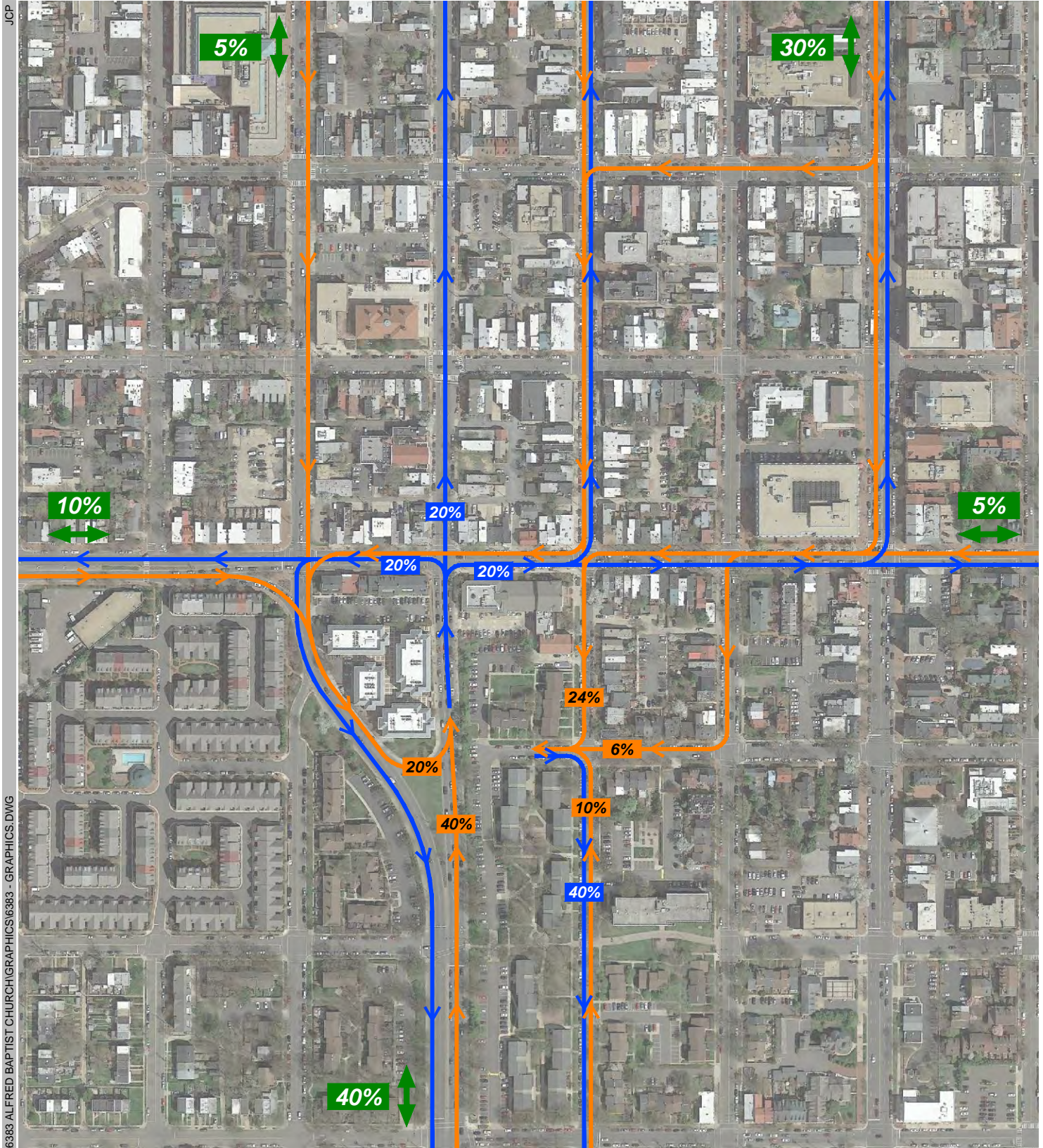
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Figure 5-6  
PM Peak Hour Site Trip Routes

Alfred Street Baptist Church  
City of Alexandria







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Figure 5-7  
Sunday Site Trip Routes

Alfred Street Baptist Church  
City of Alexandria





## SECTION 6 ANALYSIS OF FUTURE CONDITIONS WITH DEVELOPMENT

### Traffic Volumes

Future traffic forecasts with the proposed development were developed based on a composite of existing peak hour traffic volumes, regional growth and the proposed developments primary trips. Future lane-use including proposed site driveways is shown on Figure 6-1. The future peak hour traffic forecast for year 2022 (project build-out) are shown on Figure 6-2 and 6-3, and for year 2028 (build-out plus six years) are shown on Figure 6-4 and 6-5.

### Capacity Analysis

Future peak hour levels of service and 50<sup>th</sup> and 95<sup>th</sup> percentile queues with the proposed development are summarized in Tables 6-1 and 6-2, respectively. The results were identified for the key study intersections based on the future traffic forecasts shown on Figures 6-1 and 6-2, and the Highway Capacity Manual 2000 methodology using Synchro 9.1.

**Levels of Service.** The 2022 LOS results with the proposed development are summarized in Table 6-1 and indicate the following:

- All signalized study intersections would continue to operate at overall acceptable LOS “D” or better during the AM, PM, and Sunday peak hours except for the following intersections:
  - S. Henry Street/King Street which operates at LOS “E” during the weekday PM peak hour
  - S. Patrick Street/King Street which operates at LOS “F” during the weekday AM peak hour
  - S. Patrick Street/Duke Street which operates at LOS “E” during the weekday AM peak hour
  - Washington Street/Duke Street which operates at LOS “E” during the weekday AM peak hour

Some turning movements along Route 1 (S. Patrick Street and S. Henry Street) would continue to operate at LOS “E” or “F” during the AM, PM, and/or Sunday peak hours, consistent with future conditions without development. In addition, the westbound thru/right lane at the intersection of S. Patrick Street/Duke Street deteriorates from LOS “C” to LOS “E” during the Sunday peak hour. The eastbound approach and northbound thru/right lane at the intersection of Duke Street/S. Washington Street both deteriorate from LOS “D” to LOS “E” during the PM and Sunday peak hours. The

overall LOS at both the S. Patrick Street/Duke Street and S. Washington Street/Duke Street are consistent between the conditions with and without development.

- When compared to future conditions without development, the overall delay per vehicle at each of the signalized study intersections would increase by less than three (3) seconds during the AM or PM peak hours, and four (4) seconds during the Sunday peak hour. Thus, the proposed development would have only a minor impact on overall traffic operations in the area.
- All of the approaches at the stop controlled study intersections would continue to operate at acceptable levels of service (LOS “D” or better) during the AM, PM, and Sunday peak hours with the proposed development.
- The eastbound left movement out of the existing garage opposite of the church across S. Patrick Street would continue to operate at an LOS “D” with the redevelopment. The proposed garage would operate at an LOS “B” during the AM, PM, and Sunday peak hours.

The LOS results for build-out plus six (6) years (2028) are also summarized in Table 6-1. As shown in Table 6-1, with an additional six (6) years of regional growth both signalized and stop controlled study intersections would operate at levels of service consistent with build-out conditions (2022).

Given the magnitude of regional traffic along U.S. Route 1 and Washington Street and the modest impact of development-related traffic, no vehicular geometric improvements are recommended at the study intersections.

Capacity analysis worksheets for 2022 and 2028 conditions with development are included in Appendix F.

**Queues.** The future peak hour queue results with the proposed development for the turning movements are presented in Appendix F and summarized in Table 6-2. As shown in Table 6-2, the estimated 50<sup>th</sup> and 95<sup>th</sup> percentile queues at study intersections would operate generally consistent with future conditions without development along throughout the study area and along U.S. Route 1 (S. Patrick Street and S. Henry Street). Consistent with existing and future conditions without development the 95<sup>th</sup> percentile queues of eastbound right turns at S. Henry Street/Duke Street could exceed the available storage.

### Network Alternatives

**Signalization.** The intersection of S. Patrick and the slip ramp from southbound S. Henry Street to S. Patrick Street was evaluated for a traffic signal. A concern was raised by City staff that motorists utilizing the slip ramp would cross three lanes of traffic in a short distance of approximately 75 feet to execute a right turn into the proposed parking garage on the east side of S. Patrick Street opposite the Alexandria Gateway garage. Under existing

conditions for STOP control at the slip ramp the eastbound u-turn movement operates at LOS “B” or better during both weekday and Sunday peak hours. For future conditions in 2022, the eastbound u-turn operates at LOS “C” or better during the Sunday peak hour.

The Average Daily Traffic warrant was evaluated based on the total future conditions with the proposed development. However, based on the low volume daily vehicle volumes utilizing the slip ramp, the traffic signal is not warranted.

A signal at this location would only be beneficial during the Sunday peak hour to facilitate traffic from southbound Route 1 into the proposed garage. A police officer is currently stationed on Sunday at the exit of the Alexandria Gateway garage to assist motorists exiting the garage. Additional police officers could be hired to assist in operations at the proposed garage during the Sunday peak periods. Temporary (on Sundays only) or permanent signage on the slip ramp that would prohibit motorists from crossing Route 1 to enter the proposed garage could be implemented to reduce potential conflict points. These mitigation measures are expected to yield similar results and can be modified or updated more easily than a signal to aid the various operations of the church facilities. Additionally, these alternative measure, signage and traffic maintenance personell, would not have an adverse effect during the weekday peak hour operations.

**Left-Turn Restriction from Wolfe Street to Alfred Street.** During the Sunday midday peak hour, vehicles exiting the garage onto Wolfe Street would be required to turn right onto S. Alfred Street and head south towards Gibbon Street. S. Alfred Street at the intersection of Duke Street becomes congested at the beginning and end of major weekend services. Restricting outbound traffic to making a right on S. Alfred Street would reduce pontential conflicts at the pick-up/drop-off area to the north near the main entrance to the church. Outbound traffic that wishes to head north can utilize the exit onto S. Patrick Street. The site access points connect at the top of the ramp up from the below-grade garage, allowing any driver in the garage to select which exit to use after reaching the top of the ramp. Weekday AM and PM peak hour traffic would allowed to head to the north and south on S. Alfred Street from Wolfe Street, but would likely still utilize the S. Patrick Street exit to travel north. Vehicles are prohibited from making a southbound right from S. Alfred Street onto Gibbon Street during the PM peak hour. For this reason, southbound traffic would likely head north on S. Alfred Street to exit.

The restriction of left-turns onto S. Alfred Street from Wolfe Street alleviates congestion at the main entrance and reduces potential safety concerns of pedestrian and vehicle conflicts at the intersection of S. Alfred Street and Duke Street. The restriction can be implement by signage or a police officer directing traffic.

#### **Layby Lanes.**

A pickup/dropoff survey was conducted on Sunday April 3, 2016 to determine the frequency of drivers dropping off and picking up passengers on Alfred Street in front of the church. Motorists including shuttle bus drives travelling southbound on Alfred Street pull

along the curb and, with the help of security personnel, drop-off or pick-up passengers. Observations indicated that a curb side area of approximately 50 feet is kept clear by cones of parked vehicles to allow for the pick-up/drop-off area. Prior to the peak 10:00 AM service, approximately 70 parishioners from 45 vehicles were dropped off in front of the church. Approximately 23 parishioners were picked up after the 10:00AM service. On average it took less than 30 seconds for each individual pick-up or drop-off to occur. It was noted that many were elderly. For this purpose, a 91 foot layby lane has been proposed on S. Alfred Street. An additional layby lane on the south side of Duke Street between S. Patrick Street and S. Alfred Street would help facilitate traffic on the local grid of streets. A summary of the field observations are included in Appendix B.



Table 6-1  
Alfred Street Baptist Church

Total Future with Development Intersection Level of Service Summary <sup>(1)</sup>

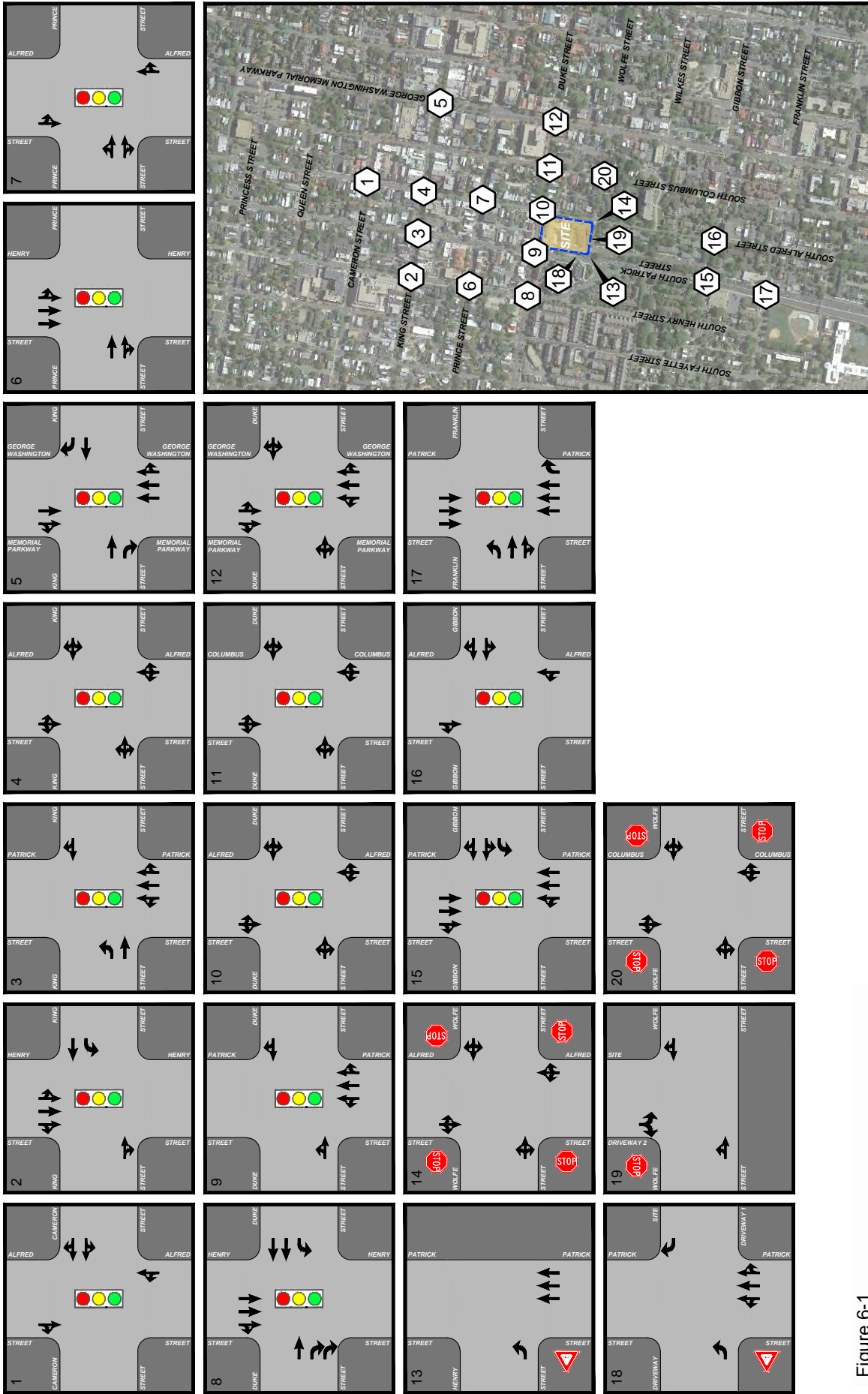
Intersection	Intersection Control	Approach/Movement	Existing Conditions			2022 Future Conditions without Development			2022 Future Conditions with Development			2028 Future Conditions with Development					
			AM Peak Hour Delay (sec.)	PM Peak Hour Delay (sec.)	Sunday Peak Hour Delay (sec.)	AM Peak Hour Delay (sec.)	PM Peak Hour Delay (sec.)	Sunday Peak Hour Delay (sec.)	AM Peak Hour Delay (sec.)	PM Peak Hour Delay (sec.)	Sunday Peak Hour Delay (sec.)	AM Peak Hour Delay (sec.)	PM Peak Hour Delay (sec.)	Sunday Peak Hour Delay (sec.)			
			LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS			
1. Alfred Street/Cameron Street	Signalized	WBLTR	B 14.5	B 19.6	B 15.4	B 14.4	B 19.9	B 15.5	B 14.4	B 19.9	B 15.5	B 14.4	B 19.9	B 15.5			
		NBLTR	A 6.0	A 7.7	A 7.9	A 6.0	A 7.8	A 8.0	A 6.0	A 7.8	A 8.0	A 6.0	A 7.8	A 8.0			
		SBTR	B 12.4	C 21.5	B 11.7	B 12.5	C 21.9	B 11.7	B 12.5	C 21.9	B 11.8	B 12.5	C 22.8	B 11.8			
		Overall	A 9.6	B 18.8	B 12.5	A 9.5	B 19.2	B 12.6	A 9.5	B 19.2	B 12.7	A 9.5	B 19.2	B 12.7			
2. Henry Street/King Street	Signalized	EBTR	C 26.6	D 50.3	D 36.1	C 25.6	D 54.2	D 36.1	C 25.6	D 54.2	D 36.1	C 25.6	D 54.2	D 36.1			
		WBLTR	A 9.0	B 15.3	B 17.5	A 9.1	B 15.3	B 18.0	A 9.1	B 15.3	B 18.0	A 9.1	B 15.3	B 18.0			
		WBTR	B 10.9	B 17.1	B 16.2	B 11.0	B 16.8	B 16.5	B 11.0	B 16.8	B 16.3	B 11.1	B 16.9	B 16.4			
		SBTR	D 46.4	F 87.0	C 23.5	D 54.4	E 76.2	C 26.2	D 54.7	E 76.4	C 26.6	E 62.1	F 86.1	C 29.3			
3. Patrick Street/King Street	Signalized	EBLTR	C 22.2	B 10.4	B 14.7	C 22.6	B 10.2	B 14.8	C 22.6	B 10.2	B 15.0	C 22.5	B 10.2	B 15.3			
		EBT	B 18.9	B 14.0	B 15.4	B 19.3	B 13.7	B 15.7	B 19.3	B 13.7	B 15.7	B 19.2	B 13.7	B 15.8			
		WBTR	C 21.6	C 22.1	C 21.3	C 21.1	C 21.8	B 19.1	C 21.0	C 21.8	C 23.7	C 21.4	C 23.2	C 24.8			
		Overall	F 92.0	B 12.8	A 9.9	F 107.0	B 14.5	B 11.8	F 107.9	B 14.7	B 13.9	F 120.0	B 17.5	B 17.5			
4. Alfred Street/King Street	Signalized	EBLTR	A 6.4	A 6.9	B 11.8	A 5.8	A 7.4	B 10.9	A 5.8	A 7.4	B 11.6	A 6.0	A 7.7	B 12.1			
		WBLTR	A 9.8	A 15.3	B 11.2	A 9.6	B 15.2	B 11.3	A 9.7	B 15.5	B 13.2	A 9.8	B 16.7	B 13.4			
		NBLTR	B 18.5	A 9.8	A 4.8	C 26.6	B 10.1	A 4.8	C 26.8	A 10.0	A 4.5	C 31.0	B 10.1	A 4.8			
		Overall	B 13.6	B 14.9	B 10.6	B 18.0	B 15.3	B 10.2	B 18.1	B 15.5	B 11.3	C 20.4	B 16.2	B 11.6			
5. Washington Street/King Street	Signalized	EBT	D 35.1	C 32.4	C 27.6	C 34.8	C 32.4	C 27.5	C 34.8	C 32.4	C 27.5	C 35.0	C 32.5	C 27.8			
		EBR	C 31.1	C 28.7	C 26.6	C 31.1	C 28.7	C 22.4	C 31.1	C 28.7	C 22.4	C 31.1	C 28.8	C 24.4			
		WBTR	C 33.8	D 36.1	C 26.6	C 34.0	D 35.6	C 26.8	C 34.0	D 35.6	C 26.8	C 34.0	D 36.0	C 27.1			
		Overall	C 30.9	C 28.1	C 23.2	C 31.0	C 28.1	C 23.7	C 31.0	C 28.1	C 23.7	C 31.0	C 28.1	C 23.8			
6. Henry Street/Prince Street	Signalized	NBTR	A 3.3	A 9.3	B 16.9	A 10.6	A 9.1	B 17.5	A 10.9	A 9.1	B 16.8	A 19.0	A 9.7	B 19.0			
		SBTR	A 9.6	C 34.5	C 28.4	A 9.6	D 42.7	C 30.4	A 9.6	D 43.1	C 33.4	A 9.7	D 49.3	D 35.1			
		Overall	A 6.7	C 27.3	C 23.3	B 12.1	C 31.9	C 24.3	B 12.3	C 32.2	C 25.2	B 18.5	D 36.1	C 26.8			
		EBTR	B 14.8	E 55.9	B 16.9	B 15.0	E 64.5	B 16.9	B 15.0	E 64.5	B 16.9	B 15.3	E 73.0	B 17.0			
7. Alfred Street/Prince Street	Signalized	SBLT	A 4.4	A 4.3	A 4.5	A 3.6	A 4.8	A 4.9	A 3.6	A 4.8	A 5.1	A 4.1	A 5.3	A 5.5			
		Overall	A 7.7	C 27.5	A 7.0	A 7.2	C 31.5	A 7.2	A 7.2	C 31.5	A 7.4	A 7.7	D 35.5	A 7.7			
		EBLTR	A 1.3	A 3.9	A 1.5	A 1.2	A 5.0	A 1.6	A 1.2	A 5.0	A 1.4	A 1.3	A 5.4	A 1.6			
		Overall	B 6.5	B 12.8	A 6.4	A 5.4	B 12.9	A 6.1	A 5.2	B 12.9	A 6.9	A 4.6	B 13.3	A 7.0			
8. Henry Street/Duke Street	Signalized	EBT	C 24.8	D 44.7	D 40.3	C 25.0	D 47.7	D 44.8	C 25.0	D 44.7	D 44.8	C 25.7	D 46.8	D 46.8			
		EBR	B 18.6	E 65.3	C 29.2	B 18.5	E 57.6	C 29.6	B 18.6	E 58.1	C 30.2	B 18.7	E 63.0	C 30.5			
		WBLTR	A 6.9	B 17.6	B 18.7	A 6.8	B 18.8	C 21.9	A 6.6	B 19.5	C 24.9	A 6.7	C 20.9	C 24.7			
		Overall	B 15.7	D 37.0	B 13.3	B 17.7	C 33.5	B 14.3	B 17.7	C 33.6	B 14.8	C 20.5	D 38.9	B 15.3			
9. Patrick Street/Duke Street	Signalized	EBT	C 28.3	B 19.9	B 17.3	D 36.1	B 20.0	B 19.9	D 42.1	B 20.0	C 20.0	D 53.9	C 20.4	C 21.7			
		WBTR	E 73.7	C 23.6	C 24.1	F 97.8	C 21.3	C 34.2	F 107.6	C 23.3	D 35.3	F 116.3	C 25.3	D 40.2			
		NBLTR	D 45.3	D 43.1	B 19.0	E 56.0	D 49.1	C 20.1	E 55.5	D 49.4	C 24.7	E 65.4	E 55.8	C 27.7			
		Overall	D 47.5	D 35.3	B 19.9	E 60.1	D 38.8	C 23.2	E 62.2	D 39.4	C 26.4	E 72.1	D 44.0	C 29.7			
10. Alfred Street/Duke Street	Signalized	EBLTR	B 12.8	A 7.5	A 8.4	B 14.4	A 7.5	A 8.3	A 9.8	A 7.5	B 10.3	A 9.6	A 7.9	A 9.9			
		WBLTR	A 9.2	A 9.4	A 9.6	A 9.4	A 9.9	A 9.2	A 9.7	A 9.9	A 9.3	B 10.0	B 10.1	A 9.6			
		NBLTR	D 52.9	B 19.6	B 19.8	E 57.2	B 19.5	B 19.6	E 69.9	C 20.8	B 18.8	E 75.5	C 21.1	B 18.9			
		Overall	C 6.8	C 28.8	B 14.7	A 6.4	C 30.4	B 14.2	A 6.5	C 30.7	B 17.9	A 6.2	C 32.2	B 18.0			
11. Columbus Street/Duke Street	Signalized	EBLTR	A 9.0	B 18.3	B 16.2	B 10.2	B 19.6	B 15.7	B 11.3	C 20.1	B 14.7	B 11.8	C 20.1	B 14.5			
		WBLTR	C 21.4	C 23.9	B 15.9	D 32.1	C 24.1	B 16.2	C 22.7	C 24.3	B 17.5	C 23.1	C 25.0	B 17.9			
		NBLTR	D 39.9	B 15.4	C 20.7	D 45.0	B 15.1	C 20.4	D 45.0	B 15.1	C 20.4	D 50.2	B 15.6	C 20.6			
		Overall	C 5.2	C 26.5	B 14.1	A 4.0	C 29.8	B 13.6	A 4.0	C 29.8	B 13.6	A 3.9	C 32.4	B 13.7			
12. Washington Street/Duke Street	Signalized	EBLTR	F 98.9	D 45.2	C 32.8	F 123.6	D 54.7	D 36.7	F 129.4	E 56.5	D 44.6	F 141.3	E 62.1	D 48.0			
		WBLTR	D 36.2	C 32.8	C 28.9	D 39.7	D 35.7	C 32.1	D 39.9	D 35.8	C 32.9	D 40.3	D 36.2	C 33.5			
		NBTR	E 65.1	B 18.7	E 57.5	E 63.4	B 18.3	D 54.6	E 63.4	B 18.3	E 57.2	E 72.5	B 18.7	E 68.4			
		Overall	A 7.0	B 10.6	C 22.2	A 7.2	B 15.7	C 28.2	A 7.3	B 15.9	C 32.0	A 7.3	C 23.4	D 42.0			
13. Patrick Street/U-Turns from Henry Street	Unsignalized	EBL	B 10.9	A 9.7	B 10.2	B 10.9	A 9.8	A 9.9	B 11.1	A 9.9	B 6.8	B 11.2	A 9.9	B 11.2			
		NBT	A 0.0	A 0.0	A 0.0	A 0.0	A 0.0	A 0.0	A 0.0	A 0.0	A 0.0	A 0.0	A 0.0	A 0.0			
	* Alternative with Signal	Signalized	EBL	-	-	-	-	-	-	-	-	C 34.3	-	-	C 34.3		
			NBTR	-	-	-	-	-	-	-	-	-	-	-	-		
14. Alfred Street/Wolfe Street	Unsignalized	EBLTR	A 8.2	A 8.2	A 7.7	A 8.3	A 8.2	A 7.6	A 8.3	A 8.2	A 7.8	A 8.4	A 8.3	A 7.8			
		WBLTR	A 9.0	A 9.3	A 7.6	A 7.8	A 9.2	A 7.5	A 8.0	A 9.3	A 8.0	A 8.0	A 9.4	A 8.0			
		NBLTR	B 10.6	A 8.1	A 7.8	B 10.7	A 8.1	A 7.8	B 11.0	A 8.2	A 8.3	B 11.3	A 8.2	A 8.4			
		Overall	A 7.9	B 10.3	A 8.0	A 7.9	B 10.2	A 7.9	B 7.9	B 10.3	A 8.5	A 8.0	B 10.5	A 8.5			
15. Patrick Street/Gibbon Street	Signalized	WBLTR	F 82.0	F 126.0	C 27.5	F 81.3	F 139.6	C 27.7	F 83.3	F 139.6	C 29.7	F 85.5	F 151.0	C 30.3			
		NBLTR	D 49.7	C 25.6	C 20.4	D 49.0	C 27.1	C 20.0	D 49.3	C 27.1	C 20.3	D 49.2	C 28.7	C 20.3			
		SBTR	B 10.2	B 18.6	B 11.8	B 11.8	C 20.6	B 13.7	B 12.4	C 20.8	B 16.6	B 14.7	C 22.9	B 18.6			
		Overall	B 15.3	D 36.9	B 10.4	B 15.8	D 44.6	B 11.9	B 16.4	D 44.8	B 13.7	B 17.8	D 51.4	B 15.5			
16. Alfred Street/Gibbon Street	Signalized	WBLTR	B 15.6	B 12.0	A 8.9	B 15.7	B 12.6	A 9.0	B 15.7	B 12.6	A 9.0	B 15.9	B 13.1	A 9.1			
		NBLTR	C 23.0	D 49.3	B 12.5	C 22.8	D 53.3	B 12.1	C 23.1	E 55.3	B 13.1	C 23.8	E 66.3	B 13.3			
		SBTR	B 12.5	B 14.8	A 9.4	B 12.4	B 15.5	A 9.3	B 12.5	B 15.6	B 10.3	B 12.5	B 16.3	B 10.5			
		Overall	B 19.0	B 19.2	A 9.7	B 18.9	C 20.2	A 9.6	B 19.0	C 20.6	B 10.1	B 19.5	C 22.9	B 10.2			
17. Patrick Street/Franklin Street	Signalized	EBLT	E 65.3	E 63.1	E 65.5	E 65.3	E 63.1	E 65.6	E 65.3	E 63.1	E 65.6	E 65.1	E 62.9	E 65.6			
		EBR	E 67.7	E 67.0	E 67.5	E 67.7	E 67.0	E 67.5	E 67.7	E 67.0	E 67.5	E 67.6	E 67.0	E 67.6			
		NBT	A 7.7	A 4.2	A 2.9	A 8.2	A 4.2	A 2.8	A 8.4	A 4.2	A 2.9	A 9.5	A 4.3	A 3.0			
		Overall	B 19.1	B 19.1	A 4.5	C 21.2	C 25.8	A 4.5	C 21.3	C 26.4	A 4.7	C 24.2	C 32.6	A 4.8			
18. Existing Garage Driveway/Patrick Street/ *Northbound right future movement only	Unsignalized	EBL	A 9.9	A 9.5	D 25.4	B 10.0	A 9.6	C 24.8	A 0.0	A 0.0	F 65.4	A 0.0	A 0.0	F 64.8			
		NBLTR*	A 0.0	A 0.0	A 0.0	A 0.4	A 0.6	A 3.3	A 9.8	A 9.3	B 10.9	A 9.9	A 9.4	B 10.8			
19. Proposed Site Driveway/S. Alfred Street	Unsignalized	SBLR	Proposed Site Driveway										A 9.0	A 9.0	A 9.4	A 9.0	A 9.4
		EBLTR	A 8.9	A 9.6	A 8.5	A 8.9	A 9.2	A 8.3	A 8.9	A 9.2	A 8.4	A 8.9	A 9.2	A 8.4	A 8.9		
20. S. Columbus Street/Wolfe Street	Unsignalized	WBLTR	A 9.0	B 12.2	A 8.4	A 9.0	B 11.4	A 8.3	A 9.1	B 11.4	A 8.3	A 9.1	B 11.4	A 8.3			
		NBLTR	B 14.5	A 9.9	A 9.3	B 14.5	A 9.5	A 9.1	B 14.5	A 9.5	A 9.1	B 14.5	A 9.5	A 9.1			
		SBTR	A 8.5	C 21.0	A 8.8	A 8.5	C 17.3	A 8.6	A 8.5	C 17.4	A 8.6	A 8.5	C 17.4	A 8.6			
		Overall	A 8.5	C 21.0	A 8.8	A 8.5	C 17.3	A 8.6	A 8.5	C 17.4	A 8.6	A 8.5	C 17.4	A 8.6			

Notes:

(1) Capacity analysis based on Highway Capacity Manual methodology, using Synchro 9.







NORTH  
 Represents One Travel Lane  
 Signalized Intersection  
 Stop Sign

Figure 6-1  
Total Future Lane Use and Traffic Controls

Alfred Street Baptist Church  
City of Alexandria, Virginia

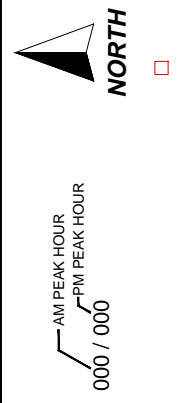
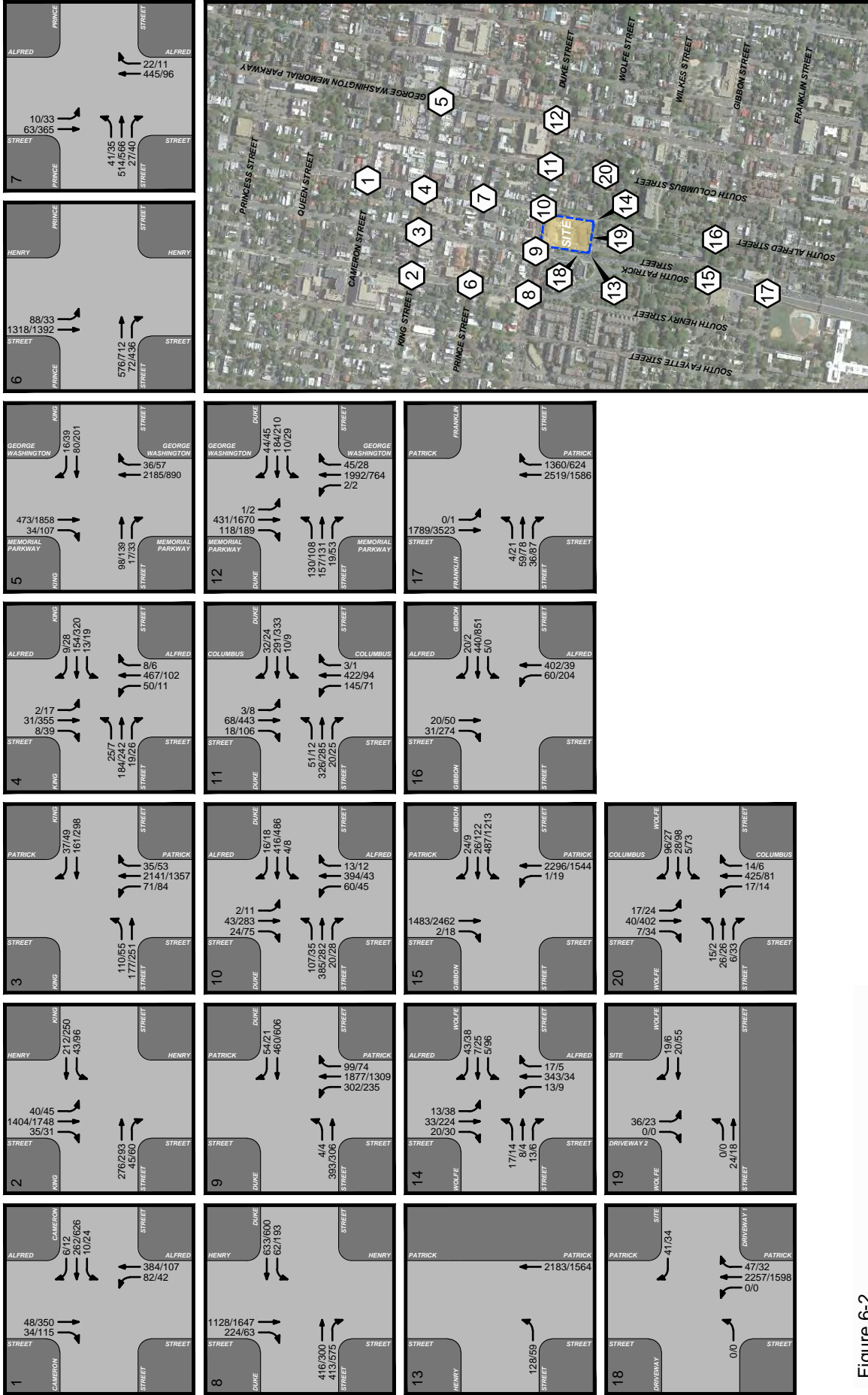
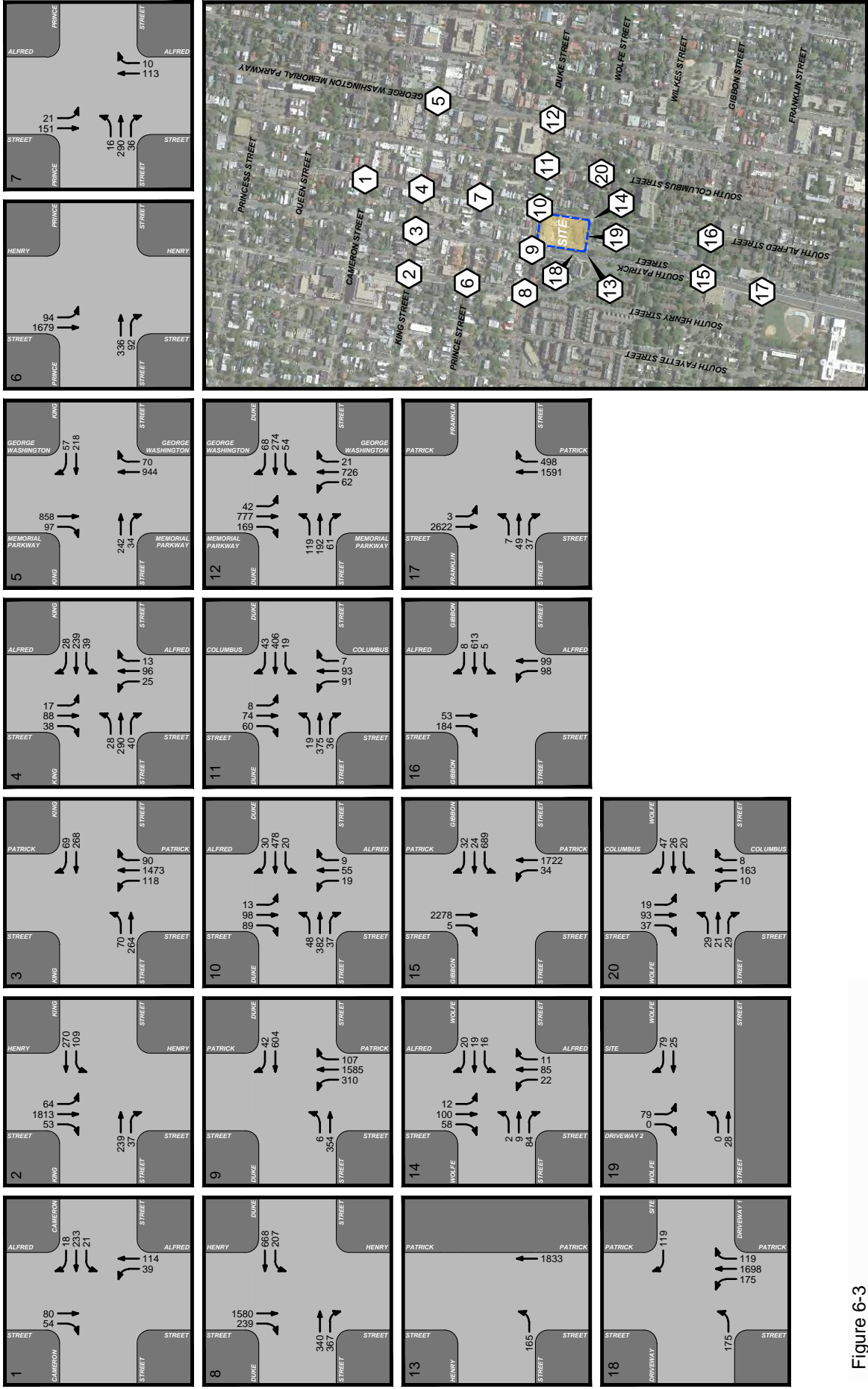


Figure 6-2  
 Future Peak Hour Traffic Forecasts  
 With Development (2022) - Weekday  
 Alfred Street Baptist Church  
 City of Alexandria, Virginia





**Figure 6-3**  
**Future Peak Hour Traffic Forecasts**  
**With Development (2022) - Sunday**  
 Alfred Street Baptist Church  
 City of Alexandria, Virginia

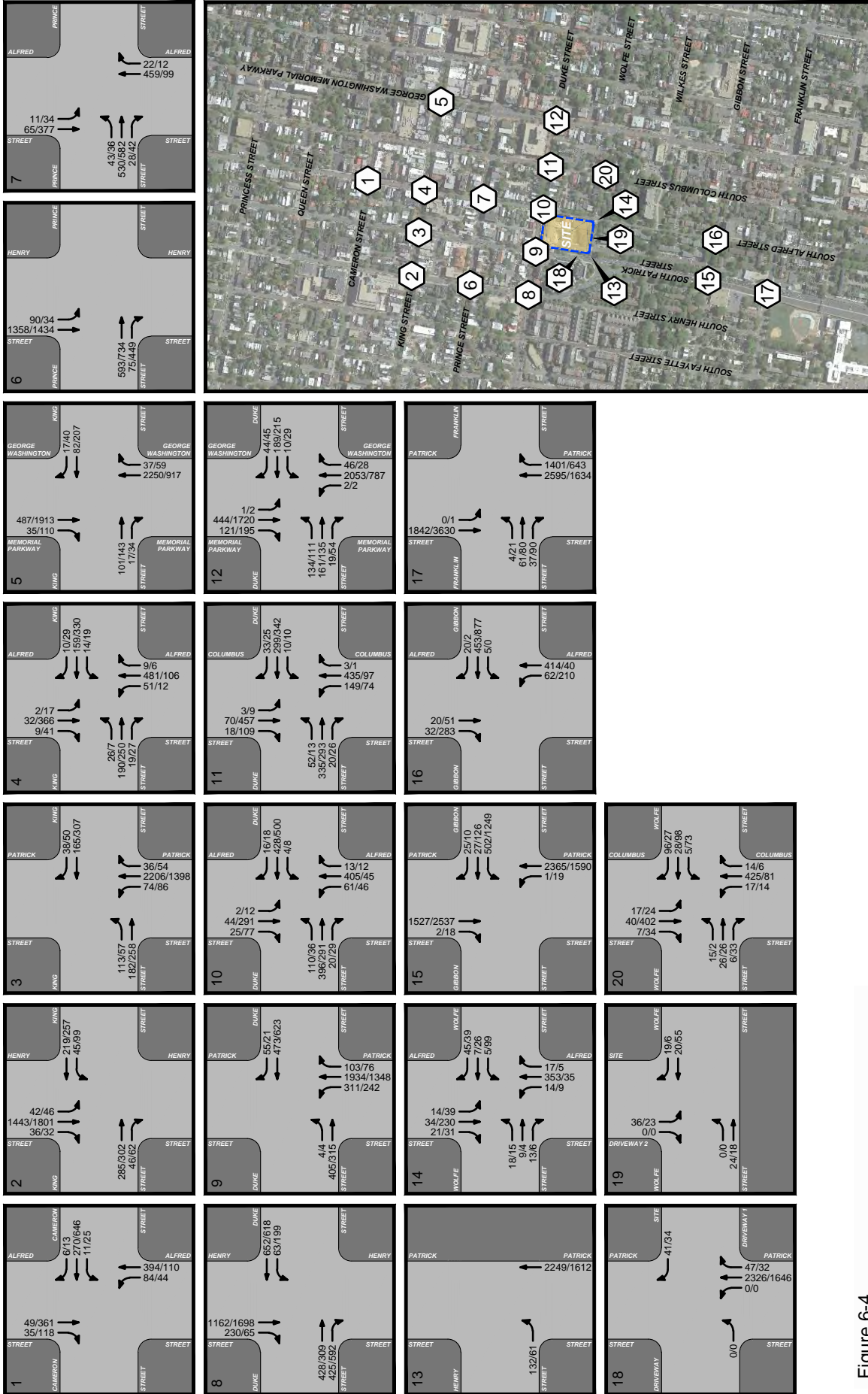
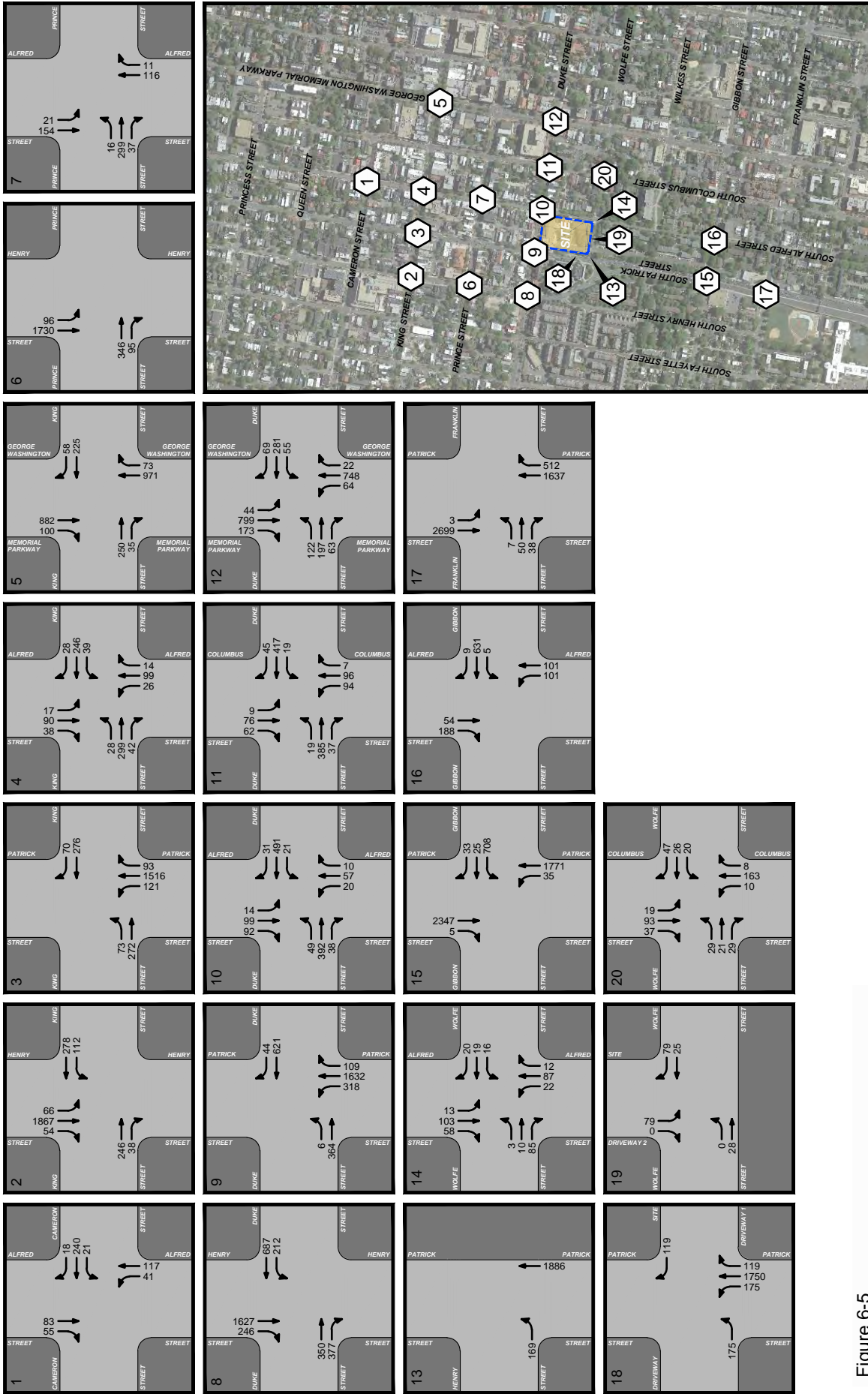


Figure 6-4  
 Future Peak Hour Traffic Forecasts  
 With Development (2028) - Weekday  
 Alfred Street Baptist Church  
 City of Alexandria, Virginia





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Figure 6-5  
 Future Peak Hour Traffic Forecasts  
 With Development (2028) - Sunday  
 Alfred Street Baptist Church  
 City of Alexandria, Virginia

## SECTION 7 NON-AUTO FACILITIES EVALUATION

### Introduction

This section evaluates the non-auto facilities within the site vicinity. It includes the safe and efficient pedestrian and bicycle access and circulation and identifies transit service in the area. It is a goal of the City of Alexandria to create an integrated, multimodal transportation system that is accessible and safe for all users, including pedestrians and bicyclists. To help achieve this goal, the City Council adopted a Complete Streets Policy in 2010. The term Complete Streets describes a comprehensive, integrated transportation network with infrastructure and design that allows safe and convenient travel along and across streets for all users. The policy is intended to promote equality for pedestrians, bicyclists, riders and drivers of public transportation, as well as drivers of other motor vehicles, and people of all ages and abilities, including children, older adults, and individuals with disabilities.

Per the City's Guidelines, the bicycle and pedestrian study area is based on the size of the proposed development. As agreed during the scoping process the study area includes bicycle and pedestrian data, analysis and reporting of infrastructure and deficiencies within a ½ mile radius from the site.

### Existing Conditions

The Old Town area has a connected network of sidewalks that provides the safe and efficient movement of pedestrians between residences, places of employment, retail shops, open space, transit facilities and other destinations within the area. A review of existing conditions confirms that within ½ mile from the subject site, sidewalks are present along both sides of all streets with the following exceptions, as shown on Figure 7-1 through 7-5.

- West side of S. Payne Street from Wilkes Street to the end of roadway.

A total of 53 signalized intersections are located within the pedestrian and bicycle study area. A review of the existing signalized intersections confirms that crosswalks are provided on all legs of the intersections where pedestrian ramps are located connecting to the sidewalk. Pedestrian countdown signal heads are provided for each marked crosswalk at the signalized intersections with exception of the following intersections or leg of an intersection as noted below and shown on Figure 7-1 through 7-5:

- N. Henry Street/Princess Street
- N. Alfred Street/Cameron Street
- N. St Asaph Street/Cameron Street
- Peyton Street/King Street

- West Street/King Street
- S. Alfred Street/Duke Street
- S. Columbus Street/Duke Street
- S. Columbus Street/Gibbon Street
- S. Patrick Street/Gibbon Street

### Public Transit Service

The Old Town area is well served by transit as shown on Figure 7-6. This includes bus, Bus Rapid Transit (BRT) and Metrorail. Boarding and alighting information for certain bus lines, as provided by the City of Alexandria, are summarized in Table 7-1.

**DASH Service.** DASH service is provided by lines AT2, AT3-4, AT5, AT7, AT8, and KST in the vicinity of the site as shown on Figure 7-6. Line AT2 provides service from the Landmark Plaza to the Braddock Road Metrorail stations; additional stops include Mark Center, the King Street Metro station, City Hall and Old Town. In the vicinity of the site the line travels along King Street. Line AT3-4 Loop provides service to and from Old Town Alexandria. Major stops along this route include Parkfairfax, Braddock Metro Station, and City Hall. In the vicinity of the site the line travels along Royal Street. Line AT5 provides service between the Van Dorn Metrorail station and the Braddock Metrorail station; additional stops include Landmark Mall, George Washington Masonic National Memorial, King Street Metrorail station, and City Hall. In the vicinity of the site the line travels along King Street. Line AT7 provides service between the Landmark Mall and Nannie J. Lee Center. Additional stops along this line include the Van Dorn Metrorail station, the Eisenhower Metrorail station, the U.S. Federal Courthouse, and the Kind Street Metrorail station. The line runs along Duke Street in the vicinity of the site. Line AT8 provides service between the Van Dorn Metrorail station and Old Town Alexandria; including stops at the Landmark Mall, Cameron Station, and the King Street Metrorail station. In the vicinity of the site the line runs along Duke Street. The KST (King Street Trolley) provides local service to and from the King Street Metrorail station to Potomac Yard. The King Street trolley serves all of the major attractions along King Street. It should be noted that all of the bus lines listed above serve the area 7 days a week, with the exception of AT7, which only runs on weekdays. Refer to Figure 7-6 for the location of existing bus stops, metrorail, and bus lines.

**Metrorail Service.** The King Street-Old Town Metrorail station is located approximately 0.6 miles (straight line distance) west of the subject site. This station is served by the by the Yellow, Green, and Blue Lines. These metro lines provide regional access to Arlington County, Fairfax County, Washington DC, Montgomery County, and Prince Georges County. The subject property is located just outside the ½ mile walkshed from the station based on the City of Alexandria Metro Station Walkshed Map. Refer to Figure 7-6 for the location of existing bus stops, metrorail, and bus lines. Alfred Street Baptist Church provides a shuttle

service to the closest Metrorail station and off-site parking. The shuttle route is provided on Figure 7-9.

**Metrobus Service.** Metrobus service is provided by lines 9A, 10A, and 11Y which run along Washington Street. Line 9A operates seven (7) days a week and provides service between the Huntington Avenue and Pentagon Metro stations. Line 10A operates seven (7) days a week and provides service to the Pentagon Metrorail station and Hunting Point. Line 11Y operates Monday through Friday and provides service from Mount Vernon to Potomac Park in Washington, D.C. In the vicinity of the site all of the Metrobus lines run along Washington Street. Refer to Figure 7-6 for the location of existing bus stops, metrorail, and bus lines.

### **Pedestrian and Bicycle Traffic Volumes**

Pedestrian and bicycle counts were conducted on Tuesday, May 19, 2015 from 6:30 to 9:30 AM and 4:30 to 7:30 PM at each study intersection. Pedestrian and bicycle counts were also conducted for Sunday conditions on Sunday, May 31, 2015 from 7:00 AM to 3:00 PM. Existing peak hour pedestrian and bicycle counts are shown in Figures 7-7 and 7-8, respectively and are summarized in Appendix B.

### **Bicycle Network**

There are few dedicated bicycle lanes within the Old Town North area. Many riders simply utilize the travel lanes since vehicle speeds are relatively low in this area. The lack of bike lanes is primarily due to the existing street geometry with narrow lane widths and the inability to remove curb parking for dedicated bike lanes.

As shown on Figure 7-10, within vicinity of the site S. Henry Street (to the west) is classified as a shared roadway. Wilkes Street (to the south) is classified as a shared roadway with some trails where the roadway does not continue. S. Columbus Street (to the east) is classified as a shared roadway, as well. Prince Street (to the north) has dedicated bike lanes. King Street (to the north) has dedicated bike lanes and some shared roadway segments. Access to the Mount Vernon trail running along the Potomac River can be gained through Wilkes Street. The Mount Vernon Trail connects to Arlington County to the north and Fairfax County to the south.

The closest Capital Bikeshare station is at the intersection of King Street & Patrick Street, two blocks north of the Alfred Street Baptist Church. Additional Capital Bikeshare stations can be found along King Street and also at the King Street Metrorail station. Refer to Figure 7-5 for locations of Capital Bikeshare stations, in the vicinity of the site.

As mentioned previously, a total of 34 bicycle parking spaces will be provided at grade and within the below grade parking garage serving the proposed development.

### **Pedestrian Access**

Access for pedestrians are facilitated by marked crosswalks and ramps at the intersections of Duke Street/Patrick Street, Duke Street/S. Alfred Street, and Wolfe Street/S. Alfred Street. Ramps exist on all quadrants of the intersections with marked crosswalks. All three of the immediate intersections surrounding the site, mentioned previously, have pedestrian signals with the exceptions of the Duke Street/S. Alfred Street intersection.

The nearest transit stops are located on the north side of the property along Duke Street where DASH service can be found via line AT7 and AT8. The King Street Metro station is approximately 0.6 miles west of the site and is accessible via a connected grid of sidewalks or via one of the nearby transit lines. Also as noted previously the church operates shuttles on Sundays providing access to additional parking areas and the King Street Metro station.

### **Shuttle Bus**

Two church shuttle busses are available during Sunday services to assist patrons to church. The shuttles run on a continuous circuit route from approximately 6:00 AM until 3:00 PM and serves the King Street Metro, the 117 Alfred Street parking garage, and the Coal Lot. A third shuttle bus is available and takes church patrons to more distant neighborhoods and to Maryland on an as needed basis.

A bus occupancy count was conducted on Sunday, April 3, 2016 between the hours of 6:00 AM and 3:00 PM. A total of 43 patrons were dropped off and 46 picked up. The average was 1.4 perpersn per drop off and 1.5 persons per pickup. It is anticipated that this service will continue. The results of the shuttle bus occupancy count of boarding and alighting is found in Appendix B.





Table 7-1  
 Alfred Street Baptist Church  
 Boarding and Alighting Information

On Street	X Street	Direction	Average Daily On	Average Daily Off
Duke	S Alfred	EB	0	13
Duke	S Alfred	WB	29	2
Duke	S Payne	EB	3	10
Duke	S Washington	EB	1	18
Duke	S Washington	WB	3	0
Duke	Henry	WB	8	0
S Washington	Prince	SB	11	8
S Washington	Duke	SB	7	21
S Washington	Duke	NB	28	12
S Washington	King	NB	243	189
S Washington	King	SB	155	80
S Washington	Wilkes	SB	17	45
S Washington	Wilkes	NB	67	22
King	S. Washington	EB	15	76
King	S. Washington	WB	46	14
King	Columbus	EB	18	109
King	Columbus	WB	154	22
King	Alfred	EB	1	26
King	Alfred	WB	28	4





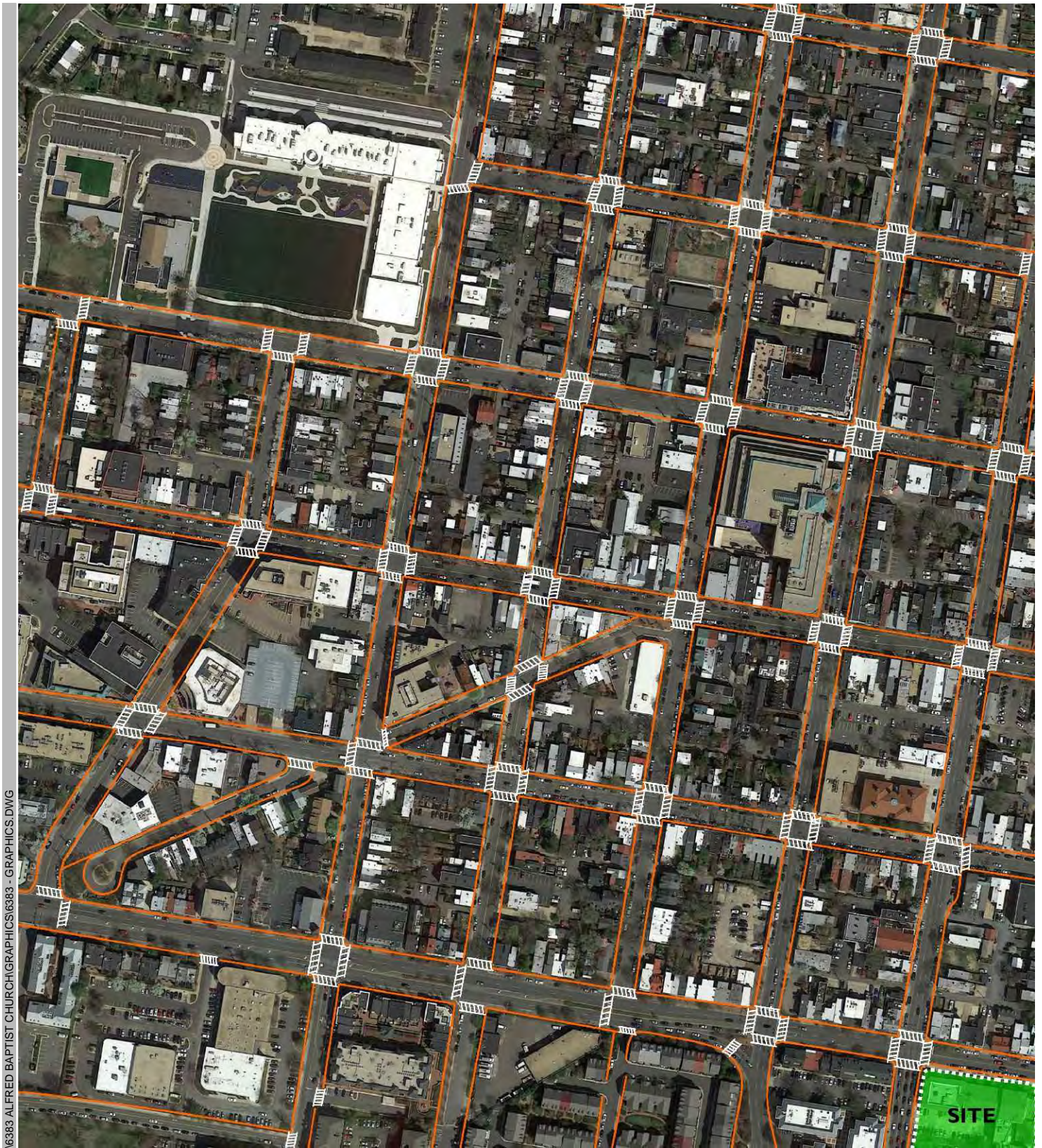
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Figure 7-1  
Sidewalk & Crosswalk Inventory

Alfred Street Baptist Church  
City of Alexandria







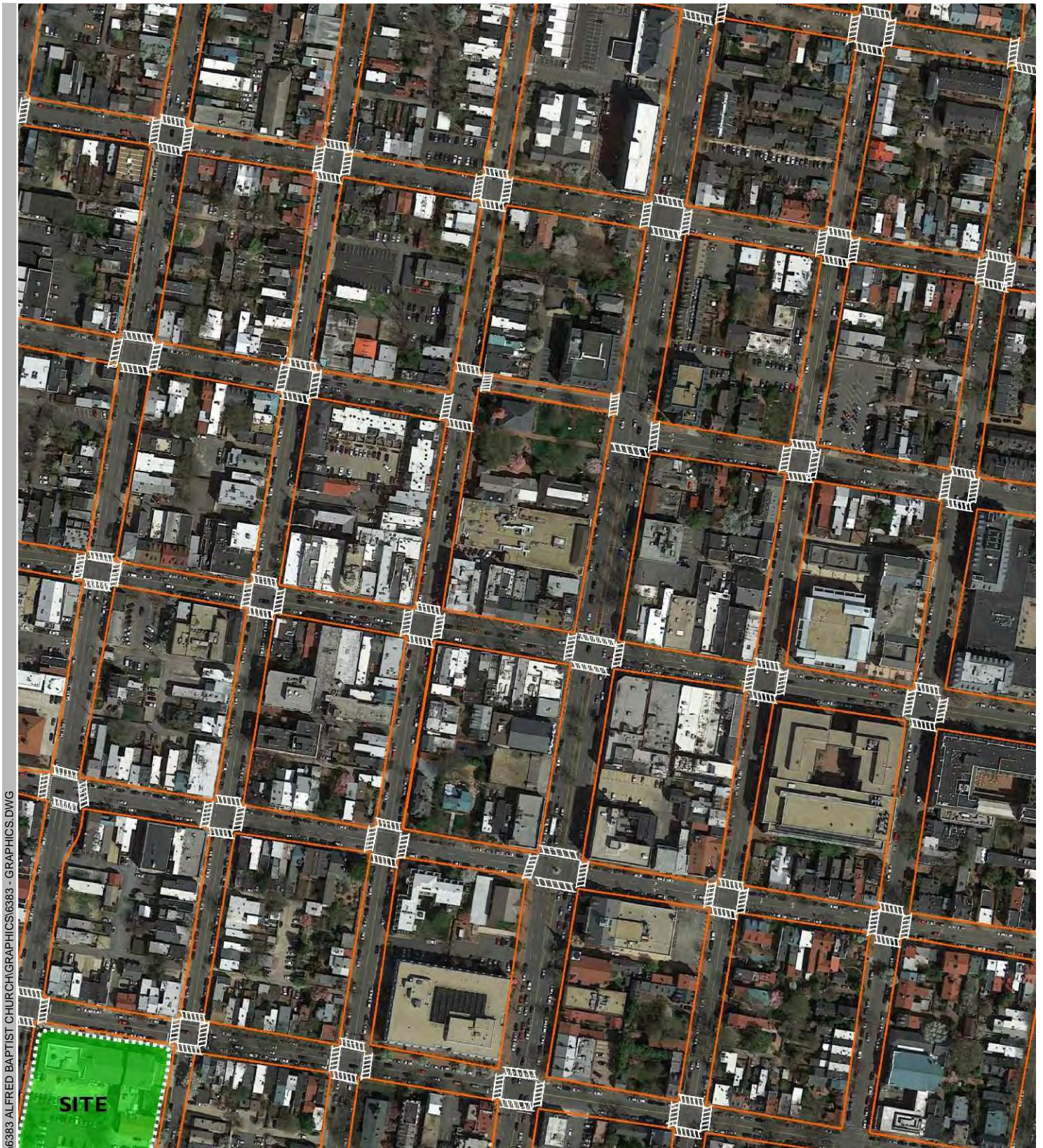
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Figure 7-2  
Area 1 Sidewalk & Crosswalk Inventory

Alfred Street Baptist Church  
City of Alexandria







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Figure 7-3  
Area 2 Sidewalk & Crosswalk Inventory

Alfred Street Baptist Church  
City of Alexandria







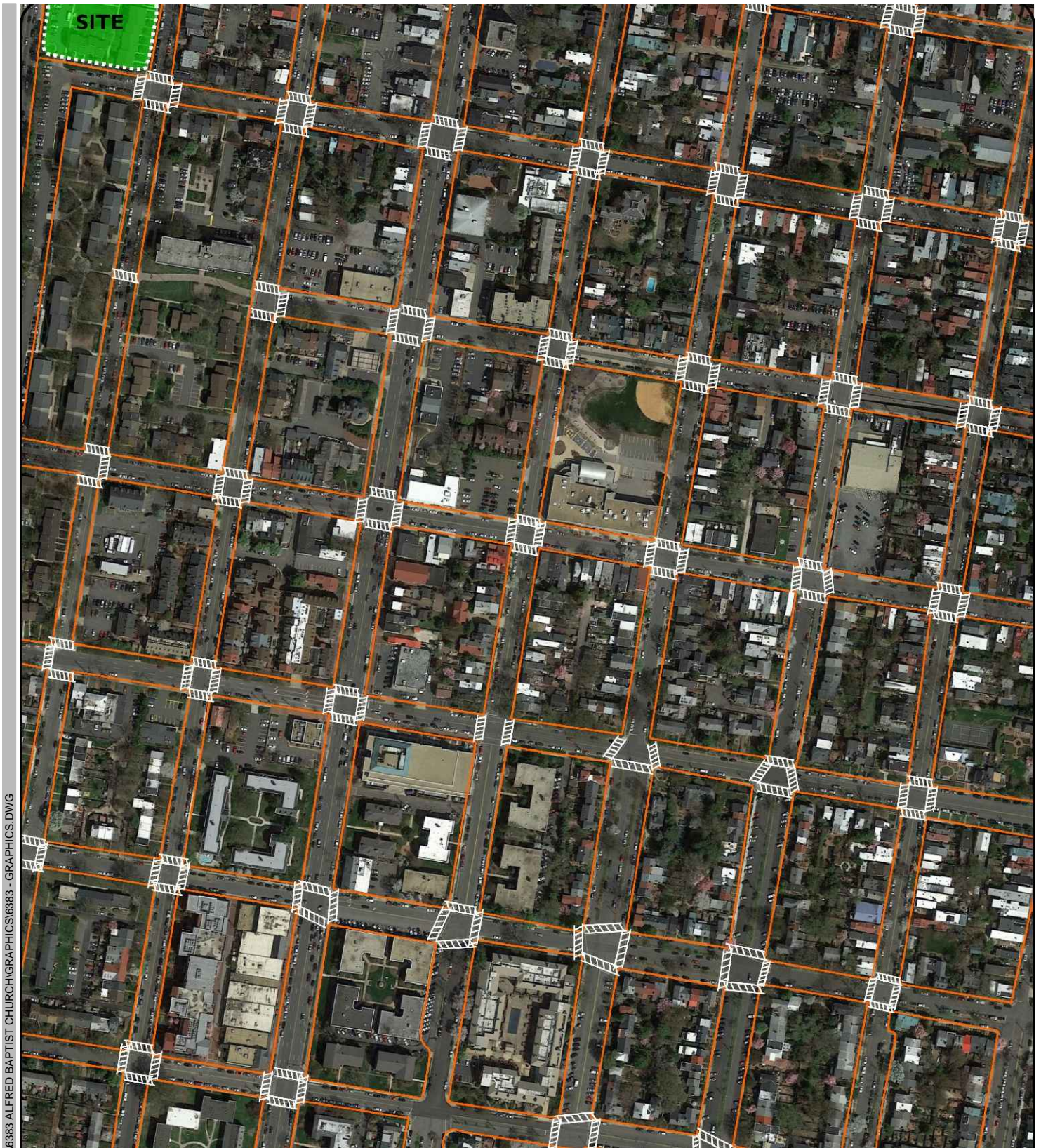
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Figure 7-4  
Area 3 Sidewalk & Crosswalk Inventory

Alfred Street Baptist Church  
City of Alexandria







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Figure 7-5  
Area 4 Sidewalk & Crosswalk Inventory

Alfred Street Baptist Church  
City of Alexandria





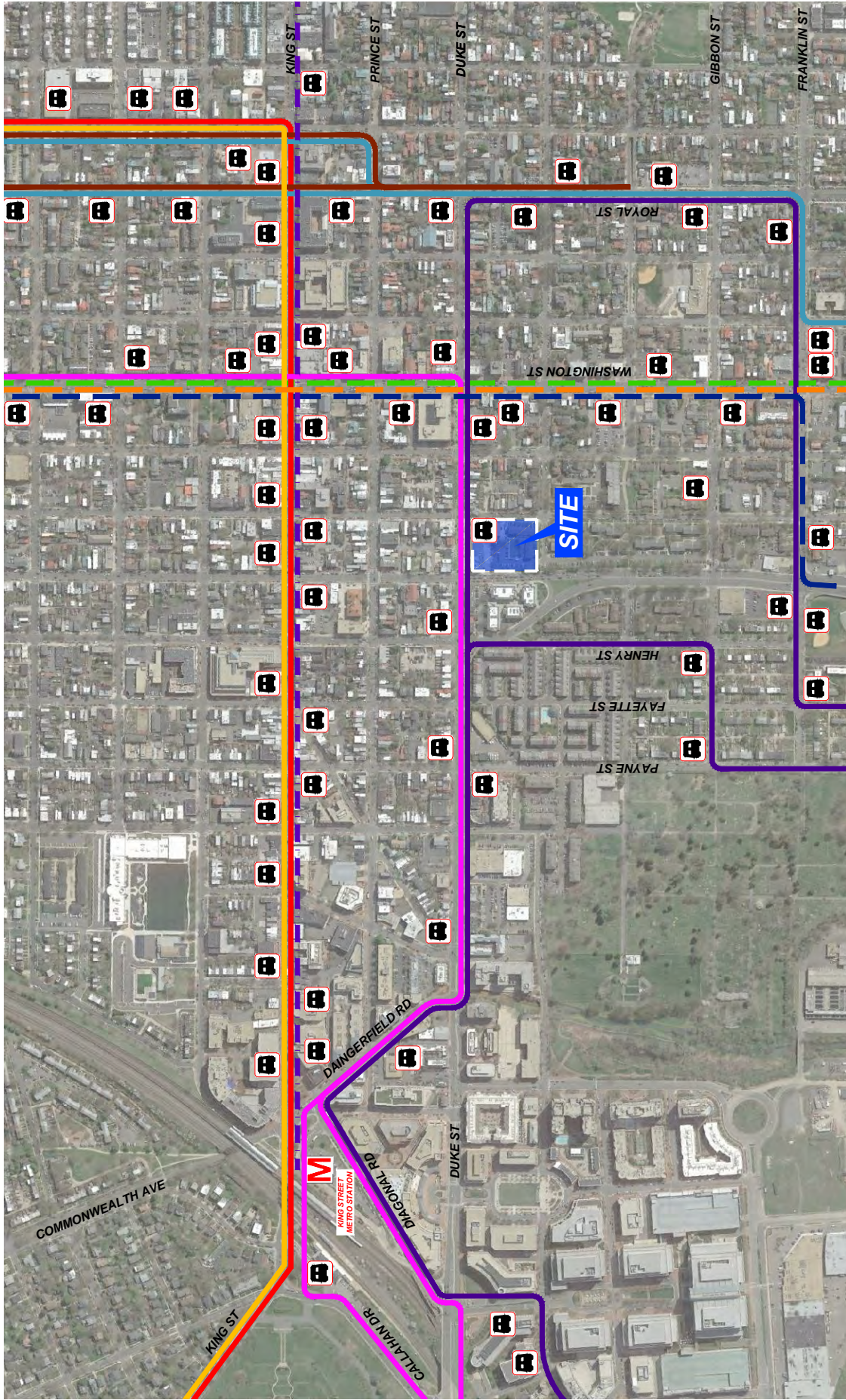


Figure 7-6  
Existing Bus Stops/Metro Rail/Bus Lines

Alfred Street Baptist Church  
City of Alexandria, Virginia





Figure 7-7 Existing Pedestrian Traffic Volumes

Alfred Street Baptist Church  
City of Alexandria, Virginia



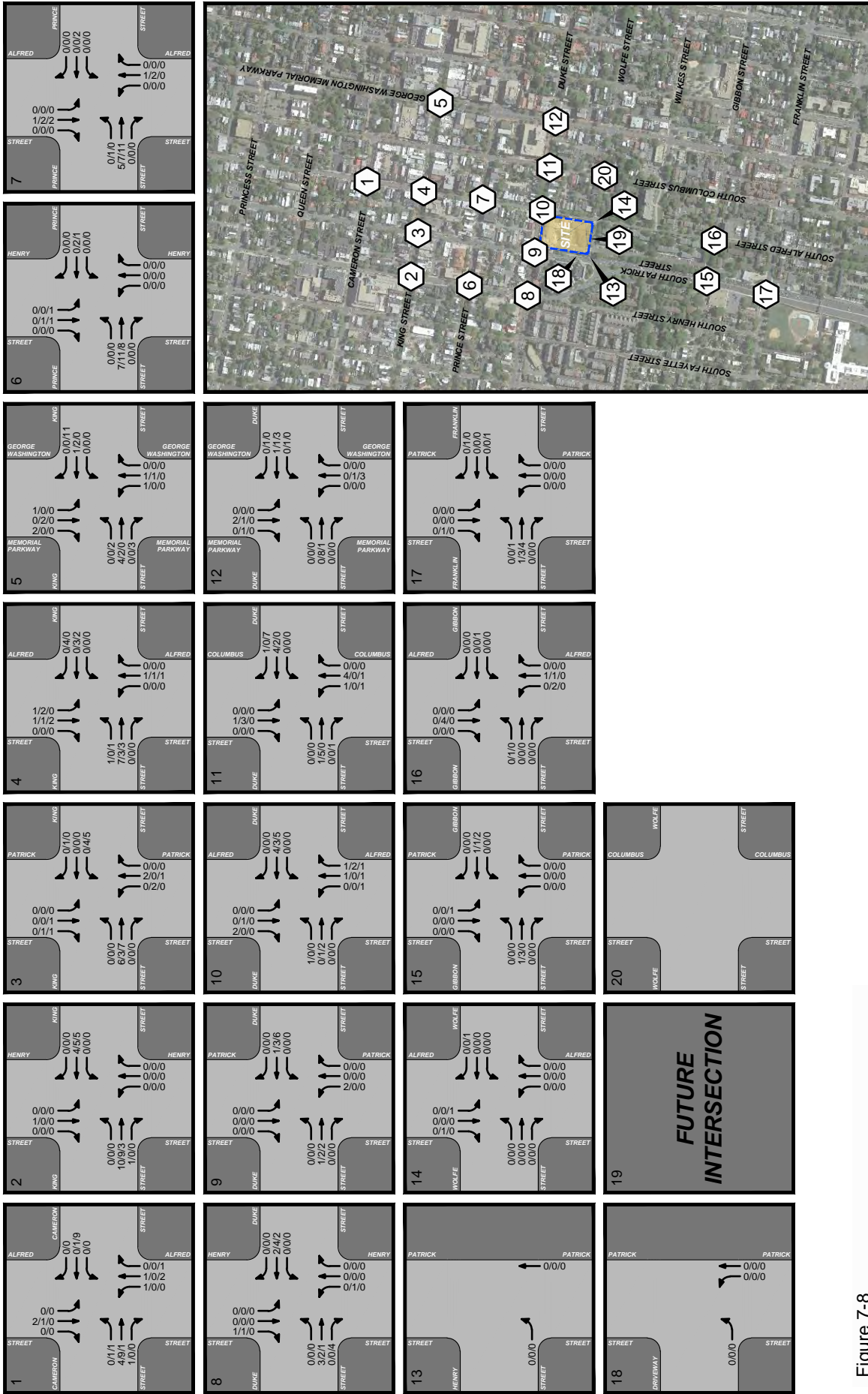


Figure 7-8  
Existing Bicycle Traffic Volumes

Alfred Street Baptist Church  
City of Alexandria, Virginia



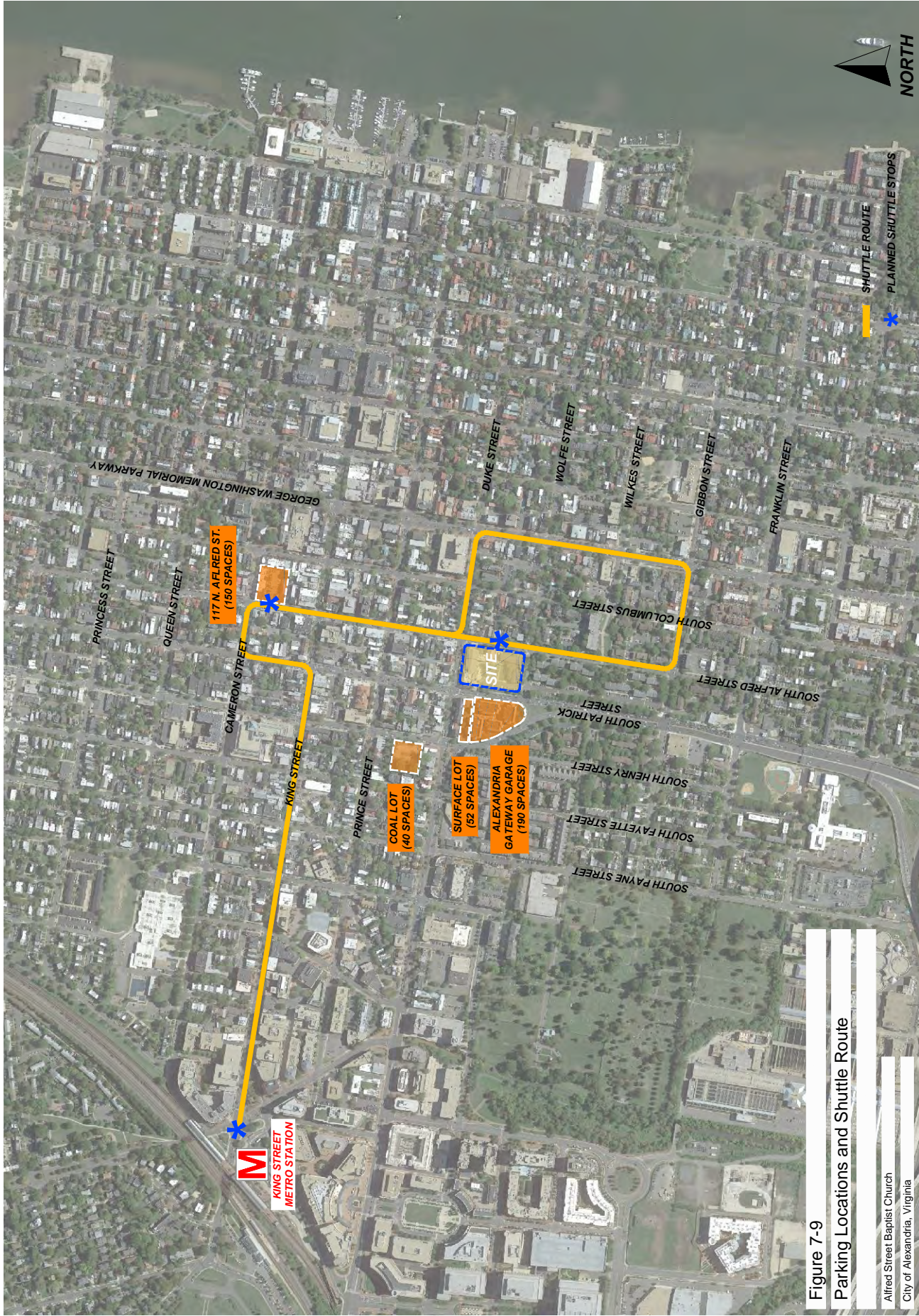






Figure 7-10  
Alexandria Bike Master Plan

Alfred Street Baptist Church  
City of Alexandria

- |                            |                            |                        |
|----------------------------|----------------------------|------------------------|
| <b>Bike Facility Group</b> | <b>Existing Facilities</b> | <b>M</b> Metro Station |
| Enhanced Bicycle Corridor  | Bike Lane                  | <b>M</b> Metroway Stop |
| Shared Roadway             | Sharrow                    | Future Street          |
| Trail                      | Trail                      |                        |
| Climbing Lane              | Unpaved Nature Trail       |                        |



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## SECTION 8 PARKING DEMAND ANALYSIS

### Overview

This section provides an evaluation of the observed parking occupancy characteristics of the existing church parking facilities and surrounding area. Also included are details regarding the existing shuttle service that will remain in operation subsequent to the redevelopment, an on-street parking occupancy survey along the adjacent roadways, and a parking management plan to serve the site.

### Code Requirement and Proposed Parking Ratio

The City of Alexandria Code requires one (1) space per every five (5) seats for churches. As shown on Table 8-1, the existing church (920 seats, including the chapel) would require 184 spaces, and provides a total of 292 spaces on-site. This excludes the overflow spaces used on Sundays through agreements with other property owners provided in off-site facilities.

Based on the proposed development program of 2,163 seats, a total of 433 parking spaces are required. The proposed parking supply of 458 spaces would meet the required amount of on-site parking spaces. In addition to the requirement being met, the church will maintain the existing off-site overflow parking and shuttle service.

### Parking Occupancy

In accordance with the City's guidelines, on-street parking occupancy data surrounding the site was collected for the area covering a two (2) block radius from the site. Figure 8-1 highlights the surveyed area. As agreed during the scoping process, the occupancy survey was conducted on Wednesday, May 20, 2015 from 6:30 to 9:30 AM and 4:30 to 7:30 PM and on Sunday, May 31 and Sunday June 7, 2015 from 7:00 AM to 3:00 PM.

**Weekdays.** The results of the weekday on-street parking survey are shown on Figures 8-2 and 8-3 and indicate that on-street parking is generally available during the AM and PM peak hours on weekdays. During the weekday AM peak hour, a maximum of 396 parked vehicles (or 51 percent occupied spaces) were observed at 9:30 AM. A maximum of 558 vehicles (or 72 percent occupied spaces) were observed at 7:00 PM.

**Sundays.** The results of the Sunday counts (average of both count days) of on-street parking are shown on Figure 8-4 and indicate that a maximum of 766 parked vehicles (or 99 percent occupied spaces) were observed at 12:30 PM.





The parking occupancy counts collected at the existing Coal Lot, 117 N. Alfred Street Garage, surface parking next to the Gateway Garage, and the Alexandria Gateway Garage are summarized on Figure 8-5, and indicate that a maximum of 357 parked vehicles (or 83 percent occupied spaces) were observed at 11:45 PM during the Sunday midday peak hour. This indicates that a surplus of approximately 75 spaces is available during this period. It is noted that the Alexandria Gateway Garage and its surface parking were beyond capacity during this period, but spaces were available in the other lots.

Detailed summaries of each of the parking areas surveyed as well as the signed parking agreements are contained in Appendix G.

### Parking on Alfred Street

As discussed above, on-street parking is permitted along the east side of Alfred Street from Duke Street to Gibbon Street but is restricted to two-hour parking between Duke Street and Wolfe Street Monday through Saturday from 8:00 AM to 11:00 PM except for “holders of dist 4 permits.” Parking is not permitted on the west side of Alfred Street from Duke Street to Gibbon Street except for Sundays from 7:30 AM to 9:00 PM.

On Sundays, vehicles are parked along the west side and recent observations indicated that nearly all available parking spaces are occupied from 8:00 AM until 1:00 PM between Duke Street and Gibbon Street. A travel time study was conducted on Saturday May 21, 2016 and on Sunday, May 22, 2016 from 9:00 AM to 12:00 PM to determine the average travel time for motorists to traverse Alfred Street from Duke Street to Gibbon Street. The results indicate that the average time for a motorist to travel between Duke Street and Wolfe Street on a Saturday is 15 seconds with parking restricted on the west side of S. Alfred Street. On Sunday with parking allowed on the west side, the travel time increases to 19 seconds. From Wolfe Street to Gibbon Street, the average travel time is 19 seconds on a Saturday and increases to 35 seconds on a Sunday. Although vehicles passing one other in opposing direction can create potential delays, there is only a total increase for the two segments of 20 seconds. While delays along S. Alfred Street are anticipated with the church expansion, these periods will continue to be short (15 – 30 minutes before and after two planned services) and isolated to Sundays. A police officer is recommended at the S. Alfred Street/Wolfe Street intersection initially.

The grid of streets in the vicinity of the site provides motorist multiple alternatives to Alfred Street if motorists wish to travel in a north-south direction. If delays on Alfred Street become an issue during peak periods, existing and site traffic could divert to other roads. It was also noted during the on-site review that on-street parking serves as a traffic calming feature to keep speeds low in a primarily residential neighborhood. The traffic volume along Alfred Street is typically light.

Recorded accident data provided by the City from January, 2012 through May, 2016 revealed that one accident occurred between Duke Street and Gibbon Street involving either a side swipe or parked vehicle. The report did not state what day of the week it

occurred. The data suggests that an ongoing accident problem does not exist. The accidents report summaries are included in Appendix B.

To allow greater space for vehicles to execute a right-turn from eastbound Wolfe Street to southbound Alfred Street, on-street parking along Alfred Street should be restricted within 50 feet of the intersection.

### **Parking Management Plan**

The church currently utilizes an extensive parking management plan in order to accommodate parking demands on typical Sundays. These measures include traffic control personnel at key intersections, agreements for additional off-street parking, and shuttle service provided to the off-site parking facilities and metro. Church administration frequently updates parishioners of available parking and shuttle services in order to most effectively circulate traffic during peak service times. A non-auto reduction of 10 percent was used for the future trip generation calculations, and is assumed to increase as the church continues to grow.

As shown on Table 8-1, the off-site parking facilities would provide for 190 additional spaces, or a combined total of 648 parking spaces. The proposed parking supply is 215 more spaces than required by the zoning code. Further, the church has formal agreements for the use of these spaces. Thus, the additional parking provided on-site and use of the off-site parking facilities would adequately accommodate the parking demands of the church.



Table 8-1  
 Alfred Street Baptist Church  
 Existing and Proposed Parking Supply vs. Requirements

<b>Existing</b>		
Seats <sup>(1)</sup>	920	seats
Parking Requirement at 1 space / 5 seats <sup>(2)</sup>	184	spaces
On-Site Parking Provided <sup>(3)</sup>	292	spaces
<i>Difference</i>	<i>+108</i>	<i>spaces</i>
<b>Proposed</b>		
Seats <sup>(1)</sup>	2,163	seats
Parking Requirement at 1 space / 5 seats <sup>(2)</sup>	433	spaces
On-Site Parking Provided	<u>458</u>	spaces
<i>Difference</i>	<i>+25</i>	<i>spaces</i>
<b>Percent Over</b>	<b>5.77%</b>	
<b>Additional Off-Street Parking Supply</b>		
Coal Lot	40	spaces
117 N. Alfred Street	<u>150</u>	spaces
<i>Total Additional Off-Site Parking</i>	<i>190</i>	<i>spaces</i>
<b>Total Off-Street Proposed Supply (On and Off Site)</b>	<b>648</b>	<b>spaces</b>
<b>Surplus Parking Supply</b>	<b>215</b>	<b>spaces</b>

(1) Seating number includes chapel seating separated from the main sanctuary.

(2) Zoning Ordinance Section 8-200

(3) Includes additional parking made addition for Tuesday night activities and Sunday services.







	<b>2 HOUR PAY PARKING</b> <b>MON - SAT, 8 AM - 9 PM</b>
	<b>2 HOUR PARKING, RESTRICTIONS APPLY, DAILY 8 AM - 2 AM,</b> <b>SUN 11 AM - MON 2 AM, HOLDERS OF DIST. 1 RES PERMITS EXEMPTS, \$40 FINE</b>
	<b>2 HOUR PARKING</b> <b>MON - SAT, 8 AM - 5 PM</b>
	<b>3 HOUR PARKING</b> <b>8 AM - 5 PM, MON - FRI, EXCEPT HOLDERS OF DIST 4 PERMITS</b>
	<b>2 HOUR PARKING, 8 AM - 11 PM, MON -SAT</b> <b>EXCEPT HOLDERS OF DIST 4 PERMITS</b>
	<b>NO PARKING, EXCEPT SUNDAY</b> <b>7:30 AM - 9 PM</b>
	<b>3 HOUR PARKING</b> <b>MON - FRI, 8 AM - 5 PM</b>
	<b>3 HOUR PAY PARKING</b> <b>MON - SAT, 8 AM - 9 PM</b>
	<b>2 HOUR PARKING MON - FRI, 8 AM - 11 PM</b> <b>EXCEPT HOLDERS OF DIST. 4 PERMITS</b>
	<b>2 HOUR PARKING</b> <b>MON - FRI, 9 AM - 5 PM</b>
	<b>2 HOUR PARKING, 8 AM - 11 PM, MON - SAT,</b> <b>11 AM - 11 PM SUN, EXCEPT DIST. 4 PERMIT</b>
	<b>2 HOUR PARKING, 8 AM - 11 PM, MON - SAT</b> <b>EXCEPT HOLDERS OF DIST. 4 PERMITS</b>
	<b>2 HOUR PARKING</b> <b>9 AM - 5 PM, MON - FRI, EXCEPT HOLIDAYS</b>
	<b>2 HOUR PAID PARKING, MON - FRI, 8 AM - 4 PM, 6 PM - 9 PM,</b> <b>SAT 8 AM - 9 PM</b>

Figure 8-10E  
On-Street Parking Restrictions - Legends

Alfred Street Baptist Church  
City of Alexandria





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Figure 8-1  
On-Street Parking Restrictions

Alfred Street Baptist Church  
City of Alexandria





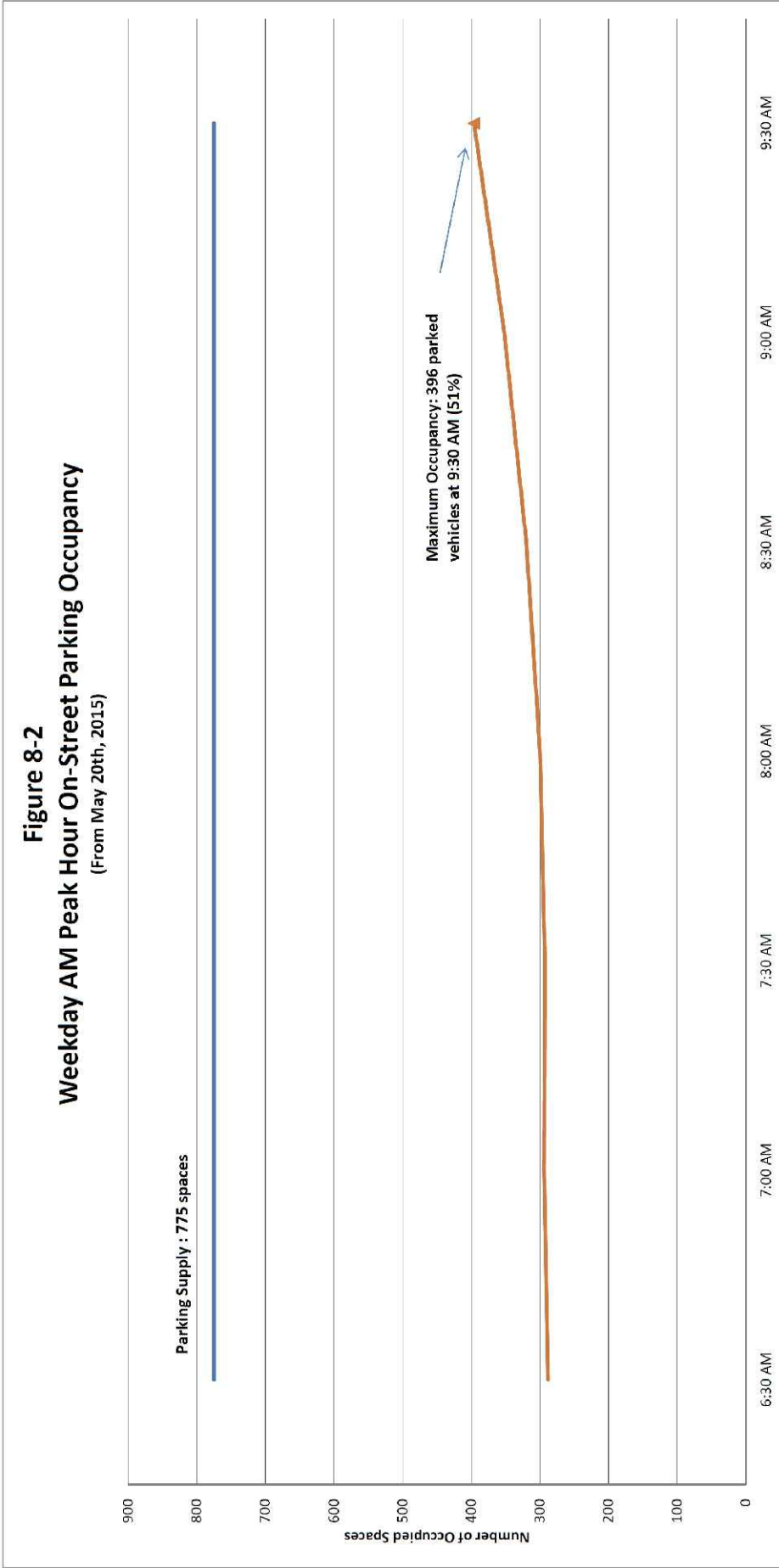


Figure 8-2  
Weekday AM Peak Hour On-Street Parking Occupancy

Alfred Street Baptist Church  
City of Alexandria, Virginia





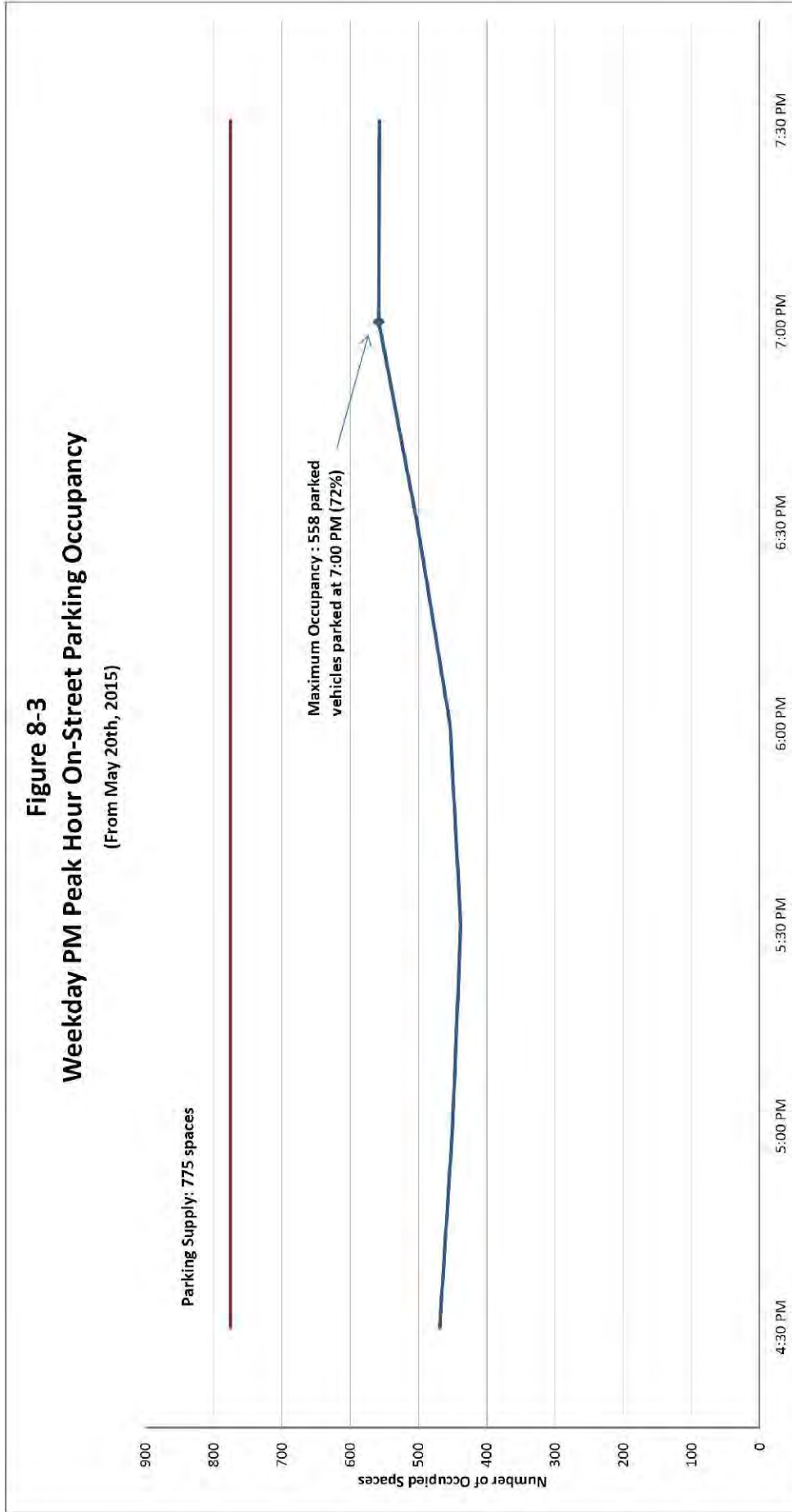


Figure 8-3  
Weekday PM Peak Hour On-Street Parking Occupancy

Alfred Street Baptist Church  
City of Alexandria, Virginia



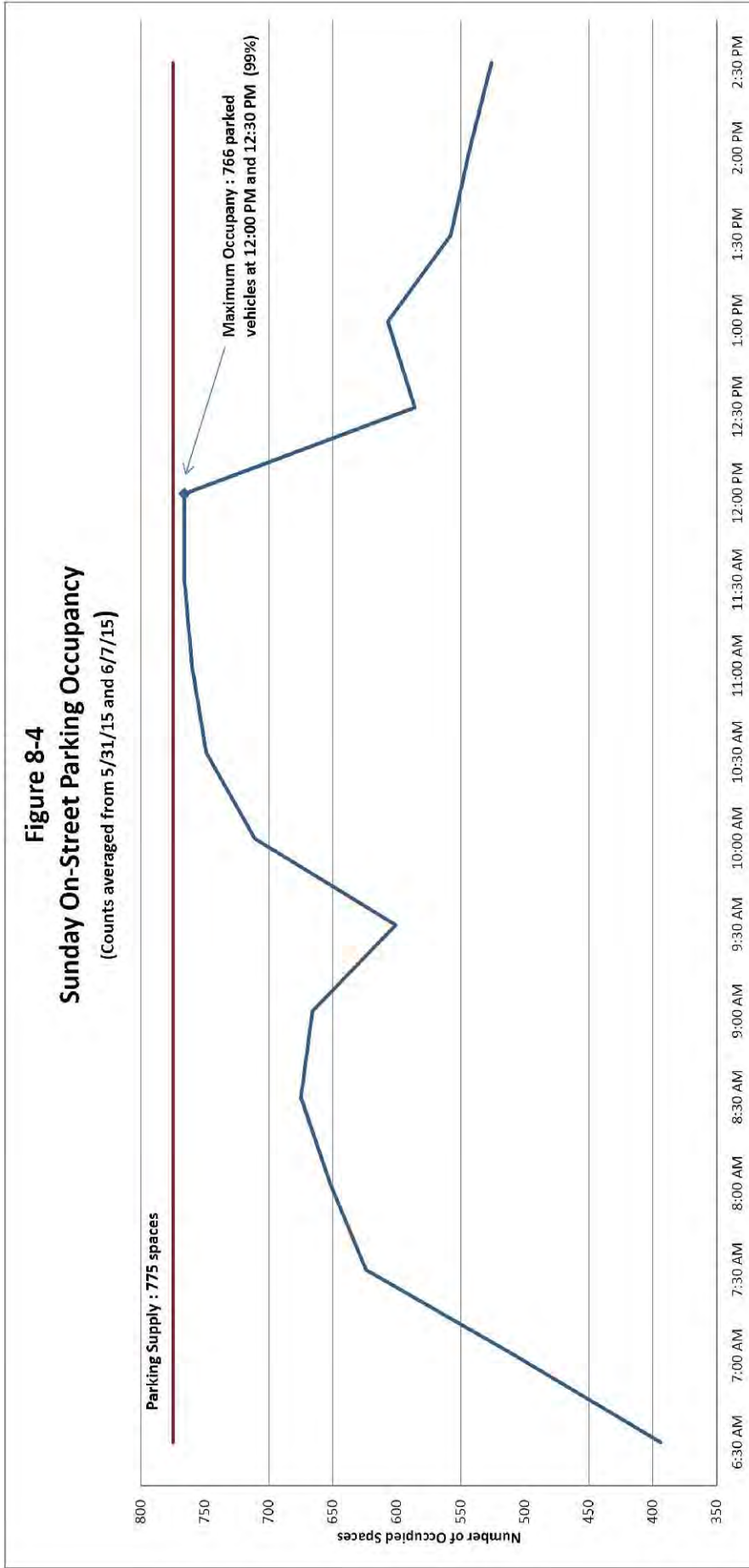
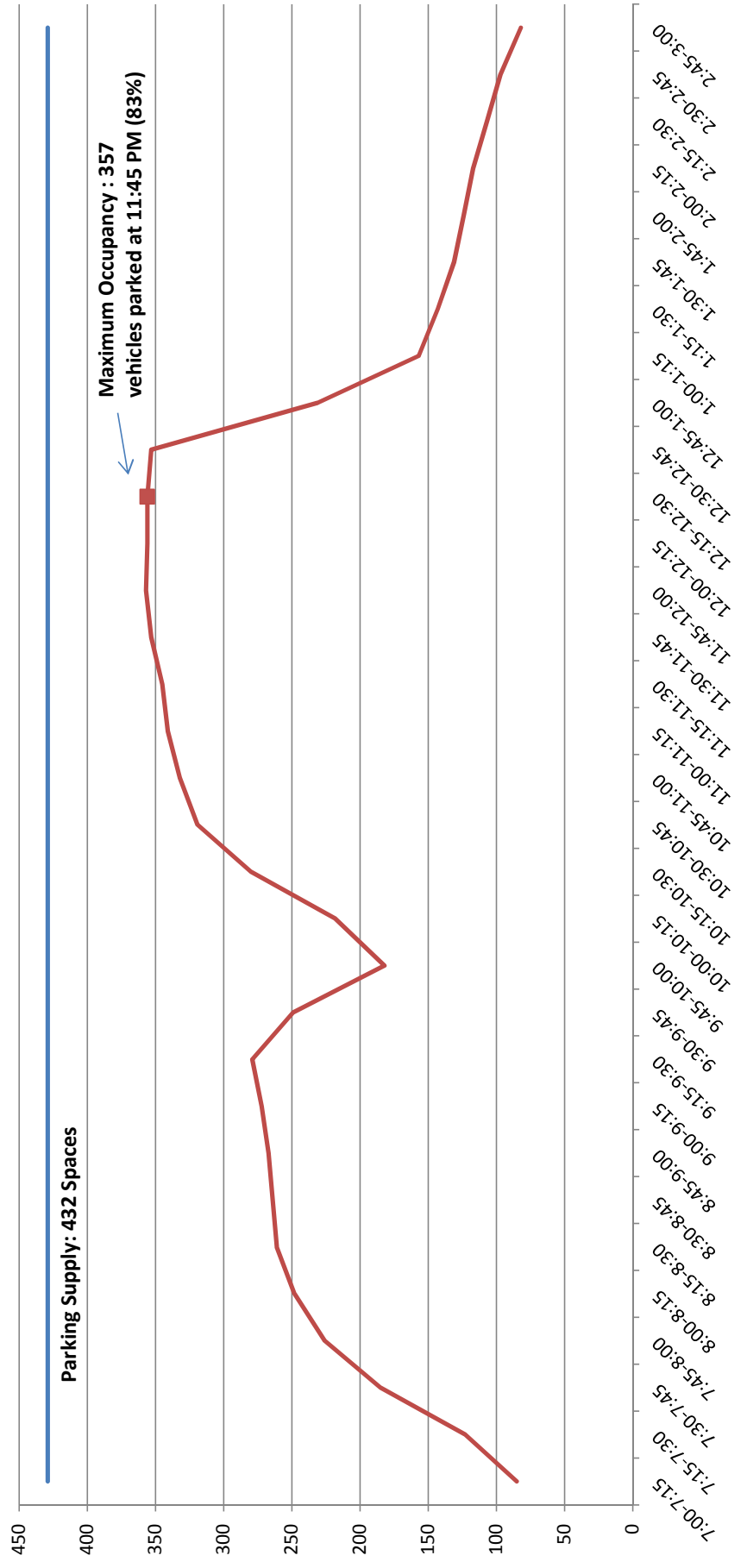


Figure 8-4  
Sunday Peak Hour On-Street Parking Occupancy

Allred Street Baptist Church  
City of Alexandria, Virginia



**Figure 8-5**  
**Sunday Off-Street Parking Occupancy**  
 (Counts averaged from 5/31/15 and 6/7/15)





## SECTION 9 CONCLUSIONS AND RECOMMENDATIONS

The conclusions of this traffic impact study are as follows:

1. The 15 signalized study intersections currently operate at overall acceptable levels of service (LOS “D” or better) during the weekday AM, weekday PM and Sunday midday peak periods with the exception of Henry Street/King Street (weekday PM peak), Patrick Street/King Street (weekday AM peak), and Washington Street/Duke Street (weekday AM peak) which operate at LOS “E”. Some minor street approaches at these intersections operate at LOS “E” or “F” during the AM, PM, and/or Sunday peak periods, this is in part due to long cycle lengths and the majority of time being allocated to mainline U.S. Route 1 (Henry Street and Patrick Street). All of the approaches at the stop controlled intersections currently operate at acceptable levels of service with minimal delay.
2. The results for 2022 conditions without development are generally consistent with those identified under existing conditions. The signalized intersections on Washington Street and U.S. Route 1 would continue to experience peak hour, peak direction congestion. The approaches at the stop controlled intersections would continue to operate at acceptable levels of service during peak periods with minimal delay.
3. The Alfred Street Baptist Church project (232,368 GSF Church with 2,163 seats) is expected to generate an additional 23 weekday AM peak hour trips, 5 weekday PM peak hour trips, 396 Sunday peak hour trips, 444 weekday daily (24-hour) trips, and 1,261 Sunday (24-hour) trips upon completion and full occupancy by 2022. These estimates account for a 10 percent non-auto mode split reduction. The non-auto mode split is related to the bus route that runs directly past the church’s main entrance and the existing shuttle service to the King Street Metrorail Station.
4. The results of the 2022 conditions with development indicate that the redevelopment of the site would have only a minor impact on overall delays at the study intersections. At all signalized study intersections, the overall delay would have a net increase of four (4) seconds or less with addition of site generated traffic when compared to future conditions without development during peak periods. Approaches at the stop controlled intersections would realize little or no increase (less than five (5) seconds) in delay with the proposed development when compared to future conditions without development. Given the magnitude of regional traffic along U.S. Route 1 and Washington Street, and the minimal site impact, no vehicular geometric improvements are recommended at the study intersections.
5. The Applicant exceeds the parking requirement of 433 spaces with 458 proposed on-site parking spaces. Additional off-site parking and shuttle service is also offered during service periods and will continue to be offered after the expansion.



6. The church is exempt from providing a formal Transportation Management Plan (TMP). However, the church provides an extensive traffic and parking program for typical Sundays. The plan includes traffic control personnel at key intersections, agreements for additional off-street parking, and shuttle service provided to the off-site parking facilities and metro. Church administration frequently updates parishioners of available parking and shuttle services in order to most effectively circulate traffic during peak service times. The continued use of this program would help increase the non-auto mode share and reduce traffic and parking impacts.
7. A traffic signal is not recommended on the slip ramp from southbound S. Henry Street to northbound S. Patrick Street to assist motorists wanting to ingress the proposed parking garage on the east side of Patrick Street opposite the Alexandria Gateway garage. Signage or police assistance could be implemented on Sundays to either restrict or assist in this maneuver.
8. During Sunday peak periods, vehicles on eastbound Wolfe Street could be restricted from turning left onto S. Alfred Street to reduce conflict with the pick-up and drop-off area to the north at the main entrance to the facilities.
9. A layby lane on Alfred Street of approximately 91 feet should be provided to allow for vehicles to Drop-off and pick-up passengers. The existing parking area along the south side of Duke Street between S. Patrick Street and S. Alfred Street is recommended as additional layby lane on Sunday. These measures will allow for overall improvement in traffic flow in the area.
10. To allow greater space for vehicles to execute a right-turn maneuver from eastbound Wolfe Street to southbound Alfred Street, on-street parking along Alfred Street should be restricted within 50 feet of the intersection. During the Sunday peak periods, vehicles on eastbound Wolfe Street should be restricted from turning left onto Alfred Street to reduced conflicts within the drop-off/pick-up area at the church. These measures will enhance traffic flow operations at this intersection.

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





City of Alexandria  
Transportation Screening Worksheet

Date: 6/25/15

Project Name: Alfred St. Baptist Church

Property Address (include vicinity map): bound by Duke St., S. Alfred St., Wolfe St., and Patrick St.

Application # if available:

Point of contact name: Larry Sefcik, Wells + Associates

Phone: 703-917-6620 (Wells + Associates)

Email: lesefcik@mjwells.com

Existing uses	No. of units	Square feet
Use 1: Church	48,350	SF
	1,208	Seats
Use 3:		
Use 4:		

Proposed uses	No. of units	Units
Use 1: Church	173,250	SF
	1,910	Seats
Use 3:	-	0
Use 5:	-	0

**Project Description:**

The addition of a new 1,910 seat worship facility, parking structure, and renovation of the existing church building.

Trip Generation			AM Peak Hour			PM Peak Hour			Other Peak Hour*			Weekday	Sunday
	ITE Code	DU/SF	In	Out	Total	In	Out	Total	In	Out	Total	ADT	ADT
<b>Existing Uses</b>													
1: Church (SF)	560	48,350	15	12	27	12	10	22				441	
1: Church (Seats)	560	1,208							369	369	737		2,235
3: Townhomes		22	3	12	15	11	6	17	27	28	55	172	106
<b>Total Existing Trips</b>			<b>18</b>	<b>24</b>	<b>42</b>	<b>23</b>	<b>16</b>	<b>39</b>	<b>396</b>	<b>397</b>	<b>792</b>	<b>613</b>	<b>2,341</b>
<b>Proposed uses</b>													
1: Church (SF)	560	173,250	53	44	97	35	29	64				1,579	
1: Church (Seats)		1,910							583	583	1,166		3,534
Non-Auto Reduction 10%:			(5)	(4)	(10)	(4)	(3)	(6)	(58)	(58)	(117)	(158)	(353)
<b>Total Proposed Trips</b>			<b>48</b>	<b>40</b>	<b>87</b>	<b>31</b>	<b>26</b>	<b>58</b>	<b>525</b>	<b>525</b>	<b>1,049</b>	<b>1,421</b>	<b>3,181</b>
<b>Net New Site Trips</b>			<b>30</b>	<b>16</b>	<b>45</b>	<b>8</b>	<b>10</b>	<b>19</b>	<b>130</b>	<b>129</b>	<b>257</b>	<b>808</b>	<b>840</b>

City staff is available to assist in calculating trip generation.

(1) Trip generation calculations based on Institute of Transportation Engineers (ITE) Trip Generation, 9th Edition.

**Administrative Use Only**

Reviewed by:	Date:			
TMP Required	None	Tier 1	Tier 2	Tier 3
Study Required	None	Report		

City of Alexandria  
Transportation Scoping Intake Form

Date: 6/25/15

Project Name: Alfred St. Baptist Church

Property Address (include vicinity map): bound by Duke St., S. Alfred St., Wolfe St., and Patrick St.

Application # if available:

Point of contact name: Larry Sefcik, Wells + Associates

Phone: 703-917-6620 (Wells + Associates)

Email: lesefcik@mjwells.com

Existing uses	No. of Units	Units	Proposed uses	No. of Units	Units
Use 1: Church	48,350	SF	Use 1: Church	173,250	SF
Use 1: Church	1,208	Seats	Use 1: Church	1,910	Seats
Use 2: Townhomes	22	DU			

Project Description:  
The addition of a new 1,910 seat worship facility, parking structure, and renovation of the existing church building.  
Current number of seats in main room is 860 seats, but peak church attendance was recorded as 1,208 seats and used overflow seating.

Trip Generation	ITE Code	DU/SF	AM Peak Hour			PM Peak Hour			Sunday Peak Hour			Weekday ADT	Sunday ADT
			In	Out	Total	In	Out	Total	In	Out	Total		
<b>Existing Uses</b>													
1: Church (SF)	560	48,350	15	12	27	12	10	22				441	
1: Church (Seats)	560	1,208							369	369	737		2,235
2. Townhomes		22	3	12	15	11	6	17	27	28	55	172	106
<b>Total Existing Trips</b>			<b>18</b>	<b>24</b>	<b>42</b>	<b>23</b>	<b>16</b>	<b>39</b>	<b>396</b>	<b>397</b>	<b>792</b>	<b>613</b>	<b>2,341</b>
<b>Proposed uses</b>													
1: Church (SF)	560	173,250	53	44	97	35	29	64				1,579	
1: Church (Seats)		1,910							583	583	1,166		3,534
	Non-Auto Reduction 10%:		(5)	(4)	(10)	(4)	(3)	(6)	(58)	(58)	(117)	(158)	(353)
<b>Total Proposed Trips</b>			<b>48</b>	<b>40</b>	<b>87</b>	<b>31</b>	<b>26</b>	<b>58</b>	<b>525</b>	<b>525</b>	<b>1,049</b>	<b>1,421</b>	<b>3,181</b>
<b>Net New Site Trips</b>			<b>30</b>	<b>16</b>	<b>45</b>	<b>8</b>	<b>10</b>	<b>19</b>	<b>130</b>	<b>129</b>	<b>257</b>	<b>808</b>	<b>840</b>

Horizon Years                      Existing Year: 2015                      Build Out Year: 2022                      Design Year: 2028

Proposed Study Area                      North: Duke Street                      East: S. Patrick Street

Boundaries (Attach map)                      South: Wolfe Street                      West: S. Alfred Street

Study Intersections: <sup>(3)</sup>

- |                           |                               |  |                                 |
|---------------------------|-------------------------------|--|---------------------------------|
| 1. Cameron St./Alfred St. | 5. Washington St./King Street | 9. S. Patrick St./Duke St.                               | 14. Alfred St./Wolfe St.        |
| 2. Henry St./King St.     | 6. S. Henry St./Prince St.    | 10. Alfred St./Duke St.                                  | 15. S. Patrick St./Gibbon St.   |
| 3. Patrick St./King St.   | 7. Alfred St./Prince St.      | 11. S. Columbus St./Duke St.                             | 16. Alfred St./Gibbon St.       |
| 4. Alfred St./King St.    | 8. S. Henry St./Duke St.      | 12. S. Washington St./Duke St.                           | 17. S. Patrick St./Franklin St. |
|                           |                               | 13. Turning Movement from S. Henry St./S. Patrick Street | 18. 4 Site Driveways (P1-P4)    |



City of Alexandria  
Transportation Scoping Intake Form

Background Development Projects

- 1. An established 0.5%/year growth rate, based on AADT Volumes provided by VDOT for the most recent 5 year period.
- 2. 220 South Union
- 3. Robinson Terminal

Roadway Improvements

- 1. None
- 2.
- 3.
- 4.

Trip Distribution (attach a map)

North:	30%	(to/from Washington St.)	South:	10%	(to/from Washington St.)
North:	5%	(to/from N. Patrick St.)	East:	5%	(to/from Duke Street)
South:	40%	(to/from Rt 1-Richmond Hwy)	West:	10%	(to/from Duke Street)

Proposed Access Points (attach site map)

Annual Growth Rate: 0.5% \*See Tables 1-4

Methodology to be used: Synchro

Trip Reduction

Modal split/transit: 10% reduction

Internal capture: No

Pass-by trips: No

Parking: <sup>(3)</sup>

Proposed parking spaces to be provided: 742 Spaces Including all satellite lots with shuttle. (416 on site parking spaces including proposed garage and garage across S. Patrick St.)

Parking spaces required by Code: 435

Is a parking modification requested?

Yes

TMP category based on project size

TMP options available

Note: TMP not required for this study.

Tier 1

Join Citywide TDM Program - As directed by City Staff

Tier 2

Partner with adjacent TMPs or join Citywide TDM Program

Tier 3

Create stand-alone TMP or partner with adjacent TMPs

Additional Studies Required

Signal Warrant Analysis

Queuing Analysis

Signal Timing/Phasing Improvements

Parking Study <sup>(2)</sup>

Other

Notes:

- 1. The 1/2 mile pedestrian and bicycle study area is also shown on Figure 1.
- 2. A parking study will be conducted for a two block radius as shown in Figure 2 during a weekday Pm and on two Sundays.
- 3. Parking and traffic counts will be taken on the weekdays from 6:30AM-9:30AM and 4:30PM-7:30PM and Sundays from 7:00AM-3:00PM

PPRant  
City Staff Signature

6/26/15  
Date

L. E. [Signature]  
Applicant Signature

6/25/2015  
Date

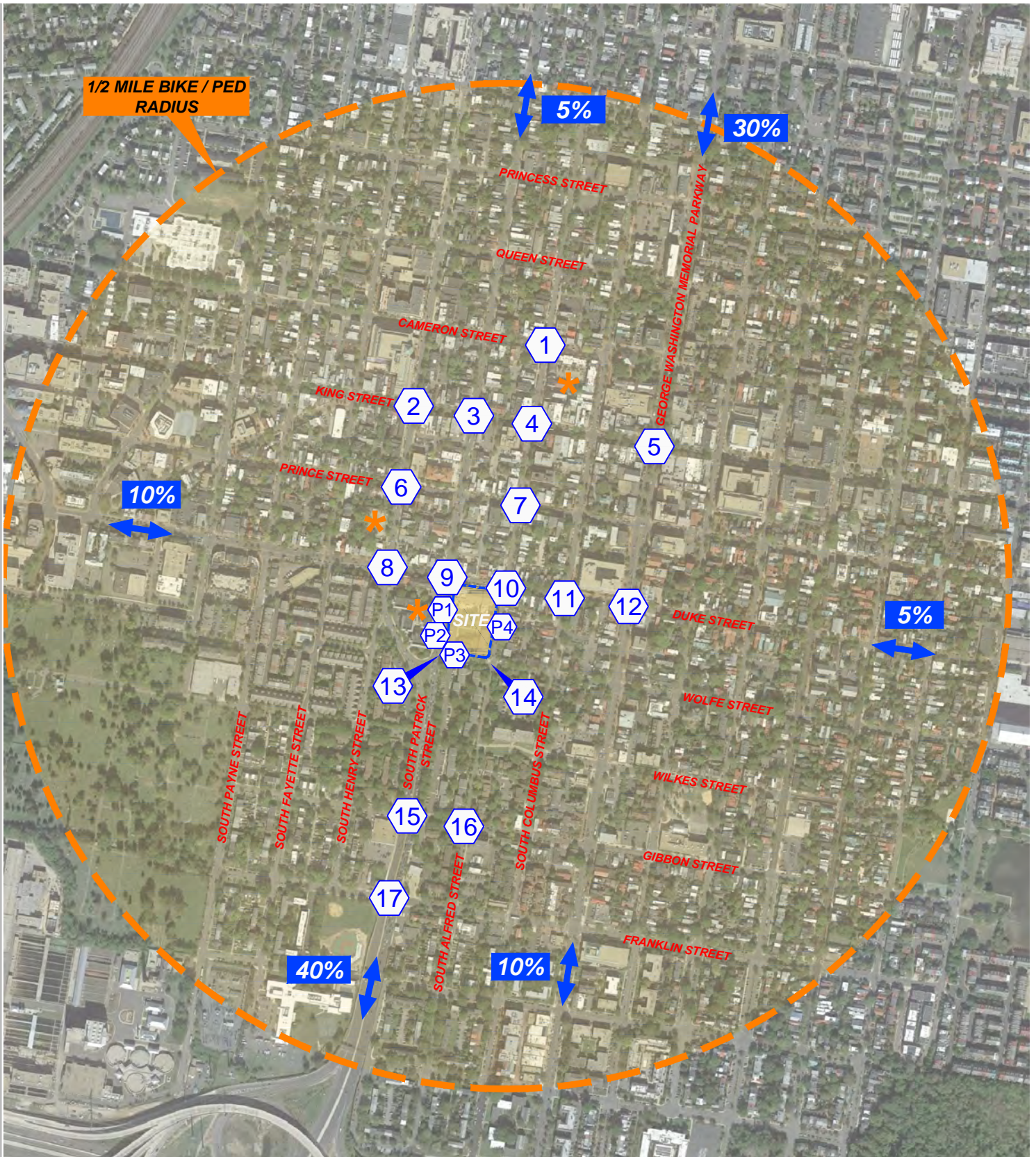





Figure 1  
Study Intersection and Directional Distribution

Alfred Baptist Church  
City of Alexandria

-  Parking Area
-  Study Intersection
-  Directional Distribution





JCP



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Figure 2  
On-Street Parking Inventory

Alfred Baptist Church  
City of Alexandria

On-Street Parking





Tables 1-4

Growth Rate\*

Year	Patrick St. Wilkes St, US 1 Par - King St.		
	Volume	Difference	% change
2010	27000		
		-1000	-3.7%
2011	26000		
		2000	7.7%
2012	28000		
		0	0.0%
2013	28000		
		-1000	-3.6%
2014	27000		
		% change per year 0.104%	

\* AADT volumes obtained from VDOT [lastest 5-year data available]

Growth Rate\*

Year	Duke St. (US 1 SB Henry St - SR 400 Washington St.)		
	Volume	Difference	% change
2010	12000		
		0	0.0%
2011	12000		
		-2100	-17.5%
2012	9900		
		0	0.0%
2013	9900		
		-300	-3.0%
2014	9600		
		% change per year -5.133%	

\* AADT volumes obtained from VDOT [lastest 5-year data available]

Growth Rate\*

Year	King St. (West St. - Washington St.)		
	Volume	Difference	% change
2010	8100		
		-200	-2.5%
2011	7900		
		-400	-5.1%
2012	7500		
		300	4.0%
2013	7800		
		-300	-3.8%
2014	7500		
		% change per year -1.845%	

\* AADT volumes obtained from VDOT [lastest 5-year data available]

Growth Rate\*

Year	Washington St. (SR 236 Duke St - Queen St.)		
	Volume	Difference	% change
2010	29000		
		0	0.0%
2011	29000		
		0	0.0%
2012	29000		
		0	0.0%
2013	29000		
		-1000	-3.4%
2014	28000		
		% change per year -0.862%	

\* AADT volumes obtained from VDOT [lastest 5-year data available]

**APPENDIX B**  
**EXISTING TRAFFIC COUNTS**





# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - Bicycles

Time Period	Southbound			Northbound			Eastbound			Westbound			North & South		East & West	Total
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru		
<b>AM 15 Minute Volumes</b>																
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>AM One Hour Volumes</b>																
6:30 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>PM 15 Minute Volumes</b>																
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM - 7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>PM One Hour Volumes</b>																
4:30 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

# Wells + Associates, Inc.

McLean, Virginia

## Pedestrian Volume Survey

Time Period	Southbound		Northbound		Eastbound		Westbound		North & South		East & West	Total
	Right	Thru	Right	Thru	Right	Thru	Right	Thru	Right	Thru		
<b>AM 15 Minute Volumes</b>												
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0
<b>AM One Hour Volumes</b>												
6:30 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0
<b>PM 15 Minute Volumes</b>												
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM - 7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0
<b>PM One Hour Volumes</b>												
4:30 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0







# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - Bicycles

Time Period	Southbound North Henry Street - 1			Northbound South Henry Street - 1			Eastbound King Street - 7			Westbound King Street - 7			North & South		Total
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	
<b>AM 15 Minute Volumes</b>															
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>AM One Hour Volumes</b>															
6:30 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>PM 15 Minute Volumes</b>															
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM - 7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>PM One Hour Volumes</b>															
4:30 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

# Wells + Associates, Inc.

McLean, Virginia

## Pedestrian Volume Survey

Time Period	Southbound King Street - 7			Northbound King Street - 7			Eastbound North Henry Street - 1			Westbound South Henry Street - 1			North		Total
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	
<b>AM 15 Minute Volumes</b>															
6:30 AM - 6:45 AM	4	1	0	3	10	1	2	0	0	0	0	0	0	0	
6:45 AM - 7:00 AM	7	6	1	10	4	2	0	0	0	0	0	0	0	0	
7:00 AM - 7:15 AM	8	8	1	11	7	1	0	0	0	0	0	0	0	0	
7:15 AM - 7:30 AM	8	7	1	4	8	1	0	0	0	0	0	0	0	0	
7:30 AM - 7:45 AM	3	4	1	7	1	1	0	0	0	0	0	0	0	0	
7:45 AM - 8:00 AM	9	12	0	7	16	2	0	0	0	0	0	0	0	0	
8:00 AM - 8:15 AM	10	8	0	11	15	3	0	0	0	0	0	0	0	0	
8:15 AM - 8:30 AM	10	11	3	11	11	4	0	0	0	0	0	0	0	0	
8:30 AM - 8:45 AM	9	22	2	13	15	1	0	0	0	0	0	0	0	0	
8:45 AM - 9:00 AM	10	23	2	7	23	2	0	0	0	0	0	0	0	0	
9:00 AM - 9:15 AM	8	15	4	2	6	16	5	0	0	0	0	0	0	0	
9:15 AM - 9:30 AM	7	19	2	7	11	2	0	0	0	0	0	0	0	0	
<b>Total</b>	93	136	14	4	87	143	17	16	0	0	0	0	0		
<b>AM One Hour Volumes</b>															
6:30 AM - 7:30 AM	27	22	2	1	28	29	4	4	0	0	0	0	0		
7:30 AM - 8:30 AM	26	25	3	1	25	26	4	3	0	0	0	0	0		
8:30 AM - 9:30 AM	28	31	2	1	22	38	4	5	0	0	0	0	0		
<b>Total</b>	30	31	1	1	19	46	6	4	0	0	0	0	0		
<b>PM 15 Minute Volumes</b>															
4:30 PM - 4:45 PM	32	35	4	0	26	49	0	5	67	4	75	15	161		
4:45 PM - 5:00 PM	38	53	3	1	39	57	10	4	91	4	96	14	205		
5:00 PM - 5:15 PM	39	64	5	1	39	64	8	4	103	6	103	12	224		
5:15 PM - 5:30 PM	37	71	9	3	37	65	5	9	108	12	102	14	236		
5:30 PM - 5:45 PM	34	79	8	3	33	65	3	7	113	11	98	10	232		
5:45 PM - 6:00 PM	14	10	2	1	14	22	4	3	0	0	0	0	0		
6:00 PM - 6:15 PM	15	7	1	0	27	42	3	9	0	0	0	0	0		
6:15 PM - 6:30 PM	19	17	3	0	25	37	7	7	0	0	0	0	0		
6:30 PM - 6:45 PM	24	22	1	1	25	44	4	11	0	0	0	0	0		
6:45 PM - 7:00 PM	15	30	0	1	24	31	10	4	0	0	0	0	0		
7:00 PM - 7:15 PM	33	24	4	4	41	53	2	4	0	0	0	0	0		
7:15 PM - 7:30 PM	34	32	1	5	44	50	5	4	0	0	0	0	0		
7:30 PM - 7:45 PM	26	35	7	22	58	8	3	0	0	0	0	0	0		
7:45 PM - 8:00 PM	56	36	1	1	31	54	6	13	0	0	0	0	0		
8:00 PM - 8:15 PM	24	39	4	1	31	36	20	6	0	0	0	0	0		
8:15 PM - 8:30 PM	28	27	2	5	32	50	6	9	0	0	0	0	0		
8:30 PM - 8:45 PM	17	39	1	3	13	44	2	3	0	0	0	0	0		
<b>Total</b>	305	318	20	25	329	521	77	76	0	0	0	0	0		
<b>PM One Hour Volumes</b>															
4:30 PM - 5:30 PM	72	56	7	2	91	145	18	30	128	9	236	48	421		
5:30 PM - 6:30 PM	73	76	5	2	101	154	24	31	149	7	255	55	466		
6:30 PM - 7:30 PM	91	93	2	115	165	23	26	184	10	280	49	523			
7:30 PM - 8:30 PM	106	108	6	7	134	178	21	23	214	13	312	44	583		
8:30 PM - 9:30 PM	108	121	5	13	131	192	25	15	229	18	323	40	610		
9:30 PM - 10:30 PM	149	127	6	13	138	215	21	24	276	19	353	45	683		
10:30 PM - 11:30 PM	140	142	6	14	128	198	39	26	282	20	326	65	693		
11:30 PM - 12:30 AM	134	137	7	14	116	198	40	31	271	11	314	71	677		
<b>Total</b>	125	141	8	10	107	184	34	31	266	18	291	65	640		

Wells + Associates, Inc.  
McLean, Virginia

Pedestrian Volume Survey

PROJECT: Allied St. Baptist Church  
 W. A. 308 S. 1st St.  
 INTERSECTION: King St. & N. Henry St.  
 LOCATION: City of Alexandria, VA

DATE: 5/1/2015  
 WEATHER: clear  
 COUNTED BY: Geraldin  
 INPUT BY: agan

North Henry Street  
 King Street  
 King Street  
 North  
 South Henry Street

Time Period	1	2	3	4	5	6	7	8	1+2	3+4	5+6	7+8	Total
15 Minute Volumes	5	1	2	4	4	4	4	4					
7:00 AM - 7:15 AM	5	1	2	4	4	4	4	4					
7:15 AM - 7:30 AM	3	8	2	4	7	1	1	1					
7:30 AM - 7:45 AM	3	8	2	4	7	1	1	1					
7:45 AM - 8:00 AM	4	13	2	3	8	2	1	1					
8:00 AM - 8:15 AM	8	3	3	8	2	1	1	1					
8:15 AM - 8:30 AM	14	8	2	10	9	2	1	1					
8:30 AM - 8:45 AM	24	24	2	18	38	1	2	2					
8:45 AM - 9:00 AM	13	17	5	15	23	3	1	1					
9:00 AM - 9:15 AM	13	17	5	15	23	3	1	1					
9:15 AM - 9:30 AM	7	15	2	7	14	23	1	1					
9:30 AM - 9:45 AM	8	25	1	3	15	38	3	1					
9:45 AM - 10:00 AM	9	25	1	3	15	38	3	1					
10:00 AM - 10:15 AM	15	8	3	8	4	40	2	2					
10:15 AM - 10:30 AM	13	8	3	8	4	40	2	2					
10:30 AM - 10:45 AM	21	14	4	4	20	26	2	4					
10:45 AM - 11:00 AM	21	14	4	4	20	26	2	4					
11:00 AM - 11:15 AM	34	23	2	21	18	39	4	5					
11:15 AM - 11:30 AM	34	23	2	21	18	39	4	5					
11:30 AM - 11:45 AM	11	16	3	5	26	56	4	3					
11:45 AM - 12:00 PM	15	22	1	8	22	57	8	17					
12:00 PM - 12:15 PM	19	20	2	3	28	53	8	2					
12:15 PM - 12:30 PM	14	19	4	7	23	50	10	10					
12:30 PM - 12:45 PM	15	15	1	15	21	41	7	8					
12:45 PM - 1:00 PM	15	13	1	15	21	41	7	8					
1:00 PM - 1:15 PM	29	15	4	15	47	49	6	7					
1:15 PM - 1:30 PM	29	16	5	16	36	48	2	2					
1:30 PM - 1:45 PM	21	7	5	4	24	63	4	2					
1:45 PM - 2:00 PM	30	25	1	13	36	36	2	10					
2:00 PM - 2:15 PM	30	25	1	13	36	36	2	10					
2:15 PM - 2:30 PM	33	33	9	10	81	68	3	10					
2:30 PM - 2:45 PM	33	33	9	10	81	68	3	10					
2:45 PM - 3:00 PM	27	15	11	8	49	37	6	7					
One Hour Volumes	232	295	104	179	754	1126	108	138					
7:00 AM - 8:00 AM	12	29	4	8	23	2	2	4					
7:15 AM - 8:15 AM	15	31	2	7	25	4	2	4					
7:30 AM - 8:30 AM	29	34	2	17	23	4	2	4					
7:45 AM - 8:45 AM	29	34	2	17	23	4	2	4					
8:00 AM - 9:00 AM	49	45	4	35	58	3	6	4					
8:15 AM - 9:15 AM	60	59	5	50	75	4	7	10					
8:30 AM - 9:30 AM	107	77	7	13	60	66	5	13					
8:45 AM - 9:45 AM	38	78	8	14	95	86	7	11					
9:00 AM - 10:00 AM	46	65	6	18	94	106	5	12					
9:15 AM - 10:15 AM	60	64	4	15	90	121	8	12					
9:30 AM - 10:30 AM	61	59	5	33	95	122	9	18					
9:45 AM - 10:45 AM	76	73	9	31	82	173	12	14					
10:00 AM - 11:00 AM	70	81	10	35	84	204	16	27					
10:15 AM - 11:15 AM	85	68	12	17	96	192	22	31					
11:00 AM - 12:00 PM	56	72	13	19	92	186	40	40					
11:15 AM - 12:15 PM	51	70	23	17	81	190	37	31					
12:00 PM - 1:00 PM	88	67	25	41	171	211	30	25					
12:15 PM - 1:15 PM	102	64	26	50	184	209	16	20					
12:30 PM - 1:30 PM	96	46	20	40	130	204	15	14					
1:00 PM - 2:00 PM	98	95	17	38	141	211	10	23					
1:15 PM - 2:15 PM	97	73	22	32	106	231	11	34					
1:30 PM - 2:30 PM	109	101	27	40	150	242	13	34					
2:00 PM - 3:00 PM	119	105	30	35	224	207	16	30					

B-10

McLean, Virginia  
 Turning Movement Count - Bicycles

PROJECT: Allied St. Baptist Church  
 W. A. 308 S. 1st St.  
 INTERSECTION: King St. & N. Henry St.  
 LOCATION: City of Alexandria, VA

DATE: 5/1/2015  
 WEATHER: clear  
 COUNTED BY: Geraldin  
 INPUT BY: agan

Southbound  
 Northbound  
 Southbound  
 Northbound

Time Period	Southbound		Northbound		Westbound		Eastbound		Total									
	Right	Left	Right	Left	Right	Left	Right	Left										
15 Minute Volumes	0	3	6	8	33	0	41	1	2	0	3	0	35	0	35	9	77	88
7:00 AM - 7:15 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7:15 AM - 7:30 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7:30 AM - 7:45 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7:45 AM - 8:00 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8:00 AM - 8:15 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8:15 AM - 8:30 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8:30 AM - 8:45 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8:45 AM - 9:00 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9:00 AM - 9:15 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9:15 AM - 9:30 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9:30 AM - 9:45 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9:45 AM - 10:00 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10:00 AM - 10:15 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10:15 AM - 10:30 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10:30 AM - 10:45 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10:45 AM - 11:00 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11:00 AM - 11:15 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11:15 AM - 11:30 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11:30 AM - 11:45 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11:45 AM - 12:00 PM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12:00 PM - 12:15 PM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12:15 PM - 12:30 PM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12:30 PM - 1:00 PM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1:00 PM - 1:15 PM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1:15 PM - 1:30 PM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1:30 PM - 1:45 PM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1:45 PM - 2:00 PM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2:00 PM - 2:15 PM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2:15 PM - 2:30 PM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2:30 PM - 2:45 PM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2:45 PM - 3:00 PM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
One Hour Volumes	0	3	6	8	33	0	41	1	2	0	3	0	35	0	35	9	77	88
7:00 AM - 8:00 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7:15 AM - 8:15 AM	1	1	1	1</														





# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - Bicycles

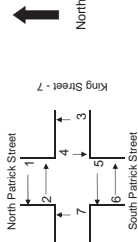
Time Period	Southbound North Patrick Street			Northbound South Patrick Street			Eastbound King Street - 7			Westbound King Street - 7			North & South		Total
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	
<b>AM 15 Minute Volumes</b>															
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
6:45 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
9:00 AM - 9:15 AM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
9:15 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
<b>AM One Hour Volumes</b>															
6:30 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	3	3	3	0	3
7:30 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	6	6	6	0	6
8:30 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	11	11	11	0	11
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	13	13	13	0	13
<b>PM 15 Minute Volumes</b>															
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
6:00 PM - 6:15 PM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
6:15 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
6:30 PM - 6:45 PM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
6:45 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
7:00 PM - 7:15 PM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
7:15 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	11	11	11	0	11
<b>PM One Hour Volumes</b>															
4:30 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	2	2	2	0	2
5:30 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	3	3	3	0	3
6:30 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	6	6	6	0	6
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	6	6	6	0	6

# Wells + Associates, Inc.

McLean, Virginia

## Pedestrian Volume Survey

PROJECT: Alfred St. Baptist Church  
 W-A JOB NO: 6393  
 INTERSECTION: King St. & N. Patrick St.  
 LOCATION: City of Alexandria, VA  
 DATE: 5/19/2015  
 DAY: Tuesday  
 WEATHER: clear  
 COUNTED BY: Gina  
 INPUT BY: agan



Time Period	Movement							Total
	1	2	3	4	5	6	7	
<b>AM 15 Minute Volumes</b>								
6:30 AM - 6:45 AM	5	3	1	5	8	8	1	
6:45 AM - 7:00 AM	8	6	2	4	4	6	1	
7:00 AM - 7:15 AM	6	7	3	13	7	2		
7:15 AM - 7:30 AM	1	9	4	4	8	11	4	
7:30 AM - 7:45 AM	4	7	5	5	2	14	2	
7:45 AM - 8:00 AM	13	16	2	1	5	23	1	
8:00 AM - 8:15 AM	5	9	3	5	8	15	1	
8:15 AM - 8:30 AM	9	12	4	9	15	1		
8:30 AM - 8:45 AM	8	19	3	6	16	26	7	
8:45 AM - 9:00 AM	7	35	7	4	6	30	3	
9:00 AM - 9:15 AM	7	19	2	4	12	20	6	
9:15 AM - 9:30 AM	6	21	5	10	9	21	1	
<b>Total</b>	79	163	37	48	100	196	28	28
<b>AM One Hour Volumes</b>								
6:30 AM - 7:30 AM	20	25	10	9	33	32	8	2
7:30 AM - 8:30 AM	24	39	14	10	28	55	8	7
8:30 AM - 9:30 AM	29	63	23	63	63	112	16	195
9:30 AM - 10:30 AM	31	44	10	15	24	67	3	9
10:30 AM - 11:30 AM	35	56	8	16	38	79	9	11
11:30 AM - 12:30 PM	29	75	13	19	39	86	11	11
12:30 PM - 1:30 PM	31	85	12	18	43	91	16	14
1:30 PM - 2:30 PM	28	94	17	24	43	97	17	18
<b>PM 15 Minute Volumes</b>								
4:30 PM - 4:45 PM	10	17	1	4	27	24	2	9
4:45 PM - 5:00 PM	28	8	2	1	23	48	4	4
5:00 PM - 5:15 PM	27	22	4	4	30	56	6	7
5:15 PM - 5:30 PM	19	14	8	5	24	27	1	4
5:30 PM - 5:45 PM	17	21	8	4	35	42	3	4
5:45 PM - 6:00 PM	35	25	3	10	42	48	6	2
6:00 PM - 6:15 PM	32	23	3	12	48	42	11	8
6:15 PM - 6:30 PM	27	45	10	2	34	60	8	16
6:30 PM - 6:45 PM	47	24	6	4	28	45	4	5
6:45 PM - 7:00 PM	37	42	2	8	31	50	4	6
7:00 PM - 7:15 PM	71	64	7	11	65	85	7	6
7:15 PM - 7:30 PM	30	45	2	7	21	64	10	7
<b>Total</b>	380	350	56	72	408	592	66	76
<b>PM One Hour Volumes</b>								
4:30 PM - 5:30 PM	84	61	15	14	104	156	13	24
5:30 PM - 6:30 PM	91	65	22	14	112	174	14	19
6:30 PM - 7:30 PM	98	82	23	23	117	174	16	17
7:30 PM - 8:30 PM	103	83	22	31	149	159	21	18
8:30 PM - 9:30 PM	111	84	24	28	159	192	28	30
9:30 PM - 10:30 PM	141	117	22	26	152	195	29	31
10:30 PM - 11:30 PM	143	134	21	26	141	197	27	35
11:30 PM - 12:30 AM	182	175	25	25	158	240	23	33
12:30 AM - 1:30 AM	185	175	17	30	145	244	25	24
1:30 AM - 2:30 AM	24	360	47	389	49	845		



**Wells + Associates, Inc.**  
McLean, Virginia

**Turning Movement Count - All Vehicles**

**PROJECT:** Alfred St. Baptist Church  
**WVA JOB NO.:** 6383  
**INTERSECTION:** King St. & N. Patrick St.  
**LOCATION:** City of Alexandria, VA

**DATE:** 5/19/2015  
**DAY:** Tuesday  
**WEATHER:** clear  
**COUNTED BY:** Orel & James  
**INPUT BY:** again

**SOUTHBOUND ROAD:** North Patrick Street  
**NORTHBOUND ROAD:** South Patrick Street  
**WESTBOUND ROAD:** King Street - 7  
**EASTBOUND ROAD:** King Street - 7

Time Period	Southbound				Northbound				Eastbound				Westbound			
	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total
<b>AM 15 Minute Volumes</b>	<b>King Street - 7</b>															
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>AM One Hour Volumes</b>	<b>King Street - 7</b>															
6:30 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM - 11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM - 11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM - 12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM - 12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM - 12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM - 1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM - 1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM - 1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM - 2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM - 2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM - 2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM - 3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>One Hour Volumes</b>	<b>King Street - 7</b>															
7:30 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM - 11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM - 12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM - 1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM - 2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM - 3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM - 4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**Wells + Associates, Inc.**  
McLean, Virginia

**Turning Movement Count - Total Vehicles**

**PROJECT:** Alfred St. Baptist Church  
**WVA JOB NO.:** 6383  
**INTERSECTION:** King St. & N. Patrick St.  
**LOCATION:** City of Alexandria, VA

**DATE:** 5/19/2015  
**DAY:** Tuesday  
**WEATHER:** clear  
**COUNTED BY:** Cami & Friends  
**INPUT BY:** again

**SOUTHBOUND ROAD:** North Patrick Street - 1  
**NORTHBOUND ROAD:** South Patrick Street - 1  
**WESTBOUND ROAD:** King Street  
**EASTBOUND ROAD:** King Street

Time Period	Southbound				Northbound				Eastbound				Westbound			
	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total
<b>15 Minute Volumes</b>	<b>King Street</b>															
6:30 AM - 6:45 AM	1	10	11	22	6	121	6	133	2	11	133	22	152	133	22	155
6:45 AM - 7:00 AM	4	13	17	34	8	122	4	134	28	4	33	32	170	56	226	254
7:00 AM - 7:15 AM	6	18	24	48	15	146	9	170	28	4	32	40	170	56	226	254
7:15 AM - 7:30 AM	2	13	15	30	11	141	7	159	22	3	25	28	159	40	199	200
7:30 AM - 7:45 AM	7	18	25	50	8	133	5	146	33	4	37	40	199	40	239	239
7:45 AM - 8:00 AM	7	18	25	50	8	133	5	146	33	4	37	40	199	40	239	239
8:00 AM - 8:15 AM	7	22	29	58	8	270	2	280	33	4	37	40	199	40	239	239
8:15 AM - 8:30 AM	7	26	33	66	17	153	16	216	36	8	44	48	216	77	293	293
8:30 AM - 8:45 AM	7	26	33	66	17	153	16	216	36	8	44	48	216	77	293	293
8:45 AM - 9:00 AM	7	44	51	102	17	220	15	236	33	11	44	48	236	111	347	347
9:00 AM - 9:15 AM	4	33	37	74	16	238	24	260	38	12	50	54	260	82	342	342
9:15 AM - 9:30 AM	3	47	54	104	9	340	19	368	34	10	44	48	260	82	342	342
9:30 AM - 9:45 AM	3	47	54	104	9	340	19	368	34	10	44	48	260	82	342	342
9:45 AM - 10:00 AM	5	53	58	116	16	351	20	387	37	12	50	54	260	82	342	342
10:00 AM - 10:15 AM	8	53	61	122	23	256	19	288	34	10	44	48	260	82	342	342
10:15 AM - 10:30 AM	9	41	49	99	27	288	26	320	41	14	55	59	320	126	446	446
10:30 AM - 10:45 AM	4	46	50	100	21	286	19	326	40	22	76	80	326	126	452	452
10:45 AM - 11:00 AM	19	50	69	129	24	312	15	351	50	20	100	170	351	169	520	520
11:00 AM - 11:15 AM	15	52	67	134	21	357	17	395	53	20	73	126	395	140	535	535
11:15 AM - 11:30 AM	15	52	67	134	21	357	17	395	53	20	73	126	395	140	535	535
11:30 AM - 11:45 AM	27	40	67	134	50	267	34	324	51	19	70	80	324	157	481	481
11:45 AM - 12:00 PM	27	64	91	182	12	243	31	286	73	19	92	104	286	183	469	469
12:00 PM - 12:15 PM	15	62	77	154	18	336	24	378	63	12	75	81	378	152	530	530
12:15 PM - 12:30 PM	11	64	75	150	16	317	25	358	55	10	65	70	358	140	498	498
12:30 PM - 1:00 PM	11	64	75	150	20	331	22	373	55	10	65	70	373	140	513	513
1:00 PM - 1:15 PM	13	59	72	150	20	336	20	376	71	16	87	97	376	159	535	535
1:15 PM - 1:30 PM	10	60	70	140	27	308	26	359	63	16	79	89	359	149	508	508
1:30 PM - 2:00 PM	12	76	90	178	21	345	26	392	81	18	99	109	392	170	561	561
2:00 PM - 2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	319	1258	1577	2954	627	8679	562	9868	1535	397	1932	2032	9868	3509	13377	13377
<b>One Hour Volumes</b>	<b>King Street</b>															
7:30 AM - 8:15 AM	12	54	66	132	31	434	24	489	32	14	46	52	132	130	262	262
8:15 AM - 9:00 AM	13	59	72	144	38	514	25	577	42	16	58	66	144	176	320	320
9:00 AM - 10:00 AM	16	65	81	162	47	662	25	692	61	18	74	93	162	195	357	357
10:00 AM - 11:00 AM	17	69	86	172	40	617	30	687	50	18	68	78	172	208	380	380
11:00 AM - 12:00 PM	30	90	120	240	60	810	45	855	75	25	100	120	240	270	510	510
12:00 PM - 1:00 PM	30	90	120	240	60	810	45	855	75	25	100	120	240	270	510	510
1:00 PM - 2:00 PM	30	119	149	298	55	806	50	911	61	22	83	105	298	323	621	621
2:00 PM - 3:00 PM	27	130	157	314	63	835	73	1071	78	26	104	130	314	359	673	673
3:00 PM - 4:00 PM	19	150	169	328	54	1170	74	1298	84	19	54	73	328	414	742	742
4:00 PM - 5:00 PM	19	147	166	332	52	1055	69	1176	86	25	76	107	332	401	739	739
5:00 PM - 6:00 PM	19	150	169	328	54	1170	74	1298	84	19	54	73	328	414	742	742
6:00 PM - 7:00 PM	20	170	190	360	54	1221	80	1355	86	24	54	78	360	468	828	828
7:00 PM - 8:00 PM	28	184														



# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - Bicycles

Time Period	Southbound			Northbound			Eastbound			North & South			East & West Total
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
<b>AM 15 Minute Volumes</b>													
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM - 7:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	1	1	0	1	1	0	2	1	3	2	3	5	3
8:15 AM - 8:30 AM	2	1	0	2	1	0	1	1	1	3	1	4	4
8:30 AM - 8:45 AM	2	1	0	2	1	0	3	3	2	5	7	7	7
8:45 AM - 9:00 AM	2	2	1	1	1	1	5	5	2	6	8	8	8
9:00 AM - 9:15 AM	0	1	1	1	1	1	1	1	1	2	2	4	4
9:15 AM - 9:30 AM	2	1	4	0	3	2	5	0	21	12	27	39	39
<b>Total</b>	11	11	11	11	11	11	22	22	22	12	27	39	39
<b>AM One Hour Volumes</b>													
6:30 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 9:30 AM	2	1	4	1	1	1	2	2	2	4	10	10	14
<b>Total</b>	2	1	4	1	1	1	2	2	2	4	10	10	14
<b>PM 15 Minute Volumes</b>													
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	1	1	3	3	3	0	0	0	0	1	3	4	4
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 6:15 PM	1	1	2	3	3	0	0	0	0	0	0	0	0
6:15 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 6:45 PM	0	1	2	3	3	0	0	0	0	0	0	0	0
6:45 PM - 7:00 PM	0	1	2	3	3	0	0	0	0	0	0	0	0
7:00 PM - 7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	1	1	4	4	4	0	0	0	0	0	0	0	0
<b>PM One Hour Volumes</b>													
4:30 PM - 5:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 6:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	1	0	0	0	0	0	0	0	0	0	0	0	0

# Wells + Associates, Inc.

McLean, Virginia

## Pedestrian Volume Survey

Time Period	Southbound			Northbound			Eastbound			North & South			Total
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
<b>AM 15 Minute Volumes</b>													
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	1	1	0	1	1	0	2	1	3	2	3	5	3
8:00 AM - 8:15 AM	2	1	0	2	1	0	1	1	1	3	1	4	4
8:15 AM - 8:30 AM	2	2	1	1	1	1	5	5	2	6	8	8	8
8:30 AM - 8:45 AM	0	1	1	1	1	1	1	1	1	2	2	4	4
8:45 AM - 9:00 AM	0	1	1	1	1	1	1	1	1	2	2	4	4
9:00 AM - 9:15 AM	2	1	4	0	3	2	5	0	21	12	27	39	39
9:15 AM - 9:30 AM	2	1	4	0	3	2	5	0	21	12	27	39	39
<b>Total</b>	11	11	11	11	11	11	22	22	22	12	27	39	39
<b>AM One Hour Volumes</b>													
6:30 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 9:30 AM	2	1	4	1	1	1	2	2	2	4	10	10	14
<b>Total</b>	2	1	4	1	1	1	2	2	2	4	10	10	14
<b>PM 15 Minute Volumes</b>													
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	1	1	3	3	3	0	0	0	0	1	3	4	4
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 6:15 PM	1	1	2	3	3	0	0	0	0	0	0	0	0
6:15 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 6:45 PM	0	1	2	3	3	0	0	0	0	0	0	0	0
6:45 PM - 7:00 PM	0	1	2	3	3	0	0	0	0	0	0	0	0
7:00 PM - 7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	1	1	4	4	4	0	0	0	0	0	0	0	0
<b>PM One Hour Volumes</b>													
4:30 PM - 5:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 6:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	1	0	0	0	0	0	0	0	0	0	0	0	0

**Wells + Associates, Inc.**  
McLean, Virginia

**Pedestrian Volume Survey**

PROJECT: Alfred St. Baptist Church  
 W. 308 S. 1st St. N. Alfred St.  
 INTERSECTION: King St. & N. Alfred St.  
 LOCATION: City of Alexandria, VA  
 DATE: 5/01/2015  
 WEATHER: clear  
 COUNTED BY: Maria  
 INPUT BY: open

Time Period	Movement							
	1	2	3	4	5	6	7	8
<b>15 Minute Volumes</b>	<b>1+2 3+4 5+6 7+8 Total</b>							
7:00 AM - 7:15 AM	2	1	3	1	3	6	4	16
7:15 AM - 7:30 AM	3	1	3	1	3	6	6	19
7:30 AM - 7:45 AM	3	1	3	1	3	6	6	19
7:45 AM - 8:00 AM	6	2	1	2	1	13	1	27
8:00 AM - 8:15 AM	14	5	3	5	7	10	5	59
8:15 AM - 8:30 AM	19	19	5	7	10	5	5	76
8:30 AM - 8:45 AM	12	13	3	2	13	15	6	64
8:45 AM - 9:00 AM	8	14	7	5	15	18	1	69
9:00 AM - 9:15 AM	8	14	7	5	15	18	1	69
9:15 AM - 9:30 AM	19	35	18	5	3	18	16	114
9:30 AM - 9:45 AM	13	29	14	4	2	43	15	111
9:45 AM - 10:00 AM	13	29	14	4	2	43	15	111
10:00 AM - 10:15 AM	22	11	9	9	22	21	1	127
10:15 AM - 10:30 AM	17	23	5	5	18	45	5	118
10:30 AM - 10:45 AM	10	15	15	22	10	2	10	84
10:45 AM - 11:00 AM	24	15	15	22	10	2	10	108
11:00 AM - 11:15 AM	35	24	19	18	34	57	7	194
11:15 AM - 11:30 AM	18	25	8	12	39	57	7	166
11:30 AM - 11:45 AM	42	24	9	11	32	45	6	179
11:45 AM - 12:00 PM	26	30	13	18	26	46	3	152
12:00 PM - 12:15 PM	34	41	24	10	33	77	2	221
12:15 PM - 12:30 PM	34	39	13	12	33	46	15	202
12:30 PM - 12:45 PM	44	25	32	7	45	10	4	167
12:45 PM - 1:00 PM	44	25	32	7	45	10	4	167
1:00 PM - 1:15 PM	34	41	24	10	33	77	2	221
1:15 PM - 1:30 PM	34	39	13	12	33	46	15	202
1:30 PM - 1:45 PM	47	35	16	10	36	79	10	233
1:45 PM - 2:00 PM	47	35	16	10	36	79	10	233
2:00 PM - 2:15 PM	38	30	11	12	41	71	4	197
2:15 PM - 2:30 PM	38	30	11	12	41	71	4	197
2:30 PM - 2:45 PM	42	32	15	5	37	10	3	224
2:45 PM - 3:00 PM	38	32	23	8	31	67	11	190
<b>Total Volumes</b>	<b>255</b>	<b>257</b>	<b>340</b>	<b>255</b>	<b>822</b>	<b>1257</b>	<b>179</b>	<b>6511</b>

**McLean, Virginia**  
**Turning Movement Count - Bicycles**

PROJECT: Alfred St. Baptist Church  
 W. 308 S. 1st St. N. Alfred St.  
 INTERSECTION: King St. & N. Alfred St.  
 LOCATION: City of Alexandria, VA  
 DATE: 5/01/2015  
 WEATHER: clear  
 COUNTED BY: Maria  
 INPUT BY: open

SOUTHBOUND ROAD: North Alfred Street  
 NORTHBOUND ROAD: South Alfred Street  
 WESTBOUND ROAD: King Street  
 EASTBOUND ROAD: King Street

Time Period	Southbound				Northbound				Westbound				Eastbound			
	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total
<b>15 Minute Volumes</b>	<b>1+2 3+4 5+6 7+8 Total</b>															
7:00 AM - 7:15 AM	1	1	1	3	2	2	3	7	1	1	1	3	1	1	1	3
7:15 AM - 7:30 AM	1	1	1	3	2	2	3	7	1	1	1	3	1	1	1	3
7:30 AM - 7:45 AM	1	1	1	3	2	2	3	7	1	1	1	3	1	1	1	3
7:45 AM - 8:00 AM	2	2	2	6	1	1	1	3	1	1	1	3	1	1	1	3
8:00 AM - 8:15 AM	1	1	1	3	1	1	1	3	1	1	1	3	1	1	1	3
8:15 AM - 8:30 AM	1	1	1	3	1	1	1	3	1	1	1	3	1	1	1	3
8:30 AM - 8:45 AM	1	1	1	3	1	1	1	3	1	1	1	3	1	1	1	3
8:45 AM - 9:00 AM	1	2	3	6	1	1	1	3	1	1	1	3	1	1	1	3
9:00 AM - 9:15 AM	1	3	4	8	1	1	1	3	1	1	1	3	1	1	1	3
9:15 AM - 9:30 AM	1	3	4	8	1	1	1	3	1	1	1	3	1	1	1	3
9:30 AM - 9:45 AM	2	2	2	6	1	1	1	3	1	1	1	3	1	1	1	3
9:45 AM - 10:00 AM	2	2	2	6	1	1	1	3	1	1	1	3	1	1	1	3
10:00 AM - 10:15 AM	1	1	1	3	2	2	2	6	1	1	1	3	1	1	1	3
10:15 AM - 10:30 AM	1	1	1	3	2	2	2	6	1	1	1	3	1	1	1	3
10:30 AM - 10:45 AM	1	1	1	3	2	2	2	6	1	1	1	3	1	1	1	3
10:45 AM - 11:00 AM	1	1	1	3	2	2	2	6	1	1	1	3	1	1	1	3
11:00 AM - 11:15 AM	1	1	1	3	2	2	2	6	1	1	1	3	1	1	1	3
11:15 AM - 11:30 AM	2	2	2	6	1	1	1	3	1	1	1	3	1	1	1	3
11:30 AM - 11:45 AM	1	1	1	3	2	2	2	6	1	1	1	3	1	1	1	3
11:45 AM - 12:00 PM	1	1	1	3	2	2	2	6	1	1	1	3	1	1	1	3
12:00 PM - 12:15 PM	1	1	1	3	2	2	2	6	1	1	1	3	1	1	1	3
12:15 PM - 12:30 PM	2	2	2	6	1	1	1	3	1	1	1	3	1	1	1	3
12:30 PM - 12:45 PM	2	2	2	6	1	1	1	3	1	1	1	3	1	1	1	3
12:45 PM - 1:00 PM	2	2	2	6	1	1	1	3	1	1	1	3	1	1	1	3
1:00 PM - 1:15 PM	1	1	1	3	2	2	2	6	1	1	1	3	1	1	1	3
1:15 PM - 1:30 PM	1	1	1	3	2	2	2	6	1	1	1	3	1	1	1	3
1:30 PM - 1:45 PM	1	1	1	3	2	2	2	6	1	1	1	3	1	1	1	3
1:45 PM - 2:00 PM	1	1	1	3	2	2	2	6	1	1	1	3	1	1	1	3
2:00 PM - 2:15 PM	1	1	1	3	2	2	2	6	1	1	1	3	1	1	1	3
2:15 PM - 2:30 PM	2	2	2	6	1	1	1	3	1	1	1	3	1	1	1	3
2:30 PM - 2:45 PM	2	2	2	6	1	1	1	3	1	1	1	3	1	1	1	3
2:45 PM - 3:00 PM	2	2	2	6	1	1	1	3	1	1	1	3	1	1	1	3
<b>Total Volumes</b>	<b>2</b>	<b>12</b>	<b>3</b>	<b>17</b>	<b>3</b>	<b>32</b>	<b>0</b>	<b>35</b>	<b>1</b>	<b>11</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>35</b>	<b>3</b>	<b>35</b>

# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - All Vehicles

**PROJECT:** Alfred St. Baptist Church  
**WVA JOB NO.:** 6383  
**INTERSECTION:** King St. & N. Alfred St.  
**LOCATION:** City of Alexandria, VA

**DATE:** 01/19/2015  
**DAY:** Tuesday  
**WEATHER:** clear  
**COUNTED BY:** Whitney & Dominique  
**INSPECTED BY:** agan

**SOUTHBOUND ROAD:** North Alfred Street  
**NORTHBOUND ROAD:** South Alfred Street  
**WESTBOUND ROAD:** King Street  
**EASTBOUND ROAD:** King Street

Time Period	Southbound			Northbound			Westbound			Eastbound			North & South	East & West	Total								
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left				PHF							
<b>AM 15 Minute Volumes</b>																							
6:30 AM - 6:45 AM	1	4	0	5	0	15	0	30	6	36	4	20	2	28	41	61							
6:45 AM - 7:00 AM	2	4	0	6	2	15	1	31	21	63	4	20	6	32	63	144							
7:00 AM - 7:15 AM	2	4	0	6	2	15	1	31	21	63	4	20	6	32	63	144							
7:15 AM - 7:30 AM	2	4	0	6	2	15	1	31	21	63	4	20	6	32	63	144							
7:30 AM - 7:45 AM	3	4	0	7	1	38	2	41	0	123	8	13	4	50	119	229							
7:45 AM - 8:00 AM	0	5	1	6	0	38	1	39	3	112	8	13	2	31	134	210							
8:00 AM - 8:15 AM	2	0	1	12	0	38	1	39	4	103	10	13	2	31	134	210							
8:15 AM - 8:30 AM	2	0	1	12	0	38	1	39	4	103	10	13	2	31	134	210							
8:30 AM - 8:45 AM	2	14	1	17	2	40	1	43	4	85	10	13	6	62	116	221							
8:45 AM - 9:00 AM	0	11	2	13	5	27	2	34	2	59	4	6	57	101	91	192							
9:00 AM - 9:15 AM	2	10	1	13	4	27	4	52	2	59	4	6	57	101	91	192							
9:15 AM - 9:30 AM	4	9	1	14	4	26	0	37	2	39	1	4	10	60	53	111							
9:30 AM - 9:45 AM	4	9	1	14	4	26	0	37	2	39	1	4	10	60	53	111							
<b>AM One Hour Volumes</b>																							
6:30 AM - 7:30 AM	5	14	3	22	0.56	9	89	1	99	0.79	5	241	20	266	0.61	11	106	17	134	0.64	288	233	521
7:30 AM - 8:30 AM	7	14	3	24	0.60	9	113	3	125	0.76	5	334	22	361	0.69	11	128	19	158	0.79	385	283	668
8:30 AM - 9:30 AM	7	19	3	29	0.73	7	133	4	144	0.88	6	403	34	443	0.85	12	126	21	159	0.80	472	303	775
9:30 AM - 10:30 AM	7	24	3	35	0.78	8	140	4	150	0.91	9	407	44	500	0.98	16	150	19	158	0.72	535	315	850
10:30 AM - 11:30 AM	7	36	3	43	0.71	10	151	2	169	0.86	12	412	50	474	0.93	17	169	26	232	0.83	622	400	1022
11:30 AM - 12:30 PM	7	45	4	55	0.81	15	140	6	163	0.83	11	379	44	434	0.82	16	208	28	252	0.93	489	415	904
12:30 PM - 1:30 PM	7	45	4	55	0.82	14	153	11	178	0.86	9	325	33	367	0.60	16	208	29	253	0.92	423	431	854
1:30 PM - 2:30 PM	8	44	5	57	0.84	13	140	13	160	0.77	8	260	23	291	0.73	13	206	29	248	0.90	348	408	756
<b>PM 15 Minute Volumes</b>																							
4:30 PM - 4:45 PM	6	33	1	39	1	73	3	77	4	14	7	25	5	39	4	48	3	48	64	125	189		
4:45 PM - 5:00 PM	7	47	2	56	5	65	3	73	2	11	3	16	4	39	3	46	3	35	88	110	191		
5:00 PM - 5:15 PM	8	55	3	66	3	71	1	75	1	26	3	21	6	28	7	41	1	19	119	111	230		
5:15 PM - 5:30 PM	12	74	2	86	6	60	2	70	2	16	3	16	4	33	2	39	1	17	117	128	245		
5:30 PM - 5:45 PM	19	71	1	91	5	81	3	89	1	19	6	26	6	48	2	56	0	4	122	148	270		
5:45 PM - 6:00 PM	16	88	1	105	4	86	2	92	3	16	2	21	6	48	2	56	0	4	122	148	270		
6:00 PM - 6:15 PM	7	83	3	93	6	78	6	92	1	22	5	28	3	53	2	58	121	150	271	419	791		
6:15 PM - 6:30 PM	8	83	5	96	3	78	1	79	3	23	3	26	7	43	2	58	119	130	249	419	791		
6:30 PM - 6:45 PM	7	67	2	76	3	70	4	77	2	23	3	26	7	28	7	42	104	119	223	419	791		
6:45 PM - 7:00 PM	7	52	3	62	4	46	3	53	3	25	8	34	1	45	7	63	76	116	192	419	791		
7:00 PM - 7:15 PM	7	52	3	62	4	46	3	53	3	25	8	34	1	45	7	63	76	116	192	419	791		
7:15 PM - 7:30 PM	110	754	34	858	62	827	38	927	22	250	50	302	65	468	40	538	1200	1523	2723	419	791		
<b>PM One Hour Volumes</b>																							
4:30 PM - 5:30 PM	33	208	8	249	0.71	17	269	9	295	0.96	9	67	18	94	0.76	17	136	17	170	0.89	343	465	808
5:30 PM - 6:30 PM	46	247	8	301	0.83	21	277	9	307	0.88	6	72	17	95	0.77	16	130	15	161	0.88	396	468	864
6:30 PM - 7:30 PM	54	338	13	349	0.93	26	348	13	374	0.96	7	75	15	88	0.79	13	182	18	186	0.96	436	562	1007
7:30 PM - 8:30 PM	49	330	12	331	0.93	23	324	16	363	0.93	6	75	14	95	0.83	26	170	7	199	0.88	486	562	1048
8:30 PM - 9:30 PM	38	342	16	336	0.84	27	309	16	352	0.86	6	75	11	92	0.82	25	180	7	212	0.91	488	564	1052
9:30 PM - 10:30 PM	29	321	11	370	0.88	22	300	17	339	0.92	7	80	13	100	0.89	23	172	13	208	0.90	470	547	1017
10:30 PM - 11:30 PM	29	326	13	370	0.89	22	300	18	330	0.82	5	89	19	113	0.83	28	169	18	215	0.85	450	515	965
11:30 PM - 12:30 PM	28	216	14	258	0.61	22	234	13	268	0.68	7	88	18	113	0.63	28	162	16	227	0.81	371	468	839

# McLean, Virginia

## Turning Movement Count - Total Vehicles

**PROJECT:** Alfred St. Baptist Church  
**WVA JOB NO.:** 6383  
**INTERSECTION:** King St. & N. Alfred St.  
**LOCATION:** City of Alexandria, VA

**DATE:** 03/17/2015  
**DAY:** Sunday  
**WEATHER:** Sunny  
**COUNTED BY:** Tyler & Adam  
**INSPECTED BY:** agan

**SOUTHBOUND ROAD:** North Alfred Street  
**NORTHBOUND ROAD:** South Alfred Street  
**WESTBOUND ROAD:** King Street  
**EASTBOUND ROAD:** King Street

Time Period	Southbound			Northbound			Westbound			Eastbound			North & South	East & West	Total	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left				PHF
<b>15 Minute Volumes</b>																
7:00 AM - 7:15 AM	4	1	2	1	1	2	1	1	2	1	1	2	16	6	21	27
7:15 AM - 7:30 AM	1	1	2	1	1	2	1	1	2	1	1	2	16	6	21	27
7:30 AM - 7:45 AM	1	1	2	1	1	2	1	1	2	1	1	2	16	6	21	27
7:45 AM - 8:00 AM	3	1	2	3	2	2	2	3	2	2	4	2	29	10	45	65
8:00 AM - 8:15 AM	2	1	4	3	6	14	3	6	14	3	6	14	33	13	47	69
8:15 AM - 8:30 AM	1	2	3	6	16	22	5	5	12	2	5	12	32	10	45	69
8:30 AM - 9:00 AM	3	4	7	3	3	3	3	3	3	3	3	3	33	14	66	89
9:00 AM - 9:15 AM	4	4	2	7	6	6	3	3	3	3	3	3	42	10	71	81
9:15 AM - 9:30 AM	3	3	3	3	3	3	3	3	3	3	3	3	33	14	66	89
9:30 AM - 9:45 AM	5	2	1	4	17	11	29	2	6	5	6	6	6	41	58	140
9:45 AM - 10:00 AM	5	7	13	6	25	2	39	1	14	5	5	5	60	27	93	120
10:00 AM - 10:15 AM	1	16	3	20	2	37	4	39	4	8	5	17	45	37	84	121
10:15 AM - 10:30 AM	2	8	1	11	3	13	3	13	3	13	3	13	3	13	3	13
10:30 AM - 10:45 AM	2	8	1	11	3	13	3	13	3	13	3	13	3	13	3	13
10:45 AM - 11:00 AM	2	8	1	11	3	13	3	13	3	13	3	13	3	13	3	13
11:00 AM - 11:15 AM	3	12	3	18	2	57	1	60	4	65	5	67	67	41	123	164
11:15 AM - 11:30 AM	3	22	5	30	2	38	4	40	7	13	7	27	11	64	72	103
11:30 AM - 11:45 AM	3	22	5	30	2	38	4	40	7	13	7	27	11	64	72	103
11:45 AM - 12:00 PM	2	5	1	8	9	38	1	49	8	66	4	98	6	82	130	157
12:00 PM - 12:15 PM	6	12	4	22	4	22	4	22	4	22	4	22	4	22	4	22
12:15 PM - 12:30 PM	6	10	7	23	5	59	4	68	4	15	5	25	13	61	7	81
12:30 PM - 1:00 PM	7	17	4	28	6	53	13	71	2	29	5	36	8	65	4	77
1:00 PM - 1:15 PM	4	23	3	30	3	75	7	85	2	34	4	40	4	54	70	132
1:15 PM - 1:30 PM	3	23	2	28	3	54	4	61	4	31	9	44	10	53	8	71
1:30 PM - 1:45 PM	2	8	1	11	8	45	6	60	7	10	4	9	5	14	7	13
1:45 PM - 2:00 PM	4	14	5	23	9	60	1	70	6	65	2	76	6	81	146	197
2:00 PM - 2:15 PM	4	11	2	17	14	68	4	76	6	66	7	79	43	155	198	286
2:15 PM - 2:30 PM	1	10	3	14	3	68	3	74	3	12	4	19	3	66	2	71
2:30 PM - 2:45 PM	2	8	2	11												



# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - Bicycles

Time Period	Southbound Street - 400			Northbound Street - 400			Eastbound King Street - 7			Westbound King Street - 7			North & South		East & West Total
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	
<b>AM 15 Minute Volumes</b>															
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1
6:45 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 7:15 AM	0	0	0	0	0	0	1	1	1	2	2	2	1	1	2
7:15 AM - 7:30 AM	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	2	2	2	2	2	2	2	2	4
7:45 AM - 8:00 AM	0	0	0	0	0	0	2	2	2	1	1	1	2	2	4
8:00 AM - 8:15 AM	0	0	0	0	0	0	2	2	2	1	1	1	2	2	4
8:15 AM - 8:30 AM	0	0	0	0	0	0	2	2	2	1	1	1	2	2	4
8:30 AM - 8:45 AM	0	0	0	0	0	0	1	1	1	1	1	1	1	1	2
8:45 AM - 9:00 AM	0	0	0	0	0	0	1	1	1	1	1	1	1	1	2
9:00 AM - 9:15 AM	0	0	0	0	0	0	1	1	1	1	1	1	1	1	2
9:15 AM - 9:30 AM	0	0	0	0	0	0	1	1	1	2	2	2	1	1	2
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>12</b>	<b>10</b>	<b>22</b>
<b>AM One Hour Volumes</b>															
6:30 AM - 7:30 AM	0	0	0	0	0	0	1	1	1	2	2	2	3	3	6
7:30 AM - 8:30 AM	0	0	0	0	0	0	1	1	1	2	2	2	3	3	6
8:30 AM - 9:30 AM	0	0	0	0	0	0	3	3	3	4	4	4	5	5	10
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>12</b>	<b>10</b>	<b>22</b>
<b>PM 15 Minute Volumes</b>															
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	2	2	2	0	0	2
4:45 PM - 5:00 PM	2	2	2	1	1	1	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	2	2	2	1	1	1	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	4	4	4	1	1	1	1	1	2
6:00 PM - 6:15 PM	0	0	0	0	0	0	0	0	0	2	2	2	0	0	2
6:15 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1
6:30 PM - 6:45 PM	1	1	1	0	0	0	0	0	0	1	1	1	0	0	1
6:45 PM - 7:00 PM	1	1	1	0	0	0	0	0	0	2	2	2	0	0	2
7:00 PM - 7:15 PM	0	0	0	0	0	0	3	3	3	0	0	0	0	0	3
7:15 PM - 7:30 PM	0	0	0	0	0	0	13	13	13	1	1	1	0	0	1
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>2</b>	<b>2</b>	<b>4</b>
<b>PM One Hour Volumes</b>															
4:30 PM - 5:30 PM	0	2	0	0	2	0	0	1	0	0	2	0	0	2	3
5:30 PM - 6:30 PM	0	4	0	0	3	0	0	1	0	0	0	0	0	3	3
6:30 PM - 7:30 PM	0	2	0	0	2	0	0	0	0	0	3	0	0	3	3
7:30 PM - 8:30 PM	0	2	0	0	2	0	0	0	0	0	3	0	0	3	3
8:30 PM - 9:30 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3
9:30 PM - 10:30 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3
10:30 PM - 11:30 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3
11:30 PM - 12:30 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3
<b>Total</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>11</b>

# Wells + Associates, Inc.

McLean, Virginia

## Pedestrian Volume Survey

Time Period	Northbound King Street - 7			Southbound King Street - 7			Northbound King Street - 401			Southbound King Street - 401			Total			
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
<b>AM 15 Minute Volumes</b>																
6:30 AM - 6:45 AM	8	10	4	5	1	4	1	4	1	1	1	1	1	1	1	1
6:45 AM - 7:00 AM	9	6	4	5	6	8	0	1	2	1	1	1	1	1	1	1
7:00 AM - 7:15 AM	8	8	4	5	6	8	0	1	2	1	1	1	1	1	1	1
7:15 AM - 7:30 AM	5	13	5	3	5	12	1	3	1	1	1	1	1	1	1	1
7:30 AM - 7:45 AM	4	6	1	4	6	29	1	4	1	1	1	1	1	1	1	1
7:45 AM - 8:00 AM	6	13	1	5	3	19	7	4	1	1	1	1	1	1	1	1
8:00 AM - 8:15 AM	4	18	5	6	2	25	3	1	1	1	1	1	1	1	1	1
8:15 AM - 8:30 AM	9	5	5	4	2	12	7	1	1	1	1	1	1	1	1	1
8:30 AM - 8:45 AM	9	22	13	5	11	35	1	1	1	1	1	1	1	1	1	1
8:45 AM - 9:00 AM	9	15	5	2	9	37	5	1	1	1	1	1	1	1	1	1
9:00 AM - 9:15 AM	13	15	7	8	8	35	1	4	1	1	1	1	1	1	1	1
9:15 AM - 9:30 AM	13	16	5	7	4	19	1	4	1	1	1	1	1	1	1	1
<b>Total</b>	<b>97</b>	<b>147</b>	<b>59</b>	<b>63</b>	<b>244</b>	<b>28</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>
<b>AM One Hour Volumes</b>																
6:30 AM - 7:30 AM	30	37	17	18	18	33	2	6	67	35	51	8	161			
7:30 AM - 8:30 AM	23	40	11	17	23	58	2	6	59	31	81	8	179			
8:30 AM - 9:30 AM	19	50	12	18	16	85	12	7	69	30	101	19	219			
9:30 AM - 10:30 AM	23	42	12	19	13	65	18	5	65	31	98	23	217			
10:30 AM - 11:30 AM	28	58	24	20	18	91	18	6	86	44	109	24	283			
11:30 AM - 12:30 PM	31	60	28	17	24	109	16	3	91	45	133	19	288			
12:30 PM - 1:30 PM	40	57	30	19	30	119	14	7	97	49	149	21	316			
1:30 PM - 2:30 PM	44	68	30	22	32	126	8	14	112	52	158	22	344			
<b>PM 15 Minute Volumes</b>																
4:30 PM - 4:45 PM	35	27	15	27	28	29	13	8	48	35	11	15	33	34	12	4
4:45 PM - 5:00 PM	48	35	11	15	33	34	12	4	42	30	10	15	28	30	10	8
5:00 PM - 5:15 PM	40	34	11	13	48	45	12	9	51	45	31	8	37	30	13	8
5:15 PM - 5:30 PM	62	58	25	6	50	32	9	7	60	62	58	6	50	32	9	7
5:30 PM - 6:00 PM	61	42	14	11	39	51	12	8	60	61	42	14	11	39	51	12
6:00 PM - 6:15 PM	90	21	17	7	35	49	9	13	63	90	21	17	7	35	49	9
6:15 PM - 6:30 PM	46	36	16	9	23	45	7	8	40	46	36	16	9	23	45	7
6:30 PM - 6:45 PM	40	33	11	4	28	37	10	15	37	40	33	11	4	28	37	10
6:45 PM - 7:00 PM	65	45	23	8	32	80	5	9	61	65	45	23	8	32	80	5
7:00 PM - 7:30 PM	61	44	19	14	41	51	13	14	61	61	44	19	14	41	51	13
<b>Total</b>	<b>165</b>	<b>126</b>	<b>47</b>	<b>70</b>	<b>137</b>	<b>138</b>	<b>47</b>	<b>29</b>	<b>291</b>	<b>117</b>	<b>275</b>	<b>76</b>	<b>759</b>			
<b>PM One Hour Volumes</b>																
4:30 PM - 5:30 PM	161	144	63	51	146	139	47	29	325	114	285	76	800			
5:30 PM - 6:00 PM	195	167	77	42	163	137	44	32	362	119	300	76	857			
6:00 PM - 6:15 PM	214	179	81	38	174	158	46	32	393	119	332	78	922			
6:15 PM - 6:30 PM	284	166	87	32	161	162	43	36	430	119	323	79	951			
6:30 PM - 6:45 PM	259	157	72	33	147	177	37	36	416	105	324	73	918			
6:45 PM - 7:00 PM	237	132	58	31	125	182	38	44	369	89	307	82	847			
7:00 PM - 7:30 PM	213	125	54	37	123	186	48	55	338	91	309	103	841			
7:30 PM - 8:00 PM	188	149	60	38	120	217	44	51	337	98	337	95	867			

# Wells + Associates, Inc.

McLean, Virginia

## Pedestrian Volume Survey

Time Period	Southbound Street		Westbound Street		Northbound Street		Eastbound Street		Total				
	Right	Left	Right	Left	Right	Left	Right	Left					
<b>15 Minute Volumes</b>	1	2	3	4	5	6	7	8	1+2	3+4	5+6	7+8	Total
7:00 AM - 7:15 AM	3	5	4	3	3	1	1	1	8	7	4	2	22
7:15 AM - 7:30 AM	3	5	4	3	3	1	1	1	8	7	4	2	22
7:30 AM - 7:45 AM	3	5	4	3	3	1	1	1	8	7	4	2	22
7:45 AM - 8:00 AM	10	31	6	7	7	10	8	2	25	35	17	10	87
8:00 AM - 8:15 AM	12	33	6	7	7	10	8	2	27	37	17	10	91
8:15 AM - 8:30 AM	20	18	1	15	15	10	2	2	35	30	30	12	107
8:30 AM - 8:45 AM	20	18	1	15	15	10	2	2	35	30	30	12	107
8:45 AM - 9:00 AM	15	31	9	13	13	9	4	2	27	44	26	13	110
9:00 AM - 9:15 AM	11	15	8	18	18	28	6	1	19	26	26	34	85
9:15 AM - 9:30 AM	11	15	8	18	18	28	6	1	19	26	26	34	85
9:30 AM - 9:45 AM	32	25	3	12	12	22	4	1	35	37	34	26	132
9:45 AM - 10:00 AM	21	43	10	14	14	30	7	6	31	57	44	37	169
10:00 AM - 10:15 AM	22	45	10	14	14	30	7	6	32	59	44	37	172
10:15 AM - 10:30 AM	22	45	10	14	14	30	7	6	32	59	44	37	172
10:30 AM - 10:45 AM	28	25	6	18	18	31	15	9	34	43	33	24	134
10:45 AM - 11:00 AM	28	25	6	18	18	31	15	9	34	43	33	24	134
11:00 AM - 11:15 AM	33	41	27	40	40	87	13	21	40	87	67	111	198
11:15 AM - 11:30 AM	35	24	7	41	41	55	10	23	42	82	51	117	212
11:30 AM - 11:45 AM	73	40	10	64	64	62	11	21	83	74	75	73	235
11:45 AM - 12:00 PM	63	41	9	67	67	65	17	21	72	76	84	88	240
12:00 PM - 12:15 PM	63	41	9	67	67	65	17	21	72	76	84	88	240
12:15 PM - 12:30 PM	69	54	9	67	67	65	17	21	78	81	84	88	251
12:30 PM - 12:45 PM	69	54	9	67	67	65	17	21	78	81	84	88	251
1:00 PM - 1:15 PM	45	67	9	84	84	112	6	27	54	93	93	118	274
1:15 PM - 1:30 PM	45	67	9	84	84	112	6	27	54	93	93	118	274
1:30 PM - 1:45 PM	59	45	10	70	70	99	36	21	69	85	89	114	253
1:45 PM - 2:00 PM	68	63	17	65	65	123	9	6	85	88	82	122	295
2:00 PM - 2:15 PM	76	57	24	76	76	105	15	18	100	100	110	133	343
2:15 PM - 2:30 PM	76	57	24	76	76	105	15	18	100	100	110	133	343
2:30 PM - 2:45 PM	61	58	32	85	85	89	13	21	93	103	98	124	318
2:45 PM - 3:00 PM	61	58	32	85	85	89	13	21	93	103	98	124	318
<b>One Hour Volumes</b>	1295	1211	300	1283	1283	1610	348	380	1595	1591	1610	1618	4804
7:00 AM - 8:00 AM	21	62	15	16	16	18	9	3	36	31	34	12	116
8:00 AM - 9:00 AM	61	65	11	16	16	31	11	3	78	27	47	16	186
9:00 AM - 10:00 AM	69	69	15	33	33	40	20	13	84	53	56	38	230
10:00 AM - 11:00 AM	69	69	15	33	33	40	20	13	84	53	56	38	230
11:00 AM - 12:00 PM	69	69	15	33	33	40	20	13	84	53	56	38	230
12:00 PM - 1:00 PM	69	69	15	33	33	40	20	13	84	53	56	38	230
1:00 PM - 2:00 PM	76	63	20	84	84	65	16	19	96	84	128	35	427
2:00 PM - 3:00 PM	62	115	21	65	65	86	19	23	83	84	151	42	476
3:00 AM - 4:00 AM	122	129	20	90	90	134	40	30	142	129	174	50	695
4:00 AM - 5:00 AM	112	135	23	62	62	97	20	24	135	82	117	54	608
5:00 AM - 6:00 AM	108	135	26	68	68	101	39	23	134	94	169	67	673
6:00 AM - 7:00 AM	153	146	36	200	207	53	78	238	256	256	457	124	1141
7:00 AM - 8:00 AM	221	190	38	240	240	259	95	91	370	278	489	146	1238
8:00 AM - 9:00 AM	241	190	42	284	284	292	94	82	431	306	546	158	1419
9:00 AM - 10:00 AM	210	224	36	303	303	348	40	53	444	353	651	158	1576
10:00 AM - 11:00 AM	238	247	36	283	288	378	37	79	475	324	671	116	1689
11:00 AM - 12:00 PM	268	241	44	272	272	420	50	42	515	324	624	102	1935
12:00 PM - 1:00 PM	262	229	55	248	248	397	60	47	511	303	635	100	1579
1:00 PM - 2:00 PM	283	242	59	287	287	400	53	53	530	353	654	161	1695
2:00 PM - 3:00 PM	278	225	76	321	321	399	84	82	503	397	685	178	1726

Time Period	Southbound Street		Westbound Street		Northbound Street		Eastbound Street		Total				
	Right	Left	Right	Left	Right	Left	Right	Left					
<b>15 Minute Volumes</b>	1	2	3	4	5	6	7	8	1+2	3+4	5+6	7+8	Total
7:00 AM - 7:15 AM	1	1	1	1	1	1	1	1	2	2	2	2	8
7:15 AM - 7:30 AM	1	1	1	1	1	1	1	1	2	2	2	2	8
7:30 AM - 7:45 AM	1	1	1	1	1	1	1	1	2	2	2	2	8
7:45 AM - 8:00 AM	1	1	1	1	1	1	1	1	2	2	2	2	8
8:00 AM - 8:15 AM	2	2	2	2	2	2	2	2	4	4	4	4	16
8:15 AM - 8:30 AM	1	1	1	1	1	1	1	1	2	2	2	2	8
8:30 AM - 8:45 AM	4	4	4	4	4	4	4	4	8	8	8	8	32
8:45 AM - 9:00 AM	1	1	1	1	1	1	1	1	2	2	2	2	8
9:00 AM - 9:15 AM	1	1	1	1	1	1	1	1	2	2	2	2	8
9:15 AM - 9:30 AM	2	2	2	2	2	2	2	2	4	4	4	4	16
9:30 AM - 9:45 AM	2	2	2	2	2	2	2	2	4	4	4	4	16
9:45 AM - 10:00 AM	2	2	2	2	2	2	2	2	4	4	4	4	16
10:00 AM - 10:15 AM	2	2	2	2	2	2	2	2	4	4	4	4	16
10:15 AM - 10:30 AM	2	2	2	2	2	2	2	2	4	4	4	4	16
10:30 AM - 10:45 AM	2	2	2	2	2	2	2	2	4	4	4	4	16
10:45 AM - 11:00 AM	2	2	2	2	2	2	2	2	4	4	4	4	16
11:00 AM - 11:15 AM	1	1	1	1	1	1	1	1	2	2	2	2	8
11:15 AM - 11:30 AM	1	1	1	1	1	1	1	1	2	2	2	2	8
11:30 AM - 11:45 AM	1	1	1	1	1	1	1	1	2	2	2	2	8
11:45 AM - 12:00 PM	1	1	1	1	1	1	1	1	2	2	2	2	8
12:00 PM - 12:15 PM	3	3	3	3	3	3	3	3	6	6	6	6	24
12:15 PM - 12:30 PM	1	1	1	1	1	1	1	1	2	2	2	2	8
12:30 PM - 1:00 PM	1	1	1	1	1	1	1	1	2	2	2	2	8
1:00 PM - 1:15 PM	1	1	1	1	1	1	1	1	2	2	2	2	8
1:15 PM - 1:30 PM	1	1	1	1	1	1	1	1	2	2	2	2	8
1:30 PM - 1:45 PM	5	5	5	5	5	5	5	5	10	10	10	10	40
1:45 PM - 2:00 PM	2	2	2	2	2	2	2	2	4	4	4	4	16
2:00 PM - 2:15 PM	2	2	2	2	2	2	2	2	4	4	4	4	16
2:15 PM - 2:30 PM	2	2	2	2	2	2	2	2	4	4	4	4	16
2:30 PM - 2:45 PM	2	2	2	2	2	2	2	2	4	4	4	4	16
2:45 PM - 3:00 PM	2	2	2	2	2	2	2	2	4	4	4	4	16
<b>One Hour Volumes</b>	17	0	6	23	35	0	2	40	17	0	5	22	34
7:00 AM - 8:00 AM	2	2	2	2	2	2	2	2	4	4	4	4	16
8:00 AM - 9:00 AM	3	3	3	3	3	3	3	3	6	6	6	6	24
9:00 AM - 10:00 AM	2	2	2	2	2	2	2	2	4	4	4	4	16
10:00 AM - 11:00 AM	2	2	2	2	2	2	2	2	4	4	4	4	16
11:00 AM - 12:00 PM	2	2	2	2	2	2	2	2	4	4	4	4	16
12:00 PM - 1:00 PM	2	2	2	2	2	2	2	2	4	4	4	4	16
1:00 PM - 2:00 PM	2	2	2	2	2	2	2	2	4	4	4	4	16
2:00 PM - 3:00 PM	2	2	2	2	2	2	2	2	4	4	4	4	16

## Turning Movement Count - Bicycles

Time Period	Southbound Street		Westbound Street		Northbound Street		Eastbound Street		Total				
	Right	Left	Right	Left	Right	Left	Right	Left					
<b>15 Minute Volumes</b>	1	2	3	4	5	6	7	8	1+2	3+4	5+6	7+8	Total
7:00 AM - 7:15 AM	1	1	1	1	1	1	1	1	2	2	2	2	8
7:15 AM - 7:30 AM	1	1	1	1	1	1	1	1	2	2	2	2	8
7:30 AM - 7:45 AM	1	1	1	1	1	1	1	1	2	2	2	2	8
7:45 AM - 8:00 AM	1	1	1	1	1	1	1	1	2	2	2	2	8
8:00 AM - 8:15 AM	2	2	2	2	2	2	2	2	4	4	4	4	16
8:15 AM - 8:30 AM	1	1	1	1	1	1	1	1	2	2	2	2	8
8:30 AM - 8:45 AM	4	4	4	4	4	4	4	4	8	8	8	8	32
8:45 AM - 9:00 AM	1	1	1										

# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - All Vehicles

**PROJECT:** Alfred St. Baptist Church  
**WVA JOB NO.:** 6383  
**INTERSECTION:** King St. & N. Washington St.  
**LOCATION:** City of Alexandria, VA

**DATE:** 6/19/2015  
**DAY:** Tuesday  
**WEATHER:** clear  
**COUNTED BY:** Jonathan & Jen  
**INPUT BY:** agan

**SOUTHBOUND ROAD:** North Washington Street - 400  
**WESTBOUND ROAD:** South Washington Street - 400  
**EASTBOUND ROAD:** King Street - 7  
**WESTBOUND ROAD:** King Street - 7

Time Period	Southbound			Westbound			Eastbound			North & South	East & West	Total				
	Right	Left	PHF	Right	Left	PHF	Right	Left	PHF							
<b>AM 15 Minute Volumes</b>																
6:30 AM - 6:45 AM	1	78	0.79	0	0	0	5	0	0	12	0	0	19	589	31	600
6:45 AM - 7:00 AM	1	80	0.80	0	0	0	5	0	0	12	0	0	19	601	31	630
7:00 AM - 7:15 AM	9	130	1.10	0	0	0	20	0	0	20	0	0	20	675	40	715
7:15 AM - 7:30 AM	6	130	1.10	0	0	0	19	0	0	20	0	0	20	660	33	693
7:30 AM - 7:45 AM	10	117	1.07	0	0	0	22	0	0	22	0	0	24	586	50	636
7:45 AM - 8:00 AM	8	120	1.08	0	0	0	22	0	0	22	0	0	24	534	66	600
8:00 AM - 8:15 AM	5	110	0.95	0	0	0	20	0	0	20	0	0	20	550	65	615
8:15 AM - 8:30 AM	5	110	0.95	0	0	0	20	0	0	20	0	0	20	550	65	615
8:30 AM - 8:45 AM	11	97	0.88	0	0	0	23	0	0	23	0	0	24	558	76	634
8:45 AM - 9:00 AM	10	110	1.00	0	0	0	29	0	0	29	0	0	31	562	82	644
9:00 AM - 9:15 AM	9	100	0.90	0	0	0	28	0	0	28	0	0	31	554	91	645
9:15 AM - 9:30 AM	12	128	1.14	0	0	0	31	0	0	31	0	0	32	522	83	605
9:30 AM - 9:45 AM	12	128	1.14	0	0	0	31	0	0	31	0	0	32	522	83	605
<b>AM One Hour Volumes</b>	<b>32</b>	<b>423</b>	<b>0.97</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>258</b>	<b>0</b>	<b>0</b>	<b>258</b>	<b>0</b>	<b>0</b>	<b>45</b>	<b>407</b>	<b>783</b>	<b>780</b>
6:30 AM - 7:30 AM	19	391	0.410	0	0	0	75	0	0	75	0	0	85	0	102	0.71
7:30 AM - 8:30 AM	28	430	0.488	0	0	0	85	0	0	85	0	0	95	0	111	0.84
8:30 AM - 9:30 AM	33	468	0.501	0	0	0	87	0	0	87	0	0	106	0	122	0.74
9:30 AM - 10:30 AM	29	478	0.507	0	0	0	83	0	0	83	0	0	102	0	118	0.76
10:30 AM - 11:30 AM	32	437	0.469	0	0	0	78	0	0	78	0	0	94	0	108	0.82
11:30 AM - 12:30 PM	34	427	0.461	0	0	0	109	0	0	109	0	0	116	0	132	0.92
12:30 PM - 1:30 PM	35	416	0.454	0	0	0	119	0	0	119	0	0	123	0	140	0.96
1:30 PM - 2:30 PM	42	438	0.477	0	0	0	101	0	0	101	0	0	119	0	140	0.96
2:30 PM - 3:30 PM	26	433	0.453	0	0	0	75	0	0	75	0	0	83	0	102	0.74
3:30 PM - 4:30 PM	20	445	0.479	0	0	0	64	0	0	64	0	0	73	0	91	0.69
4:30 PM - 5:30 PM	28	442	0.470	0	0	0	44	0	0	44	0	0	54	0	72	0.54
5:30 PM - 6:30 PM	21	409	0.430	0	0	0	66	0	0	66	0	0	71	0	90	0.67
6:30 PM - 7:30 PM	33	324	0.349	0	0	0	55	0	0	55	0	0	61	0	80	0.60
7:30 PM - 8:30 PM	25	359	0.384	0	0	0	67	0	0	67	0	0	74	0	93	0.70
8:30 PM - 9:30 PM	22	383	0.405	0	0	0	55	0	0	55	0	0	63	0	82	0.61
9:30 PM - 10:30 PM	15	348	0.363	0	0	0	49	0	0	49	0	0	55	0	74	0.55
10:30 PM - 11:30 PM	12	374	0.398	0	0	0	31	0	0	31	0	0	36	0	49	0.36
11:30 PM - 12:30 AM	27	471	0.502	0	0	0	87	0	0	87	0	0	90	0	117	0.87
<b>PM One Hour Volumes</b>	<b>101</b>	<b>1767</b>	<b>0.1868</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>229</b>	<b>0</b>	<b>0</b>	<b>229</b>	<b>0</b>	<b>0</b>	<b>33</b>	<b>134</b>	<b>168</b>	<b>0.88</b>
4:30 PM - 5:30 PM	102	1743	0.1845	0	0	0	225	0	0	225	0	0	32	125	157	0.93
5:30 PM - 6:30 PM	99	1644	0.1735	0	0	0	215	0	0	215	0	0	28	120	148	0.88
6:30 PM - 7:30 PM	103	1661	0.1824	0	0	0	224	0	0	224	0	0	26	128	154	0.90
7:30 PM - 8:30 PM	104	1535	0.1639	0	0	0	237	0	0	237	0	0	30	149	179	1.00
8:30 PM - 9:30 PM	95	1464	0.1589	0	0	0	212	0	0	212	0	0	28	152	180	1.00
9:30 PM - 10:30 PM	74	1464	0.1589	0	0	0	188	0	0	188	0	0	21	152	173	0.90
10:30 PM - 11:30 PM	67	1433	0.1530	0	0	0	163	0	0	163	0	0	19	163	182	0.94
11:30 PM - 12:30 AM	67	1433	0.1530	0	0	0	163	0	0	163	0	0	19	163	182	0.94

## McLean, Virginia

### Turning Movement Count - Total Vehicles

**PROJECT:** Alfred St. Baptist Church  
**WVA JOB NO.:** 6383  
**INTERSECTION:** King St. & N. Washington St.  
**LOCATION:** City of Alexandria, VA

**DATE:** 6/19/2015  
**DAY:** Sunday  
**WEATHER:** Sunny  
**COUNTED BY:** Sahn & Armina  
**INPUT BY:** agan

**SOUTHBOUND ROAD:** North Washington Street  
**WESTBOUND ROAD:** South Washington Street  
**EASTBOUND ROAD:** King Street  
**WESTBOUND ROAD:** King Street

Time Period	Southbound			Westbound			Eastbound			North & South	East & West	Total				
	Right	Left	PHF	Right	Left	PHF	Right	Left	PHF							
<b>15 Minute Volumes</b>																
7:00 AM - 7:15 AM	2	35	0.37	0	0	0	5	0	0	11	0	0	16	111	11	122
7:15 AM - 7:30 AM	1	36	0.39	0	0	0	5	0	0	11	0	0	16	111	11	122
7:30 AM - 7:45 AM	2	58	0.60	0	0	0	6	0	0	14	0	0	15	124	14	148
7:45 AM - 8:00 AM	6	60	0.63	0	0	0	7	0	0	20	0	0	170	36	206	242
8:00 AM - 8:15 AM	4	54	0.57	0	0	0	4	0	0	22	0	0	149	40	189	229
8:15 AM - 8:30 AM	5	60	0.63	0	0	0	5	0	0	20	0	0	149	40	189	229
8:30 AM - 8:45 AM	5	60	0.63	0	0	0	5	0	0	20	0	0	149	40	189	229
8:45 AM - 9:00 AM	6	107	1.13	0	0	0	11	0	0	24	0	0	263	42	305	347
9:00 AM - 9:15 AM	6	79	0.85	0	0	0	5	0	0	29	0	0	214	52	266	316
9:15 AM - 9:30 AM	2	16	0.17	0	0	0	12	0	0	34	0	0	110	55	165	200
9:30 AM - 9:45 AM	7	113	1.20	0	0	0	9	0	0	17	0	0	180	86	266	316
9:45 AM - 10:00 AM	14	113	1.27	0	0	0	8	0	0	44	0	0	377	71	388	458
10:00 AM - 10:15 AM	11	101	1.12	0	0	0	12	0	0	34	0	0	297	67	334	401
10:15 AM - 10:30 AM	7	130	1.37	0	0	0	16	0	0	42	0	0	372	93	465	555
10:30 AM - 10:45 AM	7	130	1.37	0	0	0	16	0	0	42	0	0	372	93	465	555
10:45 AM - 11:00 AM	17	147	1.64	0	0	0	12	0	0	47	0	0	362	100	462	562
11:00 AM - 11:15 AM	11	147	1.58	0	0	0	12	0	0	47	0	0	362	100	462	562
11:15 AM - 11:30 AM	17	158	1.85	0	0	0	10	0	0	42	0	0	378	92	470	570
11:30 AM - 11:45 AM	17	158	1.85	0	0	0	10	0	0	42	0	0	378	92	470	570
11:45 AM - 12:00 PM	17	161	1.78	0	0	0	9	0	0	54	0	0	385	100	485	585
12:00 PM - 12:15 PM	18	162	1.70	0	0	0	9	0	0	54	0	0	385	100	485	585
12:15 PM - 12:30 PM	19	162	1.70	0	0	0	9	0	0	54	0	0	385	100	485	585
12:30 PM - 12:45 PM	19	162	1.70	0	0	0	9	0	0	54	0	0	385	100	485	585
12:45 PM - 1:00 PM	21	188	2.05	0	0	0	7	0	0	65	0	0	456	145	601	701
1:00 PM - 1:15 PM	17	176	1.93	0	0	0	10	0	0	63	0	0	421	124	545	645
1:15 PM - 1:30 PM	15	212	2.27	0	0	0	18	0	0	66	0	0	462	132	594	694
1:30 PM - 1:45 PM	12	212	2.27	0	0	0	18	0	0	66	0	0	462	132	594	694
1:45 PM - 2:00 PM	3	70	0.73	0	0	0	10	0	0	64	0	0	441	129	571	671
2:00 PM - 2:15 PM	6	82	0.86	0	0	0	17	0	0	52	0	0	412	129	541	641
2:15 PM - 2:30 PM	12	61	0.65	0	0	0	6	0	0	58	0	0	431	137	568	668
2:30 PM - 2:45 PM	14	53	0.57	0	0	0	9	0	0	54	0	0	420	133	553	653
2:45 PM - 3:00 PM	10	58	0.62	0	0	0	12	0	0	54	0	0	420	133	553	653
<b>Total</b>	<b>391</b>	<b>4312</b>	<b>0.4703</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>966</b>	<b>0</b>	<b>0</b>	<b>1557</b>	<b>0</b>	<b>0</b>	<b>10263</b>	<b>2843</b>	<b>13126</b>	<b>13126</b>
7:00 AM - 7:15 AM	2	34	0.36	0	0	0	5	0	0	11	0	0	16	111	11	122
7:15 AM - 7:30 AM	2	34	0.36	0	0	0	5	0	0	11	0	0	16	111	11	122
7:30 AM - 7:45 AM	2	34	0.36	0	0	0	5	0	0	11	0	0	16	111	11	122
7:45 AM - 8:00 AM	6	60														

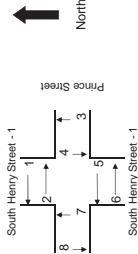


# Wells + Associates, Inc.

McLean, Virginia

## Pedestrian Volume Survey

PROJECT: Alfred St. Baptist Church  
 W-A JOB NO: 6393  
 INTERSECTION: S. Henry St. & Prince St.  
 LOCATION: City of Alexandria, VA  
 DATE: 5/19/2015  
 DAY: Tuesday  
 WEATHER: clear  
 COUNTED BY: Demo  
 INPUT BY: agan



Time Period	Movement							
	1	2	3	4	5	6	7	8
<b>AM 15 Minute Volumes</b>								
6:30 AM - 6:45 AM	4	1	1	2	2	2	2	2
6:45 AM - 7:00 AM	5	1	1	1	2	4	2	2
7:00 AM - 7:15 AM	1	1	1	1	2	1	1	1
7:15 AM - 7:30 AM	1	1	4	3	1			
7:30 AM - 7:45 AM	7	1	4	2	3	2		
7:45 AM - 8:00 AM	10	2	3	1	4	1		
8:00 AM - 8:15 AM	4	4	1	1	1	1	6	
8:15 AM - 8:30 AM	4	3	1	2	2	2	2	
8:30 AM - 8:45 AM	6	3	1	2	2	2	2	
8:45 AM - 9:00 AM	8	6	3	1	3	2	2	
9:00 AM - 9:15 AM	3	7	1	1	6	2	4	
9:15 AM - 9:30 AM	2	1	1	1	1	1	3	
<b>Total</b>	<b>53</b>	<b>29</b>	<b>15</b>	<b>7</b>	<b>21</b>	<b>31</b>	<b>14</b>	<b>20</b>
<b>AM One Hour Volumes</b>								
6:30 AM - 7:30 AM	9	2	2	3	9	11	1	4
7:30 AM - 8:30 AM	16	2	6	2	9	12	1	4
8:30 AM - 9:30 AM	22	4	8	3	11	9	1	2
<b>Total</b>	<b>47</b>	<b>8</b>	<b>16</b>	<b>5</b>	<b>21</b>	<b>22</b>	<b>2</b>	<b>10</b>
<b>PM 15 Minute Volumes</b>								
4:30 PM - 4:45 PM	6	3	3	4	3	2		
4:45 PM - 5:00 PM	3	1	1	1	1	1	1	2
5:00 PM - 5:15 PM	2	3	1	4	1	5	2	
5:15 PM - 5:30 PM	1	5	3	2	1	2		
5:30 PM - 5:45 PM	9	6	1	1	3	7	3	5
5:45 PM - 6:00 PM	1	4	2	3	8	2		
6:00 PM - 6:15 PM	6	5	1	3	4	4	3	
6:15 PM - 6:30 PM	4	5	4	1	9	8	4	3
6:30 PM - 6:45 PM	1	4	1	3	9	3	1	
6:45 PM - 7:00 PM	2	3	3	4	4	4	1	2
7:00 PM - 7:15 PM	3	4	4	6	7	2	2	
7:15 PM - 7:30 PM	3	4	6	7	2	2		
<b>Total</b>	<b>42</b>	<b>48</b>	<b>12</b>	<b>11</b>	<b>44</b>	<b>63</b>	<b>29</b>	<b>22</b>
<b>PM One Hour Volumes</b>								
4:30 PM - 5:30 PM	12	12	0	5	10	6	10	4
5:30 PM - 6:30 PM	15	15	1	6	9	10	11	9
6:30 PM - 7:30 PM	13	18	3	5	12	17	10	9
<b>Total</b>	<b>40</b>	<b>45</b>	<b>4</b>	<b>11</b>	<b>20</b>	<b>27</b>	<b>21</b>	<b>22</b>

# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - Bicycles

PROJECT: Alfred St. Baptist Church  
 W-A JOB NO: 6393  
 INTERSECTION: S. Henry St. & Prince St.  
 LOCATION: City of Alexandria, VA  
 DATE: 5/19/2015  
 DAY: Tuesday  
 WEATHER: clear  
 COUNTED BY: Maria  
 INPUT BY: agan

Time Period	Southbound South Henry Street - 1			Northbound South Henry Street - 1			Eastbound Prince Street			Westbound Prince Street			North & South		East & West	Total	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru			
<b>AM 15 Minute Volumes</b>																	
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM - 7:00 AM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>AM One Hour Volumes</b>																	
6:30 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>PM 15 Minute Volumes</b>																	
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM - 7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>PM One Hour Volumes</b>																	
4:30 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>



Wells + Associates, Inc.  
McLean, Virginia

Turning Movement Count - All Vehicles

PROJECT: Alfred St. Baptist Church  
WVA JOB NO: 6883  
INTERSECTION: S. Henry St. & Prince St.  
COUNTED BY: Damir & Magda  
INPUTED BY: agan

DATE: 5/19/2015  
DAY: Tuesday  
WEATHER: clear  
COUNTED BY: Damir & Magda  
INPUTED BY: agan

SOUTHBOUND ROAD: South Henry Street - 1  
WESTBOUND ROAD: South Henry Street - 1  
EASTBOUND ROAD: Prince Street

SOUTHBOUND ROAD: South Henry Street - 1  
WESTBOUND ROAD: Prince Street  
EASTBOUND ROAD: Prince Street

Time Period	Southbound - Prince Street - 1			Westbound - Prince Street			Eastbound - Prince Street			North & East - South & West	Total
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
<b>AM 15 Minute Volumes</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>PHF</b>	<b>Total</b>
6:30 AM - 6:45 AM	0	214	2	216	0	0	0	0	0	0.00	216
6:45 AM - 7:00 AM	0	264	7	271	0	0	0	0	0	0.00	271
7:00 AM - 7:15 AM	0	314	13	327	0	0	0	0	0	0.00	327
7:15 AM - 7:30 AM	0	319	13	332	0	0	0	0	0	0.00	332
7:30 AM - 7:45 AM	0	303	20	323	0	0	0	0	0	0.00	323
7:45 AM - 8:00 AM	0	320	17	337	0	0	0	0	0	0.00	337
8:00 AM - 8:15 AM	0	323	22	345	0	0	0	0	0	0.00	345
8:15 AM - 8:30 AM	0	296	15	311	0	0	0	0	0	0.00	311
8:30 AM - 8:45 AM	0	277	18	295	0	0	0	0	0	0.00	295
8:45 AM - 9:00 AM	0	290	20	310	0	0	0	0	0	0.00	310
9:00 AM - 9:15 AM	0	373	17	390	0	0	0	0	0	0.00	390
9:15 AM - 9:30 AM	0	426	28	454	0	0	0	0	0	0.00	454
9:30 AM - 9:45 AM	0	411	44	455	0	0	0	0	0	0.00	455
9:45 AM - 10:00 AM	0	426	58	484	0	0	0	0	0	0.00	484
10:00 AM - 10:15 AM	0	426	58	484	0	0	0	0	0	0.00	484
10:15 AM - 10:30 AM	0	426	58	484	0	0	0	0	0	0.00	484
10:30 AM - 10:45 AM	0	426	58	484	0	0	0	0	0	0.00	484
10:45 AM - 11:00 AM	0	426	58	484	0	0	0	0	0	0.00	484
11:00 AM - 11:15 AM	0	426	58	484	0	0	0	0	0	0.00	484
11:15 AM - 11:30 AM	0	426	58	484	0	0	0	0	0	0.00	484
11:30 AM - 11:45 AM	0	426	58	484	0	0	0	0	0	0.00	484
11:45 AM - 12:00 PM	0	426	58	484	0	0	0	0	0	0.00	484
12:00 PM - 12:15 PM	0	426	58	484	0	0	0	0	0	0.00	484
12:15 PM - 12:30 PM	0	426	58	484	0	0	0	0	0	0.00	484
12:30 PM - 12:45 PM	0	426	58	484	0	0	0	0	0	0.00	484
12:45 PM - 1:00 PM	0	426	58	484	0	0	0	0	0	0.00	484
1:00 PM - 1:15 PM	0	426	58	484	0	0	0	0	0	0.00	484
1:15 PM - 1:30 PM	0	426	58	484	0	0	0	0	0	0.00	484
1:30 PM - 1:45 PM	0	426	58	484	0	0	0	0	0	0.00	484
1:45 PM - 2:00 PM	0	426	58	484	0	0	0	0	0	0.00	484
2:00 PM - 2:15 PM	0	426	58	484	0	0	0	0	0	0.00	484
2:15 PM - 2:30 PM	0	426	58	484	0	0	0	0	0	0.00	484
2:30 PM - 2:45 PM	0	426	58	484	0	0	0	0	0	0.00	484
2:45 PM - 3:00 PM	0	426	58	484	0	0	0	0	0	0.00	484
<b>One Hour Volumes</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>PHF</b>	<b>Total</b>
6:30 AM - 7:30 AM	0	1026	28	1054	0	0	0	0	0	0.00	1054
7:30 AM - 8:30 AM	0	1131	44	1175	0	0	0	0	0	0.00	1175
8:30 AM - 9:30 AM	0	1200	58	1258	0	0	0	0	0	0.00	1258
9:30 AM - 10:30 AM	0	1258	58	1316	0	0	0	0	0	0.00	1316
10:30 AM - 11:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
11:30 AM - 12:30 PM	0	1271	78	1349	0	0	0	0	0	0.00	1349
12:30 PM - 1:30 PM	0	1271	78	1349	0	0	0	0	0	0.00	1349
1:30 PM - 2:30 PM	0	1271	78	1349	0	0	0	0	0	0.00	1349
2:30 PM - 3:30 PM	0	1271	78	1349	0	0	0	0	0	0.00	1349
3:30 PM - 4:30 PM	0	1271	78	1349	0	0	0	0	0	0.00	1349
4:30 PM - 5:30 PM	0	1271	78	1349	0	0	0	0	0	0.00	1349
5:30 PM - 6:30 PM	0	1271	78	1349	0	0	0	0	0	0.00	1349
6:30 PM - 7:30 PM	0	1271	78	1349	0	0	0	0	0	0.00	1349
7:30 PM - 8:30 PM	0	1271	78	1349	0	0	0	0	0	0.00	1349
8:30 PM - 9:30 PM	0	1271	78	1349	0	0	0	0	0	0.00	1349
9:30 PM - 10:30 PM	0	1271	78	1349	0	0	0	0	0	0.00	1349
10:30 PM - 11:30 PM	0	1271	78	1349	0	0	0	0	0	0.00	1349
11:30 PM - 12:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
12:30 AM - 1:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
1:30 AM - 2:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
2:30 AM - 3:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
3:30 AM - 4:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
4:30 AM - 5:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
5:30 AM - 6:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
6:30 AM - 7:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
7:30 AM - 8:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
8:30 AM - 9:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
9:30 AM - 10:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
10:30 AM - 11:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
11:30 AM - 12:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
12:30 AM - 1:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
1:30 AM - 2:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
2:30 AM - 3:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
3:30 AM - 4:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
4:30 AM - 5:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
5:30 AM - 6:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
6:30 AM - 7:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
7:30 AM - 8:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
8:30 AM - 9:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
9:30 AM - 10:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
10:30 AM - 11:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
11:30 AM - 12:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
12:30 AM - 1:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
1:30 AM - 2:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
2:30 AM - 3:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
3:30 AM - 4:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
4:30 AM - 5:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
5:30 AM - 6:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
6:30 AM - 7:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
7:30 AM - 8:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
8:30 AM - 9:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
9:30 AM - 10:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
10:30 AM - 11:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
11:30 AM - 12:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
12:30 AM - 1:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
1:30 AM - 2:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
2:30 AM - 3:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
3:30 AM - 4:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
4:30 AM - 5:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
5:30 AM - 6:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
6:30 AM - 7:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
7:30 AM - 8:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
8:30 AM - 9:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
9:30 AM - 10:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
10:30 AM - 11:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
11:30 AM - 12:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
12:30 AM - 1:30 AM	0	1271	78	1349	0	0	0	0	0	0.00	1349
1:30 AM - 2:30 AM	0										



# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - Bicycles

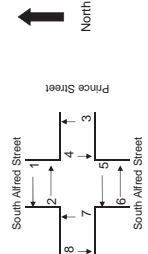
Time Period	Southbound South Alfred Street			Northbound South Alfred Street			Eastbound Prince Street			Westbound Prince Street			North & South		East & West	Total
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru		
<b>AM 15 Minute Volumes</b>																
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>AM One Hour Volumes</b>																
6:30 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>PM 15 Minute Volumes</b>																
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM - 7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>PM One Hour Volumes</b>																
4:30 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

# Wells + Associates, Inc.

McLean, Virginia

## Pedestrian Volume Survey

Time Period	Southbound		Northbound		Eastbound		Westbound		Total	
	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left
<b>AM 15 Minute Volumes</b>										
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	0
6:45 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0
9:00 AM - 9:15 AM	0	0	0	0	0	0	0	0	0	0
9:15 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0
<b>AM One Hour Volumes</b>										
6:30 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0
7:30 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0
8:30 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0
<b>PM 15 Minute Volumes</b>										
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0
6:00 PM - 6:15 PM	0	0	0	0	0	0	0	0	0	0
6:15 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0
6:30 PM - 6:45 PM	0	0	0	0	0	0	0	0	0	0
6:45 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0
7:00 PM - 7:15 PM	0	0	0	0	0	0	0	0	0	0
7:15 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0
<b>PM One Hour Volumes</b>										
4:30 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0
5:30 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0
6:30 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0



**Wells + Associates, Inc.**  
McLean, Virginia

**Pedestrian Volume Survey**

PROJECT: Alfred St. Baptist Church  
 W. A. Wells + Associates, Inc.  
 INTERSECTION: S. Alfred St. & Prince St.  
 LOCATION: City of Alexandria, VA  
 DATE: 6/7/2015  
 DAY: Sunday  
 WEATHER: clear  
 COUNTED BY: Salih  
 INPUT BY: Salih

Time Period	Movement							
	1	2	3	4	5	6	7	8
<b>15 Minute Volumes</b>	<b>1+2 3+4 5+6 7+8 Total</b>							
7:00 AM - 7:15 AM	1	1	1	1	1	3	2	2
7:15 AM - 7:30 AM	3	2	5	3	1	10	3	7
7:30 AM - 7:45 AM	2	2	6	3	1	11	3	7
7:45 AM - 8:00 AM	2	2	6	3	1	11	3	7
8:00 AM - 8:15 AM	3	1	3	1	0	2	2	2
8:15 AM - 8:30 AM	3	4	2	1	1	0	2	2
8:30 AM - 8:45 AM	1	2	2	2	2	2	2	2
8:45 AM - 9:00 AM	1	2	2	2	2	2	2	2
9:00 AM - 9:15 AM	10	7	13	1	1	8	26	4
9:15 AM - 9:30 AM	3	4	5	1	3	6	23	5
9:30 AM - 9:45 AM	3	4	5	1	3	6	23	5
9:45 AM - 10:00 AM	3	4	5	1	3	6	23	5
10:00 AM - 10:15 AM	2	6	4	3	4	4	11	7
10:15 AM - 10:30 AM	2	6	4	3	4	4	11	7
10:30 AM - 10:45 AM	2	6	4	3	4	4	11	7
10:45 AM - 11:00 AM	5	11	2	3	8	8	6	7
11:00 AM - 11:15 AM	5	11	2	3	8	8	6	7
11:15 AM - 11:30 AM	10	14	3	2	3	7	1	10
11:30 AM - 11:45 AM	2	5	4	5	3	3	3	3
11:45 AM - 12:00 PM	4	3	1	6	2	7	3	7
12:00 PM - 12:15 PM	3	4	2	1	5	6	3	4
12:15 PM - 12:30 PM	3	4	2	1	5	6	3	4
12:30 PM - 12:45 PM	2	3	1	6	1	3	8	3
12:45 PM - 1:00 PM	2	3	1	6	1	3	8	3
1:00 PM - 1:15 PM	2	7	3	3	2	7	7	0
1:15 PM - 1:30 PM	3	2	8	3	2	14	8	1
1:30 PM - 1:45 PM	3	2	8	3	2	14	8	1
1:45 PM - 2:00 PM	3	8	4	1	4	5	3	2
2:00 PM - 2:15 PM	6	5	1	4	3	2	2	2
2:15 PM - 2:30 PM	3	4	4	5	2	2	6	2
2:30 PM - 2:45 PM	3	4	4	5	2	2	6	2
2:45 PM - 3:00 PM	2	5	3	5	2	1	2	2
<b>Total</b>	<b>102</b>	<b>136</b>	<b>96</b>	<b>74</b>	<b>92</b>	<b>117</b>	<b>182</b>	<b>133</b>

**McLean, Virginia**

**Turning Movement Count - Bicycles**

PROJECT: Alfred St. Baptist Church  
 W. A. Wells + Associates, Inc.  
 INTERSECTION: S. Alfred St. & Prince St.  
 LOCATION: City of Alexandria, VA  
 DATE: 6/7/2015  
 WEATHER: clear  
 COUNTED BY: Salih  
 INPUT BY: Salih

SOUTHBOUND ROAD: South Alfred Street  
 NORTHBOUND ROAD: South Alfred Street  
 WESTBOUND ROAD: Prince Street  
 EASTBOUND ROAD: Prince Street

Time Period	Southbound		Westbound		Eastbound		Total	
	Right	Left	Right	Left	Right	Left	Right	Left
<b>15 Minute Volumes</b>	<b>1+2 3+4 5+6 7+8 Total</b>							
7:00 AM - 7:15 AM	1	1	1	1	1	1	1	1
7:15 AM - 7:30 AM	2	2	2	2	2	2	2	2
7:30 AM - 7:45 AM	2	2	2	2	2	2	2	2
7:45 AM - 8:00 AM	2	2	2	2	2	2	2	2
8:00 AM - 8:15 AM	1	1	1	1	1	1	1	1
8:15 AM - 8:30 AM	1	1	1	1	1	1	1	1
8:30 AM - 8:45 AM	1	1	1	1	1	1	1	1
8:45 AM - 9:00 AM	1	1	1	1	1	1	1	1
9:00 AM - 9:15 AM	1	1	1	1	1	1	1	1
9:15 AM - 9:30 AM	4	4	4	4	4	4	4	4
9:30 AM - 9:45 AM	1	1	1	1	1	1	1	1
9:45 AM - 10:00 AM	1	1	1	1	1	1	1	1
10:00 AM - 10:15 AM	1	1	1	1	1	1	1	1
10:15 AM - 10:30 AM	1	1	1	1	1	1	1	1
10:30 AM - 10:45 AM	1	1	1	1	1	1	1	1
10:45 AM - 11:00 AM	1	1	1	1	1	1	1	1
11:00 AM - 11:15 AM	1	1	1	1	1	1	1	1
11:15 AM - 11:30 AM	1	1	1	1	1	1	1	1
11:30 AM - 11:45 AM	2	2	2	2	2	2	2	2
11:45 AM - 12:00 PM	2	2	2	2	2	2	2	2
12:00 PM - 12:15 PM	1	1	1	1	1	1	1	1
12:15 PM - 12:30 PM	1	1	1	1	1	1	1	1
12:30 PM - 12:45 PM	1	1	1	1	1	1	1	1
12:45 PM - 1:00 PM	1	1	1	1	1	1	1	1
1:00 PM - 1:15 PM	1	1	1	1	1	1	1	1
1:15 PM - 1:30 PM	1	1	1	1	1	1	1	1
1:30 PM - 1:45 PM	2	2	2	2	2	2	2	2
1:45 PM - 2:00 PM	2	2	2	2	2	2	2	2
2:00 PM - 2:15 PM	1	1	1	1	1	1	1	1
2:15 PM - 2:30 PM	1	1	1	1	1	1	1	1
2:30 PM - 2:45 PM	1	1	1	1	1	1	1	1
2:45 PM - 3:00 PM	1	1	1	1	1	1	1	1
<b>Total</b>	<b>0</b>	<b>5</b>	<b>7</b>	<b>12</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>8</b>

**Wells + Associates, Inc.**  
McLean, Virginia

**Turning Movement Count - All Vehicles**

PROJECT: Alfred St. Baptist Church  
WVA JOB NO: 6383  
INTERSECTION: S. Alfred St. & Prince St.  
LOCATION: City of Alexandria, VA

DATE: 5/19/2015  
DAY: Tuesday  
WEATHER: clear  
COUNTED BY: Camill  
INPUTED BY: Camill

SOUTHBOUND ROAD: South Alfred Street  
NORTHBOUND ROAD: South Alfred Street  
WESTBOUND ROAD: Prince Street  
EASTBOUND ROAD: Prince Street

Time Period	Southbound			Northbound			Eastbound			Westbound		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
<b>15 Minute Volumes</b>	<b>Total</b>											
6:30 AM - 6:45 AM	0	2	0	0	0	0	0	0	0	0	0	0
6:45 AM - 7:00 AM	0	2	0	0	0	0	0	0	0	0	0	0
7:00 AM - 7:15 AM	0	2	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	2	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	2	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	2	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	2	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	2	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	2	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	2	0	0	0	0	0	0	0	0	0	0
9:00 AM - 9:15 AM	0	2	0	0	0	0	0	0	0	0	0	0
9:15 AM - 9:30 AM	0	2	0	0	0	0	0	0	0	0	0	0
<b>AM One Hour Volumes</b>	0	16	0	0	0	0	0	0	0	0	0	0
6:30 AM - 7:30 AM	0	25	0	0	0	0	0	0	0	0	0	0
7:30 AM - 8:30 AM	0	27	0	0	0	0	0	0	0	0	0	0
8:30 AM - 9:30 AM	0	32	0	0	0	0	0	0	0	0	0	0
9:30 AM - 10:30 AM	0	45	0	0	0	0	0	0	0	0	0	0
10:30 AM - 11:30 AM	0	46	0	0	0	0	0	0	0	0	0	0
11:30 AM - 12:30 PM	0	49	0	0	0	0	0	0	0	0	0	0
12:30 PM - 1:30 PM	0	49	0	0	0	0	0	0	0	0	0	0
1:30 PM - 2:30 PM	0	49	0	0	0	0	0	0	0	0	0	0
2:30 PM - 3:30 PM	0	49	0	0	0	0	0	0	0	0	0	0
3:30 PM - 4:30 PM	0	49	0	0	0	0	0	0	0	0	0	0
<b>PM One Hour Volumes</b>	0	42	0	0	0	0	0	0	0	0	0	0
4:30 PM - 5:30 PM	0	45	0	0	0	0	0	0	0	0	0	0
5:30 PM - 6:30 PM	0	56	0	0	0	0	0	0	0	0	0	0
6:30 PM - 7:30 PM	0	77	0	0	0	0	0	0	0	0	0	0
7:30 PM - 8:30 PM	0	107	0	0	0	0	0	0	0	0	0	0
8:30 PM - 9:30 PM	0	177	0	0	0	0	0	0	0	0	0	0
9:30 PM - 10:30 PM	0	88	0	0	0	0	0	0	0	0	0	0
10:30 PM - 11:30 PM	0	79	0	0	0	0	0	0	0	0	0	0
11:30 PM - 12:30 AM	0	51	0	0	0	0	0	0	0	0	0	0
12:30 AM - 1:30 AM	0	78	0	0	0	0	0	0	0	0	0	0
<b>AM One Hour Volumes</b>	0	206	0	0	0	0	0	0	0	0	0	0
4:30 PM - 5:30 PM	0	241	0	0	0	0	0	0	0	0	0	0
5:30 PM - 6:30 PM	0	336	0	0	0	0	0	0	0	0	0	0
6:30 PM - 7:30 PM	0	530	0	0	0	0	0	0	0	0	0	0
7:30 PM - 8:30 PM	0	830	0	0	0	0	0	0	0	0	0	0
8:30 PM - 9:30 PM	0	1341	0	0	0	0	0	0	0	0	0	0
9:30 PM - 10:30 PM	0	2061	0	0	0	0	0	0	0	0	0	0
10:30 PM - 11:30 PM	0	2561	0	0	0	0	0	0	0	0	0	0
11:30 PM - 12:30 AM	0	2561	0	0	0	0	0	0	0	0	0	0
12:30 AM - 1:30 AM	0	2561	0	0	0	0	0	0	0	0	0	0
1:30 AM - 2:30 AM	0	2561	0	0	0	0	0	0	0	0	0	0
2:30 AM - 3:30 AM	0	2561	0	0	0	0	0	0	0	0	0	0
3:30 AM - 4:30 AM	0	2561	0	0	0	0	0	0	0	0	0	0
<b>PM One Hour Volumes</b>	0	206	0	0	0	0	0	0	0	0	0	0
4:30 PM - 5:30 PM	0	241	0	0	0	0	0	0	0	0	0	0
5:30 PM - 6:30 PM	0	336	0	0	0	0	0	0	0	0	0	0
6:30 PM - 7:30 PM	0	530	0	0	0	0	0	0	0	0	0	0
7:30 PM - 8:30 PM	0	830	0	0	0	0	0	0	0	0	0	0
8:30 PM - 9:30 PM	0	1341	0	0	0	0	0	0	0	0	0	0
9:30 PM - 10:30 PM	0	2061	0	0	0	0	0	0	0	0	0	0
10:30 PM - 11:30 PM	0	2561	0	0	0	0	0	0	0	0	0	0
11:30 PM - 12:30 AM	0	2561	0	0	0	0	0	0	0	0	0	0
12:30 AM - 1:30 AM	0	2561	0	0	0	0	0	0	0	0	0	0
1:30 AM - 2:30 AM	0	2561	0	0	0	0	0	0	0	0	0	0
2:30 AM - 3:30 PM	0	2561	0	0	0	0	0	0	0	0	0	0
3:30 PM - 4:30 PM	0	2561	0	0	0	0	0	0	0	0	0	0

**McLean, Virginia**  
**Turning Movement Count - Total Vehicles**

PROJECT: Alfred St. Baptist Church  
WVA JOB NO: 6383  
INTERSECTION: S. Alfred St. & Prince St.  
LOCATION: City of Alexandria, VA

DATE: 6/7/2015  
DAY: Sunday  
WEATHER: Sunny  
COUNTED BY: Salih  
INPUTED BY: again

SOUTHBOUND ROAD: South Alfred Street  
NORTHBOUND ROAD: South Alfred Street  
WESTBOUND ROAD: Prince Street  
EASTBOUND ROAD: Prince Street

Time Period	Southbound			Northbound			Eastbound			Westbound		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
<b>15 Minute Volumes</b>	<b>Total</b>											
7:00 AM - 7:15 AM	5	2	2	2	2	2	3	4	7	7	7	14
7:15 AM - 7:30 AM	8	8	16	5	17	1	1	21	7	23	21	44
7:30 AM - 7:45 AM	5	2	7	3	17	1	1	21	7	23	21	44
7:45 AM - 8:00 AM	8	2	10	2	25	3	3	30	3	31	30	61
8:00 AM - 8:15 AM	6	3	9	6	28	2	3	36	2	28	36	62
8:15 AM - 8:30 AM	3	2	5	8	33	3	3	38	1	11	33	47
8:30 AM - 8:45 AM	6	3	9	3	35	3	3	38	1	11	31	41
8:45 AM - 9:00 AM	3	3	6	1	29	1	1	34	1	10	34	45
9:00 AM - 9:15 AM	5	1	6	2	31	1	1	34	1	10	35	46
9:15 AM - 9:30 AM	2	6	8	1	30	1	1	35	1	10	35	46
9:30 AM - 9:45 AM	2	16	10	6	30	3	3	39	3	30	39	108
9:45 AM - 10:00 AM	6	2	8	6	30	3	3	39	3	30	39	108
10:00 AM - 10:15 AM	11	3	15	4	116	4	127	38	127	165	165	165
10:15 AM - 10:30 AM	11	1	12	5	71	7	63	27	63	110	110	110
10:30 AM - 10:45 AM	12	4	16	10	69	6	76	42	76	136	136	136
10:45 AM - 11:00 AM	10	2	12	10	69	6	76	42	76	136	136	136
11:00 AM - 11:15 AM	21	2	23	9	79	2	90	49	90	139	139	139
11:15 AM - 11:30 AM	13	2	15	3	54	5	57	36	57	83	83	83
11:30 AM - 11:45 AM	12	3	15	7	73	4	84	51	84	126	126	126
11:45 AM - 12:00 PM	13	5	18	5	58	3	66	41	66	107	107	107
12:00 PM - 12:15 PM	20	6	26	2	22	2	2	48	62	110	110	110
12:15 PM - 12:30 PM	17	11	28	5	79	3	87	54	87	141	141	141
12:30 PM - 12:45 PM	17	11	28	5	79	3	87	54	87	141	141	141
12:45 PM - 1:00 PM	25	8	33	3	19	2	2	71	64	139	139	139
1:00 PM - 1:15 PM	24	4	28	2	26	2	2	65	54	78	78	78
1:15 PM - 1:30 PM	21	3	24	10	69	4	82	58	82	140	140	140
1:30 PM - 1:45 PM	26	5	31	2	21	2	2	48	62	110	110	110
1:45 PM - 2:00 PM	26	5	31	2	21	2	2	48	62	110	110	110
2:00 PM - 2:15 PM	21	1	22	3	48	6	57	42	57	99	99	99
2:15 PM - 2:30 PM	20	3	23	6	18	2	2	45	63	108	108	108
2:30 PM - 2:45 PM	19	2	21	3	26	2	2	45	63	108	108	108
2:45 PM - 3:00 PM	19	2	21	3	26	2	2	45	63	108	108	108
<b>One Hour Volumes</b>	0	433	97	0	112	440	0	661	157	1740	98	1995
7:00 AM - 7:15 AM	25	3	28	34	153	3	160	97	160	205	205	205
7:15 AM - 7:30 AM	25	3	28	34	153	3	160	97	160	205	205	205
7:30 AM - 7:45 AM	20	9	29	64	162	11	184	7	184	222	222	222
7:45 AM - 8:00 AM	18	7	25	56	166	8	178	9	178	218	218	218
8:00 AM - 8:15 AM	15	6	21	31	138	7	152	7	152	196	196	196
8:15 AM - 8:30 AM	17	3	20	38	159	4	171	10	171	215	215	215
8:30 AM - 8:45 AM	26	2	28	38	159	4	171	10	171	215	215	215
8:45 AM - 9:00 AM	31	4	35	50	162	8	178	10	178	225	225	225
9:00 AM - 9:15 AM	38	6	44	69	174	13	205	13	205	262	262	262
9:15 AM - 9:30 AM	35	4	39	63	166	11	190	11	190	241	241	241
9:30 AM - 9:45 AM	44	10	54	73	183	21	226	16	226	283	283	283
9:45 AM - 10:00 AM	55	11	66	91	199	25	246	19	246	317	317	317
10:00 AM - 10:15 AM	63	10	73	95	202	27	249	17	249	326	326	326
10:15 AM - 10:30 AM	65	10	75	95	202	27	249	17	249	326	326	326
10:30 AM - 10:45 AM	65	10	75</									



# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - Bicycles

Time Period	Southbound South Henry Street - 1			Northbound South Henry Street - 1			Eastbound Duke Street - 236			Westbound Duke Street - 236			North & South		East & West Total
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	South	North	
<b>AM 15 Minute Volumes</b>															
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1
6:45 AM - 7:00 AM	0	0	0	1	1	1	0	0	0	0	0	0	0	0	1
7:00 AM - 7:15 AM	0	0	0	1	1	1	0	0	0	0	0	0	0	0	1
7:15 AM - 7:30 AM	0	0	0	1	1	1	0	0	0	0	0	0	0	0	1
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	1	1	1	0	0	0	0	0	0	0	0	2
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	2	2	2	0	0	0	0	0	0	0	0	3
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM - 9:00 AM	0	0	0	1	1	1	0	0	0	0	0	0	0	0	2
9:00 AM - 9:15 AM	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1
9:15 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	2	0	0	6	6	6	0	0	0	0	0	0	5	2	11
<b>AM One Hour Volumes</b>															
6:30 AM - 7:30 AM	0	0	0	3	3	3	0	0	0	0	0	0	1	0	4
7:30 AM - 8:30 AM	0	0	0	3	3	3	0	0	0	0	0	0	0	0	3
8:30 AM - 9:30 AM	0	0	0	3	3	3	0	0	0	0	0	0	0	0	4
<b>Total</b>	0	0	0	6	6	6	0	0	0	0	0	0	1	0	8
<b>PM 15 Minute Volumes</b>															
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	3	3	3	0	0	0	0	0	0	0	0	3
5:00 PM - 5:15 PM	0	0	0	1	1	1	0	0	0	0	0	0	0	0	1
5:15 PM - 5:30 PM	0	0	0	1	1	1	0	0	0	0	0	0	0	0	1
5:30 PM - 5:45 PM	1	1	1	0	0	0	0	0	0	0	0	0	0	0	3
5:45 PM - 6:00 PM	0	0	0	2	2	2	0	0	0	0	0	0	0	0	2
6:00 PM - 6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM - 6:30 PM	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1
6:30 PM - 6:45 PM	0	0	0	1	1	1	0	0	0	0	0	0	0	0	2
6:45 PM - 7:00 PM	0	0	0	1	1	1	0	0	0	0	0	0	0	0	2
7:00 PM - 7:15 PM	0	0	0	1	1	1	0	0	0	0	0	0	0	0	1
7:15 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	2	0	0	11	11	11	1	0	1	2	0	0	5	2	18
<b>PM One Hour Volumes</b>															
4:30 PM - 5:30 PM	0	0	0	5	5	5	0	0	0	0	0	0	0	0	5
5:30 PM - 6:30 PM	1	0	0	6	6	6	0	0	0	0	0	0	0	0	6
6:30 PM - 7:30 PM	1	0	0	4	4	4	0	0	0	0	0	0	0	0	4
<b>Total</b>	2	0	0	15	15	15	0	0	0	0	0	0	0	0	15

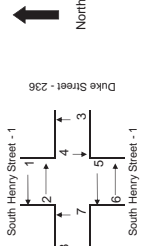
# Wells + Associates, Inc.

McLean, Virginia

## Pedestrian Volume Survey

PROJECT: Alfred St. Baptist Church  
 W-A JOB NO: 6393  
 INTERSECTION: Duke St. & S. Henry St.  
 LOCATION: City of Alexandria, VA

DATE: 5/20/2015  
 DAY: Wednesday  
 WEATHER: clear  
 COUNTED BY: Geraldin  
 INPUT BY: agan



Time Period	Movement							
	1	2	3	4	5	6	7	8
<b>AM 15 Minute Volumes</b>								
6:30 AM - 6:45 AM	2				7			2
6:45 AM - 7:00 AM	1	2			2		3	1
7:00 AM - 7:15 AM	1	4			1	1	3	2
7:15 AM - 7:30 AM	2	1	1	1	2	1	2	1
7:30 AM - 7:45 AM	2	1	1	1	1	1	1	1
7:45 AM - 8:00 AM	2	1	1	1	1	1	1	1
8:00 AM - 8:15 AM	1	1	1	1	1	1	1	2
8:15 AM - 8:30 AM	3	4	1	1	2	6		
8:30 AM - 8:45 AM	3	2	1	4	1			
8:45 AM - 9:00 AM	3	2	1	1	4	2	2	
9:00 AM - 9:15 AM	3	1	1	3	1			
9:15 AM - 9:30 AM	1	1	1	3	3			
<b>Total</b>	19	17	4	1	20	15	23	15
<b>AM One Hour Volumes</b>								
6:30 AM - 7:30 AM	6	6	1	0	11	2	8	6
7:30 AM - 8:30 AM	7	5	2	0	4	2	9	5
8:30 AM - 9:30 AM	6	2	0	4	2	10	2	6
<b>Total</b>	19	13	3	4	17	12	19	17
<b>PM 15 Minute Volumes</b>								
4:30 PM - 4:45 PM	1							
4:45 PM - 5:00 PM	3	3	3	1	4	1	6	
5:00 PM - 5:15 PM	2	2	3	1	3	1	3	
5:15 PM - 5:30 PM	2	6	6	6	6	7	4	1
5:30 PM - 5:45 PM	1	3	3	1	1	1	1	
5:45 PM - 6:00 PM	5	2	2	4	6	3	1	
6:00 PM - 6:15 PM	3	3	1	4	3	1	4	3
6:15 PM - 6:30 PM	1	1	1	1	2	5	2	3
6:30 PM - 6:45 PM	1	1	1	1	2	5	2	3
6:45 PM - 7:00 PM	1	1	1	1	3	8	5	3
7:00 PM - 7:15 PM	1	1	1	1	3	8	5	3
7:15 PM - 7:30 PM	1	1	1	1	3	8	5	3
<b>Total</b>	15	36	36	7	17	30	27	30
<b>PM One Hour Volumes</b>								
4:30 PM - 5:30 PM	4	7	7	4	1	5	1	9
5:30 PM - 6:30 PM	5	13	13	4	1	5	6	13
6:30 PM - 7:30 PM	5	17	17	3	7	12	10	14
<b>Total</b>	14	37	37	11	12	17	17	26







# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - Bicycles

Time Period	Southbound - 1			Northbound			Eastbound			North & South			East & West	Total	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left			
<b>AM 15 Minute Volumes</b>															
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1
6:45 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>5</b>	<b>0</b>	<b>13</b>
<b>AM One Hour Volumes</b>															
6:30 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>PM 15 Minute Volumes</b>															
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM - 7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>PM One Hour Volumes</b>															
4:30 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

# Wells + Associates, Inc.

McLean, Virginia

## Pedestrian Volume Survey

Time Period	Southbound - 1			Northbound			Eastbound			North & South			East & West	Total	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left			
<b>AM 15 Minute Volumes</b>															
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1
6:45 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>5</b>	<b>0</b>	<b>13</b>
<b>AM One Hour Volumes</b>															
6:30 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>PM 15 Minute Volumes</b>															
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM - 7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>PM One Hour Volumes</b>															
4:30 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>



# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - All Vehicles

PROJECT: Alfred St. Baptist Church  
 WVA JOB NO: 6383  
 INTERSECTION: Duke St. & S. Patrick St.  
 LOCATION: City of Alexandria, VA

DATE: 5/20/2015  
 DAY: Wednesday  
 WEATHER: clear  
 COUNTED BY: Whitney & Dominique  
 INPUTED BY: again

SOUTHBOUND ROAD: South Patrick Street - 1  
 NORTHBOUND ROAD: South Patrick Street - 1  
 WESTBOUND ROAD: Duke Street - 236  
 EASTBOUND ROAD: Duke Street - 236

Time Period	Southbound			Northbound			Eastbound			Westbound		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
<b>AM 15 Minute Volumes</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	51	0	58	2	60
6:45 AM - 7:00 AM	0	0	0	0	0	0	12	566	51	629	11	740
7:00 AM - 7:15 AM	0	0	0	0	0	0	23	519	47	589	13	702
7:15 AM - 7:30 AM	0	0	0	0	0	0	15	477	54	546	21	727
7:30 AM - 7:45 AM	0	0	0	0	0	0	16	463	52	531	23	767
7:45 AM - 8:00 AM	0	0	0	0	0	0	18	448	48	511	25	786
8:00 AM - 8:15 AM	0	0	0	0	0	0	20	437	50	525	27	804
8:15 AM - 8:30 AM	0	0	0	0	0	0	18	405	52	525	20	782
8:30 AM - 8:45 AM	0	0	0	0	0	0	25	402	75	502	9	721
8:45 AM - 9:00 AM	0	0	0	0	0	0	28	439	82	549	1	757
9:00 AM - 9:15 AM	0	0	0	0	0	0	22	497	74	593	1	811
9:15 AM - 9:30 AM	0	0	0	0	0	0	23	470	67	560	1	824
<b>AM One Hour Volumes</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>
6:30 AM - 7:30 AM	0	0	0	0	0	0	57	2120	195	2372	0	2382
7:30 AM - 8:30 AM	0	0	0	0	0	0	61	2017	196	2274	0	2464
8:30 AM - 9:30 AM	0	0	0	0	0	0	72	1904	201	2177	0	2392
9:30 AM - 10:30 AM	0	0	0	0	0	0	69	1852	213	2134	0	2380
10:30 AM - 11:30 AM	0	0	0	0	0	0	65	1760	204	2084	0	2333
11:30 AM - 12:30 PM	0	0	0	0	0	0	100	1784	263	2169	0	2564
<b>PM One Hour Volumes</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>
3:30 PM - 4:30 PM	0	0	0	0	0	0	9	151	0	160	0	169
4:30 PM - 5:30 PM	0	0	0	0	0	0	2	182	0	184	0	186
5:30 PM - 6:30 PM	0	0	0	0	0	0	4	111	0	115	0	119
6:30 PM - 7:30 PM	0	0	0	0	0	0	7	116	0	123	0	130
7:30 PM - 8:30 PM	0	0	0	0	0	0	5	140	0	145	0	150
8:30 PM - 9:30 PM	0	0	0	0	0	0	1	120	0	121	0	122
9:30 PM - 10:30 PM	0	0	0	0	0	0	3	115	0	118	0	121
10:30 PM - 11:30 PM	0	0	0	0	0	0	4	113	0	117	0	121
11:30 PM - 12:30 AM	0	0	0	0	0	0	7	115	0	122	0	129
<b>PM One Hour Volumes</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>
3:30 PM - 4:30 PM	0	0	0	0	0	0	64	1927	0	1931	0	1938
4:30 PM - 5:30 PM	0	0	0	0	0	0	72	1490	227	1559	0	1823
5:30 PM - 6:30 PM	0	0	0	0	0	0	14	524	0	538	0	548
6:30 PM - 7:30 PM	0	0	0	0	0	0	26	323	23	352	0	381
7:30 PM - 8:30 PM	0	0	0	0	0	0	18	412	0	430	0	448
8:30 PM - 9:30 PM	0	0	0	0	0	0	16	519	0	535	0	551
9:30 PM - 10:30 PM	0	0	0	0	0	0	17	489	199	1545	0	281
10:30 PM - 11:30 PM	0	0	0	0	0	0	13	488	0	501	0	521
11:30 PM - 12:30 AM	0	0	0	0	0	0	15	463	0	478	0	498
<b>PM One Hour Volumes</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>
4:30 PM - 5:30 PM	0	0	0	0	0	0	283	4	287	4	291	4
5:30 PM - 6:30 PM	0	0	0	0	0	0	285	0	289	0	293	0
6:30 PM - 7:30 PM	0	0	0	0	0	0	263	9	272	9	281	9
7:30 PM - 8:30 PM	0	0	0	0	0	0	278	7	285	7	292	7
8:30 PM - 9:30 PM	0	0	0	0	0	0	281	4	285	4	289	4
9:30 PM - 10:30 PM	0	0	0	0	0	0	279	1	280	1	281	1
10:30 PM - 11:30 PM	0	0	0	0	0	0	293	2	295	2	297	2
11:30 PM - 12:30 AM	0	0	0	0	0	0	317	4	321	4	325	4

## McLean, Virginia

## Turning Movement Count - Total Vehicles

PROJECT: Alfred St. Baptist Church  
 WVA JOB NO: 6383  
 INTERSECTION: Duke St. & S. Patrick St.  
 LOCATION: City of Alexandria, VA

DATE: 5/21/2015  
 DAY: Sunday  
 WEATHER: Sunny  
 COUNTED BY: Jerome & Trey  
 INPUTED BY: again

SOUTHBOUND ROAD: South Patrick Street - 1  
 NORTHBOUND ROAD: South Patrick Street - 1  
 WESTBOUND ROAD: Duke Street  
 EASTBOUND ROAD: Duke Street

Time Period	Southbound			Northbound			Eastbound			Westbound		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
<b>15 Minute Volumes</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>
3:00 AM - 3:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
3:15 AM - 3:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
3:30 AM - 3:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
3:45 AM - 4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM - 4:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
4:15 AM - 4:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
4:30 AM - 4:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
4:45 AM - 5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM - 5:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
5:15 AM - 5:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
5:30 AM - 5:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
5:45 AM - 6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM - 6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM - 6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM - 9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM - 10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM - 10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM - 10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM - 10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM - 11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM - 11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM - 11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM - 11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM - 12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM - 12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM - 12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM - 12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM - 1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM - 1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM - 1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM - 1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM - 2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM - 2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM - 2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM - 2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM - 3:00 PM	0	0	0	0								





# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - Bicycles

PROJECT: Alfred St. Baptist Church W.A. JOB NO: 6333 INTERSECTION: Duke St. & S. Alfred St. LOCATION: City of Alexandria, VA		DATE: 5/20/2015 DAY: Wednesday WEATHER: clear COUNTED BY: dak INPUTED BY: agan		SOUTHBOUND ROAD: South Alfred Street NORTHBOUND ROAD: South Alfred Street WESTBOUND ROAD: Duke Street - 236 EASTBOUND ROAD: Duke Street - 236		Southbound		Northbound		Eastbound		North & South		East & West		Total
						Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	
<b>AM 15 Minute Volumes</b>																
Time Period	Right	Left	Total	Right	Left	Total	Right	Left	Total	Right	Left	Total	Right	Left	Total	
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6:45 AM - 7:00 AM	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>AM One Hour Volumes</b>																
6:30 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>PM 15 Minute Volumes</b>																
Time Period	Right	Left	Total	Right	Left	Total	Right	Left	Total	Right	Left	Total	Right	Left	Total	
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM - 7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>PM One Hour Volumes</b>																
4:30 PM - 5:30 PM	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0

# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - Total Vehicles

PROJECT: Alfred St. Baptist Church W.A. JOB NO: 6333 INTERSECTION: Duke St. & S. Alfred St. LOCATION: City of Alexandria, VA		DATE: 5/20/2015 DAY: Sunday WEATHER: Dk & Gr COUNTED BY: dak & gir INPUTED BY: agan		SOUTHBOUND ROAD: South Alfred Street NORTHBOUND ROAD: South Alfred Street WESTBOUND ROAD: Duke Street EASTBOUND ROAD: Duke Street		Southbound		Northbound		Eastbound		North & South		East & West		Total
						Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	
<b>15 Minute Volumes</b>																
Time Period	Right	Left	Total	Right	Left	Total	Right	Left	Total	Right	Left	Total	Right	Left	Total	
7:00 AM - 7:15 AM	5	1	6	1	1	2	4	1	2	2	4	6	2	3	5	42
7:15 AM - 7:30 AM	3	2	5	1	3	4	6	1	3	4	8	12	3	6	9	83
7:30 AM - 7:45 AM	3	3	6	2	5	7	10	1	6	7	13	20	1	7	8	99
7:45 AM - 8:00 AM	4	2	6	4	4	8	10	15	15	12	27	39	6	12	18	141
8:00 AM - 8:15 AM	6	2	8	3	1	4	7	6	3	9	15	24	6	9	15	111
8:15 AM - 8:30 AM	1	3	4	1	4	5	6	4	5	1	6	11	4	5	9	95
8:30 AM - 8:45 AM	1	3	4	1	4	5	7	2	6	8	14	22	4	8	12	99
8:45 AM - 9:00 AM	3	2	5	2	5	7	2	6	8	2	10	18	1	11	19	134
9:00 AM - 9:15 AM	3	2	5	1	3	4	6	4	5	9	14	23	1	11	16	106
9:15 AM - 9:30 AM	4	1	5	1	3	4	6	4	5	9	14	23	1	11	16	106
9:30 AM - 9:45 AM	1	5	6	1	6	7	10	10	10	10	20	30	3	13	16	123
9:45 AM - 10:00 AM	6	15	21	2	9	11	24	9	8	17	26	33	18	15	33	185
10:00 AM - 10:15 AM	6	10	16	2	11	13	24	12	12	24	36	48	14	16	30	218
10:15 AM - 10:30 AM	7	8	15	3	12	15	30	16	16	32	48	64	18	20	38	276
10:30 AM - 10:45 AM	13	16	29	12	18	30	57	16	16	32	48	64	18	20	38	276
10:45 AM - 11:00 AM	13	16	29	10	13	23	46	9	7	16	25	41	10	11	21	241
11:00 AM - 11:15 AM	9	6	15	8	11	19	30	7	8	15	23	38	4	5	9	203
11:15 AM - 11:30 AM	6	7	13	6	8	14	20	9	7	16	23	37	4	5	9	197
11:30 AM - 11:45 AM	18	1	19	3	5	8	15	9	7	16	23	37	4	5	9	203
11:45 AM - 12:00 PM	3	8	11	3	6	9	15	5	8	13	21	34	3	5	8	118
12:00 PM - 12:15 PM	9	8	17	2	5	7	14	8	8	16	24	32	2	2	4	242
12:15 PM - 12:30 PM	21	10	31	14	12	26	52	11	11	22	33	44	4	4	8	285
12:30 PM - 12:45 PM	4	5	9	4	5	9	19	6	7	13	20	27	6	6	12	111
12:45 PM - 1:00 PM	21	13	34	4	5	9	19	6	7	13	20	27	6	6	12	111
1:00 PM - 1:15 PM	30	18	48	7	8	15	36	17	8	25	33	44	10	10	20	284
1:15 PM - 1:30 PM	12	12	24	2	16	18	34	5	8	13	21	32	5	9	14	262
1:30 PM - 1:45 PM	12	12	24	2	16	18	34	5	8	13	21	32	5	9	14	262
1:45 PM - 2:00 PM	12	10	22	3	11	14	26	3	6	9	15	21	4	5	9	263
2:00 PM - 2:15 PM	2	18	20	2	10	12	20	17	7	24	31	42	4	5	9	263
2:15 PM - 2:30 PM	7	9	16	1	9	10	16	3	7	10	17	24	3	7	10	237
2:30 PM - 2:45 PM	7	9	16	1	9	10	16	3	7	10	17	24	3	7	10	237
2:45 PM - 3:00 PM	6	14	20	2	15	17	24	5	7	12	19	26	4	5	9	274
<b>Total</b>	299	240	539	134	242	376	624	241	219	460	660	859	118	139	257	6517
<b>One Hour Volumes</b>																
7:00 AM - 8:00 AM	13	11	24	3	17	20	36	12	12	24	36	52	5	6	11	311
8:00 AM - 9:00 AM	18	9	27	8	30	38	72	38	35	73	108	146	8	8	16	436
9:00 AM - 10:00 AM	16	9	25	6	30	36	72	32	25	57	82	117	23	24	47	478
10:00 AM - 11:00 AM	14	8	22	4	26	30	60	22	18	40	58	86	10	10	20	478
11:00 AM - 12:00 PM	13	9	22	6	25	31	62	12	10	22	32	44	7	7	14	401
12:00 PM - 1:00 PM	14	10	24	4	18	22	40	21	25	46	61	86	12	12	24	442
1:00 PM - 2:00 PM	26	11	37	6	43	49	92	21	25	46	71	96	6	6	12	602
2:00 PM - 3:00 PM	34	14	48	5	29	34	63	28	29	57	86	115	10	10	20	706
3:00 PM - 4:00 PM	43	27	70	13	34	47	90	34	3							

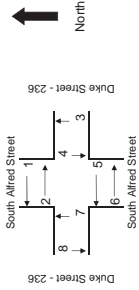
# Wells + Associates, Inc.

McLean, Virginia

## Pedestrian Volume Survey

PROJECT: Alfred St. Baptist Church  
 W-A JOB NO: 6383  
 INTERSECTION: Duke St. & S. Alfred St.  
 LOCATION: City of Alexandria, VA

DATE: 5/20/2015  
 DAY: Wednesday  
 WEATHER: clear  
 COUNTED BY: James  
 INPUTED BY: agan



Time Period	1	2	3	4	5	6	7	8	1+2	3+4	5+6	7+8	Total
<b>AM 15 Minute Volumes</b>													
6:30 AM - 6:45 AM		2			10	1	1						
6:45 AM - 7:00 AM		3	2	1	3	2	2						
7:00 AM - 7:15 AM		1	5	1	1	1	1						
7:15 AM - 7:30 AM		1	2	2	1	1	2	1					
7:30 AM - 7:45 AM		1	2	2	6	4							
7:45 AM - 8:00 AM		3	1	1	1								
8:00 AM - 8:15 AM		1	4	4	5	1	3	1					
8:15 AM - 8:30 AM		3	4	4	3	5	4						
8:30 AM - 8:45 AM		3	2	4	1	7	2	3					
8:45 AM - 9:00 AM		3	1	1	7	1	1						
9:00 AM - 9:15 AM		4	3	2	2	5	2	1					
9:15 AM - 9:30 AM		6	2	2	2	5	2	1					
<b>Total</b>	<b>20</b>	<b>18</b>	<b>35</b>	<b>7</b>	<b>44</b>	<b>24</b>	<b>23</b>	<b>16</b>					
<b>AM One Hour Volumes</b>													
6:30 AM - 7:30 AM	2	6	11	2	15	6	6	1	8	13	21	7	49
7:30 AM - 8:30 AM	3	8	11	4	11	5	9	1	11	15	16	10	52
8:30 AM - 9:30 AM	3	5	12	3	9	4	7	1	8	15	13	8	44
<b>Total</b>	<b>8</b>	<b>19</b>	<b>34</b>	<b>19</b>	<b>35</b>	<b>25</b>	<b>22</b>	<b>9</b>	<b>27</b>	<b>41</b>	<b>40</b>	<b>25</b>	<b>145</b>
<b>PM 15 Minute Volumes</b>													
4:30 PM - 4:45 PM	4	3	2	5	2	6	1	5					
4:45 PM - 5:00 PM	2	2	2	3	2	3	1	3					
5:00 PM - 5:15 PM	4	2	4	2	2	4	2	1					
5:15 PM - 5:30 PM	2	5	1	1	4	4	2						
5:30 PM - 5:45 PM	2	2	6	5	3	3	2	2					
5:45 PM - 6:00 PM	1	2	1	3	5	5	2	1					
6:00 PM - 6:15 PM	2	5	3	1	5	3	9						
6:15 PM - 6:30 PM	3	2	2	1	4	4	2						
6:30 PM - 6:45 PM	6	6	2	2	7	4	1	9					
6:45 PM - 7:00 PM	6	6	1	3	4	4	3	7					
7:00 PM - 7:15 PM	3	1	1	7	3	3	6						
7:15 PM - 7:30 PM	5	1	1	3	1	6	2						
<b>Total</b>	<b>36</b>	<b>22</b>	<b>30</b>	<b>35</b>	<b>32</b>	<b>45</b>	<b>21</b>	<b>54</b>					
<b>PM One Hour Volumes</b>													
4:30 PM - 5:30 PM	12	5	13	11	7	17	4	16	17	24	24	20	85
5:30 PM - 6:30 PM	10	4	17	11	8	14	5	13	14	28	22	16	82
6:30 PM - 7:30 PM	9	6	16	11	11	16	6	11	15	27	27	17	86
7:30 PM - 8:30 PM	7	9	15	9	10	17	7	19	16	24	27	26	93
8:30 PM - 9:30 PM	8	9	12	9	10	17	7	14	17	21	27	21	86
<b>Total</b>	<b>46</b>	<b>41</b>	<b>63</b>	<b>56</b>	<b>61</b>	<b>71</b>	<b>49</b>	<b>63</b>	<b>69</b>	<b>112</b>	<b>115</b>	<b>90</b>	<b>352</b>

# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - All Vehicles

PROJECT: Alfred St. Baptist Church  
 W-A JOB NO: 6383  
 INTERSECTION: Duke St. & S. Alfred St.  
 LOCATION: City of Alexandria, VA

DATE: 5/20/2015  
 DAY: Wednesday  
 WEATHER: clear  
 COUNTED BY: James  
 INPUTED BY: agan

SOUTHBOUND ROAD: South Alfred Street  
 NORTHBOUND ROAD: South Alfred Street  
 WESTBOUND ROAD: Duke Street - 236  
 EASTBOUND ROAD: Duke Street - 236

Time Period	Southbound				Northbound				Eastbound				North & South		Total	
	Right	Thru	Left	PHF	Right	Thru	Left	PHF	Right	Thru	Left	PHF	Right	Left		
<b>AM 15 Minute Volumes</b>																
6:30 AM - 6:45 AM	2	0	0	2	2	38	0	40	0	21	4	25	0	60	10	70
6:45 AM - 7:00 AM	3	0	0	3	5	36	0	41	0	25	9	34	0	61	18	79
7:00 AM - 7:15 AM	5	6	0	11	5	70	0	75	2	55	9	64	3	81	18	102
7:15 AM - 7:30 AM	3	5	0	8	2	112	0	124	1	89	13	103	6	100	21	127
7:30 AM - 7:45 AM	9	5	0	14	6	95	0	103	2	105	15	120	4	86	32	122
7:45 AM - 8:00 AM	3	0	1	4	0	83	0	87	0	107	11	119	0	107	25	134
8:00 AM - 8:15 AM	2	0	1	3	4	82	0	86	2	70	11	82	0	80	22	104
8:15 AM - 8:30 AM	6	17	1	24	2	97	4	103	0	83	9	92	4	80	26	110
8:30 AM - 8:45 AM	6	12	1	19	6	79	0	85	2	81	11	94	3	89	20	112
8:45 AM - 9:00 AM	11	17	1	29	6	100	1	107	1	68	8	77	2	86	18	106
9:00 AM - 9:15 AM	8	11	4	23	4	90	1	95	1	59	7	67	4	86	16	106
9:15 AM - 9:30 AM	7	9	10	17	4	97	6	102	12	67	10	77	3	101	27	127
<b>AM One Hour Volumes</b>	<b>73</b>	<b>84</b>	<b>10</b>	<b>177</b>	<b>44</b>	<b>576</b>	<b>6</b>	<b>628</b>	<b>12</b>	<b>675</b>	<b>62</b>	<b>689</b>	<b>37</b>	<b>601</b>	<b>237</b>	<b>875</b>
6:30 AM - 7:30 AM	19	12	1	32	0.53	11	2.36	0	247	0.80	3	2.04	24	231	0.61	5
7:30 AM - 8:30 AM	20	17	2	39	0.66	11	3.10	0	321	0.70	4	2.72	33	309	0.75	11
8:30 AM - 9:30 AM	28	21	2	51	0.82	18	3.49	0	367	0.80	6	3.35	36	377	0.92	14
<b>Total</b>	<b>67</b>	<b>50</b>	<b>5</b>	<b>122</b>	<b>1.15</b>	<b>40</b>	<b>7.94</b>	<b>0</b>	<b>1035</b>	<b>1.30</b>	<b>13</b>	<b>12.11</b>	<b>67</b>	<b>697</b>	<b>1.28</b>	<b>30</b>
<b>PM 15 Minute Volumes</b>																
4:30 PM - 4:45 PM	31	33	2	66	3	126	0	131	0	7	8	15	7	71	9	87
4:45 PM - 5:00 PM	19	42	1	62	2	111	0	113	1	8	17	2	64	10	76	79
5:00 PM - 5:15 PM	24	43	2	69	2	82	1	85	2	8	5	15	6	62	3	74
5:15 PM - 5:30 PM	26	54	3	83	0	75	1	76	1	16	6	23	6	60	9	75
5:30 PM - 5:45 PM	20	68	3	91	2	97	1	100	0	5	7	12	4	70	5	79
5:45 PM - 6:00 PM	19	68	2	92	4	114	0	120	0	1	10	14	2	70	16	88
6:00 PM - 6:15 PM	19	68	2	92	4	114	0	120	0	1	10	14	2	70	16	88
6:15 PM - 6:30 PM	18	63	3	84	4	106	2	112	2	14	9	25	8	52	5	65
6:30 PM - 6:45 PM	18	59	2	79	4	115	3	122	4	8	6	18	11	75	7	93
6:45 PM - 7:00 PM	9	42	3	54	1	66	2	69	3	6	6	15	7	64	7	78
7:00 PM - 7:15 PM	15	37	2	54	3	105	1	109	2	1	8	21	1	83	10	104
7:15 PM - 7:30 PM	25	57	2	82	3	130	1	133	3	13	13	21	8	104	16	121
<b>Total</b>	<b>226</b>	<b>376</b>	<b>27</b>	<b>628</b>	<b>33</b>	<b>1230</b>	<b>14</b>	<b>1277</b>	<b>16</b>	<b>110</b>	<b>85</b>	<b>211</b>	<b>84</b>	<b>768</b>	<b>93</b>	<b>973</b>
<b>PM One Hour Volumes</b>																
4:30 PM - 5:30 PM	100	172	8	280	0.84	7	3.96	2	405	0.77	4	3.9	27	70	0.76	24
5:30 PM - 6:30 PM	89	207	9	305	0.84	6	3.65	3	374	0.83	4	3.7	26	67	0.73	21
6:30 PM - 7:30 PM	82	216	12	310	0.83	3	3.43	1	363	0.83	3	3.06	27	304	0.98	372
<b>Total</b>	<b>271</b>	<b>595</b>	<b>29</b>	<b>895</b>	<b>0.84</b>	<b>16</b>	<b>11.44</b>	<b>5</b>	<b>1142</b>	<b>0.83</b>	<b>11</b>	<b>10.72</b>	<b>54</b>	<b>265</b>	<b>2.47</b>	<b>84</b>
4:30 PM - 4:45 PM	82	250	12	336	0.92	15	4.34	5	454	0.93	2	34	32	68	0.68	20
4:45 PM - 5:00 PM	74	250	12	336	0.92	15	4.34	5	454	0.93	2	34	32	68	0.68	20
5:00 PM - 5:15 PM	72	241	11	324	0.91	17	4.52	7	476	0.98	6	37	31	74	0.74	27
5:15 PM - 5:30 PM	64	232	10	306	0.86	13	4.31	9	453	0.93	9	32	31	72	0.72	25
5:30 PM - 6:30 PM	60	201	10	271	0.81	12	4.22	8	442	0.91	11	39	29	79	0.79	37
6:30 PM - 7:30 PM	52	153	7	212	0.67	11	4.60	7	418	0.68	10	37	28	73	0.61	40
<b>Total</b>	<b>528</b>	<b>1533</b>	<b>77</b>	<b>2127</b>												

# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - Bicycles

Time Period	Southbound			Northbound			Eastbound			Westbound			North & South		East & West	Total
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Total	Total		
<b>AM 15 Minute Volumes</b>																
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1
6:45 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 7:15 AM	0	0	0	1	1	1	1	1	1	2	2	2	0	0	0	2
7:15 AM - 7:30 AM	0	0	0	1	1	1	0	0	0	1	1	1	0	0	0	1
7:30 AM - 7:45 AM	0	0	0	2	2	2	1	1	1	1	1	1	1	1	1	3
7:45 AM - 8:00 AM	0	0	0	1	1	1	0	0	0	2	2	2	0	0	0	2
8:00 AM - 8:15 AM	0	0	0	2	2	2	1	1	1	2	2	2	2	2	2	4
8:15 AM - 8:30 AM	0	0	0	2	2	2	1	1	1	0	0	0	1	1	1	2
8:30 AM - 8:45 AM	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	1
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 9:15 AM	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	2
9:15 AM - 9:30 AM	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	2
<b>Total</b>	0	0	0	1	1	1	0	0	0	8	8	8	0	0	0	12
<b>AM One Hour Volumes</b>																
6:30 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1
7:30 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	3	3	3	0	0	0	3
8:30 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	4	4	4	0	0	0	4
<b>Total</b>	0	0	0	0	0	0	0	0	0	5	5	5	0	0	0	5
<b>PM 15 Minute Volumes</b>																
4:30 PM - 4:45 PM	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	2
4:45 PM - 5:00 PM	1	1	1	1	1	1	0	0	0	1	1	1	0	0	0	1
5:00 PM - 5:15 PM	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1	2
5:15 PM - 5:30 PM	2	2	2	0	0	0	0	0	0	1	1	1	2	2	2	3
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	2	2	2	0	0	0	2
5:45 PM - 6:00 PM	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	2
6:00 PM - 6:15 PM	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1	2
6:15 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1
6:30 PM - 6:45 PM	2	2	2	4	4	4	3	3	3	3	3	3	2	2	2	7
6:45 PM - 7:00 PM	1	1	1	1	1	1	4	4	4	4	4	4	1	1	1	4
7:00 PM - 7:15 PM	0	0	0	0	0	0	1	1	1	1	1	1	4	4	4	4
7:15 PM - 7:30 PM	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	2
<b>Total</b>	0	0	0	9	9	9	1	1	1	4	4	4	1	1	1	15
<b>PM One Hour Volumes</b>																
4:30 PM - 5:30 PM	0	0	0	2	2	2	0	0	0	1	1	1	0	0	0	2
5:30 PM - 6:30 PM	0	0	0	3	3	3	0	0	0	0	0	0	3	3	3	6
6:30 PM - 7:30 PM	0	0	0	2	2	2	0	0	0	0	0	0	3	3	3	5
<b>Total</b>	0	0	0	5	5	5	0	0	0	0	0	0	6	6	6	11

# Wells + Associates, Inc.

McLean, Virginia

## Pedestrian Volume Survey

Time Period	Southbound		Northbound		Eastbound		Westbound		North & South		East & West	Total
	Right	Thru	Right	Thru	Right	Thru	Right	Thru	Total			
<b>AM 15 Minute Volumes</b>												
6:30 AM - 6:45 AM	0	0	0	0	0	0	1	1	0	0	0	1
6:45 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 7:15 AM	0	0	1	1	1	1	2	2	0	0	0	2
7:15 AM - 7:30 AM	0	0	1	1	1	1	1	1	0	0	0	1
7:30 AM - 7:45 AM	0	0	2	2	2	2	4	4	1	1	1	5
7:45 AM - 8:00 AM	0	0	1	1	1	1	1	1	1	1	1	3
8:00 AM - 8:15 AM	0	0	3	3	3	3	3	3	2	2	2	7
8:15 AM - 8:30 AM	0	0	2	2	2	2	7	7	6	6	6	13
8:30 AM - 8:45 AM	0	0	1	1	1	1	2	2	1	1	1	3
8:45 AM - 9:00 AM	0	0	2	2	2	2	3	3	1	1	1	3
9:00 AM - 9:15 AM	0	0	2	2	2	2	1	1	5	5	5	11
9:15 AM - 9:30 AM	0	0	2	2	2	2	4	4	1	1	1	4
<b>Total</b>	0	0	15	15	15	15	20	20	4	4	29	27
<b>AM One Hour Volumes</b>												
6:30 AM - 7:30 AM	0	0	1	1	1	1	3	3	2	2	3	3
7:30 AM - 8:30 AM	0	0	3	3	3	3	6	6	4	4	10	8
8:30 AM - 9:30 AM	0	0	5	5	5	5	11	11	6	6	14	12
<b>Total</b>	0	0	6	6	6	6	14	14	12	12	23	21
<b>PM 15 Minute Volumes</b>												
4:30 PM - 4:45 PM	2	2	3	3	3	3	2	2	5	5	4	4
4:45 PM - 5:00 PM	4	4	1	1	1	1	2	2	1	1	3	3
5:00 PM - 5:15 PM	5	5	2	2	2	2	3	3	3	3	6	6
5:15 PM - 5:30 PM	3	3	3	3	3	3	4	4	2	2	4	4
5:30 PM - 5:45 PM	3	3	3	3	3	3	4	4	3	3	10	8
5:45 PM - 6:00 PM	5	5	1	1	1	1	2	2	2	2	4	4
6:00 PM - 6:15 PM	3	3	3	3	3	3	4	4	5	5	11	8
6:15 PM - 6:30 PM	2	2	2	2	2	2	3	3	1	1	2	2
6:30 PM - 6:45 PM	4	4	5	5	5	5	6	6	4	4	12	10
6:45 PM - 7:00 PM	7	7	3	3	3	3	3	3	3	3	9	7
7:00 PM - 7:15 PM	2	2	7	7	7	7	3	3	2	2	11	8
7:15 PM - 7:30 PM	2	2	7	7	7	7	3	3	2	2	11	8
<b>Total</b>	43	43	28	28	28	28	35	35	30	30	78	61
<b>PM One Hour Volumes</b>												
4:30 PM - 5:30 PM	14	14	6	6	6	6	4	4	6	6	12	9
5:30 PM - 6:30 PM	15	15	6	6	6	6	5	5	9	9	14	10
6:30 PM - 7:30 PM	14	14	8	8	8	8	7	7	16	16	25	22
<b>Total</b>	43	43	28	28	28	28	35	35	30	30	78	61





# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - All Vehicles

Time Period	Southbound Street			Northbound Street			Eastbound Street			Westbound Street		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
<b>15 Minute Volumes</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>	<b>Right</b>	<b>Thru</b>	<b>Left</b>
6:30 AM - 6:45 AM	1	5	0	1	5	0	2	18	8	2	18	8
6:45 AM - 7:00 AM	1	5	0	1	5	0	2	18	8	2	18	8
7:00 AM - 7:15 AM	1	5	0	1	5	0	2	18	8	2	18	8
7:15 AM - 7:30 AM	1	5	0	1	5	0	2	18	8	2	18	8
7:30 AM - 7:45 AM	1	5	0	1	5	0	2	18	8	2	18	8
7:45 AM - 8:00 AM	1	5	0	1	5	0	2	18	8	2	18	8
8:00 AM - 8:15 AM	1	5	0	1	5	0	2	18	8	2	18	8
8:15 AM - 8:30 AM	1	5	0	1	5	0	2	18	8	2	18	8
8:30 AM - 8:45 AM	1	5	0	1	5	0	2	18	8	2	18	8
8:45 AM - 9:00 AM	1	5	0	1	5	0	2	18	8	2	18	8
9:00 AM - 9:15 AM	1	5	0	1	5	0	2	18	8	2	18	8
9:15 AM - 9:30 AM	1	5	0	1	5	0	2	18	8	2	18	8
9:30 AM - 9:45 AM	1	5	0	1	5	0	2	18	8	2	18	8
9:45 AM - 10:00 AM	1	5	0	1	5	0	2	18	8	2	18	8
10:00 AM - 10:15 AM	1	5	0	1	5	0	2	18	8	2	18	8
10:15 AM - 10:30 AM	1	5	0	1	5	0	2	18	8	2	18	8
10:30 AM - 10:45 AM	1	5	0	1	5	0	2	18	8	2	18	8
10:45 AM - 11:00 AM	1	5	0	1	5	0	2	18	8	2	18	8
11:00 AM - 11:15 AM	1	5	0	1	5	0	2	18	8	2	18	8
11:15 AM - 11:30 AM	1	5	0	1	5	0	2	18	8	2	18	8
11:30 AM - 11:45 AM	1	5	0	1	5	0	2	18	8	2	18	8
11:45 AM - 12:00 PM	1	5	0	1	5	0	2	18	8	2	18	8
12:00 PM - 12:15 PM	1	5	0	1	5	0	2	18	8	2	18	8
12:15 PM - 12:30 PM	1	5	0	1	5	0	2	18	8	2	18	8
12:30 PM - 12:45 PM	1	5	0	1	5	0	2	18	8	2	18	8
12:45 PM - 1:00 PM	1	5	0	1	5	0	2	18	8	2	18	8
1:00 PM - 1:15 PM	1	5	0	1	5	0	2	18	8	2	18	8
1:15 PM - 1:30 PM	1	5	0	1	5	0	2	18	8	2	18	8
1:30 PM - 1:45 PM	1	5	0	1	5	0	2	18	8	2	18	8
1:45 PM - 2:00 PM	1	5	0	1	5	0	2	18	8	2	18	8
2:00 PM - 2:15 PM	1	5	0	1	5	0	2	18	8	2	18	8
2:15 PM - 2:30 PM	1	5	0	1	5	0	2	18	8	2	18	8
2:30 PM - 2:45 PM	1	5	0	1	5	0	2	18	8	2	18	8
2:45 PM - 3:00 PM	1	5	0	1	5	0	2	18	8	2	18	8
3:00 PM - 3:15 PM	1	5	0	1	5	0	2	18	8	2	18	8
3:15 PM - 3:30 PM	1	5	0	1	5	0	2	18	8	2	18	8
3:30 PM - 3:45 PM	1	5	0	1	5	0	2	18	8	2	18	8
3:45 PM - 4:00 PM	1	5	0	1	5	0	2	18	8	2	18	8
4:00 PM - 4:15 PM	1	5	0	1	5	0	2	18	8	2	18	8
4:15 PM - 4:30 PM	1	5	0	1	5	0	2	18	8	2	18	8
4:30 PM - 4:45 PM	1	5	0	1	5	0	2	18	8	2	18	8
4:45 PM - 5:00 PM	1	5	0	1	5	0	2	18	8	2	18	8
5:00 PM - 5:15 PM	1	5	0	1	5	0	2	18	8	2	18	8
5:15 PM - 5:30 PM	1	5	0	1	5	0	2	18	8	2	18	8
5:30 PM - 5:45 PM	1	5	0	1	5	0	2	18	8	2	18	8
5:45 PM - 6:00 PM	1	5	0	1	5	0	2	18	8	2	18	8
6:00 PM - 6:15 PM	1	5	0	1	5	0	2	18	8	2	18	8
6:15 PM - 6:30 PM	1	5	0	1	5	0	2	18	8	2	18	8
6:30 PM - 6:45 PM	1	5	0	1	5	0	2	18	8	2	18	8
6:45 PM - 7:00 PM	1	5	0	1	5	0	2	18	8	2	18	8
7:00 PM - 7:15 PM	1	5	0	1	5	0	2	18	8	2	18	8
7:15 PM - 7:30 PM	1	5	0	1	5	0	2	18	8	2	18	8
7:30 PM - 7:45 PM	1	5	0	1	5	0	2	18	8	2	18	8
7:45 PM - 8:00 PM	1	5	0	1	5	0	2	18	8	2	18	8
8:00 PM - 8:15 PM	1	5	0	1	5	0	2	18	8	2	18	8
8:15 PM - 8:30 PM	1	5	0	1	5	0	2	18	8	2	18	8
8:30 PM - 8:45 PM	1	5	0	1	5	0	2	18	8	2	18	8
8:45 PM - 9:00 PM	1	5	0	1	5	0	2	18	8	2	18	8
9:00 PM - 9:15 PM	1	5	0	1	5	0	2	18	8	2	18	8
9:15 PM - 9:30 PM	1	5	0	1	5	0	2	18	8	2	18	8
9:30 PM - 9:45 PM	1	5	0	1	5	0	2	18	8	2	18	8
9:45 PM - 10:00 PM	1	5	0	1	5	0	2	18	8	2	18	8
10:00 PM - 10:15 PM	1	5	0	1	5	0	2	18	8	2	18	8
10:15 PM - 10:30 PM	1	5	0	1	5	0	2	18	8	2	18	8
10:30 PM - 10:45 PM	1	5	0	1	5	0	2	18	8	2	18	8
10:45 PM - 11:00 PM	1	5	0	1	5	0	2	18	8	2	18	8
11:00 PM - 11:15 PM	1	5	0	1	5	0	2	18	8	2	18	8
11:15 PM - 11:30 PM	1	5	0	1	5	0	2	18	8	2	18	8
11:30 PM - 11:45 PM	1	5	0	1	5	0	2	18	8	2	18	8
11:45 PM - 12:00 AM	1	5	0	1	5	0	2	18	8	2	18	8
12:00 AM - 12:15 AM	1	5	0	1	5	0	2	18	8	2	18	8
12:15 AM - 12:30 AM	1	5	0	1	5	0	2	18	8	2	18	8
12:30 AM - 12:45 AM	1	5	0	1	5	0	2	18	8	2	18	8
12:45 AM - 1:00 AM	1	5	0	1	5	0	2	18	8	2	18	8
1:00 AM - 1:15 AM	1	5	0	1	5	0	2	18	8	2	18	8
1:15 AM - 1:30 AM	1	5	0	1	5	0	2	18	8	2	18	8
1:30 AM - 1:45 AM	1	5	0	1	5	0	2	18	8	2	18	8
1:45 AM - 2:00 AM	1	5	0	1	5	0	2	18	8	2	18	8
2:00 AM - 2:15 AM	1	5	0	1	5	0	2	18	8	2	18	8
2:15 AM - 2:30 AM	1	5	0	1	5	0	2	18	8	2	18	8
2:30 AM - 2:45 AM	1	5	0	1	5	0	2	18	8	2	18	8
2:45 AM - 3:00 AM	1	5	0	1	5	0	2	18	8	2	18	8
3:00 AM - 3:15 AM	1	5	0	1	5	0	2	18	8	2	18	8
3:15 AM - 3:30 AM	1	5	0	1	5	0	2	18	8	2	18	8
3:30 AM - 3:45 AM	1	5	0	1	5	0	2	18	8	2	18	8
3:45 AM - 4:00 AM	1	5	0	1	5	0	2	18	8	2	18	8
4:00 AM - 4:15 AM	1	5	0	1	5	0	2	18	8	2	18	8
4:15 AM - 4:30 AM	1	5	0	1	5	0	2	18	8	2	18	8
4:30 AM - 4:45 AM	1	5	0	1	5	0	2	18	8	2	18	8
4:45 AM - 5:00 AM	1	5	0	1	5	0	2	18	8	2	18	8
5:00 AM - 5:15 AM	1	5	0	1	5	0	2	18	8	2	18	8
5:15 AM - 5:30 AM	1	5	0	1	5	0	2	18	8	2	18	8
5:30 AM - 5:45 AM	1	5	0	1	5	0	2	18	8	2	18	8
5:45 AM - 6:00 AM	1	5	0	1	5	0	2	18	8	2	18	8
6:00 AM - 6:15 AM	1	5	0	1	5	0	2	18	8	2	18	8
6:15 AM - 6:30 AM	1	5	0	1	5	0	2	18	8	2	18	8
6:30 AM - 6:45 AM	1	5	0	1	5	0	2	18	8	2	18	8
6:45 AM - 7:00 AM	1	5	0	1	5	0	2	18	8	2	18	8
7:00 AM - 7:15 AM	1	5	0	1	5	0	2	18	8	2	18	8
7:15 AM - 7:30 AM	1	5	0	1	5	0	2	18	8	2	18	8
7:30 AM - 7:45 AM	1	5	0	1	5	0	2	18	8	2	18	8
7:45 AM - 8:00 AM	1	5	0	1	5	0	2	18	8	2	18	8
8:00 AM - 8:15 AM	1	5	0	1	5	0	2	18	8	2	18	8
8:15 AM - 8:30 AM	1	5	0	1	5	0	2	18	8	2	18	8
8:30 AM - 8:45 AM	1	5	0	1	5	0	2	18	8	2	18	8
8:45 AM - 9:00 AM	1	5	0	1	5	0	2	18	8	2	18	8
9:00 AM - 9:15 AM	1	5	0	1	5	0	2	18	8			

# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - Bicycles

Time Period	Southbound - 400			Northbound - 400			Eastbound - 236			Westbound - 236			Total
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
<b>AM 15 Minute Volumes</b>													
6:30 AM - 6:45 AM	0	0	0	0	0	0	1	1	1	1	1	1	2
6:45 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	2	2	0	0	0	0	0	0	0	0	0	0	2
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	1	1	1	1	1	1	3
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	1	1	1	1	1	1	2
8:30 AM - 8:45 AM	1	1	1	1	1	1	0	0	0	0	0	0	2
8:45 AM - 9:00 AM	1	1	1	1	1	1	0	0	0	0	0	0	2
9:00 AM - 9:15 AM	2	2	2	2	2	2	0	0	0	0	0	0	5
9:15 AM - 9:30 AM	1	1	1	1	1	1	0	0	0	0	0	0	2
<b>Total</b>	0	7	1	8	0	3	0	7	1	8	1	0	16
<b>AM One Hour Volumes</b>													
6:30 AM - 7:30 AM	0	2	0	0	1	0	1	0	0	1	0	0	3
7:30 AM - 8:30 AM	0	2	0	0	0	0	0	0	0	0	0	0	2
8:30 AM - 9:30 AM	0	2	0	0	0	0	1	1	1	1	1	1	5
<b>PM 15 Minute Volumes</b>													
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	1	1	1	1	1	1	1	1	1	1	1	1	4
5:15 PM - 5:30 PM	1	1	1	1	1	1	0	0	0	0	0	0	2
5:30 PM - 5:45 PM	1	1	1	1	1	1	1	1	1	1	1	1	4
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 6:45 PM	1	1	1	1	1	1	1	1	1	1	1	1	4
6:45 PM - 7:00 PM	1	1	1	1	1	1	1	1	1	1	1	1	4
7:00 PM - 7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	1	5	0	6	3	5	1	9	0	3	2	8	12
<b>PM One Hour Volumes</b>													
4:30 PM - 5:30 PM	1	1	0	2	1	1	3	0	1	0	2	0	3
5:30 PM - 6:30 PM	1	3	0	4	2	0	2	0	2	1	3	1	6
6:30 PM - 7:30 PM	1	2	0	3	0	0	1	0	1	1	2	1	5
7:30 PM - 8:30 PM	0	2	0	2	0	0	1	0	1	1	1	0	3
8:30 PM - 9:30 PM	0	2	0	2	0	0	1	0	1	1	0	0	3
9:30 PM - 10:30 PM	0	2	0	2	0	0	1	0	1	1	0	0	3
10:30 PM - 11:30 PM	0	2	0	2	0	0	1	0	1	1	0	0	3
11:30 PM - 12:30 AM	0	2	0	2	0	0	1	0	1	1	0	0	3
<b>Total</b>	0	2	0	2	1	4	0	5	0	1	5	1	7

# Wells + Associates, Inc.

McLean, Virginia

## Pedestrian Volume Survey

Time Period	Southbound - 400			Northbound - 400			Eastbound - 236			Westbound - 236			Total
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
<b>AM 15 Minute Volumes</b>													
6:30 AM - 6:45 AM	1	1	1	1	1	1	1	1	1	1	1	1	3
6:45 AM - 7:00 AM	2	2	1	2	2	1	2	2	1	2	2	1	4
7:00 AM - 7:15 AM	2	2	1	2	2	1	2	2	1	2	2	1	4
7:15 AM - 7:30 AM	2	2	1	2	2	1	2	2	1	2	2	1	4
7:30 AM - 7:45 AM	2	2	1	2	2	1	2	2	1	2	2	1	4
7:45 AM - 8:00 AM	2	2	1	2	2	1	2	2	1	2	2	1	4
8:00 AM - 8:15 AM	2	2	1	2	2	1	2	2	1	2	2	1	4
8:15 AM - 8:30 AM	2	2	1	2	2	1	2	2	1	2	2	1	4
8:30 AM - 8:45 AM	2	2	1	2	2	1	2	2	1	2	2	1	4
8:45 AM - 9:00 AM	2	2	1	2	2	1	2	2	1	2	2	1	4
9:00 AM - 9:15 AM	2	2	1	2	2	1	2	2	1	2	2	1	4
9:15 AM - 9:30 AM	2	2	1	2	2	1	2	2	1	2	2	1	4
<b>Total</b>	11	19	18	14	20	14	40	8					8
<b>AM One Hour Volumes</b>													
6:30 AM - 7:30 AM	1	5	4	5	7	1	6	1					30
7:30 AM - 8:30 AM	2	5	3	0	3	11	2	8	3	13	2	3	32
8:30 AM - 9:30 AM	4	5	5	2	5	13	4	9	7	10	17	43	53
9:30 AM - 10:30 AM	6	8	6	3	5	4	18	3	14	9	9	21	53
10:30 AM - 11:30 AM	6	7	10	3	7	8	17	3	13	13	15	20	61
11:30 AM - 12:30 AM	5	11	8	4	8	8	15	5	16	12	16	20	64
12:30 AM - 1:30 AM	8	9	7	5	6	6	16	3	15	12	12	19	58
1:30 AM - 2:30 AM	4	6	8	6	8	9	16	4	10	14	17	20	61
<b>PM 15 Minute Volumes</b>													
4:30 PM - 4:45 PM	5	2	4	2	1	2	4						10
4:45 PM - 5:00 PM	6	1	4	3	2	3	10						10
5:00 PM - 5:15 PM	3	3	1	2	2	4	2						2
5:15 PM - 5:30 PM	4	1	1	5	3	2	2						2
5:30 PM - 5:45 PM	4	8	1	1	1	1	1						1
5:45 PM - 6:00 PM	3	2	3	5	2	4	9						5
6:00 PM - 6:15 PM	3	1	6	8	2	3	2						7
6:15 PM - 6:30 PM	3	3	4	3	1	2	7						9
6:30 PM - 6:45 PM	2	1	4	5	1	4	5						9
6:45 PM - 7:00 PM	5	3	8	10	3	4	2						9
7:00 PM - 7:15 PM	5	3	1	7	3	2	1						3
7:15 PM - 7:30 PM	4	8	5	3	4	1	9						6
<b>Total</b>	44	31	46	55	20	24	43	55					182
<b>PM One Hour Volumes</b>													
4:30 PM - 5:30 PM	18	6	7	13	3	5	12	18	24	20	8	30	82
5:30 PM - 6:30 PM	14	8	11	12	4	5	11	15	22	23	9	26	80
6:30 PM - 7:30 PM	11	10	13	13	3	7	17	10	21	26	10	27	84
7:30 PM - 8:30 PM	11	8	18	19	5	8	15	11	19	37	13	26	95
8:30 PM - 9:30 PM	10	10	21	17	6	8	14	16	20	38	14	30	102
9:30 PM - 10:30 PM	11	7	17	21	6	11	18	18	18	38	17	36	109
10:30 PM - 11:30 PM	8	7	22	26	7	11	11	22	21	48	18	33	120
11:30 PM - 12:30 AM	15	10	17	25	8	10	10	22	25	42	18	32	117
12:30 AM - 1:30 AM	16	15	18	25	11	11	17	21	31	43	22	38	134

### Wells + Associates, Inc.

McLean, Virginia

#### Pedestrian Volume Survey

PROJECT: Alfred St. Baptist Church 1800 St. & S. Washington St. LOCATION: City of Alexandria, VA		SOUTHBOUND ROAD: South Washington Street NORTHBOUND ROAD: South Washington Street EASTBOUND ROAD: Duke Street WESTBOUND ROAD: Duke Street	
DATE: 5/01/2015 DAY: Sunday		WEATHER: clear	
COUNTED BY: apen		IMPUTED BY: apen	

Time Period	Southbound Street Right	Southbound Street Thru	Southbound Street Left	Total	Southbound Street Right	Southbound Street Thru	Southbound Street Left	Total	Northbound Street Right	Northbound Street Thru	Northbound Street Left	Total	Eastbound Street Right	Eastbound Street Thru	Eastbound Street Left	Total	Westbound Street Right	Westbound Street Thru	Westbound Street Left	Total
<b>15 Minute Volumes</b>																				
7:00 AM - 7:15 AM																				
7:15 AM - 7:30 AM																				
7:30 AM - 7:45 AM																				
7:45 AM - 8:00 AM																				
8:00 AM - 8:15 AM																				
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1:45 PM - 2:00 PM																				
2:00 PM - 2:15 PM																				
2:15 PM - 2:30 PM																				
2:30 PM - 2:45 PM																				
2:45 PM - 3:00 PM																				
<b>Total</b>	89	97	117	144	70	84	152	605												

### Wells + Associates, Inc.

McLean, Virginia

#### Turning Movement Count - Bicycles

PROJECT: Alfred St. Baptist Church 1800 St. & S. Washington St. LOCATION: City of Alexandria, VA		SOUTHBOUND ROAD: South Washington Street NORTHBOUND ROAD: South Washington Street EASTBOUND ROAD: Duke Street WESTBOUND ROAD: Duke Street	
DATE: 5/01/2015 DAY: Sunday		WEATHER: clear	
COUNTED BY: apen		IMPUTED BY: apen	

Time Period	Southbound Street Right	Southbound Street Thru	Southbound Street Left	Total	Southbound Street Right	Southbound Street Thru	Southbound Street Left	Total	Northbound Street Right	Northbound Street Thru	Northbound Street Left	Total	Eastbound Street Right	Eastbound Street Thru	Eastbound Street Left	Total	Westbound Street Right	Westbound Street Thru	Westbound Street Left	Total
<b>15 Minute Volumes</b>																				
7:00 AM - 7:15 AM																				
7:15 AM - 7:30 AM																				
7:30 AM - 7:45 AM																				
7:45 AM - 8:00 AM																				
8:00 AM - 8:15 AM																				
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2:00 PM - 2:15 PM																				
2:15 PM - 2:30 PM																				
2:30 PM - 2:45 PM																				
2:45 PM - 3:00 PM																				
<b>Total</b>	5	2	0	7	1	15	0	17	7	17	1	35	4	8	3	15	32	32	4	64



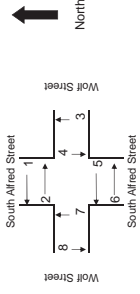


# Wells + Associates, Inc.

McLean, Virginia

## Pedestrian Volume Survey

**PROJECT:** Alfred St. Baptist Church  
**W-A JOB NO:** 6393  
**INTERSECTION:** S. Alfred St. & Wolfe St.  
**LOCATION:** City of Alexandria, VA  
**DATE:** 5/20/2015  
**DAY:** Wednesday  
**WEATHER:** clear  
**COUNTED BY:** Marija  
**INPUTED BY:** agan



Time Period	Movement							
	1	2	3	4	5	6	7	8
<b>AM 15 Minute Volumes</b>								
6:30 AM - 6:45 AM	3							
6:45 AM - 7:00 AM	2							
7:00 AM - 7:15 AM	2							
7:15 AM - 7:30 AM	3							
7:30 AM - 7:45 AM	4							
7:45 AM - 8:00 AM	3	2						
8:00 AM - 8:15 AM	2							
8:15 AM - 8:30 AM	4							
8:30 AM - 8:45 AM	4							
8:45 AM - 9:00 AM	4							
9:00 AM - 9:15 AM	1	3						
9:15 AM - 9:30 AM	1	4						
<b>Total</b>	<b>21</b>	<b>2</b>	<b>15</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>
<b>AM One Hour Volumes</b>								
6:30 AM - 7:30 AM	10	0	0	0	0	0	0	0
7:30 AM - 8:30 AM	11	0	0	0	0	0	0	0
8:30 AM - 9:30 AM	12	2	0	0	0	0	0	0
<b>Total</b>	<b>33</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>PM 15 Minute Volumes</b>								
4:30 PM - 4:45 PM	2	4						
4:45 PM - 5:00 PM	7							
5:00 PM - 5:15 PM	8	1						
5:15 PM - 5:30 PM	4	2						
5:30 PM - 5:45 PM	5	5						
5:45 PM - 6:00 PM	2	5						
6:00 PM - 6:15 PM	1	3						
6:15 PM - 6:30 PM	2	2						
6:30 PM - 6:45 PM	3	3						
6:45 PM - 7:00 PM	1	2						
7:00 PM - 7:15 PM	1	1						
7:15 PM - 7:30 PM	1	1						
<b>Total</b>	<b>3</b>	<b>9</b>	<b>17</b>	<b>34</b>	<b>8</b>	<b>15</b>	<b>11</b>	<b>31</b>
<b>PM One Hour Volumes</b>								
4:30 PM - 5:30 PM	0	8	7	14	0	2	1	16
5:30 PM - 6:30 PM	0	8	10	15	0	6	1	15
<b>Total</b>	<b>0</b>	<b>16</b>	<b>17</b>	<b>29</b>	<b>0</b>	<b>8</b>	<b>2</b>	<b>31</b>

# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - Bicycles

**PROJECT:** Alfred St. Baptist Church  
**W-A JOB NO:** 6393  
**INTERSECTION:** S. Alfred St. & Wolfe St.  
**LOCATION:** City of Alexandria, VA  
**DATE:** 5/20/2015  
**DAY:** Wednesday  
**WEATHER:** clear  
**COUNTED BY:** Marija  
**INPUTED BY:** agan

**SOUTHBOUND ROAD:** South Alfred Street  
**NORTHBOUND ROAD:** South Alfred Street  
**WESTBOUND ROAD:** Wolfe Street  
**EASTBOUND ROAD:** Wolfe Street

Time Period	Southbound			Northbound			Eastbound			Westbound			North & South		East & West		Total	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right		Thru
<b>AM 15 Minute Volumes</b>																		
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 7:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM - 9:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>
<b>AM One Hour Volumes</b>																		
6:30 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>PM 15 Minute Volumes</b>																		
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM - 7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
<b>PM One Hour Volumes</b>																		
4:30 PM - 5:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 6:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

Wells + Associates, Inc.  
McLean, Virginia

Pedestrian Volume Survey

PROJECT: Alfred St. Baptist Church  
W. A. Wells + Associates, Inc.  
INTERSECTION: S. Alfred St. & Wolfe St.  
LOCATION: City of Alexandria, VA  
DATE: 5/01/2015  
DAY: Sunday  
WEATHER: clear  
COUNTED BY: LZ  
INPUT BY: LZ

Time Period	Southbound				Northbound				Westbound				Eastbound			
	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total
<b>15 Minute Volumes</b>	1 2 3 4 5 6 7 8															
7:00 AM - 7:15 AM	1				1				1				1			
7:15 AM - 7:30 AM	1				1				1				1			
7:30 AM - 7:45 AM	1				1				1				1			
7:45 AM - 8:00 AM	1				1				1				1			
8:00 AM - 8:15 AM	1				1				1				1			
8:15 AM - 8:30 AM	1				1				1				1			
8:30 AM - 8:45 AM	1				1				1				1			
8:45 AM - 9:00 AM	1				1				1				1			
9:00 AM - 9:15 AM	1				1				1				1			
9:15 AM - 9:30 AM	1				1				1				1			
9:30 AM - 9:45 AM	1				1				1				1			
9:45 AM - 10:00 AM	1				1				1				1			
10:00 AM - 10:15 AM	1				1				1				1			
10:15 AM - 10:30 AM	1				1				1				1			
10:30 AM - 10:45 AM	1				1				1				1			
10:45 AM - 11:00 AM	1				1				1				1			
11:00 AM - 11:15 AM	1				1				1				1			
11:15 AM - 11:30 AM	1				1				1				1			
11:30 AM - 11:45 AM	1				1				1				1			
11:45 AM - 12:00 PM	1				1				1				1			
12:00 PM - 12:15 PM	1				1				1				1			
12:15 PM - 12:30 PM	1				1				1				1			
12:30 PM - 12:45 PM	1				1				1				1			
12:45 PM - 1:00 PM	1				1				1				1			
1:00 PM - 1:15 PM	1				1				1				1			
1:15 PM - 1:30 PM	1				1				1				1			
1:30 PM - 1:45 PM	1				1				1				1			
1:45 PM - 2:00 PM	1				1				1				1			
2:00 PM - 2:15 PM	1				1				1				1			
2:15 PM - 2:30 PM	1				1				1				1			
2:30 PM - 2:45 PM	1				1				1				1			
2:45 PM - 3:00 PM	1				1				1				1			
<b>One Hour Volumes</b>	103	61	90	75	43	70	224	251	30	11	2	6	1	60	110	

McLean, Virginia

Turning Movement Count - Bicycles

PROJECT: Alfred St. Baptist Church  
W. A. Wells + Associates, Inc.  
INTERSECTION: S. Alfred St. & Wolfe St.  
LOCATION: City of Alexandria, VA  
DATE: 5/01/2015  
DAY: Sunday  
WEATHER: clear  
COUNTED BY: LZ  
INPUT BY: LZ

SOUTHBOUND ROAD: South Alfred Street  
NORTHBOUND ROAD: South Alfred Street  
WESTBOUND ROAD: Wolfe Street  
EASTBOUND ROAD: Wolfe Street

Time Period	Southbound			Northbound			Westbound			Eastbound								
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left						
<b>15 Minute Volumes</b>	1 2 3 4 5 6 7 8																	
7:00 AM - 7:15 AM	1			1			1			1								
7:15 AM - 7:30 AM	1			1			1			1								
7:30 AM - 7:45 AM	1			1			1			1								
7:45 AM - 8:00 AM	1			1			1			1								
8:00 AM - 8:15 AM	1			1			1			1								
8:15 AM - 8:30 AM	1			1			1			1								
8:30 AM - 8:45 AM	1			1			1			1								
8:45 AM - 9:00 AM	1			1			1			1								
9:00 AM - 9:15 AM	1			1			1			1								
9:15 AM - 9:30 AM	1			1			1			1								
9:30 AM - 9:45 AM	1			1			1			1								
9:45 AM - 10:00 AM	1			1			1			1								
10:00 AM - 10:15 AM	1			1			1			1								
10:15 AM - 10:30 AM	1			1			1			1								
10:30 AM - 10:45 AM	1			1			1			1								
10:45 AM - 11:00 AM	1			1			1			1								
11:00 AM - 11:15 AM	1			1			1			1								
11:15 AM - 11:30 AM	1			1			1			1								
11:30 AM - 11:45 AM	1			1			1			1								
11:45 AM - 12:00 PM	1			1			1			1								
12:00 PM - 12:15 PM	1			1			1			1								
12:15 PM - 12:30 PM	1			1			1			1								
12:30 PM - 12:45 PM	1			1			1			1								
12:45 PM - 1:00 PM	1			1			1			1								
1:00 PM - 1:15 PM	1			1			1			1								
1:15 PM - 1:30 PM	1			1			1			1								
1:30 PM - 1:45 PM	1			1			1			1								
1:45 PM - 2:00 PM	1			1			1			1								
2:00 PM - 2:15 PM	1			1			1			1								
2:15 PM - 2:30 PM	1			1			1			1								
2:30 PM - 2:45 PM	1			1			1			1								
2:45 PM - 3:00 PM	1			1			1			1								
<b>One Hour Volumes</b>	0	9	5	14	4	1	0	5	1	4	0	5	0	0	0	19	5	24





# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - Bicycles

Time Period		Southbound South Patrick Street - 1			Northbound South Patrick Street - 1			Eastbound Gibbon Street			North & South West			Total	
		Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
<b>AM 15 Minute Volumes</b>															
6:30 AM - 6:45 AM		0	0	0	1	0	0	0	0	0	0	0	0	0	1
6:45 AM - 7:00 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 7:15 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM		0	0	0	1	0	0	1	0	0	0	0	0	0	2
8:00 AM - 8:15 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 9:15 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM - 9:30 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>		0	0	0	2	0	0	2	0	0	0	0	0	0	4
<b>AM One Hour Volumes</b>															
6:30 AM - 7:30 AM		0	0	0	1	0	0	0	0	0	0	0	0	0	1
7:30 AM - 8:30 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 9:30 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>		0	0	0	1	0	0	0	0	0	0	0	0	0	1
<b>PM 15 Minute Volumes</b>															
4:30 PM - 4:45 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 6:15 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM - 6:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 6:45 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM - 7:00 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM - 7:15 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM - 7:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>		0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>PM One Hour Volumes</b>															
4:30 PM - 5:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 6:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 7:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>		0	0	0	0	0	0	0	0	0	0	0	0	0	0

# Wells + Associates, Inc.

McLean, Virginia

## Pedestrian Volume Survey

Time Period		Southbound South Patrick Street - 1			Northbound South Patrick Street - 1			Eastbound Gibbon Street			North & South West			Total	
		Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
<b>AM 15 Minute Volumes</b>															
6:30 AM - 6:45 AM		0	0	0	1	0	0	0	0	0	0	0	0	0	1
6:45 AM - 7:00 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 7:15 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM		0	0	0	1	0	0	1	0	0	0	0	0	0	2
8:00 AM - 8:15 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 9:15 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM - 9:30 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>		0	0	0	2	0	0	2	0	0	0	0	0	0	4
<b>AM One Hour Volumes</b>															
6:30 AM - 7:30 AM		0	0	0	1	0	0	0	0	0	0	0	0	0	1
7:30 AM - 8:30 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 9:30 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>		0	0	0	1	0	0	0	0	0	0	0	0	0	1
<b>PM 15 Minute Volumes</b>															
4:30 PM - 4:45 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 6:15 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM - 6:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 6:45 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM - 7:00 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM - 7:15 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM - 7:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>		0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>PM One Hour Volumes</b>															
4:30 PM - 5:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 6:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 7:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>		0	0	0	0	0	0	0	0	0	0	0	0	0	0





# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - Bicycles

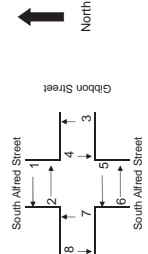
Time Period	Southbound South Alfred Street			Northbound South Alfred Street			Eastbound Gibbon Street			Westbound Gibbon Street			North & South		East & West Total	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru		
<b>AM 15 Minute Volumes</b>																
6:30 AM - 6:45 AM	0	0	0	1	1	1	1	1	1	0	0	0	0	1	1	2
6:45 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 9:15 AM	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	1
9:15 AM - 9:30 AM	0	0	0	2	2	2	0	0	0	0	0	0	0	2	2	4
<b>Total</b>	0	0	0	0	2	2	0	3	1	4	0	0	1	1	3	7
<b>AM One Hour Volumes</b>																
6:30 AM - 7:30 AM	0	0	0	1	1	1	0	0	0	0	0	0	0	1	1	2
7:30 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	1	1	1	0	0	0	0	0	0	0	1	1	2
<b>PM 15 Minute Volumes</b>																
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	4
5:00 PM - 5:15 PM	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2
5:45 PM - 6:00 PM	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
6:00 PM - 6:15 PM	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
6:15 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM - 6:45 PM	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2
6:45 PM - 7:00 PM	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7:00 PM - 7:15 PM	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	12	0	5	0	5	0	4	2	6	0	0	0	18	5	23
<b>PM One Hour Volumes</b>																
4:30 PM - 5:30 PM	0	5	0	1	0	1	0	0	0	0	0	0	0	5	1	6
5:30 PM - 6:30 PM	0	7	0	0	0	0	0	0	0	0	0	0	0	7	1	8
6:30 PM - 7:30 PM	0	4	0	0	0	0	0	0	0	0	0	0	0	4	1	5
<b>Total</b>	0	4	0	1	0	1	0	0	0	0	0	0	0	16	2	19
<b>5:15 PM - 6:15 PM</b>																
5:15 PM - 5:30 PM	0	4	0	0	0	0	0	0	0	0	0	0	0	4	1	5
5:30 PM - 5:45 PM	0	4	0	0	0	0	0	0	0	0	0	0	0	4	1	5
5:45 PM - 6:00 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	3	0	3
6:00 PM - 6:15 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	3	0	3
6:15 PM - 6:30 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	3	0	3
6:30 PM - 7:30 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	3	0	3

# Wells + Associates, Inc.

McLean, Virginia

## Pedestrian Volume Survey

Time Period	Southbound South Alfred Street			Northbound South Alfred Street			Eastbound Gibbon Street			Westbound Gibbon Street			North & South		Total
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	
<b>AM 15 Minute Volumes</b>															
6:30 AM - 6:45 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6:45 AM - 7:00 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7:00 AM - 7:15 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7:15 AM - 7:30 AM	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
7:30 AM - 7:45 AM	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
7:45 AM - 8:00 AM	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
8:00 AM - 8:15 AM	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
8:15 AM - 8:30 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8:30 AM - 8:45 AM	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
8:45 AM - 9:00 AM	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
9:00 AM - 9:15 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9:15 AM - 9:30 AM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
<b>Total</b>	18	27	15	7	4	4	20	12	12	18	11	11	28	11	47
<b>AM One Hour Volumes</b>															
6:30 AM - 7:30 AM	2	7	2	1	0	2	12	4	9	3	2	2	16	3	30
7:30 AM - 8:30 AM	8	12	2	2	1	1	13	4	20	4	2	17	14	48	
8:30 AM - 9:30 AM	9	19	3	2	1	0	11	3	28	5	1	14	48		
<b>Total</b>	11	18	3	6	4	0	9	2	28	9	4	11	53	11	
<b>PM 15 Minute Volumes</b>															
4:30 PM - 4:45 PM	1	2	1	2	2	1	1	1	2	1	1	1	2	1	2
4:45 PM - 5:00 PM	1	2	3	2	3	2	1	1	2	1	1	1	2	1	2
5:00 PM - 5:15 PM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5:15 PM - 5:30 PM	1	4	4	1	4	1	2	2	2	2	2	2	2	2	
5:30 PM - 5:45 PM	2	5	2	3	1	2	3	2	3	2	3	2	3	2	
5:45 PM - 6:00 PM	4	3	5	4	2	3	5	6	6	6	6	6	6	6	
6:00 PM - 6:15 PM	6	10	8	10	8	10	11	12	12	12	12	12	12	12	
6:15 PM - 6:30 PM	7	6	9	8	6	9	8	10	10	10	10	10	10	10	
6:30 PM - 6:45 PM	15	10	6	9	4	5	9	8	8	8	8	8	8	8	
6:45 PM - 7:00 PM	8	6	4	5	2	4	7	6	6	6	6	6	6	6	
7:00 PM - 7:15 PM	3	1	3	4	4	3	4	5	5	5	5	5	5	5	
7:15 PM - 7:30 PM	4	8	4	6	4	3	4	5	5	5	5	5	5	5	
<b>Total</b>	48	48	46	52	34	40	53	54	54	40	40	53	54	54	
<b>PM One Hour Volumes</b>															
4:30 PM - 5:30 PM	3	6	5	5	6	4	4	4	9	10	10	10	7	36	
5:30 PM - 6:30 PM	2	5	9	7	7	3	5	5	7	16	10	10	43	51	
6:30 PM - 7:30 PM	4	9	9	8	4	4	6	7	13	17	8	13	51	51	
<b>Total</b>	7	10	11	12	4	6	10	11	17	23	10	21	71	71	
<b>5:15 PM - 6:15 PM</b>															
5:15 PM - 5:30 PM	19	24	25	17	24	27	30	36	41	59	41	57	190	141	
5:30 PM - 5:45 PM	32	29	28	31	20	27	33	36	61	59	48	71	246	236	
5:45 PM - 6:00 PM	36	32	27	32	20	28	35	36	68	59	48	71	246	246	
6:00 PM - 6:15 PM	33	23	22	26	16	21	28	29	56	48	37	57	198	198	





**Wells + Associates, Inc.**  
McLean, Virginia

**Pedestrian Volume Survey**

PROJECT: Alfred St. Baptist Church  
W. ALFRED ST. INTERSECTION: S. Alfred St. & Gibson St.  
LOCATION: City of Alexandria, VA  
DATE: Sunday  
WEATHER: clear  
COUNTED BY: Vanessa  
INPUTTED BY: agm

SOUTHBOUND ROAD: South Alfred Street  
NORTHBOUND ROAD: South Alfred Street  
WESTBOUND ROAD: Gibson Street  
EASTBOUND ROAD: Gibson Street

DATE: 5/1/2015  
DAY: Sunday  
WEATHER: clear  
COUNTED BY: Vanessa  
INPUTTED BY: agm

Time Period	1	2	3	4	5	6	7	8	9	10	11	12
<b>15 Minute Volumes</b>	<b>15 Minute Volumes</b>											
7:00 AM - 7:15 AM												
7:15 AM - 7:30 AM												
7:30 AM - 7:45 AM												
7:45 AM - 8:00 AM												
8:00 AM - 8:15 AM												
8:15 AM - 8:30 AM												
8:30 AM - 8:45 AM												
8:45 AM - 9:00 AM												
9:00 AM - 9:15 AM												
9:15 AM - 9:30 AM												
9:30 AM - 9:45 AM												
9:45 AM - 10:00 AM												
10:00 AM - 10:15 AM												
10:15 AM - 10:30 AM												
10:30 AM - 10:45 AM												
10:45 AM - 11:00 AM												
11:00 AM - 11:15 AM												
11:15 AM - 11:30 AM												
11:30 AM - 11:45 AM												
11:45 AM - 12:00 PM												
12:00 PM - 12:15 PM												
12:15 PM - 12:30 PM												
12:30 PM - 12:45 PM												
12:45 PM - 1:00 PM												
1:00 PM - 1:15 PM												
1:15 PM - 1:30 PM												
1:30 PM - 1:45 PM												
1:45 PM - 2:00 PM												
2:00 PM - 2:15 PM												
2:15 PM - 2:30 PM												
2:30 PM - 2:45 PM												
2:45 PM - 3:00 PM												
<b>One Hour Volumes</b>	31	29	29	17	7	19	42	32				

**McLean, Virginia**  
**Turning Movement Count - Bicycles**

PROJECT: Alfred St. Baptist Church  
W. ALFRED ST. INTERSECTION: S. Alfred St. & Gibson St.  
LOCATION: City of Alexandria, VA  
DATE: 5/1/2015  
DAY: Sunday  
WEATHER: clear  
COUNTED BY: Vanessa  
INPUTTED BY: agm

SOUTHBOUND ROAD: South Alfred Street  
NORTHBOUND ROAD: South Alfred Street  
WESTBOUND ROAD: Gibson Street  
EASTBOUND ROAD: Gibson Street

DATE: 5/1/2015  
DAY: Sunday  
WEATHER: clear  
COUNTED BY: Vanessa  
INPUTTED BY: agm

Time Period	Southbound			Northbound			Westbound			Eastbound			Total					
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left						
<b>15 Minute Volumes</b>	<b>15 Minute Volumes</b>																	
7:00 AM - 7:15 AM													1					
7:15 AM - 7:30 AM													1					
7:30 AM - 7:45 AM													1					
7:45 AM - 8:00 AM													2					
8:00 AM - 8:15 AM													3					
8:15 AM - 8:30 AM													3					
8:30 AM - 8:45 AM													3					
8:45 AM - 9:00 AM													4					
9:00 AM - 9:15 AM													4					
9:15 AM - 9:30 AM													4					
9:30 AM - 9:45 AM													4					
9:45 AM - 10:00 AM													4					
10:00 AM - 10:15 AM													4					
10:15 AM - 10:30 AM													4					
10:30 AM - 10:45 AM													4					
10:45 AM - 11:00 AM													4					
11:00 AM - 11:15 AM													4					
11:15 AM - 11:30 AM													4					
11:30 AM - 11:45 AM													4					
11:45 AM - 12:00 PM													4					
12:00 PM - 12:15 PM													4					
12:15 PM - 12:30 PM													4					
12:30 PM - 12:45 PM													4					
12:45 PM - 1:00 PM													4					
1:00 PM - 1:15 PM													4					
1:15 PM - 1:30 PM													4					
1:30 PM - 1:45 PM													4					
1:45 PM - 2:00 PM													4					
2:00 PM - 2:15 PM													4					
2:15 PM - 2:30 PM													4					
2:30 PM - 2:45 PM													4					
2:45 PM - 3:00 PM													4					
<b>One Hour Volumes</b>	10	0	11	1	8	1	10	0	4	1	5	2	3	0	5	16	15	31

# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - All Vehicles

**PROJECT:** Alfred St. Baptist Church  
**WVA JOB NO.:** 6883  
**INTERSECTION:** S. Alfred St. & Gibson St.  
**LOCATION:** City of Alexandria, VA

**DATE:** 5/20/2015  
**DAY:** Wednesday  
**WEATHER:** clear  
**COUNTED BY:** Camill  
**INPUT BY:** agan

**SOUTHBOUND ROAD:** South Alfred Street  
**NORTHBOUND ROAD:** South Alfred Street  
**WESTBOUND ROAD:** Gibson Street  
**EASTBOUND ROAD:** Gibson Street

Time Period	Southbound			Northbound			Eastbound			Westbound			North & South	East & West	Total	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left				PHF
<b>AM 15 Minute Volumes</b>																
6:30 AM - 6:45 AM	5	1	0	0	76	1	0	18	12	30	0	0	0	0	0	113
6:45 AM - 7:00 AM	3	0	0	0	80	0	0	67	9	26	0	0	0	0	0	113
7:00 AM - 7:15 AM	6	3	0	2	90	0	0	67	9	26	0	0	0	0	0	117
7:15 AM - 7:30 AM	6	3	0	2	90	0	0	67	9	26	0	0	0	0	0	117
7:30 AM - 7:45 AM	6	3	0	2	90	0	0	67	9	26	0	0	0	0	0	117
7:45 AM - 8:00 AM	5	3	0	3	114	1	122	0	90	11	101	0	0	0	0	234
8:00 AM - 8:15 AM	4	6	0	8	114	1	118	0	97	9	106	0	0	0	0	232
8:15 AM - 8:30 AM	4	6	0	8	114	1	118	0	97	9	106	0	0	0	0	232
8:30 AM - 8:45 AM	6	3	0	11	7	91	0	86	7	93	0	0	0	0	0	202
8:45 AM - 9:00 AM	6	4	0	10	4	73	0	82	18	100	0	0	0	0	0	187
9:00 AM - 9:15 AM	6	4	0	14	3	91	1	85	0	75	14	89	0	0	0	198
9:15 AM - 9:30 AM	4	4	0	8	4	86	4	86	4	94	0	0	0	0	0	181
<b>AM One Hour Volumes</b>	58	40	0	108	42	1065	12	1139	0	903	56	1059	0	0	0	2206
6:30 AM - 7:30 AM	19	7	0	26	0.72	5	324	2	331	0.89	0	212	45	257	0.73	614
7:30 AM - 8:30 AM	22	9	0	31	0.70	9	365	2	376	0.77	0	284	44	328	0.81	627
8:30 AM - 9:30 AM	23	13	0	36	0.82	15	413	4	427	0.91	0	389	51	420	0.88	653
9:30 AM - 10:30 AM	24	16	0	39	0.81	22	384	4	420	0.89	0	373	54	433	0.83	682
10:30 AM - 11:30 AM	28	19	0	47	0.84	20	347	3	379	0.91	0	364	63	427	0.85	697
11:30 AM - 12:30 PM	26	17	0	43	0.77	18	341	5	384	0.93	0	337	54	391	0.90	608
<b>PM 15 Minute Volumes</b>																
4:30 PM - 4:45 PM	33	13	0	46	0	240	0	240	0	11	41	52	0	0	0	338
4:45 PM - 5:00 PM	35	17	0	52	0	204	0	204	0	7	53	60	0	0	0	316
5:00 PM - 5:15 PM	41	16	0	57	0	214	0	214	0	8	51	59	0	0	0	330
5:15 PM - 5:30 PM	55	12	0	67	1	198	0	199	0	7	58	66	0	0	0	332
5:30 PM - 5:45 PM	70	10	0	80	0	209	0	209	0	7	35	42	0	0	0	331
5:45 PM - 6:00 PM	72	11	0	83	0	204	0	204	0	10	53	62	0	0	0	331
6:00 PM - 6:15 PM	72	11	0	83	0	204	0	204	0	10	53	62	0	0	0	331
6:15 PM - 6:30 PM	66	5	0	71	1	183	0	184	0	12	46	58	0	0	0	323
6:30 PM - 6:45 PM	81	3	0	84	3	182	0	185	0	14	34	48	0	0	0	317
6:45 PM - 7:00 PM	43	13	0	56	0	192	2	194	0	8	38	46	0	0	0	296
7:00 PM - 7:15 PM	29	11	0	40	0	209	0	209	0	13	18	31	0	0	0	280
7:15 PM - 7:30 PM	29	11	0	40	0	209	0	209	0	13	18	31	0	0	0	280
<b>PM One Hour Volumes</b>	613	136	0	749	13	2423	2	2428	0	123	602	625	0	0	0	3811
4:30 PM - 5:30 PM	164	58	0	222	0.83	7	850	0	857	0.89	0	34	203	237	0.90	1316
5:30 PM - 6:30 PM	201	55	0	256	0.80	7	819	0	826	0.96	0	30	197	227	0.86	1309
6:30 PM - 7:30 PM	258	43	0	301	0.84	2	832	0.81	832	0.81	0	40	165	233	0.81	1327
<b>Total</b>	1176	279	0	1455	0.84	13	4253	2	4258	0.89	0	467	1168	1365	0.89	5177

## McLean, Virginia

### Turning Movement Count - Total Vehicles

**PROJECT:** Alfred St. Baptist Church  
**WVA JOB NO.:** 6883  
**INTERSECTION:** S. Alfred St. & Gibson St.  
**LOCATION:** City of Alexandria, VA

**DATE:** 5/31/2015  
**DAY:** Sunday  
**WEATHER:** Sunny  
**COUNTED BY:** Vanessa  
**INPUT BY:** agan

**SOUTHBOUND ROAD:** South Alfred Street  
**NORTHBOUND ROAD:** South Alfred Street  
**WESTBOUND ROAD:** Gibson Street  
**EASTBOUND ROAD:** Gibson Street

Time Period	Southbound			Northbound			Eastbound			Westbound			North & South	East & West	Total	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left				PHF
<b>15 Minute Volumes</b>																
7:00 AM - 7:15 AM	3	1	0	8	1	9	31	31	0	13	31	44	0	0	0	124
7:15 AM - 7:30 AM	2	1	0	6	1	8	26	26	0	18	26	56	0	0	0	110
7:30 AM - 7:45 AM	4	1	0	5	4	9	45	46	0	31	46	77	0	0	0	168
7:45 AM - 8:00 AM	4	1	0	5	2	7	14	6	20	64	39	64	0	0	0	150
8:00 AM - 8:15 AM	3	2	0	5	3	8	18	19	0	10	19	53	0	0	0	133
8:15 AM - 8:30 AM	3	2	0	5	4	9	42	1	43	3	43	53	0	0	0	148
8:30 AM - 8:45 AM	3	1	0	4	2	6	54	56	0	20	56	76	0	0	0	159
8:45 AM - 9:00 AM	4	1	0	5	1	6	10	16	16	20	76	96	0	0	0	164
9:00 AM - 9:15 AM	4	1	0	5	1	6	10	14	14	19	93	114	0	0	0	170
9:15 AM - 9:30 AM	4	1	0	5	2	7	15	16	16	22	96	124	0	0	0	177
9:30 AM - 9:45 AM	4	1	0	5	2	7	15	16	16	22	96	124	0	0	0	177
9:45 AM - 10:00 AM	4	1	0	5	2	7	15	16	16	22	96	124	0	0	0	177
10:00 AM - 10:15 AM	6	5	11	4	92	1	37	14	18	15	32	43	88	131	0	206
10:15 AM - 10:30 AM	5	3	2	8	4	12	19	19	38	20	69	137	206	0	0	342
10:30 AM - 10:45 AM	6	8	1	15	3	4	18	18	36	21	61	86	143	0	0	234
10:45 AM - 11:00 AM	6	8	1	15	3	4	18	18	36	21	61	86	143	0	0	234
11:00 AM - 11:15 AM	6	5	11	3	123	126	12	12	22	33	126	159	0	0	0	318
11:15 AM - 11:30 AM	14	7	21	1	101	102	1	1	12	23	102	146	0	0	0	333
11:30 AM - 11:45 AM	14	7	21	1	101	102	1	1	12	23	102	146	0	0	0	333
11:45 AM - 12:00 PM	6	6	12	1	108	109	1	1	20	21	109	150	0	0	0	327
12:00 PM - 12:15 PM	8	9	17	2	93	95	0	0	14	20	95	132	0	0	0	329
12:15 PM - 12:30 PM	15	4	19	1	137	139	0	0	12	26	139	196	0	0	0	351
12:30 PM - 12:45 PM	15	4	19	1	137	139	0	0	12	26	139	196	0	0	0	351
1:00 PM - 1:15 PM	34	4	39	2	164	167	0	0	32	29	167	265	0	0	0	399
1:15 PM - 1:30 PM	23	3	31	1	136	137	0	0	19	19	137	206	0	0	0	326
1:30 PM - 1:45 PM	10	2	12	1	53	54	0	0	11	16	54	82	0	0	0	175
1:45 PM - 2:00 PM	10	2	12	1	53	54	0	0	11	16	54	82	0	0	0	175
2:00 PM - 2:15 PM	14	10	24	1	130	130	0	0	14	21	130	189	0	0	0	214
2:15 PM - 2:30 PM	15	6	21	3	139	143	0	0	16	18	143	198	0	0	0	222
2:30 PM - 2:45 PM	15	7	22	3	110	112	0	0	17	20	112	170	0	0	0	222
<b>Total</b>	373	134	6	507	85	2952	28	3035	0	446	485	844	0	0	0	4482
<b>One Hour Volumes</b>																
7:00 AM - 8:00 AM	11	3	20	0.832	3	133	126	0.72	6	16	73	106	0	0	0	134
8:00 AM - 9:00 AM	11	8	21	0.852	3	150	142	0.72	6	21	84	126	0	0	0	147
9:00 AM - 10:00 AM	10	8	19	0.75	3	150	153	0.832	5	26	84	126	0	0	0	152
10:00 AM - 11:00 AM	11	4	15	0.75	1	166	1	168	0.813	4	26	69	0.653	84	168	252
11:00 AM - 12:00 PM	10	4	11	0.7	2	175	1	178	0.795	5	29	97	0.78	73	178	251
12:00 PM - 1:00																

# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - Bicycles

Time Period		Southbound - 1			Northbound			Eastbound			North & South		East & West Total
		Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Total	Total	
<b>PROJECT:</b> Alfred St. Baptist Church <b>W-A JOB NO:</b> 6393 <b>INTERSECTION:</b> Route 1 & Franklin St. <b>LOCATION:</b> City of Alexandria, VA <b>DATE:</b> 5/20/2015 <b>DAY:</b> Wednesday <b>WEATHER:</b> clear <b>COUNTED BY:</b> Anitra <b>INPUTED BY:</b> agan													
<b>SOUTHBOUND ROAD:</b> South Patrick Street - 1 <b>NORTHBOUND ROAD:</b> South Patrick Street - 1 <b>WESTBOUND ROAD:</b> Franklin Street <b>EASTBOUND ROAD:</b> Franklin Street													
<b>AM 15 Minute Volumes</b>													
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	
9:00 AM - 9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	
9:15 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	
<b>AM One Hour Volumes</b>													
6:30 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	
7:30 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	
8:30 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	
<b>PM 15 Minute Volumes</b>													
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	
6:00 PM - 6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 PM - 6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	
7:00 PM - 7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	
7:15 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	
<b>PM One Hour Volumes</b>													
4:30 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	
5:30 PM - 6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 PM - 7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	

# Wells + Associates, Inc.

McLean, Virginia

## Pedestrian Volume Survey

Time Period		Movement							
		1	2	3	4	5	6	7	8
<b>PROJECT:</b> Alfred St. Baptist Church <b>W-A JOB NO:</b> 6393 <b>INTERSECTION:</b> Route 1 & Franklin St. <b>LOCATION:</b> City of Alexandria, VA <b>DATE:</b> 5/20/2015 <b>DAY:</b> Wednesday <b>WEATHER:</b> clear <b>COUNTED BY:</b> Salih <b>INPUTED BY:</b> agan									
<b>SOUTHBOUND ROAD:</b> South Patrick Street - 1 <b>NORTHBOUND ROAD:</b> South Patrick Street - 1 <b>WESTBOUND ROAD:</b> Franklin Street <b>EASTBOUND ROAD:</b> Franklin Street									
<b>AM 15 Minute Volumes</b>									
6:30 AM - 6:45 AM	2	1	1	1	1	1	1	1	1
6:45 AM - 7:00 AM	1	1	1	1	1	1	1	1	1
7:00 AM - 7:15 AM	1	1	1	1	1	1	1	1	1
7:15 AM - 7:30 AM	1	1	1	1	1	1	1	1	1
7:30 AM - 7:45 AM	2	2	2	2	2	2	2	2	2
7:45 AM - 8:00 AM	7	7	7	7	7	7	7	7	7
8:00 AM - 8:15 AM	3	3	3	3	3	3	3	3	3
8:15 AM - 8:30 AM	2	2	2	2	2	2	2	2	2
8:30 AM - 8:45 AM	2	2	2	2	2	2	2	2	2
8:45 AM - 9:00 AM	2	2	2	2	2	2	2	2	2
9:00 AM - 9:15 AM	2	2	2	2	2	2	2	2	2
9:15 AM - 9:30 AM	2	2	2	2	2	2	2	2	2
<b>Total</b>	18	17	17	17	17	17	17	17	17
<b>AM One Hour Volumes</b>									
6:30 AM - 7:30 AM	3	3	3	3	3	3	3	3	3
7:30 AM - 8:30 AM	11	11	11	11	11	11	11	11	11
8:30 AM - 9:30 AM	5	5	5	5	5	5	5	5	5
<b>Total</b>	19	19	19	19	19	19	19	19	19
<b>PM 15 Minute Volumes</b>									
4:30 PM - 4:45 PM	1	1	1	1	1	1	1	1	1
4:45 PM - 5:00 PM	2	2	2	2	2	2	2	2	2
5:00 PM - 5:15 PM	4	4	4	4	4	4	4	4	4
5:15 PM - 5:30 PM	4	4	4	4	4	4	4	4	4
5:30 PM - 5:45 PM	1	1	1	1	1	1	1	1	1
5:45 PM - 6:00 PM	2	2	2	2	2	2	2	2	2
6:00 PM - 6:15 PM	1	1	1	1	1	1	1	1	1
6:15 PM - 6:30 PM	2	2	2	2	2	2	2	2	2
6:30 PM - 6:45 PM	3	3	3	3	3	3	3	3	3
6:45 PM - 7:00 PM	2	2	2	2	2	2	2	2	2
7:00 PM - 7:15 PM	2	2	2	2	2	2	2	2	2
7:15 PM - 7:30 PM	1	1	1	1	1	1	1	1	1
<b>Total</b>	18	32	2	3	1	4	1	3	
<b>PM One Hour Volumes</b>									
4:30 PM - 5:30 PM	6	7	0	1	0	2	0	1	13
5:30 PM - 6:30 PM	7	6	1	1	0	2	1	1	13
6:30 PM - 7:30 PM	7	10	1	1	0	2	1	1	17
<b>Total</b>	20	23	1	2	0	4	2	3	33





**Wells + Associates, Inc.**  
McLean, Virginia

**Turning Movement Count - All Vehicles**

PROJECT: Alfred St. Baptist Church  
WVA JOB NO: 6883  
INTERSECTION: Route 1 & Franklin St.  
LOCATION: City of Alexandria, VA

DATE: 5/20/2015  
DAY: Wednesday  
WEATHER: clear  
COUNTED BY: Saha & Amna  
INPUTED BY: Saha & Amna

SOUTHBOUND ROAD: South Patrick Street - 1  
NORTHBOUND ROAD: South Patrick Street - 1  
WESTBOUND ROAD: Franklin Street  
EASTBOUND ROAD: Franklin Street

Time Period	Southbound			Northbound			Eastbound			Westbound			Total
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
<b>15 Minute Volumes</b>													
6:30 AM - 6:45 AM	0	264	0	0	0	0	0	0	0	0	0	0	264
6:45 AM - 7:00 AM	0	264	0	0	0	0	0	0	0	0	0	0	264
7:00 AM - 7:15 AM	0	347	0	0	0	0	0	0	0	0	0	0	347
7:15 AM - 7:30 AM	0	401	0	0	0	0	0	0	0	0	0	0	401
7:30 AM - 7:45 AM	0	432	0	0	0	0	0	0	0	0	0	0	432
7:45 AM - 8:00 AM	0	461	0	0	0	0	0	0	0	0	0	0	461
8:00 AM - 8:15 AM	0	453	0	0	0	0	0	0	0	0	0	0	453
8:15 AM - 8:30 AM	0	450	0	0	0	0	0	0	0	0	0	0	450
8:30 AM - 8:45 AM	0	404	0	0	0	0	0	0	0	0	0	0	404
8:45 AM - 9:00 AM	0	408	0	0	0	0	0	0	0	0	0	0	408
9:00 AM - 9:15 AM	0	383	0	0	0	0	0	0	0	0	0	0	383
9:15 AM - 9:30 AM	0	343	0	0	0	0	0	0	0	0	0	0	343
<b>AM One Hour Volumes</b>	0	4714	0	0	0	0	0	0	0	0	0	0	4714
6:30 AM - 7:30 AM	0	1350	0	0	0	0	0	0	0	0	0	0	1350
7:30 AM - 8:30 AM	0	1518	0	0	0	0	0	0	0	0	0	0	1518
8:30 AM - 9:30 AM	0	1641	0	0	0	0	0	0	0	0	0	0	1641
9:30 AM - 10:30 AM	0	1777	0	0	0	0	0	0	0	0	0	0	1777
10:30 AM - 11:30 AM	0	1798	0	0	0	0	0	0	0	0	0	0	1798
11:30 AM - 12:30 PM	0	1745	0	0	0	0	0	0	0	0	0	0	1745
<b>PM One Hour Volumes</b>	0	1645	0	0	0	0	0	0	0	0	0	0	1645
1:30 PM - 2:30 PM	0	1790	0	0	0	0	0	0	0	0	0	0	1790
2:30 PM - 3:30 PM	0	1840	0	0	0	0	0	0	0	0	0	0	1840
3:30 PM - 4:30 PM	0	1739	0	0	0	0	0	0	0	0	0	0	1739
4:30 PM - 5:30 PM	0	1833	0	0	0	0	0	0	0	0	0	0	1833
5:30 PM - 6:30 PM	0	1893	0	0	0	0	0	0	0	0	0	0	1893
6:30 PM - 7:30 PM	0	1824	0	0	0	0	0	0	0	0	0	0	1824
7:30 PM - 8:30 PM	0	1774	0	0	0	0	0	0	0	0	0	0	1774
8:30 PM - 9:30 PM	0	1708	0	0	0	0	0	0	0	0	0	0	1708
9:30 PM - 10:30 PM	0	1531	0	0	0	0	0	0	0	0	0	0	1531
10:30 PM - 11:30 PM	0	1533	0	0	0	0	0	0	0	0	0	0	1533
<b>PM One Hour Volumes</b>	0	1626	0	0	0	0	0	0	0	0	0	0	1626
4:30 PM - 5:30 PM	0	3184	0	0	0	0	0	0	0	0	0	0	3184
5:30 PM - 6:30 PM	0	3289	0	0	0	0	0	0	0	0	0	0	3289
6:30 PM - 7:30 PM	0	3238	0	0	0	0	0	0	0	0	0	0	3238
7:30 PM - 8:30 PM	0	3271	0	0	0	0	0	0	0	0	0	0	3271
8:30 PM - 9:30 PM	0	3124	0	0	0	0	0	0	0	0	0	0	3124
9:30 PM - 10:30 PM	0	3141	0	0	0	0	0	0	0	0	0	0	3141
10:30 PM - 11:30 PM	0	3055	0	0	0	0	0	0	0	0	0	0	3055

**McLean, Virginia**

**Turning Movement Count - Total Vehicles**

PROJECT: Alfred St. Baptist Church  
WVA JOB NO: 6883  
INTERSECTION: Route 1 & Franklin St.  
LOCATION: City of Alexandria, VA

DATE: 5/21/2015  
DAY: Sunday  
WEATHER: Partly Cloudy  
COUNTED BY: Evelyn & Virginia  
INPUTED BY: again

SOUTHBOUND ROAD: South Patrick Street - 1  
NORTHBOUND ROAD: South Patrick Street - 1  
WESTBOUND ROAD: Franklin Street  
EASTBOUND ROAD: Franklin Street

Time Period	Southbound			Northbound			Eastbound			Westbound			Total
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
<b>15 Minute Volumes</b>													
7:00 AM - 7:15 AM	83	168	211	0	0	0	0	0	0	0	0	0	462
7:15 AM - 7:30 AM	141	344	276	1	5	2	0	0	0	0	0	0	564
7:30 AM - 7:45 AM	165	318	306	4	2	8	0	0	0	0	0	0	651
7:45 AM - 8:00 AM	150	212	276	1	3	7	0	0	0	0	0	0	438
8:00 AM - 8:15 AM	171	265	322	6	6	14	0	0	0	0	0	0	578
8:15 AM - 8:30 AM	187	291	375	4	8	2	0	0	0	0	0	0	667
8:30 AM - 8:45 AM	238	240	307	6	10	2	0	0	0	0	0	0	695
8:45 AM - 9:00 AM	276	266	306	9	10	5	0	0	0	0	0	0	706
9:00 AM - 9:15 AM	324	365	465	3	6	2	0	0	0	0	0	0	800
9:15 AM - 9:30 AM	402	409	459	11	9	21	0	0	0	0	0	0	891
9:30 AM - 9:45 AM	408	412	468	18	10	9	0	0	0	0	0	0	897
9:45 AM - 10:00 AM	319	412	470	10	9	2	0	0	0	0	0	0	811
10:00 AM - 10:15 AM	359	359	470	4	14	3	0	0	0	0	0	0	826
10:15 AM - 10:30 AM	432	318	451	17	12	8	0	0	0	0	0	0	820
10:30 AM - 10:45 AM	284	329	483	17	16	4	0	0	0	0	0	0	794
10:45 AM - 11:00 AM	284	284	476	10	9	18	0	0	0	0	0	0	719
11:00 AM - 11:15 AM	272	321	406	10	9	20	0	0	0	0	0	0	698
11:15 AM - 11:30 AM	515	519	465	16	14	33	0	0	0	0	0	0	1003
11:30 AM - 11:45 AM	538	538	491	19	14	41	0	0	0	0	0	0	1070
11:45 AM - 12:00 PM	595	595	402	32	18	2	0	0	0	0	0	0	1050
12:00 PM - 12:15 PM	600	600	377	21	14	35	0	0	0	0	0	0	1012
12:15 PM - 12:30 PM	591	591	463	9	18	8	0	0	0	0	0	0	1081
12:30 PM - 12:45 PM	556	556	473	8	9	4	0	0	0	0	0	0	1041
12:45 PM - 1:00 PM	557	557	453	8	10	3	0	0	0	0	0	0	1014
1:00 PM - 1:15 PM	528	528	472	2	8	11	0	0	0	0	0	0	1014
1:15 PM - 1:30 PM	525	525	456	2	8	11	0	0	0	0	0	0	1014
1:30 PM - 1:45 PM	0	1182	28	0	0	0	296	316	80	882	2487	682	2566
<b>One Hour Volumes</b>													
7:00 AM - 7:30 AM	533	619	772	7	14	2	0	0	0	0	0	0	1326
7:30 AM - 8:00 AM	549	648	813	17	16	26	0	0	0	0	0	0	1406
8:00 AM - 8:30 AM	591	600	893	24	26	33	0	0	0	0	0	0	1476
8:30 AM - 9:00 AM	631	638	976	27	26	62	0	0	0	0	0	0	1623
9:00 AM - 9:30 AM	653	658	975	28	27	67	0	0	0	0	0	0	1677
9:30 AM - 10:00 AM	688	693	989	31	30	72	0	0	0	0	0	0	1790
10:00 AM - 10:30 AM	744	744	914	34	34	81	0	0	0	0	0	0	1913
10:30 AM - 11:00 AM	808	808	974	38	38	95	0	0	0	0	0	0	2021
11:00 AM - 11:30 AM	854	854	974	41	41	102	0	0	0	0	0	0	2137
11:30 AM - 12:00 PM	929	929	974	47	47	114	0	0	0	0	0	0	2250
12:00 PM - 12:30 PM	943	943	974	47	47	114	0	0	0	0	0	0	2250
12:30 PM - 1:00 PM	943	943	974	47	47	114	0	0	0	0	0	0	2250
1:00 PM - 1:30 PM	1855	1855	967	46	46	119	0	0	0	0	0	0	3762
1:30 PM - 2:00 PM	2198	2198	967	46	46	119	0	0	0	0	0	0	4311
2:00 PM - 2:30 PM	2532	2532	948	46	46	119	0	0	0	0	0	0	4625
2:30 PM - 3:00 PM	2404	2404	969	46	46	119	0	0	0	0	0	0	4329
3:00 PM - 3:30 PM	2353	2353	963	46	46	119	0	0	0	0	0	0	4262
3:30 PM - 4:00 PM	2229	2229	963	46	46	119	0	0	0	0	0	0	4154
4:00 PM - 4:30 PM	2231	2231	963	46	46	119	0	0	0	0	0	0	4154
4:30 PM - 5:00 PM	2229	2229	963	46	46	119	0	0	0	0	0	0	4154



**Wells + Associates, Inc.**  
McLean, Virginia

**Auto Occupancy Count**

PROJECT: **Alford Street Church** DATE: **4/20/16**  
 WVA JOB NO: **638** DAY: **Sunday**  
 INTERSECTION: **Church Back, Drop off** WEATHER: **clear**  
 LOCATION: **Alexandria, VA** COUNTY: **Staff**  
 COMPUTED BY: **SLB**

Time	Front Church								Total	Average Vehicle Occupancy	
	1	2	3	4	5	6	7	8			
<b>15 Minute Volumes</b>											
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	0	1
6:45 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 9:15 AM	0	0	0	0	0	0	0	0	0	0	0
9:15 AM - 9:30 AM	4	1	1	1	0	0	0	0	0	0	7
9:30 AM - 9:45 AM	1	1	1	1	0	0	0	0	0	0	4
9:45 AM - 10:00 AM	1	1	1	1	0	0	0	0	0	0	4
10:00 AM - 10:15 AM	1	1	1	1	0	0	0	0	0	0	4
10:15 AM - 10:30 AM	0	0	0	0	0	0	0	0	0	0	0
10:30 AM - 10:45 AM	0	0	0	0	0	0	0	0	0	0	0
10:45 AM - 11:00 AM	0	0	0	0	0	0	0	0	0	0	0
11:00 AM - 11:15 AM	0	0	0	0	0	0	0	0	0	0	0
11:15 AM - 11:30 AM	0	0	0	0	0	0	0	0	0	0	0
11:30 AM - 11:45 AM	0	0	0	0	0	0	0	0	0	0	0
11:45 AM - 12:00 PM	0	0	0	0	0	0	0	0	0	0	0
12:00 PM - 12:15 PM	0	0	0	0	0	0	0	0	0	0	0
12:15 PM - 12:30 PM	0	0	0	0	0	0	0	0	0	0	0
12:30 PM - 12:45 PM	0	0	0	0	0	0	0	0	0	0	0
12:45 PM - 1:00 PM	0	0	0	0	0	0	0	0	0	0	0
1:00 PM - 1:15 PM	0	0	0	0	0	0	0	0	0	0	0
1:15 PM - 1:30 PM	0	0	0	0	0	0	0	0	0	0	0
1:30 PM - 1:45 PM	0	0	0	0	0	0	0	0	0	0	0
1:45 PM - 2:00 PM	0	0	0	0	0	0	0	0	0	0	0
2:00 PM - 2:15 PM	0	0	0	0	0	0	0	0	0	0	0
2:15 PM - 2:30 PM	0	0	0	0	0	0	0	0	0	0	0
2:30 PM - 2:45 PM	0	0	0	0	0	0	0	0	0	0	0
2:45 PM - 3:00 PM	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>14</b>	<b>4</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>24</b>
<b>One Hour Volumes</b>											
6:30 AM - 7:00 AM											
7:00 AM - 8:00 AM											
8:00 AM - 9:00 AM											
9:00 AM - 10:00 AM											
10:00 AM - 11:00 AM											
11:00 AM - 12:00 PM											
12:00 PM - 1:00 PM											
1:00 PM - 2:00 PM											
2:00 PM - 3:00 PM											
<b>Total</b>	<b>1</b>										<b>1</b>

**Wells + Associates, Inc.**  
McLean, Virginia

**Auto Occupancy Count**

PROJECT: **Alford Street Church** DATE: **4/20/16**  
 WVA JOB NO: **638** DAY: **Sunday**  
 INTERSECTION: **Church Front - Pick Up** WEATHER: **clear**  
 LOCATION: **Alexandria, VA** COUNTY: **Staff**  
 COMPUTED BY: **SLB**

Time	Front Church								Total	Average Vehicle Occupancy	
	1	2	3	4	5	6	7	8			
<b>15 Minute Volumes</b>											
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	0	0
6:45 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	1	0	0	0	0	0	0	0	0	0	1
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 9:15 AM	0	0	0	0	0	0	0	0	0	0	0
9:15 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0
9:30 AM - 9:45 AM	0	0	0	0	0	0	0	0	0	0	0
9:45 AM - 10:00 AM	0	0	0	0	0	0	0	0	0	0	0
10:00 AM - 10:15 AM	0	0	0	0	0	0	0	0	0	0	0
10:15 AM - 10:30 AM	0	0	0	0	0	0	0	0	0	0	0
10:30 AM - 10:45 AM	0	0	0	0	0	0	0	0	0	0	0
10:45 AM - 11:00 AM	0	0	0	0	0	0	0	0	0	0	0
11:00 AM - 11:15 AM	0	0	0	0	0	0	0	0	0	0	0
11:15 AM - 11:30 AM	2	2	1	0	0	0	0	0	0	0	5
11:30 AM - 11:45 AM	0	0	0	0	0	0	0	0	0	0	0
11:45 AM - 12:00 PM	0	0	0	0	0	0	0	0	0	0	0
12:00 PM - 12:15 PM	0	0	0	0	0	0	0	0	0	0	0
12:15 PM - 12:30 PM	0	0	0	0	0	0	0	0	0	0	0
12:30 PM - 12:45 PM	0	0	0	0	0	0	0	0	0	0	0
12:45 PM - 1:00 PM	0	0	0	0	0	0	0	0	0	0	0
1:00 PM - 1:15 PM	0	0	0	0	0	0	0	0	0	0	0
1:15 PM - 1:30 PM	0	0	0	0	0	0	0	0	0	0	0
1:30 PM - 1:45 PM	0	0	0	0	0	0	0	0	0	0	0
1:45 PM - 2:00 PM	0	0	0	0	0	0	0	0	0	0	0
2:00 PM - 2:15 PM	0	0	0	0	0	0	0	0	0	0	0
2:15 PM - 2:30 PM	0	0	0	0	0	0	0	0	0	0	0
2:30 PM - 2:45 PM	0	0	0	0	0	0	0	0	0	0	0
2:45 PM - 3:00 PM	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>12</b>	<b>8</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>22</b>
<b>One Hour Volumes</b>											
6:30 AM - 7:00 AM											
7:00 AM - 8:00 AM											
8:00 AM - 9:00 AM											
9:00 AM - 10:00 AM											
10:00 AM - 11:00 AM											
11:00 AM - 12:00 PM											
12:00 PM - 1:00 PM											
1:00 PM - 2:00 PM											
2:00 PM - 3:00 PM											
<b>Total</b>	<b>12</b>										<b>22</b>

**Wells + Associates, Inc.**  
McLean, Virginia

**Auto Occupancy Count**

PROJECT: Aired Street Church DATE: 4/20/16  
 W-A JOB NO: 638 DAY: Sunday  
 INTERSECTION: Church Front - Drop off WEATHER: clear  
 LOCATION: Alexandria, VA COMMENTS: 5th  
 COMPUTED BY: JBR

Time	From Church							Total	Average Vehicle
	1	2	3	4	5	6	7		
15 Minutes	Number of Passengers							Total	Vehicle Occupancy
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	0
6:45 AM - 7:00 AM	2	1	0	0	0	0	0	3	1.333333
7:00 AM - 7:15 AM	3	1	0	0	0	0	0	4	1.333333
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	1	0	0	0	0	0	0	1	1
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	2	0	0	0	0	0	2	4
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0
9:00 AM - 9:15 AM	2	0	0	0	0	0	0	2	5
9:15 AM - 9:30 AM	4	0	0	0	0	0	0	4	4
9:30 AM - 9:45 AM	10	4	1	1	0	0	0	16	25
9:45 AM - 10:00 AM	11	1	1	1	0	0	0	13	18
10:00 AM - 10:15 AM	5	0	1	1	0	0	0	7	13
10:15 AM - 10:30 AM	4	0	1	0	0	0	0	5	17
10:30 AM - 10:45 AM	0	0	0	0	0	0	0	0	14
10:45 AM - 11:00 AM	0	0	0	0	0	0	0	0	16
11:00 AM - 11:15 AM	0	0	0	0	0	0	0	0	1
11:15 AM - 11:30 AM	1	1	0	0	0	0	0	2	2
11:30 AM - 11:45 AM	3	0	0	0	0	0	0	3	1.5
11:45 AM - 12:00 PM	3	3	0	0	0	0	0	6	3
12:00 PM - 12:15 PM	0	1	0	0	0	0	0	1	1.5
12:15 PM - 12:30 PM	0	0	0	0	0	0	0	0	2
12:30 PM - 12:45 PM	0	0	0	0	0	0	0	0	0
12:45 PM - 1:00 PM	0	0	0	0	0	0	0	0	0
1:00 PM - 1:15 PM	0	0	0	0	0	0	0	0	0
1:15 PM - 1:30 PM	1	0	0	0	0	0	0	1	1
1:30 PM - 1:45 PM	0	0	0	0	0	0	0	0	0
1:45 PM - 2:00 PM	0	0	0	0	0	0	0	0	0
2:00 PM - 2:15 PM	0	0	0	0	0	0	0	0	0
2:15 PM - 2:30 PM	0	0	0	0	0	0	0	0	0
2:30 PM - 2:45 PM	0	0	0	0	0	0	0	0	0
2:45 PM - 3:00 PM	0	0	0	0	0	0	0	0	0
Total	48	17	5	2	0	0	0	72	103

**One Hour Volumes**

6:30 AM - 7:00 AM	6	1	0	0	0	0	0	7	11.42857
7:00 AM - 7:30 AM	4	1	0	0	0	0	0	5	6
7:30 AM - 8:00 AM	3	1	0	0	0	0	0	4	3
8:00 AM - 8:15 AM	2	1	0	0	0	0	0	3	3
8:15 AM - 8:30 AM	3	1	0	0	0	0	0	4	1.333333
8:30 AM - 8:45 AM	1	3	0	0	0	0	0	4	1.333333
8:45 AM - 9:00 AM	1	3	0	0	0	0	0	4	7
9:00 AM - 9:15 AM	3	2	1	1	0	0	0	6	10
9:15 AM - 9:30 AM	3	2	1	1	0	0	0	6	16.66667
9:30 AM - 9:45 AM	17	4	2	1	0	0	0	24	35
9:45 AM - 10:00 AM	19	7	4	2	0	0	0	31	49
10:00 AM - 10:15 AM	22	7	4	2	0	0	0	35	56
10:15 AM - 10:30 AM	25	7	4	2	0	0	0	38	64
10:30 AM - 10:45 AM	12	3	3	1	1	0	0	19	31
10:45 AM - 11:00 AM	9	1	1	1	0	0	0	12	18
11:00 AM - 11:15 AM	3	0	0	0	0	0	0	3	5
11:15 AM - 11:30 AM	1	2	0	0	0	0	0	3	6.66667
11:30 AM - 11:45 AM	4	2	1	1	0	0	0	8	13.33333
11:45 AM - 12:00 PM	7	1	1	0	0	0	0	9	11.25
12:00 PM - 12:15 PM	9	4	2	0	0	0	0	15	18
12:15 PM - 12:30 PM	6	4	2	0	0	0	0	12	17
12:30 PM - 12:45 PM	3	4	2	0	0	0	0	9	13.07692
12:45 PM - 1:00 PM	3	4	2	0	0	0	0	9	11.25
1:00 PM - 1:15 PM	1	1	1	0	0	0	0	3	4.5
1:15 PM - 1:30 PM	1	1	1	0	0	0	0	3	4.5
1:30 PM - 1:45 PM	1	1	1	0	0	0	0	3	4.5
1:45 PM - 2:00 PM	1	1	1	0	0	0	0	3	4.5
2:00 PM - 2:15 PM	1	1	1	0	0	0	0	3	4.5
2:15 PM - 2:30 PM	1	1	1	0	0	0	0	3	4.5
2:30 PM - 2:45 PM	1	1	1	0	0	0	0	3	4.5
2:45 PM - 3:00 PM	1	1	1	0	0	0	0	3	4.5

**Wells + Associates, Inc.**  
McLean, Virginia

**Auto Occupancy Count**

PROJECT: Aired Street Church DATE: 4/20/16  
 W-A JOB NO: 638 DAY: Sunday  
 INTERSECTION: Church Back - Pick Up WEATHER: clear  
 LOCATION: Alexandria, VA COMMENTS: 5th  
 COMPUTED BY: JBR

Time	From Church							Total	Average Vehicle
	1	2	3	4	5	6	7		
15 Minutes	Number of Passengers							Total	Vehicle Occupancy
6:30 AM - 6:45 AM	0	0	0	0	0	0	0	0	0
6:45 AM - 7:00 AM	1	0	0	0	0	0	0	1	1
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0
9:00 AM - 9:15 AM	0	0	0	0	0	0	0	0	0
9:15 AM - 9:30 AM	1	0	0	0	0	0	0	1	1
9:30 AM - 9:45 AM	1	0	0	0	0	0	0	1	1
9:45 AM - 10:00 AM	0	0	0	0	0	0	0	0	0
10:00 AM - 10:15 AM	0	0	0	0	0	0	0	0	0
10:15 AM - 10:30 AM	0	0	0	0	0	0	0	0	0
10:30 AM - 10:45 AM	0	0	0	0	0	0	0	0	0
10:45 AM - 11:00 AM	0	0	0	0	0	0	0	0	0
11:00 AM - 11:15 AM	0	0	0	0	0	0	0	0	0
11:15 AM - 11:30 AM	0	0	0	0	0	0	0	0	0
11:30 AM - 11:45 AM	0	0	0	0	0	0	0	0	0
11:45 AM - 12:00 PM	0	0	0	0	0	0	0	0	0
12:00 PM - 12:15 PM	0	0	0	0	0	0	0	0	0
12:15 PM - 12:30 PM	0	0	0	0	0	0	0	0	0
12:30 PM - 12:45 PM	0	0	0	0	0	0	0	0	0
12:45 PM - 1:00 PM	0	0	0	0	0	0	0	0	0
1:00 PM - 1:15 PM	0	0	0	0	0	0	0	0	0
1:15 PM - 1:30 PM	0	0	0	0	0	0	0	0	0
1:30 PM - 1:45 PM	0	0	0	0	0	0	0	0	0
1:45 PM - 2:00 PM	0	0	0	0	0	0	0	0	0
2:00 PM - 2:15 PM	0	0	0	0	0	0	0	0	0
2:15 PM - 2:30 PM	0	0	0	0	0	0	0	0	0
2:30 PM - 2:45 PM	0	0	0	0	0	0	0	0	0
2:45 PM - 3:00 PM	0	0	0	0	0	0	0	0	0
Total	5	0	0	0	0	0	0	5	5

**One Hour Volumes**

6:30 AM - 7:00 AM	1	0	0	0	0	0	0	1	1
7:00 AM - 7:30 AM	1	0	0	0	0	0	0	1	1
7:30 AM - 8:00 AM	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0
8:30 AM - 9:00 AM	1	0	0	0	0	0	0	1	1
9:00 AM - 9:15 AM	1	0	0	0	0	0	0	1	1
9:15 AM - 9:30 AM	3	0	0	0	0	0	0	3	3
9:30 AM - 9:45 AM	3	0	0	0	0	0	0	3	3
9:45 AM - 10:00 AM	2	0	0	0	0	0	0	2	2
10:00 AM - 10:15 AM	2	0	0	0	0	0	0	2	2
10:15 AM - 10:30 AM	1	0	0	0	0	0	0	1	1
10:30 AM - 10:45 AM	1	0	0	0	0	0	0	1	1
10:45 AM - 11:00 AM	0	0	0	0	0	0	0	0	0
11:00 AM - 11:15 AM	0	0	0	0	0	0	0	0	0
11:15 AM - 11:30 AM	0	0	0	0	0	0	0	0	0
11:30 AM - 11:45 AM	0	0	0	0	0	0	0	0	0
11:45 AM - 12:00 PM	0	0	0	0	0	0	0	0	0
12:00 PM - 12:15 PM	0	0	0	0	0	0	0	0	0
12:15 PM - 12:30 PM	0	0	0	0	0	0	0	0	0
12:30 PM - 12:45 PM	0	0	0	0	0	0	0	0	0
12:45 PM - 1:00 PM	0	0	0	0	0	0	0	0	0
1:00 PM - 1:15 PM	0	0	0	0	0	0	0	0	0
1:15 PM - 1:30 PM	0	0	0	0	0	0	0	0	0
1:30 PM - 1:45 PM	0	0	0	0	0	0	0	0	0
1:45 PM - 2:00 PM	0	0	0	0	0	0	0	0	0
2:00 PM - 2:15 PM	0	0	0	0	0	0	0	0	0
2:15 PM - 2:30 PM	0	0	0	0	0	0	0	0	0
2:30 PM - 2:45 PM	0								



Project Name: Alfred Street Church  
 Project No.: 6383  
 Date: 4/3/2016

**Shuttle Buses Occupancy**  
**Church - Front**

Time In	Time :	Drop Off	Pick Up
6:52	22"	2	0
7:10	24"	1	0
7:40	35"	1	0
8:08	35"	1	1
8:20	1'25"	2	0
8:21	1'10"	0	1
8:36	45"	5	0
8:37	1'48"	1	0
8:45	5'25"	0	0
9:01	25"	1	0
9:02	1'15"	2	0
9:19	26"	3	0
9:24	23"	5	0
9:26	31"	2	0
9:51	17"	5	0
9:52	19"	1	0
10:03	3'15"	2	1
10:21	3'40"	0	1
10:33	15"	0	0
10:33	7'30"	0	1
11:21	48"	2	0
11:30	2'45"	2	9
11:42	7'11"	1	13
11:51	33"	0	0
12:05	28"	1	3
12:17	21"	2	0
13:17	15'30"	0	3
13:37	4'18"	0	3
13:41	5'12"	0	6
13:52	15"	1	4
13:55	7'10"	0	0
<b>Total</b>		<b>43</b>	<b>46</b>
<b>Average</b>		<b>1.4</b>	<b>1.5</b>

**INTERSECTION APPROACH STOPPED DELAY**

**INTERSECTION:** Alfred Street (Between Wolfe Street and Duke Street)  
**APPROACH:** Northbound/Southbound Alfred Street Baptist Church  
**LANE(S):** Two  
**DIRECTION:** Thru

**6383**

**TIME:** 9am to 12pm  
**WEATHER:** Light rain/drizzle  
**COUNTER(S):** Salth  
**DATE:** 5/21 - 22/2016  
**DISTANCE:** SB - appx. 355" NB - app 255"

**21-May**

**22-May**

Time Cycle	South Alfred Street		Time Cycle	South Alfred Street	
	Northbound	Southbound		Northbound	Southbound
9:00	10	13	9:00	9	16
	11	10		11	21
	8	18		13	13
	8	6		10	17
	6	6		9	25
	8				15
	7				9
9:15	7	12			16
	9	12			13
	9	8			15
	11	10	9:15	8	12
	8	14		8	15
	8	18		11	21
	9	9		9	25
	11			20	16
9:30	7	14		9	22
	7	12		10	45
	6	11		10	17
	9	9		9	16
	12	10		14	14
	8	13		12	26
	11			20	20
	6		9:30	8	23
	8			13	36
9:45	8	14		15	18
	7	12		12	39
	12	16		12	44
	6	21		10	19
	7	30		9	15
	14	10		10	36
	17				32
10:00	11	16-104	9:45		

	9	12	18
	11	14	21
	7	14	19
	5	12	13
	10	10	19
	6	11	14
	9	12	13
	8	20	27
	11	14	24
	8	10	13
	7	21	9
	6	24	36
	8	15	14
		12	10
		15	14
	13	12	42
	8	9	24
	9	14	31
	7	17	23
	9	22	9
	11	29	7
	9	12	8
	10	34	13
	6	20	16
	9	22	19
	7	24	24
	8	20	15
	13	11	21
	10	15	19
	16		14
	8		18
	13		14
	10	25	17
	15	11	19
	7	14	18
	9	17	18
	14	10	16
	12	18	19
	8	11	13
	11	18	12
	20	25	18
	8	39	15
	11	21	16
		24	15
	6	16	12
	7	13	13
	10	11	19
	24	17	19
		B-105	
			Wells & Associates, Inc
			McLean, Virginia

	31	31	18	31
	10		9	
	12	12	14	
	8		11	14
	14	16	12	22
	12	19	11	13
	26	18	10	14
	19	22	9	
	10	16	7	
	14		10	
	9	24	9	12
	16	36	8	12
	10	13	10	11
	14	20	9	15
	9	12	8	19
	24		11	33
				30
	33			13
	48			12
		29	10	16
			10	16
			14	29
			9	34
	36		9	29
	28		16	36
	12	20	16	
	8	23	14	
	7	16	10	
	11	18	23	
	9	14	14	
	13	12	27	
	10	14	30	38
	8	19	34	41
	11	16	26	47
	7	19	20	22
	8	15	75	14
		18	36	22
		20	28	26
		14	20	15
		12	16	
			11	
			11	
			9	14
			11	16
			13	19
			28	15
			39	16
			80	18
		B-106		
				Wells & Associates, Inc
				McLean, Virginia



	19	15	32	
	22	11	31	27
		11	35	42
		12	24	23
		10	43	23
		16	40	20
10:30	24	12	57	20
	26	15	27	32
	21	14	25	
	26	14	20	
	22	14	33	
	23	15	39	
	25		30	14
	28		22	14
10:45	21	15	20	16
	24	13	38	25
	29	15	30	43
	26	18	42	22
	22	12	33	19
	26	12	20	29
	20	18	67	18
	19	15	24	17
		17	39	20
		14	50	26
11:00	28	13	30	28
	25	16	34	22
	28	11	22	22
	24	15	32	23
	18	26	40	21
	25	14	30	32
	31	13	40	19
	26	12	27	
	23		31	
	20		25	16
11:15	43	16	17	16
	21	18	21	15
	24	19	19	17
	27	22	43	21
	25	16	28	29
	30	17	20	20
	19	16	28	30
	27	15	38	39
	31	13	26	34
	29	14	28	19
		16	36	24
		16	33	42
	18		190	27
	21		53	184
	22		91	62
	17		46	42
	17		138	44
11:30	23	16	23	38
	24	15	85	42
	17	15	41	54

Wells & Associates, LLC  
McLean, Virginia

B-109

	19	13		34
	28	18		19
	29	14		32
	16	14		64
	22	19	11:45	27
		16		31
		16		56
		15		39
11:45	19	14		63
	18	18		62
	21	14		19
	23	16		51
	22	16		28
	27	16		37
	27	14		
	24	17		
	26	19		
	2071	1610		
Total	43	30	Total	3085
Maximum	24	16	Maximum	184
Average	19	35	Average	32
Avg N&S combined			Avg N&S combined	

Wells & Associates, LLC  
McLean, Virginia

B-110



### Alexandria Police Accident Listing Report

Date Range: 1/1/2015 To 5/25/2016  
Geography: Intersection - S ALFRED ST AND GIBBON ST  
- Other parameters may be limiting the results

Total Accidents: 2

Case#	Accident Date	Accident Time	Location	Day	Event #1
[REDACTED]	13-Jan-15	1500	GIBBON ST & S ALFRED ST	Tuesday	REAR END
[REDACTED]	16-Feb-16	1335	GIBBON ST & S ALFRED ST	Tuesday	ANGLE

### Alexandria Police Accident Listing Report

Date Range: 1/1/2015 To 5/25/2016  
Geography: Intersection - S ALFRED ST AND DUKE ST  
- Other parameters may be limiting the results

Total Accidents: 2

Case#	Accident Date	Accident Time	Location	Day	Event #1
[REDACTED]	14-Jul-15	1915	DUKE ST & S ALFRED ST	Tuesday	ANGLE
[REDACTED]	17-May-16	0920	DUKE ST & S ALFRED ST	Tuesday	REAR END

# Alexandria Police Accident Listing Report

Date Range: 1/1/2015 To 5/25/2016

Geography: Intersection - S ALFRED ST AND WOLFE ST

\* Other parameters may be limiting the results

Total Accidents: 1

Case#	Accident Date	Accident Location	Event #1
[REDACTED]	20-Aug-15 1910	S ALFRED ST & WOLFE ST	REAR END

## Narrative

Case Number: [REDACTED]

HEWES, JEFFREY

Original Report

On September 05, 2014 at approximately 1934 hours V1 made positive contact with V2 at the intersection of Gibbon St. and S. Alfred St. in the city of Alexandria, VA. V1 was traveling West on Gibbon St. The driver stated he had a green light and proceeded into the intersection at S. Alfred St. As he did so he saw V2 enter the intersection as well. He stated he attempted to brake but could not stop and made positive contact with the passenger's side of V2. V2 was traveling North on S. Alfred St. The driver stated she had the green light and proceeded into the intersection. She stated as she entered the intersection she was struck by V1. V1 sustained damage estimated at \$3000 to the front driver's side of the vehicle. V2 sustained damage estimated at \$3000 to the passenger's side of the vehicle. Due to the fact I arrived on scene after the crash occurred and conflicting stories from the parties on scene I was unable to determine the at fault driver in this crash. No driver was cited as a result of the crash. Photos of the damage to V1 and V2 were uploaded to the LAN.

## Narrative

Case Number: [REDACTED]

RILEY III, FRANK

Original Report

The Driver of Vehicle # 2 was traveling south bound on S. Alfred Street approaching the intersection at Gibbons Street. The Driver of Vehicle # 2 had the green and then attempted to turn left onto Gibbon Street. The Driver of Vehicle # 1 was traveling west bound on Gibbon Street in the far left lanes. The Driver of Vehicle # 1 ran the red light at the intersection of Gibbon @ S. Alfred Street and collided into the driver of vehicle #2. The Driver of vehicle # 1 was issued a Virginia Uniform Summons for disregarding a red light.

Tuesday, May 24, 2016 10:30:09 AM

Page 1 of 1

B-115

## Narrative

Case Number: [REDACTED]

MAYNARD, BRUCE

Original Report

Vehicle #1 was pulling out of a parking space in order to proceed westbound on Gibbon Street. While pulling out on to the roadway, Vehicle #1 struck Vehicle #2, which was in the middle travel lane of Gibbon Street. Vehicle #2 is a motorcycle. The motorcycle operator sustained injuries to the left leg, but declined medical transport to the hospital. The driver of Vehicle #1 was cited for failing to pay full time attention.

Tuesday, May 24, 2016 10:30:04 AM

Page 1 of 1

B-116

## Narrative

Case Number: [REDACTED]

ASH, JEFFREY

Original Report

V1 TRAVELING WESTBOUND ON GIBBON STREET, FAILED TO STOP FOR THE RED LIGHT AND STRUCK V2 TRAVELING NORTHBOUND ON SOUTH ALFRED STREET.

Tuesday, May 24, 2016 10:29:58 AM

Page 1 of 1

B-117

## Narrative

Case Number: [REDACTED]

ASHCROFT, JENIFE

Original Report

On September 28th, 2013 at approximately 1330 hours, Vehicle 2 was travelling Westbound on Gibbon St. in the left lane. As vehicle 2 approached the intersection with S. Alfred St. it was struck by vehicle 1 which had also been travelling Westbound on Gibbon St. in the center lane. Vehicle 2 ran into vehicle 1 as it made an illegal left turn in front of it from the center lane. Vehicle 2 sustained damage to the front passenger side bumper corner estimated at \$1000. Vehicle 1 sustained damage to its rear drivers side quarter panel estimated at approximately \$1000. Upon speaking with the drivers, I found that neither was currently licensed. Driver 1 had not ever held a drivers license, and driver 2 had an expired Washington DC license. Both drivers exchanged information. Both drivers were cited city code 10-3-300 (No operator's license) and driver 1 was additionally cited city code 10-3-846 (Improper turn). Each driver had a licensed driver come to the scene who could drive the vehicle away for them.

Tuesday, May 24, 2016 10:29:52 AM

Page 1 of 1

B-118



## Narrative

Case Number: [REDACTED]

YOUNG, JORDAN

Original Report

On 01/02/13 at approximately 1149hrs, V1 was traveling Westbound on Gibbon Street, and disregarded a red traffic signal.

V2 was traveling Northbound on S. Alfred Street, V2 had a Green light. V1 struck V2 on the passenger side front bumper and corner panel and scraped down to the rear passenger side door.

Medics refused.

Ms. Merikale Manly was in the doorway of 607 S. Alfred and witnessed the accident. Manly confirmed the above information.

Tuesday, May 24, 2016 10:28:42 AM

Page 1 of 1

B-119

## Narrative

Case Number: [REDACTED]

PASQUARELLI, MICA

Original Report

Driver of Vehicle 1 was traveling northbound on South Alfred Street towards Gibbon Street while evading police. Vehicle 2 was traveling northbound on South Alfred Street towards Gibbon Street. Vehicle 3 was traveling southbound on South Patrick Street towards Route 95. Vehicle 1 struck the back of Vehicle 2 and fled the scene, making a left onto Gibbon Street. Vehicle 2, a city-leased police vehicle, suffered approximately \$500 of damage. No one was reported injured.

Vehicle 1 continued onto Route 1, attempting to escape. Vehicle 1 attempted to merge into traffic towards Route 95 and struck Vehicle 3, causing approximately \$700 of damage to the vehicle.

There were no reported injuries, other than possible bruising of the driver. Vehicle 1 struck a concrete barrier, then lost control and damaged a guard rail with approximately \$5000 in damages to the structure. Vehicle 1 ultimately was disabled and came to stop against a concrete barrier by the Route 95 exit ramp. Approximately \$5000 dollars of damage were done to Vehicle 1. Driver of Vehicle 1 transported to hospital for scrapes and cuts. Was then charged with felony evading, driving while suspended, and hit and run.

Tuesday, May 24, 2016 10:29:47 AM

Page 1 of 1

B-120

## Narrative

Case Number: [REDACTED]

BOOTH, MICHAEL

Original Report

V1 WAS IN THE 800 BLOCK OF GIBBON STREET BEHIND V2 IN THE LEFT TRAFFIC OF THREE WESTBOUND. UPON APPROACHING THE TRAFFIC SIGNAL AT GIBBON AND SOUTH HENRY STREET TRAFFIC CAME TO A STOP, AS DID V2. V1 STATES HE ATTEMPTED TO STOP, BUT PRESSED DOWN ON THE ACCELERATOR INSTEAD OF THE BRAKE AND V1 RAN INTO THE REAR BUMPER OF V2. THERE APPEARED TO BE ONLY MINIMAL DAMAGE TO BOTH VEHICLES, BUT V2 DRIVER WAS COMPLAINING OF NECK AND BACK PAIN. DRIVERS INFORMATION WAS EXCHANGED AND V1 DRIVERS WAS CHARGED WITH FAIL TO PAY FULL TIME ATTENTION.

Tuesday, May 24, 2016 10:29:37 AM

Page 1 of 1

B-121

## Narrative

Case Number: [REDACTED]

HOUSTON, LEMUEL

Original Report

V3 WAS STOPPED AT A RED SIGNAL IN THE 800 BLOCK OF WEST BOUND GIBBON ST AT THE INTERSECTION OF S ALFRED ST. V2 WAS STOPPED BEHIND V3. V1 WAS TRAVELING BEHIND V2 BUT FAILED TO SEE TO THAT V2 HAD COME TO A COMPLETE STOP AND STRUCK THE REAR OF V2. THE IMPACT OF V1 PUSHED V2 INTO THE REAR OF V3. DRIVER OF V1 STATED HE WAS LOOKING AT THE MOTOR OFFICERS THAT WERE WORKING IN THAT SAME BLOCK. NO INJURIES REPORTED. DRIVER OF V1 WAS CITED FOR "FAILURE TO PAY FULL TIME ATTENTION"

Tuesday, May 24, 2016 10:35:22 AM

Page 1 of 1

B-122

## Narrative

Case Number: [REDACTED]

TAYLOR, PATRICK

Original Report

V1 AND V2 WERE WESTBOUND ON GIBBON ST. V1 WAS IN THE CENTER LANE AND STATED THAT HE INTENDED TO MAKE A LEFT TURN FROM THE CENTER LANE. V1 INITIATED THIS MANUEVER AND TURNED INTO V2. V1 CITED WITH IMPROPER LANE CHANGE.

Tuesday, May 24, 2016 10:29:32 AM

Page 1 of 1

B-123

## Narrative

Case Number: [REDACTED]

PARENT, MICHAEL

Original Report

On 2/16/2012 at approximately 22:15 hours, I was dispatched to the intersection of Gibbon Street and South Alfred Street, for the report of an automobile accident.

When I arrived on scene I determined that two vehicles were involved in the accident. I checked with the drivers for any injuries. Both drivers stated no injuries.

Vehicle #2 was driven by Mr. Jeremy Olinger. Mr. Olinger stated that he was traveling southbound on South Alfred Street going approximately 25 miles an hour when he approached the intersection of Gibbon Street. He stated that he had a green light and proceeded through the intersection. Mr. Olinger then stated that vehicle #1 proceeded through the intersection traveling westbound on Gibbon Street and collided with him.

Vehicle #1 was driven by Mr. Irfan Adnan. Mr. Adnan stated that he was driving westbound on Gibbon Street going approximately 25 miles an hour. At the intersection of South Alfred Street he stated that he was not paying attention to the signal and instead was looking at the signal for the next intersection, which was green. He did not slow down and proceeded through the red light. He then collided with vehicle #2.

Ms. Lekeysha Garner, who is a security guard at Heritage Apartments, stated that she witnessed vehicle #1 disregard the red light and collide with vehicle #2. Mr. Adnan was cited for disregarding red light and both vehicles were towed at owners expense.

Tuesday, May 24, 2016 10:29:26 AM

Page 1 of 1

B-124

## Narrative

Case Number: [REDACTED]

CANNIFF, DANIEL

Original Report

VEHICLE # 1, A CITY OF ALEXANDRIA UN-MARKED POLICE VEHICLE, WAS WEST BOUND IN THE 800 BLOCK OF WOLFE STREET. THERE WERE PARKED VEHICLES ON BOTH THE NORTH AND SOUTH SIDES OF WOLFE STREET. THE AVAILABLE TRAVEL PORTION OF THE ROADWAY WAS LIMITED. AT THAT POINT, A VEHICLE MADE A QUICK LEFT TURN FROM SOUTH BOUND SOUTH ALFRED ON TO EAST BOUND WOLFE STREET. THAT CAUSED DRIVER # 1 TO HAVE TO QUICKLY MANUEVER OVER TO THE RIGHT. THE RIGHT REAR DOOR AND QUARTER PANEL OF VEHICLE # 1 STRUCK THE FRONT LEFT BUMPER OF VEHICLE #2. A PARKED, UN-ATTENDED VEHICLE.

Tuesday, May 24, 2016 10:28:58 AM

Page 1 of 1

B-125

## Narrative

Case Number: [REDACTED]

Original Report

Original Report

V1 was driving West on Wolfe Street in the 800 block, when it struck P1 in the left, rear wheel well, and again in the front, left wheel well, causing P1 to hit the rear of P2, and P2 to hit the rear of P3. The driver of V1 is unknown. Witnesses, Dianne Oehms (703-739-1163), and Douglas Hall (703-663-6649), both stated they saw the suspect vehicle (V1) drive away seconds after hearing the crash. Both described V1 as an unknown, light grey SUV. They said it drove away at a high rate of speed, turning North on South Alfred Street.

Tuesday, May 24, 2016 10:28:51 AM

Page 1 of 1

B-126



## Narrative

Case Number: [REDACTED]

BATTLE, MISTI

Original Report

V1, V2, and V3 were all westbound on Duke St awaiting the light to turn green at the intersection of Duke and Alfred St. The driver of V1 started to advance in traffic, striking the back of V2. The driver of V3 then noted the abrupt braking of V1, but was unable to stop in time, and therefore struck the back V1. None of the drivers were cited due to the snowy conditions. Driver of V2 was transported to Alexandria INOVA with non-life-threatening injuries.

Tuesday, May 24, 2016 10:25:33 AM

Page 1 of 1

B-127

## Narrative

Case Number: [REDACTED]

ASH, JEFFREY

Original Report

V2 WAS PREPARING TO TURN RIGHT ONTO S ALFRED ST FROM THE PARKING LANE AS V1 ATTEMPTED TO DRIVE AROUND ANOTHER VEHICLE THAT WAS MAKING A LEFT TURN ONTO S ALFRED ST. AS THE DRIVER OF V1 ATTEMPTED THE MANEUVER, SHE STRUCK V2. NO CHARGES DUE TO CONFLICTING VERSIONS OF THE CRASH.

Tuesday, May 24, 2016 10:28:25 AM

Page 1 of 1

B-128

**Narrative**

Case Number: [REDACTED]

SCOTT, NATHAN

Original Report

V1 WAS TRAVELING WEST BOUND ON DUKE STREET WHEN IT SIDE SWIPED V2.

V2 WAS ATTEMPTING TO TURN RIGHT FROM DUKE STREET ONTO ALFRED STREET WHEN V1 COLLIDED INTO IT.

DRIVER OF V1 STATED HE DID NOT KNOW HOW CLOSE HE WAS TO V2 WHEN HE ATTEMPTED TO DRIVE BY.

DRIVER OF V1 WAS CITED FOR FAILURE TO PAY FULL TIME ATTENTION (ALEXANDRIA CITY CODE 10-3-3)

B-129

**Narrative**

Case Number: [REDACTED]

MINNIX, DAMON

Original Report

V1 was traveling eastbound on Duke Street. V2 was legally parked and unoccupied approximately 50 feet from the intersection of Duke Street and South Alfred Street. V1 was pulling over to the DASH stop at the intersection and struck V2 causing damage to V2's driver's side mirror. There was no damage to V1.

B-130

## Narrative

Case Number: [REDACTED]

IGNACIO, VICTOR

Original Report

VEHICLE 1 WAS TRAVELING EAST ON DUKE STREET. VEHICLE 2 WAS TRAVELING WEST ON DUKE STREET. BOTH VEHICLES HAD A GREEN LIGHT. VEHICLE 1 ATTEMPTED TO MAKE A LEFT TURN ON TO SOUTH ALFRED STREET WHEN IT STRUCK VEHICLE 2. THE DRIVER OF VEHICLE 1 INDICATED THAT SHE WAS DISTRACTED BY HER GPS. DRIVER OF VEHICLE 1 WAS CHARGED WITH FAILURE TO PAY FULL TIME AND ATTENTION.

Tuesday, May 24, 2016 10:25:09 AM

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B-131

## Narrative

Case Number: [REDACTED]

BOOTH, MICHAEL

Original Report

V1 WAS TRAVELING NIB IN THE 200 BLOCK OF SOUTH ALFRED STREET AT THE SAME TIME V2 WAS TRAVELING S/B IN THAT SAME BLOCK. V1 CROSSED OVER THE DOUBLE YELLOW LINE AND THE LEFT FRONT CORNER OF THE BOX PART OF THE TRUCK STRUCK THE LEFT FRONT FENDER/DOOR AREA OF V2. THE IMPACT BROKE THE LEFT OUTSIDE MIRROR OFF OF V2 AND BENT THE LEFT FRONT FENDER BACKWARD INTO THE LEFT FRONT DOOR, CAUSING THAT DOOR TO NOT OPEN. V1 CONTINUED TRAVELING NIB AND THE FRONT LEFT CORNER OF THE BOX PART OF THE TRUCK CONTINUED DOWN THE LEFT SIDE OF V2, CAUSING THE METAL TO CREASE AND PAINT TO FLAKE OFF ON THE LEFT FRONT DOOR, THE LEFT REAR DOOR AND THE LEFT REAR FENDER OF V2. TOTAL DAMAGE TO V2 IS ESTIMATED AT \$2000. DAMAGE TO V1 WAS CONTAINED TO THE LEFT FRONT CORNER OF THE BOX PART OF THE TRUCK WITH DAMAGE ESTIMATED AT \$1000. V1 DRIVER CHARGED WITH FAILURE TO MAINTAIN LANE OF TRAVEL.

BOOTH, MICHAEL

Original Report

This revised FR 300 is to list the commercial vehicle information for the Martin Seafood Company truck which was involved in this accident and listed as vehicle 1 in the original report.

Tuesday, May 24, 2016 10:28:01 AM

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B-132

## Narrative

Case Number: [REDACTED]

TUITE, CHRISTOPHE Original Report

Vehicle two was traveling west on Duke Street. Vehicle one was attempting to turn left onto South Alfred Street from eastbound Duke Street.

The driver of vehicle two stated that the traffic light for traffic traveling west on Duke Street was green. The driver of vehicle one stated that the traffic light for traffic traveling east on Duke Street was yellow. There are no turn lanes at this intersection.

Vehicle one, without the right-of-way, turned left on South

Alfred Street, causing a collision with vehicle two.

Both drivers moved their vehicles to the 300 block of South

Alfred Street before my arrival.

Vehicle two was driven from the scene by a licensed driver.

Vehicle one was disable in the accident and had to be towed from the scene.

Mr. James Patrick O'Brien (831-524-1949) was seated in the passenger seat of vehicle two. Mr. Oscar Garcia (no additional information known) was seated in the passenger seat of vehicle one and left the scene before I arrived.

There were no injuries reported.

The driver of vehicle one was issued VUS number 1003996655 for operating a motor vehicle without a driver's license (46.2-300), and VUS number 1003996686 for failing to yield on left turn (10-3-625).

Tuesday, May 24, 2016 10:27:56 AM

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B-133

## Narrative

Case Number: [REDACTED]

ASH, JEFFREY Original Report

THE DRIVER OF V1 WAS TRAVELING EASTBOUND ON DUKE ST AND FAILED TO YIELD WHILE ATTEMPTING TO TURN LEFT ON TO SOUTH ALFED ST. STRIKING V2 TRAVELING WESTBOUND ON DUKE ST. TRAFFIC SIGNAL WAS SOLID GREEN FOR BOTH DRIVERS.

Tuesday, May 24, 2016 10:27:50 AM

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B-134



## Narrative

Case Number: [REDACTED]

TUITE, CHRISTOPHE Original Report

Vehicle one, a tow truck for Advance Towing, was towing vehicle two northbound on the 300 block of South Alfred Street.

The trucks supporting the rear wheels of vehicle two failed and broke apart. The truck on the driver-side of vehicle

two slid under vehicle two and perforated the fuel tank.

The truck on the passenger-side of vehicle two rolled south

on South Alfred Street and struck vehicle three.

Neither vehicle two nor three was occupied.

Fire responded and cleaned up the spilled fuel.

All owners were located and information exchanged.

Tuesday, May 24, 2016 10:27:27 AM

Page 1 of 1

B-135

## Narrative

Case Number: [REDACTED]

HILL, ROBERT Original Report

V1, a double occupied vehicle, was attempting to parallel park on the east side of the 400 block of S Alfred Street, facing north bound. V2, a unoccupied vehicle, was parked on the east side of the 400 block of S Alfred Street several vehicles north of V1. V1 accelerated rapidly and swerved striking V2 in the left rear of the vehicle. D1 complained of pain in the right knee and passenger of V1 complained of head pain. Medics were called and arrived to check both for injuries. Neither was transported to a hospital. Driver of V1 was issued one (1) VUS for Failure to pay full time & attention (City Code: 10-3-3).

Statement:

D1 explained to me that she had been trying to back into the empty parking space on the east side of the 400 block of S Alfred Street when she instead went forward rapidly and turned, which caused her vehicle to strike V2. D1 was unable to explain why she had suddenly accelerated instead of backing up. She stated that she had just gotten off the phone with someone prior to trying to park. D1 did not think she still had the vehicle in "Drive" or that she accidentally hit the gas pedal instead of brake pedal. V2 was unoccupied and parked legally.

Tuesday, May 24, 2016 10:27:19 AM

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B-136

**APPENDIX C**  
**EXISTING LEVEL OF SERVICE AND QUEUE**  
**SYNCHRO WORKSHEETS**



Queues

1: Alfred St & Cameron St

Existing AM

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	313	486	84
v/c Ratio	0.23	0.76	0.13
Control Delay	14.5	7.0	8.4
Queue Delay	0.0	0.3	0.0
Total Delay	14.5	7.4	8.4
Queue Length 50th (ft)	48	19	13
Queue Length 95th (ft)	72	m22	37
Internal Link Dist (ft)	239	341	294
Turn Bay Length (ft)			
Base Capacity (vph)	1338	637	659
Starvation Cap Reductn	0	15	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.23	0.78	0.13

Intersection Summary

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

C-1

HCM Signalized Intersection Capacity Analysis

1: Alfred St & Cameron St

Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←	←	←	←	←	←	←	←
Traffic Volume (vph)	0	0	0	10	253	6	79	368	0	0	44	33
Future Volume (vph)	0	0	0	10	253	6	79	368	0	0	44	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	12	12	12	12	12	12	12
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Frpb, ped/bikes					1.00			1.00			0.99	
Flpb, ped/bikes					1.00			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3054			1468			1384	
Flt Permitted					1.00			0.93			1.00	
Satd. Flow (perm)					3054			1379			1384	
Peak-hour factor, PHF	0.85	0.85	0.85	0.86	0.86	0.86	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	12	294	7	86	400	0	0	48	36
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	19	0
Lane Group Flow (vph)	0	0	0	0	311	0	0	486	0	0	65	0
Confl. Peds. (#/hr)	34		25	25		34	17		32	32		17
Confl. Bikes (#/hr)			4					1				
Parking (#/hr)					6			3			3	
Turn Type					Perm	NA		Perm	NA		NA	
Protected Phases					2			1			1	
Permitted Phases					2			1			1	
Actuated Green, G (s)					34.0			36.0			36.0	
Effective Green, g (s)					35.0			37.0			37.0	
Actuated g/C Ratio					0.44			0.46			0.46	
Clearance Time (s)					5.0			5.0			5.0	
Lane Grp Cap (vph)					1336			637			640	
v/s Ratio Prot											0.05	
v/s Ratio Perm					0.10			c0.35				
v/c Ratio					0.23			0.76			0.10	
Uniform Delay, d1					14.1			17.9			12.1	
Progression Factor					1.00			0.13			1.00	
Incremental Delay, d2					0.4			3.7			0.3	
Delay (s)					14.5			6.0			12.4	
Level of Service					B			A			B	
Approach Delay (s)	0.0				14.5			6.0			12.4	
Approach LOS	A				B			A			B	

Intersection Summary

HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	10		
c Critical Lane Group			

C-2

Queues

2: Henry St & King St

Existing AM

Lane Group	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	365	46	223	1540
v/c Ratio	0.67	0.12	0.27	1.01
Control Delay	26.9	8.2	11.0	47.7
Queue Delay	0.0	0.0	1.5	0.0
Total Delay	26.9	8.2	12.5	47.7
Queue Length 50th (ft)	143	16	89	-284
Queue Length 95th (ft)	221	m15	m104	#394
Internal Link Dist (ft)	77		222	128
Turn Bay Length (ft)		100		
Base Capacity (vph)	542	376	830	1521
Starvation Cap Reductn	0	0	433	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.67	0.12	0.56	1.01

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.  
# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.  
m Volume for 95th percentile queue is metered by upstream signal.

C-3

HCM Signalized Intersection Capacity Analysis

2: Henry St & King St

Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←	←	←	←	←	←	←	←
Traffic Volume (vph)	0	267	43	42	205	0	0	0	0	39	1344	34
Future Volume (vph)	0	267	43	42	205	0	0	0	0	39	1344	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	10	10	12	12	12	12	12	11	12
Total Lost time (s)		4.0		4.0	4.0						4.0	
Lane Util. Factor		1.00		1.00	1.00						0.91	
Frpb, ped/bikes		0.98		1.00	1.00						1.00	
Flpb, ped/bikes		1.00		0.98	1.00						1.00	
Frt		0.98		1.00	1.00						1.00	
Flt Protected		1.00		0.95	1.00						1.00	
Satd. Flow (prot)		1381		1463	1546						4188	
Flt Permitted		1.00		0.35	1.00						1.00	
Satd. Flow (perm)		1381		539	1546						4188	
Peak-hour factor, PHF	0.85	0.85	0.85	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.92	0.92
Adj. Flow (vph)	0	314	51	46	223	0	0	0	0	42	1461	37
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	358	0	46	223	0	0	0	0	0	1537	0
Confl. Peds. (#/hr)	91		96	96		91	14		4	4		14
Confl. Bikes (#/hr)												
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)		3									3	
Turn Type		NA		pm-pt	NA					Split	NA	
Protected Phases		6		5	2.6					4	4	
Permitted Phases		2.6		2.6								
Actuated Green, G (s)		30.0		42.0	42.0						28.0	
Effective Green, g (s)		31.0		43.0	43.0						29.0	
Actuated g/C Ratio		0.39		0.54	0.54						0.36	
Clearance Time (s)		5.0		5.0							5.0	
Lane Grp Cap (vph)		535		382	830						1518	
v/s Ratio Prot		c0.26		0.01	c0.14						c0.37	
v/s Ratio Perm				0.05								
v/c Ratio		0.67		0.12	0.27						1.01	
Uniform Delay, d1		20.3		9.9	10.0						25.5	
Progression Factor		1.00		0.87	1.04						1.00	
Incremental Delay, d2		6.4		0.4	0.5						20.9	
Delay (s)		26.6		9.0	10.9						46.4	
Level of Service		C		A	B						D	
Approach Delay (s)	26.6				10.6			0.0			46.4	
Approach LOS	C				B			A			D	

Intersection Summary

HCM 2000 Control Delay	38.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	10		
c Critical Lane Group			

C-4



Queues

3: Patrick St & King St

Existing AM

Lane Group	EBL	EBT	WBT	NBT
Lane Group Flow (vph)	118	190	224	2345
v/c Ratio	0.39	0.32	0.63	1.27
Control Delay	19.5	18.9	21.3	98.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.5	18.9	21.3	98.5
Queue Length 50th (ft)	55	92	80	-1310
Queue Length 95th (ft)	m77	m136	m56	m#827
Internal Link Dist (ft)		222	239	344
Turn Bay Length (ft)		100		
Base Capacity (vph)	306	589	357	1840
Starvation Cap Reductn	0	0	0	2
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.39	0.32	0.63	1.28

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

C-5

HCM Signalized Intersection Capacity Analysis

3: Patrick St & King St

Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕		↔	↕		↔	↕		↔	↕	↔
Traffic Volume (vph)	106	171	0	0	155	36	69	2054	34	0	0	0
Future Volume (vph)	106	171	0	0	155	36	69	2054	34	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0			4.0				
Lane Util. Factor	1.00	1.00			1.00			0.78				
Frpb, ped/bikes	1.00	1.00			0.98			1.00				
Flpb, ped/bikes	0.98	1.00			1.00			1.00				
Frt	1.00	1.00			0.97			1.00				
Flt Protected	0.95	1.00			1.00			1.00				
Satd. Flow (prot)	1454	1521			1389			3587				
Flt Permitted	0.47	1.00			1.00			1.00				
Satd. Flow (perm)	726	1521			1389			3587				
Peak-hour factor, PHF	0.90	0.90	0.90	0.85	0.85	0.85	0.92	0.92	0.92	0.85	0.85	0.85
Adj. Flow (vph)	118	190	0	0	182	42	75	2233	37	0	0	0
RTOR Reduction (vph)	0	0	0	0	11	0	0	2	0	0	0	0
Lane Group Flow (vph)	118	190	0	0	214	0	0	2343	0	0	0	0
Confl. Peds. (#/hr)	63		83	83		63	15		24	24		15
Confl. Bikes (#/hr)			6						2			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	7	0	0	6	0	0	0	0	0	0	0
Parking (#/hr)					3			4				
Turn Type	pm+pt	NA			NA		Split	NA				NA
Protected Phases	2	2,3			3		1	1				
Permitted Phases	2,3				3							
Actuated Green, G (s)	24.4	29.4			18.4			40.0				
Effective Green, g (s)	26.4	30.4			20.0			41.0				
Actuated g/C Ratio	0.33	0.38			0.25			0.51				
Clearance Time (s)	5.0				5.6			5.0				
Lane Grp Cap (vph)	303	577			347			1838				
v/s Ratio Prot	0.03	c0.12			c0.15			c0.65				
v/c Ratio Perm	0.09											
v/c Ratio	0.39	0.33			0.62			1.27				
Uniform Delay, d1	19.7	17.6			26.6			19.5				
Progression Factor	1.00	1.01			0.54			0.47				
Incremental Delay, d2	2.6	1.0			7.1			82.8				
Delay (s)	22.2	18.9			21.6			92.0				
Level of Service	C	B			C			F				
Approach Delay (s)	20.1				21.6			92.0				0.0
Approach LOS	C				C			F				A

Intersection Summary

HCM 2000 Control Delay	78.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.6
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	10		
c Critical Lane Group			

C-6

Queues

4: Alfred St & King St

Existing AM

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	258	195	550	44
v/c Ratio	0.42	0.31	0.93	0.08
Control Delay	6.4	9.9	21.1	10.1
Queue Delay	0.1	0.0	0.0	0.0
Total Delay	6.5	9.9	21.1	10.1
Queue Length 50th (ft)	23	41	32	9
Queue Length 95th (ft)	m28	m58	m#457	21
Internal Link Dist (ft)	239	236	338	341
Turn Bay Length (ft)				
Base Capacity (vph)	608	629	589	582
Starvation Cap Reductn	38	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.45	0.31	0.93	0.08

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

C-7

HCM Signalized Intersection Capacity Analysis

4: Alfred St & King St

Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	24	178	18	8	149	9	48	450	8	2	28	8
Future Volume (vph)	24	178	18	8	149	9	48	450	8	2	28	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.98			0.99			1.00			0.99	
Flpb, ped/bikes		0.99			0.99			1.00			1.00	
Frt		0.99			0.99			1.00			0.97	
Flt Protected		0.99			1.00			1.00			1.00	
Satd. Flow (prot)		1285			1301			1465			1419	
Flt Permitted		0.96			0.99			0.97			0.98	
Satd. Flow (perm)		1239			1286			1428			1399	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.92	0.92	0.92	0.85	0.85	0.85
Adj. Flow (vph)	28	209	21	9	175	11	52	489	9	2	33	9
RTOR Reduction (vph)	0	4	0	0	3	0	0	1	0	0	5	0
Lane Group Flow (vph)	0	254	0	0	192	0	0	549	0	0	39	0
Confl. Peds. (#/hr)	79		90	90		79	21		41	41		21
Confl. Bikes (#/hr)		7							1			1
Bus Blockages (#/hr)	0	7	0	0	9	0	0	0	0	0	0	0
Parking (#/hr)		3			3			3			3	
Turn Type	Perm	NA			Perm	NA		Perm	NA		Perm	NA
Protected Phases		6			2			4			8	
Permitted Phases	6				2			4			8	
Actuated Green, G (s)		38.0			38.0			31.9			31.9	
Effective Green, g (s)		39.0			39.0			33.0			33.0	
Actuated g/C Ratio		0.49			0.49			0.41			0.41	
Clearance Time (s)		5.0			5.0			5.1			5.1	
Lane Grp Cap (vph)		604			626			589			577	
v/s Ratio Prot												
v/s Ratio Perm		c0.20			0.15			c0.38			0.03	
v/c Ratio		0.42			0.31			0.93			0.07	
Uniform Delay, d1		13.2			12.4			22.4			14.2	
Progression Factor		0.33			0.70			0.20			0.80	
Incremental Delay, d2		2.0			1.1			14.0			0.2	
Delay (s)		6.4			9.8			18.5			11.6	
Level of Service		A			A			B			B	
Approach Delay (s)		6.4			9.8			18.5			11.6	
Approach LOS		A			A			B			B	

Intersection Summary

HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	10		
c Critical Lane Group			

C-8

Queues

5: Washington St & King St

Existing AM

Lane Group	EBT	EBR	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	113	19	84	9	2299	539
v/c Ratio	0.28	0.06	0.20	0.03	0.97	0.30
Control Delay	35.7	13.3	34.4	6.6	5.1	9.7
Queue Delay	0.0	0.0	0.0	0.0	22.2	0.0
Total Delay	35.7	13.3	34.4	6.6	27.2	9.7
Queue Length 50th (ft)	68	0	50	0	30	88
Queue Length 95th (ft)	111	17	93	8	m25	108
Internal Link Dist (ft)	245		94		335	133
Turn Bay Length (ft)		100				
Base Capacity (vph)	410	327	410	348	2358	1789
Starvation Cap Reductn	0	0	0	0	232	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.06	0.20	0.03	1.08	0.30

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

5: Washington St & King St

Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↑		↑	↑		↑↑	↑		↑	↑
Traffic Volume (vph)	0	95	16	0	77	8	0	2080	35	0	430	28
Future Volume (vph)	0	95	16	0	77	8	0	2080	35	0	430	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	9	8	12	9	9	10	10	10	8	10	10
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		0.78			0.95	
Frpb, ped/bikes		1.00	0.90		1.00	0.92		1.00			1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		1.00	0.85		1.00			0.99	
Flt Protected		1.00	1.00		1.00	1.00		1.00			1.00	
Satd. Flow (prot)		1448	1107		1448	1183		3627			2753	
Flt Permitted		1.00	1.00		1.00	1.00		1.00			1.00	
Satd. Flow (perm)		1448	1107		1448	1183		3627			2753	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.85	0.85	0.85	0.85
Adj. Flow (vph)	0	113	19	0	84	9	0	2261	38	0	506	33
RTOR Reduction (vph)	0	0	14	0	0	6	0	0	0	0	0	0
Lane Group Flow (vph)	0	113	5	0	84	3	0	2299	0	0	539	0
Confl. Peds. (#/hr)	59		81	81		59	8		31	31		8
Confl. Bikes (#/hr)			4			1			1			
Bus Blockages (#/hr)	0	10	0	0	10	0	0	4	0	0	3	0
Parking (#/hr)												3
Turn Type		NA	Perm		NA	Perm		NA			NA	
Protected Phases		2			2			1			1	
Permitted Phases		2			2			1			1	
Actuated Green, G (s)		32.1	32.1		32.1	32.1		77.0			77.0	
Effective Green, g (s)		34.0	34.0		34.0	34.0		78.0			78.0	
Actuated g/C Ratio		0.28	0.28		0.28	0.28		0.65			0.65	
Clearance Time (s)		5.9	5.9		5.9	5.9		5.0			5.0	
Lane Grp Cap (vph)		410	313		410	335		2357			1789	
v/s Ratio Prot		c0.08			0.06			c0.63			0.20	
v/s Ratio Perm		0.00			0.00							
v/c Ratio		0.28	0.02		0.20	0.01		0.98			0.30	
Uniform Delay, d1		33.4	31.0		32.7	30.9		20.1			9.1	
Progression Factor		1.00	1.00		1.00	1.00		0.06			1.00	
Incremental Delay, d2		1.7	0.1		1.1	0.0		2.1			0.4	
Delay (s)		35.1	31.1		33.8	30.9		3.3			9.6	
Level of Service		D	C		C	C		A			A	
Approach Delay (s)		34.5			33.6			3.3			9.6	
Approach LOS		C			C			A			A	

Intersection Summary

HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	10		

c Critical Lane Group

Queues

6: Henry St & Prince St

Existing AM

Lane Group	EBT	SBT
Lane Group Flow (vph)	680	1467
v/c Ratio	0.48	0.87
Control Delay	14.9	5.2
Queue Delay	0.5	0.0
Total Delay	15.3	5.3
Queue Length 50th (ft)	111	15
Queue Length 95th (ft)	156	m15
Internal Link Dist (ft)	69	341
Turn Bay Length (ft)		
Base Capacity (vph)	1427	1687
Starvation Cap Reductn	0	1
Spillback Cap Reductn	335	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.62	0.87

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

6: Henry St & Prince St

Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑									↑	↑
Traffic Volume (vph)	0	556	70	0	0	0	0	0	0	0	78	1271
Future Volume (vph)	0	556	70	0	0	0	0	0	0	0	78	1271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	10
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frpb, ped/bikes		1.00									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.98									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		2917									4054	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		2917									4054	
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.92	0.92
Adj. Flow (vph)	0	604	76	0	0	0	0	0	0	0	85	1382
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	0	16
Lane Group Flow (vph)	0	675	0	0	0	0	0	0	0	0	1451	0
Confl. Peds. (#/hr)	36		15	15		36	15		8	8		15
Confl. Bikes (#/hr)			7									
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Parking (#/hr)			6								3	
Turn Type		NA								Perm	NA	
Protected Phases		2									1	
Permitted Phases		2									1	
Actuated Green, G (s)		38.0									32.0	
Effective Green, g (s)		39.0									33.0	
Actuated g/C Ratio		0.49									0.41	
Clearance Time (s)		5.0									5.0	
Lane Grp Cap (vph)		1422									1672	
v/s Ratio Prot		c0.23										
v/s Ratio Perm											0.36	
v/c Ratio		0.47									0.87	
Uniform Delay, d1		13.7									21.5	
Progression Factor		1.00									0.12	
Incremental Delay, d2		1.1									1.9	
Delay (s)		14.8									4.4	
Level of Service		B									A	
Approach Delay (s)		14.8			0.0			0.0			4.4	
Approach LOS		B			A			A			A	

Intersection Summary

HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	10		

c Critical Lane Group

**Queues**  
7: Alfred St & Prince St

Existing AM

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	604	530	76
v/c Ratio	0.42	0.85	0.13
Control Delay	1.3	12.1	15.3
Queue Delay	0.2	3.5	0.0
Total Delay	1.5	15.7	15.3
Queue Length 50th (ft)	7	68	26
Queue Length 95th (ft)	m7	m71	49
Internal Link Dist (ft)	242	151	338
Turn Bay Length (ft)			
Base Capacity (vph)	1442	627	579
Starvation Cap Reductn	254	13	0
Spillback Cap Reductn	0	49	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.51	0.92	0.13

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

C-13

**HCM Signalized Intersection Capacity Analysis**  
7: Alfred St & Prince St

Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔					↔	↔		↔	↔
Traffic Volume (vph)	40	490	26	0	0	0	0	429	21	10	54	0
Future Volume (vph)	40	490	26	0	0	0	0	429	21	10	54	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	12	12	12	12	12	12
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frpb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.99						0.99			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3028						1472			1470	
Flt Permitted		1.00						1.00			0.92	
Satd. Flow (perm)		3028						1472			1363	
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	43	533	28	0	0	0	0	505	25	12	64	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	600	0	0	0	0	0	528	0	0	76	0
Confl. Peds. (#/hr)	47		21	21		47	33		38	38		33
Confl. Bikes (#/hr)			5						1			1
Parking (#/hr)		6						3			3	
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		37.0						33.0			33.0	
Effective Green, g (s)		38.0						34.0			34.0	
Actuated g/C Ratio		0.48						0.42			0.42	
Clearance Time (s)		5.0						5.0			5.0	
Lane Grp Cap (vph)		1438						625			579	
v/s Ratio Prot								c0.36				
v/s Ratio Perm		0.20									0.06	
v/c Ratio		0.42						0.84			0.13	
Uniform Delay, d1		13.7						20.6			14.0	
Progression Factor		0.07						0.28			1.03	
Incremental Delay, d2		0.4						5.4			0.5	
Delay (s)		1.3						11.2			14.9	
Level of Service		A						B			B	
Approach Delay (s)		1.3			0.0			11.2			14.9	
Approach LOS		A			A			B			B	

**Intersection Summary**  
HCM 2000 Control Delay: 6.5, HCM 2000 Level of Service: A  
HCM 2000 Volume to Capacity ratio: 0.62  
Actuated Cycle Length (s): 80.0, Sum of lost time (s): 8.0  
Intersection Capacity Utilization: 54.0%, ICU Level of Service: A  
Analysis Period (min): 10  
c Critical Lane Group

C-14

**Queues**  
8: Henry St & Duke St

Existing AM

Lane Group	EBT	EBR	WBL	WBT	SBT
Lane Group Flow (vph)	447	453	55	671	1417
v/c Ratio	0.67	0.43	0.16	0.41	0.96
Control Delay	25.5	18.9	5.8	6.7	18.6
Queue Delay	0.1	0.0	0.0	0.6	0.0
Total Delay	25.6	18.9	5.8	7.2	18.6
Queue Length 50th (ft)	178	79	8	60	36
Queue Length 95th (ft)	267	113	m8	m55	m#320
Internal Link Dist (ft)	72			232	347
Turn Bay Length (ft)		125			
Base Capacity (vph)	670	1064	344	1625	1473
Starvation Cap Reductn	0	0	0	538	0
Spillback Cap Reductn	12	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.68	0.43	0.16	0.62	0.96

**Intersection Summary**  
# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.  
m Volume for 95th percentile queue is metered by upstream signal.

C-15

**HCM Signalized Intersection Capacity Analysis**  
8: Henry St & Duke St

Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔	↔				↔	↔	↔
Traffic Volume (vph)	0	389	394	49	597	0	0	0	0	0	1087	216
Future Volume (vph)	0	389	394	49	597	0	0	0	0	0	1087	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	10	12	12	12	12	12	12	11
Total Lost time (s)		4.0	4.0	4.0	4.0						4.0	
Lane Util. Factor		1.00	1.00	1.00	0.95						0.91	
Frpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	
Frt		1.00	0.85	1.00	1.00						0.98	
Flt Protected		1.00	1.00	0.95	1.00						1.00	
Satd. Flow (prot)		1676	2660	1484	2955						4105	
Flt Permitted		1.00	1.00	0.28	1.00						1.00	
Satd. Flow (perm)		1676	2660	438	2955						4105	
Peak-hour factor, PHF	0.87	0.87	0.87	0.89	0.89	0.89	0.85	0.85	0.85	0.85	0.92	0.92
Adj. Flow (vph)	0	447	453	55	671	0	0	0	0	0	1182	235
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	37	0
Lane Group Flow (vph)	0	447	453	55	671	0	0	0	0	0	1380	0
Confl. Peds. (#/hr)	15		14	14		15	13		2	2		13
Confl. Bikes (#/hr)			3				2					
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)												1
Turn Type	NA	Prot	pm+pt	NA								NA
Protected Phases		8	8	7	4							2
Permitted Phases				4								
Actuated Green, G (s)		30.7	30.7	42.7	42.7							26.9
Effective Green, g (s)		32.0	32.0	43.7	44.0							28.0
Actuated g/C Ratio		0.40	0.40	0.55	0.55							0.35
Clearance Time (s)		5.3	5.3	5.0	5.3							5.1
Lane Grp Cap (vph)		670	1064	343	1625							1436
v/s Ratio Prot		c0.27	0.17	0.02	c0.23							c0.34
v/s Ratio Perm				0.07								
v/c Ratio		0.67	0.43	0.16	0.41							0.96
Uniform Delay, d1		19.6	17.4	10.2	10.5							25.5
Progression Factor		1.00	1.00	0.67	0.63							0.30
Incremental Delay, d2		5.1	1.2	0.1	0.1							8.8
Delay (s)		24.8	18.6	6.9	6.6							16.6
Level of Service		C	B	A	A							B
Approach Delay (s)		21.7			6.7			0.0				16.6
Approach LOS		C			A			A				B

**Intersection Summary**  
HCM 2000 Control Delay: 15.7, HCM 2000 Level of Service: B  
HCM 2000 Volume to Capacity ratio: 0.77  
Actuated Cycle Length (s): 80.0, Sum of lost time (s): 12.0  
Intersection Capacity Utilization: 65.0%, ICU Level of Service: C  
Analysis Period (min): 10  
c Critical Lane Group

C-16

Queues

9: Patrick St & Duke St

Existing AM

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	403	495	2396
v/c Ratio	0.71	1.07	1.07
Control Delay	29.1	74.9	46.5
Queue Delay	0.5	0.0	9.8
Total Delay	29.7	74.9	56.3
Queue Length 50th (ft)	94	-287	-654
Queue Length 95th (ft)	184	m#449	#739
Internal Link Dist (ft)	232	245	191
Turn Bay Length (ft)			
Base Capacity (vph)	564	461	2249
Starvation Cap Reductn	25	0	0
Spillback Cap Reductn	15	0	278
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.75	1.07	1.22

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

C-17

HCM Signalized Intersection Capacity Analysis

9: Patrick St & Duke St

Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↓			↑	↓			
Traffic Volume (vph)	4	367	0	0	412	43	298	1808	98	0	0	0
Future Volume (vph)	4	367	0	0	412	43	298	1808	98	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.78				
Frpb, ped/bikes		1.00			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			0.99			0.99				
Flt Protected		1.00			1.00			1.00				
Satd. Flow (prot)		1899			1460			3821				
Flt Permitted		0.95			1.00			0.99				
Satd. Flow (perm)		1806			1460			3821				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.85	0.85	0.85
Adj. Flow (vph)	4	399	0	0	448	47	324	1965	107	0	0	0
RTOR Reduction (vph)	0	0	0	0	5	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	403	0	0	490	0	0	2391	0	0	0	0
Confl. Peds. (#/hr)	15		15	15		15	5		14	14		5
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Parking (#/hr)												
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		2			2			1				
Permitted Phases	2							1				
Actuated Green, G (s)		23.8			23.8			46.0				
Effective Green, g (s)		25.0			25.0			47.0				
Actuated g/C Ratio		0.31			0.31			0.59				
Clearance Time (s)		5.2			5.2			5.0				
Lane Grp Cap (vph)		564			456			2244				
v/s Ratio Prot					c0.34							
v/s Ratio Perm		0.22						0.63				
v/c Ratio		0.71			1.07			1.07				
Uniform Delay, d1		24.3			27.5			16.5				
Progression Factor		0.94			1.01			1.17				
Incremental Delay, d2		5.5			45.9			26.0				
Delay (s)		28.3			73.7			45.3				
Level of Service		C			E			D				
Approach Delay (s)		28.3			73.7			45.3				0.0
Approach LOS		C			E			D				A

Intersection Summary

HCM 2000 Control Delay	47.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	10		
c Critical Lane Group			

C-18

Queues

10: Alfred St & Duke St

Existing AM

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	527	454	470	70
v/c Ratio	0.80	0.53	0.96	0.15
Control Delay	13.2	9.5	55.3	4.7
Queue Delay	4.7	1.5	6.7	0.0
Total Delay	17.8	11.0	62.1	4.7
Queue Length 50th (ft)	50	78	226	3
Queue Length 95th (ft)	m65	m132	#419	10
Internal Link Dist (ft)	245	227	382	116
Turn Bay Length (ft)				
Base Capacity (vph)	660	860	489	480
Starvation Cap Reductn	84	167	0	0
Spillback Cap Reductn	4	235	22	3
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.91	0.73	1.01	0.15

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

C-19

HCM Signalized Intersection Capacity Analysis

10: Alfred St & Duke St

Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↓			↑	↓			
Traffic Volume (vph)	102	363	19	0	376	15	43	300	5	2	35	23
Future Volume (vph)	102	363	19	0	376	15	43	300	5	2	35	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	14	12	12	12	11	12	12	11
Total Lost time (s)		4.0			4.0			4.0				4.0
Lane Util. Factor		1.00			1.00			1.00				1.00
Frpb, ped/bikes		1.00			1.00			1.00				0.98
Flpb, ped/bikes		1.00			1.00			1.00				1.00
Frt		0.99			0.99			1.00				0.95
Flt Protected		0.99			1.00			1.00				1.00
Satd. Flow (prot)		1532			1562			1437				1334
Flt Permitted		0.77			1.00			0.97				0.99
Satd. Flow (perm)		1198			1562			1395				1323
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.91	0.91	0.91	0.85	0.85	0.85
Adj. Flow (vph)	111	395	21	0	437	17	47	418	5	2	41	27
RTOR Reduction (vph)	0	2	0	0	2	0	0	1	0	0	18	0
Lane Group Flow (vph)	0	525	0	0	452	0	0	469	0	0	52	0
Confl. Peds. (#/hr)	12		22	22		12	12		15	15		12
Confl. Bikes (#/hr)						4						1
Bus Blockages (#/hr)	0	3	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)		3			2			1				3
Turn Type	Perm	NA			NA		Perm	NA			Perm	NA
Protected Phases		2			2			1				1
Permitted Phases	2							1				1
Actuated Green, G (s)		43.0			43.0			27.0				27.0
Effective Green, g (s)		44.0			44.0			28.0				28.0
Actuated g/C Ratio		0.55			0.55			0.35				0.35
Clearance Time (s)		5.0			5.0			5.0				5.0
Lane Grp Cap (vph)		658			859			488				463
v/s Ratio Prot					0.29							
v/s Ratio Perm		c0.44						c0.34				0.04
v/c Ratio		0.80			0.53			0.96				0.11
Uniform Delay, d1		14.4			11.4			25.5				17.6
Progression Factor		0.46			0.66			1.00				0.36
Incremental Delay, d2		6.2			1.7			27.4				0.5
Delay (s)		12.8			9.2			52.9				6.8
Level of Service		B			A			D				A
Approach Delay (s)		12.8			9.2			52.9				6.8
Approach LOS		B			A			D				A

Intersection Summary

HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	10		
c Critical Lane Group			

C-20



Queues

11: Columbus St & Duke St

Existing AM

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	398	335	598	100
v/c Ratio	0.72	0.55	0.94	0.14
Control Delay	9.1	21.7	42.6	4.5
Queue Delay	1.3	1.9	9.0	0.0
Total Delay	10.4	23.6	51.6	4.5
Queue Length 50th (ft)	51	120	268	8
Queue Length 95th (ft)	m103	189	#489	28
Internal Link Dist. (ft)	227	234	271	354
Turn Bay Length (ft)				
Base Capacity (vph)	551	604	636	698
Starvation Cap Reductn	47	142	0	0
Spillback Cap Reductn	0	0	43	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.79	0.73	1.01	0.14

**Intersection Summary**

- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

11: Columbus St & Duke St

Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔		↔	↔	
Traffic Volume (vph)	49	298	19	7	250	31	140	408	3	3	66	17
Future Volume (vph)	49	298	19	7	250	31	140	408	3	3	66	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0				4.0				4.0
Lane Util. Factor	1.00			1.00				1.00				1.00
Frpb, ped/bikes	1.00			0.99				1.00				0.99
Flpb, ped/bikes	1.00			1.00				0.99				1.00
Frt	0.99			0.99				1.00				0.97
Flt Protected	0.99			1.00				0.99				1.00
Satd. Flow (prot)	1438			1466				1455				1427
Flt Permitted	0.92			0.99				0.89				0.99
Satd. Flow (perm)	1332			1453				1307				1413
Peak-hour factor, PHF	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.86	0.86	0.86	0.86
Adj. Flow (vph)	53	324	21	8	291	36	152	443	3	3	77	20
RTOR Reduction (vph)	0	2	0	0	5	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	396	0	0	330	0	0	598	0	0	90	0
Confl. Peds. (#/hr)	22		15	15		22	14		8	8		14
Confl. Bikes (#/hr)	0	3	0	0	0	0	0	0	0	0	0	1
Bus Blockages (#/hr)	0	3	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)		3			1			3				3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)		32.0			32.0			38.0			38.0	
Effective Green, g (s)		33.0			33.0			39.0			39.0	
Actuated g/C Ratio		0.41			0.41			0.49			0.49	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		549			599			637			688	
v/s Ratio Prot												
v/s Ratio Perm		c0.30			0.23			c0.46			0.06	
v/c Ratio		0.72			0.55			0.94			0.13	
Uniform Delay, d1		19.6			17.9			19.4			11.2	
Progression Factor		0.22			1.00			1.00			0.43	
Incremental Delay, d2		4.6			3.6			20.5			0.4	
Delay (s)		9.0			21.4			39.9			5.2	
Level of Service		A			C			D			A	
Approach Delay (s)		9.0			21.4			39.9			5.2	
Approach LOS		A			C			D			A	

**Intersection Summary**

- HCM 2000 Control Delay: 24.5
- HCM 2000 Level of Service: C
- HCM 2000 Volume to Capacity ratio: 0.84
- Actuated Cycle Length (s): 80.0
- Sum of lost time (s): 8.0
- Intersection Capacity Utilization: 88.5%
- ICU Level of Service: E
- Analysis Period (min): 10
- c Critical Lane Group

Queues

12: Washington St & Duke St

Existing AM

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	328	203	2230	547
v/c Ratio	1.08	0.44	1.12	0.33
Control Delay	97.0	36.2	66.1	6.4
Queue Delay	5.6	0.0	0.6	0.0
Total Delay	102.6	36.2	66.7	6.4
Queue Length 50th (ft)	-282	123	-851	38
Queue Length 95th (ft)	#428	183	#925	50
Internal Link Dist. (ft)	234	98	339	351
Turn Bay Length (ft)				
Base Capacity (vph)	304	460	1995	1672
Starvation Cap Reductn	19	0	0	0
Spillback Cap Reductn	0	0	388	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.15	0.44	1.39	0.33

**Intersection Summary**

- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

12: Washington St & Duke St

Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔		↔	↔	
Traffic Volume (vph)	123	138	18	5	152	15	2	1924	37	1	396	107
Future Volume (vph)	123	138	18	5	152	15	2	1924	37	1	396	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	11	9	9	9	11	9
Total Lost time (s)	4.0			4.0				4.0			4.0	
Lane Util. Factor	1.00			1.00				0.78			0.95	
Frpb, ped/bikes	1.00			1.00				1.00			1.00	
Flpb, ped/bikes	1.00			1.00				1.00			1.00	
Frt	0.99			0.99				1.00			0.97	
Flt Protected	0.98			1.00				1.00			1.00	
Satd. Flow (prot)	1470			1497				3394			2783	
Flt Permitted	0.65			0.99				0.94			0.95	
Satd. Flow (perm)	980			1483				3190			2643	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.88	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	145	162	21	6	179	18	2	2186	42	1	430	116
RTOR Reduction (vph)	0	2	0	0	3	0	0	2	0	0	20	0
Lane Group Flow (vph)	0	326	0	0	200	0	0	2229	0	0	527	0
Confl. Peds. (#/hr)	7		2	2		7	8		9	9		8
Confl. Bikes (#/hr)	0	2	0	0	2	0	0	0	0	0	0	2
Bus Blockages (#/hr)	0	3	0	0	3	0	0	1	0	0	0	3
Parking (#/hr)		3			3			1			3	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		35.5			35.5			74.0			74.0	
Effective Green, g (s)		37.0			37.0			75.0			75.0	
Actuated g/C Ratio		0.31			0.31			0.62			0.62	
Clearance Time (s)		5.5			5.5			5.0			5.0	
Lane Grp Cap (vph)		302			457			1993			1651	
v/s Ratio Prot												
v/s Ratio Perm		c0.33			0.14			c0.70			0.20	
v/c Ratio		1.08			0.44			1.12			0.32	
Uniform Delay, d1		41.5			33.2			22.5			10.5	
Progression Factor		1.00			1.00			1.00			0.62	
Incremental Delay, d2		57.4			3.0			42.6			0.5	
Delay (s)		98.9			36.2			65.1			7.0	
Level of Service		F			D			E			A	
Approach Delay (s)		98.9			36.2			65.1			7.0	
Approach LOS		F			D			E			A	

**Intersection Summary**

- HCM 2000 Control Delay: 57.1
- HCM 2000 Level of Service: E
- HCM 2000 Volume to Capacity ratio: 1.10
- Actuated Cycle Length (s): 120.0
- Sum of lost time (s): 8.0
- Intersection Capacity Utilization: 93.7%
- ICU Level of Service: F
- Analysis Period (min): 10
- c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
13: Patrick St & Henry to Patrick Connector

Existing AM

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↑↑↑	↓	
Traffic Volume (veh/h)	114	0	0	2090	0	0
Future Volume (veh/h)	114	0	0	2090	0	0
Sign Control	Yield			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.85	0.92	0.92
Hourly flow rate (vph)	124	0	0	2459	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)				419	442	
Upstream signal (ft)						
pX, platoon unblocked	0.72					
vC, conflicting volume	820	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vC3, unblocked vol	0	0	0			
tC, single (s)	6.8	6.9	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	83	100	100			
cM capacity (veh/h)	733	1084	1614			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>		
Volume Total	124	820	820	820		
Volume Left	124	0	0	0		
Volume Right	0	0	0	0		
cSH	733	1700	1700	1700		
Volume to Capacity	0.17	0.48	0.48	0.48		
Queue Length 95th (ft)	15	0	0	0		
Control Delay (s)	10.9	0.0	0.0	0.0		
Lane LOS	B					
Approach Delay (s)	10.9	0.0				
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.5			
Intersection Capacity Utilization		87.2%		ICU Level of Service	E	
Analysis Period (min)		10				

HCM Unsignalized Intersection Capacity Analysis  
14: Alfred St & Wolfe St.

Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	13	8	3	5	4	42	8	331	16	13	32	8
Future Volume (vph)	13	8	3	5	4	42	8	331	16	13	32	8
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.92	0.92	0.92	0.85	0.85	0.85
Hourly flow rate (vph)	15	9	4	6	5	49	9	360	17	15	38	9
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total (vph)	28	60	386	62								
Volume Left (vph)	15	6	9	15								
Volume Right (vph)	4	49	17	9								
Had (s)	0.06	-0.44	0.01	0.00								
Departure Headway (s)	5.0	4.5	4.2	4.5								
Degree Utilization, x	0.04	0.07	0.45	0.08								
Capacity (veh/h)	644	721	840	758								
Control Delay (s)	8.2	7.9	10.6	7.9								
Approach Delay (s)	8.2	7.9	10.6	7.9								
Approach LOS	A	A	B	A								
<b>Intersection Summary</b>												
Delay			9.8									
Level of Service			A									
Intersection Capacity Utilization		34.0%		ICU Level of Service	A							
Analysis Period (min)		10										

HCM 2010 AWSC  
14: Alfred St & Wolfe St.

Existing AM

Intersection												
Intersection Delay, s/veh	9.8											
Intersection LOS	A											
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	13	8	3	0	5	4	42	0	8	331	16
Future Vol, veh/h	0	13	8	3	0	5	4	42	0	8	331	16
Peak Hour Factor	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	15	9	4	0	6	5	49	0	9	360	17
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach	EB				WB				NB			
Opposing Approach	WB				EB				SB			
Opposing Lanes	1				1				1			
Conflicting Approach Left	SB				NB				EB			
Conflicting Lanes Left	1				1				1			
Conflicting Approach Right	NB				SB				WB			
Conflicting Lanes Right	1				1				1			
HCM Control Delay	8.2				7.9				10.5			
HCM LOS	A				A				B			
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	2%	54%	10%	25%								
Vol Thru, %	93%	33%	8%	60%								
Vol Right, %	5%	12%	82%	15%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	355	24	51	53								
LT Vol	8	13	5	13								
Through Vol	331	8	4	32								
RT Vol	16	3	42	8								
Lane Flow Rate	386	28	60	62								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.441	0.039	0.075	0.078								
Departure Headway (Hd)	4.111	5.034	4.485	4.493								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	864	714	803	800								
Service Time	2.202	3.043	2.491	2.504								
HCM Lane V/C Ratio	0.447	0.039	0.075	0.077								
HCM Control Delay	10.5	8.2	7.9	7.9								
HCM Lane LOS	B	A	A	A								
HCM 95th-ile Q	2.2	0.1	0.2	0.3								

HCM 2010 AWSC  
14: Alfred St & Wolfe St.

Existing AM

Intersection				
Intersection Delay, s/veh	9.8			
Intersection LOS	A			
Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	13	32	8
Future Vol, veh/h	0	13	32	8
Peak Hour Factor	0.92	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	15	38	9
Number of Lanes	0	0	1	0
Approach	SB			
Opposing Approach	NB			
Opposing Lanes	1			
Conflicting Approach Left	WB			
Conflicting Lanes Left	1			
Conflicting Approach Right	EB			
Conflicting Lanes Right	1			
HCM Control Delay	7.9			
HCM LOS	A			
Lane				

Queues  
15: Patrick St & Gibbon St

Existing AM

Lane Group	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	259	314	2391	1620
v/c Ratio	0.93	0.99	0.87	0.48
Control Delay	84.5	51.9	10.6	5.7
Queue Delay	7.1	0.5	0.4	0.0
Total Delay	91.6	52.5	11.0	5.7
Queue Length 50th (ft)	297	139	720	106
Queue Length 95th (ft)	#470	201	13	112
Internal Link Dist. (ft)		264	352	342
Turn Bay Length (ft)				
Base Capacity (vph)	286	541	2734	3393
Starvation Cap Reductn	18	48	71	204
Spillback Cap Reductn	0	0	20	13
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.97	0.64	0.90	0.51

**Intersection Summary**  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 dl Defacto Left Lane. Recode with 1 though lane as a left lane.

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HCM Signalized Intersection Capacity Analysis  
15: Patrick St & Gibbon St

Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				←	←	←	←	←	←	←	←	←
Traffic Volume (vph)	0	0	0	457	25	23	1	2199	0	0	1424	2
Future Volume (vph)	0	0	0	457	25	23	1	2199	0	0	1424	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	12	12	12	12	12	12
Grade (%)		0%			2%			0%			0%	
Total Lost time (s)				4.0	4.0			4.0			4.0	
Lane Util. Factor				0.91	0.91			0.78			0.91	
Frbp, ped/bikes				1.00	1.00			1.00			1.00	
Ft/bp, ped/bikes				1.00	1.00			1.00			1.00	
Frt				1.00	0.99			1.00			1.00	
Flt Protected				0.95	0.96			1.00			1.00	
Satd. Flow (prot)				1387	2608			3885			4531	
Flt Permitted				0.95	0.96			0.94			1.00	
Satd. Flow (perm)				1387	2608			3650			4531	
Peak-hour factor, PHF	0.85	0.85	0.85	0.88	0.88	0.88	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	0	0	0	519	28	26	1	2390	0	0	1618	2
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	259	310	0	0	2391	0	0	1620	0
Confl. Peds. (#/hr)	7						7	2		1		2
Confl. Bikes (#/hr)			1				1					
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)				1								
Turn Type				Split	NA		Perm	NA			NA	
Protected Phases				2	2			1			1	
Permitted Phases							1					
Actuated Green, G (s)				30.2	30.2			118.3			118.3	
Effective Green, g (s)				32.2	32.2			119.8			119.8	
Actuated g/C Ratio				0.20	0.20			0.75			0.75	
Clearance Time (s)				6.0	6.0			5.5			5.5	
Vehicle Extension (s)				3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)				279	524			2732			3392	
v/s Ratio Prot				c0.19	0.12						0.36	
v/s Ratio Perm								c0.66				
v/c Ratio				0.93	0.99			0.88			0.48	
Uniform Delay, d1				62.8	57.9			14.7			7.9	
Progression Factor				0.84	0.83			0.53			0.65	
Incremental Delay, d2				29.0	1.7			2.5			0.5	
Delay (s)				82.0	49.7			10.2			5.6	
Level of Service				F	D			B			A	
Approach Delay (s)	0.0				64.3			10.2			5.6	
Approach LOS	A				E			B			A	

**Intersection Summary**  
 HCM 2000 Control Delay 15.3 HCM 2000 Level of Service B  
 HCM 2000 Volume to Capacity ratio 0.89  
 Actuated Cycle Length (s) 160.0 Sum of lost time (s) 8.0  
 Intersection Capacity Utilization 70.3% ICU Level of Service C

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HCM Signalized Intersection Capacity Analysis  
15: Patrick St & Gibbon St

Existing AM

Analysis Period (min) 10  
 dl Defacto Left Lane. Recode with 1 though lane as a left lane.  
 c Critical Lane Group

Queues  
16: Alfred St & Gibbon St

Existing AM

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	488	501	46
v/c Ratio	0.39	0.70	0.06
Control Delay	15.6	23.8	7.4
Queue Delay	0.1	0.0	0.0
Total Delay	15.7	23.8	7.4
Queue Length 50th (ft)	81	193	5
Queue Length 95th (ft)	118	295	21
Internal Link Dist. (ft)	221	141	304
Turn Bay Length (ft)			
Base Capacity (vph)	1253	720	726
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	92	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.42	0.70	0.06

**Intersection Summary**

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HCM Signalized Intersection Capacity Analysis  
16: Alfred St & Gibbon St

Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				5	4	19	58	383	0	0	16	23
Traffic Volume (vph)	0	0	0	5	420	19	58	383	0	0	16	23
Future Volume (vph)	0	0	0	5	420	19	58	383	0	0	16	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	12	12	12	12	12	12	13
Total Lost time (s)				4.0			4.0			4.0		
Lane Util. Factor				0.95			1.00			1.00		
Fripb, ped/bikes				1.00			1.00			0.99		
Fipb, ped/bikes				1.00			1.00			1.00		
Frt				0.99			1.00			0.92		
Flt Protected				1.00			0.99			1.00		
Satd. Flow (prot)				2776			1665			1580		
Flt Permitted				1.00			0.96			1.00		
Satd. Flow (perm)				2776			1603			1580		
Peak-hour factor, PHF	0.85	0.85	0.85	0.91	0.91	0.88	0.88	0.88	0.85	0.85	0.85	0.85
Adj. Flow (vph)	0	0	0	5	462	21	66	435	0	0	19	27
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	15	0
Lane Group Flow (vph)	0	0	0	0	484	0	0	501	0	0	31	0
Confl. Peds. (#/hr)	26		4	4		26	6		11	11		6
Confl. Bikes (#/hr)								1				
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)					1							
Turn Type				Perm	NA		Perm	NA				NA
Protected Phases					2			1				1
Permitted Phases				2			1					1
Actuated Green, G (s)					35.0			34.7				34.7
Effective Green, g (s)					36.0			36.0				36.0
Actuated g/C Ratio					0.45			0.45				0.45
Clearance Time (s)					5.0			5.3				5.3
Lane Grp Cap (vph)					1249			721				711
v/s Ratio Prot												0.02
v/s Ratio Perm					0.17			c0.31				
v/c Ratio					0.39			0.69				0.04
Uniform Delay, d1					14.7			17.6				12.3
Progression Factor					1.00			1.00				1.00
Incremental Delay, d2					0.9			5.4				0.1
Delay (s)					15.6			23.0				12.5
Level of Service					B			C				B
Approach Delay (s)		0.0			15.6			23.0				12.5
Approach LOS		A			B			C				B
<b>Intersection Summary</b>												
HCM 2000 Control Delay				19.0								B
HCM 2000 Volume to Capacity ratio				0.54								
Actuated Cycle Length (s)				80.0				8.0				
Intersection Capacity Utilization				56.5%				ICU Level of Service				B
Analysis Period (min)				10								

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Queues  
17: Patrick St & Franklin St

Existing AM

Lane Group	EBL	EBT	NBT	NBR	SBT
Lane Group Flow (vph)	5	108	2653	1438	1874
v/c Ratio	0.03	0.34	0.90	1.11	0.49
Control Delay	59.5	58.7	9.7	52.0	3.0
Queue Delay	0.0	0.0	0.6	0.0	0.1
Total Delay	59.5	58.7	10.4	52.0	3.1
Queue Length 50th (ft)	5	49	358	-1585	71
Queue Length 95th (ft)	16	68	951	#1831	270
Internal Link Dist (ft)		272	788		352
Turn Bay Length (ft)	200				
Base Capacity (vph)	541	1080	3305	1300	3846
Starvation Cap Reductn	0	0	0	0	522
Spillback Cap Reductn	0	0	299	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.01	0.10	0.88	1.11	0.56
<b>Intersection Summary</b>					
- Volume exceeds capacity, queue is theoretically infinite.					
- Queue shown is maximum after two cycles.					
# 95th percentile volume exceeds capacity, queue may be longer.					
- Queue shown is maximum after two cycles.					

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HCM Signalized Intersection Capacity Analysis  
17: Patrick St & Franklin St

Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4	5	35	0	0	0	0	2414	1309	0	1705	0
Traffic Volume (vph)	4	57	35	0	0	0	0	2414	1309	0	1705	0
Future Volume (vph)	4	57	35	0	0	0	0	2414	1309	0	1705	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	11	11	11	12	12	12	12	12	12
Grade (%)		2%			0%			0%	4.0		0%	
Total Lost time (s)	4.0	4.0						4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95						0.78	1.00		0.91	
Fripb, ped/bikes	1.00	0.99						1.00	0.99		1.00	
Fipb, ped/bikes	0.98	1.00						1.00	1.00		1.00	
Frt	1.00	0.94						1.00	0.85		1.00	
Flt Protected	0.95	1.00						1.00	1.00		1.00	
Satd. Flow (prot)	1546	3056						3885	1391		4520	
Flt Permitted	0.95	1.00						1.00	1.00		1.00	
Satd. Flow (perm)	1546	3056						3885	1391		4520	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	5	67	41	0	0	0	0	2653	1438	0	1874	0
RTOR Reduction (vph)	0	14	0	0	0	0	0	0	117	0	0	0
Lane Group Flow (vph)	5	94	0	0	0	0	0	2653	1321	0	1874	0
Confl. Peds. (#/hr)	12					12	1		1	1		1
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	2
Turn Type	Perm	NA						NA	Perm			NA
Protected Phases		4						2				2
Permitted Phases	4							2				2
Actuated Green, G (s)	13.8	13.8						134.2	134.2		134.2	
Effective Green, g (s)	15.8	15.8						136.2	136.2		136.2	
Actuated g/C Ratio	0.10	0.10						0.85	0.85		0.85	
Clearance Time (s)	6.0	6.0						6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0						0.2	0.2		0.2	
Lane Grp Cap (vph)	152	301						3307	1184		3847	
v/s Ratio Prot								0.68			0.41	
v/s Ratio Perm	0.00								c0.95			
v/c Ratio	0.03	0.31						0.80	1.12		0.49	
Uniform Delay, d1	65.2	67.1						5.6	11.9		3.0	
Progression Factor	1.00	1.00						1.00	1.00		0.70	
Incremental Delay, d2	0.1	0.6						2.1	45.9		0.4	
Delay (s)	65.3	67.7						7.7	57.8		2.5	
Level of Service	E							A	E		A	
Approach Delay (s)		67.6				0.0		25.3			2.5	
Approach LOS		E				A		C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay				19.1								B
HCM 2000 Volume to Capacity ratio				1.03								
Actuated Cycle Length (s)				160.0				8.0				
Intersection Capacity Utilization				103.5%				ICU Level of Service				G
Analysis Period (min)				10								

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HCM Signalized Intersection Capacity Analysis  
17: Patrick St & Franklin St

Existing AM

c Critical Lane Group

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HCM Unsignalized Intersection Capacity Analysis  
18: Patrick St

Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔	↔				
Traffic Volume (veh/h)	24	0	0	0	0	0	18	2180	0	0	0	0
Future Volume (Veh/h)	24	0	0	0	0	0	18	2180	0	0	0	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	0	0	0	0	0	20	2370	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None						None					
Median storage (veh)												
Upstream signal (ft)							590					
pX, platoon unblocked	0.75	0.75		0.75	0.75	0.75			0.75			
vC, conflicting volume	830	2410	0	2410	2410	790	0		2370			
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vC3, unblocked vol	0	1696	0	1696	1696	0	0		1643			
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1		4.1			
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2		2.2			
p0 queue free %	97	100	100	100	100	100	99		100			
cM capacity (veh/h)	755	67	1084	44	67	808	1622		291			
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3							
Volume Total	26	0	612	1185	592							
Volume Left	26	0	20	0	0							
Volume Right	0	0	0	0	0							
CSH	755	1700	1622	1700	1700							
Volume to Capacity	0.03	0.00	0.01	0.70	0.35							
Queue Length 95th (ft)	3	0	1	0	0							
Control Delay (s)	9.9	0.0	0.4	0.0	0.0							
Lane LOS	A	A	A									
Approach Delay (s)	9.9	0.0	0.1									
Approach LOS	A	A										
Intersection Summary												
Average Delay				0.2								
Intersection Capacity Utilization				57.2%			ICU Level of Service			B		
Analysis Period (min)				10								

HCM Unsignalized Intersection Capacity Analysis  
20: Columbus St. & Wolfe St.

Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔	↔				
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	15	26	6	5	28	96	17	425	14	17	40	4
Future Volume (vph)	15	26	6	5	28	96	17	425	14	17	40	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	28	7	5	30	104	18	462	15	18	43	4
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	51	139	495	65								
Volume Left (vph)	16	5	18	18								
Volume Right (vph)	7	104	15	4								
Had (s)	0.01	-0.41	0.02	0.05								
Departure Headway (s)	5.5	4.9	4.5	5.0								
Degree Utilization, x	0.08	0.19	0.62	0.09								
Capacity (veh/h)	581	658	780	660								
Control Delay (s)	8.9	9.0	14.5	8.5								
Approach Delay (s)	8.9	9.0	14.5	8.5								
Approach LOS	A	A	B	A								
Intersection Summary												
Delay				12.6								
Level of Service				B								
Intersection Capacity Utilization				40.4%			ICU Level of Service			A		
Analysis Period (min)				10								

HCM 2010 AWSC

20: Columbus St. & Wolfe St.

Existing AM

Intersection												
Intersection Delay, s/veh	12.5											
Intersection LOS	B											
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	15	26	6	0	5	28	96	0	17	425	14
Future Vol, veh/h	0	15	26	6	0	5	28	96	0	17	425	14
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	0	16	28	7	0	5	30	104	0	18	462	15
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach	EB				WB				NB			
Opposing Approach	WB				EB				SB			
Opposing Lanes	1				1				1			
Conflicting Approach Left	SB				NB				EB			
Conflicting Lanes Left	1				1				1			
Conflicting Approach Right	NB				SB				WB			
Conflicting Lanes Right	1				1				1			
HCM Control Delay	9				9.1				14.4			
HCM LOS	A				A				B			
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	4%	32%	4%	28%								
Vol Thru, %	93%	55%	22%	66%								
Vol Right, %	3%	13%	74%	7%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	456	47	129	61								
LT Vol	17	15	5	17								
Through Vol	425	26	28	40								
RT Vol	14	6	96	4								
Lane Flow Rate	496	51	140	66								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.617	0.077	0.19	0.092								
Departure Headway (Hd)	4.479	5.423	4.869	4.989								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	803	655	732	713								
Service Time	2.525	3.499	2.932	3.058								
HCM Lane V/C Ratio	0.618	0.078	0.191	0.093								
HCM Control Delay	14.4	9	9.1	8.6								
HCM Lane LOS	B	A	A	A								
HCM 95th-ile Q	4.2	0.2	0.7	0.3								

HCM 2010 AWSC

20: Columbus St. & Wolfe St.

Existing AM

Intersection				
Intersection Delay, s/veh	12.5			
Intersection LOS	B			
Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	17	40	4
Future Vol, veh/h	0	17	40	4
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	18	43	4
Number of Lanes	0	0	1	0
Approach	SB			
Opposing Approach	NB			
Opposing Lanes	1			
Conflicting Approach Left	WB			
Conflicting Lanes Left	1			
Conflicting Approach Right	EB			
Conflicting Lanes Right	1			
HCM Control Delay	8.6			
HCM LOS	A			
Lane				



**Queues**

**1: Alfred St & Cameron St**

Existing PM

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	696	168	497
v/c Ratio	0.55	0.29	0.70
Control Delay	19.9	8.0	21.4
Queue Delay	0.0	0.0	0.0
Total Delay	19.9	8.0	21.4
Queue Length 50th (ft)	134	25	173
Queue Length 95th (ft)	187	m39	291
Internal Link Dist (ft)	237	338	290
Turn Bay Length (ft)			
Base Capacity (vph)	1261	583	709
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.55	0.29	0.70

**Intersection Summary**

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

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**HCM Signalized Intersection Capacity Analysis**

**1: Alfred St & Cameron St**

Existing PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔	↔					↔	↔
Traffic Volume (vph)	0	0	0	23	605	12	41	102	0	0	337	111
Future Volume (vph)	0	0	0	23	605	12	41	102	0	0	337	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	12	12	12	12	12	12	12
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Frpb, ped/bikes					1.00			1.00			0.99	
Flpb, ped/bikes					1.00			1.00			1.00	
Frt					1.00			1.00			0.97	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3055			1459			1423	
Flt Permitted					1.00			0.81			1.00	
Satd. Flow (perm)					3055			1196			1423	
Peak-hour factor, PHF	0.85	0.85	0.85	0.92	0.92	0.85	0.85	0.85	0.85	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	25	658	13	48	120	0	0	374	123
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	15	0
Lane Group Flow (vph)	0	0	0	0	694	0	0	168	0	0	482	0
Confl. Peds. (#/hr)	36		35	35		36	31		28	28		31
Confl. Bikes (#/hr)			9			1						1
Parking (#/hr)					6			3				3
Turn Type					Perm	NA		Perm	NA		NA	
Protected Phases					2			1			1	
Permitted Phases					2			1			1	
Actuated Green, G (s)					32.0			38.0			38.0	
Effective Green, g (s)					33.0			39.0			39.0	
Actuated g/C Ratio					0.41			0.49			0.49	
Clearance Time (s)					5.0			5.0			5.0	
Lane Grp Cap (vph)					1260			583			693	
v/s Ratio Prot												0.34
v/s Ratio Perm					0.23			0.14				
v/c Ratio					0.55			0.29			0.70	
Uniform Delay, d1					17.9			12.2			15.9	
Progression Factor					1.00			0.53			1.00	
Incremental Delay, d2					1.7			1.2			5.6	
Delay (s)					19.6			7.7			21.5	
Level of Service					B			A			C	
Approach Delay (s)	0.0				19.6			7.7			21.5	
Approach LOS	A				B			A			C	

**Intersection Summary**

HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	10		
c Critical Lane Group			

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**Queues**

**2: Henry St & King St**

Existing PM

Lane Group	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	371	109	284	2048
v/c Ratio	0.91	0.44	0.45	1.17
Control Delay	53.5	17.1	18.4	79.9
Queue Delay	0.0	0.0	1.6	0.0
Total Delay	53.5	17.1	20.1	79.9
Queue Length 50th (ft)	179	47	127	-532
Queue Length 95th (ft)	#357	m53	m159	#586
Internal Link Dist (ft)	548		225	128
Turn Bay Length (ft)		100		
Base Capacity (vph)	409	248	637	1750
Starvation Cap Reductn	0	0	204	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.91	0.44	0.66	1.17

**Intersection Summary**

- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

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**HCM Signalized Intersection Capacity Analysis**

**2: Henry St & King St**

Existing PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔	↔					↔	↔
Traffic Volume (vph)	0	283	58	93	241	0	0	0	0	43	1668	30
Future Volume (vph)	0	283	58	93	241	0	0	0	0	43	1668	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	10	10	12	12	12	12	12	11	12
Total Lost time (s)		4.0		4.0	4.0						4.0	
Lane Util. Factor		1.00		1.00	1.00						0.78	
Frpb, ped/bikes		0.95		1.00	1.00						1.00	
Flpb, ped/bikes		1.00		0.97	1.00						1.00	
Frt		0.98		1.00	1.00						1.00	
Flt Protected		1.00		0.95	1.00						1.00	
Satd. Flow (prot)		1325		1448	1546						3588	
Flt Permitted		1.00		0.26	1.00						1.00	
Satd. Flow (perm)		1325		401	1546						3588	
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	0	308	63	109	284	0	0	0	0	51	1962	35
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	362	0	109	284	0	0	0	0	0	2046	0
Confl. Peds. (#/hr)	266		291	291		266	65		18	18		65
Confl. Bikes (#/hr)						5						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)		3										3
Turn Type		NA		pm-pt	NA					Split	NA	
Protected Phases		6		5	2.6					4	4	
Permitted Phases		2.6										
Actuated Green, G (s)		23.2		33.0	33.0						37.0	
Effective Green, g (s)		24.2		34.0	34.0						38.0	
Actuated g/C Ratio		0.30		0.42	0.42						0.48	
Clearance Time (s)		5.0		5.0							5.0	
Vehicle Extension (s)		3.0		3.0							3.0	
Lane Grp Cap (vph)		400		246	657						1704	
v/s Ratio Prot		c0.27		0.03	c0.18						c0.57	
v/s Ratio Perm				0.16								
v/c Ratio		0.90		0.44	0.43						1.20	
Uniform Delay, d1		26.8		15.8	16.2						21.0	
Progression Factor		1.00		0.93	0.99						1.00	
Incremental Delay, d2		23.5		0.7	1.1						66.0	
Delay (s)		50.3		15.3	17.1						87.0	
Level of Service		D		B	B						F	
Approach Delay (s)	50.3			16.6				0.0			87.0	
Approach LOS	D			B				A			F	

**Intersection Summary**

HCM 2000 Control Delay	72.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	10		

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HCM Signalized Intersection Capacity Analysis  
2: Henry St & King St

Existing PM

c Critical Lane Group

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Queues  
3: Patrick St & King St

Existing PM

Lane Group	EBL	EBT	WBT	NBT
Lane Group Flow (vph)	62	285	380	1554
v/c Ratio	0.21	0.39	0.82	0.90
Control Delay	8.4	14.1	24.1	13.9
Queue Delay	0.0	2.1	0.8	0.0
Total Delay	8.4	16.1	24.9	13.9
Queue Length 50th (ft)	17	140	42	55
Queue Length 95th (ft)	m18	m150	#235	#358
Internal Link Dist (ft)		225	238	340
Turn Bay Length (ft)	100			
Base Capacity (vph)	301	735	464	1718
Starvation Cap Reductn	0	310	12	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.21	0.67	0.84	0.90

**Intersection Summary**  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 # Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

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HCM Signalized Intersection Capacity Analysis  
3: Patrick St & King St

Existing PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗			↘	↗		↘↗	↘↗			
Traffic Volume (vph)	53	242	0	0	288	47	81	1298	51	0	0	0
Future Volume (vph)	53	242	0	0	288	47	81	1298	51	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	12	12	12	11	12	12	12	12
Total Lost Time (s)	4.0	4.0			4.0			4.0				
Lane Util. Factor	1.00	1.00			1.00			0.91				
Flpb, ped/bikes	1.00	1.00			0.96			1.00				
Flpb, ped/bikes	0.97	1.00			1.00			1.00				
Frt	1.00	1.00			0.98			0.99				
Flt Protected	0.95	1.00			1.00			1.00				
Satd. Flow (prot)	1435	1508			1355			4153				
Flt Permitted	0.33	1.00			1.00			1.00				
Satd. Flow (perm)	497	1508			1355			4153				
Peak-hour factor, PHF	0.85	0.85	0.85	0.88	0.88	0.88	0.92	0.92	0.85	0.85	0.85	0.85
Adj. Flow (vph)	62	285	0	0	327	53	88	1411	55	0	0	0
RTOR Reduction (vph)	0	0	0	0	7	0	0	5	0	0	0	0
Lane Group Flow (vph)	62	285	0	0	373	0	0	1549	0	0	0	0
Confl. Peds. (#/hr)	225		351	351		225	58		52	52		58
Confl. Bikes (#/hr)			3	4								
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	9	0	0	8	0	0	0	0	0	0	0
Parking (#/hr)					3			4				
Turn Type	pm+pt	NA			NA		Split	NA				
Protected Phases	2	2,3			3		1	1				
Permitted Phases	2,3				3							
Actuated Green, G (s)	32.4	37.4			25.4			32.0				
Effective Green, g (s)	34.4	38.4			27.0			33.0				
Actuated g/C Ratio	0.43	0.48			0.34			0.41				
Clearance Time (s)	5.0				5.6			5.0				
Lane Grp Cap (vph)	307	723			457			1713				
v/s Ratio Prot	0.02	c0.19			c0.28			c0.37				
v/s Ratio Perm	0.07											
v/c Ratio	0.20	0.39			0.82			0.90				
Uniform Delay, d1	14.3	13.3			24.2			22.0				
Progression Factor	0.69	1.01			0.46			0.32				
Incremental Delay, d2	0.5	0.5			10.9			5.8				
Delay (s)	10.4	14.0			22.1			12.8				
Level of Service	B	B			C			B				
Approach Delay (s)		13.4			22.1			12.8				0.0
Approach LOS		B			C			B				A

**Intersection Summary**  
 HCM 2000 Control Delay 14.4 HCM 2000 Level of Service B  
 HCM 2000 Volume to Capacity ratio 0.82  
 Actuated Cycle Length (s) 80.0 Sum of lost time (s) 12.6  
 Intersection Capacity Utilization 75.2% ICU Level of Service D  
 Analysis Period (min) 10  
 c Critical Lane Group

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Queues  
4: Alfred St & King St

Existing PM

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	292	382	135	430
v/c Ratio	0.51	0.67	0.22	0.69
Control Delay	6.9	15.7	9.8	22.0
Queue Delay	0.2	0.2	0.0	0.1
Total Delay	7.1	15.9	9.8	22.1
Queue Length 50th (ft)	26	70	21	102
Queue Length 95th (ft)	m36	m98	34	197
Internal Link Dist (ft)	238	237	340	338
Turn Bay Length (ft)				
Base Capacity (vph)	567	568	609	627
Starvation Cap Reductn	28	12	0	7
Spillback Cap Reductn	0	15	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.54	0.69	0.22	0.69

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

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HCM Signalized Intersection Capacity Analysis  
4: Alfred St & King St

Existing PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	7	234	25	16	309	27	11	3	98	6	16	342
Future Volume (vph)	7	224	25	16	309	27	11	98	6	16	342	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fripb, ped/bikes	0.95	0.96	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Fit Protected	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1227	1239	1447	1437	1437	1437	1437	1437	1437	1437	1437	1437
Fit Permitted	0.99	0.98	0.95	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Satd. Flow (perm)	1215	1219	1388	1424	1424	1424	1424	1424	1424	1424	1424	1424
Peak-hour factor, PHF	0.91	0.91	0.92	0.92	0.92	0.85	0.85	0.85	0.85	0.92	0.92	0.92
Adj. Flow (vph)	8	257	27	17	336	29	13	115	7	17	372	41
RTOR Reduction (vph)	0	5	0	0	4	0	0	2	0	0	5	0
Lane Group Flow (vph)	0	287	0	0	378	0	0	133	0	0	426	0
Confl. Peds. (#/hr)	272	319	319	272	51	72	72	51	72	72	51	72
Confl. Bikes (#/hr)	0	12	3	0	11	3	0	0	1	0	0	1
Bus Blockages (#/hr)	0	12	3	0	11	3	0	0	0	0	0	1
Parking (#/hr)	3	3	3	3	3	3	3	3	3	3	3	3
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	6	6	2	2	4	4	8	8	8	8	8	8
Permitted Phases	6	6	2	2	4	4	8	8	8	8	8	8
Actuated Green, G (s)	36.0	36.0	33.9	33.9	33.9	33.9	33.9	33.9	33.9	33.9	33.9	33.9
Effective Green, g (s)	37.0	37.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0
Actuated g/C Ratio	0.46	0.46	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
Clearance Time (s)	5.0	5.0	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
Lane Grp Cap (vph)	561	563	607	607	607	607	607	607	607	607	607	607
v/s Ratio Prot												
v/s Ratio Perm	0.24	c0.31	0.10	c0.30	0.24	c0.31	0.10	c0.30	0.24	c0.31	0.10	c0.30
v/c Ratio	0.51	0.67	0.22	0.68	0.51	0.67	0.22	0.68	0.51	0.67	0.22	0.68
Uniform Delay, d1	15.1	16.8	14.0	18.0	15.1	16.8	14.0	18.0	15.1	16.8	14.0	18.0
Progression Factor	0.26	0.60	0.64	0.94	0.26	0.60	0.64	0.94	0.26	0.60	0.64	0.94
Incremental Delay, d2	3.0	5.2	0.8	4.5	3.0	5.2	0.8	4.5	3.0	5.2	0.8	4.5
Delay (s)	6.9	15.3	9.8	21.5	6.9	15.3	9.8	21.5	6.9	15.3	9.8	21.5
Level of Service	A	B	A	C	A	B	A	C	A	B	A	C
Approach Delay (s)	6.9	15.3	9.8	21.5	6.9	15.3	9.8	21.5	6.9	15.3	9.8	21.5
Approach LOS	A	B	A	C	A	B	A	C	A	B	A	C
<b>Intersection Summary</b>												
HCM 2000 Control Delay	14.9		HCM 2000 Level of Service				B					
HCM 2000 Volume to Capacity ratio	0.68											
Actuated Cycle Length (s)	80.0		Sum of lost time (s)				8.0					
Intersection Capacity Utilization	62.4%		ICU Level of Service				B					
Analysis Period (min)	10											
c Critical Lane Group												

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Queues  
5: Washington St & King St

Existing PM

Lane Group	EBT	EBR	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	152	36	228	41	962	2031
v/c Ratio	0.32	0.12	0.49	0.13	0.58	0.97
Control Delay	33.0	18.6	36.8	9.5	9.5	35.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	9.7
Total Delay	33.0	18.6	36.8	9.5	9.5	44.7
Queue Length 50th (ft)	89	10	141	0	98	604
Queue Length 95th (ft)	143	34	205	24	146	#789
Internal Link Dist (ft)	237	569	335	130		
Turn Bay Length (ft)	100					
Base Capacity (vph)	468	289	466	314	1654	2093
Starvation Cap Reductn	0	0	0	0	23	0
Spillback Cap Reductn	0	0	0	0	0	123
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.12	0.49	0.13	0.59	1.03
<b>Intersection Summary</b>						
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.						

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HCM Signalized Intersection Capacity Analysis  
5: Washington St & King St

Existing PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	0	134	32	0	194	35	0	830	55	0	1767	101
Future Volume (vph)	0	134	32	0	194	35	0	830	55	0	1767	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	9	8	12	9	9	10	10	10	8	10	10
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Fripb, ped/bikes	1.00	0.69	1.00	0.69	0.98	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Fit Protected	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1442	854	1436	882	2718	3441	3441	3441	3441	3441	3441	3441
Fit Permitted	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1442	854	1436	882	2718	3441	3441	3441	3441	3441	3441	3441
Peak-hour factor, PHF	0.88	0.88	0.88	0.85	0.85	0.85	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	152	36	0	228	41	0	902	60	0	1921	110
RTOR Reduction (vph)	0	0	12	0	0	28	0	0	0	0	0	0
Lane Group Flow (vph)	0	152	24	0	228	13	0	962	0	0	2031	0
Confl. Peds. (#/hr)	291	275	275	291	76	117	117	76	117	117	76	117
Confl. Bikes (#/hr)	0	11	0	0	12	0	0	0	0	0	2	2
Bus Blockages (#/hr)	0	11	0	0	12	0	0	0	0	0	2	2
Parking (#/hr)												
Turn Type	NA	Perm	NA	Perm	NA	NA	NA	NA	NA	NA	NA	NA
Protected Phases	2	2	2	2	1	1	1	1	1	1	1	1
Permitted Phases	2	2	2	2	1	1	1	1	1	1	1	1
Actuated Green, G (s)	37.1	37.1	37.1	37.1	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0
Effective Green, g (s)	39.0	39.0	39.0	39.0	73.0	73.0	73.0	73.0	73.0	73.0	73.0	73.0
Actuated g/C Ratio	0.32	0.32	0.32	0.32	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
Clearance Time (s)	5.9	5.9	5.9	5.9	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	468	277	466	286	1653	2093	2093	2093	2093	2093	2093	2093
v/s Ratio Prot	0.11		c0.16		0.35	c0.59						
v/s Ratio Perm		0.03		0.02								
v/c Ratio	0.32	0.09	0.49	0.05	0.58	0.97						
Uniform Delay, d1	30.6	28.1	32.5	27.8	14.2	22.5						
Progression Factor	1.00	1.00	1.00	1.00	0.56	1.00						
Incremental Delay, d2	1.8	0.6	3.6	0.3	1.3	12.0						
Delay (s)	32.4	28.7	36.1	28.1	9.3	34.5						
Level of Service	C	C	D	C	A	C						
Approach Delay (s)	31.7	34.9	9.3	34.5								
Approach LOS	C	C	A	C								
<b>Intersection Summary</b>												
HCM 2000 Control Delay	27.3		HCM 2000 Level of Service				C					
HCM 2000 Volume to Capacity ratio	0.80											
Actuated Cycle Length (s)	120.0		Sum of lost time (s)				8.0					
Intersection Capacity Utilization	74.0%		ICU Level of Service				D					
Analysis Period (min)	10											
c Critical Lane Group												

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Queues  
6: Henry St & Prince St

Existing PM

Lane Group	EBT	SBT
Lane Group Flow (vph)	1206	1474
v/c Ratio	1.06	0.86
Control Delay	57.0	5.0
Queue Delay	0.0	1.9
Total Delay	57.0	6.9
Queue Length 50th (ft)	-351	35
Queue Length 95th (ft)	#478	m30
Internal Link Dist (ft)	636	338
Turn Bay Length (ft)	100	
Base Capacity (vph)	1143	1713
Starvation Cap Reductn	0	2
Spillback Cap Reductn	0	126
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.06	0.93
<b>Intersection Summary</b>		
- Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds		

HCM Signalized Intersection Capacity Analysis  
6: Henry St & Prince St

Existing PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↑								↑	↑
Traffic Volume (vph)	0	688	421	0	0	0	0	0	0	13	1343	0
Future Volume (vph)	0	688	421	0	0	0	0	0	0	13	1343	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	10	12
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.78	
Frpb, ped/bikes		1.00									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.94									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		2749									3485	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		2749									3485	
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.85	0.85	0.85	0.92	0.92	0.92
Adj. Flow (vph)	0	748	458	0	0	0	0	0	0	14	1460	0
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	1197	0	0	0	0	0	0	0	0	1460	0
Confl. Peds. (#/hr)	37	31	31	31	31	37	19	8	8	8	8	19
Confl. Bikes (#/hr)		11				2						1
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Parking (#/hr)		6									3	
Turn Type	NA									Perm	NA	
Protected Phases	2										1	
Permitted Phases												1
Actuated Green, G (s)		32.0									38.0	
Effective Green, g (s)		33.0									39.0	
Actuated g/C Ratio		0.41									0.49	
Clearance Time (s)		5.0									5.0	
Lane Grp Cap (vph)		1133									1698	
v/s Ratio Prot		c0.44									0.42	
v/s Ratio Perm											0.86	
v/c Ratio		1.06									18.1	
Uniform Delay, d1		23.5									0.21	
Progression Factor		1.00									0.6	
Incremental Delay, d2		32.4									4.3	
Delay (s)		55.9									4.3	
Level of Service		E									A	
Approach Delay (s)		55.9			0.0			0.0			4.3	
Approach LOS		E			A			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		27.5										C
HCM 2000 Volume to Capacity ratio		0.95										
Actuated Cycle Length (s)		80.0									8.0	
Intersection Capacity Utilization		75.2%									ICU Level of Service	D
Analysis Period (min)		10										
c Critical Lane Group												

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Queues

7: Alfred St & Prince St

Existing PM

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	690	121	451
v/c Ratio	0.51	0.18	0.70
Control Delay	3.9	11.9	27.6
Queue Delay	0.2	0.0	0.1
Total Delay	4.1	11.9	27.7
Queue Length 50th (ft)	25	26	150
Queue Length 95th (ft)	31	m49	226
Internal Link Dist (ft)	244	348	340
Turn Bay Length (ft)			
Base Capacity (vph)	1363	660	646
Starvation Cap Reductn	147	0	7
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.57	0.18	0.71
<b>Intersection Summary</b>			
m Volume for 95th percentile queue is metered by upstream signal.			

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HCM Signalized Intersection Capacity Analysis  
7: Alfred St & Prince St

Existing PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↑					↑			↑	↑
Traffic Volume (vph)	34	527	39	0	0	0	0	92	11	32	351	0
Future Volume (vph)	34	527	39	0	0	0	0	92	11	32	351	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	12	12	12	12	12	12
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frpb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.99						0.99			1.00	
Flt Protected		1.00						1.00			1.00	
Satd. Flow (prot)		3017						1457			1475	
Flt Permitted		1.00						1.00			0.97	
Satd. Flow (perm)		3017						1457			1437	
Peak-hour factor, PHF	0.87	0.87	0.87	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	39	606	45	0	0	0	0	108	13	38	413	0
RTOR Reduction (vph)	0	7	0	0	0	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	683	0	0	0	0	0	116	0	0	451	0
Confl. Peds. (#/hr)	43	42	42			43	30		34	34		30
Confl. Bikes (#/hr)		7							2			2
Parking (#/hr)		6						3			3	
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases	1							2			2	
Permitted Phases												2
Actuated Green, G (s)		35.0						35.0			35.0	
Effective Green, g (s)		36.0						36.0			36.0	
Actuated g/C Ratio		0.45						0.45			0.45	
Clearance Time (s)		5.0						5.0			5.0	
Lane Grp Cap (vph)		1357						655			646	
v/s Ratio Prot								0.08				
v/s Ratio Perm		0.23									c0.31	
v/c Ratio		0.50						0.18			0.70	
Uniform Delay, d1		15.6						13.1			17.6	
Progression Factor		0.18						0.92			1.23	
Incremental Delay, d2		1.2						0.6			4.8	
Delay (s)		3.9						12.6			26.5	
Level of Service		A						B			C	
Approach Delay (s)		3.9			0.0			12.6			26.5	
Approach LOS		A			A			B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		12.8										B
HCM 2000 Volume to Capacity ratio		0.60										
Actuated Cycle Length (s)		80.0									8.0	
Intersection Capacity Utilization		58.0%									ICU Level of Service	B
Analysis Period (min)		10										
c Critical Lane Group												

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Queues

8: Henry St & Duke St

Existing PM

Lane Group	EBT	EBR	WBL	WBT	SBT
Lane Group Flow (vph)	326	651	188	615	1876
v/c Ratio	0.82	1.03	0.66	0.50	1.07
Control Delay	46.5	67.1	16.5	13.0	39.3
Queue Delay	0.0	0.0	0.0	0.6	0.0
Total Delay	46.5	67.1	16.5	13.6	39.3
Queue Length 50th (ft)	155	-177	40	81	-440
Queue Length 95th (ft)	#261	#252	m44	m90	m#496
Internal Link Dist (ft)	72			232	350
Turn Bay Length (ft)		125			
Base Capacity (vph)	398	631	287	1221	1758
Starvation Cap Reductn	0	0	0	274	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.82	1.03	0.66	0.65	1.07
<b>Intersection Summary</b>					
- Volume exceeds capacity, queue is theoretically infinite.					
- Queue shown is maximum after two cycles.					
# 95th percentile volume exceeds capacity, queue may be longer.					
- Queue shown is maximum after two cycles.					
m Volume for 95th percentile queue is metered by upstream signal.					

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### HCM Signalized Intersection Capacity Analysis

8: Henry St & Duke St

Existing PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↑↑	↑	↑↑						↑↑↑	
Traffic Volume (vph)	0	277	553	173	566	0	0	0	0	0	1590	61
Future Volume (vph)	0	277	553	173	566	0	0	0	0	0	1590	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	10	12	12	12	12	12	12	11
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0						4.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00						0.78	
Fripb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	
Fripb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	
Frt	1.00	0.85	1.00	1.00	1.00						0.99	
Flt Protected	1.00	1.00	0.95	1.00	1.00						1.00	
Satd. Flow (prot)	1676	2660	1484	2961							3600	
Flt Permitted	1.00	1.00	0.23	1.00							1.00	
Satd. Flow (perm)	1676	2660	357	2961							3600	
Peak-hour factor, PHF	0.85	0.85	0.85	0.92	0.92	0.85	0.85	0.85	0.88	0.88	0.88	0.88
Adj. Flow (vph)	0	326	651	188	615	0	0	0	0	0	1807	69
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	326	651	188	615	0	0	0	0	0	1872	0
Confl. Peds. (#/hr)	20	15	15			20	18			21	21	18
Confl. Bikes (#/hr)			2			4						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)												1
Turn Type	NA	Prot	pm+pt	NA							NA	
Protected Phases	8	8	7	4							2	
Permitted Phases			4									
Actuated Green, G (s)	17.7	17.7	31.7	31.7							37.9	
Effective Green, g (s)	19.0	19.0	32.7	33.0							39.0	
Actuated g/C Ratio	0.24	0.24	0.41	0.41							0.49	
Clearance Time (s)	5.3	5.3	5.0	5.3							5.1	
Lane Grp Cap (vph)	398	631	286	1221							1755	
v/s Ratio Prot	0.19	c0.24	c0.08	0.21							c0.52	
v/s Ratio Perm				0.19								
v/c Ratio	0.82	1.03	0.66	0.50							1.07	
Uniform Delay, d1	28.9	30.5	17.5	17.4							20.5	
Progression Factor	1.00	1.00	0.75	0.71							0.51	
Incremental Delay, d2	15.8	34.8	4.5	0.6							25.2	
Delay (s)	44.7	65.3	17.6	12.9							35.8	
Level of Service	D	E	B	B							D	
Approach Delay (s)	58.5			14.0				0.0			35.8	
Approach LOS	E			B				A			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	37.0			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	1.00											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	79.3%			ICU Level of Service			D					
Analysis Period (min)	10											
c Critical Lane Group												

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### Queues

9: Patrick St & Duke St

Existing PM

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	338	677	1695
v/c Ratio	0.35	0.89	0.98
Control Delay	20.5	25.7	43.3
Queue Delay	1.1	0.0	0.0
Total Delay	21.6	25.7	43.3
Queue Length 50th (ft)	98	140	330
Queue Length 95th (ft)	m140	#458	#415
Internal Link Dist (ft)	232	245	212
Turn Bay Length (ft)			
Base Capacity (vph)	966	758	1733
Starvation Cap Reductn	401	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.60	0.89	0.98
<b>Intersection Summary</b>			
#	95th percentile volume exceeds capacity, queue may be longer.		
	Queue shown is maximum after two cycles.		
m	Volume for 95th percentile queue is metered by upstream signal.		

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### HCM Signalized Intersection Capacity Analysis

9: Patrick St & Duke St

Existing PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑↑↑				
Traffic Volume (vph)	4	283	0	0	559	16	227	1260	72	0	0	0
Future Volume (vph)	4	283	0	0	559	16	227	1260	72	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0				4.0			4.0				
Lane Util. Factor	1.00				1.00			0.91				
Fripb, ped/bikes	1.00				1.00			1.00				
Fripb, ped/bikes	1.00				1.00			1.00				
Frt	1.00				1.00			0.99				
Flt Protected	1.00				1.00			0.99				
Satd. Flow (prot)	1899				1477			4455				
Flt Permitted	0.99				1.00			0.99				
Satd. Flow (perm)	1885				1477			4455				
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.92	0.92	0.85	0.85	0.85	0.85
Adj. Flow (vph)	5	333	0	0	658	19	247	1370	78	0	0	0
RTOR Reduction (vph)	0	0	0	0	1	0	0	7	0	0	0	0
Lane Group Flow (vph)	0	338	0	0	676	0	0	1688	0	0	0	0
Confl. Peds. (#/hr)	14		15	15		14	8		5	5		8
Confl. Bikes (#/hr)			2			3						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Parking (#/hr)						3						
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		2			2							
Permitted Phases	2						1		1			
Actuated Green, G (s)		39.8			39.8			30.0				
Effective Green, g (s)		41.0			41.0			31.0				
Actuated g/C Ratio		0.51			0.51			0.39				
Clearance Time (s)		5.2			5.2			5.0				
Lane Grp Cap (vph)		966			756			1726				
v/s Ratio Prot					c0.46							
v/s Ratio Perm	0.18							0.38				
v/c Ratio	0.35				0.89			0.98				
Uniform Delay, d1	11.6				17.5			24.2				
Progression Factor	1.67				0.64			1.26				
Incremental Delay, d2	0.6				12.3			12.6				
Delay (s)	19.9				23.6			43.1				
Level of Service	B				C			D				
Approach Delay (s)	19.9				23.6			43.1			0.0	
Approach LOS	B				C			D			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	35.3			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	0.93											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	76.6%			ICU Level of Service			D					
Analysis Period (min)	10											
c Critical Lane Group												

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### Queues

10: Alfred St & Duke St

Existing PM

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	379	517	92	385
v/c Ratio	0.48	0.60	0.23	0.79
Control Delay	7.5	9.7	19.0	29.6
Queue Delay	0.2	0.5	0.1	2.4
Total Delay	7.7	10.2	19.1	32.0
Queue Length 50th (ft)	36	90	30	88
Queue Length 95th (ft)	m42	m128	60	#295
Internal Link Dist (ft)	245	227	398	348
Turn Bay Length (ft)				
Base Capacity (vph)	791	863	406	488
Starvation Cap Reductn	80	94	0	0
Spillback Cap Reductn	0	39	33	39
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.53	0.67	0.25	0.86
<b>Intersection Summary</b>				
#	95th percentile volume exceeds capacity, queue may be longer.			
	Queue shown is maximum after two cycles.			
m	Volume for 95th percentile queue is metered by upstream signal.			

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HCM Signalized Intersection Capacity Analysis  
10: Alfred St & Duke St

Existing PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔	↔		↔	↔		↔	↔		↔
Traffic Volume (vph)	33	262	27	7	452	17	31	42	6	11	271	72
Future Volume (vph)	33	262	27	7	452	17	31	42	6	11	271	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	14	12	12	11	12	12	11	12
Total Lost time (s)	4.0			4.0			4.0			4.0		
Lane Util. Factor	1.00			1.00			1.00			1.00		
Frlpb, ped/bikes	0.99			1.00			1.00			0.98		
Frlpb, ped/bikes	1.00			1.00			0.99			1.00		
Frt	0.99			1.00			0.99			0.97		
Flt Protected	0.99			1.00			0.98			1.00		
Satd. Flow (prot)	1543			1575			1390			1370		
Flt Permitted	0.92			0.99			0.81			0.99		
Satd. Flow (perm)	1430			1568			1150			1362		
Peak-hour factor, PHF	0.85	0.85	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.92	0.92	0.92
Adj. Flow (vph)	39	308	32	8	491	18	36	49	7	12	295	78
RTOR Reduction (vph)	0	4	0	0	2	0	0	4	0	0	12	0
Lane Group Flow (vph)	0	375	0	0	515	0	0	88	0	0	373	0
Confl. Peds. (#/hr)	15		32	32		15	27		14	14		27
Confl. Bikes (#/hr)	0	0	1		3		0	0	0	0		1
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)	3				1			1				3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2			2			1			1		1
Permitted Phases	2			2			1			1		1
Actuated Green, G (s)	43.0			43.0			27.0			27.0		
Effective Green, g (s)	44.0			44.0			28.0			28.0		
Actuated g/C Ratio	0.55			0.55			0.35			0.35		
Clearance Time (s)	5.0			5.0			5.0			5.0		
Lane Grp Cap (vph)	786			862			402			476		
v/s Ratio Prot				c0.33			0.08			c0.27		
v/s Ratio Perm	0.26			c0.33			0.08			c0.27		
v/c Ratio	0.48			0.60			0.22			0.78		
Uniform Delay, d1	11.0			12.1			18.3			23.3		
Progression Factor	0.52			0.59			1.00			0.86		
Incremental Delay, d2	1.9			2.3			1.3			8.8		
Delay (s)	7.5			9.4			19.6			28.8		
Level of Service	A			A			B			C		
Approach Delay (s)	7.5			9.4			19.6			28.8		
Approach LOS	A			A			B			C		

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.3%	ICU Level of Service	C
Analysis Period (min)	10		

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Queues

11: Columbus St & Duke St

Existing PM

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	321	392	189	585
v/c Ratio	0.54	0.64	0.40	0.63
Control Delay	18.5	24.4	16.2	27.5
Queue Delay	0.3	3.7	0.0	0.1
Total Delay	18.8	28.1	16.2	27.6
Queue Length 50th (ft)	73	150	57	180
Queue Length 95th (ft)	m83	226	100	m242
Internal Link Dist (ft)	227	231	395	358
Turn Bay Length (ft)				
Base Capacity (vph)	593	608	477	702
Starvation Cap Reductn	42	139	0	4
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.58	0.84	0.40	0.84

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

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HCM Signalized Intersection Capacity Analysis  
11: Columbus St & Duke St

Existing PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔	↔		↔	↔		↔	↔		↔
Traffic Volume (vph)	12	259	24	8	303	23	69	91	1	8	428	102
Future Volume (vph)	12	259	24	8	303	23	69	91	1	8	428	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	14	12	12	11	12	12	11	12
Total Lost time (s)	4.0			4.0			4.0			4.0		
Lane Util. Factor	1.00			1.00			1.00			1.00		
Frlpb, ped/bikes	0.99			1.00			1.00			0.99		
Frlpb, ped/bikes	1.00			1.00			0.99			1.00		
Frt	0.99			0.99			1.00			0.97		
Flt Protected	1.00			1.00			0.98			1.00		
Satd. Flow (prot)	1454			1477			1442			1424		
Flt Permitted	0.98			0.99			0.67			1.00		
Satd. Flow (perm)	1429			1467			981			1420		
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.85	0.85	0.85	0.92	0.92	0.92
Adj. Flow (vph)	13	282	26	9	356	27	81	107	1	9	465	111
RTOR Reduction (vph)	0	4	0	0	4	0	0	0	0	0	11	0
Lane Group Flow (vph)	0	317	0	0	388	0	0	189	0	0	574	0
Confl. Peds. (#/hr)	21		27	27		21	26		12	12		26
Confl. Bikes (#/hr)			5		2		3					3
Parking (#/hr)	3				1			3				3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	6			2			4			8		8
Permitted Phases	6			2			4			8		8
Actuated Green, G (s)	32.0			32.0			38.0			38.0		
Effective Green, g (s)	33.0			33.0			39.0			39.0		
Actuated g/C Ratio	0.41			0.41			0.49			0.49		
Clearance Time (s)	5.0			5.0			5.0			5.0		
Lane Grp Cap (vph)	589			605			478			692		
v/s Ratio Prot				c0.26			0.19			c0.40		
v/s Ratio Perm	0.22			c0.26			0.19			c0.40		
v/c Ratio	0.54			0.64			0.40			0.83		
Uniform Delay, d1	17.7			18.8			13.0			17.6		
Progression Factor	0.85			1.00			1.00			1.12		
Incremental Delay, d2	3.1			5.1			2.4			6.7		
Delay (s)	18.3			23.9			15.4			26.5		
Level of Service	B			C			B			C		
Approach Delay (s)	18.3			23.9			15.4			26.5		
Approach LOS	B			C			B			C		

Intersection Summary			
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	10		

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Wells + Associates

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Queues

12: Washington St & Duke St

Existing PM

Lane Group	EBT	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	209	262	860	24	1946
v/c Ratio	0.75	0.50	0.59	0.04	0.98
Control Delay	45.3	33.2	19.1	4.6	12.5
Queue Delay	9.8	0.0	0.0	0.0	0.6
Total Delay	55.1	33.2	19.1	4.6	13.1
Queue Length 50th (ft)	187	154	217	0	37
Queue Length 95th (ft)	#325	221	261	12	m#54
Internal Link Dist (ft)	231	575	344		349
Turn Bay Length (ft)				115	
Base Capacity (vph)	385	524	1452	679	1977
Starvation Cap Reductn	74	0	0	0	10
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.93	0.50	0.59	0.04	0.99

Intersection Summary			
#	95th percentile volume exceeds capacity, queue may be longer.		
	Queue shown is maximum after two cycles.		
m	Volume for 95th percentile queue is metered by upstream signal.		

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Wells + Associates

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HCM Signalized Intersection Capacity Analysis  
12: Washington St & Duke St

Existing PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↕			↕		
Traffic Volume (vph)	102	113	51	22	185	15	2	738	21	2	1588	181
Future Volume (vph)	102	113	51	22	185	15	2	738	21	2	1588	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	11	9	9	9	11	9
Total Lost time (s)	4.0			4.0			4.0			4.0		
Lane Util. Factor	1.00			1.00			0.95			1.00		
Flpb, ped/bikes	1.00			1.00			1.00			0.92		
Flpb, ped/bikes	0.99			1.00			1.00			1.00		
Fit	0.97			0.99			1.00			0.85		
Fit Protected	0.98			1.00			1.00			1.00		
Satd. Flow (prot)	1437			1494			2702			1181		
Fit Permitted	0.71			0.95			0.95			1.00		
Satd. Flow (perm)	1033			1424			2563			1181		
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.86	0.86	0.86	0.91	0.91	0.91
Adj. Flow (vph)	111	123	55	26	218	18	2	858	24	2	1745	199
RTOR Reduction (vph)	0	7	0	0	2	0	0	0	10	0	10	0
Lane Group Flow (vph)	0	282	0	0	260	0	0	860	14	0	1936	0
Confl. Peds. (#/hr)	24	8	8	8	24	30	20	20	20	20	30	30
Confl. Bikes (#/hr)	0	2	2	2	1	1	0	1	0	0	0	1
Bus Blockages (#/hr)	0	2	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)	3	3	3	3	3	3	3	3	3	3	3	3
Turn Type	Perm	NA	NA	Perm	NA	NA	Perm	NA	Perm	Perm	NA	NA
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	42.5			42.5			67.0			67.0		
Effective Green, g (s)	44.0			44.0			68.0			68.0		
Actuated g/C Ratio	0.37			0.37			0.57			0.57		
Clearance Time (s)	5.5			5.5			5.0			5.0		
Lane Grp Cap (vph)	378			522			1452			669		
v/s Ratio Prot	c0.27			0.18			0.34			0.01		
v/c Ratio Perm	0.75			0.50			0.59			0.02		
v/c Ratio	33.1			29.4			17.0			11.4		
Uniform Delay, d1	1.00			1.00			1.00			1.00		
Progression Factor	12.1			3.4			1.8			0.1		
Incremental Delay, d2	45.2			32.8			18.7			11.5		
Delay (s)	D			C			B			B		
Level of Service	D			C			B			B		
Approach Delay (s)	45.2			32.8			18.5			10.6		
Approach LOS	D			C			B			B		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	17.3			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.89											
Actuated Cycle Length (s)	120.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	90.2%			ICU Level of Service			E					
Analysis Period (min)	10											

HCM Unsignalized Intersection Capacity Analysis  
13: Patrick St & Henry to Patrick Connector

Existing PM

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↕		↕	
Traffic Volume (veh/h)	54	0	0	1489	0	0
Future Volume (veh/h)	54	0	0	1489	0	0
Sign Control	Yield		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	59	0	0	1618	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None None					
Median storage (veh)						
Upstream signal (ft)	414 441					
pX, platoon unblocked	0.81					
vC, conflicting volume	539	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
IC, single (s)	6.8	6.9	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	93	100	100			
cM capacity (veh/h)	825	1084	1622			
<b>Direction, Lane #</b>						
Volume Total	EB 1	NB 1	NB 2	NB 3		
Volume Left	59	539	539	539		
Volume Right	0	0	0	0		
cSH	825	1700	1700	1700		
Volume to Capacity	0.07	0.32	0.32	0.32		
Queue Length 95th (ft)	6	0	0	0		
Control Delay (s)	9.7	0.0	0.0	0.0		
Lane LOS	A					
Approach Delay (s)	9.7	0.0				
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay	0.3					
Intersection Capacity Utilization	90.8%					
ICU Level of Service	E					
Analysis Period (min)	10					

HCM Unsignalized Intersection Capacity Analysis  
14: Alfred St & Wolfe Street/Wolfe St.

Existing PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↕			↕		
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	10	4	4	93	23	37	7	33	5	37	216	25
Future Volume (vph)	10	4	4	93	23	37	7	33	5	37	216	25
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.87	0.87	0.87	0.89	0.89	0.89
Hourly flow rate (vph)	12	5	5	109	27	44	8	38	6	42	243	28
<b>Direction, Lane #</b>												
Volume Total (vph)	EB 1	WB 1	NB 1	SB 1								
Volume Left (vph)	22	180	52	313								
Volume Right (vph)	12	109	8	42								
Head (s)	5	44	6	28								
Departure Headway (s)	0.01	0.01	0.00	0.01								
Degree Utilization, x	5.0	4.8	4.8	4.5								
Capacity (veh/h)	0.03	0.24	0.07	0.39								
Control Delay (s)	646	697	703	768								
Approach Delay (s)	8.2	9.3	8.1	10.3								
Approach LOS	A	A	A	B								
<b>Intersection Summary</b>												
Delay	9.7											
Level of Service	A											
Intersection Capacity Utilization	40.2%											
ICU Level of Service	A											
Analysis Period (min)	10											

HCM 2010 AWSC  
14: Alfred St & Wolfe Street/Wolfe St.

Existing PM

<b>Intersection</b>												
Intersection Delay, s/veh	9.7											
Intersection LOS	A											
<b>Movement</b>												
Traffic Vol, veh/h	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Future Vol, veh/h	0	10	4	4	0	93	23	37	0	7	33	5
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.87	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	12	5	5	0	109	27	44	0	8	38	6
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
<b>Approach</b>												
Opposing Approach	EB				WB				NB			
Opposing Lanes	WB				EB				SB			
Conflicting Approach Left	1				1				1			
Conflicting Approach Right	SB				NB				EB			
Conflicting Lanes Left	1				1				1			
Conflicting Approach Right	NB				SB				WB			
Conflicting Lanes Right	1				1				1			
HCM Control Delay	8.2				9.3				8.1			
HCM LOS	A				A				A			
<b>Lane</b>												
Vol Left, %	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Thru, %	16%	56%	61%	13%								
Vol Right, %	73%	22%	15%	78%								
Sign Control	11%	22%	24%	9%								
Traffic Vol by Lane	Stop	Stop	Stop	Stop								
LT Vol	45	18	153	278								
Through Vol	7	10	93	37								
RT Vol	33	4	23	216								
Lane Flow Rate	5	4	37	25								
Geometry Grp	52	21	180	312								
Degree of Util (X)	1	1	1	1								
Departure Headway (Hd)	0.068	0.029	0.239	0.387								
Convergence, Y/N	4.75	4.992	4.782	4.466								
Cap	Yes	Yes	Yes	Yes								
Service Time	753	715	751	806								
HCM Lane V/C Ratio	2.789	3.038	2.815	2.492								
HCM Control Delay	0.069	0.029	0.24	0.387								
HCM Lane LOS	8.1	8.2	9.3	10.3								
HCM 95th-ile Q	A	A	A	B								
	0.2	0.1	0.9	1.8								

HCM 2010 AWSC

14: Alfred St & Wolfe Street/Wolfe St.


Existing PM

Intersection				
Intersection Delay s/veh				
Intersection LOS				
Movement	SBU	SBL	SBT	SBR
Traffic Vol. veh/h	0	37	216	25
Future Vol. veh/h	0	37	216	25
Peak Hour Factor	0.85	0.89	0.89	0.89
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	42	243	28
Number of Lanes	0	0	1	0
Approach				
SB				
Opposing Approach				
NB				
Opposing Lanes				
1				
Conflicting Approach Left				
WB				
Conflicting Lanes Left				
1				
Conflicting Approach Right				
EB				
Conflicting Lanes Right				
1				
HCM Control Delay				
10.3				
HCM LOS				
B				
Lane				

Queues

15: Patrick St & Gibbon St

Existing PM




Lane Group	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	635	774	1670	2598
v/c Ratio	1.31	1.41d	0.84	1.04
Control Delay	127.4	28.3	18.8	32.2
Queue Delay	0.0	0.2	0.4	15.8
Total Delay	127.4	28.5	19.3	48.0
Queue Length 50th (ft)	-467	159	230	-205
Queue Length 95th (ft)	m#643	m#246	392	m26
Internal Link Dist (ft)		273	346	346
Turn Bay Length (ft)				
Base Capacity (vph)	485	925	1996	2490
Starvation Cap Reductn	1	9	0	14
Spillback Cap Reductn	1	1	76	519
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.31	0.84	0.87	1.32
Intersection Summary				
- Volume exceeds capacity, queue is theoretically infinite.				
- Queue shown is maximum after two cycles.				
# 95th percentile volume exceeds capacity, queue may be longer.				
- Queue shown is maximum after two cycles.				
m Volume for 95th percentile queue is metered by upstream signal.				
d# Defacto Left Lane. Recode with 1 though lane as a left lane.				

HCM Signalized Intersection Capacity Analysis

15: Patrick St & Gibbon St

Existing PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↓	↑			↑	↑		↑	↑
Traffic Volume (vph)	0	0	0	1169	118	9	18	1485	0	0	2374	17
Future Volume (vph)	0	0	0	1169	118	9	18	1485	0	0	2374	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	12	12	12	12	12	12
Grade (%)			0%			2%			0%			0%
Total Lost time (s)			4.0		4.0				4.0			4.0
Lane Util. Factor			0.91		0.91				0.91			0.91
Frtb, ped/bikes			1.00		1.00				1.00			1.00
Ftjb, ped/bikes			1.00		1.00				1.00			1.00
Frt			1.00		1.00				1.00			1.00
Flt Protected			0.95		0.96				1.00			1.00
Satd. Flow (prot)			1386		2639				4530			4527
Flt Permitted			0.95		0.96				0.80			1.00
Satd. Flow (perm)			1386		2639				3629			4527
Peak-hour factor, PHF	0.85	0.85	0.85	0.92	0.92	0.92	0.90	0.90	0.90	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	1271	128	10	20	1650	0	0	2580	18
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	635	773	0	0	1670	0	0	2597	0
Confl. Peds. (#/hr)	17	0	1	1	17	7			8	8		7
Confl. Bikes (#/hr)			3		1							
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)					1							
Turn Type			Perm		NA		Perm		NA			NA
Protected Phases			2		2		1		1			1
Permitted Phases												
Actuated Green, G (s)			26.0		26.0				42.5			42.5
Effective Green, g (s)			28.0		28.0				44.0			44.0
Actuated g/C Ratio			0.35		0.35				0.55			0.55
Clearance Time (s)			6.0		6.0				5.5			5.5
Vehicle Extension (s)			2.0		2.0				2.0			2.0
Lane Grp Cap (vph)			485		923				1995			2489
v/s Ratio Prot												c0.57
v/s Ratio Perm			c0.46		0.29				0.46			
v/c Ratio			1.31		1.41d				0.84			1.04
Uniform Delay, d1			26.0		23.9				15.0			18.0
Progression Factor			0.90		0.89				0.98			0.88
Incremental Delay, d2			102.5		4.4				3.9			14.4
Delay (s)			126.0		25.6				18.6			30.3
Level of Service			F		C				B			C
Approach Delay (s)			0.0		70.8				18.6			30.3
Approach LOS			A		E				B			C
Intersection Summary												
HCM 2000 Control Delay	36.9			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	1.15											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	100.7%			ICU Level of Service			G					

HCM Signalized Intersection Capacity Analysis

15: Patrick St & Gibbon St

Existing PM

Analysis Period (min)	10
d# Defacto Left Lane. Recode with 1 though lane as a left lane.	
c Critical Lane Group	

**Queues**  
16: Alfred St & Gibbon St

Existing PM

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	893	265	338
v/c Ratio	0.70	0.95	0.60
Control Delay	12.5	58.0	13.6
Queue Delay	1.1	7.2	0.3
Total Delay	13.5	65.2	13.8
Queue Length 50th (ft)	76	55	46
Queue Length 95th (ft)	125	#159	106
Internal Link Dist (ft)	218	136	305
Turn Bay Length (ft)			
Base Capacity (vph)	1275	278	567
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	174	13	29
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.81	1.00	0.63

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

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**HCM Signalized Intersection Capacity Analysis**  
16: Alfred St & Gibbon St

Existing PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←	←	←	←	←	←	←	←
Traffic Volume (vph)	0	0	0	0	820	2	197	36	0	0	46	265
Future Volume (vph)	0	0	0	0	820	2	197	36	0	0	46	265
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	12	12	12	12	12	13	12
Total Lost time (s)					4.0		4.0				4.0	
Lane Util. Factor					0.95		1.00				1.00	
Frpb, ped/bikes					1.00		1.00				0.97	
Flpb, ped/bikes					1.00		0.99				1.00	
Frt					1.00		1.00				0.88	
Flt Protected					1.00		0.96				1.00	
Satd. Flow (prot)					2832		1613				1491	
Flt Permitted					1.00		0.47				1.00	
Satd. Flow (perm)					2832		796				1491	
Peak-hour factor, PHF	0.85	0.85	0.85	0.92	0.92	0.92	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	891	2	224	41	0	0	50	288
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	46	0
Lane Group Flow (vph)	0	0	0	0	892	0	265	0	0	0	293	0
Confl. Peds. (#/hr)	17	10	10	10	17	21	23	23	23	23	21	21
Confl. Bikes (#/hr)					1		1				4	
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)					1							
Turn Type					NA		Perm	NA		NA		NA
Protected Phases					2		1			1		1
Permitted Phases					2		1			1		1
Actuated Green, G (s)					17.0		12.7			12.7		12.7
Effective Green, g (s)					18.0		14.0			14.0		14.0
Actuated g/C Ratio					0.45		0.35			0.35		0.35
Clearance Time (s)					5.0		5.3			5.3		5.3
Lane Grp Cap (vph)					1274		278			521		202
v/s Ratio Prot					c0.32							0.20
v/s Ratio Perm							c0.33					
v/c Ratio					0.70		0.95					0.56
Uniform Delay, d1					8.8		12.7			10.5		10.5
Progression Factor					1.00		1.00			1.00		1.00
Incremental Delay, d2					3.2		36.6			4.3		4.3
Delay (s)					12.0		49.3			14.8		14.8
Level of Service					B		D			B		B
Approach Delay (s)		0.0			12.0		49.3			14.8		14.8
Approach LOS		A			B		D			B		B

**Intersection Summary**  
 HCM 2000 Control Delay 19.2 HCM 2000 Level of Service B  
 HCM 2000 Volume to Capacity ratio 0.81  
 Actuated Cycle Length (s) 40.0 Sum of lost time (s) 8.0  
 Intersection Capacity Utilization 72.1% ICU Level of Service C  
 Analysis Period (min) 10  
 c Critical Lane Group

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**Queues**  
17: Patrick St & Franklin St

Existing PM

Lane Group	EBL	EBT	NBT	NBR	SBT
Lane Group Flow (vph)	23	180	1754	678	3685
v/c Ratio	0.12	0.51	0.47	0.53	1.04
Control Delay	60.8	69.6	4.8	2.0	27.6
Queue Delay	0.0	0.0	0.0	0.0	15.9
Total Delay	60.8	69.6	4.8	2.0	43.5
Queue Length 50th (ft)	22	95	140	0	-1494
Queue Length 95th (ft)	47	122	260	22	m#1465
Internal Link Dist (ft)		261	297		346
Turn Bay Length (ft)					
Base Capacity (vph)	511	980	3759	1269	3533
Starvation Cap Reductn	0	0	0	0	386
Spillback Cap Reductn	0	0	176	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.18	0.49	0.53	1.17

**Intersection Summary**  
 - Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

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**HCM Signalized Intersection Capacity Analysis**  
17: Patrick St & Franklin St

Existing PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	←	←	←	←	←	←	←	←	←	←	←	←
Traffic Volume (vph)	20	75	84	0	0	0	0	1526	590	1	3389	0
Future Volume (vph)	20	75	84	0	0	0	0	1526	590	1	3389	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	11	11	11	12	12	12	12	12	12
Grade (%)		2%			0%			0%			0%	
Total Lost time (s)	4.0	4.0						4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95						0.91	1.00		0.91	
Frpb, ped/bikes	1.00	0.99						1.00	0.99		1.00	
Flpb, ped/bikes	0.98	1.00						1.00	1.00		1.00	
Frt	1.00	0.92						1.00	0.85		1.00	
Flt Protected	0.95	1.00						1.00	1.00		1.00	
Satd. Flow (prot)	1544	2955						4532	1391		4532	
Flt Permitted	0.95	1.00						1.00	1.00		0.94	
Satd. Flow (perm)	1544	2955						4532	1391		4259	
Peak-hour factor, PHF	0.88	0.88	0.88	0.85	0.85	0.85	0.87	0.87	0.87	0.92	0.92	0.92
Adj. Flow (vph)	23	85	95	0	0	0	0	1754	678	1	3684	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	116	0	0	0
Lane Group Flow (vph)	23	180	0	0	0	0	0	1754	562	0	3685	0
Confl. Peds. (#/hr)	13	E					13	1	A	1	1	1
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	3	0	0	0	0	0	0	0	0	0	0
Turn Type	Perm	NA						NA	Perm	Perm	NA	
Protected Phases		4						2		2		2
Permitted Phases		4						2		2		2
Actuated Green, G (s)	17.3	17.3						130.7	130.7		130.7	
Effective Green, g (s)	19.3	19.3						132.7	132.7		132.7	
Actuated g/C Ratio	0.12	0.12						0.83	0.83		0.83	
Clearance Time (s)	6.0	6.0						6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0						0.2	0.2		0.2	
Lane Grp Cap (vph)	186	356						3758	1153		3532	
v/s Ratio Prot								0.39				
v/s Ratio Perm	0.01								0.40		c0.87	
v/c Ratio	0.12	0.51						0.47	0.49		1.04	
Uniform Delay, d1	62.8	65.9						3.8	3.9		13.7	
Progression Factor	1.00	1.00						1.00	1.00		0.89	
Incremental Delay, d2	0.3	1.1						0.4	1.5		14.0	
Delay (s)	63.1	67.0						4.2	5.4		26.1	
Level of Service	E	E						A	A		C	
Approach Delay (s)		66.6				0.0		4.5	26.1		26.1	
Approach LOS		E				A		A	C		C	

**Intersection Summary**  
 HCM 2000 Control Delay 19.1 HCM 2000 Level of Service B  
 HCM 2000 Volume to Capacity ratio 0.97  
 Actuated Cycle Length (s) 160.0 Sum of lost time (s) 8.0  
 Intersection Capacity Utilization 130.1% ICU Level of Service H  
 Analysis Period (min) 10

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HCM Signalized Intersection Capacity Analysis  
17: Patrick St & Franklin St

Existing PM

c Critical Lane Group

C-77

HCM Unsignalized Intersection Capacity Analysis  
18: Patrick St

Existing PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	16	0	0	0	0	0	23	1543	0	0	0	0
Traffic Volume (veh/h)	16	0	0	0	0	0	23	1543	0	0	0	0
Future Volume (Veh/h)	16	0	0	0	0	0	23	1543	0	0	0	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	19	0	0	0	0	0	27	1815	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)							563			292		
pX, platoon unblocked	0.82	0.82		0.82	0.82	0.82				0.82		
vC, conflicting volume	659	1869	0	1869	1869	605	0			1815		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vC4, unblocked vol	0	1277	0	1277	1277	0	0			1211		
IC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
IC, 2 stage (s)												
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	100	100	100	100	98			100		
cM capacity (veh/h)	824	133	1084	99	133	885	1622			467		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3							
Volume Total	19	0	481	908	454							
Volume Left	19	0	27	0	0							
Volume Right	0	0	0	0	0							
cSH	824	1700	1622	1700	1700							
Volume to Capacity	0.02	0.00	0.02	0.53	0.27							
Queue Length 95th (ft)	2	0	1	0	0							
Control Delay (s)	9.5	0.0	0.6	0.0	0.0							
Lane LOS	A	A	A									
Approach Delay (s)	9.5	0.0	0.1									
Approach LOS	A	A										
<b>Intersection Summary</b>												
Average Delay	0.2											
Intersection Capacity Utilization	43.6%			ICU Level of Service			A					
Analysis Period (min)	10											

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HCM Unsignalized Intersection Capacity Analysis  
20: Columbus St & Wolfe St.

Existing PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	Stop			Stop			Stop			Stop		
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	2	26	33	73	98	27	14	81	6	24	402	33
Future Volume (vph)	2	26	33	73	98	27	14	81	6	24	402	33
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	2	31	39	86	115	32	16	95	7	28	473	39
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	72	233	118	540								
Volume Left (vph)	2	86	16	28								
Volume Right (vph)	39	32	7	39								
Head (s)	-0.29	0.03	0.03	0.00								
Departure Headway (s)	5.8	5.8	5.7	5.0								
Degree Utilization, x	0.12	0.38	0.19	0.75								
Capacity (veh/h)	539	568	569	700								
Control Delay (s)	9.6	12.2	9.9	21.0								
Approach Delay (s)	9.6	12.2	9.9	21.0								
Approach LOS	A	B	A	C								
<b>Intersection Summary</b>												
Delay	16.7											
Level of Service	C											
Intersection Capacity Utilization	51.4%			ICU Level of Service			A					
Analysis Period (min)	10											

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HCM 2010 AWSC  
20: Columbus St & Wolfe St.

Existing PM

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	2	26	33	0	73	98	27	0	14	81	6
Future Vol, veh/h	0	2	26	33	0	73	98	27	0	14	81	6
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2	31	39	0	86	115	32	0	16	95	7
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
<b>Approach</b>												
Opposing Approach	WB			EB			NB					
Opposing Lanes	1			1			1					
Conflicting Approach Left	SB			NB			EB					
Conflicting Lanes Left	1			1			1					
Conflicting Approach Right	NB			SB			WB					
Conflicting Lanes Right	1			1			1					
HCM Control Delay	9.6			12.2			10					
HCM LOS	A			B			A					
<b>Lane</b>												
Vol Left, %	14%			3%			37%			5%		
Vol Thru, %	80%			43%			49%			88%		
Vol Right, %	6%			54%			14%			7%		
Sign Control	Stop			Stop			Stop			Stop		
Traffic Vol by Lane	101	61	198	459								
LT Vol	14	2	73	24								
Through Vol	81	26	98	402								
RT Vol	6	33	27	33								
Lane Flow Rate	119	72	233	540								
Geometry Grp	1											
Degree of Util (X)	0.186	0.116	0.374	0.75								
Departure Headway (Hd)	5.624	5.805	5.779	5								
Convergence, Y/N	Yes											
Cap	637	615	622	724								
Service Time	3.673	3.863	3.824	3.034								
HCM Lane V/C Ratio	0.187	0.117	0.375	0.746								
HCM Control Delay	10	9.6	12.2	20.9								
HCM Lane LOS	A	A	B	C								
HCM 95th-ile Q	0.7	0.4	1.7	6.3								

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Intersection				
Intersection Delay, s/veh				
Intersection LOS				
Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	24	402	33
Future Vol, veh/h	0	24	402	33
Peak Hour Factor	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	28	473	39
Number of Lanes	0	0	1	0
Approach				
SB				
Opposing Approach				
NB				
Opposing Lanes				
1				
Conflicting Approach Left				
WB				
Conflicting Lanes Left				
1				
Conflicting Approach Right				
EB				
Conflicting Lanes Right				
1				
HCM Control Delay				
20.9				
HCM LOS				
C				
Lane				

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	291	160	141
v/c Ratio	0.21	0.22	0.18
Control Delay	15.0	8.1	7.4
Queue Delay	0.0	0.0	0.0
Total Delay	15.0	8.1	7.4
Queue Length 50th (ft)	45	29	21
Queue Length 95th (ft)	72	m46	46
Internal Link Dist (ft)	237	338	290
Turn Bay Length (ft)			
Base Capacity (vph)	1388	722	778
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.21	0.22	0.18
Intersection Summary			
m Volume for 95th percentile queue is metered by upstream signal.			

HCM Signalized Intersection Capacity Analysis  
1: Alfred St & Cameron St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔			↔	
Traffic Volume (vph)	0	0	0	20	225	17	38	100	0	0	68	52
Future Volume (vph)	0	0	0	20	225	17	38	100	0	0	68	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	12	12	12	12	12	12	12
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Flpb, ped/bikes					1.00			1.00			0.99	
Flpb, ped/bikes					1.00			1.00			1.00	
Flt					0.99			1.00			0.94	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3353			1620			1532	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3353			1483			1532	
Peak-hour factor, PHF	0.85	0.85	0.85	0.90	0.90	0.86	0.86	0.86	0.85	0.85	0.85	0.85
Adj. Flow (vph)	0	0	0	22	250	19	44	116	0	0	80	61
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	31	0
Lane Group Flow (vph)	0	0	0	0	285	0	0	160	0	0	110	0
Confl. Peds. (#/hr)	28		23	23		28	29		22	22		29
Confl. Bikes (#/hr)			1			9		2				2
Parking (#/hr)					6			3				3
Turn Type					Perm	NA	Perm	NA			NA	
Protected Phases					2			1			1	
Permitted Phases					2			1			1	
Actuated Green, G (s)					32.0			38.0			38.0	
Effective Green, g (s)					33.0			39.0			39.0	
Actuated g/C Ratio					0.41			0.49			0.49	
Clearance Time (s)					5.0			5.0			5.0	
Lane Grp Cap (vph)					1383			722			746	
v/s Ratio Prot											0.07	
v/s Ratio Perm					0.08			c0.11				
v/c Ratio					0.21			0.22			0.15	
Uniform Delay, d1					15.1			11.8			11.3	
Progression Factor					1.00			0.61			1.00	
Incremental Delay, d2					0.3			0.7			0.4	
Delay (s)					15.4			7.9			11.7	
Level of Service					B			A			B	
Approach Delay (s)		0.0			15.4			7.9			11.7	
Approach LOS		A			B			A			B	
Intersection Summary												
HCM 2000 Control Delay					12.5					HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio					0.21							
Actuated Cycle Length (s)					80.0					Sum of lost time (s)	8.0	
Intersection Capacity Utilization					31.5%					ICU Level of Service	A	
Analysis Period (min)					10							
c Critical Lane Group												

Queues  
2: Henry St & King St

Lane Group	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	300	109	284	1995
v/c Ratio	0.72	0.37	0.40	0.88
Control Delay	36.5	15.4	16.6	24.1
Queue Delay	0.0	0.0	1.6	0.0
Total Delay	36.5	15.4	18.1	24.1
Queue Length 50th (ft)	131	44	121	310
Queue Length 95th (ft)	#238	m52	m162	383
Internal Link Dist (ft)	548		225	128
Turn Bay Length (ft)		100		
Base Capacity (vph)	417	291	708	2265
Starvation Cap Reductn	0	0	261	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.72	0.37	0.64	0.88
Intersection Summary				
# 95th percentile volume exceeds capacity, queue may be longer.				
Queue shown is maximum after two cycles.				
m Volume for 95th percentile queue is metered by upstream signal.				

HCM Signalized Intersection Capacity Analysis  
2: Henry St & King St

Existing Sunday

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	0	231	36	100	261	0	0	0	0	62	1723	51
Future Volume (vph)	0	231	36	100	261	0	0	0	0	62	1723	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	10	10	12	12	12	12	12	11	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fripb, ped/bikes	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fipb, ped/bikes	1.00	1.00	0.94	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1490	1546	1718	1718	1718	1718	1718	1718	1718	1718	1718	1718
Flt Permitted	1.00	0.38	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1490	614	1718	1718	1718	1718	1718	1718	1718	1718	1718	1718
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.92	0.92
Adj. Flow (vph)	0	260	40	109	284	0	0	0	0	67	1873	55
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	293	0	109	284	0	0	0	0	0	1991	0
Confl. Peds. (#/hr)	210		448	448		210	45		55	55		45
Confl. Bikes (#/hr)			3		5							
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)		3										3
Turn Type	NA	pm+pt	NA	NA	Split	NA						
Protected Phases	3	2	2	3	1	1						
Permitted Phases		2	3									
Actuated Green, G (s)	21.0	27.0	32.0								38.0	
Effective Green, g (s)	22.0	29.0	33.0								39.0	
Actuated g/C Ratio	0.28	0.36	0.41								0.49	
Clearance Time (s)	5.0	5.0									5.0	
Lane Grp Cap (vph)	409	304	708								2262	
v/s Ratio Prot	c0.20	0.03	c0.17								c0.43	
v/s Ratio Perm		0.10										
v/c Ratio	0.72	0.36	0.40								0.88	
Uniform Delay, d1	26.2	17.9	16.5								18.4	
Progression Factor	1.00	0.87	0.91								1.00	
Incremental Delay, d2	9.9	2.0	1.0								5.1	
Delay (s)	36.1	17.5	16.2								23.5	
Level of Service	D	B	B								C	
Approach Delay (s)	36.1		16.5				0.0				23.5	
Approach LOS	D		B				A				C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	23.9			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.79											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	67.2%			ICU Level of Service			C					
Analysis Period (min)	10											
c Critical Lane Group												

Alfred Street Baptist Church  
Wells + Associates

Synchro 9 Report  
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Queues  
3: Patrick St & King St

Existing Sunday

Lane Group	EBL	EBT	WBT	NBT
Lane Group Flow (vph)	74	277	359	1706
v/c Ratio	0.24	0.36	0.74	0.87
Control Delay	12.2	15.3	22.2	10.5
Queue Delay	0.0	1.6	0.5	0.0
Total Delay	12.2	17.0	22.7	10.5
Queue Length 50th (ft)	30	123	99	43
Queue Length 95th (ft)	m34	m173	138	76
Internal Link Dist (ft)		225	238	340
Turn Bay Length (ft)	100			
Base Capacity (vph)	307	775	485	1965
Starvation Cap Reductn	0	334	15	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.24	0.63	0.76	0.87
<b>Intersection Summary</b>				
m Volume for 95th percentile queue is metered by upstream signal.				

Alfred Street Baptist Church  
Wells + Associates

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HCM Signalized Intersection Capacity Analysis  
3: Patrick St & King St

Existing Sunday

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	68	255	0	0	254	51	105	1360	87	0	0	0
Future Volume (vph)	68	255	0	0	254	51	105	1360	87	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0			4.0				
Lane Util. Factor	1.00	1.00			1.00			0.91				
Fripb, ped/bikes	1.00	1.00			0.94			0.97				
Fipb, ped/bikes	0.95	1.00			1.00			1.00				
Frt	1.00	1.00			0.98			0.99				
Flt Protected	0.95	1.00			1.00			1.00				
Satd. Flow (prot)	1569	1676			1468			4479				
Flt Permitted	0.34	1.00			1.00			1.00				
Satd. Flow (perm)	567	1676			1468			4479				
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.91	0.91	0.91	0.85	0.85	0.85
Adj. Flow (vph)	74	277	0	0	299	60	115	1495	96	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	4	0	0	0	0
Lane Group Flow (vph)	74	277	0	0	350	0	0	1702	0	0	0	0
Confl. Peds. (#/hr)	459		677	677		459	302		297	297		302
Confl. Bikes (#/hr)			7		5		1					
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	9	0	0	8	0	0	0	0	0	0	0
Parking (#/hr)					3			4				
Turn Type	pm+pt	NA			NA		Split	NA				
Protected Phases	2	2	3		3		1	1				
Permitted Phases		2	3									
Actuated Green, G (s)	30.4	35.4			24.4			34.0				
Effective Green, g (s)	32.4	36.4			26.0			35.0				
Actuated g/C Ratio	0.40	0.45			0.32			0.44				
Clearance Time (s)	5.0				5.6			5.0				
Lane Grp Cap (vph)	317	762			477			1959				
v/s Ratio Prot	0.02	c0.17			c0.24			c0.38				
v/s Ratio Perm	0.07											
v/c Ratio	0.23	0.36			0.73			0.87				
Uniform Delay, d1	15.5	14.2			23.9			20.4				
Progression Factor	0.87	1.01			0.52			0.27				
Incremental Delay, d2	1.2	0.9			8.9			4.5				
Delay (s)	14.7	15.4			21.3			9.9				
Level of Service	B	B			C			A				
Approach Delay (s)	15.2				21.3			9.9			0.0	
Approach LOS	B				C			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	12.4			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.78											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			12.6					
Intersection Capacity Utilization	67.2%			ICU Level of Service			C					
Analysis Period (min)	10											
c Critical Lane Group												

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Queues  
4: Alfred St & King St

Existing Sunday

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	392	299	145	112
v/c Ratio	0.65	0.48	0.22	0.18
Control Delay	12.0	11.4	4.7	9.9
Queue Delay	0.2	0.2	0.0	0.0
Total Delay	12.2	11.5	4.7	9.9
Queue Length 50th (ft)	62	49	13	23
Queue Length 95th (ft)	m78	76	21	41
Internal Link Dist (ft)	238	237	340	338
Turn Bay Length (ft)	100			
Base Capacity (vph)	606	618	647	639
Starvation Cap Reductn	15	40	0	0
Spillback Cap Reductn	0	19	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.66	0.52	0.22	0.18
<b>Intersection Summary</b>				
m Volume for 95th percentile queue is metered by upstream signal.				

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HCM Signalized Intersection Capacity Analysis  
4: Alfred St & King St

Existing Sunday

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations															
Traffic Volume (vph)	18	280	39	18	231	20	24	87	13	16	58	21			
Future Volume (vph)	18	280	39	18	231	20	24	87	13	16	58	21			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Width	12	10	12	12	10	12	12	12	12	12	12	12			
Total Lost time (s)	4.0														
Lane Util. Factor	1.00														
Fripb, ped/bikes	0.94														
Fipb, ped/bikes	0.99														
Frt	0.98														
Flt Protected	1.00														
Satd. Flow (prot)	1326														
Flt Permitted	0.98														
Satd. Flow (perm)	1298														
Peak-hour factor, PHF	0.86	0.86	0.86	0.90	0.90	0.90	0.85	0.85	0.85	0.85	0.85	0.85			
Adj. Flow (vph)	21	326	45	20	257	22	28	102	15	19	68	25			
RTOR Reduction (vph)	0														
Lane Group Flow (vph)	0			386			0			295			0		
Confl. Peds. (#/hr)	257			351			257			51			106		
Confl. Bikes (#/hr)	0			12			0			0			0		
Bus Blockages (#/hr)	0			12			0			0			0		
Parking (#/hr)	3			0			3			0			3		
Turn Type	Perm	NA	NA	Perm	NA	NA	Perm	NA	NA	Perm	NA	NA			
Protected Phases	2														
Permitted Phases	2														
Actuated Green, G (s)	35.9			35.9			34.0			34.0					
Effective Green, g (s)	37.0			37.0			35.0			35.0					
Actuated g/C Ratio	0.46			0.46			0.44			0.44					
Clearance Time (s)	5.1			5.1			5.0			5.0					
Lane Grp Cap (vph)	600			615			642			626					
v/s Ratio Prot	c0.30														
v/s Ratio Perm	0.64														
v/c Ratio	16.5														
Uniform Delay, d1	0.43														
Progression Factor	4.7														
Incremental Delay, d2	11.8														
Delay (s)	B														
Level of Service	B														
Approach Delay (s)	11.8														
Approach LOS	B														
<b>Intersection Summary</b>															
HCM 2000 Control Delay	10.6			HCM 2000 Level of Service			B								
HCM 2000 Volume to Capacity ratio	0.44														
Actuated Cycle Length (s)	80.0														
Intersection Capacity Utilization	45.8%			ICU Level of Service			A								
Analysis Period (min)	10														
c Critical Lane Group															

Queues

5: Washington St & King St

Existing Sunday

Lane Group	EBT	EBR	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	266	38	229	50	1007	922
v/c Ratio	0.39	0.10	0.34	0.13	0.66	0.73
Control Delay	28.1	8.8	27.1	17.0	17.1	28.9
Queue Delay	5.6	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	8.8	27.1	17.0	17.1	28.9
Queue Length 50th (ft)	153	2	128	16	150	376
Queue Length 95th (ft)	221	23	195	43	172	482
Internal Link Dist (ft)	237		569		335	130
Turn Bay Length (ft)	100					
Base Capacity (vph)	678	368	675	392	1518	1255
Starvation Cap Reductn	348	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.10	0.34	0.13	0.66	0.73

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
5: Washington St & King St

Existing Sunday

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations															
Traffic Volume (vph)	0	224	33	0	211	46	0	858	68	0	780	68			
Future Volume (vph)	0	224	33	0	211	46	0	858	68	0	780	68			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Width	12	9	8	12	9	9	10	10	10	8	10	10			
Total Lost time (s)	4.0														
Lane Util. Factor	1.00														
Fripb, ped/bikes	1.00														
Fipb, ped/bikes	1.00														
Frt	1.00														
Flt Protected	1.00														
Satd. Flow (prot)	1603														
Flt Permitted	1.00														
Satd. Flow (perm)	1603														
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Adj. Flow (vph)	0	266	38	0	229	50	0	933	74	0	848	74			
RTOR Reduction (vph)	0														
Lane Group Flow (vph)	0			266			18			229			40		
Confl. Peds. (#/hr)	502			634			502			129			308		
Confl. Bikes (#/hr)	0			11			0			0			0		
Bus Blockages (#/hr)	0			11			0			0			0		
Parking (#/hr)	0			11			0			0			0		
Turn Type	NA	Perm	Perm	NA	Perm	Perm	NA	NA	NA	NA	NA	NA			
Protected Phases	2														
Permitted Phases	2														
Actuated Green, G (s)	53.1			53.1			53.1			66.0					
Effective Green, g (s)	55.0			55.0			55.0			67.0					
Actuated g/C Ratio	0.42			0.42			0.42			0.52					
Clearance Time (s)	5.9			5.9			5.9			5.0					
Lane Grp Cap (vph)	678			349			675			381					
v/s Ratio Prot	c0.17														
v/s Ratio Perm	0.02														
v/c Ratio	0.39														
Uniform Delay, d1	25.9														
Progression Factor	1.00														
Incremental Delay, d2	1.7														
Delay (s)	27.6														
Level of Service	C														
Approach Delay (s)	27.0														
Approach LOS	C														
<b>Intersection Summary</b>															
HCM 2000 Control Delay	23.3			HCM 2000 Level of Service			C								
HCM 2000 Volume to Capacity ratio	0.58														
Actuated Cycle Length (s)	130.0														
Intersection Capacity Utilization	59.9%			ICU Level of Service			B								
Analysis Period (min)	10														
c Critical Lane Group															

Queues

6: Henry St & Prince St

Existing Sunday

Lane Group	EBT	SBT
Lane Group Flow (vph)	459	1825
v/c Ratio	0.35	0.83
Control Delay	16.8	4.6
Queue Delay	0.0	0.2
Total Delay	16.8	4.8
Queue Length 50th (ft)	78	26
Queue Length 95th (ft)	115	30
Internal Link Dist (ft)	636	338
Turn Bay Length (ft)	100	
Base Capacity (vph)	1312	2211
Starvation Cap Reductn	0	58
Spillback Cap Reductn	0	13
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.35	0.85

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
6: Henry St & Prince St

Existing Sunday

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↓									↑↑	
Traffic Volume (vph)	0	324	89	0	0	0	0	0	0	72	1607	0
Future Volume (vph)	0	324	89	0	0	0	0	0	0	72	1607	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	10	12
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frpb, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.97									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3170									4506	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3170									4506	
Peak-hour factor, PHF	0.90	0.90	0.90	0.85	0.85	0.85	0.85	0.85	0.85	0.92	0.92	0.92
Adj. Flow (vph)	0	360	99	0	0	0	0	0	0	78	1747	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	455	0	0	0	0	0	0	0	0	1811	0
Confl. Peds. (#/hr)	26		25	25		26	22		17	17		22
Confl. Bikes (#/hr)			8			1						1
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Parking (#/hr)		6										3
Turn Type		NA								Perm	NA	
Protected Phases		2									1	
Permitted Phases												1
Actuated Green, G (s)		32.0									38.0	
Effective Green, g (s)		33.0									39.0	
Actuated g/C Ratio		0.41									0.49	
Clearance Time (s)		5.0									5.0	
Lane Grp Cap (vph)		1307									2196	
v/s Ratio Prot		c0.14										0.40
v/s Ratio Perm												0.82
v/c Ratio		0.35										17.6
Uniform Delay, d1		16.1										0.15
Progression Factor		1.00										1.9
Incremental Delay, d2		0.7										4.5
Delay (s)		16.9										A
Level of Service		B										A
Approach Delay (s)		16.9			0.0			0.0				4.5
Approach LOS		B			A			A				A
<b>Intersection Summary</b>												
HCM 2000 Control Delay			7.0									A
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			80.0								8.0	
Intersection Capacity Utilization			57.2%								ICU Level of Service	B
Analysis Period (min)			10									

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Queues

7: Alfred St & Prince St

Existing Sunday

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	339	133	140
v/c Ratio	0.23	0.18	0.20
Control Delay	1.5	13.4	11.5
Queue Delay	0.0	0.0	0.0
Total Delay	1.5	13.4	11.5
Queue Length 50th (ft)	4	32	40
Queue Length 95th (ft)	7	60	m63
Internal Link Dist (ft)	244	348	340
Turn Bay Length (ft)			
Base Capacity (vph)	1504	734	700
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.23	0.18	0.20
<b>Intersection Summary</b>			
m Volume for 95th percentile queue is metered by upstream signal.			

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HCM Signalized Intersection Capacity Analysis  
7: Alfred St & Prince St

Existing Sunday

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↓							↑		↓	
Traffic Volume (vph)	15	262	35	0	0	0	0	103	10	20	99	0
Future Volume (vph)	15	262	35	0	0	0	0	103	10	20	99	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	12	12	12	12	12	12
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frpb, ped/bikes		0.99						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.98						0.99			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3316						1623			1628	
Flt Permitted		1.00						1.00			0.95	
Satd. Flow (perm)		3316						1623			1558	
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	16	285	38	0	0	0	0	121	12	24	116	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	327	0	0	0	0	0	129	0	0	140	0
Confl. Peds. (#/hr)	29		54	54		29	81		40	40		81
Confl. Bikes (#/hr)			11			2						2
Parking (#/hr)		6						3				3
Turn Type		Perm	NA					NA		Perm	NA	
Protected Phases		1						2			2	
Permitted Phases												2
Actuated Green, G (s)		35.0						35.0			35.0	
Effective Green, g (s)		36.0						36.0			36.0	
Actuated g/C Ratio		0.45						0.45			0.45	
Clearance Time (s)		5.0						5.0			5.0	
Lane Grp Cap (vph)		1492						730			701	
v/s Ratio Prot								0.08				c0.09
v/s Ratio Perm		0.10										0.20
v/c Ratio		0.22						0.18				13.3
Uniform Delay, d1		13.4						13.1				0.80
Progression Factor		0.09						1.02				0.6
Incremental Delay, d2		0.3						0.5				11.2
Delay (s)		1.5						13.9				B
Level of Service		A						B				B
Approach Delay (s)		1.5			0.0			13.9				11.2
Approach LOS		A			A			B				B
<b>Intersection Summary</b>												
HCM 2000 Control Delay			6.4									A
HCM 2000 Volume to Capacity ratio			0.21									
Actuated Cycle Length (s)			80.0								8.0	
Intersection Capacity Utilization			32.2%								ICU Level of Service	A
Analysis Period (min)			10									

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Queues

8: Henry St & Duke St

Existing Sunday

Lane Group	EBT	EBR	WBL	WBT	SBT
Lane Group Flow (vph)	342	364	193	695	1895
v/c Ratio	0.77	0.52	0.63	0.51	0.84
Control Delay	41.8	29.6	17.3	12.8	5.0
Queue Delay	0.0	0.0	0.0	0.8	0.1
Total Delay	41.8	29.6	17.3	13.6	5.1
Queue Length 50th (ft)	160	79	43	82	24
Queue Length 95th (ft)	#285	120	m54	m106	31
Internal Link Dist (ft)	72			232	350
Turn Bay Length (ft)		125			
Base Capacity (vph)	442	702	308	1357	2264
Starvation Cap Reductn	0	0	0	349	17
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.77	0.52	0.63	0.69	0.84
<b>Intersection Summary</b>					
# 95th percentile volume exceeds capacity, queue may be longer.					
Queue shown is maximum after two cycles.					
m Volume for 95th percentile queue is metered by upstream signal.					

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HCM Signalized Intersection Capacity Analysis  
8: Henry St & Duke St

Existing Sunday

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↑	↑	↑					↑	↑	↑
Traffic Volume (vph)	0	315	335	170	612	0	0	0	0	2	1511	231
Future Volume (vph)	0	315	335	170	612	0	0	0	0	2	1511	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	10	12	12	12	12	12	11	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0					4.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00					0.91		
Fripb, ped/bikes	1.00	1.00	1.00	1.00	1.00					1.00		
Fripb, ped/bikes	1.00	1.00	1.00	1.00	1.00					1.00		
Frt	1.00	0.85	1.00	1.00	1.00					0.98		
Flt Protected	1.00	1.00	0.95	1.00	1.00					1.00		
Satd. Flow (prot)	1863	2956	1651	3290						4593		
Flt Permitted	1.00	1.00	0.21	1.00						1.00		
Satd. Flow (perm)	1863	2956	357	3290						4593		
Peak-hour factor, PHF	0.92	0.92	0.92	0.88	0.88	0.88	0.85	0.85	0.85	0.92	0.92	0.92
Adj. Flow (vph)	0	342	364	193	695	0	0	0	0	2	1642	251
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	26	0
Lane Group Flow (vph)	0	342	364	193	695	0	0	0	0	0	1869	0
Confl. Peds. (#/hr)	12	7	7		12	6				4	4	6
Confl. Bikes (#/hr)		1			2							
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)												1
Turn Type	NA	Prot	pm+pt	NA			Perm	NA				
Protected Phases	8	8	7	4								2
Permitted Phases			4							2		
Actuated Green, G (s)	17.7	17.7	31.7	31.7								37.9
Effective Green, g (s)	19.0	19.0	32.7	33.0								39.0
Actuated g/C Ratio	0.24	0.24	0.41	0.41								0.49
Clearance Time (s)	5.3	5.3	5.0	5.3								5.1
Lane Grp Cap (vph)	442	702	307	1357								2239
v/s Ratio Prot	c0.18	0.12	c0.08	0.21								
v/s Ratio Perm				0.18								0.41
v/c Ratio	0.77	0.52	0.63	0.51								0.83
Uniform Delay, d1	28.5	26.5	17.4	17.5								17.7
Progression Factor	1.00	1.00	0.83	0.69								0.15
Incremental Delay, d2	11.9	2.7	4.3	0.6								2.3
Delay (s)	40.3	29.2	18.7	12.7								5.0
Level of Service	D	C	B	B								A
Approach Delay (s)	34.6			14.0				0.0				5.0
Approach LOS	C			B				A				A
<b>Intersection Summary</b>												
HCM 2000 Control Delay	13.3			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.79											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	71.8%			ICU Level of Service			C					
Analysis Period (min)	10											
c Critical Lane Group												

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Queues  
9: Patrick St & Duke St

Existing Sunday

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	364	643	1973
v/c Ratio	0.40	0.90	0.86
Control Delay	17.7	26.4	19.0
Queue Delay	0.8	0.1	0.0
Total Delay	18.4	26.5	19.0
Queue Length 50th (ft)	75	112	213
Queue Length 95th (ft)	m134	#482	273
Internal Link Dist (ft)	232	245	181
Turn Bay Length (ft)			
Base Capacity (vph)	913	716	2300
Starvation Cap Reductn	284	2	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.58	0.90	0.86
<b>Intersection Summary</b>			
m 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
n Volume for 95th percentile queue is metered by upstream signal.			

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HCM Signalized Intersection Capacity Analysis  
9: Patrick St & Duke St

Existing Sunday

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑	↑	↑		
Traffic Volume (vph)	6	328	0	0	549	42	261	1489	65	0	0	0
Future Volume (vph)	6	328	0	0	549	42	261	1489	65	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0				4.0			4.0				
Lane Util. Factor	1.00				1.00			0.91				
Fripb, ped/bikes	1.00				1.00			1.00				
Fripb, ped/bikes	1.00				1.00			1.00				
Frt	1.00				0.99			0.99				
Flt Protected	1.00				1.00			0.99				
Satd. Flow (prot)	2109				1629			4961				
Flt Permitted	0.99				1.00			0.99				
Satd. Flow (perm)	2087				1629			4961				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.85	0.85	0.85	0.85
Adj. Flow (vph)	7	357	0	0	597	46	284	1618	71	0	0	0
RTOR Reduction (vph)	0	0	0	0	3	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	364	0	0	640	0	0	1968	0	0	0	0
Confl. Peds. (#/hr)	11		72	72		11	13		11	11		13
Confl. Bikes (#/hr)			2			6						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Parking (#/hr)						3						
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases	2				2							
Permitted Phases							1		1			
Actuated Green, G (s)	33.8				33.8			36.0				
Effective Green, g (s)	35.0				35.0			37.0				
Actuated g/C Ratio	0.44				0.44			0.46				
Clearance Time (s)	5.2				5.2			5.0				
Lane Grp Cap (vph)	913				712			2294				
v/s Ratio Prot					c0.39							
v/s Ratio Perm	0.17							0.40				
v/c Ratio	0.40				0.90			0.86				
Uniform Delay, d1	15.3				20.9			19.2				
Progression Factor	1.07				0.51			0.78				
Incremental Delay, d2	0.9				13.4			4.1				
Delay (s)	17.3				24.1			19.0				
Level of Service	B				C			B				
Approach Delay (s)	17.3				24.1			19.0				0.0
Approach LOS	B				C			B				A
<b>Intersection Summary</b>												
HCM 2000 Control Delay	19.9			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.88											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	75.9%			ICU Level of Service			D					
Analysis Period (min)	10											
c Critical Lane Group												

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Queues  
10: Alfred St & Duke St

Existing Sunday

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	433	545	117	172
v/c Ratio	0.50	0.57	0.26	0.36
Control Delay	8.4	9.8	19.3	8.6
Queue Delay	0.0	0.5	0.0	0.0
Total Delay	8.4	10.3	19.3	8.6
Queue Length 50th (ft)	53	90	38	11
Queue Length 95th (ft)	m49	117	73	36
Internal Link Dist (ft)	245	227	398	348
Turn Bay Length (ft)				
Base Capacity (vph)	863	949	455	477
Starvation Cap Reductn	2	121	0	0
Spillback Cap Reductn	0	72	0	3
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.50	0.66	0.26	0.36
<b>Intersection Summary</b>				
m Volume for 95th percentile queue is metered by upstream signal.				

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Wells + Associates

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HCM Signalized Intersection Capacity Analysis

10: Alfred St & Duke St

Existing Sunday

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔	↔		↔	↔		↔	↔		↔
Traffic Volume (vph)	37	326	36	9	425	29	33	57	9	13	48	86
Future Volume (vph)	37	326	36	9	425	29	33	57	9	13	48	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	14	12	12	11	12	12	11	12
Total Lost time (s)	4.0			4.0			4.0			4.0		
Lane Util. Factor	1.00			1.00			1.00			1.00		
Frlpb, ped/bikes	0.97			1.00			0.99			0.83		
Frlpb, ped/bikes	1.00			1.00			0.94			0.99		
Frt	0.99			0.99			0.99			0.92		
Flt Protected	1.00			1.00			0.98			1.00		
Satd. Flow (prot)	1680			1735			1449			1204		
Flt Permitted	0.93			0.99			0.87			0.98		
Satd. Flow (perm)	1562			1720			1288			1181		
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	40	354	39	11	500	34	39	67	11	15	56	101
RTOR Reduction (vph)	0	5	0	0	3	0	0	5	0	0	64	0
Lane Group Flow (vph)	0 429 0			0 542 0			0 112 0			0 108 0		
Confl. Peds. (#/hr)	27			133			27			130		
Confl. Bikes (#/hr)	0			2			5			1		
Bus Blockages (#/hr)	0			0			2			0		
Parking (#/hr)	3			1			1			3		
Turn Type	Perm	NA	NA	Perm	NA	NA	Perm	NA	NA	Perm	NA	NA
Protected Phases	2		2		2		1		1		1	
Permitted Phases	2		2		2		1		1		1	
Actuated Green, G (s)	43.0			43.0			27.0			27.0		
Effective Green, g (s)	44.0			44.0			28.0			28.0		
Actuated g/C Ratio	0.55			0.55			0.35			0.35		
Clearance Time (s)	5.0			5.0			5.0			5.0		
Lane Grp Cap (vph)	859			946			450			413		
v/s Ratio Prot	0.27			c0.31			0.09			c0.09		
v/c Ratio	0.50			0.57			0.25			0.26		
Uniform Delay, d1	11.2			11.8			18.5			18.6		
Progression Factor	0.59			0.63			1.00			0.71		
Incremental Delay, d2	1.9			2.2			1.3			1.5		
Delay (s)	8.4			9.6			19.8			14.7		
Level of Service	A			A			B			B		
Approach Delay (s)	8.4			9.6			19.8			14.7		
Approach LOS	A			A			B			B		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	10.9			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.45											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	62.8%			ICU Level of Service			B					
Analysis Period (min)	10											
c Critical Lane Group												

Queues

11: Columbus St & Duke St

Existing Sunday

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	410	463	218	161
v/c Ratio	0.51	0.56	0.44	0.27
Control Delay	16.5	16.1	21.2	10.1
Queue Delay	0.2	4.1	0.0	0.0
Total Delay	16.7	20.2	21.2	10.1
Queue Length 50th (ft)	106	145	77	19
Queue Length 95th (ft)	114	211	128	46
Internal Link Dist (ft)	227	231	391	358
Turn Bay Length (ft)				
Base Capacity (vph)	801	832	500	602
Starvation Cap Reductn	60	284	0	0
Spillback Cap Reductn	0	18	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.55	0.84	0.44	0.27

Intersection Summary

HCM Signalized Intersection Capacity Analysis

11: Columbus St & Duke St

Existing Sunday

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔	↔		↔	↔		↔	↔		↔
Traffic Volume (vph)	18	320	35	7	345	42	88	90	7	8	71	58
Future Volume (vph)	18	320	35	7	345	42	88	90	7	8	71	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	4.0			4.0			4.0			4.0		
Lane Util. Factor	1.00			1.00			1.00			1.00		
Frlpb, ped/bikes	0.99			0.99			1.00			0.96		
Frlpb, ped/bikes	1.00			1.00			0.98			1.00		
Frt	0.99			0.99			1.00			0.94		
Flt Protected	1.00			1.00			0.98			1.00		
Satd. Flow (prot)	1599			1623			1559			1490		
Flt Permitted	0.97			0.99			0.81			0.98		
Satd. Flow (perm)	1556			1613			1288			1470		
Peak-hour factor, PHF	0.91	0.91	0.91	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	20	352	38	8	406	49	104	106	8	9	84	68
RTOR Reduction (vph)	0	4	0	0	5	0	0	2	0	0	33	0
Lane Group Flow (vph)	0 406 0			0 458 0			0 216 0			0 128 0		
Confl. Peds. (#/hr)	38			68			38			33		
Confl. Bikes (#/hr)	3			1			7			1		
Parking (#/hr)	6			2			4			8		
Turn Type	Perm	NA	NA	Perm	NA	NA	Perm	NA	NA	Perm	NA	NA
Protected Phases	6		6		2		4		4		8	
Permitted Phases	6		6		2		4		4		8	
Actuated Green, G (s)	40.0			40.0			30.0			30.0		
Effective Green, g (s)	41.0			41.0			31.0			31.0		
Actuated g/C Ratio	0.51			0.51			0.39			0.39		
Clearance Time (s)	5.0			5.0			5.0			5.0		
Lane Grp Cap (vph)	797			826			499			569		
v/s Ratio Prot	0.26			c0.28			c0.17			0.09		
v/c Ratio	0.51			0.55			0.43			0.22		
Uniform Delay, d1	12.9			13.3			18.0			16.4		
Progression Factor	1.10			1.00			1.00			0.80		
Incremental Delay, d2	2.1			2.7			2.7			0.9		
Delay (s)	16.2			15.9			20.7			14.1		
Level of Service	B			B			C			B		
Approach Delay (s)	16.2			15.9			20.7			14.1		
Approach LOS	B			B			C			B		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	16.6			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.50											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	72.6%			ICU Level of Service			C					
Analysis Period (min)	10											
c Critical Lane Group												

Queues

12: Washington St & Duke St

Existing Sunday

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	344	357	912	985
v/c Ratio	0.63	0.53	1.00	0.90
Control Delay	32.8	29.1	57.7	23.1
Queue Delay	18.2	0.0	0.0	0.0
Total Delay	51.0	29.1	57.7	23.1
Queue Length 50th (ft)	212	210	394	118
Queue Length 95th (ft)	324	283	#499	#638
Internal Link Dist (ft)	231	575	344	349
Turn Bay Length (ft)				
Base Capacity (vph)	549	676	911	1089
Starvation Cap Reductn	201	0	0	1
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.99	0.53	1.00	0.91

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis  
12: Washington St & Duke St

Existing Sunday

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	162	59	45	228	31	60	701	14	41	724	141
Future Volume (vph)	96	162	59	45	228	31	60	701	14	41	724	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	11	9	9	9	11	9
Total Lost time (s)	4.0			4.0			4.0			4.0		
Lane Util. Factor	1.00			1.00			0.95			0.78		
Frbp, ped/bikes	0.99			1.00			1.00			0.98		
Frlb, ped/bikes	1.00			1.00			1.00			1.00		
Frt	0.97			0.99			1.00			0.98		
Flt Protected	0.99			0.99			1.00			1.00		
Satd. Flow (prot)	1619			1658			2978			2684		
Flt Permitted	0.74			0.90			0.62			0.82		
Satd. Flow (perm)	1218			1509			1850			2197		
Peak-hour factor, PHF	0.92	0.92	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.92	0.92	0.92
Adj. Flow (vph)	104	176	64	53	268	36	71	825	16	45	787	153
RTOR Reduction (vph)	0	6	0	0	3	0	0	1	0	0	9	0
Lane Group Flow (vph)	0	338	0	0	354	0	0	911	0	0	976	0
Confl. Peds. (#/hr)	18	15	15	18	32	22	22	32	22	22	32	32
Confl. Bikes (#/hr)	3			3			3			3		
Parking (#/hr)	3			3			3			3		
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	56.5			56.5			63.0			63.0		
Effective Green, g (s)	58.0			58.0			64.0			64.0		
Actuated g/C Ratio	0.45			0.45			0.49			0.49		
Clearance Time (s)	5.5			5.5			5.0			5.0		
Lane Grp Cap (vph)	543			673			910			1081		
vs Ratio Prot	c0.28			0.23			c0.49			0.44		
vs Ratio Perm	0.62			0.53			1.00			0.90		
v/c Ratio	27.6			26.0			33.0			30.2		
Uniform Delay, d1	1.00			1.00			1.00			0.44		
Progression Factor	5.2			2.9			24.5			8.9		
Incremental Delay, d2	32.8			28.9			57.5			22.2		
Delay (s)	C			C			E			C		
Level of Service	C			C			E			C		
Approach Delay (s)	32.8			28.9			57.5			22.2		
Approach LOS	C			C			E			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	36.9			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	0.82											
Actuated Cycle Length (s)	130.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	89.9%			ICU Level of Service			E					
Analysis Period (min)	10											
c Critical Lane Group												

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HCM Unsignalized Intersection Capacity Analysis  
13: Patrick St & Henry to Patrick Connector

Existing Sunday

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	121	0	0	1694	0	0
Future Volume (veh/h)	121	0	0	1694	0	0
Sign Control	Yield	Free	Free	Free	Free	Free
Grade	0%					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	132	0	0	1841	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked	0.87					
vC, conflicting volume	614	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	57	0	0			
IC, single (s)	6.8	6.9	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	84	100	100			
cM capacity (veh/h)	826	1084	1622			
<b>Direction, Lane #</b>						
Volume Total	EB 1	NB 1	NB 2	NB 3		
Volume Left	132	0	0	0		
Volume Right	0	0	0	0		
cSH	826	1700	1700	1700		
Volume to Capacity	0.16	0.36	0.36	0.36		
Queue Length 95th (ft)	14	0	0	0		
Control Delay (s)	10.2	0.0	0.0	0.0		
Lane LOS	B					
Approach Delay (s)	10.2	0.0				
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay	0.7					
Intersection Capacity Utilization	85.7%					
ICU Level of Service	E					
Analysis Period (min)	10					

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HCM Unsignalized Intersection Capacity Analysis  
14: Alfred St & Wolfe St

Existing Sunday

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop											
Traffic Volume (vph)	11	9	8	15	7	19	2	82	11	12	94	16
Future Volume (vph)	11	9	8	15	7	19	2	82	11	12	94	16
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	13	11	9	18	8	22	2	96	13	14	111	19
<b>Direction, Lane #</b>												
Volume Total (vph)	EB 1	WB 1	NB 1	SB 1								
Volume Left (vph)	13	18	2	14								
Volume Right (vph)	9	22	13	19								
Hd (s)	-0.05	-0.17	-0.03	-0.03								
Departure Headway (s)	4.5	4.3	4.2	4.2								
Degree Utilization, x	0.04	0.06	0.13	0.17								
Capacity (veh/h)	747	772	828	841								
Control Delay (s)	7.7	7.6	7.8	8.0								
Approach Delay (s)	7.7	7.6	7.8	8.0								
Approach LOS	A	A	A	A								
<b>Intersection Summary</b>												
Delay	7.9											
Level of Service	A											
Intersection Capacity Utilization	31.9%			ICU Level of Service			A					
Analysis Period (min)	10											

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HCM 2010 AWSC  
14: Alfred St & Wolfe St

Existing Sunday

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	11	9	8	0	15	7	19	0	2	82	11
Future Vol, veh/h	0	11	9	8	0	15	7	19	0	2	82	11
Peak Hour Factor	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	13	11	9	0	18	8	22	0	2	96	13
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
<b>Approach</b>												
Opposing Approach	WB			EB			NB			SB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB					
Conflicting Lanes Left	1			1			1					
Conflicting Approach Right	NB			SB			WB					
Conflicting Lanes Right	1			1			1					
HCM Control Delay	7.6			7.6			7.8					
HCM LOS	A			A			A					
<b>Lane</b>												
Vol Left, %	2%			39%			37%			10%		
Vol Thru, %	86%			32%			17%			77%		
Vol Right, %	12%			29%			46%			13%		
Sign Control	Stop			Stop			Stop			Stop		
Traffic Vol by Lane	95			28			41			122		
LT Vol	2			11			15			12		
Through Vol	82			9			7			94		
RT Vol	11			8			19			16		
Lane Flow Rate	112			33			48			144		
Geometry Grp	1			1			1			1		
Degree of Util (X)	0.128			0.041			0.058			0.164		
Departure Headway (Hd)	4.12			4.454			4.325			4.101		
Convergence, Y/N	Yes			Yes			Yes			Yes		
Cap	858			809			833			864		
Service Time	2.205			2.455			2.326			2.18		
HCM Lane V/C Ratio	0.131			0.041			0.058			0.167		
HCM Control Delay	7.8			7.6			7.6			8		
HCM Lane LOS	A			A			A			A		
HCM 95th-ile Q	0.4			0.1			0.2			0.6		

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Intersection				
Intersection Delay s/veh				
Intersection LOS				
Movement	SBU	SBL	SBT	SBR
Traffic Vol. veh/h	0	12	94	16
Future Vol. veh/h	0	12	94	16
Peak Hour Factor	0.92	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	14	111	19
Number of Lanes	0	0	1	0
Approach				
Approach				
Opposing Approach				
Opposing Lanes				
Conflicting Approach Left				
Conflicting Lanes Left				
Conflicting Approach Right				
Conflicting Lanes Right				
HCM Control Delay				
HCM LOS				
Lane				

Lane Group	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	327	387	1736	2369
v/c Ratio	0.74	0.46	0.71	0.77
Control Delay	31.3	20.5	12.7	8.1
Queue Delay	0.2	0.0	0.0	1.5
Total Delay	31.5	20.5	12.7	7.7
Queue Length 50th (ft)	127	70	198	26
Queue Length 95th (ft)	209	99	334	520
Internal Link Dist (ft)		273	346	346
Turn Bay Length (ft)				
Base Capacity (vph)	558	1057	2444	3083
Starvation Cap Reductn	21	0	8	499
Spillback Cap Reductn	0	0	0	126
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.61	0.37	0.71	0.92
Intersection Summary				

HCM Signalized Intersection Capacity Analysis  
15: Patrick St & Gibbon St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↓	↑			↑	↑		↑	↑
Traffic Volume (vph)	0	0	0	603	23	31	33	1564	0	0	2175	5
Future Volume (vph)	0	0	0	603	23	31	33	1564	0	0	2175	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	12	12	12	12	12	12
Grade (%)			0%			2%			0%			0%
Total Lost time (s)			4.0		4.0			4.0				4.0
Lane Util. Factor			0.91		0.91			0.91				0.91
Frtb, ped/bikes			1.00		1.00			1.00				1.00
Ftjb, ped/bikes			1.00		1.00			1.00				1.00
Frt			1.00		0.99			1.00				1.00
Flt Protected			0.95		0.96			1.00				1.00
Satd. Flow (prot)			1541		2894			5031				5034
Flt Permitted			0.95		0.96			0.79				1.00
Satd. Flow (perm)			1541		2894			3992				5034
Peak-hour factor, PHF	0.85	0.85	0.85	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	655	25	34	36	1700	0	0	2364	5
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	327	378	0	0	1736	0	0	2369	0
Confl. Peds. (#/hr)	3	0	2	2		3						
Confl. Bikes (#/hr)								2				
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)					1							
Turn Type				Split	NA		Perm	NA			NA	
Protected Phases				2	2			1				1
Permitted Phases							1					
Actuated Green, G (s)				21.0	21.0			47.5				47.5
Effective Green, g (s)				23.0	23.0			49.0				49.0
Actuated g/C Ratio				0.29	0.29			0.61				0.61
Clearance Time (s)				6.0	6.0			5.5				5.5
Vehicle Extension (s)				2.0	2.0			2.0				2.0
Lane Grp Cap (vph)				443	832			2445				3083
v/s Ratio Prot				c0.21	0.13							c0.47
v/s Ratio Perm								0.43				
v/c Ratio				0.74	0.45			0.71				0.77
Uniform Delay, d1				25.8	23.4			10.6				11.3
Progression Factor				0.87	0.87			0.95				0.33
Incremental Delay, d2				4.9	0.1			1.7				1.5
Delay (s)				27.5	20.4			11.8				5.3
Level of Service				C	C			B				A
Approach Delay (s)		0.0			23.7			11.8				5.3
Approach LOS		A			C			B				A
Intersection Summary												
HCM 2000 Control Delay				10.4				HCM 2000 Level of Service				B
HCM 2000 Volume to Capacity ratio				0.76								
Actuated Cycle Length (s)				80.0				Sum of lost time (s)				8.0
Intersection Capacity Utilization				83.7%				ICU Level of Service				E

HCM Signalized Intersection Capacity Analysis  
15: Patrick St & Gibbon St

Analysis Period (min)	10
Critical Lane Group	

Queues  
16: Alfred St & Gibbon St

Existing Sunday

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	666	201	176
v/c Ratio	0.48	0.41	0.25
Control Delay	9.1	13.1	4.4
Queue Delay	0.0	0.0	0.0
Total Delay	9.1	13.1	4.4
Queue Length 50th (ft)	49	33	5
Queue Length 95th (ft)	81	67	29
Internal Link Dist (ft)	218	136	305
Turn Bay Length (ft)			
Base Capacity (vph)	1389	486	692
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	14	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.48	0.41	0.25

Intersection Summary

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HCM Signalized Intersection Capacity Analysis  
16: Alfred St & Gibbon St

Existing Sunday

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	5	586	8	95	76	0	0	29	121
Future Volume (vph)	0	0	0	5	586	8	95	76	0	0	29	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	12	12	12	12	12	12	13
Total Lost time (s)					4.0			4.0				4.0
Lane Util. Factor					0.95			1.00				1.00
Flt					1.00			1.00				0.89
Flt Protected					1.00			0.97				1.00
Satd. Flow (prot)					3080			1812				1715
Flt Permitted					1.00			0.75				1.00
Satd. Flow (perm)					3080			1390				1715
Peak-hour factor, PHF	0.85	0.85	0.85	0.90	0.90	0.90	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	0	0	0	6	651	9	112	89	0	0	34	142
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	92	0
Lane Group Flow (vph)	0	0	0	0	664	0	0	201	0	0	84	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)					1							
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases					2			1				1
Permitted Phases												
Actuated Green, G (s)					17.0			12.7				12.7
Effective Green, g (s)					18.0			14.0				14.0
Actuated g/C Ratio					0.45			0.35				0.35
Clearance Time (s)					5.0			5.3				5.3
Lane Grp Cap (vph)					1386			486				600
v/s Ratio Prot												0.05
v/s Ratio Perm					0.22			c0.14				
v/c Ratio					0.48			0.41				0.14
Uniform Delay, d1					7.7			9.9				8.9
Progression Factor					1.00			1.00				1.00
Incremental Delay, d2					1.2			2.6				0.5
Delay (s)					8.9			12.5				9.4
Level of Service					A			B				A
Approach Delay (s)		0.0			8.9			12.5				9.4
Approach LOS		A			A			B				A

Intersection Summary

HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	10		

c Critical Lane Group

C-114

Queues  
17: Patrick St & Franklin St

Existing Sunday

Lane Group	EBL	EBT	NBT	NBR	SBT
Lane Group Flow (vph)	8	97	1698	544	2660
v/c Ratio	0.05	0.30	0.40	0.38	0.66
Control Delay	60.4	67.3	3.5	1.1	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.3
Total Delay	60.4	67.3	3.6	1.1	4.3
Queue Length 50th (ft)	8	51	92	0	65
Queue Length 95th (ft)	22	68	229	20	612
Internal Link Dist (ft)		261	297		346
Turn Bay Length (ft)					
Base Capacity (vph)	555	1065	4290	1416	4025
Starvation Cap Reductn	0	0	0	0	637
Spillback Cap Reductn	0	0	108	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.01	0.09	0.41	0.38	0.79

Intersection Summary

C-115

HCM Signalized Intersection Capacity Analysis  
17: Patrick St & Franklin St

Existing Sunday

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	47	36	0	0	0	0	1460	468	3	2444	0
Future Volume (vph)	7	47	36	0	0	0	0	1460	468	3	2444	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	11	11	11	12	12	12	12	12	12
Grade (%)		2%			0%			0%				0%
Total Lost time (s)	4.0	4.0						4.0	4.0			4.0
Lane Util. Factor	1.00	0.95						0.91	1.00			0.91
Fltp, ped/bikes	1.00	0.99						1.00	1.00			1.00
Fltp, ped/bikes	1.00	1.00						1.00	1.00			1.00
Flt	1.00	0.94						1.00	0.85			1.00
Flt Protected	0.95	1.00						1.00	1.00			1.00
Satd. Flow (prot)	1744	3334						5036	1568			5036
Flt Permitted	0.95	1.00						1.00	1.00			0.94
Satd. Flow (perm)	1744	3334						5036	1568			4723
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	8	55	42	0	0	0	0	1698	544	3	2657	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	81	0	0	0
Lane Group Flow (vph)	8	97	0	0	0	0	0	1698	463	0	2660	0
Confl. Peds. (#/hr)	3	E						A	A			A
Confl. Bikes (#/hr)			4				1					
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	3	0	0	0	0	0	0	0	0	0	0
Turn Type	Perm	NA						NA	Perm	Perm	NA	NA
Protected Phases		4										2
Permitted Phases									2			2
Actuated Green, G (s)	13.7	13.7						134.3	134.3			134.3
Effective Green, g (s)	15.7	15.7						136.3	136.3			136.3
Actuated g/C Ratio	0.10	0.10						0.85	0.85			0.85
Clearance Time (s)	6.0	6.0						6.0	6.0			6.0
Vehicle Extension (s)	3.0	3.0						0.2	0.2			0.2
Lane Grp Cap (vph)	171	327						4290	1335			4023
v/s Ratio Prot		c0.03							0.34			
v/s Ratio Perm	0.00								0.30			c0.56
v/c Ratio	0.05	0.30						0.40	0.35			0.66
Uniform Delay, d1	65.4	67.0						2.6	2.5			4.0
Progression Factor	1.00	1.00						1.00	1.00			0.66
Incremental Delay, d2	0.1	0.5						0.3	0.7			0.6
Delay (s)	65.5	67.5						2.9	3.2			3.3
Level of Service	E	E						A	A			A
Approach Delay (s)		67.4				0.0		3.0				3.3
Approach LOS		E				A		A				A

Intersection Summary

HCM 2000 Control Delay	4.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	92.9%	ICU Level of Service	F
Analysis Period (min)	10		

C-116

HCM Signalized Intersection Capacity Analysis  
17: Patrick St & Franklin St

Existing Sunday

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	175	0	0	0	0	0	0	175	1640	0	0	0
Future Volume (Veh/h)	175	0	0	0	0	0	0	175	1640	0	0	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	190	0	0	0	0	0	0	190	1783	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)							594			261		
pX, platoon unblocked	0.88	0.88		0.88	0.88	0.88				0.88		
vC, conflicting volume	974	2163	0	2163	2163	594	0			1783		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCU, unblocked vol	507	1853	0	1853	1853	77	0			1423		
IC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
IC, 2 stage (s)												
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	47	100	100	100	100	100	100	88		100		
cM capacity (veh/h)	360	57	1084	37	57	855	1622			419		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>							
Volume Total	190	0	636	892	446							
Volume Left	190	0	190	0	0							
Volume Right	0	0	0	0	0							
ESH	360	1700	1622	1700	1700							
Volume to Capacity	0.53	0.00	0.12	0.52	0.26							
Queue Length 95th (ft)	70	0	10	0	0							
Control Delay (s)	25.4	0.0	3.1	0.0	0.0							
Lane LOS	D	A	A									
Approach Delay (s)	25.4	0.0	1.0									
Approach LOS	D	A										
<b>Intersection Summary</b>												
Average Delay						3.1						
Intersection Capacity Utilization						51.6%	ICU Level of Service			A		
Analysis Period (min)	10											

C-117

HCM Unsignalized Intersection Capacity Analysis  
18: Patrick St & Existing Garage/Proposed Site Garage

Existing Sunday

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	175	0	0	0	0	0	0	175	1640	0	0	0
Future Volume (Veh/h)	175	0	0	0	0	0	0	175	1640	0	0	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	190	0	0	0	0	0	0	190	1783	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)							594			261		
pX, platoon unblocked	0.88	0.88		0.88	0.88	0.88				0.88		
vC, conflicting volume	974	2163	0	2163	2163	594	0			1783		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCU, unblocked vol	507	1853	0	1853	1853	77	0			1423		
IC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
IC, 2 stage (s)												
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	47	100	100	100	100	100	100	88		100		
cM capacity (veh/h)	360	57	1084	37	57	855	1622			419		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>							
Volume Total	190	0	636	892	446							
Volume Left	190	0	190	0	0							
Volume Right	0	0	0	0	0							
ESH	360	1700	1622	1700	1700							
Volume to Capacity	0.53	0.00	0.12	0.52	0.26							
Queue Length 95th (ft)	70	0	10	0	0							
Control Delay (s)	25.4	0.0	3.1	0.0	0.0							
Lane LOS	D	A	A									
Approach Delay (s)	25.4	0.0	1.0									
Approach LOS	D	A										
<b>Intersection Summary</b>												
Average Delay						3.1						
Intersection Capacity Utilization						51.6%	ICU Level of Service			A		
Analysis Period (min)	10											

C-118

HCM Unsignalized Intersection Capacity Analysis  
20: Columbus St & Wolfe St.

Existing Sunday

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	29	21	29	20	26	47	10	163	8	19	93	25
Future Volume (vph)	29	21	29	20	26	47	10	163	8	19	93	25
Peak Hour Factor	0.85	0.85	0.85	0.86	0.86	0.86	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	34	25	34	23	30	55	12	192	9	22	109	29
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total (vph)	93	108	213	160								
Volume Left (vph)	34	23	12	22								
Volume Right (vph)	34	55	9	29								
Hadj (s)	-0.11	-0.23	0.02	-0.05								
Departure Headway (s)	4.8	4.7	4.6	4.6								
Degree Utilization, x	0.12	0.14	0.27	0.20								
Capacity (veh/h)	681	702	743	734								
Control Delay (s)	8.5	8.4	9.3	8.8								
Approach Delay (s)	8.5	8.4	9.3	8.8								
Approach LOS	A	A	A	A								
<b>Intersection Summary</b>												
Delay						8.9						
Level of Service	A											
Intersection Capacity Utilization						32.2%	ICU Level of Service			A		
Analysis Period (min)	10											

C-119

HCM 2010 AWSC  
20: Columbus St & Wolfe St.

Existing Sunday

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	29	21	29	0	20	26	47	0	10	163	8
Future Vol, veh/h	0	29	21	29	0	20	26	47	0	10	163	8
Peak Hour Factor	0.92	0.85	0.85	0.85	0.92	0.86	0.86	0.86	0.92	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	34	25	34	0	23	30	55	0	12	192	9
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
<b>Approach</b>	<b>EB</b>			<b>WB</b>				<b>NB</b>				
Opposing Approach	WB			EB				SB				
Opposing Lanes	1			1				1				
Conflicting Approach Left	SB			NB				EB				
Conflicting Lanes Left	1			1				1				
Conflicting Approach Right	NB			SB				WB				
Conflicting Lanes Right	1			1				1				
HCM Control Delay	8.5			8.5				9.3				
HCM LOS	A			A				A				
<b>Lane</b>	<b>NBLn1</b>	<b>EBLn1</b>	<b>WBLn1</b>	<b>SBLn1</b>								
Vol Left, %	6%	37%	22%	14%								
Vol Thru, %	90%	27%	28%	68%								
Vol Right, %	4%	37%	51%	18%								
Sign Control	Stop			Stop				Stop				
Traffic Vol by Lane	181	79	93	137								
LT Vol	10	29	20	19								
Through Vol	163	21	26	93								
RT Vol	8	29	47	25								
Lane Flow Rate	213	93	108	161								
Geometry Grp	1											
Degree of Util (X)	0.271	0.124	0.14	0.205								
Departure Headway (Hd)	4.583	4.787	4.657	4.578								
Convergence, Y/N	Yes											
Cap	781	746	768	782								
Service Time	2.622	2.834	2.702	2.619								
HCM Lane V/C Ratio	0.273	0.125	0.141	0.206								
HCM Control Delay	9.3	8.5	8.5	8.8								
HCM Lane LOS	A											
HCM 95th-ile Q	1.1	0.4	0.5	0.8								

C-120

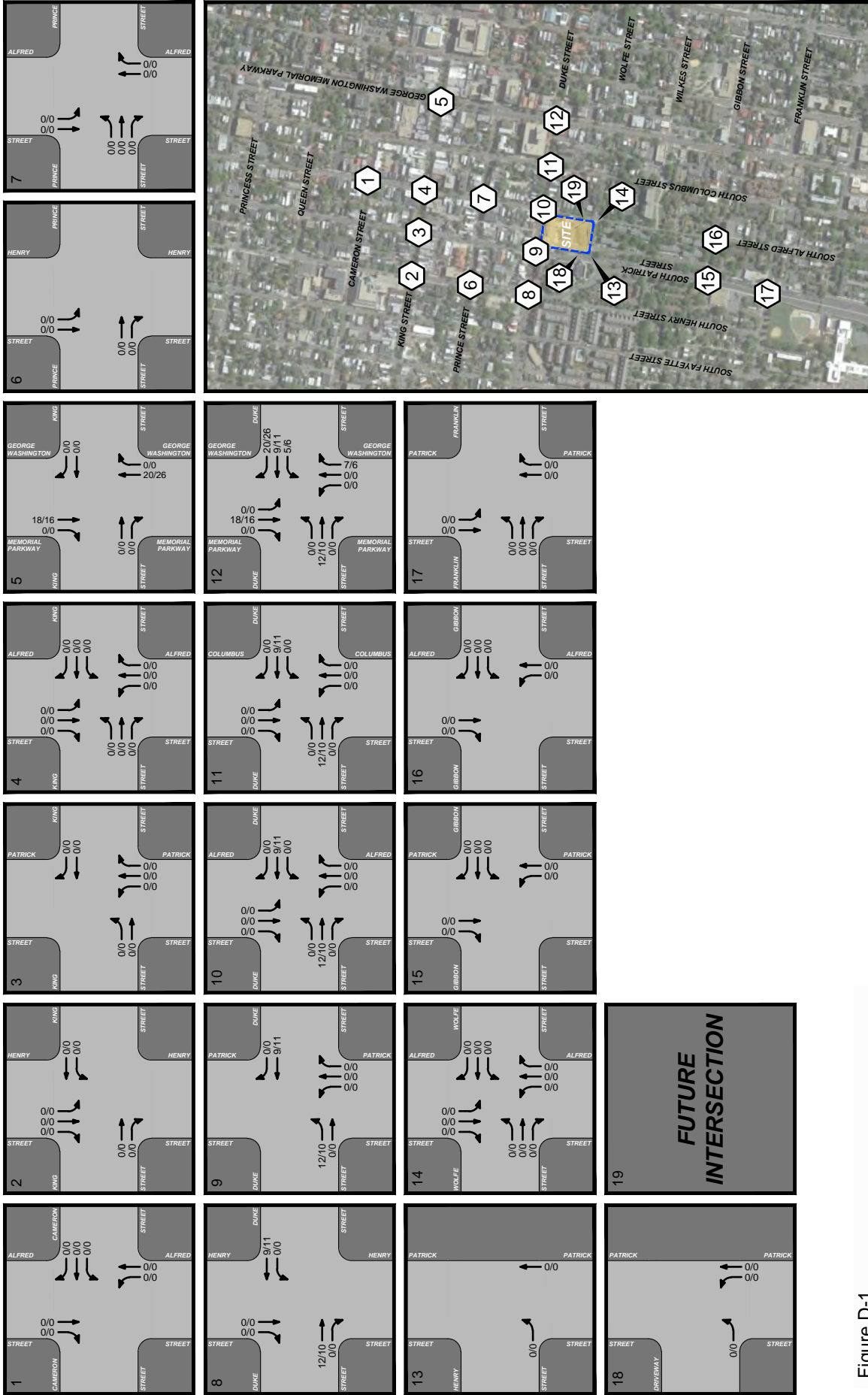


Intersection				
Intersection Delay, s/veh				
Intersection LOS				
Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	19	93	25
Future Vol, veh/h	0	19	93	25
Peak Hour Factor	0.92	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	22	109	29
Number of Lanes	0	0	1	0
Approach		SB		
Opposing Approach		NB		
Opposing Lanes		1		
Conflicting Approach Left		WB		
Conflicting Lanes Left		1		
Conflicting Approach Right		EB		
Conflicting Lanes Right		1		
HCM Control Delay		8.8		
HCM LOS		A		
Lane				

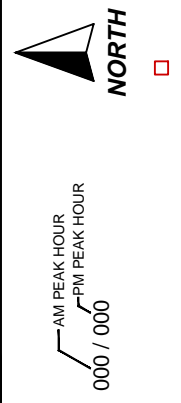


**APPENDIX D**  
**INDIVIDUAL PIPELINE FORECASTS**

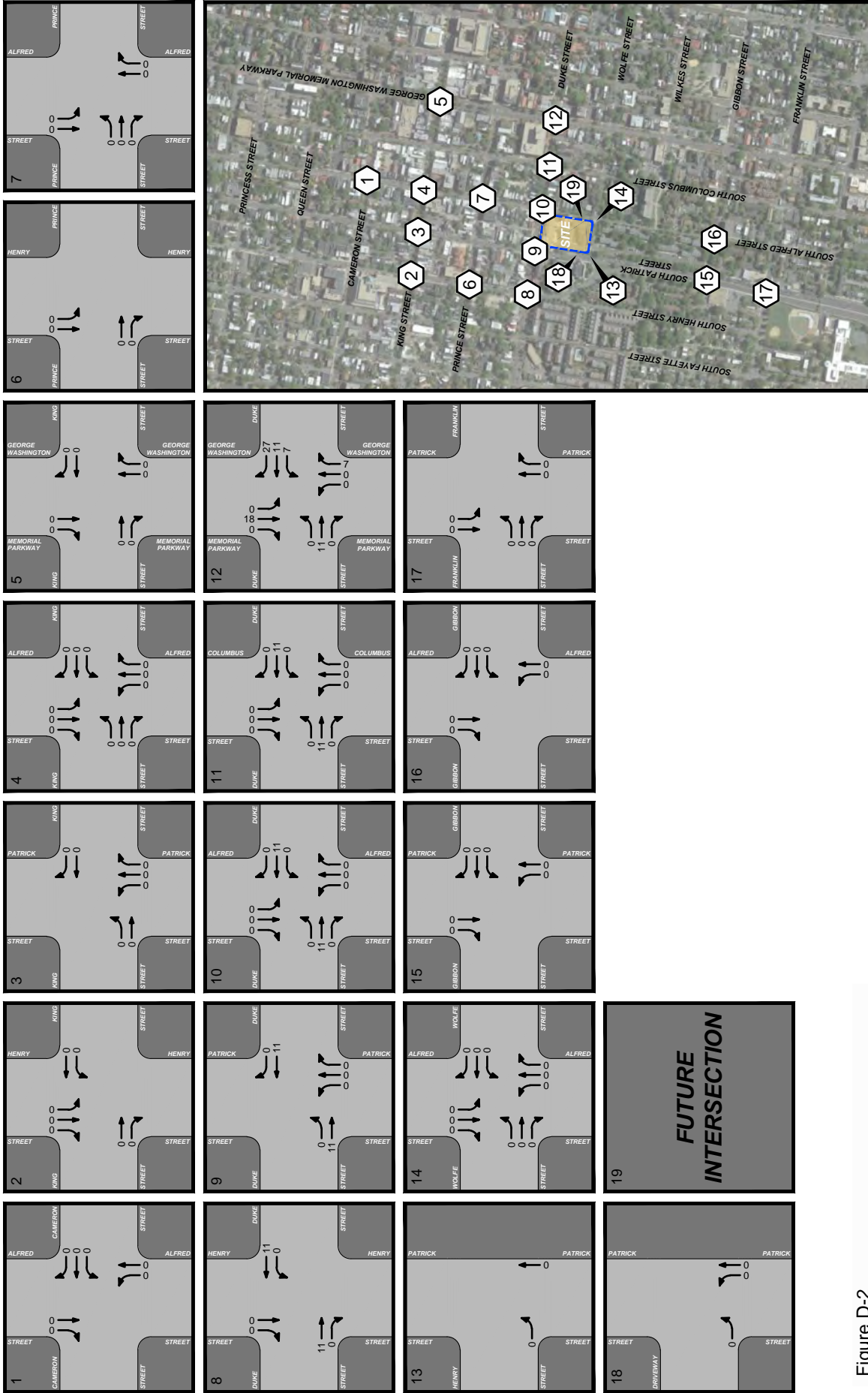




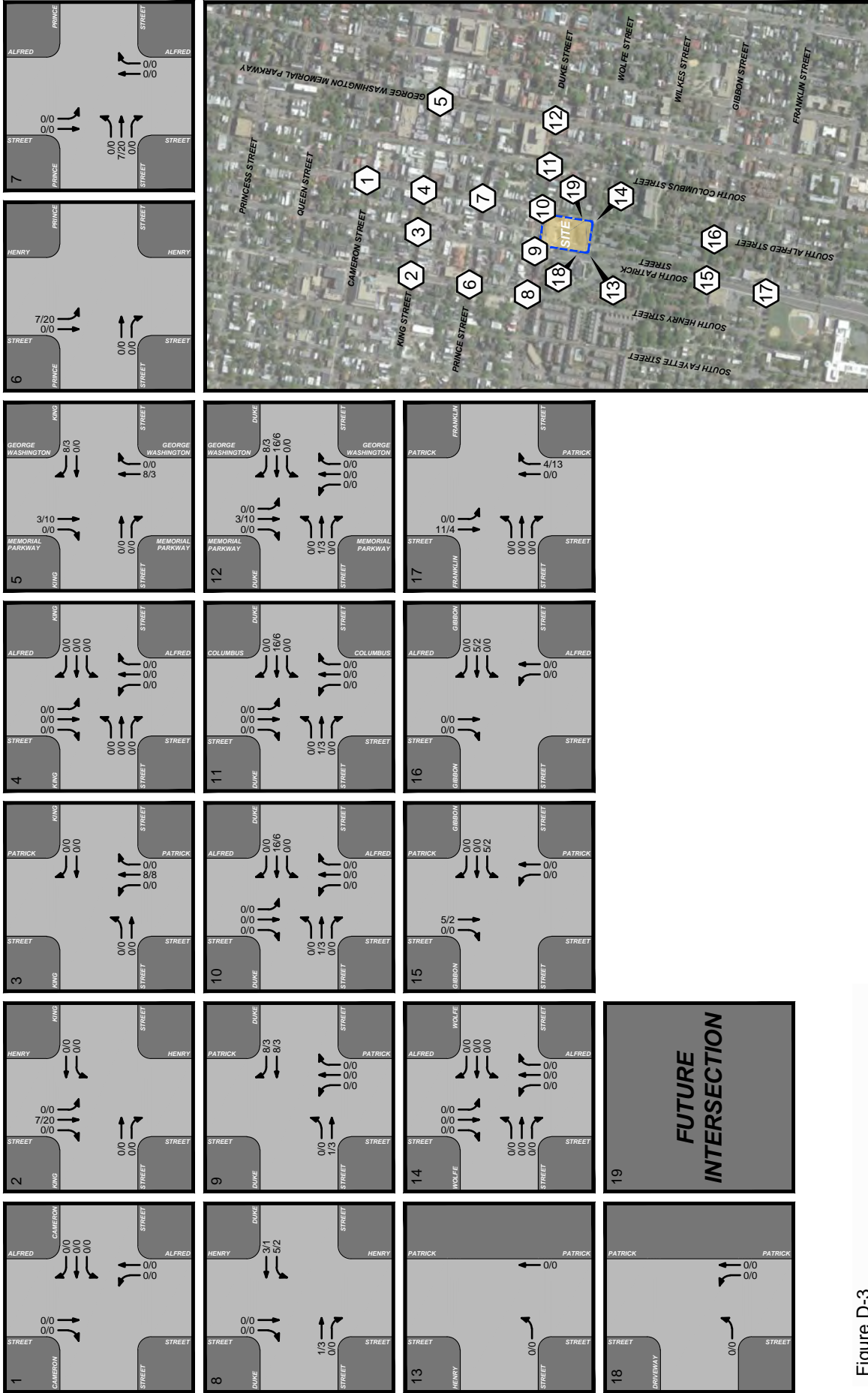
**Figure D-1**  
**Weekday Pipeline Development**  
**220 South Union**  
 Alfred Baptist Church  
 City of Alexandria, Virginia



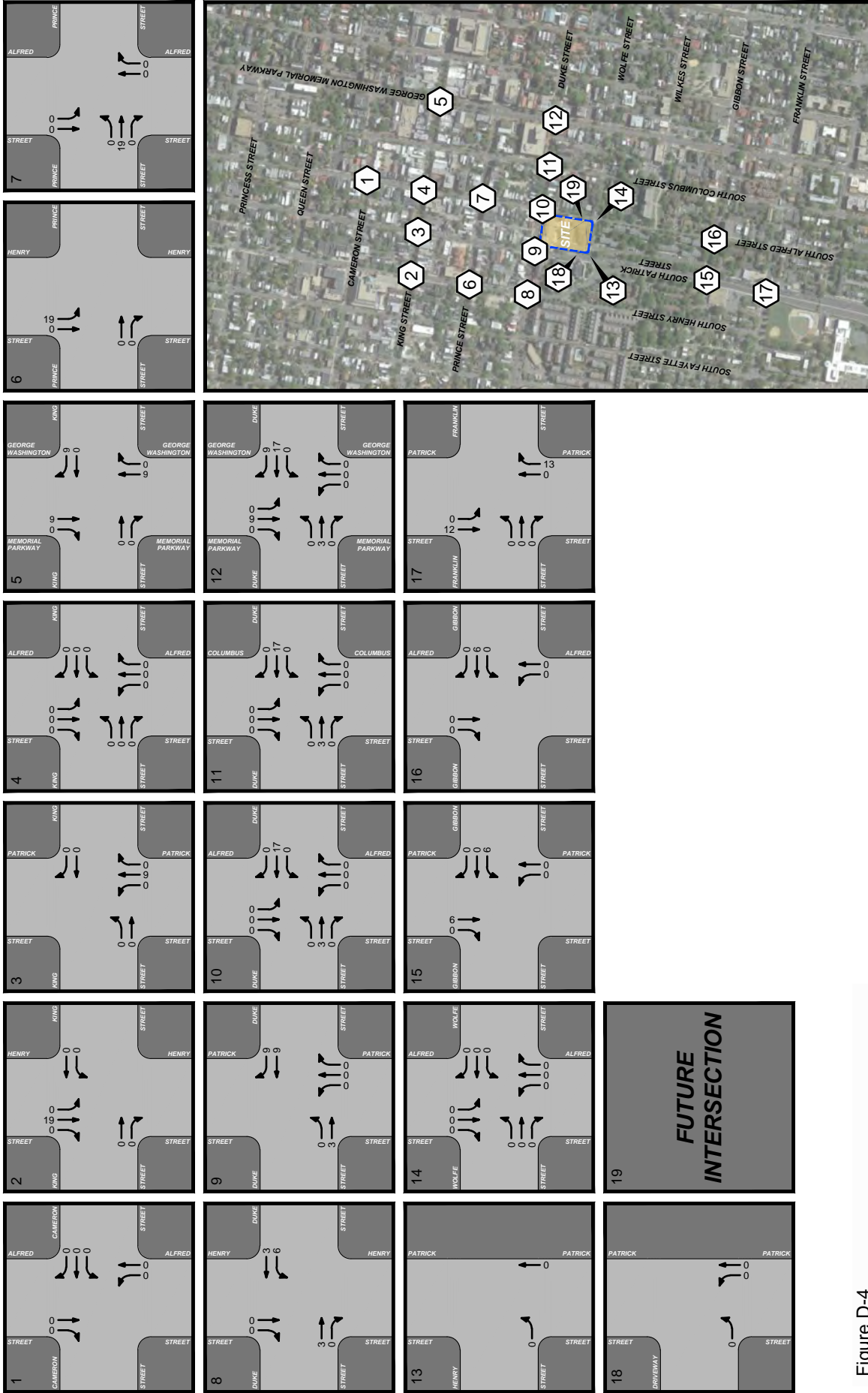




**Figure D-2**  
**Sunday Pipeline Development**  
**220 South Union**  
 Alfred Baptist Church  
 City of Alexandria, Virginia



**Figure D-3**  
**Weekday Pipeline Development**  
**Robinson Terminal**  
 Alfred Baptist Church  
 City of Alexandria, Virginia



**Figure D-4**  
**Sunday Pipeline Development**  
**Robinson Terminal**  
 Alfred Baptist Church  
 City of Alexandria, Virginia

**APPENDIX E**  
**BACKGROUND LEVEL OF SERVICE AND QUEUE**  
**SYNCHRO WORKSHEETS**





Queues

1: Alfred St & Cameron St

Total Future AM w/o Development 2022

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	303	503	87
v/c Ratio	0.23	0.79	0.13
Control Delay	14.4	7.4	8.4
Queue Delay	0.0	0.4	0.0
Total Delay	14.4	7.8	8.4
Queue Length 50th (ft)	47	19	13
Queue Length 95th (ft)	73	m20	38
Internal Link Dist (ft)	239	341	294
Turn Bay Length (ft)			
Base Capacity (vph)	1338	636	660
Starvation Cap Reductn	0	14	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.23	0.81	0.13

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

1: Alfred St & Cameron St

Total Future AM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←	←	←	←	←	←	←	←
Traffic Volume (vph)	0	0	0	10	262	6	82	381	0	0	46	34
Future Volume (vph)	0	0	0	10	262	6	82	381	0	0	46	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	12	12	12	12	12	12	12
Total Lost time (s)					4.0			4.0				4.0
Lane Util. Factor					0.95			1.00				1.00
Frpb, ped/bikes					1.00			1.00				0.99
Flpb, ped/bikes					1.00			1.00				1.00
Frt					1.00			1.00				0.94
Flt Protected					1.00			0.99				1.00
Satd. Flow (prot)					3054			1468				1385
Flt Permitted					1.00			0.93				1.00
Satd. Flow (perm)					3054			1377				1385
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	11	285	7	89	414	0	0	50	37
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	20	0
Lane Group Flow (vph)	0	0	0	0	301	0	0	503	0	0	67	0
Confl. Peds. (#/hr)	34		25	25		34	17		32	32		17
Confl. Bikes (#/hr)			4					1				
Parking (#/hr)					6			3				3
Turn Type					Perm	NA		Perm	NA			NA
Protected Phases					2			1				1
Permitted Phases					2			1				1
Actuated Green, G (s)					34.0			36.0				36.0
Effective Green, g (s)					35.0			37.0				37.0
Actuated g/C Ratio					0.44			0.46				0.46
Clearance Time (s)					5.0			5.0				5.0
Lane Grp Cap (vph)					1336			636				640
v/s Ratio Prot												0.05
v/s Ratio Perm					0.10			c0.37				
v/c Ratio					0.23			0.79				0.10
Uniform Delay, d1					14.0			18.2				12.1
Progression Factor					1.00			1.02				1.00
Incremental Delay, d2					0.4			3.7				0.3
Delay (s)					14.4			6.0				12.5
Level of Service					B			A				B
Approach Delay (s)	0.0				14.4			6.0				12.5
Approach LOS	A				B			A				B

Intersection Summary

HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	10		
c Critical Lane Group			

Queues

2: Henry St & King St

Total Future AM w/o Development 2022

Lane Group	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	349	47	230	1402
v/c Ratio	0.64	0.12	0.28	1.05
Control Delay	25.8	8.4	11.2	55.6
Queue Delay	0.0	0.0	1.5	0.0
Total Delay	25.8	8.4	12.7	55.6
Queue Length 50th (ft)	134	16	89	-325
Queue Length 95th (ft)	228	m16	m108	#420
Internal Link Dist (ft)	77		222	128
Turn Bay Length (ft)		100		
Base Capacity (vph)	542	386	830	1521
Starvation Cap Reductn	0	0	429	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.64	0.12	0.57	1.05

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.  
 - Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 - Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: Henry St & King St

Total Future AM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		←	←	←	←	←	←	←	←	←	←	←
Traffic Volume (vph)	0	276	45	43	212	0	0	0	0	0	40	1399
Future Volume (vph)	0	276	45	43	212	0	0	0	0	0	40	1399
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	10	10	12	12	12	12	12	12	11
Total Lost time (s)		4.0		4.0	4.0							4.0
Lane Util. Factor		1.00		1.00	1.00							0.91
Frpb, ped/bikes		0.98		1.00	1.00							1.00
Flpb, ped/bikes		1.00		0.98	1.00							1.00
Frt		0.98		1.00	1.00							1.00
Flt Protected		1.00		0.95	1.00							1.00
Satd. Flow (prot)		1380		1461	1546							4189
Flt Permitted		1.00		0.37	1.00							1.00
Satd. Flow (perm)		1380		563	1546							4189
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	300	49	47	230	0	0	0	0	0	43	1521
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	0	3
Lane Group Flow (vph)	0	342	0	47	230	0	0	0	0	0	0	1599
Confl. Peds. (#/hr)	91		96	96		91	14		4	4		14
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)		3										3
Turn Type		NA		pm-pt	NA						Split	NA
Protected Phases		6		5	2.6						4	4
Permitted Phases		2.6		2.6								
Actuated Green, G (s)		30.0		42.0	42.0							28.0
Effective Green, g (s)		31.0		43.0	43.0							29.0
Actuated g/C Ratio		0.39		0.54	0.54							0.36
Clearance Time (s)		5.0		5.0								5.0
Lane Grp Cap (vph)		534		392	830							1518
v/s Ratio Prot		c0.25		0.01	c0.15							c0.38
v/s Ratio Perm				0.05								
v/c Ratio		0.64		0.12	0.28							1.05
Uniform Delay, d1		20.0		9.8	10.1							25.5
Progression Factor		1.00		0.89	1.04							1.00
Incremental Delay, d2		5.7		0.4	0.5							28.9
Delay (s)		25.6		9.1	11.0							54.4
Level of Service		C		A	B							D
Approach Delay (s)	25.6				10.7			0.0				54.4
Approach LOS	C				B			A				D

Intersection Summary

HCM 2000 Control Delay	44.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	10		
c Critical Lane Group			

Queues

3: Patrick St & King St

Total Future AM w/o Development 2022

Lane Group	EBL	EBT	WBT	NBT
Lane Group Flow (vph)	120	192	215	2436
v/c Ratio	0.38	0.33	0.60	1.32
Control Delay	19.9	19.3	20.8	114.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.9	19.3	20.8	114.1
Queue Length 50th (ft)	56	93	77	-1395
Queue Length 95th (ft)	m85	m142	m58	m822
Internal Link Dist (ft)		222	239	344
Turn Bay Length (ft)	100			
Base Capacity (vph)	312	589	357	1839
Starvation Cap Reductn	0	0	0	1
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.38	0.33	0.60	1.33

**Intersection Summary**

- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

3: Patrick St & King St

Total Future AM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	110	177	0	0	161	37	71	2135	35	0	0	0
Future Volume (vph)	110	177	0	0	161	37	71	2135	35	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0			4.0				
Lane Util. Factor	1.00	1.00			1.00			0.78				
Frpb, ped/bikes	1.00	1.00			0.98			1.00				
Flpb, ped/bikes	0.98	1.00			1.00			1.00				
Frt	1.00	1.00			0.97			1.00				
Flt Protected	0.95	1.00			1.00			1.00				
Satd. Flow (prot)	1452	1521			1389			3587				
Flt Permitted	0.49	1.00			1.00			1.00				
Satd. Flow (perm)	750	1521			1389			3587				
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)	120	192	0	0	175	40	77	2321	38	0	0	0
RTOR Reduction (vph)	0	0	0	0	11	0	0	1	0	0	0	0
Lane Group Flow (vph)	120	192	0	0	205	0	0	2435	0	0	0	0
Confl. Peds. (#/hr)	63		83	83			63	15		24	24	15
Confl. Bikes (#/hr)			6							2		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	7	0	0	6	0	0	0	0	0	0	0
Parking (#/hr)					3			4				
Turn Type	pm+pt	NA			NA		Split	NA				
Protected Phases	2	2,3			3		1	1				
Permitted Phases	2,3				3							
Actuated Green, G (s)	24.4	29.4			18.4			40.0				
Effective Green, g (s)	26.4	30.4			20.0			41.0				
Actuated g/C Ratio	0.33	0.38			0.25			0.51				
Clearance Time (s)	5.0				5.6			5.0				
Lane Grp Cap (vph)	308	577			347			1838				
v/s Ratio Prot	0.03	c0.13			c0.15			c0.68				
v/c Ratio Perm	0.09											
v/c Ratio	0.39	0.33			0.59			1.32				
Uniform Delay, d1	19.7	17.6			26.4			19.5				
Progression Factor	1.01	1.03			0.56			0.47				
Incremental Delay, d2	2.6	1.1			6.4			97.7				
Delay (s)	22.6	19.3			21.1			107.0				
Level of Service	C	B			C			F				
Approach Delay (s)	20.5				21.1			107.0				0.0
Approach LOS	C				C			F				A

**Intersection Summary**

HCM 2000 Control Delay	91.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.6
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	10		
c Critical Lane Group			

Queues

4: Alfred St & King St

Total Future AM w/o Development 2022

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	248	186	570	43
v/c Ratio	0.41	0.30	0.97	0.07
Control Delay	5.8	9.7	29.7	10.0
Queue Delay	0.1	0.0	0.0	0.0
Total Delay	5.9	9.7	29.7	10.0
Queue Length 50th (ft)	20	39	51	8
Queue Length 95th (ft)	m26	m58	#507	22
Internal Link Dist (ft)	239	236	338	341
Turn Bay Length (ft)				
Base Capacity (vph)	608	629	589	581
Starvation Cap Reductn	39	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.44	0.30	0.97	0.07

**Intersection Summary**

- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

4: Alfred St & King St

Total Future AM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	25	184	19	8	154	9	50	466	8	2	29	8
Future Volume (vph)	25	184	19	8	154	9	50	466	8	2	29	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	12	12	12	12	12	12
Total Lost time (s)	4.0				4.0			4.0				
Lane Util. Factor	1.00				1.00			1.00				
Frpb, ped/bikes	0.98				0.99			1.00				
Flpb, ped/bikes	0.99				0.99			1.00				
Frt	0.99				0.99			1.00				
Flt Protected	0.99				1.00			1.00				
Satd. Flow (prot)	1283				1302			1465				1418
Flt Permitted	0.96				0.99			0.97				0.98
Satd. Flow (perm)	1239				1286			1428				1397
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)	27	200	21	9	167	10	54	507	9	2	32	9
RTOR Reduction (vph)	0	4	0	0	3	0	0	1	0	0	5	0
Lane Group Flow (vph)	0	244	0	0	183	0	0	569	0	0	38	0
Confl. Peds. (#/hr)	79		90	90			79	21		41	41	21
Confl. Bikes (#/hr)			7							1		
Bus Blockages (#/hr)	0	7	0	0	9	0	0	0	0	0	0	0
Parking (#/hr)	3				3			3				3
Turn Type	Perm	NA			Perm	NA		Perm	NA		Perm	NA
Protected Phases	6	6			2			4			8	
Permitted Phases	6				2			4			8	
Actuated Green, G (s)	38.0				38.0			31.9			31.9	
Effective Green, g (s)	39.0				39.0			33.0			33.0	
Actuated g/C Ratio	0.49				0.49			0.41			0.41	
Clearance Time (s)	5.0				5.0			5.1			5.1	
Lane Grp Cap (vph)	604				626			589			576	
v/s Ratio Prot												
v/s Ratio Perm	c0.20				0.14			c0.40			0.03	
v/c Ratio	0.40				0.29			0.97			0.07	
Uniform Delay, d1	13.1				12.3			23.0			14.2	
Progression Factor	0.31				0.69			0.28			0.80	
Incremental Delay, d2	1.8				1.1			20.1			0.2	
Delay (s)	5.8				9.6			26.6			11.5	
Level of Service	A				A			C			B	
Approach Delay (s)	5.8				9.6			26.6			11.5	
Approach LOS	A				A			C			B	

**Intersection Summary**

HCM 2000 Control Delay	18.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	10		
c Critical Lane Group			

Queues

5: Washington St & King St

Total Future AM w/o Development 2022

Lane Group	EBT	EBR	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	107	18	87	17	2411	539
v/c Ratio	0.26	0.06	0.21	0.05	1.02	0.30
Control Delay	35.4	13.3	34.5	12.9	13.4	9.7
Queue Delay	0.0	0.0	0.0	0.0	16.0	0.0
Total Delay	35.4	13.3	34.5	12.9	29.5	9.7
Queue Length 50th (ft)	64	0	51	0	-50	88
Queue Length 95th (ft)	114	18	96	18	m26	117
Internal Link Dist (ft)	245		94		335	133
Turn Bay Length (ft)		100				
Base Capacity (vph)	410	326	410	348	2358	1789
Starvation Cap Reductn	0	0	0	0	137	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.06	0.21	0.05	1.09	0.30

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

5: Washington St & King St

Total Future AM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↑		↑	↑		↑↑	↑		↑	↑
Traffic Volume (vph)	0	98	17	0	80	16	0	2182	36	0	466	29
Future Volume (vph)	0	98	17	0	80	16	0	2182	36	0	466	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	9	8	12	9	9	10	10	10	8	10	10
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		0.78			0.95	
Frpb, ped/bikes		1.00	0.90		1.00	0.92		1.00			1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		1.00	0.85		1.00			0.99	
Flt Protected		1.00	1.00		1.00	1.00		1.00			1.00	
Satd. Flow (prot)		1448	1107		1448	1183		3627			2754	
Flt Permitted		1.00	1.00		1.00	1.00		1.00			1.00	
Satd. Flow (perm)		1448	1107		1448	1183		3627			2754	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	107	18	0	87	17	0	2372	39	0	507	32
RTOR Reduction (vph)	0	0	13	0	0	12	0	0	0	0	0	0
Lane Group Flow (vph)	0	107	5	0	87	5	0	2411	0	0	539	0
Confl. Peds. (#/hr)	59	81	81	0	59	8	0	31	31	31	8	8
Confl. Bikes (#/hr)			4			1			1			
Bus Blockages (#/hr)	0	10	0	0	10	0	0	4	0	0	3	0
Parking (#/hr)												3
Turn Type		NA	Perm		NA	Perm		NA			NA	
Protected Phases		2			2			1			1	
Permitted Phases		2			2			1			1	
Actuated Green, G (s)		32.1	32.1		32.1	32.1		77.0			77.0	
Effective Green, g (s)		34.0	34.0		34.0	34.0		78.0			78.0	
Actuated g/C Ratio		0.28	0.28		0.28	0.28		0.65			0.65	
Clearance Time (s)		5.9	5.9		5.9	5.9		5.0			5.0	
Lane Grp Cap (vph)		410	313		410	335		2357			1790	
v/s Ratio Prot		c0.07			0.06			c0.66			0.20	
v/s Ratio Perm		0.00			0.00							
v/c Ratio		0.26	0.02		0.21	0.01		1.02			0.30	
Uniform Delay, d1		33.3	31.0		32.8	30.9		21.0			9.1	
Progression Factor		1.00	1.00		1.00	1.00		0.07			1.00	
Incremental Delay, d2		1.5	0.1		1.2	0.1		9.2			0.4	
Delay (s)		34.8	31.1		34.0	31.0		10.6			9.6	
Level of Service		C	C		C	C		B			A	
Approach Delay (s)		34.3			33.5			10.6			9.6	
Approach LOS		C			C			B			A	

Intersection Summary

HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	10		
c Critical Lane Group			

Queues

6: Henry St & Prince St

Total Future AM w/o Development 2022

Lane Group	EBT	SBT
Lane Group Flow (vph)	704	1526
v/c Ratio	0.49	0.90
Control Delay	15.1	4.9
Queue Delay	0.3	0.0
Total Delay	15.4	4.9
Queue Length 50th (ft)	116	15
Queue Length 95th (ft)	164	m14
Internal Link Dist (ft)	69	341
Turn Bay Length (ft)		
Base Capacity (vph)	1426	1687
Starvation Cap Reductn	0	1
Spillback Cap Reductn	224	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.59	0.91

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

6: Henry St & Prince St

Total Future AM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑									↑	↑
Traffic Volume (vph)	0	576	72	0	0	0	0	0	0	0	88	1316
Future Volume (vph)	0	576	72	0	0	0	0	0	0	0	88	1316
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frpb, ped/bikes		1.00									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.98									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		2918									4053	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		2918									4053	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	626	78	0	0	0	0	0	0	0	96	1430
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	0	0	0	16
Lane Group Flow (vph)	0	700	0	0	0	0	0	0	0	0	1510	0
Confl. Peds. (#/hr)	36	15	15	0	0	0	0	0	0	0	8	8
Confl. Bikes (#/hr)			7									
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%
Parking (#/hr)		6									3	
Turn Type		NA									Perm	NA
Protected Phases		2									1	
Permitted Phases		2									1	
Actuated Green, G (s)		38.0									32.0	
Effective Green, g (s)		39.0									33.0	
Actuated g/C Ratio		0.49									0.41	
Clearance Time (s)		5.0									5.0	
Lane Grp Cap (vph)		1422									1671	
v/s Ratio Prot		c0.24										
v/s Ratio Perm											0.37	
v/c Ratio		0.49									0.90	
Uniform Delay, d1		13.8									22.0	
Progression Factor		1.00									0.12	
Incremental Delay, d2		1.2									0.9	
Delay (s)		15.0									3.6	
Level of Service		B									A	
Approach Delay (s)		15.0			0.0			0.0			3.6	
Approach LOS		B			A			A			A	

Intersection Summary

HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	10		
c Critical Lane Group			

Queues

7: Alfred St & Prince St

Total Future AM w/o Development 2022

	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	633	507	72
v/c Ratio	0.44	0.81	0.12
Control Delay	1.2	9.8	15.3
Queue Delay	0.2	3.0	0.0
Total Delay	1.3	12.8	15.3
Queue Length 50th (ft)	5	65	25
Queue Length 95th (ft)	m6	m67	51
Internal Link Dist (ft)	242	151	338
Turn Bay Length (ft)			
Base Capacity (vph)	1442	627	583
Starvation Cap Reductn	201	15	0
Spillback Cap Reductn	0	57	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.51	0.89	0.12

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

7: Alfred St & Prince St

Total Future AM w/o Development 2022

	↖	→	↗	↖	←	↖	↖	↑	↗	↘	↘	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖↗						↖↗			↖↗	
Traffic Volume (vph)	41	514	27	0	0	0	0	444	22	10	56	0
Future Volume (vph)	41	514	27	0	0	0	0	444	22	10	56	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	12	12	12	12	12	12
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frpb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.99						0.99			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3029						1471			1470	
Flt Permitted		1.00						1.00			0.93	
Satd. Flow (perm)		3029						1471			1373	
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)	45	559	29	0	0	0	0	483	24	11	61	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	629	0	0	0	0	0	505	0	0	72	0
Confl. Peds. (#/hr)	47		21	21		47	33		38	38		33
Confl. Bikes (#/hr)			5						1			1
Parking (#/hr)		6						3			3	
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		37.0						33.0			33.0	
Effective Green, g (s)		38.0						34.0			34.0	
Actuated g/C Ratio		0.48						0.42			0.42	
Clearance Time (s)		5.0						5.0			5.0	
Lane Grp Cap (vph)		1438						625			583	
v/s Ratio Prot								c0.34				
v/s Ratio Perm		0.21								0.05		
v/c Ratio		0.44						0.81			0.12	
Uniform Delay, d1		13.9						20.1			14.0	
Progression Factor		0.05						0.28			1.04	
Incremental Delay, d2		0.5						3.7			0.4	
Delay (s)		1.2						9.4			14.9	
Level of Service		A						A			B	
Approach Delay (s)		1.2			0.0			9.4			14.9	
Approach LOS		A			A			A			B	

Intersection Summary

HCM 2000 Control Delay	5.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	10		
c Critical Lane Group			

Queues

8: Henry St & Duke St

Total Future AM w/o Development 2022

	→	↖	↗	←	↓
Lane Group	EBT	EBR	WBL	WBT	SBT
Lane Group Flow (vph)	452	443	61	685	1467
v/c Ratio	0.67	0.42	0.18	0.42	1.00
Control Delay	25.8	18.8	5.7	6.5	23.4
Queue Delay	0.5	0.0	0.0	0.6	0.0
Total Delay	26.2	18.8	5.7	7.1	23.4
Queue Length 50th (ft)	181	77	9	60	41
Queue Length 95th (ft)	286	115	m8	m51	m#121
Internal Link Dist (ft)	72			232	347
Turn Bay Length (ft)		125			
Base Capacity (vph)	670	1064	341	1625	1473
Starvation Cap Reductn	0	0	0	552	0
Spillback Cap Reductn	38	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.72	0.42	0.18	0.64	1.00

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.  
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

8: Henry St & Duke St

Total Future AM w/o Development 2022

	↖	→	↗	↖	←	↖	↖	↑	↗	↘	↘	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖↗	↖↗		↖↗			↖↗			↖↗	
Traffic Volume (vph)	0	416	408	56	630	0	0	0	0	0	1126	224
Future Volume (vph)	0	416	408	56	630	0	0	0	0	0	1126	224
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	10	12	12	12	12	12	12	11
Total Lost time (s)		4.0	4.0	4.0	4.0						4.0	
Lane Util. Factor		1.00	1.00	1.00	0.95						0.91	
Frpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	
Frt		1.00	0.85	1.00	1.00						0.98	
Flt Protected		1.00	1.00	0.95	1.00						1.00	
Satd. Flow (prot)		1676	2660	1485	2955						4105	
Flt Permitted		1.00	1.00	0.28	1.00						1.00	
Satd. Flow (perm)		1676	2660	431	2955						4105	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	452	443	61	685	0	0	0	0	0	1224	243
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	37	0
Lane Group Flow (vph)	0	452	443	61	685	0	0	0	0	0	1430	0
Confl. Peds. (#/hr)	15		14	14		15	13		2	2		13
Confl. Bikes (#/hr)			3				2					
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)												1
Turn Type	NA	Prot	pm+pt	NA								NA
Protected Phases		8	8	7	4							2
Permitted Phases				4								
Actuated Green, G (s)		30.7	30.7	42.7	42.7							26.9
Effective Green, g (s)		32.0	32.0	43.7	44.0							28.0
Actuated g/C Ratio		0.40	0.40	0.55	0.55							0.35
Clearance Time (s)		5.3	5.3	5.0	5.3							5.1
Lane Grp Cap (vph)		670	1064	340	1625							1436
v/s Ratio Prot		c0.27	0.17	0.02	c0.23							c0.35
v/s Ratio Perm				0.08								
v/c Ratio		0.67	0.42	0.18	0.42							1.00
Uniform Delay, d1		19.7	17.3	10.3	10.5							25.9
Progression Factor		1.00	1.00	0.65	0.60							0.34
Incremental Delay, d2		5.3	1.2	0.1	0.1							12.3
Delay (s)		25.0	18.5	6.8	6.4							21.0
Level of Service		C	B	A	A							C
Approach Delay (s)		21.8			6.5			0.0				21.0
Approach LOS		C			A			A				C

Intersection Summary

HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.7%	ICU Level of Service	C
Analysis Period (min)	10		
c Critical Lane Group			

Queues

9: Patrick St & Duke St

Total Future AM w/o Development 2022

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	431	541	2481
v/c Ratio	0.86	1.17	1.10
Control Delay	38.2	97.2	57.4
Queue Delay	2.5	0.0	0.5
Total Delay	40.7	97.2	57.9
Queue Length 50th (ft)	102	-334	-734
Queue Length 95th (ft)	#341	m#496	#644
Internal Link Dist (ft)	232	245	191
Turn Bay Length (ft)			
Base Capacity (vph)	499	461	2249
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	24	0	405
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.91	1.17	1.35

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

9: Patrick St & Duke St

Total Future AM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑				
Traffic Volume (vph)	4	393	0	0	444	53	309	1872	101	0	0	0
Future Volume (vph)	4	393	0	0	444	53	309	1872	101	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.78				
Frpb, ped/bikes		1.00			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Flt		1.00			0.99			0.99				
Flt Protected		1.00			1.00			1.00				
Satd. Flow (prot)		1899			1457			3821				
Flt Permitted		0.84			1.00			0.99				
Satd. Flow (perm)		1598			1457			3821				
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)	4	427	0	0	483	58	336	2035	110	0	0	0
RTOR Reduction (vph)	0	0	0	0	6	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	431	0	0	536	0	0	2476	0	0	0	0
Confl. Peds. (#/hr)	15		15	15		15	5		14	14		5
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Parking (#/hr)												
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		2			2			1				1
Permitted Phases	2											
Actuated Green, G (s)		23.8			23.8			46.0				
Effective Green, g (s)		25.0			25.0			47.0				
Actuated g/C Ratio		0.31			0.31			0.59				
Clearance Time (s)		5.2			5.2			5.0				
Lane Grp Cap (vph)		499			455			2244				
v/s Ratio Prot					c0.37							
v/s Ratio Perm		0.27						0.65				
v/c Ratio		0.86			1.18			1.10				
Uniform Delay, d1		25.9			27.5			16.5				
Progression Factor		0.90			1.01			1.23				
Incremental Delay, d2		12.7			70.0			35.6				
Delay (s)		36.1			97.8			56.0				
Level of Service		D			F			E				
Approach Delay (s)		36.1			97.8			56.0				0.0
Approach LOS		D			F			E				A

Intersection Summary

HCM 2000 Control Delay	60.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	10		
c Critical Lane Group			

Queues

10: Alfred St & Duke St

Total Future AM w/o Development 2022

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	560	467	482	67
v/c Ratio	0.86	0.54	0.99	0.14
Control Delay	15.6	9.6	59.8	4.4
Queue Delay	10.6	2.5	3.8	0.0
Total Delay	26.1	12.1	63.6	4.4
Queue Length 50th (ft)	52	78	235	3
Queue Length 95th (ft)	m83	m148	#435	10
Internal Link Dist (ft)	245	227	382	116
Turn Bay Length (ft)				
Base Capacity (vph)	648	860	488	479
Starvation Cap Reductn	82	169	0	0
Spillback Cap Reductn	15	268	11	4
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.99	0.79	1.01	0.14

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

10: Alfred St & Duke St

Total Future AM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑			↓	↓
Traffic Volume (vph)	106	389	20	0	414	16	45	394	5	2	36	24
Future Volume (vph)	106	389	20	0	414	16	45	394	5	2	36	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	14	12	12	11	12	12	11	12
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			1.00			0.98	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Flt		0.99			1.00			1.00			0.95	
Flt Protected		0.99			1.00			0.99			1.00	
Satd. Flow (prot)		1532			1562			1437			1333	
Flt Permitted		0.76			1.00			0.97			0.99	
Satd. Flow (perm)		1175			1562			1394			1321	
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)	115	423	22	0	450	17	49	428	5	2	39	26
RTOR Reduction (vph)	0	2	0	0	2	0	0	1	0	0	17	0
Lane Group Flow (vph)	0	558	0	0	465	0	0	481	0	0	50	0
Confl. Peds. (#/hr)	12		22	22		12	12		15	15		12
Confl. Bikes (#/hr)						4			1			
Bus Blockages (#/hr)	0	3	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)		3			2			1			3	
Turn Type	Perm	NA			NA		Perm	NA			Perm	NA
Protected Phases		2			2			1			1	
Permitted Phases	2											
Actuated Green, G (s)		43.0			43.0			27.0			27.0	
Effective Green, g (s)		44.0			44.0			28.0			28.0	
Actuated g/C Ratio		0.55			0.55			0.35			0.35	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		646			859			487			462	
v/s Ratio Prot					0.30							
v/s Ratio Perm		c0.48						c0.35			0.04	
v/c Ratio		0.86			0.54			0.99			0.11	
Uniform Delay, d1		15.4			11.5			25.8			17.6	
Progression Factor		0.49			0.66			1.00			0.34	
Incremental Delay, d2		6.9			1.7			31.4			0.5	
Delay (s)		14.4			9.4			57.2			6.4	
Level of Service		B			A			E			A	
Approach Delay (s)		14.4			9.4			57.2			6.4	
Approach LOS		B			A			E			A	

Intersection Summary

HCM 2000 Control Delay	25.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	10		
c Critical Lane Group			



**Queues**

**11: Columbus St & Duke St**

Total Future AM w/o Development 2022

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	427	352	620	97
v/c Ratio	0.77	0.58	0.97	0.14
Control Delay	10.3	22.4	47.9	3.4
Queue Delay	2.1	2.2	8.6	0.0
Total Delay	12.4	24.7	56.5	3.4
Queue Length 50th (ft)	59	129	287	6
Queue Length 95th (ft)	m100	215	#515	21
Internal Link Dist. (ft)	227	234	379	354
Turn Bay Length (ft)				
Base Capacity (vph)	553	605	636	697
Starvation Cap Reductn	48	140	0	0
Spillback Cap Reductn	0	0	32	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.85	0.76	1.03	0.14

**Intersection Summary**  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

**HCM Signalized Intersection Capacity Analysis**

**11: Columbus St & Duke St**

Total Future AM w/o Development 2022

	→	←	↑	↓								
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔		↔	↔	
Traffic Volume (vph)	51	322	20	7	284	32	145	422	3	3	68	18
Future Volume (vph)	51	322	20	7	284	32	145	422	3	3	68	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	0.99	1.00	0.97
Ft	0.99	0.99	0.99	1.00	0.99	1.00	0.99	0.99	1.00	0.99	1.00	0.97
Flt Protected	0.99	1.00	1.00	0.99	1.00	0.99	1.00	0.99	1.00	0.99	1.00	0.97
Satd. Flow (prot)	1439	1468	1468	1455	1455	1455	1455	1455	1455	1455	1455	1410
Flt Permitted	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Satd. Flow (perm)	1334	1455	1455	1455	1455	1455	1455	1455	1455	1455	1455	1410
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	350	22	8	309	35	158	459	3	3	74	20
RTOR Reduction (vph)	0	2	0	0	5	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	425	0	0	347	0	0	620	0	0	87	0
Confl. Peds. (#/hr)	22	15	15	22	14	8	8	14	8	8	14	1
Confl. Bikes (#/hr)	0	3	0	0	0	0	0	0	0	0	0	0
Bus Blockages (#/hr)	0	3	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	3	1	1	3	3	3	3	3	3	3	3	3
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	6	6	2	2	4	4	8	8	8	8	8	8
Permitted Phases	6	6	2	2	4	4	8	8	8	8	8	8
Actuated Green, G (s)	32.0	33.0	33.0	33.0	38.0	39.0	38.0	39.0	39.0	39.0	39.0	39.0
Effective Green, g (s)	33.0	33.0	33.0	33.0	38.0	39.0	38.0	39.0	39.0	39.0	39.0	39.0
Actuated g/C Ratio	0.41	0.41	0.41	0.41	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	550	600	600	600	637	637	637	637	637	637	637	637
v/s Ratio Prot												
v/s Ratio Perm	c0.32	0.24	0.24	0.24	c0.47	0.06	0.06	0.06	0.06	0.06	0.06	0.06
v/c Ratio	0.77	0.58	0.58	0.58	0.97	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Uniform Delay, d1	20.3	18.1	18.1	18.1	20.0	11.2	11.2	11.2	11.2	11.2	11.2	11.2
Progression Factor	0.26	1.00	1.00	1.00	1.00	0.32	0.32	0.32	0.32	0.32	0.32	0.32
Incremental Delay, d2	5.0	4.0	4.0	4.0	25.0	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Delay (s)	10.2	22.1	22.1	22.1	45.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Level of Service	B	C	C	C	D	A	A	A	A	A	A	A
Approach Delay (s)	10.2	22.1	22.1	22.1	45.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Approach LOS	B	C	C	C	D	A	A	A	A	A	A	A

**Intersection Summary**  
 HCM 2000 Control Delay 27.0 HCM 2000 Level of Service C  
 HCM 2000 Volume to Capacity ratio 0.88  
 Actuated Cycle Length (s) 80.0 Sum of lost time (s) 8.0  
 Intersection Capacity Utilization 93.2% ICU Level of Service F  
 Analysis Period (min) 10  
 c Critical Lane Group

**Queues**

**12: Washington St & Duke St**

Total Future AM w/o Development 2022

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	329	257	2216	590
v/c Ratio	1.18	0.57	1.11	0.35
Control Delay	119.2	39.3	64.2	6.7
Queue Delay	0.2	0.0	0.5	0.0
Total Delay	119.3	39.3	64.8	6.7
Queue Length 50th (ft)	-305	161	-841	44
Queue Length 95th (ft)	#492	250	#953	57
Internal Link Dist. (ft)	234	98	339	351
Turn Bay Length (ft)				
Base Capacity (vph)	279	452	1995	1673
Starvation Cap Reductn	4	0	0	0
Spillback Cap Reductn	0	0	341	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.20	0.57	1.34	0.35

**Intersection Summary**  
 - Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

**HCM Signalized Intersection Capacity Analysis**

**12: Washington St & Duke St**

Total Future AM w/o Development 2022

	→	←	↑	↓								
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔		↔	↔	
Traffic Volume (vph)	127	156	19	10	182	44	2	1992	45	1	431	111
Future Volume (vph)	127	156	19	10	182	44	2	1992	45	1	431	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	11	9	9	9	11	9
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.78	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	1.00	0.99	1.00	0.97
Ft	0.99	0.97	0.97	1.00	0.97	1.00	0.97	0.97	1.00	0.97	1.00	0.97
Flt Protected	0.98	1.00	1.00	0.98	1.00	0.98	1.00	0.98	1.00	0.98	1.00	0.97
Satd. Flow (prot)	1472	1473	1473	1473	3392	2787	2787	2787	2787	2787	2787	2787
Flt Permitted	0.60	0.98	0.98	0.98	0.94	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Satd. Flow (perm)	901	1448	1448	1448	3188	2648	2648	2648	2648	2648	2648	2648
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)	138	170	21	11	198	48	2	2165	49	1	468	121
RTOR Reduction (vph)	0	2	0	0	6	0	0	2	0	0	19	0
Lane Group Flow (vph)	0	327	0	0	251	0	0	2215	0	0	571	0
Confl. Peds. (#/hr)	7	2	2	2	7	8	8	9	9	9	8	8
Confl. Bikes (#/hr)	0	2	0	0	2	0	0	0	0	0	0	0
Bus Blockages (#/hr)	0	3	0	0	3	3	3	3	3	3	3	3
Parking (#/hr)	3	1	1	3	3	3	3	3	3	3	3	3
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	4	4	8	8	2	6	6	6	6	6	6	6
Permitted Phases	4	4	8	8	2	6	6	6	6	6	6	6
Actuated Green, G (s)	35.5	37.0	37.0	37.0	74.0	74.0	74.0	74.0	74.0	74.0	74.0	74.0
Effective Green, g (s)	37.0	37.0	37.0	37.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0
Actuated g/C Ratio	0.31	0.31	0.31	0.31	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Clearance Time (s)	5.5	5.5	5.5	5.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	277	446	446	446	1992	1655	1655	1655	1655	1655	1655	1655
v/s Ratio Prot												
v/s Ratio Perm	c0.36	0.17	0.17	0.17	c0.69	0.22	0.22	0.22	0.22	0.22	0.22	0.22
v/c Ratio	1.18	0.56	0.56	0.56	1.11	0.34	0.34	0.34	0.34	0.34	0.34	0.34
Uniform Delay, d1	41.5	34.7	34.7	34.7	22.5	10.8	10.8	10.8	10.8	10.8	10.8	10.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Incremental Delay, d2	82.1	5.0	5.0	5.0	40.9	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Delay (s)	123.6	39.7										

HCM Unsignalized Intersection Capacity Analysis  
13: Patrick St & Henry to Patrick Connector

Total Future AM w/o Development 2022

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↑↑↑	↓	
Traffic Volume (veh/h)	118	0	0	2139	0	0
Future Volume (Veh/h)	118	0	0	2139	0	0
Sign Control	Yield			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	128	0	0	2325	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)				419	442	
Upstream signal (ft)						
pX, platoon unblocked	0.72					
vC, conflicting volume	775	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.8	6.9	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	83	100	100			
cM capacity (veh/h)	737	1084	1614			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3		
Volume Total	128	775	775	775		
Volume Left	128	0	0	0		
Volume Right	0	0	0	0		
cSH	737	1700	1700	1700		
Volume to Capacity	0.17	0.46	0.46	0.46		
Queue Length 95th (ft)	16	0	0	0		
Control Delay (s)	10.9	0.0	0.0	0.0		
Lane LOS	B					
Approach Delay (s)	10.9	0.0				
Approach LOS	B					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization		89.8%		ICU Level of Service	E	
Analysis Period (min)		10				

HCM Unsignalized Intersection Capacity Analysis  
14: Alfred St & Wolfe St./Wolfe St

Total Future AM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	13	8	3	5	4	43	8	343	17	13	33	8
Future Volume (vph)	13	8	3	5	4	43	8	343	17	13	33	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	9	3	5	4	47	9	373	18	14	36	9
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	26	56	400	59								
Volume Left (vph)	14	5	9	14								
Volume Right (vph)	3	47	18	9								
Had (s)	0.07	-0.45	0.01	-0.01								
Departure Headway (s)	5.1	4.5	4.2	4.5								
Degree Utilization, x	0.04	0.07	0.46	0.07								
Capacity (veh/h)	639	719	845	760								
Control Delay (s)	8.3	7.8	10.7	7.9								
Approach Delay (s)	8.3	7.8	10.7	7.9								
Approach LOS	A	A	B	A								
Intersection Summary												
Delay			10.0									
Level of Service			A									
Intersection Capacity Utilization		34.8%		ICU Level of Service	A							
Analysis Period (min)		10										

HCM 2010 AWSC

14: Alfred St & Wolfe St./Wolfe St

Total Future AM w/o Development 2022

Intersection												
Intersection Delay, s/veh	9.9											
Intersection LOS	A											
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	13	8	3	0	5	4	43	0	8	343	17
Future Vol, veh/h	0	13	8	3	0	5	4	43	0	8	343	17
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	0	14	9	3	0	5	4	47	0	9	373	18
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach	EB				WB				NB			
Opposing Approach	WB				EB				SB			
Opposing Lanes	1				1				1			
Conflicting Approach Left	SB				NB				EB			
Conflicting Lanes Left	1				1				1			
Conflicting Approach Right	NB				SB				WB			
Conflicting Lanes Right	1				1				1			
HCM Control Delay	8.3				7.8				10.6			
HCM LOS	A				A				B			
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	2%	54%	10%	24%								
Vol Thru, %	93%	33%	8%	61%								
Vol Right, %	5%	12%	83%	15%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	368	24	52	54								
LT Vol	8	13	5	13								
Through Vol	343	8	4	33								
RT Vol	17	3	43	8								
Lane Flow Rate	400	26	57	59								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.455	0.037	0.071	0.073								
Departure Headway (Hd)	4.098	5.05	4.5	4.492								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	868	712	800	800								
Service Time	2.185	3.058	2.505	2.504								
HCM Lane V/C Ratio	0.461	0.037	0.071	0.074								
HCM Control Delay	10.6	8.3	7.8	7.9								
HCM Lane LOS	B	A	A	A								
HCM 95th-ile Q	2.4	0.1	0.2	0.2								

HCM 2010 AWSC

14: Alfred St & Wolfe St./Wolfe St

Total Future AM w/o Development 2022

Intersection				
Intersection Delay, s/veh	9.9			
Intersection LOS	A			
Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	13	33	8
Future Vol, veh/h	0	13	33	8
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	14	36	9
Number of Lanes	0	0	1	0
Approach	SB			
Opposing Approach	NB			
Opposing Lanes	1			
Conflicting Approach Left	WB			
Conflicting Lanes Left	1			
Conflicting Approach Right	EB			
Conflicting Lanes Right	1			
HCM Control Delay	7.9			
HCM LOS	A			
Lane				

Queues  
15: Patrick St & Gibbon St

Total Future AM w/o Development 2022

Lane Group	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	260	314	2476	1611
v/c Ratio	0.93	0.99	0.91	0.48
Control Delay	84.2	51.3	12.3	5.0
Queue Delay	6.8	0.5	0.4	0.0
Total Delay	91.0	51.8	12.8	5.1
Queue Length 50th (ft)	298	136	800	89
Queue Length 95th (ft)	#490	206	13	96
Internal Link Dist (ft)		264	352	342
Turn Bay Length (ft)				
Base Capacity (vph)	286	541	2733	3391
Starvation Cap Reductn	17	47	52	137
Spillback Cap Reductn	0	0	27	13
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.97	0.64	0.92	0.50

**Intersection Summary**  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 dl Defacto Left Lane. Recode with 1 though lane as a left lane.

HCM Signalized Intersection Capacity Analysis  
15: Patrick St & Gibbon St

Total Future AM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				←	←	←	←	←	←	←	←	←
Traffic Volume (vph)	0	0	0	478	26	24	1	2277	0	0	1480	2
Future Volume (vph)	0	0	0	478	26	24	1	2277	0	0	1480	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	12	12	12	12	12	12
Grade (%)		0%			2%			0%			0%	
Total Lost time (s)				4.0	4.0			4.0			4.0	
Lane Util. Factor				0.91	0.91			0.78			0.91	
Frb, ped/bikes				1.00	1.00			1.00			1.00	
Ft/b, ped/bikes				1.00	1.00			1.00			1.00	
Frt Protected				0.95	0.96			1.00			1.00	
Satd. Flow (prot)				1387	2608			3885			4531	
Frt Permitted				0.95	0.96			0.94			1.00	
Satd. Flow (perm)				1387	2608			3650			4531	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	520	28	26	1	2475	0	0	1609	2
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	260	310	0	0	2476	0	0	1611	0
Confl. Peds. (#/hr)	7						7	2		1	1	2
Confl. Bikes (#/hr)			1					1				
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)				1								
Turn Type				Split	NA		Perm	NA			NA	
Protected Phases				2	2			1			1	
Permitted Phases							1					
Actuated Green, G (s)				30.3	30.3			118.2			118.2	
Effective Green, g (s)				32.3	32.3			119.7			119.7	
Actuated g/C Ratio				0.20	0.20			0.75			0.75	
Clearance Time (s)				6.0	6.0			5.5			5.5	
Vehicle Extension (s)				3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)				280	526			2730			3389	
v/s Ratio Prot				c0.19	0.12						0.36	
v/s Ratio Perm								c0.68				
v/c Ratio				0.93	0.99			0.91			0.48	
Uniform Delay, d1				62.7	57.8			15.8			7.9	
Progression Factor				0.84	0.82			0.55			0.57	
Incremental Delay, d2				28.8	1.6			3.1			0.4	
Delay (s)				81.3	49.0			11.8			5.0	
Level of Service				F	D			B			A	
Approach Delay (s)	0.0				63.6			11.8			5.0	
Approach LOS	A				E			B			A	

**Intersection Summary**  
 HCM 2000 Control Delay 15.8 HCM 2000 Level of Service B  
 HCM 2000 Volume to Capacity ratio 0.91  
 Actuated Cycle Length (s) 160.0 Sum of lost time (s) 8.0  
 Intersection Capacity Utilization 72.5% ICU Level of Service C

HCM Signalized Intersection Capacity Analysis  
15: Patrick St & Gibbon St

Total Future AM w/o Development 2022

Analysis Period (min) 10  
 dl Defacto Left Lane. Recode with 1 though lane as a left lane.  
 c Critical Lane Group

Queues  
16: Alfred St & Gibbon St

Total Future AM w/o Development 2022

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	505	497	44
v/c Ratio	0.40	0.69	0.06
Control Delay	15.8	23.6	7.4
Queue Delay	0.1	0.0	0.0
Total Delay	15.8	23.6	7.4
Queue Length 50th (ft)	84	190	5
Queue Length 95th (ft)	123	303	22
Internal Link Dist (ft)	221	141	304
Turn Bay Length (ft)			
Base Capacity (vph)	1253	721	724
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	91	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.43	0.69	0.06

**Intersection Summary**

HCM Signalized Intersection Capacity Analysis  
16: Alfred St & Gibbon St

Total Future AM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				5	4	20	60	397	0	0	17	24
Traffic Volume (vph)	0	0	0	5	440	20	60	397	0	0	17	24
Future Volume (vph)	0	0	0	5	440	20	60	397	0	0	17	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	12	12	12	12	12	12	12
Total Lost time (s)				4.0				4.0				4.0
Lane Util. Factor				0.95				1.00				1.00
Frbp, ped/bikes				1.00				1.00				0.99
Fjpb, ped/bikes				1.00				1.00				1.00
Frt				0.99				1.00				0.92
Flt Protected				1.00				0.99				1.00
Satd. Flow (prot)				2775				1665				1579
Flt Permitted				1.00				0.96				1.00
Satd. Flow (perm)				2775				1604				1579
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	5	478	22	65	432	0	0	18	26
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	0	0	0	501	0	0	497	0	0	30	0
Confl. Peds. (#/hr)	26		4	4		26	6		11	11		6
Confl. Bikes (#/hr)									1			
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)					1							
Turn Type				Perm	NA		Perm	NA				NA
Protected Phases												
Permitted Phases				2			1					1
Actuated Green, G (s)					35.0			34.7				34.7
Effective Green, g (s)					36.0			36.0				36.0
Actuated g/C Ratio					0.45			0.45				0.45
Clearance Time (s)					5.0			5.3				5.3
Lane Grp Cap (vph)					1248			721				710
v/s Ratio Prot												0.02
v/s Ratio Perm					0.18			c0.31				
v/c Ratio					0.40			0.69				0.04
Uniform Delay, d1					14.8			17.5				12.3
Progression Factor					1.00			1.00				1.00
Incremental Delay, d2					1.0			5.2				0.1
Delay (s)					15.7			22.8				12.4
Level of Service					B			C				B
Approach Delay (s)		0.0			15.7			22.8				12.4
Approach LOS		A			B			C				B
<b>Intersection Summary</b>												
HCM 2000 Control Delay				18.9								B
HCM 2000 Volume to Capacity ratio				0.54								
Actuated Cycle Length (s)				80.0				Sum of lost time (s)			8.0	
Intersection Capacity Utilization				58.1%				ICU Level of Service			B	
Analysis Period (min)				10								

Queues  
17: Patrick St & Franklin St

Total Future AM w/o Development 2022

Lane Group	EBL	EBT	NBT	NBR	SBT
Lane Group Flow (vph)	4	103	2717	1478	1932
v/c Ratio	0.03	0.33	0.82	1.14	0.50
Control Delay	59.2	59.4	10.3	60.3	2.9
Queue Delay	0.0	0.0	1.0	0.0	0.1
Total Delay	59.2	59.4	11.3	60.3	3.0
Queue Length 50th (ft)	4	47	382	-1672	64
Queue Length 95th (ft)	15	71	1029	#1915	264
Internal Link Dist (ft)		272	788		352
Turn Bay Length (ft)		200			
Base Capacity (vph)	541	1078	3308	1301	3850
Starvation Cap Reductn	0	0	0	0	457
Spillback Cap Reductn	0	0	321	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.01	0.10	0.91	1.14	0.57
<b>Intersection Summary</b>					
- Volume exceeds capacity, queue is theoretically infinite.					
- Queue shown is maximum after two cycles.					
# 95th percentile volume exceeds capacity, queue may be longer.					
- Queue shown is maximum after two cycles.					

HCM Signalized Intersection Capacity Analysis  
17: Patrick St & Franklin St

Total Future AM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4	59	36	0	0	0	0	2500	1360	0	1777	0
Traffic Volume (vph)	4	59	36	0	0	0	0	2500	1360	0	1777	0
Future Volume (vph)	4	59	36	0	0	0	0	2500	1360	0	1777	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	11	11	11	12	12	12	12	12	12
Grade (%)		2%			0%			0%	4.0			0%
Total Lost time (s)	4.0	4.0						4.0	4.0			4.0
Lane Util. Factor	1.00	0.95						0.78	1.00			0.91
Frbp, ped/bikes	1.00	0.99						1.00	0.99			1.00
Fjpb, ped/bikes	0.98	1.00						1.00	1.00			1.00
Frt	1.00	0.94						1.00	0.85			1.00
Flt Protected	0.95	1.00						1.00	1.00			1.00
Satd. Flow (prot)	1546	3057						3885	1391			4520
Flt Permitted	0.95	1.00						1.00	1.00			1.00
Satd. Flow (perm)	1546	3057						3885	1391			4520
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)	4	64	39	0	0	0	0	2717	1478	0	1932	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	117	0	0	0
Lane Group Flow (vph)	4	91	0	0	0	0	0	2717	1361	0	1932	0
Confl. Peds. (#/hr)	12					12	1		1	1		1
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	2
Turn Type	Perm	NA						NA	Perm			NA
Protected Phases		4							2			2
Permitted Phases												
Actuated Green, G (s)	13.7	13.7						134.3	134.3			134.3
Effective Green, g (s)	15.7	15.7						136.3	136.3			136.3
Actuated g/C Ratio	0.10	0.10						0.85	0.85			0.85
Clearance Time (s)	6.0	6.0						6.0	6.0			6.0
Vehicle Extension (s)	3.0	3.0						0.2	0.2			0.2
Lane Grp Cap (vph)	151	299						3309	1184			3850
v/s Ratio Prot								0.70				0.43
v/s Ratio Perm	0.00								c0.98			
v/c Ratio	0.03	0.31						0.82	1.15			0.50
Uniform Delay, d1	65.2	67.1						5.8	11.8			3.1
Progression Factor	1.00	1.00						1.00	1.00			0.66
Incremental Delay, d2	0.1	0.6						2.4	54.5			0.4
Delay (s)	65.3	67.7						8.2	66.4			2.4
Level of Service	E	E						A	E			A
Approach Delay (s)		67.6			0.0			28.7	E			2.4
Approach LOS		E			A			C				A
<b>Intersection Summary</b>												
HCM 2000 Control Delay				21.2								C
HCM 2000 Volume to Capacity ratio				1.06								
Actuated Cycle Length (s)				160.0				Sum of lost time (s)			8.0	
Intersection Capacity Utilization				107.0%				ICU Level of Service			G	
Analysis Period (min)				10								

HCM Signalized Intersection Capacity Analysis  
17: Patrick St & Franklin St

Total Future AM w/o Development 2022

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
18: Patrick St

Total Future AM w/o Development 2022

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↔		
Traffic Volume (veh/h)	24	0	18	2257	0	0
Future Volume (veh/h)	24	0	18	2257	0	0
Sign Control	Stop		Free	Free		
Grade	0%		0%	0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	0	20	2453	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)				590	271	
Upstream signal (ft)						
pX, platoon unblocked	0.73					
vC, conflicting volume	858	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	100	99			
cM capacity (veh/h)	741	1084	1622			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3		
Volume Total	26	511	981	981		
Volume Left	26	20	0	0		
Volume Right	0	0	0	0		
cSH	741	1622	1700	1700		
Volume to Capacity	0.04	0.01	0.58	0.58		
Queue Length 95th (ft)	3	1	0	0		
Control Delay (s)	10.0	0.4	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	10.0	0.1				
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			58.9%		ICU Level of Service	B
Analysis Period (min)			10			

HCM Unsignalized Intersection Capacity Analysis  
20: Columbus St & Wolfe St

Total Future AM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	
Sign Control	Stop	Stop		Stop	Stop		Stop	Stop		Stop	Stop	
Traffic Volume (vph)	15	26	6	5	28	96	17	425	14	17	40	4
Future Volume (vph)	15	26	6	5	28	96	17	425	14	17	40	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	28	7	5	30	104	18	462	15	18	43	4
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	51	139	495	65								
Volume Left (vph)	16	5	18	18								
Volume Right (vph)	7	104	15	4								
Had (s)	0.01	-0.41	0.02	0.05								
Departure Headway (s)	5.5	4.9	4.5	5.0								
Degree Utilization, x	0.08	0.19	0.62	0.09								
Capacity (veh/h)	581	658	780	660								
Control Delay (s)	8.9	9.0	14.5	8.5								
Approach Delay (s)	8.9	9.0	14.5	8.5								
Approach LOS	A	A	B	A								
Intersection Summary												
Delay			12.6									
Level of Service			B									
Intersection Capacity Utilization			40.4%				ICU Level of Service				A	
Analysis Period (min)			10									

HCM 2010 AWSC

20: Columbus St & Wolfe St

Total Future AM w/o Development 2022

Intersection												
Intersection Delay, s/veh	12.5											
Intersection LOS	B											
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	15	26	6	0	5	28	96	0	17	425	14
Future Vol, veh/h	0	15	26	6	0	5	28	96	0	17	425	14
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	0	16	28	7	0	5	30	104	0	18	462	15
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach	EB				WB				NB			
Opposing Approach	WB				EB				SB			
Opposing Lanes	1				1				1			
Conflicting Approach Left	SB				NB				EB			
Conflicting Lanes Left	1				1				1			
Conflicting Approach Right	NB				SB				WB			
Conflicting Lanes Right	1				1				1			
HCM Control Delay	9				9.1				14.4			
HCM LOS	A				A				B			
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	4%	32%	4%	28%								
Vol Thru, %	93%	55%	22%	66%								
Vol Right, %	3%	13%	74%	7%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	456	47	129	61								
LT Vol	17	15	5	17								
Through Vol	425	26	28	40								
RT Vol	14	6	96	4								
Lane Flow Rate	496	51	140	66								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.617	0.077	0.19	0.092								
Departure Headway (Hd)	4.479	5.423	4.869	4.989								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	803	655	732	713								
Service Time	2.525	3.499	2.932	3.058								
HCM Lane V/C Ratio	0.618	0.078	0.191	0.093								
HCM Control Delay	14.4	9	9.1	8.6								
HCM Lane LOS	B	A	A	A								
HCM 95th-ile Q	4.2	0.2	0.7	0.3								

HCM 2010 AWSC

20: Columbus St & Wolfe St

Total Future AM w/o Development 2022

Intersection				
Intersection Delay, s/veh	12.5			
Intersection LOS	B			
Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	17	40	4
Future Vol, veh/h	0	17	40	4
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	18	43	4
Number of Lanes	0	0	1	0
Approach	SB			
Opposing Approach	NB			
Opposing Lanes	1			
Conflicting Approach Left	WB			
Conflicting Lanes Left	1			
Conflicting Approach Right	EB			
Conflicting Lanes Right	1			
HCM Control Delay	8.6			
HCM LOS	A			
Lane				



Queues

1: Alfred St & Cameron St

Total Future PM w/o Development 2022

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	719	161	504
v/c Ratio	0.57	0.28	0.71
Control Delay	20.2	8.1	21.8
Queue Delay	0.0	0.0	0.0
Total Delay	20.2	8.1	21.8
Queue Length 50th (ft)	140	25	177
Queue Length 95th (ft)	194	m40	298
Internal Link Dist (ft)	237	338	290
Turn Bay Length (ft)			
Base Capacity (vph)	1261	584	709
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	2
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.57	0.28	0.71

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

1: Alfred St & Cameron St

Total Future PM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←	←	←	←	←	←	←	←
Traffic Volume (vph)	0	0	0	24	626	12	42	106	0	0	349	115
Future Volume (vph)	0	0	0	24	626	12	42	106	0	0	349	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	12	12	12	12	12	12	12
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Frpb, ped/bikes					1.00			1.00			0.99	
Flpb, ped/bikes					1.00			1.00			1.00	
Frt					1.00			1.00			0.97	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3055			1459			1423	
Flt Permitted					1.00			0.81			1.00	
Satd. Flow (perm)					3055			1199			1423	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	26	680	13	46	115	0	0	379	125
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	15	0
Lane Group Flow (vph)	0	0	0	0	717	0	0	161	0	0	489	0
Confl. Peds. (#/hr)	36		35	35		36	31		28	28		31
Confl. Bikes (#/hr)			9			1						1
Parking (#/hr)					6			3				3
Turn Type					Perm	NA		Perm	NA		NA	
Protected Phases					2			1				1
Permitted Phases					2			1				1
Actuated Green, G (s)					32.0			38.0			38.0	
Effective Green, g (s)					33.0			39.0			39.0	
Actuated g/C Ratio					0.41			0.49			0.49	
Clearance Time (s)					5.0			5.0			5.0	
Lane Grp Cap (vph)					1260			584			693	
v/s Ratio Prot											0.34	
v/s Ratio Perm					0.23			0.13				
v/c Ratio					0.57			0.28			0.71	
Uniform Delay, d1					18.0			12.1			16.0	
Progression Factor					1.00			0.55			1.00	
Incremental Delay, d2					1.9			1.1			5.8	
Delay (s)					19.9			7.8			21.9	
Level of Service					B			A			C	
Approach Delay (s)	0.0				19.9			7.8			21.9	
Approach LOS	A				B			A			C	

Intersection Summary

HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	10		
c Critical Lane Group			

Queues

2: Henry St & King St

Total Future PM w/o Development 2022

Lane Group	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	383	104	272	1982
v/c Ratio	0.94	0.43	0.43	1.13
Control Delay	57.6	16.9	18.1	69.6
Queue Delay	0.0	0.0	1.5	0.0
Total Delay	57.6	16.9	19.6	69.6
Queue Length 50th (ft)	-195	45	122	-501
Queue Length 95th (ft)	#371	m49	m149	#614
Internal Link Dist (ft)	548		225	128
Turn Bay Length (ft)		100		
Base Capacity (vph)	409	242	637	1750
Starvation Cap Reductn	0	0	206	0
Spillback Cap Reductn	0	0	0	20
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.94	0.43	0.63	1.15

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.  
 - Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 - Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: Henry St & King St

Total Future PM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←	←	←	←	←	←	←	←
Traffic Volume (vph)	0	293	60	96	250	0	0	0	0	45	1747	31
Future Volume (vph)	0	293	60	96	250	0	0	0	0	45	1747	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	10	10	12	12	12	12	12	12	11
Total Lost time (s)		4.0		4.0	4.0						4.0	
Lane Util. Factor		1.00		1.00	1.00						0.78	
Frpb, ped/bikes		0.95		1.00	1.00						1.00	
Flpb, ped/bikes		1.00		0.98	1.00						1.00	
Frt		0.98		1.00	1.00						1.00	
Flt Protected		1.00		0.95	1.00						1.00	
Satd. Flow (prot)		1325		1452	1546						3588	
Flt Permitted		1.00		0.25	1.00						1.00	
Satd. Flow (perm)		1325		380	1546						3588	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	318	65	104	272	0	0	0	0	49	1899	34
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	374	0	104	272	0	0	0	0	0	1980	0
Confl. Peds. (#/hr)	266		291	291		266	65		18	18		65
Confl. Bikes (#/hr)			0			5						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)		3										3
Turn Type		NA		pm-pt	NA					Split	NA	
Protected Phases		6		5	2.6					4	4	
Permitted Phases				2.6								
Actuated Green, G (s)		23.2		33.0	33.0						37.0	
Effective Green, g (s)		24.2		34.0	34.0						38.0	
Actuated g/C Ratio		0.30		0.42	0.42						0.48	
Clearance Time (s)		5.0		5.0							5.0	
Vehicle Extension (s)		3.0		3.0							3.0	
Lane Grp Cap (vph)		400		239	657						1704	
v/s Ratio Prot		c0.28		0.03	c0.18						c0.55	
v/s Ratio Perm				0.15								
v/c Ratio		0.93		0.44	0.41						1.16	
Uniform Delay, d1		27.1		15.9	16.0						21.0	
Progression Factor		1.00		0.92	0.99						1.00	
Incremental Delay, d2		27.1		0.7	1.0						55.2	
Delay (s)		54.2		15.3	16.8						76.2	
Level of Service		D		B	B						E	
Approach Delay (s)	54.2			16.4				0.0			76.2	
Approach LOS	D			B				A			E	

Intersection Summary

HCM 2000 Control Delay	65.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	10		

HCM Signalized Intersection Capacity Analysis  
2: Henry St & King St

Total Future PM w/o Development 2022

c Critical Lane Group

Queues  
3: Patrick St & King St

Total Future PM w/o Development 2022

Lane Group	EBL	EBT	WBT	NBT
Lane Group Flow (vph)	60	273	377	1619
v/c Ratio	0.20	0.37	0.81	0.94
Control Delay	8.2	13.7	23.6	16.4
Queue Delay	0.0	1.8	0.8	0.0
Total Delay	8.2	15.5	24.4	16.4
Queue Length 50th (ft)	16	135	42	54
Queue Length 95th (ft)	m17	m141	m#304	#383
Internal Link Dist (ft)		225	238	340
Turn Bay Length (ft)		100		
Base Capacity (vph)	303	735	464	1717
Starvation Cap Reductn	0	311	13	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.20	0.64	0.84	0.94

**Intersection Summary**  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 # Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
3: Patrick St & King St

Total Future PM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕		↔	↕		↔	↕		↔	↕	
Traffic Volume (vph)	55	251	0	0	298	49	84	1352	53	0	0	0
Future Volume (vph)	55	251	0	0	298	49	84	1352	53	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0			4.0				
Lane Util. Factor	1.00	1.00			1.00			0.91				
Flpb, ped/bikes	1.00	1.00			0.96			1.00				
Flpb, ped/bikes	0.96	1.00			1.00			1.00				
Frt	1.00	1.00			0.98			0.99				
Flt Protected	0.95	1.00			1.00			1.00				
Satd. Flow (prot)	1433	1508			1354			4153				
Flt Permitted	0.33	1.00			1.00			1.00				
Satd. Flow (perm)	503	1508			1354			4153				
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)	60	273	0	0	324	53	91	1470	58	0	0	0
RTOR Reduction (vph)	0	0	0	0	7	0	0	5	0	0	0	0
Lane Group Flow (vph)	60	273	0	0	370	0	0	1614	0	0	0	0
Confl. Peds. (#/hr)	225		351	351		225	58		52	52		58
Confl. Bikes (#/hr)			3	4								
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	9	0	0	8	0	0	0	0	0	0	0
Parking (#/hr)					3			4				
Turn Type	pm+pt	NA			NA		Split	NA				
Protected Phases	2	2,3			3		1	1				
Permitted Phases	2,3				3							
Actuated Green, G (s)	32.4	37.4			25.4			32.0				
Effective Green, g (s)	34.4	38.4			27.0			33.0				
Actuated g/C Ratio	0.43	0.48			0.34			0.41				
Clearance Time (s)	5.0				5.6			5.0				
Lane Grp Cap (vph)	309	723			456			1713				
v/s Ratio Prot	0.02	c0.18			c0.27			c0.39				
v/s Ratio Perm	0.06											
v/c Ratio	0.19	0.38			0.81			0.94				
Uniform Delay, d1	14.2	13.2			24.2			22.6				
Progression Factor	0.69	1.00			0.48			0.29				
Incremental Delay, d2	0.4	0.5			10.3			7.9				
Delay (s)	10.2	13.7			21.8			14.5				
Level of Service	B	B			C			B				
Approach Delay (s)												0.0
Approach LOS		B			C			B				A

**Intersection Summary**  
 HCM 2000 Control Delay 15.5 HCM 2000 Level of Service B  
 HCM 2000 Volume to Capacity ratio 0.84  
 Actuated Cycle Length (s) 80.0 Sum of lost time (s) 12.6  
 Intersection Capacity Utilization 77.9% ICU Level of Service D  
 Analysis Period (min) 10  
 c Critical Lane Group

Queues  
4: Alfred St & King St


Total Future PM w/o Development 2022

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	299	396	129	445
v/c Ratio	0.53	0.70	0.21	0.71
Control Delay	7.5	15.6	10.0	22.9
Queue Delay	0.2	0.3	0.0	0.1
Total Delay	7.7	15.8	10.0	23.0
Queue Length 50th (ft)	28	63	20	109
Queue Length 95th (ft)	m40	89	35	206
Internal Link Dist (ft)	238	237	340	338
Turn Bay Length (ft)				
Base Capacity (vph)	566	566	610	627
Starvation Cap Reductn	27	0	0	7
Spillback Cap Reductn	0	15	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.55	0.72	0.21	0.72

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

HCM Signalized Intersection Capacity Analysis  
4: Alfred St & King St

Total Future PM w/o Development 2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	7	242	26	17	350	28	11	101	6	17	354	39
Future Volume (vph)	7	242	26	17	320	28	11	101	6	17	354	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	12	12	12	12	12	12
Total Lost time (s)	4.0		4.0		4.0		4.0		4.0		4.0	
Lane Util. Factor	1.00		1.00		1.00		1.00		1.00		1.00	
Frbp, ped/bikes	0.95		0.96		0.99		0.99		0.99		0.99	
Frbp, ped/bikes	0.99		0.99		1.00		1.00		1.00		1.00	
Frt	0.99		0.99		0.99		0.99		0.99		0.99	
Flt Protected	1.00		1.00		1.00		1.00		1.00		1.00	
Satd. Flow (prot)	1226		1239		1447		1437		1437		1437	
Flt Permitted	0.99		0.98		0.96		0.96		0.99		0.99	
Satd. Flow (perm)	1215		1217		1389		1389		1423		1423	
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)	8	263	28	18	348	30	12	110	7	18	385	42
RTOR Reduction (vph)	0	5	0	0	4	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	294	0	0	392	0	0	126	0	0	441	0
Confl. Peds. (#/hr)	272		319		319		272		51		72	
Confl. Bikes (#/hr)	0	12	3	0	11	3	0	0	1	0	0	0
Bus Blockages (#/hr)	0	12	0	0	11	0	0	0	0	0	0	0
Parking (#/hr)	3		3		3		3		3		3	
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	6		6		2		2		4		4	
Permitted Phases	6		6		2		2		4		4	
Actuated Green, G (s)	36.0		36.0		36.0		33.9		33.9		33.9	
Effective Green, g (s)	37.0		37.0		37.0		35.0		35.0		35.0	
Actuated g/C Ratio	0.46		0.46		0.46		0.44		0.44		0.44	
Clearance Time (s)	5.0		5.0		5.0		5.1		5.1		5.1	
Lane Grp Cap (vph)	561		562		607		622		622		622	
v/s Ratio Prot		0.24			c0.32		0.09		0.31		c0.31	
v/c Ratio	0.52		0.70		0.70		0.21		0.71		0.71	
Uniform Delay, d1	15.3		17.1		17.1		13.9		18.3		18.3	
Progression Factor	0.28		0.54		0.54		0.67		0.94		0.94	
Incremental Delay, d2	3.1		6.0		6.0		0.8		5.1		5.1	
Delay (s)	7.4		15.2		15.2		10.1		22.3		22.3	
Level of Service	A		B		B		B		C		C	
Approach Delay (s)	7.4		15.2		15.2		10.1		22.3		22.3	
Approach LOS	A		B		B		B		C		C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	15.3		HCM 2000 Level of Service				B					
HCM 2000 Volume to Capacity ratio	0.70											
Actuated Cycle Length (s)	80.0		Sum of lost time (s)				8.0					
Intersection Capacity Utilization	64.9%		ICU Level of Service				C					
Analysis Period (min)	10											
c Critical Lane Group												


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Queues  
5: Washington St & King St

Total Future PM w/o Development 2022



Lane Group	EBT	EBR	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	151	36	218	42	1027	2131
v/c Ratio	0.32	0.12	0.47	0.13	0.62	1.02
Control Delay	32.9	18.6	36.3	9.6	9.3	43.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	20.7
Total Delay	32.9	18.6	36.3	9.6	9.3	63.9
Queue Length 50th (ft)	88	10	134	0	100	-746
Queue Length 95th (ft)	147	36	211	26	142	#857
Internal Link Dist (ft)	237		569		335	130
Turn Bay Length (ft)	100					
Base Capacity (vph)	468	289	466	315	1655	2093
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	155
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.12	0.47	0.13	0.62	1.10
<b>Intersection Summary</b>						
- Volume exceeds capacity, queue is theoretically infinite.						
- Queue shown is maximum after two cycles.						
# 95th percentile volume exceeds capacity, queue may be longer.						
- Queue shown is maximum after two cycles.						


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HCM Signalized Intersection Capacity Analysis  
5: Washington St & King St

Total Future PM w/o Development 2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	0	139	33	0	201	39	0	888	57	0	1856	105
Future Volume (vph)	0	139	33	0	201	39	0	888	57	0	1856	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	9	8	12	9	9	10	10	10	8	10	10
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0		4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		0.95		0.95		0.78	
Frbp, ped/bikes	1.00	0.69		1.00	0.69		0.98		0.99		0.99	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00		1.00		1.00	
Frt	1.00	0.85		1.00	0.85		0.99		0.99		0.99	
Flt Protected	1.00	1.00		1.00	1.00		1.00		1.00		1.00	
Satd. Flow (prot)	1442	854		1436	882		2721		3442		3442	
Flt Permitted	1.00	1.00		1.00	1.00		1.00		1.00		1.00	
Satd. Flow (perm)	1442	854		1436	882		2721		3442		3442	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	151	36	0	218	42	0	965	62	0	2017	114
RTOR Reduction (vph)	0	0	12	0	0	28	0	0	0	0	0	0
Lane Group Flow (vph)	0	151	24	0	218	14	0	1027	0	0	2131	0
Confl. Peds. (#/hr)	291		275		275		291		76		117	
Confl. Bikes (#/hr)	0	11	0	0	12	0	0	0	0	0	2	2
Bus Blockages (#/hr)	0	11	0	0	12	0	0	0	0	0	2	2
Parking (#/hr)							3		3		3	
Turn Type	NA	Perm		NA	Perm		NA		NA		NA	
Protected Phases	2			2			1		1		1	
Permitted Phases	2			2			1		1		1	
Actuated Green, G (s)	37.1	37.1		37.1	37.1		72.0		72.0		72.0	
Effective Green, g (s)	39.0	39.0		39.0	39.0		73.0		73.0		73.0	
Actuated g/C Ratio	0.32	0.32		0.32	0.32		0.61		0.61		0.61	
Clearance Time (s)	5.9	5.9		5.9	5.9		5.0		5.0		5.0	
Lane Grp Cap (vph)	468	277		466	286		1655		2093		2093	
v/s Ratio Prot		0.10			c0.15		0.38		c0.62		c0.62	
v/s Ratio Perm		0.03			0.02		0.62		1.02		1.02	
v/c Ratio	0.32	0.09		0.47	0.05		0.62		1.02		1.02	
Uniform Delay, d1	30.5	28.1		32.2	27.8		14.8		23.5		23.5	
Progression Factor	1.00	1.00		1.00	1.00		0.52		1.00		1.00	
Incremental Delay, d2	1.8	0.6		3.3	0.3		1.5		19.2		19.2	
Delay (s)	32.4	28.7		35.6	28.1		9.1		42.7		42.7	
Level of Service	C	C		D	C		A		D		D	
Approach Delay (s)	31.7			34.4			9.1		42.7		42.7	
Approach LOS	C			C			A		D		D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	31.9		HCM 2000 Level of Service				C					
HCM 2000 Volume to Capacity ratio	0.83											
Actuated Cycle Length (s)	120.0		Sum of lost time (s)				8.0					
Intersection Capacity Utilization	76.1%		ICU Level of Service				D					
Analysis Period (min)	10											
c Critical Lane Group												


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Queues  
6: Henry St & Prince St

Total Future PM w/o Development 2022



Lane Group	EBT	SBT
Lane Group Flow (vph)	1248	1548
v/c Ratio	1.09	0.90
Control Delay	65.4	6.0
Queue Delay	0.0	4.0
Total Delay	65.4	10.0
Queue Length 50th (ft)	-375	38
Queue Length 95th (ft)	#504	m33
Internal Link Dist (ft)	636	338
Turn Bay Length (ft)	100	
Base Capacity (vph)	1142	1711
Starvation Cap Reductn	0	2
Spillback Cap Reductn	0	120
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.09	0.97
<b>Intersection Summary</b>		
- Volume exceeds capacity, queue is theoretically infinite.		
- Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer.		
- Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

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HCM Signalized Intersection Capacity Analysis

6: Henry St & Prince St

Total Future PM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑↑↑	
Traffic Volume (vph)	0	712	436	0	0	0	0	0	0	33	1391	0
Future Volume (vph)	0	712	436	0	0	0	0	0	0	33	1391	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	10	12
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.78	
Fripb, ped/bikes		0.98									1.00	
Fipb, ped/bikes		1.00									1.00	
Frt		0.94									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		2749									3482	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		2749									3482	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	774	474	0	0	0	0	0	0	36	1512	0
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	1240	0	0	0	0	0	0	0	0	1534	0
Confl. Peds. (#/hr)	37	31	31	31	37	19	8	8	8	8	19	19
Confl. Bikes (#/hr)		11			2							1
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Parking (#/hr)	6										3	
Turn Type	NA									Perm	NA	
Protected Phases	2										1	
Permitted Phases												1
Actuated Green, G (s)		32.0									38.0	
Effective Green, g (s)		33.0									39.0	
Actuated g/C Ratio		0.41									0.49	
Clearance Time (s)		5.0									5.0	
Lane Grp Cap (vph)		1133									1697	
v/s Ratio Prot		0.45										
v/s Ratio Perm											0.44	
v/c Ratio		1.09									0.90	
Uniform Delay, d1		23.5									18.8	
Progression Factor		1.00									0.21	
Incremental Delay, d2		41.0									0.9	
Delay (s)		64.5									4.8	
Level of Service		E									A	
Approach Delay (s)		64.5			0.0			0.0			4.8	
Approach LOS		E			A			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		31.5										
HCM 2000 Volume to Capacity ratio		0.99										
Actuated Cycle Length (s)		80.0									8.0	
Intersection Capacity Utilization		77.9%									ICU Level of Service	D
Analysis Period (min)		10										
c Critical Lane Group												

Queues

7: Alfred St & Prince St

Total Future PM w/o Development 2022

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	696	115	431
v/c Ratio	0.51	0.17	0.67
Control Delay	5.0	12.0	26.7
Queue Delay	0.2	0.0	0.1
Total Delay	5.2	12.0	26.8
Queue Length 50th (ft)	32	25	139
Queue Length 95th (ft)	42	m50	233
Internal Link Dist (ft)	244	348	340
Turn Bay Length (ft)			
Base Capacity (vph)	1364	661	647
Starvation Cap Reductn	139	0	8
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.57	0.17	0.67
<b>Intersection Summary</b>			
m Volume for 95th percentile queue is metered by upstream signal.			

HCM Signalized Intersection Capacity Analysis

7: Alfred St & Duke St

Total Future PM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (vph)	35	566	40	0	0	0	0	95	11	33	363	0
Future Volume (vph)	35	566	40	0	0	0	0	95	11	33	363	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	12	12	12	12	12	12
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Fripb, ped/bikes		1.00						1.00			1.00	
Fipb, ped/bikes		1.00						1.00			1.00	
Frt		0.99						0.99			1.00	
Flt Protected		1.00						1.00			1.00	
Satd. Flow (prot)		3019						1457			1475	
Flt Permitted		1.00						1.00			0.97	
Satd. Flow (perm)		3019						1457			1439	
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)	38	615	43	0	0	0	0	103	12	36	395	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	690	0	0	0	0	0	110	0	0	431	0
Confl. Peds. (#/hr)	43	42	42			43	30		34	34		30
Confl. Bikes (#/hr)		7							2			2
Parking (#/hr)		6						3				3
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases	1							2			2	
Permitted Phases												2
Actuated Green, G (s)		35.0						35.0			35.0	
Effective Green, g (s)		36.0						36.0			36.0	
Actuated g/C Ratio		0.45						0.45			0.45	
Clearance Time (s)		5.0						5.0			5.0	
Lane Grp Cap (vph)		1358						655			647	
v/s Ratio Prot								0.08				
v/s Ratio Perm		0.23									0.30	
v/c Ratio		0.51						0.17			0.67	
Uniform Delay, d1		15.7						13.1			17.3	
Progression Factor		0.24						0.93			1.27	
Incremental Delay, d2		1.3						0.5			3.8	
Delay (s)		5.0						12.7			25.6	
Level of Service		A						B			C	
Approach Delay (s)		5.0				0.0		12.7			25.6	
Approach LOS		A				A		B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		12.9										
HCM 2000 Volume to Capacity ratio		0.59										
Actuated Cycle Length (s)		80.0									8.0	
Intersection Capacity Utilization		60.1%									ICU Level of Service	B
Analysis Period (min)		10										
c Critical Lane Group												

Queues

8: Henry St & Duke St

Total Future PM w/o Development 2022

Lane Group	EBT	EBR	WBL	WBT	SBT
Lane Group Flow (vph)	326	623	197	650	1857
v/c Ratio	0.62	0.99	0.69	0.53	1.06
Control Delay	46.5	59.8	17.7	13.6	35.1
Queue Delay	0.0	0.0	0.0	0.7	0.0
Total Delay	46.5	59.8	17.7	14.3	35.1
Queue Length 50th (ft)	155	155	44	91	-432
Queue Length 95th (ft)	#289	#260	m48	m100	m#480
Internal Link Dist (ft)	72			232	350
Turn Bay Length (ft)		125			
Base Capacity (vph)	398	631	287	1221	1760
Starvation Cap Reductn	0	0	0	267	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.82	0.99	0.69	0.68	1.06
<b>Intersection Summary</b>					
- Volume exceeds capacity, queue is theoretically infinite.					
- Queue shown is maximum after two cycles.					
# 95th percentile volume exceeds capacity, queue may be longer.					
- Queue shown is maximum after two cycles.					
m Volume for 95th percentile queue is metered by upstream signal.					

HCM Signalized Intersection Capacity Analysis  
8: Henry St & Duke St

Total Future PM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↑	↑	↑					↑	↑	↑
Traffic Volume (vph)	0	300	573	181	598	0	0	0	0	0	1646	63
Future Volume (vph)	0	300	573	181	598	0	0	0	0	0	1646	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	10	12	12	12	12	12	11	12
Total Lost time (s)		4.0	4.0	4.0	4.0						4.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00						0.78	
Fripb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	
Fripb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	
Frt	1.00	0.85	1.00	1.00	1.00						0.99	
Flt Protected	1.00	1.00	0.95	1.00	1.00						1.00	
Satd. Flow (prot)	1676	2660	1484	2961	3600						3600	
Flt Permitted	1.00	1.00	0.23	1.00	1.00						1.00	
Satd. Flow (perm)	1676	2660	357	2961	3600						3600	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	326	623	197	650	0	0	0	0	0	1789	68
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	326	623	197	650	0	0	0	0	0	1853	0
Confl. Peds. (#/hr)	20	15	15	15	20	18	21	21	21	21	18	18
Confl. Bikes (#/hr)		2			4							
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)												1
Turn Type	NA	Prot	pm+pt	NA	NA						NA	
Protected Phases	8	8	7	4							2	
Permitted Phases			4									
Actuated Green, G (s)	17.7	17.7	31.7	31.7							37.9	
Effective Green, g (s)	19.0	19.0	32.7	33.0							39.0	
Actuated g/C Ratio	0.24	0.24	0.41	0.41							0.49	
Clearance Time (s)	5.3	5.3	5.0	5.3							5.1	
Lane Grp Cap (vph)	398	631	286	1221							1755	
v/s Ratio Prot	0.19	c0.23	c0.09	0.22							c0.51	
v/s Ratio Perm			0.19									
v/c Ratio	0.82	0.99	0.69	0.53							1.06	
Uniform Delay, d1	28.9	30.4	17.6	17.7							20.5	
Progression Factor	1.00	1.00	0.78	0.73							0.51	
Incremental Delay, d2	15.8	27.2	5.1	0.6							21.6	
Delay (s)	44.7	57.6	18.8	13.5							32.0	
Level of Service	D	E	B	B							C	
Approach Delay (s)	53.2		14.7				0.0				32.0	
Approach LOS	D		B				A				C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		33.5										C
HCM 2000 Volume to Capacity ratio		0.99										
Actuated Cycle Length (s)		80.0									12.0	
Intersection Capacity Utilization		81.9%									D	
Analysis Period (min)		10										
c Critical Lane Group												

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Queues  
9: Patrick St & Duke St

Total Future PM w/o Development 2022

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	337	667	1755
v/c Ratio	0.35	0.88	1.01
Control Delay	20.5	23.4	49.1
Queue Delay	1.1	0.0	0.0
Total Delay	21.6	23.4	49.1
Queue Length 50th (ft)	98	131	-354
Queue Length 95th (ft)	m140	m#490	#465
Internal Link Dist (ft)	232	245	212
Turn Bay Length (ft)			
Base Capacity (vph)	968	757	1733
Starvation Cap Reductn	402	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.60	0.88	1.01
<b>Intersection Summary</b>			
- Volume exceeds capacity, queue is theoretically infinite.			
- Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
- Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

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HCM Signalized Intersection Capacity Analysis  
9: Patrick St & Duke St

Total Future PM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑	↑	↑		
Traffic Volume (vph)	4	306	0	0	593	20	235	1305	75	0	0	0
Future Volume (vph)	4	306	0	0	593	20	235	1305	75	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0				4.0			
Lane Util. Factor	1.00	1.00			1.00				0.91			
Fripb, ped/bikes	1.00	1.00			1.00				1.00			
Fripb, ped/bikes	1.00	1.00			1.00				1.00			
Frt	1.00	1.00			1.00				0.99			
Flt Protected	1.00	1.00			1.00				0.99			
Satd. Flow (prot)	1899				1476				4455			
Flt Permitted	0.99				1.00				0.99			
Satd. Flow (perm)	1889				1476				4455			
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)	4	333	0	0	645	22	255	1418	82	0	0	0
RTOR Reduction (vph)	0	0	0	0	1	0	0	7	0	0	0	0
Lane Group Flow (vph)	0	337	0	0	666	0	0	1748	0	0	0	0
Confl. Peds. (#/hr)	14	15	15	15	14	8	8	5	5	5	8	8
Confl. Bikes (#/hr)		2			3							
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Parking (#/hr)					3							
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases	2	2			2		1	1				
Permitted Phases												
Actuated Green, G (s)	39.8				39.8			30.0				
Effective Green, g (s)	41.0				41.0			31.0				
Actuated g/C Ratio	0.51				0.51			0.39				
Clearance Time (s)	5.2				5.2			5.0				
Lane Grp Cap (vph)	968				756			1726				
v/s Ratio Prot					c0.45							
v/s Ratio Perm	0.18							0.39				
v/c Ratio	0.35				0.88			1.01				
Uniform Delay, d1	11.6				17.3			24.5				
Progression Factor	1.68				0.62			1.30				
Incremental Delay, d2	0.6				10.6			17.2				
Delay (s)	20.0				21.3			49.1				
Level of Service	B				C			D				
Approach Delay (s)	20.0				21.3			49.1			0.0	
Approach LOS	B				C			D			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		38.8										D
HCM 2000 Volume to Capacity ratio		0.94										
Actuated Cycle Length (s)		80.0						8.0				
Intersection Capacity Utilization		80.1%						D				
Analysis Period (min)		10										
c Critical Lane Group												

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Queues  
10: Alfred St & Duke St

Total Future PM w/o Development 2022

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	376	555	89	399
v/c Ratio	0.48	0.64	0.22	0.82
Control Delay	7.5	10.2	18.9	31.4
Queue Delay	0.3	0.5	0.0	1.6
Total Delay	7.8	10.7	18.9	33.0
Queue Length 50th (ft)	36	97	29	97
Queue Length 95th (ft)	m46	m137	63	#310
Internal Link Dist (ft)	245	227	398	348
Turn Bay Length (ft)				
Base Capacity (vph)	791	864	403	488
Starvation Cap Reductn	86	71	0	0
Spillback Cap Reductn	11	39	19	24
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.53	0.70	0.23	0.86
<b>Intersection Summary</b>				
# 95th percentile volume exceeds capacity, queue may be longer.				
- Queue shown is maximum after two cycles.				
m Volume for 95th percentile queue is metered by upstream signal.				

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HCM Signalized Intersection Capacity Analysis

10: Alfred St & Duke St

Total Future PM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔		↔	↔	
Traffic Volume (vph)	34	284	28	7	485	18	32	43	6	11	281	75
Future Volume (vph)	34	284	28	7	485	18	32	43	6	11	281	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	14	12	12	11	12	12	11	12
Total Lost time (s)	4.0			4.0			4.0			4.0		
Lane Util. Factor	1.00			1.00			1.00			1.00		
Frlpb, ped/bikes	0.99			1.00			1.00			0.98		
Frlpb, ped/bikes	1.00			1.00			0.99			1.00		
Frt	0.99			1.00			0.99			0.97		
Flt Protected	1.00			1.00			0.98			1.00		
Satd. Flow (prot)	1545			1575			1390			1369		
Flt Permitted	0.92			0.99			0.81			0.99		
Satd. Flow (perm)	1432			1568			1142			1361		
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)	37	309	30	8	527	20	35	47	7	12	305	82
RTOR Reduction (vph)	0	4	0	0	2	0	0	4	0	0	12	0
Lane Group Flow (vph)	0	372	0	0	553	0	0	85	0	0	387	0
Confl. Peds. (#/hr)	15		32	32		15	27		14	14		27
Confl. Bikes (#/hr)	0	0	1	0	3	0	0	0	0	0	0	1
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)	3				1			1				3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2	2		2	2		1	1		1	1	
Permitted Phases	2	2		2	2		1	1		1	1	
Actuated Green, G (s)	43.0			43.0			27.0			27.0		
Effective Green, g (s)	44.0			44.0			28.0			28.0		
Actuated g/C Ratio	0.55			0.55			0.35			0.35		
Clearance Time (s)	5.0			5.0			5.0			5.0		
Lane Grp Cap (vph)	787			862			399			476		
v/s Ratio Prot	0.26			c0.35			0.07			c0.28		
v/c Ratio	0.47			0.64			0.21			0.81		
Uniform Delay, d1	10.9			12.5			18.3			23.6		
Progression Factor	0.52			0.57			1.00			0.84		
Incremental Delay, d2	1.8			2.7			1.2			10.5		
Delay (s)	7.5			9.9			19.5			30.4		
Level of Service	A			A			B			C		
Approach Delay (s)	7.5			9.9			19.5			30.4		
Approach LOS	A			A			B			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	15.6			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.71											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	71.4%			ICU Level of Service			C					
Analysis Period (min)	10											

Queues

11: Columbus St & Duke St

Total Future PM w/o Development 2022

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	345	395	180	606
v/c Ratio	0.58	0.65	0.38	0.86
Control Delay	19.9	24.6	15.8	30.9
Queue Delay	0.3	3.8	0.0	0.0
Total Delay	20.3	28.5	15.8	30.9
Queue Length 50th (ft)	80	152	54	183
Queue Length 95th (ft)	m92	250	103	m#406
Internal Link Dist (ft)	227	231	389	358
Turn Bay Length (ft)				
Base Capacity (vph)	594	608	477	702
Starvation Cap Reductn	38	138	0	0
Spillback Cap Reductn	0	3	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	0.84	0.38	0.86
<b>Intersection Summary</b>				
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.				
m Volume for 95th percentile queue is metered by upstream signal.				

HCM Signalized Intersection Capacity Analysis

11: Columbus St & Duke St

Total Future PM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔		↔	↔	
Traffic Volume (vph)	12	281	25	8	331	24	71	94	1	8	443	106
Future Volume (vph)	12	281	25	8	331	24	71	94	1	8	443	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	14	12	12	11	12	12	11	12
Total Lost time (s)	4.0			4.0			4.0			4.0		
Lane Util. Factor	1.00			1.00			1.00			1.00		
Frlpb, ped/bikes	0.99			1.00			1.00			0.99		
Frlpb, ped/bikes	1.00			1.00			0.99			1.00		
Frt	0.99			0.99			1.00			0.97		
Flt Protected	1.00			1.00			0.98			1.00		
Satd. Flow (prot)	1455			1478			1442			1424		
Flt Permitted	0.98			0.99			0.66			1.00		
Satd. Flow (perm)	1432			1467			979			1420		
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)	13	305	27	9	360	26	77	102	1	9	482	115
RTOR Reduction (vph)	0	4	0	0	3	0	0	0	0	0	11	0
Lane Group Flow (vph)	0	341	0	0	392	0	0	180	0	0	595	0
Confl. Peds. (#/hr)	21		27	27		21	26		12	12		26
Confl. Bikes (#/hr)			5		1		2		3			3
Parking (#/hr)	3				1			3				3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	6	6		2	2		4	4		8	8	
Permitted Phases	6	6		2	2		4	4		8	8	
Actuated Green, G (s)	32.0			32.0			38.0			38.0		
Effective Green, g (s)	33.0			33.0			39.0			39.0		
Actuated g/C Ratio	0.41			0.41			0.49			0.49		
Clearance Time (s)	5.0			5.0			5.0			5.0		
Lane Grp Cap (vph)	590			605			477			692		
v/s Ratio Prot	0.24			c0.27			0.18			c0.42		
v/c Ratio	0.58			0.65			0.38			0.86		
Uniform Delay, d1	18.1			18.8			12.9			18.1		
Progression Factor	0.88			1.00			1.00			1.11		
Incremental Delay, d2	3.7			5.2			2.3			9.7		
Delay (s)	19.6			24.1			15.1			29.8		
Level of Service	B			C			B			C		
Approach Delay (s)	19.6			24.1			15.1			29.8		
Approach LOS	B			C			B			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	24.3			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.76											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	85.7%			ICU Level of Service			E					
Analysis Period (min)	10											

Queues

12: Washington St & Duke St

Total Future PM w/o Development 2022

Lane Group	EBT	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	314	308	832	30	2020
v/c Ratio	0.66	0.60	0.57	0.04	1.02
Control Delay	55.1	35.6	18.7	4.8	18.5
Queue Delay	17.6	0.0	0.0	0.0	1.0
Total Delay	72.6	35.6	18.7	4.8	19.5
Queue Length 50th (ft)	216	186	207	1	-49
Queue Length 95th (ft)	#388	285	268	15	m#715
Internal Link Dist (ft)	231	575	344		349
Turn Bay Length (ft)				115	
Base Capacity (vph)	367	516	1451	680	1977
Starvation Cap Reductn	57	0	0	0	9
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.01	0.60	0.57	0.04	1.03
<b>Intersection Summary</b>					
- Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.					
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.					
m Volume for 95th percentile queue is metered by upstream signal.					

HCM Signalized Intersection Capacity Analysis  
12: Washington St & Duke St

Total Future PM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↕			↕		
Traffic Volume (vph)	106	130	53	29	209	45	2	764	28	2	1670	187
Future Volume (vph)	106	130	53	29	209	45	2	764	28	2	1670	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	11	9	9	9	11	9
Total Lost time (s)	4.0			4.0			4.0			4.0		
Lane Util. Factor	1.00			1.00			0.95			1.00		
Flpb, ped/bikes	1.00			0.99			1.00			0.92		
Flpb, ped/bikes	0.99			1.00			1.00			1.00		
Fit	0.98			0.98			1.00			0.85		
Fit Protected	0.98			0.99			1.00			1.00		
Satd. Flow (prot)	1441			1468			2702			1181		
Fit Permitted	0.67			0.94			0.95			1.00		
Satd. Flow (perm)	985			1392			2561			1181		
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)	115	141	58	32	227	49	2	830	30	2	1815	203
RTOR Reduction (vph)	0	7	0	0	6	0	0	0	12	0	9	0
Lane Group Flow (vph)	0	307	0	0	302	0	0	832	18	0	2011	0
Confl. Peds. (#/hr)	24	8	8	8	24	30	20	20	20	20	30	0
Confl. Bikes (#/hr)	0	2	2	2	1	1	0	0	1	0	0	1
Bus Blockages (#/hr)	0	2	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)	3	3	3	3	3	3	3	3	3	3	3	3
Turn Type	Perm	NA	NA	Perm	NA	NA	Perm	NA	Perm	Perm	NA	NA
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	42.5			42.5			67.0			67.0		
Effective Green, g (s)	44.0			44.0			68.0			68.0		
Actuated g/C Ratio	0.37			0.37			0.57			0.57		
Clearance Time (s)	5.5			5.5			5.0			5.0		
Lane Grp Cap (vph)	361			510			1451			1966		
v/s Ratio Prot	c0.31			0.22			0.32			0.02		
v/c Ratio Perm	0.85			0.59			0.57			0.03		
v/c Ratio	35.0			30.7			16.7			11.4		
Uniform Delay, d1	1.00			1.00			1.00			1.00		
Progression Factor	1.00			1.00			1.00			1.00		
Incremental Delay, d2	19.7			4.9			1.6			0.1		
Delay (s)	54.7			35.7			18.3			11.5		
Level of Service	D			D			B			B		
Approach Delay (s)	54.7			35.7			18.1			15.7		
Approach LOS	D			D			B			B		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	21.5			HCM 2000 Level of Service			C			C		
HCM 2000 Volume to Capacity ratio	0.95											
Actuated Cycle Length (s)	120.0			Sum of lost time (s)			8.0			8.0		
Intersection Capacity Utilization	92.3%			ICU Level of Service			F			F		
Analysis Period (min)	10											

HCM Unsignalized Intersection Capacity Analysis  
13: Patrick St & Henry to Patrick Connector

Total Future PM w/o Development 2022

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↕		↕	
Traffic Volume (veh/h)	56	0	0	1542	0	0
Future Volume (veh/h)	56	0	0	1542	0	0
Sign Control	Yield		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	61	0	0	1676	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None None					
Median storage (veh)						
Upstream signal (ft)	414 441					
pX, platoon unblocked	0.79					
vC, conflicting volume	559	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
IC, single (s)	6.8	6.9	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	92	100	100			
cM capacity (veh/h)	806	1084	1622			
<b>Direction, Lane #</b>						
Volume Total	EB 1	NB 1	NB 2	NB 3		
Volume Left	61	0	0	0		
Volume Right	0	0	0	0		
cSH	806	1700	1700	1700		
Volume to Capacity	0.08	0.33	0.33	0.33		
Queue Length 95th (ft)	6	0	0	0		
Control Delay (s)	9.8	0.0	0.0	0.0		
Lane LOS	A					
Approach Delay (s)	9.8	0.0				
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay	0.3					
Intersection Capacity Utilization	93.8%					
ICU Level of Service	F					
Analysis Period (min)	10					

HCM Unsignalized Intersection Capacity Analysis  
14: Alfred St & Wolfe Street/Wolfe St.

Total Future PM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↕			↕		
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	10	4	4	96	24	38	7	34	5	38	224	26
Future Volume (vph)	10	4	4	96	24	38	7	34	5	38	224	26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	4	4	104	26	41	8	37	5	41	243	28
<b>Direction, Lane #</b>												
Volume Total (vph)	EB 1	WB 1	NB 1	SB 1								
Volume Left (vph)	11	104	8	41								
Volume Right (vph)	4	4	5	28								
Hd/s	0.02	0.01	0.01	0.01								
Departure Headway (s)	5.0	4.8	4.8	4.5								
Degree Utilization, x	0.03	0.23	0.07	0.39								
Capacity (veh/h)	648	699	709	775								
Control Delay (s)	8.2	9.2	8.1	10.2								
Approach Delay (s)	8.2	9.2	8.1	10.2								
Approach LOS	A	A	A	B								
<b>Intersection Summary</b>												
Delay	9.6											
Level of Service	A											
Intersection Capacity Utilization	41.4%			ICU Level of Service			A			A		
Analysis Period (min)	10											

HCM 2010 AWSC  
14: Alfred St & Wolfe Street/Wolfe St.

Total Future PM w/o Development 2022

<b>Intersection</b>												
Intersection Delay, s/veh	9.6											
Intersection LOS	A											
<b>Movement</b>												
Traffic Vol, veh/h	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Future Vol, veh/h	0	10	4	4	0	96	24	38	0	7	34	5
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	0	11	4	4	0	104	26	41	0	8	37	5
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
<b>Approach</b>												
Opposing Approach	EB			WB			NB			SB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB					
Conflicting Lanes Left	1			1			1					
Conflicting Approach Right	NB			SB			WB					
Conflicting Lanes Right	1			1			1					
HCM Control Delay	8.2			9.2			8.1			10.2		
HCM LOS	A			A			A			B		
<b>Lane</b>												
Vol Left, %	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Thru, %	15%	56%	61%	13%								
Vol Right, %	74%	22%	15%	78%								
Sign Control	Stop Stop Stop Stop											
Traffic Vol by Lane	46	18	158	288								
LT Vol	7	10	96	38								
Through Vol	34	4	24	224								
RT Vol	5	4	38	26								
Lane Flow Rate	50	20	172	313								
Geometry Grp	1 1 1 1											
Degree of Util (X)	0.066	0.027	0.228	0.386								
Departure Headway (Hd)	4.721	4.973	4.772	4.435								
Convergence, Y/N	Yes Yes Yes Yes											
Cap	757	717	751	811								
Service Time	2.761	3.021	2.808	2.464								
HCM Lane V/C Ratio	0.066	0.028	0.229	0.386								
HCM Control Delay	8.1	8.2	9.2	10.2								
HCM Lane LOS	A	A	A	B								
HCM 95th-ile Q	0.2	0.1	0.9	1.8								

Intersection				
Intersection Delay s/veh				
Intersection LOS				
Movement	SBU	SBL	SBT	SBR
Traffic Vol. veh/h	0	38	224	26
Future Vol. veh/h	0	38	224	26
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	41	243	28
Number of Lanes	0	0	1	0
Approach				
SB				
Opposing Approach				
NB				
Opposing Lanes				
1				
Conflicting Approach Left				
WB				
Conflicting Lanes Left				
1				
Conflicting Approach Right				
EB				
Conflicting Lanes Right				
1				
HCM Control Delay				
10.2				
HCM LOS				
B				
Lane				

Lane Group	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	659	802	1693	2694
v/c Ratio	1.36	1.46d	0.87	1.08
Control Delay	140.8	29.8	20.8	44.0
Queue Delay	0.1	0.3	0.8	5.6
Total Delay	140.9	30.1	21.6	49.6
Queue Length 50th (ft)	-494	166	257	-244
Queue Length 95th (ft)	m#672	m#292	426	m39
Internal Link Dist (ft)		273	346	346
Turn Bay Length (ft)				
Base Capacity (vph)	485	925	1954	2490
Starvation Cap Reductn	1	9	0	0
Spillback Cap Reductn	4	4	83	540
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.37	0.88	0.90	1.38
Intersection Summary				
- Volume exceeds capacity, queue is theoretically infinite.				
- Queue shown is maximum after two cycles.				
# 95th percentile volume exceeds capacity, queue may be longer.				
- Queue shown is maximum after two cycles.				
m Volume for 95th percentile queue is metered by upstream signal.				
d# Defacto Left Lane. Recode with 1 though lane as a left lane.				

HCM Signalized Intersection Capacity Analysis

15: Patrick St & Gibbon St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↓	↑			↑	↑		↑	↑
Traffic Volume (vph)	0	0	0	1213	122	9	19	1538	0	0	2460	18
Future Volume (vph)	0	0	0	1213	122	9	19	1538	0	0	2460	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	12	12	12	12	12	12
Grade (%)		0%			2%			0%			0%	
Total Lost time (s)		4.0		4.0				4.0			4.0	
Lane Util. Factor		0.91		0.91				0.91			0.91	
Frtb, ped/bikes		1.00		1.00				1.00			1.00	
Ftjb, ped/bikes		1.00		1.00				1.00			1.00	
Frt		1.00		1.00				1.00			1.00	
Flt Protected		0.95		0.96				1.00			1.00	
Satd. Flow (prot)		1386		2639				4530			4527	
Flt Permitted		0.95		0.96				0.78			1.00	
Satd. Flow (perm)		1386		2639				3553			4527	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	1318	133	10	21	1672	0	0	2674	20
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	659	801	0	0	1693	0	0	2693	0
Confl. Peds. (#/hr)	17	0	1	1	17	7		8	8		7	
Confl. Bikes (#/hr)			3		1							
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)				1								
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases				2	2		1	1			1	
Permitted Phases				2			1					
Actuated Green, G (s)				26.0	26.0		42.5	42.5			42.5	
Effective Green, g (s)				28.0	28.0		44.0	44.0			44.0	
Actuated g/C Ratio				0.35	0.35		0.55	0.55			0.55	
Clearance Time (s)				6.0	6.0		5.5	5.5			5.5	
Vehicle Extension (s)				2.0	2.0		2.0	2.0			2.0	
Lane Grp Cap (vph)				485	923		1954	2489			2489	
v/s Ratio Prot												c0.59
v/s Ratio Perm				c0.48	0.30		0.48					
v/c Ratio				1.36	1.46d		0.87	1.08			1.08	
Uniform Delay, d1				26.0	24.3		15.5	18.0			18.0	
Progression Factor				0.90	0.89		1.02	0.91			0.91	
Incremental Delay, d2				116.2	5.5		4.8	25.4			41.8	
Delay (s)				139.6	27.1		20.6	41.8			41.8	
Level of Service				F	C		C	D			D	
Approach Delay (s)	0.0				77.9		20.6	41.8				
Approach LOS	A				E		C	D				
Intersection Summary												
HCM 2000 Control Delay	44.6			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	1.19											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	103.9%			ICU Level of Service			G					

HCM Signalized Intersection Capacity Analysis

15: Patrick St & Gibbon St

Analysis Period (min)	10
d# Defacto Left Lane. Recode with 1 though lane as a left lane.	
c Critical Lane Group	

Queues

16: Alfred St & Gibbon St

Total Future PM w/o Development 2022

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	927	262	350
v/c Ratio	0.73	0.97	0.62
Control Delay	13.3	62.4	14.9
Queue Delay	1.5	9.4	0.4
Total Delay	14.7	71.8	15.3
Queue Length 50th (ft)	80	55	50
Queue Length 95th (ft)	133	#165	#120
Internal Link Dist (ft)	218	136	305
Turn Bay Length (ft)			
Base Capacity (vph)	1275	269	562
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	181	14	32
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.85	1.03	0.66

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

16: Alfred St & Gibbon St

Total Future PM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←	←	←	←	←	←	←	←
Traffic Volume (vph)	0	0	0	0	851	2	204	37	0	0	48	274
Future Volume (vph)	0	0	0	0	851	2	204	37	0	0	48	274
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	12	12	12	12	12	13	12
Total Lost time (s)					4.0			4.0				4.0
Lane Util. Factor					0.95			1.00				1.00
Frpb, ped/bikes					1.00			1.00				0.97
Flpb, ped/bikes					1.00			0.99				1.00
Frt					1.00			1.00				0.89
Flt Protected					1.00			0.96				1.00
Satd. Flow (prot)					2832			1613				1491
Flt Permitted					1.00			0.46				1.00
Satd. Flow (perm)					2832			769				1491
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	925	2	222	40	0	0	52	298
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	41	0
Lane Group Flow (vph)	0	0	0	0	926	0	0	262	0	0	309	0
Confl. Peds. (#/hr)	17		10	10		17	21		23	23		21
Confl. Bikes (#/hr)					1				1			4
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)					1							
Turn Type					NA		Perm	NA		NA		NA
Protected Phases					2			1				1
Permitted Phases					2			1				1
Actuated Green, G (s)					17.0			12.7				12.7
Effective Green, g (s)					18.0			14.0				14.0
Actuated g/C Ratio					0.45			0.35				0.35
Clearance Time (s)					5.0			5.3				5.3
Lane Grp Cap (vph)					1274			269				521
v/s Ratio Prot					c0.33							0.21
v/s Ratio Perm								c0.34				
v/c Ratio					0.73							0.59
Uniform Delay, d1					9.0			12.8				10.7
Progression Factor					1.00			1.00				1.00
Incremental Delay, d2					3.6			40.5				4.8
Delay (s)					12.6			53.3				15.5
Level of Service					B			D				B
Approach Delay (s)		0.0			12.6			53.3				15.5
Approach LOS		A			B			D				B

Intersection Summary

HCM 2000 Control Delay 20.2 HCM 2000 Level of Service C  
 HCM 2000 Volume to Capacity ratio 0.83  
 Actuated Cycle Length (s) 40.0 Sum of lost time (s) 8.0  
 Intersection Capacity Utilization 74.2% ICU Level of Service D  
 Analysis Period (min) 10  
 Critical Lane Group

Queues

17: Patrick St & Franklin St

Total Future PM w/o Development 2022

Lane Group	EBL	EBT	NBT	NBR	SBT
Lane Group Flow (vph)	23	180	1717	678	3819
v/c Ratio	0.12	0.51	0.46	0.53	1.08
Control Delay	60.8	69.6	4.7	2.0	39.4
Queue Delay	0.0	0.0	0.0	0.0	5.6
Total Delay	60.8	69.6	4.7	2.0	45.0
Queue Length 50th (ft)	22	95	135	0	-1603
Queue Length 95th (ft)	47	125	267	30	m#1480
Internal Link Dist (ft)		261	297		346
Turn Bay Length (ft)					
Base Capacity (vph)	511	980	3759	1269	3533
Starvation Cap Reductn	0	0	0	0	386
Spillback Cap Reductn	0	0	206	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.18	0.48	0.53	1.21

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.  
# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.  
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

17: Patrick St & Franklin St

Total Future PM w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	←	←	←	←	←	←	←	←	←	←	←	←
Traffic Volume (vph)	21	78	87	0	0	0	0	1580	624	1	3513	0
Future Volume (vph)	21	78	87	0	0	0	0	1580	624	1	3513	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	11	11	11	12	12	12	12	12	12
Grade (%)		2%			0%			0%				0%
Total Lost time (s)	4.0	4.0						4.0	4.0			4.0
Lane Util. Factor	1.00	0.95						0.91	1.00			0.91
Frpb, ped/bikes	1.00	0.99						1.00	0.99			1.00
Flpb, ped/bikes	0.98	1.00						1.00	1.00			1.00
Frt	1.00	0.92						1.00	0.85			1.00
Flt Protected	0.95	1.00						1.00	1.00			1.00
Satd. Flow (prot)	1544	2955						4532	1391			4532
Flt Permitted	0.95	1.00						1.00	1.00			0.94
Satd. Flow (perm)	1544	2955						4532	1391			4259
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)	23	85	95	0	0	0	0	1717	678	1	3818	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	116	0	0	0
Lane Group Flow (vph)	23	180	0	0	0	0	0	1717	562	0	3819	0
Confl. Peds. (#/hr)	13						13	1		1		1
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	3	0	0	0	0	0	0	0	0	0	0
Turn Type	Perm	NA						NA	Perm	Perm	NA	NA
Protected Phases		4							2			2
Permitted Phases		4							2			2
Actuated Green, G (s)	17.3	17.3						130.7	130.7			130.7
Effective Green, g (s)	19.3	19.3						132.7	132.7			132.7
Actuated g/C Ratio	0.12	0.12						0.83	0.83			0.83
Clearance Time (s)	6.0	6.0						6.0	6.0			6.0
Vehicle Extension (s)	3.0	3.0						0.2	0.2			0.2
Lane Grp Cap (vph)	186	356						3758	1153			3532
v/s Ratio Prot								0.38				
v/s Ratio Perm	0.01								0.40			c0.90
v/c Ratio	0.12	0.51						0.46	0.49			1.08
Uniform Delay, d1	62.8	65.9						3.8	3.9			13.7
Progression Factor	1.00	1.00						1.00	1.00			0.89
Incremental Delay, d2	0.3	1.1						0.4	1.5			25.0
Delay (s)	63.1	67.0						4.2	5.4			37.1
Level of Service	E	E						A	A			D
Approach Delay (s)		66.6				0.0		4.5				37.1
Approach LOS		E				A		A				D

Intersection Summary

HCM 2000 Control Delay 25.8 HCM 2000 Level of Service C  
 HCM 2000 Volume to Capacity ratio 1.01  
 Actuated Cycle Length (s) 160.0 Sum of lost time (s) 8.0  
 Intersection Capacity Utilization 135.1% ICU Level of Service H  
 Analysis Period (min) 10

HCM Signalized Intersection Capacity Analysis  
17: Patrick St & Franklin St


Total Future PM w/o Development 2022

c Critical Lane Group

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HCM Unsignalized Intersection Capacity Analysis  
18: Patrick St

Total Future PM w/o Development 2022




Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	1	0	23	1598	0	0
Traffic Volume (veh/h)	16	0	23	1598	0	0
Future Volume (Veh/h)	16	0	23	1598	0	0
Sign Control	Stop		Free	Free		
Grade	0%		0%	0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	0	25	1737	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				563	292	
pX, platoon unblocked	0.80					
vC, conflicting volume	629	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
IC, single (s)	6.8	6.9	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	98	100	98			
cM capacity (veh/h)	803	1084	1622			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>		
Volume Total	17	372	695	695		
Volume Left	17	25	0	0		
Volume Right	0	0	0	0		
ESH	803	1622	1700	1700		
Volume to Capacity	0.02	0.02	0.41	0.41		
Queue Length 95th (ft)	2	1	0	0		
Control Delay (s)	9.6	0.6	0.0	0.0		
Lane LOS	A	A				
Approach Delay (s)	9.6	0.1				
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			44.8%		ICU Level of Service	A
Analysis Period (min)			10			

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HCM Unsignalized Intersection Capacity Analysis  
20: Columbus St & Wolfe St.

Total Future PM w/o Development 2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		Stop			Stop			Stop			Stop	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	2	26	33	73	98	27	14	81	6	24	402	33
Future Volume (vph)	2	26	33	73	98	27	14	81	6	24	402	33
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	28	36	79	107	29	15	88	7	26	437	36
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total (vph)	66	215	110	499								
Volume Left (vph)	2	79	15	26								
Volume Right (vph)	36	29	7	36								
Hadj (s)	-0.29	0.03	0.02	0.00								
Departure Headway (s)	5.6	5.6	5.5	4.9								
Degree Utilization, x	0.10	0.34	0.17	0.68								
Capacity (veh/h)	553	586	604	713								
Control Delay (s)	9.2	11.4	9.5	17.3								
Approach Delay (s)	9.2	11.4	9.5	17.3								
Approach LOS	A	B	A	C								
<b>Intersection Summary</b>												
Delay				14.3								
Level of Service				B								
Intersection Capacity Utilization				51.4%						ICU Level of Service		A
Analysis Period (min)				10								

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HCM 2010 AWSC  
20: Columbus St & Wolfe St.


Total Future PM w/o Development 2022

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	2	26	33	0	73	98	27	0	14	81	6
Future Vol, veh/h	0	2	26	33	0	73	98	27	0	14	81	6
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	0	2	28	36	0	79	107	29	0	15	88	7
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
<b>Approach</b>	<b>EB</b>	<b>WB</b>	<b>NB</b>									
Opposing Approach	WB	EB	SB									
Opposing Lanes	1	1	1									
Conflicting Approach Left	SB	NB	EB									
Conflicting Lanes Left	1	1	1									
Conflicting Approach Right	NB	SB	WB									
Conflicting Lanes Right	1	1	1									
HCM Control Delay	9.2		11.4								9.5	
HCM LOS	A		B								A	
<b>Lane</b>	<b>NBLn1</b>	<b>EBLn1</b>	<b>WBLn1</b>	<b>SBLn1</b>								
Vol Left, %	14%	3%	37%	5%								
Vol Thru, %	80%	43%	49%	88%								
Vol Right, %	6%	54%	14%	7%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	101	61	198	459								
LT Vol	14	2	73	24								
Through Vol	81	26	98	402								
RT Vol	6	33	27	33								
Lane Flow Rate	110	66	215	499								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.166	0.103	0.335	0.665								
Departure Headway (Hd)	5.439	5.581	5.603	4.911								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	661	644	646	738								
Service Time	3.464	3.599	3.613	2.911								
HCM Lane V/C Ratio	0.166	0.102	0.333	0.676								
HCM Control Delay	9.5	9.2	11.4	16.9								
HCM Lane LOS	A	A	B	C								
HCM 95th-ile Q	0.6	0.3	1.5	4.8								


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Intersection				
Intersection Delay s/veh				
Intersection LOS				
Movement	SBU	SBL	SBT	SBR
Traffic Vol. veh/h	0	24	402	33
Future Vol. veh/h	0	24	402	33
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	26	437	36
Number of Lanes	0	0	1	0
Approach				
SB				
Opposing Approach NB				
Opposing Lanes 1				
Conflicting Approach Left WB				
Conflicting Lanes Left 1				
Conflicting Approach Right EB				
Conflicting Lanes Right 1				
HCM Control Delay 16.9				
HCM LOS C				
Lane				



Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	296	155	135
v/c Ratio	0.21	0.21	0.17
Control Delay	15.1	8.2	7.4
Queue Delay	0.0	0.0	0.0
Total Delay	15.1	8.2	7.4
Queue Length 50th (ft)	46	29	19
Queue Length 95th (ft)	73	m48	49
Internal Link Dist (ft)	237	338	290
Turn Bay Length (ft)			
Base Capacity (vph)	1388	725	776
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.21	0.21	0.17
Intersection Summary			
m Volume for 95th percentile queue is metered by upstream signal.			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕				↕
Traffic Volume (vph)	0	0	0	21	233	18	39	104	0	0	70	54
Future Volume (vph)	0	0	0	21	233	18	39	104	0	0	70	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	12	12	12	12	12	12	12
Total Lost time (s)					4.0			4.0				4.0
Lane Util. Factor					0.95			1.00				1.00
Frbp, ped/bikes					1.00			1.00				0.99
Frbp, ped/bikes					1.00			1.00				1.00
Frt					0.99			1.00				0.94
Flt Protected					1.00			0.99				1.00
Satd. Flow (prot)					3351			1620				1531
Flt Permitted					1.00			0.91				1.00
Satd. Flow (perm)					3351			1490				1531
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	23	253	20	42	113	0	0	76	59
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	30	0
Lane Group Flow (vph)	0	0	0	0	290	0	0	155	0	0	105	0
Confl. Peds. (#/hr)	28		23	23		28	29		22	22		29
Confl. Bikes (#/hr)			1			9		2				2
Parking (#/hr)					6			3				3
Turn Type					Perm	NA	Perm	NA				NA
Protected Phases					2			1				1
Permitted Phases					2			1				1
Actuated Green, G (s)					32.0			38.0				38.0
Effective Green, g (s)					33.0			39.0				39.0
Actuated g/C Ratio					0.41			0.49				0.49
Clearance Time (s)					5.0			5.0				5.0
Lane Grp Cap (vph)					1382			726				746
v/s Ratio Prot												0.07
v/s Ratio Perm					0.09			c0.10				
v/c Ratio					0.21			0.21				0.14
Uniform Delay, d1					15.1			11.7				11.3
Progression Factor					1.00			0.62				1.00
Incremental Delay, d2					0.3			0.7				0.4
Delay (s)					15.5			8.0				11.7
Level of Service					B			A				B
Approach Delay (s)		0.0			15.5			8.0				11.7
Approach LOS		A			B			A				B
Intersection Summary												
HCM 2000 Control Delay	12.6		HCM 2000 Level of Service	B								
HCM 2000 Volume to Capacity ratio	0.21											
Actuated Cycle Length (s)	80.0		Sum of lost time (s)	8.0								
Intersection Capacity Utilization	37.8%		ICU Level of Service	A								
Analysis Period (min)	10											
c Critical Lane Group												



Lane Group	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	300	113	293	2088
v/c Ratio	0.72	0.39	0.41	0.92
Control Delay	36.5	15.9	16.9	27.0
Queue Delay	0.0	0.0	1.7	0.0
Total Delay	36.5	15.9	18.6	27.0
Queue Length 50th (ft)	131	46	123	336
Queue Length 95th (ft)	#243	m55	m170	#464
Internal Link Dist (ft)	548		225	128
Turn Bay Length (ft)		100		
Base Capacity (vph)	417	291	708	2265
Starvation Cap Reductn	0	0	259	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.72	0.39	0.65	0.92
Intersection Summary				
# 95th percentile volume exceeds capacity, queue may be longer.				
Queue shown is maximum after two cycles.				
m Volume for 95th percentile queue is metered by upstream signal.				

HCM Signalized Intersection Capacity Analysis  
2: Henry St & King St

Total Future SUN w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	0	239	37	104	270	0	0	0	0	64	1803	53
Future Volume (vph)	0	239	37	104	270	0	0	0	0	64	1803	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	10	10	12	12	12	12	12	11	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0					4.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00					0.91		
Fripb, ped/bikes	0.95	1.00	1.00	1.00	1.00					1.00		
Fipb, ped/bikes	1.00	1.00	0.94	1.00	1.00					1.00		
Frt	0.98	1.00	1.00	1.00	1.00					1.00		
Flt Protected	1.00	0.95	1.00	1.00	1.00					1.00		
Satd. Flow (prot)	1490	1546	1718	1718	1718					4640		
Flt Permitted	1.00	0.38	1.00	1.00	1.00					1.00		
Satd. Flow (perm)	1490	614	1718	1718	1718					4640		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	260	40	113	293	0	0	0	0	70	1960	58
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	293	0	113	293	0	0	0	0	2084	0	0
Confl. Peds. (#/hr)	210		448	448		210	45		55	55		45
Confl. Bikes (#/hr)			3			5						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)		3										3
Turn Type	NA	NA	pm+pt	NA	NA	Split	NA			NA		NA
Protected Phases	3		2	2.3		1	1					
Permitted Phases			2.3									
Actuated Green, G (s)	21.0		27.0	32.0						38.0		
Effective Green, g (s)	22.0		29.0	33.0						39.0		
Actuated g/C Ratio	0.28		0.36	0.41						0.49		
Clearance Time (s)	5.0		5.0							5.0		
Lane Grp Cap (vph)	409		304	708						2262		
v/s Ratio Prot	c0.20		0.03	c0.17						c0.45		
v/s Ratio Perm			0.10									
v/c Ratio	0.72		0.37	0.41						0.92		
Uniform Delay, d1	26.2		17.9	16.6						19.1		
Progression Factor	1.00		0.88	0.92						1.00		
Incremental Delay, d2	9.9		2.2	1.1						7.2		
Delay (s)	36.1		18.0	16.5						26.2		
Level of Service	D		B	B						C		
Approach Delay (s)	36.1		16.9				0.0			26.2		
Approach LOS	D		B				A			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	25.9			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.81											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	69.3%			ICU Level of Service			C					
Analysis Period (min)	10											
c Critical Lane Group												

Alfred Street Baptist Church  
Wells + Associates

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Queues  
3: Patrick St & King St

Total Future SUN w/o Development 2022

Lane Group	EBL	EBT	WBT	NBT
Lane Group Flow (vph)	76	287	344	1756
v/c Ratio	0.24	0.37	0.71	0.89
Control Delay	12.3	15.6	19.5	12.6
Queue Delay	0.0	1.8	0.4	0.0
Total Delay	12.3	17.4	19.9	12.6
Queue Length 50th (ft)	31	127	92	63
Queue Length 95th (ft)	m36	m176	#140	#90
Internal Link Dist (ft)		225	238	340
Turn Bay Length (ft)	100			
Base Capacity (vph)	314	775	486	1965
Starvation Cap Reductn	0	332	15	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.24	0.65	0.73	0.89
<b>Intersection Summary</b>				
m 95th percentile volume exceeds capacity, queue may be longer.				
Queue shown is maximum after two cycles.				
n Volume for 95th percentile queue is metered by upstream signal.				

Alfred Street Baptist Church  
Wells + Associates

Synchro 9 Report  
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HCM Signalized Intersection Capacity Analysis  
3: Patrick St & King St

Total Future SUN w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	70	264	0	0	263	53	109	1417	90	0	0	0
Future Volume (vph)	70	264	0	0	263	53	109	1417	90	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0			4.0				
Lane Util. Factor	1.00	1.00			1.00			0.91				
Fripb, ped/bikes	1.00	1.00			0.94			0.97				
Fipb, ped/bikes	0.94	1.00			1.00			1.00				
Frt	1.00	1.00			0.98			0.99				
Flt Protected	0.95	1.00			1.00			1.00				
Satd. Flow (prot)	1559	1676			1467			4481				
Flt Permitted	0.36	1.00			1.00			1.00				
Satd. Flow (perm)	596	1676			1467			4481				
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)	76	287	0	0	286	58	118	1540	98	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	4	0	0	0	0
Lane Group Flow (vph)	76	287	0	0	335	0	0	1752	0	0	0	0
Confl. Peds. (#/hr)	459		677	677		459	302		297	297		302
Confl. Bikes (#/hr)			7			5			1			1
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	9	0	0	8	0	0	0	0	0	0	0
Parking (#/hr)					3			4				
Turn Type	pm+pt	NA			NA			Split	NA			NA
Protected Phases	2	2.3			3			1	1			
Permitted Phases		2.3			3							
Actuated Green, G (s)	30.4	35.4			24.4			34.0				
Effective Green, g (s)	32.4	36.4			26.0			35.0				
Actuated g/C Ratio	0.40	0.45			0.32			0.44				
Clearance Time (s)	5.0				5.6			5.0				
Lane Grp Cap (vph)	325	762			476			1960				
v/s Ratio Prot	0.02	c0.17			c0.23			c0.39				
v/s Ratio Perm	0.07											
v/c Ratio	0.23	0.38			0.70			0.89				
Uniform Delay, d1	15.4	14.3			23.6			20.8				
Progression Factor	0.88	1.02			0.48			0.30				
Incremental Delay, d2	1.2	1.0			7.7			5.4				
Delay (s)	14.8	15.7			19.1			11.8				
Level of Service	B	B			B			B				
Approach Delay (s)	15.5				19.1			11.8		0.0		
Approach LOS	B				B			B		A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	13.3			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.78											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			12.6					
Intersection Capacity Utilization	69.3%			ICU Level of Service			C					
Analysis Period (min)	10											
c Critical Lane Group												

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Wells + Associates

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Queues  
4: Alfred St & King St

Total Future SUN w/o Development 2022

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	379	304	139	107
v/c Ratio	0.63	0.49	0.21	0.17
Control Delay	11.0	11.5	4.7	9.8
Queue Delay	0.1	0.2	0.0	0.0
Total Delay	11.1	11.7	4.7	9.8
Queue Length 50th (ft)	54	50	12	22
Queue Length 95th (ft)	m72	77	22	43
Internal Link Dist (ft)	238	237	340	338
Turn Bay Length (ft)				
Base Capacity (vph)	606	617	648	639
Starvation Cap Reductn	14	36	0	0
Spillback Cap Reductn	0	13	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.64	0.52	0.21	0.17
<b>Intersection Summary</b>				
m Volume for 95th percentile queue is metered by upstream signal.				

Alfred Street Baptist Church  
Wells + Associates

Synchro 9 Report  
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HCM Signalized Intersection Capacity Analysis

4: Alfred St & King St

Total Future SUN w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔	↔		↔	↔		↔	↔
Traffic Volume (vph)	19	290	40	19	239	21	25	90	13	17	60	22
Future Volume (vph)	19	290	40	19	239	21	25	90	13	17	60	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fripb, ped/bikes	0.94			0.96			0.98			0.97		0.97
Fipb, ped/bikes	0.98			0.98			0.98			0.97		0.97
Frt	0.98			0.99			0.99			0.97		0.97
Flt Protected	1.00			1.00			0.99			0.99		0.99
Satd. Flow (prot)	1327			1370			1544			1491		1491
Flt Permitted	0.97			0.96			0.94			0.95		0.95
Satd. Flow (perm)	1297			1325			1471			1433		1433
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)	21	315	43	21	260	23	27	98	14	18	65	24
RTOR Reduction (vph)	0	6	0	0	4	0	0	5	0	0	13	0
Lane Group Flow (vph)	0	373	0	0	300	0	0	134	0	0	94	0
Confl. Peds. (#/hr)	257		351	351		257	51		106	106		57
Confl. Bikes (#/hr)	0	12	3	0	11	2	0	0	1	0	0	2
Bus Blockages (#/hr)	3	0	0	3	0	0	0	0	0	0	0	0
Parking (#/hr)	3			3			3			3		3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2			2			1			1		
Permitted Phases	2			2			1			1		
Actuated Green, G (s)	35.9			35.9			34.0			34.0		
Effective Green, g (s)	37.0			37.0			35.0			35.0		
Actuated g/C Ratio	0.46			0.46			0.44			0.44		
Clearance Time (s)	5.1			5.1			5.0			5.0		
Lane Grp Cap (vph)	599			612			643			626		
v/s Ratio Prot												
v/s Ratio Perm	c0.29			0.23			c0.09			0.07		
v/c Ratio	0.62			0.49			0.21			0.15		
Uniform Delay, d1	16.2			14.9			13.9			13.5		
Progression Factor	0.41			0.58			0.29			0.84		
Incremental Delay, d2	4.2			2.6			0.7			0.5		
Delay (s)	10.9			11.3			4.8			11.8		
Level of Service	B			B			A			B		
Approach Delay (s)	10.9			11.3			4.8			11.8		
Approach LOS	B			B			A			B		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	10.2		HCM 2000 Level of Service				B					
HCM 2000 Volume to Capacity ratio	0.42											
Actuated Cycle Length (s)	80.0											
Sum of lost time (s)	8.0											
Intersection Capacity Utilization	46.6%		ICU Level of Service				A					
Analysis Period (min)	10											
c Critical Lane Group												

Queues

5: Washington St & King St

Total Future SUN w/o Development 2022

Lane Group	EBT	EBR	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	263	37	237	62	1080	984
v/c Ratio	0.39	0.10	0.35	0.16	0.71	0.78
Control Delay	28.0	8.6	27.3	18.6	17.8	31.0
Queue Delay	5.5	0.0	0.0	0.0	0.0	0.0
Total Delay	33.5	8.6	27.3	18.6	17.8	31.0
Queue Length 50th (ft)	151	1	133	23	166	419
Queue Length 95th (ft)	225	24	202	54	190	534
Internal Link Dist (ft)	237		569		335	130
Turn Bay Length (ft)	100					
Base Capacity (vph)	678	368	675	391	1520	1257
Starvation Cap Reductn	349	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.10	0.35	0.16	0.71	0.78

Intersection Summary

HCM Signalized Intersection Capacity Analysis

5: Washington St & King St

Total Future SUN w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔	↔		↔	↔		↔	↔
Traffic Volume (vph)	0	242	34	0	218	57	0	924	70	0	835	70
Future Volume (vph)	0	242	34	0	218	57	0	924	70	0	835	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	9	8	12	9	9	10	10	10	8	10	10
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95			0.78		
Fripb, ped/bikes	1.00	0.60		1.00	0.63		0.96			0.97		
Fipb, ped/bikes	1.00	1.00		1.00	1.00		1.00			1.00		
Frt	1.00	0.85		1.00	0.85		0.99			0.99		
Flt Protected	1.00	1.00		1.00	1.00		1.00			1.00		
Satd. Flow (prot)	1603	825		1596	902		2952			2440		
Flt Permitted	1.00	1.00		1.00	1.00		1.00			1.00		
Satd. Flow (perm)	1603	825		1596	902		2952			2440		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	263	37	0	237	62	0	1004	76	0	908	76
RTOR Reduction (vph)	0	0	20	0	0	10	0	0	0	0	0	0
Lane Group Flow (vph)	0	263	17	0	237	52	0	1080	0	0	984	0
Confl. Peds. (#/hr)	502		634	634		502	129		308	308		129
Bus Blockages (#/hr)	0	11	0	0	12	0	0	0	0	0	0	2
Parking (#/hr)							3			3		3
Turn Type	NA	Perm		NA	Perm		NA			NA		NA
Protected Phases	2			2			1			1		
Permitted Phases	2			2			1			1		
Actuated Green, G (s)	53.1	53.1		53.1	53.1		66.0			66.0		
Effective Green, g (s)	55.0	55.0		55.0	55.0		67.0			67.0		
Actuated g/C Ratio	0.42	0.42		0.42	0.42		0.52			0.52		
Clearance Time (s)	5.9	5.9		5.9	5.9		5.0			5.0		
Lane Grp Cap (vph)	678	349		675	381		1521			1257		
v/s Ratio Prot	c0.16			0.15			0.37			c0.40		
v/s Ratio Perm		0.02			0.06							
v/c Ratio	0.39	0.05		0.35	0.14		0.71			0.78		
Uniform Delay, d1	25.9	22.1		25.4	23.0		24.1			25.6		
Progression Factor	1.00	1.00		1.00	1.00		0.62			1.00		
Incremental Delay, d2	1.7	0.3		1.4	0.7		2.5			4.8		
Delay (s)	27.5	22.4		26.8	23.7		17.5			30.4		
Level of Service	C	C		C	C		B			C		
Approach Delay (s)	26.9			26.2			17.5			30.4		
Approach LOS	C			C			B			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	24.3		HCM 2000 Level of Service				C					
HCM 2000 Volume to Capacity ratio	0.60											
Actuated Cycle Length (s)	130.0											
Sum of lost time (s)	8.0											
Intersection Capacity Utilization	61.7%		ICU Level of Service				B					
Analysis Period (min)	10											
c Critical Lane Group												

Queues

6: Henry St & Prince St

Total Future SUN w/o Development 2022

Lane Group	EBT	SBT
Lane Group Flow (vph)	465	1911
v/c Ratio	0.35	0.87
Control Delay	16.9	5.3
Queue Delay	0.0	0.4
Total Delay	16.9	5.7
Queue Length 50th (ft)	80	27
Queue Length 95th (ft)	117	m30
Internal Link Dist (ft)	636	338
Turn Bay Length (ft)		
Base Capacity (vph)	1311	2208
Starvation Cap Reductn	0	57
Spillback Cap Reductn	0	30
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.35	0.89

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

6: Henry St & Prince St

Total Future SUN w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↓									↑↑	
Traffic Volume (vph)	0	336	92	0	0	0	0	0	0	94	1664	0
Future Volume (vph)	0	336	92	0	0	0	0	0	0	94	1664	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	10	12
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Fripb, ped/bikes		0.99									1.00	
Fipb, ped/bikes		1.00									1.00	
Frt		0.97									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3170									4503	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3170									4503	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	365	100	0	0	0	0	0	0	102	1809	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	461	0	0	0	0	0	0	0	0	1897	0
Confl. Peds. (#/hr)	26		25	25		26	22		17	17		22
Confl. Bikes (#/hr)			8			1						1
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Parking (#/hr)		6										3
Turn Type		NA								Perm	NA	
Protected Phases		2									1	
Permitted Phases												1
Actuated Green, G (s)		32.0									38.0	
Effective Green, g (s)		33.0									39.0	
Actuated g/C Ratio		0.41									0.49	
Clearance Time (s)		5.0									5.0	
Lane Grp Cap (vph)		1307									2195	
v/s Ratio Prot		c0.15									0.42	
v/s Ratio Perm											0.86	
v/c Ratio		0.35									0.86	
Uniform Delay, d1		16.2									18.2	
Progression Factor		1.00									0.15	
Incremental Delay, d2		0.7									2.1	
Delay (s)		16.9									4.9	
Level of Service		B									A	
Approach Delay (s)		16.9			0.0			0.0			4.9	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			7.2									A
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			80.0								8.0	
Intersection Capacity Utilization			58.8%								ICU Level of Service	B
Analysis Period (min)			10									
c Critical Lane Group												

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Queues

7: Alfred St & Prince St

Total Future SUN w/o Development 2022

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	371	127	135
v/c Ratio	0.25	0.17	0.19
Control Delay	1.6	13.6	11.3
Queue Delay	0.0	0.0	0.0
Total Delay	1.6	13.6	11.3
Queue Length 50th (ft)	6	31	39
Queue Length 95th (ft)	8	m62	m64
Internal Link Dist (ft)	244	348	340
Turn Bay Length (ft)			
Base Capacity (vph)	1505	734	702
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.25	0.17	0.19
<b>Intersection Summary</b>			
m Volume for 95th percentile queue is metered by upstream signal.			

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Wells + Associates

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HCM Signalized Intersection Capacity Analysis

7: Alfred St & Duke St

Total Future SUN w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↓						↑			↑	
Traffic Volume (vph)	16	290	36	0	0	0	0	107	10	21	103	0
Future Volume (vph)	16	290	36	0	0	0	0	107	10	21	103	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	12	12	12	12	12	12
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Fripb, ped/bikes		0.99						1.00			1.00	
Fipb, ped/bikes		1.00						1.00			1.00	
Frt		0.98						0.99			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3322						1624			1628	
Flt Permitted		1.00						1.00			0.95	
Satd. Flow (perm)		3322						1624			1561	
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)	17	315	39	0	0	0	0	116	11	23	112	0
RTOR Reduction (vph)	0	11	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	360	0	0	0	0	0	123	0	0	135	0
Confl. Peds. (#/hr)	29		54	54		29	81		40	40		81
Confl. Bikes (#/hr)			11			2						2
Parking (#/hr)		6						3				3
Turn Type		Perm	NA					NA		Perm	NA	
Protected Phases		1						2			2	
Permitted Phases												2
Actuated Green, G (s)		35.0						35.0			35.0	
Effective Green, g (s)		36.0						36.0			36.0	
Actuated g/C Ratio		0.45						0.45			0.45	
Clearance Time (s)		5.0						5.0			5.0	
Lane Grp Cap (vph)		1494						730			702	
v/s Ratio Prot								0.08			c0.09	
v/s Ratio Perm		0.11									0.19	
v/c Ratio		0.24						0.17			0.19	
Uniform Delay, d1		13.6						13.1			13.2	
Progression Factor		0.09						1.04			0.79	
Incremental Delay, d2		0.3						0.5			0.6	
Delay (s)		1.6						14.1			11.0	
Level of Service		A						B			B	
Approach Delay (s)		1.6			0.0			14.1			11.0	
Approach LOS		A			A			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			6.1									A
HCM 2000 Volume to Capacity ratio			0.22									
Actuated Cycle Length (s)			80.0								8.0	
Intersection Capacity Utilization			33.3%								ICU Level of Service	A
Analysis Period (min)			10									
c Critical Lane Group												

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Queues

8: Henry St & Duke St

Total Future SUN w/o Development 2022

Lane Group	EBT	EBR	WBL	WBT	SBT
Lane Group Flow (vph)	370	377	198	704	1963
v/c Ratio	0.84	0.54	0.67	0.52	0.87
Control Delay	46.5	30.0	19.9	12.9	5.8
Queue Delay	0.0	0.0	0.0	0.8	0.1
Total Delay	46.5	30.0	19.9	13.8	5.9
Queue Length 50th (ft)	176	82	49	92	25
Queue Length 95th (ft)	#320	124	m55	m100	32
Internal Link Dist (ft)	72			232	350
Turn Bay Length (ft)		125			
Base Capacity (vph)	442	702	294	1357	2264
Starvation Cap Reductn	0	0	0	359	21
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.84	0.54	0.67	0.71	0.88
<b>Intersection Summary</b>					
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.					
m Volume for 95th percentile queue is metered by upstream signal.					

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HCM Signalized Intersection Capacity Analysis

8: Henry St & Duke St

Total Future SUN w/o Development 2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↑	↑	↑					↑	↑	↑
Traffic Volume (vph)	0	340	347	182	648	0	0	0	0	2	1565	239
Future Volume (vph)	0	340	347	182	648	0	0	0	0	2	1565	239
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	10	12	12	12	12	12	11	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0					4.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00					0.91		
Fripb, ped/bikes	1.00	1.00	1.00	1.00	1.00					1.00		
Fripb, ped/bikes	1.00	1.00	1.00	1.00	1.00					1.00		
Frt	1.00	0.85	1.00	1.00	1.00					0.98		
Flt Protected	1.00	1.00	0.95	1.00	1.00					1.00		
Satd. Flow (prot)	1863	2956	1651	3290						4593		
Flt Permitted	1.00	1.00	0.18	1.00						1.00		
Satd. Flow (perm)	1863	2956	306	3290						4593		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	370	377	198	704	0	0	0	0	2	1701	260
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	26
Lane Group Flow (vph)	0	370	377	198	704	0	0	0	0	0	1937	0
Confl. Peds. (#/hr)	12	7	7		12	6		6	4	4		6
Confl. Bikes (#/hr)		1			2							
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)												1
Turn Type	NA	Prot	pm+pt	NA			Perm	NA				
Protected Phases	8	8	7	4								2
Permitted Phases			4							2		
Actuated Green, G (s)	17.7	17.7	31.7	31.7								37.9
Effective Green, g (s)	19.0	19.0	32.7	33.0								39.0
Actuated g/C Ratio	0.24	0.24	0.41	0.41								0.49
Clearance Time (s)	5.3	5.3	5.0	5.3								5.1
Lane Grp Cap (vph)	442	702	293	1357								2239
v/s Ratio Prot	c0.20	0.13	c0.08	0.21								
v/s Ratio Perm				0.19								0.42
v/c Ratio	0.84	0.54	0.68	0.52								0.87
Uniform Delay, d1	29.0	26.7	17.8	17.6								18.2
Progression Factor	1.00	1.00	1.00	0.70								0.15
Incremental Delay, d2	15.8	2.9	4.1	0.5								2.7
Delay (s)	44.8	29.6	21.9	12.9								5.3
Level of Service	D	C	C	B								A
Approach Delay (s)	37.1			14.8			0.0					5.3
Approach LOS	D			B			A					A

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Queues

9: Patrick St & Duke St

Total Future SUN w/o Development 2022



Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	392	697	2042
v/c Ratio	0.46	0.97	0.89
Control Delay	20.4	37.5	20.2
Queue Delay	0.9	0.0	0.0
Total Delay	21.2	37.5	20.2
Queue Length 50th (ft)	91	129	202
Queue Length 95th (ft)	m134	#545	276
Internal Link Dist (ft)	232	245	181
Turn Bay Length (ft)			
Base Capacity (vph)	847	715	2300
Starvation Cap Reductn	219	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.62	0.97	0.89

**Intersection Summary**  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

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HCM Signalized Intersection Capacity Analysis

9: Patrick St & Duke St

Total Future SUN w/o Development 2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↑	↑	↑			↑	↑	↑	↑	↑
Traffic Volume (vph)	6	354	0	0	589	52	270	1542	67	0	0	0
Future Volume (vph)	6	354	0	0	589	52	270	1542	67	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0				4.0				4.0			
Lane Util. Factor	1.00				1.00				0.91			
Fripb, ped/bikes	1.00				1.00				1.00			
Fripb, ped/bikes	1.00				1.00				1.00			
Frt	1.00				0.99				0.99			
Flt Protected	1.00				1.00				0.99			
Satd. Flow (prot)	2109				1627				4962			
Flt Permitted	0.92				1.00				0.99			
Satd. Flow (perm)	1937				1627				4962			
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)	7	385	0	0	640	57	293	1676	73	0	0	0
RTOR Reduction (vph)	0	0	0	0	4	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	392	0	0	693	0	0	2037	0	0	0	0
Confl. Peds. (#/hr)	11		72	72		11	13		11	11		13
Confl. Bikes (#/hr)			2			6						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Parking (#/hr)						3						
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases	2				2							
Permitted Phases							1		1			
Actuated Green, G (s)	33.8				33.8				36.0			
Effective Green, g (s)	35.0				35.0				37.0			
Actuated g/C Ratio	0.44				0.44				0.46			
Clearance Time (s)	5.2				5.2				5.0			
Lane Grp Cap (vph)	847				711				2294			
v/s Ratio Prot					c0.43							
v/s Ratio Perm	0.20								0.41			
v/c Ratio	0.46				0.97				0.89			
Uniform Delay, d1	15.9				22.1				19.6			
Progression Factor	1.19				0.55				0.77			
Incremental Delay, d2	1.1				22.1				5.1			
Delay (s)	19.9				34.2				20.1			
Level of Service	B				C				C			
Approach Delay (s)	19.9				34.2				20.1			0.0
Approach LOS	B				C				C			A

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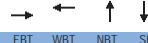
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Queues

10: Alfred St & Duke St

Total Future SUN w/o Development 2022



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	464	552	111	145
v/c Ratio	0.54	0.58	0.24	0.35
Control Delay	8.3	9.4	19.0	8.1
Queue Delay	0.0	0.5	0.0	0.0
Total Delay	8.3	9.9	19.0	8.1
Queue Length 50th (ft)	53	87	36	10
Queue Length 95th (ft)	m41	119	74	38
Internal Link Dist (ft)	245	227	398	348
Turn Bay Length (ft)				
Base Capacity (vph)	865	950	457	477
Starvation Cap Reductn	2	116	0	0
Spillback Cap Reductn	0	113	0	5
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.54	0.66	0.24	0.35

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

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Wells + Associates

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HCM Signalized Intersection Capacity Analysis

10: Alfred St & Duke St

Total Future SUN w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	38	352	37	9	468	30	34	59	9	13	50	89
Future Volume (vph)	38	352	37	9	468	30	34	59	9	13	50	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	14	12	12	11	12	12	11	12
Total Lost time (s)	4.0			4.0			4.0			4.0		
Lane Util. Factor	1.00			1.00			1.00			1.00		
Frpb, ped/bikes	0.97			1.00			0.99			0.83		
Flpb, ped/bikes	1.00			1.00			0.94			0.99		
Fit	0.99			0.99			0.99			0.92		
Fit Protected	1.00			1.00			0.98			1.00		
Satd. Flow (prot)	1683			1736			1448			1204		
Fit Permitted	0.93			0.99			0.88			0.98		
Satd. Flow (perm)	1567			1723			1294			1182		
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)	41	383	40	10	509	33	37	64	10	14	54	97
RTOR Reduction (vph)	0	4	0	0	3	0	0	5	0	0	63	0
Lane Group Flow (vph)	0	460	0	0	549	0	0	106	0	0	102	0
Confl. Peds. (#/hr)	27		133	133		27	130		53	53		130
Confl. Bikes (#/hr)	0	0	2	0	5	0	0	1	0	0	0	0
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)	3			1			1			3		3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2	2		2	2		1	1		1	1	
Permitted Phases	2	2		2	2		1	1		1	1	
Actuated Green, G (s)	43.0			43.0			27.0			27.0		
Effective Green, g (s)	44.0			44.0			28.0			28.0		
Actuated g/C Ratio	0.55			0.55			0.35			0.35		
Clearance Time (s)	5.0			5.0			5.0			5.0		
Lane Grp Cap (vph)	861			947			452			413		
v/s Ratio Prot		0.29			c0.32			0.08			c0.09	
v/c Ratio		0.53			0.58			0.24			0.25	
Uniform Delay, d1		11.5			11.9			18.4			18.5	
Progression Factor		0.54			0.59			1.00			0.69	
Incremental Delay, d2		2.0			2.3			1.2			1.4	
Delay (s)		8.3			9.2			19.6			14.2	
Level of Service		A			A			B			B	
Approach Delay (s)		8.3			9.2			19.6			14.2	
Approach LOS		A			A			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		10.4										B
HCM 2000 Volume to Capacity ratio		0.45										
Actuated Cycle Length (s)		80.0				Sum of lost time (s)		8.0				
Intersection Capacity Utilization		65.3%				ICU Level of Service		C				
Analysis Period (min)		10										

Queues

11: Columbus St & Duke St

Total Future SUN w/o Development 2022

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	435	473	208	154
v/c Ratio	0.54	0.57	0.42	0.26
Control Delay	16.0	16.4	20.8	9.6
Queue Delay	0.2	4.5	0.0	0.0
Total Delay	16.2	20.9	20.8	9.6
Queue Length 50th (ft)	105	150	73	18
Queue Length 95th (ft)	112	240	131	41
Internal Link Dist (ft)	227	231	393	358
Turn Bay Length (ft)				
Base Capacity (vph)	801	833	498	602
Starvation Cap Reductn	56	283	0	0
Spillback Cap Reductn	0	16	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.58	0.86	0.42	0.26

Intersection Summary

HCM Signalized Intersection Capacity Analysis

11: Columbus St & Duke St

Total Future SUN w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	19	345	36	7	385	43	91	93	7	8	74	60
Future Volume (vph)	19	345	36	7	385	43	91	93	7	8	74	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	14	12	12	11	12	12	11	12
Total Lost time (s)	4.0			4.0			4.0			4.0		
Lane Util. Factor	1.00			1.00			1.00			1.00		
Frpb, ped/bikes	0.99			0.99			0.99			0.96		
Flpb, ped/bikes	1.00			1.00			0.98			1.00		
Fit	0.99			0.99			0.99			0.94		
Fit Protected	1.00			1.00			0.98			1.00		
Satd. Flow (prot)	1600			1626			1558			1490		
Fit Permitted	0.97			0.99			0.80			0.98		
Satd. Flow (perm)	1556			1616			1281			1469		
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)	21	375	39	8	418	47	99	101	8	9	80	65
RTOR Reduction (vph)	0	4	0	0	5	0	0	2	0	0	33	0
Lane Group Flow (vph)	0	431	0	0	468	0	0	206	0	0	121	0
Confl. Peds. (#/hr)	38		68	68		38	33		44	44		33
Confl. Bikes (#/hr)					7			1				
Parking (#/hr)		3			1			3				3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	6	6		2	2		4	4		8	8	
Permitted Phases	6	6		2	2		4	4		8	8	
Actuated Green, G (s)	40.0			40.0			30.0			30.0		
Effective Green, g (s)	41.0			41.0			31.0			31.0		
Actuated g/C Ratio	0.51			0.51			0.39			0.39		
Clearance Time (s)	5.0			5.0			5.0			5.0		
Lane Grp Cap (vph)	797			828			496			569		
v/s Ratio Prot		0.28			c0.29			c0.16			0.08	
v/c Ratio		0.54			0.57			0.42			0.21	
Uniform Delay, d1		13.1			13.4			17.9			16.4	
Progression Factor		1.02			1.00			1.00			0.78	
Incremental Delay, d2		2.3			2.8			2.5			0.8	
Delay (s)		15.7			16.2			20.4			13.6	
Level of Service		B			B			C			B	
Approach Delay (s)		15.7			16.2			20.4			13.6	
Approach LOS		B			B			C			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		16.4										B
HCM 2000 Volume to Capacity ratio		0.50										
Actuated Cycle Length (s)		80.0				Sum of lost time (s)		8.0				
Intersection Capacity Utilization		74.8%				ICU Level of Service		D				
Analysis Period (min)		10										

Queues

12: Washington St & Duke St

Total Future SUN w/o Development 2022


Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	372	420	879	1050
v/c Ratio	0.71	0.63	0.98	0.95
Control Delay	36.9	32.2	54.8	29.3
Queue Delay	29.8	0.0	0.0	0.0
Total Delay	66.6	32.2	54.8	29.3
Queue Length 50th (ft)	242	261	372	139
Queue Length 95th (ft)	372	378	#530	#705
Internal Link Dist (ft)	231	575	344	349
Turn Bay Length (ft)				
Base Capacity (vph)	526	665	894	1105
Starvation Cap Reductn	174	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.06	0.63	0.98	0.95

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
12: Washington St & Duke St


Total Future SUN w/o Development 2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Volume (vph)	99	182	61	54	264	68	62	726	21	42	777	146
Future Volume (vph)	99	182	61	54	264	68	62	726	21	42	777	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	11	9	9	9	11	9
Total Lost time (s)	4.0			4.0			4.0			4.0		
Lane Util. Factor	1.00			1.00			0.95			0.78		
Frbp, ped/bikes	0.99			0.99			1.00			0.98		
Frlb, ped/bikes	1.00			1.00			1.00			1.00		
Frt	0.98			0.98			1.00			0.98		
Flt Protected	0.99			0.99			1.00			1.00		
Satd. Flow (prot)	1623			1637			2972			2687		
Flt Permitted	0.71			0.90			0.61			0.83		
Satd. Flow (perm)	1165			1478			1812			2227		
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)	108	198	66	59	287	74	67	789	23	46	845	159
RTOR Reduction (vph)	0	6	0	0	6	0	0	2	0	0	9	0
Lane Group Flow (vph)	0	366	0	0	414	0	0	877	0	0	1041	0
Confl. Peds. (#/hr)	18	15	15	18	32	18	32	22	22	32	32	32
Confl. Bikes (#/hr)	3			3			3			3		
Parking (#/hr)	3			3			3			3		
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	56.5			56.5			63.0			63.0		
Effective Green, g (s)	58.0			58.0			64.0			64.0		
Actuated g/C Ratio	0.45			0.45			0.49			0.49		
Clearance Time (s)	5.5			5.5			5.0			5.0		
Lane Grp Cap (vph)	519			659			892			1096		
vs Ratio Prot	c0.31			0.28			c0.48			0.47		
vs Ratio Perm	0.71			0.63			0.98			0.95		
v/c Ratio	29.1			27.7			32.5			31.5		
Uniform Delay, d1	1.00			1.00			1.00			0.49		
Progression Factor	7.6			4.4			22.1			12.8		
Incremental Delay, d2	36.7			32.1			54.6			28.2		
Delay (s)	D			C			D			C		
Level of Service	36.7			32.1			54.6			28.2		
Approach Delay (s)	D			C			D			C		
Approach LOS	D			C			D			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	38.5			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	0.85											
Actuated Cycle Length (s)	130.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	95.0%			ICU Level of Service			F					
Analysis Period (min)	10											
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis  
13: Patrick St & Henry to Patrick Connector


Total Future SUN w/o Development 2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔		↔	
Traffic Volume (veh/h)	125	0	0	1573	0	0
Future Volume (veh/h)	125	0	0	1573	0	0
Sign Control	Yield		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	136	0	0	1710	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None None					
Median storage (veh)						
Upstream signal (ft)	414 441					
pX, platoon unblocked	0.88					
vC, conflicting volume	570 0 0					
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	19 0 0					
IC, single (s)	6.8 6.9 4.1					
IC, 2 stage (s)						
IF (s)	3.5 3.3 2.2					
p0 queue free %	84 100 100					
cM capacity (veh/h)	873 1084 1622					
<b>Direction, Lane #</b>						
Volume Total	EB 1	NB 1	NB 2	NB 3		
Volume Left	136	0	0	0		
Volume Right	0	0	0	0		
cSH	873	1700	1700	1700		
Volume to Capacity	0.16	0.34	0.34	0.34		
Queue Length 95th (ft)	14	0	0	0		
Control Delay (s)	9.9	0.0	0.0	0.0		
Lane LOS	A					
Approach Delay (s)	9.9	0.0				
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay	0.7					
Intersection Capacity Utilization	85.3%					
Analysis Period (min)	10					
	ICU Level of Service E					

HCM Unsignalized Intersection Capacity Analysis  
14: Alfred St & Wolfe St

Total Future SUN w/o Development 2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	11	9	8	16	7	20	2	85	11	12	97	17
Future Volume (vph)	11	9	8	16	7	20	2	85	11	12	97	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	10	9	17	8	22	2	92	12	13	105	18
<b>Direction, Lane #</b>												
Volume Total (vph)	EB 1	WB 1	NB 1	SB 1								
Volume Left (vph)	12	17	2	13								
Volume Right (vph)	9	22	12	18								
Hd (s)	-0.06	-0.17	-0.03	-0.03								
Departure Headway (s)	4.4	4.3	4.2	4.2								
Degree Utilization, x	0.04	0.06	0.12	0.16								
Capacity (veh/h)	766	781	832	844								
Control Delay (s)	7.6	7.5	7.8	7.9								
Approach Delay (s)	7.6	7.5	7.8	7.9								
Approach LOS	A	A	A	A								
<b>Intersection Summary</b>												
Delay	7.8											
Level of Service	A											
Intersection Capacity Utilization	32.2%			ICU Level of Service			A					
Analysis Period (min)	10											

HCM 2010 AWSC  
14: Alfred St & Wolfe St

Total Future SUN w/o Development 2022

<b>Intersection</b>												
Intersection Delay, s/veh	7.8											
Intersection LOS	A											
<b>Movement</b>												
Traffic Vol, veh/h	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Future Vol, veh/h	0	11	9	8	0	16	7	20	0	2	85	11
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	0	12	10	9	0	17	8	22	0	2	92	12
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
<b>Approach</b>												
Opposing Approach	EB				WB				NB			
Opposing Lanes	WB				EB				SB			
Conflicting Approach Left	1				1				1			
Conflicting Approach Right	SB				NB				EB			
Conflicting Lanes Left	1				1				1			
Conflicting Approach Right	NB				SB				WB			
Conflicting Lanes Right	1				1				1			
HCM Control Delay	7.6				7.6				7.8			
HCM LOS	A				A				A			
<b>Lane</b>												
	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	2%	39%	37%	10%								
Vol Thru, %	87%	32%	16%	77%								
Vol Right, %	11%	29%	47%	13%								
Sign Control	Stop				Stop				Stop			
Traffic Vol by Lane	98	28	43	126								
LT Vol	2	11	16	12								
Through Vol	85	9	7	97								
RT Vol	11	8	20	17								
Lane Flow Rate	107	30	47	137								
Geometry Grp	1 1 1 1											
Degree of Util (X)	0.122	0.037	0.056	0.156								
Departure Headway (Hd)	4.11	4.425	4.295	4.089								
Convergence, Y/N	Yes Yes Yes Yes											
Cap	861	814	839	867								
Service Time	2.188	2.427	2.296	2.16								
HCM Lane V/C Ratio	0.124	0.037	0.056	0.158								
HCM Control Delay	7.8	7.6	7.6	7.9								
HCM Lane LOS	A	A	A	A								
HCM 95th-ile Q	0.4	0.1	0.2	0.5								

Intersection				
Intersection Delay s/veh				
Intersection LOS				
Movement	SBU	SBL	SBT	SBR
Traffic Vol. veh/h	0	12	97	17
Future Vol. veh/h	0	12	97	17
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	13	105	18
Number of Lanes	0	0	1	0
Approach				
SB				
Opposing Approach				
NB				
Opposing Lanes				
1				
Conflicting Approach Left				
WB				
Conflicting Lanes Left				
1				
Conflicting Approach Right				
EB				
Conflicting Lanes Right				
1				
HCM Control Delay				
7.9				
HCM LOS				
A				
Lane				

Lane Group	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	342	404	1798	2459
v/c Ratio	0.75	0.47	0.76	0.81
Control Delay	31.2	20.2	14.8	8.3
Queue Delay	0.3	0.0	0.0	3.9
Total Delay	31.5	20.2	14.8	12.2
Queue Length 50th (ft)	129	72	227	311
Queue Length 95th (ft)	234	102	364	541
Internal Link Dist (ft)		273	346	346
Turn Bay Length (ft)				
Base Capacity (vph)	558	1056	2363	3038
Starvation Cap Reductn	24	0	0	504
Spillback Cap Reductn	0	0	0	140
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.64	0.38	0.76	0.97
Intersection Summary				

HCM Signalized Intersection Capacity Analysis  
15: Patrick St & Gibbon St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations				↔	↔			↔	↔		↔	↔	
Traffic Volume (vph)	0	0	0	630	24	32	34	1620	0	0	2258	5	
Future Volume (vph)	0	0	0	630	24	32	34	1620	0	0	2258	5	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	12	12	11	11	11	12	12	12	12	12	12	
Grade (%)			0%			2%			0%			0%	
Total Lost time (s)			4.0			4.0			4.0			4.0	
Lane Util. Factor			0.91			0.91			0.91			0.91	
Ft/b, ped/bikes			1.00			1.00			1.00			1.00	
Ft/b, ped/bikes			1.00			1.00			1.00			1.00	
Frt			1.00			0.99			1.00			1.00	
Flt Protected			0.95			0.96			1.00			1.00	
Satd. Flow (prot)			1541			2895			5031			5034	
Flt Permitted			0.95			0.96			0.78			1.00	
Satd. Flow (perm)			1541			2895			3917			5034	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	685	26	35	37	1761	0	0	2454	5	
RTOR Reduction (vph)	0	0	0	0	0	8	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	342	396	0	0	1798	0	0	2459	0	
Confl. Peds. (#/hr)	3	0	2	2	0	3	0	0	0	0	0	0	
Confl. Bikes (#/hr)													
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%	
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0	
Parking (#/hr)													
Turn Type				Split	NA		Perm	NA			NA		
Protected Phases				2	2			1				1	
Permitted Phases							1						
Actuated Green, G (s)				21.7	21.7			46.8				46.8	
Effective Green, g (s)				23.7	23.7			48.3				48.3	
Actuated g/C Ratio				0.30	0.30			0.60				0.60	
Clearance Time (s)				6.0	6.0			5.5				5.5	
Vehicle Extension (s)				2.0	2.0			2.0				2.0	
Lane Grp Cap (vph)				456	857			2364				3039	
v/s Ratio Prot				c0.22	0.14							c0.49	
v/s Ratio Perm								0.46					
v/c Ratio				0.75	0.46			0.76				0.81	
Uniform Delay, d1				25.5	22.9			11.6				12.3	
Progression Factor				0.87	0.87			0.99				0.42	
Incremental Delay, d2				5.4	0.1			2.2				2.0	
Delay (s)				27.7	20.0			13.7				7.1	
Level of Service				C	C			B				A	
Approach Delay (s)	0.0				23.5			13.7				7.1	
Approach LOS	A				C			B				A	
Intersection Summary													
HCM 2000 Control Delay				11.9				HCM 2000 Level of Service	B				
HCM 2000 Volume to Capacity ratio				0.79									
Actuated Cycle Length (s)				80.0				Sum of lost time (s)	8.0				
Intersection Capacity Utilization				86.3%				ICU Level of Service	E				

HCM Signalized Intersection Capacity Analysis  
15: Patrick St & Gibbon St

Analysis Period (min)	10
Critical Lane Group	

Queues

16: Alfred St & Gibbon St

Total Future SUN w/o Development 2022

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	680	193	169
v/c Ratio	0.49	0.39	0.25
Control Delay	9.2	12.8	4.4
Queue Delay	0.0	0.0	0.0
Total Delay	9.2	12.8	4.4
Queue Length 50th (ft)	50	31	5
Queue Length 95th (ft)	83	70	31
Internal Link Dist (ft)	218	136	305
Turn Bay Length (ft)			
Base Capacity (vph)	1389	491	688
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	22	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.50	0.39	0.25

Intersection Summary

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HCM Signalized Intersection Capacity Analysis

16: Alfred St & Gibbon St

Total Future SUN w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←	←	←	←	←	←	←	←
Traffic Volume (vph)	0	0	0	5	613	8	98	79	0	0	30	125
Future Volume (vph)	0	0	0	5	613	8	98	79	0	0	30	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	12	12	12	12	12	12	13
Total Lost time (s)					4.0			4.0				4.0
Lane Util. Factor					0.95			1.00				1.00
Flt					1.00			1.00				0.89
Flt Protected					1.00			0.97				1.00
Satd. Flow (prot)					3080			1813				1716
Flt Permitted					1.00			0.75				1.00
Satd. Flow (perm)					3080			1403				1716
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	5	666	9	107	86	0	0	33	136
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	88	0
Lane Group Flow (vph)	0	0	0	0	678	0	0	193	0	0	81	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)					1							
Turn Type					Perm	NA		Perm	NA			NA
Protected Phases					2			1				1
Permitted Phases												
Actuated Green, G (s)					17.0			12.7				12.7
Effective Green, g (s)					18.0			14.0				14.0
Actuated g/C Ratio					0.45			0.35				0.35
Clearance Time (s)					5.0			5.3				5.3
Lane Grp Cap (vph)					1386			491				600
v/s Ratio Prot												0.05
v/s Ratio Perm					0.22			c0.14				
v/c Ratio					0.49			0.39				0.13
Uniform Delay, d1					7.8			9.8				8.9
Progression Factor					1.00			1.00				1.00
Incremental Delay, d2					1.2			2.3				0.5
Delay (s)					9.0			12.1				9.3
Level of Service					A			B				A
Approach Delay (s)					0.0			12.1				9.3
Approach LOS					A			B				A

Intersection Summary

HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.2%	ICU Level of Service	A
Analysis Period (min)	10		
c Critical Lane Group			

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Queues

17: Patrick St & Franklin St

Total Future SUN w/o Development 2022

Lane Group	EBL	EBT	NBT	NBR	SBT
Lane Group Flow (vph)	8	93	1643	541	2767
v/c Ratio	0.05	0.29	0.38	0.38	0.69
Control Delay	60.6	67.1	3.5	1.1	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.4
Total Delay	60.6	67.1	3.5	1.1	4.8
Queue Length 50th (ft)	8	49	86	0	83
Queue Length 95th (ft)	23	70	234	28	688
Internal Link Dist (ft)		261	297		346
Turn Bay Length (ft)					
Base Capacity (vph)	555	1065	4294	1416	4028
Starvation Cap Reductn	0	0	0	0	643
Spillback Cap Reductn	0	0	132	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.01	0.09	0.39	0.38	0.82

Intersection Summary

E-115

HCM Signalized Intersection Capacity Analysis

17: Patrick St & Franklin St

Total Future SUN w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		←	←					←	←	←	←	←
Traffic Volume (vph)	7	49	37	0	0	0	0	1512	498	3	2543	0
Future Volume (vph)	7	49	37	0	0	0	0	1512	498	3	2543	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	11	11	11	12	12	12	12	12	12
Grade (%)		2%			0%			0%				0%
Total Lost time (s)	4.0	4.0						4.0	4.0			4.0
Lane Util. Factor	1.00	0.95						0.91	1.00			0.91
Fltp, ped/bikes	1.00	0.99						1.00	1.00			1.00
Fltp, ped/bikes	1.00	1.00						1.00	1.00			1.00
Flt	1.00	0.94						1.00	0.85			1.00
Flt Protected	0.95	1.00						1.00	1.00			1.00
Satd. Flow (prot)	1744	3336						5036	1568			5036
Flt Permitted	0.95	1.00						1.00	1.00			0.94
Satd. Flow (perm)	1744	3336						5036	1568			4724
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)	8	53	40	0	0	0	0	1643	541	3	2764	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	80	0	0	0
Lane Group Flow (vph)	8	93	0	0	0	0	0	1643	461	0	2767	0
Confl. Bikes (#/hr)	3	E						A	A			A
Confl. Bikes (#/hr)			4				3	1				
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	3	0	0	0	0	0	0	0	0	0	0
Turn Type					Perm	NA		NA	Perm			NA
Protected Phases					4			2				2
Permitted Phases												
Actuated Green, G (s)		13.6	13.6					134.4	134.4			134.4
Effective Green, g (s)		15.6	15.6					136.4	136.4			136.4
Actuated g/C Ratio		0.10	0.10					0.85	0.85			0.85
Clearance Time (s)		6.0	6.0					6.0	6.0			6.0
Vehicle Extension (s)		3.0	3.0					0.2	0.2			0.2
Lane Grp Cap (vph)		170	325					4293	1336			4027
v/s Ratio Prot					c0.03			0.33				
v/s Ratio Perm		0.00							0.29			c0.59
v/c Ratio		0.05	0.29					0.38	0.35			0.69
Uniform Delay, d1		65.5	67.0					2.6	2.5			4.2
Progression Factor		1.00	1.00					1.00	1.00			0.69
Incremental Delay, d2		0.1	0.5					0.3	0.7			0.6
Delay (s)		65.6	67.5					2.8	3.2			3.5
Level of Service		E	E					A	A			A
Approach Delay (s)		67.4				0.0		2.9				3.5
Approach LOS		E				A		A				A

Intersection Summary

HCM 2000 Control Delay	4.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	96.7%	ICU Level of Service	F
Analysis Period (min)	10		

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HCM Signalized Intersection Capacity Analysis  
17: Patrick St & Franklin St

Total Future SUN w/o Development 2022

c Critical Lane Group

E-117

HCM Unsignalized Intersection Capacity Analysis  
18: Patrick St & Existing Garage

Total Future SUN w/o Development 2022

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	1			↑↑↑		
Traffic Volume (veh/h)	175	0	175	1698	0	0
Future Volume (Veh/h)	175	0	175	1698	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	190	0	190	1846	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				594	261	
pX, platoon unblocked	0.89					
vC, conflicting volume	995	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCU, unblocked vol	546	0	0			
IC, single (s)	6.8	6.9	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	48	100	88			
cM capacity (veh/h)	366	1084	1622			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>		
Volume Total	190	559	738	738		
Volume Left	190	190	0	0		
Volume Right	0	0	0	0		
ESH	366	1622	1700	1700		
Volume to Capacity	0.52	0.12	0.43	0.43		
Queue Length 95th (ft)	68	10	0	0		
Control Delay (s)	24.8	3.3	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	24.8	0.9				
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			2.9			
Intersection Capacity Utilization		52.7%		ICU Level of Service		A
Analysis Period (min)			10			

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HCM Unsignalized Intersection Capacity Analysis  
20: Columbus St & Wolfe St

Total Future SUN w/o Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑			↑	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	29	21	29	20	26	47	10	163	8	19	93	25
Future Volume (vph)	29	21	29	20	26	47	10	163	8	19	93	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
Hourly flow rate (vph)	32	23	32	22	28	51	11	177	9	21	101	27
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total (vph)	87	101	197	149								
Volume Left (vph)	32	22	11	21								
Volume Right (vph)	32	51	9	27								
Hadj (s)	-0.11	-0.23	0.02	-0.05								
Departure Headway (s)	4.7	4.6	4.6	4.5								
Degree Utilization, x	0.11	0.13	0.25	0.19								
Capacity (veh/h)	696	716	754	746								
Control Delay (s)	8.3	8.3	9.1	8.6								
Approach Delay (s)	8.3	8.3	9.1	8.6								
Approach LOS	A	A	A	A								
<b>Intersection Summary</b>												
Delay				8.7								
Level of Service				A								
Intersection Capacity Utilization			27.4%		ICU Level of Service							A
Analysis Period (min)				10								

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HCM 2010 AWSC  
20: Columbus St & Wolfe St

Total Future SUN w/o Development 2022

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	29	21	29	0	20	26	47	0	10	163	8
Future Vol, veh/h	0	29	21	29	0	20	26	47	0	10	163	8
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	0	32	23	32	0	22	28	51	0	11	177	9
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
<b>Approach</b>												
Opposing Approach		WB			EB				NB			SB
Opposing Lanes		1			1				1			1
Conflicting Approach Left		SB			NB				EB			
Conflicting Lanes Left		1			1				1			
Conflicting Approach Right		NB			SB				WB			
Conflicting Lanes Right		1			1				1			
HCM Control Delay		8.3			8.3				9			
HCM LOS		A			A				A			
<b>Lane</b>												
Vol Left, %		6%	37%	22%		14%						
Vol Thru, %		90%	27%	28%		68%						
Vol Right, %		4%	37%	51%		18%						
Sign Control		Stop	Stop	Stop		Stop						
Traffic Vol by Lane		181	79	93		137						
LT Vol		10	29	20		19						
Through Vol		163	21	26		93						
RT Vol		8	29	47		25						
Lane Flow Rate		197	86	101		149						
Geometry Grp		1	1	1		1						
Degree of Util (X)		0.247	0.112	0.128		0.187						
Departure Headway (Hd)		4.526	4.703	4.572		4.515						
Convergence, Y/N		Yes	Yes	Yes		Yes						
Cap		793	761	782		794						
Service Time		2.557	2.741	2.61		2.547						
HCM Lane V/C Ratio		0.248	0.113	0.129		0.188						
HCM Control Delay		9	8.3	8.3		8.6						
HCM Lane LOS		A	A	A		A						
HCM 95th-ile Q		1	0.4	0.4		0.7						

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Intersection				
Intersection Delay, s/veh				
Intersection LOS				
Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	19	93	25
Future Vol, veh/h	0	19	93	25
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	21	101	27
Number of Lanes	0	0	1	0
Approach		SB		
Opposing Approach		NB		
Opposing Lanes		1		
Conflicting Approach Left		WB		
Conflicting Lanes Left		1		
Conflicting Approach Right		EB		
Conflicting Lanes Right		1		
HCM Control Delay		8.6		
HCM LOS		A		
Lane				



**APPENDIX F**  
**TOTAL FUTURE LEVEL OF SERVICE AND QUEUE**  
**SYNCHRO WORKSHEETS**



Queues

1: Alfred St & Cameron St

Total Future AM w/ Development 2022

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	303	504	89
v/c Ratio	0.23	0.79	0.13
Control Delay	14.4	7.4	8.5
Queue Delay	0.0	0.4	0.0
Total Delay	14.4	7.8	8.5
Queue Length 50th (ft)	47	19	14
Queue Length 95th (ft)	73	m20	39
Internal Link Dist (ft)	239	341	294
Turn Bay Length (ft)			
Base Capacity (vph)	1338	636	661
Starvation Cap Reductn	0	14	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.23	0.81	0.13

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

1: Alfred St & Cameron St

Total Future AM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←	←	←	←	←	←	←	←
Traffic Volume (vph)	0	0	0	10	262	6	82	382	0	0	48	34
Future Volume (vph)	0	0	0	10	262	6	82	382	0	0	48	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	12	12	12	12	12	12	12
Total Lost time (s)					4.0			4.0				4.0
Lane Util. Factor					0.95			1.00				1.00
Frpb, ped/bikes					1.00			1.00				0.99
Flpb, ped/bikes					1.00			1.00				1.00
Frt					1.00			1.00				0.94
Flt Protected					1.00			0.99				1.00
Satd. Flow (prot)					3054			1468				1387
Flt Permitted					1.00			0.93				1.00
Satd. Flow (perm)					3054			1377				1387
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	11	285	7	89	415	0	0	52	37
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	20	0
Lane Group Flow (vph)	0	0	0	0	301	0	0	504	0	0	69	0
Confl. Peds. (#/hr)	34		25	25		34	17		32	32		17
Confl. Bikes (#/hr)			4					1				
Parking (#/hr)					6			3				3
Turn Type					Perm	NA		Perm	NA			NA
Protected Phases					2			1				1
Permitted Phases					2			1				1
Actuated Green, G (s)					34.0			36.0				36.0
Effective Green, g (s)					35.0			37.0				37.0
Actuated g/C Ratio					0.44			0.46				0.46
Clearance Time (s)					5.0			5.0				5.0
Lane Grp Cap (vph)					1336			636				641
v/s Ratio Prot												0.05
v/s Ratio Perm					0.10			c0.37				
v/c Ratio					0.23			0.79				0.11
Uniform Delay, d1					14.0			18.2				12.2
Progression Factor					1.00			0.12				1.00
Incremental Delay, d2					0.4			3.7				0.3
Delay (s)					14.4			6.0				12.5
Level of Service					B			A				B
Approach Delay (s)	0.0				14.4			6.0				12.5
Approach LOS	A				B			A				B

Intersection Summary

HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	10		
c Critical Lane Group			

Queues

2: Henry St & King St

Total Future AM w/ Development 2022

Lane Group	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	349	47	230	1404
v/c Ratio	0.64	0.12	0.28	1.05
Control Delay	25.8	8.4	11.2	55.8
Queue Delay	0.0	0.0	1.5	0.0
Total Delay	25.8	8.4	12.7	55.8
Queue Length 50th (ft)	134	16	89	-326
Queue Length 95th (ft)	228	m16	m108	#420
Internal Link Dist (ft)	77		222	128
Turn Bay Length (ft)		100		
Base Capacity (vph)	542	386	830	1521
Starvation Cap Reductn	0	0	429	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.64	0.12	0.57	1.05

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.  
 - Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 - Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: Henry St & King St

Total Future AM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		←	←	←	←	←	←	←	←	←	←	←
Traffic Volume (vph)	0	276	45	43	212	0	0	0	0	0	40	1401
Future Volume (vph)	0	276	45	43	212	0	0	0	0	0	40	1401
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	10	10	12	12	12	12	12	12	11
Total Lost time (s)		4.0		4.0	4.0							4.0
Lane Util. Factor		1.00		1.00	1.00							0.91
Frpb, ped/bikes		0.98		1.00	1.00							1.00
Flpb, ped/bikes		1.00		0.98	1.00							1.00
Frt		0.98		1.00	1.00							1.00
Flt Protected		1.00		0.95	1.00							1.00
Satd. Flow (prot)		1380		1461	1546							4189
Flt Permitted		1.00		0.37	1.00							1.00
Satd. Flow (perm)		1380		563	1546							4189
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	300	49	47	230	0	0	0	0	0	43	1523
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	0	3
Lane Group Flow (vph)	0	342	0	47	230	0	0	0	0	0	0	1601
Confl. Peds. (#/hr)	91		96	96		91	14		4	4		14
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)		3										3
Turn Type		NA		pm-pt	NA						Split	NA
Protected Phases		6		5	2.6						4	4
Permitted Phases		2.6										
Actuated Green, G (s)		30.0		42.0	42.0							28.0
Effective Green, g (s)		31.0		43.0	43.0							29.0
Actuated g/C Ratio		0.39		0.54	0.54							0.36
Clearance Time (s)		5.0		5.0								5.0
Lane Grp Cap (vph)		534		392	830							1518
v/s Ratio Prot		c0.25		0.01	c0.15							c0.38
v/s Ratio Perm				0.05								
v/c Ratio		0.64		0.12	0.28							1.05
Uniform Delay, d1		20.0		9.8	10.1							25.5
Progression Factor		1.00		0.89	1.05							1.00
Incremental Delay, d2		5.7		0.4	0.5							29.2
Delay (s)		25.6		9.1	11.0							54.7
Level of Service		C		A	B							D
Approach Delay (s)	25.6				10.7			0.0				54.7
Approach LOS	C				B			A				D

Intersection Summary

HCM 2000 Control Delay	44.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	10		
c Critical Lane Group			



Queues

3: Patrick St & King St

Total Future AM w/ Development 2022

Lane Group	EBL	EBT	WBT	NBT
Lane Group Flow (vph)	120	192	215	2442
v/c Ratio	0.38	0.33	0.60	1.33
Control Delay	19.9	19.3	20.7	115.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.9	19.3	20.7	115.1
Queue Length 50th (ft)	56	93	76	-1400
Queue Length 95th (ft)	m85	m142	m58	m#827
Internal Link Dist (ft)		222	239	344
Turn Bay Length (ft)	100			
Base Capacity (vph)	312	589	357	1839
Starvation Cap Reductn	0	0	0	1
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.38	0.33	0.60	1.33

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

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HCM Signalized Intersection Capacity Analysis

3: Patrick St & King St

Total Future AM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕		↔	↕		↔	↕		↔	↕	↔
Traffic Volume (vph)	110	177	0	0	161	37	71	2141	35	0	0	0
Future Volume (vph)	110	177	0	0	161	37	71	2141	35	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0			4.0				
Lane Util. Factor	1.00	1.00			1.00			0.78				
Frpb, ped/bikes	1.00	1.00			0.98			1.00				
Flpb, ped/bikes	0.98	1.00			1.00			1.00				
Frt	1.00	1.00			0.97			1.00				
Flt Protected	0.95	1.00			1.00			1.00				
Satd. Flow (prot)	1452	1521			1389			3587				
Flt Permitted	0.49	1.00			1.00			1.00				
Satd. Flow (perm)	750	1521			1389			3587				
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)	120	192	0	0	175	40	77	2327	38	0	0	0
RTOR Reduction (vph)	0	0	0	0	11	0	0	1	0	0	0	0
Lane Group Flow (vph)	120	192	0	0	205	0	0	2441	0	0	0	0
Confl. Peds. (#/hr)	63		83	83		63	15		24	24		15
Confl. Bikes (#/hr)			6						2			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	7	0	0	6	0	0	0	0	0	0	0
Parking (#/hr)					3				4			
Turn Type	pm+pt	NA			NA		Split	NA				NA
Protected Phases	2	2,3			3		1	1				
Permitted Phases	2,3				3							
Actuated Green, G (s)	24.4	29.4			18.4			40.0				
Effective Green, g (s)	26.4	30.4			20.0			41.0				
Actuated g/C Ratio	0.33	0.38			0.25			0.51				
Clearance Time (s)	5.0				5.6			5.0				
Lane Grp Cap (vph)	308	577			347			1838				
v/s Ratio Prot	0.03	c0.13			c0.15			c0.68				
v/c Ratio Perm	0.09											
v/c Ratio	0.39	0.33			0.59			1.33				
Uniform Delay, d1	19.7	17.6			26.4			19.5				
Progression Factor	1.01	1.03			0.55			0.47				
Incremental Delay, d2	2.6	1.1			6.4			98.7				
Delay (s)	22.6	19.3			21.0			107.9				
Level of Service	C	B			C			F				
Approach Delay (s)	20.5				21.0			107.9				0.0
Approach LOS	C				C			F				A

Intersection Summary

- HCM 2000 Control Delay: 92.5
- HCM 2000 Volume to Capacity ratio: 1.02
- Actuated Cycle Length (s): 80.0
- Intersection Capacity Utilization: 81.9%
- Analysis Period (min): 10
- c Critical Lane Group
- HCM 2000 Level of Service: F
- Sum of lost time (s): 12.6
- ICU Level of Service: D

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Queues

4: Alfred St & King St

Total Future AM w/ Development 2022

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	248	191	571	45
v/c Ratio	0.41	0.31	0.97	0.08
Control Delay	5.8	9.8	29.9	10.1
Queue Delay	0.1	0.0	0.0	0.0
Total Delay	5.9	9.8	29.9	10.1
Queue Length 50th (ft)	20	40	54	9
Queue Length 95th (ft)	m26	m60	#507	22
Internal Link Dist (ft)	239	236	338	341
Turn Bay Length (ft)				
Base Capacity (vph)	608	621	589	583
Starvation Cap Reductn	39	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.44	0.31	0.97	0.08

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

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HCM Signalized Intersection Capacity Analysis

4: Alfred St & King St

Total Future AM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↕	↕	↕
Traffic Volume (vph)	25	184	19	13	154	9	50	467	8	2	31	8
Future Volume (vph)	25	184	19	13	154	9	50	467	8	2	31	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	12	12	12	12	12	12
Total Lost time (s)	4.0				4.0			4.0				4.0
Lane Util. Factor	1.00				1.00			1.00				1.00
Frpb, ped/bikes	0.98				0.99			1.00				0.99
Flpb, ped/bikes	0.99				0.99			1.00				1.00
Frt	0.99				0.99			1.00				0.97
Flt Protected	0.99				1.00			1.00				1.00
Satd. Flow (prot)	1283				1297			1465				1420
Flt Permitted	0.96				0.98			0.97				0.98
Satd. Flow (perm)	1239				1269			1428				1401
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)	27	200	21	14	167	10	54	508	9	2	34	9
RTOR Reduction (vph)	0	4	0	0	3	0	0	1	0	0	5	0
Lane Group Flow (vph)	0	244	0	0	188	0	0	570	0	0	40	0
Confl. Peds. (#/hr)	79		90	90		79	21		41	41		21
Confl. Bikes (#/hr)	0	7	7						1			1
Bus Blockages (#/hr)	0	3	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)		3			3			3				3
Turn Type	Perm	NA			Perm	NA		Perm	NA			Perm
Protected Phases	6	6			2			4	4			8
Permitted Phases	6				2			4				8
Actuated Green, G (s)	38.0				38.0			31.9				31.9
Effective Green, g (s)	39.0				39.0			33.0				33.0
Actuated g/C Ratio	0.49				0.49			0.41				0.41
Clearance Time (s)	5.0				5.0			5.1				5.1
Lane Grp Cap (vph)	604				618			589				577
v/s Ratio Prot												
v/s Ratio Perm	c0.20				0.15			c0.40				0.03
v/c Ratio	0.40				0.30			0.97				0.07
Uniform Delay, d1	13.1				12.3			23.0				14.2
Progression Factor	0.31				0.69			0.28				0.80
Incremental Delay, d2	1.8				1.2			20.2				0.2
Delay (s)	5.8				9.7			26.8				11.6
Level of Service	A				A			C				B
Approach Delay (s)	5.8				9.7			26.8				11.6
Approach LOS	A				A			C				B

Intersection Summary

- HCM 2000 Control Delay: 18.1
- HCM 2000 Volume to Capacity ratio: 0.66
- Actuated Cycle Length (s): 80.0
- Intersection Capacity Utilization: 64.7%
- Analysis Period (min): 10
- c Critical Lane Group
- HCM 2000 Level of Service: B
- Sum of lost time (s): 8.0
- ICU Level of Service: C

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Queues

5: Washington St & King St

Total Future AM w/ Development 2022

Lane Group	EBT	EBR	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	107	18	87	17	2414	551
v/c Ratio	0.26	0.06	0.21	0.05	1.02	0.31
Control Delay	35.4	13.3	34.5	12.9	13.8	9.7
Queue Delay	0.0	0.0	0.0	0.0	16.0	0.0
Total Delay	35.4	13.3	34.5	12.9	29.8	9.7
Queue Length 50th (ft)	64	0	51	0	-51	90
Queue Length 95th (ft)	114	18	96	18	m26	120
Internal Link Dist (ft)	245		94		335	133
Turn Bay Length (ft)		100				
Base Capacity (vph)	410	326	410	348	2358	1787
Starvation Cap Reductn	0	0	0	0	136	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.06	0.21	0.05	1.09	0.31

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

5: Washington St & King St

Total Future AM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↑		↑	↑		↑↑	↑		↑	↑
Traffic Volume (vph)	0	98	17	0	80	16	0	2185	36	0	473	34
Future Volume (vph)	0	98	17	0	80	16	0	2185	36	0	473	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	9	8	12	9	9	10	10	10	10	8	10
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		0.78			0.95	
Frpb, ped/bikes		1.00	0.90		1.00	0.92		1.00			1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		1.00	0.85		1.00			0.99	
Flt Protected		1.00	1.00		1.00	1.00		1.00			1.00	
Satd. Flow (prot)		1448	1107		1448	1183		3627			2749	
Flt Permitted		1.00	1.00		1.00	1.00		1.00			1.00	
Satd. Flow (perm)		1448	1107		1448	1183		3627			2749	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	107	18	0	87	17	0	2375	39	0	514	37
RTOR Reduction (vph)	0	0	13	0	0	12	0	0	0	0	0	0
Lane Group Flow (vph)	0	107	5	0	87	5	0	2414	0	0	551	0
Confl. Peds. (#/hr)	59	81	81	0	59	8	0	31	31	0	8	0
Confl. Bikes (#/hr)			4			1			1			
Bus Blockages (#/hr)	0	10	0	0	10	0	0	4	0	0	3	0
Parking (#/hr)												3
Turn Type		NA	Perm		NA	Perm		NA			NA	
Protected Phases		2			2			1			1	
Permitted Phases			2			2						1
Actuated Green, G (s)		32.1	32.1		32.1	32.1		77.0			77.0	
Effective Green, g (s)		34.0	34.0		34.0	34.0		78.0			78.0	
Actuated g/C Ratio		0.28	0.28		0.28	0.28		0.65			0.65	
Clearance Time (s)		5.9	5.9		5.9	5.9		5.0			5.0	
Lane Grp Cap (vph)		410	313		410	335		2357			1786	
v/s Ratio Prot		c0.07			0.06			c0.67			0.20	
v/s Ratio Perm			0.00			0.00						0.31
v/c Ratio		0.26	0.02		0.21	0.01		1.02			0.31	
Uniform Delay, d1		33.3	31.0		32.8	30.9		21.0			9.2	
Progression Factor		1.00	1.00		1.00	1.00		0.07			1.00	
Incremental Delay, d2		1.5	0.1		1.2	0.1		9.5			0.4	
Delay (s)		34.8	31.1		34.0	31.0		10.9			9.6	
Level of Service		C	C		C	C		B			A	
Approach Delay (s)		34.3			33.5			10.9			9.6	
Approach LOS		C			C			B			A	

Intersection Summary

HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	10		
c Critical Lane Group			

Queues

6: Henry St & Prince St

Total Future AM w/ Development 2022

Lane Group	EBT	SBT
Lane Group Flow (vph)	704	1529
v/c Ratio	0.49	0.91
Control Delay	15.1	4.9
Queue Delay	0.3	0.0
Total Delay	15.4	4.9
Queue Length 50th (ft)	116	15
Queue Length 95th (ft)	164	m14
Internal Link Dist (ft)	69	341
Turn Bay Length (ft)		
Base Capacity (vph)	1426	1687
Starvation Cap Reductn	0	1
Spillback Cap Reductn	224	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.59	0.91

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

6: Henry St & Prince St

Total Future AM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑									↑↑	
Traffic Volume (vph)	0	576	72	0	0	0	0	0	0	0	88	1318
Future Volume (vph)	0	576	72	0	0	0	0	0	0	0	88	1318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	10
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frpb, ped/bikes		1.00									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.98									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		2918									4053	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		2918									4053	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	626	78	0	0	0	0	0	0	0	96	1433
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	0	0	0	16
Lane Group Flow (vph)	0	700	0	0	0	0	0	0	0	0	1513	0
Confl. Peds. (#/hr)	36	15	15	0	0	0	0	0	0	0	8	8
Confl. Bikes (#/hr)			7									15
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%
Parking (#/hr)		6									3	
Turn Type		NA									Perm	NA
Protected Phases												1
Permitted Phases												1
Actuated Green, G (s)		38.0										32.0
Effective Green, g (s)		39.0										33.0
Actuated g/C Ratio		0.49										0.41
Clearance Time (s)		5.0										5.0
Lane Grp Cap (vph)		1422										1671
v/s Ratio Prot		c0.24										0.37
v/s Ratio Perm												0.91
v/c Ratio		0.49										0.91
Uniform Delay, d1		13.8										22.0
Progression Factor		1.00										0.12
Incremental Delay, d2		1.2										0.9
Delay (s)		15.0										3.6
Level of Service		B										A
Approach Delay (s)		15.0				0.0			0.0			3.6
Approach LOS		B				A			A			A

Intersection Summary

HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.6%	ICU Level of Service	B
Analysis Period (min)	10		
c Critical Lane Group			

**Queues**  
7: Alfred St & Prince St

Total Future AM w/ Development 2022

	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	633	508	79
v/c Ratio	0.44	0.81	0.13
Control Delay	1.2	9.2	15.5
Queue Delay	0.2	3.0	0.0
Total Delay	1.3	12.2	15.5
Queue Length 50th (ft)	5	66	28
Queue Length 95th (ft)	m6	m65	56
Internal Link Dist (ft)	242	151	338
Turn Bay Length (ft)			
Base Capacity (vph)	1442	627	586
Starvation Cap Reductn	201	17	0
Spillback Cap Reductn	0	57	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.51	0.89	0.13

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

**HCM Signalized Intersection Capacity Analysis**  
7: Alfred St & Prince St

Total Future AM w/ Development 2022

	↖	→	↗	↖	←	↗	↖	↑	↗	↖	↓	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔						↔			↔	
Traffic Volume (vph)	41	514	27	0	0	0	0	445	22	10	63	0
Future Volume (vph)	41	514	27	0	0	0	0	445	22	10	63	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	12	12	12	12	12	12
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frpb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.99						0.99			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3029						1472			1471	
Flt Permitted		1.00						1.00			0.93	
Satd. Flow (perm)		3029						1472			1381	
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)	45	559	29	0	0	0	0	484	24	11	68	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	629	0	0	0	0	0	506	0	0	79	0
Confl. Peds. (#/hr)	47		21	21		47	33		38	38		33
Confl. Bikes (#/hr)			5						1			1
Parking (#/hr)		6						3			3	
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		37.0						33.0			33.0	
Effective Green, g (s)		38.0						34.0			34.0	
Actuated g/C Ratio		0.48						0.42			0.42	
Clearance Time (s)		5.0						5.0			5.0	
Lane Grp Cap (vph)		1438						625			586	
v/s Ratio Prot								c0.34				
v/s Ratio Perm		0.21									0.06	
v/c Ratio		0.44						0.81			0.13	
Uniform Delay, d1		13.9						20.2			14.0	
Progression Factor		0.05						0.29			1.04	
Incremental Delay, d2		0.5						2.9			0.5	
Delay (s)		1.2						8.7			15.1	
Level of Service		A						A			B	
Approach Delay (s)		1.2			0.0			8.7			15.1	
Approach LOS		A			A			A			B	

**Intersection Summary**  
HCM 2000 Control Delay 5.2 HCM 2000 Level of Service A  
HCM 2000 Volume to Capacity ratio 0.61  
Actuated Cycle Length (s) 80.0 Sum of lost time (s) 8.0  
Intersection Capacity Utilization 55.8% ICU Level of Service B  
Analysis Period (min) 10  
c Critical Lane Group

**Queues**  
8: Henry St & Duke St

Total Future AM w/ Development 2022

	→	↖	↗	←	↓
Lane Group	EBT	EBR	WBL	WBT	SBT
Lane Group Flow (vph)	452	449	67	688	1469
v/c Ratio	0.67	0.42	0.20	0.42	1.00
Control Delay	25.8	18.9	5.5	6.2	23.6
Queue Delay	0.6	0.0	0.0	0.7	0.0
Total Delay	26.3	18.9	5.5	6.9	23.6
Queue Length 50th (ft)	181	79	9	58	41
Queue Length 95th (ft)	286	116	m8	m48	m#117
Internal Link Dist (ft)	72			232	347
Turn Bay Length (ft)		125			
Base Capacity (vph)	670	1064	341	1625	1473
Starvation Cap Reductn	0	0	0	553	0
Spillback Cap Reductn	46	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.72	0.42	0.20	0.64	1.00

**Intersection Summary**  
# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.  
m Volume for 95th percentile queue is metered by upstream signal.

**HCM Signalized Intersection Capacity Analysis**  
8: Henry St & Duke St

Total Future AM w/ Development 2022

	↖	→	↗	↖	←	↗	↖	↑	↗	↖	↓	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔	↔		↔			↔	↔
Traffic Volume (vph)	0	416	413	62	633	0	0	0	0	0	1128	224
Future Volume (vph)	0	416	413	62	633	0	0	0	0	0	1128	224
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	10	12	12	12	12	12	12	11
Total Lost time (s)		4.0	4.0	4.0	4.0						4.0	
Lane Util. Factor		1.00	1.00	1.00	0.95						0.91	
Frpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	
Frt		1.00	0.85	1.00	1.00						0.98	
Flt Protected		1.00	1.00	0.95	1.00						1.00	
Satd. Flow (prot)		1676	2660	1485	2955						4105	
Flt Permitted		1.00	1.00	0.28	1.00						1.00	
Satd. Flow (perm)		1676	2660	431	2955						4105	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	452	449	67	688	0	0	0	0	0	1226	243
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	37	0
Lane Group Flow (vph)	0	452	449	67	688	0	0	0	0	0	1432	0
Confl. Peds. (#/hr)	15		14	14		15	13		2	2		13
Confl. Bikes (#/hr)			3				2					
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)												1
Turn Type	NA	Prot	pm+pt	NA								NA
Protected Phases		8	8	7	4							2
Permitted Phases				4								
Actuated Green, G (s)		30.7	30.7	42.7	42.7							26.9
Effective Green, g (s)		32.0	32.0	43.7	44.0							28.0
Actuated g/C Ratio		0.40	0.40	0.55	0.55							0.35
Clearance Time (s)		5.3	5.3	5.0	5.3							5.1
Lane Grp Cap (vph)		670	1064	340	1625							1436
v/s Ratio Prot		c0.27	0.17	0.02	c0.23							c0.35
v/s Ratio Perm				0.09								
v/c Ratio		0.67	0.42	0.20	0.42							1.00
Uniform Delay, d1		19.7	17.3	10.4	10.6							26.0
Progression Factor		1.00	1.00	0.63	0.58							0.34
Incremental Delay, d2		5.3	1.2	0.1	0.1							12.4
Delay (s)		25.0	18.6	6.6	6.2							21.1
Level of Service		C	B	A	A							C
Approach Delay (s)		21.8			6.2			0.0				21.1
Approach LOS		C			A			A				C

**Intersection Summary**  
HCM 2000 Control Delay 17.7 HCM 2000 Level of Service B  
HCM 2000 Volume to Capacity ratio 0.79  
Actuated Cycle Length (s) 80.0 Sum of lost time (s) 12.0  
Intersection Capacity Utilization 68.1% ICU Level of Service C  
Analysis Period (min) 10  
c Critical Lane Group

Queues

9: Patrick St & Duke St

Total Future AM w/ Development 2022

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	431	559	2476
v/c Ratio	0.91	1.21	1.10
Control Delay	44.6	106.5	57.1
Queue Delay	0.0	0.0	0.5
Total Delay	44.6	106.5	57.6
Queue Length 50th (ft)	110	-353	-731
Queue Length 95th (ft)	#355	m#502	#629
Internal Link Dist (ft)	232	245	181
Turn Bay Length (ft)			
Base Capacity (vph)	472	461	2248
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	406
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.91	1.21	1.34

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

9: Patrick St & Duke St

Total Future AM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑				
Traffic Volume (vph)	4	393	0	0	460	54	302	1877	99	0	0	0
Future Volume (vph)	4	393	0	0	460	54	302	1877	99	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.78				
Frpb, ped/bikes		1.00			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Flt		1.00			0.99			0.99				
Flt Protected		1.00			1.00			1.00				
Satd. Flow (prot)		1899			1458			3822				
Flt Permitted		0.80			1.00			0.99				
Satd. Flow (perm)		1512			1458			3822				
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)	4	427	0	0	500	59	328	2040	108	0	0	0
RTOR Reduction (vph)	0	0	0	0	6	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	431	0	0	554	0	0	2471	0	0	0	0
Confl. Peds. (#/hr)	15		15	15		15	5		14	14		5
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Parking (#/hr)												
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		2			2			1				
Permitted Phases	2							1				
Actuated Green, G (s)		23.8			23.8			46.0				
Effective Green, g (s)		25.0			25.0			47.0				
Actuated g/C Ratio		0.31			0.31			0.59				
Clearance Time (s)		5.2			5.2			5.0				
Lane Grp Cap (vph)		472			455			2245				
v/s Ratio Prot					c0.38							
v/s Ratio Perm		0.29						0.65				
v/c Ratio		0.91			1.22			1.10				
Uniform Delay, d1		26.5			27.5			16.5				
Progression Factor		0.93			1.01			1.24				
Incremental Delay, d2		17.5			79.8			35.0				
Delay (s)		42.1			107.6			55.5				
Level of Service		D			F			E				
Approach Delay (s)		42.1			107.6			55.5				0.0
Approach LOS		D			F			E				A

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

10: Alfred St & Duke St

Total Future AM w/ Development 2022

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	556	473	507	75
v/c Ratio	0.79	0.55	1.06	0.16
Control Delay	10.0	10.0	72.2	4.7
Queue Delay	4.3	3.3	5.9	0.0
Total Delay	14.3	13.3	78.1	4.7
Queue Length 50th (ft)	50	79	-282	4
Queue Length 95th (ft)	m53	m155	#469	11
Internal Link Dist (ft)	245	227	189	116
Turn Bay Length (ft)				
Base Capacity (vph)	702	858	480	483
Starvation Cap Reductn	91	170	0	0
Spillback Cap Reductn	20	284	11	4
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.91	0.82	1.08	0.16

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

10: Alfred St & Duke St

Total Future AM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑				
Traffic Volume (vph)	107	385	20	4	416	16	60	394	13	2	43	24
Future Volume (vph)	107	385	20	4	416	16	60	394	13	2	43	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	14	12	12	11	12	12	11	12
Total Lost time (s)		4.0			4.0			4.0				4.0
Lane Util. Factor		1.00			1.00			1.00				1.00
Frpb, ped/bikes		1.00			1.00			1.00				0.98
Flpb, ped/bikes		1.00			1.00			1.00				1.00
Flt		0.99			1.00			1.00				0.95
Flt Protected		0.99			1.00			0.99				1.00
Satd. Flow (prot)		1532			1561			1430				1344
Flt Permitted		0.82			1.00			0.95				0.99
Satd. Flow (perm)		1274			1557			1369				1332
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)	116	418	22	4	452	17	65	428	14	2	47	26
RTOR Reduction (vph)	0	2	0	0	2	0	0	1	0	0	17	0
Lane Group Flow (vph)	0	554	0	0	471	0	0	506	0	0	58	0
Confl. Peds. (#/hr)	12		22	22		12	12		15	15		12
Confl. Bikes (#/hr)						4						1
Bus Blockages (#/hr)	0	3	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)		3			2			1				3
Turn Type	Perm	NA			Perm	NA		Perm	NA			Perm
Protected Phases		2			2			1				1
Permitted Phases	2							1				1
Actuated Green, G (s)		43.0			43.0			27.0				27.0
Effective Green, g (s)		44.0			44.0			28.0				28.0
Actuated g/C Ratio		0.55			0.55			0.35				0.35
Clearance Time (s)		5.0			5.0			5.0				5.0
Lane Grp Cap (vph)		700			856			479				466
v/s Ratio Prot												
v/s Ratio Perm		c0.44			0.30			c0.37				0.04
v/c Ratio		0.79			0.55			1.06				0.12
Uniform Delay, d1		14.3			11.6			26.0				17.7
Progression Factor		0.43			0.68			1.00				0.34
Incremental Delay, d2		3.6			1.8			43.9				0.5
Delay (s)		9.8			9.7			69.9				6.5
Level of Service		A			A			E				A
Approach Delay (s)		9.8			9.7			69.9				6.5
Approach LOS		A			A			E				A

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

11: Columbus St & Duke St

Total Future AM w/ Development 2022

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	431	362	620	97
v/c Ratio	0.78	0.60	0.97	0.14
Control Delay	11.6	23.0	47.9	3.4
Queue Delay	1.8	2.5	8.6	0.0
Total Delay	13.3	25.5	56.5	3.4
Queue Length 50th (ft)	57	134	287	6
Queue Length 95th (ft)	m136	224	#515	21
Internal Link Dist. (ft)	227	234	390	354
Turn Bay Length (ft)				
Base Capacity (vph)	552	602	636	697
Starvation Cap Reductn	40	136	0	0
Spillback Cap Reductn	0	0	32	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.84	0.78	1.03	0.14

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

11: Columbus St & Duke St

Total Future AM w/ Development 2022

	→	←	↑	↓								
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔		↔	↔		↔	↔	↔
Traffic Volume (vph)	51	326	20	10	291	32	145	422	3	3	68	18
Future Volume (vph)	51	326	20	10	291	32	145	422	3	3	68	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	0.99	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00	1.00
Frt	0.99	0.99	0.99	0.99	1.00	0.99	1.00	0.99	1.00	0.99	1.00	0.97
Flt Protected	0.99	1.00	1.00	0.99	1.00	0.99	1.00	0.99	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1439	1469	1469	1455	1455	1455	1455	1455	1455	1455	1426	1426
Flt Permitted	0.92	0.99	0.99	0.99	0.99	0.89	0.89	0.89	0.89	0.89	0.99	0.99
Satd. Flow (perm)	1334	1449	1449	1307	1307	1307	1307	1307	1307	1307	1410	1410
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	354	22	11	316	35	158	459	3	3	74	20
RTOR Reduction (vph)	0	2	0	0	5	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	429	0	0	357	0	0	620	0	0	87	0
Confl. Peds. (#/hr)	22	15	15	22	14	8	8	8	8	8	14	14
Confl. Bikes (#/hr)	0	3	0	0	0	0	0	0	0	0	0	1
Bus Blockages (#/hr)	0	3	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	3	1	1	3	3	3	3	3	3	3	3	3
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	6	6	2	2	4	4	8	8	8	8	8	8
Permitted Phases	6	6	2	2	4	4	8	8	8	8	8	8
Actuated Green, G (s)	32.0	33.0	32.0	33.0	38.0	39.0	38.0	39.0	39.0	39.0	39.0	39.0
Effective Green, g (s)	33.0	33.0	33.0	33.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0
Actuated g/C Ratio	0.41	0.41	0.41	0.41	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	550	597	597	637	687	687	687	687	687	687	687	687
v/s Ratio Prot												
v/s Ratio Perm	c0.32	0.25	0.25	0.25	c0.47	0.06	0.06	0.06	0.06	0.06	0.06	0.06
v/c Ratio	0.78	0.60	0.60	0.60	0.97	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Uniform Delay, d1	20.3	18.3	18.3	20.0	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2
Progression Factor	0.26	1.00	1.00	1.00	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
Incremental Delay, d2	6.1	4.3	4.3	25.0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Delay (s)	11.3	22.7	22.7	45.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Level of Service	B	C	C	D	A	A	A	A	A	A	A	A
Approach Delay (s)	11.3	22.7	22.7	45.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Approach LOS	B	C	C	D	A	A	A	A	A	A	A	A

Intersection Summary

- HCM 2000 Control Delay: 27.4
- HCM 2000 Level of Service: C
- HCM 2000 Volume to Capacity ratio: 0.88
- Actuated Cycle Length (s): 80.0
- Sum of lost time (s): 8.0
- Intersection Capacity Utilization: 94.1%
- ICU Level of Service: F
- Analysis Period (min): 10
- c Critical Lane Group

Queues

12: Washington St & Duke St

Total Future AM w/ Development 2022

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	333	259	2216	597
v/c Ratio	1.20	0.57	1.11	0.36
Control Delay	124.4	39.5	64.2	6.7
Queue Delay	0.1	0.0	0.5	0.0
Total Delay	124.5	39.5	64.8	6.7
Queue Length 50th (ft)	-313	162	-841	45
Queue Length 95th (ft)	#500	253	#953	57
Internal Link Dist. (ft)	234	98	339	351
Turn Bay Length (ft)				
Base Capacity (vph)	277	452	1995	1672
Starvation Cap Reductn	3	0	0	0
Spillback Cap Reductn	0	0	343	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.22	0.57	1.34	0.36

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

12: Washington St & Duke St

Total Future AM w/ Development 2022

	→	←	↑	↓								
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔		↔	↔		↔	↔	↔
Traffic Volume (vph)	130	157	19	10	184	44	2	1992	45	1	431	118
Future Volume (vph)	130	157	19	10	184	44	2	1992	45	1	431	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	11	9	9	9	11	9
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.78	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	1.00	0.99	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.99	0.97	0.97	0.97	1.00	0.97	1.00	0.97	1.00	0.97	1.00	0.97
Flt Protected	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1472	1473	1473	1473	3392	2782	2782	2782	2782	2782	2782	2782
Flt Permitted	0.60	0.98	0.98	0.98	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Satd. Flow (perm)	894	1448	1448	1448	3188	2644	2644	2644	2644	2644	2644	2644
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)	141	171	21	11	200	48	2	2165	49	1	468	128
RTOR Reduction (vph)	0	2	0	0	6	0	0	2	0	0	21	0
Lane Group Flow (vph)	0	331	0	0	253	0	0	2215	0	0	576	0
Confl. Peds. (#/hr)	7	2	2	7	8	8	8	8	8	8	8	8
Confl. Bikes (#/hr)	0	2	0	0	2	0	0	0	0	0	0	2
Bus Blockages (#/hr)	0	3	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)	3	1	1	3	3	3	3	3	3	3	3	3
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	4	4	8	8	2	2	6	6	6	6	6	6
Permitted Phases	4	4	8	8	2	2	6	6	6	6	6	6
Actuated Green, G (s)	35.5	35.5	35.5	35.5	74.0	74.0	74.0	74.0	74.0	74.0	74.0	74.0
Effective Green, g (s)	37.0	37.0	37.0	37.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0
Actuated g/C Ratio	0.31	0.31	0.31	0.31	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Clearance Time (s)	5.5	5.5	5.5	5.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	275	446	446	446	1992	1652	1652	1652	1652	1652	1652	1652
v/s Ratio Prot												
v/s Ratio Perm	c0.37	0.17	0.17	0.17	c0.69	0.22	0.22	0.22	0.22	0.22	0.22	0.22
v/c Ratio	1.20	0.57	0.57	0.57	1.11	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Uniform Delay, d1	41.5	34.8	34.8									



HCM Unsignalized Intersection Capacity Analysis  
13: Patrick St & Henry to Patrick Connector

Total Future AM w/ Development 2022

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↑↑↑		
Traffic Volume (veh/h)	128	0	0	2183	0	0
Future Volume (veh/h)	128	0	0	2183	0	0
Sign Control	Yield			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	139	0	0	2373	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)				419	441	
Upstream signal (ft)						
pX, platoon unblocked	0.72					
vC, conflicting volume	791	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.8	6.9	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	81	100	100			
cM capacity (veh/h)	732	1084	1614			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3		
Volume Total	139	791	791	791		
Volume Left	139	0	0	0		
Volume Right	0	0	0	0		
cSH	732	1700	1700	1700		
Volume to Capacity	0.19	0.47	0.47	0.47		
Queue Length 95th (ft)	17	0	0	0		
Control Delay (s)	11.1	0.0	0.0	0.0		
Lane LOS	B					
Approach Delay (s)	11.1	0.0				
Approach LOS	B					
Intersection Summary						
Average Delay		0.6				
Intersection Capacity Utilization		91.3%		ICU Level of Service	F	
Analysis Period (min)		10				

HCM Unsignalized Intersection Capacity Analysis  
14: Alfred St & Wolfe St./Wolfe St

Total Future AM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	17	8	13	5	7	43	13	343	17	13	33	20
Future Volume (vph)	17	8	13	5	7	43	13	343	17	13	33	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	9	14	5	8	47	14	373	18	14	36	22
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	41	60	405	72								
Volume Left (vph)	18	5	14	14								
Volume Right (vph)	14	47	18	22								
Had (s)	-0.08	-0.42	0.01	-0.11								
Departure Headway (s)	5.0	4.6	4.2	4.5								
Degree Utilization, x	0.06	0.08	0.48	0.09								
Capacity (veh/h)	649	699	830	763								
Control Delay (s)	8.3	8.0	11.0	7.9								
Approach Delay (s)	8.3	8.0	11.0	7.9								
Approach LOS	A	A	B	A								
Intersection Summary												
Delay		10.1										
Level of Service		B										
Intersection Capacity Utilization		37.1%		ICU Level of Service	A							
Analysis Period (min)		10										

HCM 2010 AWSC

14: Alfred St & Wolfe St./Wolfe St

Total Future AM w/ Development 2022

Intersection												
Intersection Delay, s/veh	10											
Intersection LOS	A											
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	17	8	13	0	5	7	43	0	13	343	17
Future Vol, veh/h	0	17	8	13	0	5	7	43	0	13	343	17
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	0	18	9	14	0	5	8	47	0	14	373	18
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach	EB				WB				NB			
Opposing Approach	WB				EB				SB			
Opposing Lanes	1				1				1			
Conflicting Approach Left	SB				NB				EB			
Conflicting Lanes Left	1				1				1			
Conflicting Approach Right	NB				SB				WB			
Conflicting Lanes Right	1				1				1			
HCM Control Delay	8.3				8				10.9			
HCM LOS	A				A				B			
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	3%	45%	9%	20%								
Vol Thru, %	92%	21%	13%	50%								
Vol Right, %	5%	34%	78%	30%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	373	38	55	66								
LT Vol	13	17	5	13								
Through Vol	343	8	7	33								
RT Vol	17	13	43	20								
Lane Flow Rate	405	41	60	72								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.467	0.057	0.076	0.089								
Departure Headway (Hd)	4.251	4.952	4.593	4.451								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	851	726	783	807								
Service Time	2.251	2.963	2.603	2.466								
HCM Lane V/C Ratio	0.476	0.056	0.077	0.089								
HCM Control Delay	10.9	8.3	8	7.9								
HCM Lane LOS	B	A	A	A								
HCM 95th-ile Q	2.5	0.2	0.2	0.3								

HCM 2010 AWSC

14: Alfred St & Wolfe St./Wolfe St

Total Future AM w/ Development 2022

Intersection				
Intersection Delay, s/veh	10			
Intersection LOS	A			
Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	13	33	20
Future Vol, veh/h	0	13	33	20
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	14	36	22
Number of Lanes	0	0	1	0
Approach	SB			
Opposing Approach	NB			
Opposing Lanes	1			
Conflicting Approach Left	WB			
Conflicting Lanes Left	1			
Conflicting Approach Right	EB			
Conflicting Lanes Right	1			
HCM Control Delay	7.9			
HCM LOS	A			
Lane				

Queues

15: Patrick St & Gibbon St

Total Future AM w/ Development 2022

Lane Group	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	264	319	2497	1614
v/c Ratio	0.94	1.00	0.92	0.48
Control Delay	85.3	51.7	13.0	5.1
Queue Delay	7.6	0.5	0.5	0.0
Total Delay	92.9	52.2	13.5	5.1
Queue Length 50th (ft)	305	141	821	90
Queue Length 95th (ft)	#506	212	13	97
Internal Link Dist (ft)		264	352	342
Turn Bay Length (ft)				
Base Capacity (vph)	286	541	2728	3385
Starvation Cap Reductn	17	47	51	136
Spillback Cap Reductn	0	0	25	17
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.98	0.65	0.93	0.50

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.
- d1 Defacto Left Lane. Recode with 1 though lane as a left lane.

HCM Signalized Intersection Capacity Analysis

15: Patrick St & Gibbon St

Total Future AM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				←	←	←	←	←	←	←	←	←
Traffic Volume (vph)	0	0	0	487	26	24	1	2296	0	0	1483	2
Future Volume (vph)	0	0	0	487	26	24	1	2296	0	0	1483	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	12	12	12	12	12	12
Grade (%)		0%			2%			0%				0%
Total Lost time (s)				4.0	4.0			4.0				4.0
Lane Util. Factor				0.91	0.91			0.78				0.91
Frb, ped/bikes				1.00	1.00			1.00				1.00
Ft/b, ped/bikes				1.00	1.00			1.00				1.00
Frt Protected				0.95	0.96			1.00				1.00
Satd. Flow (prot)				1387	2608			3885				4531
Frt Permitted				0.95	0.96			0.94				1.00
Satd. Flow (perm)				1387	2608			3650				4531
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	529	28	26	1	2496	0	0	1612	2
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	264	315	0	0	2497	0	0	1614	0
Confl. Peds. (#/hr)	7						7	2		1		2
Confl. Bikes (#/hr)			1					1				
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)				1								
Turn Type				Split	NA		Perm	NA				NA
Protected Phases				2	2			1				1
Permitted Phases							1					
Actuated Green, G (s)				30.5	30.5			118.0				118.0
Effective Green, g (s)				32.5	32.5			119.5				119.5
Actuated g/C Ratio				0.20	0.20			0.75				0.75
Clearance Time (s)				6.0	6.0			5.5				5.5
Vehicle Extension (s)				3.0	3.0			3.0				3.0
Lane Grp Cap (vph)				281	529			2726				3384
v/s Ratio Prot				c0.19	0.12							0.36
v/s Ratio Perm								c0.68				
v/c Ratio				0.94	1.00			0.92				0.48
Uniform Delay, d1				62.8	57.8			16.2				8.0
Progression Factor				0.84	0.82			0.55				0.58
Incremental Delay, d2				30.5	1.7			3.4				0.4
Delay (s)				83.3	49.3			12.4				5.0
Level of Service				F	D			B				A
Approach Delay (s)	0.0				64.7			12.4				5.0
Approach LOS	A				E			B				A

Intersection Summary

- HCM 2000 Control Delay: 16.4
- HCM 2000 Volume to Capacity ratio: 0.92
- Actuated Cycle Length (s): 160.0
- Intersection Capacity Utilization: 73.1%
- HCM 2000 Level of Service: B
- Sum of lost time (s): 8.0
- ICU Level of Service: D

HCM Signalized Intersection Capacity Analysis

15: Patrick St & Gibbon St

Total Future AM w/ Development 2022

Analysis Period (min): 10

- d1 Defacto Left Lane. Recode with 1 though lane as a left lane.
- c Critical Lane Group

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	505	502	56
v/c Ratio	0.40	0.70	0.08
Control Delay	15.8	23.9	7.1
Queue Delay	0.1	0.0	0.0
Total Delay	15.8	23.9	7.1
Queue Length 50th (ft)	84	193	6
Queue Length 95th (ft)	123	307	26
Internal Link Dist (ft)	221	141	304
Turn Bay Length (ft)			
Base Capacity (vph)	1253	720	727
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	95	1	2
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.44	0.70	0.08

Intersection Summary

Queues

16: Alfred St & Gibbon St

Total Future AM w/ Development 2022

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	505	502	56
v/c Ratio	0.40	0.70	0.08
Control Delay	15.8	23.9	7.1
Queue Delay	0.1	0.0	0.0
Total Delay	15.8	23.9	7.1
Queue Length 50th (ft)	84	193	6
Queue Length 95th (ft)	123	307	26
Internal Link Dist (ft)	221	141	304
Turn Bay Length (ft)			
Base Capacity (vph)	1253	720	727
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	95	1	2
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.44	0.70	0.08

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
16: Alfred St & Gibbon St

Total Future AM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				5	4	20	60	40	0	0	20	31
Traffic Volume (vph)	0	0	0	5	440	20	60	40	0	0	20	31
Future Volume (vph)	0	0	0	5	440	20	60	40	0	0	20	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	12	12	12	12	12	13	12
Total Lost time (s)				4.0			4.0				4.0	
Lane Util. Factor				0.95			1.00				1.00	
Frbp, ped/bikes				1.00			1.00				0.99	
Ft				1.00			1.00				1.00	
Fit Protected				1.00			0.99				1.00	
Satd. Flow (prot)				2775			1665				1575	
Fit Permitted				1.00			0.96				1.00	
Satd. Flow (perm)				2775			1602				1575	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	5	478	22	65	437	0	0	22	34
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	19	0
Lane Group Flow (vph)	0	0	0	0	501	0	0	502	0	0	37	0
Confl. Peds. (#/hr)	26		4	4		26	6		11	11		6
Confl. Bikes (#/hr)									1			
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)					1							
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases												
Permitted Phases				2	2		1	1			1	
Actuated Green, G (s)					35.0			34.7			34.7	
Effective Green, g (s)					36.0			36.0			36.0	
Actuated g/C Ratio					0.45			0.45			0.45	
Clearance Time (s)					5.0			5.3			5.3	
Lane Grp Cap (vph)					1248			720			708	
v/s Ratio Prot											0.02	
v/s Ratio Perm					0.18			c0.31				
v/c Ratio					0.40			0.70			0.05	
Uniform Delay, d1					14.8			17.6			12.4	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					1.0			5.4			0.1	
Delay (s)					15.7			23.1			12.5	
Level of Service					B			C			B	
Approach Delay (s)		0.0			15.7			23.1			12.5	
Approach LOS		A			B			C			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay				19.0								B
HCM 2000 Volume to Capacity ratio				0.55								
Actuated Cycle Length (s)				80.0				Sum of lost time (s)			8.0	
Intersection Capacity Utilization				58.3%				ICU Level of Service			B	
Analysis Period (min)				10								

Queues  
17: Patrick St & Franklin St

Total Future AM w/ Development 2022

Lane Group	EBL	EBT	NBT	NBR	SBT
Lane Group Flow (vph)	4	103	2738	1478	1945
v/c Ratio	0.03	0.33	0.83	1.14	0.51
Control Delay	59.2	59.4	10.5	60.5	2.9
Queue Delay	0.0	0.0	1.1	0.0	0.1
Total Delay	59.2	59.4	11.6	60.5	3.0
Queue Length 50th (ft)	4	47	391	-1674	64
Queue Length 95th (ft)	15	71	1053	#1918	270
Internal Link Dist (ft)		272	788		352
Turn Bay Length (ft)		200			
Base Capacity (vph)	541	1078	3308	1300	3850
Starvation Cap Reductn	0	0	0	0	449
Spillback Cap Reductn	0	0	326	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.01	0.10	0.92	1.14	0.57
<b>Intersection Summary</b>					
- Volume exceeds capacity, queue is theoretically infinite.					
- Queue shown is maximum after two cycles.					
# 95th percentile volume exceeds capacity, queue may be longer.					
- Queue shown is maximum after two cycles.					

HCM Signalized Intersection Capacity Analysis  
17: Patrick St & Franklin St

Total Future AM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1						1	1		1	1
Traffic Volume (vph)	4	59	36	0	0	0	0	2519	1360	0	1789	0
Future Volume (vph)	4	59	36	0	0	0	0	2519	1360	0	1789	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	11	11	11	12	12	12	12	12	12
Grade (%)		2%			0%			0%	4.0		0%	
Total Lost time (s)	4.0	4.0						4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95						0.78	1.00		0.91	
Frbp, ped/bikes	1.00	0.99						1.00	0.99		1.00	
Ft	0.98	1.00						1.00	1.00		1.00	
Fit Protected	1.00	0.94						1.00	0.85		1.00	
Fit Permitted	0.95	1.00						1.00	1.00		1.00	
Satd. Flow (prot)	1546	3057						3885	1391		4520	
Fit Permitted	0.95	1.00						1.00	1.00		1.00	
Satd. Flow (perm)	1546	3057						3885	1391		4520	
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)	4	64	39	0	0	0	0	2738	1478	0	1945	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	116	0	0	0
Lane Group Flow (vph)	4	91	0	0	0	0	0	2738	1362	0	1945	0
Confl. Peds. (#/hr)	12					12	1		1	1		1
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	2	0
Turn Type	Perm	NA						NA	Perm		NA	
Protected Phases		4						2			2	
Permitted Phases	4							2			2	
Actuated Green, G (s)	13.7	13.7						134.3	134.3		134.3	
Effective Green, g (s)	15.7	15.7						136.3	136.3		136.3	
Actuated g/C Ratio	0.10	0.10						0.85	0.85		0.85	
Clearance Time (s)	6.0	6.0						6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0						0.2	0.2		0.2	
Lane Grp Cap (vph)	151	299						3309	1184		3850	
v/s Ratio Prot		c0.03						0.70			0.43	
v/s Ratio Perm	0.00							c0.98				
v/c Ratio	0.03	0.31						0.83	1.15		0.51	
Uniform Delay, d1	65.2	67.1						5.9	11.8		3.1	
Progression Factor	1.00	1.00						1.00	1.00		0.66	
Incremental Delay, d2	0.1	0.6						2.5	54.7		0.4	
Delay (s)	65.3	67.7						8.4	66.6		2.4	
Level of Service	E	E						A	E		A	
Approach Delay (s)		67.6				0.0		28.8			2.4	
Approach LOS		E				A		C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay				21.3								C
HCM 2000 Volume to Capacity ratio				1.06								
Actuated Cycle Length (s)				160.0				Sum of lost time (s)			8.0	
Intersection Capacity Utilization				107.0%				ICU Level of Service			G	
Analysis Period (min)				10								

HCM Signalized Intersection Capacity Analysis  
17: Patrick St & Franklin St

Total Future AM w/ Development 2022

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
18: Patrick St & Existing Garage/Proposed Patrick Entrance

Total Future AM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	0	0	0	0	0	41	0	2257	47	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	41	0	2257	47	0	0	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	45	0	2453	51	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None						None					
Median storage (veh)							599					
Upstream signal (ft)												
pX, platoon unblocked	0.73	0.73		0.73	0.73	0.73				0.73		
vC, conflicting volume	863	2504	0	2478	2478	843	0			2504		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	1761	0	1726	1726	0	0			1761		
IC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
IC, 2 stage (s)												
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	94	100		100		
cM capacity (veh/h)	703	61	1084	42	64	790	1622			256		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3							
Volume Total	0	45	613	1226	664							
Volume Left	0	0	0	0	0							
Volume Right	0	45	0	0	51							
ESH	1700	790	1622	1700	1700							
Volume to Capacity	0.00	0.06	0.00	0.72	0.39							
Queue Length 95th (ft)	0	5	0	0	0							
Control Delay (s)	0.0	9.8	0.0	0.0	0.0							
Lane LOS	A	A										
Approach Delay (s)	0.0	9.8	0.0									
Approach LOS	A	A										
Intersection Summary												
Average Delay	0.2											
Intersection Capacity Utilization	54.7%			ICU Level of Service			A					
Analysis Period (min)	10											

HCM Unsignalized Intersection Capacity Analysis  
19: Wolfe St. & Proposed Wolfe Entrance

Total Future AM w/ Development 2022

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	0	24	20	19	36	0
Future Volume (Veh/h)	0	24	20	19	36	0
Sign Control	Free		Free	Free	Stop	
Grade	0%		0%	0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	26	22	21	39	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	43			58 32		
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	43			58 32		
IC, single (s)	4.1			6.4 6.2		
IC, 2 stage (s)						
IF (s)	2.2			3.5 3.3		
p0 queue free %	100			96 100		
cM capacity (veh/h)	1566			949 1041		
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	26	43	39			
Volume Left	0	0	39			
Volume Right	0	21	0			
ESH	1566	1700	949			
Volume to Capacity	0.00	0.03	0.04			
Queue Length 95th (ft)	0	0	3			
Control Delay (s)	0.0	0.0	9.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.0			
Approach LOS			A			
Intersection Summary						
Average Delay	3.2					
Intersection Capacity Utilization	13.3%			ICU Level of Service		
Analysis Period (min)	10					

HCM Unsignalized Intersection Capacity Analysis  
20: Columbus St & Wolfe St

Total Future AM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	15	26	6	5	28	96	17	425	14	17	40	7
Future Volume (vph)	15	26	6	5	28	96	17	425	14	17	40	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	28	7	5	30	104	18	462	15	18	43	8
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	51	139	495	69								
Volume Left (vph)	16	5	18	18								
Volume Right (vph)	7	104	15	8								
Hd (s)	0.01	-0.41	0.02	0.02								
Departure Headway (s)	5.5	4.9	4.5	5.0								
Degree Utilization, x	0.08	0.19	0.62	0.10								
Capacity (veh/h)	579	656	779	664								
Control Delay (s)	8.9	9.1	14.5	8.5								
Approach Delay (s)	8.9	9.1	14.5	8.5								
Approach LOS	A	A	B	A								
Intersection Summary												
Delay	12.6											
Level of Service	B											
Intersection Capacity Utilization	40.4%			ICU Level of Service			A					
Analysis Period (min)	10											

HCM 2010 AWSC  
20: Columbus St & Wolfe St

Total Future AM w/ Development 2022

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	15	26	6	0	5	28	96	0	17	425	14
Future Vol, veh/h	0	15	26	6	0	5	28	96	0	17	425	14
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	0	16	28	7	0	5	30	104	0	18	462	15
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach	EB			WB				NB				
Opposing Approach	WB			EB				SB				
Opposing Lanes	1			1				1				
Conflicting Approach Left	SB			NB				EB				
Conflicting Lanes Left	1			1				1				
Conflicting Approach Right	NB			SB				WB				
Conflicting Lanes Right	1			1				1				
HCM Control Delay	9			9.1				14.4				
HCM LOS	A			A				B				
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	4%	32%	4%	27%								
Vol Thru, %	93%	55%	22%	62%								
Vol Right, %	3%	13%	74%	11%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	456	47	129	64								
LT Vol	17	15	5	17								
Through Vol	425	26	28	40								
RT Vol	14	6	96	7								
Lane Flow Rate	496	51	140	70								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.617	0.077	0.19	0.096								
Departure Headway (Hd)	4.484	5.431	4.876	4.962								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	803	654	731	717								
Service Time	2.529	3.506	2.939	3.029								
HCM Lane V/C Ratio	0.618	0.078	0.192	0.098								
HCM Control Delay	14.4	9	9.1	8.6								
HCM Lane LOS	B	A	A	A								
HCM 95th-ile Q	4.2	0.2	0.7	0.3								

Intersection				
Intersection Delay s/veh				
Intersection LOS				
Movement	SBU	SBL	SBT	SBR
Traffic Vol. veh/h	0	17	40	7
Future Vol. veh/h	0	17	40	7
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	18	43	8
Number of Lanes	0	0	1	0
Approach				
SB				
Opposing Approach NB				
Opposing Lanes 1				
Conflicting Approach Left WB				
Conflicting Lanes Left 1				
Conflicting Approach Right EB				
Conflicting Lanes Right 1				
HCM Control Delay 8.6				
HCM LOS A				
Lane				

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	312	519	91
v/c Ratio	0.23	0.82	0.14
Control Delay	14.5	7.8	8.5
Queue Delay	0.0	0.5	0.0
Total Delay	14.5	8.3	8.5
Queue Length 50th (ft)	48	20	14
Queue Length 95th (ft)	75	m20	39
Internal Link Dist (ft)	239	341	294
Turn Bay Length (ft)			
Base Capacity (vph)	1338	636	661
Starvation Cap Reductn	0	14	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.23	0.83	0.14
Intersection Summary			
m Volume for 95th percentile queue is metered by upstream signal.			

HCM Signalized Intersection Capacity Analysis  
1: Alfred St & Cameron St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↕	↕		↕			↕	↕	
Traffic Volume (vph)	0	0	0	11	270	6	84	394	0	0	49	35	
Future Volume (vph)	0	0	0	11	270	6	84	394	0	0	49	35	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	12	12	12	13	12	12	12	12	12	12	12	
Total Lost time (s)					4.0			4.0			4.0		
Lane Util. Factor					0.95			1.00			1.00		
Flpb. ped/bikes					1.00			1.00			0.99		
Flpb. ped/bikes					1.00			1.00			1.00		
Flt					1.00			1.00			0.94		
Flt Protected					1.00			0.99			1.00		
Satd. Flow (prot)					3054			1468			1387		
Flt Permitted					1.00			0.93			1.00		
Satd. Flow (perm)					3054			1376			1387		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	12	293	7	91	428	0	0	53	38	
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	20	0	
Lane Group Flow (vph)	0	0	0	0	310	0	0	519	0	0	71	0	
Confl. Peds. (#/hr)	34		25	25		34	17		32	32		17	
Confl. Bikes (#/hr)			4					1					
Parking (#/hr)					6			3			3		
Turn Type					Perm	NA		Perm	NA		NA		
Protected Phases					2			1			1		
Permitted Phases					2			1			1		
Actuated Green, G (s)					34.0			36.0			36.0		
Effective Green, g (s)					35.0			37.0			37.0		
Actuated g/C Ratio					0.44			0.46			0.46		
Clearance Time (s)					5.0			5.0			5.0		
Lane Grp Cap (vph)					1336			636			641		
v/s Ratio Prot											0.05		
v/s Ratio Perm					0.10			c0.38					
v/c Ratio					0.23			0.82			0.11		
Uniform Delay, d1					14.1			18.6			12.2		
Progression Factor					1.00			0.12			1.00		
Incremental Delay, d2					0.4			3.7			0.3		
Delay (s)					14.5			6.0			12.5		
Level of Service					B			A			B		
Approach Delay (s)					0.0			6.0			12.5		
Approach LOS					A			A			B		
Intersection Summary													
HCM 2000 Control Delay					9.5	HCM 2000 Level of Service				A			
HCM 2000 Volume to Capacity ratio					0.53								
Actuated Cycle Length (s)					80.0	Sum of lost time (s)				8.0			
Intersection Capacity Utilization					53.8%	ICU Level of Service				A			
Analysis Period (min)					10								
c Critical Lane Group													

Queues  
2: Henry St & King St

Lane Group	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	360	49	238	1653
v/c Ratio	0.66	0.13	0.29	1.09
Control Delay	26.6	8.4	11.2	63.1
Queue Delay	0.0	0.0	1.7	0.0
Total Delay	26.6	8.4	12.9	63.1
Queue Length 50th (ft)	140	17	92	-345
Queue Length 95th (ft)	237	m16	m108	#440
Internal Link Dist (ft)	77		222	128
Turn Bay Length (ft)		100		
Base Capacity (vph)	542	379	830	1521
Starvation Cap Reductn	0	0	428	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.66	0.13	0.59	1.09
Intersection Summary				
- Volume exceeds capacity, queue is theoretically infinite.				
Queue shown is maximum after two cycles.				
# 95th percentile volume exceeds capacity, queue may be longer.				
Queue shown is maximum after two cycles.				
m Volume for 95th percentile queue is metered by upstream signal.				



HCM Signalized Intersection Capacity Analysis  
2: Henry St & King St

Total Future AM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	0	285	46	45	219	0	0	0	0	42	1443	36
Future Volume (vph)	0	285	46	45	219	0	0	0	0	42	1443	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	10	10	12	12	12	12	12	11	12
Total Lost time (s)		4.0		4.0	4.0					4.0		
Lane Util. Factor		1.00		1.00	1.00					0.91		
Fripb. ped/bikes		0.98		1.00	1.00					1.00		
Fipb. ped/bikes		1.00		0.98	1.00					1.00		
Frt		0.98		1.00	1.00					1.00		
Flt Protected		1.00		0.95	1.00					1.00		
Satd. Flow (prot)		1381		1463	1546					4189		
Flt Permitted		1.00		0.36	1.00					1.00		
Satd. Flow (perm)		1381		547	1546					4189		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	310	50	49	238	0	0	0	0	46	1568	39
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	353	0	49	238	0	0	0	0	0	1650	0
Confl. Peds. (#/hr)	91		96	96		91	14			4	4	14
Confl. Bikes (#/hr)			10			4						1
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)		3										3
Turn Type	NA	pm+pt	NA			Split	NA				NA	
Protected Phases	6		5	2.6			4			4		
Permitted Phases			2.6									
Actuated Green, G (s)	30.0		42.0	42.0							28.0	
Effective Green, g (s)	31.0		43.0	43.0							29.0	
Actuated g/C Ratio	0.39		0.54	0.54							0.36	
Clearance Time (s)	5.0		5.0								5.0	
Lane Grp Cap (vph)	535		385	830							1518	
v/s Ratio Prot	c0.26		0.01	c0.15							c0.39	
v/s Ratio Perm			0.06									
v/c Ratio	0.66		0.13	0.29							1.09	
Uniform Delay, d1	20.2		9.8	10.1							25.5	
Progression Factor	1.00		0.89	1.04							1.00	
Incremental Delay, d2	6.1		0.4	0.5							36.6	
Delay (s)	26.3		9.2	11.1							62.1	
Level of Service	C		A	B							E	
Approach Delay (s)	26.3			10.7				0.0			62.1	
Approach LOS	C			B				A			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		50.1				HCM 2000 Level of Service					D	
HCM 2000 Volume to Capacity ratio		0.80										
Actuated Cycle Length (s)		80.0				Sum of lost time (s)				12.0		
Intersection Capacity Utilization		83.6%				ICU Level of Service				E		
Analysis Period (min)		10										
c Critical Lane Group												

Alfred Street Baptist Church  
Wells + Associates

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Queues  
3: Patrick St & King St

Total Future AM w/ Development 2028

Lane Group	EBL	EBT	WBT	NBT
Lane Group Flow (vph)	123	198	220	2517
v/c Ratio	0.40	0.34	0.62	1.37
Control Delay	19.9	19.2	21.1	127.6
Queue Delay	0.0	1.2	0.0	0.0
Total Delay	19.9	20.4	21.1	127.6
Queue Length 50th (ft)	57	96	78	-1470
Queue Length 95th (ft)	m82	m142	m59	m#1304
Internal Link Dist (ft)		222	239	344
Turn Bay Length (ft)	100			
Base Capacity (vph)	308	589	357	1839
Starvation Cap Reductn	0	219	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.40	0.54	0.62	1.37
<b>Intersection Summary</b>				
- Volume exceeds capacity, queue is theoretically infinite.				
- Queue shown is maximum after two cycles.				
# 95th percentile volume exceeds capacity, queue may be longer.				
- Queue shown is maximum after two cycles.				
m Volume for 95th percentile queue is metered by upstream signal.				

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Wells + Associates

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HCM Signalized Intersection Capacity Analysis  
3: Patrick St & King St

Total Future AM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	113	182	0	0	165	38	74	2206	36	0	0	0
Future Volume (vph)	113	182	0	0	165	38	74	2206	36	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0			4.0				
Lane Util. Factor	1.00	1.00			1.00			0.78				
Fripb. ped/bikes	1.00	1.00			0.98			1.00				
Fipb. ped/bikes	0.98	1.00			1.00			1.00				
Frt	1.00	1.00			0.97			1.00				
Flt Protected	0.95	1.00			1.00			1.00				
Satd. Flow (prot)	1453	1521			1389			3587				
Flt Permitted	0.48	1.00			1.00			1.00				
Satd. Flow (perm)	736	1521			1389			3587				
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)	123	198	0	0	179	41	80	2398	39	0	0	0
RTOR Reduction (vph)	0	0	0	0	11	0	0	1	0	0	0	0
Lane Group Flow (vph)	123	198	0	0	210	0	0	2516	0	0	0	0
Confl. Peds. (#/hr)	63		83	83		63	15		24	24		15
Confl. Bikes (#/hr)			6						2			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	7	0	0	6	0	0	0	0	0	0	0
Parking (#/hr)					3			4				
Turn Type	pm+pt	NA			NA		Split	NA			NA	
Protected Phases	2	2.3			3		1	1				
Permitted Phases	2.3				3							
Actuated Green, G (s)	24.4	29.4			18.4			40.0				
Effective Green, g (s)	26.4	30.4			20.0			41.0				
Actuated g/C Ratio	0.33	0.38			0.25			0.51				
Clearance Time (s)	5.0				5.6			5.0				
Lane Grp Cap (vph)	305	577			347			1838				
v/s Ratio Prot	0.04	c0.13			c0.15			c0.70				
v/s Ratio Perm	0.10											
v/c Ratio	0.40	0.34			0.60			1.37				
Uniform Delay, d1	19.8	17.7			26.5			19.5				
Progression Factor	1.01	1.02			0.55			0.47				
Incremental Delay, d2	2.7	1.1			6.7			110.9				
Delay (s)	22.5	19.2			21.4			120.0				
Level of Service	C	B			C			F				
Approach Delay (s)	20.5				21.4			120.0			0.0	
Approach LOS	C				C			F			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		102.4				HCM 2000 Level of Service					F	
HCM 2000 Volume to Capacity ratio		1.05										
Actuated Cycle Length (s)		80.0				Sum of lost time (s)				12.6		
Intersection Capacity Utilization		83.6%				ICU Level of Service				E		
Analysis Period (min)		10										
c Critical Lane Group												

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Wells + Associates

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Queues  
4: Alfred St & King St

Total Future AM w/ Development 2028

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	256	199	588	47
v/c Ratio	0.42	0.32	1.00	0.08
Control Delay	5.9	10.0	34.3	9.9
Queue Delay	0.1	0.0	0.0	0.0
Total Delay	6.1	10.0	34.3	9.9
Queue Length 50th (ft)	20	42	55	9
Queue Length 95th (ft)	m27	m62	#542	23
Internal Link Dist (ft)	239	236	338	341
Turn Bay Length (ft)				
Base Capacity (vph)	607	619	589	582
Starvation Cap Reductn	33	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.45	0.32	1.00	0.08
<b>Intersection Summary</b>				
# 95th percentile volume exceeds capacity, queue may be longer.				
- Queue shown is maximum after two cycles.				
m Volume for 95th percentile queue is metered by upstream signal.				

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HCM Signalized Intersection Capacity Analysis

4: Alfred St & King St

Total Future AM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	19	19	14	159	10	51	481	9	2	32	9
Future Volume (vph)	26	19	19	14	159	10	51	481	9	2	32	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	12	12	12	12	12	12
Total Lost time (s)	4.0			4.0			4.0			4.0		
Lane Util. Factor	1.00			1.00			1.00			1.00		
Fripb, ped/bikes	0.98			0.99			1.00			0.99		
Fipb, ped/bikes	0.99			0.99			1.00			1.00		
Frt	0.99			0.99			1.00			0.97		
Flt Protected	0.99			1.00			1.00			1.00		
Satd. Flow (prot)	1285			1295			1465			1417		
Flt Permitted	0.96			0.97			0.97			0.98		
Satd. Flow (perm)	1238			1266			1427			1397		
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)	28	207	21	15	173	11	55	523	10	2	35	10
RTOR Reduction (vph)	0	4	0	0	3	0	0	1	0	0	6	0
Lane Group Flow (vph)	0	252	0	0	196	0	0	587	0	0	41	0
Confl. Peds. (#/hr)	79		90	90		79	21		41	41		21
Confl. Bikes (#/hr)		7	7		7		1		1			1
Bus Blockages (#/hr)	0	7	0	0	9	0	0	0	0	0	0	0
Parking (#/hr)	3			3			3			3		3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	6			2			4			8		
Permitted Phases	6			2			4			8		
Actuated Green, G (s)	38.0			38.0			31.9			31.9		
Effective Green, g (s)	39.0			39.0			33.0			33.0		
Actuated g/C Ratio	0.49			0.49			0.41			0.41		
Clearance Time (s)	5.0			5.0			5.1			5.1		
Lane Grp Cap (vph)	603			617			588			576		
v/s Ratio Prot												
v/s Ratio Perm	c0.20			0.16			c0.41			0.03		
v/c Ratio	0.42			0.32			1.00			0.07		
Uniform Delay, d1	13.2			12.4			23.5			14.2		
Progression Factor	0.31			0.69			0.29			0.79		
Incremental Delay, d2	1.9			1.2			24.3			0.2		
Delay (s)	6.0			9.8			31.0			11.5		
Level of Service	A			A			C			B		
Approach Delay (s)	6.0			9.8			31.0			11.5		
Approach LOS	A			A			C			B		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	20.4		HCM 2000 Level of Service				C					
HCM 2000 Volume to Capacity ratio	0.68											
Actuated Cycle Length (s)	80.0				Sum of lost time (s)				8.0			
Intersection Capacity Utilization	66.1%		ICU Level of Service				C					
Analysis Period (min)	10											
c Critical Lane Group												

Queues

5: Washington St & King St

Total Future AM w/ Development 2028

Lane Group	EBT	EBR	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	110	18	89	18	2486	567
v/c Ratio	0.27	0.06	0.22	0.05	1.05	0.32
Control Delay	35.6	13.3	34.6	13.2	22.7	9.8
Queue Delay	0.0	0.0	0.0	0.0	12.5	0.0
Total Delay	35.6	13.3	34.6	13.2	35.2	9.8
Queue Length 50th (ft)	66	0	53	0	885	94
Queue Length 95th (ft)	117	18	98	18	m27	124
Internal Link Dist (ft)	245		94		335	133
Turn Bay Length (ft)	100					
Base Capacity (vph)	410	326	410	348	2358	1787
Starvation Cap Reductn	0	0	0	0	105	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.06	0.22	0.05	1.10	0.32
<b>Intersection Summary</b>						
n Volume exceeds capacity, queue is theoretically infinite.						
m Queue shown is maximum after two cycles.						
m Volume for 95th percentile queue is metered by upstream signal.						

HCM Signalized Intersection Capacity Analysis

5: Washington St & King St

Total Future AM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	101	17	0	82	17	0	2250	37	0	487	35
Future Volume (vph)	0	101	17	0	82	17	0	2250	37	0	487	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	9	8	12	9	9	10	10	10	8	10	10
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0			4.0		
Lane Util. Factor	1.00	1.00		1.00	1.00		0.78			0.95		
Fripb, ped/bikes	1.00	0.90		1.00	0.92		1.00			1.00		
Fipb, ped/bikes	1.00	1.00		1.00	1.00		1.00			1.00		
Frt	1.00	0.85		1.00	0.85		1.00			0.99		
Flt Protected	1.00	1.00		1.00	1.00		1.00			1.00		
Satd. Flow (prot)	1448	1107		1448	1183		3627			2750		
Flt Permitted	1.00	1.00		1.00	1.00		1.00			1.00		
Satd. Flow (perm)	1448	1107		1448	1183		3627			2750		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	110	18	0	89	18	0	2446	40	0	529	38
RTOR Reduction (vph)	0	0	13	0	0	13	0	0	0	0	0	0
Lane Group Flow (vph)	0	110	5	0	89	5	0	2486	0	0	567	0
Confl. Peds. (#/hr)	59		81	81		59	8		31	31		8
Confl. Bikes (#/hr)		4		4		1		1		1		1
Bus Blockages (#/hr)	0	10	0	0	10	0	0	4	0	0	3	0
Parking (#/hr)												3
Turn Type	NA	Perm		NA	Perm		NA		NA		NA	
Protected Phases	2			2			1			1		
Permitted Phases	2			2			1			1		
Actuated Green, G (s)	32.1	32.1		32.1	32.1		77.0			77.0		
Effective Green, g (s)	34.0	34.0		34.0	34.0		78.0			78.0		
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.65			0.65		
Clearance Time (s)	5.9	5.9		5.9	5.9		5.0			5.0		
Lane Grp Cap (vph)	410	313		410	335		2357			1787		
v/s Ratio Prot		c0.08		0.06			c0.69			0.21		
v/s Ratio Perm		0.00		0.00								
v/c Ratio	0.27	0.02		0.22	0.02		1.05			0.32		
Uniform Delay, d1	33.4	31.0		32.8	31.0		21.0			9.3		
Progression Factor	1.00	1.00		1.00	1.00		0.06			1.00		
Incremental Delay, d2	1.6	0.1		1.2	0.1		17.7			0.5		
Delay (s)	35.0	31.1		34.0	31.0		19.0			9.7		
Level of Service	C	C		C	C		B			A		
Approach Delay (s)	34.4			33.5			19.0			9.7		
Approach LOS	C			C			B			A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	18.5		HCM 2000 Level of Service				B					
HCM 2000 Volume to Capacity ratio	0.82											
Actuated Cycle Length (s)	120.0				Sum of lost time (s)				8.0			
Intersection Capacity Utilization	82.6%		ICU Level of Service				E					
Analysis Period (min)	10											
c Critical Lane Group												

Queues

6: Henry St & Prince St

Total Future AM w/ Development 2028

Lane Group	EBT	SBT
Lane Group Flow (vph)	727	1574
v/c Ratio	0.51	0.93
Control Delay	15.4	5.9
Queue Delay	0.3	0.0
Total Delay	15.7	5.9
Queue Length 50th (ft)	122	16
Queue Length 95th (ft)	171	m14
Internal Link Dist (ft)	69	341
Turn Bay Length (ft)		
Base Capacity (vph)	1425	1687
Starvation Cap Reductn	0	1
Spillback Cap Reductn	217	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.60	0.93
<b>Intersection Summary</b>		
m Volume for 95th percentile queue is metered by upstream signal.		

HCM Signalized Intersection Capacity Analysis

6: Henry St & Prince St

Total Future AM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑↑	
Traffic Volume (vph)	0	593	75	0	0	0	0	0	0	90	1358	0
Future Volume (vph)	0	593	75	0	0	0	0	0	0	90	1358	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	10	12
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Fripb, ped/bikes		1.00									1.00	
Fipb, ped/bikes		1.00									1.00	
Frt		0.98									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		2917									4053	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		2917									4053	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	645	82	0	0	0	0	0	0	98	1476	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	0	0	16	0
Lane Group Flow (vph)	0	723	0	0	0	0	0	0	0	0	1558	0
Confl. Peds. (#/hr)	36	15	15			36	15			8	8	15
Confl. Bikes (#/hr)		7										
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Parking (#/hr)	6										3	
Turn Type		NA								Perm	NA	
Protected Phases		2									1	
Permitted Phases												1
Actuated Green, G (s)		38.0									32.0	
Effective Green, g (s)		39.0									33.0	
Actuated g/C Ratio		0.49									0.41	
Clearance Time (s)		5.0									5.0	
Lane Grp Cap (vph)		1422									1671	
v/s Ratio Prot		c0.25										
v/s Ratio Perm											0.38	
v/c Ratio		0.51									0.93	
Uniform Delay, d1		14.0									22.4	
Progression Factor		1.00									0.13	
Incremental Delay, d2		1.3									1.3	
Delay (s)		15.3									4.1	
Level of Service		B									A	
Approach Delay (s)		15.3			0.0			0.0			4.1	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			7.7									A
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			80.0								8.0	
Intersection Capacity Utilization			61.1%								ICU Level of Service	B
Analysis Period (min)			10									
c Critical Lane Group												

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Queues

7: Alfred St & Prince St

Total Future AM w/ Development 2028

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	653	523	83
v/c Ratio	0.45	0.83	0.14
Control Delay	1.3	7.9	15.5
Queue Delay	0.2	4.5	0.0
Total Delay	1.5	12.3	15.5
Queue Length 50th (ft)	6	68	29
Queue Length 95th (ft)	m7	m66	59
Internal Link Dist (ft)	242	151	338
Turn Bay Length (ft)			
Base Capacity (vph)	1442	627	583
Starvation Cap Reductn	191	17	0
Spillback Cap Reductn	0	61	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.52	0.92	0.14
<b>Intersection Summary</b>			
m Volume for 95th percentile queue is metered by upstream signal.			

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HCM Signalized Intersection Capacity Analysis

7: Alfred St & Duke St

Total Future AM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑							↑		↑	
Traffic Volume (vph)	43	530	28	0	0	0	0	459	22	11	65	0
Future Volume (vph)	43	530	28	0	0	0	0	459	22	11	65	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	12	12	12	12	12	12
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Fripb, ped/bikes		1.00						1.00			1.00	
Fipb, ped/bikes		1.00						1.00			1.00	
Frt		0.99						0.99			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3028						1472			1471	
Flt Permitted		1.00						1.00			0.93	
Satd. Flow (perm)		3028						1472			1372	
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)	47	576	30	0	0	0	0	499	24	12	71	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	649	0	0	0	0	0	521	0	0	83	0
Confl. Peds. (#/hr)	47	21	21			47	33			38	38	33
Confl. Bikes (#/hr)		5								1		1
Parking (#/hr)		6						3			3	
Turn Type		Perm	NA					NA		Perm	NA	
Protected Phases		1						2			2	
Permitted Phases												2
Actuated Green, G (s)		37.0						33.0			33.0	
Effective Green, g (s)		38.0						34.0			34.0	
Actuated g/C Ratio		0.48						0.42			0.42	
Clearance Time (s)		5.0						5.0			5.0	
Lane Grp Cap (vph)		1438						625			583	
v/s Ratio Prot								c0.35				
v/s Ratio Perm		0.21									0.06	
v/c Ratio		0.45						0.83			0.14	
Uniform Delay, d1		14.0						20.5			14.1	
Progression Factor		0.06						0.29			1.04	
Incremental Delay, d2		0.5						1.3			0.5	
Delay (s)		1.3						7.1			15.1	
Level of Service		A						A			B	
Approach Delay (s)		1.3			0.0			7.1			15.1	
Approach LOS		A			A			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			4.6									A
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			80.0								8.0	
Intersection Capacity Utilization			57.2%								ICU Level of Service	B
Analysis Period (min)			10									
c Critical Lane Group												

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Queues

8: Henry St & Duke St

Total Future AM w/ Development 2028

Lane Group	EBT	EBR	WBL	WBT	SBT
Lane Group Flow (vph)	465	462	68	709	1513
v/c Ratio	0.69	0.43	0.20	0.44	1.03
Control Delay	26.5	19.0	5.5	6.3	29.5
Queue Delay	0.9	0.0	0.0	0.7	0.0
Total Delay	27.4	19.0	5.5	7.0	29.5
Queue Length 50th (ft)	188	81	10	60	-59
Queue Length 95th (ft)	297	120	m8	m48	m#319
Internal Link Dist (ft)	72			232	347
Turn Bay Length (ft)		125			
Base Capacity (vph)	670	1064	333	1625	1473
Starvation Cap Reductn	0	0	0	0	553
Spillback Cap Reductn	58	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.76	0.43	0.20	0.66	1.03
<b>Intersection Summary</b>					
- Volume exceeds capacity, queue is theoretically infinite.					
# Queue shown is maximum after two cycles.					
# 95th percentile volume exceeds capacity, queue may be longer.					
# Queue shown is maximum after two cycles.					
m Volume for 95th percentile queue is metered by upstream signal.					

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HCM Signalized Intersection Capacity Analysis  
8: Henry St & Duke St

Total Future AM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↑	↑	↑					↑	↑	↑
Traffic Volume (vph)	0	428	425	63	652	0	0	0	0	0	1162	230
Future Volume (vph)	0	428	425	63	652	0	0	0	0	0	1162	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	10	12	12	12	12	12	12	11
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0						4.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00						0.91	
Fripb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	
Fripb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	
Frt	1.00	0.85	1.00	1.00	1.00						0.98	
Flt Protected	1.00	1.00	0.95	1.00	1.00						1.00	
Satd. Flow (prot)	1676	2660	1485	2955							4105	
Flt Permitted	1.00	1.00	0.26	1.00							1.00	
Satd. Flow (perm)	1676	2660	412	2955							4105	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	465	462	68	709	0	0	0	0	0	1263	250
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	37
Lane Group Flow (vph)	0	465	462	68	709	0	0	0	0	0	1476	0
Confl. Peds. (#/hr)	15	14	14		15	13			2	2		13
Confl. Bikes (#/hr)		3			2							
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)												1
Turn Type	NA	Prot	pm+pt	NA							NA	
Protected Phases	8	8	7	4							2	
Permitted Phases			4									
Actuated Green, G (s)	30.7	30.7	42.7	42.7							26.9	
Effective Green, g (s)	32.0	32.0	43.7	44.0							28.0	
Actuated g/C Ratio	0.40	0.40	0.55	0.55							0.35	
Clearance Time (s)	5.3	5.3	5.0	5.3							5.1	
Lane Grp Cap (vph)	670	1064	332	1625							1436	
v/s Ratio Prot	c0.28	0.17	0.02	c0.24							c0.36	
v/s Ratio Perm			0.09									
v/c Ratio	0.69	0.43	0.20	0.44							1.03	
Uniform Delay, d1	19.9	17.4	10.5	10.7							26.0	
Progression Factor	1.00	1.00	0.63	0.57							0.37	
Incremental Delay, d2	5.7	1.3	0.1	0.1							17.2	
Delay (s)	25.7	18.7	6.7	6.2							26.8	
Level of Service	C	B	A	A							C	
Approach Delay (s)	22.2			6.2			0.0				26.8	
Approach LOS	C			A			A				C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	20.5			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.81											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	69.8%			ICU Level of Service			C					
Analysis Period (min)	10											
c Critical Lane Group												

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Queues  
9: Patrick St & Duke St

Total Future AM w/ Development 2028

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	444	574	2552
v/c Ratio	0.99	1.25	1.14
Control Delay	56.9	115.4	67.0
Queue Delay	5.6	0.0	0.5
Total Delay	62.4	115.4	67.5
Queue Length 50th (ft)	123	-371	-694
Queue Length 95th (ft)	#385	m#511	#1043
Internal Link Dist (ft)	232	245	181
Turn Bay Length (ft)			
Base Capacity (vph)	449	460	2248
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	14	0	397
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.02	1.25	1.38
<b>Intersection Summary</b>			
- Volume exceeds capacity, queue is theoretically infinite.			
- Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
- Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

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HCM Signalized Intersection Capacity Analysis  
9: Patrick St & Duke St

Total Future AM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑	↑	↑		
Traffic Volume (vph)	4	406	0	0	473	55	311	1934	103	0	0	0
Future Volume (vph)	4	406	0	0	473	55	311	1934	103	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0				4.0			4.0				
Lane Util. Factor	1.00				1.00			0.78				
Fripb, ped/bikes	1.00				1.00			1.00				
Fripb, ped/bikes	1.00				1.00			1.00				
Frt	1.00				0.99			0.99				
Flt Protected	1.00				1.00			0.99				
Satd. Flow (prot)	1899				1458			3822				
Flt Permitted	0.76				1.00			0.99				
Satd. Flow (perm)	1439				1458			3822				
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)	4	440	0	0	514	60	338	2102	112	0	0	0
RTOR Reduction (vph)	0	0	0	0	5	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	444	0	0	569	0	0	2547	0	0	0	0
Confl. Peds. (#/hr)	15		15	15		15	5		14	14		5
Confl. Bikes (#/hr)		1			1							
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Parking (#/hr)					3							
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases	2				2		1	1				
Permitted Phases												
Actuated Green, G (s)	23.8				23.8			46.0				
Effective Green, g (s)	25.0				25.0			47.0				
Actuated g/C Ratio	0.31				0.31			0.59				
Clearance Time (s)	5.2				5.2			5.0				
Lane Grp Cap (vph)	449				455			2245				
v/s Ratio Prot					c0.39							
v/s Ratio Perm	0.31							0.67				
v/c Ratio	0.99				1.25			1.13				
Uniform Delay, d1	27.4				27.5			16.5				
Progression Factor	0.97				1.00			1.28				
Incremental Delay, d2	27.4				88.8			44.2				
Delay (s)	53.9				116.3			65.4				
Level of Service	D				F			E				
Approach Delay (s)	53.9				116.3			65.4			0.0	
Approach LOS	D				F			E			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	72.1			HCM 2000 Level of Service			E					
HCM 2000 Volume to Capacity ratio	1.17											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	91.5%			ICU Level of Service			F					
Analysis Period (min)	10											
c Critical Lane Group												

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Queues  
10: Alfred St & Duke St

Total Future AM w/ Development 2028

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	572	486	520	77
v/c Ratio	0.62	0.57	1.08	0.16
Control Delay	10.1	10.3	77.6	4.5
Queue Delay	6.2	4.5	4.4	0.0
Total Delay	16.3	14.9	82.0	4.5
Queue Length 50th (ft)	51	80	-296	4
Queue Length 95th (ft)	m51	m162	#486	12
Internal Link Dist (ft)	245	227	189	116
Turn Bay Length (ft)				
Base Capacity (vph)	695	858	480	483
Starvation Cap Reductn	89	169	0	0
Spillback Cap Reductn	28	295	19	4
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.94	0.86	1.13	0.16
<b>Intersection Summary</b>				
- Volume exceeds capacity, queue is theoretically infinite.				
- Queue shown is maximum after two cycles.				
# 95th percentile volume exceeds capacity, queue may be longer.				
- Queue shown is maximum after two cycles.				
m Volume for 95th percentile queue is metered by upstream signal.				

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HCM Signalized Intersection Capacity Analysis

10: Alfred St & Duke St

Total Future AM w/ Development 2028




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔	↔		↔	↔		↔	↔		↔
Traffic Volume (vph)	110	396	20	4	428	16	61	405	13	2	44	25
Future Volume (vph)	110	396	20	4	428	16	61	405	13	2	44	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	14	12	12	11	12	12	11	12
Total Lost time (s)	4.0		4.0		4.0		4.0		4.0		4.0	
Lane Util. Factor	1.00		1.00		1.00		1.00		1.00		1.00	
Frlpb, ped/bikes	1.00		1.00		1.00		1.00		0.98		1.00	
Frlpb, ped/bikes	1.00		1.00		1.00		1.00		1.00		1.00	
Frt	0.99		1.00		1.00		1.00		0.95		1.00	
Flt Protected	0.99		1.00		0.99		0.99		1.00		1.00	
Satd. Flow (prot)	1532		1562		1430		1343		1343		1343	
Flt Permitted	0.81		1.00		0.95		0.99		0.99		0.99	
Satd. Flow (perm)	1261		1557		1370		1331		1331		1331	
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)	120	430	22	4	465	17	66	440	14	2	48	27
RTOR Reduction (vph)	0	2	0	0	2	0	0	1	0	0	18	0
Lane Group Flow (vph)	0	570	0	0	484	0	0	519	0	0	59	0
Confl. Peds. (#/hr)	12		22	22		12	12		15	15		12
Confl. Bikes (#/hr)					4				1			
Bus Blockages (#/hr)	0	3	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)	3				2			1				3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2	2		2	2		1	1		1	1	
Permitted Phases	2	2		2	2		1	1		1	1	
Actuated Green, G (s)	43.0		43.0		27.0		27.0		27.0		27.0	
Effective Green, g (s)	44.0		44.0		28.0		28.0		28.0		28.0	
Actuated g/C Ratio	0.55		0.55		0.35		0.35		0.35		0.35	
Clearance Time (s)	5.0		5.0		5.0		5.0		5.0		5.0	
Lane Grp Cap (vph)	693		856		479		465		465		465	
v/s Ratio Prot	c0.45		0.31		c0.38		0.04		0.04		0.04	
v/s Ratio Perm	0.82		0.57		1.08		0.13		0.13		0.13	
v/c Ratio	14.8		11.8		26.0		17.7		17.7		17.7	
Uniform Delay, d1	0.45		0.70		1.00		0.32		0.32		0.32	
Progression Factor	3.0		1.8		49.5		0.6		0.6		0.6	
Incremental Delay, d2	9.6		10.0		75.5		6.2		6.2		6.2	
Delay (s)	A		B		E		A		A		A	
Level of Service	A		B		E		A		A		A	
Approach Delay (s)	9.6		10.0		75.5		6.2		6.2		6.2	
Approach LOS	A		B		E		A		A		A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	30.3		HCM 2000 Level of Service		C		C		C		C	
HCM 2000 Volume to Capacity ratio	0.92											
Actuated Cycle Length (s)	80.0		Sum of lost time (s)		8.0		8.0		8.0		8.0	
Intersection Capacity Utilization	102.8%		ICU Level of Service		G		G		G		G	
Analysis Period (min)	10											
c Critical Lane Group												

Queues

11: Columbus St & Duke St

Total Future AM w/ Development 2028




Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	443	372	638	99
v/c Ratio	0.81	0.62	1.00	0.14
Control Delay	12.4	23.5	52.9	3.3
Queue Delay	2.3	2.8	10.8	0.0
Total Delay	14.7	26.3	63.7	3.3
Queue Length 50th (ft)	58	139	-306	6
Queue Length 95th (ft)	m143	232	#535	21
Internal Link Dist (ft)	227	234	376	354
Turn Bay Length (ft)				
Base Capacity (vph)	550	602	636	698
Starvation Cap Reductn	41	135	0	0
Spillback Cap Reductn	0	0	32	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.87	0.80	1.06	0.14
<b>Intersection Summary</b>				
- Volume exceeds capacity, queue is theoretically infinite.				
Queue shown is maximum after two cycles.				
# 95th percentile volume exceeds capacity, queue may be longer.				
Queue shown is maximum after two cycles.				
m Volume for 95th percentile queue is metered by upstream signal.				

HCM Signalized Intersection Capacity Analysis

11: Columbus St & Duke St

Total Future AM w/ Development 2028




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔	↔		↔	↔		↔	↔		↔
Traffic Volume (vph)	52	336	20	10	299	33	149	435	3	3	70	18
Future Volume (vph)	52	336	20	10	299	33	149	435	3	3	70	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	14	12	12	11	12	12	11	12
Total Lost time (s)	4.0		4.0		4.0		4.0		4.0		4.0	
Lane Util. Factor	1.00		1.00		1.00		1.00		1.00		1.00	
Frlpb, ped/bikes	1.00		0.99		1.00		0.99		1.00		0.99	
Frlpb, ped/bikes	1.00		1.00		1.00		0.99		1.00		1.00	
Frt	0.99		0.99		1.00		0.99		1.00		0.97	
Flt Protected	0.99		1.00		0.99		0.99		1.00		1.00	
Satd. Flow (prot)	1439		1469		1455		1427		1427		1427	
Flt Permitted	0.92		0.99		0.89		0.99		0.99		0.99	
Satd. Flow (perm)	1330		1449		1306		1411		1411		1411	
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)	57	364	22	11	325	36	162	473	3	3	76	20
RTOR Reduction (vph)	0	2	0	0	5	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	441	0	0	367	0	0	638	0	0	89	0
Confl. Peds. (#/hr)	22		15	15		22	14		8	8		14
Confl. Bikes (#/hr)			1		4				4			1
Bus Blockages (#/hr)	0	3	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	3				1			3				3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	6	6		2	2		4	4		8	8	
Permitted Phases	6	6		2	2		4	4		8	8	
Actuated Green, G (s)	32.0		32.0		38.0		38.0		38.0		38.0	
Effective Green, g (s)	33.0		33.0		39.0		39.0		39.0		39.0	
Actuated g/C Ratio	0.41		0.41		0.49		0.49		0.49		0.49	
Clearance Time (s)	5.0		5.0		5.0		5.0		5.0		5.0	
Lane Grp Cap (vph)	548		597		636		687		687		687	
v/s Ratio Prot	c0.33		0.25		c0.49		0.06		0.06		0.06	
v/s Ratio Perm	0.80		0.62		1.00		0.13		0.13		0.13	
v/c Ratio	20.7		18.5		20.5		11.2		11.2		11.2	
Uniform Delay, d1	0.26		1.00		1.00		0.31		0.31		0.31	
Progression Factor	6.5		4.6		29.7		0.4		0.4		0.4	
Incremental Delay, d2	11.8		23.1		50.2		3.9		3.9		3.9	
Delay (s)	B		C		D		A		A		A	
Level of Service	B		C		D		A		A		A	
Approach Delay (s)	11.8		23.1		50.2		3.9		3.9		3.9	
Approach LOS	B		C		D		A		A		A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	29.8		HCM 2000 Level of Service		C		C		C		C	
HCM 2000 Volume to Capacity ratio	0.91											
Actuated Cycle Length (s)	80.0		Sum of lost time (s)		8.0		8.0		8.0		8.0	
Intersection Capacity Utilization	96.2%		ICU Level of Service		F		F		F		F	
Analysis Period (min)	10											
c Critical Lane Group												

Queues

12: Washington St & Duke St

Total Future AM w/ Development 2028




Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	342	214	2284	616
v/c Ratio	1.25	0.58	1.14	0.37
Control Delay	135.3	40.0	73.5	6.7
Queue Delay	0.0	0.0	0.5	0.1
Total Delay	135.3	40.0	73.9	6.8
Queue Length 50th (ft)	-330	167	-888	46
Queue Length 95th (ft)	#520	259	#1000	60
Internal Link Dist (ft)	234	98	339	351
Turn Bay Length (ft)				
Base Capacity (vph)	274	452	1995	1672
Starvation Cap Reductn	1	0	0	233
Spillback Cap Reductn	0	0	332	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.25	0.58	1.37	0.43
<b>Intersection Summary</b>				
- Volume exceeds capacity, queue is theoretically infinite.				
Queue shown is maximum after two cycles.				
# 95th percentile volume exceeds capacity, queue may be longer.				
Queue shown is maximum after two cycles.				



HCM Signalized Intersection Capacity Analysis  
12: Washington St & Duke St


Total Future AM w/ Development 2028



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↖	↗	↖	↗	↗	↖	↖	↗	↖	↗	↖	
Traffic Volume (vph)	134	161	19	10	189	44	2	2053	46	1	444	121	
Future Volume (vph)	134	161	19	10	189	44	2	2053	46	1	444	121	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	13	12	12	13	12	11	9	9	9	11	9	
Total Lost time (s)	4.0			4.0			4.0			4.0			
Lane Util. Factor	1.00			1.00			0.78			0.95			
Frpb, ped/bikes	1.00			1.00			1.00			0.99			
Flpb, ped/bikes	1.00			1.00			1.00			1.00			
Fit	0.99			0.98			1.00			0.97			
Flt Protected	0.98			1.00			1.00			1.00			
Satd. Flow (prot)	1472			1474			3392			2782			
Flt Permitted	0.59			0.98			0.94			0.95			
Satd. Flow (perm)	883			1449			3188			2643			
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)	146	175	21	11	205	48	2	2232	50	1	483	132	
RTOR Reduction (vph)	0	2	0	0	6	0	0	2	0	0	21	0	
Lane Group Flow (vph)	0	340	0	0	258	0	0	2283	0	0	595	0	
Confl. Peds. (#/hr)	7	2	2	2	7	8	8	9	9	9	8	8	
Confl. Bikes (#/hr)	0	2	0	0	2	1	0	0	0	0	0	2	
Bus Blockages (#/hr)	3			3			1			3			
Parking (#/hr)	3			3			1			3			
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases	4	4		8	8		2	2		6	6		
Permitted Phases	4	4		8	8		2	2		6	6		
Actuated Green, G (s)	35.5			35.5			74.0			74.0			
Effective Green, g (s)	37.0			37.0			75.0			75.0			
Actuated g/C Ratio	0.31			0.31			0.62			0.62			
Clearance Time (s)	5.5			5.5			5.0			5.0			
Lane Grp Cap (vph)	272			446			1992			1651			
v/s Ratio Prot													
v/s Ratio Perm	c0.38			0.18			c0.72			0.23			
v/c Ratio	1.25			0.58			1.15			0.36			
Uniform Delay, d1	41.5			34.9			22.5			10.9			
Progression Factor	1.00			1.00			1.00			0.62			
Incremental Delay, d2	99.8			5.3			50.0			0.6			
Delay (s)	141.3			40.3			72.5			7.3			
Level of Service	F			D			E			A			
Approach Delay (s)	141.3			40.3			72.5			7.3			
Approach LOS	F			D			E			A			
<b>Intersection Summary</b>													
HCM 2000 Control Delay	65.3			HCM 2000 Level of Service				E					
HCM 2000 Volume to Capacity ratio	1.18												
Actuated Cycle Length (s)	120.0			Sum of lost time (s)				8.0					
Intersection Capacity Utilization	96.7%			ICU Level of Service				F					
Analysis Period (min)	10												

HCM Unsignalized Intersection Capacity Analysis  
13: Patrick St & Henry to Patrick Connector


Total Future AM w/ Development 2028



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↖		↖	↖	↖
Traffic Volume (veh/h)	132	0	0	2249	0	0
Future Volume (veh/h)	132	0	0	2249	0	0
Sign Control	Yield			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	143	0	0	2445	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				419	441	
pX, platoon unblocked	0.71					
vC, conflicting volume	815	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCU, unblocked vol	0	0	0			
IC, single (s)	6.8	6.9	4.2			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	80	100	100			
cM capacity (veh/h)	726	1084	1614			
<b>Direction, Lane #</b>						
Volume Total	EB 1	NB 1	NB 2	NB 3		
Volume Left	143	815	815	815		
Volume Right	0	0	0	0		
cSH	726	1700	1700	1700		
Volume to Capacity	0.20	0.48	0.48	0.48		
Queue Length 95th (ft)	18	0	0	0		
Control Delay (s)	11.2	0.0	0.0	0.0		
Lane LOS	B					
Approach Delay (s)	11.2	0.0				
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay				0.6		
Intersection Capacity Utilization	94.0%			ICU Level of Service	F	
Analysis Period (min)	10					

HCM Unsignalized Intersection Capacity Analysis  
14: Alfred St & Wolfe St.

Total Future AM w/ Development 2028



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↖	↗		↖	↗		↖	↗		↖	↗	
Sign Control	Stop			Stop			Stop			Stop		Stop	
Traffic Volume (vph)	18	9	13	5	7	45	14	353	17	14	34	21	
Future Volume (vph)	18	9	13	5	7	45	14	353	17	14	34	21	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	20	10	14	5	8	49	15	384	18	15	37	23	
<b>Direction, Lane #</b>													
Volume Total (vph)	EB 1	WB 1	NB 1	SB 1									
Volume Left (vph)	44	62	417	75									
Volume Right (vph)	20	5	15	15									
Had (s)	-0.07	-0.42	0.02	-0.11									
Departure Headway (s)	5.0	4.6	4.3	4.5									
Degree Utilization, x	0.06	0.08	0.49	0.09									
Capacity (veh/h)	641	692	827	756									
Control Delay (s)	8.4	8.0	11.3	8.0									
Approach Delay (s)	8.4	8.0	11.3	8.0									
Approach LOS	A	A	B	A									
<b>Intersection Summary</b>													
Delay	10.3												
Level of Service	B												
Intersection Capacity Utilization	38.4%			ICU Level of Service				A					
Analysis Period (min)	10												

HCM 2010 AWSC  
14: Alfred St & Wolfe St.

Total Future AM w/ Development 2028

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	
Intersection Delay, s/veh	10.2												
Intersection LOS	B												
Traffic Vol, veh/h	0	18	9	13	0	5	7	45	0	14	353	17	
Future Vol, veh/h	0	18	9	13	0	5	7	45	0	14	353	17	
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	0	20	10	14	0	5	8	49	0	15	384	18	
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	
<b>Approach</b>													
Opposing Approach	EB			WB				NB					
Opposing Lanes	WB			EB				SB					
Conflicting Approach Left	1			1				1					
Conflicting Lanes Left	SB			NB				EB					
Conflicting Approach Right	1			1				1					
Conflicting Lanes Right	NB			SB				WB					
HCM Control Delay	8.3			8				11.1					
HCM LOS	A			A				B					
<b>Lane</b>													
Vol Left, %	NBLn1	EBLn1	WBLn1	SBLn1									
Vol Thru, %	4%	45%	9%	20%									
Vol Right, %	92%	22%	12%	49%									
Sign Control	Stop	Stop	Stop	Stop									
Traffic Vol by Lane	384	40	57	69									
LT Vol	14	18	5	14									
Through Vol	353	9	7	34									
RT Vol	17	13	45	21									
Lane Flow Rate	417	43	62	75									
Geometry Grp	1	1	1	1									
Degree of Util (X)	0.482	0.06	0.08	0.093									
Departure Headway (Hd)	4.269	5.004	4.629	4.478									
Convergence, Y/N	Yes	Yes	Yes	Yes									
Cap	851	719	778	802									
Service Time	2.269	3.014	2.637	2.495									
HCM Lane V/C Ratio	0.49	0.06	0.08	0.094									
HCM Control Delay	11.1	8.3	8	8									
HCM Lane LOS	B	A	A	A									
HCM 95th-ile Q	2.6	0.2	0.3	0.3									

Intersection				
Intersection Delay s/veh				
Intersection LOS				
Movement	SBU	SBL	SBT	SBR
Traffic Vol. veh/h	0	14	34	21
Future Vol. veh/h	0	14	34	21
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	15	37	23
Number of Lanes	0	0	1	0
Approach				
SB				
Opposing Approach				
NB				
Opposing Lanes				
1				
Conflicting Approach Left				
WB				
Conflicting Lanes Left				
1				
Conflicting Approach Right				
EB				
Conflicting Lanes Right				
1				
HCM Control Delay				
8				
HCM LOS				
A				
Lane				

Lane Group	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	273	329	2572	1662
v/c Ratio	0.95	1.02dl	0.95	0.49
Control Delay	87.3	51.7	15.3	5.3
Queue Delay	8.9	0.6	1.1	0.0
Total Delay	96.2	52.3	16.3	5.4
Queue Length 50th (ft)	317	150	905	95
Queue Length 95th (ft)	#527	224	14	103
Internal Link Dist (ft)		264	352	342
Turn Bay Length (ft)				
Base Capacity (vph)	286	541	2716	3371
Starvation Cap Reductn	16	46	51	135
Spillback Cap Reductn	0	0	26	26
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.01	0.66	0.97	0.51
Intersection Summary				
# 95th percentile volume exceeds capacity, queue may be longer.				
dl Queue shown is maximum after two cycles.				
dl Defacto Left Lane. Recode with 1 though lane as a left lane.				

HCM Signalized Intersection Capacity Analysis  
15: Patrick St & Gibbon St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↓	↑↑			↑↑↑			↑↑↑	
Traffic Volume (vph)	0	0	0	502	27	25	1	2365	0	0	1527	2
Future Volume (vph)	0	0	0	502	27	25	1	2365	0	0	1527	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	12	12	12	12	12	12
Grade (%)			0%			2%			0%			0%
Total Lost time (s)			4.0	4.0				4.0				4.0
Lane Util. Factor			0.91	0.91				0.78				0.91
Ft/b, ped/bikes			1.00	1.00				1.00				1.00
Ft/b, ped/bikes			1.00	1.00				1.00				1.00
Frt			1.00	0.99				1.00				1.00
Flt Protected			0.95	0.96				1.00				1.00
Satd. Flow (prot)			1387	2608				3885				4531
Flt Permitted			0.95	0.96				0.94				1.00
Satd. Flow (perm)			1387	2608				3650				4531
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	546	29	27	1	2571	0	0	1660	2
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	273	325	0	0	2572	0	0	1662	0
Confl. Peds. (#/hr)	7				7		2		1	1		2
Confl. Bikes (#/hr)			1				1					
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)					1							
Turn Type			Split	NA			Perm	NA			NA	
Protected Phases			2	2			1	1			1	
Permitted Phases							1					
Actuated Green, G (s)			31.0	31.0			117.5				117.5	
Effective Green, g (s)			33.0	33.0			119.0				119.0	
Actuated g/C Ratio			0.21	0.21			0.74				0.74	
Clearance Time (s)			6.0	6.0			5.5				5.5	
Vehicle Extension (s)			3.0	3.0			3.0				3.0	
Lane Grp Cap (vph)			286	537			2714				3369	
v/s Ratio Prot			c0.20	0.12							0.37	
v/s Ratio Perm							c0.70					
v/c Ratio			0.95	1.02dl			0.95				0.49	
Uniform Delay, d1			62.8	57.6			17.8				8.3	
Progression Factor			0.84	0.82			0.57				0.58	
Incremental Delay, d2			32.9	1.8			4.6				0.5	
Delay (s)			85.5	49.2			14.7				5.3	
Level of Service			F	D			B				A	
Approach Delay (s)	0.0				65.7			14.7			5.3	
Approach LOS	A				E			B			A	
Intersection Summary												
HCM 2000 Control Delay	17.8			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.95											
Actuated Cycle Length (s)	160.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	74.9%											
ICU Level of Service	D											

HCM Signalized Intersection Capacity Analysis  
15: Patrick St & Gibbon St

Analysis Period (min)	10
dl Defacto Left Lane. Recode with 1 though lane as a left lane.	
c Critical Lane Group	

Queues

16: Alfred St & Gibbon St

Total Future AM w/ Development 2028

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	519	517	57
v/c Ratio	0.41	0.72	0.08
Control Delay	15.9	24.7	7.0
Queue Delay	0.1	0.1	0.0
Total Delay	16.0	24.8	7.0
Queue Length 50th (ft)	87	202	6
Queue Length 95th (ft)	126	321	26
Internal Link Dist (ft)	221	141	304
Turn Bay Length (ft)			
Base Capacity (vph)	1254	720	727
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	97	11	12
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.45	0.73	0.08

Intersection Summary

HCM Signalized Intersection Capacity Analysis

16: Alfred St & Gibbon St

Total Future AM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←	←	←	←	←	←	←	←
Traffic Volume (vph)	0	0	0	5	453	20	62	414	0	0	20	32
Future Volume (vph)	0	0	0	5	453	20	62	414	0	0	20	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	12	12	12	12	12	12	13
Total Lost time (s)					4.0			4.0				4.0
Lane Util. Factor					0.95			1.00				1.00
Frpb, ped/bikes					1.00			1.00				0.99
Flpb, ped/bikes					1.00			1.00				1.00
Frt					0.99			1.00				0.92
Flt Protected					1.00			1.00				1.00
Satd. Flow (prot)					2776			1665				1573
Flt Permitted					1.00			0.96				1.00
Satd. Flow (perm)					2776			1601				1573
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	5	492	22	67	450	0	0	22	35
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	19	0
Lane Group Flow (vph)	0	0	0	0	515	0	0	517	0	0	38	0
Confl. Peds. (#/hr)	26		4	4		26	6		11	11		6
Confl. Bikes (#/hr)									1			
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)					1							
Turn Type					Perm	NA		Perm	NA			NA
Protected Phases												
Permitted Phases					2	2		1	1			1
Actuated Green, G (s)					35.0			34.7				34.7
Effective Green, g (s)					36.0			36.0				36.0
Actuated g/C Ratio					0.45			0.45				0.45
Clearance Time (s)					5.0			5.3				5.3
Lane Grp Cap (vph)					1249			720				707
v/s Ratio Prot												0.02
v/s Ratio Perm					0.19			0.32				
v/c Ratio					0.41			0.72				0.05
Uniform Delay, d1					14.9			17.9				12.4
Progression Factor					1.00			1.00				1.00
Incremental Delay, d2					1.0			5.9				0.1
Delay (s)					15.9			23.8				12.5
Level of Service					B			C				B
Approach Delay (s)	0.0				15.9			23.8				12.5
Approach LOS	A				B			C				B

Intersection Summary

Queues

17: Patrick St & Franklin St

Total Future AM w/ Development 2028

Lane Group	EBL	EBT	NBT	NBR	SBT
Lane Group Flow (vph)	4	106	2821	1523	2002
v/c Ratio	0.03	0.34	0.85	1.17	0.52
Control Delay	59.0	60.9	11.6	70.7	3.1
Queue Delay	0.0	0.0	1.9	0.0	0.1
Total Delay	59.0	60.9	13.5	70.7	3.1
Queue Length 50th (ft)	4	50	445	-1773	67
Queue Length 95th (ft)	15	73	1174	#2017	m282
Internal Link Dist (ft)		272	788		352
Turn Bay Length (ft)	200				
Base Capacity (vph)	541	1077	3304	1299	3844
Starvation Cap Reductn	0	0	0	0	383
Spillback Cap Reductn	0	0	330	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.01	0.10	0.95	1.17	0.58

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

17: Patrick St & Franklin St

Total Future AM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								←	←	←	←	←
Traffic Volume (vph)	4	61	37	0	0	0	0	2595	1401	0	1842	0
Future Volume (vph)	4	61	37	0	0	0	0	2595	1401	0	1842	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	11	11	11	12	12	12	12	12	12
Grade (%)		2%			0%			0%	4.0			0%
Total Lost time (s)	4.0	4.0						4.0	12.0			4.0
Lane Util. Factor	1.00	0.95						0.78	1.00			0.91
Frpb, ped/bikes	1.00	0.99						1.00	0.99			1.00
Flpb, ped/bikes	0.98	1.00						1.00	1.00			1.00
Frt	1.00	0.94						1.00	0.85			1.00
Flt Protected	0.95	1.00						1.00	1.00			1.00
Satd. Flow (prot)	1546	3058						3885	1391			4520
Flt Permitted	0.95	1.00						1.00	1.00			1.00
Satd. Flow (perm)	1546	3058						3885	1391			4520
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)	4	66	40	0	0	0	0	2821	1523	0	2002	0
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	117	0	0	0
Lane Group Flow (vph)	4	96	0	0	0	0	0	2821	1406	0	2002	0
Confl. Peds. (#/hr)	12							12	1		1	1
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	2
Turn Type	Perm	NA						NA	Perm			NA
Protected Phases		4										2
Permitted Phases		4							2			
Actuated Green, G (s)	13.9	13.9						134.1	134.1			134.1
Effective Green, g (s)	15.9	15.9						136.1	136.1			136.1
Actuated g/C Ratio	0.10	0.10						0.85	0.85			0.85
Clearance Time (s)	6.0	6.0						6.0	6.0			6.0
Vehicle Extension (s)	3.0	3.0						0.2	0.2			0.2
Lane Grp Cap (vph)	153	303						3304	1183			3844
v/s Ratio Prot								0.73				0.44
v/s Ratio Perm	0.00								c1.01			
v/c Ratio	0.03	0.32						0.85	1.19			0.52
Uniform Delay, d1	65.1	67.0						6.5	12.0			3.2
Progression Factor	1.00	1.00						1.00	1.00			0.66
Incremental Delay, d2	0.1	0.6						3.0	65.0			0.4
Delay (s)	65.1	67.6						9.5	76.9			2.5
Level of Service	E	E						A	E			A
Approach Delay (s)	67.5				0.0			33.1				2.5
Approach LOS	E				A			C				A

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
17: Patrick St & Franklin St

Total Future AM w/ Development 2028

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	41	0	2326	47	0	0
Future Volume (Veh/h)	0	0	0	0	0	41	0	0	2326	47	0	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	45	0	2528	51	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)							599			261		
Upstream signal (ft)												
pX, platoon unblocked	0.72	0.72		0.72	0.72	0.72				0.72		
vC, conflicting volume	888	2579	0	2554	2554	868	0			2579		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	1830	0	1795	1795	0	0			1830		
IC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
IC, 2 stage (s)												
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	94	100	100	100		
cM capacity (veh/h)	693	54	1084	36	57	780	1622			237		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>							
Volume Total	0	45	632	1264	683							
Volume Left	0	0	0	0	0							
Volume Right	0	45	0	0	51							
cSH	1700	780	1622	1700	1700							
Volume to Capacity	0.00	0.06	0.00	0.74	0.40							
Queue Length 95th (ft)	0	5	0	0	0							
Control Delay (s)	0.0	9.9	0.0	0.0	0.0							
Lane LOS	A	A										
Approach Delay (s)	0.0	9.9	0.0									
Approach LOS	A	A										
<b>Intersection Summary</b>												
Average Delay	0.2											
Intersection Capacity Utilization	56.0%						ICU Level of Service			B		
Analysis Period (min)	10											

HCM Unsignalized Intersection Capacity Analysis  
18: Patrick St & Proposed Patrick Entrance

Total Future AM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	41	0	2326	47	0	0
Future Volume (Veh/h)	0	0	0	0	0	41	0	0	2326	47	0	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	45	0	2528	51	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)							599			261		
Upstream signal (ft)												
pX, platoon unblocked	0.72	0.72		0.72	0.72	0.72				0.72		
vC, conflicting volume	888	2579	0	2554	2554	868	0			2579		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	1830	0	1795	1795	0	0			1830		
IC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
IC, 2 stage (s)												
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	94	100	100	100		
cM capacity (veh/h)	693	54	1084	36	57	780	1622			237		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>							
Volume Total	0	45	632	1264	683							
Volume Left	0	0	0	0	0							
Volume Right	0	45	0	0	51							
cSH	1700	780	1622	1700	1700							
Volume to Capacity	0.00	0.06	0.00	0.74	0.40							
Queue Length 95th (ft)	0	5	0	0	0							
Control Delay (s)	0.0	9.9	0.0	0.0	0.0							
Lane LOS	A	A										
Approach Delay (s)	0.0	9.9	0.0									
Approach LOS	A	A										
<b>Intersection Summary</b>												
Average Delay	0.2											
Intersection Capacity Utilization	56.0%						ICU Level of Service			B		
Analysis Period (min)	10											

HCM Unsignalized Intersection Capacity Analysis  
19: Wolfe St. & Proposed Wolfe Entrance

Total Future AM w/ Development 2028

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	24	20	19	36	0
Future Volume (Veh/h)	0	24	20	19	36	0
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	26	22	21	39	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	43				58	32
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	43				58	32
IC, single (s)	4.1				6.4	6.2
IC, 2 stage (s)						
IF (s)	2.2				3.5	3.3
p0 queue free %	100				96	100
cM capacity (veh/h)	1566				949	1041
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	26	43	39			
Volume Left	0	0	39			
Volume Right	0	21	0			
cSH	1566	1700	949			
Volume to Capacity	0.00	0.03	0.04			
Queue Length 95th (ft)	0	0	3			
Control Delay (s)	0.0	0.0	9.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.0			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay	3.2					
Intersection Capacity Utilization	13.3%		ICU Level of Service		A	
Analysis Period (min)	10					

HCM Unsignalized Intersection Capacity Analysis  
20: Columbus St & Wolfe St.

Total Future AM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	15	26	6	5	28	96	17	425	14	17	40	7
Future Volume (vph)	15	26	6	5	28	96	17	425	14	17	40	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	28	7	5	30	104	18	462	15	18	43	8
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total (vph)	51	139	495	69								
Volume Left (vph)	16	5	18	18								
Volume Right (vph)	7	104	15	8								
Head (s)	0.01	-0.41	0.02	0.02								
Departure Headway (s)	5.5	4.9	4.5	5.0								
Degree Utilization x	0.08	0.19	0.62	0.10								
Capacity (veh/h)	579	656	779	664								
Control Delay (s)	8.9	9.1	14.5	8.5								
Approach Delay (s)	8.9	9.1	14.5	8.5								
Approach LOS	A	A	B	A								
<b>Intersection Summary</b>												
Delay	12.6											
Level of Service	B											
Intersection Capacity Utilization	40.4%				ICU Level of Service				A			
Analysis Period (min)	10											

Intersection												
Intersection Delay s/veh	12.5											
Intersection LOS	B											
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	15	26	6	0	5	28	96	0	17	425	14
Future Vol, veh/h	0	15	26	6	0	5	28	96	0	17	425	14
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	0	16	28	7	0	5	30	104	0	18	462	15
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach			EB			WB			NB			
Opposing Approach	WB			EB			SB					
Opposing Lanes	1			1			1					
Conflicting Approach Left	SB			NB			EB					
Conflicting Lanes Left	1			1			1					
Conflicting Approach Right	NB			SB			WB					
Conflicting Lanes Right	1			1			1					
HCM Control Delay	9			9.1			14.4					
HCM LOS	A			A			B					
Lane												
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	4%	32%	4%	27%								
Vol Thru, %	93%	55%	22%	62%								
Vol Right, %	3%	13%	74%	11%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	456	47	129	64								
LT Vol	17	15	5	17								
Through Vol	425	26	28	40								
RT Vol	14	6	96	7								
Lane Flow Rate	496	51	140	70								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.617	0.077	0.19	0.096								
Departure Headway (Hd)	4.484	5.431	4.876	4.962								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	803	654	731	717								
Service Time	2.529	3.506	2.939	3.029								
HCM Lane V/C Ratio	0.618	0.078	0.192	0.098								
HCM Control Delay	14.4	9	9.1	8.6								
HCM Lane LOS	B	A	A	A								
HCM 95th-ile Q	4.2	0.2	0.7	0.3								

Intersection				
Intersection Delay s/veh	12.5			
Intersection LOS	B			
Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	17	40	7
Future Vol, veh/h	0	17	40	7
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	18	43	8
Number of Lanes	0	0	1	0
Approach		SB		
Opposing Approach	NB			SB
Opposing Lanes	1			1
Conflicting Approach Left	WB			EB
Conflicting Lanes Left	1			1
Conflicting Approach Right	EB			WB
Conflicting Lanes Right	1			1
HCM Control Delay	8.6			A
HCM LOS	A			B
Lane				
Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	4%	32%	4%	27%
Vol Thru, %	93%	55%	22%	62%
Vol Right, %	3%	13%	74%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	456	47	129	64
LT Vol	17	15	5	17
Through Vol	425	26	28	40
RT Vol	14	6	96	7
Lane Flow Rate	496	51	140	70
Geometry Grp	1	1	1	1
Degree of Util (X)	0.617	0.077	0.19	0.096
Departure Headway (Hd)	4.484	5.431	4.876	4.962
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	803	654	731	717
Service Time	2.529	3.506	2.939	3.029
HCM Lane V/C Ratio	0.618	0.078	0.192	0.098
HCM Control Delay	14.4	9	9.1	8.6
HCM Lane LOS	B	A	A	A
HCM 95th-ile Q	4.2	0.2	0.7	0.3

Queues  
1: Alfred St & Cameron St

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	719	162	505
v/c Ratio	0.57	0.28	0.71
Control Delay	20.2	8.0	21.8
Queue Delay	0.0	0.0	0.0
Total Delay	20.2	8.0	21.9
Queue Length 50th (ft)	140	25	177
Queue Length 95th (ft)	194	m40	299
Internal Link Dist (ft)	237	338	290
Turn Bay Length (ft)			
Base Capacity (vph)	1261	584	709
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	3
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.57	0.28	0.72

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

HCM Signalized Intersection Capacity Analysis  
1: Alfred St & Cameron St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔				↔
Traffic Volume (vph)	0	0	0	24	626	12	42	107	0	0	350	115
Future Volume (vph)	0	0	0	24	626	12	42	107	0	0	350	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	12	12	12	12	12	12	12
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Frbp, ped/bikes					1.00			1.00			0.99	
Ftpb, ped/bikes					1.00			1.00			1.00	
Frt					1.00			1.00			0.97	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3055			1460			1423	
Flt Permitted					1.00			0.81			1.00	
Satd. Flow (perm)					3055			1198			1423	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	26	680	13	46	116	0	0	380	125
RTOR Reduction (vph)	0	0	0	2	0	0	0	0	0	0	15	0
Lane Group Flow (vph)	0	0	0	717	0	0	162	0	0	490	0	0
Confl. Peds. (#/hr)	36		35	35		36	31		28	28		31
Confl. Bikes (#/hr)			9			1			3			3
Parking (#/hr)					6				3			3
Turn Type					Perm	NA		Perm	NA		NA	
Protected Phases					2			1			1	
Permitted Phases					2			1			1	
Actuated Green, G (s)					32.0			38.0			38.0	
Effective Green, g (s)					33.0			39.0			39.0	
Actuated g/C Ratio					0.41			0.49			0.49	
Clearance Time (s)					5.0			5.0			5.0	
Lane Grp Cap (vph)					1260			584			693	
v/s Ratio Prot											c0.34	
v/s Ratio Perm					0.23			0.14				
v/c Ratio					0.57			0.28			0.71	
Uniform Delay, d1					18.0			12.1			16.0	
Progression Factor					1.00			0.55			1.00	
Incremental Delay, d2					1.9			1.1			5.9	
Delay (s)					19.9			7.8			21.9	
Level of Service					B			A			C	
Approach Delay (s)		0.0			19.9			7.8			21.9	
Approach LOS		A			B			A			C	
Intersection Summary												
HCM 2000 Control Delay	19.2			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.64											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	71.6%			ICU Level of Service			C					
Analysis Period (min)	10											
c Critical Lane Group												



Queues  
2: Henry St & King St

Total Future PM w/ Development 2022

Lane Group	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	383	104	272	1983
v/c Ratio	0.94	0.43	0.43	1.13
Control Delay	57.6	16.9	18.1	69.8
Queue Delay	0.0	0.0	1.5	0.0
Total Delay	57.6	16.9	19.6	69.8
Queue Length 50th (ft)	-195	45	122	-502
Queue Length 95th (ft)	#371	m49	m149	#615
Internal Link Dist (ft)	548		225	128
Turn Bay Length (ft)		100		
Base Capacity (vph)	409	242	637	1750
Starvation Cap Reductn	0	0	206	0
Spillback Cap Reductn	0	0	0	20
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.94	0.43	0.63	1.15

**Intersection Summary**

- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

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HCM Signalized Intersection Capacity Analysis  
2: Henry St & King St

Total Future PM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	0	293	60	96	250	0	0	0	0	45	1748	31
Future Volume (vph)	0	293	60	96	250	0	0	0	0	45	1748	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	10	10	12	12	12	12	12	12	11
Total Lost time (s)		4.0		4.0	4.0						4.0	
Lane Util. Factor		1.00		1.00	1.00						0.78	
Frpb, ped/bikes		0.95		1.00	1.00						1.00	
Flpb, ped/bikes		1.00		0.98	1.00						1.00	
Flt		0.98		1.00	1.00						1.00	
Flt Protected		1.00		0.95	1.00						1.00	
Satd. Flow (prot)		1325		1452	1546						3588	
Flt Permitted		1.00		0.25	1.00						1.00	
Satd. Flow (perm)		1325		380	1546						3588	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	318	65	104	272	0	0	0	0	49	1900	34
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	374	0	104	272	0	0	0	0	0	1981	0
Confl. Peds. (#/hr)	266		291	291		266	65			18	18	65
Confl. Bikes (#/hr)			9		5							
Heavy Vehicles (%)	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)		3									3	
Turn Type	NA		pm-pt	NA						Split	NA	
Protected Phases	6		5	2.6						4	4	
Permitted Phases				2.6								
Actuated Green, G (s)		23.2		33.0	33.0						37.0	
Effective Green, g (s)		24.2		34.0	34.0						38.0	
Actuated g/C Ratio		0.30		0.42	0.42						0.48	
Clearance Time (s)		5.0		5.0							5.0	
Vehicle Extension (s)		3.0		3.0							3.0	
Lane Grp Cap (vph)		400		239	657						1704	
v/s Ratio Prot		c0.28		0.03	c0.18						c0.55	
v/s Ratio Perm				0.15								
v/c Ratio		0.93		0.44	0.41						1.16	
Uniform Delay, d1		27.1		15.9	16.0						21.0	
Progression Factor		1.00		0.93	0.99						1.00	
Incremental Delay, d2		27.1		0.6	1.0						55.4	
Delay (s)		54.2		15.3	16.8						76.4	
Level of Service		D		B	B						E	
Approach Delay (s)		54.2		16.4				0.0			76.4	
Approach LOS		D		B				A			E	

**Intersection Summary**

- HCM 2000 Control Delay: 65.1
- HCM 2000 Level of Service: E
- HCM 2000 Volume to Capacity ratio: 1.03
- Actuated Cycle Length (s): 80.0
- Sum of lost time (s): 12.0
- Intersection Capacity Utilization: 77.9%
- ICU Level of Service: D
- Analysis Period (min): 10

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HCM Signalized Intersection Capacity Analysis  
2: Henry St & King St

Total Future PM w/ Development 2022

c Critical Lane Group

Queues  
3: Patrick St & King St

Total Future PM w/ Development 2022

Lane Group	EBL	EBT	WBT	NBT
Lane Group Flow (vph)	60	273	377	1624
v/c Ratio	0.20	0.37	0.81	0.95
Control Delay	8.2	13.7	23.6	16.6
Queue Delay	0.0	1.8	0.9	0.0
Total Delay	8.2	15.5	24.5	16.6
Queue Length 50th (ft)	16	135	42	54
Queue Length 95th (ft)	m17	m141	m#303	#384
Internal Link Dist (ft)		225	238	340
Turn Bay Length (ft)		100		
Base Capacity (vph)	303	735	464	1717
Starvation Cap Reductn	0	311	14	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.20	0.64	0.84	0.95

**Intersection Summary**

- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

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HCM Signalized Intersection Capacity Analysis  
3: Patrick St & King St

Total Future PM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	55	251	0	0	298	49	84	1357	53	0	0	0
Future Volume (vph)	55	251	0	0	298	49	84	1357	53	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0			4.0				
Lane Util. Factor	1.00	1.00			1.00			0.91				
Frlpb, ped/bikes	1.00	1.00			0.96			1.00				
Frlpb, ped/bikes	0.96	1.00			1.00			1.00				
Frt	1.00	1.00			0.98			0.99				
Flt Protected	0.95	1.00			1.00			1.00				
Satd. Flow (prot)	1433	1508			1354			4153				
Flt Permitted	0.33	1.00			1.00			1.00				
Satd. Flow (perm)	503	1508			1354			4153				
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)	60	273	0	0	324	53	91	1475	58	0	0	0
RTOR Reduction (vph)	0	0	0	0	7	0	0	5	0	0	0	0
Lane Group Flow (vph)	60	273	0	0	370	0	0	1619	0	0	0	0
Confl. Peds. (#/hr)	225		351	351		225	58		52	52		58
Confl. Bikes (#/hr)			3			4						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	9	0	0	8	0	0	0	0	0	0	0
Parking (#/hr)					3			4				
Turn Type	pm-rt	NA			NA		Split	NA				
Protected Phases	2	2,3			3		1	1				
Permitted Phases	2,3				3							
Actuated Green, G (s)	32.4	37.4			25.4			32.0				
Effective Green, g (s)	34.4	38.4			27.0			33.0				
Actuated g/C Ratio	0.43	0.48			0.34			0.41				
Clearance Time (s)	5.0				5.6			5.0				
Lane Grp Cap (vph)	309	723			456			1713				
v/s Ratio Prot	0.02	c0.18			c0.27			c0.39				
v/s Ratio Perm	0.06											
v/c Ratio	0.19	0.38			0.81			0.95				
Uniform Delay, d1	14.2	13.2			24.2			22.6				
Progression Factor	0.69	1.00			0.48			0.29				
Incremental Delay, d2	0.4	0.5			10.2			8.1				
Delay (s)	10.2	13.7			21.8			14.7				
Level of Service	B	B			C			B				
Approach Delay (s)	13.1				21.8			14.7				0.0
Approach LOS	B				C			B				A
<b>Intersection Summary</b>												
HCM 2000 Control Delay	15.6		HCM 2000 Level of Service		B							
HCM 2000 Volume to Capacity ratio	0.84											
Actuated Cycle Length (s)	80.0		Sum of lost time (s)		12.6							
Intersection Capacity Utilization	77.9%		ICU Level of Service		D							
Analysis Period (min)	10											
c Critical Lane Group												

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Wells + Associates

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Queues  
4: Alfred St & King St

Total Future PM w/ Development 2022

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	299	399	130	446
v/c Ratio	0.53	0.71	0.21	0.71
Control Delay	7.5	16.1	9.9	22.9
Queue Delay	0.2	0.3	0.0	0.1
Total Delay	7.7	16.4	9.9	23.1
Queue Length 50th (ft)	28	63	20	110
Queue Length 95th (ft)	m40	89	35	207
Internal Link Dist (ft)	238	237	340	338
Turn Bay Length (ft)				
Base Capacity (vph)	566	563	610	627
Starvation Cap Reductn	27	0	0	7
Spillback Cap Reductn	0	15	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.55	0.73	0.21	0.72
<b>Intersection Summary</b>				
m Volume for 95th percentile queue is metered by upstream signal.				

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Wells + Associates

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HCM Signalized Intersection Capacity Analysis  
4: Alfred St & King St

Total Future PM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	7	242	26	19	320	28	11	102	6	17	355	39
Future Volume (vph)	7	242	26	19	320	28	11	102	6	17	355	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	12	12	12	12	12	12
Total Lost time (s)	4.0				4.0			4.0				4.0
Lane Util. Factor	1.00				1.00			1.00				1.00
Frlpb, ped/bikes	0.95				0.96			0.99				0.99
Frlpb, ped/bikes	0.99				0.98			1.00				1.00
Frt	0.99				0.99			0.99				0.99
Flt Protected	1.00				1.00			1.00				1.00
Satd. Flow (prot)	1226				1236			1447				1438
Flt Permitted	0.99				0.98			0.96				0.99
Satd. Flow (perm)	1215				1210			1390				1423
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)	8	263	28	21	348	30	12	111	7	18	386	42
RTOR Reduction (vph)	0	5	0	0	4	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	294	0	0	395	0	0	127	0	0	442	0
Confl. Peds. (#/hr)	272		319	319		272	51		72	72		51
Confl. Bikes (#/hr)			3			3			1			1
Bus Blockages (#/hr)	0	12	3	0	11	0	0	0	0	0	0	0
Parking (#/hr)	3		3		3			3				3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm		NA
Protected Phases	6				2			4				8
Permitted Phases	6			2			4			8		
Actuated Green, G (s)	36.0				36.0			33.9				33.9
Effective Green, g (s)	37.0				37.0			35.0				35.0
Actuated g/C Ratio	0.46				0.46			0.44				0.44
Clearance Time (s)	5.0				5.0			5.1				5.1
Lane Grp Cap (vph)	561				559			608				622
v/s Ratio Prot												
v/s Ratio Perm	0.24				c0.33			0.09				c0.31
v/c Ratio	0.52				0.71			0.21				0.71
Uniform Delay, d1	15.3				17.2			13.9				18.4
Progression Factor	0.28				0.54			0.66				0.94
Incremental Delay, d2	3.1				6.3			0.8				5.1
Delay (s)	7.4				15.5			10.0				22.4
Level of Service	A				B			A				C
Approach Delay (s)	7.4				15.5			10.0				22.4
Approach LOS	A				B			A				C
<b>Intersection Summary</b>												
HCM 2000 Control Delay	15.5		HCM 2000 Level of Service		B							
HCM 2000 Volume to Capacity ratio	0.71											
Actuated Cycle Length (s)	80.0		Sum of lost time (s)		8.0							
Intersection Capacity Utilization	66.1%		ICU Level of Service		C							
Analysis Period (min)	10											
c Critical Lane Group												

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Wells + Associates

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Queues  
5: Washington St & King St

Total Future PM w/ Development 2022

Lane Group	EBT	EBR	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	151	36	218	42	1029	2136
v/c Ratio	0.32	0.12	0.47	0.13	0.62	1.02
Control Delay	32.9	18.6	36.3	9.6	9.3	43.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	20.3
Total Delay	32.9	18.6	36.3	9.6	9.3	63.9
Queue Length 50th (ft)	88	10	134	0	100	-750
Queue Length 95th (ft)	147	36	211	26	142	#861
Internal Link Dist (ft)	237		569		335	130
Turn Bay Length (ft)			100			
Base Capacity (vph)	468	289	466	315	1655	2093
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	154
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.12	0.47	0.13	0.62	1.10
<b>Intersection Summary</b>						
- Volume exceeds capacity, queue is theoretically infinite.						
- Queue shown is maximum after two cycles.						
# 95th percentile volume exceeds capacity, queue may be longer.						
- Queue shown is maximum after two cycles.						

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Wells + Associates

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HCM Signalized Intersection Capacity Analysis  
5: Washington St & King St

Total Future PM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↑		↑	↑		↑	↑		↑	↑
Traffic Volume (vph)	0	139	33	0	201	39	0	890	57	0	1858	107
Future Volume (vph)	0	139	33	0	201	39	0	890	57	0	1858	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	9	8	12	9	9	10	10	10	8	10	10
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		0.95			0.78	
Fripb, ped/bikes		1.00	0.69		1.00	0.69		0.98			0.99	
Fipb, ped/bikes		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		1.00	0.85		0.99			0.99	
Flt Protected		1.00	1.00		1.00	1.00		1.00			1.00	
Satd. Flow (prot)		1442	854		1436	882		2721			3441	
Flt Permitted		1.00	1.00		1.00	1.00		1.00			1.00	
Satd. Flow (perm)		1442	854		1436	882		2721			3441	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	151	36	0	218	42	0	967	62	0	2020	116
RTOR Reduction (vph)	0	0	12	0	0	28	0	0	0	0	0	0
Lane Group Flow (vph)	0	151	24	0	218	14	0	1029	0	0	2136	0
Confl. Peds. (#/hr)	291		275	275		291	76		117	117		76
Confl. Bikes (#/hr)	0	11	0	0	12	0	0	0	1	0	0	2
Bus Blockages (#/hr)	0	11	0	0	12	0	0	0	0	0	0	2
Parking (#/hr)									3			3
Turn Type	NA	Perm		NA	Perm		NA		NA		NA	
Protected Phases	2			2			1				1	
Permitted Phases		2			2							
Actuated Green, G (s)	37.1	37.1		37.1	37.1		72.0				72.0	
Effective Green, g (s)	39.0	39.0		39.0	39.0		73.0				73.0	
Actuated g/C Ratio	0.32	0.32		0.32	0.32		0.61				0.61	
Clearance Time (s)	5.9	5.9		5.9	5.9		5.0				5.0	
Lane Grp Cap (vph)	468	277		466	286		1655				2093	
v/s Ratio Prot		0.10			0.15		0.38				0.62	
v/s Ratio Perm			0.03			0.02						
v/c Ratio		0.32	0.09		0.47	0.05		0.62			1.02	
Uniform Delay, d1		30.5	28.1		32.2	27.8		14.8			23.5	
Progression Factor		1.00	1.00		1.00	1.00		0.51			1.00	
Incremental Delay, d2		1.8	0.6		3.3	0.3		1.5			19.6	
Delay (s)		32.4	28.7		35.6	28.1		9.1			43.1	
Level of Service		C	C		D	C		A			D	
Approach Delay (s)		31.7			34.4			9.1			43.1	
Approach LOS		C			C			A			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		32.2										C
HCM 2000 Volume to Capacity ratio		0.83										
Actuated Cycle Length (s)		120.0				Sum of lost time (s)		8.0				
Intersection Capacity Utilization		76.1%				ICU Level of Service		D				
Analysis Period (min)		10										
c Critical Lane Group												

Queues

6: Henry St & Prince St

Total Future PM w/ Development 2022

Lane Group	EBT	SBT
Lane Group Flow (vph)	1248	1549
v/c Ratio	1.09	0.91
Control Delay	65.4	6.0
Queue Delay	0.0	4.1
Total Delay	65.4	10.2
Queue Length 50th (ft)	-375	38
Queue Length 95th (ft)	#504	m33
Internal Link Dist (ft)	636	338
Turn Bay Length (ft)		
Base Capacity (vph)	1142	1711
Starvation Cap Reductn	0	2
Spillback Cap Reductn	0	122
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.09	0.97
<b>Intersection Summary</b>		
m Volume exceeds capacity, queue is theoretically infinite.		
Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

HCM Signalized Intersection Capacity Analysis  
6: Henry St & Prince St

Total Future PM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↑								↑	↑
Traffic Volume (vph)	0	712	436	0	0	0	0	0	0	0	33	1392
Future Volume (vph)	0	712	436	0	0	0	0	0	0	0	33	1392
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	10	12
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.78	
Fripb, ped/bikes		0.98									1.00	
Fipb, ped/bikes		1.00									1.00	
Frt		0.94									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		2749									3482	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		2749									3482	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	774	474	0	0	0	0	0	0	0	36	1513
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	0	14
Lane Group Flow (vph)	0	1240	0	0	0	0	0	0	0	0	0	1535
Confl. Peds. (#/hr)	37		31	31		37	19		8	8		19
Confl. Bikes (#/hr)			11			2						1
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Parking (#/hr)		6										3
Turn Type	NA									Perm		NA
Protected Phases	2											1
Permitted Phases										1		
Actuated Green, G (s)	32.0											38.0
Effective Green, g (s)	33.0											39.0
Actuated g/C Ratio	0.41											0.49
Clearance Time (s)	5.0											5.0
Lane Grp Cap (vph)	1133											1697
v/s Ratio Prot		0.45										0.44
v/s Ratio Perm												0.90
v/c Ratio		1.09										18.8
Uniform Delay, d1		23.5										0.21
Progression Factor		1.00										0.9
Incremental Delay, d2		41.0										4.8
Delay (s)		64.5										4.8
Level of Service		E										A
Approach Delay (s)		64.5				0.0		0.0				4.8
Approach LOS		E				A		A				A
<b>Intersection Summary</b>												
HCM 2000 Control Delay		31.5										C
HCM 2000 Volume to Capacity ratio		0.99										
Actuated Cycle Length (s)		80.0				Sum of lost time (s)		8.0				
Intersection Capacity Utilization		78.0%				ICU Level of Service		D				
Analysis Period (min)		10										
c Critical Lane Group												

Queues

7: Alfred St & Prince St

Total Future PM w/ Development 2022

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	496	116	433
v/c Ratio	0.51	0.18	0.67
Control Delay	5.0	12.2	26.7
Queue Delay	0.2	0.0	0.1
Total Delay	5.2	12.2	26.8
Queue Length 50th (ft)	33	26	140
Queue Length 95th (ft)	42	m51	234
Internal Link Dist (ft)	244	348	340
Turn Bay Length (ft)			
Base Capacity (vph)	1364	661	647
Starvation Cap Reductn	139	0	9
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.57	0.18	0.68
<b>Intersection Summary</b>			
m Volume for 95th percentile queue is metered by upstream signal.			

HCM Signalized Intersection Capacity Analysis

7: Alfred St & Prince St

Total Future PM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		←	←	←	←	←	←	←	←	←	←	←
Traffic Volume (vph)	35	566	40	0	0	0	0	96	11	33	365	0
Future Volume (vph)	35	566	40	0	0	0	0	96	11	33	365	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	12	12	12	12	12	12
Total Lost time (s)	4.0							4.0				4.0
Lane Util. Factor	1.00	0.95						1.00				1.00
Fripb, ped/bikes	1.00							1.00				1.00
Fripb, ped/bikes	1.00							1.00				1.00
Frt	0.99							0.99				1.00
Flt Protected	1.00							1.00				1.00
Satd. Flow (prot)	3019							1458				1475
Flt Permitted	1.00							1.00				0.97
Satd. Flow (perm)	3019							1458				1439
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)	38	615	43	0	0	0	0	104	12	36	397	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	690	0	0	0	0	0	111	0	0	433	0
Confl. Peds. (#/hr)	43		42	42		43	30		34	34		30
Confl. Bikes (#/hr)			7						2			2
Parking (#/hr)		6						3				3
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		35.0						35.0			35.0	
Effective Green, g (s)		36.0						36.0			36.0	
Actuated g/C Ratio		0.45						0.45			0.45	
Clearance Time (s)		5.0						5.0			5.0	
Lane Grp Cap (vph)		1358						656			647	
v/s Ratio Prot								0.08				
v/s Ratio Perm		0.23									c0.30	
v/c Ratio		0.51						0.17			0.67	
Uniform Delay, d1		15.7						13.1			17.3	
Progression Factor		0.24						0.94			1.26	
Incremental Delay, d2		1.3						0.5			3.8	
Delay (s)		5.0						12.8			25.6	
Level of Service		A						B			C	
Approach Delay (s)		5.0			0.0			12.8			25.6	
Approach LOS		A			A			B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		12.9										B
HCM 2000 Volume to Capacity ratio		0.59										
Actuated Cycle Length (s)		80.0						8.0				
Intersection Capacity Utilization		60.2%						ICU Level of Service				B
Analysis Period (min)		10										
c Critical Lane Group												

Queues

8: Henry St & Duke St

Total Future PM w/ Development 2022

Lane Group	EBT	EBR	WBL	WBT	SBT
Lane Group Flow (vph)	326	625	210	652	1858
v/c Ratio	0.82	0.99	0.73	0.53	1.06
Control Delay	46.5	60.3	18.9	13.4	35.2
Queue Delay	0.0	0.0	0.0	0.7	0.0
Total Delay	46.5	60.3	18.9	14.1	35.2
Queue Length 50th (ft)	155	156	46	89	432
Queue Length 95th (ft)	#289	#261	m50	m96	m#480
Internal Link Dist (ft)	72			232	350
Turn Bay Length (ft)		125			
Base Capacity (vph)	398	631	287	1221	1760
Starvation Cap Reductn	0	0	0	269	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.82	0.99	0.73	0.68	1.06
<b>Intersection Summary</b>					
- Volume exceeds capacity, queue is theoretically infinite.					
- Queue shown is maximum after two cycles.					
# 95th percentile volume exceeds capacity, queue may be longer.					
- Queue shown is maximum after two cycles.					
m Volume for 95th percentile queue is metered by upstream signal.					

HCM Signalized Intersection Capacity Analysis

8: Henry St & Duke St

Total Future PM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		←	←	←	←	←	←	←	←	←	←	←
Traffic Volume (vph)	0	300	575	193	400	0	0	0	0	0	1647	63
Future Volume (vph)	0	300	575	193	400	0	0	0	0	0	1647	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	10	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0						4.0	
Lane Util. Factor	1.00	1.00	1.00	0.95							0.78	
Fripb, ped/bikes	1.00	1.00	1.00	1.00							1.00	
Fripb, ped/bikes	1.00	1.00	1.00	1.00							1.00	
Frt	1.00	0.85	1.00	1.00							0.99	
Flt Protected	1.00	1.00	0.95	1.00							1.00	
Satd. Flow (prot)	1676	2660	1484	2961							3600	
Flt Permitted	1.00	1.00	0.23	1.00							1.00	
Satd. Flow (perm)	1676	2660	357	2961							3600	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	326	625	210	652	0	0	0	0	0	1790	68
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	326	625	210	652	0	0	0	0	0	1854	0
Confl. Peds. (#/hr)	20		15	15		20	18		21	21		18
Confl. Bikes (#/hr)			2		4							
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)												1
Turn Type	NA	Prot	pm+pt	NA							NA	
Protected Phases	8	8	7	4							2	
Permitted Phases			4									
Actuated Green, G (s)	17.7	17.7	31.7	31.7							37.9	
Effective Green, g (s)	19.0	19.0	32.7	33.0							39.0	
Actuated g/C Ratio	0.24	0.24	0.41	0.41							0.49	
Clearance Time (s)	5.3	5.3	5.0	5.3							5.1	
Lane Grp Cap (vph)	398	631	286	1221							1755	
v/s Ratio Prot	0.19	c0.23	c0.09	0.22							c0.51	
v/s Ratio Perm			0.21									
v/c Ratio	0.82	0.99	0.73	0.53							1.06	
Uniform Delay, d1	28.9	30.4	17.8	17.7							20.5	
Progression Factor	1.00	1.00	0.77	0.72							0.51	
Incremental Delay, d2	15.8	27.7	5.8	0.6							21.7	
Delay (s)	44.7	58.1	19.5	13.3							32.1	
Level of Service	D	E	B	B							C	
Approach Delay (s)	53.5			14.8				0.0			32.1	
Approach LOS	D			B				A			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		33.6										C
HCM 2000 Volume to Capacity ratio		0.99										
Actuated Cycle Length (s)		80.0						12.0				
Intersection Capacity Utilization		82.7%						ICU Level of Service				E
Analysis Period (min)		10										
c Critical Lane Group												

Queues

9: Patrick St & Duke St

Total Future PM w/ Development 2022

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	337	682	1758
v/c Ratio	0.35	0.90	1.02
Control Delay	20.5	25.5	49.5
Queue Delay	1.1	0.0	0.0
Total Delay	21.6	25.5	49.5
Queue Length 50th (ft)	98	142	356
Queue Length 95th (ft)	m140	m#507	#467
Internal Link Dist (ft)	232	245	181
Turn Bay Length (ft)			
Base Capacity (vph)	968	757	1732
Starvation Cap Reductn	402	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.60	0.90	1.02
<b>Intersection Summary</b>			
- Volume exceeds capacity, queue is theoretically infinite.			
- Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
- Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

HCM Signalized Intersection Capacity Analysis  
9: Patrick St & Duke St

Total Future PM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	4	306	0	0	606	21	235	1309	74	0	0	0
Future Volume (vph)	4	306	0	0	606	21	235	1309	74	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Fripb, ped/bikes		1.00			1.00			1.00				
Fipb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			1.00			0.99				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		1899			1475			4456				
Flt Permitted		0.99			1.00			0.99				
Satd. Flow (perm)		1889			1475			4456				
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)	4	333	0	0	659	23	255	1423	80	0	0	0
RTOR Reduction (vph)	0	0	0	0	1	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	337	0	0	681	0	0	1752	0	0	0	0
Confl. Peds. (#/hr)	14		15	15		14	8		5	5		8
Confl. Bikes (#/hr)			2			3						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Parking (#/hr)												
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		2			2			1				
Permitted Phases	2							1				
Actuated Green, G (s)		39.8			39.8			30.0				
Effective Green, g (s)		41.0			41.0			31.0				
Actuated g/C Ratio		0.51			0.51			0.39				
Clearance Time (s)		5.2			5.2			5.0				
Lane Grp Cap (vph)		968			755			1726				
v/s Ratio Prot					c0.46							
v/s Ratio Perm		0.18						0.39				
v/c Ratio		0.35			0.90			1.01				
Uniform Delay, d1		11.6			17.7			24.5				
Progression Factor		1.68			0.63			1.30				
Incremental Delay, d2		0.6			12.1			17.6				
Delay (s)		20.0			23.3			49.4				
Level of Service		B			C			D				
Approach Delay (s)		20.0			23.3			49.4				0.0
Approach LOS		B			C			D				A
<b>Intersection Summary</b>												
HCM 2000 Control Delay		39.4										D
HCM 2000 Volume to Capacity ratio		0.95										
Actuated Cycle Length (s)		80.0				Sum of lost time (s)		8.0				
Intersection Capacity Utilization		81.0%				ICU Level of Service		D				
Analysis Period (min)		10										
c Critical Lane Group												

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Queues  
10: Alfred St & Duke St

Total Future PM w/ Development 2022

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	375	557	109	402
v/c Ratio	0.48	0.65	0.30	0.83
Control Delay	7.5	10.2	20.1	31.9
Queue Delay	0.2	0.5	0.2	4.2
Total Delay	7.7	10.7	20.2	36.1
Queue Length 50th (ft)	35	97	35	97
Queue Length 95th (ft)	m45	m137	76	#314
Internal Link Dist (ft)	245	227	199	348
Turn Bay Length (ft)				
Base Capacity (vph)	788	863	364	487
Starvation Cap Reductn	83	72	0	0
Spillback Cap Reductn	13	39	33	44
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.53	0.70	0.33	0.91
<b>Intersection Summary</b>				
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.				
m Volume for 95th percentile queue is metered by upstream signal.				

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HCM Signalized Intersection Capacity Analysis  
10: Alfred St & Duke St

Total Future PM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	35	282	28	8	486	18	45	43	12	11	283	75
Future Volume (vph)	35	282	28	8	486	18	45	43	12	11	283	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	14	12	12	11	12	12	11	12
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Fripb, ped/bikes		0.99			1.00			0.99			0.98	
Fipb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.99			1.00			0.98			0.97	
Flt Protected		0.99			1.00			0.98			1.00	
Satd. Flow (prot)		1545			1575			1374			1370	
Flt Permitted		0.92			0.99			0.73			0.99	
Satd. Flow (perm)		1427			1566			1025			1361	
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)	38	307	30	9	528	20	49	47	13	12	308	82
RTOR Reduction (vph)	0	4	0	0	2	0	0	6	0	0	12	0
Lane Group Flow (vph)	0	371	0	0	555	0	0	103	0	0	390	0
Confl. Peds. (#/hr)	15		32	32		15	27		14	14		27
Confl. Bikes (#/hr)			1			3						1
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)		3			1			1				3
Turn Type	Perm	NA			Perm	NA		Perm	NA		Perm	NA
Protected Phases		2			2			1			1	
Permitted Phases	2							1			1	
Actuated Green, G (s)		43.0			43.0			27.0			27.0	
Effective Green, g (s)		44.0			44.0			28.0			28.0	
Actuated g/C Ratio		0.55			0.55			0.35			0.35	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		784			861			358			476	
v/s Ratio Prot					c0.35			0.10			c0.29	
v/s Ratio Perm		0.26						0.29			0.82	
v/c Ratio		0.47			0.64			0.29			0.82	
Uniform Delay, d1		10.9			12.6			18.8			23.7	
Progression Factor		0.52			0.57			1.00			0.84	
Incremental Delay, d2		1.8			2.8			2.0			10.8	
Delay (s)		7.5			9.9			20.8			30.7	
Level of Service		A			A			C			C	
Approach Delay (s)		7.5			9.9			20.8			30.7	
Approach LOS		A			A			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		15.9										B
HCM 2000 Volume to Capacity ratio		0.71										
Actuated Cycle Length (s)		80.0				Sum of lost time (s)		8.0				
Intersection Capacity Utilization		79.9%				ICU Level of Service		D				
Analysis Period (min)		10										
c Critical Lane Group												

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Queues  
11: Columbus St & Duke St

Total Future PM w/ Development 2022

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	350	398	180	606
v/c Ratio	0.59	0.66	0.38	0.86
Control Delay	20.5	24.9	15.8	31.0
Queue Delay	0.3	4.0	0.0	0.0
Total Delay	20.9	28.9	15.8	31.0
Queue Length 50th (ft)	84	154	54	182
Queue Length 95th (ft)	m97	253	103	m#406
Internal Link Dist (ft)	227	231	390	358
Turn Bay Length (ft)				
Base Capacity (vph)	594	607	477	702
Starvation Cap Reductn	38	137	0	0
Spillback Cap Reductn	0	3	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.63	0.85	0.38	0.86
<b>Intersection Summary</b>				
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.				
m Volume for 95th percentile queue is metered by upstream signal.				

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HCM Signalized Intersection Capacity Analysis  
11: Columbus St & Duke St

Total Future PM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔	↔		↔	↔		↔	↔		↔
Traffic Volume (vph)	12	285	25	9	353	24	71	94	1	8	443	106
Future Volume (vph)	12	285	25	9	333	24	71	94	1	8	443	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0		4.0		4.0		4.0	
Lane Util. Factor	1.00		1.00		1.00		1.00		1.00		1.00	
Frbp, ped/bikes	0.99		1.00		1.00		1.00		0.99		0.99	
Flpb, ped/bikes	1.00		1.00		0.99		1.00		1.00		1.00	
Fit	0.99		0.99		1.00		0.97		1.00		0.97	
Fit Protected	1.00		1.00		0.98		1.00		1.00		1.00	
Satd. Flow (prot)	1456		1478		1442		1424		1424		1424	
Fit Permitted	0.98		0.99		0.66		1.00		1.00		1.00	
Satd. Flow (perm)	1432		1465		979		1420		1420		1420	
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)	13	310	27	10	362	26	77	102	1	9	482	115
RTOR Reduction (vph)	0	4	0	0	3	0	0	0	0	0	11	0
Lane Group Flow (vph)	0	346	0	0	395	0	0	180	0	0	595	0
Confl. Peds. (#/hr)	21	27	27	21	26	2	12	12	26	12	26	26
Confl. Bikes (#/hr)	3		5		1		2		3		3	
Parking (#/hr)	3		1		3		3		3		3	
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	6		2		4		8		8		8	
Permitted Phases	6		2		4		8		8		8	
Actuated Green, G (s)	32.0		32.0		38.0		38.0		38.0		38.0	
Effective Green, g (s)	33.0		33.0		39.0		39.0		39.0		39.0	
Actuated g/C Ratio	0.41		0.41		0.49		0.49		0.49		0.49	
Clearance Time (s)	5.0		5.0		5.0		5.0		5.0		5.0	
Lane Grp Cap (vph)	590		604		477		692		692		692	
v/s Ratio Prot	0.24		c0.27		0.18		c0.42		0.18		c0.42	
v/s Ratio Perm	0.59		0.65		0.38		0.86		0.38		0.86	
v/c Ratio	18.2		18.9		12.9		18.1		12.9		18.1	
Uniform Delay, d1	0.90		1.00		1.00		1.11		1.00		1.11	
Progression Factor	3.8		5.4		2.3		9.7		2.3		9.7	
Incremental Delay, d2	20.1		24.3		15.1		29.8		15.1		29.8	
Delay (s)	C		C		B		C		B		C	
Level of Service	C		C		B		C		B		C	
Approach Delay (s)	20.1		24.3		15.1		29.8		15.1		29.8	
Approach LOS	C		C		B		C		B		C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	24.4		HCM 2000 Level of Service		C		C		C		C	
HCM 2000 Volume to Capacity ratio	0.77		0.77		0.77		0.77		0.77		0.77	
Actuated Cycle Length (s)	80.0		Sum of lost time (s)		8.0		8.0		8.0		8.0	
Intersection Capacity Utilization	85.8%		ICU Level of Service		E		E		E		E	
Analysis Period (min)	10		10		10		10		10		10	

Alfred Street Baptist Church  
Wells + Associates

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Queues  
12: Washington St & Duke St

Total Future PM w/ Development 2022

Lane Group	EBT	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	317	309	832	30	2022
v/c Ratio	0.87	0.60	0.57	0.04	1.02
Control Delay	56.6	35.7	18.7	4.8	18.7
Queue Delay	19.3	0.0	0.0	0.0	1.1
Total Delay	75.9	35.7	18.7	4.8	19.9
Queue Length 50th (ft)	219	187	207	1	-50
Queue Length 95th (ft)	#393	286	268	15	m#717
Internal Link Dist (ft)	231	575	344	349	
Turn Bay Length (ft)	115				
Base Capacity (vph)	365	516	1451	680	1977
Starvation Cap Reductn	56	0	0	0	10
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.03	0.60	0.57	0.04	1.03
<b>Intersection Summary</b>					
Volume exceeds capacity, queue is theoretically infinite.					
Queue shown is maximum after two cycles.					
# 95th percentile volume exceeds capacity, queue may be longer.					
Queue shown is maximum after two cycles.					
m Volume for 95th percentile queue is metered by upstream signal.					

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HCM Signalized Intersection Capacity Analysis  
12: Washington St & Duke St

Total Future PM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔	↔		↔	↔		↔	↔		↔
Traffic Volume (veh/h)	108	131	53	29	210	45	2	764	28	2	1670	189
Future Volume (veh/h)	108	131	53	29	210	45	2	764	28	2	1670	189
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	11	9	9	9	11	9
Total Lost time (s)	4.0		4.0		4.0		4.0		4.0		4.0	
Lane Util. Factor	1.00		1.00		0.95		1.00		0.78		0.78	
Frbp, ped/bikes	1.00		0.99		1.00		0.92		0.99		0.99	
Flpb, ped/bikes	0.99		1.00		1.00		1.00		1.00		1.00	
Fit	0.98		0.98		1.00		0.85		0.98		0.98	
Fit Protected	0.98		0.99		1.00		1.00		1.00		1.00	
Satd. Flow (prot)	1441		1469		2702		1181		3693		3693	
Fit Permitted	0.67		0.94		0.95		1.00		0.94		0.94	
Satd. Flow (perm)	978		1392		2561		1181		3470		3470	
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)	117	142	58	32	228	49	2	830	30	2	1815	205
RTOR Reduction (vph)	0	7	0	0	6	0	0	0	12	0	10	0
Lane Group Flow (vph)	0	310	0	0	303	0	0	832	18	0	2012	0
Confl. Peds. (#/hr)	24	2	8	8	24	30	1	20	20	30	20	30
Confl. Bikes (#/hr)	0	2	2	2	1	0	0	0	0	0	0	0
Bus Blockages (#/hr)	3	3	3	3	3	3	3	3	3	3	3	3
Parking (#/hr)	3		3		3		3		3		3	
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	4		8		2		2		6		6	
Permitted Phases	4		8		2		2		6		6	
Actuated Green, G (s)	42.5		42.5		67.0		67.0		67.0		67.0	
Effective Green, g (s)	44.0		44.0		68.0		68.0		68.0		68.0	
Actuated g/C Ratio	0.37		0.37		0.57		0.57		0.57		0.57	
Clearance Time (s)	5.5		5.5		5.0		5.0		5.0		5.0	
Lane Grp Cap (vph)	358		510		1451		669		1966		1966	
v/s Ratio Prot	c0.32		0.22		0.32		0.02		c0.58		c0.58	
v/s Ratio Perm	0.87		0.59		0.57		0.03		1.02		1.02	
v/c Ratio	35.3		30.8		16.7		11.4		26.0		26.0	
Uniform Delay, d1	1.00		1.00		1.00		1.00		0.09		0.09	
Progression Factor	21.3		5.0		1.6		0.1		13.5		13.5	
Incremental Delay, d2	56.5		35.8		18.3		11.5		15.9		15.9	
Delay (s)	E		D		B		B		B		B	
Level of Service	E		D		B		B		B		B	
Approach Delay (s)	56.5		35.8		18.1		15.9		15.9		15.9	
Approach LOS	E		D		B		B		B		B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	21.8		HCM 2000 Level of Service		C		C		C		C	
HCM 2000 Volume to Capacity ratio	0.96		0.96		0.96		0.96		0.96		0.96	
Actuated Cycle Length (s)	120.0		Sum of lost time (s)		8.0		8.0		8.0		8.0	
Intersection Capacity Utilization	92.3%		ICU Level of Service		F		F		F		F	
Analysis Period (min)	10		10		10		10		10		10	

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HCM Unsignalized Intersection Capacity Analysis  
13: Patrick St & Henry to Patrick Connector

Total Future PM w/ Development 2022

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	59	0	0	1564	0	0
Future Volume (veh/h)	59	0	0	1564	0	0
Sign Control	Yield	Free	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	64	0	0	1700	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None None					
Median storage (veh)	414 441					
Upstream signal (ft)						
pX, platoon unblocked	0.79					
vC, conflicting volume	567 0 0					
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0 0 0					
IC, single (s)	6.8 6.9 4.1					
IC, 2 stage (s)						
IF (s)	3.5 3.3 2.2					
p0 queue free %	92 100 100					
cM capacity (veh/h)	804 1084 1622					
<b>Direction, Lane #</b>						
Volume Total	EB 1	NB 1	NB 2	NB 3		
Volume Left	64	0	0	0		
Volume Right	0	0	0	0		
cSH	804	1700	1700	1700		
Volume to Capacity	0.08	0.33	0.33	0.33		
Queue Length 95th (ft)	6	0	0	0		
Control Delay (s)	9.9	0.0	0.0	0.0		
Lane LOS	A					
Approach Delay (s)	9.9	0.0				



HCM Unsignalized Intersection Capacity Analysis  
14: Alfred St & Wolfe Street/Wolfe St

Total Future PM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		Stop			Stop			Stop			Stop	
Traffic Control	14	4	6	96	25	38	9	34	5	38	224	30
Future Volume (vph)	14	4	6	96	25	38	9	34	5	38	224	30
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	4	7	104	27	41	10	37	5	41	243	33
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	26	172	52	317								
Volume Left (vph)	15	104	10	41								
Volume Right (vph)	7	41	5	33								
Hadj (s)	-0.01	0.01	0.01	0.00								
Departure Headway (s)	5.0	4.8	4.8	4.5								
Degree Utilization, x	0.04	0.23	0.07	0.39								
Capacity (veh/h)	649	694	702	772								
Control Delay (s)	8.2	9.3	8.2	10.3								
Approach Delay (s)	8.2	9.3	8.2	10.3								
Approach LOS	A	A	A	B								
<b>Intersection Summary</b>												
Delay	9.7											
Level of Service	A											
Intersection Capacity Utilization	40.3%											
ICU Level of Service	A											
Analysis Period (min)	10											

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HCM 2010 AWSC  
14: Alfred St & Wolfe Street/Wolfe St

Total Future PM w/ Development 2022

<b>Intersection</b>												
Intersection Delay, s/veh	9.7											
Intersection LOS	A											
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	14	4	6	0	96	25	38	0	9	34	5
Future Vol, veh/h	0	14	4	6	0	96	25	38	0	9	34	5
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	0	15	4	7	0	104	27	41	0	10	37	5
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach	EB				WB				NB			
Opposing Approach	WB				EB				SB			
Opposing Lanes	1				1				1			
Conflicting Approach Left	SB				NB				EB			
Conflicting Lanes Left	1				1				1			
Conflicting Approach Right	NB				SB				WB			
Conflicting Lanes Right	1				1				1			
HCM Control Delay	8.2				9.3				8.2			
HCM LOS	A				A				A			
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	19%	58%	60%	13%								
Vol Thru, %	71%	17%	16%	77%								
Vol Right, %	10%	25%	24%	10%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	48	24	159	292								
LT Vol	9	14	96	38								
Through Vol	34	4	25	224								
RT Vol	5	6	38	30								
Lane Flow Rate	52	26	173	317								
Geometry Crp	1	1	1	1								
Degree of Util (X)	0.069	0.036	0.23	0.392								
Departure Headway (Hd)	4.759	4.982	4.798	4.451								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	751	716	747	809								
Service Time	2.8	3.029	2.834	2.48								
HCM Lane V/C Ratio	0.069	0.036	0.232	0.392								
HCM Control Delay	8.2	8.2	9.3	10.3								
HCM Lane LOS	A	A	A	B								
HCM 95th-ile Q	0.2	0.1	0.9	1.9								

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HCM 2010 AWSC  
14: Alfred St & Wolfe Street/Wolfe St

Total Future PM w/ Development 2022

<b>Intersection</b>				
Intersection Delay, s/veh				
Intersection LOS				
Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	38	224	30
Future Vol, veh/h	0	38	224	30
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	41	243	33
Number of Lanes	0	0	1	0
Approach	SB			
Opposing Approach	NB			
Opposing Lanes	1			
Conflicting Approach Left	WB			
Conflicting Lanes Left	1			
Conflicting Approach Right	EB			
Conflicting Lanes Right	1			
HCM Control Delay	10.3			
HCM LOS	B			
Lane				

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Queues  
15: Patrick St & Gibbon St

Total Future PM w/ Development 2022

Lane Group	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	659	802	1699	2696
v/c Ratio	1.36	1.46	0.87	1.08
Control Delay	140.8	29.8	21.0	44.2
Queue Delay	0.1	0.3	0.8	5.4
Total Delay	140.9	30.1	21.9	49.6
Queue Length 50th (ft)	-494	166	259	-245
Queue Length 95th (ft)	m#671	m#292	430	m#40
Internal Link Dist (ft)		273	346	346
Turn Bay Length (ft)				
Base Capacity (vph)	485	925	1954	2490
Starvation Cap Reductn	1	9	0	0
Spillback Cap Reductn	5	5	82	542
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.37	0.88	0.91	1.38
<b>Intersection Summary</b>				
- Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.				
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.				
m Volume for 95th percentile queue is metered by upstream signal.				
dl Defacto Left Lane. Record with 1 though lane as a left lane.				

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HCM Signalized Intersection Capacity Analysis  
15: Patrick St & Gibbon St

Total Future PM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	0	0	0	1213	122	9	19	1544	0	0	2462	18
Future Volume (vph)	0	0	0	1213	122	9	19	1544	0	0	2462	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	12	12	12	12	12	12
Grade (%)			0%			2%			0%			0%
Total Lost time (s)			4.0			4.0			4.0			4.0
Lane Util. Factor			0.91			0.91			0.91			0.91
Frbp, ped/bikes			1.00			1.00			1.00			1.00
Fjpb, ped/bikes			1.00			1.00			1.00			1.00
Frt			1.00			1.00			1.00			1.00
Flt Protected			0.95			0.96			1.00			1.00
Satd. Flow (prot)			1386			2639			4530			4527
Flt Permitted			0.95			0.96			0.78			1.00
Satd. Flow (perm)			1386			2639			3552			4527
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	1318	133	10	21	1678	0	0	2676	20
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	659	801	0	0	1699	0	0	2695	0
Confl. Peds. (#/hr)	17		1	1		17	7		8	8		7
Confl. Bikes (#/hr)			3			1						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)						1						
Turn Type			Perm		NA		Perm		NA			NA
Protected Phases			2		2		1		1			1
Permitted Phases												
Actuated Green, G (s)			26.0		26.0		42.5		42.5			42.5
Effective Green, g (s)			28.0		28.0		44.0		44.0			44.0
Actuated g/C Ratio			0.35		0.35		0.55		0.55			0.55
Clearance Time (s)			6.0		6.0		5.5		5.5			5.5
Vehicle Extension (s)			2.0		2.0		2.0		2.0			2.0
Lane Grp Cap (vph)			485		923		1953		2489			2489
v/s Ratio Prot												c0.60
v/s Ratio Perm			c0.48		0.30		0.48		0.48			0.48
v/c Ratio			1.36		1.46		0.87		0.87			1.08
Uniform Delay, d1			26.0		24.3		15.5		18.0			18.0
Progression Factor			0.90		0.89		1.02		0.91			0.91
Incremental Delay, d2			116.2		5.5		5.0		25.7			25.7
Delay (s)			139.6		27.1		20.8		42.0			42.0
Level of Service			F		C		C		D			D
Approach Delay (s)	0.0				77.8				20.8			42.0
Approach LOS	A				E				C			D
<b>Intersection Summary</b>												
HCM 2000 Control Delay	44.8			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	1.19											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	104.0%			ICU Level of Service			G					

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HCM Signalized Intersection Capacity Analysis  
15: Patrick St & Gibbon St

Total Future PM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	0	0	0	1213	122	9	19	1544	0	0	2462	18
Future Volume (vph)	0	0	0	1213	122	9	19	1544	0	0	2462	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	12	12	12	12	12	12
Grade (%)			0%			2%			0%			0%
Total Lost time (s)			4.0			4.0			4.0			4.0
Lane Util. Factor			0.91			0.91			0.91			0.91
Frbp, ped/bikes			1.00			1.00			1.00			1.00
Fjpb, ped/bikes			1.00			1.00			1.00			1.00
Frt			1.00			1.00			1.00			1.00
Flt Protected			0.95			0.96			1.00			1.00
Satd. Flow (prot)			1386			2639			4530			4527
Flt Permitted			0.95			0.96			0.78			1.00
Satd. Flow (perm)			1386			2639			3552			4527
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	1318	133	10	21	1678	0	0	2676	20
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	659	801	0	0	1699	0	0	2695	0
Confl. Peds. (#/hr)	17		1	1		17	7		8	8		7
Confl. Bikes (#/hr)			3			1						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)						1						
Turn Type			Perm		NA		Perm		NA			NA
Protected Phases			2		2		1		1			1
Permitted Phases												
Actuated Green, G (s)			26.0		26.0		42.5		42.5			42.5
Effective Green, g (s)			28.0		28.0		44.0		44.0			44.0
Actuated g/C Ratio			0.35		0.35		0.55		0.55			0.55
Clearance Time (s)			6.0		6.0		5.5		5.5			5.5
Vehicle Extension (s)			2.0		2.0		2.0		2.0			2.0
Lane Grp Cap (vph)			485		923		1953		2489			2489
v/s Ratio Prot												c0.60
v/s Ratio Perm			c0.48		0.30		0.48		0.48			0.48
v/c Ratio			1.36		1.46		0.87		0.87			1.08
Uniform Delay, d1			26.0		24.3		15.5		18.0			18.0
Progression Factor			0.90		0.89		1.02		0.91			0.91
Incremental Delay, d2			116.2		5.5		5.0		25.7			25.7
Delay (s)			139.6		27.1		20.8		42.0			42.0
Level of Service			F		C		C		D			D
Approach Delay (s)	0.0				77.8				20.8			42.0
Approach LOS	A				E				C			D
<b>Intersection Summary</b>												
HCM 2000 Control Delay	44.8			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	1.19											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	104.0%			ICU Level of Service			G					

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Queues  
16: Alfred St & Gibbon St

Total Future PM w/ Development 2022

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	927	264	352
v/c Ratio	0.73	0.99	0.63
Control Delay	13.3	64.5	15.0
Queue Delay	1.5	10.1	0.4
Total Delay	14.7	74.6	15.4
Queue Length 50th (ft)	80	56	50
Queue Length 95th (ft)	133	#166	#122
Internal Link Dist (ft)	218	136	305
Turn Bay Length (ft)			
Base Capacity (vph)	1275	268	563
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	181	14	33
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.85	1.04	0.66

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

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HCM Signalized Intersection Capacity Analysis  
16: Alfred St & Gibbon St

Total Future PM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	0	0	0	0	851	2	204	39	0	0	50	274
Future Volume (vph)	0	0	0	0	851	2	204	39	0	0	50	274
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	12	12	12	12	12	12	13
Total Lost time (s)					4.0			4.0				4.0
Lane Util. Factor					0.95			1.00				1.00
Frbp, ped/bikes					1.00			1.00				0.97
Fjpb, ped/bikes					1.00			0.99				1.00
Frt					1.00			1.00				0.89
Flt Protected					1.00			0.96				1.00
Satd. Flow (prot)					2832			1613				1493
Flt Permitted					1.00							

Queues

17: Patrick St & Franklin St

Total Future PM w/ Development 2022

Lane Group	EBL	EBT	NBT	NBR	SBT
Lane Group Flow (vph)	23	180	1724	678	3830
v/c Ratio	0.12	0.51	0.46	0.53	1.08
Control Delay	60.8	69.6	4.7	2.0	40.4
Queue Delay	0.0	0.0	0.0	0.0	4.7
Total Delay	60.8	69.6	4.7	2.0	45.1
Queue Length 50th (ft)	22	95	135	0	-1611
Queue Length 95th (ft)	47	125	268	30	m#1487
Internal Link Dist (ft)		261	297		346
Turn Bay Length (ft)					
Base Capacity (vph)	511	980	3759	1269	3533
Starvation Cap Reductn	0	0	0	0	384
Spillback Cap Reductn	0	0	210	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.18	0.49	0.53	1.22

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

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HCM Signalized Intersection Capacity Analysis

17: Patrick St & Franklin St

Total Future PM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	21	78	87	0	0	0	0	1586	624	1	3523	0
Future Volume (vph)	21	78	87	0	0	0	0	1586	624	1	3523	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	11	11	11	12	12	12	12	12	12
Grade (%)		2%			0%			0%			0%	
Total Lost time (s)	4.0	4.0						4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95						0.91	1.00		0.91	
Frbp, ped/bikes	1.00	0.99						1.00	0.99		1.00	
Flpb, ped/bikes	0.98	1.00						1.00	1.00		1.00	
Frt	1.00	0.92						1.00	0.85		1.00	
Flt Protected	0.95	1.00						1.00	1.00		1.00	
Satd. Flow (prot)	1544	2955						4532	1391		4532	
Flt Permitted	0.95	1.00						1.00	1.00		0.94	
Satd. Flow (perm)	1544	2955						4532	1391		4259	
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)	23	85	95	0	0	0	0	1724	678	1	3829	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	116	0	0	0
Lane Group Flow (vph)	23	180	0	0	0	0	0	1724	562	0	3830	0
Confl. Peds. (#/hr)	13						13	1	1	1	1	1
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	3	0	0	0	0	0	0	0	0	0	0
Turn Type	Perm	NA	NA	NA	NA	NA	NA	Perm	Perm	NA	NA	NA
Protected Phases		4						2		2		2
Permitted Phases	4							2	2	2		
Actuated Green, G (s)	17.3	17.3						130.7	130.7		130.7	
Effective Green, g (s)	19.3	19.3						132.7	132.7		132.7	
Actuated g/C Ratio	0.12	0.12						0.83	0.83		0.83	
Clearance Time (s)	6.0	6.0						6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0						0.2	0.2		0.2	
Lane Grp Cap (vph)	186	356						3758	1153		3532	
v/s Ratio Prot		c0.06						0.38				
v/s Ratio Perm	0.01							0.40			c0.90	
v/c Ratio	0.12	0.51						0.46	0.49		1.08	
Uniform Delay, d1	62.8	65.9						3.8	3.9		13.7	
Progression Factor	1.00	1.00						1.00	1.00		0.89	
Incremental Delay, d2	0.3	1.1						0.4	1.5		25.9	
Delay (s)	63.1	67.0						4.2	5.4		38.0	
Level of Service	E	E						A	A		D	
Approach Delay (s)	66.6				0.0			4.5			38.0	
Approach LOS	E				A			A			D	

Intersection Summary

HCM 2000 Control Delay	26.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	135.4%	ICU Level of Service	H
Analysis Period (min)	10		

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HCM Signalized Intersection Capacity Analysis

17: Patrick St & Franklin St

Total Future PM w/ Development 2022

c Critical Lane Group

Volume Total	0	37	434	868	469
Volume Left	0	0	0	0	0
Volume Right	0	37	0	0	35
cSH	1700	865	1622	1700	1700
Volume to Capacity	0.00	0.04	0.00	0.51	0.28
Queue Length 95th (ft)	0	3	0	0	0
Control Delay (s)	0.0	9.3	0.0	0.0	0.0
Lane LOS	A	A			
Approach Delay (s)	0.0	9.3	0.0		
Approach LOS	A	A			

HCM Unsignalized Intersection Capacity Analysis

18: Patrick St & Existing Garage/Proposed Patrick Entrance

Total Future PM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	0	0	0	0	0	34	0	1598	32	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	34	0	1598	32	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	37	0	1737	35	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)								594			261	
Upstream signal (ft)												
pX, platoon unblocked	0.80	0.80		0.80	0.80	0.80			0.80			
vC, conflicting volume	616	1772	0	1754	1754	596	0			1772		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	1079	0	1057	1057	0	0			1079		
IC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
IC, 2 stage (s)												
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	96			100		
cM capacity (veh/h)	781	173	1084	143	178	865	1622			512		

Intersection Summary

Average Delay	0.2		
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	10		

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HCM Unsignalized Intersection Capacity Analysis  
19: Wolfe Street & Proposed Wolfe Entrance

Total Future PM w/ Development 2022

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔	↔	↔	↔
Traffic Volume (veh/h)	0	18	55	6	23	0
Future Volume (Veh/h)	0	18	55	6	23	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	20	60	7	25	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	67				84	64
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vC0, unblocked vol	67				84	64
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				97	100
cM capacity (veh/h)	1535				918	1001
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	20	67	25			
Volume Left	0	0	25			
Volume Right	0	7	0			
CSH	1535	1700	918			
Volume to Capacity	0.00	0.04	0.03			
Queue Length 95th (ft)	0	0	2			
Control Delay (s)	0.0	0.0	9.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.0			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay			2.0			
Intersection Capacity Utilization			13.3%		ICU Level of Service	A
Analysis Period (min)			10			

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HCM Unsignalized Intersection Capacity Analysis  
20: Columbus St & Wolfe St

Total Future PM w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔	↔		↔	↔	↔	↔	↔
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	2	26	33	73	98	27	14	81	6	24	402	34
Future Volume (vph)	2	26	33	73	98	27	14	81	6	24	402	34
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	28	36	79	107	29	15	88	7	26	437	37
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total (vph)	66	215	110	500								
Volume Left (vph)	2	79	15	26								
Volume Right (vph)	36	29	7	37								
Hd (s)	-0.29	0.03	0.02	0.00								
Departure Headway (s)	5.6	5.6	5.5	4.9								
Degree Utilization, x	0.10	0.34	0.17	0.68								
Capacity (veh/h)	553	586	603	714								
Control Delay (s)	9.2	11.4	9.5	17.4								
Approach Delay (s)	9.2	11.4	9.5	17.4								
Approach LOS	A	B	A	C								
<b>Intersection Summary</b>												
Delay			14.4									
Level of Service			B									
Intersection Capacity Utilization			51.4%		ICU Level of Service					A		
Analysis Period (min)			10									

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HCM 2010 AWSC

20: Columbus St & Wolfe St

Total Future PM w/ Development 2022

Intersection												
Intersection Delay, s/veh	14.1											
Intersection LOS	B											
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	2	26	33	0	73	98	27	0	14	81	6
Future Vol, veh/h	0	2	26	33	0	73	98	27	0	14	81	6
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	0	2	28	36	0	79	107	29	0	15	88	7
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach	EB				WB				NB			
Opposing Approach	WB				EB				SB			
Opposing Lanes	1				1				1			
Conflicting Approach Left	SB				NB				EB			
Conflicting Lanes Left	1				1				1			
Conflicting Approach Right	NB				SB				WB			
Conflicting Lanes Right	1				1				1			
HCM Control Delay	9.2				11.4				9.5			
HCM LOS	A				B				A			
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	14%	3%	37%	5%								
Vol Thru, %	80%	43%	49%	87%								
Vol Right, %	6%	54%	14%	7%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	101	61	198	460								
LT Vol	14	2	73	24								
Through Vol	81	26	98	402								
RT Vol	6	33	27	34								
Lane Flow Rate	110	66	215	500								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.166	0.103	0.335	0.666								
Departure Headway (Hd)	5.443	5.585	5.604	4.91								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	661	644	644	740								
Service Time	3.465	3.601	3.615	2.91								
HCM Lane V/C Ratio	0.166	0.102	0.334	0.676								
HCM Control Delay	9.5	9.2	11.4	16.9								
HCM Lane LOS	A	A	B	C								
HCM 95th-ile Q	0.6	0.3	1.5	4.8								

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HCM 2010 AWSC

20: Columbus St & Wolfe St

Total Future PM w/ Development 2022

Intersection				
Intersection Delay, s/veh	14.1			
Intersection LOS	B			
Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	24	402	34
Future Vol, veh/h	0	24	402	34
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	26	437	37
Number of Lanes	0	0	1	0
Approach	SB			
Opposing Approach	NB			
Opposing Lanes	1			
Conflicting Approach Left	WB			
Conflicting Lanes Left	1			
Conflicting Approach Right	EB			
Conflicting Lanes Right	1			
HCM Control Delay	16.9			
HCM LOS	C			
Lane				

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Queues

1: Alfred St & Cameron St

Total Future PM w/ Development 2028

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	743	168	520
v/c Ratio	0.59	0.30	0.73
Control Delay	20.5	8.2	22.8
Queue Delay	0.0	0.0	0.1
Total Delay	20.5	8.2	22.9
Queue Length 50th (ft)	146	26	186
Queue Length 95th (ft)	203	m41	314
Internal Link Dist (ft)	237	338	290
Turn Bay Length (ft)			
Base Capacity (vph)	1261	565	709
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	10
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.59	0.30	0.74

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

1: Alfred St & Cameron St

Total Future PM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←	←	←	←	←	←	←	←
Traffic Volume (vph)	0	0	0	25	646	13	44	110	0	0	361	118
Future Volume (vph)	0	0	0	25	646	13	44	110	0	0	361	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	12	12	12	12	12	12	12
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Frpb, ped/bikes					1.00			1.00			0.99	
Flpb, ped/bikes					1.00			1.00			1.00	
Frt					1.00			1.00			0.97	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3055			1460			1423	
Flt Permitted					1.00			0.78			1.00	
Satd. Flow (perm)					3055			1160			1423	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	27	702	14	48	120	0	0	392	128
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	15	0
Lane Group Flow (vph)	0	0	0	0	741	0	0	168	0	0	505	0
Confl. Peds. (#/hr)	36		35	35		36	31		28	28		31
Confl. Bikes (#/hr)			9			1						1
Parking (#/hr)					6			3				3
Turn Type					Perm	NA		Perm	NA		NA	
Protected Phases					2			1				1
Permitted Phases					2			1				1
Actuated Green, G (s)					32.0			38.0			38.0	
Effective Green, g (s)					33.0			39.0			39.0	
Actuated g/C Ratio					0.41			0.49			0.49	
Clearance Time (s)					5.0			5.0			5.0	
Lane Grp Cap (vph)					1260			565			693	
v/s Ratio Prot											0.35	
v/s Ratio Perm					0.24			0.14				
v/c Ratio					0.59			0.30			0.73	
Uniform Delay, d1					18.2			12.3			16.3	
Progression Factor					1.00			0.54			1.00	
Incremental Delay, d2					2.0			1.3			6.5	
Delay (s)					20.2			8.0			22.8	
Level of Service					C			A			C	
Approach Delay (s)	0.0				20.2			8.0			22.8	
Approach LOS	A				C			A			C	

Intersection Summary

HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	10		
c Critical Lane Group			

Queues

2: Henry St & King St

Total Future PM w/ Development 2028

Lane Group	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	395	108	279	2043
v/c Ratio	0.97	0.46	0.44	1.17
Control Delay	62.1	17.2	18.2	79.1
Queue Delay	0.0	0.0	1.6	0.1
Total Delay	62.1	17.2	19.8	79.2
Queue Length 50th (ft)	-215	47	126	-529
Queue Length 95th (ft)	#386	m50	m149	#643
Internal Link Dist (ft)	548		225	128
Turn Bay Length (ft)		100		
Base Capacity (vph)	409	237	637	1750
Starvation Cap Reductn	0	0	206	0
Spillback Cap Reductn	0	0	0	37
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.97	0.46	0.65	1.19

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.  
 - Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 - Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: Henry St & King St

Total Future PM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←	←	←	←	←	←	←	←
Traffic Volume (vph)	0	302	62	99	257	0	0	0	0	0	46	1801
Future Volume (vph)	0	302	62	99	257	0	0	0	0	0	46	1801
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	10	10	12	12	12	12	12	12	11
Total Lost time (s)		4.0		4.0	4.0						4.0	
Lane Util. Factor		1.00		1.00	1.00						0.78	
Frpb, ped/bikes		0.95		1.00	1.00						1.00	
Flpb, ped/bikes		1.00		0.98	1.00						1.00	
Frt		0.98		1.00	1.00						1.00	
Flt Protected		1.00		0.95	1.00						1.00	
Satd. Flow (prot)		1325		1456	1546						3588	
Flt Permitted		1.00		0.23	1.00						1.00	
Satd. Flow (perm)		1325		360	1546						3588	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	328	67	108	279	0	0	0	0	0	50	1958
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	386	0	108	279	0	0	0	0	0	2041	0
Confl. Peds. (#/hr)	266		291	291		266	65		18	18		65
Confl. Bikes (#/hr)						5						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)		3										3
Turn Type		NA		pm-pt	NA					Split		NA
Protected Phases		6		5	2.6					4		4
Permitted Phases		2.6										
Actuated Green, G (s)		23.2		33.0	33.0						37.0	
Effective Green, g (s)		24.2		34.0	34.0						38.0	
Actuated g/C Ratio		0.30		0.42	0.42						0.48	
Clearance Time (s)		5.0		5.0							5.0	
Vehicle Extension (s)		3.0		3.0							3.0	
Lane Grp Cap (vph)		400		232	657						1704	
v/s Ratio Prot		c0.29		0.03	c0.18						c0.57	
v/s Ratio Perm				0.16								
v/c Ratio		0.96		0.47	0.42						1.20	
Uniform Delay, d1		27.5		16.1	16.1						21.0	
Progression Factor		1.00		0.93	0.99						1.00	
Incremental Delay, d2		31.2		0.7	0.9						65.1	
Delay (s)		58.7		15.7	16.9						86.1	
Level of Service		E		B	B						F	
Approach Delay (s)	58.7			16.6				0.0			86.1	
Approach LOS	E			B				A			F	

Intersection Summary

HCM 2000 Control Delay	72.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	10		

HCM Signalized Intersection Capacity Analysis  
2: Henry St & King St

Total Future PM w/ Development 2028

c Critical Lane Group

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Queues

3: Patrick St & King St

Total Future PM w/ Development 2028



Lane Group	EBL	EBT	WBT	NBT
Lane Group Flow (vph)	62	280	388	1672
v/c Ratio	0.21	0.38	0.84	0.97
Control Delay	8.2	13.8	25.3	19.9
Queue Delay	0.0	2.0	1.1	0.0
Total Delay	8.2	15.8	26.5	19.9
Queue Length 50th (ft)	17	139	44	52
Queue Length 95th (ft)	m17	m141	m#301	#402
Internal Link Dist (ft)		225	238	340
Turn Bay Length (ft)	100			
Base Capacity (vph)	297	735	464	1718
Starvation Cap Reductn	0	312	14	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.21	0.66	0.86	0.97

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

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HCM Signalized Intersection Capacity Analysis  
3: Patrick St & King St

Total Future PM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗		↘	↗	↘	↗	↗	↘	↘	↗	↘
Traffic Volume (vph)	57	250	0	0	307	50	86	1398	54	0	0	0
Future Volume (vph)	57	250	0	0	307	50	86	1398	54	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0			4.0				
Lane Util. Factor	1.00	1.00			1.00			0.91				
Flpb, ped/bikes	1.00	1.00			0.96			1.00				
Flpb, ped/bikes	0.97	1.00			1.00			1.00				
Frt	1.00	1.00			0.98			0.99				
Flt Protected	0.95	1.00			1.00			1.00				
Satd. Flow (prot)	1438	1508			1355			4153				
Flt Permitted	0.32	1.00			1.00			1.00				
Satd. Flow (perm)	483	1508			1355			4153				
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)	62	280	0	0	334	54	93	1520	59	0	0	0
RTOR Reduction (vph)	0	0	0	0	7	0	0	5	0	0	0	0
Lane Group Flow (vph)	62	280	0	0	381	0	0	1667	0	0	0	0
Confl. Peds. (#/hr)	225		351	351		225	58		52	52		58
Confl. Bikes (#/hr)			3	4								
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	9	0	0	8	0	0	0	0	0	0	0
Parking (#/hr)					3			4				
Turn Type	pm+pt	NA			NA		Split	NA				
Protected Phases	2	2.3			3		1	1				
Permitted Phases	2.3				3							
Actuated Green, G (s)	32.4	37.4			25.4			32.0				
Effective Green, g (s)	34.4	38.4			27.0			33.0				
Actuated g/C Ratio	0.43	0.48			0.34			0.41				
Clearance Time (s)	5.0				5.6			5.0				
Lane Grp Cap (vph)	303	723			457			1713				
v/s Ratio Prot	0.02	c0.19			c0.28			c0.40				
v/s Ratio Perm	0.07											
v/c Ratio	0.20	0.39			0.83			0.97				
Uniform Delay, d1	14.3	13.3			24.4			23.1				
Progression Factor	0.69	1.01			0.50			0.29				
Incremental Delay, d2	0.4	0.4			11.0			10.9				
Delay (s)	10.2	13.7			23.2			17.5				
Level of Service	B	B			C			B				
Approach Delay (s)	13.1				23.2			17.5				0.0
Approach LOS	B				C			B				A

Intersection Summary

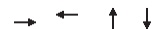
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.6
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	10		
c Critical Lane Group			

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Queues

4: Alfred St & King St

Total Future PM w/ Development 2028



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	309	412	135	461
v/c Ratio	0.55	0.73	0.22	0.74
Control Delay	7.8	17.7	10.1	24.1
Queue Delay	0.2	0.4	0.0	0.1
Total Delay	7.9	18.1	10.1	24.3
Queue Length 50th (ft)	28	67	21	117
Queue Length 95th (ft)	m41	#297	36	#215
Internal Link Dist (ft)	238	237	340	338
Turn Bay Length (ft)	100			
Base Capacity (vph)	566	562	608	627
Starvation Cap Reductn	22	0	0	7
Spillback Cap Reductn	0	19	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.57	0.76	0.22	0.74

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

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HCM Signalized Intersection Capacity Analysis  
4: Alfred St & King St

Total Future PM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	7	250	27	19	330	29	12	106	6	17	366	41
Future Volume (vph)	7	250	27	19	330	29	12	106	6	17	366	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	12	12	12	12	12	12
Total Lost time (s)	4.0			4.0			4.0			4.0		
Lane Util. Factor	1.00			1.00			1.00			1.00		
Fripb, ped/bikes	0.95			0.96			0.99			0.99		
Fipb, ped/bikes	0.99			0.99			1.00			1.00		
Frt	0.99			0.99			0.99			0.99		
Flt Protected	1.00			1.00			1.00			1.00		
Satd. Flow (prot)	1227			1235			1448			1437		
Flt Permitted	0.99			0.98			0.95			0.99		
Satd. Flow (perm)	1215			1209			1385			1423		
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)	8	272	29	21	359	32	13	115	7	18	398	45
RTOR Reduction (vph)	0	5	0	0	4	0	0	2	0	0	5	0
Lane Group Flow (vph)	0	304	0	0	408	0	0	133	0	0	456	0
Confl. Peds. (#/hr)	272		319	319		272	51		72	72		51
Confl. Bikes (#/hr)	0	12	3	0	11	3	0	0	1	0	0	1
Bus Blockages (#/hr)	0	12	3	0	11	3	0	0	0	0	0	1
Parking (#/hr)	3			3			3		3			3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	6	6		2	2		4	4		8	8	
Permitted Phases	6	6		2	2		4	4		8	8	
Actuated Green, G (s)	36.0			36.0			33.9			33.9		
Effective Green, g (s)	37.0			37.0			35.0			35.0		
Actuated g/C Ratio	0.46			0.46			0.44			0.44		
Clearance Time (s)	5.0			5.0			5.1			5.1		
Lane Grp Cap (vph)	561			559			605			622		
v/s Ratio Prot		0.25			0.34			0.10			0.32	
v/s Ratio Perm		0.54			0.73			0.22			0.73	
Uniform Delay, d1	15.4			17.5			14.0			18.6		
Progression Factor	0.28			0.55			0.67			0.96		
Incremental Delay, d2	3.3			7.0			0.8			5.5		
Delay (s)	7.7			16.7			10.1			23.4		
Level of Service	A			B			B			C		
Approach Delay (s)	7.7			16.7			10.1			23.4		
Approach LOS	A			B			B			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	16.2		HCM 2000 Level of Service				B					
HCM 2000 Volume to Capacity ratio	0.73											
Actuated Cycle Length (s)	80.0		Sum of lost time (s)				8.0					
Intersection Capacity Utilization	67.5%		ICU Level of Service				C					
Analysis Period (min)	10											
c Critical Lane Group												

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Wells + Associates

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Queues

5: Washington St & King St

Total Future PM w/ Development 2028

Lane Group	EBT	EBR	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	155	37	225	43	1061	2199
v/c Ratio	0.33	0.13	0.48	0.14	0.64	1.06
Control Delay	33.1	18.9	36.7	9.4	9.9	49.9
Queue Delay	1.4	0.0	0.0	0.0	0.0	13.4
Total Delay	34.5	18.9	36.7	9.4	9.9	63.3
Queue Length 50th (ft)	90	10	139	0	107	-793
Queue Length 95th (ft)	150	37	218	27	156	#904
Internal Link Dist (ft)	237		569		335	130
Turn Bay Length (ft)	100					
Base Capacity (vph)	468	289	466	315	1655	2093
Starvation Cap Reductn	173	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	151
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.13	0.48	0.14	0.64	1.13
<b>Intersection Summary</b>						
- Volume exceeds capacity, queue is theoretically infinite.						
Queue shown is maximum after two cycles.						
# 95th percentile volume exceeds capacity, queue may be longer.						
Queue shown is maximum after two cycles.						

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HCM Signalized Intersection Capacity Analysis  
5: Washington St & King St

Total Future PM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	0	143	34	0	207	40	0	917	59	0	1913	110
Future Volume (vph)	0	143	34	0	207	40	0	917	59	0	1913	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	9	8	12	9	9	10	10	10	8	10	10
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0			4.0		
Lane Util. Factor	1.00	1.00		1.00	1.00		0.95			0.78		
Fripb, ped/bikes	1.00	0.69		1.00	0.69		0.98			0.99		
Fipb, ped/bikes	1.00	1.00		1.00	1.00		1.00			1.00		
Frt	1.00	0.85		1.00	0.85		0.99			0.99		
Flt Protected	1.00	1.00		1.00	1.00		1.00			1.00		
Satd. Flow (prot)	1442	854		1436	882		2721			3440		
Flt Permitted	1.00	1.00		1.00	1.00		1.00			1.00		
Satd. Flow (perm)	1442	854		1436	882		2721			3440		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	155	37	0	225	43	0	997	64	0	2079	120
RTOR Reduction (vph)	0	0	12	0	0	29	0	0	0	0	0	0
Lane Group Flow (vph)	0	155	25	0	225	14	0	1061	0	0	2199	0
Confl. Peds. (#/hr)	291		275	275		291	76		117	117		76
Confl. Bikes (#/hr)	0	11	0	0	12	0	0	0	0	0	0	2
Bus Blockages (#/hr)	0	11	0	0	12	0	0	0	0	0	0	2
Parking (#/hr)							3		3			3
Turn Type	NA	Perm		NA	Perm		NA		NA		NA	
Protected Phases	2			2			1			1		
Permitted Phases	2			2			1			1		
Actuated Green, G (s)	37.1	37.1		37.1	37.1		72.0			72.0		
Effective Green, g (s)	39.0	39.0		39.0	39.0		73.0			73.0		
Actuated g/C Ratio	0.32	0.32		0.32	0.32		0.61			0.61		
Clearance Time (s)	5.9	5.9		5.9	5.9		5.0			5.0		
Lane Grp Cap (vph)	468	277		466	286		1655			2092		
v/s Ratio Prot		0.11			0.16			0.39			0.64	
v/s Ratio Perm		0.33	0.09		0.48	0.05		0.64			1.05	
Uniform Delay, d1	30.6	28.2		32.4	27.8		15.1			23.5		
Progression Factor	1.00	1.00		1.00	1.00		0.53			1.00		
Incremental Delay, d2	1.9	0.6		3.5	0.3		1.7			25.8		
Delay (s)	32.5	28.8		36.0	28.1		9.7			49.3		
Level of Service	C	C		D	C		A			D		
Approach Delay (s)	31.8			34.7			9.7			49.3		
Approach LOS	C			C			A			D		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	36.1		HCM 2000 Level of Service				D					
HCM 2000 Volume to Capacity ratio	0.85											
Actuated Cycle Length (s)	120.0		Sum of lost time (s)				8.0					
Intersection Capacity Utilization	77.4%		ICU Level of Service				D					
Analysis Period (min)	10											
c Critical Lane Group												

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Queues

6: Henry St & Prince St

Total Future PM w/ Development 2028

Lane Group	EBT	SBT
Lane Group Flow (vph)	1206	1596
v/c Ratio	1.13	0.93
Control Delay	73.8	7.0
Queue Delay	0.0	14.3
Total Delay	73.8	21.3
Queue Length 50th (ft)	-397	39
Queue Length 95th (ft)	#527	m34
Internal Link Dist (ft)	636	338
Turn Bay Length (ft)	1.00	
Base Capacity (vph)	1141	1711
Starvation Cap Reductn	0	2
Spillback Cap Reductn	0	176
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.13	1.04
<b>Intersection Summary</b>		
- Volume exceeds capacity, queue is theoretically infinite.		
Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		

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HCM Signalized Intersection Capacity Analysis

6: Henry St & Prince St

Total Future PM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↓									↑↑	
Traffic Volume (vph)	0	724	449	0	0	0	0	0	0	34	1434	0
Future Volume (vph)	0	724	449	0	0	0	0	0	0	34	1434	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	10	12
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.78	
Flpb, ped/bikes		1.00									1.00	
Flt		0.94									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		2749									3482	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		2749									3482	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	798	488	0	0	0	0	0	0	37	1559	0
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	1279	0	0	0	0	0	0	0	0	1582	0
Confl. Peds. (#/hr)	37	31	31	31	37	19	8	8	8	8	19	19
Confl. Bikes (#/hr)		11			2							1
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Parking (#/hr)	6										3	
Turn Type	NA									Perm	NA	
Protected Phases	2										1	
Permitted Phases												1
Actuated Green, G (s)		32.0									38.0	
Effective Green, g (s)		33.0									39.0	
Actuated g/C Ratio		0.41									0.49	
Clearance Time (s)		5.0									5.0	
Lane Grp Cap (vph)		1133									1697	
v/s Ratio Prot		0.47										
v/s Ratio Perm											0.45	
v/c Ratio		1.13									0.93	
Uniform Delay, d1		23.5									19.3	
Progression Factor		1.00									0.21	
Incremental Delay, d2		49.5									1.2	
Delay (s)		73.0									5.3	
Level of Service		E									A	
Approach Delay (s)		73.0			0.0			0.0			5.3	
Approach LOS		E			A			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		35.5										D
HCM 2000 Volume to Capacity ratio		1.02										
Actuated Cycle Length (s)		80.0									8.0	
Intersection Capacity Utilization		80.0%									ICU Level of Service	D
Analysis Period (min)		10										
c Critical Lane Group												

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Wells + Associates

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Queues

7: Alfred St & Prince St

Total Future PM w/ Development 2028

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	718	121	447
v/c Ratio	0.53	0.18	0.69
Control Delay	5.4	12.0	27.4
Queue Delay	0.2	0.0	0.1
Total Delay	5.6	12.0	27.5
Queue Length 50th (ft)	36	27	148
Queue Length 95th (ft)	47	m52	m239
Internal Link Dist (ft)	244	348	340
Turn Bay Length (ft)			
Base Capacity (vph)	1363	660	647
Starvation Cap Reductn	134	0	9
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.58	0.18	0.70
<b>Intersection Summary</b>			
m Volume for 95th percentile queue is metered by upstream signal.			

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HCM Signalized Intersection Capacity Analysis

7: Alfred St & Duke St

Total Future PM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↓									↑	
Traffic Volume (vph)	36	582	42	0	0	0	0	99	12	34	377	0
Future Volume (vph)	36	582	42	0	0	0	0	99	12	34	377	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	12	12	12	12	12	12
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Flt		0.99						0.99			1.00	
Flt Protected		1.00						1.00			1.00	
Satd. Flow (prot)		3018						1457			1475	
Flt Permitted		1.00						1.00			0.97	
Satd. Flow (perm)		3018						1457			1438	
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)	39	633	46	0	0	0	0	108	13	37	410	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	712	0	0	0	0	0	116	0	0	447	0
Confl. Peds. (#/hr)	43	42	42	42	43	30		34	34		30	2
Confl. Bikes (#/hr)		7						2				3
Parking (#/hr)		6						3			3	
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases	1							2			2	
Permitted Phases												2
Actuated Green, G (s)		35.0						35.0			35.0	
Effective Green, g (s)		36.0						36.0			36.0	
Actuated g/C Ratio		0.45						0.45			0.45	
Clearance Time (s)		5.0						5.0			5.0	
Lane Grp Cap (vph)		1358						655			647	
v/s Ratio Prot								0.08				
v/s Ratio Perm		0.24									0.31	
v/c Ratio		0.52						0.18			0.69	
Uniform Delay, d1		15.8						13.1			17.6	
Progression Factor		0.26						0.92			1.26	
Incremental Delay, d2		1.4						0.5			4.0	
Delay (s)		5.4						12.7			26.2	
Level of Service		A						B			C	
Approach Delay (s)		5.4			0.0			12.7			26.2	
Approach LOS		A			A			B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		13.3										B
HCM 2000 Volume to Capacity ratio		0.61										
Actuated Cycle Length (s)		80.0									8.0	
Intersection Capacity Utilization		61.5%									ICU Level of Service	B
Analysis Period (min)		10										
c Critical Lane Group												

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Queues

8: Henry St & Duke St

Total Future PM w/ Development 2028

Lane Group	EBT	EBR	WBL	WBT	SBT
Lane Group Flow (vph)	336	643	216	672	1917
v/c Ratio	0.84	1.02	0.77	0.55	1.09
Control Delay	48.8	65.0	20.5	13.5	44.2
Queue Delay	0.0	0.0	0.0	0.8	0.0
Total Delay	48.8	65.0	20.5	14.3	44.2
Queue Length 50th (ft)	160	-165	47	92	-459
Queue Length 95th (ft)	#301	#272	m51	m97	m#482
Internal Link Dist (ft)	72			232	350
Turn Bay Length (ft)		125			
Base Capacity (vph)	398	631	281	1221	1758
Starvation Cap Reductn	0	0	0	268	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.84	1.02	0.77	0.71	1.09
<b>Intersection Summary</b>					
- Volume exceeds capacity, queue is theoretically infinite.					
- Queue shown is maximum after two cycles.					
# 95th percentile volume exceeds capacity, queue may be longer.					
- Queue shown is maximum after two cycles.					
m Volume for 95th percentile queue is metered by upstream signal.					

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Wells + Associates

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HCM Signalized Intersection Capacity Analysis  
8: Henry St & Duke St

Total Future PM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↑	↑	↑					↑	↑	↑
Traffic Volume (vph)	0	309	592	199	618	0	0	0	0	0	1698	65
Future Volume (vph)	0	309	592	199	618	0	0	0	0	0	1698	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	10	12	12	12	12	12	12	11
Total Lost time (s)		4.0	4.0	4.0	4.0						4.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00						0.78	
Fripb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	
Fripb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	
Frt	1.00	0.85	1.00	1.00	1.00						0.99	
Flt Protected	1.00	1.00	0.95	1.00	1.00						1.00	
Satd. Flow (prot)	1676	2660	1484	2961							3600	
Flt Permitted	1.00	1.00	0.21	1.00							1.00	
Satd. Flow (perm)	1676	2660	334	2961							3600	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	336	643	216	672	0	0	0	0	0	1846	71
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	336	643	216	672	0	0	0	0	0	1913	0
Confl. Peds. (#/hr)	20	15	15		20	18			21	21		18
Confl. Bikes (#/hr)		2			4							
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)												1
Turn Type	NA	Prot	pm+pt	NA							NA	
Protected Phases	8	8	7	4							2	
Permitted Phases			4									
Actuated Green, G (s)	17.7	17.7	31.7	31.7							37.9	
Effective Green, g (s)	19.0	19.0	32.7	33.0							39.0	
Actuated g/C Ratio	0.24	0.24	0.41	0.41							0.49	
Clearance Time (s)	5.3	5.3	5.0	5.3							5.1	
Lane Grp Cap (vph)	398	631	280	1221							1755	
v/s Ratio Prot	0.20	c0.24	c0.10	0.23							c0.53	
v/s Ratio Perm			0.22									
v/c Ratio	0.84	1.02	0.77	0.55							1.09	
Uniform Delay, d1	29.1	30.5	18.0	17.9							20.5	
Progression Factor	1.00	1.00	0.82	0.72							0.50	
Incremental Delay, d2	17.8	32.5	6.1	0.6							30.0	
Delay (s)	46.8	63.0	20.9	13.4							40.3	
Level of Service	D	E	C	B							D	
Approach Delay (s)	57.5			15.2			0.0				40.3	
Approach LOS	E			B			A				D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	38.9			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	1.03											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	84.9%			ICU Level of Service			E					
Analysis Period (min)	10											
c Critical Lane Group												

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Queues

9: Patrick St & Duke St

Total Future PM w/ Development 2028

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	346	700	1811
v/c Ratio	0.36	0.92	1.05
Control Delay	20.9	28.0	55.5
Queue Delay	1.2	0.0	0.0
Total Delay	22.1	28.0	55.5
Queue Length 50th (ft)	103	149	-398
Queue Length 95th (ft)	m139	m#524	#509
Internal Link Dist (ft)	232	245	181
Turn Bay Length (ft)			
Base Capacity (vph)	968	757	1733
Starvation Cap Reductn	403	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.61	0.92	1.05
<b>Intersection Summary</b>			
Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

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HCM Signalized Intersection Capacity Analysis  
9: Patrick St & Duke St

Total Future PM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑	↑	↑		
Traffic Volume (vph)	4	315	0	0	623	21	242	1348	76	0	0	0
Future Volume (vph)	4	315	0	0	623	21	242	1348	76	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor	1.00	1.00			1.00			0.91				
Fripb, ped/bikes	1.00	1.00			1.00			1.00				
Fripb, ped/bikes	1.00	1.00			1.00			1.00				
Frt	1.00	1.00			1.00			0.99				
Flt Protected	1.00	1.00			1.00			0.99				
Satd. Flow (prot)	1899				1476			4455				
Flt Permitted	0.99				1.00			0.99				
Satd. Flow (perm)	1889				1476			4455				
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)	4	342	0	0	677	23	263	1465	83	0	0	0
RTOR Reduction (vph)	0	0	0	0	1	0	0	7	0	0	0	0
Lane Group Flow (vph)	0	346	0	0	699	0	0	1804	0	0	0	0
Confl. Peds. (#/hr)	14		15	15		14	8		5	5		8
Confl. Bikes (#/hr)		2			3							
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Parking (#/hr)					3							
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases	2				2			1				
Permitted Phases							1					
Actuated Green, G (s)	39.8				39.8			30.0				
Effective Green, g (s)	41.0				41.0			31.0				
Actuated g/C Ratio	0.51				0.51			0.39				
Clearance Time (s)	5.2				5.2			5.0				
Lane Grp Cap (vph)	968				756			1726				
v/s Ratio Prot					c0.47							
v/s Ratio Perm	0.18							0.40				
v/c Ratio	0.36				0.92			1.05				
Uniform Delay, d1	11.6				18.1			24.5				
Progression Factor	1.71				0.64			1.31				
Incremental Delay, d2	0.6				13.8			23.7				
Delay (s)	20.4				25.3			55.8				
Level of Service	C				C			E				
Approach Delay (s)	20.4				25.3			55.8				0.0
Approach LOS	C				C			E				A
<b>Intersection Summary</b>												
HCM 2000 Control Delay	44.0			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	0.98											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	83.1%			ICU Level of Service			E					
Analysis Period (min)	10											
c Critical Lane Group												

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Queues

10: Alfred St & Duke St

Total Future PM w/ Development 2028

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	387	572	112	413
v/c Ratio	0.49	0.66	0.31	0.85
Control Delay	7.8	10.4	20.4	33.4
Queue Delay	0.2	0.6	0.3	9.1
Total Delay	8.1	11.0	20.6	42.5
Queue Length 50th (ft)	37	101	37	98
Queue Length 95th (ft)	m46	m141	79	#327
Internal Link Dist (ft)	245	227	209	348
Turn Bay Length (ft)				
Base Capacity (vph)	787	863	359	488
Starvation Cap Reductn	74	74	0	0
Spillback Cap Reductn	14	40	44	60
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.54	0.72	0.36	0.96
<b>Intersection Summary</b>				
# 95th percentile volume exceeds capacity, queue may be longer.				
Queue shown is maximum after two cycles.				
m Volume for 95th percentile queue is metered by upstream signal.				

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HCM Signalized Intersection Capacity Analysis

10: Alfred St & Duke St

Total Future PM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	291	29	8	500	18	46	45	12	12	291	77
Future Volume (vph)	36	291	29	8	500	18	46	45	12	12	291	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	14	12	12	11	12	12	11	12
Total Lost time (s)	4.0											
Lane Util. Factor	1.00											
Fripb, ped/bikes	0.99											
Fipb, ped/bikes	1.00											
Fit	0.99											
Fit Protected	0.99											
Satd. Flow (prot)	1544											
Fit Permitted	0.92											
Satd. Flow (perm)	1423											
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)	39	316	32	9	543	20	50	49	13	13	316	84
RTOR Reduction (vph)	0	4	0	0	2	0	0	6	0	0	12	0
Lane Group Flow (vph)	0	383	0	0	570	0	0	106	0	0	401	0
Confl. Peds. (#/hr)	15		32	32		15	27		14	14		27
Confl. Bikes (#/hr)	0	0	1		3		0	0	0	0		1
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)	3				1			1				3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2	2		2	2		1	1		1	1	
Permitted Phases	2	2		2	2		1	1		1	1	
Actuated Green, G (s)	43.0			43.0			27.0			27.0		
Effective Green, g (s)	44.0			44.0			28.0			28.0		
Actuated g/C Ratio	0.55			0.55			0.35			0.35		
Clearance Time (s)	5.0			5.0			5.0			5.0		
Lane Grp Cap (vph)	782			861			353			476		
v/s Ratio Prot	0.27											
v/s Ratio Perm	0.49											
v/c Ratio	11.1											
Uniform Delay, d1	0.54											
Progression Factor	1.9											
Incremental Delay, d2	7.9											
Delay (s)	7.9											
Level of Service	A			B			C			C		
Approach Delay (s)	7.9			10.1			21.1			32.2		
Approach LOS	A			B			C			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	16.5			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.73											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	81.4%			ICU Level of Service			D					
Analysis Period (min)	10											

Queues

11: Columbus St & Duke St

Total Future PM w/ Development 2028

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	360	410	186	625
v/c Ratio	0.61	0.68	0.40	0.89
Control Delay	20.6	25.6	16.4	33.5
Queue Delay	0.3	4.7	0.0	0.0
Total Delay	20.9	30.3	16.4	33.5
Queue Length 50th (ft)	84	160	56	194
Queue Length 95th (ft)	m97	263	108	m#431
Internal Link Dist (ft)	227	231	390	358
Turn Bay Length (ft)				
Base Capacity (vph)	592	606	464	702
Starvation Cap Reductn	33	134	0	0
Spillback Cap Reductn	0	6	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.64	0.87	0.40	0.89
<b>Intersection Summary</b>				
# 95th percentile volume exceeds capacity, queue may be longer.				
Queue shown is maximum after two cycles.				
m Volume for 95th percentile queue is metered by upstream signal.				

HCM Signalized Intersection Capacity Analysis

11: Columbus St & Duke St

Total Future PM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	293	26	10	342	25	74	97	1	9	457	109
Future Volume (vph)	13	293	26	10	342	25	74	97	1	9	457	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	14	12	12	11	12	12	11	12
Total Lost time (s)	4.0											
Lane Util. Factor	1.00											
Fripb, ped/bikes	0.99											
Fipb, ped/bikes	1.00											
Fit	0.99											
Fit Protected	1.00											
Satd. Flow (prot)	1455											
Fit Permitted	0.98											
Satd. Flow (perm)	1430											
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	318	28	11	372	27	80	105	1	10	497	118
RTOR Reduction (vph)	0	4	0	0	3	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	356	0	0	407	0	0	186	0	0	615	0
Confl. Peds. (#/hr)	21		27	27		21	26		12	12		26
Confl. Bikes (#/hr)			5		1		2		3			3
Parking (#/hr)	3				1			3				3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	6	6		2	2		4	4		8	8	
Permitted Phases	6	6		2	2		4	4		8	8	
Actuated Green, G (s)	32.0			32.0			38.0			38.0		
Effective Green, g (s)	33.0			33.0			39.0			39.0		
Actuated g/C Ratio	0.41			0.41			0.49			0.49		
Clearance Time (s)	5.0			5.0			5.0			5.0		
Lane Grp Cap (vph)	589			603			465			691		
v/s Ratio Prot	0.25											
v/s Ratio Perm	0.61											
v/c Ratio	18.4											
Uniform Delay, d1	0.87											
Progression Factor	4.1											
Incremental Delay, d2	20.1											
Delay (s)	20.1											
Level of Service	C			C			B			C		
Approach Delay (s)	20.1			25.0			15.6			32.4		
Approach LOS	C			C			B			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	25.7			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.79											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	87.8%			ICU Level of Service			E					
Analysis Period (min)	10											

Queues

12: Washington St & Duke St

Total Future PM w/ Development 2028

Lane Group	EBT	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	327	315	857	30	2084
v/c Ratio	0.91	0.61	0.59	0.04	1.05
Control Delay	62.3	36.1	19.0	5.0	26.9
Queue Delay	23.7	0.0	0.0	0.0	1.4
Total Delay	86.0	36.1	19.0	5.0	28.3
Queue Length 50th (ft)	233	192	216	1	-741
Queue Length 95th (ft)	#418	293	280	15	m#760
Internal Link Dist (ft)	231	575	344		349
Turn Bay Length (ft)	115				
Base Capacity (vph)	359	516	1450	680	1977
Starvation Cap Reductn	51	0	0	0	10
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.06	0.61	0.59	0.04	1.06
<b>Intersection Summary</b>					
- Volume exceeds capacity, queue is theoretically infinite.					
Queue shown is maximum after two cycles.					
# 95th percentile volume exceeds capacity, queue may be longer.					
Queue shown is maximum after two cycles.					
m Volume for 95th percentile queue is metered by upstream signal.					

HCM Signalized Intersection Capacity Analysis  
12: Washington St & Duke St

Total Future PM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔			↔			↕	↕		↕	↕	
Traffic Volume (vph)	111	135	54	29	215	45	2	787	28	2	1720	195	
Future Volume (vph)	111	135	54	29	215	45	2	787	28	2	1720	195	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	13	12	12	13	12	11	9	9	9	11	9	
Total Lost time (s)	4.0			4.0			4.0	4.0		4.0			
Lane Util. Factor	1.00			1.00			0.95	1.00		0.78			
Flpb, ped/bikes	1.00			0.99			1.00	0.92		1.00			
Flpb, ped/bikes	0.99			1.00			1.00	1.00		1.00			
Fit	0.98			0.98			1.00	0.85		0.98			
Fit Protected	0.98			0.99			1.00	1.00		1.00			
Satd. Flow (prot)	1442			1470			2702	1181		3693			
Fit Permitted	0.66			0.94			0.95	1.00		0.94			
Satd. Flow (perm)	964			1393			2560	1181		3470			
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)	121	147	59	32	234	49	2	855	30	2	1870	212	
RTOR Reduction (vph)	0	6	0	0	6	0	0	0	11	0	10	0	
Lane Group Flow (vph)	0	321	0	0	309	0	0	857	19	0	2074	0	
Confl. Peds. (#/hr)	24		8	8		24	30		20	20		30	
Confl. Bikes (#/hr)	0	2	2	0	2	1	0	0	1	0	0	1	
Bus Blockages (#/hr)	0	2	0	0	2	0	0	0	0	0	0	0	
Parking (#/hr)	3			3			3						
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA		
Protected Phases		4			8			2		2		6	
Permitted Phases	4			8			2		2	6			
Actuated Green, G (s)	42.5			42.5			67.0	67.0		67.0			
Effective Green, g (s)	44.0			44.0			68.0	68.0		68.0			
Actuated g/C Ratio	0.37			0.37			0.57	0.57		0.57			
Clearance Time (s)	5.5			5.5			5.0	5.0		5.0			
Lane Grp Cap (vph)	353			510			1450	669		1966			
v/s Ratio Prot													
v/s Ratio Perm	c0.33			0.22			0.33	0.02		c0.60			
v/c Ratio	0.91			0.61			0.59	0.03		1.06			
Uniform Delay, d1	36.1			30.9			16.9	11.4		26.0			
Progression Factor	1.00			1.00			1.00	1.00		0.10			
Incremental Delay, d2	26.0			5.2			1.8	0.1		20.8			
Delay (s)	62.1			36.2			18.7	11.5		23.4			
Level of Service	E			D			B	B		C			
Approach Delay (s)	62.1			36.2			18.5			23.4			
Approach LOS	E			D			B			C			
<b>Intersection Summary</b>													
HCM 2000 Control Delay	26.8			HCM 2000 Level of Service				C					
HCM 2000 Volume to Capacity ratio	1.00												
Actuated Cycle Length (s)	120.0			Sum of lost time (s)				8.0					
Intersection Capacity Utilization	93.6%			ICU Level of Service				F					
Analysis Period (min)	10												

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HCM Unsignalized Intersection Capacity Analysis  
13: Patrick St & Henry to Patrick Connector

Total Future PM w/ Development 2028

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↔		↕	↕	↕
Traffic Volume (veh/h)	61	0	0	1612	0	0
Future Volume (veh/h)	61	0	0	1612	0	0
Sign Control	Yield			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	66	0	0	1752	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				414	441	
pX, platoon unblocked	0.78					
vC, conflicting volume	584	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
IC, single (s)	6.8	6.9	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	92	100	100			
cM capacity (veh/h)	798	1084	1622			
<b>Direction, Lane #</b>						
Volume Total	66	584	584	584		
Volume Left	66	0	0	0		
Volume Right	0	0	0	0		
cSH	798	1700	1700	1700		
Volume to Capacity	0.08	0.34	0.34	0.34		
Queue Length 95th (ft)	7	0	0	0		
Control Delay (s)	9.9	0.0	0.0	0.0		
Lane LOS	A					
Approach Delay (s)	9.9	0.0				
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay	9.9			0.4		
Intersection Capacity Utilization	97.1%			ICU Level of Service		F
Analysis Period (min)	10					

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HCM Unsignalized Intersection Capacity Analysis  
14: Alfred St & Wolfe Street/Wolfe St

Total Future PM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔			↔			↕	↕		↕	↕	
Sign Control	Stop			Stop			Stop		Stop		Stop		
Traffic Volume (vph)	15	4	6	99	26	39	9	35	5	39	230	31	
Future Volume (vph)	15	4	6	99	26	39	9	35	5	39	230	31	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	16	4	7	108	28	42	10	38	5	42	250	34	
<b>Direction, Lane #</b>													
Volume Total (vph)	27	178	53	326									
Volume Left (vph)	16	108	10	42									
Volume Right (vph)	7	42	5	34									
Hd (s)	0.00	0.01	0.02	0.00									
Departure Headway (s)	5.1	4.9	4.8	4.5									
Degree Utilization, x	0.04	0.24	0.07	0.41									
Capacity (veh/h)	642	689	695	767									
Control Delay (s)	8.3	9.4	8.2	10.5									
Approach Delay (s)	8.3	9.4	8.2	10.5									
Approach LOS	A	A	A	B									
<b>Intersection Summary</b>													
Delay	9.9												
Level of Service	A												
Intersection Capacity Utilization	41.1%			ICU Level of Service				A					
Analysis Period (min)	10												


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HCM 2010 AWSC  
14: Alfred St & Wolfe Street/Wolfe St

Total Future PM w/ Development 2028

<b>Intersection</b>													
Intersection Delay, s/veh	9.9												
Intersection LOS	A												
<b>Movement</b>													
Traffic Vol, veh/h	0	15	4	6	0	99	26	39	0	9	35	5	
Future Vol, veh/h	0	15	4	6	0	99	26	39	0	9	35	5	
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	0	16	4	7	0	108	28	42	0	10	38	5	
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	
<b>Approach</b>													
Opposing Approach	WB			EB				NB		SB			
Opposing Lanes	1			1				1		1			
Conflicting Approach Left	SB			NB				EB					
Conflicting Lanes Left	1			1				1					
Conflicting Approach Right	NB			SB				WB					
Conflicting Lanes Right	1			1				1					
HCM Control Delay	8.3			9.4				8.2					
HCM LOS	A			A				A					
<b>Lane</b>													
Vol Left, %	18%	60%	60%	13%									
Vol Thru, %	71%	16%	16%	77%									
Vol Right, %	10%	24%	24%	10%									
Sign Control	Stop	Stop	Stop	Stop									
Traffic Vol by Lane	49	25	164	300									
LT Vol	9	15	99	39									
Through Vol	35	4	26	230									
RT Vol	5	6	39	31									
Lane Flow Rate	53	27	178	326									
Geometry Grp	1	1	1	1									
Degree of Util (X)	0.071	0.038	0.239	0.405									
Departure Headway (Hd)	4.791	5.026	4.826	4.472									
Convergence, Y/N	Yes	Yes	Yes	Yes									
Cap	745	709	743	805									
Service Time	2.836	3.078	2.866	2.503									
HCM Lane V/C Ratio	0.071	0.038	0.24	0.405									
HCM Control Delay	8.2	8.3											


Intersection				
Intersection Delay s/veh				
Intersection LOS				
Movement	SBU	SBL	SBT	SBR
Traffic Vol. veh/h	0	39	230	31
Future Vol. veh/h	0	39	230	31
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	42	250	34
Number of Lanes	0	0	1	0
Approach				
Approach				
Opposing Approach				
Opposing Lanes				
Conflicting Approach Left				
Conflicting Lanes Left				
Conflicting Approach Right				
Conflicting Lanes Right				
HCM Control Delay				
HCM LOS				
Lane				



Lane Group	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	679	827	1749	2778
v/c Ratio	1.40	1.51d	0.91	1.12
Control Delay	151.9	31.3	23.4	54.3
Queue Delay	0.1	0.4	1.6	0.6
Total Delay	152.1	31.7	25.0	54.9
Queue Length 50th (ft)	-519	179	278	-278
Queue Length 95th (ft)	m#691	m#303	480	m53
Internal Link Dist (ft)		273	346	346
Turn Bay Length (ft)				
Base Capacity (vph)	485	925	1926	2490
Starvation Cap Reductn	1	9	0	0
Spillback Cap Reductn	8	7	80	564
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.42	0.90	0.95	1.44
Intersection Summary				
- Volume exceeds capacity, queue is theoretically infinite.				
- Queue shown is maximum after two cycles.				
# 95th percentile volume exceeds capacity, queue may be longer.				
- Queue shown is maximum after two cycles.				
m Volume for 95th percentile queue is metered by upstream signal.				
d# Defacto Left Lane. Recode with 1 though lane as a left lane.				

HCM Signalized Intersection Capacity Analysis

15: Patrick St & Gibbon St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↓	↑			↑	↑		↑	↑
Traffic Volume (vph)	0	0	0	1249	126	10	19	1590	0	0	2537	18
Future Volume (vph)	0	0	0	1249	126	10	19	1590	0	0	2537	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	12	12	12	12	12	12
Grade (%)		0%			2%			0%			0%	
Total Lost time (s)		4.0		4.0				4.0			4.0	
Lane Util. Factor		0.91		0.91				0.91			0.91	
Frtb, ped/bikes		1.00		1.00				1.00			1.00	
Ftjb, ped/bikes		1.00		1.00				1.00			1.00	
Frt		1.00		1.00				1.00			1.00	
Flt Protected		0.95		0.96				1.00			1.00	
Satd. Flow (prot)		1386		2639				4530			4527	
Flt Permitted		0.95		0.96				0.77			1.00	
Satd. Flow (perm)		1386		2639				3505			4527	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	1358	137	11	21	1728	0	0	2758	20
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	679	826	0	0	1749	0	0	2777	0
Confl. Peds. (#/hr)	17	1	1	1	17	7		8	8		7	
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)				1								
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases				2	2		1	1			1	
Permitted Phases												
Actuated Green, G (s)				26.0	26.0			42.5			42.5	
Effective Green, g (s)				28.0	28.0			44.0			44.0	
Actuated g/C Ratio				0.35	0.35			0.55			0.55	
Clearance Time (s)				6.0	6.0			5.5			5.5	
Vehicle Extension (s)				2.0	2.0			2.0			2.0	
Lane Grp Cap (vph)				485	923			1927			2489	
v/s Ratio Prot												c0.61
v/s Ratio Perm				c0.49	0.31			0.50				
v/c Ratio				1.40	1.51d			0.91			1.12	
Uniform Delay, d1				26.0	24.6			16.2			18.0	
Progression Factor				0.90	0.89			1.00			0.91	
Incremental Delay, d2				127.6	6.8			6.7			35.3	
Delay (s)				151.0	28.7			22.9			51.7	
Level of Service				F	C			C			D	
Approach Delay (s)	0.0				83.8			22.9			51.7	
Approach LOS	A				F			C			D	
Intersection Summary												
HCM 2000 Control Delay	51.4			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	1.23											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	106.7%			ICU Level of Service			G					

HCM Signalized Intersection Capacity Analysis

15: Patrick St & Gibbon St

Analysis Period (min)	10
d# Defacto Left Lane. Recode with 1 though lane as a left lane.	
c Critical Lane Group	



Queues

16: Alfred St & Gibbon St

Total Future PM w/ Development 2028

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	955	271	363
v/c Ratio	0.75	1.04	0.65
Control Delay	14.1	75.8	16.4
Queue Delay	2.0	13.3	0.6
Total Delay	16.1	89.2	17.0
Queue Length 50th (ft)	84	-63	53
Queue Length 95th (ft)	#144	#173	#148
Internal Link Dist (ft)	218	136	305
Turn Bay Length (ft)			
Base Capacity (vph)	1275	260	558
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	185	17	40
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.88	1.12	0.70

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.

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HCM Signalized Intersection Capacity Analysis

16: Alfred St & Gibbon St

Total Future PM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←	←	←	←	←	←	←	←
Traffic Volume (vph)	0	0	0	0	877	2	210	40	0	0	51	283
Future Volume (vph)	0	0	0	0	877	2	210	40	0	0	51	283
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	12	12	12	12	12	13	12
Total Lost time (s)					4.0			4.0				4.0
Lane Util. Factor					0.95			1.00				1.00
Frpb, ped/bikes					1.00			1.00				0.97
Flpb, ped/bikes					1.00			0.99				1.00
Frt					1.00			1.00				0.89
Flt Protected					1.00			0.96				1.00
Satd. Flow (prot)					2832			1614				1492
Flt Permitted					1.00			0.44				1.00
Satd. Flow (perm)					2832			744				1492
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	953	2	228	43	0	0	55	308
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	37	0
Lane Group Flow (vph)	0	0	0	0	954	0	0	271	0	0	326	0
Confl. Peds. (#/hr)	17		10	10		17	21		23	23		21
Confl. Bikes (#/hr)					1				1			4
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)					1							
Turn Type					NA		Perm	NA		NA		NA
Protected Phases					2			1				1
Permitted Phases					2			1				1
Actuated Green, G (s)					17.0			12.7				12.7
Effective Green, g (s)					18.0			14.0				14.0
Actuated g/C Ratio					0.45			0.35				0.35
Clearance Time (s)					5.0			5.3				5.3
Lane Grp Cap (vph)					1274			260				522
v/s Ratio Prot					c0.34							0.22
v/s Ratio Perm								c0.36				
v/c Ratio					0.75			1.04				0.62
Uniform Delay, d1					9.1			13.0				10.8
Progression Factor					1.00			1.00				1.00
Incremental Delay, d2					4.0			53.3				5.5
Delay (s)					13.1			66.3				16.3
Level of Service					B			E				B
Approach Delay (s)		0.0			13.1			66.3				16.3
Approach LOS		A			B			E				B

Intersection Summary

HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.4%	ICU Level of Service	D
Analysis Period (min)	10		
c Critical Lane Group			

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Queues

17: Patrick St & Franklin St

Total Future PM w/ Development 2028

Lane Group	EBL	EBT	NBT	NBR	SBT
Lane Group Flow (vph)	23	185	1176	699	3947
v/c Ratio	0.12	0.51	0.47	0.55	1.12
Control Delay	60.6	69.6	4.9	2.1	51.5
Queue Delay	0.0	0.0	0.0	0.0	0.2
Total Delay	60.6	69.6	4.9	2.1	51.6
Queue Length 50th (ft)	22	98	145	0	-1708
Queue Length 95th (ft)	47	128	281	30	m#1504
Internal Link Dist (ft)		261	297		346
Turn Bay Length (ft)					
Base Capacity (vph)	511	980	3752	1271	3527
Starvation Cap Reductn	0	0	0	0	384
Spillback Cap Reductn	0	0	252	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.19	0.51	0.55	1.26

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

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HCM Signalized Intersection Capacity Analysis

17: Patrick St & Franklin St

Total Future PM w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	←	←	←	←	←	←	←	←	←	←	←	←
Traffic Volume (vph)	21	180	90	0	0	0	0	1634	643	1	3630	0
Future Volume (vph)	21	180	90	0	0	0	0	1634	643	1	3630	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	11	11	11	12	12	12	12	12	12
Grade (%)		2%			0%			0%				0%
Total Lost time (s)	4.0	4.0						4.0	4.0			4.0
Lane Util. Factor	1.00	0.95						0.91	1.00			0.91
Frpb, ped/bikes	1.00	0.99						1.00	0.99			1.00
Flpb, ped/bikes	0.98	1.00						1.00	1.00			1.00
Frt	1.00	0.92						1.00	0.85			1.00
Flt Protected	0.95	1.00						1.00	1.00			1.00
Satd. Flow (prot)	1544	2954						4532	1391			4532
Flt Permitted	0.95	1.00						1.00	1.00			0.94
Satd. Flow (perm)	1544	2954						4532	1391			4259
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)	23	87	98	0	0	0	0	1776	699	1	3946	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	120	0	0	0
Lane Group Flow (vph)	23	185	0	0	0	0	0	1776	579	0	3947	0
Confl. Peds. (#/hr)	13	E					13	1	A	1		1
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	3	0	0	0	0	0	0	0	0	0	0
Turn Type	Perm	NA						NA	Perm	Perm		NA
Protected Phases		4						2		2		2
Permitted Phases		4						2		2		2
Actuated Green, G (s)	17.5	17.5						130.5	130.5			130.5
Effective Green, g (s)	19.5	19.5						132.5	132.5			132.5
Actuated g/C Ratio	0.12	0.12						0.83	0.83			0.83
Clearance Time (s)	6.0	6.0						6.0	6.0			6.0
Vehicle Extension (s)	3.0	3.0						0.2	0.2			0.2
Lane Grp Cap (vph)	188	360						3753	1151			3526
v/s Ratio Prot								0.39				
v/s Ratio Perm	0.01								0.42			c0.93
v/c Ratio	0.12	0.51						0.47	0.50			1.12
Uniform Delay, d1	62.6	65.8						3.9	4.1			13.8
Progression Factor	1.00	1.00						1.00	1.00			0.88
Incremental Delay, d2	0.3	1.2						0.4	1.6			36.2
Delay (s)	62.9	67.0						4.3	5.6			48.4
Level of Service	E	E						A	A			D
Approach Delay (s)		66.6				0.0		4.7	48.4			48.4
Approach LOS		E				A		A	D			D

Intersection Summary

HCM 2000 Control Delay	32.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	139.0%	ICU Level of Service	H
Analysis Period (min)	10		

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HCM Signalized Intersection Capacity Analysis  
17: Patrick St & Franklin St

Total Future PM w/ Development 2028


c Critical Lane Group

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HCM Unsignalized Intersection Capacity Analysis

18: Patrick St & Existing Garage/Proposed Patrick Entrance

Total Future PM w/ Development 2028

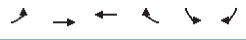


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	34	0	1646	32	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	34	0	1646	32	0	0	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	37	0	1789	35	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)							594			261		
Upstream signal (ft)												
pX, platoon unblocked	0.79	0.79		0.79	0.79	0.79				0.79		
vC, conflicting volume	633	1824	0	1806	1806	614	0			1824		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	1110	0	1088	1088	0	0			1110		
IC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
IC, 2 stage (s)												
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	96	100	100	100		
cM capacity (veh/h)	772	164	1084	134	169	856	1622			493		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3							
Volume Total	0	37	447	894	482							
Volume Left	0	0	0	0	0							
Volume Right	0	37	0	0	35							
cSH	1700	856	1622	1700	1700							
Volume to Capacity	0.00	0.04	0.00	0.53	0.28							
Queue Length 95th (ft)	0	3	0	0	0							
Control Delay (s)	0.0	9.4	0.0	0.0	0.0							
Lane LOS	A	A										
Approach Delay (s)	0.0	9.4	0.0									
Approach LOS	A	A										
Intersection Summary												
Average Delay	0.2											
Intersection Capacity Utilization	42.5%						ICU Level of Service			A		
Analysis Period (min)	10											

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HCM Unsignalized Intersection Capacity Analysis  
19: Wolfe Street & Proposed Wolfe Entrance

Total Future PM w/ Development 2028




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	18	55	6	23	0
Future Volume (Veh/h)	0	18	55	6	23	0
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	20	60	7	25	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked	67		84		64	
vC, conflicting volume	67		84		64	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	67		84		64	
IC, single (s)	4.1		6.4		6.2	
IC, 2 stage (s)						
IF (s)	2.2		3.5		3.3	
p0 queue free %	100		97		100	
cM capacity (veh/h)	1535		918		1001	
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	20	67	25			
Volume Left	0	0	25			
Volume Right	0	7	0			
cSH	1535	1700	918			
Volume to Capacity	0.00	0.04	0.03			
Queue Length 95th (ft)	0	0	2			
Control Delay (s)	0.0	0.0	9.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	9.0			
Approach LOS	A					
Intersection Summary						
Average Delay	2.0					
Intersection Capacity Utilization	13.3%		ICU Level of Service		A	
Analysis Period (min)	10					

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HCM Unsignalized Intersection Capacity Analysis

20: Columbus St & Wolfe St

Total Future PM w/ Development 2028



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	26	33	73	98	27	14	81	6	24	402	34
Future Volume (vph)	2	26	33	73	98	27	14	81	6	24	402	34
Sign Control	Stop			Stop			Stop			Stop		
Grade	0.29			0.03			0.02			0.00		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	28	36	79	107	29	15	88	7	26	437	37
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	66	215	110	500								
Volume Left (vph)	2	79	15	26								
Volume Right (vph)	36	29	7	37								
Head (s)	-0.29	0.03	0.02	0.00								
Departure Headway (s)	5.6	5.6	5.5	4.9								
Degree Utilization x	0.10	0.34	0.17	0.68								
Capacity (veh/h)	553	586	603	714								
Control Delay (s)	9.2	11.4	9.5	17.4								
Approach Delay (s)	9.2	11.4	9.5	17.4								
Approach LOS	A	B	A	C								
Intersection Summary												
Delay	14.4											
Level of Service	B											
Intersection Capacity Utilization	51.4%				ICU Level of Service				A			
Analysis Period (min)	10											

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Intersection												
Intersection Delay s/veh	14.1											
Intersection LOS	B											
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	2	26	33	0	73	98	27	0	14	81	6
Future Vol, veh/h	0	2	26	33	0	73	98	27	0	14	81	6
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	0	2	28	36	0	79	107	29	0	15	88	7
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach	EB			WB				NB				
Opposing Approach	WB			EB				SB				
Opposing Lanes	1			1				1				
Conflicting Approach Left	SB			NB				EB				
Conflicting Lanes Left	1			1				1				
Conflicting Approach Right	NB			SB				WB				
Conflicting Lanes Right	1			1				1				
HCM Control Delay	9.2			11.4				9.5				
HCM LOS	A			B				A				
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	14%	3%	37%	5%								
Vol Thru, %	80%	43%	49%	87%								
Vol Right, %	6%	54%	14%	7%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	101	61	198	460								
LT Vol	14	2	73	24								
Through Vol	81	26	98	402								
RT Vol	6	33	27	34								
Lane Flow Rate	110	66	215	500								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.166	0.103	0.335	0.666								
Departure Headway (Hd)	5.443	5.585	5.604	4.91								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	661	644	644	740								
Service Time	3.465	3.601	3.615	2.91								
HCM Lane V/C Ratio	0.166	0.102	0.334	0.676								
HCM Control Delay	9.5	9.2	11.4	16.9								
HCM Lane LOS	A	A	B	C								
HCM 95th-ile Q	0.6	0.3	1.5	4.8								

Intersection				
Intersection Delay s/veh	16.9			
Intersection LOS	C			
Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	24	402	34
Future Vol, veh/h	0	24	402	34
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	26	437	37
Number of Lanes	0	0	1	0
Approach	SB			
Opposing Approach	NB			
Opposing Lanes	1			
Conflicting Approach Left	WB			
Conflicting Lanes Left	1			
Conflicting Approach Right	EB			
Conflicting Lanes Right	1			
HCM Control Delay	16.9			
HCM LOS	C			
Lane				

Queues  
1: Alfred St & Cameron St

Total Future Sunday w/ Development 2022

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	296	166	146
v/c Ratio	0.21	0.23	0.19
Control Delay	15.1	9.0	7.7
Queue Delay	0.0	0.0	0.0
Total Delay	15.1	9.0	7.7
Queue Length 50th (ft)	46	34	23
Queue Length 95th (ft)	73	m56	53
Internal Link Dist (ft)	237	338	290
Turn Bay Length (ft)			
Base Capacity (vph)	1388	728	780
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.21	0.23	0.19

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

HCM Signalized Intersection Capacity Analysis  
1: Alfred St & Cameron St

Total Future Sunday w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔				↔
Traffic Volume (vph)	0	0	0	21	233	18	39	114	0	0	80	54
Future Volume (vph)	0	0	0	21	233	18	39	114	0	0	80	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	12	12	12	12	12	12	12
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Frbp, ped/bikes					1.00			1.00			0.99	
Ftpb, ped/bikes					1.00			1.00			1.00	
Frt					0.99			1.00			0.95	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3351			1622			1539	
Flt Permitted					1.00			0.91			1.00	
Satd. Flow (perm)					3351			1495			1539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	23	253	20	42	124	0	0	87	59
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	30	0
Lane Group Flow (vph)	0	0	0	290	0	0	166	0	0	116	0	0
Confl. Peds. (#/hr)	28		23	23		28	29		22	22		29
Confl. Bikes (#/hr)			1			9		2				2
Parking (#/hr)					6			3				3
Turn Type					Perm	NA		Perm	NA		NA	
Protected Phases					2			1				1
Permitted Phases					2			1				1
Actuated Green, G (s)					32.0			38.0			38.0	
Effective Green, g (s)					33.0			39.0			39.0	
Actuated g/C Ratio					0.41			0.49			0.49	
Clearance Time (s)					5.0			5.0			5.0	
Lane Grp Cap (vph)					1382			728			750	
v/s Ratio Prot											0.08	
v/s Ratio Perm					0.09			c0.11				
v/c Ratio					0.21			0.23			0.15	
Uniform Delay, d1					15.1			11.8			11.4	
Progression Factor					1.00			0.68			1.00	
Incremental Delay, d2					0.3			0.7			0.4	
Delay (s)					15.5			8.7			11.8	
Level of Service					B			A			B	
Approach Delay (s)		0.0			15.5			8.7			11.8	
Approach LOS		A			B			A			B	
Intersection Summary												
HCM 2000 Control Delay	12.7			HCM 2000 Level of Service				B				
HCM 2000 Volume to Capacity ratio	0.22											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)				8.0				
Intersection Capacity Utilization	38.0%			ICU Level of Service				A				
Analysis Period (min)	10											
c Critical Lane Group												

Queues

2: Henry St & King St

Total Future Sunday w/ Development 2022

Lane Group	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	300	118	293	2099
v/c Ratio	0.72	0.41	0.41	0.93
Control Delay	36.5	15.8	16.7	27.4
Queue Delay	0.0	0.0	1.7	0.0
Total Delay	36.5	15.8	18.4	27.4
Queue Length 50th (ft)	131	47	123	340
Queue Length 95th (ft)	#243	m52	m155	#469
Internal Link Dist (ft)	548		225	128
Turn Bay Length (ft)	100			
Base Capacity (vph)	417	291	708	2265
Starvation Cap Reductn	0	0	258	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.72	0.41	0.65	0.93

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

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HCM Signalized Intersection Capacity Analysis

2: Henry St & King St

Total Future Sunday w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔					↔	↔	↔
Traffic Volume (vph)	0	239	37	109	270	0	0	0	0	64	1813	53
Future Volume (vph)	0	239	37	109	270	0	0	0	0	64	1813	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	10	10	12	12	12	12	12	12	11
Total Lost time (s)		4.0		4.0	4.0						4.0	
Lane Util. Factor		1.00		1.00	1.00						0.91	
Frpb, ped/bikes		0.95		1.00	1.00						1.00	
Flpb, ped/bikes		1.00		0.94	1.00						1.00	
Frt		0.98		1.00	1.00						1.00	
Flt Protected		1.00		0.95	1.00						1.00	
Satd. Flow (prot)		1490		1546	1718						4640	
Flt Permitted		1.00		0.38	1.00						1.00	
Satd. Flow (perm)		1490		614	1718						4640	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	260	40	118	293	0	0	0	0	70	1971	58
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	293	0	118	293	0	0	0	0	0	2095	0
Confl. Peds. (#/hr)	210		448	448		210	45		55	55		45
Confl. Bikes (#/hr)			3		5							
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)												3
Turn Type		NA		pm+pt	NA					Split	NA	
Protected Phases		3		2	2 3					1	1	
Permitted Phases				2 3								
Actuated Green, G (s)		21.0		27.0	32.0						38.0	
Effective Green, g (s)		22.0		29.0	33.0						39.0	
Actuated g/C Ratio		0.28		0.36	0.41						0.49	
Clearance Time (s)		5.0		5.0							5.0	
Lane Grp Cap (vph)		409		304	708						2262	
v/s Ratio Prot		c0.20		0.03	c0.17						c0.45	
v/s Ratio Perm				0.11								
v/c Ratio		0.72		0.39	0.41						0.93	
Uniform Delay, d1		26.2		18.0	16.6						19.2	
Progression Factor		1.00		0.88	0.92						1.00	
Incremental Delay, d2		9.9		2.1	1.0						7.5	
Delay (s)		36.1		17.9	16.3						26.6	
Level of Service		D		B	B						C	
Approach Delay (s)		36.1			16.8			0.0			26.6	
Approach LOS		D			B			A			C	

Intersection Summary

HCM 2000 Control Delay: 26.2, HCM 2000 Level of Service: C  
 HCM 2000 Volume to Capacity ratio: 0.81  
 Actuated Cycle Length (s): 80.0, Sum of lost time (s): 12.0  
 Intersection Capacity Utilization: 69.8%, ICU Level of Service: C  
 Analysis Period (min): 10  
 Critical Lane Group: c

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Queues

3: Patrick St & King St

Total Future Sunday w/ Development 2022

Lane Group	EBL	EBT	WBT	NBT
Lane Group Flow (vph)	76	287	366	1827
v/c Ratio	0.25	0.37	0.36	0.93
Control Delay	12.5	15.7	24.7	15.3
Queue Delay	0.0	1.8	0.8	0.0
Total Delay	12.5	17.4	25.5	15.3
Queue Length 50th (ft)	31	127	102	71
Queue Length 95th (ft)	m36	m176	#277	#400
Internal Link Dist (ft)		225	238	340
Turn Bay Length (ft)	100			
Base Capacity (vph)	303	775	479	1967
Starvation Cap Reductn	0	332	19	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.25	0.65	0.80	0.93

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

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HCM Signalized Intersection Capacity Analysis

3: Patrick St & King St

Total Future Sunday w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔					↔	↔	↔
Traffic Volume (vph)	76	284	0	0	268	69	118	1473	90	0	0	0
Future Volume (vph)	76	284	0	0	268	69	118	1473	90	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	12	12	12	12	11	12	12	12
Total Lost time (s)	4.0	4.0			4.0				4.0			
Lane Util. Factor	1.00	1.00			1.00				0.91			
Frpb, ped/bikes	1.00	1.00			0.93				0.97			
Flpb, ped/bikes	0.95	1.00			1.00				1.00			
Frt	1.00	1.00			0.97				0.99			
Flt Protected	0.95	1.00			1.00				1.00			
Satd. Flow (prot)	1573	1676			1440				4487			
Flt Permitted	0.33	1.00			1.00				1.00			
Satd. Flow (perm)	553	1676			1440				4487			
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)	76	287	0	0	291	75	128	1601	98	0	0	0
RTOR Reduction (vph)	0	0	0	0	11	0	0	4	0	0	0	0
Lane Group Flow (vph)	76	287	0	0	355	0	0	1823	0	0	0	0
Confl. Peds. (#/hr)	459		677	677		459	302		297	297		302
Confl. Bikes (#/hr)			7		5				1			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	9	0	0	8	0	0	0	0	0	0	0
Parking (#/hr)					3				4			
Turn Type		pm+pt			NA			Split	NA			
Protected Phases		2		2 3		3		1	1			
Permitted Phases		2 3			3							
Actuated Green, G (s)		30.4		35.4		24.4			34.0			
Effective Green, g (s)		32.4		36.4		26.0			35.0			
Actuated g/C Ratio		0.40		0.45		0.32			0.44			
Clearance Time (s)		5.0		5.0		5.6			5.0			
Lane Grp Cap (vph)		313		762		468			1963			
v/s Ratio Prot		0.02		c0.17		c0.25			c0.41			
v/s Ratio Perm		0.08										
v/c Ratio		0.24		0.38		0.76			0.93			
Uniform Delay, d1		15.5		14.3		24.2			21.3			
Progression Factor		0.88		1.02		0.58			0.31			
Incremental Delay, d2		1.3		1.0		9.6			7.3			
Delay (s)		15.0		15.7		23.7			13.9			
Level of Service		B		B		C			B			
Approach Delay (s)		15.5				23.7			13.9			0.0
Approach LOS		B				C			B			A

Intersection Summary

HCM 2000 Control Delay: 15.6, HCM 2000 Level of Service: B  
 HCM 2000 Volume to Capacity ratio: 0.82  
 Actuated Cycle Length (s): 80.0, Sum of lost time (s): 12.6  
 Intersection Capacity Utilization: 69.8%, ICU Level of Service: C  
 Analysis Period (min): 10  
 Critical Lane Group: c

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Queues

4: Alfred St & King St

Total Future Sunday w/ Development 2022

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	388	332	145	155
v/c Ratio	0.65	0.58	0.22	0.24
Control Delay	11.8	13.4	4.3	10.9
Queue Delay	0.1	0.2	0.0	0.0
Total Delay	11.9	13.7	4.3	10.9
Queue Length 50th (ft)	55	55	12	33
Queue Length 95th (ft)	m75	83	21	60
Internal Link Dist. (ft)	238	237	340	338
Turn Bay Length (ft)				
Base Capacity (vph)	593	575	647	650
Starvation Cap Reductn	7	7	0	0
Spillback Cap Reductn	0	28	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.66	0.61	0.22	0.24

Intersection Summary

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

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HCM Signalized Intersection Capacity Analysis

4: Alfred St & King St

Total Future Sunday w/ Development 2022

	↖	→	↗	↖	←	↗	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔			↔			↔			↔		
Traffic Volume (vph)	28	290	40	39	239	28	25	96	13	17	88	38	
Future Volume (vph)	28	290	40	39	239	28	25	96	13	17	88	38	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	10	12	12	10	12	12	12	12	12	12	12	
Total Lost time (s)		4.0			4.0			4.0			4.0		
Lane Util. Factor		1.00			1.00			1.00			1.00		
Frpb, ped/bikes		0.94			0.95			0.98			0.96		
Flpb, ped/bikes		0.98			0.97			0.99			0.98		
Flt		0.99			0.99			0.99			0.96		
Flt Protected		1.00			0.99			0.99			0.99		
Satd. Flow (prot)		1322			1334			1551			1492		
Flt Permitted		0.96			0.92			0.94			0.97		
Satd. Flow (perm)		1272			1234			1469			1450		
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)	30	315	43	42	260	30	27	104	14	18	96	41	
RTOR Reduction (vph)	0	5	0	0	4	0	0	5	0	0	16	0	
Lane Group Flow (vph)	0	383	0	0	328	0	0	140	0	0	139	0	
Confl. Peds. (#/hr)	257		351	351		257	51		106	106		57	
Confl. Bikes (#/hr)	0	12	3	0	11	2	0	0	1	0	0	2	
Bus Blockages (#/hr)	0	3	0	0	3	0	0	0	3	0	0	3	
Parking (#/hr)	3								3			3	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		2			2			1			1		
Permitted Phases	2	2		2	2		1	1		1	1		
Actuated Green, G (s)		35.9			35.9			34.0			34.0		
Effective Green, g (s)		37.0			37.0			35.0			35.0		
Actuated g/C Ratio		0.46			0.46			0.44			0.44		
Clearance Time (s)		5.1			5.1			5.0			5.0		
Lane Gp Cap (vph)		588			570			642			634		
v/s Ratio Prot													
v/s Ratio Perm		c0.30			0.27			0.10			c0.10		
v/c Ratio		0.65			0.57			0.22			0.22		
Uniform Delay, d1		16.5			15.7			14.0			14.0		
Progression Factor		0.41			0.59			0.26			0.86		
Incremental Delay, d2		4.8			3.9			0.8			0.8		
Delay (s)		11.6			13.2			4.5			12.8		
Level of Service		B			B			A			B		
Approach Delay (s)		11.6			13.2			4.5			12.8		
Approach LOS		B			B			A			B		

Intersection Summary

HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	10		
c Critical Lane Group			

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Queues

5: Washington St & King St

Total Future Sunday w/ Development 2022

	→	↖	←	↗	↑	↓
Lane Group	EBT	EBR	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	263	37	237	62	1102	1038
v/c Ratio	0.39	0.10	0.35	0.16	0.72	0.84
Control Delay	28.0	8.6	27.3	18.6	17.1	34.1
Queue Delay	5.5	0.0	0.0	0.0	0.0	0.0
Total Delay	33.5	8.6	27.3	18.6	17.1	34.1
Queue Length 50th (ft)	151	1	133	23	156	463
Queue Length 95th (ft)	225	24	202	54	178	592
Internal Link Dist. (ft)	237		569		335	130
Turn Bay Length (ft)		100				
Base Capacity (vph)	678	368	675	391	1523	1241
Starvation Cap Reductn	349	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.10	0.35	0.16	0.72	0.84

Intersection Summary

HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	10		
e Critical Lane Group			

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HCM Signalized Intersection Capacity Analysis

5: Washington St & King St

Total Future Sunday w/ Development 2022

	↖	→	↗	↖	←	↗	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔			↔			↔			↔		
Traffic Volume (vph)	0	242	34	0	218	57	0	944	70	0	858	97	
Future Volume (vph)	0	242	34	0	218	57	0	944	70	0	858	97	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	9	8	12	9	9	10	10	10	8	10	10	
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0			4.0		
Lane Util. Factor		1.00	1.00		1.00	1.00		0.95			0.78		
Frpb, ped/bikes		1.00	0.60		1.00	0.63		0.96			0.96		
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00			1.00		
Flt		1.00	0.85		1.00	0.85		0.99			0.98		
Flt Protected		1.00	1.00		1.00	1.00		1.00			1.00		
Satd. Flow (prot)		1603	825		1596	902		2956			2408		
Flt Permitted		1.00	1.00		1.00	1.00		1.00			1.00		
Satd. Flow (perm)		1603	825		1596	902		2956			2408		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	263	37	0	237	62	0	1026	76	0	933	105	
RTOR Reduction (vph)	0	0	20	0	0	10	0	0	0	0	0	0	
Lane Group Flow (vph)	0	263	17	0	237	52	0	1102	0	0	1038	0	
Confl. Peds. (#/hr)	502		634	634		502	129		308	308		129	
Confl. Bikes (#/hr)	0	11	0	0	12	0	0	0	0	0	0	2	
Parking (#/hr)									3			3	
Turn Type	NA	Perm		NA	Perm		NA	NA		NA		NA	
Protected Phases		2			2			1			1		
Permitted Phases		2			2			1			1		
Actuated Green, G (s)		53.1	53.1		53.1	53.1		66.0			66.0		
Effective Green, g (s)		55.0	55.0		55.0	55.0		67.0			67.0		
Actuated g/C Ratio		0.42	0.42		0.42	0.42		0.52			0.52		
Clearance Time (s)		5.9	5.9		5.9	5.9		5.0			5.0		
Lane Gp Cap (vph)		678	349		675	381		1523			1241		
v/s Ratio Prot		c0.16			0.15			0.37			c0.43		
v/s Ratio Perm			0.02			0.06							
v/c Ratio		0.39	0.05		0.35	0.14		0.72			0.84		
Uniform Delay, d1		25.9	22.1		25.4	23.0		24.3			26.8		
Progression Factor		1.00	1.00		1.00	1.00		0.58			1.00		
Incremental Delay, d2		1.7	0.3		1.4	0.7		2.6			6.5		
Delay (s)		27.5	22.4		26.8	23.7		16.8			33.4		
Level of Service		C	C		C	C		B			C		
Approach Delay (s)		26.9			26.2			16.8			33.4		
Approach LOS		C			C			B			C		

Intersection Summary

Queues

6: Henry St & Prince St

Total Future Sunday w/ Development 2022

Lane Group	EBT	SBT
Lane Group Flow (vph)	465	1927
v/c Ratio	0.35	0.87
Control Delay	17.0	5.6
Queue Delay	0.0	0.4
Total Delay	17.0	6.1
Queue Length 50th (ft)	80	28
Queue Length 95th (ft)	117	m31
Internal Link Dist (ft)	636	338
Turn Bay Length (ft)		
Base Capacity (vph)	1310	2208
Starvation Cap Reductn	0	56
Spillback Cap Reductn	0	33
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.35	0.90

Intersection Summary

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

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HCM Signalized Intersection Capacity Analysis

6: Henry St & Prince St

Total Future Sunday w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔									↔	
Traffic Volume (vph)	0	336	92	0	0	0	0	0	0	94	1679	0
Future Volume (vph)	0	336	92	0	0	0	0	0	0	94	1679	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frpb, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.97									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3170									4503	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3170									4503	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	365	100	0	0	0	0	0	0	102	1825	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	462	0	0	0	0	0	0	0	0	1913	0
Confl. Peds. (#/hr)	26	25	25	25	25	26	22	17	17	17	22	22
Confl. Bikes (#/hr)			8			1						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Parking (#/hr)		6									3	
Turn Type		NA								Perm	NA	
Protected Phases		2									1	
Permitted Phases												1
Actuated Green, G (s)		32.0									38.0	
Effective Green, g (s)		33.0									39.0	
Actuated g/C Ratio		0.41									0.49	
Clearance Time (s)		5.0									5.0	
Lane Gp Cap (vph)		1307									2195	
v/s Ratio Prot		c0.15										
v/s Ratio Perm											0.42	
v/c Ratio		0.35									0.87	
Uniform Delay, d1		16.2									18.3	
Progression Factor		1.00									0.16	
Incremental Delay, d2		0.8									2.2	
Delay (s)		16.9									5.1	
Level of Service		B									A	
Approach Delay (s)		16.9		0.0				0.0			5.1	
Approach LOS		B		A				A			A	

Intersection Summary

HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	10		

c Critical Lane Group

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Queues

7: Alfred St & Prince St

Total Future Sunday w/ Development 2022

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	371	134	187
v/c Ratio	0.25	0.18	0.26
Control Delay	1.3	15.5	11.7
Queue Delay	0.0	0.0	0.0
Total Delay	1.3	15.5	11.7
Queue Length 50th (ft)	5	38	54
Queue Length 95th (ft)	7	m72	m84
Internal Link Dist (ft)	244	348	340
Turn Bay Length (ft)			
Base Capacity (vph)	1505	735	712
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.25	0.18	0.26

Intersection Summary

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

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HCM Signalized Intersection Capacity Analysis

7: Alfred St & Prince St

Total Future Sunday w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔						↔			↔	
Traffic Volume (vph)	16	290	36	0	0	0	0	113	10	21	151	0
Future Volume (vph)	16	290	36	0	0	0	0	113	10	21	151	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	12	12	12	12	12	12
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frpb, ped/bikes		0.99						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.98						0.99			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3322						1625			1634	
Flt Permitted		1.00						1.00			0.96	
Satd. Flow (perm)		3322						1625			1582	
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)	17	315	39	0	0	0	0	123	11	23	164	0
RTOR Reduction (vph)	0	11	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	360	0	0	0	0	0	130	0	0	187	0
Confl. Peds. (#/hr)	29	54	54	29	81			40	40		81	
Confl. Bikes (#/hr)		6	11		2			3			3	
Parking (#/hr)												
Turn Type		Perm	NA					NA		Perm	NA	
Protected Phases		1						2			2	
Permitted Phases		1								2		
Actuated Green, G (s)		35.0						35.0			35.0	
Effective Green, g (s)		36.0						36.0			36.0	
Actuated g/C Ratio		0.45						0.45			0.45	
Clearance Time (s)		5.0						5.0			5.0	
Lane Gp Cap (vph)		1494						731			711	
v/s Ratio Prot								0.08				
v/s Ratio Perm		0.11									c0.12	
v/c Ratio		0.24						0.18			0.26	
Uniform Delay, d1		13.6						13.2			13.7	
Progression Factor		0.07						1.18			0.77	
Incremental Delay, d2		0.4						0.5			0.8	
Delay (s)		1.4						16.0			11.4	
Level of Service		A						B			B	
Approach Delay (s)		1.4		0.0				16.0			11.4	
Approach LOS		A		A				B			B	

Intersection Summary

HCM 2000 Control Delay	6.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	39.3%	ICU Level of Service	A
Analysis Period (min)	10		

c Critical Lane Group

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Queues

8: Henry St & Duke St

Total Future Sunday w/ Development 2022

Lane Group	EBT	EBR	WBL	WBT	SBT
Lane Group Flow (vph)	370	399	225	726	1979
v/c Ratio	0.84	0.57	0.77	0.54	0.87
Control Delay	46.5	30.6	23.5	13.4	6.0
Queue Delay	0.0	0.0	0.0	1.0	0.1
Total Delay	46.5	30.6	23.5	14.4	6.1
Queue Length 50th (ft)	176	88	63	100	25
Queue Length 95th (ft)	#320	131	m67	m105	32
Internal Link Dist (ft)	72		232	350	
Turn Bay Length (ft)		125			
Base Capacity (vph)	442	702	294	1357	2264
Starvation Cap Reductn	0	0	0	361	21
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.84	0.57	0.77	0.73	0.88

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

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HCM Signalized Intersection Capacity Analysis

8: Henry St & Duke St

Total Future Sunday w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↑	↑	↑						↑	↑
Traffic Volume (vph)	0	340	367	207	668	0	0	0	0	2	1580	239
Future Volume (vph)	0	340	367	207	668	0	0	0	0	2	1580	239
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	10	12	12	12	12	12	12	11
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0							4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95							0.91
Frpb, ped/bikes	1.00	1.00	1.00	1.00								1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00								1.00
Flt	1.00	0.85	1.00	1.00								0.98
Flt Protected	1.00	1.00	0.95	1.00								1.00
Satd. Flow (prot)	1863	2956	1651	3290								4594
Flt Permitted	1.00	1.00	0.18	1.00								1.00
Satd. Flow (perm)	1863	2956	306	3290								4594
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	370	399	225	726	0	0	0	0	2	1717	260
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	25
Lane Group Flow (vph)	0	370	399	225	726	0	0	0	0	0	1954	0
Confl. Peds. (#/hr)	12	7	7			12	6			4	4	6
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)												1
Turn Type	NA	Prot	pm+pt	NA						Perm	NA	
Protected Phases	8	8	7	4							2	
Permitted Phases			4								2	
Actuated Green, G (s)	17.7	17.7	31.7	31.7								37.9
Effective Green, g (s)	19.0	19.0	32.7	33.0								39.0
Actuated g/C Ratio	0.24	0.24	0.41	0.41								0.49
Clearance Time (s)	5.3	5.3	5.0	5.3								5.1
Lane Grp Cap (vph)	442	702	293	1357								2239
v/s Ratio Prot	0.20	0.14	c0.10	0.22								
v/s Ratio Perm			c0.22									0.43
v/c Ratio	0.84	0.57	0.77	0.54								0.87
Uniform Delay, d1	29.0	26.9	18.2	17.7								18.3
Progression Factor	1.00	1.00	1.08	0.73								0.15
Incremental Delay, d2	15.8	3.3	5.4	0.4								2.8
Delay (s)	44.8	30.2	24.9	13.3								5.5
Level of Service	D	C	C	B								A
Approach Delay (s)	37.2			16.0				0.0				5.5
Approach LOS	D			B				A				A

Intersection Summary

- HCM 2000 Control Delay: 14.8
- HCM 2000 Level of Service: B
- HCM 2000 Volume to Capacity ratio: 0.86
- Actuated Cycle Length (s): 80.0
- Sum of lost time (s): 12.0
- Intersection Capacity Utilization: 76.7%
- ICU Level of Service: D
- Analysis Period (min): 10
- c Critical Lane Group

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Queues

9: Patrick St & Duke St

Total Future Sunday w/ Development 2022

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	392	703	2176
v/c Ratio	0.47	0.98	0.95
Control Delay	20.5	38.7	25.2
Queue Delay	0.8	0.8	0.0
Total Delay	21.4	39.5	25.2
Queue Length 50th (ft)	91	132	202
Queue Length 95th (ft)	m134	#555	284
Internal Link Dist (ft)	232	245	181
Turn Bay Length (ft)			
Base Capacity (vph)	837	716	2292
Starvation Cap Reductn	209	4	0
Spillback Cap Reductn	22	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.62	0.99	0.95

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

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HCM Signalized Intersection Capacity Analysis

9: Patrick St & Duke St

Total Future Sunday w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↑	↑	↑			↑	↑	↑	↑	↑
Traffic Volume (vph)	6	354	0	0	604	42	310	1585	107	0	0	0
Future Volume (vph)	6	354	0	0	604	42	310	1585	107	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0			4.0				
Lane Util. Factor	1.00	1.00			1.00			0.91				
Frpb, ped/bikes	1.00	1.00			1.00			1.00				
Flt	1.00	0.99			0.99			0.99				
Flt Protected	1.00	1.00			1.00			0.99				
Satd. Flow (prot)	2109				1631			4942				
Flt Permitted	0.91				1.00			0.99				
Satd. Flow (perm)	1914				1631			4942				
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)	7	385	0	0	657	46	337	1723	116	0	0	0
RTOR Reduction (vph)	0	0	0	0	3	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	392	0	0	700	0	0	2168	0	0	0	0
Confl. Peds. (#/hr)	11	72	72			11	13		11	11		13
Confl. Bikes (#/hr)			2			6						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Parking (#/hr)						3						
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases	2				2							1
Permitted Phases	2						1					1
Actuated Green, G (s)	33.8				33.8			36.0				
Effective Green, g (s)	35.0				35.0			37.0				
Actuated g/C Ratio	0.44				0.44			0.46				
Clearance Time (s)	5.2				5.2			5.0				
Lane Grp Cap (vph)	837				713			2285				
v/s Ratio Prot					c0.43							
v/s Ratio Perm	0.20							0.44				
v/c Ratio	0.47				0.98			0.95				
Uniform Delay, d1	15.9				22.2			20.6				
Progression Factor	1.19				0.57			0.77				
Incremental Delay, d2	1.1				22.7			8.9				
Delay (s)	20.0				35.3			24.7				
Level of Service	C				D			C				
Approach Delay (s)	20.0				35.3			24.7				0.0
Approach LOS	C				D			C				A

Intersection Summary

- HCM 2000 Control Delay: 26.4
- HCM 2000 Level of Service: C
- HCM 2000 Volume to Capacity ratio: 0.96
- Actuated Cycle Length (s): 80.0
- Sum of lost time (s): 8.0
- Intersection Capacity Utilization: 82.6%
- ICU Level of Service: E
- Analysis Period (min): 10
- c Critical Lane Group

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Queues

10: Alfred St & Duke St

Total Future Sunday w/ Development 2022

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	507	575	91	218
v/c Ratio	0.60	0.62	0.19	0.45
Control Delay	10.3	9.5	17.5	14.8
Queue Delay	0.0	0.6	0.0	0.0
Total Delay	10.3	10.2	17.5	14.8
Queue Length 50th (ft)	78	87	28	35
Queue Length 95th (ft)	m65	119	61	77
Internal Link Dist. (ft)	245	227	398	348
Turn Bay Length (ft)				
Base Capacity (vph)	849	933	488	482
Starvation Cap Reductn	2	118	0	0
Spillback Cap Reductn	0	119	0	4
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.60	0.71	0.19	0.46

Intersection Summary

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

F-185

HCM Signalized Intersection Capacity Analysis

10: Alfred St & Duke St

Total Future Sunday w/ Development 2022

	↔	→	↙	↘	←	↖	↗	↑	↙	↘	↓	↖	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔			↔			↔			↔		
Traffic Volume (vph)	48	382	37	20	478	30	19	55	9	13	98	89	
Future Volume (vph)	48	382	37	20	478	30	19	55	9	13	98	89	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	14	12	12	14	12	12	11	12	12	11	12	
Total Lost time (s)		4.0			4.0			4.0			4.0		
Lane Util. Factor		1.00			1.00			1.00			1.00		
Frpb, ped/bikes		0.98			1.00			0.99			0.87		
Flpb, ped/bikes		1.00			1.00			0.96			0.99		
Frt		0.99			0.99			0.99			0.94		
Flt Protected		0.99			1.00			0.99			1.00		
Satd. Flow (prot)		1687			1732			1487			1294		
Flt Permitted		0.91			0.97			0.92			0.98		
Satd. Flow (perm)		1538			1692			1379			1277		
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)	52	415	40	22	520	33	21	60	10	14	107	97	
RTOR Reduction (vph)	0	4	0	0	3	0	0	6	0	0	36	0	
Lane Group Flow (vph)	0	503	0	0	572	0	0	85	0	0	182	0	
Confl. Peds. (#/hr)	27		133	133		27	130		53	53		130	
Confl. Bikes (#/hr)	0	0	2	0	5	0	0	1	0	0	0	0	
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0	
Parking (#/hr)	3				1			1			3		
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		2			2			1			1		
Permitted Phases	2	2		2	2		1	1		1	1		
Actuated Green, G (s)		43.0			43.0			27.0			27.0		
Effective Green, g (s)		44.0			44.0			28.0			28.0		
Actuated g/C Ratio		0.55			0.55			0.35			0.35		
Clearance Time (s)		5.0			5.0			5.0			5.0		
Lane Grp Cap (vph)		845			930			482			446		
v/s Ratio Prot													
v/s Ratio Perm		0.33			c0.34			0.06			c0.14		
v/c Ratio		0.60			0.62			0.18			0.41		
Uniform Delay, d1		12.0			12.2			18.0			19.7		
Progression Factor		0.64			0.55			1.00			0.77		
Incremental Delay, d2		2.5			2.6			0.8			2.7		
Delay (s)		10.3			9.3			18.8			17.9		
Level of Service		B			A			B			B		
Approach Delay (s)		10.3			9.3			18.8			17.9		
Approach LOS		B			A			B			B		

Intersection Summary

HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	10		

c Critical Lane Group

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Queues

11: Columbus St & Duke St

Total Future Sunday w/ Development 2022

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	468	509	208	154
v/c Ratio	0.58	0.62	0.42	0.26
Control Delay	15.0	17.8	20.8	9.6
Queue Delay	0.3	6.8	0.0	0.0
Total Delay	15.3	24.6	20.8	9.6
Queue Length 50th (ft)	104	168	73	18
Queue Length 95th (ft)	109	270	131	41
Internal Link Dist. (ft)	227	231	390	358
Turn Bay Length (ft)				
Base Capacity (vph)	803	818	498	602
Starvation Cap Reductn	66	261	0	0
Spillback Cap Reductn	0	15	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.64	0.91	0.42	0.26

Intersection Summary

HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	10		

c Critical Lane Group

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HCM Signalized Intersection Capacity Analysis

11: Columbus St & Duke St

Total Future Sunday w/ Development 2022

	↔	→	↙	↘	←	↖	↗	↑	↙	↘	↓	↖	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔			↔			↔			↔		
Traffic Volume (vph)	19	375	36	19	406	43	91	93	7	8	74	60	
Future Volume (vph)	19	375	36	19	406	43	91	93	7	8	74	60	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width		4.0			4.0			4.0			4.0		
Lane Util. Factor		1.00			1.00			1.00			1.00		
Frpb, ped/bikes		0.99			0.99			1.00			0.96		
Flpb, ped/bikes		1.00			1.00			0.98			1.00		
Frt		0.99			0.99			0.99			0.94		
Flt Protected		1.00			1.00			0.98			1.00		
Satd. Flow (prot)		1604			1624			1558			1490		
Flt Permitted		0.97			0.97			0.80			0.98		
Satd. Flow (perm)		1560			1587			1281			1469		
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)	21	408	39	21	441	47	99	101	8	9	80	65	
RTOR Reduction (vph)	0	4	0	0	4	0	0	2	0	0	33	0	
Lane Group Flow (vph)	0	464	0	0	505	0	0	206	0	0	121	0	
Confl. Peds. (#/hr)	38		68	68		38	33		44	44		33	
Confl. Bikes (#/hr)		3			1			3			3		
Parking (#/hr)													
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		6			2			4			8		
Permitted Phases	6	6		2	2		4	4		8	8		
Actuated Green, G (s)		40.0			40.0			30.0			30.0		
Effective Green, g (s)		41.0			41.0			31.0			31.0		
Actuated g/C Ratio		0.51			0.51			0.39			0.39		
Clearance Time (s)		5.0			5.0			5.0			5.0		
Lane Grp Cap (vph)		799			813			496			569		
v/s Ratio Prot													
v/s Ratio Perm		0.30			c0.32			c0.16			0.08		
v/c Ratio		0.58			0.62			0.42			0.21		
Uniform Delay, d1		13.5			13.9			17.9			16.4		
Progression Factor		0.89			1.00			1.00			0.78		
Incremental Delay, d2		2.6			3.5			2.5			0.8		
Delay (s)		14.7			17.5			20.4			13.6		
Level of Service		B			B			C			B		
Approach Delay (s)		14.7			17.5			20.4			13.6		
Approach LOS		B			B			C			B		

Intersection Summary

HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	10		

c Critical Lane Group

F-188

Queues

12: Washington St & Duke St

Total Future Sunday w/ Development 2022

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	404	431	879	1075
w/c Ratio	0.82	0.65	1.00	0.98
Control Delay	45.2	33.0	57.3	33.4
Queue Delay	37.5	0.0	0.0	0.0
Total Delay	82.6	33.0	57.3	33.4
Queue Length 50th (ft)	286	273	377	155
Queue Length 95th (ft)	#474	395	#536	#735
Internal Link Dist (ft)	231	575	344	349
Turn Bay Length (ft)				
Base Capacity (vph)	493	662	882	1101
Starvation Cap Reductn	141	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.15	0.65	1.00	0.98

Intersection Summary

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

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HCM Signalized Intersection Capacity Analysis

12: Washington St & Duke St

Total Future Sunday w/ Development 2022

	→	←	↑	↓								
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	119	192	61	54	274	68	62	726	21	42	777	169
Future Volume (vph)	119	192	61	54	274	68	62	726	21	42	777	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	11	9	9	9	11	9
Total Lost time (s)	4.0			4.0			4.0				4.0	
Lane Util. Factor	1.00			1.00			0.95				0.78	
Flpb, ped/bikes	0.99			0.99			1.00				0.98	
Flpb, ped/bikes	1.00			1.00			1.00				1.00	
Frt	0.98			0.98			1.00				0.97	
Flt Protected	0.98			0.99			1.00				1.00	
Satd. Flow (prot)	1625			1639			2972				2673	
Flt Permitted	0.66			0.89			0.60				0.83	
Satd. Flow (perm)	1094			1472			1789				2219	
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)	129	209	66	59	298	74	67	789	23	46	845	184
RTOR Reduction (vph)	0	6	0	0	6	0	0	2	0	0	10	0
Lane Group Flow (vph)	0	398	0	0	425	0	0	877	0	0	1065	0
Confl. Peds. (#/hr)	18		15	15		18	32		22	22		32
Confl. Bikes (#/hr)			1			3			3			
Parking (#/hr)			3			3			3			
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		56.5			56.5			63.0			63.0	
Effective Green, g (s)		58.0			58.0			64.0			64.0	
Actuated g/C Ratio		0.45			0.45			0.49			0.49	
Clearance Time (s)		5.5			5.5			5.0			5.0	
Lane Grp Cap (vph)		488			656			880			1092	
w/s Ratio Prot												
w/s Ratio Perm		c0.36			0.29			c0.49			0.48	
w/c Ratio		0.82			0.65			1.00			0.98	
Uniform Delay, d1		31.4			28.1			32.9			32.2	
Progression Factor		1.00			1.00			1.00			0.51	
Incremental Delay, d2		13.2			4.8			24.3			15.6	
Delay (s)		44.6			32.9			57.2			32.0	
Level of Service		D			C			E			C	
Approach Delay (s)		44.6			32.9			57.2			32.0	
Approach LOS		D			C			E			C	

Intersection Summary

HCM 2000 Control Delay 41.9 HCM 2000 Level of Service D  
 HCM 2000 Volume to Capacity ratio 0.91  
 Actuated Cycle Length (s) 130.0 Sum of lost time (s) 8.0  
 Intersection Capacity Utilization 101.5% ICU Level of Service G  
 Analysis Period (min) 10  
 c Critical Lane Group

F-190

HCM Unsignalized Intersection Capacity Analysis

13: Patrick St & Henry to Patrick Connector

Total Future Sunday w/ Development 2022

	↖	↗	↘	↙	↕	↔
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↕	↕	↕
Traffic Volume (veh/h)	165	0	0	1833	0	0
Future Volume (veh/h)	165	0	0	1833	0	0
Sign Control	Yield			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	179	0	0	1992	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (ft)				414	441	
pX, platoon unblocked	0.88					
vC, conflicting volume	664	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCU, unblocked vol	119	0	0			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	76	100	100			
cM capacity (veh/h)	757	1084	1622			

Direction, Lane #

	EB 1	NB 1	NB 2	NB 3
Volume Total	179	664	664	664
Volume Left	179	0	0	0
Volume Right	0	0	0	0
cSH	757	1700	1700	1700
Volume to Capacity	0.24	0.39	0.39	0.39
Queue Length 95th (ft)	23	0	0	0
Control Delay (s)	11.2	0.0	0.0	0.0
Lane LOS	B			
Approach Delay (s)	11.2	0.0		
Approach LOS	B			

Intersection Summary

Average Delay 0.9  
 Intersection Capacity Utilization 93.8% ICU Level of Service F  
 Analysis Period (min) 10

F-191

HCM Unsignalized Intersection Capacity Analysis

14: Alfred St & Wolfe St

Total Future Sunday w/ Development 2022

	↖	↗	↘	↙	↕	↔						
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	2	9	84	16	19	20	22	85	11	12	100	58
Future Volume (vph)	2	9	84	16	19	20	22	85	11	12	100	58
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	10	91	17	21	22	24	92	12	13	109	63

Direction, Lane #

	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	103	60	128	185
Volume Left (vph)	2	17	24	13
Volume Right (vph)	91	22	12	63
Head (s)	-0.49	-0.13	0.02	-0.16
Departure Headway (s)	4.2	4.6	4.5	4.3
Degree Utilization, x	0.12	0.08	0.16	0.22
Capacity (veh/h)	789	718	763	802
Control Delay (s)	7.8	8.0	8.3	8.5
Approach Delay (s)	7.8	8.0	8.3	8.5
Approach LOS	A	A	A	A

Intersection Summary

Delay 8.2  
 Level of Service A  
 Intersection Capacity Utilization 32.8% ICU Level of Service A  
 Analysis Period (min) 10

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Intersection												
Intersection Delay s/veh	8.2											
Intersection LOS	A											
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	2	9	84	0	16	19	20	0	22	85	11
Future Vol, veh/h	0	2	9	84	0	16	19	20	0	22	85	11
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	0	2	10	91	0	17	21	22	0	24	92	12
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach			EB	WB	NB							
Opposing Approach	WB		EB		SB							
Opposing Lanes	1		1		1							
Conflicting Approach Left	SB		NB		EB							
Conflicting Lanes Left	1		1		1							
Conflicting Approach Right	NB		SB		WB							
Conflicting Lanes Right	1		1		1							
HCM Control Delay	7.8		8		8.3							
HCM LOS	A		A		A							
Lane												
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	19%	2%	29%	7%								
Vol Thru, %	72%	9%	35%	59%								
Vol Right, %	9%	88%	36%	34%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	118	95	55	170								
LT Vol	22	2	16	12								
Through Vol	85	9	19	100								
RT Vol	11	84	20	58								
Lane Flow Rate	128	103	60	185								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.159	0.12	0.076	0.218								
Departure Headway (Hd)	4.472	4.176	4.586	4.246								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	803	859	781	846								
Service Time	2.495	2.197	2.612	2.268								
HCM Lane v/c Ratio	0.159	0.12	0.077	0.219								
HCM Control Delay	8.3	7.8	8	8.5								
HCM Lane LOS	A	A	A	A								
HCM 95th-ile Q	0.6	0.4	0.2	0.8								

Intersection				
Intersection Delay s/veh	8.2			
Intersection LOS	A			
Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	12	100	58
Future Vol, veh/h	0	12	100	58
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	13	109	63
Number of Lanes	0	0	1	0
Approach		SB		
Opposing Approach	NB			
Opposing Lanes	1			
Conflicting Approach Left	WB			
Conflicting Lanes Left	1			
Conflicting Approach Right	EB			
Conflicting Lanes Right	1			
HCM Control Delay	8.5			
HCM LOS	A			
Lane				

Queues  
15: Patrick St & Gibbon St

Lane Group	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	374	436	1909	2481
v/c Ratio	0.78	0.48	0.83	0.84
Control Delay	33.1	20.8	17.9	9.2
Queue Delay	0.5	0.0	0.0	12.9
Total Delay	33.6	20.8	17.9	22.2
Queue Length 50th (ft)	143	79	272	1
Queue Length 95th (ft)	301	114	437	#161
Internal Link Dist (ft)	273		346	346
Turn Bay Length (ft)				
Base Capacity (vph)	558	1055	2291	2969
Starvation Cap Reductn	30	0	0	559
Spillback Cap Reductn	0	0	0	155
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.71	0.41	0.83	1.03

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

HCM Signalized Intersection Capacity Analysis  
15: Patrick St & Gibbon St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↑	↑			↑	↑		↑	↑
Traffic Volume (vph)	0	0	0	689	24	32	34	1722	0	0	2278	5
Future Volume (vph)	0	0	0	689	24	32	34	1722	0	0	2278	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	12	12	12	12	12	12
Grade (%)	0%			2%			0%			0%		
Total Lost time (s)	4.0			4.0			4.0			4.0		
Lane Util. Factor	0.91			0.91			0.91			0.91		
Frb, ped/bikes	1.00			1.00			1.00			1.00		
Fjpb, ped/bikes	1.00			1.00			1.00			1.00		
Frt	1.00			0.99			1.00			1.00		
Flt Protected	0.95			0.96			1.00			1.00		
Satd. Flow (prot)	1541			2896			5031			5034		
Flt Permitted	0.95			0.96			0.77			1.00		
Satd. Flow (perm)	1541			2896			3889			5034		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	749	26	35	37	1872	0	0	2476	5
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	374	430	0	0	1909	0	0	2481	0
Confl. Peds. (#/hr)	3	2	2	3								
Confl. Bikes (#/hr)	2											
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)	1											
Turn Type	Split			NA			Perm			NA		
Protected Phases	2			2			1			1		
Permitted Phases							1					
Actuated Green, G (s)	22.8			22.8			45.7			45.7		
Effective Green, g (s)	24.8			24.8			47.2			47.2		
Actuated g/C Ratio	0.31			0.31			0.59			0.59		
Clearance Time (s)	6.0			6.0			5.5			5.5		
Vehicle Extension (s)	2.0			2.0			2.0			2.0		
Lane Grp Cap (vph)	477			897			2294			2970		
v/s Ratio Prot	c0.24			0.15						c0.49		
v/s Ratio Perm							0.49					
v/c Ratio	0.78			0.48			0.83			0.84		
Uniform Delay, d1	25.2			22.4			13.2			13.3		
Progression Factor	0.92			0.90			1.00			0.47		
Incremental Delay, d2	6.7			0.1			3.5			1.7		
Delay (s)	29.7			20.3			16.6			7.9		
Level of Service	C			C			B			A		
Approach Delay (s)	0.0			24.7			16.6			7.9		
Approach LOS	A			C			B			A		
Intersection Summary												
HCM 2000 Control Delay	13.7			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.82											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	89.8%											

HCM Signalized Intersection Capacity Analysis  
15: Patrick St & Gibbon St

Total Future Sunday w/ Development 2022

Analysis Period (min) 10  
Critical Lane Group

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Queues

16: Alfred St & Gibbon St

Total Future Sunday w/ Development 2022

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	680	215	258
v/c Ratio	0.49	0.45	0.37
Control Delay	9.2	13.8	6.1
Queue Delay	0.0	0.0	0.0
Total Delay	9.2	13.8	6.1
Queue Length 50th (ft)	50	36	15
Queue Length 95th (ft)	83	79	51
Internal Link Dist (ft)	218	136	305
Turn Bay Length (ft)			
Base Capacity (vph)	1389	477	704
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	34	0	1
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.50	0.45	0.37

Intersection Summary

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HCM Signalized Intersection Capacity Analysis  
16: Alfred St & Gibbon St

Total Future Sunday w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↑			↓	
Traffic Volume (vph)	0	0	0	5	613	8	98	99	0	0	53	184
Future Volume (vph)	0	0	0	5	613	8	98	99	0	0	53	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	12	12	12	12	12	13	12
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Fit					1.00			1.00			0.90	
Fit Protected					1.00			0.98			1.00	
Satd. Flow (prot)					3080			1818			1723	
Fit Permitted					1.00			0.73			1.00	
Satd. Flow (perm)					3080			1364			1723	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	5	666	9	107	108	0	0	58	200
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	101	0
Lane Group Flow (vph)	0	0	0	0	678	0	0	215	0	0	157	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)					1							
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases					2			1				1
Permitted Phases				2								
Actuated Green, G (s)					17.0			12.7			12.7	
Effective Green, g (s)					18.0			14.0			14.0	
Actuated g/C Ratio					0.45			0.35			0.35	
Clearance Time (s)					5.0			5.3			5.3	
Lane Grp Cap (vph)					1386			477			603	
v/s Ratio Prot											0.09	
v/s Ratio Perm					0.22			c0.16				
v/c Ratio					0.49			0.45			0.26	
Uniform Delay, d1					7.8			10.0			9.3	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					1.2			3.0			1.0	
Delay (s)					9.0			13.1			10.3	
Level of Service					A			B			B	
Approach Delay (s)		0.0			9.0			13.1			10.3	
Approach LOS		A			A			B			B	

Intersection Summary

HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	10		

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Queues

17: Patrick St & Franklin St

Total Future Sunday w/ Development 2022

Lane Group	EBL	EBT	NBT	NBR	SBT
Lane Group Flow (vph)	8	93	1729	541	2853
v/c Ratio	0.05	0.29	0.40	0.38	0.71
Control Delay	60.6	67.1	3.6	1.1	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.5
Total Delay	60.6	67.1	3.6	1.1	5.2
Queue Length 50th (ft)	8	49	93	0	128
Queue Length 95th (ft)	23	70	252	28	707
Internal Link Dist (ft)		261	297		346
Turn Bay Length (ft)					
Base Capacity (vph)	555	1065	4294	1416	4028
Starvation Cap Reductn	0	0	0	0	628
Spillback Cap Reductn	0	0	184	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.01	0.09	0.42	0.38	0.84

Intersection Summary

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HCM Signalized Intersection Capacity Analysis  
17: Patrick St & Franklin St

Total Future Sunday w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔	↕		↔	↕		↔	↕	↕	↔	↕	↕	
Traffic Volume (vph)	7	49	37	0	0	0	0	1591	498	3	2622	0	
Future Volume (vph)	7	49	37	0	0	0	0	1591	498	3	2622	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	13	12	11	11	11	12	12	12	12	12	12	
Grade (%)		2%				0%		0%			0%		
Total Lost time (s)	4.0	4.0						4.0	4.0		4.0		
Lane Util. Factor	1.00	0.95						0.91	1.00		0.91		
Flpb, ped/bikes	1.00	0.99						1.00	1.00		1.00		
Flpb, ped/bikes	1.00	1.00						1.00	1.00		1.00		
Flt	1.00	0.94						1.00	0.85		1.00		
Flt Protected	0.95	1.00						1.00	1.00		1.00		
Satd. Flow (prot)	1744	3336						5036	1568		5036		
Flt Permitted	0.95	1.00						1.00	1.00		0.94		
Satd. Flow (perm)	1744	3336						5036	1568		4723		
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)	8	53	40	0	0	0	0	1729	541	3	2850	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	80	0	0	0	
Lane Group Flow (vph)	8	93	0	0	0	0	0	1729	461	0	2853	0	
Confl. Peds. (#/hr)	3						3						
Confl. Bikes (#/hr)			4				1						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%	
Bus Blockages (#/hr)	0	3	0	0	0	0	0	0	0	0	0	0	
Turn Type	Perm	NA						NA	Perm	Perm	NA		
Protected Phases	4							2			2		
Permitted Phases	4							2		2			
Actuated Green, G (s)	13.6	13.6						134.4	134.4		134.4		
Effective Green, g (s)	15.6	15.6						136.4	136.4		136.4		
Actuated g/C Ratio	0.10	0.10						0.85	0.85		0.85		
Clearance Time (s)	6.0	6.0						6.0	6.0		6.0		
Vehicle Extension (s)	3.0	3.0						0.2	0.2		0.2		
Lane Grp Cap (vph)	170	325						4293	1336		4026		
v/s Ratio Prot		c0.03						0.34					
v/s Ratio Perm	0.00							0.29			c0.60		
v/c Ratio	0.05	0.29						0.40	0.35		0.71		
Uniform Delay, d1	65.5	67.0						2.7	2.5		4.4		
Progression Factor	1.00	1.00						1.00	1.00		0.71		
Incremental Delay, d2	0.1	0.5						0.3	0.7		0.7		
Delay (s)	65.6	67.5						2.9	3.2		3.8		
Level of Service	E	E						A	A		A		
Approach Delay (s)	67.4			A				3.0			3.8		
Approach LOS	E			A				A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			4.7	HCM 2000 Level of Service						A			
HCM 2000 Volume to Capacity ratio			0.67										
Actuated Cycle Length (s)			160.0	Sum of lost time (s)						8.0			
Intersection Capacity Utilization			98.2%	ICU Level of Service						F			
Analysis Period (min)			10										

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HCM Signalized Intersection Capacity Analysis  
17: Patrick St & Franklin St

Total Future Sunday w/ Development 2022

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔	↕		↔	↕		↔	↕	↕	↔	↕	↕	
Traffic Volume (vph)	7	49	37	0	0	0	0	1591	498	3	2622	0	
Future Volume (vph)	7	49	37	0	0	0	0	1591	498	3	2622	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	13	12	11	11	11	12	12	12	12	12	12	
Grade (%)		2%				0%		0%			0%		
Total Lost time (s)	4.0	4.0						4.0	4.0		4.0		
Lane Util. Factor	1.00	0.95						0.91	1.00		0.91		
Flpb, ped/bikes	1.00	0.99						1.00	1.00		1.00		
Flpb, ped/bikes	1.00	1.00						1.00	1.00		1.00		
Flt	1.00	0.94						1.00	0.85		1.00		
Flt Protected	0.95	1.00						1.00	1.00		1.00		
Satd. Flow (prot)	1744	3336						5036	1568		5036		
Flt Permitted	0.95	1.00						1.00	1.00		0.94		
Satd. Flow (perm)	1744	3336						5036	1568		4723		
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)	8	53	40	0	0	0	0	1729	541	3	2850	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	80	0	0	0	
Lane Group Flow (vph)	8	93	0	0	0	0	0	1729	461	0	2853	0	
Confl. Peds. (#/hr)	3						3						
Confl. Bikes (#/hr)			4				1						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%	
Bus Blockages (#/hr)	0	3	0	0	0	0	0	0	0	0	0	0	
Turn Type	Perm	NA						NA	Perm	Perm	NA		
Protected Phases	4							2			2		
Permitted Phases	4							2		2			
Actuated Green, G (s)	13.6	13.6						134.4	134.4		134.4		
Effective Green, g (s)	15.6	15.6						136.4	136.4		136.4		
Actuated g/C Ratio	0.10	0.10						0.85	0.85		0.85		
Clearance Time (s)	6.0	6.0						6.0	6.0		6.0		
Vehicle Extension (s)	3.0	3.0						0.2	0.2		0.2		
Lane Grp Cap (vph)	170	325						4293	1336		4026		
v/s Ratio Prot		c0.03						0.34					
v/s Ratio Perm	0.00							0.29			c0.60		
v/c Ratio	0.05	0.29						0.40	0.35		0.71		
Uniform Delay, d1	65.5	67.0						2.7	2.5		4.4		
Progression Factor	1.00	1.00						1.00	1.00		0.71		
Incremental Delay, d2	0.1	0.5						0.3	0.7		0.7		
Delay (s)	65.6	67.5						2.9	3.2		3.8		
Level of Service	E	E						A	A		A		
Approach Delay (s)	67.4			A				3.0			3.8		
Approach LOS	E			A				A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			4.7	HCM 2000 Level of Service						A			
HCM 2000 Volume to Capacity ratio			0.67										
Actuated Cycle Length (s)			160.0	Sum of lost time (s)						8.0			
Intersection Capacity Utilization			98.2%	ICU Level of Service						F			
Analysis Period (min)			10										

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HCM Unsignalized Intersection Capacity Analysis  
18: Patrick St & Existing Garage/Proposed Patrick Entrance

Total Future Sunday w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔	↕		↔	↕	↕	↔	↕	↕
Traffic Volume (veh/h)	175	0	0	0	0	119	175	1698	119	0	0	0
Future Volume (veh/h)	175	0	0	0	0	119	175	1698	119	0	0	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	190	0	0	0	0	129	190	1846	129	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)								594			261	
Upstream signal (ft)												
pX, platoon unblocked	0.88	0.88		0.88	0.88	0.88				0.88		
vC, conflicting volume	1124	2355	0	2290	2290	680	0			1975		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	676	2070	0	1997	1997	173	0			1640		
IC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
IC, 2 stage (s)												
IF (s)	3.5	4.0	3.3									



HCM Unsignalized Intersection Capacity Analysis  
20: Columbus St & Wolfe St

Total Future Sunday w/ Development 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	29	21	29	20	26	47	10	163	8	19	93	37
Future Volume (vph)	29	21	29	20	26	47	10	163	8	19	93	37
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	23	32	22	28	51	11	177	9	21	101	40
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	87	101	197	162								
Volume Left (vph)	32	22	11	21								
Volume Right (vph)	32	51	9	40								
Hadj (s)	-0.11	-0.23	0.02	-0.09								
Departure Headway (s)	4.8	4.6	4.6	4.5								
Degree Utilization, x	0.12	0.13	0.25	0.20								
Capacity (veh/h)	690	710	750	752								
Control Delay (s)	8.4	8.3	9.1	8.6								
Approach Delay (s)	8.4	8.3	9.1	8.6								
Approach LOS	A	A	A	A								
<b>Intersection Summary</b>												
Delay	8.7											
Level of Service	A											
Intersection Capacity Utilization	28.1%											
ICU Level of Service	A											
Analysis Period (min)	10											

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HCM 2010 AWSC  
20: Columbus St & Wolfe St

Total Future Sunday w/ Development 2022

<b>Intersection</b>												
Intersection Delay, s/veh	8.7											
Intersection LOS	A											
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	29	21	29	0	20	26	47	0	10	163	8
Future Vol, veh/h	0	29	21	29	0	20	26	47	0	10	163	8
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	0	32	23	32	0	22	28	51	0	11	177	9
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach	EB				WB				NB			
Opposing Approach	WB				EB				SB			
Opposing Lanes	1				1				1			
Conflicting Approach Left	SB				NB				EB			
Conflicting Lanes Left	1				1				1			
Conflicting Approach Right	NB				SB				WB			
Conflicting Lanes Right	1				1				1			
HCM Control Delay	8.4				8.3				9.1			
HCM LOS	A				A				A			
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	6%	37%	22%	13%								
Vol Thru, %	90%	27%	28%	62%								
Vol Right, %	4%	37%	51%	25%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	181	79	93	149								
LT Vol	10	29	20	19								
Through Vol	163	21	26	93								
RT Vol	8	29	47	37								
Lane Flow Rate	197	86	101	162								
Geometry Crp	1	1	1	1								
Degree of Util (X)	0.248	0.113	0.129	0.201								
Departure Headway (Hd)	4.541	4.731	4.601	4.476								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	791	756	777	800								
Service Time	2.574	2.771	2.639	2.51								
HCM Lane V/C Ratio	0.249	0.114	0.13	0.203								
HCM Control Delay	9.1	8.4	8.3	8.6								
HCM Lane LOS	A	A	A	A								
HCM 95th-ile Q	1	0.4	0.4	0.7								

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HCM 2010 AWSC  
20: Columbus St & Wolfe St

Total Future Sunday w/ Development 2022

<b>Intersection</b>				
Intersection Delay, s/veh				
Intersection LOS				
Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	19	93	37
Future Vol, veh/h	0	19	93	37
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	21	101	40
Number of Lanes	0	0	1	0
Approach	SB			
Opposing Approach	NB			
Opposing Lanes	1			
Conflicting Approach Left	WB			
Conflicting Lanes Left	1			
Conflicting Approach Right	EB			
Conflicting Lanes Right	1			
HCM Control Delay	8.6			
HCM LOS	A			
Lane				

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Queues  
13: Patrick St & Henry to Patrick Connector

Total Future Sunday w/ Development 2022 IMP

Lane Group	EBL	NBT
Lane Group Flow (vph)	179	192
v/c Ratio	0.39	0.69
Control Delay	2.8	15.2
Queue Delay	13.3	0.9
Total Delay	16.1	16.2
Queue Length 50th (ft)	0	260
Queue Length 95th (ft)	m0	311
Internal Link Dist (ft)	90	210
Turn Bay Length (ft)		
Base Capacity (vph)	538	2892
Starvation Cap Reductn	0	564
Spillback Cap Reductn	334	430
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.88	0.86
<b>Intersection Summary</b>		
m Volume for 95th percentile queue is metered by upstream signal.		

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HCM Signalized Intersection Capacity Analysis  
13: Patrick St & Henry to Patrick Connector

Total Future Sunday w/ Development 2022 IMP

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	1	0	0	↑↑↑	0	0
Traffic Volume (vph)	165	0	0	1833	0	0
Future Volume (vph)	165	0	0	1833	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		
Lane Util. Factor	1.00			0.91		
Frpb, ped/bikes	1.00			1.00		
Flpb, ped/bikes	1.00			1.00		
Frt	1.00			1.00		
Flt Protected	0.95			1.00		
Satd. Flow (prot)	1770			5085		
Flt Permitted	0.95			1.00		
Satd. Flow (perm)	1770			5085		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	179	0	0	1992	0	0
RTOR Reduction (vph)	164	0	0	0	0	0
Lane Group Flow (vph)	15	0	0	1992	0	0
Confl. Peds. (#/hr)	200					
Turn Type	Prot			NA		
Protected Phases	4			2		
Permitted Phases						
Actuated Green, G (s)	5.5			44.5		
Effective Green, g (s)	6.5			45.5		
Actuated g/C Ratio	0.08			0.57		
Clearance Time (s)	5.0			5.0		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	143			2892		
v/s Ratio Prot	c0.01			c0.39		
v/s Ratio Perm						
v/c Ratio	0.10			0.69		
Uniform Delay, d1	34.0			12.2		
Progression Factor	1.00			1.13		
Incremental Delay, d2	0.2			1.2		
Delay (s)	34.3			15.1		
Level of Service	C			B		
Approach Delay (s)	34.3			15.1	0.0	
Approach LOS	C			B	A	

**Intersection Summary**

HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	97.4%	ICU Level of Service	F
Analysis Period (min)	10		

c Critical Lane Group

Queues

1: Alfred St & Cameron St

Total Future Sunday w/ Development 2028

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	304	172	150
v/c Ratio	0.22	0.24	0.19
Control Delay	15.1	8.8	7.8
Queue Delay	0.0	0.0	0.0
Total Delay	15.1	8.8	7.8
Queue Length 50th (ft)	48	35	23
Queue Length 95th (ft)	74	m57	55
Internal Link Dist (ft)	237	338	290
Turn Bay Length (ft)			
Base Capacity (vph)	1388	724	781
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.22	0.24	0.19

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
1: Alfred St & Cameron St

Total Future Sunday w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↑	↑↑			↑			↑	
Traffic Volume (vph)	0	0	0	21	240	18	41	117	0	0	83	55
Future Volume (vph)	0	0	0	21	240	18	41	117	0	0	83	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	12	12	12	12	12	12	12
Total Lost time (s)				4.0			4.0			4.0		
Lane Util. Factor				0.95			1.00			1.00		
Frpb, ped/bikes				1.00			1.00			0.99		
Flpb, ped/bikes				1.00			1.00			1.00		
Frt				0.99			1.00			0.95		
Flt Protected				1.00			0.99			1.00		
Satd. Flow (prot)				3352			1621			1541		
Flt Permitted				1.00			0.90			1.00		
Satd. Flow (perm)				3352			1486			1541		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	23	261	20	45	127	0	0	90	60
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	30	0
Lane Group Flow (vph)	0	0	0	0	298	0	0	172	0	0	120	0
Confl. Peds. (#/hr)	28		23	23		28	29		22	22		29
Confl. Bikes (#/hr)			1		6		3		2		3	2
Parking (#/hr)												
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases				2			1				1	
Permitted Phases												
Actuated Green, G (s)					32.0			38.0			38.0	
Effective Green, g (s)					33.0			39.0			39.0	
Actuated g/C Ratio					0.41			0.49			0.49	
Clearance Time (s)					5.0			5.0			5.0	
Lane Grp Cap (vph)					1382			724			751	
v/s Ratio Prot												
v/s Ratio Perm					0.09			c0.12			0.08	
v/c Ratio					0.22			0.24			0.16	
Uniform Delay, d1					15.2			11.9			11.4	
Progression Factor					1.00			0.66			1.00	
Incremental Delay, d2					0.4			0.7			0.5	
Delay (s)					15.5			8.6			11.8	
Level of Service					B			A			B	
Approach Delay (s)		0.0			15.5			8.6			11.8	
Approach LOS		A			B			A			B	

**Intersection Summary**

HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	10		

c Critical Lane Group

Queues

2: Henry St & King St

Total Future Sunday w/ Development 2028

Lane Group	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	308	122	302	2160
v/c Ratio	0.74	0.43	0.43	0.95
Control Delay	37.7	16.0	16.8	30.2
Queue Delay	0.0	0.0	1.8	0.0
Total Delay	37.7	16.0	18.6	30.2
Queue Length 50th (ft)	135	48	127	358
Queue Length 95th (ft)	#254	m53	m156	#493
Internal Link Dist (ft)	548		225	128
Turn Bay Length (ft)		100		
Base Capacity (vph)	417	287	708	2265
Starvation Cap Reductn	0	0	258	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.74	0.43	0.67	0.95

**Intersection Summary**

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.  
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
2: Henry St & King St

Total Future Sunday w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	0	246	38	112	278	0	0	0	0	66	1867	54
Future Volume (vph)	0	246	38	112	278	0	0	0	0	66	1867	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	10	10	12	12	12	12	12	11	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0					4.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00					0.91		
Fripb. ped/bikes	0.95	1.00	1.00	1.00	1.00					1.00		
Fipb. ped/bikes	1.00	0.94	1.00	1.00	1.00					1.00		
Frt	0.98	1.00	1.00	1.00	1.00					1.00		
Flt Protected	1.00	0.95	1.00	1.00	1.00					1.00		
Satd. Flow (prot)	1490	1552	1718	1718	1718					4640		
Flt Permitted	1.00	0.37	1.00	1.00	1.00					1.00		
Satd. Flow (perm)	1490	597	1718	1718	1718					4640		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	267	41	122	302	0	0	0	0	72	2029	59
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	301	0	122	302	0	0	0	0	0	2156	0
Confl. Peds. (#/hr)	210		448	448		210	45			55	55	45
Confl. Bikes (#/hr)			3			5						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)		3										3
Turn Type	NA	pm+pt	NA	NA	NA	NA	Split	NA	NA	NA	NA	NA
Protected Phases	3	2	2	3	3		1	1				
Permitted Phases		2	3									
Actuated Green, G (s)	21.0	27.0	32.0							38.0		
Effective Green, g (s)	22.0	29.0	33.0							39.0		
Actuated g/C Ratio	0.28	0.36	0.41							0.49		
Clearance Time (s)	5.0	5.0								5.0		
Lane Grp Cap (vph)	409	299	708							2262		
v/s Ratio Prot	c0.20	0.04	c0.18							c0.46		
v/s Ratio Perm		0.11										
v/c Ratio	0.74	0.41	0.43							0.95		
Uniform Delay, d1	26.4	18.1	16.8							19.6		
Progression Factor	1.00	0.88	0.92							1.00		
Incremental Delay, d2	10.8	2.1	1.0							9.6		
Delay (s)	37.1	18.1	16.4							29.3		
Level of Service	D	B	B							C		
Approach Delay (s)	37.1		16.9				0.0			29.3		
Approach LOS	D		B				A			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	28.3			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.84											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	71.5%			ICU Level of Service			C					
Analysis Period (min)	10											
c Critical Lane Group												

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Wells + Associates

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Queues  
3: Patrick St & King St

Total Future Sunday w/ Development 2028

Lane Group	EBL	EBT	WBT	NBT
Lane Group Flow (vph)	79	296	376	1881
v/c Ratio	0.27	0.38	0.78	0.96
Control Delay	12.6	15.8	25.9	19.3
Queue Delay	0.0	2.0	0.9	0.0
Total Delay	12.6	17.8	26.8	19.3
Queue Length 50th (ft)	32	132	105	83
Queue Length 95th (ft)	m36	m177	#289	#423
Internal Link Dist (ft)		225	238	340
Turn Bay Length (ft)	100			
Base Capacity (vph)	297	775	480	1967
Starvation Cap Reductn	0	332	18	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.67	0.81	0.96
<b>Intersection Summary</b>				
m 95th percentile volume exceeds capacity, queue may be longer.				
Queue shown is maximum after two cycles.				
n Volume for 95th percentile queue is metered by upstream signal.				

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HCM Signalized Intersection Capacity Analysis  
3: Patrick St & King St

Total Future Sunday w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	73	272	0	0	276	70	121	1516	93	0	0	0
Future Volume (vph)	73	272	0	0	276	70	121	1516	93	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0			4.0				
Lane Util. Factor	1.00	1.00			1.00			0.91				
Fripb. ped/bikes	1.00	1.00			0.93			0.97				
Fipb. ped/bikes	0.96	1.00			1.00			1.00				
Frt	1.00	1.00			0.97			0.99				
Flt Protected	0.95	1.00			1.00			1.00				
Satd. Flow (prot)	1579	1676			1442			4487				
Flt Permitted	0.32	1.00			1.00			1.00				
Satd. Flow (perm)	533	1676			1442			4487				
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)	79	296	0	0	300	76	132	1648	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	11	0	0	4	0	0	0	0
Lane Group Flow (vph)	79	296	0	0	365	0	0	1877	0	0	0	0
Confl. Peds. (#/hr)	459		677	677		459	302		297	297		302
Confl. Bikes (#/hr)			7			5		1				
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	9	0	0	8	0	0	0	0	0	0	0
Parking (#/hr)					3			4				
Turn Type	pm+pt	NA	NA	NA	NA	NA	Split	NA	NA	NA	NA	NA
Protected Phases	2	2	3		3		1	1				
Permitted Phases		2	3									
Actuated Green, G (s)	30.4	35.4			24.4			34.0				
Effective Green, g (s)	32.4	36.4			26.0			35.0				
Actuated g/C Ratio	0.40	0.45			0.32			0.44				
Clearance Time (s)	5.0				5.6			5.0				
Lane Grp Cap (vph)	307	762			468			1963				
v/s Ratio Prot	0.02	c0.18			c0.25			c0.42				
v/s Ratio Perm	0.08											
v/c Ratio	0.26	0.39			0.78			0.96				
Uniform Delay, d1	15.6	14.4			24.4			21.8				
Progression Factor	0.89	1.03			0.59			0.36				
Incremental Delay, d2	1.4	1.0			10.5			9.8				
Delay (s)	15.3	15.8			24.8			17.5				
Level of Service	B	B			C			B				
Approach Delay (s)	15.7				24.8			17.5		0.0		
Approach LOS	B				C			B		A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	18.3			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.85											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			12.6					
Intersection Capacity Utilization	71.5%			ICU Level of Service			C					
Analysis Period (min)	10											
c Critical Lane Group												

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Queues  
4: Alfred St & King St

Total Future Sunday w/ Development 2028

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	401	339	151	157
v/c Ratio	0.68	0.59	0.23	0.24
Control Delay	12.3	13.7	4.6	11.0
Queue Delay	0.0	0.3	0.0	0.0
Total Delay	12.4	14.0	4.6	11.0
Queue Length 50th (ft)	57	57	13	34
Queue Length 95th (ft)	m78	85	23	61
Internal Link Dist (ft)	238	237	340	338
Turn Bay Length (ft)				
Base Capacity (vph)	593	576	647	651
Starvation Cap Reductn	2	3	0	0
Spillback Cap Reductn	0	32	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.68	0.62	0.23	0.24
<b>Intersection Summary</b>				
m Volume for 95th percentile queue is metered by upstream signal.				

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Wells + Associates

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HCM Signalized Intersection Capacity Analysis  
4: Alfred St & King St

Total Future Sunday w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	28	299	42	39	246	28	26	99	14	17	90	38
Future Volume (vph)	28	299	42	39	246	28	26	99	14	17	90	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	12	12	12	12	12	12
Total Lost time (s)	4.0			4.0			4.0			4.0		
Lane Util. Factor	1.00			1.00			1.00			1.00		
Fripb, ped/bikes	0.94			0.95			0.98			0.96		
Fipb, ped/bikes	0.98			0.97			0.99			0.98		
Frt	0.98			0.99			0.99			0.96		
Flt Protected	1.00			0.99			0.99			0.99		
Satd. Flow (prot)	1319			1338			1550			1495		
Flt Permitted	0.96			0.92			0.94			0.97		
Satd. Flow (perm)	1270			1238			1467			1452		
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)	30	325	46	42	267	30	28	108	15	18	98	41
RTOR Reduction (vph)	0	6	0	0	4	0	0	5	0	0	16	0
Lane Group Flow (vph)	0	395	0	0	335	0	0	146	0	0	141	0
Confl. Peds. (#/hr)	257		351	351		257	51		106	106		57
Confl. Bikes (#/hr)			3			2			1			2
Bus Blockages (#/hr)	0	12	0	0	11	0	0	0	0	0	0	0
Parking (#/hr)	3			3			3					3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2			2			1			1		
Permitted Phases	2			2			1			1		
Actuated Green, G (s)	35.9			35.9			34.0			34.0		
Effective Green, g (s)	37.0			37.0			35.0			35.0		
Actuated g/C Ratio	0.46			0.46			0.44			0.44		
Clearance Time (s)	5.1			5.1			5.0			5.0		
Lane Grp Cap (vph)	587			572			641			635		
v/s Ratio Prot												
v/s Ratio Perm	c0.31			0.27			c0.10			0.10		
v/c Ratio	0.67			0.59			0.23			0.22		
Uniform Delay, d1	16.8			15.8			14.1			14.0		
Progression Factor	0.41			0.59			0.28			0.86		
Incremental Delay, d2	5.2			4.0			0.8			0.8		
Delay (s)	12.1			13.4			4.8			12.8		
Level of Service	B			B			A			B		
Approach Delay (s)	12.1			13.4			4.8			12.8		
Approach LOS	B			B			A			B		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	11.6		HCM 2000 Level of Service				B					
HCM 2000 Volume to Capacity ratio	0.46											
Actuated Cycle Length (s)	80.0		Sum of lost time (s)				8.0					
Intersection Capacity Utilization	48.9%		ICU Level of Service				A					
Analysis Period (min)	10											

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Queues  
5: Washington St & King St

Total Future Sunday w/ Development 2028

Lane Group	EBT	EBR	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	272	38	245	63	1134	1068
v/c Ratio	0.40	0.10	0.36	0.16	0.75	0.86
Control Delay	28.3	8.9	27.5	18.7	19.3	35.8
Queue Delay	6.2	0.0	0.0	0.0	0.0	0.0
Total Delay	34.5	8.9	27.5	18.7	19.3	35.8
Queue Length 50th (ft)	157	2	139	23	178	487
Queue Length 95th (ft)	234	24	209	56	204	623
Internal Link Dist (ft)	237		569		335	130
Turn Bay Length (ft)	100					
Base Capacity (vph)	678	368	675	391	1522	1240
Starvation Cap Reductn	347	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.10	0.36	0.16	0.75	0.86

Intersection Summary

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HCM Signalized Intersection Capacity Analysis  
5: Washington St & King St

Total Future Sunday w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	0	250	35	0	223	58	0	971	73	0	882	100
Future Volume (vph)	0	250	35	0	225	58	0	971	73	0	882	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	9	8	12	9	9	10	10	10	8	10	10
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0			4.0		
Lane Util. Factor	1.00	1.00		1.00	1.00		0.95			0.78		
Fripb, ped/bikes	1.00	0.60		1.00	0.63		0.96			0.96		
Fipb, ped/bikes	1.00	1.00		1.00	1.00		1.00			1.00		
Frt	1.00	0.85		1.00	0.85		0.99			0.98		
Flt Protected	1.00	1.00		1.00	1.00		1.00			1.00		
Satd. Flow (prot)	1603	825		1596	902		2954			2406		
Flt Permitted	1.00	1.00		1.00	1.00		1.00			1.00		
Satd. Flow (perm)	1603	825		1596	902		2954			2406		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	272	38	0	245	63	0	1055	79	0	959	109
RTOR Reduction (vph)	0	0	20	0	0	10	0	0	0	0	0	0
Lane Group Flow (vph)	0	272	18	0	245	53	0	1134	0	0	1068	0
Confl. Peds. (#/hr)	502		634	634		502	129		308	308		129
Bus Blockages (#/hr)	0	11	0	0	12	0	0	0	0	0	0	2
Parking (#/hr)							3					3
Turn Type	NA	Perm		NA	Perm		NA			NA		NA
Protected Phases	2			2			1			1		
Permitted Phases	2			2			1			1		
Actuated Green, G (s)	53.1	53.1		53.1	53.1		66.0			66.0		
Effective Green, g (s)	55.0	55.0		55.0	55.0		67.0			67.0		
Actuated g/C Ratio	0.42	0.42		0.42	0.42		0.52			0.52		
Clearance Time (s)	5.9	5.9		5.9	5.9		5.0			5.0		
Lane Grp Cap (vph)	678	349		675	381		1522			1240		
v/s Ratio Prot	c0.17			0.15			0.38			c0.44		
v/s Ratio Perm		0.02			0.06							
v/c Ratio	0.40	0.05		0.36	0.14		0.75			0.86		
Uniform Delay, d1	26.1	22.1		25.6	23.0		24.8			27.5		
Progression Factor	1.00	1.00		1.00	1.00		0.64			1.00		
Incremental Delay, d2	1.8	0.3		1.5	0.8		3.0			7.6		
Delay (s)	27.8	22.4		27.1	23.8		19.0			35.1		
Level of Service	C	C		C	C		B			D		
Approach Delay (s)	27.2			26.4			19.0			35.1		
Approach LOS	C			C			B			D		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	26.8		HCM 2000 Level of Service				C					
HCM 2000 Volume to Capacity ratio	0.65											
Actuated Cycle Length (s)	130.0		Sum of lost time (s)				8.0					
Intersection Capacity Utilization	63.1%		ICU Level of Service				B					
Analysis Period (min)	10											

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Queues  
6: Henry St & Prince St

Total Future Sunday w/ Development 2028

Lane Group	EBT	SBT
Lane Group Flow (vph)	479	1994
v/c Ratio	0.37	0.90
Control Delay	17.1	6.3
Queue Delay	0.0	0.6
Total Delay	17.1	7.0
Queue Length 50th (ft)	83	28
Queue Length 95th (ft)	121	m31
Internal Link Dist (ft)	636	338
Turn Bay Length (ft)		
Base Capacity (vph)	1310	2208
Starvation Cap Reductn	0	56
Spillback Cap Reductn	0	50
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.37	0.92

Intersection Summary

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

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HCM Signalized Intersection Capacity Analysis

6: Henry St & Prince St

Total Future Sunday w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↓									↑↑	
Traffic Volume (vph)	0	346	95	0	0	0	0	0	0	96	1730	0
Future Volume (vph)	0	346	95	0	0	0	0	0	0	96	1730	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	10	12
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Fripb, ped/bikes		0.99									1.00	
Fipb, ped/bikes		1.00									1.00	
Frt		0.97									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3170									4503	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3170									4503	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	376	103	0	0	0	0	0	0	104	1880	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	476	0	0	0	0	0	0	0	0	1970	0
Confl. Peds. (#/hr)	26		25	25		26	22		17	17		22
Confl. Bikes (#/hr)			8			1						1
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Parking (#/hr)		6										3
Turn Type		NA								Perm	NA	
Protected Phases		2									1	
Permitted Phases												1
Actuated Green, G (s)		32.0									38.0	
Effective Green, g (s)		33.0									39.0	
Actuated g/C Ratio		0.41									0.49	
Clearance Time (s)		5.0									5.0	
Lane Grp Cap (vph)		1307									2195	
v/s Ratio Prot		c0.15										0.44
v/s Ratio Perm												0.90
v/c Ratio		0.36										18.7
Uniform Delay, d1		16.2										1.00
Progression Factor		1.00										0.16
Incremental Delay, d2		0.8										2.5
Delay (s)		17.0										5.5
Level of Service		B										A
Approach Delay (s)		17.0			0.0			0.0				5.5
Approach LOS		B			A			A				A
<b>Intersection Summary</b>												
HCM 2000 Control Delay			7.7									A
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			80.0								8.0	
Intersection Capacity Utilization			60.1%								ICU Level of Service	B
Analysis Period (min)			10									

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Queues

7: Alfred St & Prince St

Total Future Sunday w/ Development 2028

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	382	138	190
v/c Ratio	0.25	0.19	0.27
Control Delay	1.6	15.4	11.7
Queue Delay	0.0	0.0	0.0
Total Delay	1.6	15.4	11.7
Queue Length 50th (ft)	6	39	54
Queue Length 95th (ft)	9	m72	m83
Internal Link Dist (ft)	244	348	340
Turn Bay Length (ft)			
Base Capacity (vph)	1506	734	712
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.25	0.19	0.27
<b>Intersection Summary</b>			
m Volume for 95th percentile queue is metered by upstream signal.			

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HCM Signalized Intersection Capacity Analysis

7: Alfred St & Duke St

Total Future Sunday w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↓							↑		↓	
Traffic Volume (vph)	16	299	37	0	0	0	0	116	11	21	154	0
Future Volume (vph)	16	299	37	0	0	0	0	116	11	21	154	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	12	12	12	12	12	12
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Fripb, ped/bikes		0.99						1.00			1.00	
Fipb, ped/bikes		1.00						1.00			1.00	
Frt		0.98						0.99			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3323						1624			1634	
Flt Permitted		1.00						1.00			0.96	
Satd. Flow (perm)		3323						1624			1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	325	40	0	0	0	0	126	12	23	167	0
RTOR Reduction (vph)	0	11	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	371	0	0	0	0	0	134	0	0	190	0
Confl. Peds. (#/hr)	29		54	54		29	81		40	40		81
Confl. Bikes (#/hr)			11			2						2
Parking (#/hr)		6						3				3
Turn Type		Perm	NA					NA		Perm	NA	
Protected Phases		1						2			2	
Permitted Phases												2
Actuated Green, G (s)		35.0						35.0			35.0	
Effective Green, g (s)		36.0						36.0			36.0	
Actuated g/C Ratio		0.45						0.45			0.45	
Clearance Time (s)		5.0						5.0			5.0	
Lane Grp Cap (vph)		1495						730			712	
v/s Ratio Prot								0.08				c0.12
v/s Ratio Perm		0.11										0.27
v/c Ratio		0.25						0.18				13.8
Uniform Delay, d1		13.6						13.2				1.00
Progression Factor		0.09						1.17				0.77
Incremental Delay, d2		0.4						0.5				0.8
Delay (s)		1.6						15.9				11.4
Level of Service		A						B				B
Approach Delay (s)		1.6			0.0			15.9				11.4
Approach LOS		A			A			B				B
<b>Intersection Summary</b>												
HCM 2000 Control Delay			7.0									A
HCM 2000 Volume to Capacity ratio			0.26									
Actuated Cycle Length (s)			80.0								8.0	
Intersection Capacity Utilization			40.0%								ICU Level of Service	A
Analysis Period (min)			10									

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Queues

8: Henry St & Duke St

Total Future Sunday w/ Development 2028

Lane Group	EBT	EBR	WBL	WBT	SBT
Lane Group Flow (vph)	380	410	230	747	2037
v/c Ratio	0.86	0.58	0.78	0.55	0.90
Control Delay	48.7	30.9	23.3	13.5	6.8
Queue Delay	0.0	0.0	0.0	1.1	0.2
Total Delay	48.7	30.9	23.3	14.6	7.0
Queue Length 50th (ft)	182	91	66	104	26
Queue Length 95th (ft)	#333	135	m67	m104	m#34
Internal Link Dist (ft)	72			232	350
Turn Bay Length (ft)		125			
Base Capacity (vph)	442	702	294	1357	2264
Starvation Cap Reductn	0	0	0	361	21
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.86	0.58	0.78	0.75	0.91
<b>Intersection Summary</b>					
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.					
m Volume for 95th percentile queue is metered by upstream signal.					

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HCM Signalized Intersection Capacity Analysis

8: Henry St & Duke St

Total Future Sunday w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (vph)	0	350	377	212	687	0	0	0	0	2	1627	246
Future Volume (vph)	0	350	377	212	687	0	0	0	0	2	1627	246
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	10	12	12	12	12	12	11	12
Total Lost time (s)		4.0	4.0	4.0	4.0						4.0	
Lane Util. Factor		1.00	1.00	1.00	0.95						0.91	
Fripb. ped/bikes		1.00	1.00	1.00	1.00						1.00	
Fripb. ped/bikes		1.00	1.00	1.00	1.00						1.00	
Frt		1.00	0.85	1.00	1.00						0.98	
Flt Protected		1.00	1.00	0.95	1.00						1.00	
Satd. Flow (prot)		1863	2956	1651	3290						4594	
Flt Permitted		1.00	1.00	0.18	1.00						1.00	
Satd. Flow (perm)		1863	2956	306	3290						4594	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	380	410	230	747	0	0	0	0	2	1768	267
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	25	0
Lane Group Flow (vph)	0	380	410	230	747	0	0	0	0	0	2012	0
Confl. Peds. (#/hr)	12	7	7		12	6		6	4	4		6
Confl. Bikes (#/hr)		1			2							
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)												1
Turn Type	NA	Prot	pm+pt	NA			Perm	NA				
Protected Phases	8	8	7	4								2
Permitted Phases			4								2	
Actuated Green, G (s)	17.7	17.7	31.7	31.7							37.9	
Effective Green, g (s)	19.0	19.0	32.7	33.0							39.0	
Actuated g/C Ratio	0.24	0.24	0.41	0.41							0.49	
Clearance Time (s)	5.3	5.3	5.0	5.3							5.1	
Lane Grp Cap (vph)	442	702	293	1357							2239	
v/s Ratio Prot	0.20	0.14	c0.10	0.23								
v/s Ratio Perm			c0.22								0.44	
v/c Ratio	0.86	0.58	0.78	0.55							0.90	
Uniform Delay, d1	29.2	27.0	18.4	17.9							18.7	
Progression Factor	1.00	1.00	1.09	0.73							0.15	
Incremental Delay, d2	17.6	3.5	4.7	0.4							3.2	
Delay (s)	46.8	30.5	24.7	13.4							6.0	
Level of Service	D	C	C	B							A	
Approach Delay (s)	38.4			16.1			0.0				6.0	
Approach LOS	D			B			A				A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		15.3					HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio		0.88										
Actuated Cycle Length (s)		80.0					Sum of lost time (s)			12.0		
Intersection Capacity Utilization		78.6%					ICU Level of Service			D		
Analysis Period (min)		10										
c Critical Lane Group												

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Queues

9: Patrick St & Duke St

Total Future Sunday w/ Development 2028

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	403	723	2238
v/c Ratio	0.50	1.01	0.98
Control Delay	22.3	43.7	28.6
Queue Delay	0.9	1.0	0.0
Total Delay	23.2	44.8	28.6
Queue Length 50th (ft)	101	-140	221
Queue Length 95th (ft)	m140	#578	#468
Internal Link Dist (ft)	232	245	181
Turn Bay Length (ft)			
Base Capacity (vph)	802	716	2292
Starvation Cap Reductn	178	4	0
Spillback Cap Reductn	16	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.65	1.02	0.98
<b>Intersection Summary</b>			
m Volume for 95th percentile queue is metered by upstream signal.			

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HCM Signalized Intersection Capacity Analysis

9: Patrick St & Duke St

Total Future Sunday w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (vph)	6	364	0	0	621	44	318	1632	109	0	0	0
Future Volume (vph)	6	364	0	0	621	44	318	1632	109	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0				4.0			
Lane Util. Factor		1.00			1.00				0.91			
Fripb. ped/bikes		1.00			1.00				1.00			
Fripb. ped/bikes		1.00			1.00				1.00			
Frt		1.00			0.99				0.99			
Flt Protected		1.00			1.00				0.99			
Satd. Flow (prot)		2109			1631				4943			
Flt Permitted		0.87			1.00				0.99			
Satd. Flow (perm)		1834			1631				4943			
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)	7	396	0	0	675	48	346	1774	118	0	0	0
RTOR Reduction (vph)	0	0	0	0	3	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	403	0	0	720	0	0	2230	0	0	0	0
Confl. Peds. (#/hr)	11		72	72		11	13		11	11		13
Confl. Bikes (#/hr)		2				6						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Parking (#/hr)						3						
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases	2				2							
Permitted Phases							1		1			
Actuated Green, G (s)		33.8			33.8				36.0			
Effective Green, g (s)		35.0			35.0				37.0			
Actuated g/C Ratio		0.44			0.44				0.46			
Clearance Time (s)		5.2			5.2				5.0			
Lane Grp Cap (vph)		802			713				2286			
v/s Ratio Prot					c0.44							
v/s Ratio Perm		0.22							0.45			
v/c Ratio		0.50			1.01				0.98			
Uniform Delay, d1		16.2			22.5				21.1			
Progression Factor		1.26			0.58				0.76			
Incremental Delay, d2		1.3			27.1				11.7			
Delay (s)		21.7			40.2				27.7			
Level of Service		C			D				C			
Approach Delay (s)		21.7			40.2				27.7			0.0
Approach LOS		C			D				C			A
<b>Intersection Summary</b>												
HCM 2000 Control Delay		29.7										C
HCM 2000 Volume to Capacity ratio		0.99										
Actuated Cycle Length (s)		80.0							8.0			
Intersection Capacity Utilization		84.8%							E			
Analysis Period (min)		10										
c Critical Lane Group												

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Queues

10: Alfred St & Duke St

Total Future Sunday w/ Development 2028

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	520	591	95	223
v/c Ratio	0.61	0.63	0.20	0.46
Control Delay	10.0	9.9	17.7	14.9
Queue Delay	0.0	0.8	0.0	0.1
Total Delay	10.0	10.6	17.8	15.0
Queue Length 50th (ft)	76	90	29	38
Queue Length 95th (ft)	m66	122	64	78
Internal Link Dist (ft)	245	227	187	348
Turn Bay Length (ft)				
Base Capacity (vph)	847	931	486	481
Starvation Cap Reductn	2	117	0	0
Spillback Cap Reductn	0	123	17	20
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	0.73	0.20	0.48
<b>Intersection Summary</b>				
m Volume for 95th percentile queue is metered by upstream signal.				

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Wells + Associates

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HCM Signalized Intersection Capacity Analysis

10: Alfred St & Duke St

Total Future Sunday w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔	↔		↔	↔		↔	↔		↔
Traffic Volume (vph)	49	392	38	21	491	31	20	57	10	14	99	92
Future Volume (vph)	49	392	38	21	491	31	20	57	10	14	99	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	14	12	12	11	12	12	11	12
Total Lost time (s)	4.0			4.0			4.0			4.0		
Lane Util. Factor	1.00			1.00			1.00			1.00		
Frlpb, ped/bikes	0.98			1.00			0.98			0.87		
Frlpb, ped/bikes	1.00			1.00			0.96			0.99		
Frt	0.99			0.99			0.98			0.94		
Flt Protected	0.99			1.00			0.99			1.00		
Satd. Flow (prot)	1688			1732			1485			1291		
Flt Permitted	0.90			0.97			0.91			0.98		
Satd. Flow (perm)	1534			1689			1374			1273		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	53	426	41	23	534	34	22	62	11	15	108	100
RTOR Reduction (vph)	0	4	0	0	3	0	0	6	0	0	36	0
Lane Group Flow (vph)	0	516	0	0	588	0	0	89	0	0	187	0
Confl. Peds. (#/hr)	27		133	133		27	130		53	53		130
Confl. Bikes (#/hr)	0	0	2	0	2	5	0	0	1	0	0	0
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)	3			1			1				3	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2	2		2	2		1	1		1	1	
Permitted Phases	2	2		2	2		1	1		1	1	
Actuated Green, G (s)	43.0			43.0			27.0			27.0		
Effective Green, g (s)	44.0			44.0			28.0			28.0		
Actuated g/C Ratio	0.55			0.55			0.35			0.35		
Clearance Time (s)	5.0			5.0			5.0			5.0		
Lane Grp Cap (vph)	843			928			480			445		
v/s Ratio Prot	0.34			c0.35			0.06			c0.15		
v/c Ratio	0.61			0.63			0.19			0.42		
Uniform Delay, d1	12.2			12.4			18.1			19.8		
Progression Factor	0.60			0.55			1.00			0.76		
Incremental Delay, d2	2.6			2.7			0.9			2.8		
Delay (s)	9.9			9.6			18.9			18.0		
Level of Service	A			A			B			B		
Approach Delay (s)	9.9			9.6			18.9			18.0		
Approach LOS	A			A			B			B		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	11.6			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.55											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	66.2%			ICU Level of Service			C					
Analysis Period (min)	10											
c Critical Lane Group												

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Queues

11: Columbus St & Duke St

Total Future Sunday w/ Development 2028

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	479	523	214	160
v/c Ratio	0.60	0.64	0.43	0.27
Control Delay	14.8	18.3	21.1	9.9
Queue Delay	0.4	8.1	0.0	0.0
Total Delay	15.2	26.4	21.1	9.9
Queue Length 50th (ft)	104	175	76	19
Queue Length 95th (ft)	110	281	135	42
Internal Link Dist (ft)	227	231	390	358
Turn Bay Length (ft)				
Base Capacity (vph)	803	817	500	600
Starvation Cap Reductn	68	257	0	0
Spillback Cap Reductn	0	19	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.65	0.93	0.43	0.27

Intersection Summary

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HCM Signalized Intersection Capacity Analysis

11: Columbus St & Duke St

Total Future Sunday w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔	↔		↔	↔		↔	↔		↔
Traffic Volume (vph)	19	385	37	19	417	45	94	96	7	9	76	62
Future Volume (vph)	19	385	37	19	417	45	94	96	7	9	76	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0			4.0			4.0		
Lane Util. Factor	1.00			1.00			1.00			1.00		
Frlpb, ped/bikes	0.99			0.99			1.00			0.96		
Frlpb, ped/bikes	1.00			1.00			0.98			1.00		
Frt	0.99			0.99			0.99			0.94		
Flt Protected	1.00			1.00			0.98			1.00		
Satd. Flow (prot)	1604			1624			1559			1490		
Flt Permitted	0.97			0.97			0.81			0.98		
Satd. Flow (perm)	1560			1586			1288			1467		
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)	21	418	40	21	453	49	102	104	8	10	83	67
RTOR Reduction (vph)	0	4	0	0	5	0	0	2	0	0	32	0
Lane Group Flow (vph)	0	475	0	0	518	0	0	212	0	0	128	0
Confl. Peds. (#/hr)	38		68	68		38	33		44	44		33
Confl. Bikes (#/hr)	3			1		7		3			3	
Parking (#/hr)	3			1			3				3	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	6	6		2	2		4	4		8	8	
Permitted Phases	6	6		2	2		4	4		8	8	
Actuated Green, G (s)	40.0			40.0			30.0			30.0		
Effective Green, g (s)	41.0			41.0			31.0			31.0		
Actuated g/C Ratio	0.51			0.51			0.39			0.39		
Clearance Time (s)	5.0			5.0			5.0			5.0		
Lane Grp Cap (vph)	799			812			499			568		
v/s Ratio Prot	0.30			c0.33			c0.16			0.09		
v/c Ratio	0.59			0.64			0.43			0.22		
Uniform Delay, d1	13.7			14.1			18.0			16.4		
Progression Factor	0.86			1.00			1.00			0.78		
Incremental Delay, d2	2.7			3.8			2.6			0.9		
Delay (s)	14.5			17.9			20.6			13.7		
Level of Service	B			B			C			B		
Approach Delay (s)	14.5			17.9			20.6			13.7		
Approach LOS	B			B			C			B		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	16.6			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.55											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	75.3%			ICU Level of Service			D					
Analysis Period (min)	10											
c Critical Lane Group												

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Queues

12: Washington St & Duke St

Total Future Sunday w/ Development 2028

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	415	440	907	1104
v/c Ratio	0.85	0.67	1.19d1	1.02
Control Delay	48.3	33.7	68.1	43.4
Queue Delay	36.3	0.0	0.0	0.0
Total Delay	84.7	33.7	68.1	43.4
Queue Length 50th (ft)	301	281	-440	-201
Queue Length 95th (ft)	#501	407	#574	#783
Internal Link Dist (ft)	231	575	344	349
Turn Bay Length (ft)				
Base Capacity (vph)	487	660	859	1080
Starvation Cap Reductn	134	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.18	0.67	1.06	1.02

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.


Queue shown is maximum after two cycles.

d1 Defacto Left Lane. Recode with 1 though lane as a left lane.

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HCM Signalized Intersection Capacity Analysis  
12: Washington St & Duke St


Total Future Sunday w/ Development 2028



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	122	197	63	55	281	69	64	748	22	44	799	173
Future Volume (vph)	122	197	63	55	281	69	64	748	22	44	799	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	11	9	9	9	11	9
Total Lost time (s)	4.0			4.0			4.0			4.0		
Lane Util. Factor	1.00			1.00			0.95			0.78		
Frbp, ped/bikes	0.99			0.99			1.00			0.98		
Frlb, ped/bikes	1.00			1.00			1.00			1.00		
Frt	0.98			0.98			1.00			0.97		
Flt Protected	0.98			0.99			1.00			1.00		
Satd. Flow (prot)	1625			1639			2971			2673		
Flt Permitted	0.65			0.89			0.58			0.81		
Satd. Flow (perm)	1079			1467			1743			2175		
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)	133	214	68	60	305	75	70	813	24	48	868	188
RTOR Reduction (vph)	0	6	0	0	6	0	0	2	0	0	10	0
Lane Group Flow (vph)	0	409	0	0	434	0	0	905	0	0	1094	0
Confl. Peds. (#/hr)	18		15	15		18	32		22	22		32
Confl. Bikes (#/hr)			1		3		3		3			32
Parking (#/hr)		3			3		3					
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	4			8			2			6		
Permitted Phases												
Actuated Green, G (s)		56.5			56.5			63.0			63.0	
Effective Green, g (s)		58.0			58.0			64.0			64.0	
Actuated g/C Ratio		0.45			0.45			0.49			0.49	
Clearance Time (s)		5.5			5.5			5.0			5.0	
Lane Grp Cap (vph)		481			654			858			1070	
vs Ratio Prot												
vs Ratio Perm		c0.38			0.30			c0.52			0.50	
v/c Ratio		0.85			0.66			1.19			1.02	
Uniform Delay, d1		32.1			28.3			33.0			33.0	
Progression Factor		1.00			1.00			1.00			0.55	
Incremental Delay, d2		15.8			5.2			35.4			23.8	
Delay (s)		48.0			33.5			68.4			42.0	
Level of Service		D			C			E			D	
Approach Delay (s)		48.0			33.5			68.4			42.0	
Approach LOS		D			C			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	49.9				HCM 2000 Level of Service				D			
HCM 2000 Volume to Capacity ratio	0.96											
Actuated Cycle Length (s)	130.0				Sum of lost time (s)				8.0			
Intersection Capacity Utilization	104.1%				ICU Level of Service				G			
Analysis Period (min)	10											
d1 - Default Left Lane. Recode with 1 through lane as a left lane.												
c - Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis  
13: Patrick St & Henry to Patrick Connector


Total Future Sunday w/ Development 2028



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↔		↔	↔	↔
Traffic Volume (veh/h)	169	0	0	1886	0	0
Future Volume (Veh/h)	169	0	0	1886	0	0
Sign Control	Yield			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	184	0	0	2050	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				414	441	
pX, platoon unblocked	0.87					
vC, conflicting volume	683	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCU, unblocked vol	108	0	0			
IC, single (s)	6.8	6.9	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	76	100	100			
cM capacity (veh/h)	762	1084	1622			
<b>Direction, Lane #</b>						
Volume Total	EB 1	NB 1	NB 2	NB 3		
Volume Left	184	0	0	0		
Volume Right	0	0	0	0		
cSH	762	1700	1700	1700		
Volume to Capacity	0.24	0.40	0.40	0.40		
Queue Length 95th (ft)	23	0	0	0		
Control Delay (s)	11.2	0.0	0.0	0.0		
Lane LOS	B					
Approach Delay (s)	11.2	0.0				
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay				0.9		
Intersection Capacity Utilization	96.4%			ICU Level of Service	F	
Analysis Period (min)	10					

HCM Unsignalized Intersection Capacity Analysis  
14: Alfred St & Wolfe St

Total Future Sunday w/ Development 2028



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	3	10	85	16	19	20	22	87	12	13	103	58
Future Volume (vph)	3	10	85	16	19	20	22	87	12	13	103	58
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	11	92	17	21	22	24	95	13	14	112	63
<b>Direction, Lane #</b>												
Volume Total (vph)	EB 1	WB 1	NB 1	SB 1								
Volume Left (vph)	3	17	24	14								
Volume Right (vph)				63								
Hd (s)	-0.48	-0.13	0.01	-0.15								
Departure Headway (s)	4.2	4.6	4.5	4.3								
Degree Utilization, x	0.12	0.08	0.16	0.22								
Capacity (veh/h)	782	713	760	798								
Control Delay (s)	7.8	8.0	8.4	8.5								
Approach Delay (s)	7.8	8.0	8.4	8.5								
Approach LOS	A	A	A	A								
<b>Intersection Summary</b>												
Delay	8.3											
Level of Service	A											
Intersection Capacity Utilization	32.9%				ICU Level of Service				A			
Analysis Period (min)	10											

HCM 2010 AWSC  
14: Alfred St & Wolfe St

Total Future Sunday w/ Development 2028

<b>Intersection</b>												
Intersection Delay, s/veh	8.3											
Intersection LOS	A											
<b>Movement</b>												
Traffic Vol, veh/h	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Future Vol, veh/h	0	3	10	85	0	16	19	20	0	22	87	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	3	11	92	0	17	21	22	0	24	95	13
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
<b>Approach</b>												
Opposing Approach	EB			WB			NB			SB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB					
Conflicting Lanes Left	1			1			1					
Conflicting Approach Right	NB			SB			WB					
Conflicting Lanes Right	1			1			1					
HCM Control Delay	7.8			8			8.4					
HCM LOS	A			A			A					
<b>Lane</b>												
Vol Left, %	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Thru, %	18%	3%	29%	7%								
Vol Right, %	72%	10%	35%	59%								
Vol Right, %	10%	87%	36%	33%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	121	98	55	174								
LT Vol	22	3	16	13								
Through Vol	87	10	19	103								
RT Vol	12	85	20	58								
Lane Flow Rate	132	107	60	189								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.164	0.124	0.077	0.224								
Departure Headway (Hd)	4.483	4.206	4.611	4.266								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	801	852	777	842								
Service Time	2.506	2.231	2.637	2.288								
HCM Lane V/C Ratio	0.165	0.126	0.077	0.224								
HCM Control Delay	8.4	7.8	8	8.5								
HCM Lane LOS	A	A	A	A								
HCM 95th-ile Q	0.6	0.4	0.2	0.9								

Intersection				
Intersection Delay s/veh				
Intersection LOS				
Movement	SBU	SBL	SBT	SBR
Traffic Vol. veh/h	0	13	103	58
Future Vol. veh/h	0	13	103	58
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	14	112	63
Number of Lanes	0	0	1	0
Approach				
SB				
Opposing Approach				
NB				
Opposing Lanes				
1				
Conflicting Approach Left				
WB				
Conflicting Lanes Left				
1				
Conflicting Approach Right				
EB				
Conflicting Lanes Right				
1				
HCM Control Delay				
8.5				
HCM LOS				
A				
Lane				

Lane Group	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	385	448	1963	2556
v/c Ratio	0.80	0.49	0.87	0.87
Control Delay	33.8	20.9	20.1	11.7
Queue Delay	0.7	0.0	0.0	14.9
Total Delay	34.5	20.9	20.1	26.6
Queue Length 50th (ft)	148	82	297	451
Queue Length 95th (ft)	313	118	#531	#583
Internal Link Dist (ft)		273	346	346
Turn Bay Length (ft)				
Base Capacity (vph)	558	1055	2245	2951
Starvation Cap Reductn	35	0	0	492
Spillback Cap Reductn	0	0	0	163
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.74	0.42	0.87	1.04
Intersection Summary				
# 95th percentile volume exceeds capacity, queue may be longer.				
Queue shown is maximum after two cycles.				

HCM Signalized Intersection Capacity Analysis  
15: Patrick St & Gibbon St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↓	↑	←	←	↑	↑	←	←	←
Traffic Volume (vph)	0	0	0	708	25	33	35	1771	0	0	2347	5
Future Volume (vph)	0	0	0	708	25	33	35	1771	0	0	2347	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	12	12	12	12	12	12
Grade (%)		0%			2%			0%			0%	
Total Lost time (s)		4.0		4.0				4.0			4.0	
Lane Util. Factor		0.91		0.91				0.91			0.91	
Ft/b, ped/bikes		1.00		1.00				1.00			1.00	
Ft/b, ped/bikes		1.00		1.00				1.00			1.00	
Frt		1.00		0.99				1.00			1.00	
Flt Protected		0.95		0.96				1.00			1.00	
Satd. Flow (prot)		1541		2897				5031			5034	
Flt Permitted		0.95		0.96				0.76			1.00	
Satd. Flow (perm)		1541		2897				3832			5034	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	770	27	36	38	1925	0	0	2551	5
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	385	443	0	0	1963	0	0	2556	0
Confl. Peds. (#/hr)	3		2	2		3						
Confl. Bikes (#/hr)												
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)				1								
Turn Type				Split	NA		Perm	NA			NA	
Protected Phases				2	2			1				1
Permitted Phases							1					
Actuated Green, G (s)				23.1	23.1			45.4			45.4	
Effective Green, g (s)				25.1	25.1			46.9			46.9	
Actuated g/C Ratio				0.31	0.31			0.59			0.59	
Clearance Time (s)				6.0	6.0			5.5			5.5	
Vehicle Extension (s)				2.0	2.0			2.0			2.0	
Lane Grp Cap (vph)				483	908			2246			2951	
v/s Ratio Prot				c0.25	0.15						0.51	
v/s Ratio Perm								c0.51				
v/c Ratio				0.80	0.49			0.87			0.87	
Uniform Delay, d1				25.1	22.2			14.0			13.9	
Progression Factor				0.92	0.90			0.99			0.50	
Incremental Delay, d2				7.3	0.1			4.7			3.1	
Delay (s)				30.3	20.3			18.6			10.1	
Level of Service				C	C			B			B	
Approach Delay (s)		0.0			24.9			18.6			10.1	
Approach LOS		A			C			B			B	
Intersection Summary												
HCM 2000 Control Delay	15.5			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.85											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	92.0%											
ICU Level of Service	F											

HCM Signalized Intersection Capacity Analysis  
15: Patrick St & Gibbon St

Analysis Period (min)	10
c Critical Lane Group	

Queues

16: Alfred St & Gibbon St

Total Future Sunday w/ Development 2028

Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	701	220	263
v/c Ratio	0.50	0.47	0.38
Control Delay	9.4	14.1	6.5
Queue Delay	0.0	0.0	0.0
Total Delay	9.4	14.1	6.5
Queue Length 50th (ft)	52	37	17
Queue Length 95th (ft)	86	81	54
Internal Link Dist (ft)	218	136	305
Turn Bay Length (ft)			
Base Capacity (vph)	1389	473	698
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	36	0	1
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.52	0.47	0.38

Intersection Summary

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HCM Signalized Intersection Capacity Analysis

16: Alfred St & Gibbon St

Total Future Sunday w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	5	631	9	101	101	0	0	54	188
Future Volume (vph)	0	0	0	5	631	9	101	101	0	0	54	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	12	12	12	12	12	12	13
Total Lost time (s)					4.0			4.0				4.0
Lane Util. Factor					0.95			1.00				1.00
Flt					1.00			1.00				0.90
Flt Protected					1.00			0.98				1.00
Satd. Flow (prot)					3080			1817				1723
Flt Permitted					1.00			0.73				1.00
Satd. Flow (perm)					3080			1355				1723
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	5	686	10	110	110	0	0	59	204
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	96
Lane Group Flow (vph)	0	0	0	0	698	0	0	220	0	0	167	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	2	0	0	0	0	0	0	0
Parking (#/hr)					1							
Turn Type					Perm	NA		Perm	NA			NA
Protected Phases						2			1			1
Permitted Phases						2			1			1
Actuated Green, G (s)						17.0			12.7			12.7
Effective Green, g (s)						18.0			14.0			14.0
Actuated g/C Ratio						0.45			0.35			0.35
Clearance Time (s)						5.0			5.3			5.3
Lane Grp Cap (vph)						1386			474			603
v/s Ratio Prot												0.10
v/s Ratio Perm						0.23			c0.16			
v/c Ratio						0.50			0.46			0.28
Uniform Delay, d1						7.8			10.1			9.4
Progression Factor						1.00			1.00			1.00
Incremental Delay, d2						1.3			3.2			1.1
Delay (s)						9.1			13.3			10.5
Level of Service						A			B			B
Approach Delay (s)		0.0				9.1			13.3			10.5
Approach LOS		A				A			B			B

Intersection Summary

HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	10		
c Critical Lane Group			

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Queues

17: Patrick St & Franklin St

Total Future Sunday w/ Development 2028

Lane Group	EBL	EBT	NBT	NBR	SBT
Lane Group Flow (vph)	8	95	1779	557	2937
v/c Ratio	0.05	0.29	0.41	0.39	0.73
Control Delay	60.4	67.2	3.6	1.2	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.6
Total Delay	60.4	67.2	3.7	1.2	5.7
Queue Length 50th (ft)	8	50	98	0	173
Queue Length 95th (ft)	23	72	263	28	731
Internal Link Dist (ft)		261	297		346
Turn Bay Length (ft)					
Base Capacity (vph)	555	1065	4292	1418	4026
Starvation Cap Reductn	0	0	0	0	625
Spillback Cap Reductn	0	0	294	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.01	0.09	0.44	0.39	0.86

Intersection Summary

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HCM Signalized Intersection Capacity Analysis

17: Patrick St & Franklin St

Total Future Sunday w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	50	38	0	0	0	0	1637	512	3	2699	0
Future Volume (vph)	7	50	38	0	0	0	0	1637	512	3	2699	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	11	11	11	12	12	12	12	12	12
Grade (%)		2%			0%			0%	4.0			0%
Total Lost time (s)	4.0	4.0						4.0	12			4.0
Lane Util. Factor	1.00	0.95						0.91	1.00			0.91
Fltp, ped/bikes	1.00	0.99						1.00	1.00			1.00
Fltp, ped/bikes	1.00	1.00						1.00	1.00			1.00
Flt	1.00	0.94						1.00	0.85			1.00
Flt Protected	0.95	1.00						1.00	1.00			1.00
Satd. Flow (prot)	1744	3335						5036	1568			5036
Flt Permitted	0.95	1.00						1.00	1.00			0.94
Satd. Flow (perm)	1744	3335						5036	1568			4723
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)	8	54	41	0	0	0	0	1779	557	3	2934	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	82	0	0	0
Lane Group Flow (vph)	8	95	0	0	0	0	0	1779	475	0	2937	0
Confl. Peds. (#/hr)	3	E						A	A		A	
Confl. Bikes (#/hr)			4				3					
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	3	0	0	0	0	0	0	0	0	0	0
Turn Type								NA	Perm		Perm	NA
Protected Phases									2			2
Permitted Phases									2			2
Actuated Green, G (s)	13.6	13.6						134.4	134.4			134.4
Effective Green, g (s)	15.6	15.6						136.4	136.4			136.4
Actuated g/C Ratio	0.10	0.10						0.85	0.85			0.85
Clearance Time (s)	6.0	6.0						6.0	6.0			6.0
Vehicle Extension (s)	3.0	3.0						0.2	0.2			0.2
Lane Grp Cap (vph)	170	325						4293	1336			4026
v/s Ratio Prot									0.35			
v/s Ratio Perm	0.00								0.30			c0.62
v/c Ratio	0.05	0.29						0.41	0.36			0.73
Uniform Delay, d1	65.5	67.1						2.7	2.5			4.6
Progression Factor	1.00	1.00						1.00	1.00			0.73
Incremental Delay, d2	0.1	0.5						0.3	0.7			0.7
Delay (s)	65.6	67.6						3.0	3.2			4.1
Level of Service	E	E						A	A			A
Approach Delay (s)		67.4				0.0		3.0	4.1			4.1
Approach LOS		E				A		A	A			A

Intersection Summary

HCM 2000 Control Delay	4.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	100.6%	ICU Level of Service	G
Analysis Period (min)	10		

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HCM Signalized Intersection Capacity Analysis  
17: Patrick St & Franklin St

Total Future Sunday w/ Development 2028

c Critical Lane Group

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HCM Unsignalized Intersection Capacity Analysis

18: Patrick St & Existing Garage/Proposed Patrick Entrance

Total Future Sunday w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Traffic Volume (veh/h)	175	0	0	0	0	119	175	1750	119	0	0	0
Future Volume (Veh/h)	175	0	0	0	0	119	175	1750	119	0	0	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	190	0	0	0	0	129	190	1902	129	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)							594			261		
Upstream signal (ft)												
pX, platoon unblocked	0.88	0.88		0.88	0.88	0.88				0.88		
vC, conflicting volume	1143	2411	0	2346	2346	698	0			2031		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	671	2117	0	2043	2043	164	0			1684		
IC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
IC, 2 stage (s)												
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	16	100	100	100	100	100	83	88		100		
cM capacity (veh/h)	226	39	1084	26	43	747	1622			330		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3							
Volume Total	190	129	666	951	604							
Volume Left	190	0	190	0	0							
Volume Right	0	129	0	0	129							
cSH	226	747	1622	1700	1700							
Volume to Capacity	0.84	0.17	0.12	0.56	0.36							
Queue Length 95th (ft)	139	15	10	0	0							
Control Delay (s)	64.8	10.8	3.0	0.0	0.0							
Lane LOS	F	B	A									
Approach Delay (s)	64.8	10.8	0.9									
Approach LOS	F	B										
Intersection Summary												
Average Delay						6.2						
Intersection Capacity Utilization						67.1%	ICU Level of Service		C			
Analysis Period (min)						10						

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HCM Unsignalized Intersection Capacity Analysis  
19: Wolfe St

Total Future Sunday w/ Development 2028

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	1	1	1	1	1	1
Traffic Volume (veh/h)	0	28	25	79	79	0
Future Volume (Veh/h)	0	28	25	79	79	0
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	30	27	86	86	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	113			100	70	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	113			100	70	
IC, single (s)	4.1			6.4	6.2	
IC, 2 stage (s)						
IF (s)	2.2			3.5	3.3	
p0 queue free %	100			90	100	
cM capacity (veh/h)	1476			899	993	
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	30	113	86			
Volume Left	0	0	86			
Volume Right	0	86	0			
cSH	1476	1700	899			
Volume to Capacity	0.00	0.07	0.10			
Queue Length 95th (ft)	0	0	8			
Control Delay (s)	0.0	0.0	9.4			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	9.4			
Approach LOS	A					
Intersection Summary						
Average Delay			3.5			
Intersection Capacity Utilization			17.2%	ICU Level of Service		A
Analysis Period (min)			10			

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HCM Unsignalized Intersection Capacity Analysis  
20: Columbus St & Wolfe St

Total Future Sunday w/ Development 2028

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Traffic Volume (veh/h)	29	21	29	20	26	47	10	163	8	19	93	37
Future Volume (vph)	29	21	29	20	26	47	10	163	8	19	93	37
Sign Control	Stop			Stop			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	23	32	22	28	51	11	177	9	21	101	40
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	87	101	197	162								
Volume Left (vph)	32	22	11	21								
Volume Right (vph)	32	51	9	40								
Head (s)	-0.11	-0.23	0.02	-0.09								
Departure Headway (s)	4.8	4.6	4.6	4.5								
Degree Utilization x	0.12	0.13	0.25	0.20								
Capacity (veh/h)	690	710	750	752								
Control Delay (s)	8.4	8.3	9.1	8.6								
Approach Delay (s)	8.4	8.3	9.1	8.6								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay	8.7											
Level of Service	A											
Intersection Capacity Utilization					28.1%	ICU Level of Service		A				
Analysis Period (min)	10											

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Intersection												
Intersection Delay, s/veh	8.7											
Intersection LOS	A											
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	29	21	29	0	20	26	47	0	10	163	8
Future Vol, veh/h	0	29	21	29	0	20	26	47	0	10	163	8
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	0	32	23	32	0	22	28	51	0	11	177	9
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach			EB	WB	NB							
Opposing Approach	WB		EB		SB							
Opposing Lanes	1		1		1							
Conflicting Approach Left	SB		NB		EB							
Conflicting Lanes Left	1		1		1							
Conflicting Approach Right	NB		SB		WB							
Conflicting Lanes Right	1		1		1							
HCM Control Delay	8.4		8.3		9.1							
HCM LOS	A		A		A							
Lane												
	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	6%	37%	22%	13%								
Vol Thru, %	90%	27%	28%	62%								
Vol Right, %	4%	37%	51%	25%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	181	79	93	149								
LT Vol	10	29	20	19								
Through Vol	163	21	26	93								
RT Vol	8	29	47	37								
Lane Flow Rate	197	86	101	162								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.248	0.113	0.129	0.201								
Departure Headway (Hd)	4.541	4.731	4.601	4.476								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	791	756	777	800								
Service Time	2.574	2.771	2.639	2.51								
HCM Lane V/C Ratio	0.249	0.114	0.13	0.203								
HCM Control Delay	9.1	8.4	8.3	8.6								
HCM Lane LOS	A	A	A	A								
HCM 95th-ile Q	1	0.4	0.4	0.7								

Intersection				
Intersection Delay, s/veh	8.7			
Intersection LOS	A			
Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	19	93	37
Future Vol, veh/h	0	19	93	37
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	21	101	40
Number of Lanes	0	0	1	0
Approach		SB		
Opposing Approach	NB			
Opposing Lanes	1			
Conflicting Approach Left	WB			
Conflicting Lanes Left	1			
Conflicting Approach Right	EB			
Conflicting Lanes Right	1			
HCM Control Delay	8.6			
HCM LOS	A			
Lane				

Queues  
13: Patrick St & Henry to Patrick Connector

Lane Group	EBL	NBT
Lane Group Flow (vph)	184	2050
v/c Ratio	0.40	0.71
Control Delay	3.1	14.8
Queue Delay	23.9	1.7
Total Delay	26.9	16.5
Queue Length 50th (ft)	0	280
Queue Length 95th (ft)	m0	325
Internal Link Dist (ft)	90	210
Turn Bay Length (ft)		
Base Capacity (vph)	537	2892
Starvation Cap Reductn	0	393
Spillback Cap Reductn	347	627
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.97	0.91

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

HCM Signalized Intersection Capacity Analysis  
13: Patrick St & Henry to Patrick Connector

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↓			↑↑↑		
Traffic Volume (vph)	169	0	0	1886	0	0
Future Volume (vph)	169	0	0	1886	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		
Lane Util. Factor	1.00			0.91		
Frt	1.00			1.00		
Flt Protected	0.95			1.00		
Satd. Flow (prot)	1770			5085		
Flt Permitted	0.95			1.00		
Satd. Flow (perm)	1770			5085		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	184	0	0	2050	0	0
RTOR Reduction (vph)	169	0	0	0	0	0
Lane Group Flow (vph)	15	0	0	2050	0	0
Turn Type	Prot			NA		
Protected Phases	4			2		
Permitted Phases						
Actuated Green, G (s)	5.5			44.5		
Effective Green, g (s)	6.5			45.5		
Actuated g/C Ratio	0.08			0.57		
Clearance Time (s)	5.0			5.0		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	143			2892		
v/s Ratio Prot	c0.01			c0.40		
v/s Ratio Perm						
v/c Ratio	0.10			0.71		
Uniform Delay, d1	34.1			12.5		
Progression Factor	1.00			1.07		
Incremental Delay, d2	0.2			1.4		
Delay (s)	34.3			14.7		
Level of Service	C			B		
Approach Delay (s)	34.3			14.7	0.0	
Approach LOS	C			B	A	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	96.4%	ICU Level of Service	F
Analysis Period (min)	10		

c Critical Lane Group





**APPENDIX G**  
**PARKING COUNTS AND INFORMATION**



**Wells & Associates, LLC**  
McLean, Virginia

**Existing Traffic Count**

PROJECT: Allied Street Baptist Church  
W & A JOB NO.: 6833  
LOCATION: City of Alexandria, VA  
APPROXIMATE DATE: 5/31/2015  
WEATHER: clear  
INSTITUTED BY: sign.

DATE: 5/31/2015  
DAY: Sunday  
WEATHER: clear  
INSTITUTED BY: sign.

LOCATION: City of Alexandria, VA  
APPROXIMATE DATE: 5/31/2015  
WEATHER: clear  
INSTITUTED BY: sign.

Passengers AM Peak 7:00-7:15	City of Alexandria, VA										Total Passengers	Time
	1	2	3	4	5	6	7	8	9	10		
7:00-7:15	1	0	0	0	0	0	0	0	0	0	1	7:00-7:15
7:15-7:30	0	0	0	0	0	0	0	0	0	0	0	7:15-7:30
7:30-7:45	0	0	0	0	0	0	0	0	0	0	0	7:30-7:45
7:45-8:00	1	0	0	0	0	0	0	0	0	0	1	7:45-8:00
8:00-8:15	1	0	0	0	0	0	0	0	0	0	1	8:00-8:15
8:15-8:30	1	0	0	0	0	0	0	0	0	0	1	8:15-8:30
8:30-8:45	1	0	0	0	0	0	0	0	0	0	1	8:30-8:45
8:45-9:00	2	1	0	0	0	0	0	0	0	0	3	8:45-9:00
9:00-9:15	1	0	0	0	0	0	0	0	0	0	1	9:00-9:15
9:15-9:30	1	0	0	0	0	0	0	0	0	0	1	9:15-9:30
9:30-9:45	1	0	0	0	0	0	0	0	0	0	1	9:30-9:45
9:45-10:00	1	0	0	0	0	0	0	0	0	0	1	9:45-10:00
10:00-10:15	1	0	0	0	0	0	0	0	0	0	1	10:00-10:15
10:15-10:30	4	0	0	0	0	0	0	0	0	0	4	10:15-10:30
10:30-10:45	6	3	0	0	0	0	0	0	0	0	9	10:30-10:45
10:45-11:00	1	0	0	0	0	0	0	0	0	0	1	10:45-11:00
11:00-11:15	1	0	0	0	0	0	0	0	0	0	1	11:00-11:15
11:15-11:30	1	0	0	0	0	0	0	0	0	0	1	11:15-11:30
11:30-11:45	2	0	0	0	0	0	0	0	0	0	2	11:30-11:45
11:45-12:00	7	2	0	0	0	0	0	0	0	0	9	11:45-12:00
12:00-12:15	1	0	0	0	0	0	0	0	0	0	1	12:00-12:15
12:15-12:30	1	0	0	0	0	0	0	0	0	0	1	12:15-12:30
12:30-12:45	1	0	0	0	0	0	0	0	0	0	1	12:30-12:45
12:45-1:00	2	0	0	0	0	0	0	0	0	0	2	12:45-1:00
1:00-1:15	1	0	0	0	0	0	0	0	0	0	1	1:00-1:15
1:15-1:30	4	2	0	0	0	0	0	0	0	0	6	1:15-1:30
1:30-1:45	1	0	0	0	0	0	0	0	0	0	1	1:30-1:45
1:45-2:00	0	0	0	0	0	0	0	0	0	0	0	1:45-2:00
2:00-2:15	0	0	0	0	0	0	0	0	0	0	0	2:00-2:15
2:15-2:30	0	0	0	0	0	0	0	0	0	0	0	2:15-2:30
2:30-2:45	0	0	0	0	0	0	0	0	0	0	0	2:30-2:45
2:45-3:00	0	0	0	0	0	0	0	0	0	0	0	2:45-3:00
<b>Totals</b>	<b>48</b>	<b>23</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>76</b>	<b>1:00-1:15</b>
<b>1 Hour</b>												
7:00-8:00	3	0	0	0	0	0	0	0	0	0	3	7:00-8:00
7:15-8:15	3	0	0	0	0	0	0	0	0	0	3	7:15-8:15
7:30-8:30	2	0	0	0	0	0	0	0	0	0	2	7:30-8:30
7:45-8:45	2	0	0	0	0	0	0	0	0	0	2	7:45-8:45
8:00-9:00	3	1	0	0	0	0	0	0	0	0	4	8:00-9:00
8:15-9:15	3	1	0	0	0	0	0	0	0	0	4	8:15-9:15
8:30-9:30	2	1	0	0	0	0	0	0	0	0	3	8:30-9:30
8:45-9:45	3	1	0	0	0	0	0	0	0	0	4	8:45-9:45
9:00-10:00	5	0	0	0	0	0	0	0	0	0	5	9:00-10:00
9:15-10:15	3	0	0	0	0	0	0	0	0	0	3	9:15-10:15
9:30-10:30	9	0	0	0	0	0	0	0	0	0	9	9:30-10:30
9:45-10:45	12	3	0	0	0	0	0	0	0	0	15	9:45-10:45
10:00-11:00	11	6	2	0	0	0	0	0	0	0	19	10:00-11:00
10:15-11:15	14	6	2	0	0	0	0	0	0	0	22	10:15-11:15
10:30-11:30	15	7	0	0	0	0	0	0	0	0	22	10:30-11:30
10:45-11:45	15	6	1	0	0	0	0	0	0	0	22	10:45-11:45
11:00-12:00	15	6	1	0	0	0	0	0	0	0	22	11:00-12:00
11:15-12:15	9	6	0	0	0	0	0	0	0	0	15	11:15-12:15
11:30-1:30	12	3	0	0	0	0	0	0	0	0	15	11:30-1:30
12:00-1:00	4	4	0	0	0	0	0	0	0	0	8	12:00-1:00
12:15-1:15	8	3	0	0	0	0	0	0	0	0	11	12:15-1:15
12:30-1:30	7	3	0	0	0	0	0	0	0	0	10	12:30-1:30
12:45-1:45	4	4	0	0	0	0	0	0	0	0	8	12:45-1:45
1:00-2:00	4	4	0	0	0	0	0	0	0	0	8	1:00-2:00
1:15-2:15	0	3	0	0	0	0	0	0	0	0	3	1:15-2:15
1:30-2:30	0	3	0	0	0	0	0	0	0	0	3	1:30-2:30
1:45-2:45	0	4	0	0	0	0	0	0	0	0	4	1:45-2:45
2:00-3:00	0	4	0	0	0	0	0	0	0	0	4	2:00-3:00
<b>AM Peak</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>8:00-9:00</b>
<b>Midday Peak</b>												
10:00-11:00	17	5	1	0	0	0	0	0	0	0	23	10:00-11:00

**Wells & Associates, LLC**  
McLean, Virginia

**Existing Traffic Count**

PROJECT: Allied Street Baptist Church  
W & A JOB NO.: 6833  
LOCATION: City of Alexandria, VA  
APPROXIMATE DATE: 5/31/2015  
WEATHER: clear  
INSTITUTED BY: sign.

DATE: 5/31/2015  
DAY: Sunday  
WEATHER: clear  
INSTITUTED BY: sign.

LOCATION: City of Alexandria, VA  
APPROXIMATE DATE: 5/31/2015  
WEATHER: clear  
INSTITUTED BY: sign.

Passengers AM Peak 7:00-7:15	City of Alexandria, VA										Total Passengers	Time
	1	2	3	4	5	6	7	8	9	10		
7:00-7:15	0	0	0	0	0	0	0	0	0	0	0	7:00-7:15
7:15-7:30	0	0	0	0	0	0	0	0	0	0	0	7:15-7:30
7:30-7:45	0	0	0	0	0	0	0	0	0	0	0	7:30-7:45
7:45-8:00	0	0	0	0	0	0	0	0	0	0	0	7:45-8:00
8:00-8:15	0	0	0	0	0	0	0	0	0	0	0	8:00-8:15
8:15-8:30	0	0	0	0	0	0	0	0	0	0	0	8:15-8:30
8:30-8:45	0	0	0	0	0	0	0	0	0	0	0	8:30-8:45
8:45-9:00	0	0	0	0	0	0	0	0	0	0	0	8:45-9:00
9:00-9:15	0	0	0	0	0	0	0	0	0	0	0	9:00-9:15
9:15-9:30	0	0	0	0	0	0	0	0	0	0	0	9:15-9:30
9:30-9:45	1	0	0	0	0	0	0	0	0	0	1	9:30-9:45
9:45-10:00	1	0	0	0	0	0	0	0	0	0	1	9:45-10:00
10:00-10:15	1	0	0	0	0	0	0	0	0	0	1	10:00-10:15
10:15-10:30	0	0	0	0	0	0	0	0	0	0	0	10:15-10:30
10:30-10:45	0	0	0	0	0	0	0	0	0	0	0	10:30-10:45
10:45-11:00	0	0	0	0	0	0	0	0	0	0	0	10:45-11:00
11:00-11:15	1	0	0	0	0	0	0	0	0	0	1	11:00-11:15
11:15-11:30	0	0	0	0	0	0	0	0	0	0	0	11:15-11:30
11:30-11:45	0	0	0	0	0	0	0	0	0	0	0	11:30-11:45
11:45-12:00	0	2	0	0	0	0	0	0	0	0	2	11:45-12:00
12:00-12:15	0	0	0	0	0	0	0	0	0	0	0	12:00-12:15
12:15-12:30	1	1	0	0	0	0	0	0	0	0	2	12:15-12:30
12:30-12:45	1	1	0	0	0	0	0	0	0	0	2	12:30-12:45
12:45-1:00	11	4	1	0	0	0	0	0	0	0	16	12:45-1:00
1:00-1:15	1	0	0	0	0	0	0	0	0	0	1	1:00-1:15
1:15-1:30	1	2	0	0	0	0	0	0	0	0	3	1:15-1:30
1:30-1:45	2	4	0	0	0	0	0	0	0	0	6	1:30-1:45
1:45-2:00	1	0	0	0	0	0	0	0	0	0	1	1:45-2:00
2:00-2:15	1	1	0	0	0	0	0	0	0	0	2	2:00-2:15
2:15-2:30	1	1	0	0	0	0	0	0	0	0	2	2:15-2:30
2:30-2:45	2	1	0	0	0	0	0	0	0	0	3	2:30-2:45
2:45-3:00	2	1	0	0	0	0	0	0	0	0	3	2:45-3:00
<b>Totals</b>	<b>33</b>	<b>22</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>55</b>	<b>1:00-1:15</b>
<b>1 Hour</b>												
7:00-8:00	0	0	0	0	0	0	0	0	0	0	0	7:00-8:00
7:15-8:15	0	0	0	0	0	0	0	0	0	0	0	7:15-8:15
7:30-8:30	0	0	0	0	0	0	0	0	0	0	0	7:30-8:30
7:45-8:45	0	0	0	0	0	0	0	0	0	0	0	7:45-8:45
8:00-9:00	0	0	0	0	0	0	0	0	0	0	0	8:00-9:00
8:15-9:15	0	0	0	0	0	0	0	0	0	0	0	8:15-9:15
8:30-9:30	0	0	0	0	0	0	0	0	0	0	0	8:30-9:30
8:45-9:45	1	0	0	0	0	0	0	0	0	0	1	8:45-9:45
9:00-10:00	2	0	0	0	0	0	0	0	0	0	2	9:00-10:00
9:15-10:15	2	0	0	0	0	0	0	0	0	0	2	9:15-10:15
9:30-10:30	2	0	0	0	0	0	0	0	0	0	2	9:30-10:30
9:45-10:45	1	1	0	0	0	0	0	0	0	0	2	9:45-10:45
10:00-11:00	1	1	0	0	0	0	0	0	0	0	2	10:00-11:00
10:15-11:15	1	1	0	0	0	0	0	0	0	0	2	10:15-11:15
10:30-11:30	2	2	0	0	0	0	0	0	0	0	4	10:30-11:30
10:45-11:45	2	2	0	0	0	0	0	0	0	0	4	10:45-11:45
11:00-12:00	1	2	1</									



**Wells & Associates, LLC**  
McLean, Virginia

**Existing Traffic Count**

PROJECT: Allied Street Baptist Church  
W & A JOB NO.: 6833  
LOCATION: City of Alexandria, VA  
APPROXIMATE DATE: 5/31/2015  
WEATHER: clear  
INFLUENCED BY: None / Orange sign.

DATE: 5/31/2015  
DAY: Sunday  
WEATHER: clear  
INFLUENCED BY: None / Orange sign.

LOCATION: City of Alexandria, VA  
APPROXIMATE DATE: 5/31/2015  
WEATHER: clear  
INFLUENCED BY: None / Orange sign.

Passengers #/Value	City of Alexandria, VA							Total Passengers	Total Vehicles	Time
	1	2	3	4	5	6	7			
7:00-7:15 AM	10	1	0	0	0	0	0	11	12	7:00-7:15
7:15-7:30	40	3	0	0	0	0	0	43	20	7:15-7:30
7:30-7:45	40	3	0	0	0	0	0	43	42	7:30-7:45
7:45-8:00	40	1	0	0	0	0	0	41	42	7:45-8:00
8:00-8:15	18	1	0	0	0	0	0	19	20	8:00-8:15
8:15-8:30	4	0	0	0	0	0	0	4	4	8:15-8:30
8:30-8:45	4	0	0	0	0	0	0	4	4	8:30-8:45
8:45-9:00	1	0	0	0	0	0	0	1	1	8:45-9:00
9:00-9:15	5	0	0	0	0	0	0	5	5	9:00-9:15
9:15-9:30	5	0	0	0	0	0	0	5	5	9:15-9:30
9:30-9:45	2	1	0	0	0	0	0	3	4	9:30-9:45
9:45-10:00	17	0	0	0	0	0	0	17	17	9:45-10:00
10:00-10:15	47	0	0	0	0	0	0	47	35	10:00-10:15
10:15-10:30	41	4	0	0	0	0	0	45	49	10:15-10:30
10:30-10:45	30	8	0	0	0	0	0	38	46	10:30-10:45
10:45-11:00	10	1	0	0	0	0	0	11	12	10:45-11:00
11:00-11:15	2	2	0	0	0	0	0	4	6	11:00-11:15
11:15-11:30	0	0	0	0	0	0	0	0	0	11:15-11:30
11:30-11:45	0	0	0	0	0	0	0	0	0	11:30-11:45
11:45-12:00	0	0	0	0	0	0	0	0	0	11:45-12:00
12:00-12:15	0	0	0	0	0	0	0	0	0	12:00-12:15
12:15-12:30	1	0	0	0	0	0	0	1	1	12:15-12:30
12:30-12:45	0	0	0	0	0	0	0	0	0	12:30-12:45
12:45-1:00	0	0	0	0	0	0	0	0	0	12:45-1:00
1:00-1:15	1	1	0	0	0	0	0	2	3	1:00-1:15
1:15-1:30	0	0	0	0	0	0	0	0	0	1:15-1:30
1:30-1:45	0	0	0	0	0	0	0	0	0	1:30-1:45
1:45-2:00	0	0	0	0	0	0	0	0	0	1:45-2:00
2:00-2:15	0	0	0	0	0	0	0	0	0	2:00-2:15
2:15-2:30	0	0	0	0	0	0	0	0	0	2:15-2:30
2:30-2:45	0	0	0	0	0	0	0	0	0	2:30-2:45
2:45-3:00	0	0	0	0	0	0	0	0	0	2:45-3:00
<b>Totals</b>	<b>278</b>	<b>37</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>314</b>	<b>353</b>	<b>Trails</b>
<b>1 Hour</b>										
7:00-8:00	109	9	0	0	0	0	0	118	127	7:00-8:00
7:15-8:15	117	9	0	0	0	0	0	126	135	7:15-8:15
7:30-8:30	121	9	0	0	0	0	0	130	139	7:30-8:30
7:45-8:45	73	2	0	0	0	0	0	75	77	7:45-8:45
8:00-9:00	34	1	0	0	0	0	0	35	36	8:00-9:00
8:15-9:15	14	0	0	0	0	0	0	14	14	8:15-9:15
8:30-9:30	14	0	0	0	0	0	0	14	14	8:30-9:30
8:45-9:45	12	1	0	0	0	0	0	13	14	8:45-9:45
9:00-10:00	28	10	0	0	0	0	0	38	48	9:00-10:00
9:15-10:15	83	21	0	0	0	0	0	104	114	9:15-10:15
9:30-10:30	65	14	0	0	0	0	0	79	83	9:30-10:30
9:45-10:45	83	21	0	0	0	0	0	104	114	9:45-10:45
10:00-11:00	95	14	1	0	0	0	0	110	126	10:00-11:00
10:15-11:15	56	12	1	0	0	0	0	69	83	10:15-11:15
10:30-11:30	33	3	0	0	0	0	0	36	39	10:30-11:30
10:45-11:45	13	2	0	0	0	0	0	15	19	10:45-11:45
11:00-12:00	3	2	0	0	0	0	0	5	7	11:00-12:00
11:15-12:15	1	1	0	0	0	0	0	2	3	11:15-12:15
11:30-12:30	1	0	0	0	0	0	0	1	1	11:30-12:30
11:45-12:45	1	0	0	0	0	0	0	1	1	11:45-12:45
12:00-1:00	1	0	0	0	0	0	0	1	1	12:00-1:00
12:15-1:15	2	1	0	0	0	0	0	3	4	12:15-1:15
12:30-1:30	2	1	0	0	0	0	0	3	4	12:30-1:30
12:45-1:45	1	1	0	0	0	0	0	2	3	12:45-1:45
1:00-2:00	1	1	0	0	0	0	0	2	3	1:00-2:00
1:15-2:15	1	1	0	0	0	0	0	2	3	1:15-2:15
1:30-2:30	0	0	0	0	0	0	0	0	0	1:30-2:30
1:45-2:45	0	0	0	0	0	0	0	0	0	1:45-2:45
2:00-3:00	0	0	0	0	0	0	0	0	0	2:00-3:00
<b>AM Peak</b>	<b>117</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>126</b>	<b>135</b>	<b>7:15-8:15</b>
<b>Midday Peak</b>										
<b>#VALUE!</b>	<b>#VALUE!</b>	<b>#VALUE!</b>	<b>#VALUE!</b>	<b>#VALUE!</b>	<b>#VALUE!</b>	<b>#VALUE!</b>	<b>#VALUE!</b>	<b>#VALUE!</b>	<b>#VALUE!</b>	<b>#VALUE!</b>

**Wells & Associates, LLC**  
McLean, Virginia

**Existing Traffic Count**

PROJECT: Allied Street Baptist Church  
W & A JOB NO.: 6833  
LOCATION: City of Alexandria, VA  
APPROXIMATE DATE: 5/31/2015  
WEATHER: clear  
INFLUENCED BY: None / Orange sign.

DATE: 5/31/2015  
DAY: Sunday  
WEATHER: clear  
INFLUENCED BY: None / Orange sign.

LOCATION: City of Alexandria, VA  
APPROXIMATE DATE: 5/31/2015  
WEATHER: clear  
INFLUENCED BY: None / Orange sign.

Passengers #/Value	City of Alexandria, VA							Total Passengers	Total Vehicles	Time
	1	2	3	4	5	6	7			
7:00-7:15 AM	0	0	0	0	0	0	0	0	0	7:00-7:15
7:15-7:30	0	0	0	0	0	0	0	0	1	7:15-7:30
7:30-7:45	0	0	0	0	0	0	0	0	0	7:30-7:45
7:45-8:00	0	0	0	0	0	0	0	0	0	7:45-8:00
8:00-8:15	1	0	0	0	0	0	0	1	1	8:00-8:15
8:15-8:30	0	0	0	0	0	0	0	0	0	8:15-8:30
8:30-8:45	0	0	0	0	0	0	0	0	0	8:30-8:45
8:45-9:00	3	0	0	0	0	0	0	3	3	8:45-9:00
9:00-9:15	0	0	0	0	0	0	0	0	0	9:00-9:15
9:15-9:30	0	0	0	0	0	0	0	0	0	9:15-9:30
9:30-9:45	30	10	1	0	0	0	0	41	53	9:30-9:45
9:45-10:00	10	1	0	0	0	0	0	11	11	9:45-10:00
10:00-10:15	2	0	0	0	0	0	0	2	2	10:00-10:15
10:15-10:30	0	0	0	0	0	0	0	0	0	10:15-10:30
10:30-10:45	0	0	0	0	0	0	0	0	0	10:30-10:45
10:45-11:00	7	3	0	0	0	0	0	10	12	10:45-11:00
11:00-11:15	5	4	0	0	0	0	0	9	13	11:00-11:15
11:15-11:30	2	0	0	0	0	0	0	2	2	11:15-11:30
11:30-11:45	2	0	0	0	0	0	0	2	2	11:30-11:45
11:45-12:00	2	0	0	0	0	0	0	2	2	11:45-12:00
12:00-12:15	2	0	0	0	0	0	0	2	2	12:00-12:15
12:15-12:30	0	0	0	0	0	0	0	0	0	12:15-12:30
12:30-12:45	0	1	0	0	0	0	0	1	2	12:30-12:45
12:45-1:00	34	22	0	0	0	0	0	56	78	12:45-1:00
1:00-1:15	4	4	0	0	0	0	0	8	10	1:00-1:15
1:15-1:30	4	23	1	0	0	0	0	28	35	1:15-1:30
1:30-1:45	5	0	0	0	0	0	0	5	5	1:30-1:45
1:45-2:00	4	1	0	0	0	0	0	5	6	1:45-2:00
2:00-2:15	4	1	0	0	0	0	0	5	6	2:00-2:15
2:15-2:30	4	2	0	0	0	0	0	6	8	2:15-2:30
2:30-2:45	2	2	0	0	0	0	0	4	6	2:30-2:45
2:45-3:00	2	2	0	0	0	0	0	4	6	2:45-3:00
<b>Totals</b>	<b>100</b>	<b>86</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>178</b>	<b>193</b>	<b>Trails</b>
<b>1 Hour</b>										
7:00-8:00	1	0	0	0	0	0	0	1	1	7:00-8:00
7:15-8:15	2	0	0	0	0	0	0	2	2	7:15-8:15
7:30-8:30	1	0	0	0	0	0	0	1	1	7:30-8:30
7:45-8:45	1	0	0	0	0	0	0	1	1	7:45-8:45
8:00-9:00	4	0	0	0	0	0	0	4	4	8:00-9:00
8:15-9:15	3	0	0	0	0	0	0	3	3	8:15-9:15
8:30-9:30	3	0	0	0	0	0	0	3	3	8:30-9:30
8:45-9:45	33	10	1	0	0	0	0	44	56	8:45-9:45
9:00-10:00	63	18	0	0	0	0	0	81	92	9:00-10:00
9:15-10:15	83	18	0	0	0	0	0	101	113	9:15-10:15
9:30-10:30	63	18	1	0	0	0	0	82	102	9:30-10:30
9:45-10:45	35	8	0	0	0	0	0	43	51	9:45-10:45
10:00-11:00	17	7	0	0	0	0				



**Wells & Associates, LLC**  
McLean, Virginia

**Existing Traffic Count**

PROJECT: Allied Street Baptist Church  
W & A JOB NO.: 6833  
LOCATION: City of Alexandria, VA  
APPROXIMATE DATE: 6/7/2016  
WEATHER: clear  
INSTRUMENTED BY: R. Williams

DATE: 6/7/2016  
DAY: Sunday  
WEATHER: clear  
INSTRUMENTED BY: R. Williams

Passengers #/Value	City of Alexandria, VA								Total Passengers	Total Vehicles	Time
	1	2	3	4	5	6	7	8			
7:00-7:15 AM	8	3	0	0	0	0	0	0	12	15	7:00-7:15
7:15-7:30	17	6	0	0	0	0	0	0	23	38	7:15-7:30
7:30-7:45	21	10	4	1	0	0	0	0	36	57	7:30-7:45
7:45-8:00	14	5	1	0	0	0	0	0	21	31	7:45-8:00
8:00-8:15	1	0	0	0	0	0	0	0	1	1	8:00-8:15
8:15-8:30	1	0	0	0	0	0	0	0	1	1	8:15-8:30
8:30-8:45	1	0	0	0	0	0	0	0	1	1	8:30-8:45
8:45-9:00	3	0	0	0	0	0	0	0	3	3	8:45-9:00
9:00-9:15	1	0	0	0	0	0	0	0	1	1	9:00-9:15
9:15-9:30	1	0	0	0	0	0	0	0	1	1	9:15-9:30
9:30-9:45	11	3	3	0	0	0	0	0	17	26	9:30-9:45
9:45-10:00	41	6	3	2	0	0	0	0	52	70	9:45-10:00
10:00-10:15	27	11	2	0	0	0	0	0	40	56	10:00-10:15
10:15-10:30	41	6	3	2	0	0	0	0	52	70	10:15-10:30
10:30-10:45	22	11	1	0	0	0	0	0	34	51	10:30-10:45
10:45-11:00	2	2	0	0	0	0	0	0	4	6	10:45-11:00
11:00-11:15	1	0	0	0	0	0	0	0	1	1	11:00-11:15
11:15-11:30	1	0	0	0	0	0	0	0	1	1	11:15-11:30
11:30-11:45	1	0	0	0	0	0	0	0	1	1	11:30-11:45
11:45-12:00	1	0	0	0	0	0	0	0	1	1	11:45-12:00
12:00-12:15	1	0	0	0	0	0	0	0	1	1	12:00-12:15
12:15-12:30	1	0	0	0	0	0	0	0	1	1	12:15-12:30
12:30-12:45	1	0	0	0	0	0	0	0	1	1	12:30-12:45
12:45-1:00	1	0	0	0	0	0	0	0	1	1	12:45-1:00
1:00-1:15	1	0	0	0	0	0	0	0	1	1	1:00-1:15
1:15-1:30	1	0	0	0	0	0	0	0	1	1	1:15-1:30
1:30-1:45	1	0	0	0	0	0	0	0	1	1	1:30-1:45
1:45-2:00	0	0	0	0	0	0	0	0	0	0	1:45-2:00
2:00-2:15	0	0	0	0	0	0	0	0	0	0	2:00-2:15
2:15-2:30	0	0	0	0	0	0	0	0	0	0	2:15-2:30
2:30-2:45	0	0	0	0	0	0	0	0	0	0	2:30-2:45
2:45-3:00	0	0	0	0	0	0	0	0	0	0	2:45-3:00
<b>Totals</b>	<b>228</b>	<b>87</b>	<b>23</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>347</b>	<b>504</b>	<b>Trains</b>
<b>1 Hour</b>											
7:00-8:00	73	30	9	2	0	0	0	0	114	168	7:00-8:00
7:15-8:15	78	32	10	3	0	0	0	0	123	184	7:15-8:15
7:30-8:30	45	17	7	3	0	0	0	0	72	112	7:30-8:30
8:00-9:00	27	7	3	2	0	0	0	0	39	58	8:00-9:00
8:15-9:15	17	9	2	0	0	0	0	0	29	46	8:15-9:15
8:30-9:30	7	9	2	0	0	0	0	0	18	31	8:30-9:30
8:45-9:45	17	12	5	0	0	0	0	0	34	56	8:45-9:45
9:00-10:00	44	14	5	0	0	0	0	0	63	97	9:00-10:00
9:15-10:15	44	14	5	0	0	0	0	0	63	97	9:15-10:15
9:30-10:30	84	19	7	2	0	0	0	0	112	151	9:30-10:30
9:45-10:45	85	27	6	3	0	0	0	0	130	178	9:45-10:45
10:00-11:00	74	25	5	4	0	0	0	0	108	155	10:00-11:00
10:15-11:15	34	19	2	2	0	0	0	0	57	86	10:15-11:15
10:30-11:30	4	4	0	0	0	0	0	0	8	12	10:30-11:30
10:45-11:45	2	2	0	0	0	0	0	0	4	6	10:45-11:45
11:00-12:00	4	4	0	0	0	0	0	0	8	12	11:00-12:00
11:15-12:15	5	5	0	0	0	0	0	0	10	15	11:15-12:15
11:30-12:30	5	5	0	0	0	0	0	0	10	15	11:30-12:30
11:45-12:45	4	4	0	0	0	0	0	0	8	12	11:45-12:45
12:00-1:00	4	4	0	0	0	0	0	0	8	12	12:00-1:00
12:15-1:15	2	2	0	0	0	0	0	0	4	6	12:15-1:15
12:30-1:30	2	2	0	0	0	0	0	0	4	6	12:30-1:30
12:45-1:45	1	0	0	0	0	0	0	0	1	1	12:45-1:45
1:00-2:00	1	0	0	0	0	0	0	0	1	1	1:00-2:00
1:15-2:15	0	0	0	0	0	0	0	0	0	0	1:15-2:15
1:30-2:30	0	0	0	0	0	0	0	0	0	0	1:30-2:30
1:45-2:45	0	0	0	0	0	0	0	0	0	0	1:45-2:45
2:00-3:00	2	0	0	0	0	0	0	0	2	2	2:00-3:00
<b>AM Peak</b>	<b>78</b>	<b>32</b>	<b>10</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>123</b>	<b>184</b>	<b>7:15-8:15</b>
<b>Midday Peak</b>	<b>99</b>	<b>31</b>	<b>6</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>140</b>	<b>195</b>	<b>10:00-11:00</b>

**Wells & Associates, LLC**  
McLean, Virginia

**Existing Traffic Count**

PROJECT: Allied Street Baptist Church  
W & A JOB NO.: 6833  
LOCATION: City of Alexandria, VA  
APPROXIMATE DATE: 6/7/2016  
WEATHER: clear  
OUT  
INSTRUMENTED BY: R. Williams

DATE: 6/7/2016  
DAY: Sunday  
WEATHER: clear  
OUT  
INSTRUMENTED BY: R. Williams

Passengers #/Value	City of Alexandria, VA								Total Passengers	Total Vehicles	Time
	1	2	3	4	5	6	7	8			
7:00-7:15 AM	0	0	0	0	0	0	0	0	0	0	7:00-7:15
7:15-7:30	0	0	0	0	0	0	0	0	0	0	7:15-7:30
7:30-7:45	0	0	0	0	0	0	0	0	0	0	7:30-7:45
7:45-8:00	0	0	0	0	0	0	0	0	0	0	7:45-8:00
8:00-8:15	0	0	0	0	0	0	0	0	0	0	8:00-8:15
8:15-8:30	0	0	0	0	0	0	0	0	0	0	8:15-8:30
8:30-8:45	1	0	0	0	0	0	0	0	1	1	8:30-8:45
8:45-9:00	0	0	0	0	0	0	0	0	0	0	8:45-9:00
9:00-9:15	0	0	0	0	0	0	0	0	0	0	9:00-9:15
9:15-9:30	0	1	0	0	0	0	0	0	1	2	9:15-9:30
9:30-9:45	19	8	4	0	0	0	0	0	31	47	9:30-9:45
9:45-10:00	71	22	4	0	0	0	0	0	97	143	9:45-10:00
10:00-10:15	9	22	4	0	0	0	0	0	35	52	10:00-10:15
10:15-10:30	7	0	0	0	0	0	0	0	7	7	10:15-10:30
10:30-10:45	6	0	0	0	0	0	0	0	6	6	10:30-10:45
10:45-11:00	3	2	1	0	0	0	0	0	6	7	10:45-11:00
11:00-11:15	2	1	0	0	0	0	0	0	3	4	11:00-11:15
11:15-11:30	2	1	0	0	0	0	0	0	3	4	11:15-11:30
11:30-11:45	1	0	0	0	0	0	0	0	1	1	11:30-11:45
11:45-12:00	5	0	0	0	0	0	0	0	5	6	11:45-12:00
12:00-12:15	1	1	0	0	0	0	0	0	2	3	12:00-12:15
12:15-12:30	7	1	0	0	0	0	0	0	8	9	12:15-12:30
12:30-12:45	58	27	6	0	0	0	0	0	88	127	12:30-12:45
12:45-1:00	12	5	0	0	0	0	0	0	17	22	12:45-1:00
1:00-1:15	12	5	0	0	0	0	0	0	17	22	1:00-1:15
1:15-1:30	1	0	0	0	0	0	0	0	1	1	1:15-1:30
1:30-1:45	0	0	0	0	0	0	0	0	0	0	1:30-1:45
1:45-2:00	2	1	0	0	0	0	0	0	3	4	1:45-2:00
2:00-2:15	6	2	0	0	0	0	0	0	8	10	2:00-2:15
2:15-2:30	6	2	0	0	0	0	0	0	8	10	2:15-2:30
2:30-2:45	2	0	0	0	0	0	0	0	2	2	2:30-2:45
2:45-3:00	14	1	0	0	0	0	0	0	15	17	2:45-3:00
<b>Totals</b>	<b>234</b>	<b>83</b>	<b>23</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>350</b>	<b>498</b>	<b>Trains</b>
<b>1 Hour</b>											
7:00-8:00	0	0	0	0	0	0	0	0	0	0	7:00-8:00
7:15-8:15	0	0	0	0	0	0	0	0	0	0	7:15-8:15
7:30-8:30	2	0	0	0	0	0	0	0	2	2	7:30-8:30
7:45-8:45	2	0	0	0	0	0	0	0	2	2	7:45-8:45
8:00-9:00	2	0	0	0	0	0	0	0	2	2	8:00-9:00
8:15-9:15	1	1	0	0	0	0	0	0	2	3	8:15-9:15
8:30-9:30	1	1	0	0	0	0	0	0	2	3	8:30-9:30
8:45-9:45	19	9	4	0	0	0	0	0	32</		

**Wells & Associates, LLC**  
McLean, Virginia

**Existing Traffic Count**

PROJECT: Allied Street Baptist Church  
W & A JOB NO.: 6833  
LOCATION: City of Alexandria, VA  
APPROXIMATE DATE: 5/31/2015  
WEATHER: clear  
INSPURTED BY: sign

DATE: 5/31/2015  
DAY: Sunday  
WEATHER: clear  
INSPURTED BY: sign

Passengers AM Peak	City of Alexandria, VA							Total Passengers	Total Vehicles	Time
	1	2	3	4	5	6	7			
7:00-7:15	1	0	0	0	0	0	0	1	1	7:00-7:15
7:15-7:30	2	0	0	0	0	0	0	2	2	7:15-7:30
7:30-7:45	3	0	0	0	0	0	0	3	3	7:30-7:45
7:45-8:00	3	0	0	0	0	0	0	3	3	7:45-8:00
8:00-8:15	1	0	0	0	0	0	0	1	1	8:00-8:15
8:15-8:30	0	0	0	0	0	0	0	0	0	8:15-8:30
8:30-8:45	0	0	0	0	0	0	0	0	0	8:30-8:45
8:45-9:00	0	0	0	0	0	0	0	0	0	8:45-9:00
9:00-9:15	0	0	0	0	0	0	0	0	0	9:00-9:15
9:15-9:30	2	0	0	0	0	0	0	2	2	9:15-9:30
9:30-9:45	1	0	0	0	0	0	0	1	1	9:30-9:45
9:45-10:00	1	0	0	0	0	0	0	1	1	9:45-10:00
10:00-10:15	1	0	0	0	0	0	0	1	1	10:00-10:15
10:15-10:30	5	1	0	0	0	0	0	6	6	10:15-10:30
10:30-10:45	10	1	0	0	0	0	0	11	11	10:30-10:45
10:45-11:00	10	1	0	0	0	0	0	11	11	10:45-11:00
11:00-11:15	2	0	0	0	0	0	0	2	2	11:00-11:15
11:15-11:30	2	0	0	0	0	0	0	2	2	11:15-11:30
11:30-11:45	1	0	0	0	0	0	0	1	1	11:30-11:45
11:45-12:00	1	0	0	0	0	0	0	1	1	11:45-12:00
12:00-12:15	0	0	0	0	0	0	0	0	0	12:00-12:15
12:15-12:30	1	0	0	0	0	0	0	1	1	12:15-12:30
12:30-12:45	1	0	0	0	0	0	0	1	1	12:30-12:45
12:45-1:00	1	0	0	0	0	0	0	1	1	12:45-1:00
1:00-1:15	0	0	0	0	0	0	0	0	0	1:00-1:15
1:15-1:30	0	0	0	0	0	0	0	0	0	1:15-1:30
1:30-1:45	0	0	0	0	0	0	0	0	0	1:30-1:45
1:45-2:00	0	0	0	0	0	0	0	0	0	1:45-2:00
2:00-2:15	0	0	0	0	0	0	0	0	0	2:00-2:15
2:15-2:30	0	0	0	0	0	0	0	0	0	2:15-2:30
2:30-2:45	0	0	0	0	0	0	0	0	0	2:30-2:45
2:45-3:00	0	0	0	0	0	0	0	0	0	2:45-3:00
<b>Totals</b>	<b>35</b>	<b>6</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>49</b>	<b>49</b>	<b>Trucks</b>
<b>1 Hour</b>										
7:00-8:00	9	0	1	0	0	0	0	10	10	7:00-8:00
7:15-8:15	9	0	1	0	0	0	0	10	12	7:15-8:15
7:30-8:30	5	0	0	0	0	0	0	5	5	7:30-8:30
7:45-8:45	5	0	0	0	0	0	0	5	5	7:45-8:45
8:00-9:00	2	0	0	0	0	0	0	2	2	8:00-9:00
8:15-9:15	2	0	0	0	0	0	0	2	2	8:15-9:15
8:30-9:30	2	0	0	0	0	0	0	2	2	8:30-9:30
8:45-9:45	2	1	0	0	0	0	0	3	4	8:45-9:45
9:00-10:00	3	2	0	0	0	0	0	5	7	9:00-10:00
9:15-10:15	3	2	0	0	0	0	0	5	7	9:15-10:15
9:30-10:30	6	3	0	0	0	0	0	9	12	9:30-10:30
9:45-10:45	12	2	1	0	0	0	0	15	19	9:45-10:45
10:00-11:00	15	1	0	0	0	0	0	16	20	10:00-11:00
10:15-11:15	15	1	0	0	0	0	0	16	20	10:15-11:15
10:30-11:30	12	0	0	0	0	0	0	12	15	10:30-11:30
10:45-11:45	6	0	0	0	0	0	0	6	10	10:45-11:45
11:00-12:00	4	0	0	0	0	0	0	4	6	11:00-12:00
11:15-12:15	4	1	0	0	0	0	0	5	10	11:15-12:15
11:30-12:30	2	1	0	0	0	0	0	3	4	11:30-12:30
11:45-12:45	2	1	0	0	0	0	0	3	4	11:45-12:45
12:00-1:00	2	1	0	0	0	0	0	3	4	12:00-1:00
12:15-1:15	2	1	0	0	0	0	0	3	4	12:15-1:15
12:30-1:30	2	0	0	0	0	0	0	2	2	12:30-1:30
12:45-1:45	1	0	0	0	0	0	0	1	1	12:45-1:45
1:00-2:00	0	0	0	0	0	0	0	0	0	1:00-2:00
1:15-2:15	0	0	0	0	0	0	0	0	0	1:15-2:15
1:30-2:30	0	0	0	0	0	0	0	0	0	1:30-2:30
1:45-2:45	0	0	0	0	0	0	0	0	0	1:45-2:45
2:00-3:00	0	0	0	0	0	0	0	0	0	2:00-3:00
<b>AM Peak</b>	<b>7:00-8:00</b>	<b>9</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>12</b>	<b>7:00-8:00</b>
<b>Midday Peak</b>										
10:00-11:00	14	2	1	0	0	0	0	17	21	10:00-11:00

**Wells & Associates, LLC**  
McLean, Virginia

**Existing Traffic Count**

PROJECT: Allied Street Baptist Church  
W & A JOB NO.: 6833  
LOCATION: City of Alexandria, VA  
APPROXIMATE DATE: 5/31/2015  
WEATHER: clear  
INSPURTED BY: sign

DATE: 5/31/2015  
DAY: Sunday  
WEATHER: clear  
INSPURTED BY: sign

Passengers AM Peak	City of Alexandria, VA							Total Passengers	Total Vehicles	Time
	1	2	3	4	5	6	7			
7:00-7:15	0	0	0	0	0	0	0	0	0	7:00-7:15
7:15-7:30	0	0	0	0	0	0	0	0	0	7:15-7:30
7:30-7:45	0	0	0	0	0	0	0	0	0	7:30-7:45
7:45-8:00	0	0	0	0	0	0	0	0	0	7:45-8:00
8:00-8:15	0	0	0	0	0	0	0	0	0	8:00-8:15
8:15-8:30	0	0	0	0	0	0	0	0	0	8:15-8:30
8:30-8:45	0	0	0	0	0	0	0	0	0	8:30-8:45
8:45-9:00	0	0	0	0	0	0	0	0	0	8:45-9:00
9:00-9:15	0	0	0	0	0	0	0	0	0	9:00-9:15
9:15-9:30	0	0	0	0	0	0	0	0	0	9:15-9:30
9:30-9:45	6	0	0	0	0	0	0	6	6	9:30-9:45
9:45-10:00	10	1	0	0	0	0	0	11	11	9:45-10:00
10:00-10:15	10	1	0	0	0	0	0	11	11	10:00-10:15
10:15-10:30	0	0	0	0	0	0	0	0	0	10:15-10:30
10:30-10:45	0	0	0	0	0	0	0	0	0	10:30-10:45
10:45-11:00	0	0	0	0	0	0	0	0	0	10:45-11:00
11:00-11:15	0	0	0	0	0	0	0	0	0	11:00-11:15
11:15-11:30	0	0	0	0	0	0	0	0	0	11:15-11:30
11:30-11:45	0	0	0	0	0	0	0	0	0	11:30-11:45
11:45-12:00	0	0	0	0	0	0	0	0	0	11:45-12:00
12:00-12:15	0	0	0	0	0	0	0	0	0	12:00-12:15
12:15-12:30	0	0	0	0	0	0	0	0	0	12:15-12:30
12:30-12:45	0	1	0	0	0	0	0	1	2	12:30-12:45
12:45-1:00	0	2	0	0	0	0	0	2	3	12:45-1:00
1:00-1:15	0	0	0	0	0	0	0	0	0	1:00-1:15
1:15-1:30	0	0	0	0	0	0	0	0	0	1:15-1:30
1:30-1:45	2	0	0	0	0	0	0	2	2	1:30-1:45
1:45-2:00	2	0	0	0	0	0	0	2	2	1:45-2:00
2:00-2:15	0	0	0	0	0	0	0	0	0	2:00-2:15
2:15-2:30	0	0	0	0	0	0	0	0	0	2:15-2:30
2:30-2:45	0	0	0	0	0	0	0	0	0	2:30-2:45
2:45-3:00	0	0	0	0	0	0	0	0	0	2:45-3:00
<b>Totals</b>	<b>31</b>	<b>6</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>43</b>	<b>43</b>	<b>Trucks</b>
<b>1 Hour</b>										
7:00-8:00	0	0	0	0	0	0	0	0	0	7:00-8:00
7:15-8:15	0	0	0	0	0	0	0	0	0	7:15-8:15
7:30-8:30	0	0	0	0	0	0	0	0	0	7:30-8:30
7:45-8:45	0	0	0	0	0	0	0	0	0	7:45-8:45
8:00-9:00	0	0	0	0	0	0	0	0	0	8:00-9:00
8:15-9:15	1	0	0	0	0	0	0	1	1	8:15-9:15
8:30-9:30	1	0	0	0	0	0	0	1	2	8:30-9:30
8:45-9:45	7	0	0	0	0	0	0	7	11	8:45-9:45
9:00-10:00	7	0	0	0	0	0	0	7	8	9:00-10:00
9:15-10:15	7	0	0	0	0	0	0	7	8	9:15-10:15
9:30-10:30	7	0	0	0	0	0	0	7	8	9:30-10:30
9:45-10:45	1	0	0	0	0	0	0	1	2	9:45-10:45
10:00-11:00	1	0	0	0	0	0	0	1	2	10:00-11:00
10:15-11:15	1	0	0	0	0	0	0	1	2	10:15-11:15
10:30-11:30	2	1	0	0	0	0	0	3	4	10:30-11:30
10:45-11:45	1	1	0	0	0	0	0	2	3	10:45-11:45
11:00-12:00	1	1	0	0	0	0	0	2	3	11:00-12:00
11:15-12:15	1	0	0	0	0	0	0	1	1	11:15-12:15
11:30-12:30	1	0	0	0	0	0	0	1	1	11:30-12:30
11:45-12:45	1	0	0	0	0	0	0	1	2	11:45-12:45
12:00-1:00	10	3	2	0	0	0	0	15	22	12:00-1:00
12:15-1:15	14	4	2	1	0	0	0	21	32	12:15-1:15
12:30-1:30	16	3	2	1	0	0	0	22	33	12:30-1:30
12:45-1:45	6	0	0	0	0	0	0	6	6	12:45-1:45
1:00-2:00	4	0	0	0	0	0	0	4	4	1:00-2:00
1:15-2:15	3	1	0	0	0	0	0	4	4	1:15-2:15
1:30-2:30	4	1	0	0	0	0	0	5	5	1:30-2:30
1:45-2:45	3	1	0	0	0	0	0	4	4	1:45-2:45
2:00-3:00	4	1	0	0	0	0	0	5	5	2:00-3:00
<b>AM Peak</b>	<b>7:00-8:00</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>11</b>	<b>7:00-8:00</b>
<b>Midday Peak</b>										
10:00-11:00	14	2	1	0	0	0	0	17	21	10:00-11:00



Time	AM and PM	Loss	A	B	Cars	D	E	F	G	H	I	J	K	L	M	N	O	P	Cars	Q
6:30 AM	8	8	10	0	0	8	4	8	7	1	1	8	7	7	9	1	0	5		
7:00 AM	8	8	10	0	0	7	4	8	7	1	7	7	7	7	9	1	1	5		
7:30 AM	8	8	11	0	0	7	0	8	0	0	6	4	5	4	9	7	0	7		
8:00 AM	8	8	11	0	0	7	0	6	0	0	4	5	4	9	7	0	0	7		
8:30 AM	7	7	11	0	0	7	0	7	0	0	3	5	10	5	10	6	2	4		
9:00 AM	10	10	10	0	0	10	0	10	0	0	5	7	10	8	8	2	4	11		
9:30 AM	10	10	10	0	0	10	0	10	0	0	5	7	10	8	8	2	4	11		
4:30 PM	11	11	11	2	0	6	0	9	9	13	10	13	10	9	10	9	3	7	12	
5:00 PM	12	12	12	0	0	7	0	8	8	11	11	7	9	9	12	9	3	5	14	
5:30 PM	12	12	12	0	0	7	0	8	8	11	11	7	8	9	12	5	6	4	12	
6:00 PM	12	12	12	0	0	7	0	8	8	11	11	7	8	9	11	6	7	7	11	
6:30 PM	11	11	12	0	0	7	0	9	10	10	10	9	9	10	12	7	7	7	14	
7:00 PM	13	13	13	0	0	9	0	10	10	11	11	9	9	10	12	8	8	7	15	
7:30 PM	13	13	13	0	0	9	0	10	10	11	11	9	9	10	12	10	10	7	15	
Total Spcs.	13	13	13	8	0	9	0	10	10	11	11	9	9	10	12	10	10	7	15	

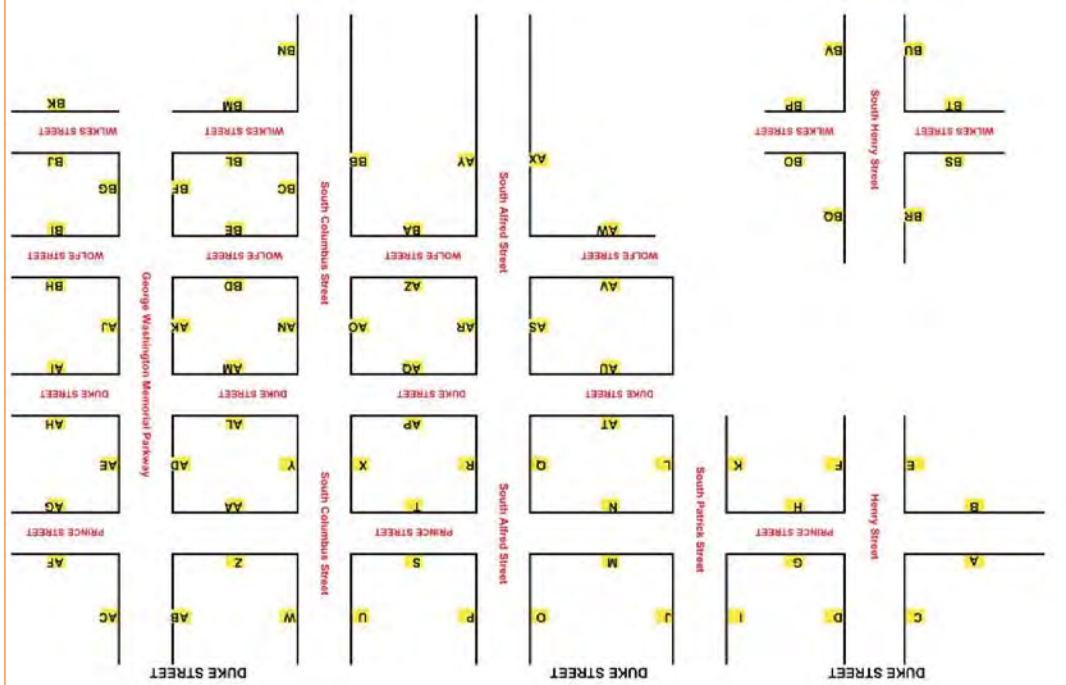
C-14

Parking Occupancy Count  
#6383

Surveyor: Luz  
Hours: 6:30AM-9:30AM / 4:30PM-7:30PM  
Date: 20-May  
Weather: Clear



Figure B-5  
On-Street Parking Diagram



C-13

C-16

Total Spcs.		10	8	6	11	14	8	11	14	12	7	8	7	7	6	36	29	12	0	22	14
Cars	Cars	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM and PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Surveyor: Luz  
 Hours: 6:30AM-9:30AM / 4:30PM-7:30PM  
 Date: 20-May  
 Weather: Clear

Parking Occupancy Count #6383

C-15

Total Spcs.		11	9	10	14	0	11	11	11	11	9	10	10	11	11	4	8	9	8	9	4	8
Cars	Cars	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
AM and PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Surveyor: Luz  
 Hours: 6:30AM-9:30AM / 4:30PM-7:30PM  
 Date: 20-May  
 Weather: Clear

Parking Occupancy Count #6383

Lot	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	Total Spcs.
3:00 PM	13	13	13	9	0	7	0	8	12	10	12	10	8	9	8	7	14	13
2:30 PM	13	13	13	9	0	7	0	8	12	10	12	10	8	9	8	7	14	13
2:00 PM	13	13	13	9	0	7	0	8	12	10	12	10	8	9	8	7	14	13
1:30 PM	13	13	13	10	0	7	0	9	12	11	14	10	8	9	9	11	14	13
1:00 PM	13	13	12	11	0	7	0	8	13	12	14	10	8	9	8	9	14	13
12:30 PM	13	13	13	11	0	7	0	10	13	12	14	11	8	9	8	9	16	13
12:00 PM	12	13	13	11	0	10	0	10	13	12	14	12	10	9	8	9	16	12
11:30 AM	12	13	13	12	0	10	0	10	13	12	14	11	8	9	8	9	16	12
11:00 AM	12	13	13	12	0	10	0	10	13	12	14	11	8	9	8	9	16	12
10:30 AM	11	13	13	12	0	9	0	9	12	11	14	10	7	6	5	8	15	11
10:00 AM	12	13	13	4	0	6	0	7	11	10	13	10	6	5	4	8	15	12
9:30 AM	12	13	13	4	0	7	0	10	13	10	14	12	11	10	9	10	16	12
9:00 AM	11	13	13	4	0	8	0	9	13	10	14	12	11	10	9	10	16	11
8:30 AM	10	13	13	4	0	8	0	9	13	10	14	12	11	10	9	10	16	10
8:00 AM	10	12	13	3	0	8	0	10	13	10	14	12	11	10	9	10	16	10
7:30 AM	11	12	12	2	0	7	0	9	11	6	7	7	7	7	7	7	13	11
7:00 AM	11	13	13	2	0	5	0	8	11	6	7	7	7	7	7	7	13	11
SUNDAY	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	

Parking Occupancy Count # 6383  
 Surveyor: Luz, Jonathan & Majda  
 Hours: 7am - 3pm  
 Date: 7-Jun  
 Weather: clear

Lot	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	Total Spcs.
6:30 AM	1	6	0	0	1	0	5	7	3	3	5	2	5	8	7	7	9	11	11	
7:00 AM	3	5	1	0	3	0	5	6	3	5	5	2	4	8	7	7	9	11	11	
7:30 AM	3	5	2	0	2	0	5	6	4	5	6	2	3	4	4	5	7	10	10	
8:00 AM	2	2	0	0	2	0	5	6	4	5	6	2	3	4	4	5	7	10	10	
8:30 AM	2	4	2	0	2	1	5	7	5	6	6	1	3	3	3	3	5	8	8	
9:00 AM	2	4	0	0	4	2	7	7	3	7	8	0	3	4	4	5	8	8	8	
9:30 AM	3	0	0	0	7	6	7	7	3	7	7	0	3	4	4	5	7	7	7	
5:00 PM	6	8	0	0	8	6	7	3	6	7	11	11	4	8	6	6	9	9	9	
5:30 PM	6	8	0	0	4	3	6	2	5	5	11	11	4	8	6	6	9	9	9	
6:00 PM	6	8	0	0	6	6	6	4	4	4	10	10	3	6	6	6	9	9	9	
6:30 PM	6	8	1	6	10	8	8	5	3	6	8	0	6	6	6	6	9	9	9	
7:00 PM	7	9	1	9	11	11	11	4	4	6	10	9	7	7	7	7	10	10	10	
7:30 PM	7	9	1	9	10	10	10	4	4	6	10	9	7	7	7	7	10	10	10	

Parking Occupancy Count # 6383  
 Surveyor: Luz  
 Hours: 6:30AM-9:30AM / 4:30PM-7:30PM  
 Date: 20-May  
 Weather: Clear



Lot	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC
7:00 AM	0	0	0	11	11	3	8	14	11	6	6	6	7	2	29	11	0	13	11
7:30 AM	0	5	5	15	12	9	9	13	14	11	6	6	7	16	30	11	0	16	13
8:00 AM	5	10	6	15	15	9	9	13	14	12	6	6	8	31	31	11	0	21	13
8:30 AM	6	10	6	15	15	9	9	12	15	12	6	6	8	31	31	11	0	21	13
9:00 AM	6	10	6	15	15	9	9	13	15	12	6	6	8	31	31	11	0	23	13
9:30 AM	6	10	6	15	14	9	8	15	15	12	6	6	8	31	29	11	0	22	12
10:00 AM	5	7	5	14	15	5	5	12	14	11	5	7	7	14	26	11	0	16	12
10:30 AM	13	10	6	15	15	8	8	14	14	11	8	8	8	16	31	12	0	17	12
11:00 AM	14	10	7	15	15	8	8	12	13	14	8	8	9	27	37	12	0	20	13
11:30 AM	14	10	6	15	15	8	8	12	13	13	8	8	9	32	39	12	0	20	13
12:00 PM	14	10	4	15	15	8	8	14	14	12	10	9	9	31	39	11	0	20	13
12:30 PM	14	9	8	15	15	8	8	13	14	12	9	8	9	31	39	11	0	20	13
1:00 PM	6	8	6	12	12	3	3	10	10	4	3	3	7	11	25	8	1	10	11
1:30 PM	5	6	5	10	10	6	5	10	10	4	7	7	7	3	21	8	0	10	10
2:00 PM	3	8	3	11	11	7	6	10	10	7	7	7	7	6	21	8	0	11	9
2:30 PM	6	6	6	11	11	4	6	11	11	7	7	6	6	21	21	6	0	11	9
3:00 PM	6	6	6	11	11	4	6	11	11	7	7	6	6	21	21	6	0	11	8
Total Spcs.	10	8	6	11	14	8	11	14	12	7	8	7	6	29	36	12	0	22	14

Parking Occupancy Count # 6383  
 Surveyor: Luz Jonathan & Mejia  
 Hours: 7am - 9pm  
 Date: 7-Jun  
 Weather: clear

Lot	AJ	AH	AI	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA
7:00 AM	13	7	7	13	13	13	13	14	13	10	10	10	10	7	7	2	7	8	10
7:30 AM	15	10	10	13	13	13	13	14	12	10	10	10	10	7	7	2	7	8	10
8:00 AM	15	12	12	12	12	12	12	14	14	10	10	10	10	4	4	1	6	5	11
8:30 AM	15	12	12	12	12	12	12	14	14	10	10	10	10	4	4	1	6	5	11
9:00 AM	15	12	12	12	12	12	12	14	14	12	12	12	12	7	7	9	8	5	11
9:30 AM	15	12	12	12	12	12	12	14	14	12	12	12	12	7	7	9	8	5	11
10:00 AM	12	11	11	10	10	10	10	10	10	9	9	9	9	7	7	11	8	7	10
10:30 AM	16	12	12	13	13	13	13	13	13	10	10	10	10	7	7	13	8	8	10
11:00 AM	16	12	12	13	13	13	13	14	13	10	10	10	10	7	7	13	8	8	10
11:30 AM	16	12	12	13	13	13	13	14	13	10	10	10	10	7	7	13	8	8	10
12:00 PM	16	12	12	13	13	13	13	14	12	10	10	10	10	7	7	13	8	8	10
12:30 PM	15	12	12	13	13	13	13	14	12	10	10	10	10	7	7	13	8	8	10
1:00 PM	16	10	10	13	13	13	13	14	12	10	10	10	10	7	7	13	8	8	10
1:30 PM	13	10	10	13	13	13	13	14	12	10	10	10	10	7	7	13	8	8	10
2:00 PM	15	11	11	11	11	11	11	14	12	10	10	10	10	7	7	13	8	8	10
2:30 PM	15	11	11	11	11	11	11	14	12	10	10	10	10	7	7	13	8	8	10
3:00 PM	15	11	11	11	11	11	11	14	12	10	10	10	10	7	7	13	8	8	10
Total Spcs.	11	9	10	14	0	11	11	11	11	9	10	10	10	11	12	9	8	9	8

Parking Occupancy Count # 6383  
 Surveyor: Luz Jonathan & Mejia  
 Hours: 7am - 9pm  
 Date: 7-Jun  
 Weather: clear

Time	13	13	12	0	13	0	9	11	7	14	14	14	11	12	14	13	13	15
3:00 PM	12	13	13	0	7	0	7	7	10	11	9	12	10	10	10	13	8	10
2:30 PM	11	13	7	0	9	0	8	9	8	12	9	10	11	10	10	13	8	11
2:00 PM	13	13	10	0	7	0	9	9	10	11	11	8	12	10	10	13	8	13
1:30 PM	13	13	10	0	6	0	10	10	10	11	11	10	10	10	10	10	8	12
1:00 PM	13	13	10	0	9	0	9	10	9	9	11	10	11	9	12	12	8	9
12:30 PM	13	13	13	0	12	0	9	13	12	13	14	13	12	10	15	15	8	14
12:00 PM	11	12	12	0	11	0	8	13	10	13	14	13	12	9	13	9	13	13
11:30 AM	11	12	12	0	11	0	9	13	10	13	14	11	12	9	13	9	15	15
11:00 AM	10	12	11	0	11	0	9	12	10	10	13	13	12	9	13	7	15	15
10:30 AM	12	11	9	0	11	0	9	13	10	11	13	13	12	9	13	7	15	15
10:00 AM	10	10	3	0	7	0	8	10	10	8	10	11	11	9	11	7	13	13
9:30 AM	10	10	4	0	8	0	9	13	10	12	14	13	12	9	9	7	15	15
9:00 AM	11	12	3	0	9	0	9	13	11	12	14	13	12	8	12	7	15	15
8:30 AM	11	12	3	0	9	0	8	13	10	14	14	14	12	9	12	6	15	15
8:00 AM	11	12	1	0	9	0	7	13	8	14	13	14	10	9	12	6	15	15
7:30 AM	10	12	1	0	9	0	7	12	7	13	13	13	10	8	10	6	13	13
7:00 AM	11	12	1	0	9	0	8	10	6	5	8	6	10	7	2	3	9	9
SUNDAY																		
Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars
Lots	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	

Parking Occupancy Count # 6383

Surveyor: Luz Jonathan & Jennifer  
 Hours: 7am - 3pm  
 Date: 31-May  
 Weather: clear

Time	10	10	10	11	7	8	6	5	8	8	12	9	8	16	11	10	10	14
3:00 PM	4	6	2	7	10	7	4	5	3	4	5	6	2	6	5	5	5	7
2:30 PM	4	4	2	7	9	7	4	6	3	4	5	6	3	3	5	5	5	7
2:00 PM	6	6	2	8	9	6	4	6	3	4	5	6	2	2	5	5	5	11
1:30 PM	4	8	2	7	4	4	4	5	3	3	5	6	2	7	5	5	5	11
1:00 PM	4	8	5	7	8	8	2	5	4	5	6	8	1	8	5	5	5	9
12:30 PM	8	6	8	11	8	10	4	6	7	7	13	9	7	8	8	5	5	8
12:00 PM	7	7	9	8	6	6	6	6	7	7	13	7	7	7	6	5	5	8
11:30 AM	8	8	10	11	3	8	4	5	7	7	13	7	7	6	9	5	6	7
11:00 AM	8	8	9	10	10	7	4	6	3	6	7	6	7	6	9	5	6	7
10:30 AM	8	8	10	10	3	8	4	3	5	6	8	4	6	6	8	5	6	9
10:00 AM	6	6	1	0	7	1	4	4	3	6	6	4	5	5	8	5	6	9
9:30 AM	9	11	1	1	0	4	1	9	5	5	10	4	4	5	8	5	6	9
9:00 AM	8	8	10	1	4	1	3	5	8	7	10	4	4	5	9	6	6	9
8:30 AM	8	8	10	0	0	2	1	3	3	7	6	9	4	4	9	7	7	12
8:00 AM	8	8	10	0	0	0	0	3	3	7	9	4	4	4	7	7	7	12
7:30 AM	5	11	0	0	1	0	3	3	3	7	6	8	4	4	7	7	8	12
7:00 AM	2	6	0	0	1	0	3	1	0	5	5	4	4	4	6	7	8	13
SUNDAY																		
Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars	Cars
Lots	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BV

Parking Occupancy Count # 6383

Surveyor: Luz Jonathan & Mejda  
 Hours: 7am - 3pm  
 Date: 7-Jun  
 Weather: clear



Lot	7:00 AM	7:30 AM	8:00 AM	8:30 AM	9:00 AM	9:30 AM	10:00 AM	10:30 AM	11:00 AM	11:30 AM	12:00 PM	12:30 PM	1:00 PM	1:30 PM	2:00 PM	2:30 PM	Total Spcs.
AK	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
AL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
AO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
AP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
AQ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
AR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
AS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
AT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
AU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
AV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
AW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
AX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36
AY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29
AZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
BA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22
BC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
SUNDAY																	

Parking Occupancy Count # 6383  
 Surveyor: Luz Jonathan & Jennifer  
 Hours: 7am - 3pm  
 Date: 31-May  
 Weather: clear

Lot	7:00 AM	7:30 AM	8:00 AM	8:30 AM	9:00 AM	9:30 AM	10:00 AM	10:30 AM	11:00 AM	11:30 AM	12:00 PM	12:30 PM	1:00 PM	1:30 PM	2:00 PM	2:30 PM	Total Spcs.
BD	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
BE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
BF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
BG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
BH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
BI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
BJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
BK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
BL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
BM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
BN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
BO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
BP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
BQ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
BR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
BS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
BT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
BU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
BV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
SUNDAY																	

Parking Occupancy Count # 6383  
 Surveyor: Luz Jonathan & Jennifer  
 Hours: 7am - 3pm  
 Date: 31-May  
 Weather: clear

Lot	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV
7:00 AM	3	6	0	0	2	1	3	2	2	7	6	5	6	8	8	5	7	5	9
7:30 AM	7	9	0	0	2	4	4	4	4	7	8	5	6	8	8	5	5	9	12
8:00 AM	8	10	0	0	3	4	7	3	6	8	10	5	6	10	6	6	5	9	11
8:30 AM	8	10	0	0	3	2	6	2	6	8	11	5	6	10	6	6	5	9	10
9:00 AM	8	10	0	0	4	4	9	4	6	8	13	5	6	10	6	6	4	8	10
9:30 AM	8	10	0	0	4	4	9	3	6	8	10	5	6	10	6	6	4	8	10
10:00 AM	6	8	0	0	4	6	10	5	5	7	8	5	5	9	6	7	4	7	10
10:30 AM	8	10	9	9	10	11	11	3	6	8	10	5	4	15	10	7	4	7	9
11:00 AM	9	10	11	9	11	11	11	5	7	9	10	6	6	14	11	7	4	9	8
11:30 AM	9	10	9	10	11	11	11	5	6	8	13	5	5	14	12	7	4	9	8
12:00 PM	9	10	9	11	11	11	11	5	7	9	10	6	6	14	12	7	4	9	8
12:30 PM	8	9	8	10	10	10	10	5	6	8	13	5	2	14	12	5	3	9	8
1:00 PM	8	9	8	10	10	10	10	5	6	8	13	5	2	14	12	5	3	9	10
1:30 PM	6	6	2	2	2	2	2	3	3	3	3	3	2	12	12	4	4	7	10
2:00 PM	5	5	3	3	3	3	3	3	3	3	3	3	3	11	13	3	4	7	11
2:30 PM	5	5	3	3	3	3	3	3	3	3	3	3	3	11	13	3	4	7	9
3:00 PM	5	5	3	3	3	3	3	3	3	3	3	3	3	11	13	3	4	7	10
Total Spcs.	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10

Parking Occupancy Count # 6383  
 Surveyor: Luz Jonathan & Jennifer  
 Hours: 7am - 3pm  
 Date: 31-May  
 Weather: clear

Lot	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
7:00 AM	11	12	1	0	9	0	8	10	6	5	8	6	10	7	2	3	9
7:30 AM	10	12	1	0	9	0	7	12	7	8	13	9	10	8	3	13	15
8:00 AM	11	12	1	0	9	0	7	13	8	13	14	12	12	9	12	15	15
8:30 AM	11	12	3	0	9	0	8	13	10	14	14	12	12	9	12	15	15
9:00 AM	11	12	3	0	9	0	9	13	11	14	14	12	12	9	12	15	15
9:30 AM	10	12	4	0	8	0	9	13	10	14	14	12	12	9	12	15	15
10:00 AM	10	12	3	0	7	0	8	13	10	10	14	12	12	9	11	13	13
10:30 AM	12	12	0	0	11	0	8	13	10	10	14	12	12	9	13	13	13
11:00 AM	11	12	0	0	11	0	9	13	10	10	14	12	12	9	13	13	15
11:30 AM	11	12	0	0	11	0	9	13	10	10	14	12	12	9	13	13	15
12:00 PM	11	12	0	0	11	0	9	13	10	10	14	12	12	9	13	13	15
12:30 PM	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	14
1:00 PM	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	14
1:30 PM	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	14
2:00 PM	13	13	10	0	6	0	10	10	9	11	11	11	10	10	10	10	13
2:30 PM	11	13	7	0	9	0	10	10	9	11	11	11	10	10	10	10	13
3:00 PM	12	13	8	0	7	0	7	10	7	11	11	9	10	10	12	8	10
Total Spcs.	13	13	12	0	13	0	9	11	7	14	14	14	14	11	14	15	15

Parking Occupancy Count # 6383  
 Surveyor: Luz Jonathan & Jennifer  
 Hours: 7am - 3pm  
 Date: 31-May  
 Weather: clear







C-34

Lot	6:30 AM	7:00 AM	7:30 AM	8:00 AM	8:30 AM	9:00 AM	9:30 AM	4:30 PM	5:00 PM	5:30 PM	6:00 PM	6:30 PM	7:00 PM	7:30 PM	Total Spcs.
AK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AQ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM and PM															

Surveyor: Luz  
 Hours: 6:30AM-9:30AM / 4:30PM-7:30PM  
 Date: 20-May  
 Weather: Clear

Parking Occupancy Count #6383

C-37

Lot	7:00 AM	7:30 AM	8:00 AM	8:30 AM	9:00 AM	9:30 AM	10:00 AM	10:30 AM	11:00 AM	11:30 AM	12:00 PM	12:30 PM	1:00 PM	1:30 PM	2:00 PM	2:30 PM	3:00 PM	Total Spcs.
AJ	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
AK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AQ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM and PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Surveyor: Luz, Jonathan & Mejia  
 Hours: 7am - 3pm  
 Date: 7-Jun  
 Weather: clear

Parking Occupancy Count #6383

C-36

Total Spcs.		10	10	11	7	8	6	5	8	8	12	9	8	13	16	11	10	10	14
6:30 AM	Cars	1	6	0	0	1	0	5	7	3	3	5	2	5	8	7	7	9	11
7:00 AM	Cars	3	5	1	0	3	0	4	6	3	5	2	4	8	7	7	7	9	11
7:30 AM	Cars	3	5	1	0	2	0	5	6	3	5	4	2	4	8	7	7	10	11
8:00 AM	Cars	2	5	2	0	2	0	5	6	4	6	2	2	3	4	7	5	7	10
8:30 AM	Cars	2	4	2	0	2	1	5	7	3	6	0	3	3	4	5	3	7	8
9:00 AM	Cars	2	4	0	0	4	2	7	7	3	8	0	3	3	4	6	3	5	8
9:30 AM	Cars	3	7	0	0	7	6	7	7	3	7	0	3	4	7	4	4	7	7
4:30 PM	Cars	6	9	0	0	6	6	6	6	4	7	11	0	3	8	6	5	3	9
5:00 PM	Cars	6	8	0	0	8	5	5	6	6	11	1	4	8	6	5	2	5	8
5:30 PM	Cars	6	8	0	4	3	4	6	2	5	11	1	4	8	6	5	5	5	9
6:00 PM	Cars	6	8	0	6	3	6	6	4	4	10	1	6	8	6	5	5	6	9
6:30 PM	Cars	6	8	1	6	6	8	5	5	3	8	0	6	8	6	4	4	6	10
7:00 PM	Cars	7	9	1	7	7	9	8	8	4	9	0	7	7	7	4	4	7	10
7:30 PM	Cars	7	9	1	7	7	10	8	4	6	9	0	7	7	7	4	4	7	10
Total Spcs.		10	10	11	7	8	6	5	8	8	12	9	8	13	16	11	10	10	14

Parking Occupancy Count #6383

Surveyor: Luz

Hours: 6:30AM-9:30AM / 4:30PM-7:30PM

Date: 20-May

Weather: Clear

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Total Spcs.		13	13	12	0	13	0	9	11	7	14	14	14	14	11	12	14	13	15
6:30 AM	Cars	8	10	0	0	8	4	8	7	1	1	8	7	7	9	1	0	5	5
7:00 AM	Cars	8	10	0	0	7	7	4	7	1	1	7	7	7	7	9	1	1	5
7:30 AM	Cars	8	11	0	0	8	8	9	6	4	5	4	4	9	7	0	1	7	5
8:00 AM	Cars	8	11	0	0	7	0	6	9	7	4	5	4	9	7	0	0	7	7
8:30 AM	Cars	7	11	0	0	7	0	7	10	9	4	3	5	10	8	2	2	4	11
9:00 AM	Cars	10	10	0	0	10	0	10	10	10	5	7	10	11	11	2	2	4	11
9:30 AM	Cars	10	10	0	0	10	0	10	10	10	5	7	10	10	10	6	2	4	11
4:30 PM	Cars	11	11	2	0	6	0	9	13	10	13	10	9	10	9	3	3	7	12
5:00 PM	Cars	12	12	0	0	7	0	8	12	11	11	7	9	9	12	9	3	5	14
5:30 PM	Cars	12	12	0	0	7	0	8	12	11	11	7	8	9	12	5	6	4	12
6:00 PM	Cars	12	12	0	0	7	0	8	12	10	11	8	7	7	11	6	7	7	11
6:30 PM	Cars	11	11	0	0	7	0	9	10	10	10	9	9	12	12	7	7	7	14
7:00 PM	Cars	13	13	0	0	9	0	10	11	11	9	12	10	10	10	8	8	7	15
7:30 PM	Cars	13	13	0	0	9	0	10	11	11	9	12	10	10	10	10	7	7	15
Total Spcs.		13	13	12	0	13	0	9	11	7	14	14	14	14	11	12	14	13	15

Parking Occupancy Count #6383

Surveyor: Luz

Hours: 6:30AM-9:30AM / 4:30PM-7:30PM

Date: 20-May

Weather: Clear





**ALFRED STREET BAPTIST CHURCH**

**REV. DR. HOWARD-JOHN WESLEY, PASTOR**

Patricia M. Johnson - Choir, Board of Deacons

James McNeil - Choir, Board of Trustees

Lawrence E. Clark - Church Business Administrator

May 29, 2013

Mark J. Robinson  
Alexandria Gateway President  
315 S. Patrick Street  
Alexandria, Virginia 22314

Re: Modification to Letter of Understanding (LOU) Dated August 1, 2012. Request for an Additional 116 Parking Spaces at Alexandria Gateway Condominium Garage

Dear Mr. Robinson:

On behalf of Alfred Street Baptist Church (ASBC), Pastor, Rev. Dr. Howard-John Wesley, and the Board of Trustees, thank you for coordinating permission with the Alexandria Gateway Condominium Association to allow ASBC to use an additional 150 spaces in the Alexandria Gateway Condominium Garage, effective August 1, 2012. ASBC wishes to modify the letter to reflect 116 spaces based on the ownership of thirty-four (34) additional parking spaces as of May 1, 2013. It is our understanding:

- Alexandria Gateway Condominium Association is required by the City of Alexandria to share at least thirty (30) parking spaces with Alfred Street Baptist Church between the hours of 6:00 p.m. and 12:00 o'clock midnight, Monday through Friday, and all day on Saturday and Sunday.
- The owners of Alexandria Gateway Condominium have approved effective August 1, 2012, an additional 150 spaces per week, between the hours of 6:00p.m. and 12:00 o'clock midnight, at a cost of \$5.00 per space for fifty-two (52) weeks, and at an annual cost of thirty-nine thousand dollars (39,000), effective August 1, 2012. We would like to modify this agreement to reflect a total of 116 spaces per week, at \$5.00 dollars per space for fifty-two (52) weeks, and an annual cost of thirty thousand one-hundred sixty dollars (\$30,160), effective ~~June 1, 2013.~~ <sup>July 1, 2013.</sup>
- Payments shall be made in equal monthly installments, payable in advance by the first day of each calendar month. Checks will be made payable to: **Alexandria Gateway Condominium Association.**

301 South Alfred Street, Alexandria, Virginia, 22314

Office Telephone: (703) 683-2222

FAX: (703) 683-1718

4. Send check and notices to the attention of:

John McMillin  
Landsdown Realty, LLC.  
7217 Lockport Place, Suite 107  
Lorton, Virginia 22079

5. This LOU shall be for three (3) years at an annual rate of:

- |   |          |
|---|----------|
| a. Year 1, August 1, 2012 through July 31, 2013:                  | \$39,000 |
| b. <b>Modified:</b> Year 1, June 1 2013 through July 31, 2013     | \$30,160 |
| c. <b>Modified:</b> Year 2, August 1, 2013 through July 31, 2014: | \$31,668 |
| d. <b>Modified:</b> Year 3, August 1, 2014 through July 31, 2015: | \$33,251 |

6. This LOU will remain in effect from August 1, 2012 through July 31, 2015, and may be cancelled by ASBC or by Alexandria Gateway Condominium, with or without cause, within thirty (30) days of written advance notice. All notices by either party shall be given by certified mail.

Sincerely,


  
Lawrence E. Clark  
Church Business Administrator

It is acknowledged between the parties that this agreement is separate and distinct from any other agreement which ASBC has with Alexandria Gateway Condominium Association. This **modified** letter of understanding is executed with agreement on May 22, 2013.

  
Name: **Lawrence E. Clark**  
Title: **Church Business Administrator**  
Address: 301 South Alfred Street  
Alexandria, Virginia 22314  
Main: 703-683-2222

Cc: Brenda Farrare, Accounting Department  
File

rt/jc

  
Name: **Mark J. Robinson**  
Title: **Alexandria Gateway President**  
Address: 315 South Patrick Street  
Alexandria, Virginia 22314  
Main: 703-836-9300

301 South Alfred Street, Alexandria, Virginia, 22314

Office Telephone: (703) 683-2222

FAX: (703) 683-1718

# ALFRED STREET BAPTIST CHURCH

REV. DR. HOWARD-JOHN WESLEY, PASTOR

Patricia M. Johnson - Chair, Board of Deacons  
James McNeil - Chair, Board of Trustees  
Elaine Crider - Church Business Administrator



March 31, 2016

Mr. Kurt Nagel  
Bedford Place Property Owners Association  
c/o 1010 Duke Street  
Alexandria, VA 22314

Dear Mr. Nagel:

Letter of Agreement

On behalf of the Alfred Street Baptist Church (ASBC), Pastor, Rev. Dr. Howard-John Wesley, and the Board of Trustees, thank you for agreeing to continue partnering with us to allow the use of up to 52 spaces at the Bedford Place Townhouse location. Our relationship with you is valuable and we appreciate your willingness to work out reasonable terms that allow us ongoing long-term use of the parking lot. The terms we have agreed to are as follows:

1. The Bedford Place POA and the Alfred Street Baptist Church would enter into an agreement for 10 years subject to annual rate reviews and subject to cancellation upon 60 days' notice by either party.
2. ASBC will provide snow removal for the parking lot and adjoining sidewalks. The church would reimburse the Bedford Place Property Owners Association (POA) for snow removal costs incurred during the winter of 2015-16 in the amount of \$3415.
3. ASBC will enter into separate agreements with each of the property owners. The separate agreements will mirror the agreement with Bedford Place Property Owner's Association. Under those agreements, payments will be made only to the property owners and not to the Bedford Place Property Owner's Association. Payments will be made quarterly.
4. ASBC will directly pay each property owner the amount of \$100 per month per space.
5. ASBC will continue to honor our current agreement with Dr. Mohyuddin (for Dr. Mohyuddin to let the church know which evenings and weekend days that he is in the office so you can reserve spots for him and his patients).

301 South Alfred Street, Alexandria, Virginia, 22314

Office Telephone: (703) 683-2222

FAX: (703) 683-1718

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6. The individual agreements with the other owners will also acknowledge that the ASBC will accommodate instances in which an owner might need to have spaces reserved on evenings and weekends in special circumstances.

7. In all of the individual agreements with the owners, the church acknowledges that it will make reasonable accommodations to permit the owners to use the church parking lot during weekdays on occasion.

8. The property owners and number of spaces are identified below:

Address	Owner	Contact	Phone	Email	Number of Parking Spaces
1000 Duke	Farooq Mohyuddin	Farooq Mohyuddin	703-625-8444	farooqmohyuddin@yahoo.com	4
1004 Duke	ASA Limited Partnership (American Subcontractors Assn.)	Richard Bright, COO	703-684-3450 Fax: 703-836-3482	rbright@pdca.org	10
1010 Duke	American Assoc. of Port Authorities	Kurt J. Nagle	703-684-5700 x107 Fax: 703-684-6321	knagle@sape-ports.org	14
1018 Duke	American Society for Horticultural Science	Mike Neff	703-836-4606 Fax: 703-836-2024	mwneff@ashis.org	8
1020 Duke	1020 Duke Street LLC	Isin Ludlow George Ludlow	703-329-8962 home 703-403-0307 cell 703-329-8966 fax 305-367-4980 FL home	ilud@cox.net	10
1022 Duke	Ward & Son Properties LLC	Tom Ward	703-916-1800 Fax: 703-916-1801	tward@republictitleinc.com	6

9. Any changes to this agreement must be agreed to by the Bedford Place Property Owners Association and the Alfred Street Baptist Church before they can become effective.

Signed

  
Kurt Nagel  
CEO, AAPA

  
Elaine A. Crider  
ASBC - Church Administrator

301 South Alfred Street, Alexandria, Virginia, 22314

Office Telephone: (703) 683-2222

FAX: (703) 683-1718

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# ALFRED STREET BAPTIST CHURCH

REV. DR. HOWARD JOHN WESLEY, PASTOR

Patricia M. Johnson - Chair, Board of Deacons  
James McNeill - Chair, Board of Trustees  
Elaine Crider - Church Business Administrator

March 31, 2016

Tom Ward  
Ward and Son Properties, LLC  
1022 Duke Street  
Alexandria, VA 22314

## Letter of Agreement

On behalf of the Alfred Street Baptist Church (ASBC), Pastor, Rev. Dr. Howard-John Wesley, and the Board of Trustees, thank you agreeing to continue partnering with us to allow the use of your 6 spaces at the Bedford Place Townhouse location. Our relationship with you is valuable and we appreciate your willingness to work out reasonable terms that allow us ongoing long-term use of the parking lot. The terms we have agreed to are as follows:

1. The Bedford Place POA and the Alfred Street Baptist Church would enter into an agreement for 10 years subject to annual rate reviews and subject to cancellation upon 60 days' notice by either party.
2. ASBC will provide snow removal for the parking lot and adjoining sidewalks. The church would reimburse the Bedford Place Property Owners Association (POA) for snow removal costs incurred during the winter of 2015-16 in the amount of \$3415.
3. This agreement is with Ward and Son Properties, LLC and reflects ASBC's commitment to reimburse Ward and Son Properties the amount of \$100 per month per space for an amount not to exceed \$7,200 annually. Payments will be made directly to Ward and Son Properties quarterly.  
*Ward & Son Properties, LLC*
4. ASBC will accommodate instances in which ~~ASBC~~ might need to have spaces reserved on evenings and weekends in special circumstances.
5. In all of the individual agreements with the owners, the church acknowledges that it will make reasonable accommodations to permit the owners to use the church parking lot during weekdays on occasion.

301 South Alfred Street, Alexandria, Virginia, 22314

Office Telephone: (703) 683-2222

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FAX: (703) 683-1718

6. Any changes to this agreement must be agreed to by the Bedford Place Property Owners Association and the Alfred Street Baptist Church before they can become effective.

Signed

Tom Ward  
Owner

Elaine A. Crider  
ASBC—Church Administrator

301 South Alfred Street, Alexandria, Virginia, 22314

Office Telephone: (703) 683-2222

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FAX: (703) 683-1718

# ALFRED STREET BAPTIST CHURCH

REV. DR. HOWARD-JOHN WESLEY, PASTOR

*Patricia M. Johnson - Chair, Board of Deacons*  
*James McNeil - Chair, Board of Trustees*  
*Elaine Crider - Church Business Administrator*



March 31, 2016

Mr. Kurt J. Nagle  
AAPA  
1010 Duke Street  
Alexandria, VA 22314

Letter of Agreement

Dear Mr. Nagle:

On behalf of the Alfred Street Baptist Church (ASBC), Pastor, Rev. Dr. Howard-John Wesley, and the Board of Trustees, thank you agreeing to continue partnering with us to allow the use of your 14 spaces at the Bedford Place Townhouse location. Our relationship with you is valuable and we appreciate your willingness to work out reasonable terms that allow us ongoing long-term use of the parking lot. The terms we have agreed to are as follows:

1. The Bedford Place POA and the Alfred Street Baptist Church would enter into an agreement for 10 years subject to annual rate reviews and subject to cancellation upon 60 days' notice by either party.
2. ASBC will provide snow removal for the parking lot and adjoining sidewalks. The church would reimburse the Bedford Place Property Owners Association (POA) for snow removal costs incurred during the winter of 2015-16 in the amount of \$3415.
3. This agreement is with AAPA and reflects ASBC's commitment to reimburse AAPA the amount of \$100 per month per space for an amount not to exceed \$16,800 annually. The payments will be made directly to AAPA on a quarterly basis.
4. ASBC will accommodate instances in which AAPA might need to have spaces reserved on evenings and weekends in special circumstances.
5. In all of the individual agreements with the owners, the church acknowledges that it will make reasonable accommodations to permit the owners to use the church parking lot during weekdays on occasion.

301 South Alfred Street, Alexandria, Virginia, 22314

Office Telephone: (703) 683-2222

FAX: (703) 683-1718

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6. Any changes to this agreement must be agreed to by the Bedford Place Property Owners Association and the Alfred Street Baptist Church before they can become effective.

Signed

  
Kurt Nagle  
Owner

  
Elaine A. Crider  
ASBC—Church Administrator

301 South Alfred Street, Alexandria, Virginia, 22314

Office Telephone: (703) 683-2222

FAX: (703) 683-1718

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# ALFRED STREET BAPTIST CHURCH

REV. DR. HOWARD-JOHN WESLEY, PASTOR

Patricia M. Johnson - Chair, Board of Deacons  
James McNeil - Chair, Board of Trustees  
Elaine Crider - Church Business Administrator



March 31, 2016

Mr. Richard Bright, COO  
ASA Limited Partnership  
American Subcontractors Association  
1004 Duke Street  
Alexandria, VA 22314

Letter of Agreement

Dear Mr. Bright:

On behalf of the Alfred Street Baptist Church (ASBC), Pastor, Rev. Dr. Howard-John Wesley, and the Board of Trustees, thank you agreeing to continue partnering with us to allow the use of your 10 spaces at the Bedford Place Townhouse location. Our relationship with you is valuable and we appreciate your willingness to work out reasonable terms that allow us ongoing long-term use of the parking lot. The terms we have agreed to are as follows:

1. The Bedford Place POA and the Alfred Street Baptist Church would enter into an agreement for 10 years subject to annual rate reviews and subject to cancellation upon 60 days' notice by either party.
2. ASBC will provide snow removal for the parking lot and adjoining sidewalks. The church would reimburse the Bedford Place Property Owners Association (POA) for snow removal costs incurred during the winter of 2015-16 in the amount of \$3415.
3. This agreement is with ASA and reflects ASBC's commitment to reimburse AAPA the amount of \$100 per month per space for an amount not to exceed \$12,000 annually. The payments will be made directly to ASA on a quarterly basis.
4. ASBC will accommodate instances in which ASA might need to have spaces reserved on evenings and weekends in special circumstances.
5. In all of the individual agreements with the owners, the church acknowledges that it will make reasonable accommodations to permit the owners to use the church parking lot during weekdays on occasion.

301 South Alfred Street, Alexandria, Virginia, 22314

Office Telephone: (703) 683-2222

FAX: (703) 683-1718

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6. Any changes to this agreement must be agreed to by the Bedford Place Property Owners Association and the Alfred Street Baptist Church before they can become effective.

Signed

Richard Bright  
COO

Elaine A. Crider  
ASBC - Church Administrator

301 South Alfred Street, Alexandria, Virginia, 22314

Office Telephone: (703) 683-2222

FAX: (703) 683-1718

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# ALFRED STREET BAPTIST CHURCH

REV. DR. HOWARD-JOHN WESLEY, PASTOR

Patricia M. Johnson - Chair, Board of Deacons

James McNeill - Chair, Board of Trustees

Elaine Crider - Church Business Administrator

March 31, 2016

Isin Ludlow  
1020 Duke Street  
Alexandria, VA 22314

Letter of Agreement

Dear Isin and George Ludlow:

On behalf of the Alfred Street Baptist Church (ASBC), Pastor, Rev. Dr. Howard-John Wesley, and the Board of Trustees, thank you agreeing to continue partnering with us to allow the use of your 10 spaces at the Bedford Place Townhouse location. Our relationship with you is valuable and we appreciate your willingness to work out reasonable terms that allow us ongoing long-term use of the parking lot. The terms we have agreed to are as follows:

1. The Bedford Place POA and the Alfred Street Baptist Church would enter into an agreement for 10 years subject to annual rate reviews and subject to cancellation upon 60 days' notice by either party.
2. ASBC will provide snow removal for the parking lot and adjoining sidewalks. The church would reimburse the Bedford Place Property Owners Association (POA) for snow removal costs incurred during the winter of 2015-16 in the amount of \$3415.
3. This agreement is with Isin and George Ludlow and reflects ASBC's commitment to reimburse you the amount of \$100 per month per space for an amount not to exceed \$12,000 annually. Payment will be made directly to ~~Isin and George Ludlow~~ quarterly. <sup>1020 Duke, LLC</sup>
4. ASBC will accommodate instances in which you might need to have spaces reserved on evenings and weekends in special circumstances.
5. ASBC acknowledges that it will make reasonable accommodations to permit you to use the church parking lot during weekdays on occasion.

301 South Alfred Street, Alexandria, Virginia, 22314

Office Telephone: (703) 683-2222

FAX: (703) 683-1718

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6. Any changes to this agreement must be agreed to by the Bedford Place Property Owners Association and the Alfred Street Baptist Church before they can become effective.

Signed

*Isin Ludlow*  
Isin Ludlow, 1020 Duke LLC  
Owner

*Elaine Crider*  
Elaine A. Crider  
ASBC-Church Administrator

301 South Alfred Street, Alexandria, Virginia, 22314

Office Telephone: (703) 683-2222

FAX: (703) 683-1718

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*PA*  
*during evening and weekend hours.*

# ALFRED STREET BAPTIST CHURCH

REV. DR. HOWARD-JOHN WESLEY, PASTOR

Patricia M. Johnson - Chair, Board of Deacons  
James McNeil - Chair, Board of Trustees  
Elaine Crider - Church Business Administrator



March 31, 2016

Mr. Mike Neff  
American Society for Horticultural Science  
1018 Duke Street  
Alexandria, VA 22314

Letter of Agreement

Dear Mr. Neff:

On behalf of the Alfred Street Baptist Church (ASBC), Pastor, Rev. Dr. Howard-John Wesley, and the Board of Trustees, thank you agreeing to continue partnering with us to allow the use of your 8 spaces at the Bedford Place Townhouse location. Our relationship with you is valuable and we appreciate your willingness to work out reasonable terms that allow us ongoing long-term use of the parking lot. The terms we have agreed to are as follows:

1. The Bedford Place POA and the Alfred Street Baptist Church would enter into an agreement for 10 years subject to annual rate reviews and subject to cancellation upon 60 days' notice by either party.
2. ASBC will provide snow removal for the parking lot and adjoining sidewalks. The church would reimburse the Bedford Place Property Owners Association (POA) for snow removal costs incurred during the winter of 2015-16 in the amount of \$3415.
3. This agreement is with ASHS and reflects ASBC's commitment to reimburse ASHS the amount of \$100 per month per space for an amount not to exceed \$9,600 annually. Payments will be made directly to ASHS quarterly.
4. ASBC will accommodate instances in which ASHS might need to have spaces reserved on evenings and weekends in special circumstances.
5. In all of the individual agreements with the owners, the church acknowledges that it will make reasonable accommodations to permit the owners to use the church parking lot during weekdays on occasion.

301 South Alfred Street, Alexandria, Virginia, 22314

Office Telephone: (703) 683-2222


FAX: (703) 683-1718

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6. Any changes to this agreement must be agreed to by the Bedford Place Property Owners Association and the Alfred Street Baptist Church before they can become effective.

Signed

  
Mike Neff  
Owner

  
Elaine A. Crider  
ASBC - Church Administrator

301 South Alfred Street, Alexandria, Virginia, 22314

Office Telephone: (703) 683-2222

FAX: (703) 683-1718

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**Alfred Street Baptist Church**

Rev. Dr. Howard John Weeks, Pastor

Patricia M. Johnson - Chair, Board of Deacons

James Nohlet - Chair, Board of Trustees

Elaine Crider - Church Business Administrator

Frank Fannon  
Mortgage Loan Officer  
Sun Trust Mortgage  
315 King Street, 2nd Floor  
Alexandria, VA 22314

April 13, 2016

Re: Coal Yard Parking Agreement

Dear Mr. Fannon:

Coal Yard LLC agrees to rent to the Alfred Street Baptist Church, the entire parking lot every Sunday at 205 S. Henry Street (Coal Yard parking lot). The fee is \$1700 a quarter to be paid in advance. The annual fee is \$6800. We appreciate the ongoing relationship and let me know if you have any further questions.

Sincerely,

Elaine Crider  
ASBC-Church Administrator

Frank Fannon  
Mortgage Loan Officer  
Sun Trust Mortgage

Owner, Coal Yard LLC

301 South Alfred Street, Alexandria, Virginia, 22314

Office Telephone: (703) 683-2222

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FAX: (703) 683-1718