TRANSPORTATION PLANNERS AND ENGINEERS

bunt & associates

1616 West Georgia Street

Transportation Assessment and Management Study

Draft Report

Prepared for

Alberni Street Developments Ltd.

Date

March 7, 2019

Project No.

04-18-0226

March 7, 2019
04-18-0226

Justin Lew
Alberni Street Developments Ltd.
1830-1055 West Hastings Street
Vancouver, BC
V6E 2Z9

VIA EMAIL: jlew@aspac.ca

Dear Justin:

Re: 1616 West Georgia Street
Draft Transportation Assessment and Management Study (TAMS)

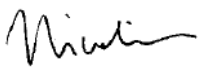
At the request of Alberni Street Developments Ltd., we have completed the attached Draft Transportation Assessment and Management Study (TAMS) report, required as part of the rezoning application for 1616 West Georgia Street, in Vancouver BC.

The attached report documents the estimated number of vehicle trips from the proposed development and the anticipated effect of the development traffic on the adjacent street system.

We trust information provided in this report will be of assistance to you and your team.

Yours truly,
Bunt & Associates





Christephen Cheng, P.Eng.
Associate

Nicole He, MURP, EIT
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CORPORATE AUTHORIZATION

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		Project No. 04-18-0226
		Status: Draft

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1. INTRODUCTION

1.1 Study Purpose

Alberni Street Developments Ltd. (the Client) is submitting a rezoning application for a proposed residential condominium located at 1616 West Georgia Street in Vancouver, BC. The site comprises of the existing White Spot restaurant property and the adjacent surface parking lot located at 1616 and 1608 West Georgia Street in downtown Vancouver. The Client is proposing to construct two residential towers (38 storeys each) and townhomes at podium level, for a total of 455 residential units. **Exhibit 1.1** highlights the site location, which is located within the West End neighborhood.

1.2 Study Scope

A study scope was prepared and confirmed with the City of Vancouver Engineering Department covering four studied intersections in the vicinity of the development site for Weekday AM and PM Peak Hour periods. In addition, Bunt was informed by City staff that two intersections - West Georgia Street & Bidwell Street and Alberni Street & Bidwell Street, will be signalized in the future. In addition, as advised by the City staff, the northbound left turn restriction during both AM and PM peak hours would also be removed at Bidwell Street and West Georgia Street. All of these operational changes will be reflected in the future traffic operation analysis. **Exhibit 1.2** shows the study area and intersections with existing laning configurations. **Table 1.1** presents the list of study intersections with their traffic control types.

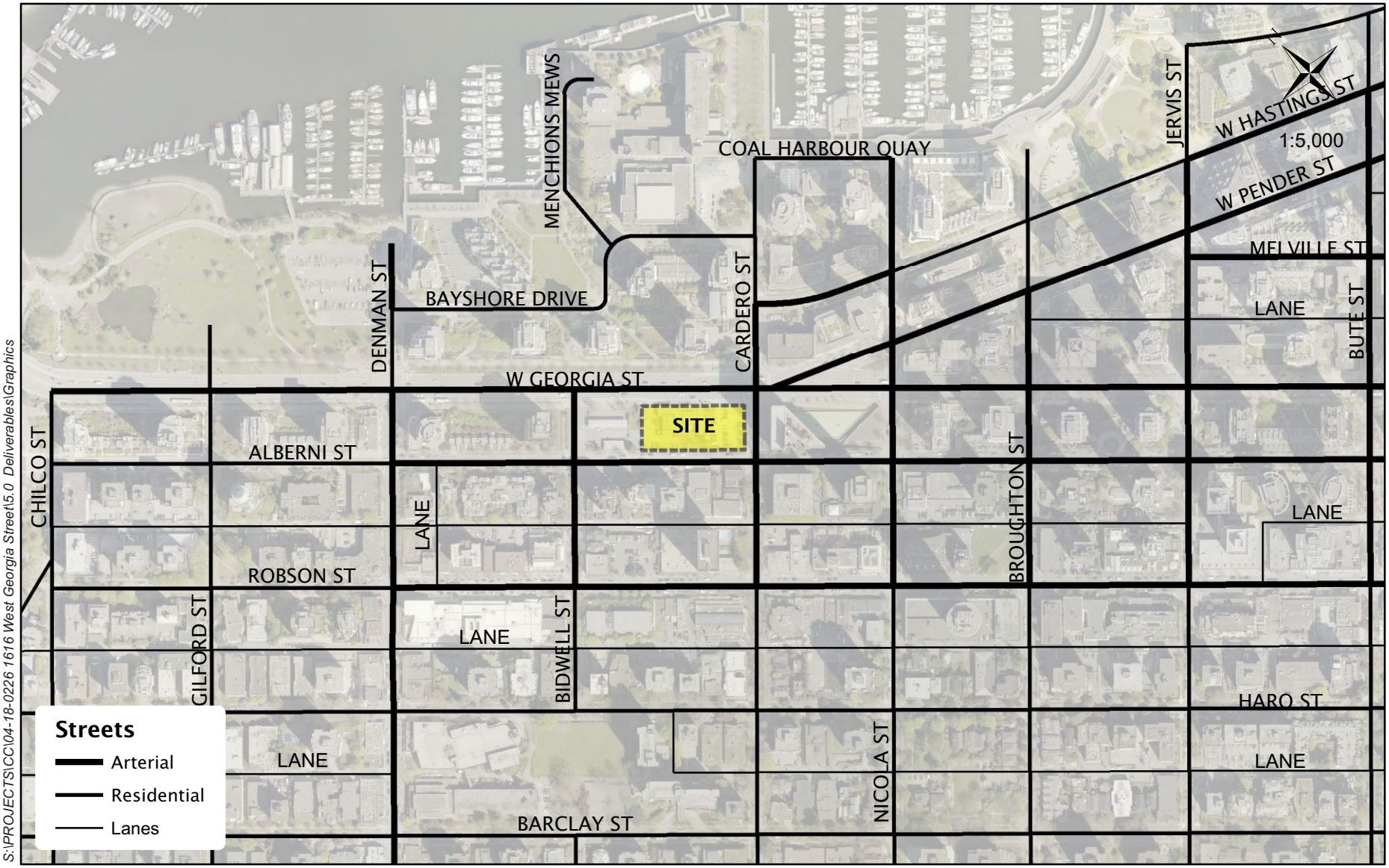
Table 1.1: Study Intersections & Existing Traffic Control

INTERSECTION	EXISTING TRAFFIC CONTROL	CONFIGURATION
Bidwell Street & West Georgia Street	Stop Controlled on Bidwell Street	Three-leg movement (East, West, South)
Cardero Street & West Georgia Street	Signalized	Full movement
Bidwell Street & Alberni Street	Stop Controlled on Bidwell Street	Full movement
Cardero Street & Alberni Street	Signalized	Full movement

1.3 Organization of Report

This report is structured in the following manner:

- **Section 2** describes the existing conditions, including the review of the transportation system for all travel modes, and the traffic operations of the study network.
- **Section 3** assesses the future traffic condition taking into account of background traffic growth along with the development site traffic.
- **Section 4** presents a review of various transportation elements for the site design including parking, loading, and bicycle provisions along with AutoTurn analysis for various design vehicles.
- **Section 5** presents the conclusion and recommendations based on the findings of this study.



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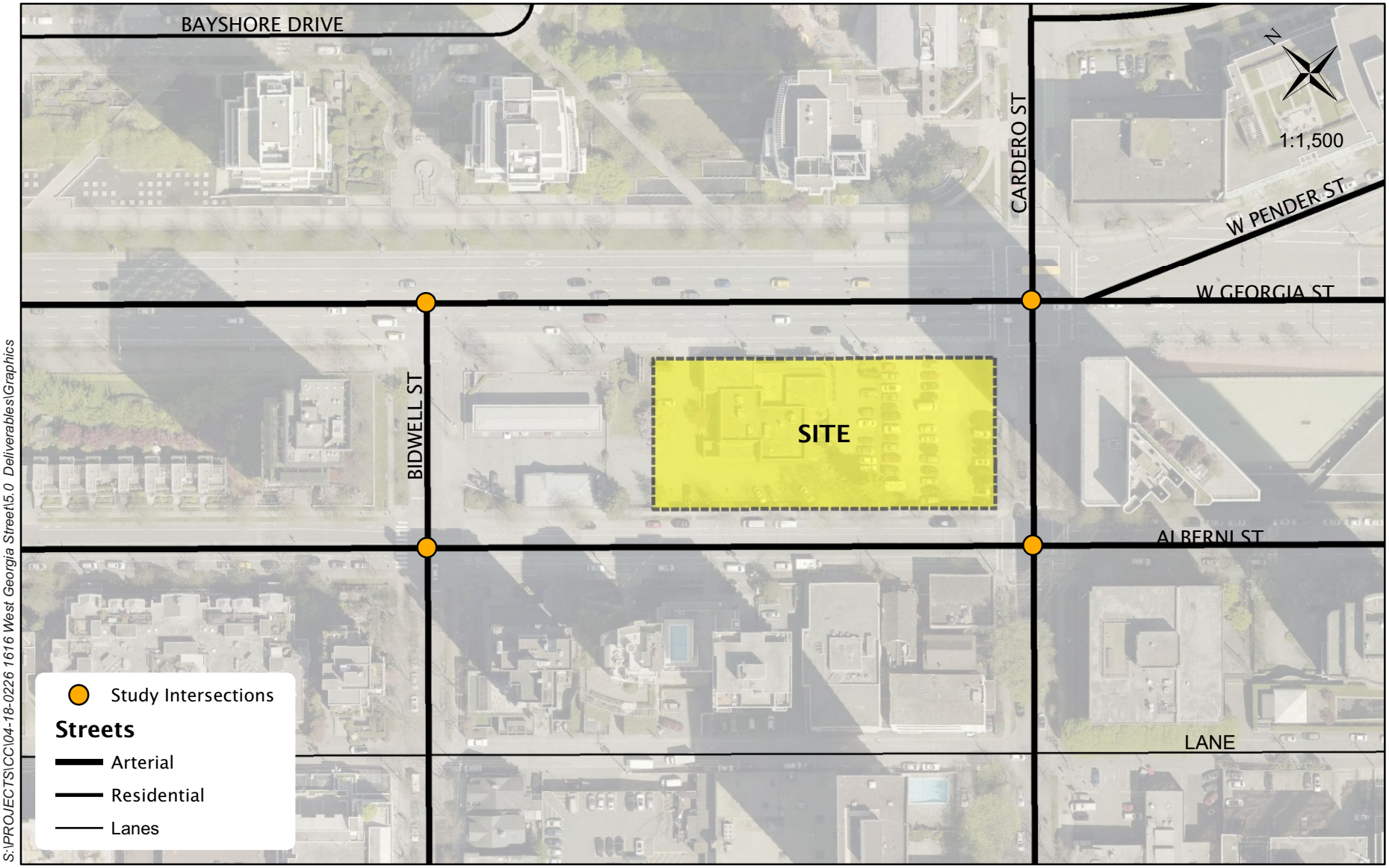
Exhibit 1.1

Site Location

1616 West Georgia Street

04-18-0226 June 2018

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Exhibit 1.2

Study Area

1616 West Georgia Street

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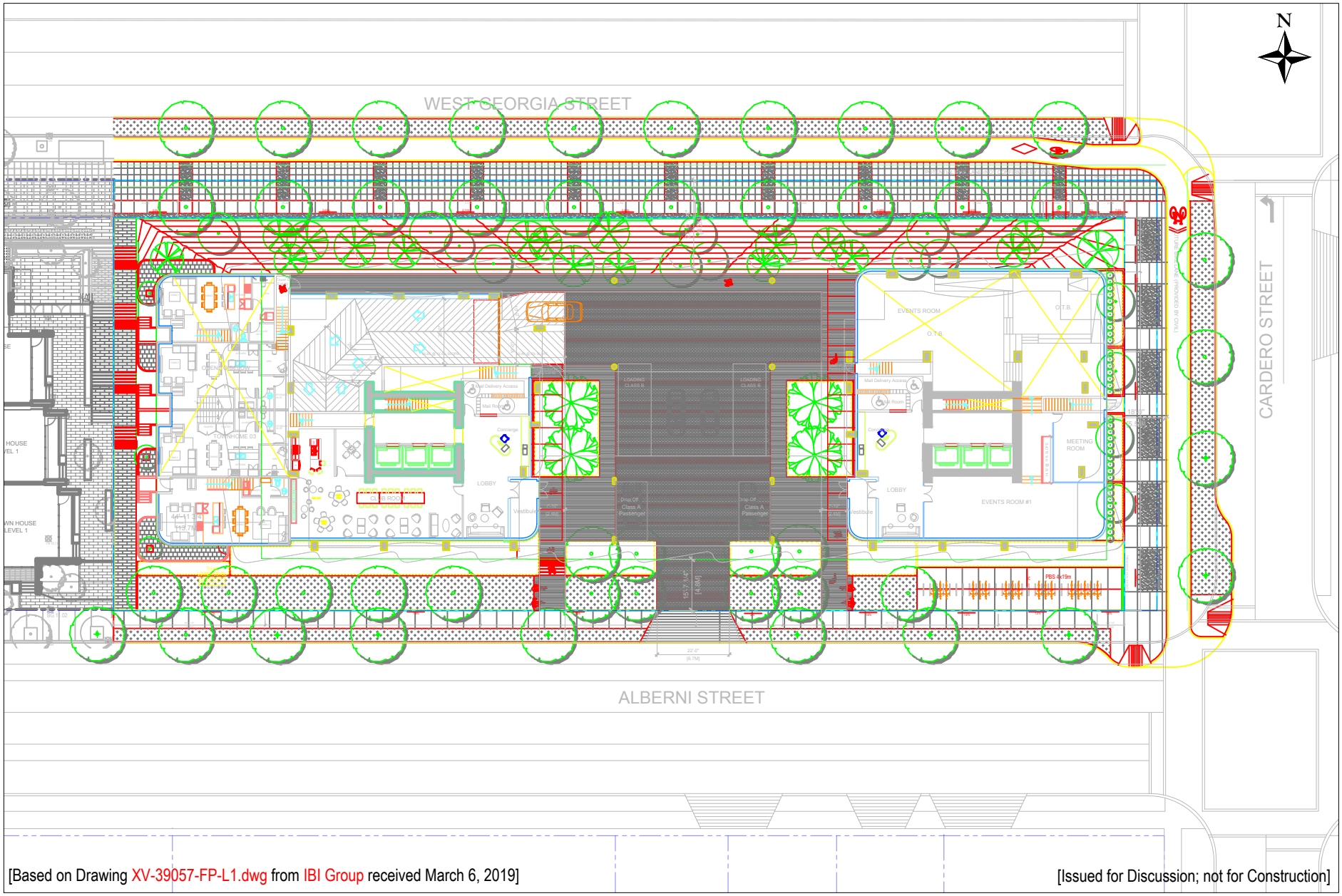
1.4 Proposed Development

Table 1.2 presents the proposed development statistics for the site, while **Exhibit 1.3** shows the site plan for the development. The project is expected to be completed by 2022.

Table 1.2: Proposed Development Statistics

LAND USE	TYPE	GROSS FLOOR AREA (SQUARE FEET)	GROSS FLOOR AREA (SQUARE METRES)	UNITS
Residential	Tower 1: 38-storey	183,825	17,078	200
	Tower 2: 38-storey	183,825	17,078	200
	Podium	71,016	6,598	55
TOTAL		438,666	40,753	455

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[Based on Drawing XV-39057-FP-L1.dwg from IBI Group received March 6, 2019]

[Issued for Discussion; not for Construction]

Exhibit 1.3
Site Plan

1616 West Georgia Street
04-18-0226 March 2019 Scale 1:500 on Letter Prepared by NH

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2. EXISTING CONDITIONS

2.1 Land Use

The development site is currently occupied by the White Spot restaurant and a public parking lot. The White Spot has parking and loading access located off West Georgia Street. The public parking lot has access off both West Georgia Street and Cardero Street.

2.2 Existing Transportation Network

2.2.1 Studied Road Network

Table 2.1 provides a summarized description of the key streets within the study area boundaries. **Exhibit 2.1** illustrates the existing laning and traffic control within the study area road network.

Table 2.1: Existing Street Characteristics

STREET	NUMBER OF TRAVEL LANES	POSTED SPEED	PARKING FACILITIES
West Georgia Street	6/7*	50 km/hr	**South side:** No Stopping between 7am to 9:30am; No Parking between 9:30am to 6pm, Monday to Friday. **North side:** Metered Parking, No Stopping between 3pm to 7pm.
Alberni Street	2	50 km/hr	**East Side:** No parking except with permit; **West Side:** No parking.
Bidwell Street	2	50 km/hr	Metered parking on both sides
Cardero Street	2	30 km/hr	**East Side**: No parking; **West Site**: 1-hour on-street parking.

*Includes one westbound HOV Lane and a reversible lane.

2.2.2 Transit Network

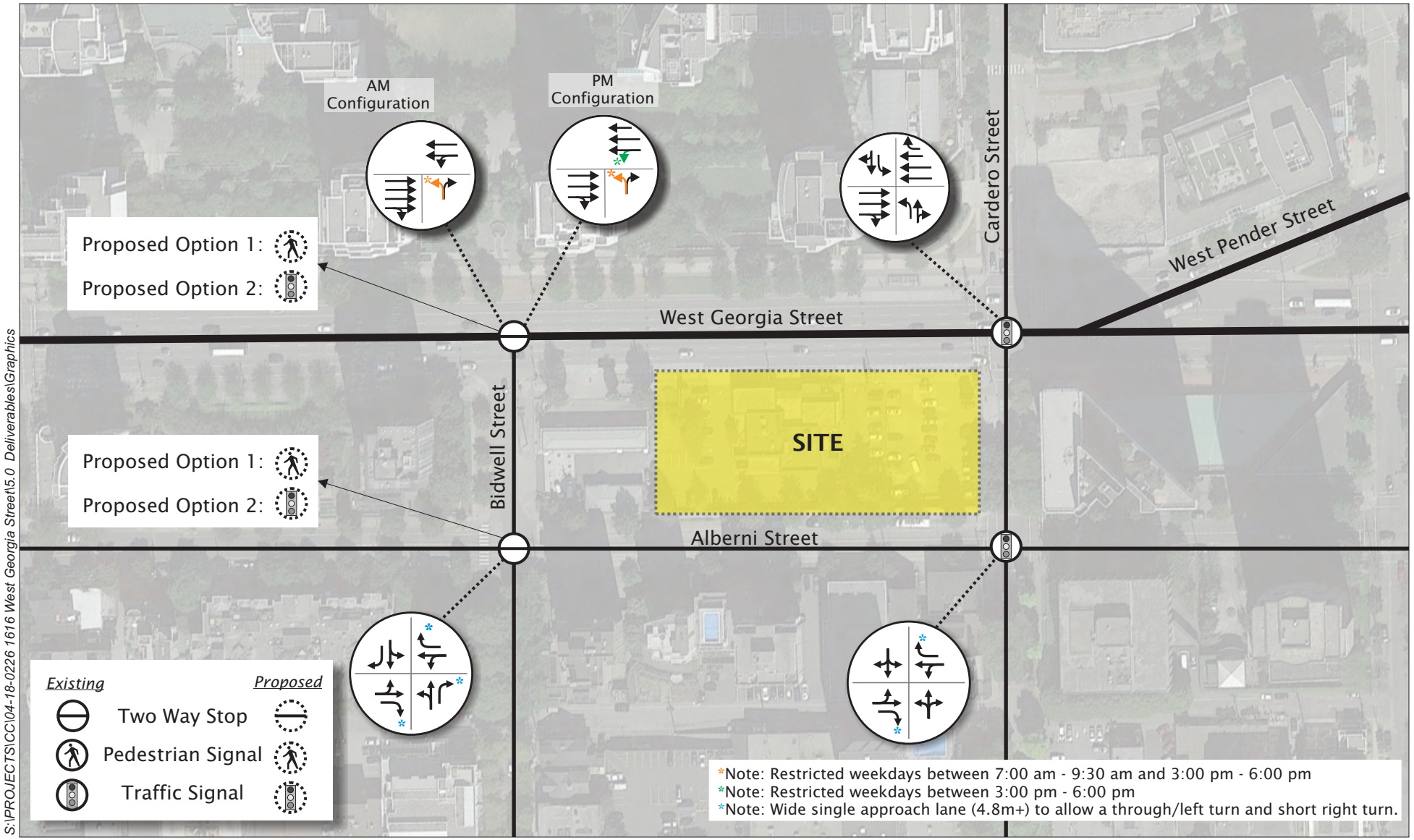
The development site is within 100 metres to two bus stops located on the West Georgia Street frontage. These two bus stops serve a number of TransLink bus routes, as shown in **Table 2.2**. **Exhibit 2.2** shows the nearest bus stops around the proposed site.

Table 2.2: Nearest Transit Stops from the Development Site

STOP LOCATION	DIRECTION	STOP #	AMENITY	ROUTES SERVICED	WALKING DISTANCE
W Georgia St Far Side Cardero St	Westbound	51474	Bus Shelter	19, 240, 241, 242, 246, 247, 250, 253, 254, N24	100 m
W Pender St Far Side Bidwell St	Eastbound	58254	Bus Shelter	240, 241, 242, 246, 247, 250, 253, 254, N24	50 m

West Georgia Street is part of TransLink's Frequent Transit Network (FTN), where transit services are provide at every 15 minutes or better, during at least all of the following times:

- Monday to Friday: 6:00 AM – 21:00 PM
- Saturdays: 7:00 AM –21:00 PM
- Sundays and holidays: 8:00 AM –21:00 PM



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Exhibit 2.1

Existing Laning and Control

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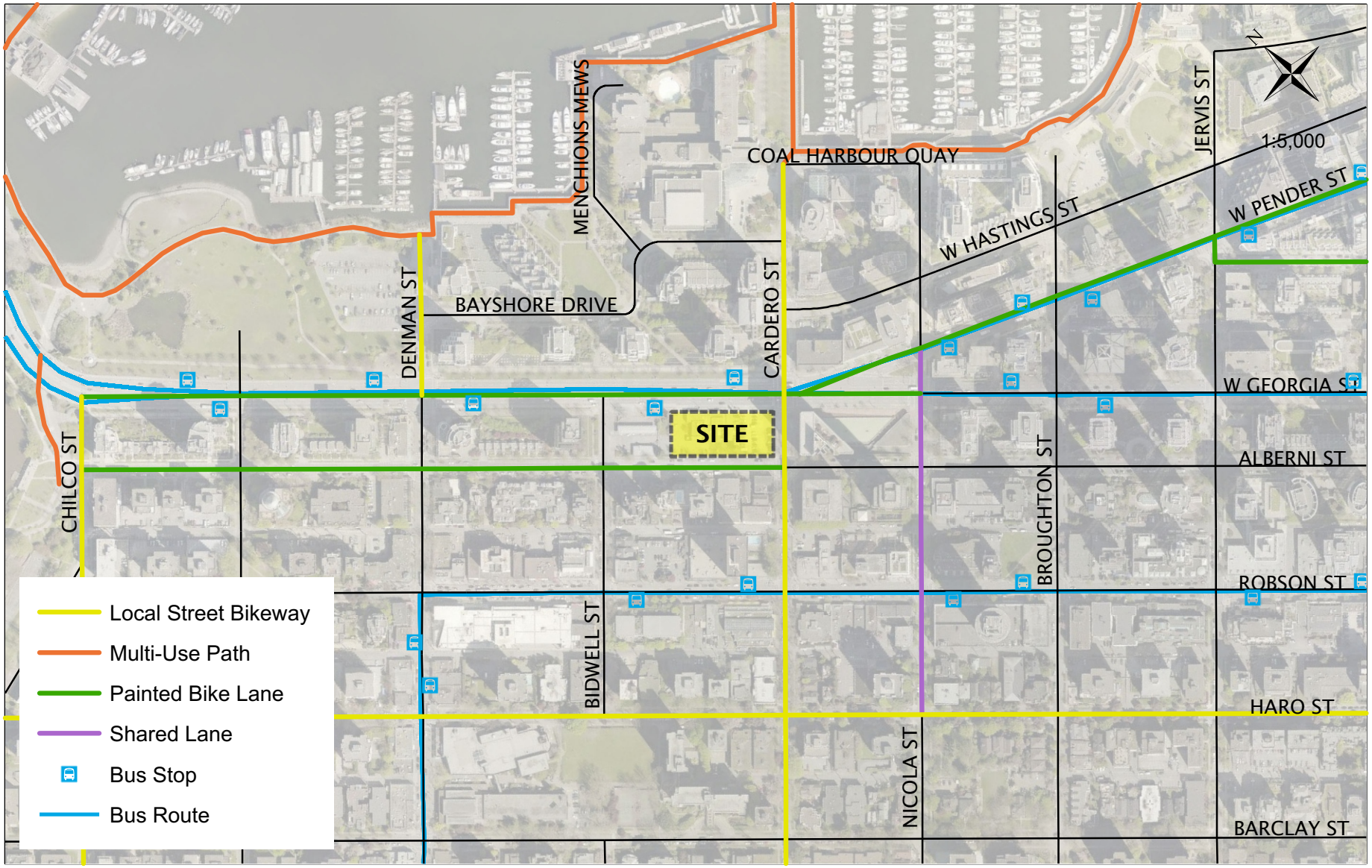


Exhibit 2.2

Existing Cycling and Transit Facilities

1616 West Georgia Street

04-18-0226 June 2018

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2.2.3 Pedestrian & Cycling Networks

Sidewalks are available along all the site frontages. Marked crosswalks and pedestrian walk "countdown" times are provided at a number of the signalized intersections within the study area. The development site has a "Walk Score" of 96 out of 100, demonstrating this location is easily accessible by foot without relying on the use of a vehicle.

The site is also well positioned to have immediate access to the city's east-west and north-south bikeway network. Both West Georgia Street and Alberni Street has painted bike lanes around the development site; Cardero Street is also a local street bikeway.

Considering the excellent connectivity to surrounding bicycle facilities) and popular destinations (such as the Sea Wall, Marina Square Park, Devonian Harbour Park, and Stanley Park), the site earns a commendable "Bike Score" of 89 out of 100. This score demonstrates the site is very "bikeable" for most trips. Exhibit 2.2 also illustrates the pedestrian and cycling facilities in the surrounding area.

2.3 Traffic Volumes

2.3.1 Data Collection Program

Intersection counts were conducted by Bunt & Associates and City of Vancouver for the Study Area in 2016. In addition, Bunt conducted driveway counts to document the existing vehicle trip generation for the site. **Table 2.3** provides a summary of the traffic count data of study intersections.

Table 2.3: Summary of Available and Counted Traffic Data

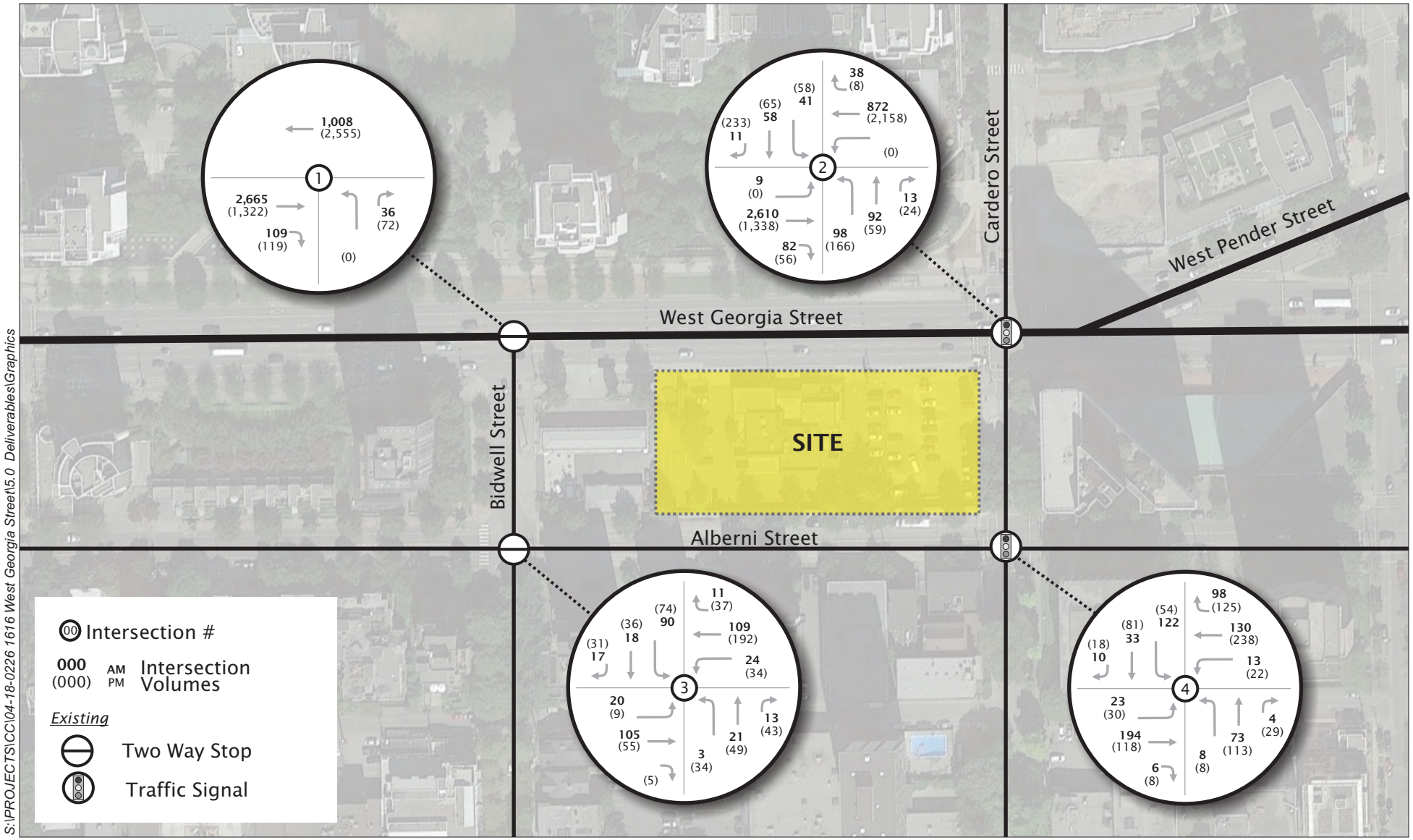
INTERSECTION	SOURCE	DATE OF COUNT	PEAK HOURS	
			AM	PM
Bidwell Street & West Georgia Street	Bunt	July 26, 2016	7:45 AM – 8:45 AM	5:00 PM – 6:00 PM
Cardero Street & West Georgia Street	Bunt	February 2, 2016	8:00 AM – 9:00 AM	5:00 PM – 6:00 PM
Bidwell Street & Alberni Street	Bunt	July 26, 2016	8:00 AM – 9:00 AM	4:30 PM – 5:30 PM
Cardero Street & Alberni Street	City of Vancouver	September 1, 2016	7:30 AM – 8:30 AM	4:30 PM – 5:30 PM
		OVERALL STUDY AREA PEAK HOUR	7:45 AM – 8:45 AM	5:00 PM – 6:00 PM

2.3.2 Peak Hour Traffic Volumes

Table 2.4 summarizes the two-way peak-hour vehicle movements for the streets in the study area. Existing Peak Hour Vehicle Traffic Volumes are presented in **Exhibit 2.3**.

Table 2.4: Existing (2016) Peak Hour Roadway Link Volumes

ROAD LINK	PEAK LINK VOLUMES (VEH/HR)	
	AM	PM
West Georgia Street	3,800	4,000
Alberni Street	560	590
Bidwell Street	180	240
Cardero Street	360	420



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Exhibit 2.3

Existing Peak Hour Vehicle Traffic Volumes

1616 West Georgia Street
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2.3.1 Existing Site Vehicle Trip Generation

Table 2.5 summarizes the vehicle trip generation from the existing site.

Table 2.5: Existing Site Trip Generation

LAND USE	AM PEAK HOUR			PM PEAK HOUR		
	IN	OUT	TOTAL	IN	OUT	TOTAL
White Spot Restaurant	14	15	29	16	13	29
Parking Lot	15	3	18	14	19	33
TOTAL	21	18	47	30	32	62

2.4 Existing Operations

2.4.1 Performance Thresholds

The existing operations of study area intersections and access points were assessed using the methods outlined in the 2000 Highway Capacity Manual (HCM), using the Synchro 9 analysis software. The traffic operations were assessed using the performance measures of Level of Service (LOS) and volume-to-capacity (V/C) ratio.

The LOS rating is based on average vehicle delay and ranges from "A" to "F" based on the quality of operation at the intersection. LOS "A" represents optimal, minimal delay conditions while a LOS "F" represents an over-capacity condition with considerable congestion and/or delay. Delay is calculated in seconds and is based on the average intersection delay per vehicle.

Table 2.6 summarizes the LOS thresholds for the five Levels of Service, for both signalized and unsignalized intersections.

Table 2.6: Intersection Level of Service Thresholds

LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)	
	SIGNALIZED	UNSIGNALIZED
A	≤10	≤10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

Source: Highway Capacity Manual

The volume to capacity (V/C) ratio of an intersection represents ratio between the demand volume and the available capacity. A V/C ratio less than 0.85 indicates that there is sufficient capacity to accommodate demands and generally represents reasonable traffic conditions in suburban settings. A V/C value between 0.85 and 0.95 indicates an intersection is approaching practical capacity; a V/C ratio over 0.95 indicates that traffic demands are close to exceeding the available capacity, resulting in saturated conditions. A V/C ratio over 1.0 indicates a very congested intersection where drivers may have to wait

through several signal cycles. In downtown and Town Centre contexts, during peak demand periods, V/C ratios over 0.90 and even 1.0 are common.

Typically, the performance thresholds that were used to trigger consideration of roadway or traffic control improvements to support roadway or traffic control improvements employed in this study are listed below:

Signalized Intersections:

- Overall intersection Level of Service = LOS D or better;
- Overall intersection V/C ratio = 0.85 or less;
- Individual movement Level of Service = LOS E or better; and,
- Individual movement V/C ratio = 0.90 or less.

Unsignalized Intersections and Roundabouts:

- Individual movement Level of Service = LOS E or better, unless the volume is very low in which case LOS F may be acceptable.

In interpreting of the analysis results, note that the HCM methodology reports performance differently for various types of intersection traffic control. In this report, the performance reporting convention is as follows:

- For signalized intersections: HCM 2000 output for overall LOS and V/C as well as individual movement LOS and V/C is reported. 95th Percentile Queues are reported as estimated by Synchro;

- For unsignalized two-way stop controlled intersections: HCM 2000 LOS and V/C output is reported just for individual lanes as the HCM methodology does not report overall performance.

- For unsignalized All-way Stop controlled intersections: HCM 2000 unsignalized LOS is reported for the overall intersection as well as by intersection approach LOS. The HCM 2000 methodology does not report an overall V/C ratio for All Way Stop controlled intersections. Degree of Utilization calculated with the HCM 2000 methodology is reported for individual movements in place of V/C, which is not part of the HCM 2000 report;

The performance reporting conventions noted above have been consistently applied throughout this document and the detailed outputs are provided in **Appendix C**.

2.4.2 Operational Analysis Results

Table 2.7 presents a summary of the existing traffic operations.

Table 2.7: Existing Traffic Operations

INTERSECTION/ TRAFFIC CONTROL	MOVEMENT	AM PEAK-HOUR			PM PEAK-HOUR		
		LOS	v/c	95th Percentile Queue (m)	LOS	v/c	95th Percentile Queue (m)
Bidwell Street & West Georgia Street (Stop Controlled on Bidwell St)	EBTR	-	0.46	-	-	0.32	0
	WBLT (AM), WBT (PM)	A	0.40	1	-	0.61	0
	NBR	C	0.10	3	B	0.14	4
Cardero Street & West Georgia Street (Signalized)	*OVERALL*	*B*	*0.72*	*2*	*B*	*0.85*	*2*
	EBTR	B	0.85	126	B	0.48	56
	WBT	B	0.46	55	B	0.75	**109**
	WBR	A	0.03	4	A	0.01	0.6
	NBL	C	0.30	29	E	0.90	**66**
	NBTR	C	0.23	28	C	0.15	19
	SBL	C	0.13	14	C	0.17	18
	SBTR	C	0.14	19	D	0.68	**74**
Bidwell Street & Alberni Street (Stop Controlled on Bidwell Street)	EBLT	A	0.02	0	A	0.01	0
	EBR	-	0	-	-	0	0
	WBLT	A	0.02	0	A	0.02	1
	WBR	-	0.01	-	-	0.02	-
	NBLTR	B	0.05	1	B	0.18	5
	SBLTR	B	0.21	6	B	0.24	7
Cardero Street & Alberni Street (Signalized)	*OVERALL*	*B*	*0.32*	-	*B*	*0.32*	*4*
	EBLT	B	0.28	28	B	0.21	21
	EBR	A	0	0	A	0.01	0
	WBLT	A	0.18	19	B	0.35	36
	WBR	A	0.07	6	B	0.13	12
	NBLTR	B	0.15	16	B	0.23	23
	SBLTR	B	0.38	30	B	0.27	25

During the AM peak-hour period, the study intersections were found to operate with low delays. All movements in the study network were found to operate within acceptable performance thresholds. During the PM peak-hour period, the intersections also were found to operate with acceptable delays, except an LOS 'E' for the northbound left movement at Cardero Street and West Georgia Street. This movement was also estimated to reach the capacity threshold and its 95th percentile queue was found to exceed the available storage length. In addition, both the westbound through/right movement and southbound through/right turn movement also were found to have 95th percentile queue exceeding the current storage lengths.

3. FUTURE TRAFFIC CONDITIONS

3.1 Traffic Forecasts

3.1.1 Background Traffic Forecasts

Background traffic is traffic that would be present on the road network if the site did not redevelop. Bunt has coordinated with City staff to obtain direction on appropriately estimating future traffic volumes. To account for several known developments around the study site, Bunt has confirmed with the City that a 1% linear background growth rate on the study network was acceptable in the West End neighborhood.

Future traffic distribution on the study network also changed, due to the opening of northbound left-turn movement from Bidwell Street to West Georgia Street during the AM and PM peak hour. In this study, 30% of northbound left-turn movement at West Georgia Street & Cardero Street in the background traffic was assumed to shift to Bidwell Street. The resulting Background (2022 Without Project) traffic volumes are shown in **Exhibit 3.1**.

3.1.2 Site Traffic

Trip Generation

Vehicle trip rates for proposed development are estimated based on Bunt observations from an existing residential building nearby at 1500 Alberni Street. **Table 3.1** summarizes the peak hour vehicle trip rates.

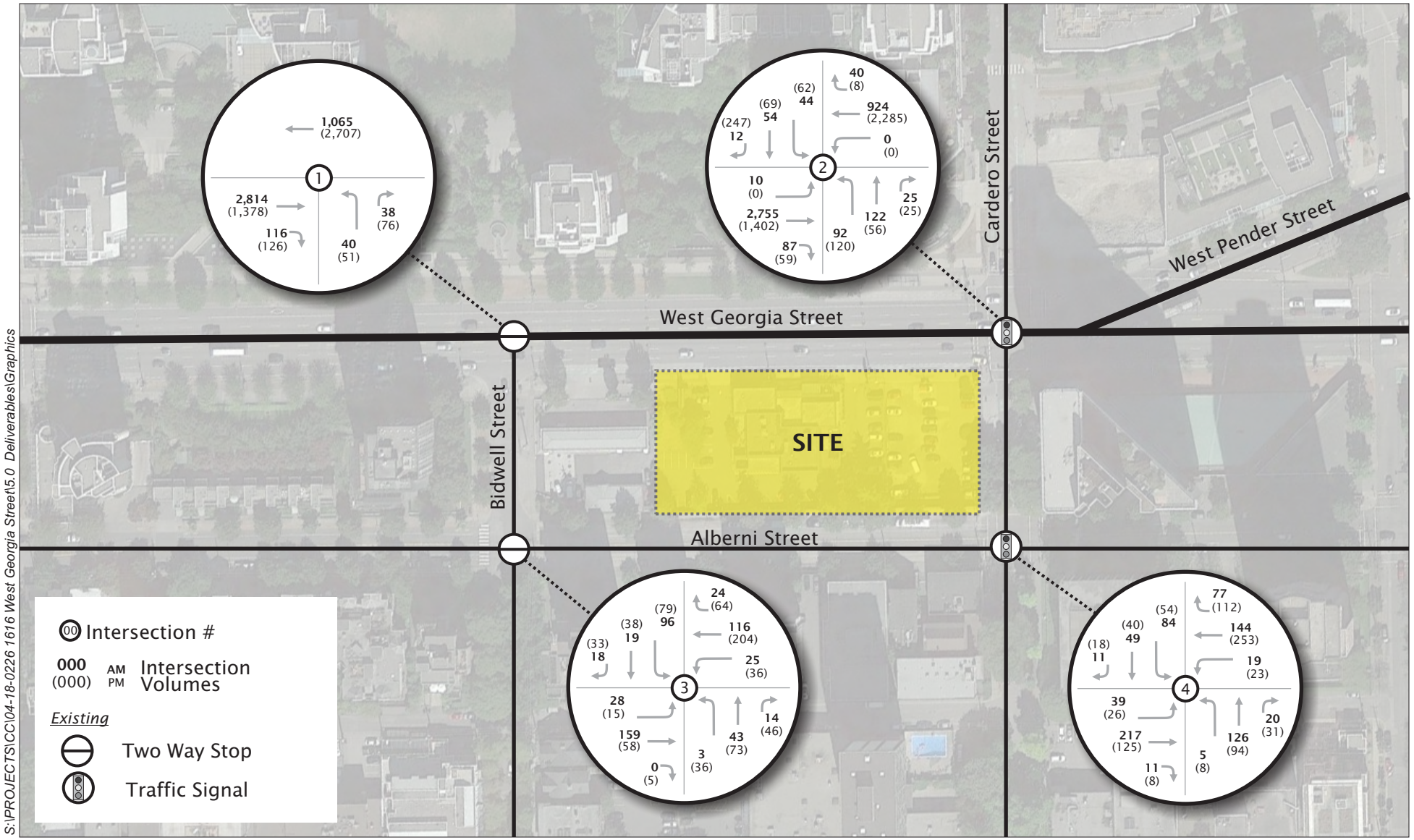
Table 3.1: Peak Hour Vehicle Trip Rates

LAND USE	AM PEAK HOUR			PM PEAK HOUR		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Residential Unit	0.03	0.15	0.18	0.15	0.09	0.24

Table 3.2 summarizes the anticipated future site generated vehicle trips for the proposed development based on the above rates.

Table 3.2: Estimated Peak Hour Site Vehicle Trips

LAND USE	AM PEAK HOUR			PM PEAK HOUR		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Residential Units (455 units)	14	68	82	68	41	109
- Existing White Spot and Parking Lot	-29	-18	-47	-30	-32	-62
NET CHANGE	-15	50	35	38	9	47



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Exhibit 3.1

Opening Day Background Traffic Forecasts

1616 West Georgia Street
04-18-0226 June 2018

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As Table 3.2 indicates, the development is expected to generate 82 and 109 vehicle trips per hour during the Weekday AM and PM peak hour periods respectively. When taking into consideration of the existing vehicle trip generation (47 and 62 vehicle trips in AM and PM peak hour periods respectively), the net increase of vehicle traffic associated with the development would be 35 and 47 additional vehicle trips per hour in the Weekday AM and PM peak hour periods respectively. In context, this is equivalent to approximately 1 additional vehicle trips every 2 minutes on average during the Weekday peak-hour periods.

Trip Distribution & Assignment

The estimated vehicle trip distribution proportions are presented in **Table 3.3** accounting for removal of northbound left-turn restriction during peak hours at West Georgia Street & Bidwell Street. Specifically, it means that the portion of new site traffic which hopes to travel westbound on West Georgia Street would choose to take Bidwell Street rather than Cardero Street. **Exhibit 3.2** presents the site traffic forecast.

Table 3.3: Estimated Trip Distribution

ORGIN/DESTINATION	AM PEAK HOUR		PM PEAK HOUR	
	IN (%)	OUT (%)	IN (%)	OUT (%)
Cardero Street (North)	4%	2%	1%	8%
Cardero Street (South)	2%	3%	1%	3%
Bidwell Street (South)	1%	1%	2%	3%
West Georgia Street (West)	24%	63%	56%	31%
West Georgia Street (East)	60%	21%	30%	47%
Alberni Street (West)	3%	4%	6%	2%
Alberni Street (East)	7%	5%	4%	8%
TOTAL	100%	100%	100%	100%

In the context of the Study Area, vehicle trips from the development site are expected to be modest. **Table 3.4** summarizes the net change in vehicle volumes at each of the study intersections. As **Table 3.4** shows, site vehicle trips will add less than 1% of existing traffic volumes onto West Georgia street intersections. The proposed development is expected to have no material impact to the study road network.

Table 3.4: Net Change in Future Intersection Vehicle Volumes with New Site Trips

INTERSECTION	AM PEAK HOUR VOLUMES			PM PEAK HOUR VOLUMES		
	Background	Site	% Change	Background	Site	% Change
Bidwell St & West Georgia St	3,992	26	<1%	4,254	43	1%
Cardero St & West Georgia St	4,085	44	1%	4,253	19	<1%
Bidwell St & Alberni St	534	29	5%	681	61	9%
Cardero St & Alberni St	785	52	7%	771	52	7%

3.1.1 Total Traffic

The total traffic forecasts are formulated by superimposing the site traffic volumes with the background traffic volumes. **Exhibit 3.3** shows the Opening Day Traffic Forecasts.

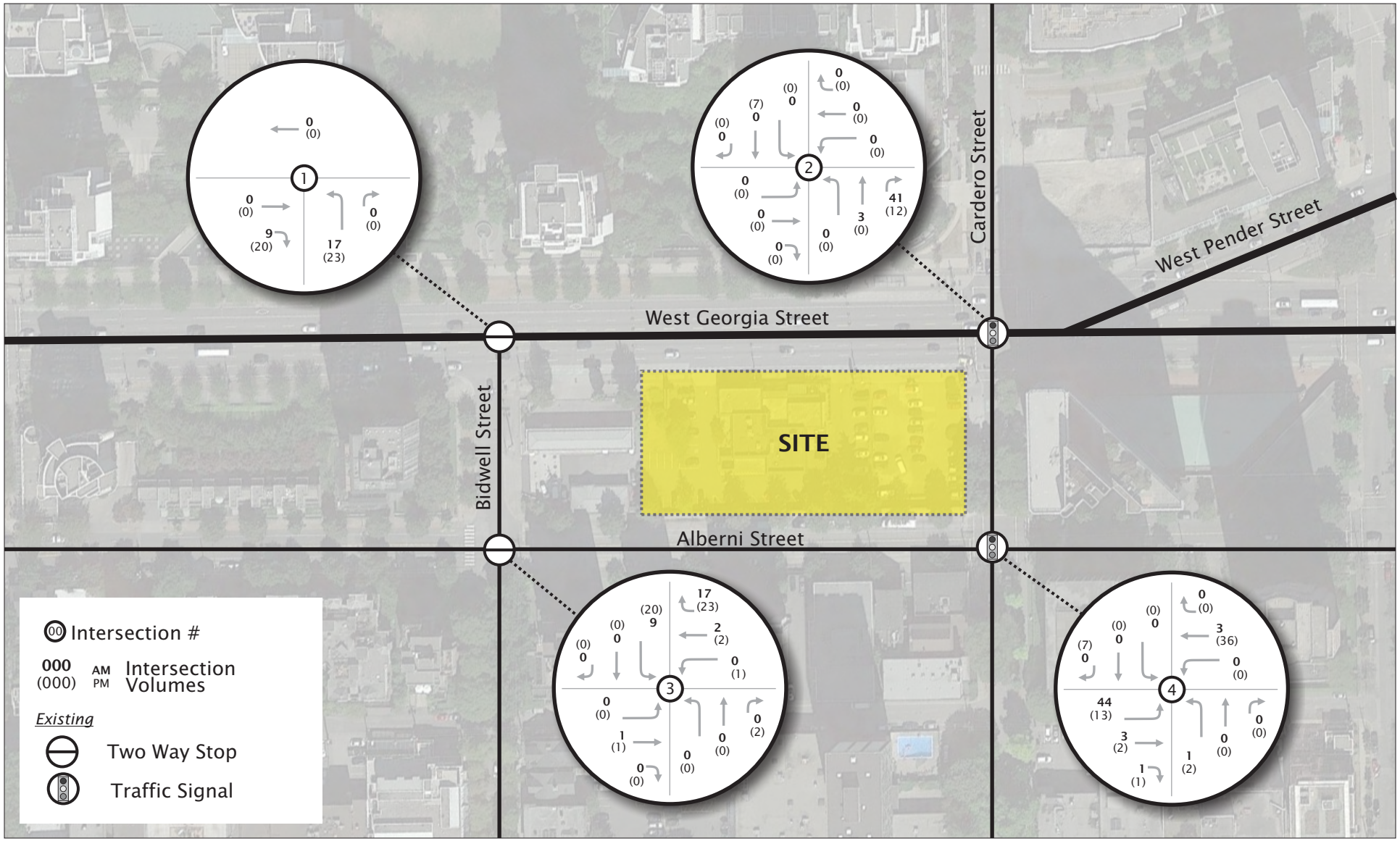


Exhibit 3.2

Site Traffic Forecasts

1616 West Georgia Street TAMS
04-18-0226 February 2019

bunt associates

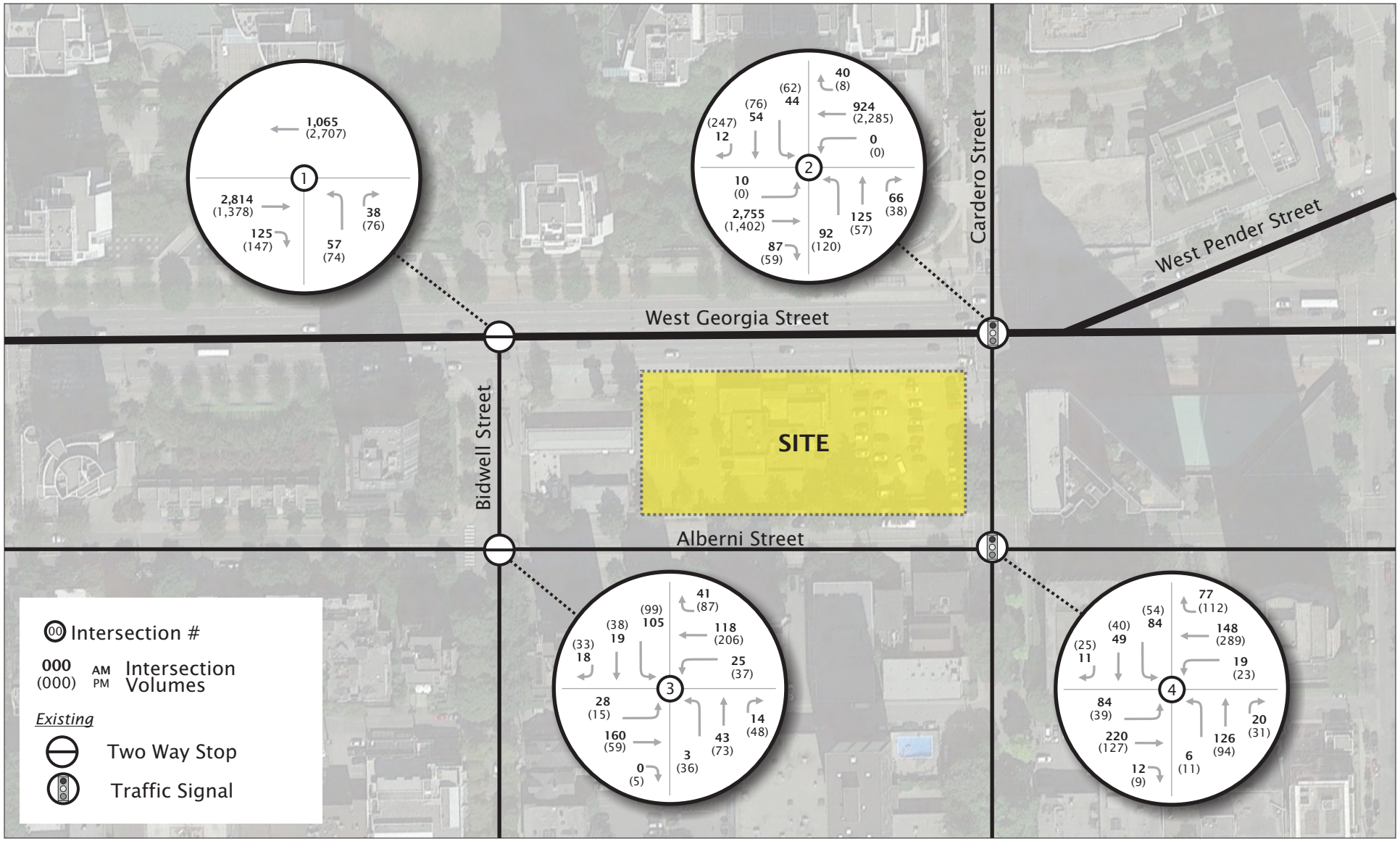


Exhibit 3.3

Opening Day Total Traffic Forecasts

1616 West Georgia Street TAMS
04-18-0226 February 2019

bunt associates

3.2 Background Traffic Operations

3.2.1 Background Traffic Operations

As informed by the City, two unsignalized study intersections: Bidwell Street & West Georgia Street and Bidwell Street & Alberni Street would be signalized in the Opening Day conditions. This operational change is also illustrated in **Exhibit 2.1**. For this analysis, two traffic control alternatives at these two intersections were investigated:

- Option 1: Pedestrian signals only at Bidwell Street for both intersections
- Option 2: Full signals for both intersections

3.2.2 Option 1 Analysis: Pedestrian Signals only at Bidwell Street

The assumptions and methodology used to model the signals at Bidwell Street & West Georgia Street and Bidwell Street & Alberni Street included the following steps:

- Apply the same cycle length of adjacent intersections to the Bidwell Street intersections. Bidwell Street & West Georgia Street signal cycle length was set to 90 seconds whereas Bidwell Street & Alberni Street's cycle length was 65 seconds;
- Assume pedestrian walk time is 7 seconds and calculate pedestrian flashing don't walk time based on curb-to-curb distance;
- Set controller to pedestrian recall on West Georgia Street and Alberni Street. Eastbound and Westbound movements are pedestrian-actuated only.

Table 3.5 presents the traffic operation summary for the Opening Day Background Conditions in option 1.

Table 3.5: Opening Day Background Vehicle Operations – Option 1

INTERSECTION/ TRAFFIC CONTROL	MOVEMENT	AM PEAK-HOUR			PM PEAK-HOUR		
		LOS	v/c	95th Percentile Queue (m)	LOS	v/c	95th Percentile Queue (m)
Bidwell Street & West Georgia Street (Signalized; Pedestrian Signals on Bidwell Street)	*OVERALL*	*A*	*0.6*	-	*B*	*0.7*	-
	EBTR	A	0.69	113	A	0.48	64
	WBLT (AM) WBT (PM)	A	0.49	68	B	0.86	**204**
	NBLR	C	0.25	22	C	0.25	25
Cardero Street & West Georgia Street (Signalized)	*OVERALL*	*B*	*0.76*	-	*B*	*0.82*	-
	EBTR	B	0.89	**142**	B	0.51	60
	WBT	B	0.48	60	B	0.79	**121**
	WBR	A	0.03	4	A	0.01	1
	NBL	C	0.28	27	D	0.7	**47**
	NBTR	C	0.33	38	C	0.14	18
	SBL	C	0.15	15	C	0.18	18
	SBTR	C	0.13	18	D	0.73	**87**

INTERSECTION/ TRAFFIC CONTROL	MOVEMENT	AM PEAK-HOUR			PM PEAK-HOUR		
		LOS	v/c	95th Percentile Queue (m)	LOS	v/c	95th Percentile Queue (m)
Bidwell Street & Alberni Street (Signalized; Pedestrian Signals on Bidwell Street)	*OVERALL*	*A*	*0.27*	-	*A*	*0.33*	-
	EBLT	A	0.19	21	A	0.09	9
	EBR	0	0	0	A	0	0
	WBLT	A	0.15	16	A	0.29	26
	WBR	A	0.02	3	A	0.06	6
	NBLT	B	0.16	9	B	0.3	12
	NBR	B	0.01	2	B	0.03	4
	SBLT	C	0.53	19	B	0.39	14
	SBR	B	0.01	3	B	0.02	3
Cardero Street & Alberni Street (Signalized)	*OVERALL*	*B*	*0.33*	-	*B*	*0.29*	-
	EBLT	B	0.33	33	B	0.21	22
	EBR	A	0.01	1	A	0.01	0
	WBLT	A	0.21	21	B	0.37	38
	WBR	A	0.05	6	B	0.12	11
	NBLTR	B	0.25	25	B	0.19	20
	SBLTR	B	0.32	26	B	0.2	18

The operations in the study network remain largely unchanged in the AM peak hour period. The eastbound through and right movement at Cardero Street & West Georgia Street was found to slightly extend beyond the previous intersection of Bidwell Street & West Cardero Street.

During the PM peak period, the traffic operation of northbound left movement at Cardero Street and West Georgia Street was improved to LOS 'D', due to diverted traffic onto northbound left turns at Bidwell Street and West Georgia Street. Overall, analysis showed similar queuing issues at the intersection of Cardero Street and West Georgia Street. The westbound through/right and southbound through/right turn movement were found to have 95th percentile queue exceeding its storage length. Due to the changes in signals, at Bidwell Street and West Georgia Street, the westbound through movement was found to have its 95th percentile queue extend slightly beyond Cardero Street.

3.2.3 Option 2 Analysis: Full Signals at Bidwell St & West Georgia St and Bidwell St & Alberni St

The assumptions and methodology used to model the full signals at Bidwell Street & West Georgia Street and Bidwell Street & Alberni Street included the following steps:

- Set the cycle length at Bidwell Street & West Georgia Street signal cycle length to 90 seconds and set Bidwell Street & Alberni Street's cycle length to 65 seconds;
- Optimize the splits at both signalized intersections.

Table 3.6 presents the traffic operation summary for the Opening Day Background Conditions in option 2, where all intersections become signalized.

Table 3.6: Opening Day Background Vehicle Operations – Option 2

INTERSECTION/ TRAFFIC CONTROL	MOVEMENT	AM PEAK-HOUR			PM PEAK-HOUR		
		LOS	v/c	95TH Percentile Queue (m)	LOS	v/c	95TH Percentile Queue (m)
Bidwell Street & West Georgia Street (Signalized)	*OVERALL*	*B*	*0.61*	-	*B*	*0.70*	-
	EBTR	B	0.78	115	B	0.51	59
	WBLT(AM), WBT(PM)	A	0.55	26	B	**0.91**	**200**
	NBLR	C	0.21	24	C	0.22	25
Cardero Street & West Georgia Street (Signalized)	*OVERALL*	*B*	*0.79*	-	*B*	*0.88*	-
	EBTR	A	0.89	32	B	0.54	55
	WBT	B	0.48	60	B	0.83	135
	WBR	A	0.03	4	A	0.01	1
	NBL	C	0.28	27	E	0.80	**52**
	NBTR	C	0.41	47	C	0.15	19
	SBL	C	0.17	15	C	0.19	19
	SBTR	C	0.13	18	D	0.77	**94**
Bidwell Street & Alberni Street (Signalized)	*OVERALL*	*B*	*0.26*	-	*B*	*0.29*	-
	EBLT	A	0.20	18	A	0.08	8
	EBR	-	0	-	A	0	0
	WBLT	A	0.15	14	A	0.25	23
	WBR	A	0.03	3	A	0.05	4.2
	NBLT	B	0.11	12	C	0.31	24
	NBR	B	0.01	2	B	0.03	7
	SBLT	C	0.41	28	C	0.39	26.6
	SBR	B	0.01	3	B	0.03	6
Cardero Street & Alberni Street (Signalized)	*OVERALL*	*B*	*0.37*	-	*B*	*0.29*	-
	EBLT	B	0.40	39	B	0.21	22
	EBR	A	0.01	1	A	0.01	0
	WBLT	A	0.22	22	B	0.37	38
	WBR	A	0.05	6	B	0.12	11
	NBLTR	B	0.26	25	B	0.19	20
	SBLTR	B	0.32	26	B	0.2	18

During the AM peak hours, the study intersections were still found to operate within capacity with acceptable delays. With the full signals at Bidwell Street and West Georgia Street, the 95th queue of eastbound through/right movement at Cardero Street and West Georgia Street was shortened. No significant traffic operational issues were identified.

During the PM peak hours, all intersections were estimated to operate with acceptable overall LOS and within capacity, except a high V/C at the westbound through movement at Bidwell Street and West Georgia Street and an LOS E of northbound left at Cardero Street and West Georgia Street. Some individual movement traffic volumes were found to have their 95th percentile queue lengths exceeding the storage lengths, and they include the westbound through movement at Bidwell Street and West Georgia Street, the northbound left and southbound through/right movements at Cardero Street and West Georgia Street.

3.3 Total Traffic Operations

Total traffic in opening day would be the sum of background traffic and site-generated traffic. Similarly, analyses were carried out for both Option 1 and Option 2.

3.3.1 Option 1 Analysis: Pedestrian Signals only at Bidwell Street

Table 3.7 presents the traffic operation summary for the Opening Day Total Conditions for option 1.

Table 3.7: Opening Day Total Vehicle Operations – Option 1

INTERSECTION/ TRAFFIC CONTROL	MOVEMENT	AM PEAK-HOUR			PM PEAK-HOUR		
		LOS	v/c	95th Percentile Queue (m)	LOS	v/c	95th Percentile Queue (m)
Bidwell Street & West Georgia Street (Pedestrian Signals only on Bidwell St)	*OVERALL*	*A*	*0.61*	-	*B*	*0.71*	-
	EBTR	A	0.70	115	A	0.49	65
	WBLT(AM), WBT(PM)	A	0.50	68	B	0.87	**204**
	NBLR	C	0.30	25	C	0.30	30
Cardero Street & West Georgia Street (Signalized)	*OVERALL*	*B*	*0.80*	-	*B*	*0.83*	-
	EBTR	B	0.89	142	B	0.51	60
	WBT	B	0.48	60	B	0.79	**121**
	WBR	A	0.03	4	A	0.01	1
	NBL	C	0.28	27	D	0.73	48
	NBTR	C	0.44	49	C	0.15	20
	SBL	C	0.18	15	C	0.18	18
	SBTR	C	0.13	18	D	0.75	90
Bidwell Street & Alberni Street (Pedestrian Signals on Bidwell Street)	*OVERALL*	*A*	*0.28*	-	*A*	*0.35*	-
	EBLT	A	0.19	21	A	0.09	9
	EBR	A	0	-	A	0	0
	WBLT	A	0.15	16	A	0.3	27
	WBR	A	0.03	4	A	0.09	8
	NBLT	B	0.15	9	B	0.3	12
	NBR	B	0.01	2	B	0.03	4
	SBLT	C	0.56	21	B	0.46	16
	SBR	B	0.01	3	B	0.02	3
Cardero Street & Alberni Street (Signalized)	*OVERALL*	*B*	*0.38*	-	*B*	*0.32*	-
	EBLT	B	0.43	42	B	0.25	24
	EBR	A	0.01	1	A	0.01	1
	WBLT	A	0.22	22	B	0.42	44
	WBR	A	0.05	6	B	0.13	12
	NBLTR	B	0.26	25	B	0.2	20
	SBLTR	B	0.32	26	B	0.21	18

3.3.2 Option 2 Analysis: Full Signals at Bidwell St & West Georgia St and Bidwell St & Alberni St

Table 3.8 presents the traffic operation summary for the Opening Day Total Conditions for option 2, where all intersections become signalized.

Table 3.8: Opening Day Total Vehicle Operations – Option 2

INTERSECTION/ TRAFFIC CONTROL	MOVEMENT	AM			PM		
		LOS	v/c	95th Percentile Queue (m)	LOS	v/c	95th Percentile Queue (m)
Bidwell Street & West Georgia Street (Signalized)	*OVERALL*	*B*	*0.61*	-	*B*	*0.72*	-
	EBTR	B	0.78	115	B	0.52	60
	WBLT(AM), WBT(PM)	A	0.55	26	B	**0.91**	200
	NBLR	C	0.22	25	C	0.27	30
Cardero Street & West Georgia Street (Signalized)	*OVERALL*	*B*	*0.80*	-	*B*	***0.89***	-
	EBTR	A	0.89	32	B	0.54	56
	WBT	B	0.48	60	B	0.83	135
	WBR	A	0.03	4	A	0.01	1
	NBL	C	0.28	27	**E**	0.83	53
	NBTR	C	0.44	49	C	0.16	21
	SBL	C	0.18	15	C	0.19	19
	SBTR	C	0.13	18	D	0.79	97
Bidwell Street & Alberni Street (Signalized)	*OVERALL*	*B*	*0.26*	-	*B*	*0.32*	-
	EBLT	A	0.20	18	A	0.08	8
	EBR	A	0.00	0	A	0	0
	WBLT	A	0.15	14	A	0.26	23
	WBR	A	0.03	3	A	0.07	5
	NBLT	B	0.11	12	C	0.31	24
	NBR	B	0.01	2	B	0.03	7
	SBLT	C	0.42	28	C	0.47	31
	SBR	B	0.01	3	B	0.03	6
Cardero Street & Alberni Street (Signalized)	*OVERALL*	*B*	*0.38*	-	*B*	*0.32*	-
	EBLT	B	0.43	42	B	0.25	24
	EBR	A	0.01	1	A	0.01	1
	WBLT	A	0.22	22	B	0.42	44
	WBR	A	0.05	6	B	0.13	12
	NBLTR	B	0.26	25	B	0.20	20
	SBLTR	B	0.32	26	B	0.21	18

3.3.3 Summary of Traffic Impacts

Compared to the Opening Day Background Traffic Conditions, the effect of the development traffic is considered minimal. During the AM peak hour, the study intersections in both options were found to operate within capacity with acceptable delays. During the PM peak hours, in Option 1 analysis, the traffic operation of northbound left movement at Cardero Street and West Georgia Street was improved to LOS 'D', due to diverted traffic onto northbound left turns at Bidwell Street and West Georgia Street. In addition, the delays of eastbound through movement in Option 1 along West Georgia Street during AM and PM peak hour periods are less than in Option 2. In Option 2 analysis, most intersections were estimated to operate with acceptable overall LOS and within capacity; the intersection Cardero Street & West Georgia Street was found to have a high overall V/C ratio (0.89), with an LOS 'E' of northbound left turn. A high V/C ratio of 0.91 was also found for the westbound through movement at Bidwell Street and West Georgia Street. Overall, study intersections perform better in Option 1 with pedestrian signals than in Option 2 with full signals.

4. SITE PLAN DESIGN REVIEW

4.1 Site Access Design

The site is located within the West End neighborhood with high vehicle, pedestrian and bicycle volumes along West Georgia Street and Bidwell Street. To minimize the development's interaction with the existing transportation movements, parking and loading access is proposed to be located off Alberni Street.

4.2 Parking Supply

4.2.1 Vehicle Parking

The City of Vancouver's (CoV) Parking By-law Section 4.3.3 outlines the minimum parking requirements for residential development in the West End and Robson North Permit Area. A breakdown of the site's parking requirements and proposed supply is summarised in **Table 4.1.**

Table 4.1: Vehicle Parking Supply Requirement & Provision

LAND USE	BY-LAW RATE	GROSS FLOOR AREA	# OF UNITS	BYLAW MINIMUM REQUIREMENT	PROVIDED
Residential	Lesser of 1space for each 140 m^2 GFA or one space per dwelling unit	40,420 m^2	455 Units	289	488
Visitors	Lesser of 5% of provided stalls or 0.05 stalls per unit; Maximum 0.1 stalls per unit			15	15
TOTAL				304	503

A minimum of 304 parking stalls would be required based on the City's Parking By-law. This is equivalent to a parking ratio of 0.67 stalls per unit for the 455 units planned. The project is planning to provide vehicle parking supply of 503 spaces, at a supply ratio of 1.1 stalls per unit, exceeding the City's Parking By-law minimum requirements.

Of the residential stalls, the bylaw requires that 1 stall per building with at least 7 units and an additional 0.034 stalls for each additional unit be accessible. Based on the proposed density, the residential land use requires 17 stalls be accessible of the total bylaw parking requirement. It is noted that accessible stalls can be counted as 2 stalls for the purpose of satisfying the minimum parking requirement.

4.2.2 Bicycle Parking

The City of Vancouver's Parking By-law also outlines the bicycle parking requirements for multi-family residential use in Section 6.2.1.2. Well managed, secure, accessible and covered bicycle parking will be provided as part of the development plan. Additional bike share facility is located the corner of Alberni Street & Cardero Street. **Table 4.2** summarizes the bicycle parking requirements from the City's Parking

By-law. The development is planning to meet the City's By-law minimum requirements by providing 911 Long Term (Class A) bicycle parking spaces and 24 Short Term (Class B) spaces.

Table 4.2: Bicycle Parking Supply Requirement

LAND USE	DENSITY	BY-LAW RATE		BY-LAW SUPPLY REQUIREMENT	
		LONG-TERM (CLASS A)	SHORT-TERM (CLASS B)	LONG-TERM (CLASS A)	SHORT-TERM (CLASS B)
Residential	243 units < 65 m^2; 180 units between 65 m^2 and 105 m^2, and 32 units > 105 m^2	1.5 spaces per unit for unit < 65 m^2; 2.5 spaces per unit for unit between 65 m^2 and 105 m^2, and 3 spaces per unit greater than 105 m^2	A minimum of 2 spaces for any development contain at least 20 DU, and 1 additional space for every additional 20 DU	911	24
			TOTAL	911	24

4.3 Passenger Loading

As part of the new Parking By-law, passenger loading spaces are required for short term pick-up/drop-off. The By-law rates broken down by land uses are outlined in **Table 4.3**.

Table 4.3: Passenger Loading Bylaw Rates

LAND USE	CLASS A	CLASS B	CLASS C
Residential	1 space for building containing a minimum of 50 DU and 1 additional space for every 150 DU over 125 DU	No requirement	No requirement

Table 4.4 outlines the number of required passenger loading stalls based on the bylaw rate. The proposed development plans to meet the minimum Bylaw requirement by providing 4 Class A passenger loading spaces, located in P1 level.

Table 4.4: Passenger Loading Requirement

LAND USE	DENSITY	CLASS A	CLASS B	CLASS C
Residential	455 units	4	0	0
TOTAL		4	0	0

4.4 Service Vehicle and Parking Access Review

Table 4.5 summarizes the loading requirements based on the City of Vancouver Parking By-law requirements. The development will provide 2 Class B loading spaces as required.

Table 4.5: Loading Bylaw Rates

LAND USE	BYLAW LOADING RATE		BYLAW SUPPLY REQUIREMENT	PROVIDED
Residential (455 units)	Class A	No requirement	0	0
	Class B	At least one space for 100 to 299 dwelling units, plus one additional space for 300 to 499 dwelling units	2	2
	Class C	No requirement	0	0
TOTAL			2	2

Swept path analyses were conducted using AutoTurn to test the maneuvering of different design vehicles at the surface level and inside the parkade. Detailed swept path diagrams are provided in **Appendix B**.

5. CONCLUSIONS & RECOMMENDATIONS

1. Alberni Developments Ltd. is proposing to redevelop the existing White Spot and the parking lot and construct two residential towers (38 storeys each) and townhomes at podium level, for a total of 455 residential units.

2. The study intersections for this report include:

   - Bidwell Street & West Georgia Street;
   - Cardero Street & West Georgia Street;
   - Bidwell Street & Alberni Street; and
   - Cardero Street & Alberni Street.

3. The existing conditions Synchro analysis indicates the study intersections were found to operate with low delays during the AM peak-hour period. During the PM peak-hour period, the intersections also were found to operate with acceptable delays, except an LOS 'E' for the northbound left movement at Cardero Street and West Georgia Street.

4. Netting out the 47 to 62 vehicle trips from the existing restaurant and parking lot, the proposed development is estimated to generate 35 and 47 new vehicle trips during the AM and PM peak hour periods respectively. In the context of West End neighborhood, the proposed development is expected to have no material impact to the study road network.

5. As informed by City staff, two intersections - West Georgia Street & Bidwell Street and Alberni Street & Bidwell Street will be signalized in the future. In addition, the northbound left turn restriction during both AM and PM peak hours would also be removed at Bidwell Street and West Georgia Street. Two traffic control alternatives in future condition analysis were investigated:

   - Option 1: Pedestrian signals only at Bidwell Street for both intersections;
   - Option 2: Full signals for both intersections

6. Comparing to the Opening Day Background Traffic Conditions, the effects of the development traffic are considered minimal. During the AM peak hour, the study intersections in both options were found to operate within capacity with acceptable delays. In the PM peak hour, Option 1 has improved the traffic operation of northbound left movement at Cardero Street and West Georgia Street to LOS 'D' and has less delay in the eastbound through movement along West Georgia Street than in Option 2.

7. Based on the City's Parking Bylaw, a minimum of 304 parking stalls would be required, or a ratio of 0.67 stalls per unit for the 455 units planned. The project is planning to provide vehicle parking supply of 503 spaces, exceeding the City's Parking By-law minimum requirements.

8. Swept path analyses were conducted using AutoTurn to test the maneuvering of different design vehicles at the surface level and inside the parkade. The design comments were now incorporated as part of the design drawing set.

APPENDIX A

Synchro Reports

HCM Unsignalized Intersection Capacity Analysis
1: Bidwell & W Georgia

9/18/2017



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2665	109	4	1008	0	36
Future Volume (Veh/h)	2665	109	4	1008	0	36
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	2719	111	4	1029	0	37
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				162		
pX, platoon unblocked					0.85	
vC, conflicting volume			2830		3297	735
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2830		3347	735
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		100	90
cM capacity (veh/h)			132		5	362

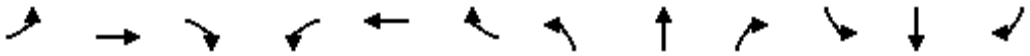
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	NB 1
Volume Total	777	777	777	499	347	686	37
Volume Left	0	0	0	0	4	0	0
Volume Right	0	0	0	111	0	0	37
cSH	1700	1700	1700	1700	132	1700	362
Volume to Capacity	0.46	0.46	0.46	0.29	0.03	0.40	0.10
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.7	0.0	2.6
Control Delay (s)	0.0	0.0	0.0	0.0	1.6	0.0	16.1
Lane LOS					A		C
Approach Delay (s)	0.0				0.5		16.1
Approach LOS							C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		



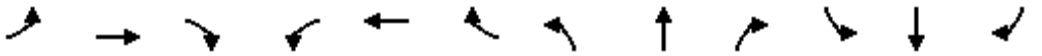
Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	2936	948	41	107	114	45	75
v/c Ratio	0.85	0.45	0.04	0.30	0.23	0.13	0.15
Control Delay	17.4	10.3	2.4	28.5	26.4	25.7	22.3
Queue Delay	0.0	52.2	4.7	1.8	2.1	0.0	0.0
Total Delay	17.4	62.5	7.2	30.3	28.6	25.7	22.3
Queue Length 50th (m)	108.6	42.3	0.0	14.6	15.0	5.8	8.3
Queue Length 95th (m)	126.4	55.2	3.6	28.5	28.4	14.2	18.7
Internal Link Dist (m)	137.7	14.2			41.5		59.5
Turn Bay Length (m)							
Base Capacity (vph)	3468	2090	951	354	491	342	496
Starvation Cap Reductn	0	1404	860	138	267	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	1.38	0.45	0.50	0.51	0.13	0.15

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	2610	82	0	872	38	98	92	13	41	58	11
Future Volume (vph)	9	2610	82	0	872	38	98	92	13	41	58	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		0.86			0.95	1.00	1.00	1.00		1.00	1.00	
Frt		1.00			1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected		1.00			1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		6165			3421	1531	1711	1767		1711	1757	
Flt Permitted		0.93			1.00	1.00	0.71	1.00		0.68	1.00	
Satd. Flow (perm)		5725			3421	1531	1275	1767		1231	1757	
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)	10	2837	89	0	948	41	107	100	14	45	63	12
RTOR Reduction (vph)	0	5	0	0	0	16	0	1	0	0	8	0
Lane Group Flow (vph)	0	2931	0	0	948	25	107	113	0	45	67	0
Turn Type	Perm	NA			NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			5 6			4			8	
Permitted Phases	2					5 6	4			8		
Actuated Green, G (s)		54.5			54.5	54.5	25.0	25.0		25.0	25.0	
Effective Green, g (s)		54.5			54.5	54.5	25.0	25.0		25.0	25.0	
Actuated g/C Ratio		0.61			0.61	0.61	0.28	0.28		0.28	0.28	
Clearance Time (s)		5.5					5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		3466			2071	927	354	490		341	488	
v/s Ratio Prot					0.28			0.06			0.04	
v/s Ratio Perm		c0.51				0.02	c0.08			0.04		
v/c Ratio		0.85			0.46	0.03	0.30	0.23		0.13	0.14	
Uniform Delay, d1		14.4			9.7	7.1	25.6	25.1		24.4	24.4	
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.7			0.7	0.1	2.2	1.1		0.8	0.6	
Delay (s)		17.1			10.4	7.2	27.8	26.2		25.2	25.0	
Level of Service		B			B	A	C	C		C	C	
Approach Delay (s)		17.1			10.3			27.0			25.1	
Approach LOS		B			B			C			C	

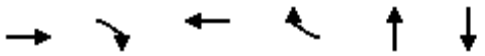
Intersection Summary			
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	105	0	24	109	11	3	21	13	90	18	17
Future Volume (Veh/h)	20	105	0	24	109	11	3	21	13	90	18	17
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	114	0	26	118	12	3	23	14	98	20	18
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)									1			1
Median type		None			None							
Median storage veh)												
Upstream signal (m)					162							
pX, platoon unblocked												
vC, conflicting volume	130			114			347	340	114	346	328	118
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	130			114			347	340	114	346	328	118
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			99	96	99	83	97	98
cM capacity (veh/h)	1455			1475			566	563	939	566	572	934

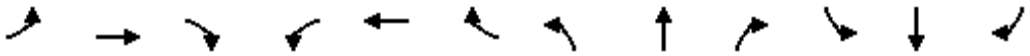
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	136	0	144	12	40	136
Volume Left	22	0	26	0	3	98
Volume Right	0	0	0	12	14	18
cSH	1455	1700	1475	1700	866	653
Volume to Capacity	0.02	0.00	0.02	0.01	0.05	0.21
Queue Length 95th (m)	0.3	0.0	0.4	0.0	1.1	5.9
Control Delay (s)	1.3	0.0	1.5	0.0	10.7	12.5
Lane LOS	A		A		B	B
Approach Delay (s)	1.3		1.4		10.7	12.5
Approach LOS					B	B

Intersection Summary				
Average Delay	5.4			
Intersection Capacity Utilization	33.0%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBT	EBR	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	236	7	155	107	92	180
v/c Ratio	0.28	0.01	0.18	0.13	0.15	0.39
Control Delay	10.8	0.0	9.9	2.6	14.7	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.6
Total Delay	10.8	0.0	9.9	2.6	14.7	19.9
Queue Length 50th (m)	15.6	0.0	9.7	0.0	7.1	15.3
Queue Length 95th (m)	27.9	0.1	18.7	6.4	15.6	30.3
Internal Link Dist (m)	37.4		93.3		33.1	41.5
Turn Bay Length (m)		10.0		10.0		
Base Capacity (vph)	855	770	860	808	618	462
Starvation Cap Reductn	0	0	0	0	0	150
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.01	0.18	0.13	0.15	0.58

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	194	6	13	130	98	8	73	4	122	33	10
Future Volume (vph)	23	194	6	13	130	98	8	73	4	122	33	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Lane Util. Factor		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		0.99	1.00		1.00	1.00		1.00			0.96	
Satd. Flow (prot)		1791	1531		1793	1531		1781			1722	
Flt Permitted		0.97	1.00		0.97	1.00		0.97			0.73	
Satd. Flow (perm)		1738	1531		1747	1531		1740			1296	
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)	25	211	7	14	141	107	9	79	4	133	36	11
RTOR Reduction (vph)	0	0	4	0	0	54	0	3	0	0	4	0
Lane Group Flow (vph)	0	236	3	0	155	53	0	89	0	0	176	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6		6	2		2	4			8		
Actuated Green, G (s)		32.0	32.0		32.0	32.0		23.0			23.0	
Effective Green, g (s)		32.0	32.0		32.0	32.0		23.0			23.0	
Actuated g/C Ratio		0.49	0.49		0.49	0.49		0.35			0.35	
Clearance Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Lane Grp Cap (vph)		855	753		860	753		615			458	
v/s Ratio Prot												
v/s Ratio Perm		c0.14	0.00		0.09	0.03		0.05			c0.14	
v/c Ratio		0.28	0.00		0.18	0.07		0.15			0.38	
Uniform Delay, d1		9.7	8.4		9.2	8.7		14.3			15.7	
Progression Factor		1.00	1.00		1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.8	0.0		0.5	0.2		0.5			2.4	
Delay (s)		10.5	8.4		9.7	8.9		14.8			18.1	
Level of Service		B	A		A	A		B			B	
Approach Delay (s)		10.4			9.3			14.8			18.1	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
1: Bidwell & W Georgia

9/18/2017



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1322	119	0	2555	0	72
Future Volume (Veh/h)	1322	119	0	2555	0	72
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	1349	121	0	2607	0	73
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				162		
pX, platoon unblocked					0.66	
vC, conflicting volume			1470		2278	510
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1470		1157	510
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	86
cM capacity (veh/h)			455		126	508

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	540	540	391	521	1043	1043	73
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	121	0	0	0	73
cSH	1700	1700	1700	455	1700	1700	508
Volume to Capacity	0.32	0.32	0.23	0.00	0.61	0.61	0.14
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	3.8
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	13.3
Lane LOS							B
Approach Delay (s)	0.0			0.0			13.3
Approach LOS							B

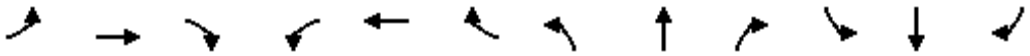
Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1437	2225	8	171	86	60	307
v/c Ratio	0.48	0.74	0.01	0.90	0.17	0.17	0.69
Control Delay	10.5	14.4	0.9	78.1	19.7	26.3	37.6
Queue Delay	0.0	48.2	1.8	0.0	1.1	0.0	0.0
Total Delay	10.5	62.5	2.6	78.1	20.8	26.3	37.6
Queue Length 50th (m)	46.0	91.2	0.0	28.4	8.1	7.9	46.2
Queue Length 95th (m)	56.3	109.1	0.6	#65.7	19.1	17.6	74.4
Internal Link Dist (m)	137.7	14.2			19.7		59.6
Turn Bay Length (m)							
Base Capacity (vph)	2963	3004	944	190	494	350	446
Starvation Cap Reductn	0	1504	890	0	259	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	1.48	0.15	0.90	0.37	0.17	0.69

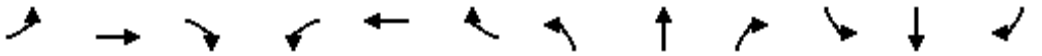
Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1338	56	0	2158	8	166	59	24	58	65	233
Future Volume (vph)	0	1338	56	0	2158	8	166	59	24	58	65	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		0.91			0.91	1.00	1.00	1.00		1.00	1.00	
Frt		0.99			1.00	0.85	1.00	0.96		1.00	0.88	
Flt Protected		1.00			1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		4886			4916	1531	1711	1722		1711	1590	
Flt Permitted		1.00			1.00	1.00	0.38	1.00		0.70	1.00	
Satd. Flow (perm)		4886			4916	1531	687	1722		1263	1590	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1379	58	0	2225	8	171	61	25	60	67	240
RTOR Reduction (vph)	0	5	0	0	0	3	0	17	0	0	5	0
Lane Group Flow (vph)	0	1432	0	0	2225	5	171	69	0	60	302	0
Turn Type		NA			NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			5 6			4			8	
Permitted Phases						5 6	4			8		
Actuated Green, G (s)		54.5			54.5	54.5	25.0	25.0		25.0	25.0	
Effective Green, g (s)		54.5			54.5	54.5	25.0	25.0		25.0	25.0	
Actuated g/C Ratio		0.61			0.61	0.61	0.28	0.28		0.28	0.28	
Clearance Time (s)		5.5					5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2958			2976	927	190	478		350	441	
v/s Ratio Prot		0.29			c0.45			0.04			0.19	
v/s Ratio Perm						0.00	c0.25			0.05		
v/c Ratio		0.48			0.75	0.01	0.90	0.15		0.17	0.68	
Uniform Delay, d1		9.9			12.8	7.0	31.3	24.5		24.6	29.0	
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.6			1.8	0.0	43.4	0.6		1.1	8.4	
Delay (s)		10.5			14.6	7.0	74.7	25.1		25.7	37.4	
Level of Service		B			B	A	E	C		C	D	
Approach Delay (s)		10.5			14.5			58.1			35.4	
Approach LOS		B			B			E			D	

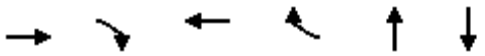
Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	55	5	34	192	37	34	49	43	74	36	31
Future Volume (Veh/h)	9	55	5	34	192	37	34	49	43	74	36	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	60	5	37	209	40	37	53	47	80	39	34
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)									1			1
Median type		None			None							
Median storage veh)												
Upstream signal (m)					162							
pX, platoon unblocked												
vC, conflicting volume	249			65			400	403	60	413	368	209
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	249			65			400	403	60	413	368	209
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			93	90	95	83	93	96
cM capacity (veh/h)	1317			1537			496	519	1005	471	543	831

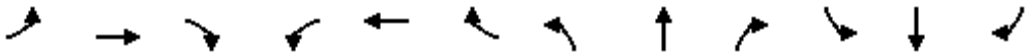
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	70	5	246	40	137	153
Volume Left	10	0	37	0	37	80
Volume Right	0	5	0	40	47	34
cSH	1317	1700	1537	1700	776	636
Volume to Capacity	0.01	0.00	0.02	0.02	0.18	0.24
Queue Length 95th (m)	0.2	0.0	0.6	0.0	4.8	7.1
Control Delay (s)	1.2	0.0	1.3	0.0	11.9	13.4
Lane LOS	A		A		B	B
Approach Delay (s)	1.1		1.1		11.9	13.4
Approach LOS					B	B

Intersection Summary			
Average Delay	6.3		
Intersection Capacity Utilization	38.0%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	EBR	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	161	9	283	136	164	167
v/c Ratio	0.21	0.01	0.35	0.18	0.24	0.28
Control Delay	11.4	0.6	12.8	5.5	12.9	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.4
Total Delay	11.4	0.6	12.8	5.5	12.9	15.8
Queue Length 50th (m)	11.0	0.0	20.7	3.4	11.1	12.4
Queue Length 95th (m)	21.1	0.4	36.0	11.7	22.7	24.8
Internal Link Dist (m)	54.5		93.3		33.2	0.1
Turn Bay Length (m)		5.0		5.0		
Base Capacity (vph)	753	724	806	750	678	590
Starvation Cap Reductn	0	0	0	0	0	263
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.01	0.35	0.18	0.24	0.51

Intersection Summary

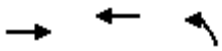


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	118	8	22	238	125	8	113	29	54	81	18
Future Volume (vph)	30	118	8	22	238	125	8	113	29	54	81	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		1.00	0.85		0.97			0.98	
Flt Protected		0.99	1.00		1.00	1.00		1.00			0.98	
Satd. Flow (prot)		1782	1531		1793	1531		1748			1741	
Flt Permitted		0.91	1.00		0.97	1.00		0.99			0.85	
Satd. Flow (perm)		1633	1531		1749	1531		1727			1514	
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)	33	128	9	24	259	136	9	123	32	59	88	20
RTOR Reduction (vph)	0	0	5	0	0	44	0	14	0	0	7	0
Lane Group Flow (vph)	0	161	4	0	283	92	0	150	0	0	160	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6		6	2		2	4			8		
Actuated Green, G (s)		30.0	30.0		30.0	30.0		25.0			25.0	
Effective Green, g (s)		30.0	30.0		30.0	30.0		25.0			25.0	
Actuated g/C Ratio		0.46	0.46		0.46	0.46		0.38			0.38	
Clearance Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Lane Grp Cap (vph)		753	706		807	706		664			582	
v/s Ratio Prot												
v/s Ratio Perm		0.10	0.00		c0.16	0.06		0.09			c0.11	
v/c Ratio		0.21	0.01		0.35	0.13		0.23			0.27	
Uniform Delay, d1		10.5	9.4		11.2	10.0		13.5			13.8	
Progression Factor		1.00	1.00		1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.6	0.0		1.2	0.4		0.8			1.2	
Delay (s)		11.1	9.5		12.4	10.4		14.3			14.9	
Level of Service		B	A		B	B		B			B	
Approach Delay (s)		11.0			11.8			14.3			14.9	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Queues
1: Bidwell & W Georgia

9/18/2017



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	2989	1091	80
v/c Ratio	0.67	0.48	0.23
Control Delay	10.8	8.8	30.5
Queue Delay	0.0	0.2	0.0
Total Delay	10.8	9.0	30.5
Queue Length 50th (m)	99.4	51.8	12.6
Queue Length 95th (m)	113.8	67.6	22.0
Internal Link Dist (m)	106.7	137.8	43.9
Turn Bay Length (m)			
Base Capacity (vph)	4453	2289	572
Starvation Cap Reductn	0	477	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.67	0.60	0.14

Intersection Summary



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2814	116	4	1065	40	38
Future Volume (vph)	2814	116	4	1065	40	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	
Lane Util. Factor	0.86			0.95	1.00	
Frt	0.99			1.00	0.93	
Flt Protected	1.00			1.00	0.98	
Satd. Flow (prot)	6158			3421	1640	
Flt Permitted	1.00			0.93	0.98	
Satd. Flow (perm)	6158			3170	1640	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	2871	118	4	1087	41	39
RTOR Reduction (vph)	4	0	0	0	1	0
Lane Group Flow (vph)	2985	0	0	1091	79	0
Turn Type	NA		Perm	NA	Perm	
Protected Phases	4			8		
Permitted Phases			8		2	
Actuated Green, G (s)	66.1			66.1	18.2	
Effective Green, g (s)	66.1			66.1	18.2	
Actuated g/C Ratio	0.70			0.70	0.19	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	4316			2222	316	
v/s Ratio Prot	c0.48					
v/s Ratio Perm				0.34	c0.05	
v/c Ratio	0.69			0.49	0.25	
Uniform Delay, d1	8.2			6.4	32.3	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.5			0.2	0.4	
Delay (s)	8.7			6.6	32.7	
Level of Service	A			A	C	
Approach Delay (s)	8.7			6.6	32.7	
Approach LOS	A			A	C	

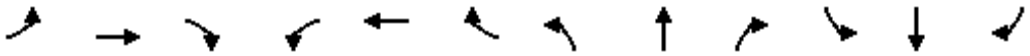
Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	94.3	Sum of lost time (s)	10.0
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	3101	1004	43	100	160	48	72
v/c Ratio	0.89	0.48	0.05	0.28	0.33	0.15	0.15
Control Delay	19.7	10.6	2.4	28.1	28.0	26.2	21.9
Queue Delay	2.4	51.9	4.9	1.5	4.4	0.0	0.0
Total Delay	22.1	62.5	7.3	29.7	32.3	26.2	21.9
Queue Length 50th (m)	122.2	45.7	0.0	13.5	21.8	6.3	7.8
Queue Length 95th (m)	142.1	59.7	3.6	26.8	38.4	14.9	17.8
Internal Link Dist (m)	137.8	14.1			41.5		59.5
Turn Bay Length (m)							
Base Capacity (vph)	3468	2090	952	355	488	310	495
Starvation Cap Reductn	252	1369	859	139	255	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	1.39	0.46	0.46	0.69	0.15	0.15

Intersection Summary



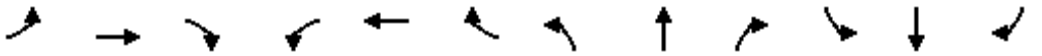
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	2755	87	0	924	40	92	122	25	44	54	12
Future Volume (vph)	10	2755	87	0	924	40	92	122	25	44	54	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		0.86			0.95	1.00	1.00	1.00		1.00	1.00	
Frt		1.00			1.00	0.85	1.00	0.97		1.00	0.97	
Flt Protected		1.00			1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		6165			3421	1531	1711	1755		1711	1752	
Flt Permitted		0.93			1.00	1.00	0.71	1.00		0.62	1.00	
Satd. Flow (perm)		5720			3421	1531	1279	1755		1117	1752	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	2995	95	0	1004	43	100	133	27	48	59	13
RTOR Reduction (vph)	0	5	0	0	0	17	0	1	0	0	9	0
Lane Group Flow (vph)	0	3096	0	0	1004	26	100	159	0	48	63	0
Turn Type	Perm	NA			NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			5 6			4			8	
Permitted Phases	2					5 6	4			8		
Actuated Green, G (s)		54.5			54.5	54.5	25.0	25.0		25.0	25.0	
Effective Green, g (s)		54.5			54.5	54.5	25.0	25.0		25.0	25.0	
Actuated g/C Ratio		0.61			0.61	0.61	0.28	0.28		0.28	0.28	
Clearance Time (s)		5.5					5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		3463			2071	927	355	487		310	486	
v/s Ratio Prot					0.29			c0.09			0.04	
v/s Ratio Perm		c0.54				0.02	0.08			0.04		
v/c Ratio		0.89			0.48	0.03	0.28	0.33		0.15	0.13	
Uniform Delay, d1		15.3			9.9	7.1	25.5	25.8		24.5	24.4	
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.0			0.8	0.1	2.0	1.8		1.1	0.6	
Delay (s)		19.3			10.7	7.2	27.4	27.6		25.6	24.9	
Level of Service		B			B	A	C	C		C	C	
Approach Delay (s)		19.3			10.6			27.5			25.2	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	73.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	203	153	26	50	15	125	20
v/c Ratio	0.18	0.14	0.03	0.13	0.04	0.45	0.06
Control Delay	6.4	6.3	2.6	15.0	2.8	21.3	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.4	6.3	2.6	15.0	2.8	21.3	4.2
Queue Length 50th (m)	6.5	4.8	0.0	3.3	0.0	8.8	0.0
Queue Length 95th (m)	20.8	16.1	2.5	9.0	1.7	19.4	2.5
Internal Link Dist (m)	115.6	76.9		32.9		43.9	
Turn Bay Length (m)			5.0		5.0		5.0
Base Capacity (vph)	1210	1193	1088	893	793	663	793
Starvation Cap Reductn	0	0	0	0	0	27	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.13	0.02	0.06	0.02	0.20	0.03

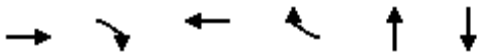
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	159	0	25	116	24	3	43	14	96	19	18
Future Volume (vph)	28	159	0	25	116	24	3	43	14	96	19	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0	5.0		5.0	5.0
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00		1.00	1.00
Frt		1.00			1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected		0.99			0.99	1.00		1.00	1.00		0.96	1.00
Satd. Flow (prot)		1787			1785	1531		1795	1531		1729	1531
Flt Permitted		0.95			0.94	1.00		0.98	1.00		0.73	1.00
Satd. Flow (perm)		1718			1695	1531		1762	1531		1310	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)	30	173	0	27	126	26	3	47	15	104	21	20
RTOR Reduction (vph)	0	0	0	0	0	10	0	0	12	0	0	16
Lane Group Flow (vph)	0	203	0	0	153	16	0	50	3	0	125	4
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		31.5			31.5	31.5		9.2	9.2		9.2	9.2
Effective Green, g (s)		31.5			31.5	31.5		9.2	9.2		9.2	9.2
Actuated g/C Ratio		0.62			0.62	0.62		0.18	0.18		0.18	0.18
Clearance Time (s)		5.0			5.0	5.0		5.0	5.0		5.0	5.0
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1067			1053	951		319	277		237	277
v/s Ratio Prot												
v/s Ratio Perm		c0.12			0.09	0.01		0.03	0.00		c0.10	0.00
v/c Ratio		0.19			0.15	0.02		0.16	0.01		0.53	0.01
Uniform Delay, d1		4.1			4.0	3.7		17.5	17.0		18.8	17.0
Progression Factor		1.00			1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.1			0.1	0.0		0.2	0.0		2.1	0.0
Delay (s)		4.2			4.1	3.7		17.7	17.0		20.9	17.0
Level of Service		A			A	A		B	B		C	B
Approach Delay (s)		4.2			4.0			17.6			20.4	
Approach LOS		A			A			B			C	

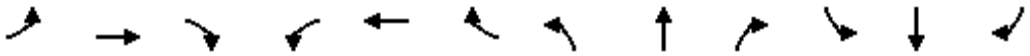
Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	50.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	EBR	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	278	12	178	84	164	156
v/c Ratio	0.33	0.02	0.21	0.11	0.26	0.33
Control Delay	11.5	1.2	10.2	2.8	15.1	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.2
Total Delay	11.5	1.2	10.2	2.8	15.1	18.2
Queue Length 50th (m)	19.0	0.0	11.3	0.0	12.6	12.7
Queue Length 95th (m)	33.3	0.9	21.4	5.6	24.9	25.9
Internal Link Dist (m)	37.4		93.3		33.1	41.5
Turn Bay Length (m)		12.0		10.0		
Base Capacity (vph)	832	770	843	796	629	480
Starvation Cap Reductn	0	0	0	0	0	170
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.02	0.21	0.11	0.26	0.50

Intersection Summary

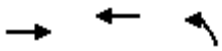


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	217	11	19	144	77	5	126	20	84	49	11
Future Volume (vph)	39	217	11	19	144	77	5	126	20	84	49	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		1.00	0.85		0.98			0.99	
Flt Protected		0.99	1.00		0.99	1.00		1.00			0.97	
Satd. Flow (prot)		1787	1531		1790	1531		1765			1731	
Flt Permitted		0.94	1.00		0.95	1.00		0.99			0.75	
Satd. Flow (perm)		1691	1531		1715	1531		1755			1345	
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)	42	236	12	21	157	84	5	137	22	91	53	12
RTOR Reduction (vph)	0	0	6	0	0	43	0	8	0	0	5	0
Lane Group Flow (vph)	0	278	6	0	178	41	0	156	0	0	151	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6		6	2		2	4			8		
Actuated Green, G (s)		32.0	32.0		32.0	32.0		23.0			23.0	
Effective Green, g (s)		32.0	32.0		32.0	32.0		23.0			23.0	
Actuated g/C Ratio		0.49	0.49		0.49	0.49		0.35			0.35	
Clearance Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Lane Grp Cap (vph)		832	753		844	753		621			475	
v/s Ratio Prot												
v/s Ratio Perm		c0.16	0.00		0.10	0.03		0.09			c0.11	
v/c Ratio		0.33	0.01		0.21	0.05		0.25			0.32	
Uniform Delay, d1		10.0	8.4		9.3	8.6		14.9			15.3	
Progression Factor		1.00	1.00		1.00	1.00		1.00			1.00	
Incremental Delay, d2		1.1	0.0		0.6	0.1		1.0			1.8	
Delay (s)		11.1	8.4		9.9	8.7		15.9			17.1	
Level of Service		B	A		A	A		B			B	
Approach Delay (s)		11.0			9.5			15.9			17.1	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Queues
1: Bidwell & W Georgia

9/18/2017



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	1535	2762	130
v/c Ratio	0.48	0.86	0.31
Control Delay	9.8	18.6	19.4
Queue Delay	0.0	4.5	1.8
Total Delay	9.8	23.0	21.2
Queue Length 50th (m)	52.5	151.3	12.3
Queue Length 95th (m)	64.4	#203.6	24.5
Internal Link Dist (m)	106.8	137.7	43.8
Turn Bay Length (m)			
Base Capacity (vph)	3183	3215	501
Starvation Cap Reductn	0	391	245
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.48	0.98	0.51

Intersection Summary

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



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1378	126	0	2707	51	76
Future Volume (vph)	1378	126	0	2707	51	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	
Lane Util. Factor	0.91			0.91	1.00	
Frt	0.99			1.00	0.92	
Flt Protected	1.00			1.00	0.98	
Satd. Flow (prot)	4854			4916	1622	
Flt Permitted	1.00			1.00	0.98	
Satd. Flow (perm)	4854			4916	1622	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	1406	129	0	2762	52	78
RTOR Reduction (vph)	10	0	0	0	34	0
Lane Group Flow (vph)	1525	0	0	2762	96	0
Turn Type	NA			NA	Prot	
Protected Phases	4			8	2	
Permitted Phases			8			
Actuated Green, G (s)	61.3			61.3	22.3	
Effective Green, g (s)	61.3			61.3	22.3	
Actuated g/C Ratio	0.65			0.65	0.24	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	3178			3219	386	
v/s Ratio Prot	0.31			c0.56	c0.06	
v/s Ratio Perm						
v/c Ratio	0.48			0.86	0.25	
Uniform Delay, d1	8.1			12.7	28.9	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.1			2.5	0.3	
Delay (s)	8.2			15.2	29.2	
Level of Service	A			B	C	
Approach Delay (s)	8.2			15.2	29.2	
Approach LOS	A			B	C	

Intersection Summary			
HCM 2000 Control Delay	13.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	93.6	Sum of lost time (s)	10.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

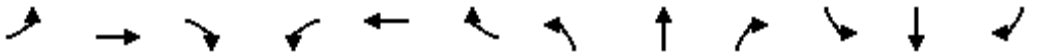
c Critical Lane Group



Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1506	2356	8	124	84	64	326
v/c Ratio	0.51	0.78	0.01	0.70	0.17	0.18	0.73
Control Delay	10.8	15.5	0.9	53.1	19.1	26.5	40.3
Queue Delay	0.0	47.8	1.8	0.0	0.0	0.0	0.0
Total Delay	10.8	63.3	2.6	53.1	19.1	26.5	40.3
Queue Length 50th (m)	49.0	101.5	0.0	19.2	7.6	8.4	50.3
Queue Length 95th (m)	60.0	121.3	0.6	#46.5	18.4	18.4	#86.8
Internal Link Dist (m)	137.7	14.2			41.5		59.5
Turn Bay Length (m)							
Base Capacity (vph)	2963	3004	944	176	495	351	445
Starvation Cap Reductn	0	1425	890	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	1.49	0.15	0.70	0.17	0.18	0.73

Intersection Summary

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



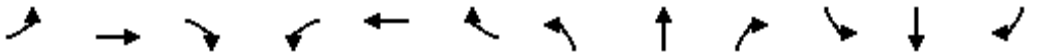
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1402	59	0	2285	8	120	56	25	62	69	247
Future Volume (vph)	0	1402	59	0	2285	8	120	56	25	62	69	247
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		0.91			0.91	1.00	1.00	1.00		1.00	1.00	
Frt		0.99			1.00	0.85	1.00	0.95		1.00	0.88	
Flt Protected		1.00			1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		4886			4916	1531	1711	1717		1711	1589	
Flt Permitted		1.00			1.00	1.00	0.35	1.00		0.70	1.00	
Satd. Flow (perm)		4886			4916	1531	634	1717		1265	1589	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1445	61	0	2356	8	124	58	26	64	71	255
RTOR Reduction (vph)	0	5	0	0	0	3	0	18	0	0	4	0
Lane Group Flow (vph)	0	1501	0	0	2356	5	124	66	0	64	322	0
Turn Type		NA			NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			5 6			4			8	
Permitted Phases						5 6	4			8		
Actuated Green, G (s)		54.5			54.5	54.5	25.0	25.0		25.0	25.0	
Effective Green, g (s)		54.5			54.5	54.5	25.0	25.0		25.0	25.0	
Actuated g/C Ratio		0.61			0.61	0.61	0.28	0.28		0.28	0.28	
Clearance Time (s)		5.5					5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2958			2976	927	176	476		351	441	
v/s Ratio Prot		0.31			c0.48			0.04			c0.20	
v/s Ratio Perm						0.00	0.20			0.05		
v/c Ratio		0.51			0.79	0.01	0.70	0.14		0.18	0.73	
Uniform Delay, d1		10.1			13.4	7.0	29.2	24.4		24.7	29.5	
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.6			2.2	0.0	21.1	0.6		1.1	10.2	
Delay (s)		10.7			15.7	7.0	50.2	25.0		25.9	39.7	
Level of Service		B			B	A	D	C		C	D	
Approach Delay (s)		10.7			15.7			40.1			37.4	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	79	5	261	70	118	50	127	36
v/c Ratio	0.09	0.01	0.27	0.08	0.27	0.11	0.34	0.08
Control Delay	7.8	1.0	8.8	5.0	10.6	3.7	11.9	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.8	1.0	8.8	5.0	10.6	3.7	11.9	3.9
Queue Length 50th (m)	2.0	0.0	7.3	0.7	5.1	0.0	5.6	0.0
Queue Length 95th (m)	9.2	0.4	26.2	6.2	12.3	3.9	13.6	3.3
Internal Link Dist (m)	115.6		59.7		33.0		43.8	
Turn Bay Length (m)		5.0		5.0		5.0		5.0
Base Capacity (vph)	1330	1217	1364	1221	1201	1195	1009	1192
Starvation Cap Reductn	0	0	0	0	0	0	26	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.00	0.19	0.06	0.10	0.04	0.13	0.03

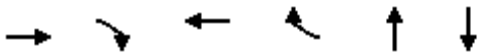
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	58	5	36	204	64	36	73	46	79	38	33
Future Volume (vph)	15	58	5	36	204	64	36	73	46	79	38	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected		0.99	1.00		0.99	1.00		0.98	1.00		0.97	1.00
Satd. Flow (prot)		1783	1531		1787	1531		1771	1531		1742	1531
Flt Permitted		0.93	1.00		0.96	1.00		0.86	1.00		0.73	1.00
Satd. Flow (perm)		1680	1531		1724	1531		1553	1531		1306	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)	16	63	5	39	222	70	39	79	50	86	41	36
RTOR Reduction (vph)	0	0	2	0	0	21	0	0	38	0	0	27
Lane Group Flow (vph)	0	79	3	0	261	49	0	118	12	0	127	9
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		19.6	19.6		19.6	19.6		9.5	9.5		9.5	9.5
Effective Green, g (s)		19.6	19.6		19.6	19.6		9.5	9.5		9.5	9.5
Actuated g/C Ratio		0.51	0.51		0.51	0.51		0.25	0.25		0.25	0.25
Clearance Time (s)		4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		864	787		886	787		387	381		325	381
v/s Ratio Prot												
v/s Ratio Perm		0.05	0.00		c0.15	0.03		0.08	0.01		c0.10	0.01
v/c Ratio		0.09	0.00		0.29	0.06		0.30	0.03		0.39	0.02
Uniform Delay, d1		4.7	4.5		5.3	4.6		11.6	10.8		11.9	10.8
Progression Factor		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.0	0.0		0.2	0.0		0.4	0.0		0.8	0.0
Delay (s)		4.8	4.5		5.5	4.7		12.1	10.9		12.7	10.8
Level of Service		A	A		A	A		B	B		B	B
Approach Delay (s)		4.7			5.3			11.7			12.3	
Approach LOS		A			A			B			B	

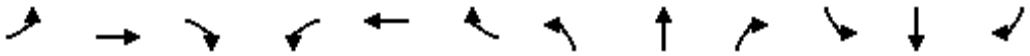
Intersection Summary			
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	38.1	Sum of lost time (s)	9.0
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



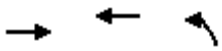
Lane Group	EBT	EBR	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	164	9	300	122	145	122
v/c Ratio	0.21	0.01	0.37	0.16	0.21	0.22
Control Delay	11.4	0.6	13.1	5.8	11.8	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.8
Total Delay	11.4	0.6	13.1	5.8	11.8	13.4
Queue Length 50th (m)	11.2	0.0	22.2	3.4	9.0	8.1
Queue Length 95th (m)	21.5	0.4	38.4	11.1	19.5	18.0
Internal Link Dist (m)	54.5		93.4		33.2	41.5
Turn Bay Length (m)		5.0		5.0		
Base Capacity (vph)	766	724	806	743	677	567
Starvation Cap Reductn	0	0	0	0	0	250
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.01	0.37	0.16	0.21	0.38

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	125	8	23	253	112	8	94	31	54	40	18
Future Volume (vph)	26	125	8	23	253	112	8	94	31	54	40	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		1.00	0.85		0.97			0.98	
Flt Protected		0.99	1.00		1.00	1.00		1.00			0.98	
Satd. Flow (prot)		1785	1531		1793	1531		1738			1719	
Flt Permitted		0.92	1.00		0.97	1.00		0.99			0.82	
Satd. Flow (perm)		1660	1531		1749	1531		1718			1446	
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	136	9	25	275	122	9	102	34	59	43	20
RTOR Reduction (vph)	0	0	5	0	0	37	0	17	0	0	11	0
Lane Group Flow (vph)	0	164	4	0	300	85	0	128	0	0	111	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6		6	2		2	4			8		
Actuated Green, G (s)		30.0	30.0		30.0	30.0		25.0			25.0	
Effective Green, g (s)		30.0	30.0		30.0	30.0		25.0			25.0	
Actuated g/C Ratio		0.46	0.46		0.46	0.46		0.38			0.38	
Clearance Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Lane Grp Cap (vph)		766	706		807	706		660			556	
v/s Ratio Prot												
v/s Ratio Perm		0.10	0.00		c0.17	0.06		0.07			c0.08	
v/c Ratio		0.21	0.01		0.37	0.12		0.19			0.20	
Uniform Delay, d1		10.5	9.4		11.4	10.0		13.3			13.3	
Progression Factor		1.00	1.00		1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.6	0.0		1.3	0.3		0.7			0.8	
Delay (s)		11.1	9.5		12.7	10.3		14.0			14.1	
Level of Service		B	A		B	B		B			B	
Approach Delay (s)		11.0			12.0			14.0			14.1	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	2997	1091	93
v/c Ratio	0.78	0.55	0.21
Control Delay	14.3	6.3	26.7
Queue Delay	0.0	0.0	1.5
Total Delay	14.3	6.3	28.2
Queue Length 50th (m)	99.7	21.7	12.2
Queue Length 95th (m)	114.5	25.9	24.3
Internal Link Dist (m)	106.7	137.7	43.8
Turn Bay Length (m)			
Base Capacity (vph)	3837	1969	441
Starvation Cap Reductn	0	0	222
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.78	0.55	0.42

Intersection Summary



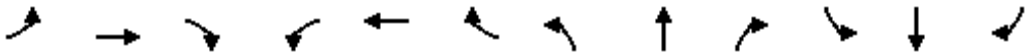
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2814	123	4	1065	53	38
Future Volume (vph)	2814	123	4	1065	53	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	
Lane Util. Factor	0.86			0.95	1.00	
Frt	0.99			1.00	0.94	
Flt Protected	1.00			1.00	0.97	
Satd. Flow (prot)	6155			3421	1651	
Flt Permitted	1.00			0.93	0.97	
Satd. Flow (perm)	6155			3165	1651	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	2871	126	4	1087	54	39
RTOR Reduction (vph)	7	0	0	0	1	0
Lane Group Flow (vph)	2990	0	0	1091	92	0
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Actuated Green, G (s)	56.0			56.0	24.0	
Effective Green, g (s)	56.0			56.0	24.0	
Actuated g/C Ratio	0.62			0.62	0.27	
Clearance Time (s)	5.0			5.0	5.0	
Lane Grp Cap (vph)	3829			1969	440	
v/s Ratio Prot	c0.49				c0.06	
v/s Ratio Perm				0.34		
v/c Ratio	0.78			0.55	0.21	
Uniform Delay, d1	12.5			9.8	25.6	
Progression Factor	1.00			0.52	1.00	
Incremental Delay, d2	1.6			1.0	1.1	
Delay (s)	14.1			6.1	26.7	
Level of Service	B			A	C	
Approach Delay (s)	14.1			6.1	26.7	
Approach LOS	B			A	C	

Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	3101	1004	43	100	198	48	72
v/c Ratio	0.89	0.48	0.05	0.28	0.42	0.17	0.15
Control Delay	9.4	10.6	2.4	28.1	29.6	26.8	21.9
Queue Delay	0.0	51.9	4.9	1.5	9.1	0.0	0.0
Total Delay	9.4	62.5	7.3	29.7	38.7	26.8	21.9
Queue Length 50th (m)	29.5	45.7	0.0	13.5	27.7	6.3	7.8
Queue Length 95th (m)	31.6	59.7	3.6	26.8	47.0	15.1	17.8
Internal Link Dist (m)	137.7	14.2			41.6		59.5
Turn Bay Length (m)							
Base Capacity (vph)	3468	2090	952	355	477	278	495
Starvation Cap Reductn	0	1369	859	139	239	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	1.39	0.46	0.46	0.83	0.17	0.15

Intersection Summary



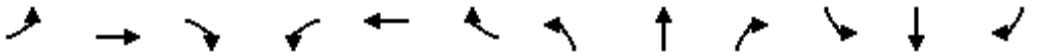
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	2755	87	0	924	40	92	125	57	44	54	12
Future Volume (vph)	10	2755	87	0	924	40	92	125	57	44	54	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		0.86			0.95	1.00	1.00	1.00		1.00	1.00	
Frt		1.00			1.00	0.85	1.00	0.95		1.00	0.97	
Flt Protected		1.00			1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		6165			3421	1531	1711	1716		1711	1752	
Flt Permitted		0.93			1.00	1.00	0.71	1.00		0.56	1.00	
Satd. Flow (perm)		5720			3421	1531	1279	1716		1002	1752	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	2995	95	0	1004	43	100	136	62	48	59	13
RTOR Reduction (vph)	0	5	0	0	0	17	0	1	0	0	9	0
Lane Group Flow (vph)	0	3096	0	0	1004	26	100	197	0	48	63	0
Turn Type	Perm	NA			NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			5 6			4			8	
Permitted Phases	2					5 6	4			8		
Actuated Green, G (s)		54.5			54.5	54.5	25.0	25.0		25.0	25.0	
Effective Green, g (s)		54.5			54.5	54.5	25.0	25.0		25.0	25.0	
Actuated g/C Ratio		0.61			0.61	0.61	0.28	0.28		0.28	0.28	
Clearance Time (s)		5.5					5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		3463			2071	927	355	476		278	486	
v/s Ratio Prot					0.29			c0.11			0.04	
v/s Ratio Perm		c0.54				0.02	0.08			0.05		
v/c Ratio		0.89			0.48	0.03	0.28	0.41		0.17	0.13	
Uniform Delay, d1		15.3			9.9	7.1	25.5	26.5		24.7	24.4	
Progression Factor		0.41			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.8			0.8	0.1	2.0	2.6		1.3	0.6	
Delay (s)		9.0			10.7	7.2	27.4	29.2		26.0	24.9	
Level of Service		A			B	A	C	C		C	C	
Approach Delay (s)		9.0			10.6			28.6			25.3	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



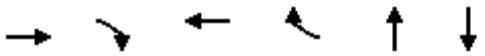
Lane Group	EBT	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	204	154	40	50	15	132	20
v/c Ratio	0.20	0.15	0.04	0.11	0.04	0.41	0.05
Control Delay	6.5	6.2	2.2	19.9	3.6	25.2	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.5	0.0
Total Delay	6.5	6.2	2.2	19.9	3.6	25.7	5.1
Queue Length 50th (m)	9.8	7.2	0.0	4.7	0.0	13.4	0.0
Queue Length 95th (m)	18.0	13.9	2.9	12.0	2.0	27.5	3.2
Internal Link Dist (m)	115.6	76.8		33.0		43.8	
Turn Bay Length (m)			5.0		5.0		5.0
Base Capacity (vph)	1028	1015	934	436	402	321	402
Starvation Cap Reductn	0	0	0	0	0	38	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.15	0.04	0.11	0.04	0.47	0.05

Intersection Summary



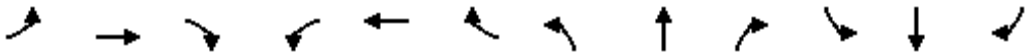
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	160	0	25	117	37	3	43	14	102	19	18
Future Volume (vph)	28	160	0	25	117	37	3	43	14	102	19	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0	5.0		5.0	5.0
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00		1.00	1.00
Frt		1.00			1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected		0.99			0.99	1.00		1.00	1.00		0.96	1.00
Satd. Flow (prot)		1788			1785	1531		1795	1531		1728	1531
Flt Permitted		0.95			0.94	1.00		0.99	1.00		0.73	1.00
Satd. Flow (perm)		1715			1692	1531		1774	1531		1306	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)	30	174	0	27	127	40	3	47	15	111	21	20
RTOR Reduction (vph)	0	0	0	0	0	16	0	0	11	0	0	15
Lane Group Flow (vph)	0	204	0	0	154	24	0	50	4	0	132	5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)		39.0			39.0	39.0		16.0	16.0		16.0	16.0
Effective Green, g (s)		39.0			39.0	39.0		16.0	16.0		16.0	16.0
Actuated g/C Ratio		0.60			0.60	0.60		0.25	0.25		0.25	0.25
Clearance Time (s)		5.0			5.0	5.0		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		1029			1015	918		436	376		321	376
v/s Ratio Prot												
v/s Ratio Perm		c0.12			0.09	0.02		0.03	0.00		c0.10	0.00
v/c Ratio		0.20			0.15	0.03		0.11	0.01		0.41	0.01
Uniform Delay, d1		5.9			5.7	5.3		19.0	18.5		20.5	18.5
Progression Factor		1.00			1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.4			0.3	0.1		0.5	0.0		3.9	0.1
Delay (s)		6.3			6.0	5.3		19.5	18.6		24.4	18.6
Level of Service		A			A	A		B	B		C	B
Approach Delay (s)		6.3			5.9			19.3			23.6	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



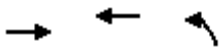
Lane Group	EBT	EBR	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	317	13	181	84	166	156
v/c Ratio	0.40	0.02	0.22	0.11	0.26	0.32
Control Delay	12.4	1.3	10.2	2.8	15.2	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.2
Total Delay	12.4	1.3	10.2	2.8	15.2	18.2
Queue Length 50th (m)	22.6	0.0	11.6	0.0	12.8	12.7
Queue Length 95th (m)	39.4	1.0	21.7	5.6	25.3	25.9
Internal Link Dist (m)	37.5		93.3		33.2	41.6
Turn Bay Length (m)		12.0		36.0		
Base Capacity (vph)	783	770	841	796	627	482
Starvation Cap Reductn	0	0	0	0	0	173
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.02	0.22	0.11	0.26	0.50

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	219	12	19	147	77	6	126	20	84	49	11
Future Volume (vph)	73	219	12	19	147	77	6	126	20	84	49	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		1.00	0.85		0.98			0.99	
Flt Protected		0.99	1.00		0.99	1.00		1.00			0.97	
Satd. Flow (prot)		1778	1531		1790	1531		1765			1731	
Flt Permitted		0.88	1.00		0.95	1.00		0.99			0.76	
Satd. Flow (perm)		1592	1531		1709	1531		1749			1351	
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	238	13	21	160	84	7	137	22	91	53	12
RTOR Reduction (vph)	0	0	7	0	0	43	0	8	0	0	5	0
Lane Group Flow (vph)	0	317	6	0	181	41	0	158	0	0	151	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6		6	2		2	4			8		
Actuated Green, G (s)		32.0	32.0		32.0	32.0		23.0			23.0	
Effective Green, g (s)		32.0	32.0		32.0	32.0		23.0			23.0	
Actuated g/C Ratio		0.49	0.49		0.49	0.49		0.35			0.35	
Clearance Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Lane Grp Cap (vph)		783	753		841	753		618			478	
v/s Ratio Prot												
v/s Ratio Perm		c0.20	0.00		0.11	0.03		0.09			c0.11	
v/c Ratio		0.40	0.01		0.22	0.05		0.26			0.32	
Uniform Delay, d1		10.5	8.4		9.4	8.6		14.9			15.3	
Progression Factor		1.00	1.00		1.00	1.00		1.00			1.00	
Incremental Delay, d2		1.6	0.0		0.6	0.1		1.0			1.7	
Delay (s)		12.0	8.4		10.0	8.7		15.9			17.0	
Level of Service		B	A		A	A		B			B	
Approach Delay (s)		11.9			9.6			15.9			17.0	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	1551	2791	131
v/c Ratio	0.51	0.91	0.28
Control Delay	9.9	17.9	18.1
Queue Delay	0.0	45.5	1.6
Total Delay	9.9	63.4	19.7
Queue Length 50th (m)	48.1	180.9	10.7
Queue Length 95th (m)	58.7	199.7	24.8
Internal Link Dist (m)	106.7	137.8	43.9
Turn Bay Length (m)			
Base Capacity (vph)	3030	3058	470
Starvation Cap Reductn	0	585	209
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.51	1.13	0.50

Intersection Summary



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1378	126	0	2707	51	76
Future Volume (vph)	1378	126	0	2707	51	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	
Lane Util. Factor	0.91			0.91	1.00	
Frt	0.99			1.00	0.92	
Flt Protected	1.00			1.00	0.98	
Satd. Flow (prot)	4854			4916	1623	
Flt Permitted	1.00			1.00	0.98	
Satd. Flow (perm)	4854			4916	1623	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1421	130	0	2791	53	78
RTOR Reduction (vph)	12	0	0	0	37	0
Lane Group Flow (vph)	1539	0	0	2791	94	0
Turn Type	NA			NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Actuated Green, G (s)	56.0			56.0	24.0	
Effective Green, g (s)	56.0			56.0	24.0	
Actuated g/C Ratio	0.62			0.62	0.27	
Clearance Time (s)	5.0			5.0	5.0	
Lane Grp Cap (vph)	3020			3058	432	
v/s Ratio Prot	0.32			c0.57	c0.06	
v/s Ratio Perm						
v/c Ratio	0.51			0.91	0.22	
Uniform Delay, d1	9.4			14.9	25.7	
Progression Factor	1.00			0.95	1.00	
Incremental Delay, d2	0.6			3.1	1.1	
Delay (s)	10.0			17.3	26.8	
Level of Service	B			B	C	
Approach Delay (s)	10.0			17.3	26.8	
Approach LOS	B			B	C	

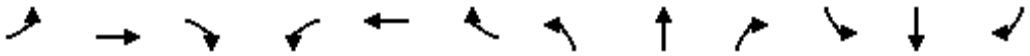
Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1588	2484	9	130	88	67	343
v/c Ratio	0.54	0.83	0.01	0.80	0.18	0.19	0.77
Control Delay	10.3	16.9	1.0	65.8	19.4	26.6	43.1
Queue Delay	0.0	47.5	1.9	0.0	1.1	0.0	0.0
Total Delay	10.3	64.4	2.9	65.8	20.5	26.6	43.1
Queue Length 50th (m)	44.4	112.6	0.0	20.8	8.2	8.8	53.8
Queue Length 95th (m)	55.2	134.9	0.8	#51.8	19.3	19.2	#94.1
Internal Link Dist (m)	137.8	14.1			41.5		59.5
Turn Bay Length (m)							
Base Capacity (vph)	2963	3004	944	163	495	350	444
Starvation Cap Reductn	0	1348	889	0	258	0	0
Spillback Cap Reductn	0	819	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	1.50	0.16	0.80	0.37	0.19	0.77

Intersection Summary

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



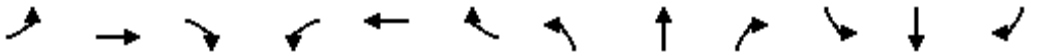
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1402	59	0	2285	8	120	56	25	62	69	247
Future Volume (vph)	0	1402	59	0	2285	8	120	56	25	62	69	247
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		0.91			0.91	1.00	1.00	1.00		1.00	1.00	
Frt		0.99			1.00	0.85	1.00	0.95		1.00	0.88	
Flt Protected		1.00			1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		4886			4916	1531	1711	1718		1711	1590	
Flt Permitted		1.00			1.00	1.00	0.33	1.00		0.70	1.00	
Satd. Flow (perm)		4886			4916	1531	587	1718		1260	1590	
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	1524	64	0	2484	9	130	61	27	67	75	268
RTOR Reduction (vph)	0	5	0	0	0	4	0	18	0	0	3	0
Lane Group Flow (vph)	0	1583	0	0	2484	5	130	70	0	67	340	0
Turn Type		NA			NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			5 6			4			8	
Permitted Phases						5 6	4			8		
Actuated Green, G (s)		54.5			54.5	54.5	25.0	25.0		25.0	25.0	
Effective Green, g (s)		54.5			54.5	54.5	25.0	25.0		25.0	25.0	
Actuated g/C Ratio		0.61			0.61	0.61	0.28	0.28		0.28	0.28	
Clearance Time (s)		5.5					5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2958			2976	927	163	477		350	441	
v/s Ratio Prot		0.32			c0.51			0.04			0.21	
v/s Ratio Perm						0.00	c0.22			0.05		
v/c Ratio		0.54			0.83	0.01	0.80	0.15		0.19	0.77	
Uniform Delay, d1		10.4			14.2	7.0	30.2	24.5		24.8	29.9	
Progression Factor		0.93			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.6			2.9	0.0	32.2	0.6		1.2	12.3	
Delay (s)		10.2			17.1	7.0	62.3	25.1		26.0	42.2	
Level of Service		B			B	A	E	C		C	D	
Approach Delay (s)		10.2			17.1			47.3			39.5	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



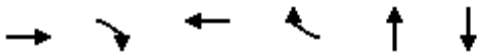
Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	79	5	261	70	118	50	127	36
v/c Ratio	0.08	0.01	0.25	0.07	0.31	0.12	0.39	0.09
Control Delay	5.7	0.0	6.9	2.2	22.6	7.4	24.9	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
Total Delay	5.7	0.0	6.9	2.2	22.6	7.4	25.3	8.3
Queue Length 50th (m)	3.5	0.0	13.0	0.3	11.6	0.0	12.8	0.1
Queue Length 95th (m)	8.0	0.0	23.0	4.2	24.0	7.0	26.6	6.0
Internal Link Dist (m)	115.6		59.7		32.9		43.9	
Turn Bay Length (m)		5.0		5.0		5.0		5.0
Base Capacity (vph)	1011	932	1033	943	385	414	322	403
Starvation Cap Reductn	0	0	0	0	0	0	40	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.01	0.25	0.07	0.31	0.12	0.45	0.09

Intersection Summary



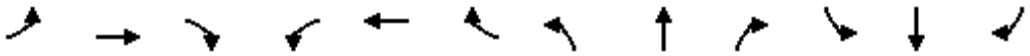
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	58	5	36	204	64	36	73	46	79	38	33
Future Volume (vph)	15	58	5	36	204	64	36	73	46	79	38	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected		0.99	1.00		0.99	1.00		0.98	1.00		0.97	1.00
Satd. Flow (prot)		1783	1531		1787	1531		1771	1531		1742	1531
Flt Permitted		0.94	1.00		0.96	1.00		0.87	1.00		0.73	1.00
Satd. Flow (perm)		1686	1531		1723	1531		1568	1531		1311	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)	16	63	5	39	222	70	39	79	50	86	41	36
RTOR Reduction (vph)	0	0	2	0	0	25	0	0	38	0	0	26
Lane Group Flow (vph)	0	79	3	0	261	45	0	118	12	0	127	10
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)		39.0	39.0		39.0	39.0		16.0	16.0		16.0	16.0
Effective Green, g (s)		39.0	39.0		39.0	39.0		16.0	16.0		16.0	16.0
Actuated g/C Ratio		0.60	0.60		0.60	0.60		0.25	0.25		0.25	0.25
Clearance Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		1011	918		1033	918		385	376		322	376
v/s Ratio Prot												
v/s Ratio Perm		0.05	0.00		c0.15	0.03		0.08	0.01		c0.10	0.01
v/c Ratio		0.08	0.00		0.25	0.05		0.31	0.03		0.39	0.03
Uniform Delay, d1		5.5	5.2		6.1	5.4		20.0	18.6		20.5	18.6
Progression Factor		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.2	0.0		0.6	0.1		2.1	0.2		3.6	0.1
Delay (s)		5.6	5.2		6.7	5.5		22.0	18.8		24.0	18.7
Level of Service		A	A		A	A		C	B		C	B
Approach Delay (s)		5.6			6.5			21.1			22.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	13.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	40.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	EBR	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	164	9	300	122	145	122
v/c Ratio	0.21	0.01	0.37	0.16	0.21	0.22
Control Delay	11.4	0.6	13.1	5.8	11.8	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.8
Total Delay	11.4	0.6	13.1	5.8	11.8	13.4
Queue Length 50th (m)	11.2	0.0	22.2	3.4	9.0	8.1
Queue Length 95th (m)	21.5	0.4	38.4	11.1	19.5	18.0
Internal Link Dist (m)	54.6		93.3		33.1	41.5
Turn Bay Length (m)		5.0		5.0		
Base Capacity (vph)	766	724	806	743	677	567
Starvation Cap Reductn	0	0	0	0	0	250
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.01	0.37	0.16	0.21	0.38

Intersection Summary

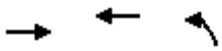


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	125	8	23	253	112	8	94	31	54	40	18
Future Volume (vph)	26	125	8	23	253	112	8	94	31	54	40	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		1.00	0.85		0.97			0.98	
Flt Protected		0.99	1.00		1.00	1.00		1.00			0.98	
Satd. Flow (prot)		1785	1531		1793	1531		1738			1719	
Flt Permitted		0.92	1.00		0.97	1.00		0.99			0.82	
Satd. Flow (perm)		1660	1531		1749	1531		1718			1446	
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	136	9	25	275	122	9	102	34	59	43	20
RTOR Reduction (vph)	0	0	5	0	0	37	0	17	0	0	11	0
Lane Group Flow (vph)	0	164	4	0	300	85	0	128	0	0	111	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6		6	2		2	4			8		
Actuated Green, G (s)		30.0	30.0		30.0	30.0		25.0			25.0	
Effective Green, g (s)		30.0	30.0		30.0	30.0		25.0			25.0	
Actuated g/C Ratio		0.46	0.46		0.46	0.46		0.38			0.38	
Clearance Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Lane Grp Cap (vph)		766	706		807	706		660			556	
v/s Ratio Prot												
v/s Ratio Perm		0.10	0.00		c0.17	0.06		0.07			c0.08	
v/c Ratio		0.21	0.01		0.37	0.12		0.19			0.20	
Uniform Delay, d1		10.5	9.4		11.4	10.0		13.3			13.3	
Progression Factor		1.00	1.00		1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.6	0.0		1.3	0.3		0.7			0.8	
Delay (s)		11.1	9.5		12.7	10.3		14.0			14.1	
Level of Service		B	A		B	B		B			B	
Approach Delay (s)		11.0			12.0			14.0			14.1	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Queues
1: Bidwell & W Georgia

02/12/2019



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	2999	1091	97
v/c Ratio	0.68	0.48	0.27
Control Delay	11.1	9.0	30.2
Queue Delay	0.0	0.2	0.3
Total Delay	11.1	9.2	30.5
Queue Length 50th (m)	100.0	51.8	15.2
Queue Length 95th (m)	115.0	68.0	25.1
Internal Link Dist (m)	106.7	137.8	43.9
Turn Bay Length (m)			
Base Capacity (vph)	4420	2272	585
Starvation Cap Reductn	0	450	207
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.68	0.60	0.26

Intersection Summary



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2814	125	4	1065	57	38
Future Volume (vph)	2814	125	4	1065	57	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	
Lane Util. Factor	0.86			0.95	1.00	
Frt	0.99			1.00	0.95	
Flt Protected	1.00			1.00	0.97	
Satd. Flow (prot)	6155			3421	1653	
Flt Permitted	1.00			0.93	0.97	
Satd. Flow (perm)	6155			3169	1653	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	2871	128	4	1087	58	39
RTOR Reduction (vph)	5	0	0	0	1	0
Lane Group Flow (vph)	2994	0	0	1091	96	0
Turn Type	NA		Perm	NA	Perm	
Protected Phases	4			8		
Permitted Phases			8		2	
Actuated Green, G (s)	64.6			64.6	18.3	
Effective Green, g (s)	64.6			64.6	18.3	
Actuated g/C Ratio	0.70			0.70	0.20	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	4280			2203	325	
v/s Ratio Prot	c0.49					
v/s Ratio Perm				0.34	c0.06	
v/c Ratio	0.70			0.50	0.30	
Uniform Delay, d1	8.4			6.6	31.8	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.5			0.2	0.5	
Delay (s)	8.9			6.8	32.3	
Level of Service	A			A	C	
Approach Delay (s)	8.9			6.8	32.3	
Approach LOS	A			A	C	

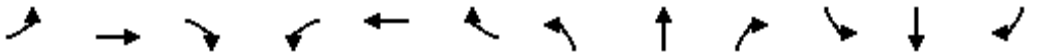
Intersection Summary			
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	92.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	3101	1004	43	100	208	48	72
v/c Ratio	0.89	0.48	0.05	0.28	0.44	0.18	0.15
Control Delay	19.7	10.6	2.4	28.1	30.1	26.9	21.9
Queue Delay	2.4	51.9	4.9	1.5	11.3	0.0	0.0
Total Delay	22.1	62.5	7.3	29.7	41.4	26.9	21.9
Queue Length 50th (m)	122.2	45.7	0.0	13.5	29.4	6.3	7.8
Queue Length 95th (m)	142.1	59.7	3.6	26.8	49.3	15.2	17.8
Internal Link Dist (m)	137.8	14.1			41.5		59.5
Turn Bay Length (m)							
Base Capacity (vph)	3468	2090	952	355	474	270	495
Starvation Cap Reductn	252	1369	859	139	234	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	1.39	0.46	0.46	0.87	0.18	0.15

Intersection Summary



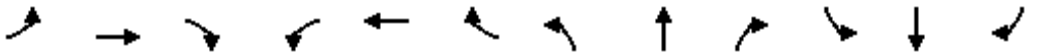
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	2755	87	0	924	40	92	125	66	44	54	12
Future Volume (vph)	10	2755	87	0	924	40	92	125	66	44	54	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		0.86			0.95	1.00	1.00	1.00		1.00	1.00	
Frt		1.00			1.00	0.85	1.00	0.95		1.00	0.97	
Flt Protected		1.00			1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		6165			3421	1531	1711	1707		1711	1752	
Flt Permitted		0.93			1.00	1.00	0.71	1.00		0.54	1.00	
Satd. Flow (perm)		5720			3421	1531	1279	1707		972	1752	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	2995	95	0	1004	43	100	136	72	48	59	13
RTOR Reduction (vph)	0	5	0	0	0	17	0	1	0	0	9	0
Lane Group Flow (vph)	0	3096	0	0	1004	26	100	207	0	48	63	0
Turn Type	Perm	NA			NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			5 6			4			8	
Permitted Phases	2					5 6	4			8		
Actuated Green, G (s)		54.5			54.5	54.5	25.0	25.0		25.0	25.0	
Effective Green, g (s)		54.5			54.5	54.5	25.0	25.0		25.0	25.0	
Actuated g/C Ratio		0.61			0.61	0.61	0.28	0.28		0.28	0.28	
Clearance Time (s)		5.5					5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		3463			2071	927	355	474		270	486	
v/s Ratio Prot					0.29			c0.12			0.04	
v/s Ratio Perm		c0.54				0.02	0.08			0.05		
v/c Ratio		0.89			0.48	0.03	0.28	0.44		0.18	0.13	
Uniform Delay, d1		15.3			9.9	7.1	25.5	26.7		24.7	24.4	
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.0			0.8	0.1	2.0	2.9		1.4	0.6	
Delay (s)		19.3			10.7	7.2	27.4	29.6		26.1	24.9	
Level of Service		B			B	A	C	C		C	C	
Approach Delay (s)		19.3			10.6			28.9			25.4	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	204	155	45	50	15	135	20
v/c Ratio	0.18	0.14	0.04	0.13	0.04	0.48	0.06
Control Delay	6.6	6.4	2.8	14.8	2.8	21.7	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.6	6.4	2.8	14.8	2.8	21.8	4.1
Queue Length 50th (m)	6.8	5.0	0.0	3.3	0.0	9.5	0.0
Queue Length 95th (m)	20.9	16.3	3.8	9.0	1.7	20.8	2.5
Internal Link Dist (m)	115.6	76.9		32.9		43.9	
Turn Bay Length (m)			5.0		5.0		5.0
Base Capacity (vph)	1201	1185	1083	894	793	661	793
Starvation Cap Reductn	0	0	0	0	0	27	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.13	0.04	0.06	0.02	0.21	0.03

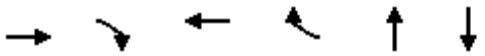
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	160	0	25	118	41	3	43	14	105	19	18
Future Volume (vph)	28	160	0	25	118	41	3	43	14	105	19	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0	5.0		5.0	5.0
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00		1.00	1.00
Frt		1.00			1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected		0.99			0.99	1.00		1.00	1.00		0.96	1.00
Satd. Flow (prot)		1788			1785	1531		1795	1531		1728	1531
Flt Permitted		0.95			0.94	1.00		0.98	1.00		0.72	1.00
Satd. Flow (perm)		1717			1695	1531		1761	1531		1304	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)	30	174	0	27	128	45	3	47	15	114	21	20
RTOR Reduction (vph)	0	0	0	0	0	17	0	0	12	0	0	16
Lane Group Flow (vph)	0	204	0	0	155	28	0	50	3	0	135	4
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		31.1			31.1	31.1		9.4	9.4		9.4	9.4
Effective Green, g (s)		31.1			31.1	31.1		9.4	9.4		9.4	9.4
Actuated g/C Ratio		0.62			0.62	0.62		0.19	0.19		0.19	0.19
Clearance Time (s)		5.0			5.0	5.0		5.0	5.0		5.0	5.0
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1057			1043	942		327	284		242	284
v/s Ratio Prot												
v/s Ratio Perm		c0.12			0.09	0.02		0.03	0.00		c0.10	0.00
v/c Ratio		0.19			0.15	0.03		0.15	0.01		0.56	0.01
Uniform Delay, d1		4.2			4.1	3.8		17.2	16.8		18.7	16.8
Progression Factor		1.00			1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.1			0.1	0.0		0.2	0.0		2.8	0.0
Delay (s)		4.3			4.2	3.8		17.4	16.8		21.4	16.8
Level of Service		A			A	A		B	B		C	B
Approach Delay (s)		4.3			4.1			17.3			20.8	
Approach LOS		A			A			B			C	

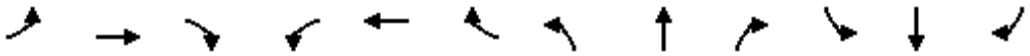
Intersection Summary			
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	50.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	EBR	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	330	13	182	84	166	156
v/c Ratio	0.43	0.02	0.22	0.11	0.26	0.32
Control Delay	12.8	1.3	10.3	2.8	15.2	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.2
Total Delay	12.8	1.3	10.3	2.8	15.2	18.2
Queue Length 50th (m)	23.9	0.0	11.6	0.0	12.8	12.7
Queue Length 95th (m)	41.6	1.0	21.8	5.6	25.3	25.9
Internal Link Dist (m)	37.4		93.3		33.1	41.5
Turn Bay Length (m)		12.0		10.0		
Base Capacity (vph)	769	770	840	796	627	482
Starvation Cap Reductn	0	0	0	0	0	173
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.02	0.22	0.11	0.26	0.50

Intersection Summary

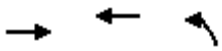


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	220	12	19	148	77	6	126	20	84	49	11
Future Volume (vph)	84	220	12	19	148	77	6	126	20	84	49	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		1.00	0.85		0.98			0.99	
Flt Protected		0.99	1.00		0.99	1.00		1.00			0.97	
Satd. Flow (prot)		1776	1531		1790	1531		1765			1731	
Flt Permitted		0.87	1.00		0.95	1.00		0.99			0.76	
Satd. Flow (perm)		1564	1531		1707	1531		1749			1351	
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)	91	239	13	21	161	84	7	137	22	91	53	12
RTOR Reduction (vph)	0	0	7	0	0	43	0	8	0	0	5	0
Lane Group Flow (vph)	0	330	6	0	182	41	0	158	0	0	151	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6		6	2		2	4			8		
Actuated Green, G (s)		32.0	32.0		32.0	32.0		23.0			23.0	
Effective Green, g (s)		32.0	32.0		32.0	32.0		23.0			23.0	
Actuated g/C Ratio		0.49	0.49		0.49	0.49		0.35			0.35	
Clearance Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Lane Grp Cap (vph)		769	753		840	753		618			478	
v/s Ratio Prot												
v/s Ratio Perm		c0.21	0.00		0.11	0.03		0.09			c0.11	
v/c Ratio		0.43	0.01		0.22	0.05		0.26			0.32	
Uniform Delay, d1		10.6	8.4		9.4	8.6		14.9			15.3	
Progression Factor		1.00	1.00		1.00	1.00		1.00			1.00	
Incremental Delay, d2		1.7	0.0		0.6	0.1		1.0			1.7	
Delay (s)		12.4	8.4		10.0	8.7		15.9			17.0	
Level of Service		B	A		A	A		B			B	
Approach Delay (s)		12.2			9.6			15.9			17.0	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Queues
1: Bidwell & W Georgia

02/12/2019



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	1556	2762	154
v/c Ratio	0.50	0.87	0.35
Control Delay	10.0	19.3	20.6
Queue Delay	0.0	4.6	2.4
Total Delay	10.0	23.9	23.0
Queue Length 50th (m)	53.5	151.3	15.2
Queue Length 95th (m)	65.2	#203.6	29.5
Internal Link Dist (m)	106.8	137.7	43.8
Turn Bay Length (m)			
Base Capacity (vph)	3141	3173	514
Starvation Cap Reductn	0	355	250
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.50	0.98	0.58

Intersection Summary

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



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1378	147	0	2707	74	76
Future Volume (vph)	1378	147	0	2707	74	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	
Lane Util. Factor	0.91			0.91	1.00	
Frt	0.99			1.00	0.93	
Flt Protected	1.00			1.00	0.98	
Satd. Flow (prot)	4845			4916	1637	
Flt Permitted	1.00			1.00	0.98	
Satd. Flow (perm)	4845			4916	1637	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	1406	150	0	2762	76	78
RTOR Reduction (vph)	12	0	0	0	33	0
Lane Group Flow (vph)	1544	0	0	2762	121	0
Turn Type	NA			NA	Prot	
Protected Phases	4			8	2	
Permitted Phases			8			
Actuated Green, G (s)	59.2			59.2	22.5	
Effective Green, g (s)	59.2			59.2	22.5	
Actuated g/C Ratio	0.65			0.65	0.25	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	3127			3173	401	
v/s Ratio Prot	0.32			c0.56	c0.07	
v/s Ratio Perm						
v/c Ratio	0.49			0.87	0.30	
Uniform Delay, d1	8.5			13.1	28.2	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.1			2.9	0.4	
Delay (s)	8.6			16.0	28.6	
Level of Service	A			B	C	
Approach Delay (s)	8.6			16.0	28.6	
Approach LOS	A			B	C	

Intersection Summary			
HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	91.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		

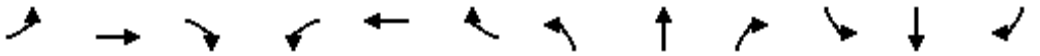
c Critical Lane Group



Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1506	2356	8	124	98	64	333
v/c Ratio	0.51	0.78	0.01	0.73	0.20	0.18	0.75
Control Delay	10.8	15.5	0.9	56.4	17.4	26.6	41.2
Queue Delay	0.0	47.8	1.8	0.0	1.2	0.0	0.0
Total Delay	10.8	63.3	2.6	56.4	18.6	26.6	41.2
Queue Length 50th (m)	49.0	101.5	0.0	19.4	7.9	8.4	51.6
Queue Length 95th (m)	60.0	121.3	0.6	#47.5	19.6	18.4	#89.6
Internal Link Dist (m)	137.7	14.2			41.5		59.5
Turn Bay Length (m)							
Base Capacity (vph)	2963	3004	944	170	497	347	446
Starvation Cap Reductn	0	1425	890	0	250	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	1.49	0.15	0.73	0.40	0.18	0.75

Intersection Summary

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



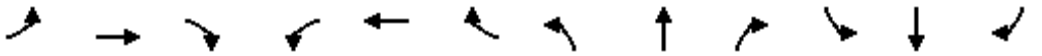
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1402	59	0	2285	8	120	57	38	62	76	247
Future Volume (vph)	0	1402	59	0	2285	8	120	57	38	62	76	247
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		0.91			0.91	1.00	1.00	1.00		1.00	1.00	
Frt		0.99			1.00	0.85	1.00	0.94		1.00	0.89	
Flt Protected		1.00			1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		4886			4916	1531	1711	1693		1711	1594	
Flt Permitted		1.00			1.00	1.00	0.34	1.00		0.69	1.00	
Satd. Flow (perm)		4886			4916	1531	615	1693		1249	1594	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1445	61	0	2356	8	124	59	39	64	78	255
RTOR Reduction (vph)	0	5	0	0	0	3	0	27	0	0	4	0
Lane Group Flow (vph)	0	1501	0	0	2356	5	124	71	0	64	329	0
Turn Type		NA			NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			5 6			4			8	
Permitted Phases						5 6	4			8		
Actuated Green, G (s)		54.5			54.5	54.5	25.0	25.0		25.0	25.0	
Effective Green, g (s)		54.5			54.5	54.5	25.0	25.0		25.0	25.0	
Actuated g/C Ratio		0.61			0.61	0.61	0.28	0.28		0.28	0.28	
Clearance Time (s)		5.5					5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2958			2976	927	170	470		346	442	
v/s Ratio Prot		0.31			c0.48			0.04			c0.21	
v/s Ratio Perm						0.00	0.20			0.05		
v/c Ratio		0.51			0.79	0.01	0.73	0.15		0.18	0.75	
Uniform Delay, d1		10.1			13.4	7.0	29.4	24.5		24.7	29.6	
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.6			2.2	0.0	23.9	0.7		1.2	10.9	
Delay (s)		10.7			15.7	7.0	53.3	25.2		25.9	40.5	
Level of Service		B			B	A	D	C		C	D	
Approach Delay (s)		10.7			15.7			40.9			38.1	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	80	5	264	95	118	52	149	36
v/c Ratio	0.09	0.01	0.28	0.11	0.26	0.11	0.39	0.08
Control Delay	8.0	1.0	9.0	4.9	10.4	3.7	12.7	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.0	1.0	9.0	4.9	10.4	3.7	12.7	3.9
Queue Length 50th (m)	2.1	0.0	7.8	1.0	5.1	0.0	6.8	0.0
Queue Length 95th (m)	9.3	0.4	26.6	7.7	12.3	4.0	15.9	3.3
Internal Link Dist (m)	115.6		59.7		33.0		43.8	
Turn Bay Length (m)		5.0		5.0		5.0		5.0
Base Capacity (vph)	1331	1218	1363	1225	1195	1197	992	1193
Starvation Cap Reductn	0	0	0	0	0	0	23	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.00	0.19	0.08	0.10	0.04	0.15	0.03

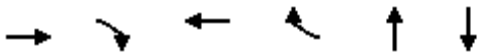
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	59	5	37	206	87	36	73	48	99	38	33
Future Volume (vph)	15	59	5	37	206	87	36	73	48	99	38	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected		0.99	1.00		0.99	1.00		0.98	1.00		0.97	1.00
Satd. Flow (prot)		1783	1531		1787	1531		1771	1531		1738	1531
Flt Permitted		0.93	1.00		0.96	1.00		0.86	1.00		0.71	1.00
Satd. Flow (perm)		1680	1531		1722	1531		1543	1531		1281	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)	16	64	5	40	224	95	39	79	52	108	41	36
RTOR Reduction (vph)	0	0	2	0	0	28	0	0	39	0	0	27
Lane Group Flow (vph)	0	80	3	0	264	67	0	118	13	0	149	9
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		19.3	19.3		19.3	19.3		9.7	9.7		9.7	9.7
Effective Green, g (s)		19.3	19.3		19.3	19.3		9.7	9.7		9.7	9.7
Actuated g/C Ratio		0.51	0.51		0.51	0.51		0.26	0.26		0.26	0.26
Clearance Time (s)		4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		853	777		874	777		393	390		326	390
v/s Ratio Prot												
v/s Ratio Perm		0.05	0.00		c0.15	0.04		0.08	0.01		c0.12	0.01
v/c Ratio		0.09	0.00		0.30	0.09		0.30	0.03		0.46	0.02
Uniform Delay, d1		4.8	4.6		5.4	4.8		11.4	10.6		11.9	10.6
Progression Factor		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.0	0.0		0.2	0.0		0.4	0.0		1.0	0.0
Delay (s)		4.9	4.6		5.6	4.9		11.8	10.7		12.9	10.6
Level of Service		A	A		A	A		B	B		B	B
Approach Delay (s)		4.9			5.4			11.5			12.5	
Approach LOS		A			A			B			B	

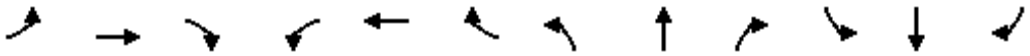
Intersection Summary			
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	38.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	EBR	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	180	10	339	122	148	129
v/c Ratio	0.25	0.01	0.42	0.17	0.22	0.23
Control Delay	11.8	0.8	13.7	6.4	12.0	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.8
Total Delay	11.8	0.8	13.7	6.4	12.0	13.1
Queue Length 50th (m)	12.5	0.0	25.7	3.9	9.4	8.1
Queue Length 95th (m)	23.7	0.6	43.8	11.7	20.0	18.3
Internal Link Dist (m)	54.5		93.4		33.2	41.5
Turn Bay Length (m)		5.0		5.0		
Base Capacity (vph)	727	724	808	739	673	572
Starvation Cap Reductn	0	0	0	0	0	249
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.01	0.42	0.17	0.22	0.40

Intersection Summary



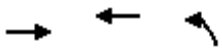
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	127	9	23	289	112	11	94	31	54	40	25
Future Volume (vph)	39	127	9	23	289	112	11	94	31	54	40	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		1.00	0.85		0.97			0.97	
Flt Protected		0.99	1.00		1.00	1.00		1.00			0.98	
Satd. Flow (prot)		1780	1531		1794	1531		1738			1711	
Flt Permitted		0.88	1.00		0.97	1.00		0.98			0.83	
Satd. Flow (perm)		1577	1531		1753	1531		1707			1448	
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)	42	138	10	25	314	122	12	102	34	59	43	27
RTOR Reduction (vph)	0	0	5	0	0	33	0	17	0	0	15	0
Lane Group Flow (vph)	0	180	5	0	339	89	0	131	0	0	114	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6		6	2		2	4			8		
Actuated Green, G (s)		30.0	30.0		30.0	30.0		25.0			25.0	
Effective Green, g (s)		30.0	30.0		30.0	30.0		25.0			25.0	
Actuated g/C Ratio		0.46	0.46		0.46	0.46		0.38			0.38	
Clearance Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Lane Grp Cap (vph)		727	706		809	706		656			556	
v/s Ratio Prot												
v/s Ratio Perm		0.11	0.00		c0.19	0.06		0.08			c0.08	
v/c Ratio		0.25	0.01		0.42	0.13		0.20			0.21	
Uniform Delay, d1		10.6	9.5		11.7	10.0		13.3			13.4	
Progression Factor		1.00	1.00		1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.8	0.0		1.6	0.4		0.7			0.8	
Delay (s)		11.5	9.5		13.3	10.4		14.0			14.2	
Level of Service		B	A		B	B		B			B	
Approach Delay (s)		11.3			12.5			14.0			14.2	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues
1: Bidwell & W Georgia

02/12/2019



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	2999	1091	97
v/c Ratio	0.78	0.55	0.22
Control Delay	14.3	6.3	26.8
Queue Delay	0.0	0.0	1.6
Total Delay	14.3	6.3	28.4
Queue Length 50th (m)	99.8	21.7	12.8
Queue Length 95th (m)	114.6	25.9	25.1
Internal Link Dist (m)	106.7	137.7	43.8
Turn Bay Length (m)			
Base Capacity (vph)	3837	1969	442
Starvation Cap Reductn	0	0	223
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.78	0.55	0.44

Intersection Summary



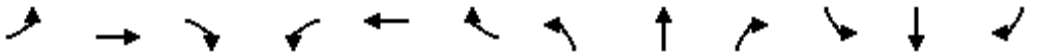
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2814	125	4	1065	57	38
Future Volume (vph)	2814	125	4	1065	57	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	
Lane Util. Factor	0.86			0.95	1.00	
Frt	0.99			1.00	0.95	
Flt Protected	1.00			1.00	0.97	
Satd. Flow (prot)	6155			3421	1653	
Flt Permitted	1.00			0.93	0.97	
Satd. Flow (perm)	6155			3165	1653	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	2871	128	4	1087	58	39
RTOR Reduction (vph)	7	0	0	0	1	0
Lane Group Flow (vph)	2992	0	0	1091	96	0
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Actuated Green, G (s)	56.0			56.0	24.0	
Effective Green, g (s)	56.0			56.0	24.0	
Actuated g/C Ratio	0.62			0.62	0.27	
Clearance Time (s)	5.0			5.0	5.0	
Lane Grp Cap (vph)	3829			1969	440	
v/s Ratio Prot	c0.49				c0.06	
v/s Ratio Perm				0.34		
v/c Ratio	0.78			0.55	0.22	
Uniform Delay, d1	12.5			9.8	25.7	
Progression Factor	1.00			0.52	1.00	
Incremental Delay, d2	1.7			1.0	1.1	
Delay (s)	14.2			6.1	26.8	
Level of Service	B			A	C	
Approach Delay (s)	14.2			6.1	26.8	
Approach LOS	B			A	C	

Intersection Summary			
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	3101	1004	43	100	208	48	72
v/c Ratio	0.89	0.48	0.05	0.28	0.44	0.18	0.15
Control Delay	9.4	10.6	2.4	28.1	30.1	26.9	21.9
Queue Delay	0.0	51.9	4.9	1.5	11.3	0.0	0.0
Total Delay	9.4	62.5	7.3	29.7	41.4	26.9	21.9
Queue Length 50th (m)	29.5	45.7	0.0	13.5	29.4	6.3	7.8
Queue Length 95th (m)	31.6	59.7	3.6	26.8	49.3	15.2	17.8
Internal Link Dist (m)	137.7	14.2			41.6		59.5
Turn Bay Length (m)							
Base Capacity (vph)	3468	2090	952	355	474	270	495
Starvation Cap Reductn	0	1369	859	139	234	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	1.39	0.46	0.46	0.87	0.18	0.15

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	2755	87	0	924	40	92	125	66	44	54	12
Future Volume (vph)	10	2755	87	0	924	40	92	125	66	44	54	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		0.86			0.95	1.00	1.00	1.00		1.00	1.00	
Frt		1.00			1.00	0.85	1.00	0.95		1.00	0.97	
Flt Protected		1.00			1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		6165			3421	1531	1711	1707		1711	1752	
Flt Permitted		0.93			1.00	1.00	0.71	1.00		0.54	1.00	
Satd. Flow (perm)		5720			3421	1531	1279	1707		972	1752	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	2995	95	0	1004	43	100	136	72	48	59	13
RTOR Reduction (vph)	0	5	0	0	0	17	0	1	0	0	9	0
Lane Group Flow (vph)	0	3096	0	0	1004	26	100	207	0	48	63	0
Turn Type	Perm	NA			NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			5 6			4			8	
Permitted Phases	2					5 6	4			8		
Actuated Green, G (s)		54.5			54.5	54.5	25.0	25.0		25.0	25.0	
Effective Green, g (s)		54.5			54.5	54.5	25.0	25.0		25.0	25.0	
Actuated g/C Ratio		0.61			0.61	0.61	0.28	0.28		0.28	0.28	
Clearance Time (s)		5.5					5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		3463			2071	927	355	474		270	486	
v/s Ratio Prot					0.29			c0.12			0.04	
v/s Ratio Perm		c0.54				0.02	0.08			0.05		
v/c Ratio		0.89			0.48	0.03	0.28	0.44		0.18	0.13	
Uniform Delay, d1		15.3			9.9	7.1	25.5	26.7		24.7	24.4	
Progression Factor		0.41			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.8			0.8	0.1	2.0	2.9		1.4	0.6	
Delay (s)		9.0			10.7	7.2	27.4	29.6		26.1	24.9	
Level of Service		A			B	A	C	C		C	C	
Approach Delay (s)		9.0			10.6			28.9			25.4	
Approach LOS		A			B			C			C	

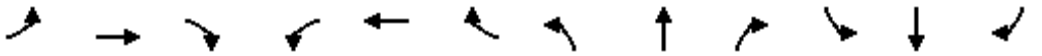
Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



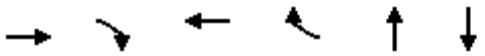
Lane Group	EBT	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	204	155	45	50	15	135	20
v/c Ratio	0.20	0.15	0.05	0.11	0.04	0.42	0.05
Control Delay	6.5	6.2	2.1	19.9	3.6	25.5	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.5	0.0
Total Delay	6.5	6.2	2.1	19.9	3.6	26.0	5.1
Queue Length 50th (m)	9.8	7.2	0.0	4.7	0.0	13.7	0.0
Queue Length 95th (m)	18.0	14.0	3.1	12.0	2.0	27.9	3.2
Internal Link Dist (m)	115.6	76.8		33.0		43.8	
Turn Bay Length (m)			5.0		5.0		5.0
Base Capacity (vph)	1028	1015	936	436	402	320	402
Starvation Cap Reductn	0	0	0	0	0	38	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.15	0.05	0.11	0.04	0.48	0.05

Intersection Summary



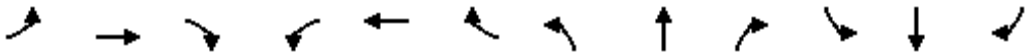
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	160	0	25	118	41	3	43	14	105	19	18
Future Volume (vph)	28	160	0	25	118	41	3	43	14	105	19	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0	5.0		5.0	5.0
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00		1.00	1.00
Frt		1.00			1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected		0.99			0.99	1.00		1.00	1.00		0.96	1.00
Satd. Flow (prot)		1788			1785	1531		1795	1531		1728	1531
Flt Permitted		0.95			0.94	1.00		0.98	1.00		0.72	1.00
Satd. Flow (perm)		1715			1692	1531		1774	1531		1304	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)	30	174	0	27	128	45	3	47	15	114	21	20
RTOR Reduction (vph)	0	0	0	0	0	18	0	0	11	0	0	15
Lane Group Flow (vph)	0	204	0	0	155	27	0	50	4	0	135	5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)		39.0			39.0	39.0		16.0	16.0		16.0	16.0
Effective Green, g (s)		39.0			39.0	39.0		16.0	16.0		16.0	16.0
Actuated g/C Ratio		0.60			0.60	0.60		0.25	0.25		0.25	0.25
Clearance Time (s)		5.0			5.0	5.0		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		1029			1015	918		436	376		320	376
v/s Ratio Prot												
v/s Ratio Perm		c0.12			0.09	0.02		0.03	0.00		c0.10	0.00
v/c Ratio		0.20			0.15	0.03		0.11	0.01		0.42	0.01
Uniform Delay, d1		5.9			5.7	5.3		19.0	18.5		20.6	18.5
Progression Factor		1.00			1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.4			0.3	0.1		0.5	0.0		4.0	0.1
Delay (s)		6.3			6.0	5.4		19.5	18.6		24.7	18.6
Level of Service		A			A	A		B	B		C	B
Approach Delay (s)		6.3			5.9			19.3			23.9	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	EBR	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	330	13	182	84	166	156
v/c Ratio	0.43	0.02	0.22	0.11	0.26	0.32
Control Delay	12.8	1.3	10.3	2.8	15.2	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.2
Total Delay	12.8	1.3	10.3	2.8	15.2	18.2
Queue Length 50th (m)	23.9	0.0	11.6	0.0	12.8	12.7
Queue Length 95th (m)	41.6	1.0	21.8	5.6	25.3	25.9
Internal Link Dist (m)	37.5		93.3		33.2	41.6
Turn Bay Length (m)		12.0		36.0		
Base Capacity (vph)	769	770	840	796	627	482
Starvation Cap Reductn	0	0	0	0	0	173
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.02	0.22	0.11	0.26	0.50

Intersection Summary

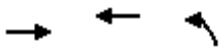


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	220	12	19	148	77	6	126	20	84	49	11
Future Volume (vph)	84	220	12	19	148	77	6	126	20	84	49	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		1.00	0.85		0.98			0.99	
Flt Protected		0.99	1.00		0.99	1.00		1.00			0.97	
Satd. Flow (prot)		1776	1531		1790	1531		1765			1731	
Flt Permitted		0.87	1.00		0.95	1.00		0.99			0.76	
Satd. Flow (perm)		1564	1531		1707	1531		1749			1351	
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)	91	239	13	21	161	84	7	137	22	91	53	12
RTOR Reduction (vph)	0	0	7	0	0	43	0	8	0	0	5	0
Lane Group Flow (vph)	0	330	6	0	182	41	0	158	0	0	151	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6		6	2		2	4			8		
Actuated Green, G (s)		32.0	32.0		32.0	32.0		23.0			23.0	
Effective Green, g (s)		32.0	32.0		32.0	32.0		23.0			23.0	
Actuated g/C Ratio		0.49	0.49		0.49	0.49		0.35			0.35	
Clearance Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Lane Grp Cap (vph)		769	753		840	753		618			478	
v/s Ratio Prot												
v/s Ratio Perm		c0.21	0.00		0.11	0.03		0.09			c0.11	
v/c Ratio		0.43	0.01		0.22	0.05		0.26			0.32	
Uniform Delay, d1		10.6	8.4		9.4	8.6		14.9			15.3	
Progression Factor		1.00	1.00		1.00	1.00		1.00			1.00	
Incremental Delay, d2		1.7	0.0		0.6	0.1		1.0			1.7	
Delay (s)		12.4	8.4		10.0	8.7		15.9			17.0	
Level of Service		B	A		A	A		B			B	
Approach Delay (s)		12.2			9.6			15.9			17.0	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Queues
1: Bidwell & W Georgia

02/12/2019



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	1573	2791	154
v/c Ratio	0.52	0.91	0.32
Control Delay	10.0	17.9	19.7
Queue Delay	0.0	45.5	2.3
Total Delay	10.0	63.5	22.0
Queue Length 50th (m)	49.0	181.5	13.9
Queue Length 95th (m)	59.7	199.7	29.9
Internal Link Dist (m)	106.7	137.8	43.9
Turn Bay Length (m)			
Base Capacity (vph)	3030	3058	474
Starvation Cap Reductn	0	589	210
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.52	1.13	0.58

Intersection Summary



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1378	147	0	2707	74	76
Future Volume (vph)	1378	147	0	2707	74	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	
Lane Util. Factor	0.91			0.91	1.00	
Frt	0.99			1.00	0.93	
Flt Protected	1.00			1.00	0.98	
Satd. Flow (prot)	4845			4916	1637	
Flt Permitted	1.00			1.00	0.98	
Satd. Flow (perm)	4845			4916	1637	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1421	152	0	2791	76	78
RTOR Reduction (vph)	14	0	0	0	37	0
Lane Group Flow (vph)	1559	0	0	2791	117	0
Turn Type	NA			NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Actuated Green, G (s)	56.0			56.0	24.0	
Effective Green, g (s)	56.0			56.0	24.0	
Actuated g/C Ratio	0.62			0.62	0.27	
Clearance Time (s)	5.0			5.0	5.0	
Lane Grp Cap (vph)	3014			3058	436	
v/s Ratio Prot	0.32			c0.57	c0.07	
v/s Ratio Perm						
v/c Ratio	0.52			0.91	0.27	
Uniform Delay, d1	9.5			14.9	26.1	
Progression Factor	1.00			0.96	1.00	
Incremental Delay, d2	0.6			3.1	1.5	
Delay (s)	10.1			17.3	27.6	
Level of Service	B			B	C	
Approach Delay (s)	10.1			17.3	27.6	
Approach LOS	B			B	C	

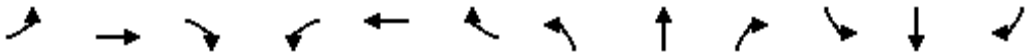
Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1588	2484	9	130	103	67	351
v/c Ratio	0.54	0.83	0.01	0.83	0.21	0.19	0.79
Control Delay	10.3	16.9	1.0	72.5	17.8	26.7	44.3
Queue Delay	0.0	47.5	1.9	0.0	1.3	0.0	0.0
Total Delay	10.3	64.4	2.9	72.5	19.1	26.7	44.3
Queue Length 50th (m)	44.2	112.6	0.0	21.1	8.6	8.8	55.4
Queue Length 95th (m)	55.9	134.9	0.8	#52.9	20.7	19.2	#97.3
Internal Link Dist (m)	137.8	14.1			41.5		59.5
Turn Bay Length (m)							
Base Capacity (vph)	2963	3004	944	156	497	345	445
Starvation Cap Reductn	0	1348	889	0	249	0	0
Spillback Cap Reductn	0	826	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	1.50	0.16	0.83	0.42	0.19	0.79

Intersection Summary

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



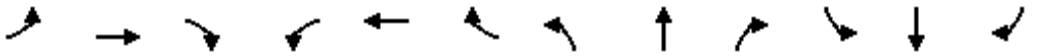
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1402	59	0	2285	8	120	57	38	62	76	247
Future Volume (vph)	0	1402	59	0	2285	8	120	57	38	62	76	247
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		0.91			0.91	1.00	1.00	1.00		1.00	1.00	
Frt		0.99			1.00	0.85	1.00	0.94		1.00	0.89	
Flt Protected		1.00			1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		4886			4916	1531	1711	1693		1711	1594	
Flt Permitted		1.00			1.00	1.00	0.31	1.00		0.69	1.00	
Satd. Flow (perm)		4886			4916	1531	565	1693		1243	1594	
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	1524	64	0	2484	9	130	62	41	67	83	268
RTOR Reduction (vph)	0	5	0	0	0	4	0	27	0	0	3	0
Lane Group Flow (vph)	0	1583	0	0	2484	5	130	76	0	67	348	0
Turn Type		NA			NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			5 6			4			8	
Permitted Phases						5 6	4			8		
Actuated Green, G (s)		54.5			54.5	54.5	25.0	25.0		25.0	25.0	
Effective Green, g (s)		54.5			54.5	54.5	25.0	25.0		25.0	25.0	
Actuated g/C Ratio		0.61			0.61	0.61	0.28	0.28		0.28	0.28	
Clearance Time (s)		5.5					5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		2958			2976	927	156	470		345	442	
v/s Ratio Prot		0.32			c0.51			0.05			0.22	
v/s Ratio Perm						0.00	c0.23			0.05		
v/c Ratio		0.54			0.83	0.01	0.83	0.16		0.19	0.79	
Uniform Delay, d1		10.4			14.2	7.0	30.5	24.6		24.8	30.0	
Progression Factor		0.93			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.6			2.9	0.0	38.2	0.7		1.3	13.3	
Delay (s)		10.3			17.1	7.0	68.8	25.3		26.1	43.3	
Level of Service		B			B	A	E	C		C	D	
Approach Delay (s)		10.3			17.1			49.6			40.5	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



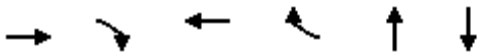
Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	80	5	264	95	118	52	149	36
v/c Ratio	0.08	0.01	0.26	0.10	0.31	0.12	0.47	0.09
Control Delay	5.8	0.0	6.9	2.1	22.7	7.3	26.8	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0
Total Delay	5.8	0.0	6.9	2.1	22.7	7.3	27.4	8.6
Queue Length 50th (m)	3.5	0.0	13.2	0.5	11.6	0.0	15.3	0.2
Queue Length 95th (m)	8.0	0.0	23.3	5.0	24.0	7.1	30.8	6.1
Internal Link Dist (m)	115.6		59.7		32.9		43.9	
Turn Bay Length (m)		5.0		5.0		5.0		5.0
Base Capacity (vph)	1011	932	1032	951	383	416	315	402
Starvation Cap Reductn	0	0	0	0	0	0	33	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.01	0.26	0.10	0.31	0.13	0.53	0.09

Intersection Summary



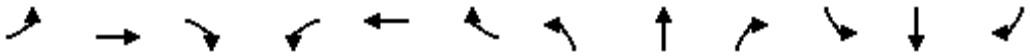
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	59	5	37	206	87	36	73	48	99	38	33
Future Volume (vph)	15	59	5	37	206	87	36	73	48	99	38	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected		0.99	1.00		0.99	1.00		0.98	1.00		0.97	1.00
Satd. Flow (prot)		1783	1531		1787	1531		1771	1531		1738	1531
Flt Permitted		0.94	1.00		0.96	1.00		0.86	1.00		0.71	1.00
Satd. Flow (perm)		1686	1531		1721	1531		1556	1531		1281	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)	16	64	5	40	224	95	39	79	52	108	41	36
RTOR Reduction (vph)	0	0	2	0	0	33	0	0	39	0	0	26
Lane Group Flow (vph)	0	80	3	0	264	62	0	118	13	0	149	10
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)		39.0	39.0		39.0	39.0		16.0	16.0		16.0	16.0
Effective Green, g (s)		39.0	39.0		39.0	39.0		16.0	16.0		16.0	16.0
Actuated g/C Ratio		0.60	0.60		0.60	0.60		0.25	0.25		0.25	0.25
Clearance Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		1011	918		1032	918		383	376		315	376
v/s Ratio Prot												
v/s Ratio Perm		0.05	0.00		c0.15	0.04		0.08	0.01		c0.12	0.01
v/c Ratio		0.08	0.00		0.26	0.07		0.31	0.03		0.47	0.03
Uniform Delay, d1		5.5	5.2		6.1	5.4		20.0	18.6		20.9	18.6
Progression Factor		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.2	0.0		0.6	0.1		2.1	0.2		5.0	0.1
Delay (s)		5.6	5.2		6.7	5.6		22.1	18.8		25.9	18.7
Level of Service		A	A		A	A		C	B		C	B
Approach Delay (s)		5.6			6.4			21.1			24.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	EBR	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	180	10	339	122	148	129
v/c Ratio	0.25	0.01	0.42	0.17	0.22	0.23
Control Delay	11.8	0.8	13.7	6.4	12.0	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.8
Total Delay	11.8	0.8	13.7	6.4	12.0	13.1
Queue Length 50th (m)	12.5	0.0	25.7	3.9	9.4	8.1
Queue Length 95th (m)	23.7	0.6	43.8	11.7	20.0	18.3
Internal Link Dist (m)	54.6		93.3		33.1	41.5
Turn Bay Length (m)		5.0		5.0		
Base Capacity (vph)	727	724	808	739	673	572
Starvation Cap Reductn	0	0	0	0	0	249
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.01	0.42	0.17	0.22	0.40

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	127	9	23	289	112	11	94	31	54	40	25
Future Volume (vph)	39	127	9	23	289	112	11	94	31	54	40	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		1.00	0.85		0.97			0.97	
Flt Protected		0.99	1.00		1.00	1.00		1.00			0.98	
Satd. Flow (prot)		1780	1531		1794	1531		1738			1711	
Flt Permitted		0.88	1.00		0.97	1.00		0.98			0.83	
Satd. Flow (perm)		1577	1531		1753	1531		1707			1448	
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)	42	138	10	25	314	122	12	102	34	59	43	27
RTOR Reduction (vph)	0	0	5	0	0	33	0	17	0	0	15	0
Lane Group Flow (vph)	0	180	5	0	339	89	0	131	0	0	114	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6		6	2		2	4			8		
Actuated Green, G (s)		30.0	30.0		30.0	30.0		25.0			25.0	
Effective Green, g (s)		30.0	30.0		30.0	30.0		25.0			25.0	
Actuated g/C Ratio		0.46	0.46		0.46	0.46		0.38			0.38	
Clearance Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Lane Grp Cap (vph)		727	706		809	706		656			556	
v/s Ratio Prot												
v/s Ratio Perm		0.11	0.00		c0.19	0.06		0.08			c0.08	
v/c Ratio		0.25	0.01		0.42	0.13		0.20			0.21	
Uniform Delay, d1		10.6	9.5		11.7	10.0		13.3			13.4	
Progression Factor		1.00	1.00		1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.8	0.0		1.6	0.4		0.7			0.8	
Delay (s)		11.5	9.5		13.3	10.4		14.0			14.2	
Level of Service		B	A		B	B		B			B	
Approach Delay (s)		11.3			12.5			14.0			14.2	
Approach LOS		B			B			B			B	

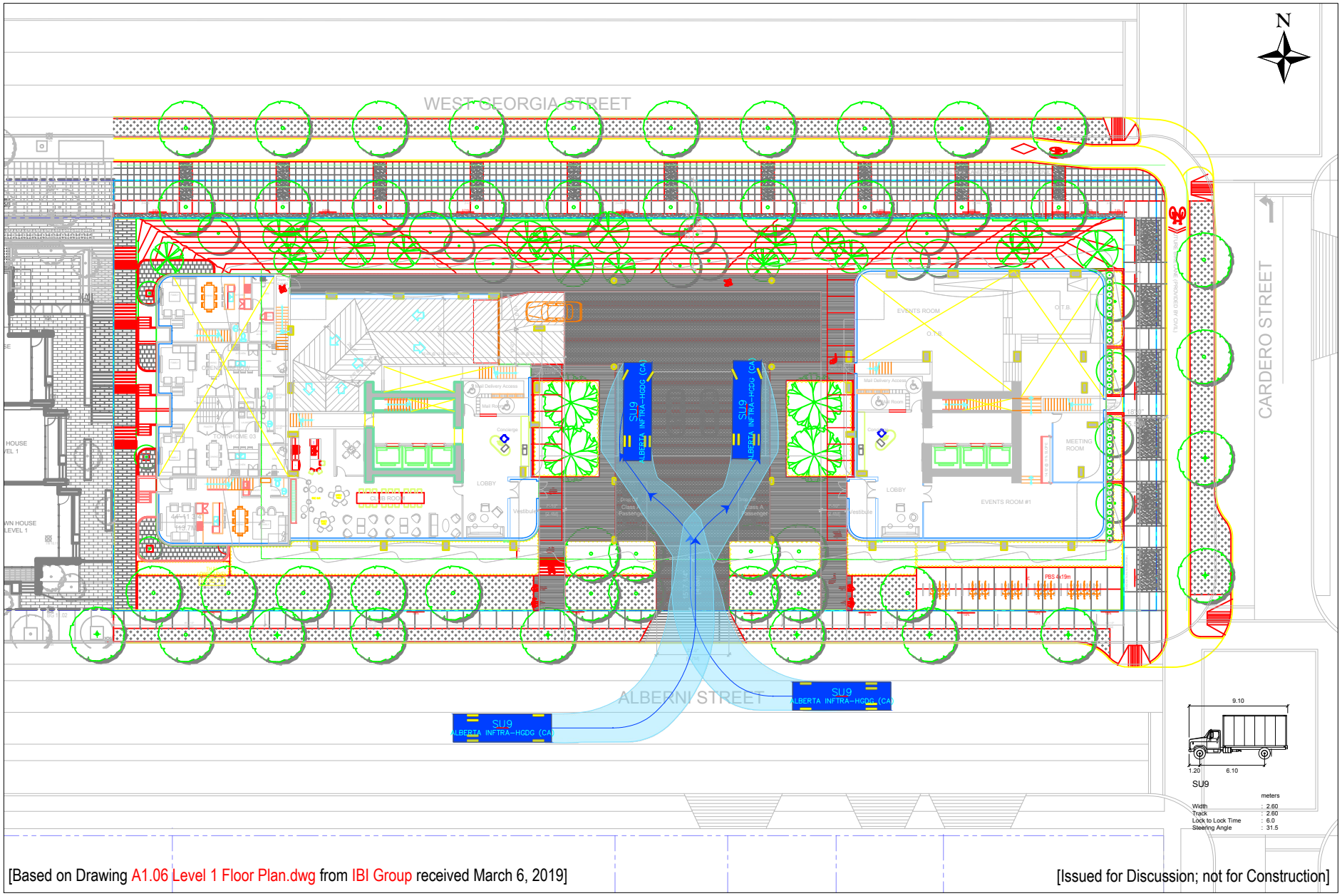
Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX B

AutoTurn Swept Paths

S:\PROJECTS\CC\04-18-0226 1616 West Georgia Street\4.0 Analysis & Design\ACAD\20190306_04-18-0226_AT_V03-4.dwg
2019/03/07 17:30, Plotted by Nicole He



[Based on Drawing A1.06 Level 1 Floor Plan.dwg from IBI Group received March 6, 2019]

[Issued for Discussion; not for Construction]

Exhibit B.1

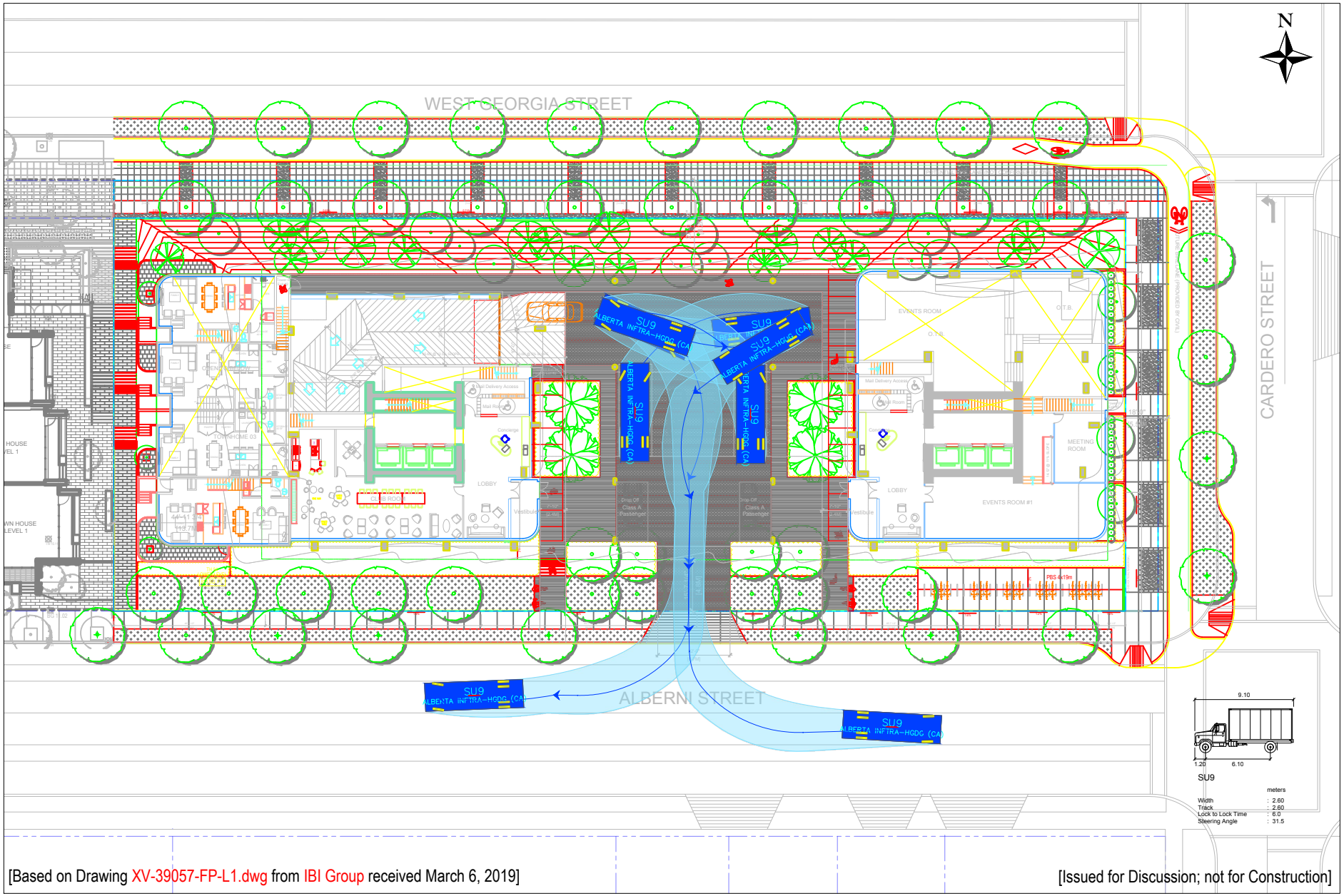
SU9 Loading - Inbound

1616 West Georgia Street

04-18-0226 March 2019 Scale 1:500 on Letter Prepared by NH

bunt & associates

S:\PROJECTS\CC\04-18-0226 1616 West Georgia Street\4.0 Analysis & Design\ACAD\20190306_04-18-0226_AT_V03-4.dwg
2019/03/07 17:31, Plotted by Nicole He



[Based on Drawing XV-39057-FP-L1.dwg from IBI Group received March 6, 2019]

[Issued for Discussion; not for Construction]

Exhibit B.2

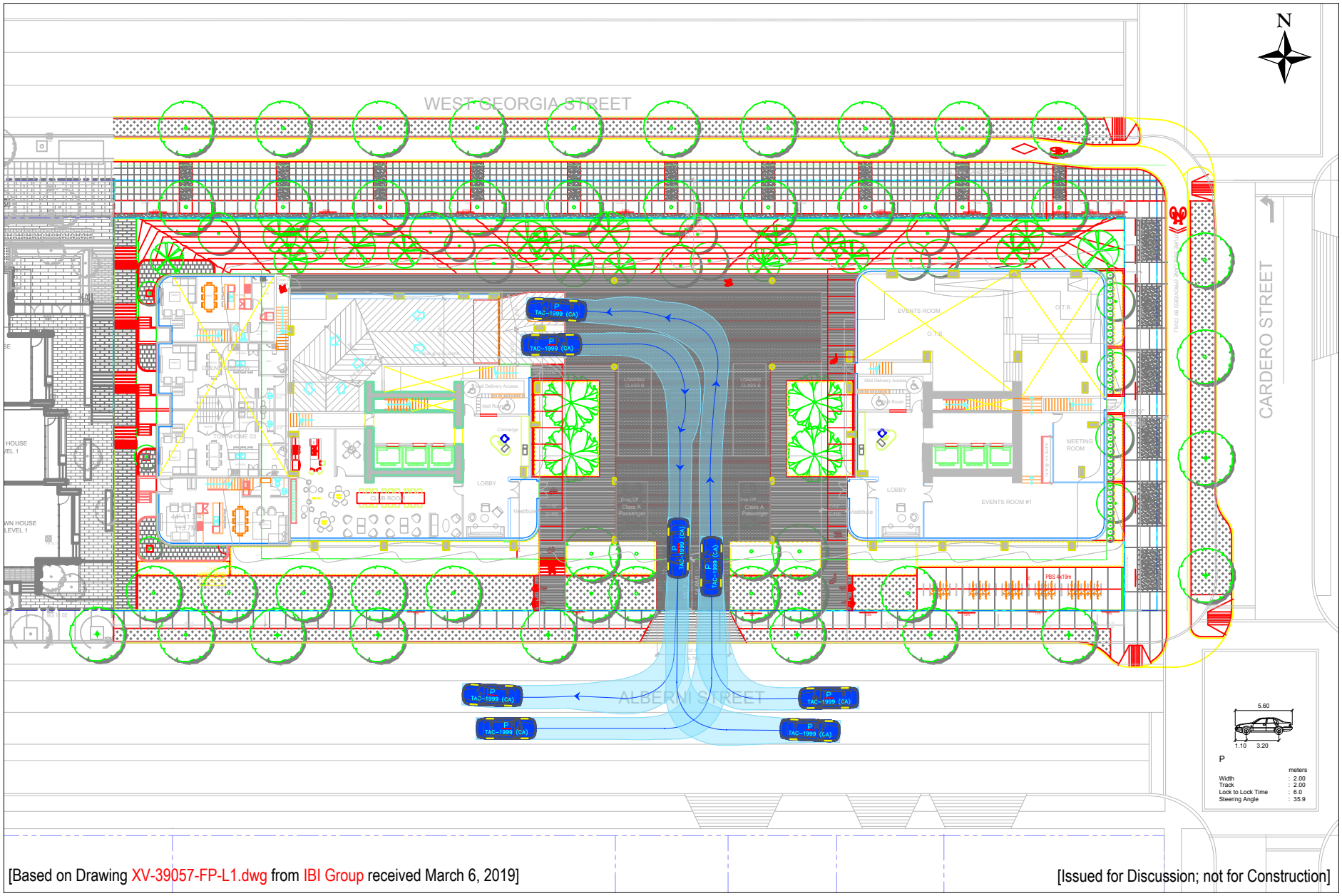
SU9 Loading - Outbound

1616 West Georgia Street

04-18-0226 March 2019 Scale 1:500 on Letter Prepared by NH

bunt & associates

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2019/03/07 17:31, Plotted by Nicole He



[Based on Drawing XV-39057-FP-L1.dwg from IBI Group received March 6, 2019]

[Issued for Discussion; not for Construction]

Exhibit B.3

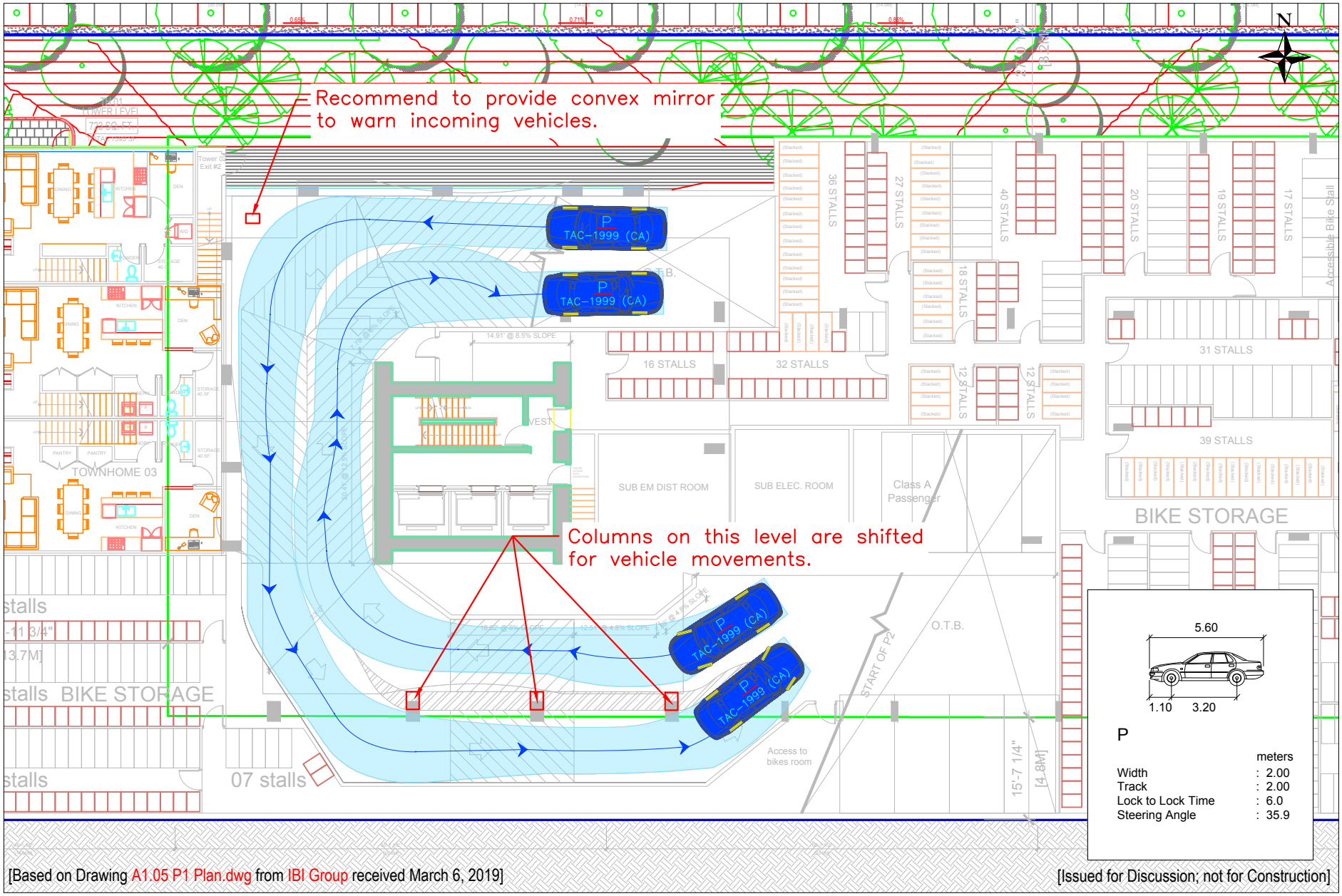
Passenger Car Access - Level 1

1616 West Georgia Street

04-18-0226 March 2019 Scale 1:500 on Letter Prepared by NH

bunt & associates

S:\PROJECTS\CC\04-18-0226 1616 West Georgia Street\4.0 Analysis & Design\ACAD\20190306_04-18-0226_AT_V03-4.dwg
2019/03/07 17:31, Plotted by Nicole He



[Based on Drawing A1.05 P1 Plan.dwg from IBI Group received March 6, 2019]

[Issued for Discussion; not for Construction]

Exhibit B.4

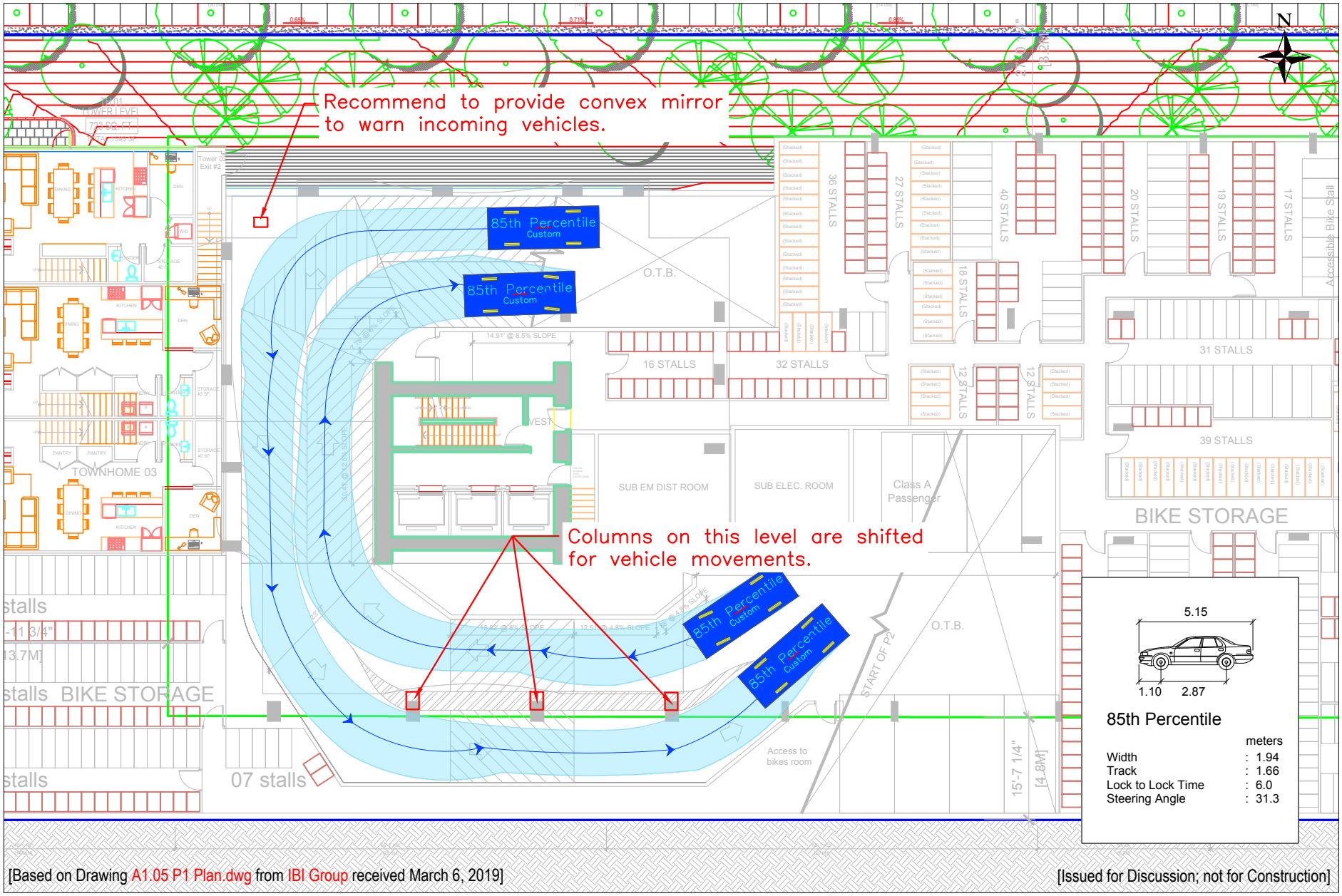
TAC Passenger Car Access - Level P1

1616 West Georgia Street

04-18-0226 March 2019 Scale 1:250 on Letter Prepared by NH

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S:\PROJECTS\CC\04-18-0226 1616 West Georgia Street\4.0 Analysis & Design\ACAD\20190306_04-18-0226_AT_V03-4.dwg
2019/03/07 17:31, Plotted by Nicole He



[Based on Drawing A1.05 P1 Plan.dwg from IBI Group received March 6, 2019]

[Issued for Discussion; not for Construction]

Exhibit B.5

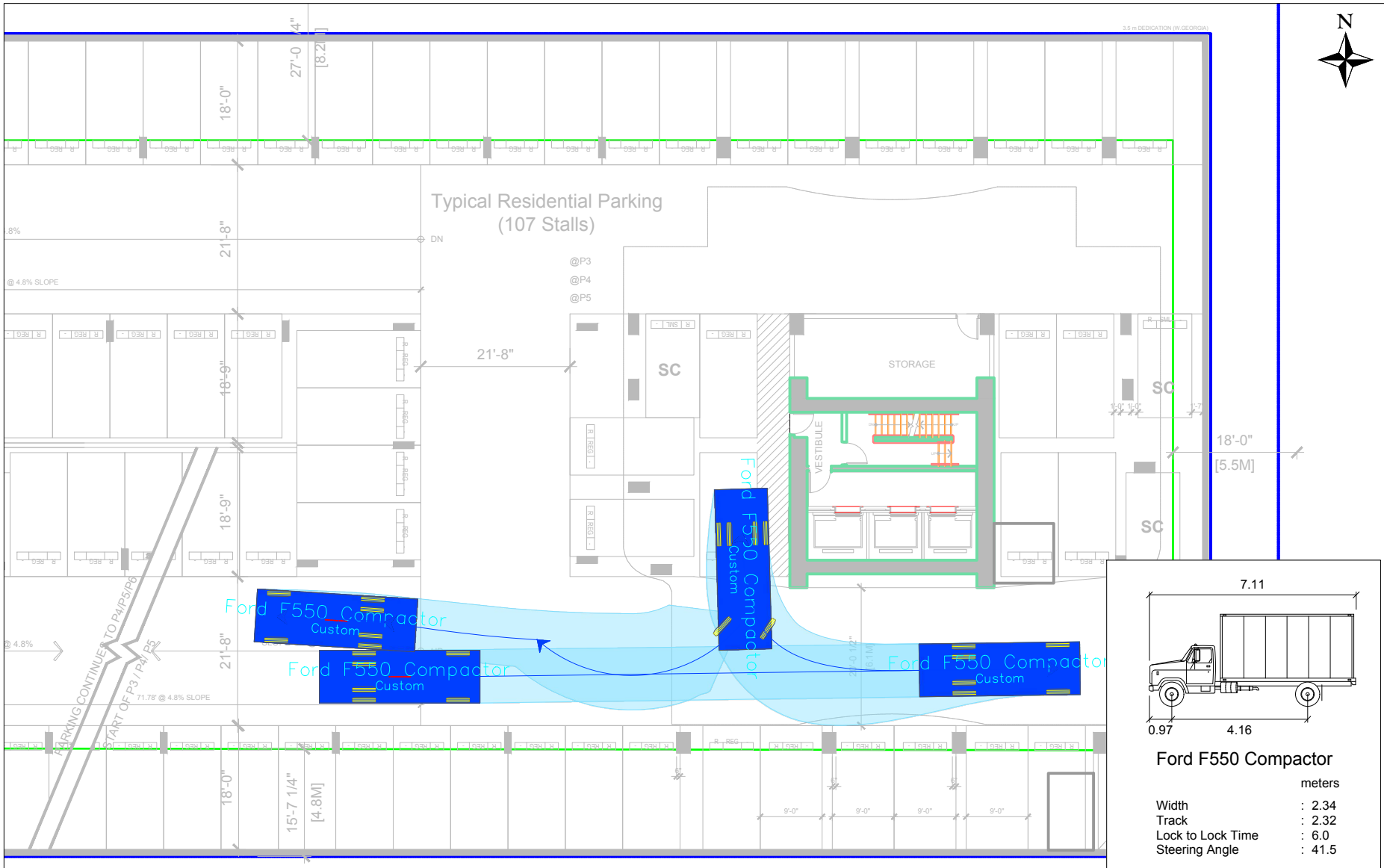
Passenger Car (85th Percentile) Access - Level P1

1616 West Georgia Street

04-18-0226 March 2019 Scale 1:250 on Letter Prepared by NH

bunt & associates

S:\PROJECTS\CC\04-18-0226 1616 West Georgia Street\4.0 Analysis & Design\ACAD\20190306_04-18-0226_AT_V03-4.dwg
2019/03/07 17:31, Plotted by Nicole He



Ford F550 Compactor

	meters
Width	: 2.34
Track	: 2.32
Lock to Lock Time	: 6.0
Steering Angle	: 41.5

[Based on Drawing A1.04 P2 Parking Plan.dwg from IBI Group received March 6, 2019]

[Issued for Discussion; not for Construction]

Exhibit B.6

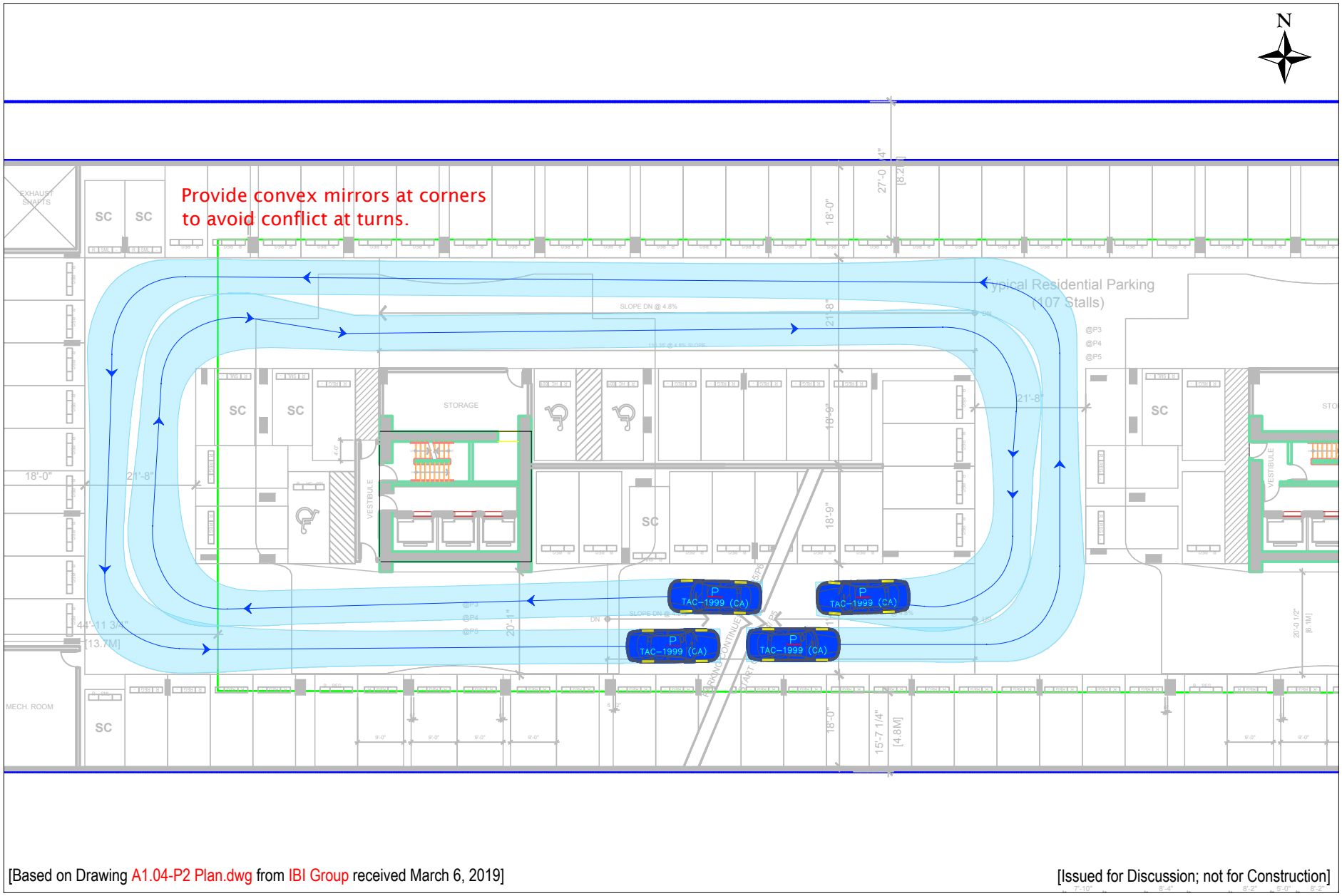
Compactor Truck Access - Level P2

1616 West Georgia Street

04-18-0226 March 2019 Scale 1:250 on Letter Prepared by NH

bunt & associates

S:\PROJECTS\CC\04-18-0226 1616 West Georgia Street\4.0 Analysis & Design\ACAD\20190306_04-18-0226_AT_V03-4.dwg
2019/03/07 17:31, Plotted by Nicole He



[Based on Drawing A1.04-P2 Plan.dwg from IBI Group received March 6, 2019]

[Issued for Discussion; not for Construction]

Exhibit B.7

Passenger Car Access - Level P2 and Below (Typical)

1616 West Georgia Street

04-18-0226 March 2019 Scale Custom on Letter Prepared by NH

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