WATT Consulting Group

HARRIS GREEN VILLAGE

Transportation Impact Assessment

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1.0 INTRODUCTION

Watt Consulting Group was retained by Starlight Developments to undertake a transportation impact assessment (TIA) for the proposed Harris Green Village in the City of Victoria. The proposed development has two locations between Yates Street and View Street. The first location is between Vancouver Street and Quadra Street (900 Yates Street). The second location is on the west side of Cook Street (1045 Yates Street). The proposed development is to contain commercial and residential uses.

This report examines the existing and long-term conditions within the study area, highlights any potential operational issues, and recommends mitigation measures to ensure accommodation of development traffic. A review of the transit, pedestrian, and cycling accommodations is provided.

This study incorporates traffic from other future developments within the region that the City of Victoria's staff identified as potentially impacting the study area. Including the concurrent developments in the assessment ensures that the long-term transportation needs are taken into account.

1.1 Study Area

The proposed development is split into two locations. Site 1 is bounded by Yates Street, Vancouver Street, View Street, and Quadra Street. Site 2 is located between Yates Street and View Street just west of Cook Street. All site accesses are to connect to View Street. There are to be two accesses into Site 1 and one access into Site 2. The following intersections are included in the study area:

- Yates Street / Cook Street;
- Yates Street / Vancouver Street;
- Yates Street / Quadra Street;
- View Street / Cook Street;
- View Street / Vancouver Street;
- View Street / Quadra Street.

See **Figure 1** for the study area and site location.

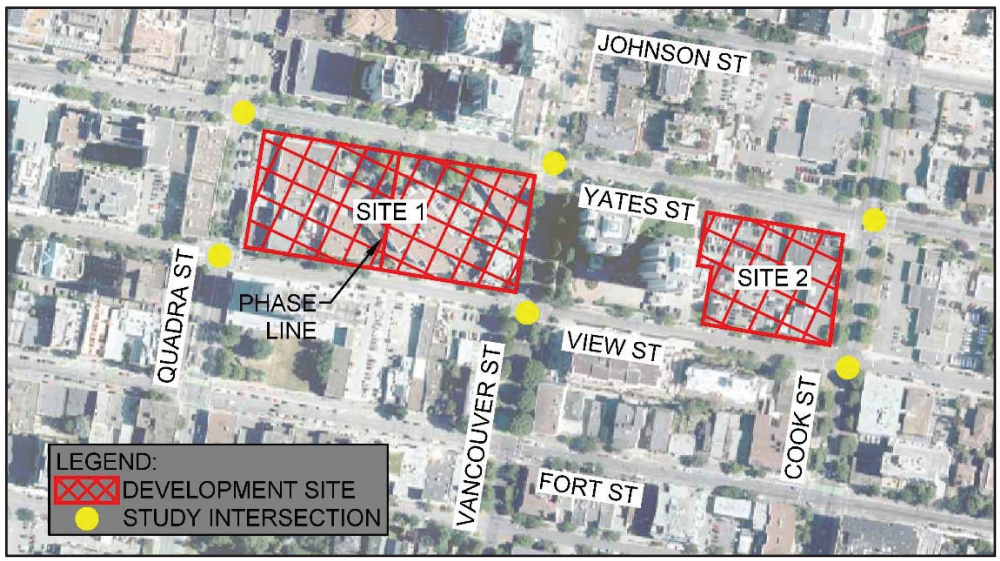


Figure 1: Study Area

2.0 EXISTING CONDITIONS

2.1 Land Use

The existing Harris Green Village development is located on Site 1 and a car dealership is located on Site 2. The proposed sites are currently zoned as Central Area District (Wilson Block R-5), Central Area District (Yates & Quadra Street R-9), Limited Service District (S-1), and Harris Green District (R-48). The surrounding land use is comprised of a mix of multi-family, commercial, and retail.

2.2 Road Network

There are five roadways within the study area as described below:

- **Cook Street** is a two-way, arterial road that runs north / south within the study area. Cook Street has two northbound lanes, two southbound lanes, and auxiliary left turn lanes at the intersections. There is limited on-street parking available along this portion of the road.
- **Yates Street** is a one-way (westbound) secondary arterial road. Yates Street has a bike lane on the north side of the road and two travel lanes transitioning into three travel lanes between Vancouver Street and Cook Street. There is a mix of parallel parking and angled parking on the street. The City has indicated that Yates Street has been identified as part of the future active transportation network which may include buffered or protected bike lanes on the south side of the road.
- **Quadra Street** is a two-way secondary arterial road that runs north / south. The northbound direction has one travel lane for all times except the PM peak hour where on-street parking is restricted to allow two northbound travel lanes. The southbound direction has one travel lane and parallel parking.

- **Vancouver Street** is a two-way, two-lane collector road that runs north / south. There is parallel parking on both sides of the road. Vancouver Street has been identified to be part of the City of Victoria's active transportation network which will change the usage along the road. Vancouver Street will remain a two-way, two-lane road but the cross section will now include buffered / protected bike lanes on either side of the road with some parallel parking on the east side of the road (within the study area).
- **View Street** is two-way, two-lane, local road that runs east / west. There is some parallel parking on both sides of the road.

The posted speed limit is 50 km/h for all roads except Quadra Street which is posted at 40 km/h. There are six intersections within the study area:

- **Yates Street / Quadra Street** is a signalized intersection with three approaches. There is a southbound right turn lane but no other auxiliary lanes at this intersection.
- **Yates Street / Vancouver Street** is a signalized intersection with three approaches. There are no auxiliary lanes at this intersection.
- **Yates Street / Cook Street** is a signalized intersection with three approaches. There is a northbound left lane and a westbound right lane.
- **View Street / Quadra Street** is a four-leg, signalized intersection. There are no auxiliary lanes at this intersection.
- **View Street / Vancouver Street** is a four-leg, signalized intersection. There are no auxiliary lanes at this intersection.
- **View Street / Cook Street** is a four-leg, unsignalized intersection with stop control on the eastbound and westbound approaches. There are left turn lanes for the northbound and southbound approaches.

2.3 Traffic Modelling – Background Information

Analysis of the traffic conditions at the study intersections was undertaken using Synchro Studio (version 10). Synchro / SimTraffic is a two-part traffic modelling software that provides analysis of the traffic conditions based on the Highway Capacity Manual (2010) evaluation methodology. A detailed description is provided in **Appendix A.**

For unsignalized (stop-controlled) intersections, the level of service (LOS) is based on the computed delay on each of the critical movements. LOS A represents minimal delays for minor street traffic movements, and LOS F represents a scenario with an insufficient number of gaps on the major street for minor street motorists to complete their movements without significant delays.

For signalized intersections, the methodology considers the intersection geometry, traffic volumes, the traffic signal phasing / timing plan, and pedestrian volumes. The average delay for each lane group is calculated, as well as the delay for the overall intersection.

2.4 Existing Traffic Conditions

Turning movement counts were provided for the study intersections by the City of Victoria staff. An additional PM peak hour count was conducted at the View Street / Cook Street intersection on January 7, 2020 between 4:00pm and 5:00pm. This study focuses on the weekday PM peak hour of travel which typically accounts for the highest traffic volumes throughout the day; however, a sensitivity analysis was conducted to ensure that the results of the study reflect other peak travel times of the day. See **Figure 2** and **Table 2** for the existing PM peak hour conditions.

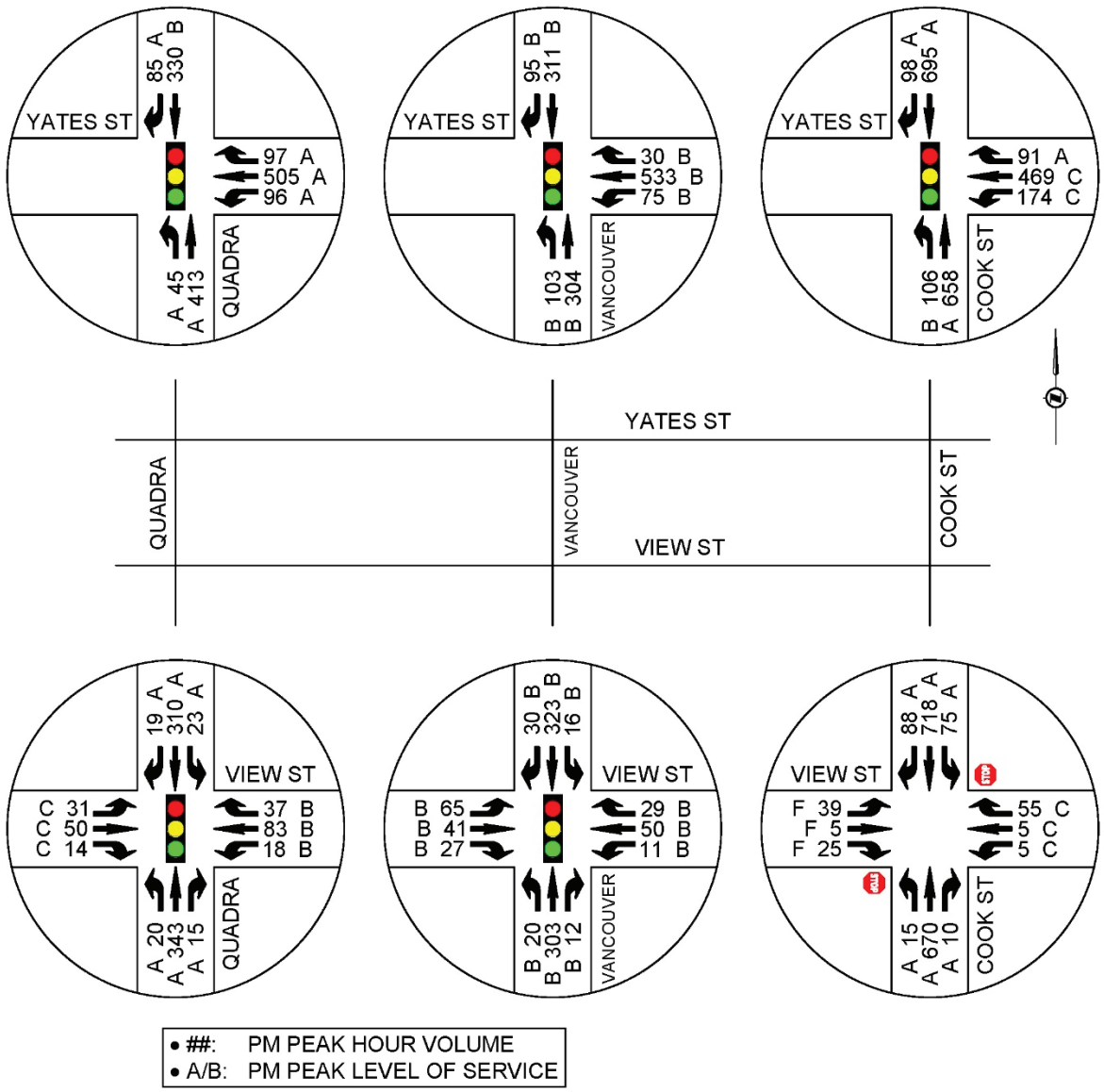


Figure 2: Existing 2019 PM Peak Hour Volumes / LOS

Table 1: 2019 Existing Conditions – PM

Intersection	Movement	LOS	Delay (s)	Queue (m) 95th
Yates St / Cook St	WBL	C	28.0	42.9
	WBT	C	25.5	46.3
	WBR	A	6.1	4.0
	NBL	B	13.8	20.6
	NBT	A	8.0	34.1
	SB T/R	A	8.7	42.4
Yates St / Vancouver St	WB	B	13.8	20.0
	NB	B	10.2	35.8
	SB	B	10.4	52.6
Yates St / Quadra St	WB	A	8.5	19.6
	NB	A	9.9	23.8
	SBT	B	14.5	50.8
	SBR	A	7.5	10.9
View St / Vancouver St	EB	B	13.6	20.4
	WB	B	16.8	20.8
	NB	B	14.5	54.7
	SB	B	12.2	58.0
View St / Quadra St	EB	C	20.3	16.7
	WB	B	15.1	26.3
	NB	A	9.3	23.1
	SB	A	8.2	21.9
View St / Cook St (Stop-Controlled)	EB	F	104.2	32.9
	WB	C	22.2	8.4
	NBL	A	9.7	0.7
	NB T/R	A	0.0	0.0
	SBL	A	9.5	2.1
	SB T/R	A	0.0	0.0

The signalized intersections operate at LOS C or better during the PM peak hour. The stop-controlled View Street / Cook Street intersection operates at LOS C or better for all movements except eastbound which operates at LOS F.

3.0 CONCURRENT AREA DEVELOPMENTS

3.1 Concurrent Development Locations

The City staff identified future developments that would potentially impact the study area for this assessment. The concurrent developments have been included into the background traffic conditions analysis. See **Figure 3** for the locations of the concurrent developments and **Table 2** for the trip generation during the PM peak hour.

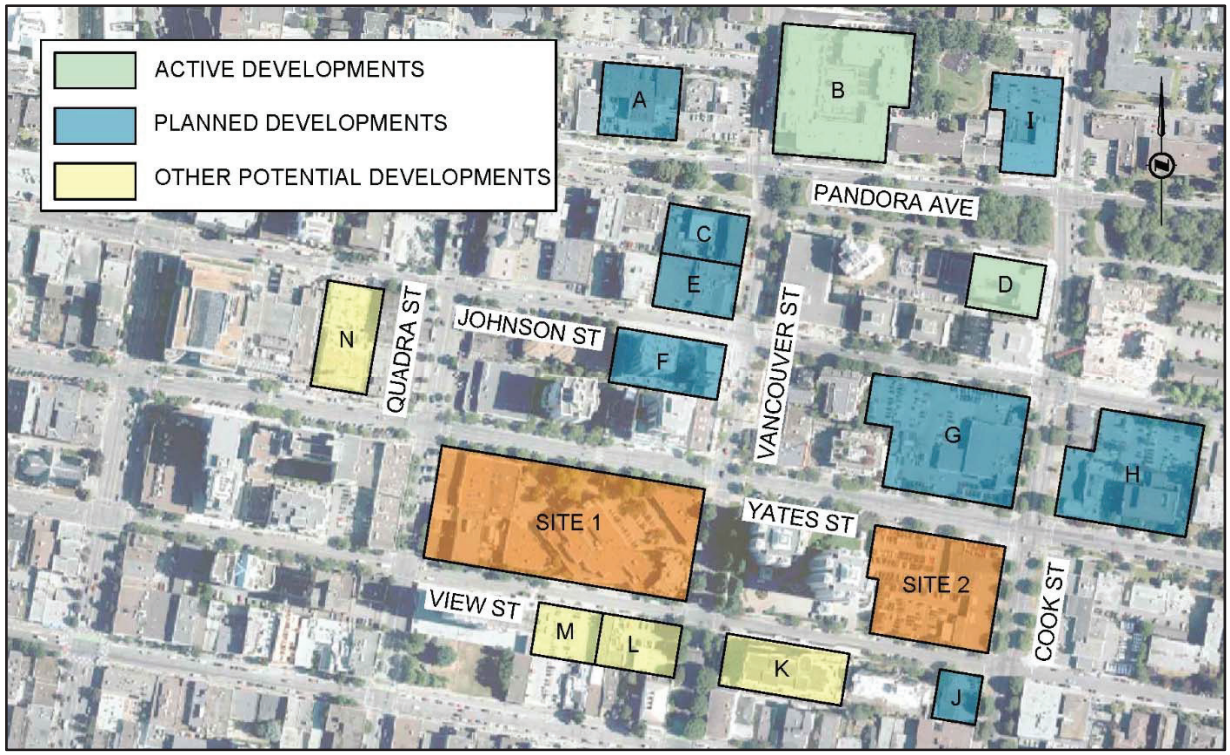


Figure 3: Concurrent Development Locations

3.2 Concurrent Development Trip Generation and Assignment

The concurrent trips were generated using the same methodology outline in **Section 4.3** using the Institute of Transportation Engineer's *Trip Generation Manual (10th Edition)*. The trip assignment was based on existing trip distributions for traffic in the area.

Table 2: Concurrent Development PM Peak Hour Background Net Trips

Development	Land Use	Units	Sq'	Trip Rate	In	Out
A	Proposed Condominium	145	-	0.44 / unit	39	25
	Proposed Retail	-	5700	2.71 / 1000 ft^2	7	8
	Existing Land Use - Empty	-	-	-	0	0
	Net Trips		**-**	**-**	**46**	**33**
B	Proposed Market Rental	195	-	0.44 / unit	52	34
	Proposed Supermarket	-	25000	9.24 /1000 ft^2	118	113
	Proposed Retail	-	25000	2.71 / 1000 ft^2	30	38
	Existing Land Use- In Construction	-	-	-	0	0
	Net Trips	**-**	**-**	**-**	**200**	**185**
C	Proposed Market Rental	166		0.36 / unit	37	23
	Proposed Retail	-	3300	2.71 / 1000 ft^2	4	5
	Existing Land Use - Church	-	2400	0.49 / 1000 ft^2	0	1
	Existing Land Use - General Office	-	5400	1.15 / 1000 ft^2	1	5
	Net Trips	**-**	**-**	**-**	**39**	**23**
D	Proposed Market Rental	134	-	0.36 / unit	29	19
	Proposed Retail	-	6800	2.71 / 1000 ft^2	8	10
	Existing Land Use - In Construction	-	-	-	0	0
	Net Trips	**-**	**-**	**-**	**37**	**29**
E	Proposed Market Rental	93	-	0.36 / unit	20	13
	Proposed Retail	-	6500	2.71 / 1000 ft^2	8	10
	Existing Land Use - Empty	-	-	-	0	0
	Net Trips	**-**	**-**	**-**	**28**	**23**
F	Proposed Condominium	120	-	0.36 / unit	26	17
	Proposed Retail	-	9000	2.71 / 1000 ft^2	11	13
	Existing - Empty	-	-	-	0	0
	Net Trips	**-**	**-**	**-**	**37**	**30**
G	Proposed Market Rental	130	-	0.36 / unit	29	18
	Existing - New Car Dealership	-	16000	2.43 / 1000 ft^2	16	23
	Net Trips	**-**	**-**	**-**	**13**	**-5**
H	Proposed Condominium	202	-	0.36 / unit	45	28
	Proposed Retail	-	14400	2.71 / 1000 ft^2	17	22
	Existing - Restaurant (Quality)	-	775	7.80 / 1000 ft^2	4	2
	Existing - medical office to remain	-	-	-	0	0
	Net Trips	**-**	**-**	**-**	**58**	**48**
I	Multi-Family (Mid Rise)	103	-	0.44 / unit	27	18
	High Turnover Sit Down Restaurant	-	2000	9.77 / 1000 ft^2	12	8
	Specialty Retail	-	9900	2.71 / 1000 ft^2	12	15
	Existing Supermarket	-	10000	9.24 /1000 ft^2	47	45
	Net Trips	**-**	**-**	**-**	**5**	**-5**
J	Proposed Condominium	129	-	0.36 / unit	29	18
	Proposed Retail	-	1790	2.71 / 1000 ft^2	3	4
	Existing - Restaurant (Quality)	-	2000	7.80 / 1000 ft^2	12	6
	Net Trips	**-**	**-**	**-**	**20**	**16**
K	Proposed Condominium	229	-	0.44 / unit	**62**	**39**
	Existing Land Use – Empty	-	-		0	0
L	Proposed Rental Apartment	154	-	0.44 / unit	41	27
	Existing – Restaurant	-	3500	7.80 / 1000 ft^2	18	9
	Net Trips	-	-	-	**23**	**18**
M	Proposed Rental Apartment	255	-	0.36 / unit	**56**	**36**
	Existing Land Use – Parking Lot	-	-	-	-	-
N	Proposed Affordable Housing Condominium	135	-	0.36 / unit	30	19
	Proposed Retail	-	5000	2.71 / 1000 ft^2	7	7
	Existing Land Use – Parking Lot	-	-	-	-	-
	Net Trips	**-**	**-**	**-**	**37**	**26**

4.0 POST DEVELOPMENT

4.1 Proposed Land Use and Site Access

The proposed development is to contain a similar amount of commercial / retail component to the existing development on Site 1. The location of any specific commercial use is subject to change. There will also be multi-family apartment located on both sites. See **Figure 4** for the development site plan.

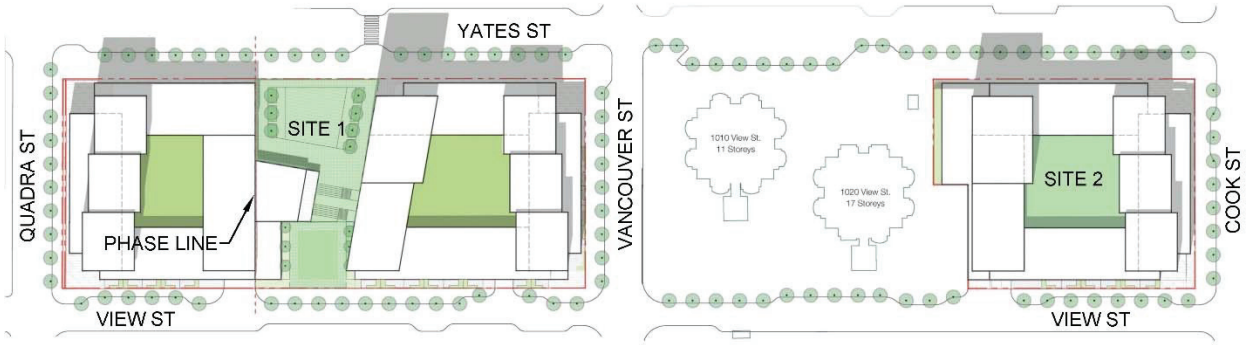


Figure 4: Site Plan.

There are three accesses planned for the development. The City has indicated that all vehicular access should be from View Street. The number of accesses on an arterial road such as Yates Street are typically limited. The main function of arterial roads is to move traffic. In comparison one of the main functions for local roads, such as View Street, is to provide land access. Situating the site accesses on View Street allows the development traffic to integrate more smoothly into the surrounding road network. There are no sight distance deficiencies at any of the proposed accesses. There is well over 150m of sight distance at all of the accesses exceeding the Transportation Association of Canada's (TAC) requirement of 105m for left turns and 95m for right turns.

The location of the accesses also meets the TAC minimum corner clearance requirements for local, collector, and arterial roads of 15m, 20m, and 35m respectively.

4.2 Trip Generation

The amount of existing commercial land use is comparable to the proposed development's commercial land use at approximately 86,800 ft^2. The Harris Green area typically has a lower trip generation rate compared to less urban settings. We captured all the traffic entering and exiting the existing development and compared the traffic volumes to the Institute of Transportation Engineers' (ITE) *Trip Generation Manual (10th Edition)*. The *Trip Generation Manual* provides trip rates for a wide variety of land uses gathered from actual sites across North America over the past 35 years.

Table 3 compares the commercial component of the development between the ITE trip generation and the existing development traffic volumes during the PM peak hour. **Table 4** summarize the trip generation for the residential portion of the proposed development during the PM peak hour of travel.

Table 3: Commercial Trip Generation for the Peak Hour of Travel

Type of Trip Generation	Total Trips	Trips In	Trips Out
ITE Trip Generation Total	595	301	294
Measured Existing Total	521	150	371

The existing traffic volumes have 74 fewer trips during the PM peak hour when compared to the ITE trip generation. The existing count data more accurately reflects this specific site's commercial trip generation; therefore, the existing commercial trip generation is used for this analysis. There is also existing residential land use on the site that was not separated from the commercial totals. The combination of the existing commercial traffic volumes and the existing residential traffic volumes provides a conservative analysis.

Table 4: Residential Trip Generation for the Peak Hour of Travel

Site	ITE Code	Land Use	Trip Rate	Units	Total Trips	Trips In	Trips Out
Site 1 – Phase 1	221	MF – Mid-Rise	0.44	180	80	49	31
	222	MF – High-Rise	0.36	250	90	55	35
Site 1 – Phase 2	221	MF – Mid-Rise	0.44	220	97	59	38
	222	MF – High-Rise	0.36	250	90	55	35
Site 2	221	MF – Mid-Rise	0.44	100	44	27	17
	222	MF – High-Rise	0.36	500	180	110	70
			Residential Total		**581**	**355**	**226**

The trips travelling to / from the proposed development will include new / diverted trips and pass-by trips. The proposed land uses will generate 1,102 total trips (521 commercial and 581 residential) during the PM peak hour of travel.

4.3 Internal and Pass-By Trips

Mixed-use developments will have some internal or shared trips between onsite land uses. For example a resident could visit one of the commercial destinations without getting into a vehicle. Therefore an internal capture rate was applied to the various land uses for these development sites. The internal capture rate is a percentage reduction to the trip generation estimates for individual land uses to account for internal trips on the site. The internal trips are subtracted from the total trips to determine the external trips to / from the site.

The ITE *Trip Generation Manual: User's Guide and Handbook Volume 1* provides the methodology for estimating internal capture rates for mixed-use sites. This methodology utilizes the internal trip percentages for the land uses from ITE and the National Cooperative Highway Research Program (NCHRP) to estimate the number of internal trips between various land uses. The internal capture rate is estimated to be 23.0% (154 internal trips) at Site 1 during the PM peak hour and 20.8% (90 internal trips) at Site 2 during the PM peak hour.

Trip Type	Site 1			Site 2		
	Inbound	Outbound	Total	Inbound	Outbound	Total
Total Trips	309	360	669	196	237	433
Internal Trips	(-) 77	(-) 77	(-) 154	(-) 45	(-) 45	(-) 90
Net External Trips	**232**	**283**	**515**	**151**	**192**	**343**

4.4 Trip Assignment

The trip assignment was based on the existing trip distribution and popular destinations for traffic in the area. See **Figure 5** for the proposed development's PM peak hour trip assignment which are based on the following trip distribution pattern:

- 45% to / from the west;
- 30% to / from the east;
- 20% to / from the north;
- 5% to / from the south.

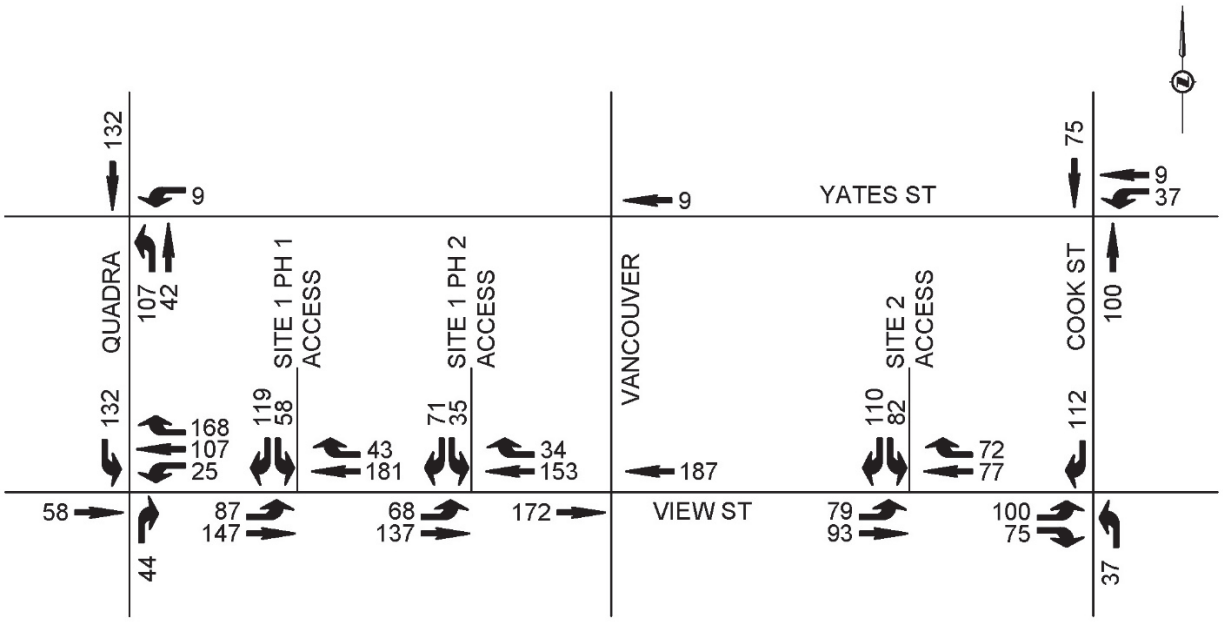


Figure 5: PM Trip Assignment

4.5 Post Development Analysis Results

4.5.1 Analysis Assumptions

The existing traffic volumes were counted for some locations and provided by the City of Victoria for other locations. No growth rate was applied to the background volumes as Victoria's traffic volumes have had a static or negative growth over the past decades. The concurrent development traffic has been included in the background traffic volumes. The existing land use traffic was maintained on the network for the background analysis. However, during the post development analysis the existing sites' traffic was removed from the network.

After the completion of the Vancouver Street bike lane project traffic patterns will likely change in the area. Vehicle traffic travelling northbound and southbound on Vancouver Street will be discouraged / limited. Therefore, 75 percent of the Vancouver Street traffic was split evenly to the adjacent north / south streets (Quadra Street and Cook Street) for the background analysis. The remaining 25 percent of the traffic volumes were maintained on Vancouver Street.

4.5.2 Background Analysis Results

The background traffic conditions were analyzed during the PM peak hour within the study area. **Figure 6** and **Table 5** show the background PM peak hour traffic conditions.

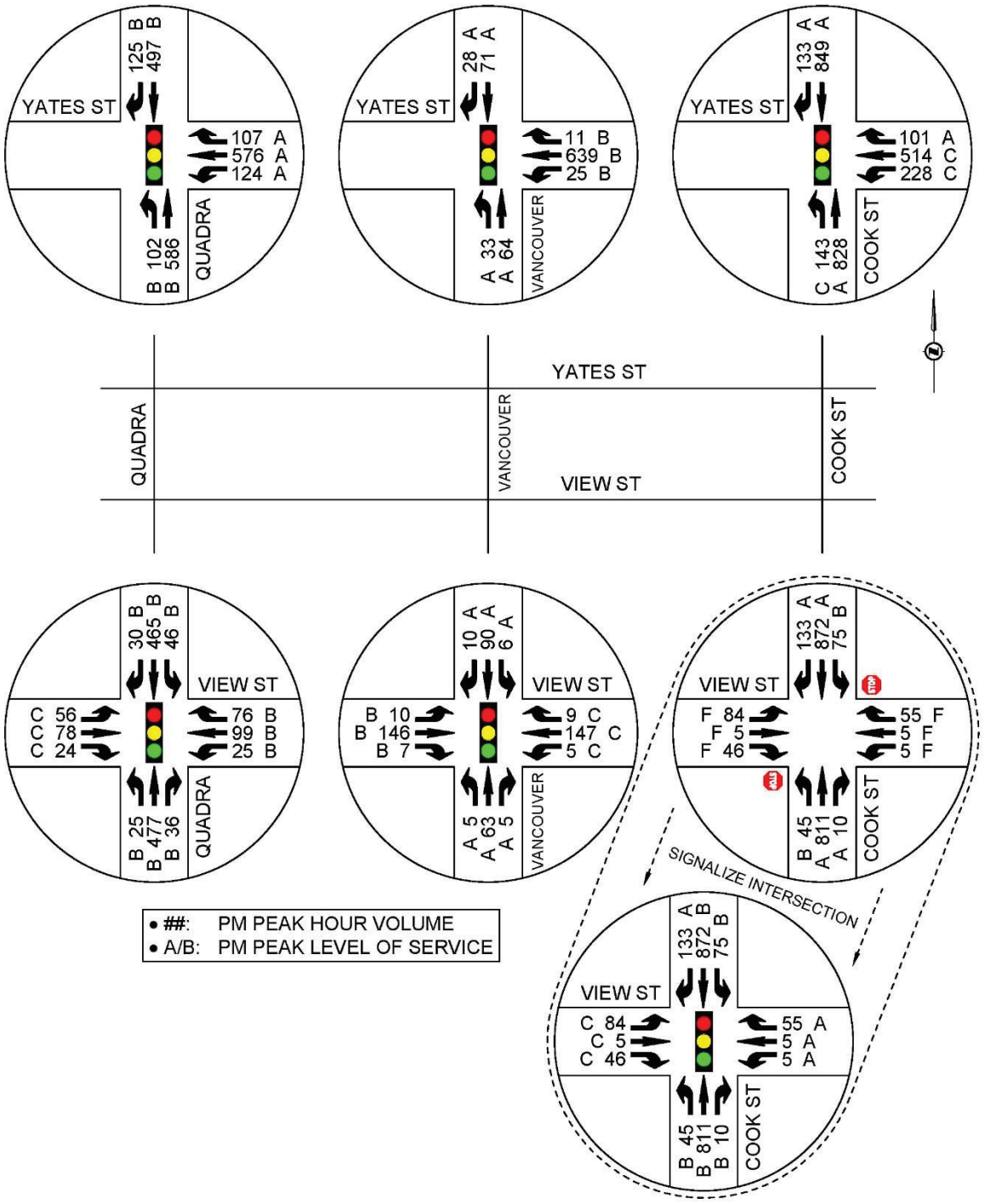


Figure 6: Background Traffic Conditions during the PM Peak Hour

Table 5: Background Traffic Conditions during the PM Peak Hour

Intersection	Movement	LOS	Delay (s)	Queue (m) 95th
Yates St / Cook St	WBL	C	32.1	56.5
	WBT	C	26.3	51.1
	WBR	A	6.1	3.9
	NBL	C	26.2	46.1
	NBT	A	8.8	44.8
	SB T/R	A	9.4	53.6
Yates St / Vancouver St	WB	B	14.4	23.0
	NB	A	6.5	10.3
	SB	A	6.7	12.4
Yates St / Quadra St	WB	A	7.1	16.5
	NB	B	17.6	71.5
	SBT	B	17.9	83.9
	SBR	B	10.5	18.6
View St / Vancouver St	EB	B	13.9	23.1
	WB	C	21.5	36.3
	NB	A	9.6	12.4
	SB	A	8.7	12.5
View St / Quadra St	EB	C	25.6	27.2
	WB	B	17.2	25.4
	NB	B	10.6	34.7
	SB	B	19.9	132.1
View St / Cook St (Stop-Controlled)	EB	F	1783.4	149.1
	WB	F	59.6	21.7
	NBL	B	12.4	2.8
	NB T/R	A	0.0	0.0
	SBL	B	10.2	2.8
	SB T/R	A	0.0	0.0
View St / Cook St (Signalized)	EB	C	32.1	30.4
	WB	A	7.7	5.5
	NBL	B	15.2	9.4
	NB T/R	B	11.5	50.5
	SBL	B	10.4	9.8
	SB T/R	A	9.2	41.2

All the signalized intersections in the study are operate at LOS C or better. The stop-controlled View Street / Cook Street intersection operates at LOS F for the View Street movements. Signalizing View Street / Cook Street allows all movements to operate at LOS A / B except for the eastbound movements which operate at LOS C.

4.5.3 Post Development Analysis Results

The post development traffic conditions were analyzed during the PM peak hour within the study area. **Figure 7** and **Table 6** show the post development PM peak hour traffic conditions.

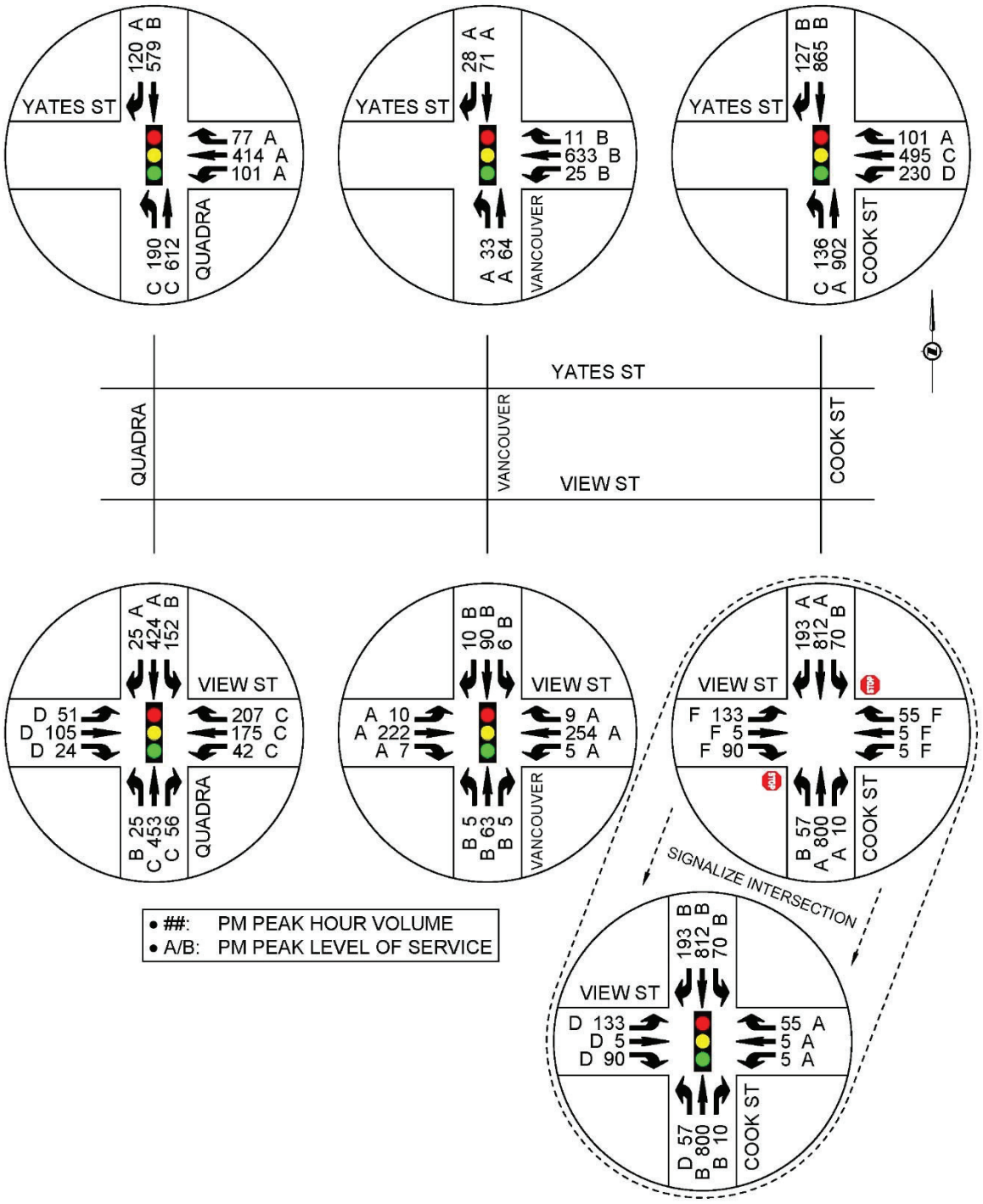


Figure 7: Post Development Conditions with Improvements – PM

Table 6: Post Development Conditions with Improvements – PM

Intersection	Movement	LOS	Delay (s)	Queue (m) 95th
Yates St / Cook St	WBL	D	40.2	80.4
	WBT	C	26.6	53.0
	WBR	A	9.5	8.1
	NBL	C	28.8	31.0
	NBT	A	7.6	31.5
	SB T/R	B	10.3	58.4
Yates St / Vancouver St	WB	B	13.2	23.2
	NB	A	5.4	7.7
	SB	A	6.8	12.8
Yates St / Quadra St	WB	A	6.7	12.8
	NB	C	31.1	101.7
	SBT	B	19.6	115.9
	SBR	A	8.8	17.1
View St / Vancouver St	EB	A	8.8	45.1
	WB	A	8.6	58.2
	NB	B	19.6	18.5
	SB	B	17.1	22.7
View St / Quadra St (with Improvements)	EBL	D	45.5	18.2
	EB T/R	D	37.7	45.8
	WBL	C	31.0	12.1
	WBT	C	33.5	52.2
	WBR	C	20.2	49.3
	NBL	B	10.5	5.8
	NB T/R	C	33.6	139.1
	SBL	B	15.8	28.6
	SB T/R	A	5.5	27.2
View St / Cook St (Stop-Controlled)	EB	F	6538.8	324.1
	WB	F	184.0	40.6
	NBL	B	14.8	7.0
	NB T/R	A	0.0	0.0
	SBL	B	10.2	2.8
	SB T/R	A	0.0	0.0
View St / Cook St (Signalized)	EB	D	44.2	51.2
	WB	A	8.1	5.6
	NBL	D	43.7	37.8
	NB T/R	B	10.9	49.0
	SBL	B	14.0	16.9
	SB T/R	B	15.7	94.6

Most movements continue to operate at LOS C or better with the proposed development with the exception of two intersections: View Street / Cook Street and View Street / Quadra Street. The stopped controlled View Street / Cook Street intersection operates at LOS F for the side street movements. If the intersection is signalized all movements operate at LOS D or better. At View Street / Quadra Street multiple movements operate at LOS E for the post development analysis. It is recommended that separate left turn lanes be provided for all approaches and a westbound right

turn lane be added. It is also recommended that the southbound left turn be provided a protected / permitted phase; however, this may impact the coordination at the intersection. With the recommended improvements the View Street / Quadra Street intersection will operate at LOS D or better.

In order to accommodate the left turn lanes for all approaches at View Street / Quadra Street some on-street parking would need to be removed. Minimum lane widths are normally recommended to be 3.3m; however, the City has allowed narrower lane widths at other locations. The existing curb to curb width of View Street is approximately 12m. If the lane widths can be reduced to 3.0m the westbound approach can be provided separate left, through, and right turn lanes (and one eastbound receiving lane). If the City does not approve 3.0m lane widths then the curb on the north side of View Street would need to be moved north approximately 1.2m to accommodate 3.3m lane widths.

If all the proposed developments in the area are completed the left turns exiting the site accesses would operate at LOS E / F; however, in reality more gaps in traffic will be created on View Street given the proximity to the signalized intersections. If the delay time for the exiting left turns is too long drivers will likely make the choice to turn right instead. It is recommended that the site accesses / driveways be provided with separate left and right turn lanes. Separate right turn lanes exiting at the site accesses will operate at LOS C.

5.0 SENSITIVITY ANALYSIS

On most roads the PM peak hour contains the largest traffic volumes for any given time throughout the day. There are some locations that can have larger traffic impacts outside of the PM peak hour such as near schools and near employment centres with shift changes. Further investigation was conducted to determine if the PM peak hour reflected the worst-case scenario for this study. When looking at the overall network the PM peak hour had 21.8 percent more traffic than the AM peak hour and 11.6 percent more traffic than the midday peak hour (or off-peak time).

The distribution of traffic volumes for specific movements at each intersection were also reviewed during the AM peak and midday peak timeframes. For example, a left turn movement that requires a protected phase during one timeframe due to higher volumes may not require the protected phase during another timeframe. The intersections on Yates Street did not show significant variances beyond overall traffic volumes. The intersections on View Street had a bit more variances for the AM peak hour compared to the midday and PM peak hours. During the AM peak hour the westbound volumes were higher that the eastbound volumes while during the midday and PM peak hours the eastbound volumes were higher than the westbound volumes. However, these variances do not have a significant impact on intersection operation.

6.0 YATES STREET LANE REDUCTION

The City's review of the initial traffic impact assessment prompted further investigation into the number of general purpose travel lanes on Yates Street through the study area. The existing

westbound through travel lanes on Yates Street increase from two to three between Cook Street and Vancouver Street. An analysis was conducted to determine the impact of maintaining only two travel lanes on Yates Street. Table 7 compares the affected Yates Street intersections before and after the lane reduction.

Table 7: Post Development Yates Street Lane Reduction Conditions Comparison – PM

	3 Westbound Lanes on Yates Street				2 Westbound Lanes on Yates Street			
Intersection	**Movement**	**LOS**	**Delay (s)**	**Queue (m) 95th**	**Movement**	**LOS**	**Delay (s)**	**Queue (m) 95th**
Yates St / Vancouver St	WB	B	13.2	23.2	WB	B	17.0	35.1
	NB	A	5.4	7.7	NB	A	5.4	7.7
	SB	A	6.8	12.8	SB	A	6.8	12.8
Yates St / Quadra St	WB	A	6.7	12.8	WB	A	9.0	22.2
	NB	C	31.1	101.7	NB	C	31.1	101.7
	SBT	B	19.6	115.9	SBT	B	19.6	115.9
	SBR	A	8.8	17.1	SBR	A	8.8	17.1

Reducing the number of lanes on Yates Street does increase the delay times at the Vancouver Street and Quadra Street intersections; however, the levels of service remain the same. The increased queue lengths due to the reduced number of lanes do not interfere with traffic operations at other intersections or existing accesses. Reducing the number of general purpose lanes on Yates Street from three to two lanes does not have a significant impact on traffic operations in the area.

7.0 IMPROVEMENT TRIGGERS

As the road network changes in the study area View Street will likely see some operational changes in the near future. The implementation of the bicycle facilities on Vancouver Street will likely increase the traffic volumes on the surrounding roads. Shifting the site accesses for the Harris Green Village to the south (from Yates Street) will also increase the traffic volumes on View Street.

It is recommended that View Street / Cook Street be signalized to accommodate the increased traffic on View Street prior to the Vancouver bicycle facilities and the proposed Harris Green Village development. It is also recommended that the laning improvements at View Street / Quadra Street be implemented before the completion of the first phase of the proposed Harris Green development on the 900 block (Site 1).

8.0 SUSTAINABLE TRANSPORTATION REVIEW

A sustainable transportation review was conducted to determine the pedestrian, cycling, electrical vehicle accommodation, and transit connection to the proposed development.

8.1 Pedestrian and Cycling Network

There are existing sidewalks on both sides of all roads in the study area. If the sidewalks are to be altered during this proposed redevelopment it is recommended that the pedestrian areas meet the

current City of Victoria standards at all locations. It is also recommended that onsite pedestrian connections be provided that match up with the existing pedestrian network. Crosswalks at View Street / Cook Street are recommended for all approaches of the intersection if the intersection is signalized.

This development is well located to access the entire City of Victoria bicycle network with the existing Yates Street bike lane and the soon to be completed Vancouver Street bicycle facilities. Yates Street could be further developed as an active transportation network with buffered or protected bike lanes on the south side of the road; it is recommended that the developer work with the City to implement bicycle facilities along the Yates Street site frontages. Onsite bicycle storage should be considered a priority along with electrical charging capability.

8.2 Electrical Vehicle Parking

As the popularity of electrical vehicles increases the availability of electrical charging stations is becoming more and more important. While the City does not yet have a formal bylaw in place requiring electrical outlets at all parking stalls it is recommended that residential parking stalls onsite be equipped with the capability for electrical vehicles to charge.

8.3 Transit Network

There are many transit options available in close proximity to the site. Yates Street provides multiple routes travelling west of the site. Cook Street and Quadra Street provide routes travelling north or south. Johnson Street or Fort Street provide many bussing options travelling west of the site.

The closest bus stops on Yates Street are on the north side of the road near Vancouver Street and another located midblock between Vancouver Street and Cook Street. The nearest bus stops on Quadra Street are located approximately 50m north and 50m south of the site. The closest bus stops on Cook Street are about 70m south of the site and 130m north of the site. The Fort Street bus stops are located approximately 130m south of the site and the Johnson Street bus stops are located approximately 120 north of the site. No transit upgrades are recommended for this development.

9.0 CONCLUSIONS

The proposed Harris Green Village development is located at the existing site on the 900 block of Yates Street and on the west side of Cook Street between Yates Street and View Street. The accesses to the sites are proposed to connect to the south of the site on View Street. The City has bicycle facilities planned for Vancouver Street that will likely divert some traffic from Vancouver Street onto the surrounding road network. With the bicycle facilities on Vancouver Street, the proposed Harris Green Village accesses, and other concurrent developments there will be increased traffic on View Street. With this increase of traffic on View Street some intersection improvements are recommended. View Street / Cook Street would benefit from being converted from a two-way, stop-controlled intersection to being signalized. New left turn lanes are

recommended for all approaches at the View Street / Quadra Street intersection with a southbound left turn phase. This intersection would also benefit from a westbound right turn lane. The intersection will operate at LOS D or better with the recommended improvements. Some on-street parking would need to be removed to install the left turn lanes and the curb may need to be located further north in order to install a westbound right turn lane.

Yates Street was determined to continue to operate with the same level of service when the general purpose lanes were reduced from three lanes down to two lanes.

Pedestrian connections through the site are recommended to meet up with existing pedestrian facilities. If View Street / Cook Street is signalized all four approaches of the intersection should have crosswalks installed. It is recommended that the developer work with the City to implement future bicycle facilities on the Yates Street site frontages. No transit upgrades are recommended for this development. As the number of electrical vehicles keeps increasing on-site residential electrical charging stations should be considered a priority for both vehicles and bicycles.

10.0 RECOMMENDATIONS

- Work with the City to signalize View Street / Cook Street, including crosswalks on all four approaches;
- Add 30m southbound left turn lane at View Street / Quadra Street with protected / permitted phase;
- Add 15m eastbound, westbound, and northbound left turn lane at View Street / Quadra Street;
- Add a 50m westbound right turn lane at View Street / Quadra Street;
- Work with the City to implement future bicycle facilities along the Yates Street site frontages;
- Consider providing electrical charging capabilities for all residential vehicle parking stalls on-site;
- Consider providing electrical charging capabilities for electrical bicycles on-site.

APPENDIX A: SYNCHRO BACKGROUND

SYNCHRO MODELLING SOFTWARE DESCRIPTION

The traffic analysis was completed using Synchro and SimTraffic traffic modelling software. Results were measured in delay, level of service (LOS), 95th percentile queue length and volume to capacity ratio. Synchro is based on the Highway Capacity Manual (HCM) methodology. SimTraffic integrates established driver behaviours and characteristics to simulate actual conditions by randomly "seeding" or positioning vehicles travelling throughout the network. The simulation is run ten times (ten different random seedings of vehicle types, behaviours and arrivals) to obtain statistical significance of the results.

Levels of Service

Traffic operations are typically described in terms of levels of service, which rates the amount of delay per vehicle for each movement and the entire intersection. Levels of service range from LOS A (representing best operations) to LOS E/F (LOS E being poor operations and LOS F being unpredictable/disruptive operations). LOS E/F are generally unacceptable levels of service under normal everyday conditions. A LOS C or better is considered acceptable operations, while D is considered to be on the threshold between acceptable and unacceptable operations. Highway operations will typically need to operate at LOS C or better for through movements and LOS E or better for other traffic movements with lower order roads.

The hierarchy of criteria for grading an intersection or movement not only includes delay times, but also takes into account traffic control type (stop signs or traffic signal). For example, if a vehicle is delayed for 19 seconds at an unsignalized intersection, it is considered to have an average operation, and would therefore be graded as an LOS C. However, at a signalized intersection, a 19 second delay would be considered a good operation and therefore it would be given an LOS B. The table below indicates the range of delay for LOS for signalized and unsignalized intersections.

Table A1: LOS Criteria, by Intersection Traffic Control

Level of Service (LOS)	Unsignalized Intersection Average Vehicle Delay (sec/veh)	Signalized Intersection Average Vehicle Delay (sec/veh)
A	0 – 10	0 – 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F	> 50	> 80

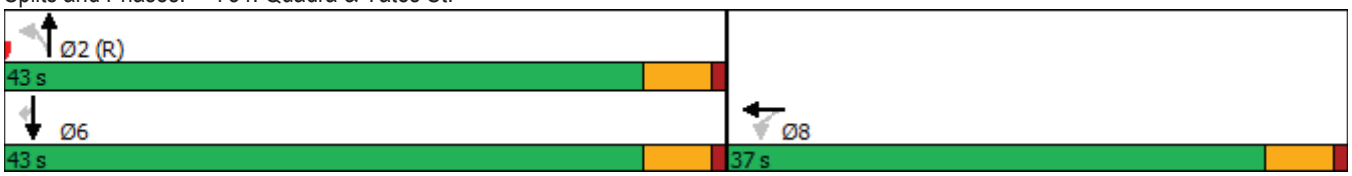
APPENDIX B: 2019 EXISTING PEAK HOUR TRAFFIC CONDITIONS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	96	505	97	45	413	0	0	330	85
Future Volume (vph)	0	0	0	96	505	97	45	413	0	0	330	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor					0.87			0.98				0.68
Frt					0.979							0.850
Flt Protected					0.993			0.993				
Satd. Flow (prot)	0	0	0	0	4733	0	0	3514	0	0	1863	1583
Flt Permitted					0.993			0.856				
Satd. Flow (perm)	0	0	0	0	4293	0	0	2967	0	0	1863	1076
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					49							49
Link Speed (k/h)		40			40			35			35	
Link Distance (m)		205.2			208.5			95.6			97.2	
Travel Time (s)		18.5			18.8			9.8			10.0	
Confl. Peds. (#/hr)				459		183	202					202
Peak Hour Factor	0.25	0.25	0.25	0.83	0.88	0.84	0.66	0.97	0.25	0.25	0.94	0.85
Adj. Flow (vph)	0	0	0	116	574	115	68	426	0	0	351	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	805	0	0	494	0	0	351	100
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type				Perm	NA		Perm	NA			NA	Perm
Protected Phases					8			2			6	
Permitted Phases				8			2					6
Minimum Split (s)				20.0	20.0		23.0	23.0			23.0	23.0
Total Split (s)				37.0	37.0		43.0	43.0			43.0	43.0
Total Split (%)				46.3%	46.3%		53.8%	53.8%			53.8%	53.8%
Maximum Green (s)				32.0	32.0		38.0	38.0			38.0	38.0
Yellow Time (s)				4.0	4.0		4.0	4.0			4.0	4.0
All-Red Time (s)				1.0	1.0		1.0	1.0			1.0	1.0
Lost Time Adjust (s)					-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)					4.0			4.0			4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)				7.0	7.0		7.0	7.0			7.0	7.0
Flash Dont Walk (s)				8.0	8.0		6.0	6.0			6.0	6.0
Pedestrian Calls (#/hr)				20	20		20	20			20	20
Act Effct Green (s)					33.0			39.0			39.0	39.0
Actuated g/C Ratio					0.41			0.49			0.49	0.49
v/c Ratio					0.45			0.34			0.39	0.18

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay					8.5			9.9			14.5	7.5
Queue Delay					0.0			0.0			0.0	0.0
Total Delay					8.5			9.9			14.5	7.5
LOS					A			A			B	A
Approach Delay					8.5			9.9			13.0	
Approach LOS					A			A			B	
Queue Length 50th (m)					12.4			11.1			32.0	4.0
Queue Length 95th (m)					19.6			23.8			50.8	10.9
Internal Link Dist (m)		181.2			184.5			71.6			73.2	
Turn Bay Length (m)												
Base Capacity (vph)					1799			1446			908	549
Starvation Cap Reductn					0			0			0	0
Spillback Cap Reductn					0			0			0	0
Storage Cap Reductn					0			0			0	0
Reduced v/c Ratio					0.45			0.34			0.39	0.18

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 3 (4%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 10.1		Intersection LOS: B	
Intersection Capacity Utilization 55.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 734: Quadra & Yates St.

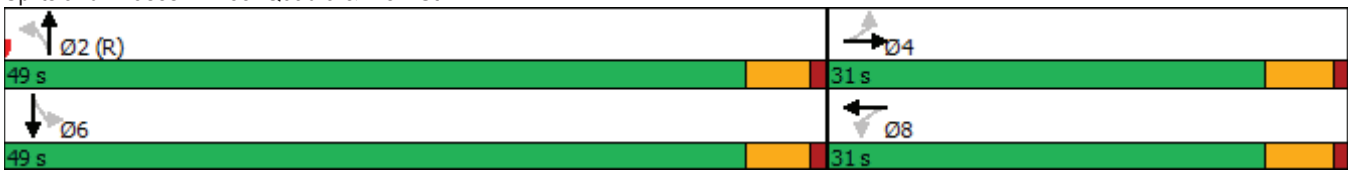


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	50	14	18	83	37	20	343	16	23	310	19
Future Volume (vph)	31	50	14	18	83	37	20	343	16	23	310	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.6	3.7	3.7	3.6	3.7	3.7	3.0	3.7	3.7	3.0	3.7
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor		0.93			0.92			0.96			0.96	
Frt		0.982			0.962			0.990			0.989	
Flt Protected		0.987			0.993			0.997			0.996	
Satd. Flow (prot)	0	1601	0	0	1544	0	0	2911	0	0	1528	0
Flt Permitted		0.893			0.952			0.923			0.957	
Satd. Flow (perm)	0	1401	0	0	1446	0	0	2672	0	0	1446	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			26			15			9	
Link Speed (k/h)		50			50			35			35	
Link Distance (m)		208.1			208.2			91.3			95.6	
Travel Time (s)		15.0			15.0			9.4			9.8	
Confl. Peds. (#/hr)	102		83	83		102	126		138	138		126
Confl. Bikes (#/hr)						1			2			3
Peak Hour Factor	0.78	0.57	0.70	0.75	0.83	0.77	0.83	0.94	0.57	0.82	0.92	0.59
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	40	88	20	24	100	48	24	365	28	28	337	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	148	0	0	172	0	0	417	0	0	397	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.13	1.14	1.13	1.13	1.14	1.13	1.13	1.25	1.13	1.13	1.25	1.13
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	21.0	21.0		21.0	21.0		23.0	23.0		23.0	23.0	
Total Split (s)	31.0	31.0		31.0	31.0		49.0	49.0		49.0	49.0	
Total Split (%)	38.8%	38.8%		38.8%	38.8%		61.3%	61.3%		61.3%	61.3%	
Maximum Green (s)	26.0	26.0		26.0	26.0		44.0	44.0		44.0	44.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		5.0	5.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	7.0	7.0		8.0	8.0		7.0	7.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		27.0			27.0			45.0			45.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.34			0.34			0.56			0.56	
v/c Ratio		0.31			0.34			0.28			0.49	
Control Delay		20.3			15.1			9.3			8.0	
Queue Delay		0.0			0.0			0.0			0.2	
Total Delay		20.3			15.1			9.3			8.2	
LOS		C			B			A			A	
Approach Delay		20.3			15.1			9.3			8.2	
Approach LOS		C			B			A			A	
Queue Length 50th (m)		15.1			15.9			15.2			14.4	
Queue Length 95th (m)		16.7			26.3			23.1			21.9	
Internal Link Dist (m)		184.1			184.2			67.3			71.6	
Turn Bay Length (m)												
Base Capacity (vph)		480			505			1509			817	
Starvation Cap Reductn		0			0			0			64	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.31			0.34			0.28			0.53	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 71 (89%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 11.2		Intersection LOS: B	
Intersection Capacity Utilization 55.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 735: Quadra & View St.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	75	533	30	103	304	0	0	311	95
Future Volume (vph)	0	0	0	75	533	30	103	304	0	0	311	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.92			0.98			0.96	
Frt					0.993						0.963	
Flt Protected					0.994			0.987				
Satd. Flow (prot)	0	0	0	0	4936	0	0	1839	0	0	1717	0
Flt Permitted					0.994			0.741				
Satd. Flow (perm)	0	0	0	0	4643	0	0	1359	0	0	1717	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					10						26	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		208.5			57.9			93.3			100.9	
Travel Time (s)		18.8			5.2			6.7			7.3	
Confl. Peds. (#/hr)				184		109	75					75
Peak Hour Factor	0.25	0.25	0.25	0.85	0.84	0.83	0.80	0.87	0.25	0.25	0.94	0.77
Adj. Flow (vph)	0	0	0	88	635	36	129	349	0	0	331	123
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	759	0	0	478	0	0	454	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases					8			2			6	
Permitted Phases				8			2					
Minimum Split (s)				18.0	18.0		23.0	23.0			23.0	
Total Split (s)				29.0	29.0		51.0	51.0			51.0	
Total Split (%)				36.3%	36.3%		63.8%	63.8%			63.8%	
Maximum Green (s)				24.0	24.0		46.0	46.0			46.0	
Yellow Time (s)				4.0	4.0		4.0	4.0			4.0	
All-Red Time (s)				1.0	1.0		1.0	1.0			1.0	
Lost Time Adjust (s)					-1.0			-1.0			-1.0	
Total Lost Time (s)					4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)				7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)				6.0	6.0		5.0	5.0			5.0	
Pedestrian Calls (#/hr)				20	20		20	20			20	
Act Effct Green (s)					25.0			47.0			47.0	
Actuated g/C Ratio					0.31			0.59			0.59	
v/c Ratio					0.52			0.60			0.45	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay					13.8			10.2			10.3	
Queue Delay					0.0			0.0			0.1	
Total Delay					13.8			10.2			10.4	
LOS					B			B			B	
Approach Delay					13.8			10.2			10.4	
Approach LOS					B			B			B	
Queue Length 50th (m)					16.7			26.0			32.7	
Queue Length 95th (m)					20.0			35.8			52.6	
Internal Link Dist (m)		184.5			33.9			69.3			76.9	
Turn Bay Length (m)												
Base Capacity (vph)					1457			798			1019	
Starvation Cap Reductn					0			5			0	
Spillback Cap Reductn					0			0			42	
Storage Cap Reductn					0			0			0	
Reduced v/c Ratio					0.52			0.60			0.46	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 70 (88%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 11.9		Intersection LOS: B	
Intersection Capacity Utilization 67.8%		ICU Level of Service C	
Analysis Period (min) 15			

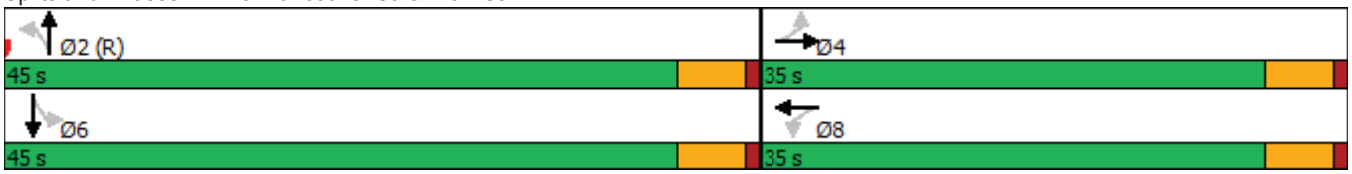
Splits and Phases: 744: Vancouver St. & Yates St.

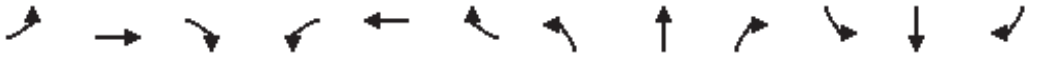
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	41	27	11	50	29	20	303	12	16	323	30
Future Volume (vph)	65	41	27	11	50	29	20	303	12	16	323	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.6	3.7	3.7	3.6	3.7	3.7	4.1	3.7	3.7	4.2	3.7
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.86			0.89			0.98			0.97	
Frt		0.974			0.952			0.994			0.983	
Flt Protected		0.973			0.993			0.996			0.997	
Satd. Flow (prot)	0	1565	0	0	1469	0	0	1763	0	0	1742	0
Flt Permitted		0.797			0.957			0.947			0.970	
Satd. Flow (perm)	0	1147	0	0	1393	0	0	1668	0	0	1683	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17			40			4			13	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		208.2			223.8			36.2			93.3	
Travel Time (s)		15.0			16.1			2.6			6.7	
Confl. Peds. (#/hr)	90		61	61		90	64		108	108		64
Confl. Bikes (#/hr)						1						7
Peak Hour Factor	0.71	0.93	0.84	0.69	0.89	0.73	0.63	0.88	0.75	0.67	0.89	0.54
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	92	44	32	16	56	40	32	344	16	24	363	56
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	168	0	0	112	0	0	392	0	0	443	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.13	1.14	1.13	1.13	1.14	1.13	1.13	1.07	1.13	1.13	1.05	1.13
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0		23.0	23.0	
Total Split (s)	35.0	35.0		35.0	35.0		45.0	45.0		45.0	45.0	
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.3%	56.3%		56.3%	56.3%	
Maximum Green (s)	30.0	30.0		30.0	30.0		40.0	40.0		40.0	40.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	8.0	8.0		8.0	8.0		7.0	7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		31.0			31.0			41.0			41.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.39			0.39			0.51			0.51	
v/c Ratio		0.37			0.20			0.46			0.51	
Control Delay		13.6			16.8			14.5			11.7	
Queue Delay		0.0			0.0			0.0			0.5	
Total Delay		13.6			16.8			14.5			12.2	
LOS		B			B			B			B	
Approach Delay		13.6			16.8			14.5			12.2	
Approach LOS		B			B			B			B	
Queue Length 50th (m)		11.2			9.1			35.3			32.0	
Queue Length 95th (m)		20.4			20.8			54.7			58.0	
Internal Link Dist (m)		184.2			199.8			12.2			69.3	
Turn Bay Length (m)												
Base Capacity (vph)		454			564			856			868	
Starvation Cap Reductn		0			0			0			145	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.37			0.20			0.46			0.61	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 78 (98%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay: 13.7		Intersection LOS: B	
Intersection Capacity Utilization 49.5%		ICU Level of Service A	
Analysis Period (min) 15			
Description: Vancouver St. & View			

Splits and Phases: 745: Vancouver St. & View St.





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	174	469	91	106	658	0	0	695	98
Future Volume (vph)	0	0	0	174	469	91	106	658	0	0	695	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0		0.0	12.0		30.0	35.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor				0.82		0.81	0.97				0.98	
Frt						0.850					0.981	
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1770	3539	1583	1770	3539	0	0	3413	0
Flt Permitted				0.950			0.257					
Satd. Flow (perm)	0	0	0	1452	3539	1289	466	3539	0	0	3413	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						140					36	
Link Speed (k/h)		40			45			40			40	
Link Distance (m)		165.1			307.3			88.8			98.6	
Travel Time (s)		14.9			24.6			8.0			8.9	
Confl. Peds. (#/hr)				112		111	92					92
Peak Hour Factor	0.25	0.25	0.25	0.89	0.95	0.65	0.88	0.92	0.25	0.25	0.85	0.82
Adj. Flow (vph)	0	0	0	196	494	140	120	715	0	0	818	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	196	494	140	120	715	0	0	938	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type				Perm	NA	Perm	Perm	NA			NA	
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Minimum Split (s)				23.0	23.0	23.0	23.0	23.0			23.0	
Total Split (s)				27.0	27.0	27.0	53.0	53.0			53.0	
Total Split (%)				33.8%	33.8%	33.8%	66.3%	66.3%			66.3%	
Maximum Green (s)				22.0	22.0	22.0	48.0	48.0			48.0	
Yellow Time (s)				4.0	4.0	4.0	4.0	4.0			4.0	
All-Red Time (s)				1.0	1.0	1.0	1.0	1.0			1.0	
Lost Time Adjust (s)				-1.0	-1.0	-1.0	-1.0	-1.0			-1.0	
Total Lost Time (s)				4.0	4.0	4.0	4.0	4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)				7.0	7.0	7.0	7.0	7.0			7.0	
Flash Dont Walk (s)				8.0	8.0	8.0	11.0	11.0			11.0	
Pedestrian Calls (#/hr)				20	20	20	20	20			20	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)				23.0	23.0	23.0	49.0	49.0			49.0	
Actuated g/C Ratio				0.29	0.29	0.29	0.61	0.61			0.61	
v/c Ratio				0.47	0.49	0.30	0.42	0.33			0.45	
Control Delay				28.0	25.5	6.1	13.8	8.0			8.7	
Queue Delay				0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay				28.0	25.5	6.1	13.8	8.0			8.7	
LOS				C	C	A	B	A			A	
Approach Delay					22.8			8.9			8.7	
Approach LOS					C			A			A	
Queue Length 50th (m)				24.4	32.5	0.0	8.5	24.8			34.2	
Queue Length 95th (m)				42.9	46.3	4.0	20.6	34.1			42.4	
Internal Link Dist (m)		141.1			283.3			64.8			74.6	
Turn Bay Length (m)				12.0		30.0	35.0					
Base Capacity (vph)				417	1017	470	285	2167			2104	
Starvation Cap Reductn				0	0	0	0	0			0	
Spillback Cap Reductn				0	0	0	0	0			0	
Storage Cap Reductn				0	0	0	0	0			0	
Reduced v/c Ratio				0.47	0.49	0.30	0.42	0.33			0.45	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 56 (70%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 13.3		Intersection LOS: B	
Intersection Capacity Utilization 51.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 754: Cook St. & Yates St.

Intersection	
Int Delay, s/veh	7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	39	5	25	5	5	55	15	670	10	75	718	88
Future Vol, veh/h	39	5	25	5	5	55	15	670	10	75	718	88
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	65	70	65	65	75	70	96	70	85	97	85
Heavy Vehicles, %	0	0	0	0	0	0	2	2	2	2	2	2
Mvmt Flow	52	8	36	8	8	73	21	698	14	88	740	104

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1363	1722	422	1297	1767	356	844	0	0	712	0	0
Stage 1	968	968	-	747	747	-	-	-	-	-	-	-
Stage 2	395	754	-	550	1020	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	109	90	586	121	85	646	788	-	-	884	-	-
Stage 1	276	335	-	376	423	-	-	-	-	-	-	-
Stage 2	607	420	-	492	317	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	81	79	586	95	74	646	788	-	-	884	-	-
Mov Cap-2 Maneuver	81	79	-	95	74	-	-	-	-	-	-	-
Stage 1	269	302	-	366	412	-	-	-	-	-	-	-
Stage 2	514	409	-	405	285	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	104.2	22.2	0.3	0.9
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	788	-	-	119	297	884	-	-
HCM Lane V/C Ratio	0.027	-	-	0.802	0.299	0.1	-	-
HCM Control Delay (s)	9.7	-	-	104.2	22.2	9.5	-	-
HCM Lane LOS	A	-	-	F	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	4.7	1.2	0.3	-	-

APPENDIX C: BACKGROUND PEAK HOUR TRAFFIC CONDITIONS

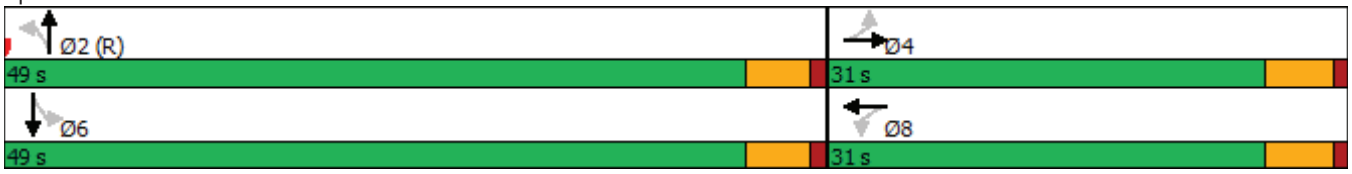
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	5	46	5	5	55	45	811	10	75	872	133
Future Volume (vph)	84	5	46	5	5	55	45	811	10	75	872	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	2.5			2.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.87			0.87		0.96	1.00		0.94	0.96	
Frt		0.952			0.889			0.998			0.978	
Flt Protected		0.971			0.996		0.950			0.950		
Satd. Flow (prot)	0	1679	0	0	1487	0	1789	3556	0	1789	3359	0
Flt Permitted		0.770			0.975		0.203			0.277		
Satd. Flow (perm)	0	1231	0	0	1444	0	369	3556	0	491	3359	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		37			73			3			39	
Link Speed (k/h)		50			48			40			40	
Link Distance (m)		223.8			209.0			93.4			88.8	
Travel Time (s)		16.1			15.7			8.4			8.0	
Confl. Peds. (#/hr)	90		90	90		90	90		90	90		90
Peak Hour Factor	0.75	0.65	0.70	0.65	0.65	0.75	0.70	0.96	0.70	0.85	0.97	0.85
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	112	8	66	8	8	73	64	845	14	88	899	156
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	186	0	0	89	0	64	859	0	88	1055	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	31.0	31.0		31.0	31.0		49.0	49.0		49.0	49.0	
Total Split (%)	38.8%	38.8%		38.8%	38.8%		61.3%	61.3%		61.3%	61.3%	
Maximum Green (s)	26.0	26.0		26.0	26.0		44.0	44.0		44.0	44.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	8.0	8.0		8.0	8.0		7.0	7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)		26.0			26.0		44.0	44.0		44.0	44.0	
Actuated g/C Ratio		0.32			0.32		0.55	0.55		0.55	0.55	
v/c Ratio		0.44			0.17		0.32	0.44		0.33	0.57	
Control Delay		32.1			7.7		15.2	11.5		10.4	8.9	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.2	
Total Delay		32.1			7.7		15.2	11.5		10.4	9.2	
LOS		C			A		B	B		B	A	
Approach Delay		32.1			7.7			11.8			9.2	
Approach LOS		C			A			B			A	
Queue Length 50th (m)		25.0			1.6		4.9	37.6		5.7	35.9	
Queue Length 95th (m)		30.4			5.5		9.4	50.5		m9.8	41.2	
Internal Link Dist (m)		199.8			185.0			69.4			64.8	
Turn Bay Length (m)							15.0			15.0		
Base Capacity (vph)		425			518		202	1957		270	1865	
Starvation Cap Reductn		0			0		0	0		0	245	
Spillback Cap Reductn		0			0		0	4		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.44			0.17		0.32	0.44		0.33	0.65	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 50 (63%), Referenced to phase 2:NBTL, Start of Green
Natural Cycle: 50
Control Type: Pretimed
Maximum v/c Ratio: 0.57
Intersection Signal Delay: 12.0 Intersection LOS: B
Intersection Capacity Utilization 62.1% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 166: Cook St. & View St./View St

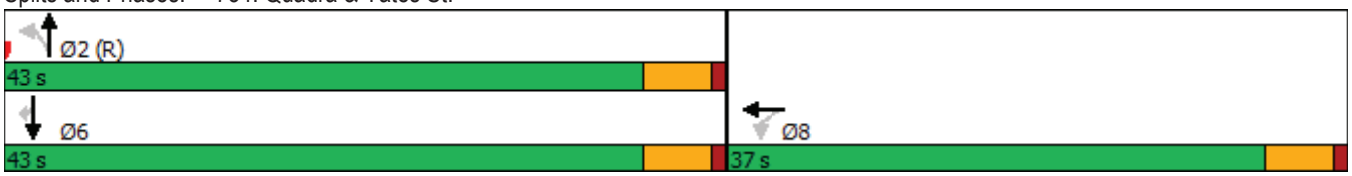


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	124	576	107	102	586	0	0	497	125
Future Volume (vph)	0	0	0	124	576	107	102	586	0	0	497	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor					0.86							0.68
Frt					0.980							0.850
Flt Protected					0.992			0.990				
Satd. Flow (prot)	0	0	0	0	4742	0	0	3504	0	0	1863	1583
Flt Permitted					0.992			0.629				
Satd. Flow (perm)	0	0	0	0	4253	0	0	2226	0	0	1863	1076
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					45							37
Link Speed (k/h)		40			40			35			35	
Link Distance (m)		205.2			208.5			95.6			97.2	
Travel Time (s)		18.5			18.8			9.8			10.0	
Confl. Peds. (#/hr)				459		183	202					202
Peak Hour Factor	0.25	0.25	0.25	0.83	0.88	0.84	0.66	0.97	0.25	0.25	0.94	0.85
Adj. Flow (vph)	0	0	0	149	655	127	155	604	0	0	529	147
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	931	0	0	759	0	0	529	147
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type				Perm	NA		Perm	NA			NA	Perm
Protected Phases					8			2			6	
Permitted Phases				8			2					6
Minimum Split (s)				20.0	20.0		23.0	23.0			23.0	23.0
Total Split (s)				37.0	37.0		43.0	43.0			43.0	43.0
Total Split (%)				46.3%	46.3%		53.8%	53.8%			53.8%	53.8%
Maximum Green (s)				32.0	32.0		38.0	38.0			38.0	38.0
Yellow Time (s)				4.0	4.0		4.0	4.0			4.0	4.0
All-Red Time (s)				1.0	1.0		1.0	1.0			1.0	1.0
Lost Time Adjust (s)					-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)					4.0			4.0			4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)				7.0	7.0		7.0	7.0			7.0	7.0
Flash Dont Walk (s)				8.0	8.0		6.0	6.0			6.0	6.0
Pedestrian Calls (#/hr)				20	20		20	20			20	20
Act Effct Green (s)					33.0			39.0			39.0	39.0
Actuated g/C Ratio					0.41			0.49			0.49	0.49
v/c Ratio					0.52			0.70			0.58	0.27

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay					7.1			17.3			17.9	10.5
Queue Delay					0.0			0.2			0.0	0.0
Total Delay					7.1			17.6			17.9	10.5
LOS					A			B			B	B
Approach Delay					7.1			17.6			16.3	
Approach LOS					A			B			B	
Queue Length 50th (m)					7.8			51.0			54.6	9.1
Queue Length 95th (m)					16.5			71.5			83.9	18.6
Internal Link Dist (m)		181.2			184.5			71.6			73.2	
Turn Bay Length (m)												
Base Capacity (vph)					1780			1085			908	543
Starvation Cap Reductn					0			43			0	0
Spillback Cap Reductn					0			0			0	0
Storage Cap Reductn					0			0			0	0
Reduced v/c Ratio					0.52			0.73			0.58	0.27

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 3 (4%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 13.1		Intersection LOS: B	
Intersection Capacity Utilization 72.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 734: Quadra & Yates St.

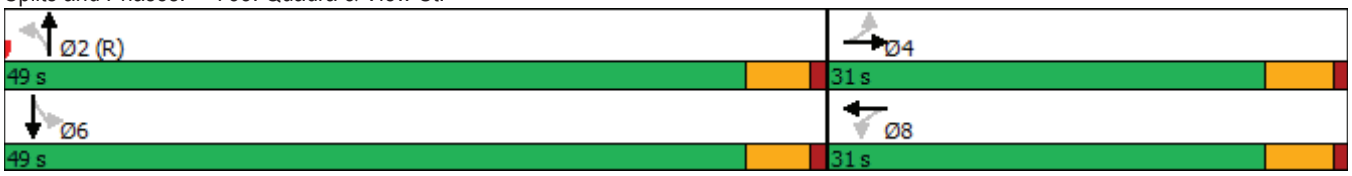


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	78	24	25	99	76	25	477	36	56	465	30
Future Volume (vph)	56	78	24	25	99	76	25	477	36	56	465	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.6	3.7	3.7	3.6	3.7	3.7	3.0	3.7	3.7	3.0	3.7
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor		0.94			0.91			0.95			0.96	
Frt		0.981			0.947			0.984			0.989	
Flt Protected		0.985			0.993			0.998			0.995	
Satd. Flow (prot)	0	1594	0	0	1483	0	0	2851	0	0	1526	0
Flt Permitted		0.842			0.938			0.909			0.885	
Satd. Flow (perm)	0	1325	0	0	1378	0	0	2585	0	0	1335	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			44			26			9	
Link Speed (k/h)		50			50			35			35	
Link Distance (m)		208.1			208.2			91.3			95.6	
Travel Time (s)		15.0			15.0			9.4			9.8	
Confl. Peds. (#/hr)	102		83	83		102	126		138	138		126
Confl. Bikes (#/hr)						1			2			3
Peak Hour Factor	0.78	0.57	0.70	0.75	0.83	0.77	0.83	0.94	0.57	0.82	0.92	0.59
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	72	137	34	33	119	99	30	507	63	68	505	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	243	0	0	251	0	0	600	0	0	624	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.13	1.14	1.13	1.13	1.14	1.13	1.13	1.25	1.13	1.13	1.25	1.13
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	21.0	21.0		21.0	21.0		23.0	23.0		23.0	23.0	
Total Split (s)	31.0	31.0		31.0	31.0		49.0	49.0		49.0	49.0	
Total Split (%)	38.8%	38.8%		38.8%	38.8%		61.3%	61.3%		61.3%	61.3%	
Maximum Green (s)	26.0	26.0		26.0	26.0		44.0	44.0		44.0	44.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		5.0	5.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	7.0	7.0		8.0	8.0		7.0	7.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		27.0			27.0			45.0			45.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.34			0.34			0.56			0.56	
v/c Ratio		0.54			0.51			0.41			0.83	
Control Delay		25.6			17.2			10.5			19.9	
Queue Delay		0.0			0.0			0.1			0.0	
Total Delay		25.6			17.2			10.6			19.9	
LOS		C			B			B			B	
Approach Delay		25.6			17.2			10.6			19.9	
Approach LOS		C			B			B			B	
Queue Length 50th (m)		28.0			12.5			23.8			27.6	
Queue Length 95th (m)		27.2			25.4			34.7			#132.1	
Internal Link Dist (m)		184.1			184.2			67.3			71.6	
Turn Bay Length (m)												
Base Capacity (vph)		454			494			1465			754	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			1			95			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.54			0.51			0.44			0.83	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 71 (89%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 17.0		Intersection LOS: B	
Intersection Capacity Utilization 82.2%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 735: Quadra & View St.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	25	639	11	33	64	0	0	71	28
Future Volume (vph)	0	0	0	25	639	11	33	64	0	0	71	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.98			0.95			0.95	
Frt					0.998						0.957	
Flt Protected					0.998			0.982				
Satd. Flow (prot)	0	0	0	0	5036	0	0	1829	0	0	1692	0
Flt Permitted					0.998			0.894				
Satd. Flow (perm)	0	0	0	0	4943	0	0	1589	0	0	1692	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					3						14	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		208.5			57.9			93.3			100.9	
Travel Time (s)		18.8			5.2			6.7			7.3	
Confl. Peds. (#/hr)				184		109	75					75
Peak Hour Factor	0.25	0.25	0.25	0.85	0.84	0.83	0.80	0.87	0.25	0.25	0.94	0.77
Adj. Flow (vph)	0	0	0	29	761	13	41	74	0	0	76	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	803	0	0	115	0	0	112	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases					8			2			6	
Permitted Phases				8			2					
Minimum Split (s)				18.0	18.0		23.0	23.0			23.0	
Total Split (s)				29.0	29.0		51.0	51.0			51.0	
Total Split (%)				36.3%	36.3%		63.8%	63.8%			63.8%	
Maximum Green (s)				24.0	24.0		46.0	46.0			46.0	
Yellow Time (s)				4.0	4.0		4.0	4.0			4.0	
All-Red Time (s)				1.0	1.0		1.0	1.0			1.0	
Lost Time Adjust (s)					-1.0			-1.0			-1.0	
Total Lost Time (s)					4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)				7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)				6.0	6.0		5.0	5.0			5.0	
Pedestrian Calls (#/hr)				20	20		20	20			20	
Act Effct Green (s)					25.0			47.0			47.0	
Actuated g/C Ratio					0.31			0.59			0.59	
v/c Ratio					0.52			0.12			0.11	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay					14.4			6.5			6.7	
Queue Delay					0.0			0.0			0.0	
Total Delay					14.4			6.5			6.7	
LOS					B			A			A	
Approach Delay					14.4			6.5			6.7	
Approach LOS					B			A			A	
Queue Length 50th (m)					19.7			6.0			5.9	
Queue Length 95th (m)					23.0			10.3			12.4	
Internal Link Dist (m)		184.5			33.9			69.3			76.9	
Turn Bay Length (m)												
Base Capacity (vph)					1546			933			999	
Starvation Cap Reductn					0			0			0	
Spillback Cap Reductn					0			0			0	
Storage Cap Reductn					0			0			0	
Reduced v/c Ratio					0.52			0.12			0.11	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 70 (88%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 12.6		Intersection LOS: B	
Intersection Capacity Utilization 31.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 744: Vancouver St. & Yates St.

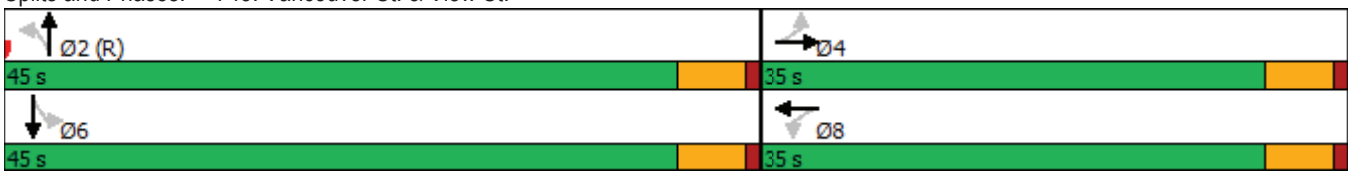
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	146	7	5	147	9	5	63	5	6	90	10
Future Volume (vph)	10	146	7	5	147	9	5	63	5	6	90	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.6	3.7	3.7	3.6	3.7	3.7	4.1	3.7	3.7	4.2	3.7
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98			0.98			0.96			0.95	
Frt		0.994			0.991			0.989			0.980	
Flt Protected		0.996			0.998			0.995			0.997	
Satd. Flow (prot)	0	1679	0	0	1663	0	0	1730	0	0	1729	0
Flt Permitted		0.976			0.990			0.981			0.987	
Satd. Flow (perm)	0	1620	0	0	1643	0	0	1683	0	0	1679	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			5			7			16	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		208.2			223.8			36.2			93.3	
Travel Time (s)		15.0			16.1			2.6			6.7	
Confl. Peds. (#/hr)	90		61	61		90	64		108	108		64
Confl. Bikes (#/hr)						1						7
Peak Hour Factor	0.71	0.93	0.84	0.69	0.89	0.73	0.63	0.88	0.75	0.67	0.89	0.54
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	14	157	8	7	165	12	8	72	7	9	101	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	179	0	0	184	0	0	87	0	0	129	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.13	1.14	1.13	1.13	1.14	1.13	1.13	1.07	1.13	1.13	1.05	1.13
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0		23.0	23.0	
Total Split (s)	35.0	35.0		35.0	35.0		45.0	45.0		45.0	45.0	
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.3%	56.3%		56.3%	56.3%	
Maximum Green (s)	30.0	30.0		30.0	30.0		40.0	40.0		40.0	40.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	8.0	8.0		8.0	8.0		7.0	7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		31.0			31.0			41.0			41.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.39			0.39			0.51			0.51	
v/c Ratio		0.28			0.29			0.10			0.15	
Control Delay		13.9			21.5			9.6			8.7	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		13.9			21.5			9.6			8.7	
LOS		B			C			A			A	
Approach Delay		13.9			21.5			9.6			8.7	
Approach LOS		B			C			A			A	
Queue Length 50th (m)		13.3			20.6			5.9			6.9	
Queue Length 95th (m)		m23.1			36.3			12.4			12.5	
Internal Link Dist (m)		184.2			199.8			12.2			69.3	
Turn Bay Length (m)												
Base Capacity (vph)		629			639			865			868	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.28			0.29			0.10			0.15	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 78 (98%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.29			
Intersection Signal Delay: 14.5		Intersection LOS: B	
Intersection Capacity Utilization 32.4%		ICU Level of Service A	
Analysis Period (min) 15			
Description: Vancouver St. & View			

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

Splits and Phases: 745: Vancouver St. & View St.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	228	514	101	143	828	0	0	849	133
Future Volume (vph)	0	0	0	228	514	101	143	828	0	0	849	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0		0.0	12.0		30.0	35.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor				0.82		0.81	0.98				0.98	
Frt						0.850					0.977	
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1770	3539	1583	1770	3539	0	0	3386	0
Flt Permitted				0.950			0.223					
Satd. Flow (perm)	0	0	0	1452	3539	1289	406	3539	0	0	3386	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						155					29	
Link Speed (k/h)		40			45			40			40	
Link Distance (m)		165.1			307.3			88.8			98.6	
Travel Time (s)		14.9			24.6			8.0			8.9	
Confl. Peds. (#/hr)				112		111	92					92
Peak Hour Factor	0.25	0.25	0.25	0.89	0.95	0.65	0.88	0.92	0.25	0.25	0.97	0.82
Adj. Flow (vph)	0	0	0	256	541	155	163	900	0	0	875	162
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	256	541	155	163	900	0	0	1037	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type				Perm	NA	Perm	Perm	NA			NA	
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Minimum Split (s)				23.0	23.0	23.0	23.0	23.0			23.0	
Total Split (s)				27.0	27.0	27.0	53.0	53.0			53.0	
Total Split (%)				33.8%	33.8%	33.8%	66.3%	66.3%			66.3%	
Maximum Green (s)				22.0	22.0	22.0	48.0	48.0			48.0	
Yellow Time (s)				4.0	4.0	4.0	4.0	4.0			4.0	
All-Red Time (s)				1.0	1.0	1.0	1.0	1.0			1.0	
Lost Time Adjust (s)				-1.0	-1.0	-1.0	-1.0	-1.0			-1.0	
Total Lost Time (s)				4.0	4.0	4.0	4.0	4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)				7.0	7.0	7.0	7.0	7.0			7.0	
Flash Dont Walk (s)				8.0	8.0	8.0	11.0	11.0			11.0	
Pedestrian Calls (#/hr)				20	20	20	20	20			20	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)				23.0	23.0	23.0	49.0	49.0			49.0	
Actuated g/C Ratio				0.29	0.29	0.29	0.61	0.61			0.61	
v/c Ratio				0.61	0.53	0.32	0.66	0.42			0.50	
Control Delay				32.1	26.3	6.1	26.2	8.8			9.4	
Queue Delay				0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay				32.1	26.3	6.1	26.2	8.8			9.4	
LOS				C	C	A	C	A			A	
Approach Delay					24.6			11.4			9.4	
Approach LOS					C			B			A	
Queue Length 50th (m)				33.5	36.1	0.0	14.4	33.5			40.2	
Queue Length 95th (m)				56.5	51.1	3.9	#46.1	44.8			53.6	
Internal Link Dist (m)		141.1			283.3			64.8			74.6	
Turn Bay Length (m)				12.0		30.0	35.0					
Base Capacity (vph)				417	1017	481	248	2167			2085	
Starvation Cap Reductn				0	0	0	0	0			0	
Spillback Cap Reductn				0	0	0	0	0			0	
Storage Cap Reductn				0	0	0	0	0			0	
Reduced v/c Ratio				0.61	0.53	0.32	0.66	0.42			0.50	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 56 (70%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 14.8		Intersection LOS: B	
Intersection Capacity Utilization 60.6%		ICU Level of Service B	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 754: Cook St. & Yates St.

Intersection	
Int Delay, s/veh	144.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑↑↱		↰	↑↑↱	
Traffic Vol, veh/h	84	5	46	5	5	55	45	811	10	75	872	133
Future Vol, veh/h	84	5	46	5	5	55	45	811	10	75	872	133
Conflicting Peds, #/hr	0	0	0	0	0	0	90	0	0	0	0	90
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	65	70	65	65	75	70	96	70	85	97	85
Heavy Vehicles, %	0	0	0	0	0	0	2	2	2	2	2	2
Mvmt Flow	112	8	66	8	8	73	64	845	14	88	899	156

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1798	2230	618	1610	2301	430	1145	0	0	859	0	0
Stage 1	1243	1243	-	980	980	-	-	-	-	-	-	-
Stage 2	555	987	-	630	1321	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 51	43	437	71	39	579	606	-	-	778	-	-
Stage 1	188	249	-	272	331	-	-	-	-	-	-	-
Stage 2	489	328	-	441	228	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 27	31	399	40	28	579	553	-	-	778	-	-
Mov Cap-2 Maneuver	~ 27	31	-	40	28	-	-	-	-	-	-	-
Stage 1	152	202	-	240	293	-	-	-	-	-	-	-
Stage 2	368	290	-	314	185	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	1783.4	59.6	0.9	0.8
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	553	-	-	41	149	778	-	-
HCM Lane V/C Ratio	0.116	-	-	4.522	0.595	0.113	-	-
HCM Control Delay (s)	12.4	-	-	$ 1783.4	59.6	10.2	-	-
HCM Lane LOS	B	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0.4	-	-	21.3	3.1	0.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

APPENDIX D: POST DEVELOPMENT PEAK HOUR TRAFFIC CONDITIONS

Intersection	
Int Delay, s/veh	7.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	87	393	413	43	58	119
Future Vol, veh/h	87	393	413	43	58	119
Conflicting Peds, #/hr	90	0	0	90	90	90
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	93	92	75	75	85
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	109	423	449	57	77	140

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	596	0	-	0	1299	658
Stage 1	-	-	-	-	568	-
Stage 2	-	-	-	-	731	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	990	-	-	-	180	468
Stage 1	-	-	-	-	571	-
Stage 2	-	-	-	-	480	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	904	-	-	-	126	390
Mov Cap-2 Maneuver	-	-	-	-	126	-
Stage 1	-	-	-	-	439	-
Stage 2	-	-	-	-	438	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	37.7
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	904	-	-	-	126	390
HCM Lane V/C Ratio	0.12	-	-	-	0.614	0.359
HCM Control Delay (s)	9.5	0	-	-	70.9	19.3
HCM Lane LOS	A	A	-	-	F	C
HCM 95th %tile Q(veh)	0.4	-	-	-	3.1	1.6

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	68	383	385	34	35	71
Future Vol, veh/h	68	383	385	34	35	71
Conflicting Peds, #/hr	90	0	0	90	90	90
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	93	92	75	70	80
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	85	412	418	45	50	89

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	553	0	-	0	1203	621
Stage 1	-	-	-	-	531	-
Stage 2	-	-	-	-	672	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1027	-	-	-	206	491
Stage 1	-	-	-	-	594	-
Stage 2	-	-	-	-	511	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	938	-	-	-	151	409
Mov Cap-2 Maneuver	-	-	-	-	151	-
Stage 1	-	-	-	-	478	-
Stage 2	-	-	-	-	467	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	24.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	938	-	-	-	151	409
HCM Lane V/C Ratio	0.091	-	-	-	0.331	0.217
HCM Control Delay (s)	9.2	0	-	-	40.2	16.2
HCM Lane LOS	A	A	-	-	E	C
HCM 95th %tile Q(veh)	0.3	-	-	-	1.3	0.8

Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	79	298	314	72	82	110
Future Vol, veh/h	79	298	314	72	82	110
Conflicting Peds, #/hr	90	0	0	90	90	90
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	93	92	75	80	85
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	99	320	341	96	103	129

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	527	0	-	0	1087	569
Stage 1	-	-	-	-	479	-
Stage 2	-	-	-	-	608	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1050	-	-	-	241	525
Stage 1	-	-	-	-	627	-
Stage 2	-	-	-	-	547	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	959	-	-	-	176	438
Mov Cap-2 Maneuver	-	-	-	-	176	-
Stage 1	-	-	-	-	500	-
Stage 2	-	-	-	-	499	-

Approach	EB	WB	SB
HCM Control Delay, s	2.2	0	31.6
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	959	-	-	-	176	438
HCM Lane V/C Ratio	0.103	-	-	-	0.582	0.295
HCM Control Delay (s)	9.2	0	-	-	50.6	16.6
HCM Lane LOS	A	A	-	-	F	C
HCM 95th %tile Q(veh)	0.3	-	-	-	3.1	1.2

Intersection	
Int Delay, s/veh	902.7

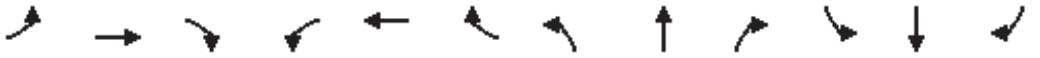
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑↑↱		↰	↑↑↱	
Traffic Vol, veh/h	192	5	128	5	5	55	104	814	10	70	821	282
Future Vol, veh/h	192	5	128	5	5	55	104	814	10	70	821	282
Conflicting Peds, #/hr	0	0	0	0	0	0	90	0	0	0	0	90
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	65	85	65	65	75	80	96	70	85	97	85
Heavy Vehicles, %	0	0	0	0	0	0	2	2	2	2	2	2
Mvmt Flow	213	8	151	8	8	73	130	848	14	82	846	332

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1954	2388	679	1706	2547	431	1268	0	0	862	0	0
Stage 1	1266	1266	-	1115	1115	-	-	-	-	-	-	-
Stage 2	688	1122	-	591	1432	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 39	34	399	60	27	578	544	-	-	776	-	-
Stage 1	~ 182	242	-	225	286	-	-	-	-	-	-	-
Stage 2	407	284	-	465	202	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 15	20	364	19	16	578	497	-	-	776	-	-
Mov Cap-2 Maneuver	~ 15	20	-	19	16	-	-	-	-	-	-	-
Stage 1	~ 123	197	-	166	211	-	-	-	-	-	-	-
Stage 2	253	210	-	234	165	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	6538.8	184	1.9	0.7
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	497	-	-	25	88	776	-	-
HCM Lane V/C Ratio	0.262	-	-	14.865	1.008	0.106	-	-
HCM Control Delay (s)	14.8	-	-	$ 6538.8	184	10.2	-	-
HCM Lane LOS	B	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	1	-	-	46.3	5.8	0.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	5	128	5	5	55	104	814	10	70	821	282
Future Volume (vph)	192	5	128	5	5	55	104	814	10	70	821	282
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	2.5			2.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.87			0.87		0.97	1.00		0.94	0.92	
Frt		0.945			0.889			0.998			0.958	
Flt Protected		0.972			0.996		0.950			0.950		
Satd. Flow (prot)	0	1655	0	0	1487	0	1789	3556	0	1789	3165	0
Flt Permitted		0.794			0.962		0.169			0.279		
Satd. Flow (perm)	0	1255	0	0	1430	0	310	3556	0	495	3165	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		45			73			3			119	
Link Speed (k/h)		50			48			40			40	
Link Distance (m)		89.5			209.0			93.4			88.8	
Travel Time (s)		6.4			15.7			8.4			8.0	
Confl. Peds. (#/hr)	90		90	90		90	90		90	90		90
Peak Hour Factor	0.90	0.65	0.85	0.65	0.65	0.75	0.80	0.96	0.70	0.85	0.97	0.85
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	213	8	151	8	8	73	130	848	14	82	846	332
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	372	0	0	89	0	130	862	0	82	1178	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	30.0	30.0		30.0	30.0		50.0	50.0		50.0	50.0	
Total Split (%)	37.5%	37.5%		37.5%	37.5%		62.5%	62.5%		62.5%	62.5%	
Maximum Green (s)	25.0	25.0		25.0	25.0		45.0	45.0		45.0	45.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	8.0	8.0		8.0	8.0		7.0	7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)		25.0			25.0		45.0	45.0		45.0	45.0	
Actuated g/C Ratio		0.31			0.31		0.56	0.56		0.56	0.56	
v/c Ratio		0.88			0.18		0.75	0.43		0.29	0.64	
Control Delay		44.2			8.1		43.7	10.9		14.0	14.2	
Queue Delay		0.0			0.0		0.0	0.0		0.0	1.5	
Total Delay		44.2			8.1		43.7	10.9		14.0	15.7	
LOS		D			A		D	B		B	B	
Approach Delay		44.2			8.1			15.2			15.6	
Approach LOS		D			A			B			B	
Queue Length 50th (m)		49.3			1.7		13.7	36.5		8.2	68.7	
Queue Length 95th (m)		51.2			5.6		#37.8	49.0		m16.9	94.6	
Internal Link Dist (m)		65.5			185.0			69.4			64.8	
Turn Bay Length (m)							15.0			15.0		
Base Capacity (vph)		423			497		174	2001		278	1832	
Starvation Cap Reductn		0			0		0	0		0	431	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.88			0.18		0.75	0.43		0.29	0.84	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green
Natural Cycle: 60
Control Type: Pretimed
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 19.1 Intersection LOS: B
Intersection Capacity Utilization 79.1% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

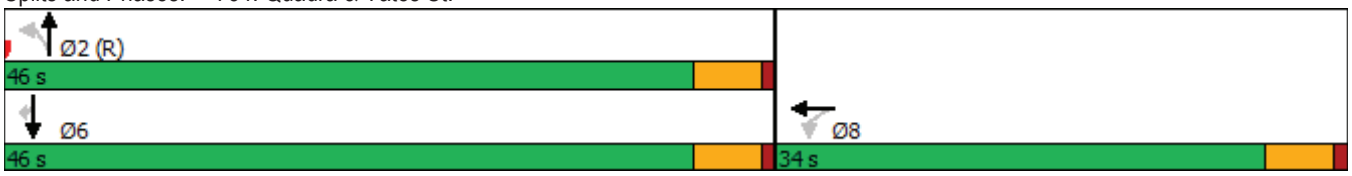
Splits and Phases: 166: Cook St. & View St./View St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	104	458	77	229	636	0	0	658	130
Future Volume (vph)	0	0	0	104	458	77	229	636	0	0	658	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor					0.86							0.68
Frt					0.981							0.850
Flt Protected					0.992			0.986				
Satd. Flow (prot)	0	0	0	0	4764	0	0	3490	0	0	1863	1583
Flt Permitted					0.992			0.535				
Satd. Flow (perm)	0	0	0	0	4243	0	0	1893	0	0	1863	1076
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					37							43
Link Speed (k/h)		40			40			35			35	
Link Distance (m)		205.2			208.5			95.6			97.2	
Travel Time (s)		18.5			18.8			9.8			10.0	
Confl. Peds. (#/hr)				459		183	202					202
Peak Hour Factor	0.25	0.25	0.25	0.83	0.88	0.84	0.90	0.97	0.25	0.25	0.94	0.85
Adj. Flow (vph)	0	0	0	125	520	92	254	656	0	0	700	153
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	737	0	0	910	0	0	700	153
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type				Perm	NA		Perm	NA			NA	Perm
Protected Phases					8			2			6	
Permitted Phases				8			2					6
Minimum Split (s)				20.0	20.0		23.0	23.0			23.0	23.0
Total Split (s)				34.0	34.0		46.0	46.0			46.0	46.0
Total Split (%)				42.5%	42.5%		57.5%	57.5%			57.5%	57.5%
Maximum Green (s)				29.0	29.0		41.0	41.0			41.0	41.0
Yellow Time (s)				4.0	4.0		4.0	4.0			4.0	4.0
All-Red Time (s)				1.0	1.0		1.0	1.0			1.0	1.0
Lost Time Adjust (s)					-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)					4.0			4.0			4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)				7.0	7.0		7.0	7.0			7.0	7.0
Flash Dont Walk (s)				8.0	8.0		6.0	6.0			6.0	6.0
Pedestrian Calls (#/hr)				20	20		20	20			20	20
Act Effct Green (s)					30.0			42.0			42.0	42.0
Actuated g/C Ratio					0.38			0.52			0.52	0.52
v/c Ratio					0.46			1.26dl			0.72	0.26

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay					6.7			26.3			19.6	8.8
Queue Delay					0.0			4.8			0.0	0.0
Total Delay					6.7			31.1			19.6	8.8
LOS					A			C			B	A
Approach Delay					6.7			31.1			17.7	
Approach LOS					A			C			B	
Queue Length 50th (m)					4.5			45.1			75.7	8.3
Queue Length 95th (m)					12.8			m#101.7			115.9	17.1
Internal Link Dist (m)		181.2			184.5			71.6			73.2	
Turn Bay Length (m)												
Base Capacity (vph)					1614			993			978	585
Starvation Cap Reductn					0			52			0	0
Spillback Cap Reductn					0			0			0	0
Storage Cap Reductn					0			0			0	0
Reduced v/c Ratio					0.46			0.97			0.72	0.26

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 3 (4%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 19.3		Intersection LOS: B	
Intersection Capacity Utilization 82.5%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			
dl Defacto Left Lane. Recode with 1 though lane as a left lane.			

Splits and Phases: 734: Quadra & Yates St.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	156	24	44	222	268	25	471	101	223	435	25
Future Volume (vph)	51	156	24	44	222	268	25	471	101	223	435	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.6	3.7	3.7	3.6	3.7	3.7	3.0	3.7	3.7	3.0	3.7
Storage Length (m)	15.0		0.0	15.0		15.0	15.0		0.0	30.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.90	0.96		0.86		0.80	0.84	0.92			0.97	
Frt		0.978				0.850		0.970			0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1643	1610	0	1643	1710	1470	1643	1421	0	1643	1532	0
Flt Permitted	0.375			0.428			0.474			0.237		
Satd. Flow (perm)	584	1610	0	636	1710	1180	685	1421	0	410	1532	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				195		24			13	
Link Speed (k/h)		50			50			35			35	
Link Distance (m)		208.1			65.6			91.3			95.6	
Travel Time (s)		15.0			4.7			9.4			9.8	
Confl. Peds. (#/hr)	102		83	83		102	126		138	138		126
Confl. Bikes (#/hr)						1			2			3
Peak Hour Factor	0.78	0.80	0.70	0.77	0.87	0.90	0.83	0.94	0.80	0.87	0.92	0.59
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	65	195	34	57	255	298	30	501	126	256	473	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	229	0	57	255	298	30	627	0	256	515	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.13	1.14	1.13	1.13	1.14	1.13	1.13	1.25	1.13	1.13	1.25	1.13
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	21.0	21.0		21.0	21.0	21.0	23.0	23.0		9.5	23.0	
Total Split (s)	21.0	21.0		21.0	21.0	21.0	45.6	45.6		13.4	59.0	
Total Split (%)	26.3%	26.3%		26.3%	26.3%	26.3%	57.0%	57.0%		16.8%	73.8%	
Maximum Green (s)	16.0	16.0		16.0	16.0	16.0	40.6	40.6		8.9	54.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		3.5	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	0.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	5.0	4.0	4.0		3.5	4.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?										Yes		
Walk Time (s)	7.0	7.0		5.0	5.0	5.0	7.0	7.0			7.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Flash Dont Walk (s)	7.0	7.0		8.0	8.0	8.0	7.0	7.0			8.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0			0	
Act Effct Green (s)	17.0	17.0		17.0	17.0	16.0	41.6	41.6		55.5	55.0	
Actuated g/C Ratio	0.21	0.21		0.21	0.21	0.20	0.52	0.52		0.69	0.69	
v/c Ratio	0.52	0.65		0.42	0.70	0.76	0.08	0.84		0.59	0.49	
Control Delay	45.5	37.7		31.0	33.5	19.6	10.5	28.0		15.4	5.0	
Queue Delay	0.0	0.0		0.0	0.0	0.6	0.0	5.6		0.4	0.5	
Total Delay	45.5	37.7		31.0	33.5	20.2	10.5	33.6		15.8	5.5	
LOS	D	D		C	C	C	B	C		B	A	
Approach Delay		39.4			26.7			32.5			9.0	
Approach LOS		D			C			C			A	
Queue Length 50th (m)	8.8	30.6		4.6	25.7	1.0	2.2	73.3		12.3	9.1	
Queue Length 95th (m)	18.2	45.8		12.1	#52.2	#49.3	5.8	#139.1		m28.6	27.2	
Internal Link Dist (m)		184.1			41.6			67.3			71.6	
Turn Bay Length (m)	15.0			15.0		15.0	15.0			30.0		
Base Capacity (vph)	124	350		135	363	392	356	750		437	1057	
Starvation Cap Reductn	0	0		0	0	0	0	0		26	218	
Spillback Cap Reductn	0	0		0	0	10	0	81		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.52	0.65		0.42	0.70	0.78	0.08	0.94		0.62	0.61	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 70			
Control Type: Pretimed			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 24.1		Intersection LOS: C	
Intersection Capacity Utilization 79.0%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 735: Quadra & View St.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	25	677	12	33	64	0	0	71	31
Future Volume (vph)	0	0	0	25	677	12	33	64	0	0	71	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.98			0.95			0.95	
Frt					0.997						0.953	
Flt Protected					0.998			0.982				
Satd. Flow (prot)	0	0	0	0	5029	0	0	1829	0	0	1678	0
Flt Permitted					0.998			0.892				
Satd. Flow (perm)	0	0	0	0	4937	0	0	1586	0	0	1678	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					3						14	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		208.5			57.9			93.3			100.9	
Travel Time (s)		18.8			5.2			6.7			7.3	
Confl. Peds. (#/hr)				184		109	75					75
Peak Hour Factor	0.25	0.25	0.25	0.85	0.88	0.83	0.80	0.87	0.25	0.25	0.94	0.77
Adj. Flow (vph)	0	0	0	29	769	14	41	74	0	0	76	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	812	0	0	115	0	0	116	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases					8			2			6	
Permitted Phases				8			2					
Minimum Split (s)				18.0	18.0		23.0	23.0			23.0	
Total Split (s)				29.0	29.0		51.0	51.0			51.0	
Total Split (%)				36.3%	36.3%		63.8%	63.8%			63.8%	
Maximum Green (s)				24.0	24.0		46.0	46.0			46.0	
Yellow Time (s)				4.0	4.0		4.0	4.0			4.0	
All-Red Time (s)				1.0	1.0		1.0	1.0			1.0	
Lost Time Adjust (s)					-1.0			-1.0			-1.0	
Total Lost Time (s)					4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)				7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)				6.0	6.0		5.0	5.0			5.0	
Pedestrian Calls (#/hr)				20	20		20	20			20	
Act Effct Green (s)					25.0			47.0			47.0	
Actuated g/C Ratio					0.31			0.59			0.59	
v/c Ratio					0.53			0.12			0.12	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay					13.2			5.4			6.8	
Queue Delay					0.0			0.0			0.0	
Total Delay					13.2			5.4			6.8	
LOS					B			A			A	
Approach Delay					13.2			5.4			6.8	
Approach LOS					B			A			A	
Queue Length 50th (m)					18.4			4.1			6.2	
Queue Length 95th (m)					23.2			7.7			12.8	
Internal Link Dist (m)		184.5			33.9			69.3			76.9	
Turn Bay Length (m)												
Base Capacity (vph)					1544			931			991	
Starvation Cap Reductn					0			0			0	
Spillback Cap Reductn					0			0			0	
Storage Cap Reductn					0			0			0	
Reduced v/c Ratio					0.53			0.12			0.12	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 70 (88%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 11.7		Intersection LOS: B	
Intersection Capacity Utilization 32.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 744: Vancouver St. & Yates St.

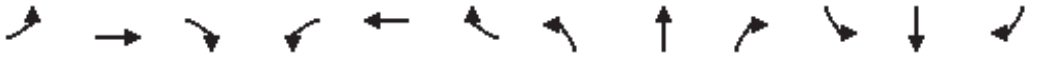
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	355	7	5	404	9	5	63	5	6	90	10
Future Volume (vph)	10	355	7	5	404	9	5	63	5	6	90	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.6	3.7	3.7	3.6	3.7	3.7	4.1	3.7	3.7	4.2	3.7
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			0.99			0.96			0.95	
Frt		0.997			0.996			0.989			0.980	
Flt Protected		0.998			0.999			0.995			0.997	
Satd. Flow (prot)	0	1695	0	0	1690	0	0	1730	0	0	1728	0
Flt Permitted		0.982			0.995			0.978			0.984	
Satd. Flow (perm)	0	1663	0	0	1681	0	0	1680	0	0	1675	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			3			6			11	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		31.0			134.3			36.2			93.3	
Travel Time (s)		2.2			9.7			2.6			6.7	
Confl. Peds. (#/hr)	90		61	61		90	64		108	108		64
Confl. Bikes (#/hr)						1						7
Peak Hour Factor	0.71	0.93	0.84	0.69	0.92	0.73	0.63	0.88	0.75	0.67	0.89	0.54
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	14	382	8	7	439	12	8	72	7	9	101	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	404	0	0	458	0	0	87	0	0	129	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.13	1.14	1.13	1.13	1.14	1.13	1.13	1.07	1.13	1.13	1.05	1.13
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0		23.0	23.0	
Total Split (s)	51.0	51.0		51.0	51.0		29.0	29.0		29.0	29.0	
Total Split (%)	63.8%	63.8%		63.8%	63.8%		36.3%	36.3%		36.3%	36.3%	
Maximum Green (s)	46.0	46.0		46.0	46.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	8.0	8.0		8.0	8.0		7.0	7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		47.0			47.0			25.0			25.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.59			0.59			0.31			0.31	
v/c Ratio		0.41			0.46			0.16			0.24	
Control Delay		8.8			8.6			19.6			17.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		8.8			8.6			19.6			17.1	
LOS		A			A			B			B	
Approach Delay		8.8			8.6			19.6			17.1	
Approach LOS		A			A			B			B	
Queue Length 50th (m)		21.4			41.6			8.8			10.3	
Queue Length 95th (m)		m45.1			m58.2			18.5			22.7	
Internal Link Dist (m)		7.0			110.3			12.2			69.3	
Turn Bay Length (m)												
Base Capacity (vph)		977			988			529			531	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.41			0.46			0.16			0.24	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 78 (98%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay: 10.6		Intersection LOS: B	
Intersection Capacity Utilization 46.3%		ICU Level of Service A	
Analysis Period (min) 15			
Description: Vancouver St. & View			

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

Splits and Phases: 745: Vancouver St. & View St.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	284	533	101	138	945	0	0	917	127
Future Volume (vph)	0	0	0	284	533	101	138	945	0	0	917	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0		0.0	12.0		30.0	35.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor				0.82		0.81	0.98				0.98	
Frt						0.850					0.979	
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1770	3539	1583	1770	3539	0	0	3400	0
Flt Permitted				0.950			0.203					
Satd. Flow (perm)	0	0	0	1452	3539	1289	371	3539	0	0	3400	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						119					26	
Link Speed (k/h)		40			45			40			40	
Link Distance (m)		165.1			307.3			88.8			98.6	
Travel Time (s)		14.9			24.6			8.0			8.9	
Confl. Peds. (#/hr)				112		111	92					92
Peak Hour Factor	0.25	0.25	0.25	0.89	0.95	0.65	0.88	0.92	0.25	0.25	0.97	0.82
Adj. Flow (vph)	0	0	0	319	561	155	157	1027	0	0	945	155
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	319	561	155	157	1027	0	0	1100	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type				Perm	NA	Perm	Perm	NA			NA	
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Minimum Split (s)				23.0	23.0	23.0	23.0	23.0			23.0	
Total Split (s)				27.0	27.0	27.0	53.0	53.0			53.0	
Total Split (%)				33.8%	33.8%	33.8%	66.3%	66.3%			66.3%	
Maximum Green (s)				22.0	22.0	22.0	48.0	48.0			48.0	
Yellow Time (s)				4.0	4.0	4.0	4.0	4.0			4.0	
All-Red Time (s)				1.0	1.0	1.0	1.0	1.0			1.0	
Lost Time Adjust (s)				-1.0	-1.0	-1.0	-1.0	-1.0			-1.0	
Total Lost Time (s)				4.0	4.0	4.0	4.0	4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)				7.0	7.0	7.0	7.0	7.0			7.0	
Flash Dont Walk (s)				8.0	8.0	8.0	11.0	11.0			11.0	
Pedestrian Calls (#/hr)				20	20	20	20	20			20	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)				23.0	23.0	23.0	49.0	49.0			49.0	
Actuated g/C Ratio				0.29	0.29	0.29	0.61	0.61			0.61	
v/c Ratio				0.76	0.55	0.34	0.69	0.47			0.53	
Control Delay				40.2	26.6	9.5	28.8	6.9			9.7	
Queue Delay				0.0	0.0	0.0	0.0	0.7			0.5	
Total Delay				40.2	26.6	9.5	28.8	7.6			10.3	
LOS				D	C	A	C	A			B	
Approach Delay					28.2			10.4			10.3	
Approach LOS					C			B			B	
Queue Length 50th (m)				44.0	37.7	4.0	8.9	27.1			43.8	
Queue Length 95th (m)				#80.4	53.0	8.1	m#31.0	m31.5			58.4	
Internal Link Dist (m)		141.1			283.3			64.8			74.6	
Turn Bay Length (m)				12.0		30.0	35.0					
Base Capacity (vph)				417	1017	455	227	2167			2092	
Starvation Cap Reductn				0	0	0	0	740			0	
Spillback Cap Reductn				0	0	0	0	0			531	
Storage Cap Reductn				0	0	0	0	0			0	
Reduced v/c Ratio				0.76	0.55	0.34	0.69	0.72			0.70	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 56 (70%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 15.9		Intersection LOS: B	
Intersection Capacity Utilization 63.5%		ICU Level of Service B	
Analysis Period (min) 15			

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

Splits and Phases: 754: Cook St. & Yates St.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	104	458	77	229	636	0	0	658	130
Future Volume (vph)	0	0	0	104	458	77	229	636	0	0	658	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor					0.86							0.68
Frt					0.981							0.850
Flt Protected					0.992			0.986				
Satd. Flow (prot)	0	0	0	0	3316	0	0	3490	0	0	1863	1583
Flt Permitted					0.992			0.535				
Satd. Flow (perm)	0	0	0	0	2953	0	0	1893	0	0	1863	1076
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					22							43
Link Speed (k/h)		40			40			35			35	
Link Distance (m)		205.2			208.5			95.6			97.2	
Travel Time (s)		18.5			18.8			9.8			10.0	
Confl. Peds. (#/hr)				459		183	202					202
Peak Hour Factor	0.25	0.25	0.25	0.83	0.88	0.84	0.90	0.97	0.25	0.25	0.94	0.85
Adj. Flow (vph)	0	0	0	125	520	92	254	656	0	0	700	153
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	737	0	0	910	0	0	700	153
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type				Perm	NA		Perm	NA			NA	Perm
Protected Phases					8			2			6	
Permitted Phases				8			2					6
Minimum Split (s)				20.0	20.0		23.0	23.0			23.0	23.0
Total Split (s)				34.0	34.0		46.0	46.0			46.0	46.0
Total Split (%)				42.5%	42.5%		57.5%	57.5%			57.5%	57.5%
Maximum Green (s)				29.0	29.0		41.0	41.0			41.0	41.0
Yellow Time (s)				4.0	4.0		4.0	4.0			4.0	4.0
All-Red Time (s)				1.0	1.0		1.0	1.0			1.0	1.0
Lost Time Adjust (s)					-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)					4.0			4.0			4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)				7.0	7.0		7.0	7.0			7.0	7.0
Flash Dont Walk (s)				8.0	8.0		6.0	6.0			6.0	6.0
Pedestrian Calls (#/hr)				20	20		20	20			20	20
Act Effct Green (s)					30.0			42.0			42.0	42.0
Actuated g/C Ratio					0.38			0.52			0.52	0.52
v/c Ratio					0.66			1.26dl			0.72	0.26

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay					9.0			26.3			19.6	8.8
Queue Delay					0.0			4.8			0.0	0.0
Total Delay					9.0			31.1			19.6	8.8
LOS					A			C			B	A
Approach Delay					9.0			31.1			17.7	
Approach LOS					A			C			B	
Queue Length 50th (m)					7.2			45.1			75.7	8.3
Queue Length 95th (m)					22.2			m#101.7			115.9	17.1
Internal Link Dist (m)		181.2			184.5			71.6			73.2	
Turn Bay Length (m)												
Base Capacity (vph)					1121			993			978	585
Starvation Cap Reductn					0			52			0	0
Spillback Cap Reductn					0			0			0	0
Storage Cap Reductn					0			0			0	0
Reduced v/c Ratio					0.66			0.97			0.72	0.26

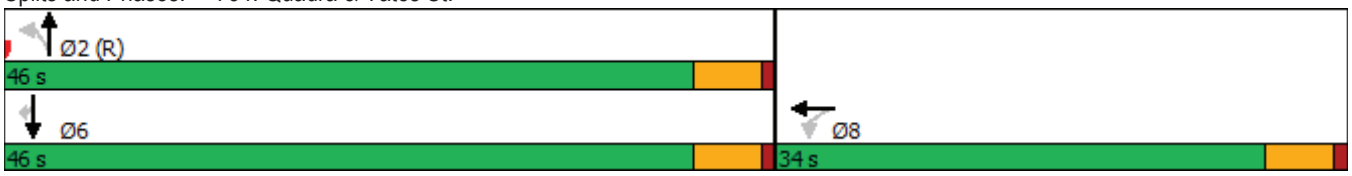
Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 3 (4%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 20.0		Intersection LOS: C	
Intersection Capacity Utilization 87.9%		ICU Level of Service E	
Analysis Period (min) 15			

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

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

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 734: Quadra & Yates St.

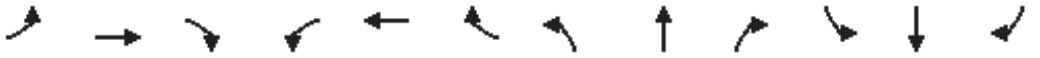


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	25	677	12	33	64	0	0	71	31
Future Volume (vph)	0	0	0	25	677	12	33	64	0	0	71	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.98			0.95			0.95	
Frt					0.997						0.953	
Flt Protected					0.998			0.982				
Satd. Flow (prot)	0	0	0	0	3500	0	0	1829	0	0	1678	0
Flt Permitted					0.998			0.892				
Satd. Flow (perm)	0	0	0	0	3436	0	0	1586	0	0	1678	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					2						14	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		208.5			57.9			93.3			100.9	
Travel Time (s)		18.8			5.2			6.7			7.3	
Confl. Peds. (#/hr)				184		109	75					75
Peak Hour Factor	0.25	0.25	0.25	0.85	0.88	0.83	0.80	0.87	0.25	0.25	0.94	0.77
Adj. Flow (vph)	0	0	0	29	769	14	41	74	0	0	76	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	812	0	0	115	0	0	116	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases					8			2			6	
Permitted Phases				8			2					
Minimum Split (s)				18.0	18.0		23.0	23.0			23.0	
Total Split (s)				29.0	29.0		51.0	51.0			51.0	
Total Split (%)				36.3%	36.3%		63.8%	63.8%			63.8%	
Maximum Green (s)				24.0	24.0		46.0	46.0			46.0	
Yellow Time (s)				4.0	4.0		4.0	4.0			4.0	
All-Red Time (s)				1.0	1.0		1.0	1.0			1.0	
Lost Time Adjust (s)					-1.0			-1.0			-1.0	
Total Lost Time (s)					4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)				7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)				6.0	6.0		5.0	5.0			5.0	
Pedestrian Calls (#/hr)				20	20		20	20			20	
Act Effct Green (s)					25.0			47.0			47.0	
Actuated g/C Ratio					0.31			0.59			0.59	
v/c Ratio					0.76			0.12			0.12	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay					17.0			5.4			6.8	
Queue Delay					0.0			0.0			0.0	
Total Delay					17.0			5.4			6.8	
LOS					B			A			A	
Approach Delay					17.0			5.4			6.8	
Approach LOS					B			A			A	
Queue Length 50th (m)					27.8			4.1			6.2	
Queue Length 95th (m)					35.1			7.7			12.8	
Internal Link Dist (m)		184.5			33.9			69.3			76.9	
Turn Bay Length (m)												
Base Capacity (vph)					1075			931			991	
Starvation Cap Reductn					0			0			0	
Spillback Cap Reductn					0			0			0	
Storage Cap Reductn					0			0			0	
Reduced v/c Ratio					0.76			0.12			0.12	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 70 (88%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 14.6		Intersection LOS: B	
Intersection Capacity Utilization 38.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 744: Vancouver St. & Yates St.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	284	533	101	138	945	0	0	917	127
Future Volume (vph)	0	0	0	284	533	101	138	945	0	0	917	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0		0.0	12.0		30.0	35.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor				0.82		0.81	0.98				0.98	
Frt						0.850					0.979	
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1770	3539	1583	1770	3539	0	0	3400	0
Flt Permitted				0.950			0.203					
Satd. Flow (perm)	0	0	0	1452	3539	1289	371	3539	0	0	3400	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						119					26	
Link Speed (k/h)		40			45			40			40	
Link Distance (m)		165.1			307.3			88.8			98.6	
Travel Time (s)		14.9			24.6			8.0			8.9	
Confl. Peds. (#/hr)				112		111	92					92
Peak Hour Factor	0.25	0.25	0.25	0.89	0.95	0.65	0.88	0.92	0.25	0.25	0.97	0.82
Adj. Flow (vph)	0	0	0	319	561	155	157	1027	0	0	945	155
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	319	561	155	157	1027	0	0	1100	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type				Perm	NA	Perm	Perm	NA			NA	
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Minimum Split (s)				23.0	23.0	23.0	23.0	23.0			23.0	
Total Split (s)				27.0	27.0	27.0	53.0	53.0			53.0	
Total Split (%)				33.8%	33.8%	33.8%	66.3%	66.3%			66.3%	
Maximum Green (s)				22.0	22.0	22.0	48.0	48.0			48.0	
Yellow Time (s)				4.0	4.0	4.0	4.0	4.0			4.0	
All-Red Time (s)				1.0	1.0	1.0	1.0	1.0			1.0	
Lost Time Adjust (s)				-1.0	-1.0	-1.0	-1.0	-1.0			-1.0	
Total Lost Time (s)				4.0	4.0	4.0	4.0	4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)				7.0	7.0	7.0	7.0	7.0			7.0	
Flash Dont Walk (s)				8.0	8.0	8.0	11.0	11.0			11.0	
Pedestrian Calls (#/hr)				20	20	20	20	20			20	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)				23.0	23.0	23.0	49.0	49.0			49.0	
Actuated g/C Ratio				0.29	0.29	0.29	0.61	0.61			0.61	
v/c Ratio				0.76	0.55	0.34	0.69	0.47			0.53	
Control Delay				40.2	26.6	9.5	28.8	6.9			9.7	
Queue Delay				0.0	0.0	0.0	0.0	0.7			0.5	
Total Delay				40.2	26.6	9.5	28.8	7.6			10.3	
LOS				D	C	A	C	A			B	
Approach Delay					28.2			10.4			10.3	
Approach LOS					C			B			B	
Queue Length 50th (m)				44.0	37.7	4.0	8.9	27.1			43.8	
Queue Length 95th (m)				#80.4	53.0	8.1	m#31.0	m31.5			58.4	
Internal Link Dist (m)		141.1			283.3			64.8			74.6	
Turn Bay Length (m)				12.0		30.0	35.0					
Base Capacity (vph)				417	1017	455	227	2167			2092	
Starvation Cap Reductn				0	0	0	0	740			0	
Spillback Cap Reductn				0	0	0	0	0			531	
Storage Cap Reductn				0	0	0	0	0			0	
Reduced v/c Ratio				0.76	0.55	0.34	0.69	0.72			0.70	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 56 (70%), Referenced to phase 2:NBTL, Start of Green
Natural Cycle: 60
Control Type: Pretimed
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 15.9 Intersection LOS: B
Intersection Capacity Utilization 63.5% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 754: Cook St. & Yates St.

APPENDIX E: INTERNAL TRIP GENERATION CAPTURE SUMMARY

Site 1 (Phases 1 & 2)

Restaurant	Total	Internal	External
Enter	19	9	10
Exit	9	6	3
Total	28	15	13

	18%	2	14%	3		41%	4	29%	6
		2		3			4		6
	16%	35	21%	29		50%	36	29%	61
				55					

Residential	Total	Internal	External					Retail	Total	Internal	External
Enter	218	57	161	46%	100	26%	55	Enter	72	11	61
Exit	139	10	129	42%	58	10%	7	Exit	212	61	151
Total	357	67	290		7			Total	284	72	212

Net External Trips for Site 1 Multi-Use Development				
	Restaurant	Res	Retail	Total
Enter	10	161	61	232
Exit	3	129	151	283
Total	13	290	212	515
Single-Use	28	357	284	669

Internal Caputure: 23.0%

Site 2

				39				
Residential	Total	Internal	External	46%	63	26%	39	Retail	Total	Internal	External
Enter	137	39	98					Enter	59	6	53
Exit	87	6	81	42%	37	10%	6	Exit	150	39	111
Total	224	45	179		6			Total	209	45	164

Net External Trips for Site 2 Multi-Use Development			
	Residential	Retail	Total
Enter	98	53	151
Exit	81	111	192
Total	179	164	343
Single-Use	224	209	433

Internal Caputure: 20.8%