Brant Street and Ghent Avenue, Burlington, ON Transportation Impact Assessment Update

Paradigm Transportation Solutions Limited

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Project Summary

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Transportation Impact Assessment Update



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Executive Summary

Content

The Molinaro Group retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Transportation Impact Assessment (TIA) for a mixed-use development located on the northwest, northeast, and southeast corners of the Brant Street and Ghent Avenue intersection in the City of Burlington.

Paradigm previously completed a Transportation Impact Assessment for this development in May 2021. This update reflects changes to the site plan and comments received from the City of Burlington and Halton Region on the May 2021 TIS.

This study determines the impacts of the development traffic on the surrounding road network and identifies the recommended improvements to accommodate the site generated traffic.

Development Concept

The subject site is located on the northwest, northeast and southeast corner of the Brant Street and Ghent Avenue intersection. The development concept includes multiple buildings ranging in height from 8 to 25 storeys. Approximately 847 units are proposed with approximately 2,078 m^2 of ground floor retail space. Build-out is expected to occur in three phases with full build-out occurring by Year 2035.

Vehicle access is proposed by private driveways to Ghent Avenue. The construction of the Phase 1 site driveway is expected to result in the removal of 1-2 existing on-street parking spaces along Ghent Avenue.

Conclusions

Based on the investigations carried out, it is concluded that:

- **Existing Traffic Operations:** Capacity issues are identified at the Brant Street intersections with Fairview Street and Prospect Street/Grahams Lane.
- **Estimated Site Generated Traffic:** Upon full build-out the subject site is forecast to generate approximately:
  - Vehicle trips – 271, 311, and 244 external vehicle trips during the AM, PM, and Saturday peak hours, respectively.

- Transit trips – 41, 54, and 34 external transit trips during the AM, PM, and Saturday peak hours, respectively. The transit trips are assumed to begin and end using Active Transportation.
- Non-Auto Trips – 15, 17, and 13 external non-motorized trips (walking/bicycle) trips during the AM, PM, and Saturday peak hours, respectively.

- **Background Traffic Operations:** The capacity constraints identified under existing conditions are expected to continue to occur with the expected growth in non-site generated traffic. Capacity issues are identified at the following intersections:
  - Brant Street and Fairview Street (Phase 1 Horizon);
  - Brant Street and Prospect Street/Grahams Lane (Phase 1 Horizon); and
  - Brant Street and Blairholm Avenue (Phase 1 Horizon).
- **Total Traffic Operations**: Site generated traffic results in new capacity deficiencies at the following intersections:
  - Brant Street and Fairview Street:
    - Westbound left-turn (PM peak hour).
  - Brant Street and Ghent Avenue:
    - Southbound left-turn (PM and Saturday peak hours).

  No capacity issues are forecast to occur at the proposed site driveways to Ghent Avenue.

- **Remedial Measures:** The following remedial measures have been identified to address forecast capacity issues at the study area intersections:
  - Brant Street and Fairview Street:
    - Optimizing signal timings.
    - Recognizing the MTSA objectives, no changes to the existing lane conditions are recommended.
  - Brant Street and Prospect Street/Grahams Lane:
    - Repaint the eastbound left-turn lane to provide an additional 35 metres of storage (65 metres total)
    - Repaint the westbound left-turn lane to provide an additional 25 metres of storage (45 metres total).
  - Brant Street and Ghent Avenue:

    - Repaint the southbound left-turn lane to provide an additional 35 metres of storage (50 metres total).
- Brant Street and Blairholm Avenue:
    - Repaint the westbound left-turn lane to provide an additional 5 metres of storage (15 metres total).
- Site Driveways to Ghent Avenue:
    - No geometric improvements are recommended.

Recommendations

Based on the findings of this study, it is recommended that:

- The road authorities monitor the future traffic volumes along the Brant Street and Fairview Street corridors and optimize the signal timings to reflect real world changes in traffic volumes.
- The road authorities consider modifying the following turn lanes to provide additional storage necessary to accommodate the forecast queue lengths:
    - Brant Street at Prospect Street – eastbound left-turn lane (65 metres of total storage);
    - Brant Street at Prospect Street – westbound left-turn lane (45 metres of total storage);
    - Brant Street at Ghent Avenue – southbound left-turn lane (50 metres of total storage)
    - Brant Street at Blairholm Avenue – westbound left-turn lane (15 metres of total storage).

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1 Introduction

1.1 Overview

Molinaro Group has retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Transportation Impact Assessment (TIA) for a mixed-use development located in the northwest, northeast, and southeast corners of the Brant Street and Ghent Avenue intersection in the City of Burlington.

Paradigm previously completed a Transportation Impact Assessment for this development in May 2021[1]. This update reflects changes to the site plan and comments received from the City of Burlington and Halton Region on the May 2021 TIS. **Figure 1.1** illustrates the location of the subject site.

The scope of the study includes:

- Determine and assess the current study area traffic conditions;
- Forecast the additional traffic generated by the proposed development;
- Analyze the impacts of the additional traffic on the study area intersections for the following horizons:
  - Phase 1 (Lot A) build-out – Year 2029;
  - Phase 2 (Lot B) build-out – Year 2032;
  - Phase 3 (Lot C) full build-out – Year 2035; and
  - Five-year horizon post full build-out – Year 2040.
- Recommend any necessary remedial measures to mitigate the traffic impacts.

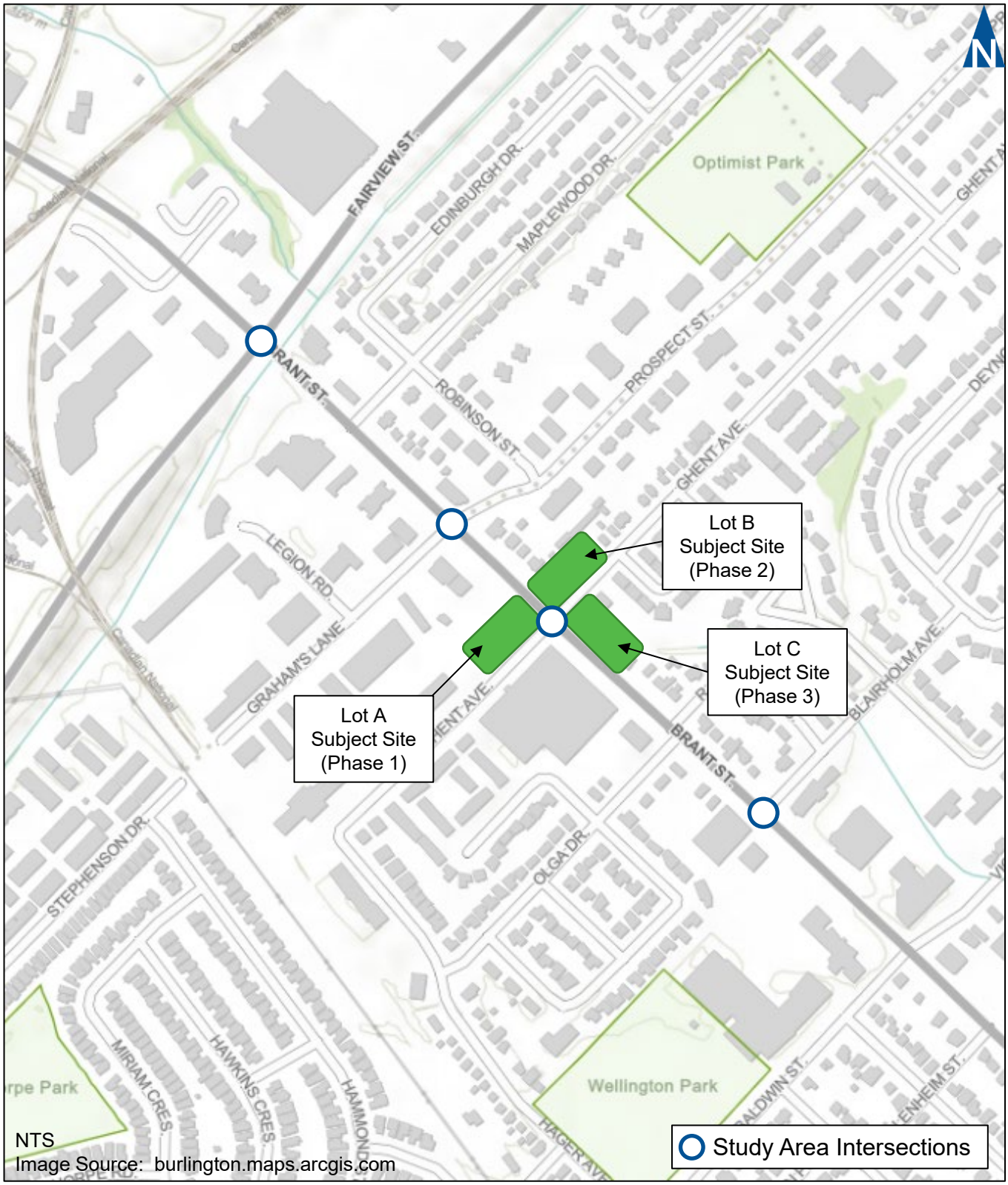
Appendix A contains the pre-study consultation material and responses from the Halton Region and the City of Burlington. The study follows Halton Region's Transportation Impact Study Guidelines[2]

[1] Paradigm Transportation Solutions Limited, *Brant Street and Ghent Avenue, Burlington, ON Transportation Impact Assessment*, (Burlington: PTSL, May 2021).
[2] Halton Region, *Transportation Impact Study Guidelines*, (Halton Region, January 2015).

1.2 Study Area

The study area intersections assessed in this study include:

- Brant Street and Fairview Street (signalized);
- Brant Street and Prospect Street/Grahams Lane (signalized);
- Brant Street and Ghent Avenue (signalized);
- Brant Street and Blairholm Avenue (signalized); and
- The proposed site driveways.



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Location of Subject Site

2 Existing Conditions

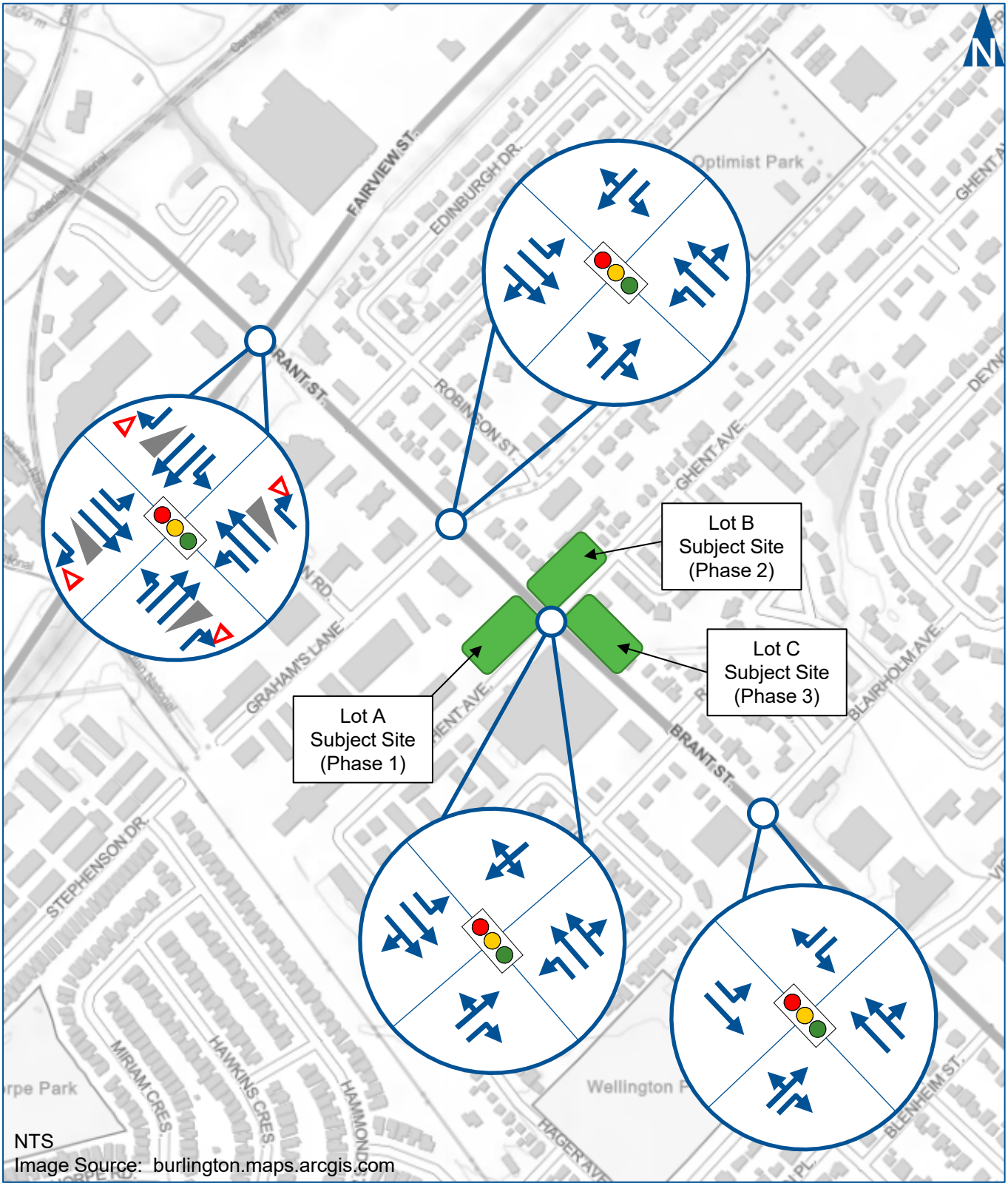
2.1 Roadway Characteristics

The roadways of interest within the study area include:

- **Brant Street** is a north-south multi-purpose arterial[3] roadway with an urban cross-section. North of Fairview Street the roadway has a 6-lane cross-section and a posted speed limit of 60 km/h. South of Fairview Street the roadway has a 4-lane cross-section and a posted speed limit of 50 km/h and is classified as a minor arterial. South of Ghent Avenue, Brant Street has two northbound lanes, one-southbound lane. The intersections with Fairview Street, Prospect Street/Grahams Lane, Ghent Avenue and Blairholm Avenue are signalized. Sidewalks are provided on both side of this roadway and on-street bicycle lanes are present in both directions.
- **Fairview Street** is an east-west multi-purpose arterial roadway with a posted speed limit of 60 km/h. It has a six-lane cross-section. Sidewalks are provided on both side of this roadway and on-street bicycle lanes are present in both directions.
- **Prospect Street/Grahams Lane** is an east-west collector roadway with a posted speed limit of 40 km/h. Prospect Street has a two-lane cross-section with an on-street bicycle lane on the north side of the roadway. The south side is marked with sharrow pavement markings. Graham Lane terminates as a cul-du-sac west of Brant Street. A sidewalk and sharrow pavement markings are provided on the north side of Graham Lane.
- **Ghent Avenue** is an east-west local roadway with a posted speed limit of 40 km/h. It has a two-lane cross-section with sidewalks provided on both sides of the roadway. No visible cycling infrastructure is noted. Paid on-street parking is provided along both sides of Ghent Avenue west of Brant Street.
- **Blairholm Avenue** is an east-west collector roadway with a posted speed limit of 40 km/h. It has a two-lane cross-section with sidewalks provided on both sides of the roadway. No visible cycling infrastructure is noted.

Figure 2.1 illustrates the existing lane configuration and traffic control at the study area intersections.

[3] City of Burlington, *Burlington's Official Plan*, (Burlington, November 2020)



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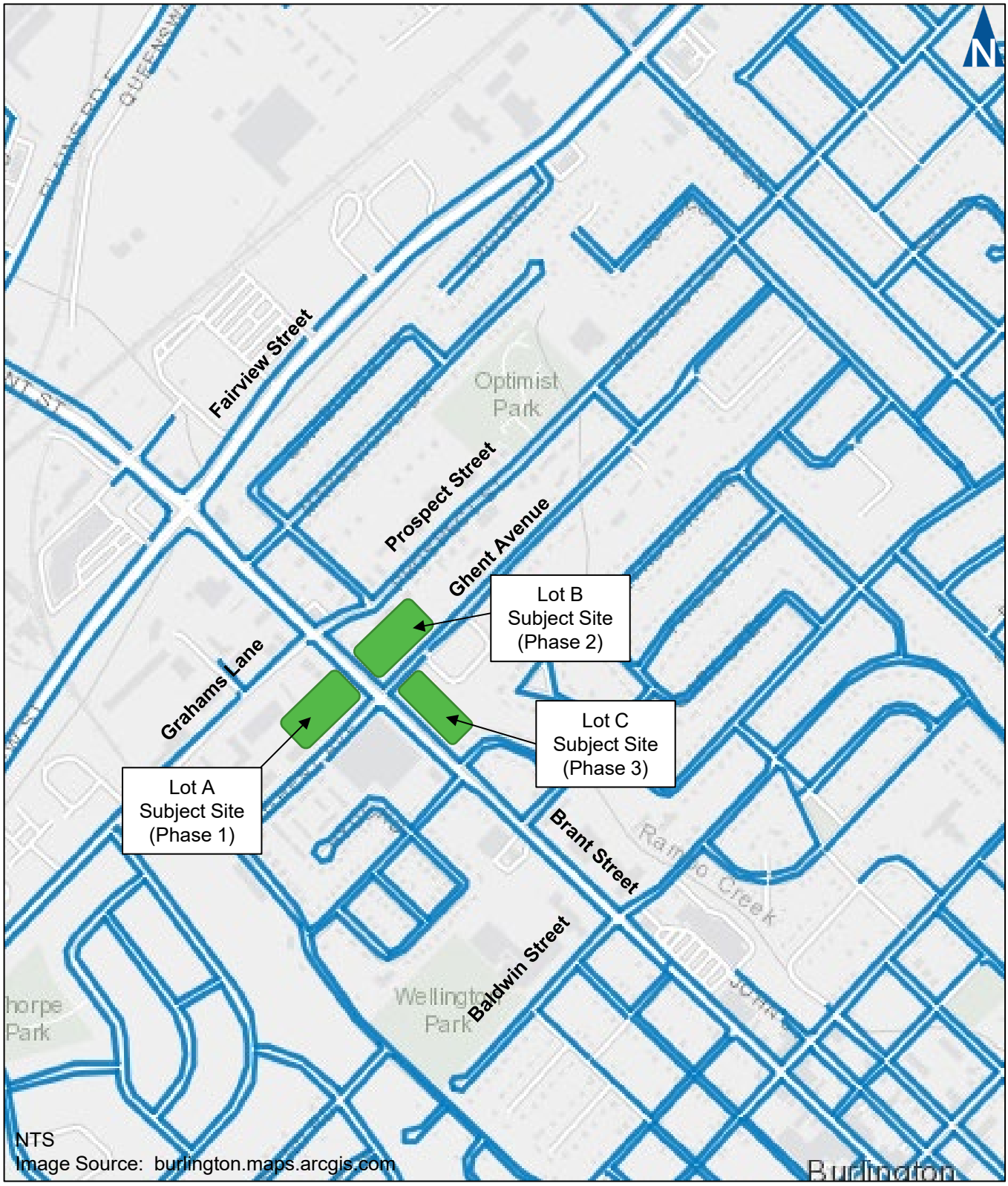
Existing Lane Configuration & Traffic Control

2.2 Walking

Sidewalks are provided on both sides of all study area roadways except Grahams Lane. All signalized intersections in the study area provide crosswalks with pedestrian pushbuttons. **Figure 2.2** illustrates the existing sidewalks within the study area.

The subject site is noted to score a Walk Score[4] of 65 and is considered “Somewhat Walkable,” which means that some errands can be accomplished on foot. Walk Score is an online tool that assigns a numerical walkability score between 0 and 100. Walk Score ranks communities nationwide based on how many businesses, parks, theatres, schools, and other common destinations are within walking distance.

[4] https://www.walkscore.com/score/brant-street-and-ghent-avenue-burlington-ontario



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Existing Pedestrian Network

2.3 Cycling

The City of Burlington's bicycle network provides a variety of cycling facilities within the immediate area. **Figure 2.3** illustrates the existing cycling network. The following cycling infrastructure is noted:

- Brant Street: On-street bike lanes are provided in both directions throughout the study area;
- Fairview Street: On-street bike lanes are provided in both directions throughout the study area;
- Prospect Street: An on-street cycle lane is provided on the north side of the street. Sharrow are provided on the south side of the street. Sharrows are not a cycling facility type but rather an optional treatment; and
- Grahams Lane: Sharrows are provided on the north side of the street.

The subject site is noted to score a cycle score of 83. This is considered "Very Bikeable," which means that biking is convenient for most trips.

The City of Burlington's Cycling Plan identifies a Protected Bikeway along Fairview Street and Brant Street (from Fairview Street to Baldwin Street). The protected bikeway can include a variety of physical separation treatments that offers a higher order of protection for cyclists. This can provide a more suitable environment for cyclists of all ages and abilities. The timing for the protected bikeway is identified as short-term in the City of Burlington Cycling Plan.

The Cycling Plan also identifies a Protected Bikeway along Prospect Street eastwards from Brant Street and a Local Street Bikeway on Grahams Lane westward from Brant Street. The intersection of Brant Street at Prospect Street/Grahams Lane has also been identified for intersection improvements.

Figure 2.4 illustrates the proposed cycling network.

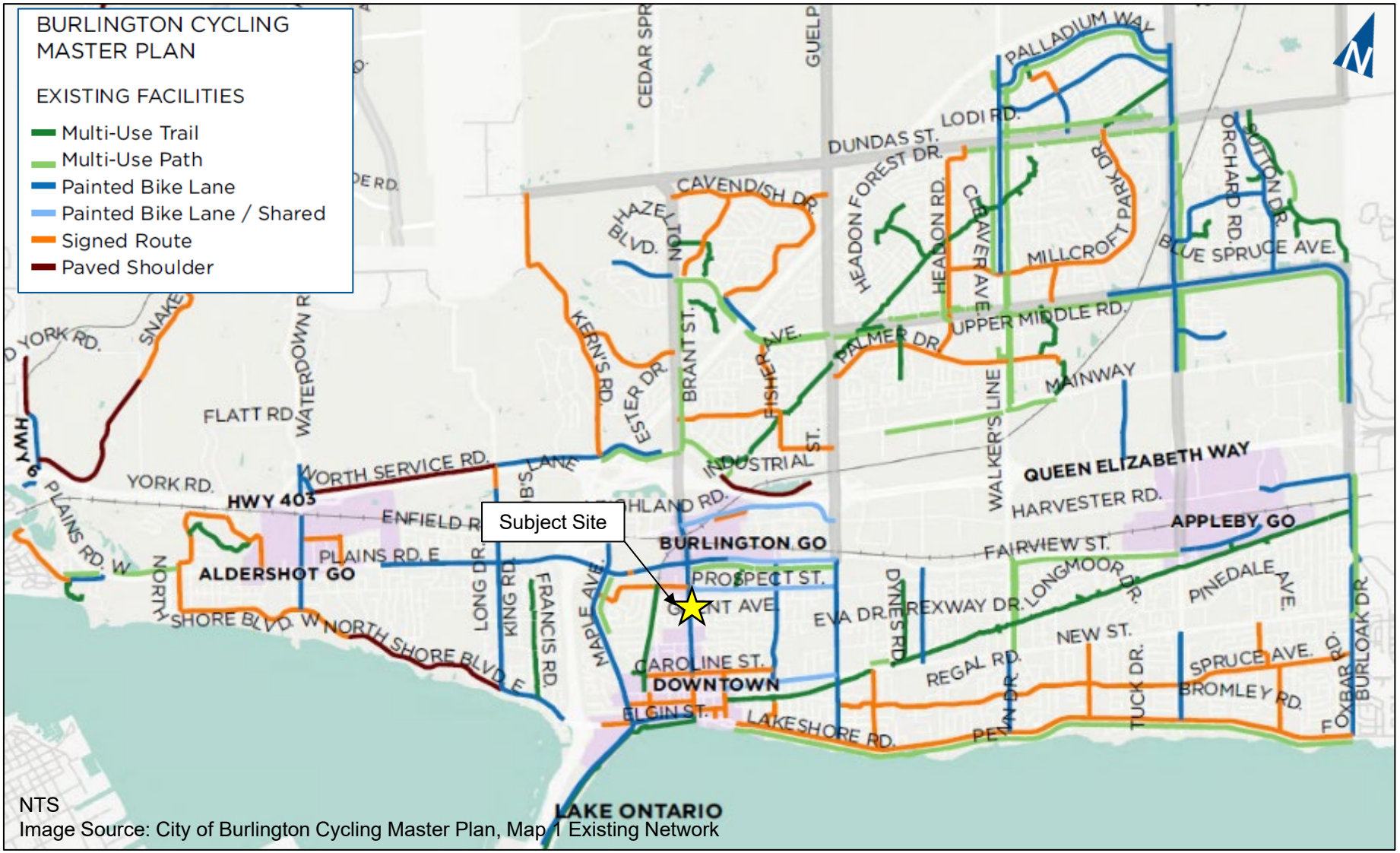


Image Source: City of Burlington Cycling Master Plan, Map 1 Existing Network

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Existing Cycle Network



NTS
Image Source: City of Burlington Cycling Master Plan, Map 5 Proposed Network

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Proposed Cycle Network

2.4 Transit Service

Transit service in the area is provided by Burlington Transit and GO Transit and is centralized around the Burlington GO Station on Fairview Street, east of Brant Street. The Burlington GO Station offers both GO Transit Bus and GO Transit train service and functions as a turnaround point for several Burlington Transit routes. Nearly 70 percent (12 of 17 routes) of all Burlington Transit Routes turn around or provide service to the Burlington GO station.

The Burlington GO Rail station platforms are accessible from areas north and south of the tracks and are connected via underground walkways. There are bus loops on both sides of the CNR corridor used by Burlington Transit and GO Transit Parking and are designed with pick-up/drop-off areas.

The walking time to the Burlington GO is about 14 minutes (1.1 km) with sidewalks provided on both Brant Street and Fairview Street as well as designated pedestrians crossings at the GO Station. The cycling time to the Burlington GO is about 4 minutes.

GO Transit offers both rail and bus service from Burlington GO Station. GO Bus Route 18C and 18F (Lakeshore West) service the Burlington GO Station during the early morning and late-night hours before and after the GO Train service. The Lakeshore WEST GO train service offers frequent train travel from Burlington GO station between Toronto and Hamilton. GO Train service is provided 7 days a week with headways generally every 20 to 30 minutes.

The following describes the existing transit service presently provided by Burlington Transit along Brant Street south of Fairview Street:

- Route 2 (Brant) travels along Brant Street between the Downtown Transit terminal and the Highway 407 GO Carpool lot operates Monday to Friday (4:49 AM to 10:13 PM) with headways approximately every 20 minutes, Saturday (6:19 AM to 10:17 PM) with headways approximately every 30 to 60 minutes, and Sunday/Holidays (7:49 AM to 8:47 PM) with headways approximately every 30 to 60 minutes.

Figure 2.5 illustrates the existing transit network.

Figure 2.6 illustrates the existing transit stops within 500 m of the subject site[5]. The closest bus stops to the subject site are on the

[5] https://www.triplinx.ca/

southwest and southeast corners of the Brant Street and Ghent Street intersections. Both stops have seating and weather protection.

The subject site is noted to score a transit score of 54. This is considered “Good Transit,” which means many nearby public transportation options.

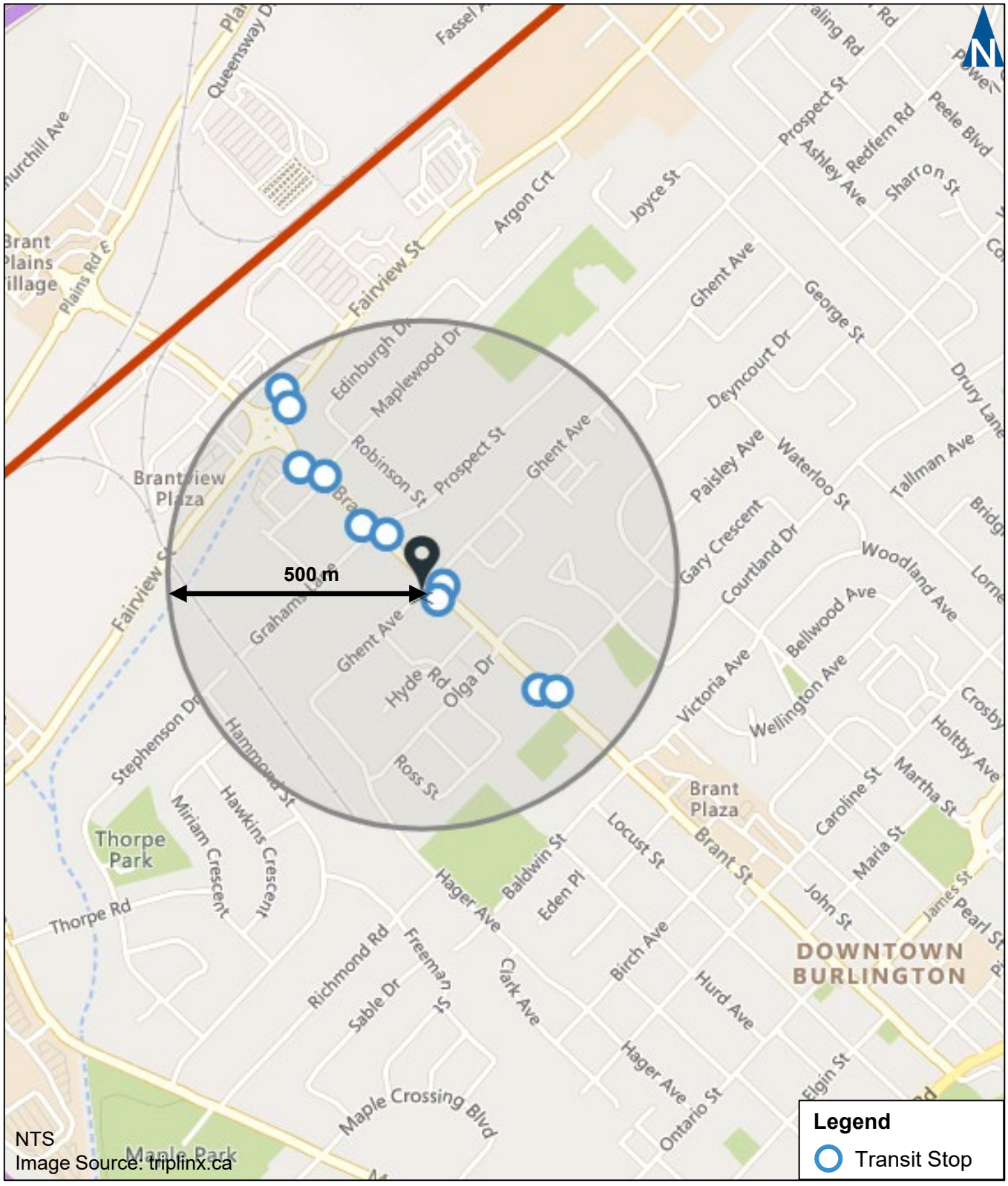
In summary the subject site is well-served by local and inter-regional transit.



NTS
Image Source: Burlington Transit January 2021 Ride Guide

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Existing Transit Network



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Existing Transit Stops

Brant St / Ghent Ave, Burlington TIS
200403

Figure 2.6

2.5 Traffic Volumes

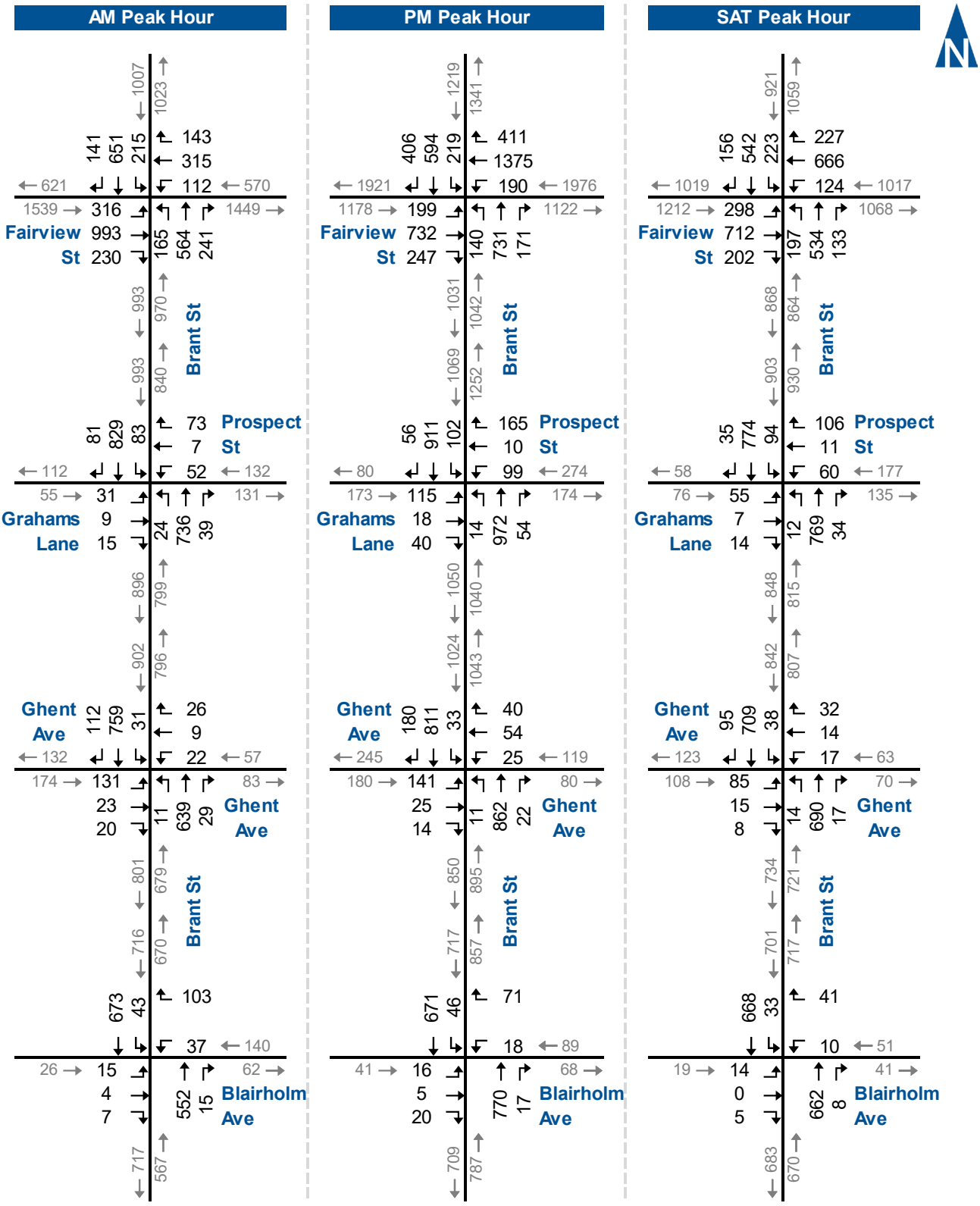
Table 2.1 summarizes the location and date of the existing turning movement count (TMC) data used in the analysis. The data was obtained from the Halton Region and City of Burlington. Paradigm collected the Saturday TMC data. **Appendix B** contains the existing count data.

TABLE 2.1: EXISTING TMC DATA

Intersection	Analysis Period	
	Weekday	Saturday
Brant Street at Fairview Street	May 2018	September 2020
Brant Street at Prospect Street/Grahams Lane	May 2019	September 2020
Brant Street at Ghent Avenue	May 2019	September 2020
Brant Street at Blairholm Avenue	May 2019	September 2020

To derive base year traffic volumes (Year 2022), the TMC data was factored to Year 2022 by using a 1% growth rate. The growth rate was determined in consultation with the City of Burlington and Halton Region.

Figure 2.7 illustrates the base year weekday AM, PM, and Saturday peak hour traffic volumes.



Base Year Traffic Volumes

Brant St / Ghent Ave, Burlington TIS
200403

Figure 2.7

2.6 Traffic Operations

Intersection level of service (LOS) is a recognized method of quantifying the efficiency of traffic flow at intersections. It is based on the delay experienced by individual vehicles executing the various movements. The delay is related to the number of vehicles desiring to make a movement, compared to the estimated capacity for that movement. The capacity is based on several criteria related to the opposing traffic flows. The highest possible rating is LOS A, under which the average total delay is equal or less than 10.0 seconds per vehicle. When the average delay exceeds 80 seconds at signalized intersections (50 seconds at unsignalized), the movement is considered to have a LOS F and remedial measures are usually implemented if they are feasible.

The operations of the study area intersections were evaluated under existing traffic volumes using Synchro 10 and HCM 2000 procedures. The intersection analysis considered the following measures of performance:

- The LOS for each turning movement. LOS is based on the average control delay per vehicle;
- The volume to capacity ratio for each intersection; and
- 95th percentile queue length (m).

Under the Region's TIS Guidelines, the following criteria indicate critical conditions and signify that mitigation measures may need to be considered:

- At signalized intersections,
  - Overall intersection operations, through movements, or shared through/turning movements increased to 0.85 or above.
  - V/C ratios for exclusive movements increased to 0.95 or above; or
  - Queues for an individual movement are projected to exceed turning lane storage.
- At unsignalized intersections,
  - LOS, based on average delay per vehicle, on individual movements exceeds LOS "D;" or
  - The estimated 95th percentile length for an individual movement exceeds the available queue storage.

Table 2.2 summarizes the results of the analysis for the intersection operations. The following critical movements are noted:

- Brant Street and Fairview Street:
  - Eastbound left-turn – PM peak hour, LOS F and v/c ratio greater than 1.00.
  - Westbound left-turn – PM peak hour, queue length exceeds storage.
  - Westbound through – PM peak hour, LOS F and v/c ratio greater than 1.00.
  - Northbound left-turn – AM, PM, and Saturday peak hour, queue length exceeds storage.
  - Northbound right-turn – AM and PM peak hour, queue length exceeds storage.
  - Southbound left-turn – AM, PM, and Saturday peak hour, queue length exceeds storage.
- Brant Street and Grahams Lane/Prospect Street:
  - Eastbound left-turn – PM peak hour, queue length exceeds storage.
- Brant Street and Blairholm Avenue:
  - Westbound left-turn – AM peak hour queue length exceeds storage.

Appendix C contains the supporting detailed Synchro reports.

As the observed traffic volumes should not technically have v/c ratios greater than 1.00, the v/c ratios exceeding 1.00 are likely due to the growth of the observed volumes to the base year condition.

TABLE 2.2A: BASE YEAR OPERATIONS (AM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Brant St & Fairview St	TCS	LOS	C	C	C	**C**	C	C	C	**C**	D	C	C	**C**	C	C	C	**C**	**C**
			Delay	21	32	21	**28**	28	28	26	**27**	37	35	30	**34**	31	31	25	**30**	**30**
			V/C	0.67	0.82	0.16		0.56	0.33	0.10		0.73	0.67	0.29		0.74	0.65	0.10		**0.79**
			Q	73	144	17		27	46	9		40	82	35		57	88	14		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	83		3	-	-		-15	-	-15		-17	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	C	C	>	**C**	C	C	>	**C**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	22	21	>	**22**	23	22	>	**22**	6	7	>	**7**	3	8	>	**7**	**9**
			V/C	0.16	0.05	>		0.25	0.08	>		0.10	0.42	>		0.17	0.49	>		**0.39**
			Q	12	8	>		18	13	>		6	48	>		6	58	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	18	-	>		2	-	>		9	-	>		14	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	B	>	**B**	A	B	>	**B**	**B**
			Delay	<	15	10	**15**	<	10	>	**10**	9	11	>	**11**	9	12	>	**12**	**12**
			V/C	<	0.61	0.01		<	0.08	>		0.07	0.45	>		0.13	0.59	>		**0.60**
			Q	<	73	2		<	10	>		4	56	>		9	76	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	13		<	-	>		21	-	>		6	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	B	B	**B**	B		B	**B**		A	>	**A**	A	A		**A**	**A**
			Delay	<	18	17	**18**	16		16	**16**		4	>	**4**	3	6		**5**	**6**
			V/C	<	0.08	0.01		0.16		0.07			0.27	>		0.09	0.61			**0.54**
			Q	<	7	0		11		11			18	>		5	65			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		-1		-			-	>		5	-			

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
< / > - Shared with through movement

TABLE 2.2B: BASE YEAR OPERATIONS (PM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Brant St & Fairview St	TCS	LOS	F	C	C	**D**	C	F	C	**E**	C	D	C	**D**	D	D	D	**D**	**D**
			Delay	114	32	26	**45**	27	88	27	**70**	30	48	33	**43**	42	36	35	**37**	**52**
			V/C	1.07	0.64	0.17		0.67	1.09	0.43		0.53	0.85	0.20		0.80	0.62	0.53		**0.97**
			Q	96	114	19		46	270	60		36	124	28		72	95	75		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	81		-16	-	-		-11	-	-8		-32	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	C	C	>	**C**	C	C	>	**C**	A	B	>	**B**	A	B	>	**B**	**B**
			Delay	26	22	>	**25**	24	22	>	**22**	8	12	>	**12**	6	11	>	**11**	**13**
			V/C	0.53	0.08	>		0.35	0.14	>		0.08	0.59	>		0.29	0.55	>		**0.52**
			Q	40	13	>		33	19	>		4	79	>		8	73	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	-10	-	>		-13	-	>		11	-	>		12	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	<	14	12	**14**	<	13	>	**13**	6	8	>	**8**	7	9	>	**9**	**9**
			V/C	<	0.41	0.01		<	0.20	>		0.06	0.52	>		0.16	0.59	>		**0.52**
			Q	<	34	1		<	20	>		3	57	>		7	65	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	14		<	-	>		22	-	>		8	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	B	B	**B**	B		B	**B**		A	>	**A**	A	A		**A**	**A**
			Delay	<	18	18	**18**	17		17	**17**		4	>	**4**	3	5		**5**	**5**
			V/C	<	0.10	0.01		0.08		0.05			0.37	>		0.13	0.59			**0.51**
			Q	<	7	3		6		9			24	>		5	59			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		4		-			-	>		5	-			

MOE - Measure of Effectiveness
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V/C - Volume to Capacity Ratio
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Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
< / > - Shared with through movement

TABLE 2.2C: BASE YEAR OPERATIONS (SAT PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
Saturday Peak Hour	Brant St & Fairview St	TCS	LOS	D	C	C	**C**	C	C	C	**C**	D	C	C	**C**	C	C	C	**C**	**C**
			Delay	38	25	20	**28**	25	35	26	**32**	38	34	28	**34**	31	29	25	**29**	**30**
			V/C	0.84	0.59	0.14		0.48	0.74	0.16		0.76	0.66	0.09		0.75	0.56	0.11		**0.80**
			Q	106	95	16		29	100	19		50	77	7		58	72	15		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	84		1	-	-		-25	-	13		-18	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	C	C	>	**C**	C	C	>	**C**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	22	20	>	**21**	22	20	>	**21**	6	8	>	**8**	3	8	>	**8**	**10**
			V/C	0.27	0.04	>		0.27	0.11	>		0.05	0.45	>		0.19	0.45	>		**0.37**
			Q	18	7	>		19	15	>		4	53	>		7	54	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	12	-	>		1	-	>		11	-	>		13	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	<	13	12	**13**	<	12	>	**12**	4	5	>	**5**	5	6	>	**6**	**6**
			V/C	<	0.32	0.01		<	0.11	>		0.05	0.39	>		0.12	0.45	>		**0.41**
			Q	<	17	0		<	9	>		3	31	>		6	36	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	15		<	-	>		22	-	>		9	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	B	**C**	B		B	**B**		A	>	**A**	A	A		**A**	**A**
			Delay	<	20	20	**20**	18		18	**18**		3	>	**3**	2	4		**4**	**4**
			V/C	<	0.10	0.00		0.06		0.03			0.29	>		0.07	0.55			**0.50**
			Q	<	5	0		4		6			19	>		3	56			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		6		-			-	>		7	-			

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
< / > - Shared with through movement

3 Development Concept

3.1 Development Description

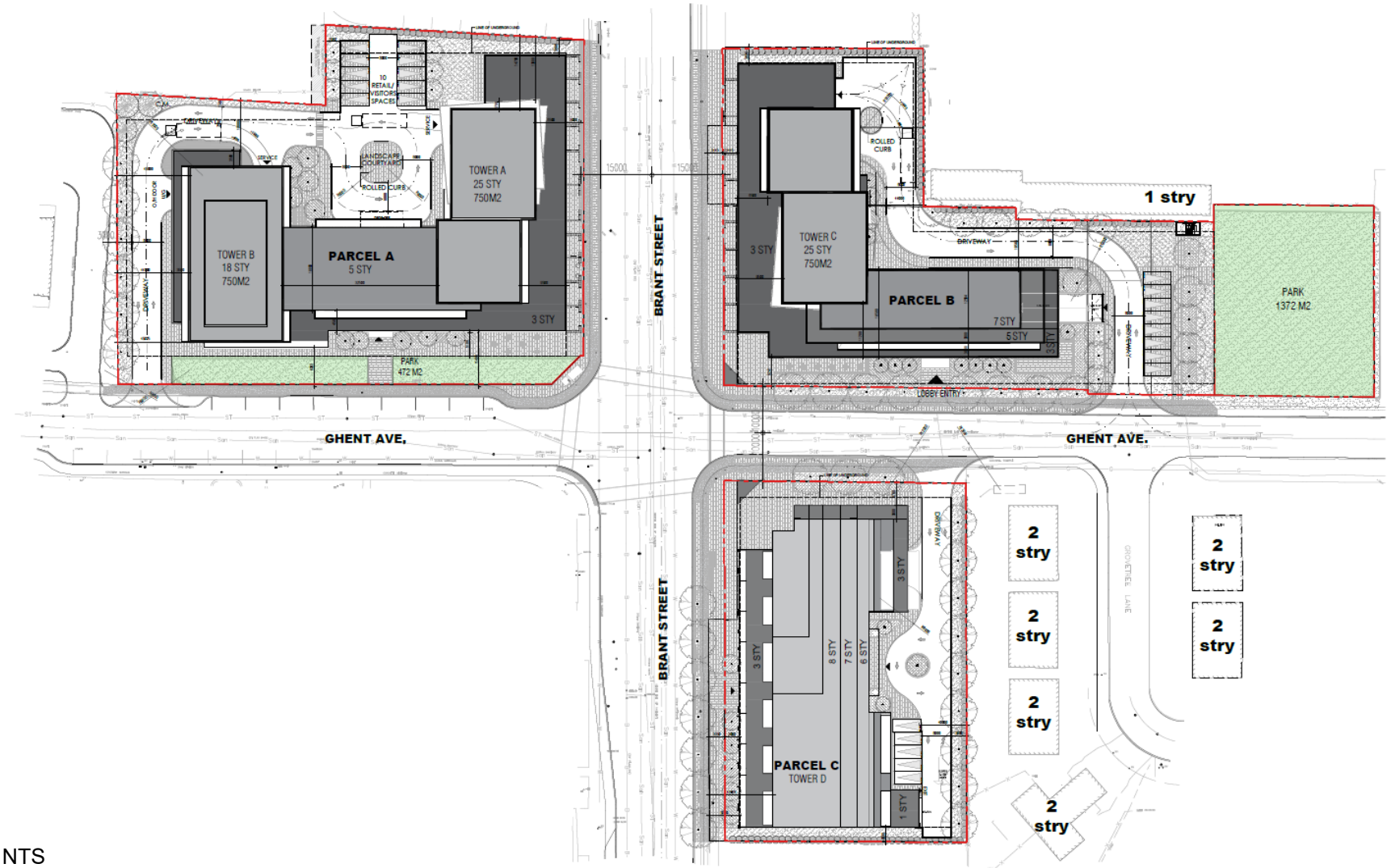
The subject site is on the northwest, northeast and southeast corner of the Brant Street and Ghent Avenue intersection. The site is separated into three lots with each lot being built in a separate phase. The details of each lot are as follows:

- **Lot A (Phase 1)**, northwest corner:
  - A 25-storey and an 18-storey high-rise building containing approximately 444 residential units with approximately 794 m^2 (8,547 ft^2) of ground floor retail;
  - Vehicle access is proposed by a private driveway to Ghent Avenue located approximately 110 m west of Brant Street. The construction of the site driveway is expected to result in the removal of 1-2 existing on-street parking spaces along the north side of Ghent Avenue.

    It is recommended that a raised curb at the proposed Lot A driveway with Ghent Avenue be implemented to define the on-street parking bay. This raised curb bump-out would provide visual and physical separation between the on-street parking bays and the site driveway as well act as a traffic calming device. The detailed design of the raised curbing can be completed during the site plan approval stage of development.
  - Build-out is anticipated to occur by Year 2029.
- **Lot B (Phase 2)**, northeast corner:
  - A 25-storey high-rise building containing approximately 283 residential units with approximately 711 m^2 (7,653 ft^2) ground floor retail;
  - Vehicle access is proposed by a private driveway to Ghent Avenue located approximately 100 m east of Brant Street. The driveway forms the fourth leg to the Grovetree Lane intersection
  - Build-out is anticipated to occur by Year 2032.
- **Lot C (Phase 3)**, southeast corner:
  - An 8-storey mid-rise building containing approximately 120 residential units with approximately 545 m^2 (5,866 ft^2) ground floor retail;

- Vehicle access is proposed by a private driveway to Ghent Avenue located approximately 60 m east of Brant Street. The driveway is located at the eastern limits of the site's frontage to Ghent Avenue.
- Build-out is anticipated to occur by Year 2035.

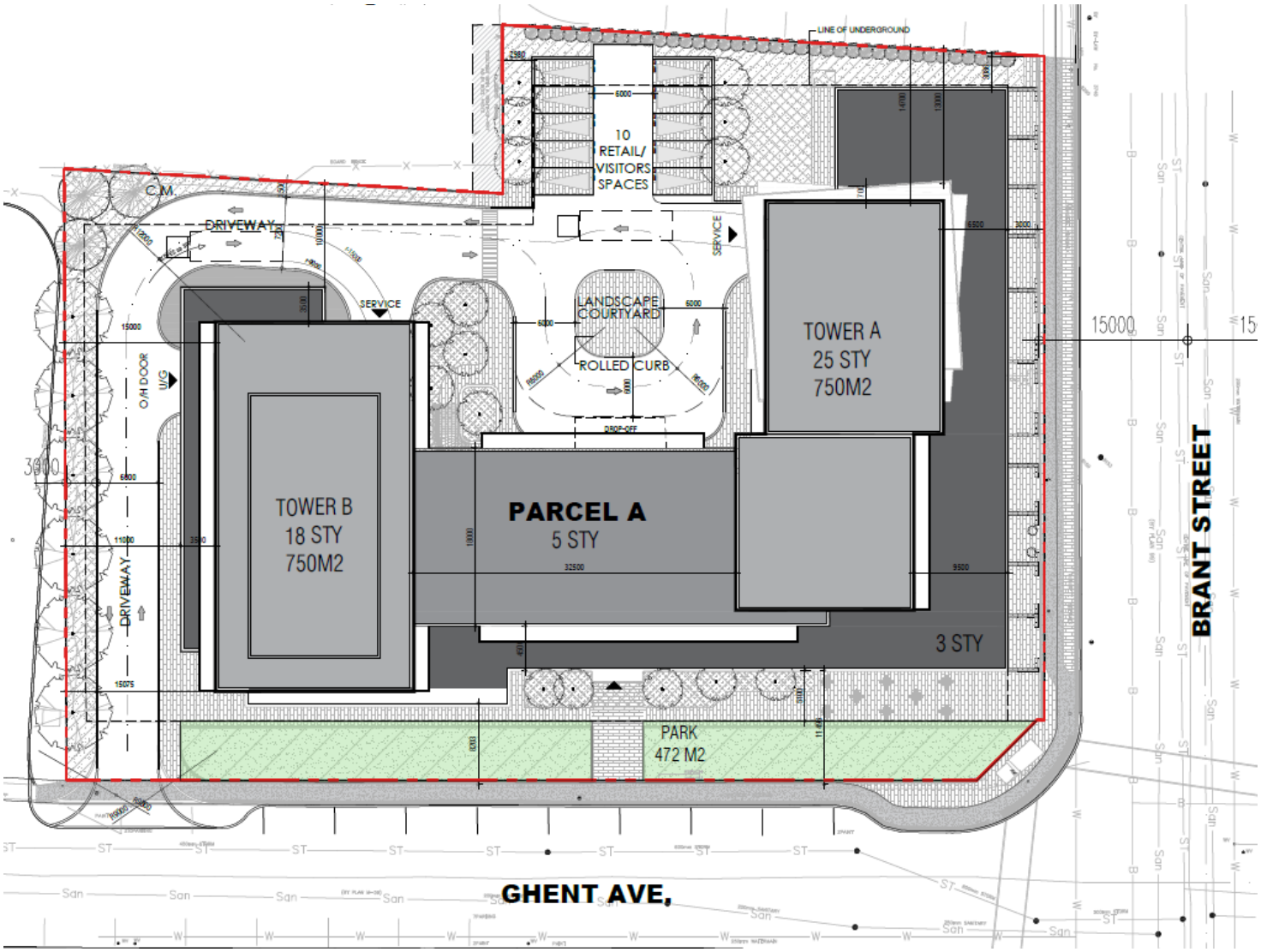
Figure 3.1 illustrates the full development concept plan. **Figure 3.2** illustrates the Lot A development concept plan. **Figure 3.3** illustrates the Lot B development concept plan. **Figure 3.4** illustrates the Lot C development concept plan.



NTS

Site Concept Plan - Overall

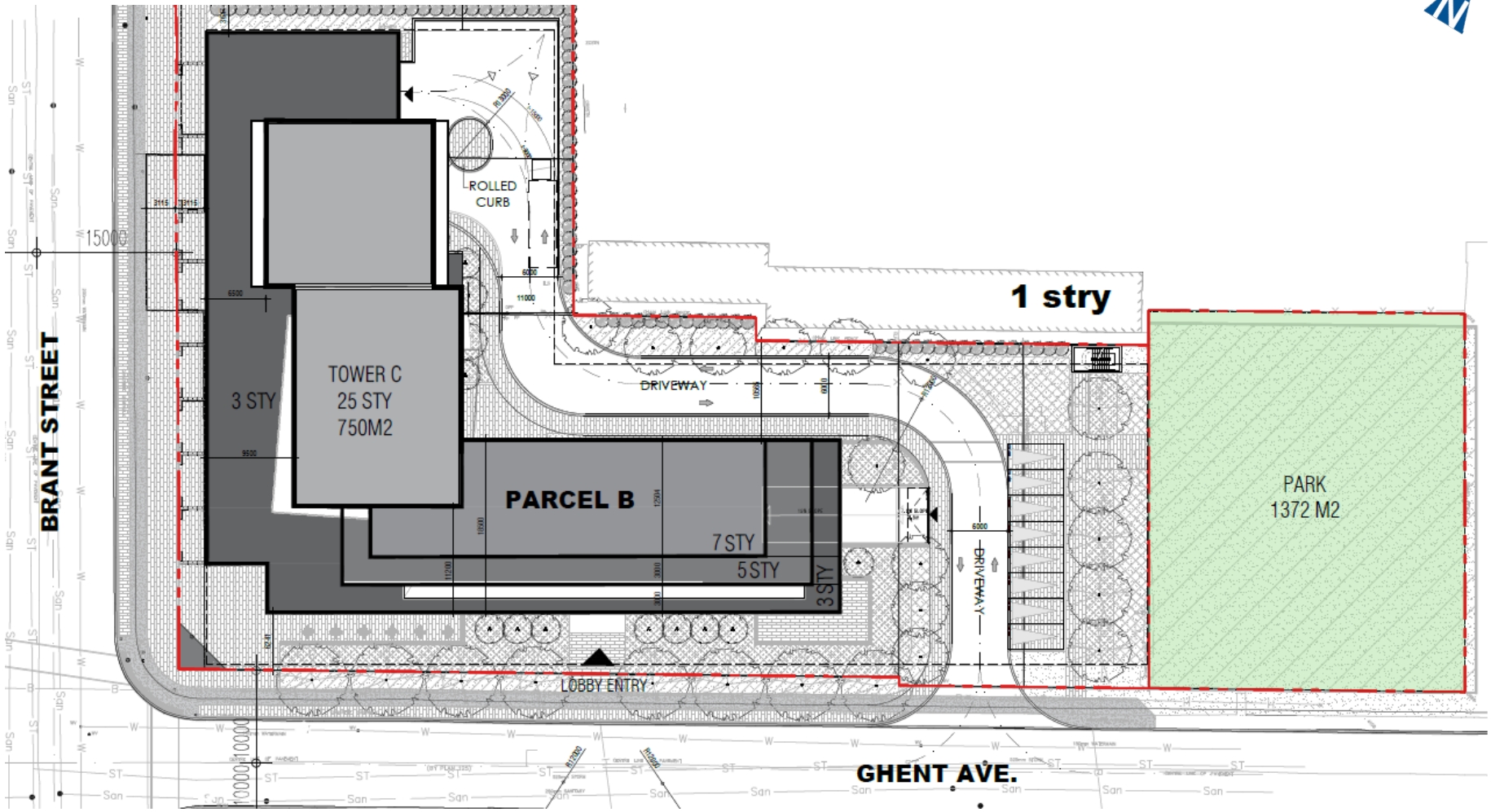
Figure 3.1



NTS

Concept Plan
Lot A (Phase 1)

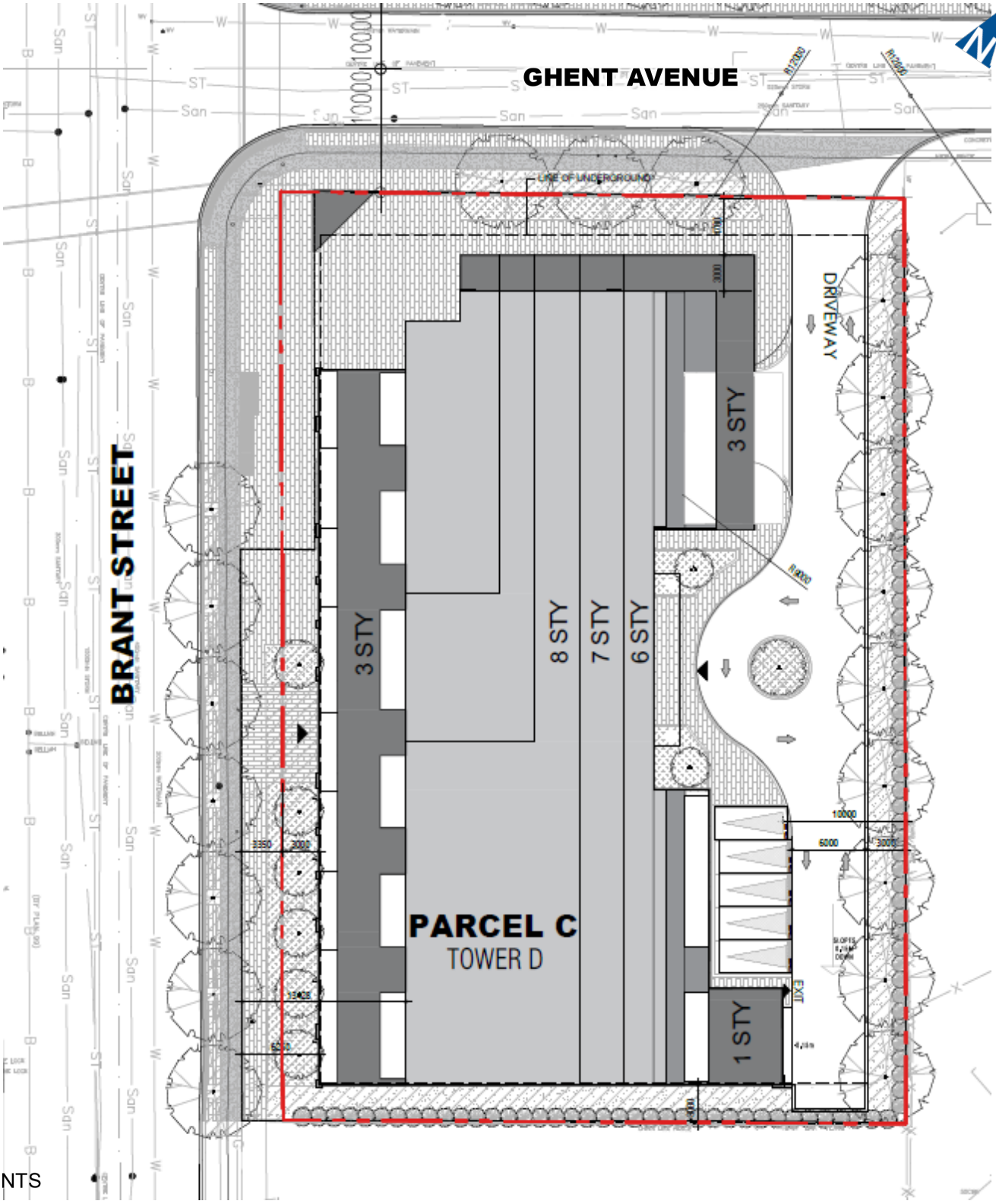
Figure 3.2



NTS

Concept Plan
Lot B (Phase 2)

Figure 3.3



paradigm TRANSPORTATION SOLUTIONS LIMITED

Concept Plan
Lot C (Phase 3)

3.2 Site Generated Traffic

The Institute of Transportation Engineers (ITE) Trip Generation[6] methods predict the site trip generation. The following land use codes were used to estimate the site's trip generation:

- LUC 221 Multifamily Housing, Mid-Rise;
- LUC 222 Multifamily Housing, High-Rise; and
- LUC 822 Strip Retail Plaza, <40k.

The highest generated trips by either using the average rate or the linear equation was used to estimate the trip generation to represent a conservative estimate.

For land use codes 221 and 222, the Dense Multi-use Urban location setting was used as the subject site is located near to Downtown Burlington and the Burlington GO MTSA.

Table 3.1 summarizes the estimated Phase 1 trip generation. **Table 3.2** summarizes the estimated Phase 2 trip generation. **Table 3.3** summarizes the estimated Phase 3 trip generation. The full build-out of the subject site is estimated to generate approximately 271 AM peak hour trips, 311 PM peak hour trips, and 244 Saturday peak hour trips.

Pass-by traffic was considered for the commercial components of the subject site with distribution from the Brant Street and Ghent Avenue intersection. The pass-by rates were obtained from the ITE Trip Generation Handbook 3rd Edition[7].

Appendix D contains the detailed site trip generation calculations.

The internal trip capture was estimated using the National Cooperative Highway Research Program (NCHRP) 8-51[8] Internal Trip Capture Estimation Tool included in **Appendix E**.

The Internal Trip Capture Estimate tool estimates that the site will generate the following:

- Transit trips – approximately 41, 54, and 34 external transit trips during the AM, PM, and Saturday peak hours, respectively. The

[6] Institute of Transportation Engineers, *Trip Generation Manual,* 11th ed., (Washington, DC. ITE, 2021)
[7] Institute of Transportation Engineers, *Trip Generation Handbook,* 3rd ed., (Washington, DC. ITE, 2017)
[8] NCHRP *8-51 Enhancing Internal Trip Capture Estimation for Mixed-Use Developments*, 2010

transit trips are assumed to begin and end using Active Transportation.

- Non-Auto Trips – approximately 15, 17, and 13 external non-motorized trips (walking/bicycle) trips during the AM, PM, and Saturday peak hours, respectively.

TABLE 3.1: PHASE 1 ESTIMATED TRIP GENERATION

ITE Land Use	Units	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
222 - Multifamily Housing, High-Rise (Units)	444	48	69	**117**	42	42	**84**	17	23	**40**
822 - Stip Retial Plaza, <40k (/1,000ft^2 GFA)	8.85	13	8	**21**	29	29	**58**	30	28	**58**
Phase 1 Total Trip Generation		61	77	**138**	71	71	**142**	47	51	**98**
Internal Capture		*-2*	*-2*	*-4*	*-1*	*-1*	*-2*	*0*	*0*	*0*
Phase 1 External Trips		**59**	**75**	**134**	**70**	**70**	**140**	**47**	**51**	**98**

222: AM T = 0.28(X) - 7.17 / PM Ln(T) = 0.95Ln(X) - 1.36 / SAT Average Rate 0.09

822: AM Avg Rate 2.36 / PM Avg Rate 6.59 / SAT Avg Rate 6.57

TABLE 3.2: PHASE 2 ESTIMATED TRIP GENERATION

ITE Land Use	Units	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
222 - Multifamily Housing, High-Rise (Units)	283	30	42	**72**	27	28	**55**	11	14	**25**
822 - Stip Retial Plaza, <40k (/1,000ft2 GFA)	7.65	11	7	**18**	25	25	**50**	25	25	**50**
Phase 2 Total Trip Generation		41	49	**90**	52	53	**105**	36	39	**75**
Internal Capture		*-1*	*-1*	*-2*	*-1*	*-1*	*-2*	0	0	0
Phase 2 External Trips		**40**	**48**	**88**	**51**	**52**	**103**	**36**	**39**	**75**

222: AM T = 0.28(X) - 7.17 / PM Ln(T) = 0.95Ln(X) - 1.36 / SAT Average Rate 0.09

822: AM Avg Rate 2.36 / PM Avg Rate 6.59 / SAT Avg Rate 6.57

TABLE 3.3: PHASE 3 ESTIMATED TRIP GENERATION

ITE Land Use	Units	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
221 - Multifamily Housing, Mid-Rise (Units)	120	5	30	**35**	21	8	**29**	14	18	**32**
822 - Stip Retial Plaza, <40k (/1,000ft2 GFA)	5.87	8	6	**14**	19	20	**39**	20	19	**39**
Phase 3 Total Trip Generation		13	36	**49**	40	28	**68**	34	37	**71**
Internal Capture		*0*	*0*	*0*	*0*	*0*	*0*	0	0	0
Phase 3 External Trips		**13**	**36**	**49**	**40**	**28**	**68**	**34**	**37**	**71**

221: AM LT = 0.25(X) + 5.35 / PM T = 0.29(X) - 6.26 / SAT Average Rate 0.27

822: AM Avg Rate 2.36 / PM Avg Rate 6.59 / SAT Avg Rate 6.57

3.3 Trip Distribution and Assignment

The site generated trips were assigned to the road network based on the information provided in the 2016 Transportation Tomorrow Survey[9]. **Table 3.4** summarizes the estimated site trip distribution.

TABLE 3.4: ESTIMATED TRIP DISTRIBUTION

Origin/Destination	Percentage
North via Brant Street	38%
East via Fairview Street	12%
East via Prospect Street	9%
East via Ghent Avenue	12%
South via Brant Street	18%
West via Fairview Street	11%
Total	**100%**

Figure 3.5A, Figure 3.5B and **Figure 3.5C** illustrates the Lot A (Phase 1) site generated traffic volumes for the AM, PM, and Saturday peak hours, respectively.

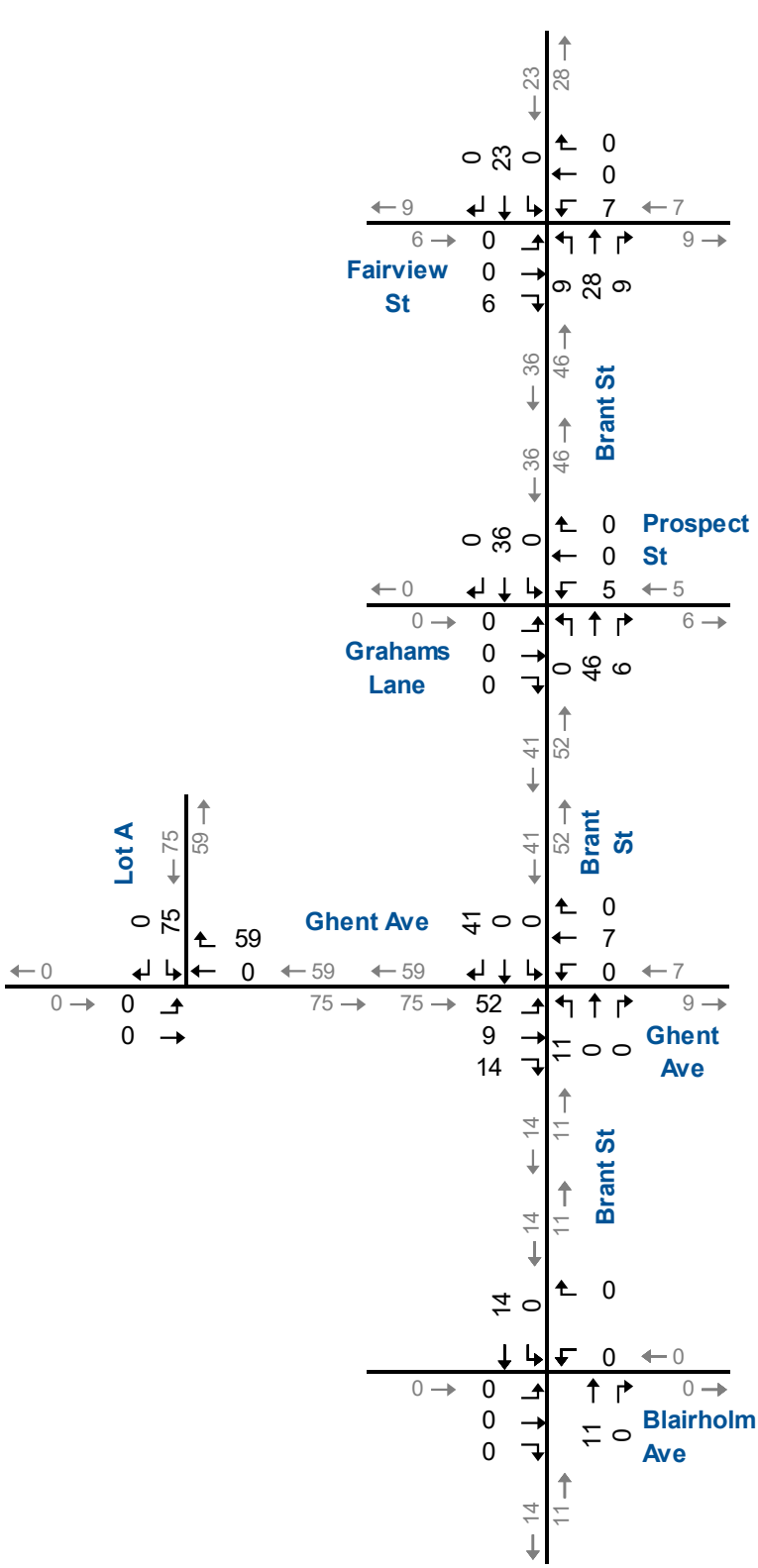
Figure 3.6A, Figure 3.6B and **Figure 3.6C** illustrates the Lot B (Phase 2) site generated traffic volumes for the AM, PM, and Saturday peak hours, respectively.

Figure 3.7A, Figure 3.7B and **Figure 3.7C** illustrates the Lot C (Phase 3) site generated traffic volumes for the AM, PM, and Saturday peak hours, respectively.

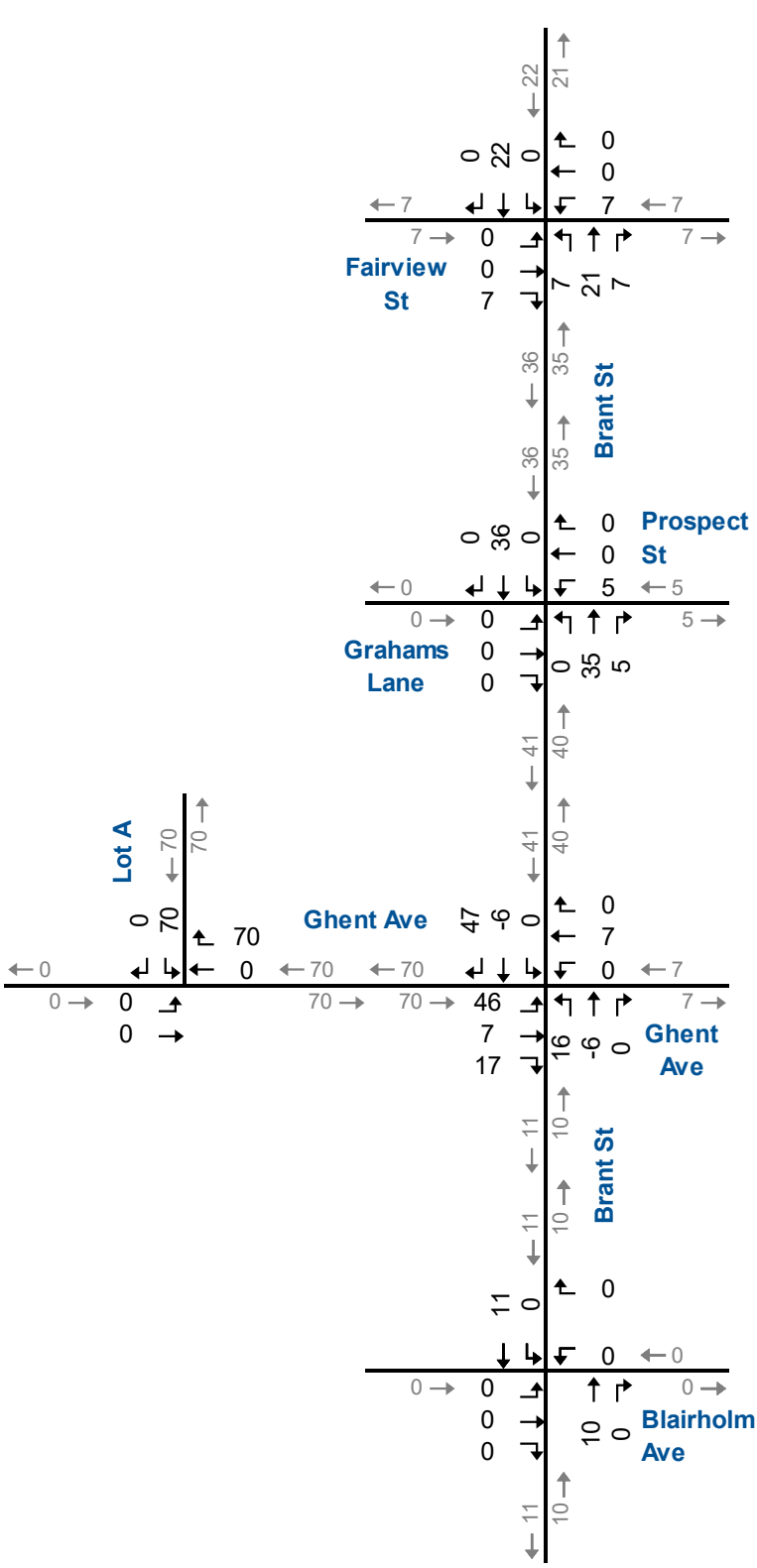
Figure 3.8A, Figure 3.8B and **Figure 3.8C** illustrates the full build-out site generated traffic volumes for the AM, PM, and Saturday peak hours, respectively.

Appendix F contains the separate site generated traffic assignment and the pass-by assignment.

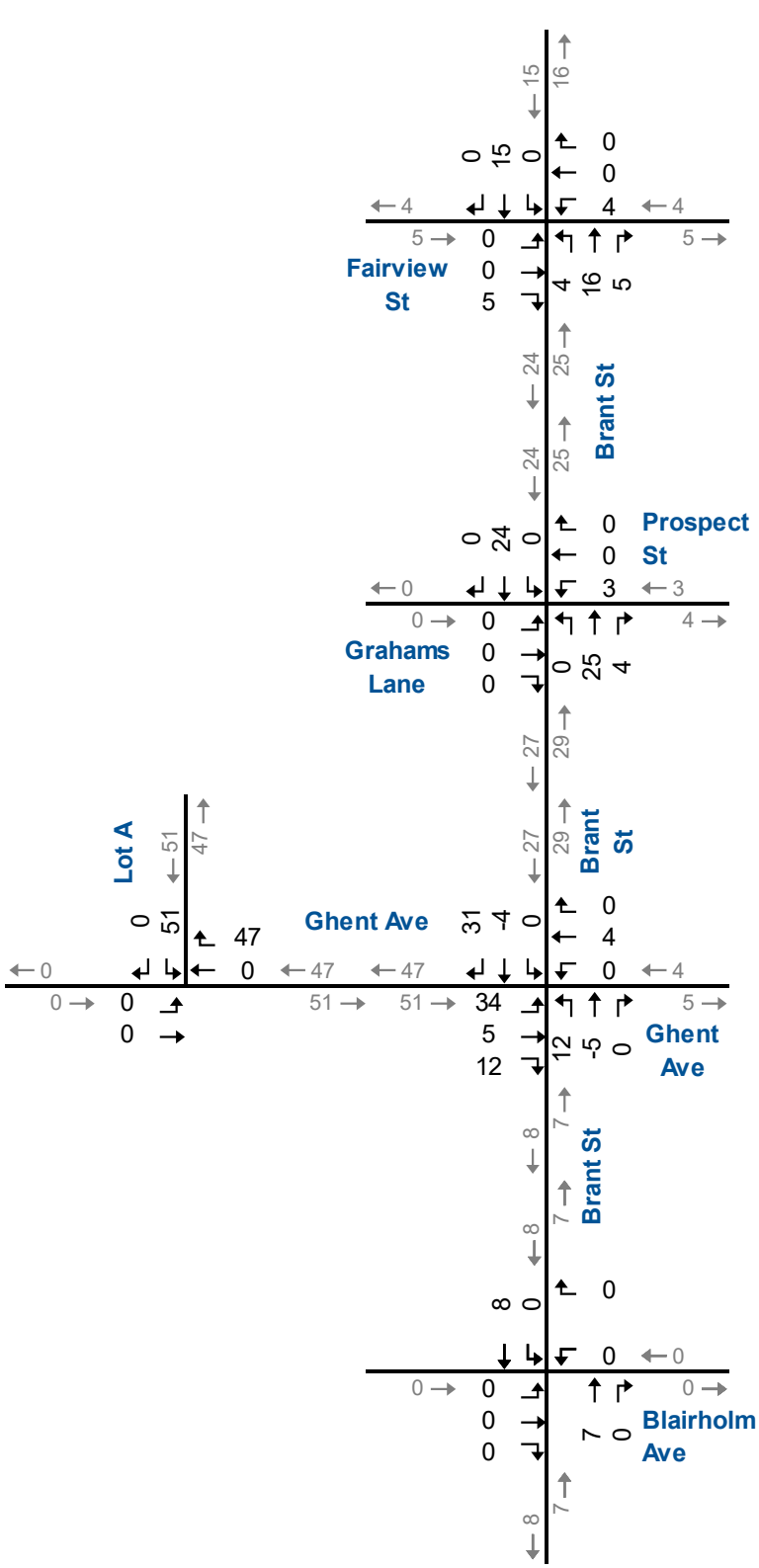
[9] Transportation Tomorrow Survey 2016, Traffic Zone 4059



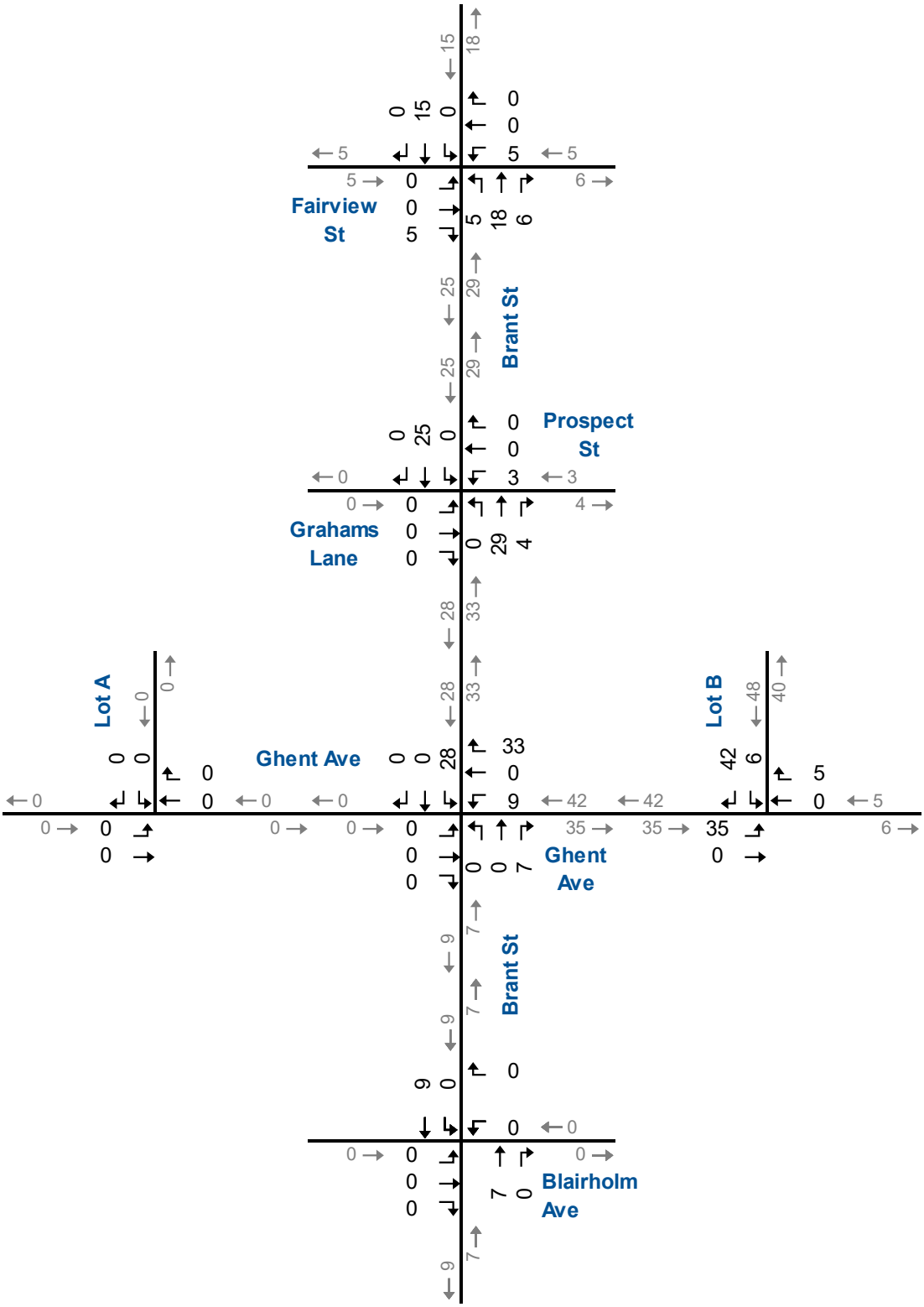
Lot A (Phase 1) Site Generated Traffic Volumes AM Peak Hour



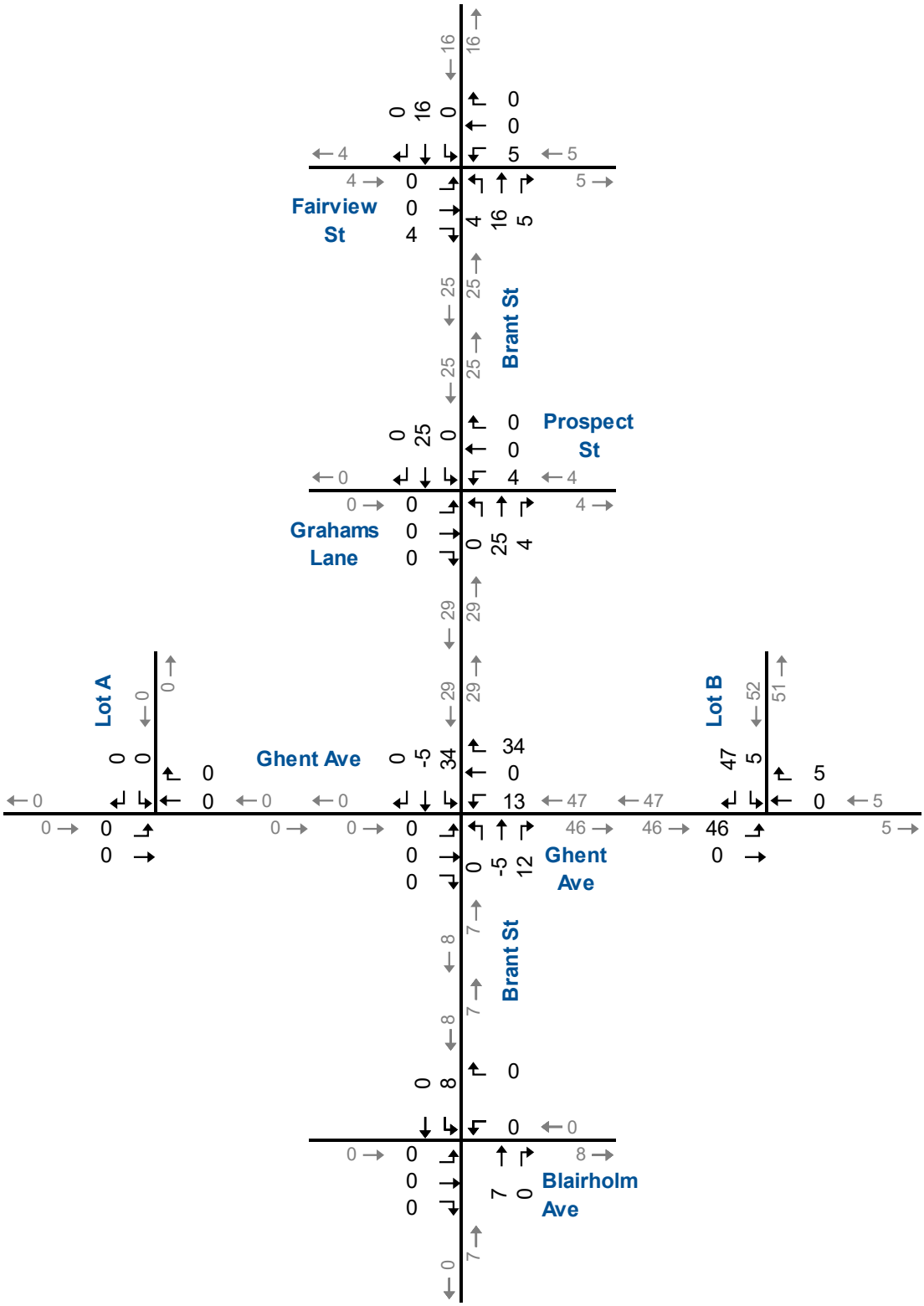
Lot A (Phase 1) Site Generated Traffic Volumes PM Peak Hour



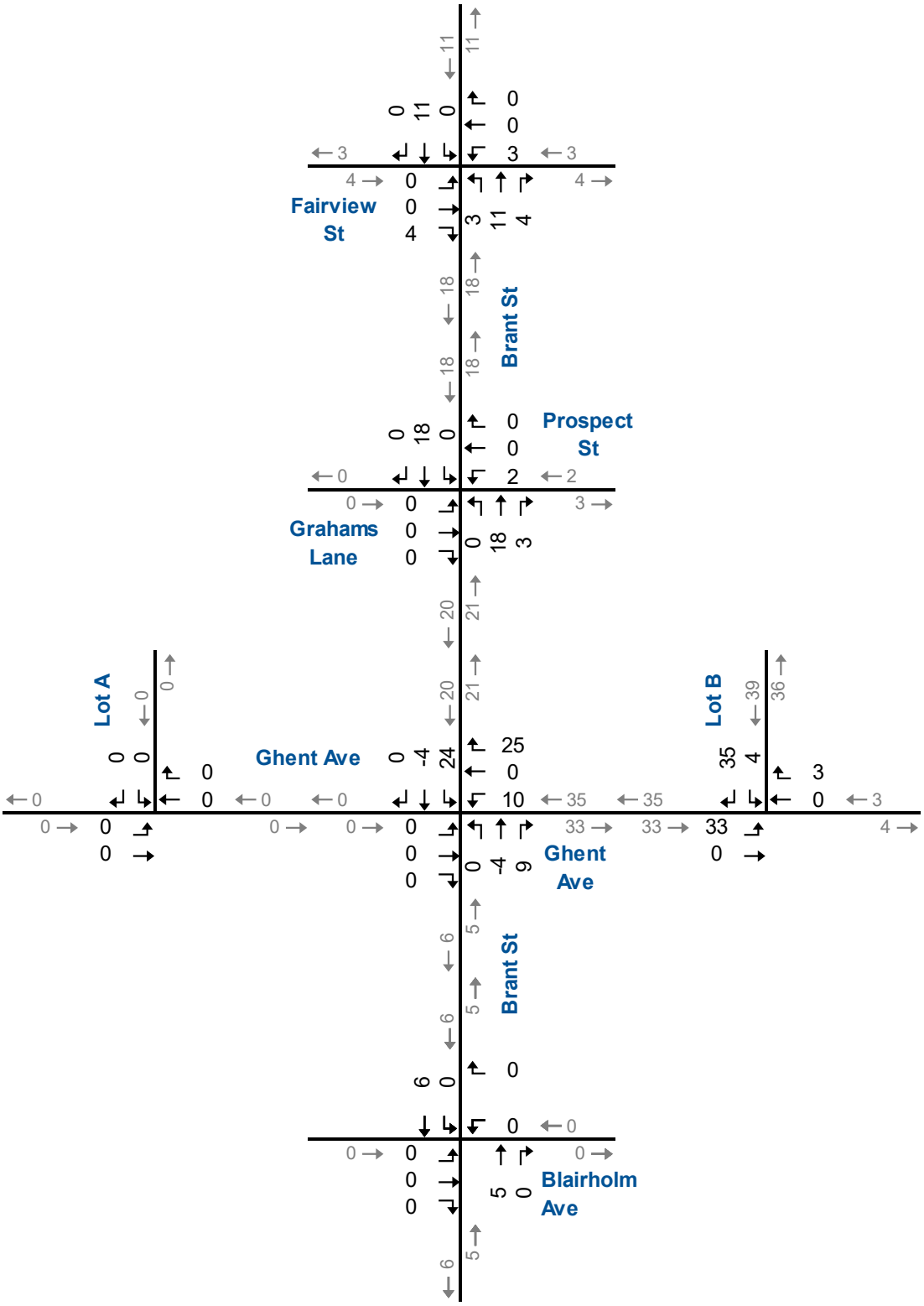
Lot A (Phase 1) Site Generated Traffic Volumes Saturday Peak Hour



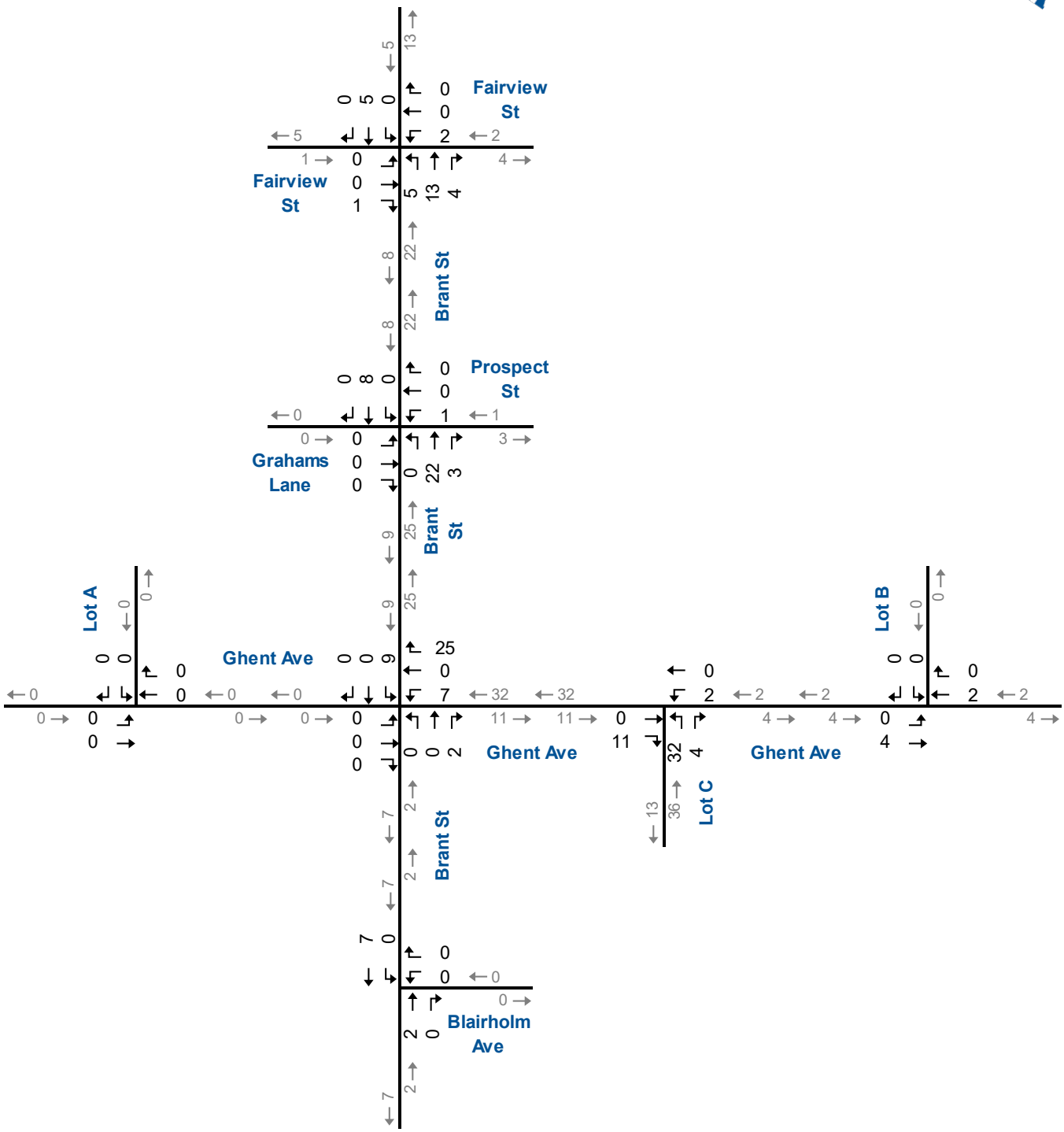
Lot B (Phase 2) Site Generated Traffic Volumes AM Peak Hour



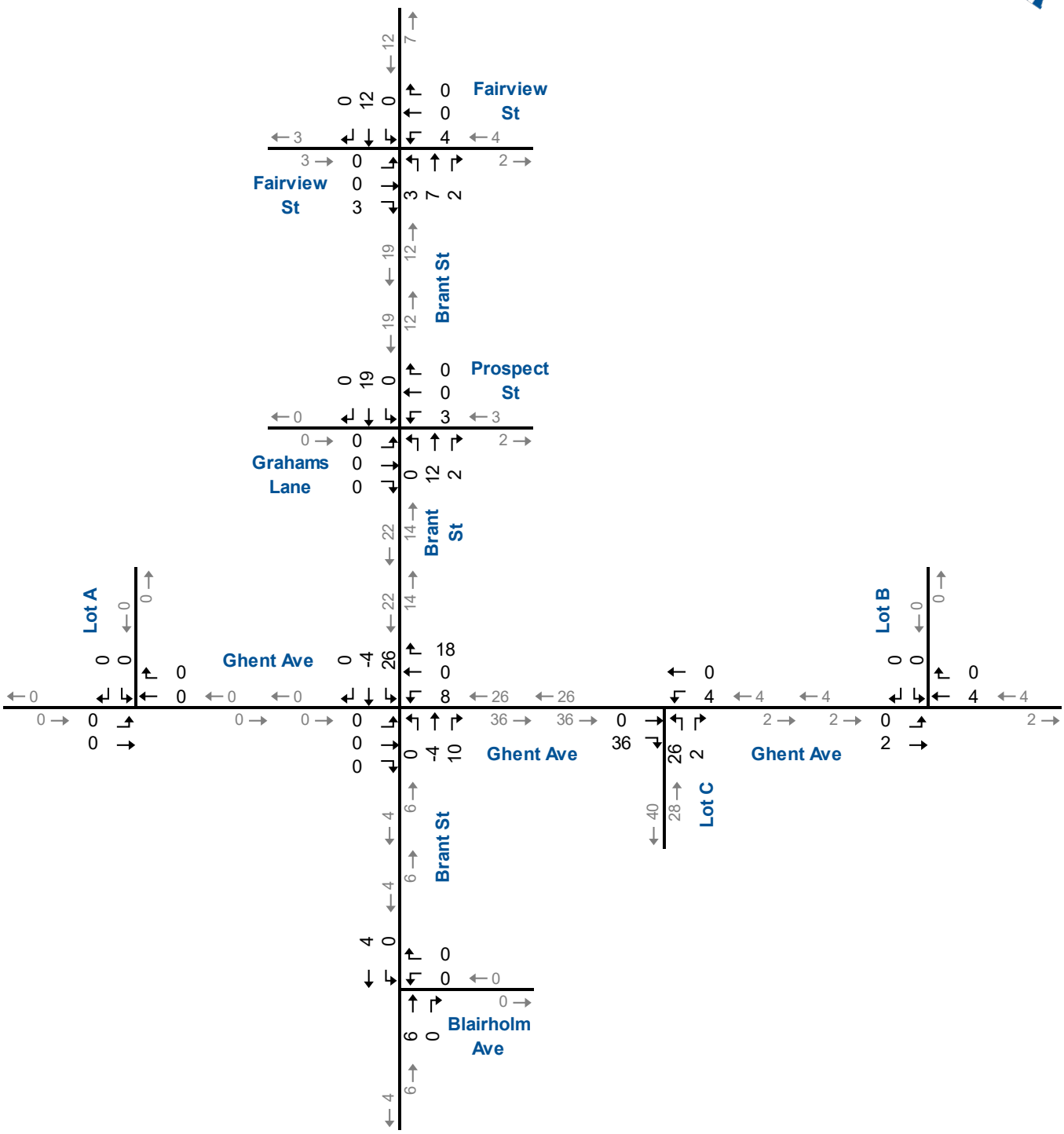
Lot B (Phase 2) Site Generated Traffic Volumes PM Peak Hour



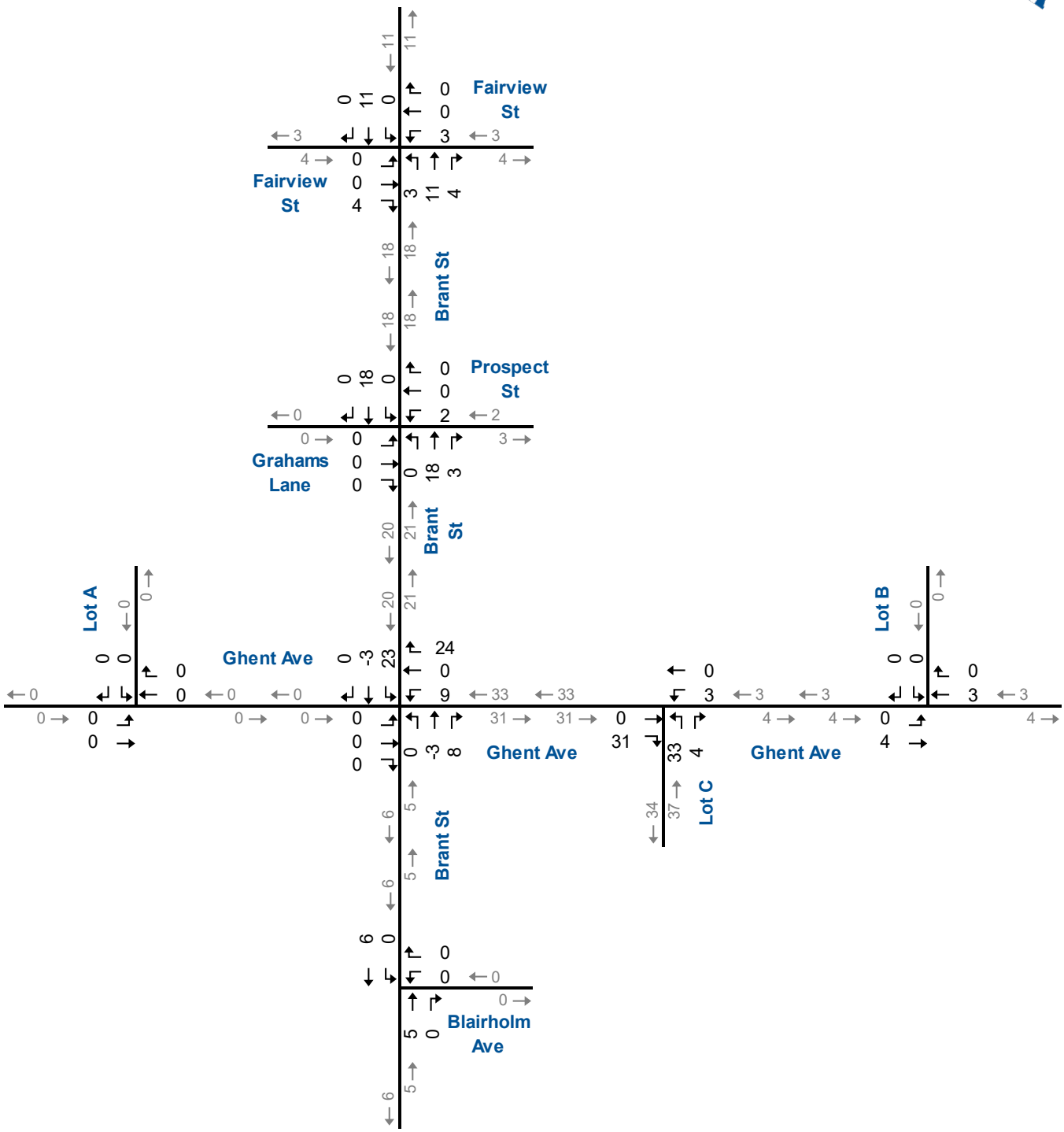
Lot B (Phase 2) Site Generated Traffic Volumes Saturday Peak Hour



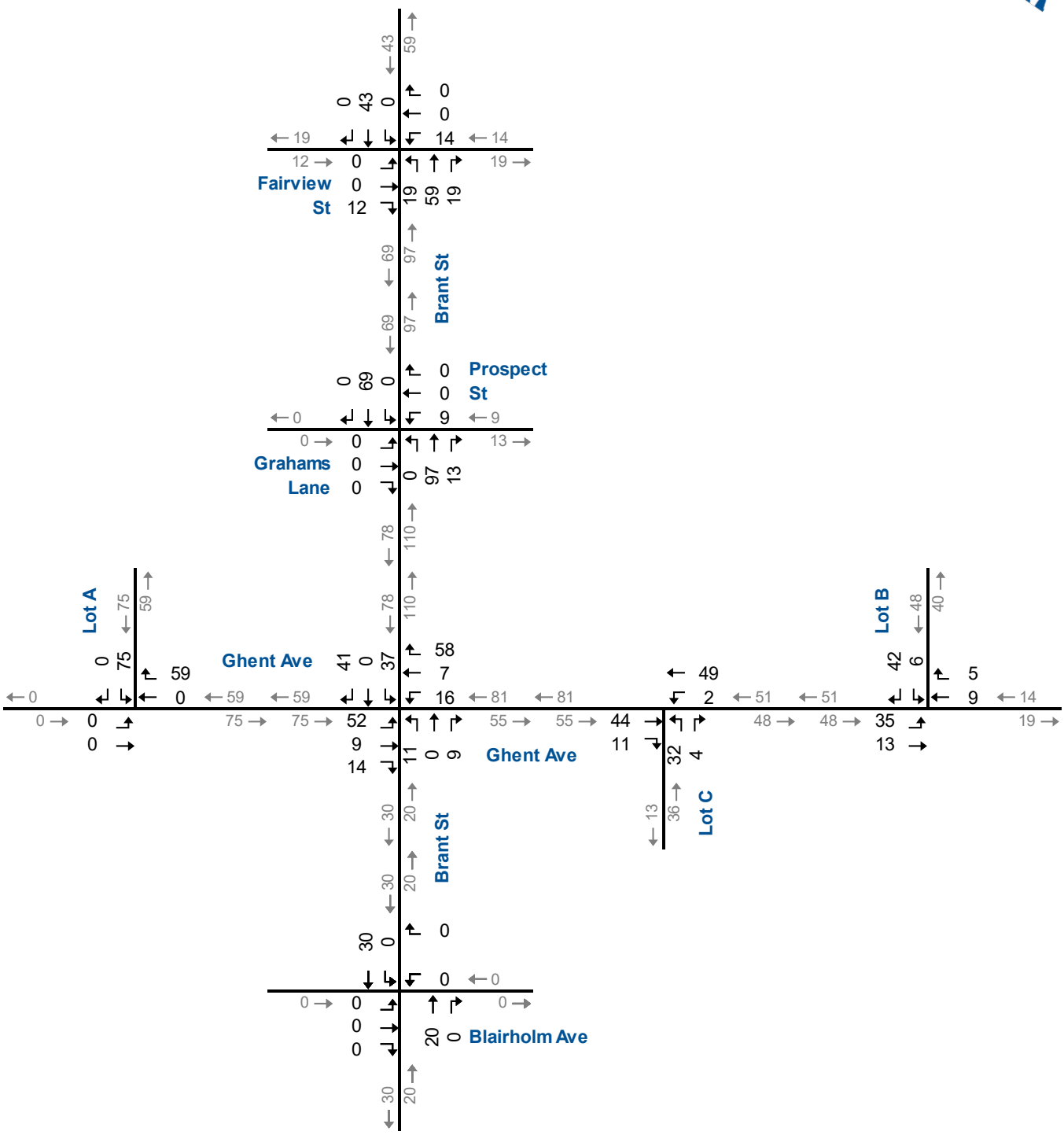
Lot C (Phase 3) Site Generated Traffic Volumes AM Peak Hour



Lot C (Phase 3) Site Generated Traffic Volumes PM Peak Hour



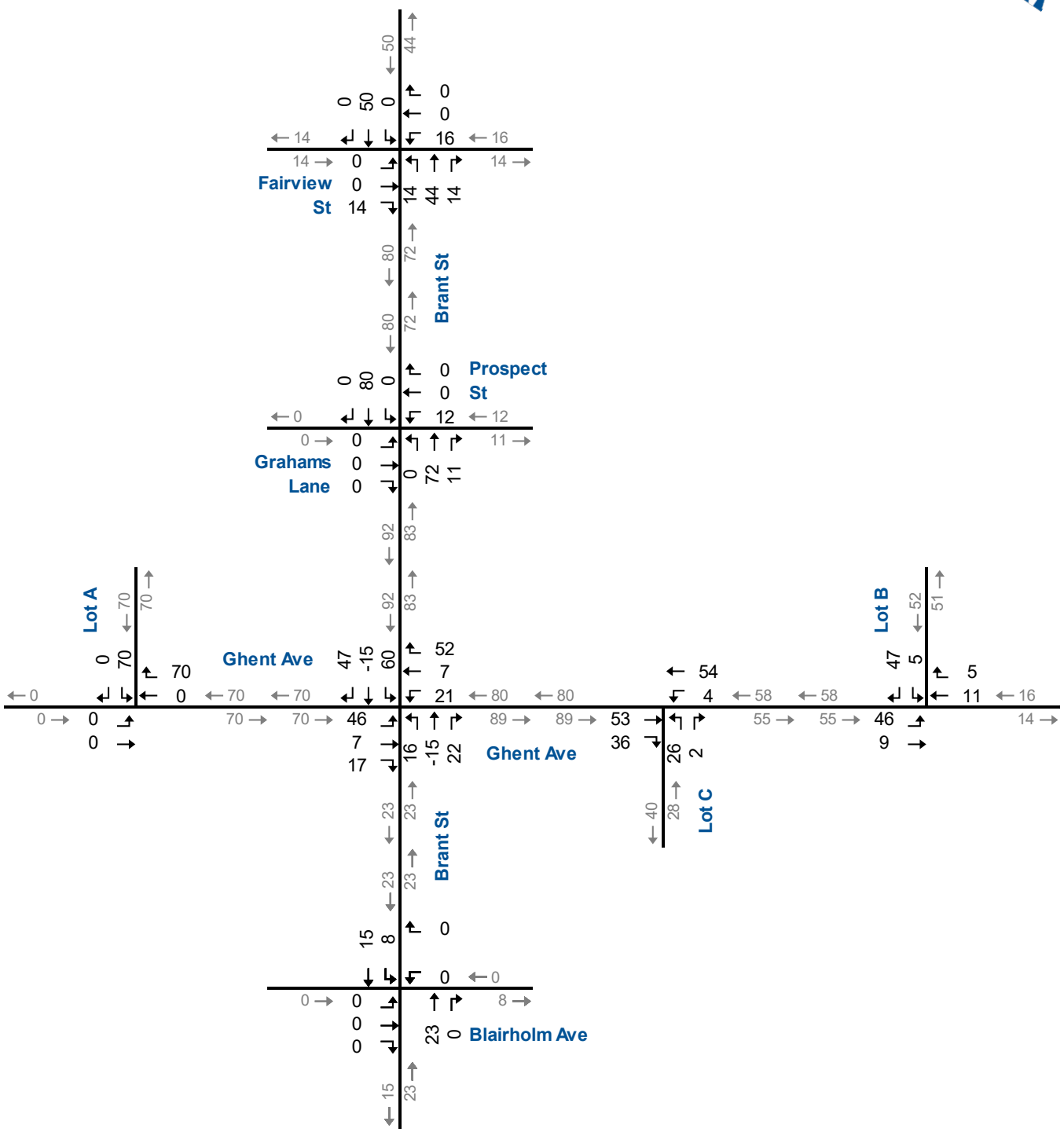
Lot C (Phase 3) Site Generated Traffic Volumes Saturday Peak Hour



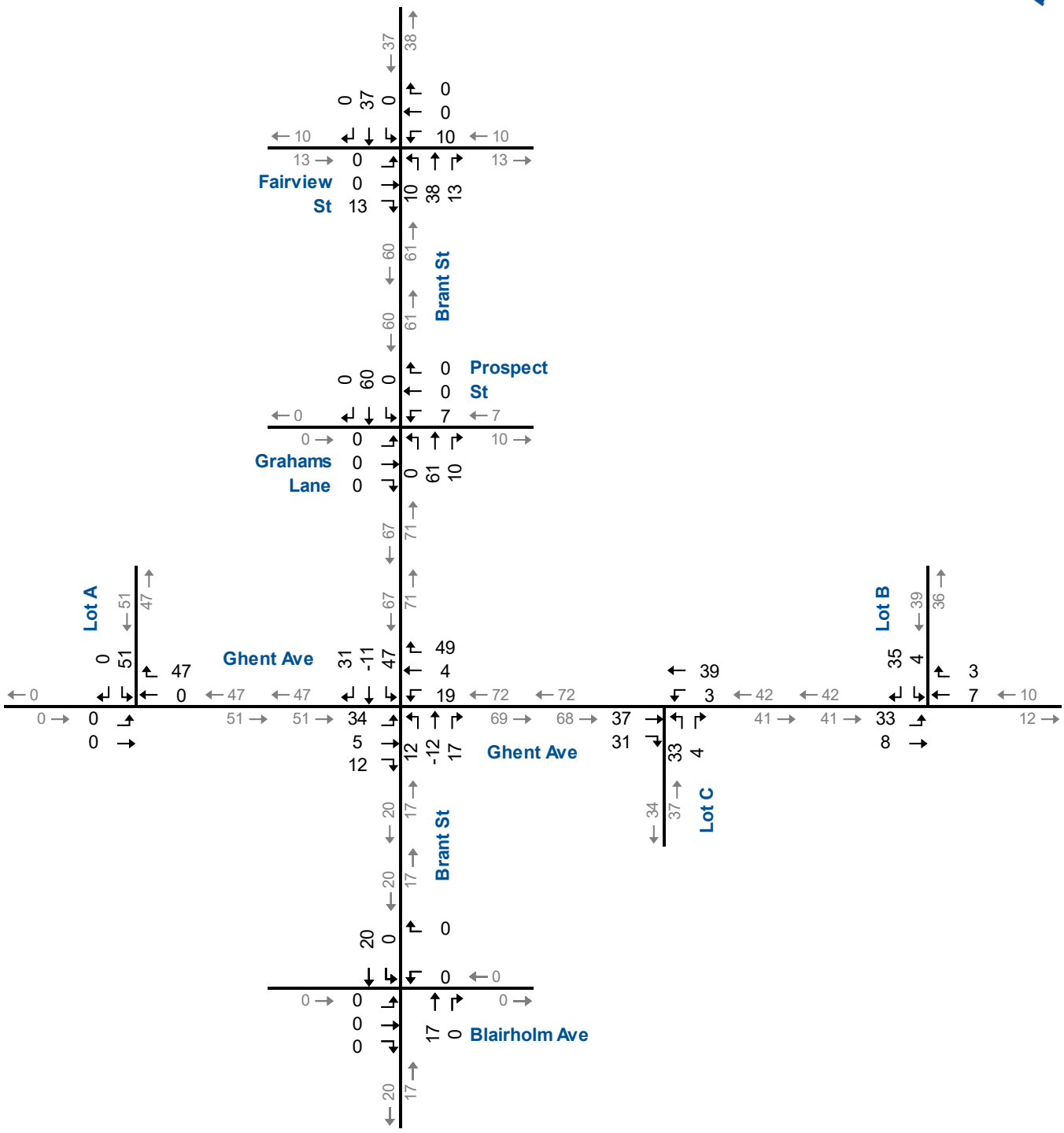
Full Build-Out Site Generated Traffic Volumes AM Peak Hour

Brant St / Ghent Ave, Burlington TIS
200403

Figure 3.8A



Full Build-Out Site Generated Traffic Volumes PM Peak Hour



Full Build-Out Site Generated Traffic Volumes Saturday Peak Hour

Brant St / Ghent Ave, Burlington TIS
200403

Figure 3.8C

4 Future Traffic Conditions

The assessment of the future traffic conditions contained in this section includes the traffic forecast as well as the level of service analysis.

4.1 Forecast Traffic Volumes

Three horizon years have been assessed to estimate the impact of the subject development and background roadway traffic:

- Build-out of Phase 1 – Year 2029;
- Build-out of Phase 2 – Year 2032;
- Full build-out – Year 2035; and
- Five-year from full build-out – Year 2040.

The likely future traffic volumes are estimated to consist of:

- Increased non-site traffic (generalized background traffic growth) estimated to be 1% percent per annum;
- Traffic generated by adjacent future developments including:
  - 2095 Prospect Street[10] – proposed residential infill development that will replace 8 existing townhouses with 50 new stacked townhouse apartments;
  - 1134-1167 Plains Road East[11] – proposed mixed use development consisting approximately 1,062 high-rise residential units, 1,018m^2 ground floor commercial, and 465 m^2 office building;
  - 849-855 Brant Street[12] – proposed residential development consisting approximately 152 mid-rise units; and
  - 535-551 Brant Street[13] – proposed mixed use development consisting approximately 248 high-rise residential units and 1,068m2 ground floor commercial.
- Traffic generated by the subject site.

[10] GHD, *Traffic and Parking Study 2095 Prospect Street, City of Burlington*, Burlington: GHD, December 2017).
[11] Paradigm Transportation Solutions Limited, *1134-1167 Plains Road East, Burlington, Transportation Impact Study*, (Burlington: PTSL May 2021).
[12] Paradigm Transportation Solutions Limited, *849-855 Brant Street, Burlington, Transportation Impact and Parking Study*, (Burlington: PTSL September 2022).
[13] Paradigm Transportation Solutions Limited, *535-551 Brant Street, Burlington, Transportation Impact and Parking Study*, (Burlington PTSL November 2020).

Appendix G contains the detailed traffic forecast for the adjacent development applications.

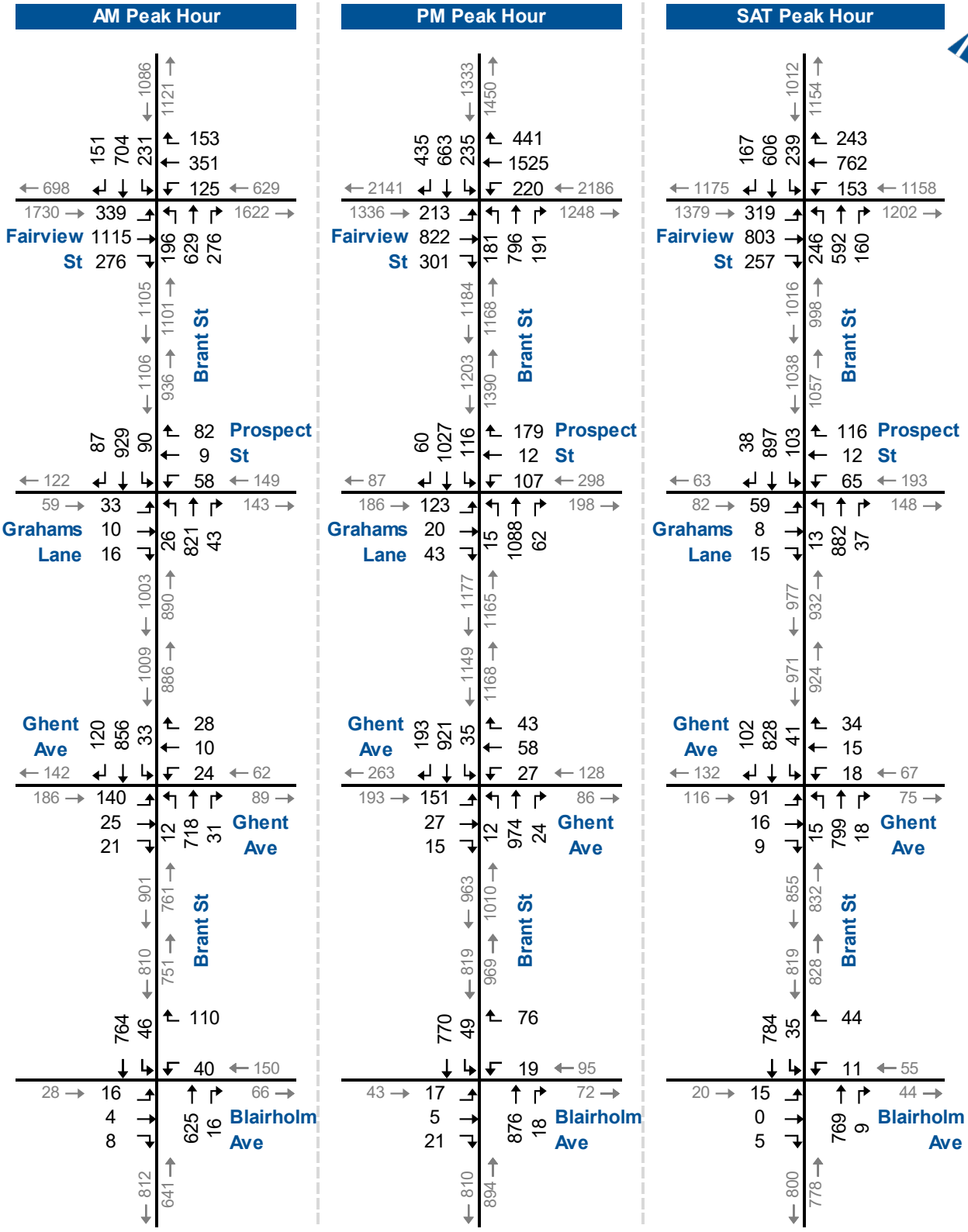
Figure 4.1 illustrates the forecast 2029 background traffic volumes.
Figure 4.2 illustrates the forecast 2032 background traffic volumes.
Figure 4.3 illustrates the forecast 2035 background traffic volumes.
Figure 4.4 illustrates the forecast 2040 background traffic volumes.

Figure 4.5A, **Figure 4.5B** and **Figure 4.5C** illustrates the forecast 2029 total traffic volumes for the AM, PM, and Saturday peak hours, respectively.

Figure 4.6A, **Figure 4.6B** and **Figure 4.6C** illustrates the forecast 2032 total traffic volumes for the AM, PM, and Saturday peak hours, respectively.

Figure 4.7A, **Figure 4.7B** and **Figure 4.7C** illustrates the forecast 2035 total traffic volumes for the AM, PM, and Saturday peak hours, respectively.

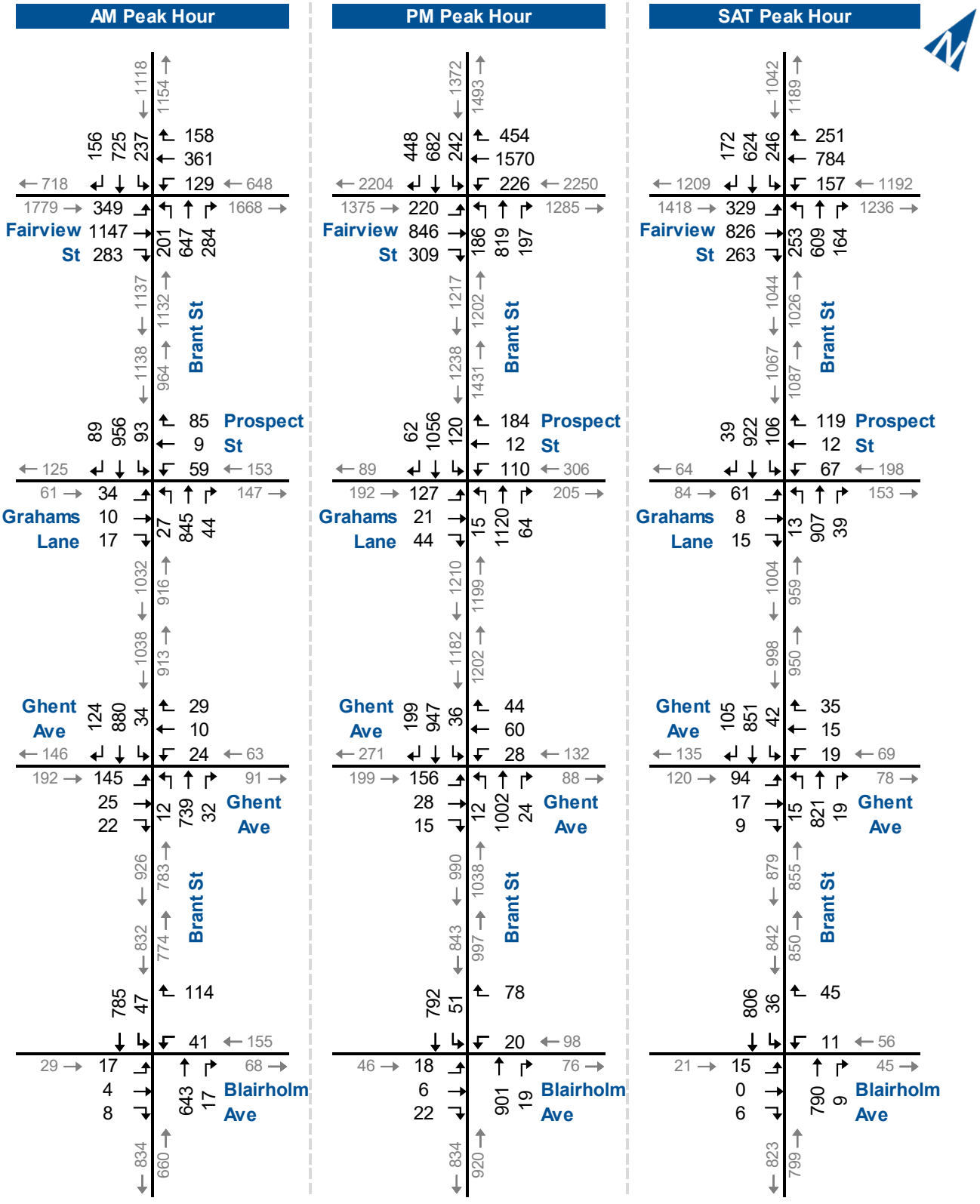
Figure 4.8A, **Figure 4.8B** and **Figure 4.8C** illustrates the forecast 2040 total traffic volumes for the AM, PM, and Saturday peak hours, respectively.



Background – Phase 1 Traffic Volumes

Brant St / Ghent Ave, Burlington TIS
200403

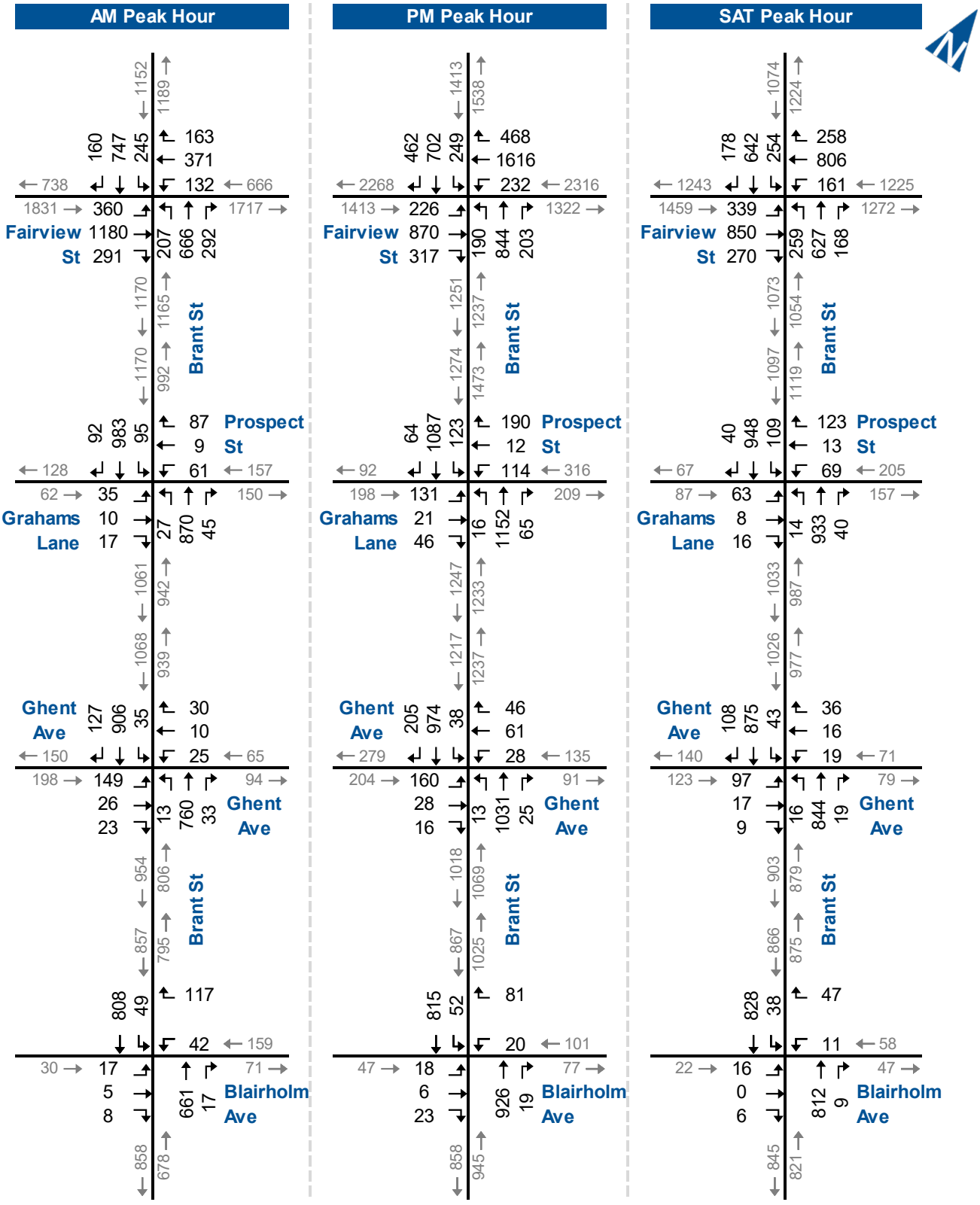
Figure 4.1



Background – Phase 2 Traffic Volumes

Brant St / Ghent Ave, Burlington TIS
200403

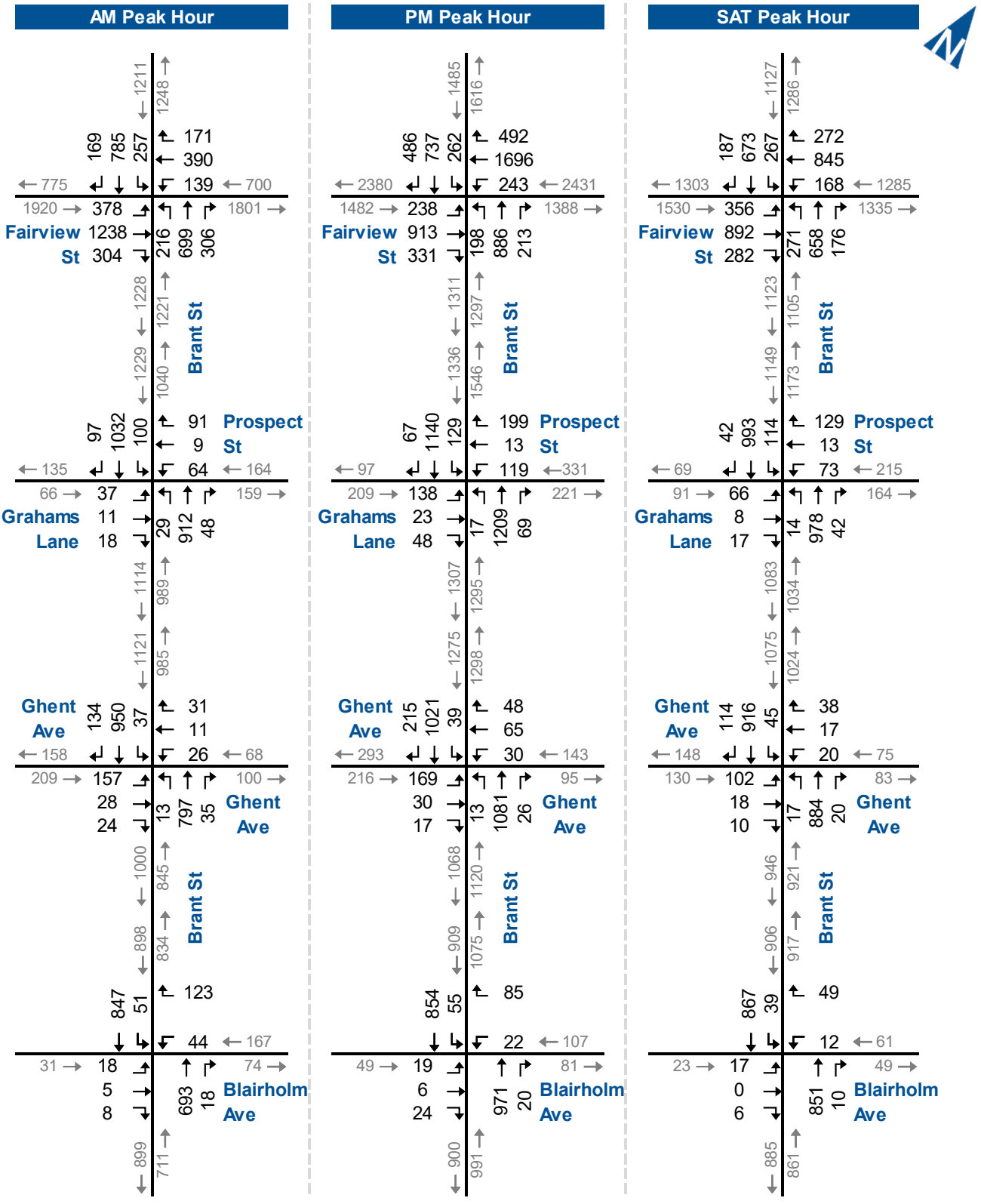
Figure 4.2



Background – Full Build-Out Traffic Volumes

Brant St / Ghent Ave, Burlington TIS
200403

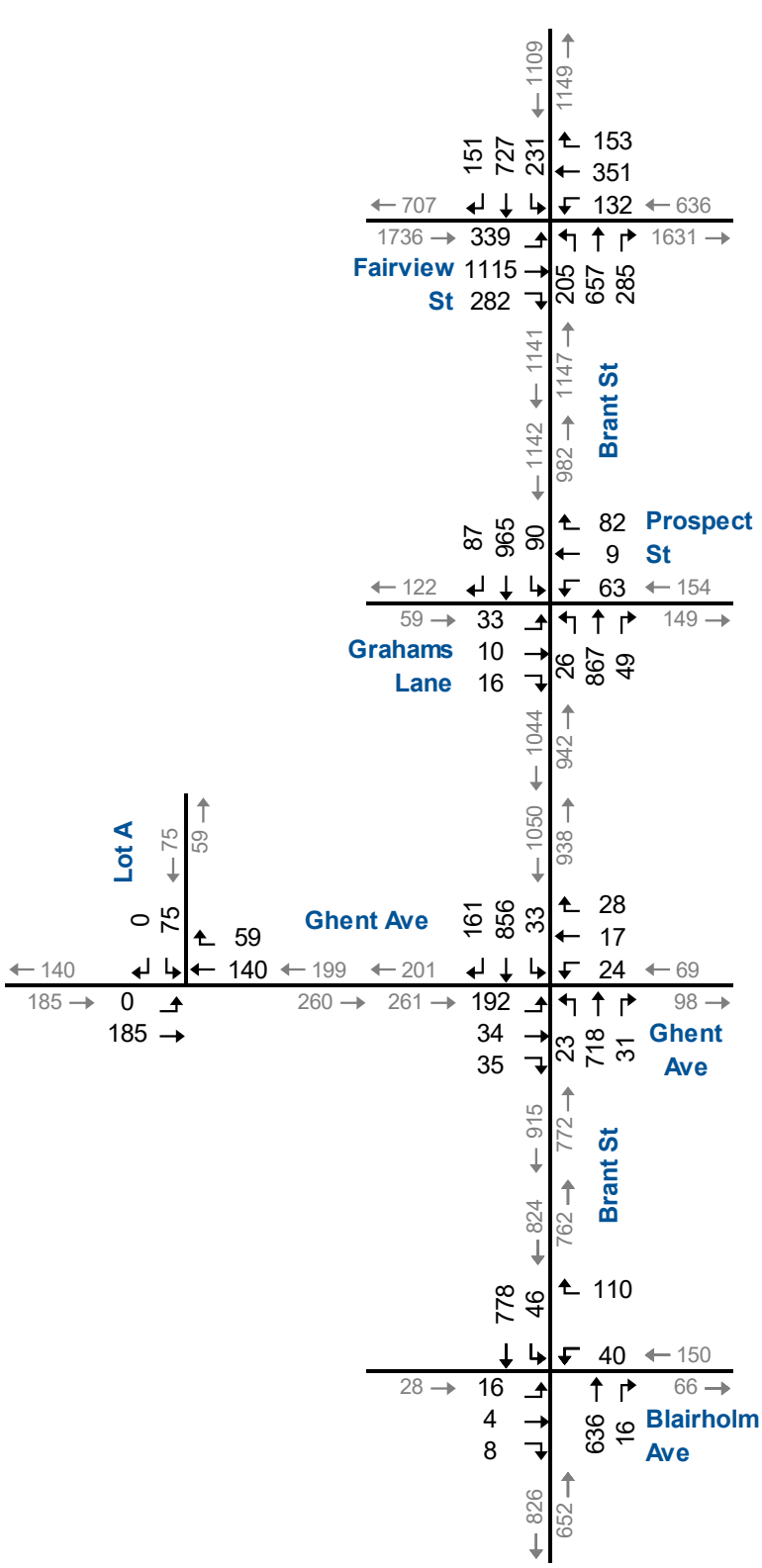
Figure 4.3



Background Five-Year Horizon Traffic Volumes

Brant St / Ghent Ave, Burlington TIS
200403

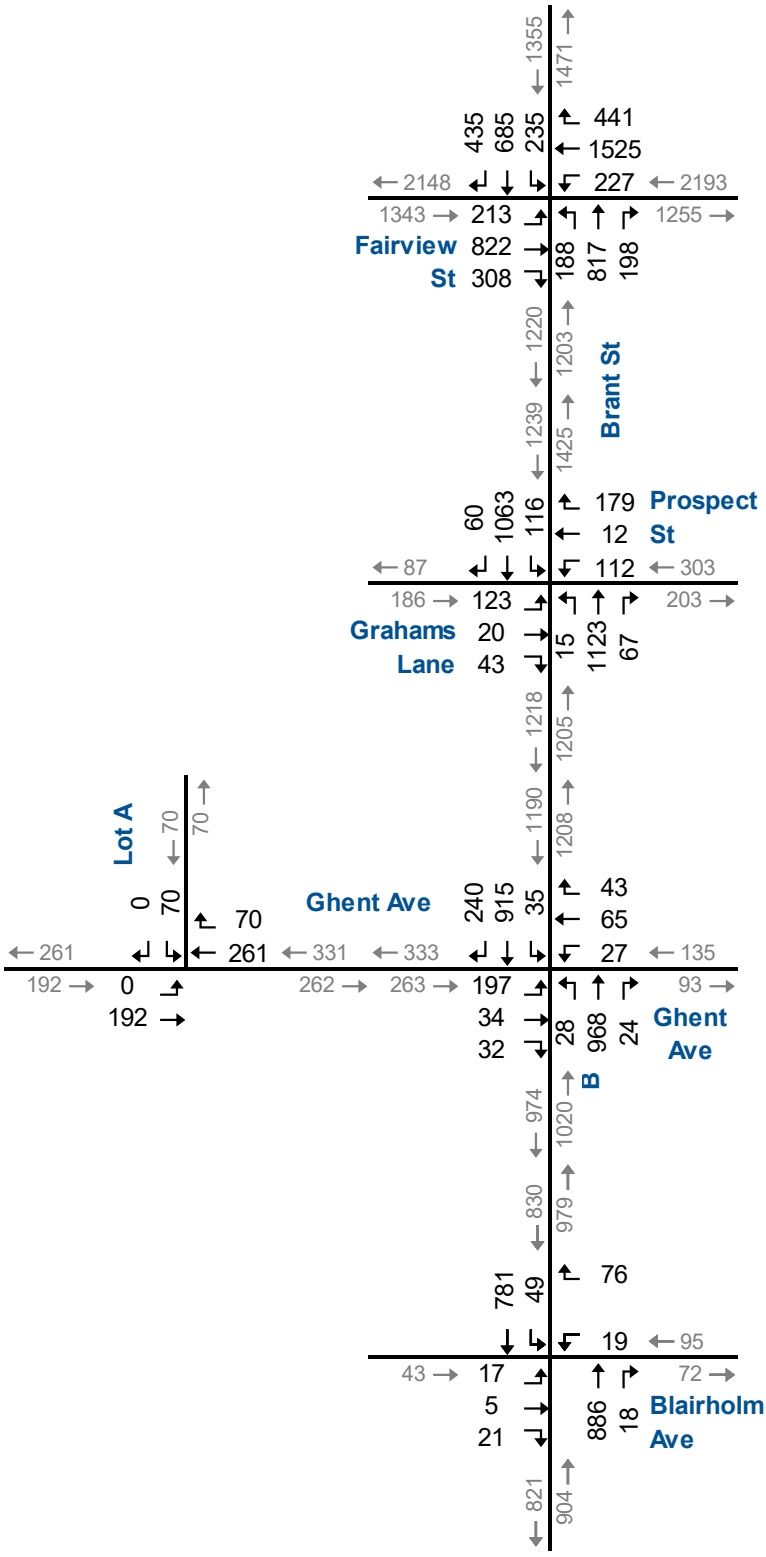
Figure 4.4



Total Traffic – Phase 1
AM Peak Hour

Brant St / Ghent Ave, Burlington TIS
200403

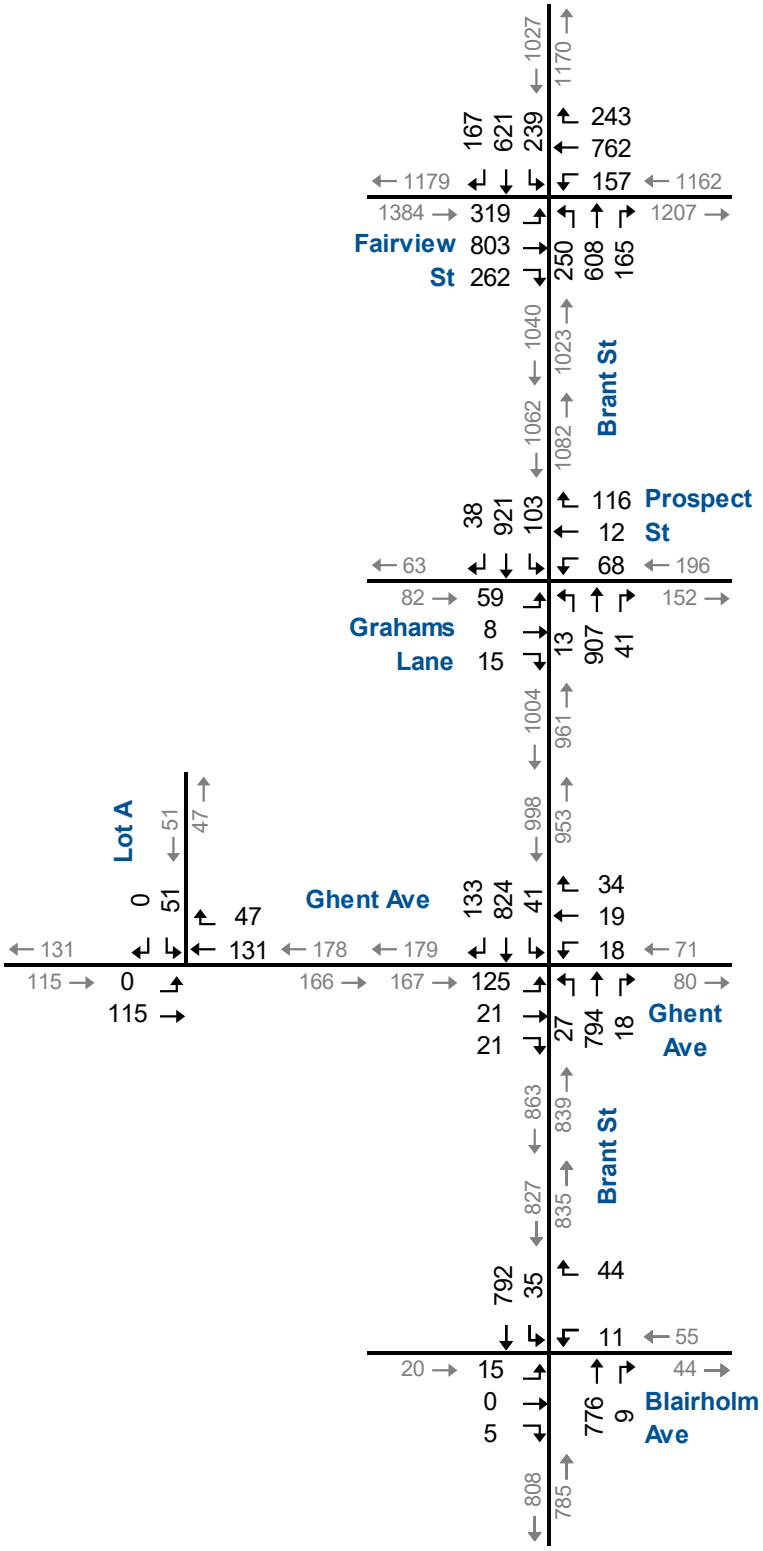
Figure 4.5A



Total Traffic – Phase 1
PM Peak Hour

Brant St / Ghent Ave, Burlington TIS
200403

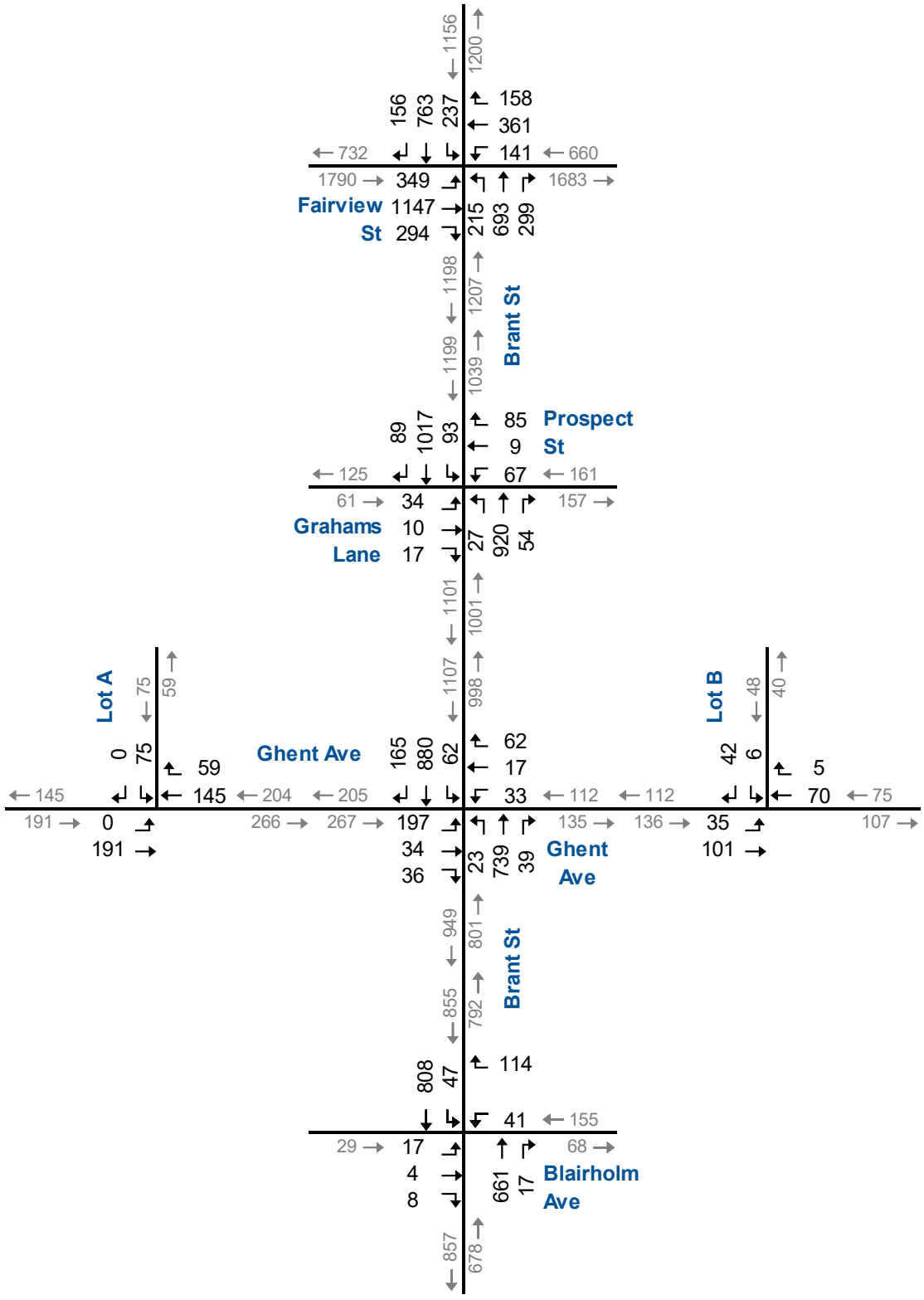
Figure 4.5B



Total Traffic – Phase 1
Saturday Peak Hour

Brant St / Ghent Ave, Burlington TIS
200403

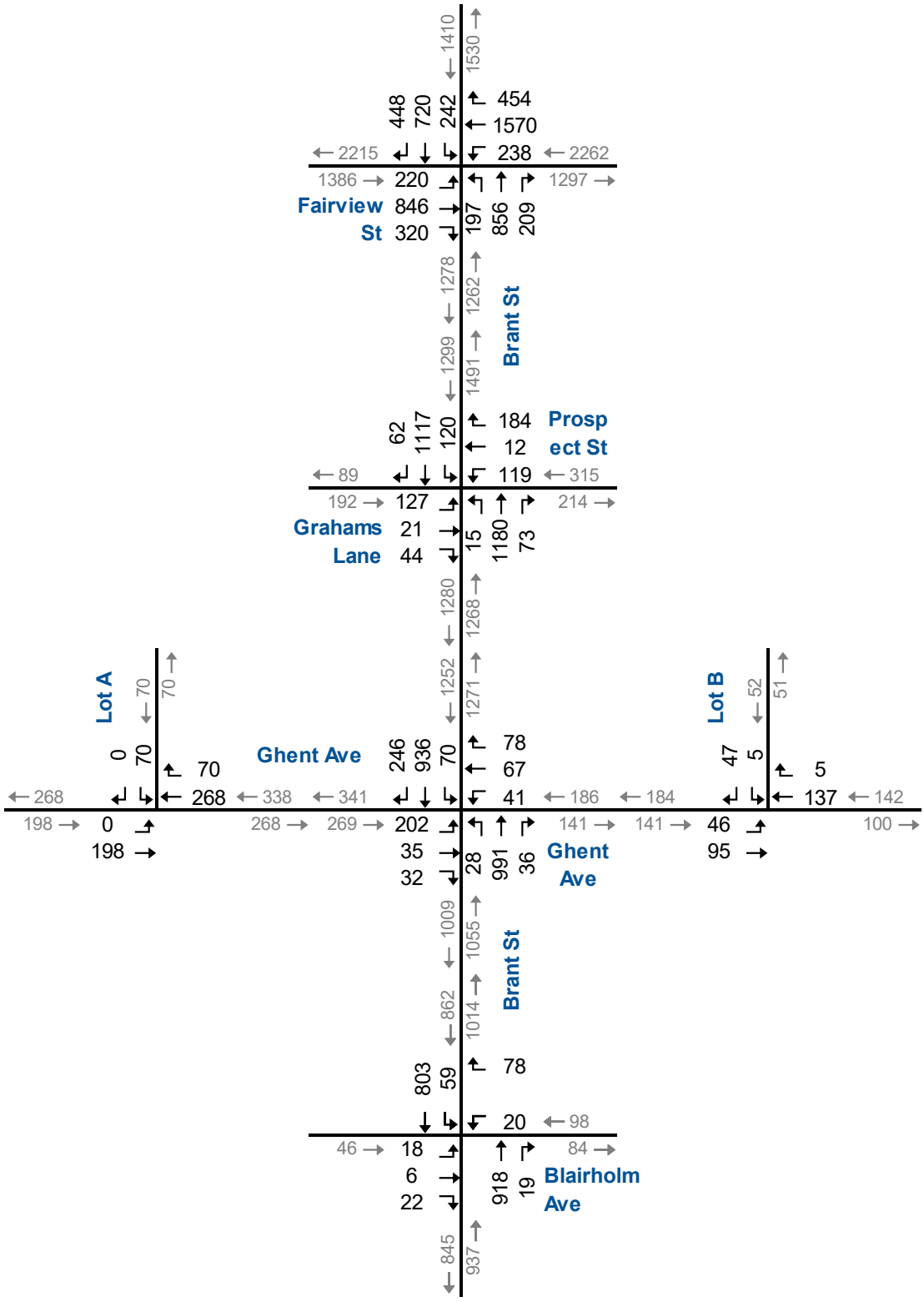
Figure 4.5C



Total Traffic – Phase 2
AM Peak Hour

Brant St / Ghent Ave, Burlington TIS
200403

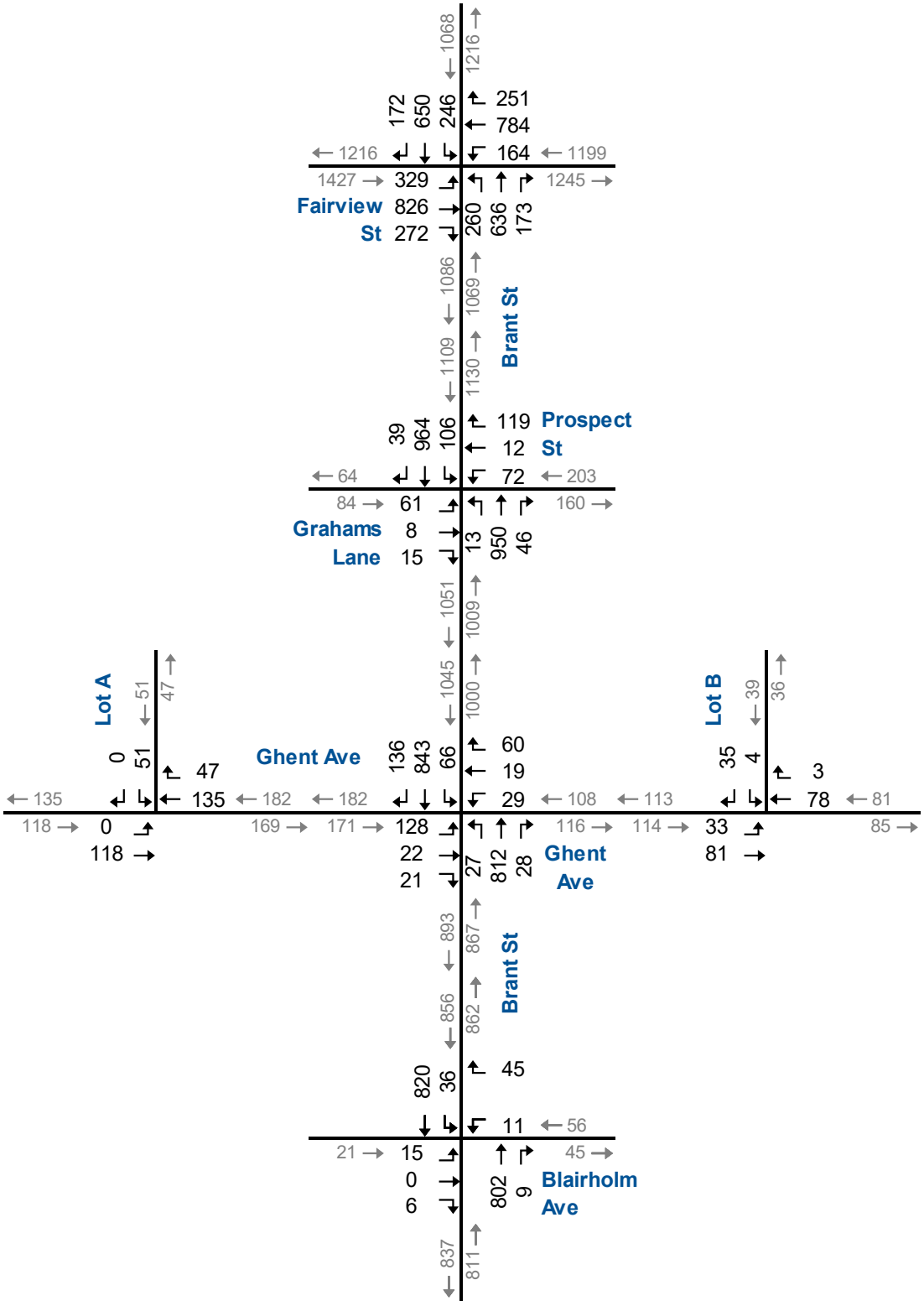
Figure 4.6A



Total Traffic – Phase 2
PM Peak Hour

Brant St / Ghent Ave, Burlington TIS
200403

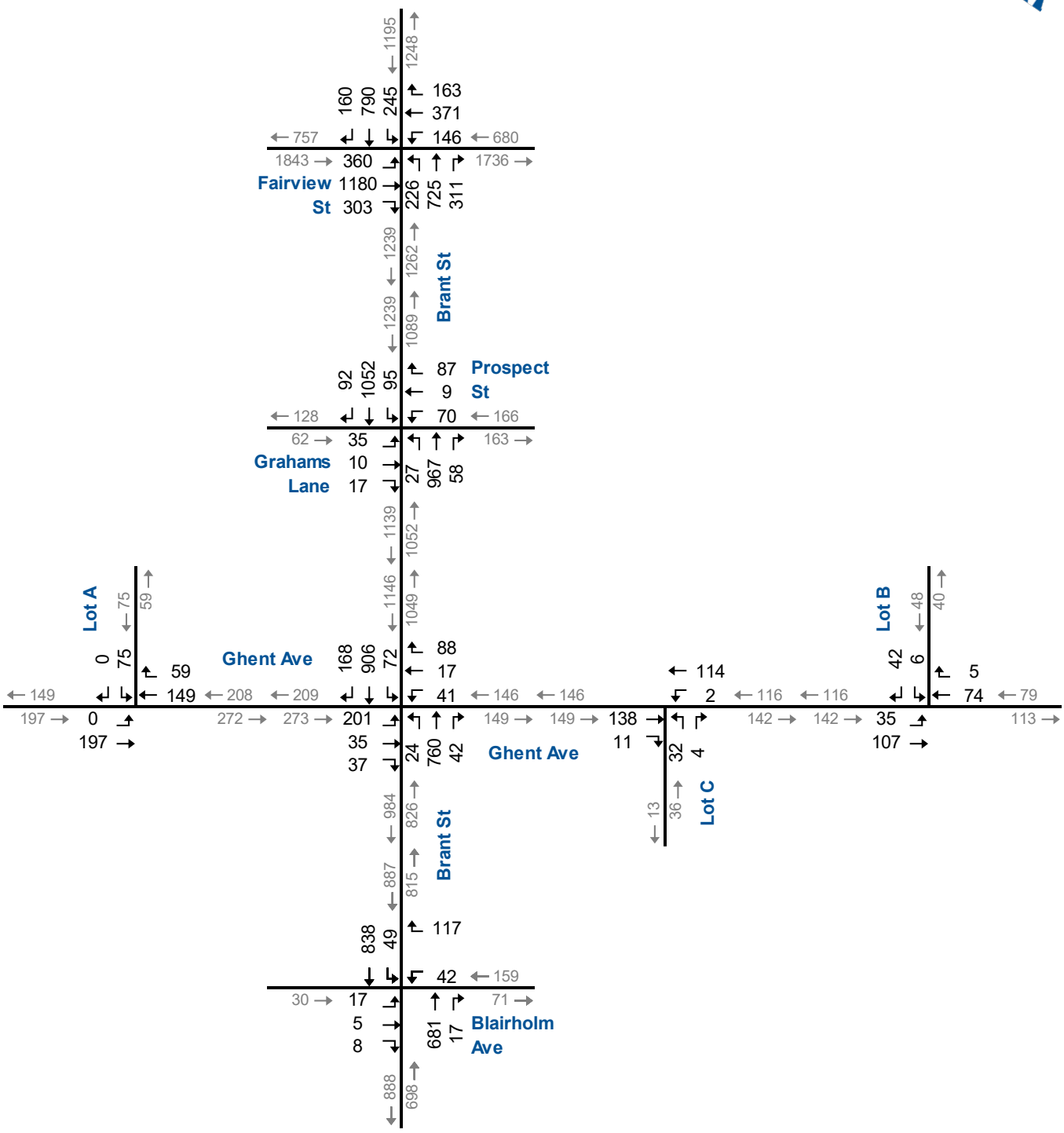
Figure 4.6B



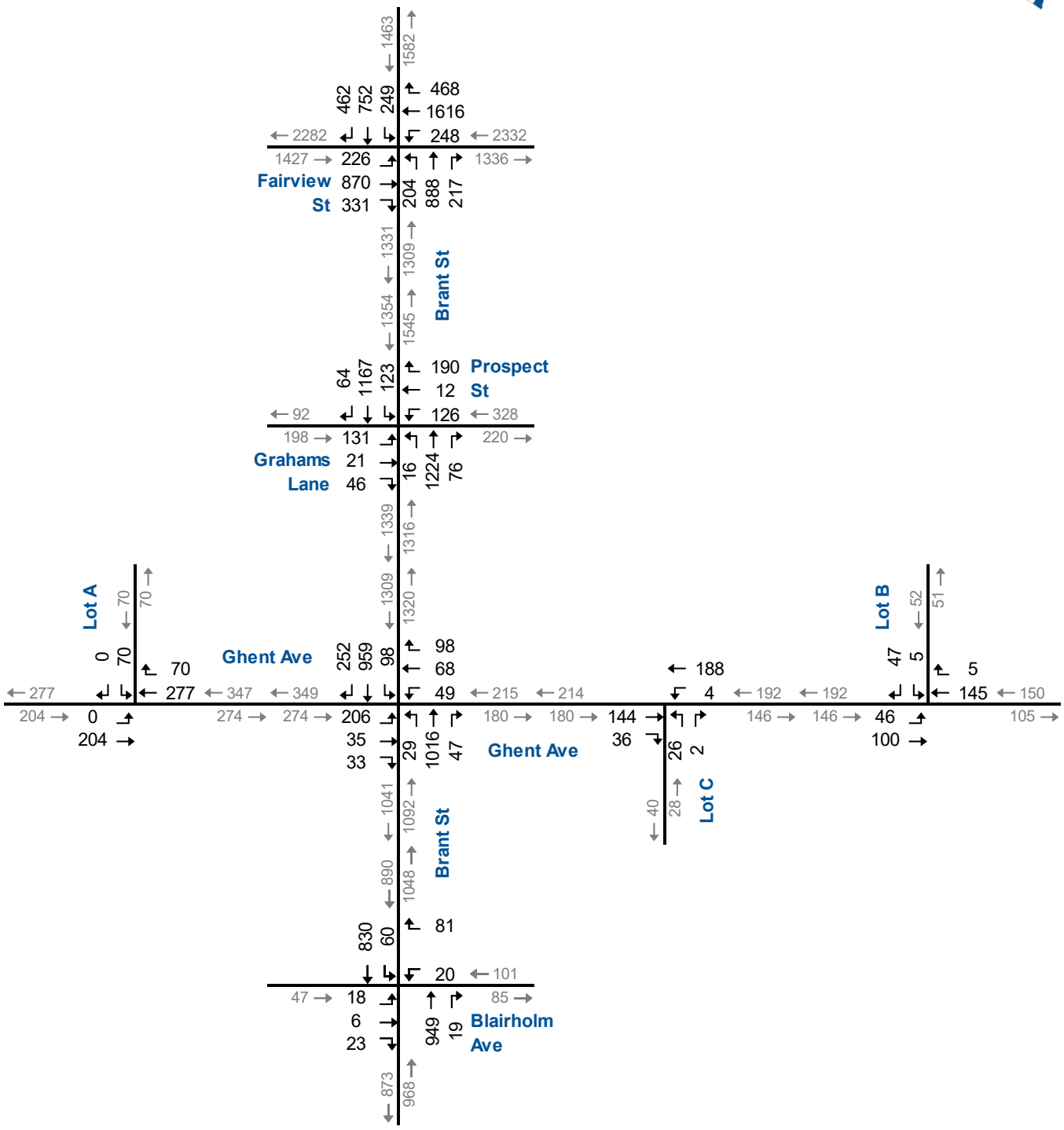
Total Traffic – Phase 2
Saturday Peak Hour

Brant St / Ghent Ave, Burlington TIS
200403

Figure 4.6C



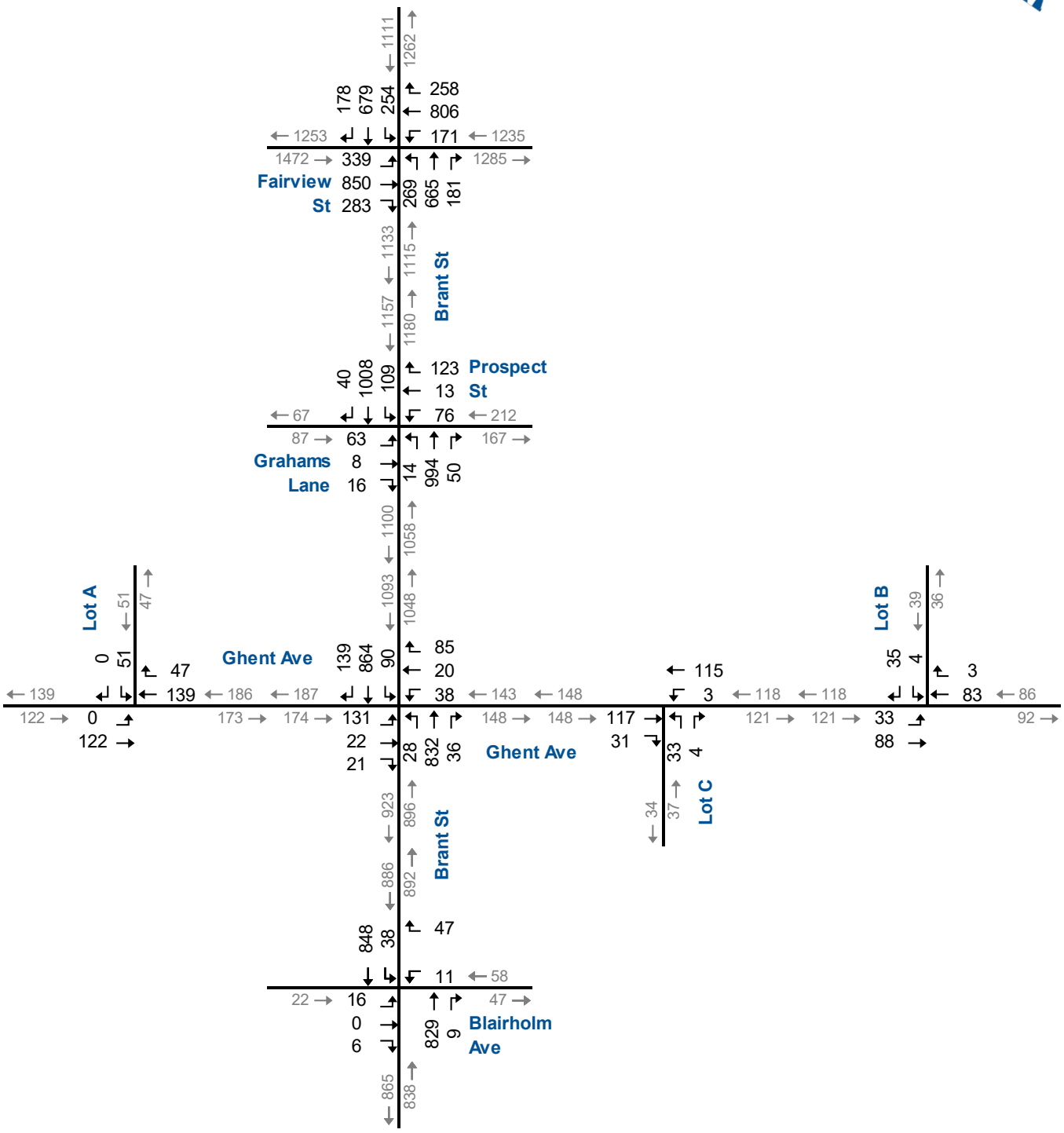
Total Traffic – Full Build-Out AM Peak Hour



Total Traffic – Full Build-Out PM Peak Hour

Brant St / Ghent Ave, Burlington TIS
200403

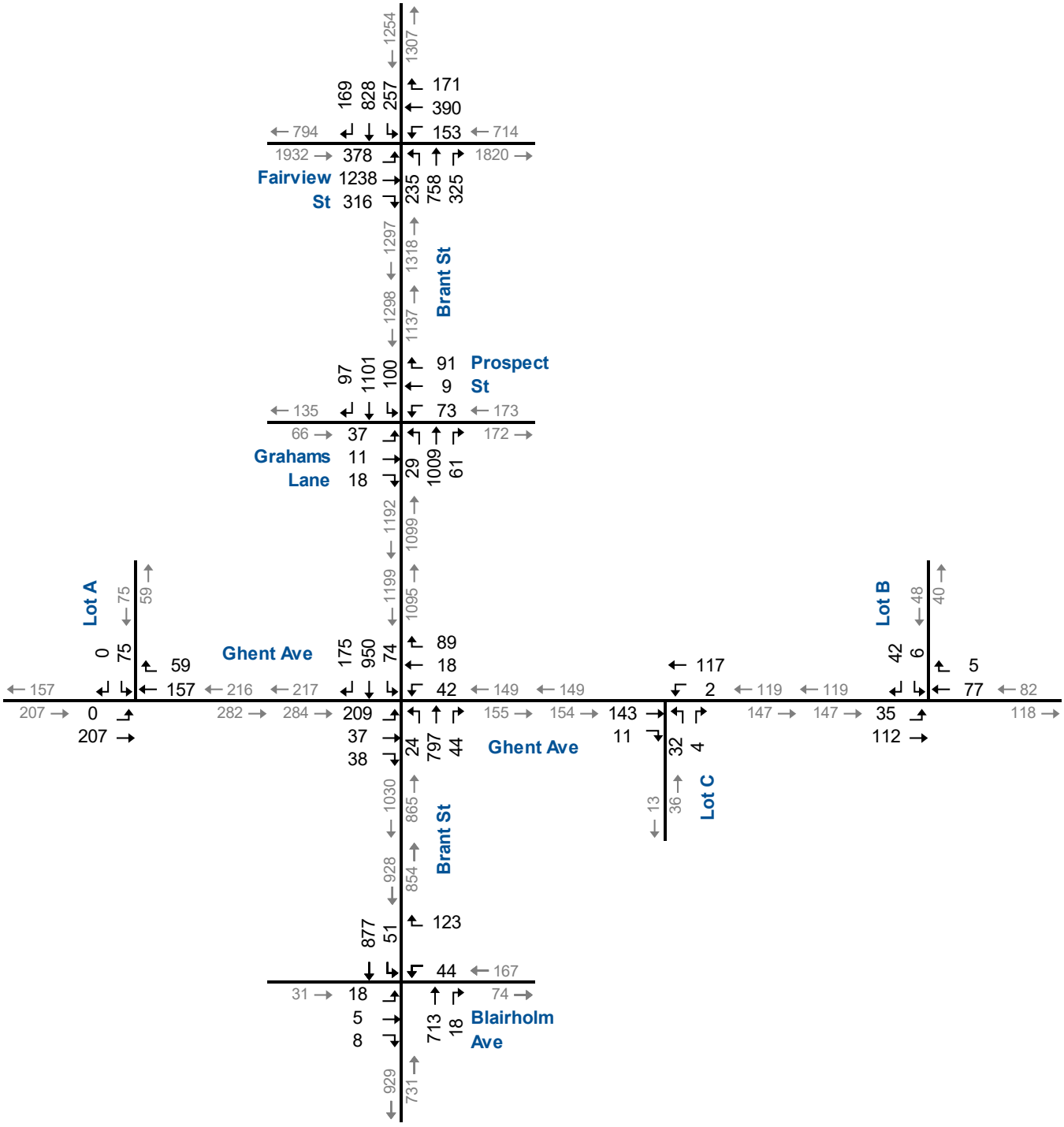
Figure 4.7B



Total Traffic – Full Build-Out Saturday Peak Hour

Brant St / Ghent Ave, Burlington TIS
200403

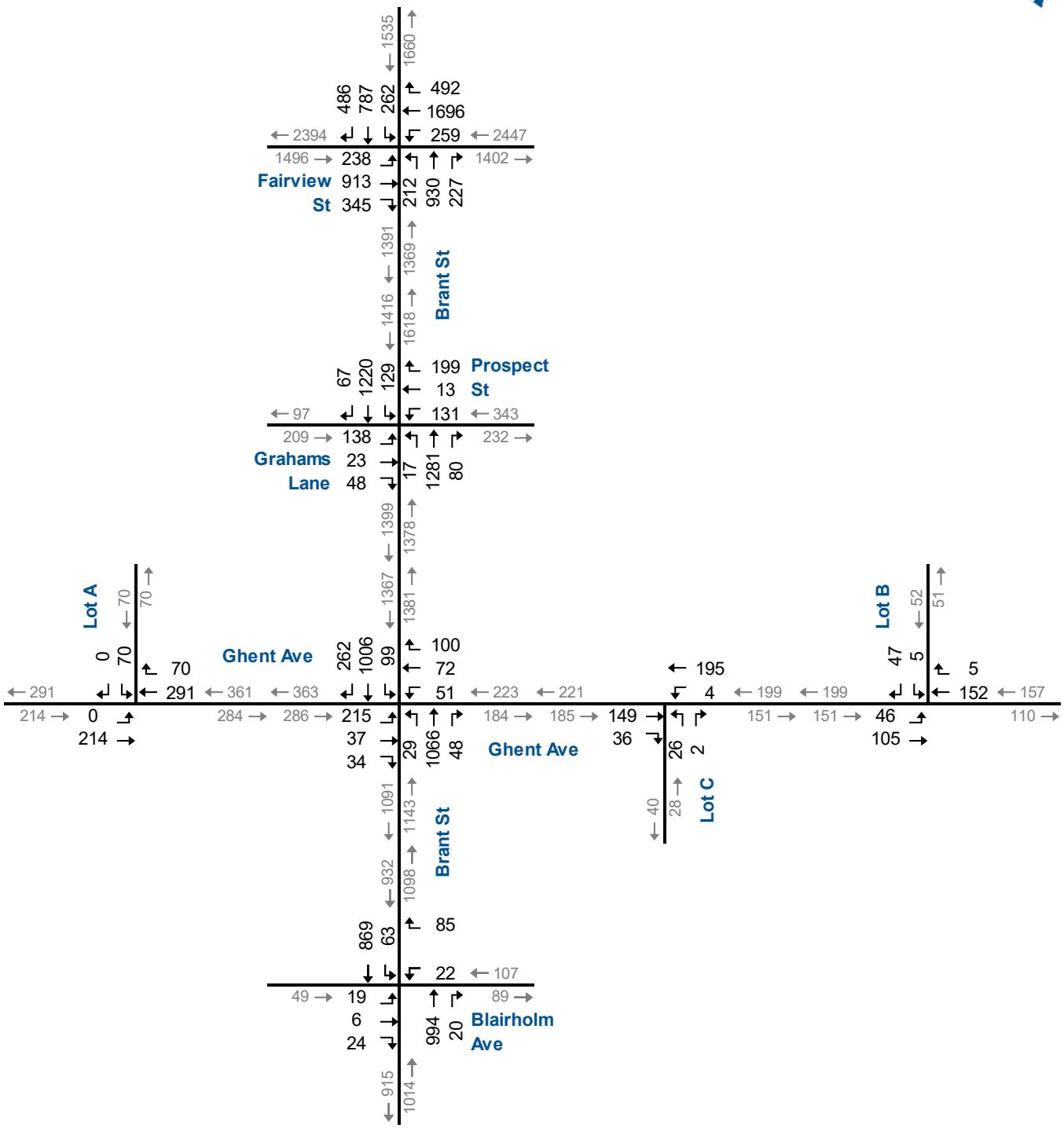
Figure 4.7C



Total Traffic Five-Year Horizon AM Peak Hour

Brant St / Ghent Ave, Burlington TIS
200403

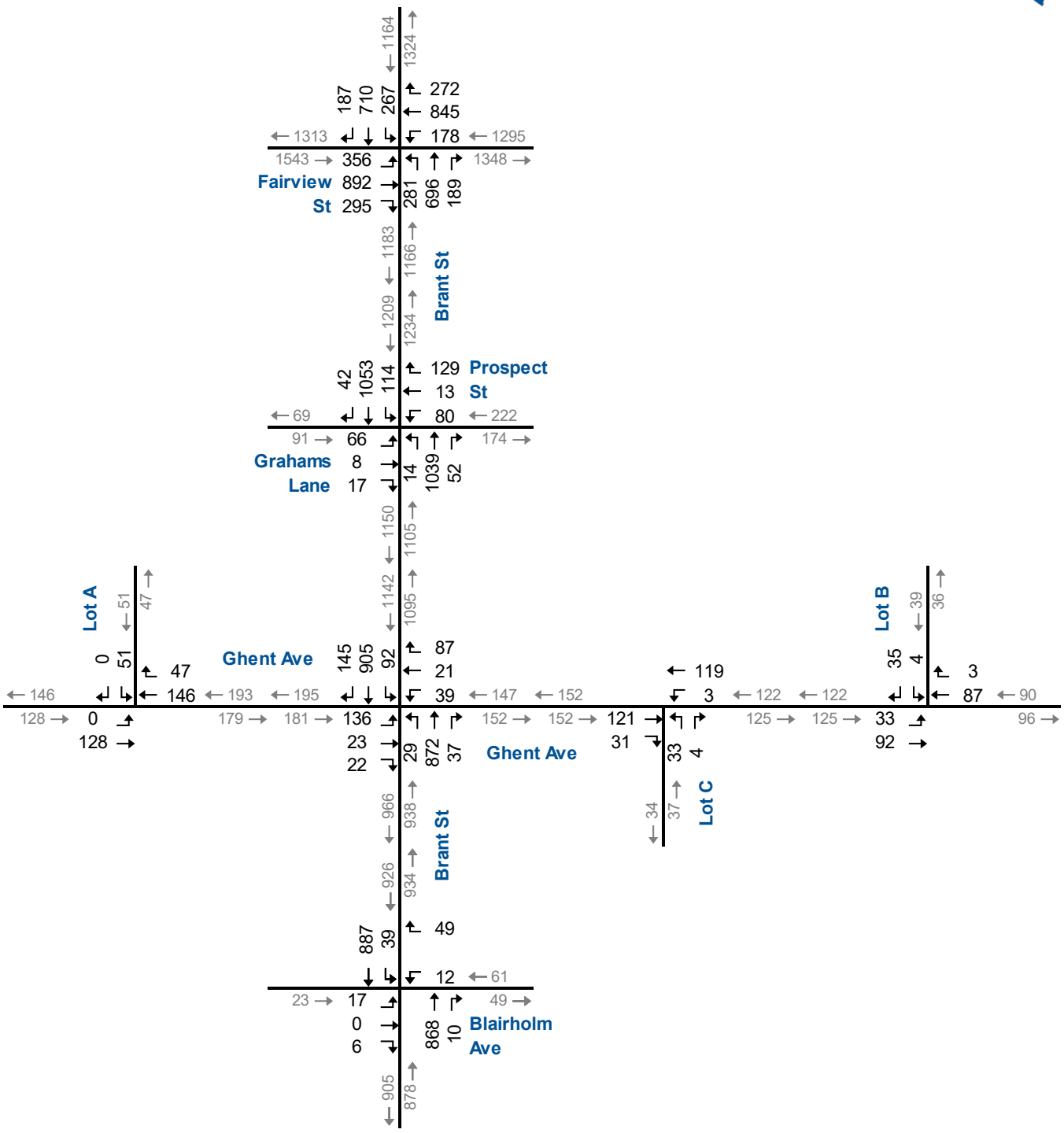
Figure 4.8A



Total Traffic Five-Year Horizon PM Peak Hour

Brant St / Ghent Ave, Burlington TIS
200403

Figure 4.8B



Total Traffic Five-Year Horizon Saturday Peak Hour

Brant St / Ghent Ave, Burlington TIS
200403

Figure 4.8C

4.2 Forecast Traffic Operations

The study area intersection operations analyses for the future background and future total traffic forecast followed the same methodology used for existing conditions. No changes to existing signal timings and lane configurations are assumed.

4.2.1 Background Operations – Phase 1

Table 4.1A, Table 4.1B and Table 4.1C summarizes the level of service conditions for the AM, PM, and Saturday peak hours, respectively. The following critical movements are noted:

- Brant Street and Fairview Street:
  - Eastbound left-turn – PM peak hour, LOS F and v/c ratio greater than 1.00. Saturday peak hour, LOS E and v/c ratio of 0.95
  - Westbound left-turn – AM, PM, and Saturday peak hour, queue length exceeds storage.
  - Westbound through – PM peak hour, LOS F and v/c ratio greater than 1.00.
  - Northbound left-turn – AM and PM peak hour, queue length exceeds storage. Saturday peak hour, LOS F, v/c ratio greater than 1.00, and queue length exceed storage.
  - Northbound right-turn – AM and PM peak hour, queue length exceeds storage.
  - Southbound left-turn – AM, PM, and Saturday peak hour, queue length exceeds storage.
- Brant Street and Grahams Lane/Prospect Street:
  - Eastbound left-turn – PM peak hour, queue length exceeds storage.
  - Westbound left-turn – PM and Saturday peak hour, queue length exceeds storage.
- Brant Street and Blairholm Avenue:
  - Westbound left-turn – AM peak hour queue length exceeds storage.

Appendix H1 contains the supporting detailed Synchro reports.

TABLE 4.1A: BACKGROUND OPERATIONS – PHASE 1 (AM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Brant St & Fairview St	TCS	LOS	C	D	C	**C**	D	C	C	**C**	E	D	C	**D**	D	C	C	**C**	**D**
			Delay	26	40	22	**35**	35	29	27	**30**	72	38	32	**42**	42	32	25	**34**	**36**
			V/C	0.75	0.91	0.23		0.67	0.37	0.10		0.93	0.72	0.38		0.84	0.68	0.10		**0.88**
			Q	79	184	26		38	51	11		64	92	46		77	96	14		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	74		-8	-	-		-39	-	-26		-37	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	C	C	>	**C**	C	C	>	**C**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	24	23	>	**24**	25	24	>	**24**	6	7	>	**7**	3	8	>	**8**	**9**
			V/C	0.18	0.05	>		0.29	0.10	>		0.12	0.44	>		0.19	0.52	>		**0.43**
			Q	14	9	>		21	14	>		6	56	>		6	70	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	16	-	>		-1	-	>		9	-	>		14	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	<	15	12	**15**	<	13	>	**13**	6	8	>	**8**	6	8	>	**8**	**9**
			V/C	<	0.43	0.01		<	0.10	>		0.06	0.43	>		0.12	0.57	>		**0.52**
			Q	<	33	2		<	11	>		3	44	>		7	62	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	13		<	-	>		22	-	>		8	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	B	B	**B**	B		B	**B**		A	>	**A**	A	A		**A**	**A**
			Delay	<	20	19	**20**	19		18	**18**		3	>	**3**	3	6		**6**	**6**
			V/C	<	0.09	0.01		0.19		0.08			0.29	>		0.10	0.66			**0.59**
			Q	<	8	0		13		12			20	>		5	79			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		-3		-			-	>		5	-			

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
< / > - Shared with through movement

TABLE 4.1B: BACKGROUND OPERATIONS – PHASE 1 (PM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Brant St & Fairview St	TCS	LOS	F	D	C	**D**	D	F	C	**F**	D	D	C	**D**	D	D	D	**D**	**E**
			Delay	148	38	28	**53**	48	145	28	**112**	35	54	34	**48**	48	40	41	**42**	**71**
			V/C	1.17	0.75	0.21		0.84	1.23	0.50		0.69	0.91	0.25		0.84	0.71	0.67		**1.06**
			Q	105	132	21		79	315	73		47	148	35		84	110	108		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	79		-49	-	-		-22	-	-15		-44	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	C	C	>	**C**	C	C	>	**C**	A	B	>	**B**	A	B	>	**B**	**B**
			Delay	34	24	>	**31**	26	24	>	**25**	8	12	>	**12**	8	12	>	**11**	**14**
			V/C	0.65	0.09	>		0.39	0.16	>		0.09	0.63	>		0.37	0.60	>		**0.59**
			Q	51	14	>		35	20	>		5	94	>		10	87	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	-21	-	>		-15	-	>		10	-	>		10	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	A	>	**A**	A	A	>	**A**	**B**
			Delay	<	16	13	**16**	<	14	>	**14**	7	9	>	**9**	7	10	>	**10**	**10**
			V/C	<	0.46	0.01		<	0.22	>		0.08	0.57	>		0.20	0.64	>		**0.57**
			Q	<	42	1		<	24	>		4	71	>		8	82	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	14		<	-	>		21	-	>		7	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	C	**C**	B		B	**B**		A	>	**A**	A	A		**A**	**A**
			Delay	<	21	20	**21**	19		19	**19**		4	>	**4**	3	6		**6**	**6**
			V/C	<	0.11	0.01		0.10		0.05			0.40	>		0.15	0.65			**0.57**
			Q	<	8	3		8		10			28	>		5	73			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		2		-			-	>		5	-			

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
< / > - Shared with through movement

TABLE 4.1C: BACKGROUND OPERATIONS – PHASE 1 (SAT PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
Saturday Peak Hour	Brant St & Fairview St	TCS	LOS	E	C	C	**C**	C	D	C	**D**	F	D	C	**D**	D	C	C	**C**	**D**
			Delay	61	28	22	**34**	32	39	28	**36**	95	37	29	**50**	42	31	25	**32**	**38**
			V/C	0.95	0.66	0.18		0.68	0.81	0.17		1.03	0.70	0.11		0.84	0.60	0.12		**0.93**
			Q	122	110	17		36	117	19		86	86	13		78	81	15		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	83		-6	-	-		-61	-	7		-38	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	C	C	>	**C**	C	C	>	**C**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	25	23	>	**24**	25	24	>	**24**	6	8	>	**8**	4	8	>	**8**	**10**
			V/C	0.33	0.04	>		0.31	0.13	>		0.06	0.48	>		0.24	0.49	>		**0.41**
			Q	21	8	>		23	17	>		4	66	>		8	68	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	9	-	>		-3	-	>		11	-	>		12	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	<	15	13	**15**	<	13	>	**13**	4	6	>	**6**	5	6	>	**6**	**6**
			V/C	<	0.36	0.01		<	0.12	>		0.06	0.44	>		0.15	0.50	>		**0.46**
			Q	<	20	0		<	10	>		3	40	>		7	46	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	15		<	-	>		22	-	>		8	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	C	**C**	C		C	**C**		A	>	**A**	A	A		**A**	**A**
			Delay	<	23	22	**23**	21		21	**21**		2	>	**2**	2	4		**4**	**4**
			V/C	<	0.12	0.00		0.08		0.03			0.33	>		0.08	0.62			**0.58**
			Q	<	7	0		5		8			22	>		3	71			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		5		-			-	>		7	-			

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
< / > - Shared with through movement

4.2.2 Background Operations – Phase 2

Table 4.2A, Table 4.2B and Table 4.2C summarizes the level of service conditions for the AM, PM, and Saturday peak hours, respectively. The following critical movements are noted:

- Brant Street and Fairview Street:
  - Eastbound left-turn – PM peak hour, LOS F and v/c ratio greater than 1.00. Saturday peak hour, LOS E and v/c ratio of 0.99
  - Westbound left-turn – AM, PM, and Saturday peak hour, queue length exceeds storage.
  - Westbound through – PM peak hour, LOS F and v/c ratio greater than 1.00.
  - Northbound left-turn – AM peak hour, LOS F, v/c ratio of 0.99, and queue exceeds storage. PM peak hour, queue length exceeds storage. Saturday peak hour, LOS F, v/c ratio greater than 1.00, and queue length exceed storage.
  - Northbound through – PM peak hour, LOS E and v/c ratio of 0.93.
  - Northbound right-turn – AM and PM peak hour, queue length exceeds storage.
  - Southbound left-turn – AM, PM, and Saturday peak hour, queue length exceeds storage.
- Brant Street and Grahams Lane/Prospect Street:
  - Eastbound left-turn – PM peak hour, queue length exceeds storage.
  - Westbound left-turn – AM, PM, and Saturday peak hour, queue length exceeds storage.
- Brant Street and Blairholm Avenue:
  - Westbound left-turn – AM peak hour queue length exceeds storage.

Appendix H2 contains the supporting detailed Synchro reports.



TABLE 4.2A: BACKGROUND OPERATIONS – PHASE 2 (AM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Brant St & Fairview St	TCS	LOS	C	D	C	**D**	D	C	C	**C**	F	D	C	**D**	D	C	C	**D**	**D**
			Delay	28	44	23	**37**	38	30	27	**30**	90	38	32	**46**	49	33	25	**36**	**38**
			V/C	0.78	0.93	0.25		0.70	0.37	0.11		0.99	0.74	0.40		0.87	0.69	0.11		**0.92**
			Q	86	193	29		42	52	12		71	95	48		82	100	15		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	71		-12	-	-		-46	-	-28		-42	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	C	C	>	**C**	C	C	>	**C**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	25	24	>	**24**	26	24	>	**25**	6	7	>	**7**	3	8	>	**8**	**9**
			V/C	0.19	0.05	>		0.30	0.10	>		0.13	0.45	>		0.20	0.54	>		**0.44**
			Q	14	9	>		21	14	>		6	59	>		7	73	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	16	-	>		-1	-	>		9	-	>		13	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	<	15	13	**15**	<	13	>	**13**	6	8	>	**8**	6	9	>	**9**	**9**
			V/C	<	0.45	0.02		<	0.10	>		0.07	0.44	>		0.13	0.58	>		**0.53**
			Q	<	35	2		<	11	>		4	48	>		7	67	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	13		<	-	>		21	-	>		8	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	B	**C**	B		B	**B**		A	>	**A**	A	A		**A**	**A**
			Delay	<	20	20	**20**	19		18	**19**		3	>	**3**	3	6		**6**	**6**
			V/C	<	0.10	0.01		0.20		0.08			0.30	>		0.11	0.67			**0.61**
			Q	<	8	0		14		13			21	>		5	83			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		-4		-			-	>		5	-			

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
< / > - Shared with through movement

TABLE 4.2B: BACKGROUND OPERATIONS – PHASE 2 (PM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Brant St & Fairview St	TCS	LOS	F	D	C	**E**	E	F	C	**F**	D	E	C	**D**	D	D	D	**D**	**E**
			Delay	164	39	29	**57**	56	163	29	**126**	37	57	34	**50**	51	40	43	**43**	**77**
			V/C	1.21	0.78	0.21		0.87	1.27	0.52		0.71	0.93	0.26		0.86	0.72	0.71		**1.09**
			Q	109	137	21		86	328	78		51	155	36		89	114	122		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	79		-56	-	-		-26	-	-16		-49	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	D	C	>	**C**	C	C	>	**C**	A	B	>	**B**	A	B	>	**B**	**B**
			Delay	38	24	>	**33**	27	25	>	**26**	8	13	>	**13**	8	12	>	**12**	**15**
			V/C	0.69	0.09	>		0.40	0.16	>		0.10	0.65	>		0.39	0.61	>		**0.61**
			Q	53	14	>		36	20	>		5	99	>		10	90	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	-23	-	>		-16	-	>		10	-	>		10	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	A	>	**A**	A	B	>	**B**	**B**
			Delay	<	17	13	**16**	<	15	>	**15**	7	10	>	**10**	8	11	>	**10**	**11**
			V/C	<	0.48	0.01		<	0.23	>		0.09	0.59	>		0.21	0.66	>		**0.59**
			Q	<	44	1		<	26	>		4	76	>		9	88	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	14		<	-	>		21	-	>		6	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	C	**C**	B		B	**B**		A	>	**A**	A	A		**A**	**A**
			Delay	<	21	21	**21**	20		19	**19**		4	>	**4**	3	6		**6**	**6**
			V/C	<	0.13	0.02		0.10		0.05			0.41	>		0.16	0.66			**0.59**
			Q	<	10	3		8		11			29	>		5	77			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		2		-			-	>		5	-			

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
< / > - Shared with through movement

TABLE 4.2C: BACKGROUND OPERATIONS – PHASE 2 (SAT PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
Saturday Peak Hour	Brant St & Fairview St	TCS	LOS	E	C	C	**D**	D	D	C	**D**	F	D	C	**D**	D	C	C	**C**	**D**
			Delay	73	28	22	**38**	36	41	28	**38**	111	37	29	**54**	47	31	25	**34**	**40**
			V/C	0.99	0.68	0.20		0.73	0.84	0.19		1.08	0.71	0.11		0.88	0.61	0.12		**0.98**
			Q	128	114	20		44	124	22		92	89	14		84	84	15		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	80		-14	-	-		-67	-	6		-44	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	C	C	>	**C**	C	C	>	**C**	A	A	>	**A**	A	A	>	**A**	**B**
			Delay	24	22	>	**23**	24	22	>	**23**	7	10	>	**10**	5	10	>	**9**	**11**
			V/C	0.28	0.04	>		0.27	0.12	>		0.06	0.52	>		0.26	0.53	>		**0.42**
			Q	22	8	>		23	17	>		4	70	>		9	72	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	8	-	>		-3	-	>		11	-	>		11	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	<	15	13	**15**	<	14	>	**14**	4	6	>	**6**	5	6	>	**6**	**7**
			V/C	<	0.37	0.01		<	0.12	>		0.06	0.45	>		0.15	0.51	>		**0.47**
			Q	<	21	0		<	11	>		3	42	>		7	49	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	15		<	-	>		22	-	>		8	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	C	**C**	C		C	**C**		A	>	**A**	A	A		**A**	**A**
			Delay	<	24	23	**23**	22		21	**21**		2	>	**2**	2	4		**4**	**4**
			V/C	<	0.12	0.00		0.08		0.03			0.33	>		0.09	0.64			**0.59**
			Q	<	7	0		6		8			23	>		3	74			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		4		-			-	>		7	-			

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
< / > - Shared with through movement

4.2.3 Background Operations – Full Build-Out

Table 4.3A, Table 4.3B and Table 4.3C summarizes the level of service conditions for the AM, PM, and Saturday peak hours, respectively. The following critical movements are noted:

- Brant Street and Fairview Street:
  - Eastbound left-turn – PM and Saturday peak hour, LOS F and v/c ratio greater than 1.00.
  - Eastbound through – AM Peak hour, LOS D and v/c ratio of 0.97.
  - Westbound left-turn – AM, PM, and Saturday peak hour, queue length exceeds storage.
  - Westbound through – PM peak hour, LOS F and v/c ratio greater than 1.00.
  - Northbound left-turn – AM and Saturday peak hour, LOS F, v/c ratio greater than 1.00, and queue exceeds storage. PM peak hour, queue length exceeds storage.
  - Northbound through – PM peak hour, LOS E and v/c ratio of 0.96.
  - Northbound right-turn – AM and PM peak hour, queue length exceeds storage.
  - Southbound left-turn – AM, PM, and Saturday peak hour, queue length exceeds storage.
- Brant Street and Grahams Lane/Prospect Street:
  - Eastbound left-turn – PM peak hour, queue length exceeds storage.
  - Westbound left-turn – AM, PM, and Saturday peak hour, queue length exceeds storage.
- Brant Street and Blairholm Avenue:
  - Westbound left-turn – AM peak hour queue length exceeds storage.

Appendix H3 contains the supporting detailed Synchro reports.



TABLE 4.3A: BACKGROUND OPERATIONS – FULL BUILD-OUT (AM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Brant St & Fairview St	TCS	LOS	C	D	C	**D**	D	C	C	**C**	F	D	C	**D**	D	C	C	**D**	**D**
			Delay	31	50	23	**42**	39	30	28	**31**	104	39	32	**49**	54	34	25	**37**	**41**
			V/C	0.82	0.97	0.27		0.71	0.38	0.11		1.04	0.75	0.41		0.90	0.70	0.11		**0.96**
			Q	95	202	32		43	54	14		77	98	51		87	103	15		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	68		-13	-	-		-52	-	-31		-47	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	C	C	>	**C**	C	C	>	**C**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	26	24	>	**25**	26	25	>	**25**	6	7	>	**7**	3	8	>	**8**	**9**
			V/C	0.19	0.05	>		0.32	0.10	>		0.14	0.46	>		0.21	0.54	>		**0.45**
			Q	14	9	>		22	15	>		6	62	>		7	77	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	16	-	>		-2	-	>		9	-	>		13	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	<	16	13	**16**	<	14	>	**14**	6	8	>	**8**	6	9	>	**9**	**9**
			V/C	<	0.46	0.02		<	0.10	>		0.08	0.45	>		0.13	0.59	>		**0.54**
			Q	<	38	2		<	12	>		4	50	>		7	70	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	13		<	-	>		21	-	>		8	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	C	**C**	B		B	**B**		A	>	**A**	A	A		**A**	**A**
			Delay	<	21	21	**21**	20		19	**20**		3	>	**3**	3	6		**6**	**6**
			V/C	<	0.11	0.01		0.21		0.08			0.30	>		0.11	0.68			**0.62**
			Q	<	9	0		14		13			22	>		5	87			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		-4		-			-	>		5	-			

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
< / > - Shared with through movement

TABLE 4.3B: BACKGROUND OPERATIONS – FULL BUILD-OUT (PM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Brant St & Fairview St	TCS	LOS	F	D	C	**E**	E	F	C	**F**	D	E	C	**D**	D	D	D	**D**	**F**
			Delay	178	41	29	**60**	57	181	30	**138**	39	63	34	**54**	54	41	45	**45**	**84**
			V/C	1.25	0.81	0.22		0.88	1.31	0.55		0.74	0.96	0.28		0.88	0.75	0.75		**1.12**
			Q	113	142	21		90	342	84		56	163	39		94	118	133		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	79		-60	-	-		-31	-	-19		-54	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	D	C	>	**D**	C	C	>	**C**	A	B	>	**B**	A	B	>	**B**	**B**
			Delay	47	26	>	**40**	29	26	>	**27**	9	14	>	**14**	9	13	>	**13**	**17**
			V/C	0.76	0.09	>		0.42	0.17	>		0.12	0.68	>		0.39	0.64	>		**0.64**
			Q	57	15	>		37	20	>		5	104	>		10	95	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	-27	-	>		-17	-	>		10	-	>		10	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	A	>	**A**	A	B	>	**B**	**B**
			Delay	<	17	14	**17**	<	15	>	**15**	7	10	>	**10**	8	11	>	**11**	**11**
			V/C	<	0.49	0.01		<	0.23	>		0.10	0.60	>		0.24	0.68	>		**0.61**
			Q	<	45	1		<	26	>		4	81	>		10	94	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	14		<	-	>		21	-	>		5	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	C	**C**	C		C	**C**		A	>	**A**	A	A		**A**	**A**
			Delay	<	23	22	**23**	21		21	**21**		3	>	**3**	3	6		**6**	**6**
			V/C	<	0.14	0.02		0.11		0.06			0.36	>		0.14	0.68			**0.61**
			Q	<	10	3		9		11			25	>		5	83			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		1		-			-	>		5	-			

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
< / > - Shared with through movement

TABLE 4.3C: BACKGROUND OPERATIONS – FULL BUILD-OUT (SAT PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
Saturday Peak Hour	Brant St & Fairview St	TCS	LOS	F	C	C	**D**	D	D	C	**D**	F	D	C	**E**	D	C	C	**D**	**D**
			Delay	84	30	22	**41**	42	43	29	**40**	127	38	29	**58**	55	31	25	**36**	**43**
			V/C	1.02	0.70	0.22		0.78	0.86	0.21		1.12	0.73	0.12		0.91	0.61	0.12		**1.01**
			Q	133	118	23		50	134	25		97	92	15		91	87	16		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	77		-20	-	-		-72	-	5		-51	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	C	C	>	**C**	C	C	>	**C**	A	A	>	**A**	A	A	>	**A**	**B**
			Delay	24	22	>	**24**	24	23	>	**24**	7	10	>	**10**	5	10	>	**9**	**11**
			V/C	0.30	0.04	>		0.28	0.13	>		0.07	0.53	>		0.27	0.54	>		**0.44**
			Q	23	8	>		24	18	>		4	74	>		9	75	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	7	-	>		-4	-	>		11	-	>		11	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	<	15	13	**15**	<	14	>	**14**	4	6	>	**6**	5	6	>	**6**	**7**
			V/C	<	0.38	0.01		<	0.12	>		0.07	0.46	>		0.16	0.52	>		**0.48**
			Q	<	22	0		<	11	>		4	44	>		8	52	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	15		<	-	>		21	-	>		7	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	C	**C**	C		C	**C**		A	>	**A**	A	A		**A**	**A**
			Delay	<	24	24	**24**	22		22	**22**		2	>	**2**	2	4		**4**	**4**
			V/C	<	0.13	0.00		0.08		0.03			0.34	>		0.09	0.65			**0.60**
			Q	<	7	0		6		8			23	>		4	78			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		4		-			-	>		6	-			

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
< / > - Shared with through movement

4.2.4 Background Operations – Five Year Horizon

Table 4.4A, Table 4.4B and Table 4.4C summarizes the level of service conditions for the AM, PM, and Saturday peak hours, respectively. The following critical movements are noted:

- Brant Street and Fairview Street:
  - Eastbound left-turn – PM and Saturday peak hour, LOS F and v/c ratio greater than 1.00.
  - Eastbound through – AM Peak hour, LOS E and v/c ratio greater than 1.00.
  - Westbound left-turn – AM, PM, and Saturday peak hour, queue length exceeds storage.
  - Westbound through – PM peak hour, LOS F and v/c ratio greater than 1.00.
  - Northbound left-turn – AM and Saturday peak hour, LOS F, v/c ratio greater than 1.00, and queue exceeds storage. PM peak hour, queue length exceeds storage.
  - Northbound through – PM peak hour, LOS E and v/c ratio greater than 1.00
  - Northbound right-turn – AM and PM peak hour, queue length exceeds storage.
  - Southbound left-turn – AM and PM peak hour, queue length exceeds storage. Saturday peak hour, LOS E, v/c ratio of 0.96, and queue length exceeds storage.
- Brant Street and Grahams Lane/Prospect Street:
  - Eastbound left-turn – PM peak hour, queue length exceeds storage.
  - Westbound left-turn – AM, PM, and Saturday peak hour, queue length exceeds storage.
- Brant Street and Blairholm Avenue:
  - Westbound left-turn – AM peak hour queue length exceeds storage.

Appendix H4 contains the supporting detailed Synchro reports.



TABLE 4.4A: BACKGROUND OPERATIONS – FIVE YEAR HORIZON (AM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Brant St & Fairview St	TCS	LOS	D	E	C	**D**	D	C	C	**C**	F	D	C	**D**	E	C	C	**D**	**D**
			Delay	40	66	24	**54**	44	31	28	**33**	133	40	33	**54**	64	34	25	**39**	**48**
			V/C	0.88	1.03	0.30		0.76	0.42	0.12		1.13	0.77	0.44		0.94	0.72	0.12		**1.02**
			Q	112	218	37		47	56	16		89	104	56		95	110	15		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	63		-17	-	-		-64	-	-36		-55	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	C	C	>	**C**	C	C	>	**C**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	26	26	>	**26**	28	26	>	**26**	6	7	>	**7**	3	8	>	**8**	**9**
			V/C	0.21	0.06	>		0.34	0.10	>		0.16	0.48	>		0.23	0.56	>		**0.47**
			Q	15	9	>		23	15	>		8	67	>		7	84	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	15	-	>		-3	-	>		7	-	>		13	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	<	17	14	**16**	<	14	>	**14**	6	8	>	**8**	7	9	>	**9**	**10**
			V/C	<	0.49	0.02		<	0.11	>		0.08	0.47	>		0.15	0.62	>		**0.57**
			Q	<	42	3		<	13	>		4	54	>		8	77	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	12		<	-	>		21	-	>		7	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	C	**C**	C		C	**C**		A	>	**A**	A	A		**A**	**A**
			Delay	<	23	23	**23**	22		21	**22**		3	>	**3**	3	6		**6**	**7**
			V/C	<	0.12	0.01		0.23		0.08			0.31	>		0.12	0.70			**0.64**
			Q	<	10	0		15		14			24	>		5	98			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		-5		-			-	>		5	-			

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
< / > - Shared with through movement

TABLE 4.4B: BACKGROUND OPERATIONS – FIVE YEAR HORIZON (PM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Brant St & Fairview St	TCS	LOS	F	D	C	**E**	E	F	C	**F**	D	E	D	**E**	E	D	D	**D**	**F**
			Delay	207	45	30	**68**	63	212	31	**161**	41	76	35	**64**	60	43	50	**48**	**96**
			V/C	1.32	0.87	0.23		0.91	1.38	0.59		0.77	1.01	0.30		0.90	0.78	0.82		**1.18**
			Q	121	160	22		96	365	94		59	176	42		102	126	150		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	78		-66	-	-		-34	-	-22		-62	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	E	C	>	**D**	C	C	>	**C**	A	B	>	**B**	B	B	>	**B**	**B**
			Delay	58	26	>	**48**	30	27	>	**28**	9	15	>	**15**	10	14	>	**14**	**18**
			V/C	0.83	0.10	>		0.44	0.18	>		0.14	0.70	>		0.43	0.67	>		**0.68**
			Q	63	15	>		39	22	>		5	112	>		16	102	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	-33	-	>		-19	-	>		10	-	>		4	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	B	>	**B**	A	B	>	**B**	**B**
			Delay	<	18	14	**18**	<	16	>	**16**	8	11	>	**11**	9	12	>	**12**	**12**
			V/C	<	0.53	0.01		<	0.25	>		0.12	0.63	>		0.27	0.71	>		**0.64**
			Q	<	48	1		<	28	>		5	91	>		11	108	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	14		<	-	>		20	-	>		4	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	C	**C**	C		C	**C**		A	>	**A**	A	A		**A**	**A**
			Delay	<	24	23	**24**	22		22	**22**		3	>	**3**	3	6		**6**	**6**
			V/C	<	0.15	0.02		0.12		0.06			0.42	>		0.18	0.69			**0.62**
			Q	<	11	4		9		12			32	>		6	88			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		1		-			-	>		4	-			

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
< / > - Shared with through movement

TABLE 4.4C: BACKGROUND OPERATIONS – FIVE YEAR HORIZON (SAT PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
Saturday Peak Hour	Brant St & Fairview St	TCS	LOS	F	C	C	**D**	E	D	C	**D**	F	D	C	**E**	E	C	C	**D**	**D**
			Delay	107	31	23	**47**	57	47	29	**45**	163	39	29	**68**	68	32	25	**39**	**49**
			V/C	1.10	0.74	0.25		0.87	0.90	0.26		1.22	0.75	0.12		0.96	0.63	0.13		**1.09**
			Q	144	125	29		61	145	31		108	97	17		100	92	16		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	71		-31	-	-		-83	-	3		-60	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	C	C	>	**C**	C	C	>	**C**	A	A	>	**A**	A	A	>	**A**	**B**
			Delay	26	24	>	**25**	25	24	>	**24**	7	10	>	**10**	5	10	>	**9**	**11**
			V/C	0.34	0.04	>		0.30	0.13	>		0.08	0.55	>		0.30	0.55	>		**0.46**
			Q	24	8	>		25	18	>		4	79	>		9	81	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	6	-	>		-5	-	>		11	-	>		11	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	<	16	14	**16**	<	15	>	**15**	4	6	>	**6**	5	6	>	**6**	**7**
			V/C	<	0.41	0.01		<	0.13	>		0.08	0.47	>		0.18	0.54	>		**0.50**
			Q	<	25	0		<	12	>		4	49	>		8	58	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	15		<	-	>		21	-	>		7	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	C	**C**	C		C	**C**		A	>	**A**	A	A		**A**	**A**
			Delay	<	26	25	**26**	24		24	**24**		2	>	**2**	2	5		**4**	**4**
			V/C	<	0.15	0.00		0.09		0.03			0.35	>		0.10	0.67			**0.62**
			Q	<	8	0		6		9			24	>		4	85			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		4		-			-	>		6	-			

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
< / > - Shared with through movement

4.2.5 Total Operations – Phase 1

Table 4.5A, Table 4.5B and Table 4.5C summarizes the level of service conditions for the AM, PM, and Saturday peak hours, respectively. The following critical movements are noted:

- Brant Street and Fairview Street:
  - Eastbound left-turn – PM peak hour, LOS F and v/c ratio greater than 1.00. Saturday peak hour, LOS E and v/c ratio of 0.95
  - Westbound left-turn – AM, PM, and Saturday peak hour, queue length exceeds storage.
  - Westbound through – PM peak hour, LOS F and v/c ratio greater than 1.00.
  - Northbound left-turn – AM peak hour, LOS F, v/c ratio of 1.00, and queue length exceeds storage. PM peak hour, queue length exceeds storage. Saturday peak hour, LOS F, v/c ratio greater than 1.00, and queue length exceed storage.
  - Northbound through – PM peak hour, LOS E and v/c ratio of 0.93.
  - Northbound right-turn – AM and PM peak hour, queue length exceeds storage.
  - Southbound left-turn – AM, PM, and Saturday peak hour, queue length exceeds storage.
- Brant Street and Grahams Lane/Prospect Street:
  - Eastbound left-turn – PM peak hour, queue length exceeds storage.
  - Westbound left-turn – AM, PM and Saturday peak hour, queue length exceeds storage.
- Brant Street and Blairholm Avenue:
  - Westbound left-turn – AM peak hour queue length exceeds storage.

Appendix I1 contains the supporting detailed Synchro reports.

The capacity issues experienced under the background traffic horizon are expected to continue to occur with or without the development of the subject site. Site traffic impacts are minimal with minor changes in delay at the study area intersections.



The proposed Lot A driveway with Ghent Avenue is forecast to operate with low levels of delay and v/c ratios during the AM, PM, and Saturday peak hours.

The queue reach for the eastbound approach at the Brant Street intersection is approximately 55 m during the PM peak hour. With 110 m between Brant Street and the Lot A driveway, the queue reach is not forecast to impact the operations of the site driveway.

TABLE 4.5A: TOTAL OPERATIONS – PHASE 1 (AM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Brant St & Fairview St	TCS	LOS	C	D	C	**D**	D	C	C	**C**	F	D	C	**D**	D	C	C	**C**	**D**
			Delay	26	42	23	**36**	38	30	27	**31**	92	38	32	**46**	45	33	25	**34**	**37**
			V/C	0.76	0.92	0.25		0.70	0.37	0.10		1.00	0.74	0.39		0.85	0.69	0.10		**0.91**
			Q	79	184	29		42	51	11		74	97	48		78	100	14		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	71		-12	-	-		-49	-	-28		-38	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	C	C	>	**C**	C	C	>	**C**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	25	24	>	**24**	26	24	>	**25**	6	7	>	**7**	3	8	>	**8**	**9**
			V/C	0.18	0.05	>		0.32	0.09	>		0.13	0.47	>		0.20	0.54	>		**0.44**
			Q	14	9	>		22	14	>		6	62	>		7	75	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	16	-	>		-2	-	>		9	-	>		13	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	A	>	**A**	A	B	>	**B**	**B**
			Delay	<	16	12	**15**	<	12	>	**12**	8	9	>	**9**	8	11	>	**10**	**11**
			V/C	<	0.54	0.02		<	0.10	>		0.15	0.45	>		0.13	0.62	>		**0.59**
			Q	<	50	5		<	13	>		7	54	>		8	79	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	10		<	-	>		18	-	>		7	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	B	**C**	B		B	**B**		A	>	**A**	A	A		**A**	**A**
			Delay	<	20	20	**20**	19		18	**19**		3	>	**3**	3	6		**6**	**6**
			V/C	<	0.09	0.01		0.19		0.08			0.29	>		0.10	0.67			**0.60**
			Q	<	8	0		13		13			21	>		5	81			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		-3		-			-	>		5	-			
	Ghent Ave & Lot A	TWSC	LOS	<	A		**A**		A	>	**A**					B		>	**B**	**A**
			Delay	<	0		**0**		0	>	**0**					12		>	**12**	**2**
			V/C	<	0.00				0.07	>						0.14		>		
			Q	<	0				0	>						4		>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
< / > - Shared with through movement

TABLE 4.5B: TOTAL OPERATIONS – PHASE 1 (PM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Brant St & Fairview St	TCS	LOS	F	D	C	**D**	D	F	C	**F**	D	E	C	**D**	D	D	D	**D**	**E**
			Delay	150	38	28	**54**	53	146	28	**113**	37	56	34	**50**	48	41	42	**42**	**72**
			V/C	1.18	0.76	0.21		0.86	1.23	0.50		0.72	0.93	0.26		0.84	0.73	0.69		**1.07**
			Q	105	132	21		86	315	73		53	154	37		84	114	115		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	79		-56	-	-		-28	-	-17		-44	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	D	C	>	**C**	C	C	>	**C**	A	B	>	**B**	A	B	>	**B**	**B**
			Delay	36	25	>	**32**	27	25	>	**26**	8	12	>	**12**	8	12	>	**12**	**15**
			V/C	0.67	0.09	>		0.41	0.16	>		0.10	0.65	>		0.38	0.61	>		**0.61**
			Q	51	14	>		36	20	>		5	100	>		10	91	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	-21	-	>		-16	-	>		10	-	>		10	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	B	>	**B**	A	B	>	**B**	**B**
			Delay	<	18	13	**17**	<	14	>	**14**	10	11	>	**11**	9	13	>	**13**	**13**
			V/C	<	0.55	0.02		<	0.22	>		0.24	0.59	>		0.22	0.70	>		**0.64**
			Q	<	56	4		<	26	>		10	88	>		11	108	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	11		<	-	>		15	-	>		4	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	C	**C**	B		B	**B**		A	>	**A**	A	A		**A**	**A**
			Delay	<	21	21	**21**	19		19	**19**		4	>	**4**	3	6		**6**	**6**
			V/C	<	0.11	0.01		0.10		0.05			0.40	>		0.15	0.66			**0.58**
			Q	<	8	3		8		10			28	>		5	74			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		2		-			-	>		5	-			
	Ghent Ave & Lot A	TWSC	LOS	<	A		**A**		A	>	**A**					B		>	**B**	**A**
			Delay	<	0		**0**		0	>	**0**					14		>	**14**	**2**
			V/C	<	0.00				0.11	>						0.16		>		
			Q	<	0				0	>						5		>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
< / > - Shared with through movement

TABLE 4.5C: TOTAL OPERATIONS – PHASE 1 (SAT PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
Saturday Peak Hour	Brant St & Fairview St	TCS	LOS	E	C	C	**C**	C	D	C	**D**	F	D	C	**D**	D	C	C	**C**	**D**
			Delay	63	28	22	**35**	34	40	28	**36**	105	37	29	**52**	44	31	25	**33**	**39**
			V/C	0.95	0.66	0.19		0.70	0.82	0.17		1.06	0.71	0.11		0.85	0.61	0.12		**0.95**
			Q	122	110	20		40	117	20		90	89	14		80	83	15		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	80		-10	-	-		-65	-	6		-40	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	C	C	>	**C**	C	C	>	**C**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	26	23	>	**25**	25	24	>	**24**	6	8	>	**8**	4	8	>	**8**	**10**
			V/C	0.33	0.04	>		0.33	0.13	>		0.06	0.49	>		0.24	0.50	>		**0.42**
			Q	21	8	>		24	17	>		4	70	>		8	71	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	9	-	>		-4	-	>		11	-	>		12	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	<	14	12	**14**	<	13	>	**13**	6	7	>	**7**	6	8	>	**8**	**8**
			V/C	<	0.40	0.01		<	0.11	>		0.14	0.47	>		0.17	0.55	>		**0.50**
			Q	<	29	2		<	11	>		6	46	>		8	57	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	13		<	-	>		19	-	>		7	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	C	**C**	C		C	**C**		A	>	**A**	A	A		**A**	**A**
			Delay	<	23	23	**23**	21		21	**21**		2	>	**2**	2	4		**4**	**4**
			V/C	<	0.12	0.00		0.08		0.03			0.33	>		0.09	0.63			**0.58**
			Q	<	7	0		6		8			22	>		3	72			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		4		-			-	>		7	-			
	Ghent Ave & Lot A	TWSC	LOS	<	A		**A**		A	>	**A**					B		>	**B**	**A**
			Delay	<	0		**0**		0	>	**0**					11		>	**11**	**2**
			V/C	<	0.00				0.06	>						0.08		>		
			Q	<	0				0	>						2		>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
< / > - Shared with through movement

4.2.6 Total Operations – Phase 2

Table 4.6A, Table 4.6B and Table 4.6C summarizes the level of service conditions for the AM, PM, and Saturday peak hours, respectively. The following critical movements are noted:

- Brant Street and Fairview Street:
  - Eastbound left-turn – PM peak hour, LOS F and v/c ratio greater than 1.00. Saturday peak hour, LOS E and v/c ratio of 0.99
  - Eastbound through – AM peak hour, LOS D and v/c ratio of 0.95.
  - Westbound left-turn – AM, PM, and Saturday peak hour, queue length exceeds storage.
  - Westbound through – PM peak hour, LOS F and v/c ratio greater than 1.00.
  - Northbound left-turn – AM peak hour, LOS F, v/c ratio of 1.00, and queue length exceeds storage. PM peak hour, queue length exceeds storage. Saturday peak hour, LOS F, v/c ratio greater than 1.00, and queue length exceed storage.
  - Northbound through – PM peak hour, LOS E and v/c ratio of 0.97.
  - Northbound right-turn – AM and PM peak hour, queue length exceeds storage.
  - Southbound left-turn – AM, PM, and Saturday peak hour, queue length exceeds storage.
- Brant Street and Grahams Lane/Prospect Street:
  - Eastbound left-turn – PM peak hour, queue length exceeds storage.
  - Westbound left-turn – AM, PM and Saturday peak hour, queue length exceeds storage.
- Brant Street and Ghent Avenue:
  - Southbound left-turn – PM peak hour, queue length exceeds storage.
- Brant Street and Blairholm Avenue:
  - Westbound left-turn – AM peak hour queue length exceeds storage.

Appendix I2 contains the supporting detailed Synchro reports.



The capacity issues experienced under the background traffic horizon are expected to continue to occur with or without the development of the subject site. Site traffic impacts are minimal with minor changes in delay at the study area intersections.

The proposed Lot A and Lot B driveways with Ghent Avenue are forecast to operate with low levels of delay and v/c ratios during the AM, PM, and Saturday peak hours.

The queue reach for the eastbound approach at the Brant Street intersection is approximately 60 m during the PM peak hour. With 110 m between Brant Street and the Lot A driveway, the queue reach is not forecast to impact the operations of the site driveway.

The forecast queue reach for the westbound approach at Brant Street is approximately 35 m during the PM peak hour. With 100 m between Brant Street and Lot B driveway, the queue reach is not forecast to impact the operations of the site driveway.

TABLE 4.6A: TOTAL OPERATIONS – PHASE 2 (AM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Brant St & Fairview St	TCS	LOS	C	D	C	**D**	D	C	C	**C**	F	D	C	**D**	D	C	C	**D**	**D**
			Delay	29	47	24	**40**	44	30	28	**33**	122	39	32	**52**	50	34	25	**36**	**41**
			V/C	0.79	0.95	0.28		0.77	0.38	0.11		1.10	0.77	0.43		0.88	0.71	0.11		**0.96**
			Q	86	193	34		49	52	12		86	103	53		84	106	15		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	66		-19	-	-		-61	-	-33		-44	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	C	C	>	**C**	C	C	>	**C**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	26	25	>	**26**	27	25	>	**26**	6	8	>	**7**	4	8	>	**8**	**9**
			V/C	0.19	0.05	>		0.35	0.10	>		0.14	0.49	>		0.22	0.56	>		**0.47**
			Q	14	9	>		23	14	>		7	69	>		7	82	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	16	-	>		-3	-	>		8	-	>		13	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	A	>	**A**	A	B	>	**B**	**B**
			Delay	<	16	12	**15**	<	13	>	**13**	8	10	>	**10**	9	12	>	**11**	**11**
			V/C	<	0.52	0.02		<	0.15	>		0.17	0.47	>		0.26	0.64	>		**0.59**
			Q	<	55	5		<	17	>		7	62	>		15	90	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	10		<	-	>		18	-	>		0	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	C	**C**	C		B	**B**		A	>	**A**	A	A		**A**	**A**
			Delay	<	21	21	**21**	20		19	**20**		3	>	**3**	3	6		**6**	**6**
			V/C	<	0.10	0.01		0.21		0.08			0.30	>		0.11	0.68			**0.62**
			Q	<	9	0		14		13			22	>		5	87			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		-4		-			-	>		5	-			
	Ghent Ave & Lot A	TWSC	LOS	<	A		**A**		A	>	**A**					B		>	**B**	**A**
			Delay	<	0		**0**		0	>	**0**					12		>	**12**	**2**
			V/C	<	0.00				0.07	>						0.14		>		
			Q	<	0				0	>						4		>		
	Ghent Ave & Lot B	TWSC	LOS	<	A		**A**		A	>	**A**					A		>	**A**	**A**
			Delay	<	2		**2**		0	>	**0**					9		>	**9**	**3**
			V/C	<	0.03				0.05	>						0.06		>		
			Q	<	1				0	>						1		>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
< / > - Shared with through movement

TABLE 4.6B: TOTAL OPERATIONS – PHASE 2 (PM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Brant St & Fairview St	TCS	LOS	F	D	C	**E**	E	F	C	**F**	D	E	C	**E**	D	D	D	**D**	**E**
			Delay	164	40	29	**57**	59	162	29	**125**	40	65	35	**56**	51	43	44	**45**	**78**
			V/C	1.21	0.79	0.22		0.89	1.27	0.52		0.76	0.97	0.29		0.86	0.78	0.74		**1.10**
			Q	108	137	21		94	328	78		59	166	41		88	121	126		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	79		-64	-	-		-34	-	-21		-48	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	D	C	>	**D**	C	C	>	**C**	A	B	>	**B**	A	B	>	**B**	**B**
			Delay	41	25	>	**36**	28	26	>	**27**	8	13	>	**13**	9	12	>	**12**	**15**
			V/C	0.72	0.09	>		0.44	0.16	>		0.11	0.67	>		0.41	0.63	>		**0.64**
			Q	54	15	>		39	20	>		5	109	>		10	99	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	-24	-	>		-19	-	>		10	-	>		10	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	C	B	**B**	<	B	>	**B**	B	B	>	**B**	B	B	>	**B**	**B**
			Delay	<	20	14	**19**	<	15	>	**15**	10	12	>	**12**	13	14	>	**14**	**14**
			V/C	<	0.62	0.02		<	0.30	>		0.27	0.61	>		0.47	0.71	>		**0.67**
			Q	<	60	4		<	34	>		10	96	>		25	116	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	11		<	-	>		15	-	>		-10	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	C	**C**	C		B	**B**		A	>	**A**	A	A		**A**	**A**
			Delay	<	22	21	**22**	20		20	**20**		4	>	**4**	3	6		**6**	**6**
			V/C	<	0.13	0.02		0.11		0.05			0.41	>		0.19	0.67			**0.59**
			Q	<	10	3		8		11			30	>		6	78			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		2		-			-	>		4	-			
	Ghent Ave & Lot A	TWSC	LOS	<	A		**A**		A	>	**A**					B		>	**B**	**A**
			Delay	<	0		**0**		0	>	**0**					14		>	**14**	**2**
			V/C	<	0.00				0.11	>						0.16		>		
			Q	<	0				0	>						5		>		
	Ghent Ave & Lot B	TWSC	LOS	<	A		**A**		A	>	**A**					A		>	**A**	**A**
			Delay	<	3		**3**		0	>	**0**					10		>	**10**	**3**
			V/C	<	0.04				0.09	>						0.07		>		
			Q	<	1				0	>						2		>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
< / > - Shared with through movement

TABLE 4.6C: TOTAL OPERATIONS – PHASE 2 (SAT PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
Saturday Peak Hour	Brant St & Fairview St	TCS	LOS	E	C	C	**D**	D	D	C	**D**	F	D	C	**E**	D	C	C	**C**	**D**
			Delay	75	29	23	**38**	40	42	28	**39**	133	38	29	**60**	50	31	25	**35**	**42**
			V/C	0.99	0.68	0.22		0.77	0.84	0.20		1.14	0.73	0.12		0.89	0.62	0.12		**1.00**
			Q	128	114	24		48	124	23		99	93	16		86	88	15		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	76		-18	-	-		-74	-	4		-46	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	C	C	>	**C**	C	C	>	**C**	A	A	>	**A**	A	A	>	**A**	**B**
			Delay	25	23	>	**24**	25	24	>	**24**	7	10	>	**10**	5	10	>	**9**	**11**
			V/C	0.29	0.04	>		0.29	0.12	>		0.07	0.54	>		0.27	0.54	>		**0.44**
			Q	22	8	>		25	17	>		4	75	>		9	76	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	8	-	>		-5	-	>		11	-	>		11	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	<	14	12	**14**	<	13	>	**13**	6	8	>	**8**	7	8	>	**8**	**9**
			V/C	<	0.39	0.01		<	0.16	>		0.14	0.48	>		0.28	0.57	>		**0.50**
			Q	<	30	2		<	15	>		6	49	>		13	60	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	13		<	-	>		19	-	>		2	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	C	**C**	C		C	**C**		A	>	**A**	A	A		**A**	**A**
			Delay	<	24	24	**24**	22		22	**22**		2	>	**2**	2	4		**4**	**4**
			V/C	<	0.12	0.00		0.08		0.03			0.34	>		0.09	0.64			**0.60**
			Q	<	7	0		6		8			23	>		3	77			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		4		-			-	>		7	-			
	Ghent Ave & Lot A	TWSC	LOS	<	A		**A**		A	>	**A**					B		>	**B**	**A**
			Delay	<	0		**0**		0	>	**0**					11		>	**11**	**2**
			V/C	<	0.00				0.06	>						0.08		>		
			Q	<	0				0	>						2		>		
	Ghent Ave & Lot B	TWSC	LOS	<	A		**A**		A	>	**A**					A		>	**A**	**A**
			Delay	<	2		**2**		0	>	**0**					9		>	**9**	**3**
			V/C	<	0.02				0.05	>						0.04		>		
			Q	<	1				0	>						1		>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
< / > - Shared with through movement

4.2.7 Total Operations – Full Build Out

Table 4.7A, Table 4.7B and Table 4.7C summarizes the level of service conditions for the AM, PM, and Saturday peak hours, respectively. The following critical movements are noted:

- Brant Street and Fairview Street:
  - Eastbound left-turn – PM and Saturday peak hour, LOS F and v/c ratio greater than 1.00.
  - Eastbound through – AM peak hour, LOS D and v/c ratio of 0.98.
  - Westbound left-turn – AM, PM, and Saturday peak hour, queue length exceeds storage.
  - Westbound through – PM peak hour, LOS F and v/c ratio greater than 1.00.
  - Northbound left-turn – AM peak hour, LOS F, v/c ratio of 1.00, and queue length exceeds storage. PM peak hour, queue length exceeds storage. Saturday peak hour, LOS F, v/c ratio greater than 1.00, and queue length exceed storage.
  - Northbound through – PM peak hour, LOS E and v/c ratio greater than 1.00.
  - Northbound right-turn – AM and PM peak hour, queue length exceeds storage.
  - Southbound left-turn – AM, PM, and Saturday peak hour, queue length exceeds storage.
- Brant Street and Grahams Lane/Prospect Street:
  - Eastbound left-turn – PM peak hour, queue length exceeds storage.
  - Westbound left-turn – AM, PM and Saturday peak hour, queue length exceeds storage.
- Brant Street and Ghent Avenue:
  - Southbound left-turn – AM, PM and Saturday peak hour, queue length exceeds storage.
- Brant Street and Blairholm Avenue:
  - Westbound left-turn – AM peak hour queue length exceeds storage.

Appendix I3 contains the supporting detailed Synchro reports.



The capacity issues experienced under the background traffic horizon are expected to continue to occur with or without the development of the subject site. Site traffic impacts are minimal with minor changes in delay at the study area intersections.

The proposed Lot A, Lot B, and Lot C driveways with Ghent Avenue are forecast to operate with low levels of delay and v/c ratios during the AM, PM, and Saturday peak hours.

The queue reach for the eastbound approach at the Brant Street intersection is approximately 65 m during the PM peak hour. With 110 m between Brant Street and the Lot A driveway, the queue reach is not forecast to impact the operations of the site driveway.

The forecast queue reach for the westbound approach at Brant Street is approximately 40 m during the PM peak hour. With 60 m between Brant Street and Lot C driveway, the queue reach is not forecast to impact the operations of the site driveway.

TABLE 4.7A: TOTAL OPERATIONS – FULL BUILD OUT (AM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Brant St & Fairview St	TCS	LOS	C	D	C	**D**	D	C	C	**D**	F	D	C	**E**	E	C	C	**D**	**D**
			Delay	33	54	25	**45**	49	31	28	**34**	154	41	33	**59**	55	34	25	**37**	**45**
			V/C	0.83	0.98	0.31		0.80	0.39	0.11		1.19	0.80	0.45		0.90	0.73	0.11		**1.02**
			Q	96	202	38		52	54	14		96	109	57		88	111	15		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	63		-21	-	-		-71	-	-37		-48	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	C	C	>	**C**	C	C	>	**C**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	27	26	>	**27**	28	26	>	**27**	6	8	>	**8**	4	8	>	**8**	**9**
			V/C	0.20	0.05	>		0.37	0.10	>		0.15	0.51	>		0.24	0.57	>		**0.48**
			Q	14	9	>		24	15	>		7	75	>		7	88	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	16	-	>		-4	-	>		8	-	>		13	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	B	>	**B**	A	B	>	**B**	**B**
			Delay	<	17	12	**16**	<	13	>	**13**	9	10	>	**10**	10	12	>	**12**	**12**
			V/C	<	0.55	0.03		<	0.18	>		0.19	0.49	>		0.33	0.66	>		**0.62**
			Q	<	57	5		<	19	>		8	69	>		20	101	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	10		<	-	>		17	-	>		-3	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	C	**C**	C		C	**C**		A	>	**A**	A	A		**A**	**A**
			Delay	<	22	22	**22**	21		20	**21**		3	>	**3**	3	6		**6**	**7**
			V/C	<	0.11	0.01		0.22		0.08			0.30	>		0.11	0.69			**0.64**
			Q	<	9	0		15		14			23	>		5	94			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		-5		-			-	>		5	-			
	Ghent Ave & Lot A	TWSC	LOS	<	A		**A**		A	>	**A**					B		>	**B**	**A**
			Delay	<	0		**0**		0	>	**0**					12		>	**12**	**2**
			V/C	<	0.00				0.07	>						0.14		>		
			Q	<	0				0	>						4		>		
	Ghent Ave & Lot B	TWSC	LOS	<	A		**A**		A	>	**A**					A		>	**A**	**A**
			Delay	<	2		**2**		0	>	**0**					9		>	**9**	**3**
			V/C	<	0.03				0.05	>						0.06		>		
			Q	<	1				0	>						1		>		
	Lot C & Ghent Ave	TWSC	LOS		A	>	**A**	<	A		**A**	B		>	**B**					**A**
			Delay		0	>	**0**	<	0		**0**	10		>	**10**					**1**
			V/C		0.10	>		<	0.00			0.05		>						
			Q		0	>		<	0			1		>						

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal

TWSC - Two-Way Stop Control
< / > - Shared with through movement

TABLE 4.7B: TOTAL OPERATIONS – FULL BUILD OUT (PM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Brant St & Fairview St	TCS	LOS	F	D	C	**E**	E	F	C	**F**	D	E	C	**E**	D	D	D	**D**	**F**
			Delay	178	42	29	**61**	65	181	30	**139**	42	74	35	**63**	55	45	47	**47**	**86**
			V/C	1.25	0.82	0.23		0.92	1.31	0.55		0.78	1.01	0.31		0.88	0.81	0.78		**1.14**
			Q	112	142	22		100	342	84		62	176	43		93	135	136		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	78		-70	-	-		-37	-	-23		-53	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	D	C	>	**D**	C	C	>	**C**	A	B	>	**B**	A	B	>	**B**	**B**
			Delay	53	27	>	**44**	30	27	>	**28**	9	15	>	**14**	10	14	>	**13**	**17**
			V/C	0.80	0.09	>		0.48	0.17	>		0.13	0.71	>		0.41	0.67	>		**0.68**
			Q	58	15	>		41	21	>		5	116	>		15	106	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	-28	-	>		-21	-	>		10	-	>		5	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	C	B	**C**	<	B	>	**B**	B	B	>	**B**	C	B	>	**B**	**B**
			Delay	<	25	15	**23**	<	17	>	**17**	11	13	>	**13**	24	14	>	**15**	**15**
			V/C	<	0.68	0.02		<	0.36	>		0.29	0.62	>		0.68	0.71	>		**0.70**
			Q	<	63	4		<	39	>		12	100	>		46	120	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	11		<	-	>		13	-	>		-31	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	C	**C**	C		C	**C**		A	>	**A**	A	A		**A**	**A**
			Delay	<	23	22	**23**	21		21	**21**		3	>	**3**	3	6		**6**	**6**
			V/C	<	0.14	0.02		0.11		0.06			0.42	>		0.20	0.68			**0.61**
			Q	<	10	4		9		11			31	>		6	84			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		1		-			-	>		4	-			
	Ghent Ave & Lot A	TWSC	LOS	<	A		**A**		A	>	**A**					B		>	**B**	**A**
			Delay	<	0		**0**		0	>	**0**					14		>	**14**	**2**
			V/C	<	0.00				0.12	>						0.17		>		
			Q	<	0				0	>						5		>		
	Ghent Ave & Lot B	TWSC	LOS	<	A		**A**		A	>	**A**					A		>	**A**	**A**
			Delay	<	3		**3**		0	>	**0**					10		>	**10**	**3**
			V/C	<	0.04				0.09	>						0.07		>		
			Q	<	1				0	>						2		>		
	Lot C & Ghent Ave	TWSC	LOS		A	>	**A**	<	A		**A**	B		>	**B**					**A**
			Delay		0	>	**0**	<	0		**0**	11		>	**11**					**1**
			V/C		0.12	>		<	0.00			0.05		>						
			Q		0	>		<	0			1		>						

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
< / > - Shared with through movement

TABLE 4.7C: TOTAL OPERATIONS – FULL BUILD OUT (SAT PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
Saturday Peak Hour	Brant St & Fairview St	TCS	LOS	F	C	C	**D**	D	D	C	**D**	F	D	C	**E**	E	C	C	**D**	**D**
			Delay	87	30	23	**42**	50	44	29	**42**	160	39	29	**66**	56	32	25	**36**	**46**
			V/C	1.03	0.70	0.25		0.84	0.87	0.22		1.21	0.76	0.13		0.91	0.64	0.12		**1.05**
			Q	134	118	29		57	134	26		100	98	18		92	92	16		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	71		-27	-	-		-75	-	2		-52	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	C	C	>	**C**	C	C	>	**C**	A	A	>	**A**	A	A	>	**A**	**B**
			Delay	26	24	>	**25**	26	24	>	**25**	7	10	>	**10**	5	10	>	**9**	**11**
			V/C	0.32	0.04	>		0.32	0.13	>		0.08	0.56	>		0.29	0.56	>		**0.46**
			Q	23	8	>		26	18	>		4	81	>		9	82	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	7	-	>		-6	-	>		11	-	>		11	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	<	15	13	**15**	<	14	>	**14**	7	8	>	**8**	8	9	>	**9**	**9**
			V/C	<	0.42	0.01		<	0.20	>		0.16	0.50	>		0.40	0.58	>		**0.52**
			Q	<	37	2		<	20	>		6	53	>		19	64	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	13		<	-	>		19	-	>		-4	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	C	**C**	C		C	**C**		A	>	**A**	A	A		**A**	**A**
			Delay	<	25	24	**25**	23		23	**23**		2	>	**2**	2	4		**4**	**4**
			V/C	<	0.14	0.00		0.08		0.03			0.34	>		0.10	0.65			**0.61**
			Q	<	7	0		6		9			24	>		3	81			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		4		-			-	>		7	-			
	Ghent Ave & Lot A	TWSC	LOS	<	A		**A**		A	>	**A**					B		>	**B**	**A**
			Delay	<	0		**0**		0	>	**0**					11		>	**11**	**2**
			V/C	<	0.00				0.06	>						0.08		>		
			Q	<	0				0	>						2		>		
	Ghent Ave & Lot B	TWSC	LOS	<	A		**A**		A	>	**A**					A		>	**A**	**A**
			Delay	<	2		**2**		0	>	**0**					9		>	**9**	**3**
			V/C	<	0.02				0.05	>						0.04		>		
			Q	<	1				0	>						1		>		
	Lot C & Ghent Ave	TWSC	LOS		A	>	**A**	<	A		**A**	B		>	**B**					**A**
			Delay		0	>	**0**	<	0		**0**	10		>	**10**					**1**
			V/C		0.09	>		<	0.00			0.05		>						
			Q		0	>		<	0			1		>						

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LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
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TCS - Traffic Control Signal
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4.2.8 Total Operations – Five Year Horizon

Table 4.8A, Table 4.8B and Table 4.8C summarizes the level of service conditions for the AM, PM, and Saturday peak hours, respectively. The following critical movements are noted:

- Brant Street and Fairview Street:
  - Eastbound left-turn – PM and Saturday peak hour, LOS F and v/c ratio greater than 1.00.
  - Eastbound through – AM peak hour, LOS D and v/c ratio greater than 1.00.
  - Westbound left-turn – AM, PM, and Saturday peak hour, queue length exceeds storage.
  - Westbound through – PM peak hour, LOS F and v/c ratio greater than 1.00.
  - Northbound left-turn – AM peak hour, LOS F, v/c ratio of 1.00, and queue length exceeds storage. PM peak hour, queue length exceeds storage. Saturday peak hour, LOS F, v/c ratio greater than 1.00, and queue length exceed storage.
  - Northbound through – PM peak hour, LOS E and v/c ratio greater than 1.00.
  - Northbound right-turn – AM and PM peak hour, queue length exceeds storage.
  - Southbound left-turn – AM and PM, queue length exceeds storage. Saturday peak hour, LOS E, v/c ratio of 0.97, and queue length exceeds storage.
- Brant Street and Grahams Lane/Prospect Street:
  - Eastbound left-turn – PM peak hour, queue length exceeds storage.
  - Westbound left-turn – AM, PM and Saturday peak hour, queue length exceeds storage.
- Brant Street and Ghent Avenue:
  - Southbound left-turn – AM, PM and Saturday peak hour, queue length exceeds storage.
- Brant Street and Blairholm Avenue:
  - Westbound left-turn – AM peak hour queue length exceeds storage.

Appendix I4 contains the supporting detailed Synchro reports.



The capacity issues experienced under the background traffic horizon are expected to continue to occur with or without the development of the subject site. Site traffic impacts are minimal with minor changes in delay at the study area intersections.

The proposed Lot A, Lot B, and Lot C driveways with Ghent Avenue are forecast to operate with low levels of delay and v/c ratios during the AM, PM, and Saturday peak hours.

The queue reach for the eastbound approach at the Brant Street intersection is approximately 70 m during the PM peak hour. With 110 m between Brant Street and the Lot A driveway, the queue reach is not forecast to impact the operations of the site driveway.

The forecast queue reach for the westbound approach at Brant Street is approximately 45 m during the PM peak hour. With 60 m between Brant Street and Lot C driveway, the queue reach is not forecast to impact the operations of the site driveway.

TABLE 4.8A: TOTAL OPERATIONS – FIVE YEAR HORIZON (AM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Brant St & Fairview St	TCS	LOS	D	E	C	**E**	D	C	C	**D**	F	D	C	**E**	E	C	C	**D**	**D**
			Delay	41	68	25	**56**	55	32	29	**36**	193	42	33	**67**	66	35	25	**40**	**52**
			V/C	0.89	1.03	0.34		0.84	0.42	0.12		1.29	0.82	0.48		0.94	0.75	0.12		**1.09**
			Q	112	218	43		56	56	16		106	115	62		96	118	15		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	57		-26	-	-		-81	-	-42		-56	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	C	C	>	**C**	C	C	>	**C**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	28	27	>	**27**	29	27	>	**28**	6	8	>	**8**	4	8	>	**8**	**10**
			V/C	0.21	0.06	>		0.38	0.10	>		0.18	0.52	>		0.26	0.59	>		**0.50**
			Q	15	9	>		25	15	>		8	81	>		8	95	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	15	-	>		-5	-	>		7	-	>		12	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	B	>	**B**	B	B	>	**B**	**B**
			Delay	<	18	13	**18**	<	14	>	**14**	10	11	>	**11**	11	13	>	**13**	**13**
			V/C	<	0.59	0.03		<	0.19	>		0.21	0.51	>		0.35	0.69	>		**0.64**
			Q	<	60	5		<	20	>		9	73	>		21	108	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	10		<	-	>		16	-	>		-6	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	C	**C**	C		C	**C**		A	>	**A**	A	A		**A**	**A**
			Delay	<	23	23	**23**	22		21	**21**		4	>	**4**	3	8		**8**	**8**
			V/C	<	0.10	0.01		0.20		0.08			0.32	>		0.13	0.74			**0.65**
			Q	<	10	0		15		14			24	>		5	105			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		-5		-			-	>		5	-			
	Ghent Ave & Lot A	TWSC	LOS	<	A		**A**		A	>	**A**					B		>	**B**	**A**
			Delay	<	0		**0**		0	>	**0**					13		>	**13**	**2**
			V/C	<	0.00				0.07	>						0.15		>		
			Q	<	0				0	>						4		>		
	Ghent Ave & Lot B	TWSC	LOS	<	A		**A**		A	>	**A**					A		>	**A**	**A**
			Delay	<	2		**2**		0	>	**0**					9		>	**9**	**3**
			V/C	<	0.03				0.05	>						0.06		>		
			Q	<	1				0	>						2		>		
	Lot C & Ghent Ave	TWSC	LOS		A	>	**A**	<	A		**A**	B		>	**B**					**A**
			Delay		0	>	**0**	<	0		**0**	10		>	**10**					**1**
			V/C		0.10	>		<	0.00			0.05		>						
			Q		0	>		<	0			1		>						

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
< / > - Shared with through movement

TABLE 4.8B: TOTAL OPERATIONS – FIVE YEAR HORIZON (PM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Brant St & Fairview St	TCS	LOS	F	D	C	**E**	E	F	C	**F**	D	F	D	**E**	E	D	D	**D**	**F**
			Delay	207	46	30	**68**	72	212	31	**161**	44	91	36	**75**	60	47	53	**51**	**99**
			V/C	1.32	0.88	0.26		0.95	1.38	0.59		0.80	1.06	0.34		0.90	0.85	0.84		**1.20**
			Q	120	160	26		107	365	94		64	189	47		102	145	152		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	74		-77	-	-		-39	-	-27		-62	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	E	C	>	**D**	C	C	>	**C**	A	B	>	**B**	B	B	>	**B**	**B**
			Delay	68	27	>	**54**	31	28	>	**29**	10	16	>	**15**	12	15	>	**14**	**19**
			V/C	0.87	0.10	>		0.49	0.20	>		0.16	0.74	>		0.45	0.70	>		**0.72**
			Q	63	15	>		42	23	>		6	125	>		20	114	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	-33	-	>		-22	-	>		9	-	>		0	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	C	B	**C**	<	B	>	**B**	B	B	>	**B**	C	B	>	**B**	**B**
			Delay	<	31	17	**29**	<	20	>	**20**	11	13	>	**13**	28	15	>	**16**	**16**
			V/C	<	0.76	0.02		<	0.39	>		0.30	0.63	>		0.72	0.72	>		**0.74**
			Q	<	69	5		<	42	>		12	108	>		48	130	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	10		<	-	>		13	-	>		-33	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	C	**C**	C		C	**C**		A	>	**A**	A	A		**A**	**A**
			Delay	<	25	24	**24**	23		22	**22**		3	>	**3**	3	6		**6**	**6**
			V/C	<	0.15	0.02		0.13		0.06			0.43	>		0.21	0.70			**0.63**
			Q	<	11	4		9		12			33	>		7	92			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		1		-			-	>		3	-			
	Ghent Ave & Lot A	TWSC	LOS	<	A		**A**		A	>	**A**					B		>	**B**	**A**
			Delay	<	0		**0**		0	>	**0**					15		>	**15**	**2**
			V/C	<	0.00				0.12	>						0.17		>		
			Q	<	0				0	>						5		>		
	Ghent Ave & Lot B	TWSC	LOS	<	A		**A**		A	>	**A**					A		>	**A**	**A**
			Delay	<	3		**3**		0	>	**0**					10		>	**10**	**3**
			V/C	<	0.04				0.10	>						0.07		>		
			Q	<	1				0	>						2		>		
	Lot C & Ghent Ave	TWSC	LOS		A	>	**A**	<	A		**A**	B		>	**B**					**A**
			Delay		0	>	**0**	<	0		**0**	11		>	**11**					**1**
			V/C		0.12	>		<	0.00			0.05		>						
			Q		0	>		<	0			1		>						

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V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
< / > - Shared with through movement

TABLE 4.8C: TOTAL OPERATIONS – FIVE YEAR HORIZON (SAT PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
Saturday Peak Hour	Brant St & Fairview St	TCS	LOS	F	C	C	**D**	E	D	C	**D**	F	D	C	**E**	E	C	C	**D**	**D**
			Delay	111	32	24	**49**	74	48	30	**48**	201	40	30	**77**	71	32	25	**40**	**53**
			V/C	1.11	0.74	0.29		0.94	0.91	0.27		1.31	0.78	0.15		0.97	0.66	0.13		**1.13**
			Q	145	125	35		70	145	32		114	104	20		101	97	16		
			Stor.	-	-	100		30	-	-		25	-	20		40	-	-		
			Avail.	-	-	65		-40	-	-		-89	-	0		-61	-	-		
	Brant St & Grahams Ln/Prospect St	TCS	LOS	C	C	>	**C**	C	C	>	**C**	A	A	>	**A**	A	A	>	**A**	**B**
			Delay	27	25	>	**27**	27	25	>	**26**	7	10	>	**10**	5	10	>	**10**	**12**
			V/C	0.35	0.04	>		0.34	0.13	>		0.08	0.57	>		0.32	0.57	>		**0.48**
			Q	24	8	>		27	18	>		4	87	>		9	88	>		
			Stor.	30	-	>		20	-	>		15	-	>		20	-	>		
			Avail.	6	-	>		-7	-	>		11	-	>		11	-	>		
	Brant St & Ghent Ave	TCS	LOS	<	B	B	**B**	<	B	>	**B**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	<	16	13	**15**	<	14	>	**14**	7	8	>	**8**	9	9	>	**9**	**10**
			V/C	<	0.43	0.02		<	0.21	>		0.18	0.52	>		0.44	0.61	>		**0.54**
			Q	<	39	3		<	22	>		7	59	>		21	71	>		
			Stor.	<	-	15		<	-	>		25	-	>		15	-	>		
			Avail.	<	-	13		<	-	>		18	-	>		-6	-	>		
	Brant St & Blairholm Ave	TCS	LOS	<	C	C	**C**	C		C	**C**		A	>	**A**	A	A		**A**	**A**
			Delay	<	27	26	**26**	24		24	**24**		2	>	**2**	2	5		**5**	**5**
			V/C	<	0.15	0.00		0.09		0.03			0.35	>		0.10	0.68			**0.63**
			Q	<	8	0		6		9			25	>		4	90			
			Stor.	<	-	-		10	-	-			-	>		10	-			
			Avail.	<	-	-		4		-			-	>		6	-			
	Ghent Ave & Lot A	TWSC	LOS	<	A		**A**		A	>	**A**					B		>	**B**	**A**
			Delay	<	0		**0**		0	>	**0**					11		>	**11**	**2**
			V/C	<	0.00				0.06	>						0.09		>		
			Q	<	0				0	>						2		>		
	Ghent Ave & Lot B	TWSC	LOS	<	A		**A**		A	>	**A**					A		>	**A**	**A**
			Delay	<	2		**2**		0	>	**0**					9		>	**9**	**3**
			V/C	<	0.02				0.06	>						0.05		>		
			Q	<	1				0	>						1		>		
	Lot C & Ghent Ave	TWSC	LOS		A	>	**A**	<	A		**A**	B		>	**B**					**A**
			Delay		0	>	**0**	<	0		**0**	10		>	**10**					**1**
			V/C		0.10	>		<	0.00			0.06		>						
			Q		0	>		<	0			1		>						

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
< / > - Shared with through movement

5 Remedial Measures

5.1 Brant Street and Fairview Street

The intersection of Brant Street and Fairview Street is experiencing capacity constraints under existing conditions. The capacity constraints are expected to continue to occur with the expected growth in non-site generated traffic.

To mitigate the increases to the delay and capacity, optimizing the signal timings to provide additional green time for these movements should be considered.

The subject site and the Brant Street intersection with Fairview Street is in the City of Burlington's Burlington GO Major Transit Station Area (MTSA). The intent of the MTSA area is an area specific plan to develop new, complete, compact neighbourhoods built around the City's GO Stations. A MTSA is a location that has several transportation options and is a concentrated point for a mix of uses such as transit, employment, housing, recreation, and shopping. MTSA will be neighbourhoods that are environmentally friendly, infrastructure-efficient, walkable, bikeable and transit oriented.

The active transportation goals of the MTSA should outweigh the need for additional vehicle capacity at the Brant Street intersection with Fairview Street. Any widening of the roadway cross-section should prioritize transit or active transportation over vehicle capacity. Continuing to design for vehicle traffic will not be supportive to the MTSA goals (e.g., increased Active Transportation). As noted in Section 2.3, the Burlington Cycling Plan has noted protected bikeways along Fairview Street and on Brant Street from Fairview Street to Baldwin Street.

It is recommended that the road authority monitor and adjust signal timings along the Brant Street and Fairview Street corridors as traffic volumes increase. Recognizing the MTSA objectives, no changes to the existing lane conditions are recommended.

City of Burlington's Transportation Assessment for the MTSA is on-going. A summary of the Transportation Assessment findings[14] applicable to all MTSAs within the City includes:

[14] City of Burlington, *Major Transit Station Areas, Area-Specific Planning Study Final Report | Downtown Burlington UGC/Burlington GO MTSA & Aldershot GO MTSA*, (Burlington, 2022), Page 24.

- *Future network modeling demonstrates that the system is flexible and that increases in sustainable mode shares for all travelers (existing, future background or new development) can create space in the system for some auto demands generated from new development.*
- *Ultimately, it is expected that with worsening congestion in the study area, the peak times will spread out to become peak periods; travelers will shift modes of travel; or people will make different decisions about their work or residence to avoid longer commute times.*
- *An aggressive transportation demand management (TDM) strategy by both the City and the Region for the MTSAs will be required to minimize vehicular travel demands. The MTSA TDM strategies will align with the over-arching TDM strategy for the City and the Region to reduce vehicle demands on both City and Regional roads within the study area. Additionally, the City should require site-specific TDM strategies from each development proposal within the MTSA that aligns with and leverages the MTSA, City and Regional TDM strategies.*
- *A change in parking rates in the MTSAs will be addressed at a later date and is subject to further study and evaluation to understand the context and implications. The rate change will be determined with consideration for the land uses, traffic and congestion options throughout the network of each MTSA.*

5.2 Brant Street and Prospect Street/Grahams Lane

The operation analysis suggests queuing issues may occur for the eastbound and westbound left-turn movements. The queue issues are forecast to occur under background traffic conditions.

To accommodate the 95th percentile queue length for the eastbound left-turn movement, approximately 35 metres of additional storage is needed (65 metres total storage). An adjustment to the existing pavement marking would resolve this issue. As Grahams Lane is a cul-du-sac the need to repaint the eastbound left-turn lane may not be necessary as it is a low volume roadway. The need for the additional storage is triggered by background traffic growth.

To accommodate the 95th percentile queue length for the westbound left-turn movement, approximately 25 metres of additional storage is needed (45 metres total storage). An adjustment to the existing pavement marking would resolve this issue. It is recommended to repaint Prospect Street between Brant Street and Robinson Street to provide a 45 metre eastbound-left-turn lane. The need for the additional storage is triggered by background traffic growth.



It is recommended that the road authority monitor and adjust signal timings along the Brant Street corridors as traffic volumes increase.

5.3 Brant Street and Ghent Avenue

The operation analysis suggests queuing issues may occur for the southbound left-turn movement under Phase 2 total traffic conditions.

To accommodate the 95th percentile queue length for the southbound left-turn movement, approximately 35 metres of additional storage is needed (50 metres total storage). An adjustment to the existing pavement marking would resolve this issue. It is recommended to repaint the two-way centre left-turn lane across the sites frontage to increase the storage of the southbound left-turn lane.

It is recommended that the road authority monitor and adjust signal timings along the Brant Street corridors as traffic volumes increase.

5.4 Brant Street and Blairholm Avenue

The operation analysis suggests queuing issues may occur for the westbound left-turn movement. The queue issues are forecast to occur under background traffic conditions.

To accommodate the 95th percentile queue length for the westbound left-turn lane, approximately 5 metres of additional storage is needed. It is recommended to repaint the westbound left-turn lane to provide 15 metres of storage.

The road authorities should monitor the future traffic volumes at this intersection and optimize the signal timings where possible.

5.5 Auxiliary Lanes

The Ministry of Transportation's Design Supplement for the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads[15] provides guidance on the assessment and/or need for auxiliary left-turn lanes at intersections.

The site driveway intersections to Ghent Avenue have been reviewed using these procedures to determine if the future traffic volumes warrant the need for a left-turn lane at the site driveway.

[15] Ontario Ministry of Transportation, *MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads*, (Toronto: Queen's Printer for Ontario, 2020)

At the Lot B Driveway and Ghent Avenue, the left-turn volumes are greater than 5% of the advancing volume, but the advancing and opposing volumes are generally too low to warrant left turn lanes.

At the Lot C Driveway and Ghent Avenue, the forecast turning traffic volumes are less than 5% of the advancing volume. A left-turn lane at the three site driveways to Ghent Avenue are not warranted. No change in the existing lane configuration is recommended.

Appendix J contains the left-turn lane warrant nomographs.

5.6 Vehicle Circulation

Heavy vehicle circulation for the loading and waste collection area has been assessed using AutoTURN swept path analysis software. Four design vehicles were used in the analysis:

- Halton Front End Loading Garbage Truck;
- Transportation Association of Canada (TAC) Medium Single Unit (MSU); and
- TAC Passenger Vehicle (P).

Appendix K contains the swept path analysis. Minor changes to the shape of the loading zones and width of the overhead doors for Phase 1 and Phase 2 is required. These design changes can be addressed as Site Plan Approval stage.

6 Conclusions and Recommendations

6.1 Conclusions

Based on the investigations carried out, it is concluded that:

- **Existing Traffic Operations:** Capacity issues are identified at the Brant Street intersections with Fairview Street and Prospect Street/Grahams Lane.
- **Estimated Site Generated Traffic:** Upon full build-out the subject site is forecast to generate approximately:
  - Vehicle trips – 271, 311, and 244 external vehicle trips during the AM, PM, and Saturday peak hours, respectively.
  - Transit trips – 41, 54, and 34 external transit trips during the AM, PM, and Saturday peak hours, respectively. The transit trips are assumed to begin and end using Active Transportation.
  - Non-Auto Trips – 15, 17, and 13 external non-motorized trips (walking/bicycle) trips during the AM, PM, and Saturday peak hours, respectively.
- **Background Traffic Operations:** The capacity constraints identified under existing conditions are expected to continue to occur with the expected growth in non-site generated traffic. Capacity issues are identified at the following intersections:
  - Brant Street and Fairview Street (Phase 1 Horizon);
  - Brant Street and Prospect Street/Grahams Lane (Phase 1 Horizon); and
  - Brant Street and Blairholm Avenue (Phase 1 Horizon).
- **Total Traffic Operations**: Site generated traffic results in new capacity deficiencies at the following intersections:
  - Brant Street and Fairview Street:
    - Westbound left-turn (PM peak hour).
  - Brant Street and Ghent Avenue:
    - Southbound left-turn (PM and Saturday peak hours).

  No capacity issues are forecast to occur at the proposed site driveways to Ghent Avenue.
- **Remedial Measures:** The following remedial measures have been identified to address forecast capacity issues at the study area intersections:

- Brant Street and Fairview Street:
  - Optimizing signal timings.
  - Recognizing the MTSA objectives, no changes to the existing lane conditions are recommended.
- Brant Street and Prospect Street/Grahams Lane:
  - Repaint the eastbound left-turn lane to provide an additional 35 metres of storage (65 metres total)
  - Repaint the westbound left-turn lane to provide an additional 25 metres of storage (45 metres total).
- Brant Street and Ghent Avenue:
  - Repaint the southbound left-turn lane to provide an additional 35 metres of storage (50 metres total).
- Brant Street and Blairholm Avenue:
  - Repaint the westbound left-turn lane to provide an additional 5 metres of storage (15 metres total).
- Site Driveways to Ghent Avenue:
  - No geometric improvements are recommended.

6.2 Recommendations

Based on the findings of this study, it is recommended that:

- The road authorities monitor the future traffic volumes along the Brant Street and Fairview Street corridors and optimize the signal timings to reflect real world changes in traffic volumes.
- The road authorities consider modifying the following turn lanes to provide additional storage necessary to accommodate the forecast queue lengths:
  - Brant Street at Prospect Street – eastbound left-turn lane (65 metres of total storage);
  - Brant Street at Prospect Street – westbound left-turn lane (45 metres of total storage);
  - Brant Street at Ghent Avenue – southbound left-turn lane (50 metres of total storage)
  - Brant Street at Blairholm Avenue – westbound left-turn lane (15 metres of total storage).

Appendix A

Pre-Study Consultation

From: Pasquini, Alexsandria
To: Andrew Evans; Lucas, Steve; Ozimkovic , Danijel; Scattolon, Walter; Huycke, Adam
Cc: Chris Day
Subject: RE: (200403) Brant St and Ghent Ave, Burlington TIS UPDATED Scope of Work
Date: August 27, 2020 4:29:19 PM
Attachments: image001.png

Hello Andrew,

The provided TIS scope of work has been updated to our satisfaction regarding the analysis periods, analysis years, phasing, growth rate and mode splits.

Thank you.
Alex

From: Andrew Evans [mailto:aevans@ptsl.com]
Sent: Thursday, August 27, 2020 2:52 PM
To: Lucas, Steve <Steve.Lucas@burlington.ca>; Ozimkovic , Danijel <Danijel.Ozimkovic@burlington.ca>; Pasquini, Alexsandria <Alex.Pasquini@halton.ca>; Scattolon, Walter <Walter.Scattolon@halton.ca>; Huycke, Adam <Adam.Huycke@halton.ca>
Cc: Chris Day <cday@ptsl.com>
Subject: RE: (200403) Brant St and Ghent Ave, Burlington TIS UPDATED Scope of Work

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Greetings,

We have received comments back from both Halton Region and City of Burlington to our proposed scope of work for the proposed mixed-used development located at three corners of the Brant Street and Ghent Avenue intersection in the City of Burlington.

As requested by Halton Region, please find below our revised and updated scope of work for your final approval.

Study area to include:

- Brant Street at Fairview Street (signalized);
- Brant Street at Prospect Street/Grahams Lane (signalized);
- Brant Street at Ghent Avenue (signalized);
- Brant Street at Blairholm Avenue (signalized); and
- Up to five site driveways.

Study Peak Hours:

- Weekday AM, PM and Saturday Peak hours

Analysis Years:

- Existing plus four(4) horizon years

- Existing (2020)
- Phase 1 (2024 buildout)
- Phase 2 (2026 buildout)
- Phase 3 (2028 buildout)
- Ten-Years from date of TIS (2030)

Background Growth Rates

- A background growth rate of 1.0% per annum on Brant Street (Regional road 18) from Fairview Street north (provided by Halton Region)
- A background growth rate of 1.0% per annum on all City Roads (provided by City of Burlington)

Background Development Traffic

- 2087-2103 Prospect Street (provided by City)

Site Generated Traffic:

- Institute of Transportation Engineers trip generation rates from ITE Trip Generation Manual (10th Edition)
- ITE Internal capture for ground floor retail
- Halton's Transportation Master Plan (2011) transit mode split:
  - 10% for Phase 1 (2024 horizon year)
  - 15% for Phase 2 & Phase 3 (2026 /2028 horizon year)
- Active Transportation:
  - 5% for all phases
- Transportation Demand Management (TDM):
  - 3% for all phases
- Site generated trips to be distributed and assigned to the study area intersection based on existing traffic patterns and Transportation Tomorrow Survey data

In addition to the TIS, Paradigm will also undertake an Access and Circulation Review to ensure compliance of the proposed development with City/Regional requirements and guidelines

- An AutoTURN assessment of vehicle access and egress, clearance and swept path manoeuvres within the site based on a suitable design vehicle (e.g. fire truck, garbage truck)
- Determine sight distance requirements for the proposed access locations
- Review of the concept plans to assess the design and operation of the proposed access and internal roadways and laneways.

Thank you and regards,

Andrew Evans, M.Sc.
Transportation Planner

Paradigm Transportation Solutions Limited
p: 905.381.2229 x **305**
m: 519.497.3239

Since 1998, our unique "work at home" business model has enabled us to harness technology, offer high quality service and strong communication with our clients and now allows us to carry on our work for you during COVID-19.

Let's stay safe and look out for each other. We will get through this together.

From: Lucas, Steve <Steve.Lucas@burlington.ca>
Sent: August 27, 2020 10:29 AM
To: Andrew Evans <aevans@ptsl.com>; Ozimkovic , Danijel <Danijel.Ozimkovic@burlington.ca>
Subject: Re: (200403) Brant St and Ghent Ave, Burlington TIS Scope of Work

Hello Andrew,

Our comments are in Red in the email chain below!

Have a great week,

-Steve

From: Pasquini, Alexsandria <Alex.Pasquini@halton.ca>
Sent: August 14, 2020 4:14 PM
To: Andrew Evans <aevans@ptsl.com>
Cc: Krusto, Matt <Matt.Krusto@halton.ca>; Scattolon, Walter <Walter.Scattolon@halton.ca>; Danijel.Ozimkovic@burlington.ca; Lucas, Steve <Steve.Lucas@burlington.ca>; Huycke, Adam <Adam.Huycke@halton.ca>; Chris Day <cday@ptsl.com>; Scattolon, Walter <Walter.Scattolon@halton.ca>
Subject: RE: (200403) Brant St and Ghent Ave, Burlington TIS Scope of Work

Hello Andrew,

We have reviewed the **TIS Scope of Work** provided below from **Paradigm**, for a **3 Phase development at Brant Street and Ghent Avenue**.

Background:

The provided scope of work is for a TIS for a mixed-use development located on the northwest,

northeast, and southeast corner of Brant Street and Ghent Avenue in the City of Burlington.

This section of Brant Street is a Local Road. The nearest Regional intersection is north of the site at Fairview Street and Brant Street, with the north leg being a Regional road.

The property owners are proposing to develop the three (3) corners in three (3) phases for a total of 1,016 residential units, 7 townhouses, and 1,822m2 of ground floor retail as follows:

- Phase 1 (*2024* buildout) – Northwest Corner : 589 residential units and 420m2 of ground floor retail.
- Phase 2 (*2026* buildout) – Northeast Corner : 316 residential units plus 7 townhouses and 405m2 of ground floor retail.
- Phase 3 (*2028* buildout) – Southeast Corner : 108 residential units and 997m2 of ground floor retail.

Comments:

Transportation Planning has the following comments on the Scope of Work:

Study Peak Hours:

Provide analysis for the following:

- Weekday AM, PM and Saturday peak hours.

Analysis Years:

As opposed to a single analysis period (2030 as proposed), the following analysis years are required:

- Existing (2020)
- Phase 1 (2024 buildout)
- Phase 2 (2026 buildout)
- Phase 3 (2028 buildout)
- Year 2030

Future Regional Roadway Improvements and Timing:

The timing from the Capital Implementation Plan for the following works must be considered across the various Phase and analysis periods that may be affected:

- Start of Construction 2027 – Brant Street (Regional Road 18) – Reconstruction from Fairview Street to QEW
- Start of Construction 2027 – Brant Street (Regional Road 18) – Widening from 4 to 6 lanes from North Service Road to Dundas Street (Regional Road 5)

- There are no planned city capital work for local streets in this projects scope.

Background Development Traffic:

The City of Burlington will provide and confirm area development details, as well as the details related to City roads – Fairview Street and Brant Street (south of Fairview Street).

- Please see the following URL's for relevant development applications:
  - https://www.burlington.ca/en/services-for-you/children-s-financial-group-inc----2087-and-2103-prospect-st-.asp

Background Growth Rates:

- A Background Growth Rate of 1% per annum is recommended for Brant Street (Regional Road 18) with extents from Fairview Street north to Dundas Street (Regional Road 5).
- Growth rates for City roads must be verified with the City of Burlington.

- Burlington staff support the proposed rate of 1%.

Transportation Modes:

- Halton's Transportation Master Plan (2011) utilizes a transit mode split of 10% for 2021, 15% for 2026 and 20% for 2031.
- Assumption of travel via other modes (Active Transportation i.e.: walk, cycle) should utilize a total 5% mode split for 2031.
- Transportation Demand Management (TDM) assumptions of 3% for 2031 would be acceptable.

Traffic Data Requests:

To inquire on available traffic data for Regional roads or intersections, please submit a

request to: trafficdatarequests@halton.ca

- Please contact Florin Patrau for availability of TMC's : florin.patrau@burlington.ca

TIS Report:

Please ensure the Recommendation Section is completed to clearly outline any proposed/recommended road improvements directly and indirectly related to the development impacts, based on the TIS analysis and findings.

This includes consideration for potential modifications to the Signalized Intersection of Brant Street and Fairview Street.

CITY OF BURLINGTON – MOBILITY HUBS STUDY:

This development is in close proximity to the study boundaries for the Burlington Mobility Hubs Study.

(Nearest boundary intersection is Prospect Street @ Brant Street, one block north of Ghent Street).

o Before concluding the TIS report, ensure that the City is satisfied with the development's potential for impacts in relation to the Mobility Hub Study and objectives.

o Review the City's Mobility Hub Study and discuss further with City Planning and City Mobility Hub staff (if necessary) - https://www.burlington.ca/en/services-for-you/mobility-hubs.asp

The balance of the Scope of Work is acceptable.

We kindly ask that the above noted comments, in addition to any comments provided by the City of Burlington, be incorporated into an updated Scope of Work that is to be submitted to the City and Region for further review and approval.

Thank you,

Alex

Alexsandria Pasquini
Intermediate Planner
Planning Services
Legislative & Planning Services
Halton Region
905-825-6000, ext. 7185 | 1-866-442-5866

Halton Region logo

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From: Andrew Evans <aevans@ptsl.com>
Sent: Wednesday, August 12, 2020 1:55 PM
To: Krusto, Matt <Matt.Krusto@halton.ca>; Scattolon, Walter <Walter.Scattolon@halton.ca>; Danijel.Ozimkovic@burlington.ca; steve.lucas@burlington.ca
Cc: Chris Day <cday@ptsl.com>
Subject: (200403) Brant St and Ghent Ave, Burlington TIS Scope of Work

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Greetings,

Paradigm was retained to undertake a TIS for a mixed-use development located at three corners of the Brant Street and Ghent Avenue intersection in the City of Burlington.

The subject site is located on the northwest, northeast, and southeast corner of Brant Street and Ghent Avenue. The property owners are proposing to develop the three corners in three phases for a total of 1,016 residential units, 7 townhouses, and 1,822m2 of ground floor retail as follows:

- Phase 1 (2024) – Northwest Corner
    - 589 residential units and 420m2 of ground floor retail
    - Vehicle access currently proposed via one all-moves access to Ghent Avenue and one right-in/right-out only access to Brant Street
- Phase 2 (2026) – Northeast Corner
    - 316 residential units plus 7 townhouses and 405m2 of ground floor retail
    - Vehicle access currently proposed via one all-moves access to Ghent Avenue and one all-moves access to Brant Street
- Phase 3 (2028) – Southeast Corner
    - 108 residential units and 997m2 of ground floor retail
    - Vehicle access currently proposed via one all-moves access to Ghent Avenue.

We have preliminary comments from the City of Burlington (Transportation Services) that have advised that “With regards to Phase 1 & 2, consider eliminating each of the proposed accesses to Brant Street and having one primary access from Ghent Avenue each.” Paradigm will conduct a sensitivity analysis to see if the site generated traffic can be adequately accommodated from Ghent Avenue all-moves access only for Phase 1 & 2.

We would like to prepare our study based on the following scope:

- Study area to include:
    - Brant Street at Fairview Street (signalized);
    - Brant Street at Prospect Street/Grahams Lane (signalized);
    - Brant Street at Ghent Avenue (signalized);
    - Brant Street at Blairholm Avenue (signalized); and
    - Up to five site driveways.
- Traffic forecasts and analysis will be completed for one planning horizon, ten years from the date of the TIS (Year 2030)
- Two analysis periods – weekday AM and PM peak hours;
- The study will follow the Halton Region Transportation Impact Study Guidelines (January 2015);

- Background growth rate (to be provided by City/Region)
- Institute of Transportation Engineers trip generation rates from ITE Trip Generation Manual (10th Edition)
- ITE Internal capture for ground floor retail
- Site generated trips to be distributed and assigned to the study area intersection based on existing traffic patterns and Transportation Tomorrow Survey data

In addition to the TIS, Paradigm will also undertake an Access and Circulation Review to ensure compliance of the proposed development with City/Regional requirements and guidelines

- An AutoTURN assessment of vehicle access and egress, clearance and swept path manoeuvres within the site based on a suitable design vehicle (e.g. fire truck, garbage truck)
- Determine sight distance requirements for the proposed access locations
- Review of the concept plans to assess the design and operation of the proposed access and internal roadways and laneways.

Please confirm that the above assumptions are appropriate and if there are any network improvements or background developments you would like us to include in our study.

Thank you and regards.

Andrew Evans, M.Sc.
Transportation Planner

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5A-150 Pinebush Road Cambridge ON N1R 8J8
p: 905.381.2229 x **305**
m: 519.497.3239
e: aevans@ptsl.com
w: www.ptsl.com

Since 1998, our unique "work at home" business model has enabled us to harness technology, offer high quality service and strong communication with our clients and now allows us to carry on our work for you during COVID-19.

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Appendix B

Traffic Data

Brant St @ Fairview St

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 8:00:00
To: 9:00:00

Municipality: Halton Region
Site #: 1020550100
Intersection: Fairview St & Brant St
TFR File #: 4
Count date: 2-May-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Fairview St runs W/E

North Leg Total:	1965			
North Entering:	975			
North Peds:	6			
Peds Cross:	⋈			
Heavys	20	11	3	34
Trucks	7	9	0	16
Cars	110	610	205	925
Totals	137	630	208	
Heavys	39			
Trucks	11			
Cars	940			
Totals	990			
East Leg Total:	1954			
East Entering:	551			
East Peds:	21			
Peds Cross:	⧖			

Brant St

Heavys	Trucks	Cars	Totals
32	12	558	602

	Cars	Trucks	Heavys	Totals
	129	4	5	138
	290	4	11	305
	103	4	1	108
	522	12	17	

Fairview St

N
W E
S

Heavys	Trucks	Cars	Totals
17	5	284	306
6	15	941	962
3	4	216	223
26	24	1441	

Fairview St

Cars	Trucks	Heavys	Totals
1376	18	9	1403

Brant St

Peds Cross:	⧖			
West Peds:	22			
West Entering:	1491			
West Leg Total:	2093			
Cars	929			
Trucks	17			
Heavys	15			
Totals	961			
Cars	158	527	230	915
Trucks	1	2	3	6
Heavys	1	17	0	18
Totals	160	546	233	
Peds Cross:	⋈			
South Peds:	1			
South Entering:	939			
South Leg Total:	1900			

Comments

Brant St @ Fairview St

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 12:15:00
To: 13:15:00

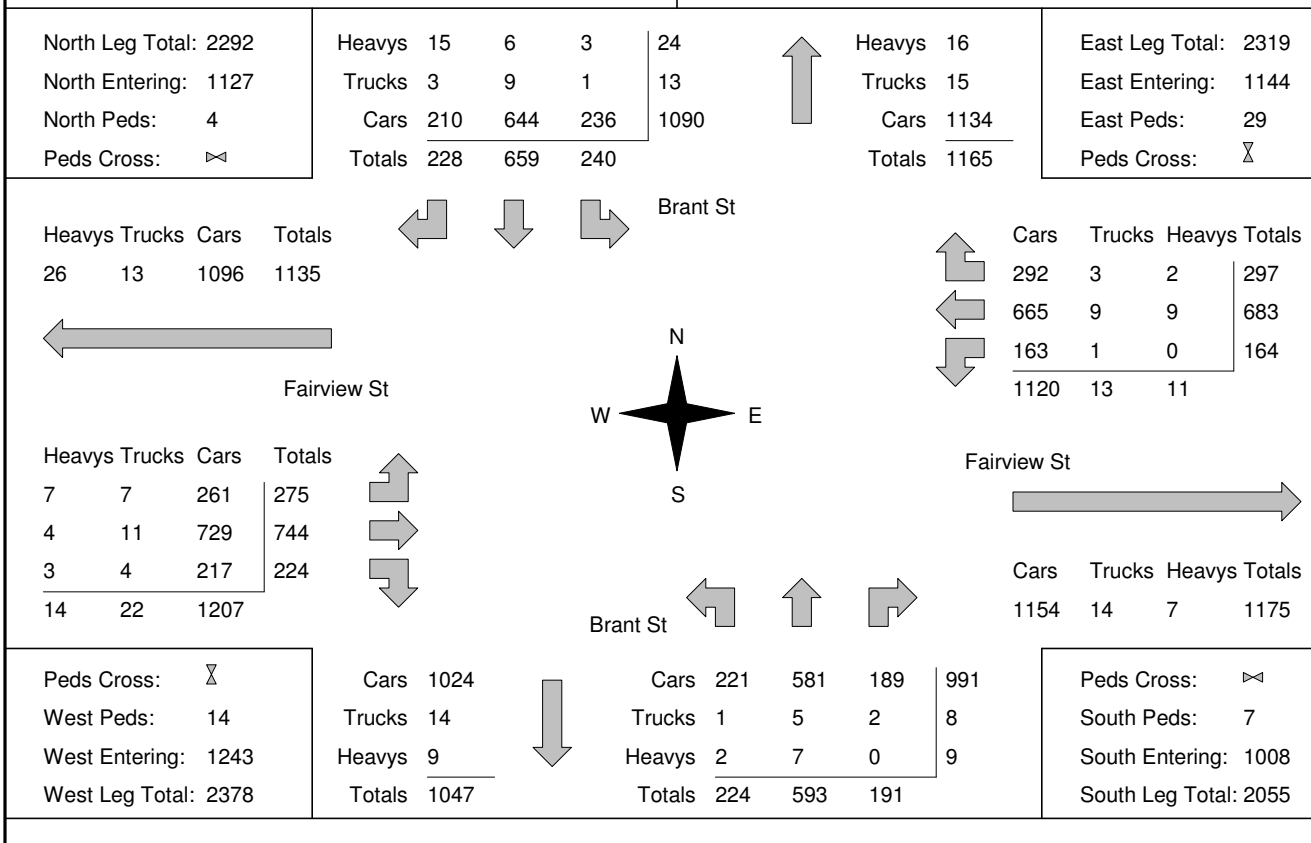
Municipality: Halton Region
Site #: 1020550100
Intersection: Fairview St & Brant St
TFR File #: 4
Count date: 2-May-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Fairview St runs W/E



Comments

Brant St @ Fairview St

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:30:00
To: 17:30:00

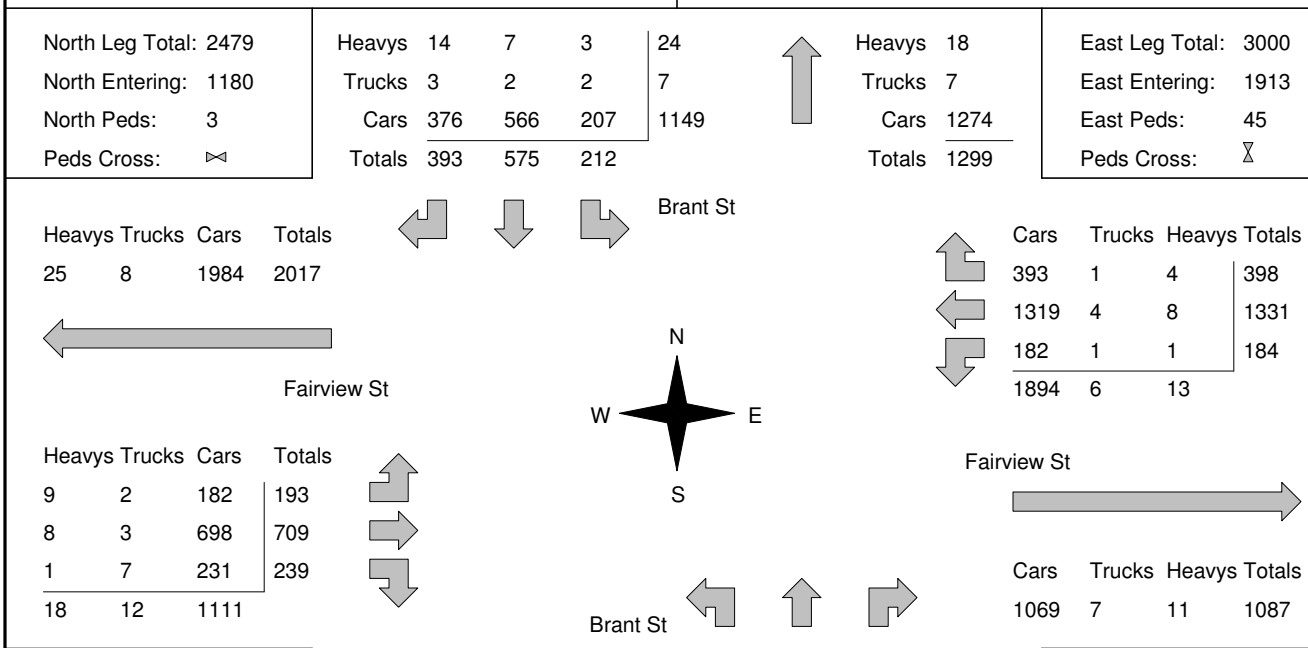
Municipality: Halton Region
Site #: 1020550100
Intersection: Fairview St & Brant St
TFR File #: 4
Count date: 2-May-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Fairview St runs W/E



Comments

Brant St @ Fairview St

Total Count Diagram

Municipality: Halton Region
Site #: 1020550100
Intersection: Fairview St & Brant St
TFR File #: 4
Count date: 2-May-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Fairview St runs W/E

North Leg Total:	17273			
North Entering:	8005			
North Peds:	38			
Peds Cross:	⋈			
Heavys	105	65	24	194
Trucks	42	49	14	105
Cars	1777	4336	1593	7706
Totals	1924	4450	1631	
Heavys	184			
Trucks	92			
Cars	8992			
Totals	9268			
East Leg Total:	18335			
East Entering:	9409			
East Peds:	245			
Peds Cross:	⧖			

Brant St

Heavys	Trucks	Cars	Totals
194	101	9311	9606

Cars	Trucks	Heavys	Totals
2154	22	27	2203
5849	48	72	5969
1215	16	6	1237
9218	86	105	

Fairview St

N
W E
S

Heavys	Trucks	Cars	Totals
88	31	1998	2117
60	52	5627	5739
17	31	1593	1641
165	114	9218	

Fairview St

Cars	Trucks	Heavys	Totals
8754	83	89	8926

Brant St

Peds Cross:	⧖			
West Peds:	143			
West Entering:	9497			
West Leg Total:	19103			
Cars	7144			
Trucks	96			
Heavys	88			
Totals	7328			
Cars	1685	4840	1534	8059
Trucks	11	39	17	67
Heavys	17	69	5	91
Totals	1713	4948	1556	
Peds Cross:	⋈			
South Peds:	49			
South Entering:	8217			
South Leg Total:	15545			

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

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Mid-day Peak Diagram

Specified Period
From: 10:00:00
To: 14:00:00

One Hour Peak
From: 12:45:00
To: 13:45:00

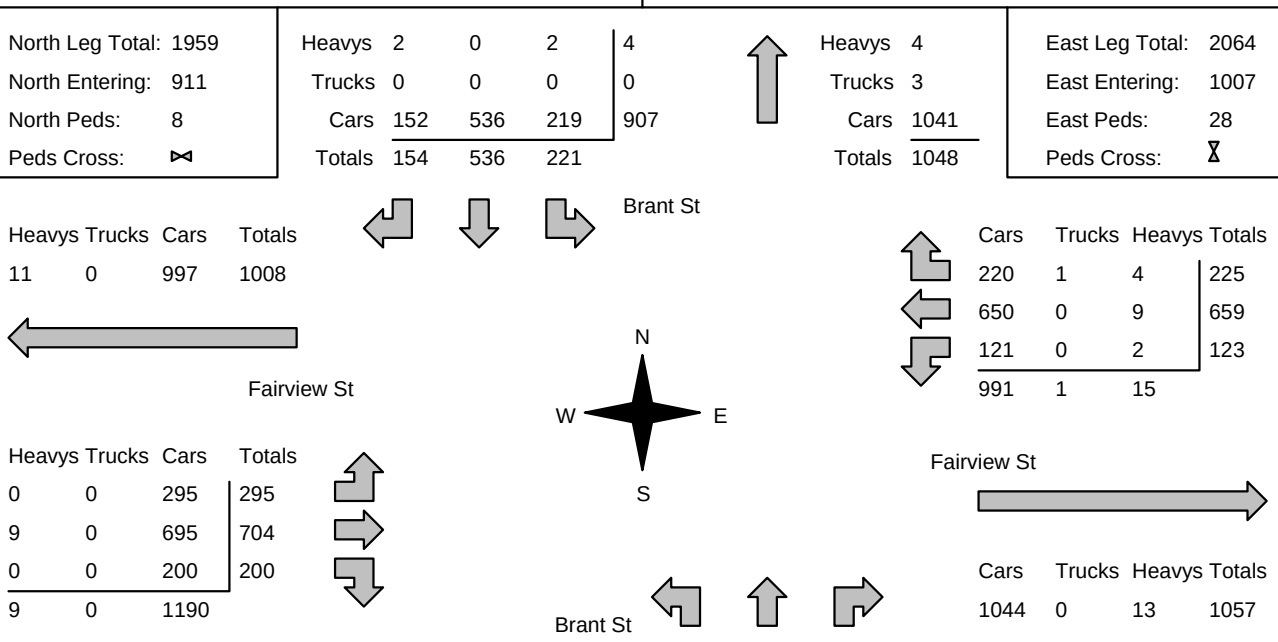
Municipality: Burlington
Site #: 2006800001
Intersection: Fairview St & Brant St
TFR File #: 1
Count date: 19-Sep-20

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Fairview St runs W/E



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Total Count Diagram

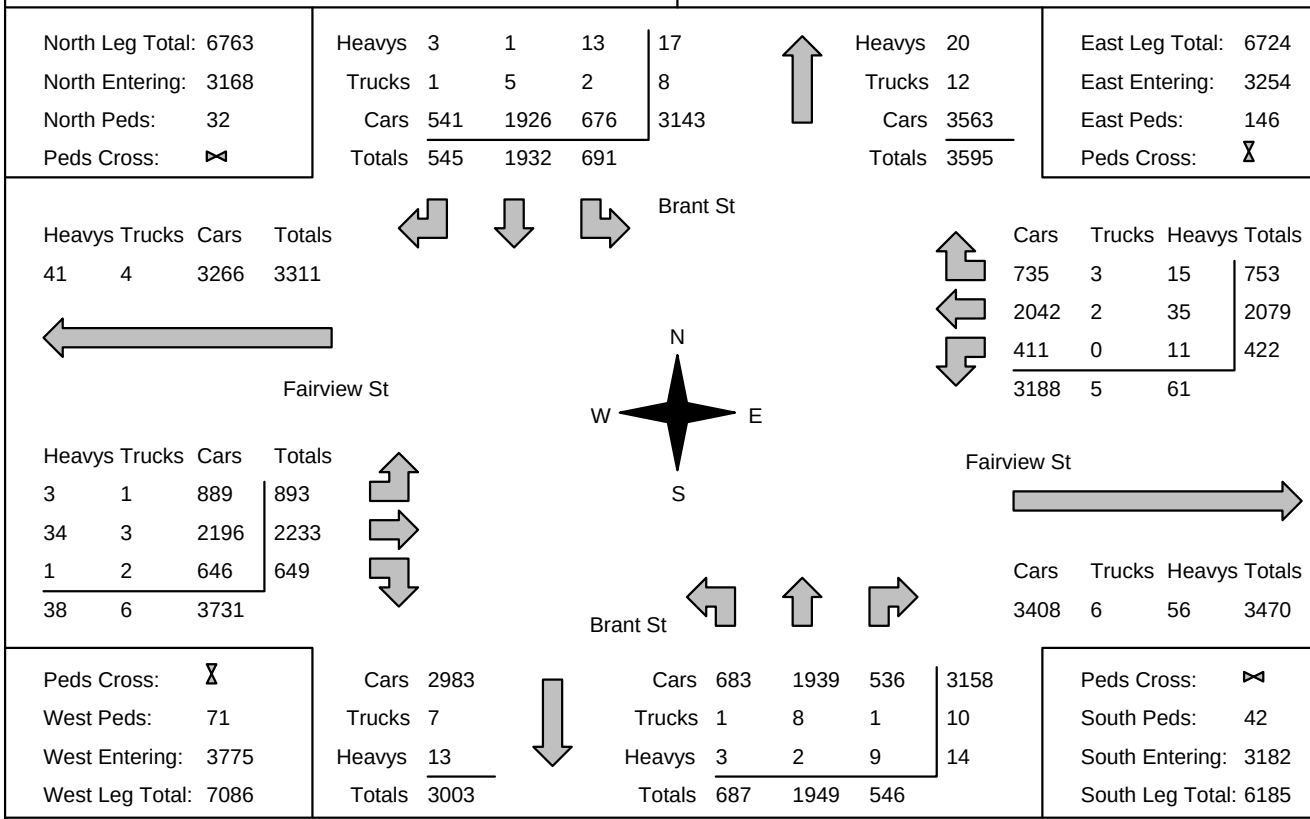
Municipality: Burlington
Site #: 2006800001
Intersection: Fairview St & Brant St
TFR File #: 1
Count date: 19-Sep-20

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Fairview St runs W/E



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: Fairview St & Brant St | **Count Date:** 19-Sep-20 | **Municipality:** Burlington

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
10:00:00	*0*	*0*	*0*	*0*	*0*
11:00:00	*128*	*392*	*91*	*611*	*7*
12:00:00	*153*	*504*	*127*	*784*	*10*
13:00:00	*189*	*526*	*165*	*880*	*9*
14:00:00	*221*	*510*	*162*	*893*	*6*
Totals:	691	1932	545	3168	32

North/South Total Approaches: *6350*

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
10:00:00	*0*	*0*	*0*	*0*	*0*
11:00:00	*153*	*404*	*134*	*691*	*13*
12:00:00	*167*	*509*	*150*	*826*	*5*
13:00:00	*181*	*511*	*130*	*822*	*20*
14:00:00	*186*	*525*	*132*	*843*	*4*
S Totals:	687	1949	546	3182	42

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
10:00:00	*0*	*0*	*0*	*0*	*0*
11:00:00	*70*	*329*	*150*	*549*	*39*
12:00:00	*106*	*482*	*157*	*745*	*38*
13:00:00	*129*	*618*	*218*	*965*	*44*
14:00:00	*117*	*650*	*228*	*995*	*25*
Totals:	422	2079	753	3254	146

East/West Total Approaches: *7029*

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
10:00:00	*0*	*0*	*0*	*0*	*0*
11:00:00	*158*	*361*	*117*	*636*	*19*
12:00:00	*198*	*476*	*167*	*841*	*17*
13:00:00	*259*	*701*	*154*	*1114*	*23*
14:00:00	*278*	*695*	*211*	*1184*	*12*
W Totals:	893	2233	649	3775	71

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*10:00*	*11:00*	*12:00*	*13:00*	*14:00*	*0:00*	*0:00*	*0:00*
Crossing Values:	*0*	*743*	*884*	*963*	*969*	*0*	*0*	*0*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 19-Sep-20 Site #: 2006800001

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
10:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15:00	23	23	95	95	18	18	0	0	1	1	0	0	0	0	0	0	0	0	2	2
10:30:00	54	31	187	92	30	12	0	0	2	1	0	0	1	1	0	0	0	0	2	0
10:45:00	84	30	280	93	57	27	0	0	4	2	0	0	2	1	0	0	0	0	6	4
11:00:00	124	40	388	108	91	34	1	1	4	0	0	0	3	1	0	0	0	0	7	1
11:15:00	152	28	507	119	120	29	1	0	5	1	0	0	3	0	0	0	0	0	8	1
11:30:00	182	30	621	114	155	35	1	0	5	0	0	0	4	1	0	0	0	0	12	4
11:45:00	229	47	749	128	194	39	1	0	5	0	1	1	5	1	0	0	1	1	16	4
12:00:00	273	44	891	142	216	22	1	0	5	0	1	0	7	2	0	0	1	0	17	1
12:15:00	314	41	1003	112	256	40	1	0	5	0	1	0	7	0	0	0	1	0	23	6
12:30:00	350	36	1143	140	304	48	1	0	5	0	1	0	8	1	1	1	1	0	24	1
12:45:00	413	63	1259	116	341	37	1	0	5	0	1	0	9	1	1	0	1	0	24	0
13:00:00	459	46	1416	157	381	40	1	0	5	0	1	0	10	1	1	0	1	0	26	2
13:15:00	528	69	1548	132	414	33	1	0	5	0	1	0	10	0	1	0	1	0	27	1
13:30:00	583	55	1661	113	454	40	1	0	5	0	1	0	11	1	1	0	3	2	29	2
13:45:00	632	49	1795	134	493	39	1	0	5	0	1	0	11	0	1	0	3	0	32	3
14:00:00	676	44	1926	131	541	48	2	1	5	0	1	0	13	2	1	0	3	0	32	0
14:15:00	676	0	1926	0	541	0	2	0	5	0	1	0	13	0	1	0	3	0	32	0
14:15:15	676	0	1926	0	541	0	2	0	5	0	1	0	13	0	1	0	3	0	32	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 19-Sep-20 Site #: 2006800001

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
10:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15:00	18	18	58	58	35	35	0	0	0	0	1	1	1	1	1	1	0	0	9	9
10:30:00	30	12	137	79	68	33	0	0	0	0	1	0	1	0	2	1	1	1	16	7
10:45:00	46	16	224	87	103	35	0	0	0	0	1	0	3	2	5	3	2	1	26	10
11:00:00	66	20	322	98	146	43	0	0	0	0	1	0	4	1	7	2	3	1	39	13
11:15:00	94	28	435	113	180	34	0	0	0	0	1	0	5	1	10	3	4	1	43	4
11:30:00	123	29	535	100	214	34	0	0	0	0	1	0	5	0	12	2	5	1	45	2
11:45:00	142	19	649	114	258	44	0	0	1	1	1	0	6	1	15	3	6	1	68	23
12:00:00	169	27	792	143	299	41	0	0	1	0	1	0	7	1	18	3	7	1	77	9
12:15:00	201	32	939	147	347	48	0	0	2	1	1	0	7	0	21	3	8	1	86	9
12:30:00	237	36	1084	145	402	55	0	0	2	0	2	1	7	0	22	1	9	1	92	6
12:45:00	264	27	1231	147	457	55	0	0	2	0	2	0	8	1	25	3	10	1	111	19
13:00:00	296	32	1400	169	512	55	0	0	2	0	2	0	9	1	27	2	11	1	121	10
13:15:00	329	33	1564	164	572	60	0	0	2	0	2	0	9	0	29	2	12	1	125	4
13:30:00	359	30	1710	146	630	58	0	0	2	0	2	0	9	0	31	2	13	1	129	4
13:45:00	385	26	1881	171	677	47	0	0	2	0	3	1	10	1	34	3	14	1	139	10
14:00:00	411	26	2042	161	735	58	0	0	2	0	3	0	11	1	35	1	15	1	146	7
14:15:00	411	0	2042	0	735	0	0	0	2	0	3	0	11	0	35	0	15	0	146	0
14:15:15	411	0	2042	0	735	0	0	0	2	0	3	0	11	0	35	0	15	0	146	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 19-Sep-20 Site #: 2006800001

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
10:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15:00	37	37	95	95	29	29	0	0	1	1	0	0	1	1	0	0	0	0	1	1
10:30:00	72	35	185	90	53	24	0	0	2	1	0	0	1	0	1	1	1	1	10	9
10:45:00	104	32	292	107	91	38	0	0	3	1	0	0	2	1	1	0	1	0	12	2
11:00:00	151	47	399	107	131	40	0	0	4	1	0	0	2	0	1	0	3	2	13	1
11:15:00	186	35	518	119	170	39	0	0	4	0	0	0	3	1	1	0	3	0	13	0
11:30:00	232	46	643	125	209	39	1	1	4	0	1	1	3	0	1	0	4	1	17	4
11:45:00	273	41	765	122	249	40	1	0	5	1	1	0	3	0	2	1	4	0	18	1
12:00:00	316	43	905	140	278	29	1	0	6	1	1	0	3	0	2	0	5	1	18	0
12:15:00	357	41	1036	131	306	28	1	0	6	0	1	0	3	0	2	0	5	0	23	5
12:30:00	408	51	1152	116	342	36	1	0	6	0	1	0	3	0	2	0	6	1	27	4
12:45:00	448	40	1284	132	369	27	1	0	6	0	1	0	3	0	2	0	6	0	34	7
13:00:00	497	49	1415	131	406	37	1	0	7	1	1	0	3	0	2	0	7	1	38	4
13:15:00	554	57	1551	136	437	31	1	0	7	0	1	0	3	0	2	0	7	0	38	0
13:30:00	591	37	1694	143	466	29	1	0	8	1	1	0	3	0	2	0	8	1	40	2
13:45:00	643	52	1810	116	499	33	1	0	8	0	1	0	3	0	2	0	8	0	42	2
14:00:00	683	40	1939	129	536	37	1	0	8	0	1	0	3	0	2	0	9	1	42	0
14:15:00	683	0	1939	0	536	0	1	0	8	0	1	0	3	0	2	0	9	0	42	0
14:15:15	683	0	1939	0	536	0	1	0	8	0	1	0	3	0	2	0	9	0	42	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 19-Sep-20 Site #: 2006800001

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
10:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15:00	34	34	78	78	27	27	0	0	0	0	0	0	0	0	2	2	0	0	4	4
10:30:00	69	35	163	85	55	28	0	0	0	0	0	0	1	1	4	2	0	0	5	1
10:45:00	116	47	266	103	90	35	0	0	0	0	0	0	1	0	5	1	0	0	14	9
11:00:00	157	41	354	88	117	27	0	0	0	0	0	0	1	0	7	2	0	0	19	5
11:15:00	193	36	465	111	152	35	0	0	0	0	0	0	1	0	10	3	0	0	22	3
11:30:00	242	49	564	99	201	49	0	0	1	1	0	0	1	0	12	2	0	0	30	8
11:45:00	297	55	689	125	238	37	0	0	2	1	0	0	1	0	14	2	0	0	30	0
12:00:00	354	57	819	130	283	45	0	0	2	0	1	1	2	1	16	2	0	0	36	6
12:15:00	402	48	960	141	315	32	0	0	2	0	2	1	2	0	19	3	0	0	45	9
12:30:00	476	74	1155	195	345	30	0	0	2	0	2	0	2	0	21	2	0	0	49	4
12:45:00	530	54	1327	172	390	45	1	1	2	0	2	0	3	1	23	2	0	0	52	3
13:00:00	611	81	1511	184	436	46	1	0	2	0	2	0	3	0	25	2	0	0	59	7
13:15:00	688	77	1668	157	482	46	1	0	2	0	2	0	3	0	28	3	0	0	62	3
13:30:00	759	71	1846	178	538	56	1	0	2	0	2	0	3	0	30	2	0	0	64	2
13:45:00	825	66	2022	176	590	52	1	0	2	0	2	0	3	0	32	2	0	0	65	1
14:00:00	889	64	2196	174	646	56	1	0	3	1	2	0	3	0	34	2	1	1	71	6
14:15:00	889	0	2196	0	646	0	1	0	3	0	2	0	3	0	34	0	1	0	71	0
14:15:15	889	0	2196	0	646	0	1	0	3	0	2	0	3	0	34	0	1	0	71	0

200275-Brant St & Prospect St

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 8:00:00
To: 9:00:00

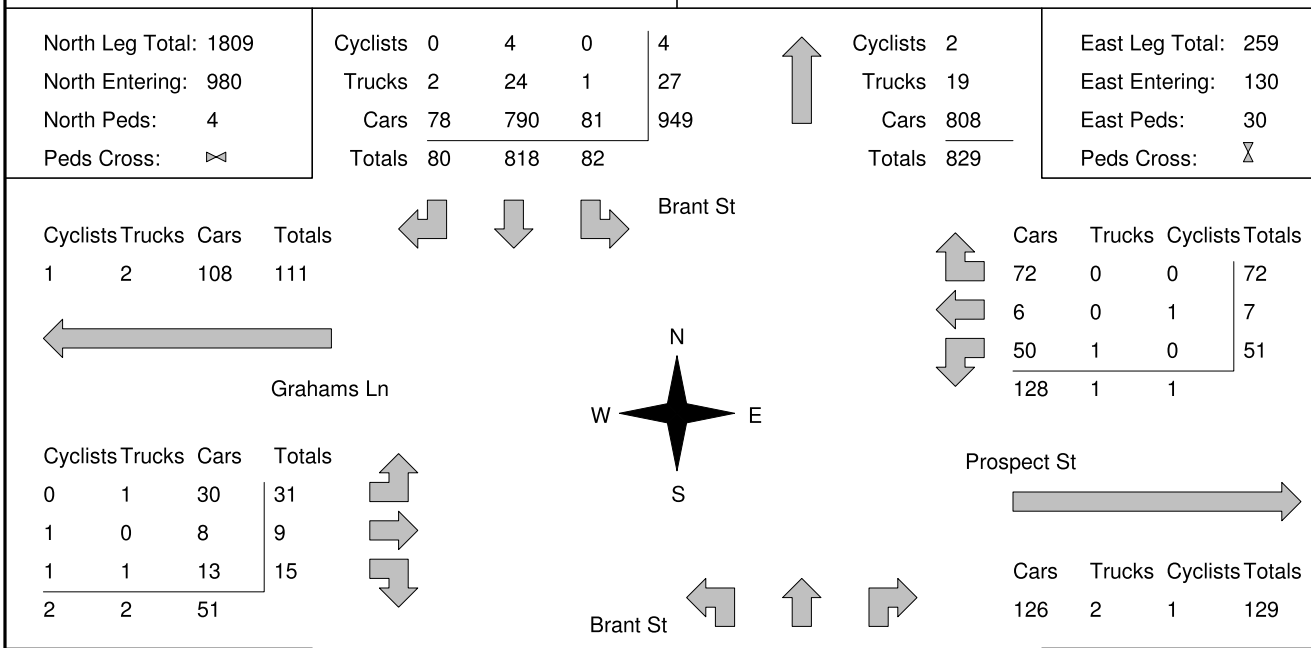
Municipality: Burlington
Site #: 0000200275
Intersection: Brant St & Prospect St
TFR File #: 1
Count date: 14-May-2019

Weather conditions:
Sunny

Person(s) who counted:
Nick

**** Signalized Intersection ****

Major Road: Brant St runs N/S



Comments

200275-Brant St & Prospect St

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 13:00:00
To: 14:00:00

Municipality: Burlington
Site #: 0000200275
Intersection: Brant St & Prospect St
TFR File #: 1
Count date: 14-May-2019

Weather conditions:
Sunny

Person(s) who counted:
Nick

**** Signalized Intersection ****

Major Road: Brant St runs N/S

North Leg Total: 2134
North Entering: 989
North Peds: 7
Peds Cross: ⋈

Cyclists	1	4	0	5
Trucks	2	18	3	23
Cars	66	829	66	961
Totals	69	851	69	

Cyclists	3
Trucks	39
Cars	1103
Totals	1145

East Leg Total: 302
East Entering: 186
East Peds: 26
Peds Cross: ⧖

Brant St

Cyclists	Trucks	Cars	Totals
1	5	101	107

Cars	Trucks	Cyclists	Totals
106	2	0	108
16	0	0	16
62	0	0	62
184	2	0	

Grahams Ln

N
W E
S

Cyclists	Trucks	Cars	Totals
0	3	95	98
1	0	12	13
0	2	23	25
1	5	130	

Prospect St

Cars	Trucks	Cyclists	Totals
112	3	1	116

Brant St

Peds Cross: ⧖
West Peds: 22
West Entering: 136
West Leg Total: 243

Cars	914			
Trucks	20			
Cyclists	4			
Totals	938			

Cars	19	902	34	955
Trucks	3	34	0	37
Cyclists	0	3	0	3
Totals	22	939	34	

Peds Cross: ⋈
South Peds: 6
South Entering: 995
South Leg Total: 1933

Comments

200275-Brant St & Prospect St

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:15:00
To: 17:15:00

Municipality: Burlington
Site #: 0000200275
Intersection: Brant St & Prospect St
TFR File #: 1
Count date: 14-May-2019

Weather conditions:
Sunny

Person(s) who counted:
Nick

**** Signalized Intersection ****

Major Road: Brant St runs N/S

North Leg Total: 2289
North Entering: 1054
North Peds: 9
Peds Cross: ⋈

Cyclists	0	5	0	5
Trucks	2	6	2	10
Cars	53	887	99	1039
Totals	55	898	101	

Cyclists	6
Trucks	22
Cars	1207
Totals	1235

East Leg Total: 443
East Entering: 271
East Peds: 31
Peds Cross: ⧖

Brant St

Cyclists	Trucks	Cars	Totals
0	4	75	79

Cars	Trucks	Cyclists	Totals
153	9	1	163
10	0	0	10
98	0	0	98
261	9	1	

Grahams Ln

N
W E
S

Cyclists	Trucks	Cars	Totals
0	4	109	113
0	0	18	18
0	0	39	39
0	4	166	

Prospect St

Cars	Trucks	Cyclists	Totals
169	2	1	172

Brant St

Peds Cross: ⧖
West Peds: 20
West Entering: 170
West Leg Total: 249

Cars	1024
Trucks	6
Cyclists	5
Totals	1035

Cars	12	945	52	1009
Trucks	2	9	0	11
Cyclists	0	5	1	6
Totals	14	959	53	

Peds Cross: ⋈
South Peds: 13
South Entering: 1026
South Leg Total: 2061

Comments

200275-Brant St & Prospect St

Total Count Diagram

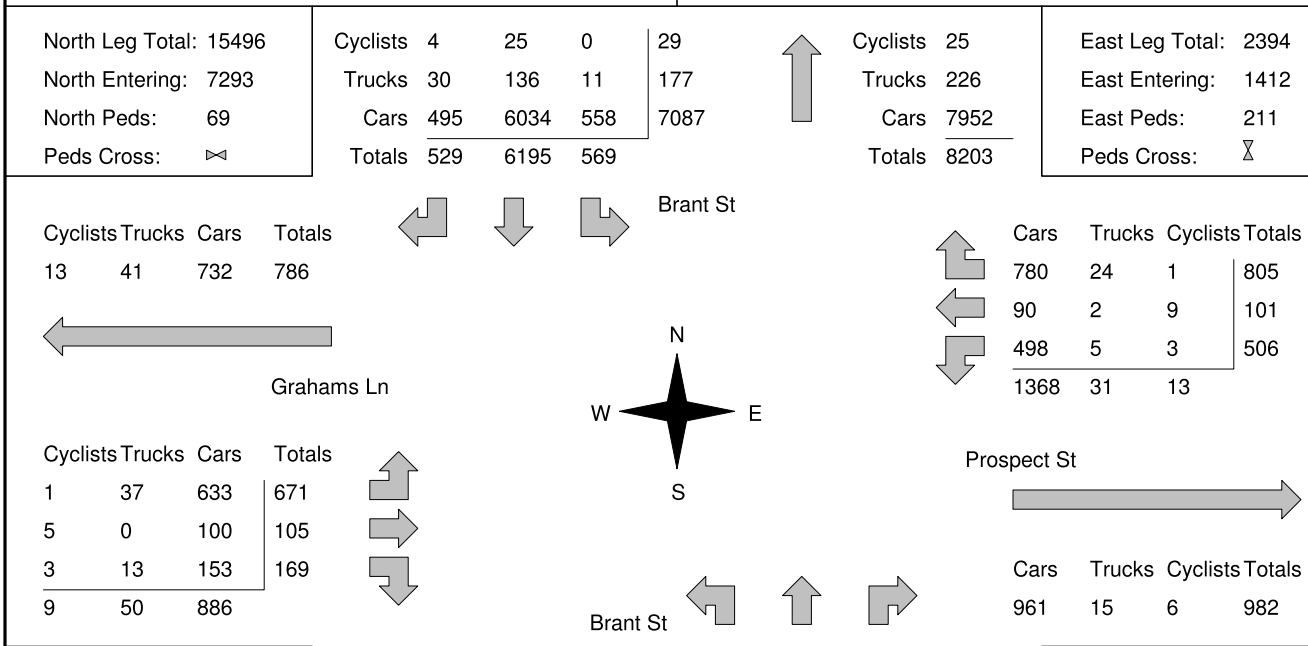
Municipality: Burlington
Site #: 0000200275
Intersection: Brant St & Prospect St
TFR File #: 1
Count date: 14-May-2019

Weather conditions:
Sunny

Person(s) who counted:
Nick

**** Signalized Intersection ****

Major Road: Brant St runs N/S



Comments

200275-Brant St & Prospect St
Traffic Count Summary

Intersection: Brant St & Prospect St | **Count Date:** 14-May-2019 | **Municipality:** Burlington

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	44	433	72	549	6	1235
9:00:00	82	818	80	980	4	1768
11:00:00	0	0	0	0	0	0
12:00:00	57	776	66	899	5	1801
13:00:00	57	851	76	984	9	1954
14:00:00	69	851	69	989	7	1984
15:00:00	0	0	0	0	0	0
16:00:00	74	796	72	942	14	1923
17:00:00	92	869	54	1015	9	2014
18:00:00	94	801	40	935	15	1805
Totals:	569	6195	529	7293	69	14484

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	22	649	15	686	2
9:00:00	24	726	38	788	7
11:00:00	0	0	0	0	0
12:00:00	13	851	38	902	6
13:00:00	25	902	43	970	8
14:00:00	22	939	34	995	6
15:00:00	0	0	0	0	0
16:00:00	20	911	50	981	18
17:00:00	19	933	47	999	19
18:00:00	11	816	43	870	15
Totals:	156	6727	308	7191	81

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	30	1	84	115	14	165
9:00:00	51	7	72	130	30	185
11:00:00	0	0	0	0	0	0
12:00:00	53	8	72	133	21	243
13:00:00	56	22	91	169	22	307
14:00:00	62	16	108	186	26	322
15:00:00	0	0	0	0	0	0
16:00:00	76	19	110	205	35	350
17:00:00	93	15	166	274	38	419
18:00:00	85	13	102	200	25	366
Totals:	506	101	805	1412	211	2357

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	40	1	9	50	16
9:00:00	31	9	15	55	19
11:00:00	0	0	0	0	0
12:00:00	83	14	13	110	11
13:00:00	102	15	21	138	10
14:00:00	98	13	25	136	22
15:00:00	0	0	0	0	0
16:00:00	106	16	23	145	28
17:00:00	105	16	24	145	22
18:00:00	106	21	39	166	18
Totals:	671	105	169	945	146

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00
Crossing Values:	79	102	161	197	189	233	242	242

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Mid-day Peak Diagram

Specified Period
From: 10:00:00
To: 14:00:00

One Hour Peak
From: 12:45:00
To: 13:45:00

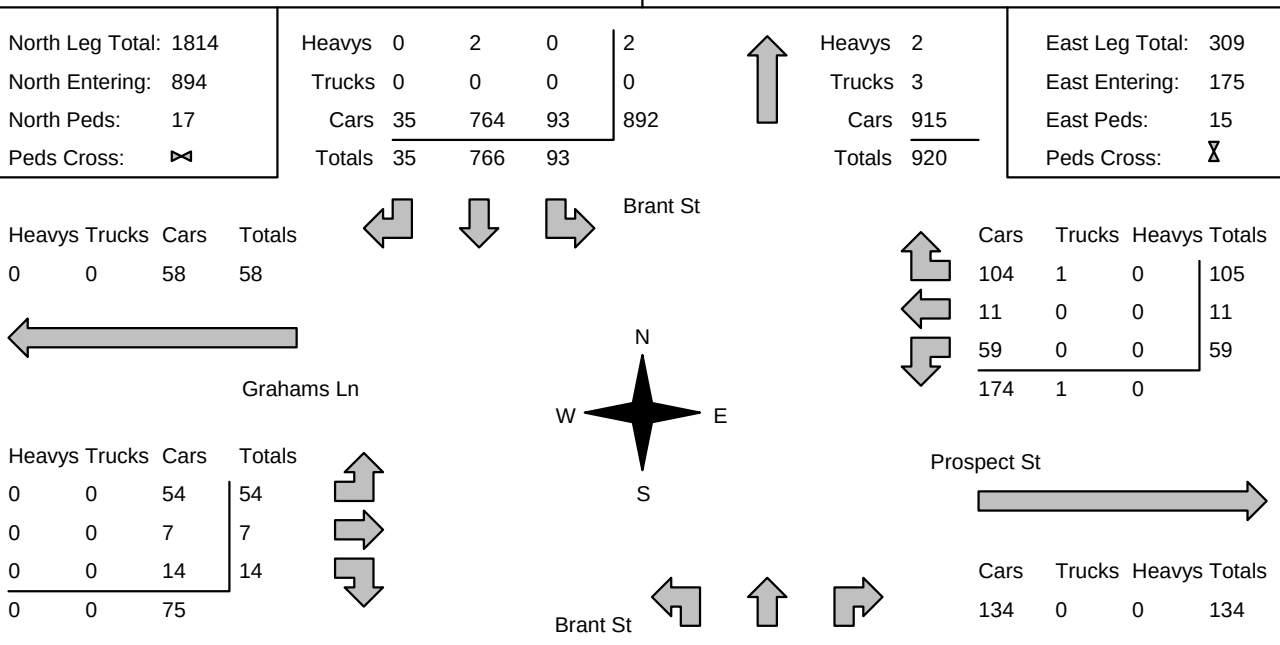
Municipality: Burlington
Site #: 2006800002
Intersection: Brant St & Prospect St
TFR File #: 1
Count date: 19-Sep-20

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Brant St runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Total Count Diagram

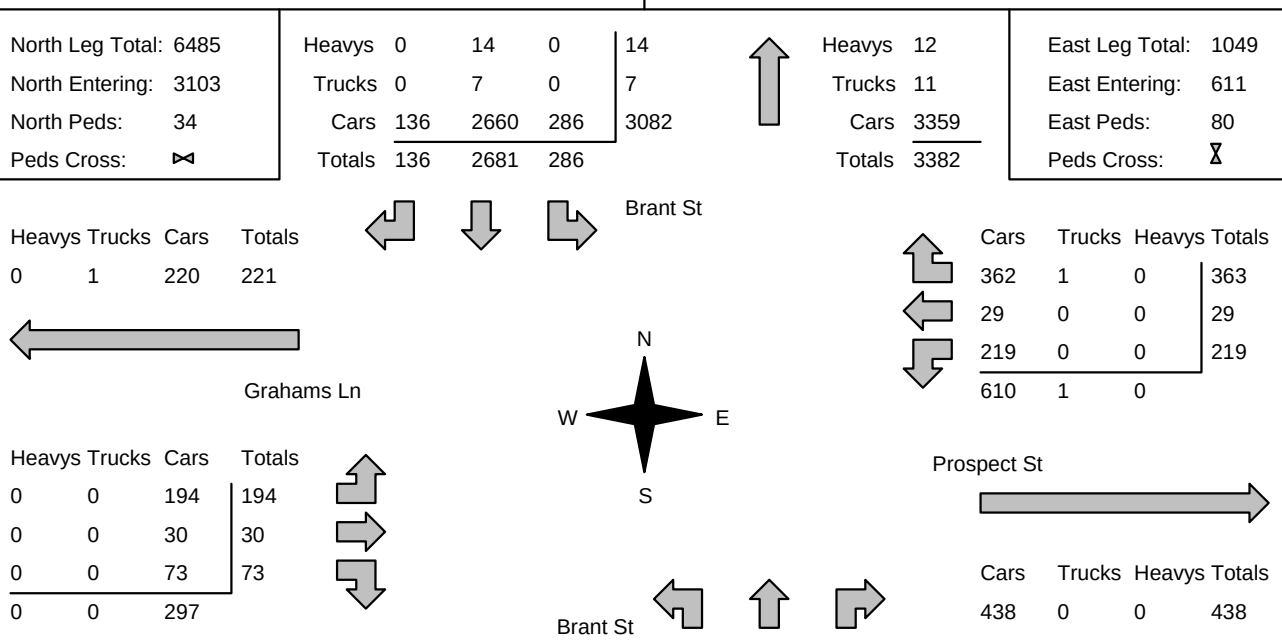
Municipality: Burlington
Site #: 2006800002
Intersection: Brant St & Prospect St
TFR File #: 1
Count date: 19-Sep-20

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Brant St runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: Brant St & Prospect St | **Count Date:** 19-Sep-20 | **Municipality:** Burlington

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds	North/South Total Approaches
	Left	Thru	Right	Grand Total		
10:00:00	*0*	*0*	*0*	*0*	*0*	*0*
11:00:00	*43*	*516*	*37*	*596*	*5*	*1258*
12:00:00	*72*	*707*	*33*	*812*	*3*	*1591*
13:00:00	*91*	*702*	*40*	*833*	*12*	*1605*
14:00:00	*80*	*756*	*26*	*862*	*14*	*1652*
Totals:	286	2681	136	3103	34	6106

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
10:00:00	*0*	*0*	*0*	*0*	*0*
11:00:00	*21*	*605*	*36*	*662*	*5*
12:00:00	*12*	*735*	*32*	*779*	*6*
13:00:00	*13*	*740*	*19*	*772*	*10*
14:00:00	*10*	*745*	*35*	*790*	*14*
S Totals:	56	2825	122	3003	35

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds	East/West Total Approaches
	Left	Thru	Right	Grand Total		
10:00:00	*0*	*0*	*0*	*0*	*0*	*0*
11:00:00	*45*	*9*	*79*	*133*	*21*	*227*
12:00:00	*58*	*6*	*83*	*147*	*20*	*221*
13:00:00	*65*	*5*	*105*	*175*	*21*	*233*
14:00:00	*51*	*9*	*96*	*156*	*18*	*227*
Totals:	219	29	363	611	80	908

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
10:00:00	*0*	*0*	*0*	*0*	*0*
11:00:00	*56*	*9*	*29*	*94*	*12*
12:00:00	*48*	*10*	*16*	*74*	*22*
13:00:00	*38*	*6*	*14*	*58*	*14*
14:00:00	*52*	*5*	*14*	*71*	*8*
W Totals:	194	30	73	297	56

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*10:00*	*11:00*	*12:00*	*13:00*	*14:00*	*0:00*	*0:00*	*0:00*
Crossing Values:	*0*	*120*	*125*	*131*	*140*	*0*	*0*	*0*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 19-Sep-20 Site #: 2006800002

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
10:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15:00	8	8	129	129	10	10	0	0	1	1	0	0	0	0	1	1	0	0	2	2
10:30:00	20	12	238	109	18	8	0	0	1	0	0	0	0	0	3	2	0	0	4	2
10:45:00	30	10	368	130	30	12	0	0	3	2	0	0	0	0	5	2	0	0	4	0
11:00:00	43	13	505	137	37	7	0	0	5	2	0	0	0	0	6	1	0	0	5	1
11:15:00	54	11	678	173	49	12	0	0	6	1	0	0	0	0	7	1	0	0	5	0
11:30:00	67	13	857	179	54	5	0	0	6	0	0	0	0	0	7	0	0	0	8	3
11:45:00	86	19	1010	153	62	8	0	0	6	0	0	0	0	0	8	1	0	0	8	0
12:00:00	115	29	1209	199	70	8	0	0	6	0	0	0	0	0	8	0	0	0	8	0
12:15:00	141	26	1364	155	78	8	0	0	7	1	0	0	0	0	9	1	0	0	15	7
12:30:00	162	21	1534	170	88	10	0	0	7	0	0	0	0	0	9	0	0	0	15	0
12:45:00	181	19	1699	165	94	6	0	0	7	0	0	0	0	0	11	2	0	0	16	1
13:00:00	206	25	1907	208	110	16	0	0	7	0	0	0	0	0	11	0	0	0	20	4
13:15:00	230	24	2100	193	117	7	0	0	7	0	0	0	0	0	12	1	0	0	22	2
13:30:00	259	29	2274	174	124	7	0	0	7	0	0	0	0	0	12	0	0	0	26	4
13:45:00	274	15	2463	189	129	5	0	0	7	0	0	0	0	0	13	1	0	0	33	7
14:00:00	286	12	2660	197	136	7	0	0	7	0	0	0	0	0	14	1	0	0	34	1
14:15:00	286	0	2660	0	136	0	0	0	7	0	0	0	0	0	14	0	0	0	34	0
14:15:15	286	0	2660	0	136	0	0	0	7	0	0	0	0	0	14	0	0	0	34	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 19-Sep-20 Site #: 2006800002

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
10:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15:00	3	3	1	1	22	22	0	0	0	0	0	0	0	0	0	0	0	0	6	6
10:30:00	21	18	4	3	37	15	0	0	0	0	0	0	0	0	0	0	0	0	9	3
10:45:00	38	17	6	2	54	17	0	0	0	0	0	0	0	0	0	0	0	0	10	1
11:00:00	45	7	9	3	79	25	0	0	0	0	0	0	0	0	0	0	0	0	21	11
11:15:00	60	15	12	3	96	17	0	0	0	0	0	0	0	0	0	0	0	0	24	3
11:30:00	70	10	13	1	115	19	0	0	0	0	0	0	0	0	0	0	0	0	35	11
11:45:00	87	17	14	1	136	21	0	0	0	0	0	0	0	0	0	0	0	0	36	1
12:00:00	103	16	15	1	162	26	0	0	0	0	0	0	0	0	0	0	0	0	41	5
12:15:00	116	13	17	2	185	23	0	0	0	0	0	0	0	0	0	0	0	0	42	1
12:30:00	130	14	17	0	219	34	0	0	0	0	0	0	0	0	0	0	0	0	48	6
12:45:00	145	15	18	1	241	22	0	0	0	0	0	0	0	0	0	0	0	0	61	13
13:00:00	168	23	20	2	266	25	0	0	0	0	1	1	0	0	0	0	0	0	62	1
13:15:00	177	9	23	3	295	29	0	0	0	0	1	0	0	0	0	0	0	0	68	6
13:30:00	187	10	27	4	319	24	0	0	0	0	1	0	0	0	0	0	0	0	72	4
13:45:00	204	17	29	2	345	26	0	0	0	0	1	0	0	0	0	0	0	0	76	4
14:00:00	219	15	29	0	362	17	0	0	0	0	1	0	0	0	0	0	0	0	80	4
14:15:00	219	0	29	0	362	0	0	0	0	0	1	0	0	0	0	0	0	0	80	0
14:15:15	219	0	29	0	362	0	0	0	0	0	1	0	0	0	0	0	0	0	80	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 19-Sep-20 Site #: 2006800002

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
10:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15:00	3	3	134	134	3	3	0	0	1	1	0	0	0	0	1	1	0	0	2	2
10:30:00	7	4	271	137	13	10	0	0	2	1	0	0	0	0	3	2	0	0	3	1
10:45:00	15	8	435	164	23	10	0	0	3	1	0	0	0	0	4	1	0	0	5	2
11:00:00	21	6	596	161	36	13	0	0	4	1	0	0	0	0	5	1	0	0	5	0
11:15:00	24	3	765	169	40	4	0	0	4	0	0	0	0	0	5	0	0	0	6	1
11:30:00	26	2	954	189	52	12	0	0	6	2	0	0	0	0	6	1	0	0	10	4
11:45:00	28	2	1134	180	60	8	0	0	7	1	0	0	0	0	7	1	0	0	11	1
12:00:00	33	5	1325	191	68	8	0	0	8	1	0	0	0	0	7	0	0	0	11	0
12:15:00	33	0	1511	186	74	6	1	1	8	0	0	0	0	0	8	1	0	0	17	6
12:30:00	36	3	1697	186	78	4	1	0	8	0	0	0	0	0	9	1	0	0	19	2
12:45:00	40	4	1875	178	81	3	1	0	8	0	0	0	0	0	9	0	0	0	19	0
13:00:00	45	5	2061	186	87	6	1	0	9	1	0	0	0	0	10	1	0	0	21	2
13:15:00	49	4	2259	198	93	6	1	0	9	0	0	0	0	0	10	0	0	0	26	5
13:30:00	50	1	2445	186	105	12	1	0	10	1	0	0	0	0	11	1	0	0	27	1
13:45:00	52	2	2632	187	115	10	1	0	10	0	0	0	0	0	11	0	0	0	28	1
14:00:00	55	3	2803	171	122	7	1	0	10	0	0	0	0	0	12	1	0	0	35	7
14:15:00	55	0	2803	0	122	0	1	0	10	0	0	0	0	0	12	0	0	0	35	0
14:15:15	55	0	2803	0	122	0	1	0	10	0	0	0	0	0	12	0	0	0	35	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 19-Sep-20 Site #: 2006800002

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
10:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15:00	16	16	1	1	6	6	0	0	0	0	0	0	0	0	0	0	0	0	3	3
10:30:00	23	7	2	1	18	12	0	0	0	0	0	0	0	0	0	0	0	0	7	4
10:45:00	41	18	6	4	25	7	0	0	0	0	0	0	0	0	0	0	0	0	8	1
11:00:00	56	15	9	3	29	4	0	0	0	0	0	0	0	0	0	0	0	0	12	4
11:15:00	70	14	13	4	35	6	0	0	0	0	0	0	0	0	0	0	0	0	19	7
11:30:00	84	14	15	2	39	4	0	0	0	0	0	0	0	0	0	0	0	0	25	6
11:45:00	91	7	16	1	43	4	0	0	0	0	0	0	0	0	0	0	0	0	28	3
12:00:00	104	13	19	3	45	2	0	0	0	0	0	0	0	0	0	0	0	0	34	6
12:15:00	110	6	19	0	51	6	0	0	0	0	0	0	0	0	0	0	0	0	38	4
12:30:00	116	6	22	3	54	3	0	0	0	0	0	0	0	0	0	0	0	0	42	4
12:45:00	127	11	22	0	55	1	0	0	0	0	0	0	0	0	0	0	0	0	46	4
13:00:00	142	15	25	3	59	4	0	0	0	0	0	0	0	0	0	0	0	0	48	2
13:15:00	155	13	26	1	64	5	0	0	0	0	0	0	0	0	0	0	0	0	49	1
13:30:00	171	16	28	2	65	1	0	0	0	0	0	0	0	0	0	0	0	0	50	1
13:45:00	181	10	29	1	69	4	0	0	0	0	0	0	0	0	0	0	0	0	55	5
14:00:00	194	13	30	1	73	4	0	0	0	0	0	0	0	0	0	0	0	0	56	1
14:15:00	194	0	30	0	73	0	0	0	0	0	0	0	0	0	0	0	0	0	56	0
14:15:15	194	0	30	0	73	0	0	0	0	0	0	0	0	0	0	0	0	0	56	0

200274-Brant St & Ghent Ave

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 8:00:00
To: 9:00:00

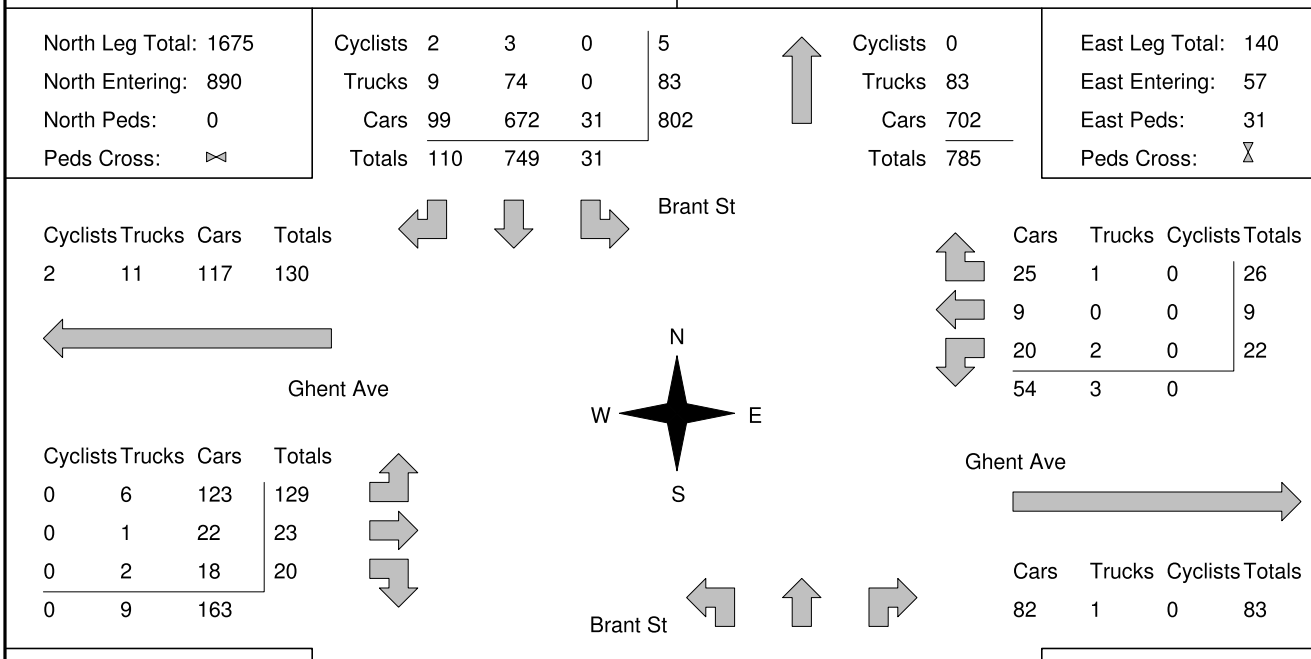
Municipality: Burlington
Site #: 0000200274
Intersection: Brant St & Ghent Ave
TFR File #: 1
Count date: 14-May-2019

Weather conditions:
Sunny

Person(s) who counted:
Tanya

**** Signalized Intersection ****

Major Road: Brant St runs N/S



Comments

200274-Brant St & Ghent Ave

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 13:00:00
To: 14:00:00

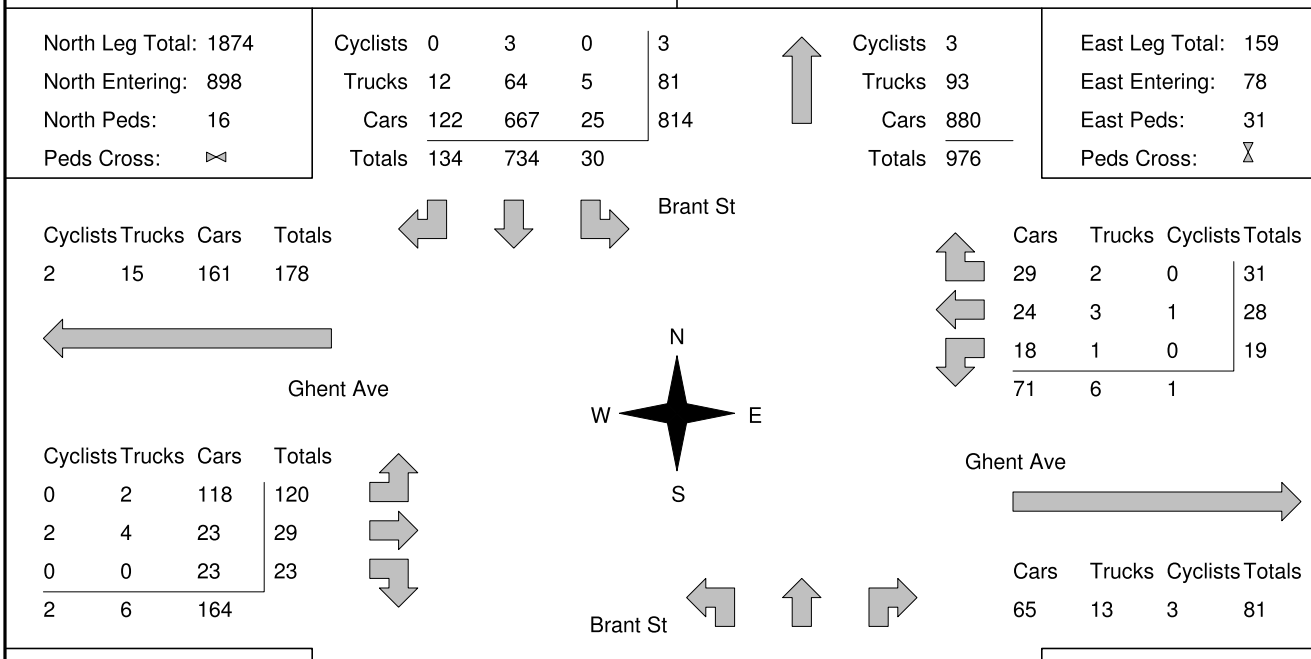
Municipality: Burlington
Site #: 0000200274
Intersection: Brant St & Ghent Ave
TFR File #: 1
Count date: 14-May-2019

Weather conditions:
Sunny

Person(s) who counted:
Tanya

**** Signalized Intersection ****

Major Road: Brant St runs N/S



Comments

200274-Brant St & Ghent Ave

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:15:00
To: 17:15:00

Municipality: Burlington
Site #: 0000200274
Intersection: Brant St & Ghent Ave
TFR File #: 1
Count date: 14-May-2019

Weather conditions:
Sunny

Person(s) who counted:
Tanya

**** Signalized Intersection ****

Major Road: Brant St runs N/S

North Leg Total: 2039
North Entering: 1011
North Peds: 3
Peds Cross: ⋈

Cyclists	1	4	0	5
Trucks	10	47	3	60
Cars	167	749	30	946
Totals	178	800	33	

Cyclists	5
Trucks	59
Cars	964
Totals	1028

East Leg Total: 197
East Entering: 117
East Peds: 15
Peds Cross: ⧖

Cyclists	Trucks	Cars	Totals
1	11	230	242

Brant St

Cars	Trucks	Cyclists	Totals
38	1	0	39
52	1	0	53
25	0	0	25
115	2	0	

Ghent Ave

N
W E
S

Cyclists	Trucks	Cars	Totals
1	7	131	139
0	1	24	25
0	1	13	14
1	9	168	

Ghent Ave

Cars	Trucks	Cyclists	Totals
76	4	0	80

Brant St

Peds Cross: ⧖
West Peds: 20
West Entering: 178
West Leg Total: 420

Cars	787
Trucks	48
Cyclists	4
Totals	839

Cars	11	795	22	828
Trucks	0	51	0	51
Cyclists	0	4	0	4
Totals	11	850	22	

Peds Cross: ⋈
South Peds: 10
South Entering: 883
South Leg Total: 1722

Comments

200274-Brant St & Ghent Ave

Total Count Diagram

Municipality: Burlington
Site #: 0000200274
Intersection: Brant St & Ghent Ave
TFR File #: 1
Count date: 14-May-2019

Weather conditions:
Sunny

Person(s) who counted:
Tanya

**** Signalized Intersection ****

Major Road: Brant St runs N/S

North Leg Total:	13864			
North Entering:	6757			
North Peds:	45			
Peds Cross:	⋈			
Cyclists	4	30	0	34
Trucks	73	473	24	570
Cars	944	4999	210	6153
Totals	1021	5502	234	
Cyclists	23			
Trucks	593			
Cars	6491			
Totals	7107			
East Leg Total:	1224			
East Entering:	653			
East Peds:	213			
Peds Cross:	⧖			

Brant St

Cyclists	Trucks	Cars	Totals
6	84	1266	1356

Cars	Trucks	Cyclists	Totals
261	18	3	282
204	6	1	211
151	9	0	160
616	33	4	

Ghent Ave

N
W E
S

Cyclists	Trucks	Cars	Totals
1	53	919	973
3	9	153	165
0	11	155	166
4	73	1227	

Ghent Ave

Cars	Trucks	Cyclists	Totals
521	44	6	571

Brant St

Peds Cross:	⧖			
West Peds:	142			
West Entering:	1304			
West Leg Total:	2660			
Cars	5305			
Trucks	493			
Cyclists	30			
Totals	5828			
Cars	118	5311	158	5587
Trucks	5	522	11	538
Cyclists	1	19	3	23
Totals	124	5852	172	
Peds Cross:	⋈			
South Peds:	97			
South Entering:	6148			
South Leg Total:	11976			

Comments

200274-Brant St & Ghent Ave
Traffic Count Summary

Intersection: Brant St & Ghent Ave | **Count Date:** 14-May-2019 | **Municipality:** Burlington

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	11	405	61	477	3	971
9:00:00	31	749	110	890	0	1560
11:00:00	0	0	0	0	0	0
12:00:00	28	668	97	793	0	1555
13:00:00	32	750	105	887	10	1744
14:00:00	30	734	134	898	16	1761
15:00:00	0	0	0	0	0	0
16:00:00	34	708	148	890	7	1743
17:00:00	34	775	152	961	4	1825
18:00:00	34	713	214	961	5	1746
Totals:	234	5502	1021	6757	45	12905

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	5	478	11	494	12
9:00:00	11	630	29	670	5
11:00:00	0	0	0	0	0
12:00:00	21	713	28	762	13
13:00:00	21	812	24	857	12
14:00:00	16	825	22	863	6
15:00:00	0	0	0	0	0
16:00:00	16	820	17	853	21
17:00:00	9	840	15	864	15
18:00:00	25	734	26	785	13
Totals:	124	5852	172	6148	97

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	8	6	41	55	20	249
9:00:00	22	9	26	57	31	229
11:00:00	0	0	0	0	0	0
12:00:00	20	23	35	78	20	236
13:00:00	14	24	34	72	29	216
14:00:00	19	28	31	78	31	250
15:00:00	0	0	0	0	0	0
16:00:00	24	23	39	86	38	232
17:00:00	22	49	39	110	26	272
18:00:00	31	49	37	117	18	273
Totals:	160	211	282	653	213	1957

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	165	18	11	194	12
9:00:00	129	23	20	172	15
11:00:00	0	0	0	0	0
12:00:00	109	23	26	158	7
13:00:00	105	13	26	144	15
14:00:00	120	29	23	172	28
15:00:00	0	0	0	0	0
16:00:00	108	17	21	146	18
17:00:00	127	18	17	162	22
18:00:00	110	24	22	156	25
Totals:	973	165	166	1304	142

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00
Crossing Values:	206	179	165	165	190	183	217	208

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Mid-day Peak Diagram

Specified Period
From: 10:00:00
To: 14:00:00

One Hour Peak
From: 12:45:00
To: 13:45:00

Municipality: Burlington
Site #: 2006800003
Intersection: Brant St & Ghent Ave
TFR File #: 1
Count date: 19-Sep-20

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Brant St runs N/S

North Leg Total: 1631
North Entering: 833
North Peds: 6
Peds Cross: ⋈

Heavys	0	2	0	2
Trucks	0	0	0	0
Cars	94	699	38	831
Totals	94	701	38	

Heavys	2
Trucks	2
Cars	794
Totals	798

East Leg Total: 133
East Entering: 63
East Peds: 37
Peds Cross: ⧖

Brant St

Heavys	Trucks	Cars	Totals
0	0	122	122

Ghent Ave

Cars	Trucks	Heavys	Totals
32	0	0	32
14	0	0	14
17	0	0	17
63	0	0	

N
W E
S

Heavys	Trucks	Cars	Totals
0	0	84	84
0	0	15	15
0	0	8	8
0	0	107	

Ghent Ave

Cars	Trucks	Heavys	Totals
70	0	0	70

Brant St

Peds Cross: ⧖
West Peds: 20
West Entering: 107
West Leg Total: 229

Cars	724
Trucks	0
Heavys	2
Totals	726

Cars	14	678	17	709
Trucks	0	2	0	2
Heavys	0	2	0	2
Totals	14	682	17	

Peds Cross: ⋈
South Peds: 8
South Entering: 713
South Leg Total: 1439

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Total Count Diagram

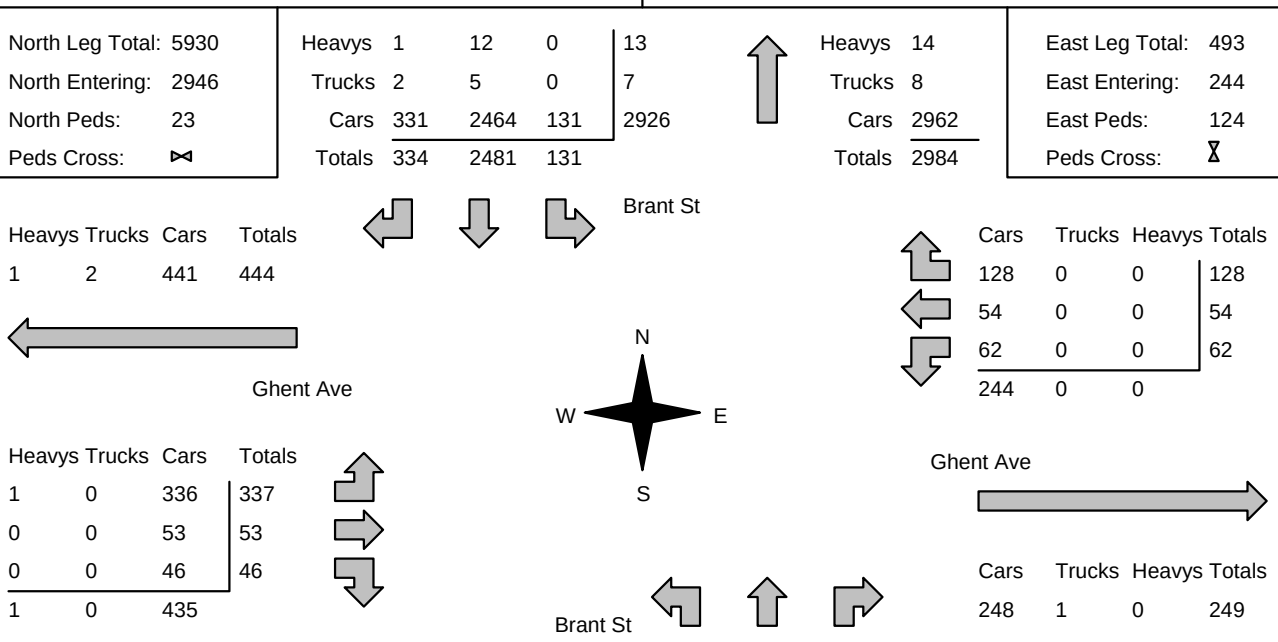
Municipality: Burlington
Site #: 2006800003
Intersection: Brant St & Ghent Ave
TFR File #: 1
Count date: 19-Sep-20

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Brant St runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: Brant St & Ghent Ave | **Count Date:** 19-Sep-20 | **Municipality:** Burlington

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
10:00:00	*0*	*0*	*0*	*0*	*0*
11:00:00	*19*	*494*	*70*	*583*	*5*
12:00:00	*30*	*652*	*87*	*769*	*4*
13:00:00	*44*	*652*	*84*	*780*	*7*
14:00:00	*38*	*683*	*93*	*814*	*7*
Totals:	131	2481	334	2946	23

North/South Total Approaches: *5586*

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
10:00:00	*0*	*0*	*0*	*0*	*0*
11:00:00	*13*	*544*	*10*	*567*	*8*
12:00:00	*16*	*657*	*20*	*693*	*6*
13:00:00	*15*	*640*	*18*	*673*	*6*
14:00:00	*12*	*678*	*17*	*707*	*8*
S Totals:	56	2519	65	2640	28

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
10:00:00	*0*	*0*	*0*	*0*	*0*
11:00:00	*14*	*8*	*22*	*44*	*27*
12:00:00	*15*	*13*	*42*	*70*	*33*
13:00:00	*17*	*15*	*36*	*68*	*25*
14:00:00	*16*	*18*	*28*	*62*	*39*
Totals:	62	54	128	244	124

East/West Total Approaches: *680*

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
10:00:00	*0*	*0*	*0*	*0*	*0*
11:00:00	*95*	*15*	*12*	*122*	*13*
12:00:00	*79*	*10*	*12*	*101*	*20*
13:00:00	*83*	*13*	*13*	*109*	*19*
14:00:00	*80*	*15*	*9*	*104*	*22*
W Totals:	337	53	46	436	74

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*10:00*	*11:00*	*12:00*	*13:00*	*14:00*	*0:00*	*0:00*	*0:00*
Crossing Values:	*0*	*137*	*117*	*128*	*129*	*0*	*0*	*0*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 19-Sep-20 Site #: 2006800003

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
10:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15:00	7	7	123	123	7	7	0	0	1	1	0	0	0	0	1	1	0	0	0	0
10:30:00	14	7	233	110	29	22	0	0	1	0	0	0	0	0	3	2	0	0	2	2
10:45:00	15	1	366	133	47	18	0	0	2	1	1	1	0	0	5	2	0	0	3	1
11:00:00	19	4	485	119	68	21	0	0	4	2	1	0	0	0	5	0	1	1	5	2
11:15:00	23	4	646	161	86	18	0	0	4	0	2	1	0	0	6	1	1	0	7	2
11:30:00	30	7	806	160	114	28	0	0	4	0	2	0	0	0	6	0	1	0	8	1
11:45:00	40	10	959	153	131	17	0	0	4	0	2	0	0	0	7	1	1	0	8	0
12:00:00	49	9	1135	176	154	23	0	0	4	0	2	0	0	0	7	0	1	0	9	1
12:15:00	58	9	1282	147	173	19	0	0	5	1	2	0	0	0	7	0	1	0	9	0
12:30:00	72	14	1436	154	195	22	0	0	5	0	2	0	0	0	7	0	1	0	11	2
12:45:00	82	10	1589	153	212	17	0	0	5	0	2	0	0	0	9	2	1	0	14	3
13:00:00	93	11	1784	195	238	26	0	0	5	0	2	0	0	0	9	0	1	0	16	2
13:15:00	101	8	1964	180	259	21	0	0	5	0	2	0	0	0	10	1	1	0	17	1
13:30:00	109	8	2115	151	283	24	0	0	5	0	2	0	0	0	10	0	1	0	18	1
13:45:00	120	11	2288	173	306	23	0	0	5	0	2	0	0	0	11	1	1	0	20	2
14:00:00	131	11	2464	176	331	25	0	0	5	0	2	0	0	0	12	1	1	0	23	3
14:15:00	131	0	2464	0	331	0	0	0	5	0	2	0	0	0	12	0	1	0	23	0
14:15:15	131	0	2464	0	331	0	0	0	5	0	2	0	0	0	12	0	1	0	23	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 19-Sep-20 Site #: 2006800003

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
10:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15:00	1	1	0	0	6	6	0	0	0	0	0	0	0	0	0	0	0	0	8	8
10:30:00	4	3	1	1	11	5	0	0	0	0	0	0	0	0	0	0	0	0	11	3
10:45:00	10	6	6	5	17	6	0	0	0	0	0	0	0	0	0	0	0	0	16	5
11:00:00	14	4	8	2	22	5	0	0	0	0	0	0	0	0	0	0	0	0	27	11
11:15:00	18	4	11	3	30	8	0	0	0	0	0	0	0	0	0	0	0	0	37	10
11:30:00	20	2	14	3	41	11	0	0	0	0	0	0	0	0	0	0	0	0	50	13
11:45:00	26	6	17	3	53	12	0	0	0	0	0	0	0	0	0	0	0	0	55	5
12:00:00	29	3	21	4	64	11	0	0	0	0	0	0	0	0	0	0	0	0	60	5
12:15:00	32	3	23	2	76	12	0	0	0	0	0	0	0	0	0	0	0	0	68	8
12:30:00	36	4	29	6	84	8	0	0	0	0	0	0	0	0	0	0	0	0	74	6
12:45:00	42	6	33	4	90	6	0	0	0	0	0	0	0	0	0	0	0	0	78	4
13:00:00	46	4	36	3	100	10	0	0	0	0	0	0	0	0	0	0	0	0	85	7
13:15:00	52	6	40	4	107	7	0	0	0	0	0	0	0	0	0	0	0	0	93	8
13:30:00	54	2	45	5	118	11	0	0	0	0	0	0	0	0	0	0	0	0	105	12
13:45:00	59	5	47	2	122	4	0	0	0	0	0	0	0	0	0	0	0	0	115	10
14:00:00	62	3	54	7	128	6	0	0	0	0	0	0	0	0	0	0	0	0	124	9
14:15:00	62	0	54	0	128	0	0	0	0	0	0	0	0	0	0	0	0	0	124	0
14:15:15	62	0	54	0	128	0	0	0	0	0	0	0	0	0	0	0	0	0	124	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 19-Sep-20 Site #: 2006800003

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
10:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15:00	4	4	112	112	1	1	0	0	0	0	0	0	0	0	2	2	0	0	0	0
10:30:00	5	1	239	127	4	3	0	0	1	1	0	0	0	0	4	2	0	0	0	0
10:45:00	10	5	385	146	6	2	0	0	1	0	0	0	0	0	5	1	0	0	3	3
11:00:00	13	3	536	151	10	4	0	0	2	1	0	0	0	0	6	1	0	0	8	5
11:15:00	17	4	688	152	14	4	0	0	2	0	0	0	0	0	6	0	0	0	11	3
11:30:00	24	7	856	168	21	7	0	0	4	2	0	0	0	0	8	2	0	0	12	1
11:45:00	27	3	1013	157	23	2	0	0	4	0	1	1	0	0	9	1	0	0	13	1
12:00:00	29	2	1187	174	29	6	0	0	5	1	1	0	0	0	9	0	0	0	14	1
12:15:00	34	5	1345	158	34	5	0	0	6	1	1	0	0	0	9	0	0	0	15	1
12:30:00	38	4	1507	162	39	5	0	0	6	0	1	0	0	0	10	1	0	0	17	2
12:45:00	40	2	1663	156	43	4	0	0	6	0	1	0	0	0	10	0	0	0	19	2
13:00:00	44	4	1823	160	47	4	0	0	7	1	1	0	0	0	11	1	0	0	20	1
13:15:00	47	3	2004	181	50	3	0	0	7	0	1	0	0	0	11	0	0	0	24	4
13:30:00	49	2	2169	165	54	4	0	0	8	1	1	0	0	0	12	1	0	0	26	2
13:45:00	54	5	2341	172	60	6	0	0	8	0	1	0	0	0	12	0	0	0	27	1
14:00:00	56	2	2498	157	64	4	0	0	8	0	1	0	0	0	13	1	0	0	28	1
14:15:00	56	0	2498	0	64	0	0	0	8	0	1	0	0	0	13	0	0	0	28	0
14:15:15	56	0	2498	0	64	0	0	0	8	0	1	0	0	0	13	0	0	0	28	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 19-Sep-20 Site #: 2006800003

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
10:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15:00	21	21	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	3	3
10:30:00	47	26	9	5	5	1	0	0	0	0	0	0	0	0	0	0	0	0	5	2
10:45:00	73	26	12	3	6	1	0	0	0	0	0	0	0	0	0	0	0	0	9	4
11:00:00	95	22	15	3	12	6	0	0	0	0	0	0	0	0	0	0	0	0	13	4
11:15:00	110	15	18	3	15	3	0	0	0	0	0	0	1	1	0	0	0	0	21	8
11:30:00	127	17	20	2	18	3	0	0	0	0	0	0	1	0	0	0	0	0	25	4
11:45:00	149	22	21	1	19	1	0	0	0	0	0	0	1	0	0	0	0	0	28	3
12:00:00	173	24	25	4	24	5	0	0	0	0	0	0	1	0	0	0	0	0	33	5
12:15:00	193	20	29	4	27	3	0	0	0	0	0	0	1	0	0	0	0	0	37	4
12:30:00	211	18	33	4	32	5	0	0	0	0	0	0	1	0	0	0	0	0	41	4
12:45:00	233	22	35	2	35	3	0	0	0	0	0	0	1	0	0	0	0	0	47	6
13:00:00	256	23	38	3	37	2	0	0	0	0	0	0	1	0	0	0	0	0	52	5
13:15:00	276	20	43	5	39	2	0	0	0	0	0	0	1	0	0	0	0	0	56	4
13:30:00	296	20	46	3	42	3	0	0	0	0	0	0	1	0	0	0	0	0	63	7
13:45:00	317	21	50	4	43	1	0	0	0	0	0	0	1	0	0	0	0	0	67	4
14:00:00	336	19	53	3	46	3	0	0	0	0	0	0	1	0	0	0	0	0	74	7
14:15:00	336	0	53	0	46	0	0	0	0	0	0	0	1	0	0	0	0	0	74	0
14:15:15	336	0	53	0	46	0	0	0	0	0	0	0	1	0	0	0	0	0	74	0

200225-Brant St & Blairholm Ave

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 8:00:00
To: 9:00:00

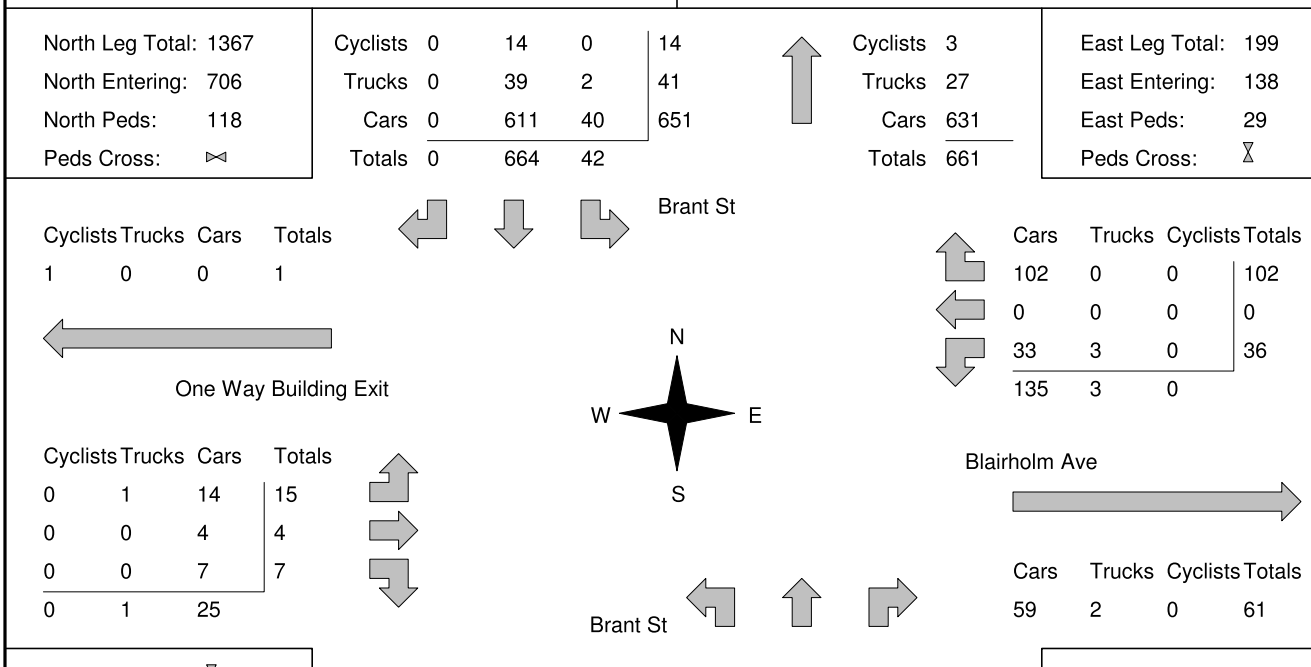
Municipality: Burlington
Site #: 0000200225
Intersection: Brant St & Blairholm Ave
TFR File #: 1
Count date: 15-May-2019

Weather conditions:
Sunny

Person(s) who counted:
Mike

**** Signalized Intersection ****

Major Road: Brant St runs N/S



Comments

200225-Brant St & Blairholm Ave

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 12:00:00
To: 13:00:00

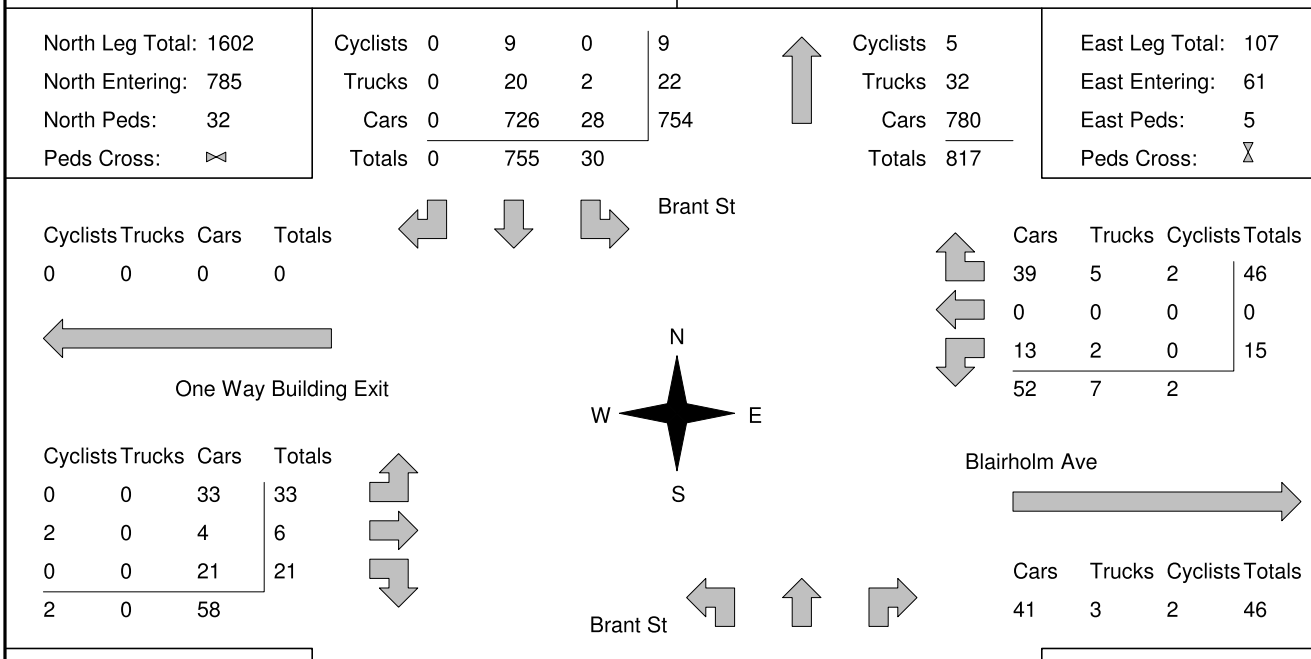
Municipality: Burlington
Site #: 0000200225
Intersection: Brant St & Blairholm Ave
TFR File #: 1
Count date: 15-May-2019

Weather conditions:
Sunny

Person(s) who counted:
Mike

**** Signalized Intersection ****

Major Road: Brant St runs N/S



Comments

200225-Brant St & Blairholm Ave

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:30:00
To: 17:30:00

Municipality: Burlington
Site #: 0000200225
Intersection: Brant St & Blairholm Ave
TFR File #: 1
Count date: 15-May-2019

Weather conditions:
Sunny

Person(s) who counted:
Mike

**** Signalized Intersection ****

Major Road: Brant St runs N/S

North Leg Total: 1552
North Entering: 707
North Peds: 14
Peds Cross: ⋈

Cyclists	0	8	0	8
Trucks	0	17	0	17
Cars	0	637	45	682
Totals	0	662	45	

Cyclists	6
Trucks	24
Cars	815
Totals	845

East Leg Total: 155
East Entering: 88
East Peds: 0
Peds Cross: ⧖

Brant St

Cyclists	Trucks	Cars	Totals
0	0	0	0

One Way Building Exit

Cars	Trucks	Cyclists	Totals
67	3	0	70
0	0	0	0
17	1	0	18
84	4	0	

N
W E
S

Cyclists	Trucks	Cars	Totals
0	1	15	16
0	0	5	5
0	0	20	20
0	1	40	

Blairholm Ave

Cars	Trucks	Cyclists	Totals
67	0	0	67

Brant St

Peds Cross: ⧖
West Peds: 13
West Entering: 41
West Leg Total: 41

Cars	674
Trucks	18
Cyclists	8
Totals	700

Cars	0	733	17	750
Trucks	0	20	0	20
Cyclists	0	6	0	6
Totals	0	759	17	

Peds Cross: ⋈
South Peds: 16
South Entering: 776
South Leg Total: 1476

Comments

200225-Brant St & Blairholm Ave

Total Count Diagram

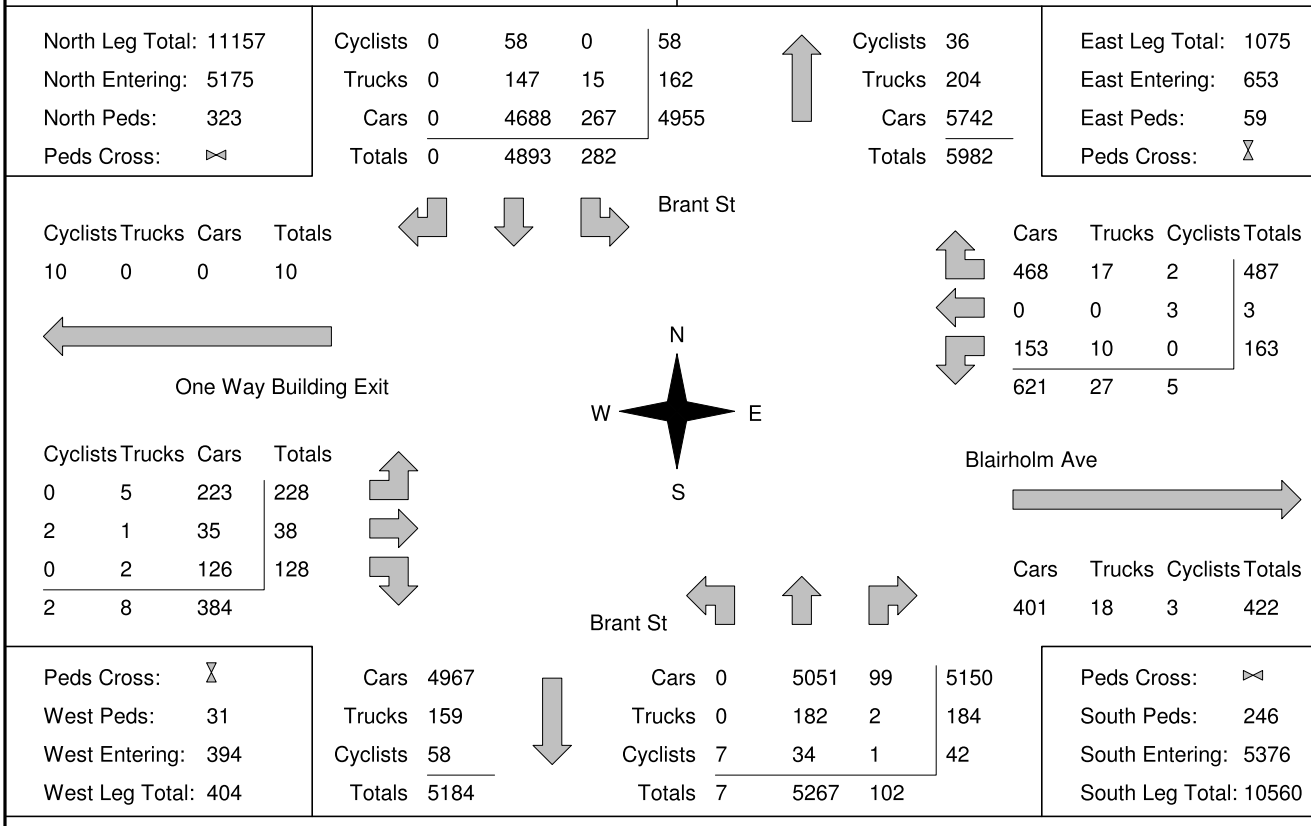
Municipality: Burlington
Site #: 0000200225
Intersection: Brant St & Blairholm Ave
TFR File #: 1
Count date: 15-May-2019

Weather conditions:
Sunny

Person(s) who counted:
Mike

**** Signalized Intersection ****

Major Road: Brant St runs N/S



Comments

200225-Brant St & Blairholm Ave
Traffic Count Summary

Intersection: Brant St & Blairholm Ave | **Count Date:** 15-May-2019 | **Municipality:** Burlington

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	24	363	0	387	29	771
9:00:00	42	664	0	706	118	1266
11:00:00	0	0	0	0	0	0
12:00:00	33	580	0	613	49	1307
13:00:00	30	755	0	785	32	1533
14:00:00	35	605	0	640	30	1402
15:00:00	0	0	0	0	0	0
16:00:00	37	603	0	640	29	1366
17:00:00	42	646	0	688	22	1440
18:00:00	39	677	0	716	14	1466
Totals:	282	4893	0	5175	323	10551

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	0	372	12	384	10
9:00:00	1	544	15	560	18
11:00:00	0	0	0	0	0
12:00:00	4	675	15	694	21
13:00:00	0	738	10	748	35
14:00:00	2	752	8	762	33
15:00:00	0	0	0	0	0
16:00:00	0	714	12	726	101
17:00:00	0	740	12	752	21
18:00:00	0	732	18	750	7
Totals:	7	5267	102	5376	246

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	9	1	55	65	8	70
9:00:00	36	0	102	138	29	164
11:00:00	0	0	0	0	0	0
12:00:00	13	0	44	57	3	130
13:00:00	15	0	46	61	5	121
14:00:00	11	2	56	69	3	136
15:00:00	0	0	0	0	0	0
16:00:00	44	0	69	113	8	185
17:00:00	18	0	63	81	3	139
18:00:00	17	0	52	69	0	102
Totals:	163	3	487	653	59	1047

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	5	0	0	5	0
9:00:00	15	4	7	26	0
11:00:00	0	0	0	0	0
12:00:00	44	10	19	73	0
13:00:00	33	6	21	60	6
14:00:00	42	5	20	67	0
15:00:00	0	0	0	0	0
16:00:00	44	6	22	72	9
17:00:00	29	4	25	58	5
18:00:00	16	3	14	33	11
Totals:	228	38	128	394	31

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00
Crossing Values:	54	191	137	121	121	224	94	57

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Mid-day Peak Diagram

Specified Period
From: 10:00:00
To: 14:00:00

One Hour Peak
From: 12:45:00
To: 13:45:00

Municipality: Burlington
Site #: 2006800004
Intersection: Brant St & Blairholm Ave
TFR File #: 1
Count date: 19-Sep-20

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

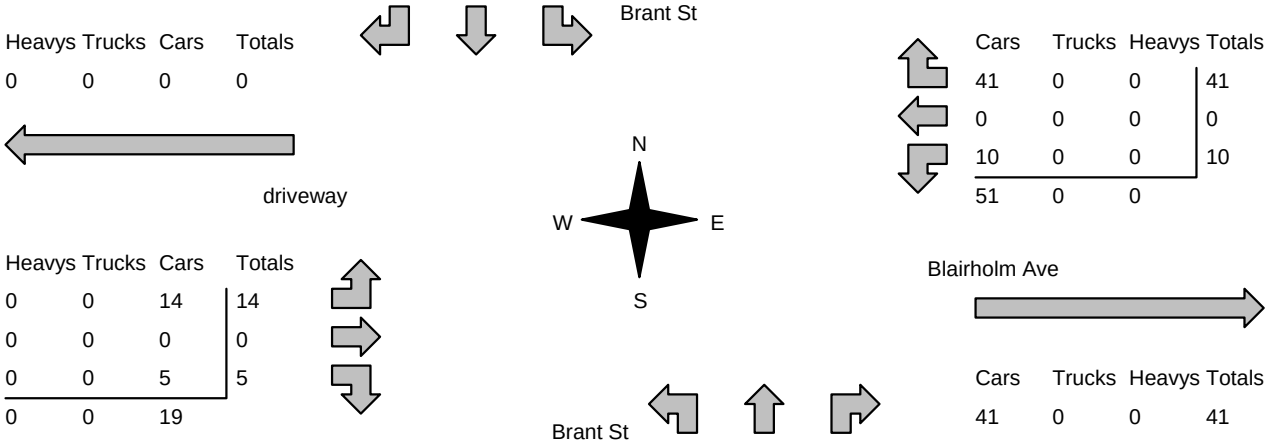
Major Road: Brant St runs N/S

North Leg Total: 1404
North Entering: 694
North Peds: 5
Peds Cross: ⋈

Heavys	0	2	0	2
Trucks	0	2	0	2
Cars	0	657	33	690
Totals	0	661	33	

Heavys	3
Trucks	2
Cars	705
Totals	710

East Leg Total: 92
East Entering: 51
East Peds: 27
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 27
West Entering: 19
West Leg Total: 19

Cars	672
Trucks	2
Heavys	2
Totals	676

Cars	0	650	8	658
Trucks	0	2	0	2
Heavys	0	3	0	3
Totals	0	655	8	

Peds Cross: ⋈
South Peds: 5
South Entering: 663
South Leg Total: 1339

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Total Count Diagram

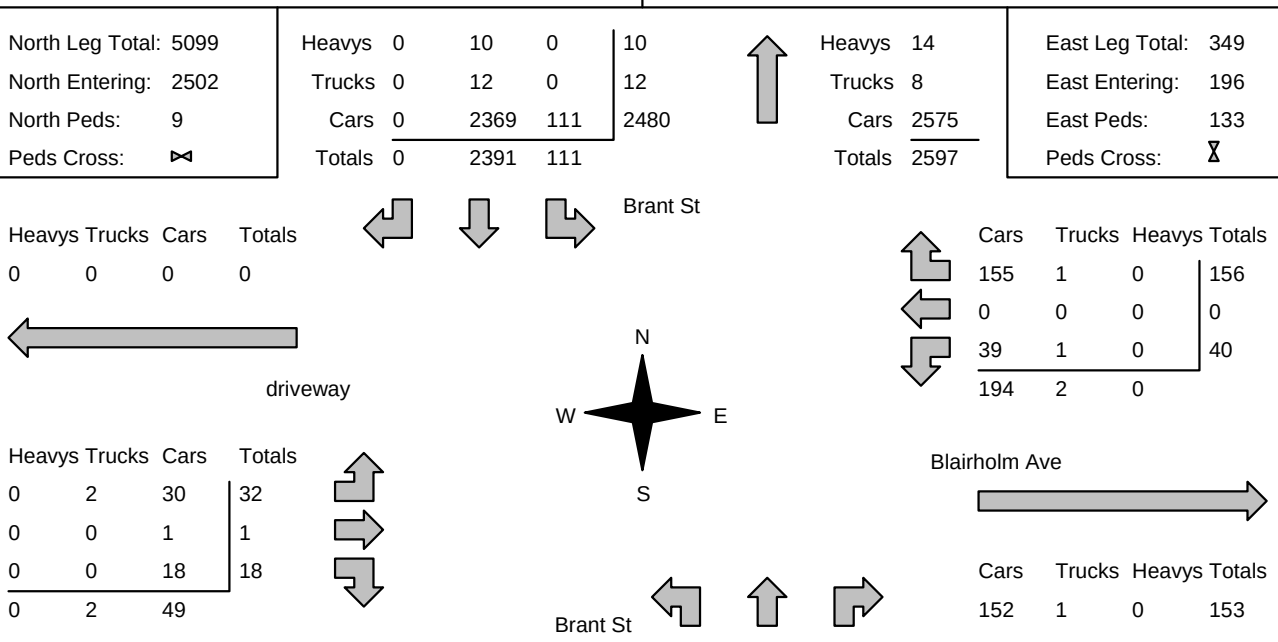
Municipality: Burlington
Site #: 2006800004
Intersection: Brant St & Blairholm Ave
TFR File #: 1
Count date: 19-Sep-20

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Brant St runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: Brant St & Blairholm Ave | **Count Date:** 19-Sep-20 | **Municipality:** Burlington

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds	North/South Total Approaches
	Left	Thru	Right	Grand Total		
10:00:00	*0*	*0*	*0*	*0*	*0*	*0*
11:00:00	*18*	*484*	*0*	*502*	*0*	*1039*
12:00:00	*29*	*644*	*0*	*673*	*0*	*1300*
13:00:00	*31*	*615*	*0*	*646*	*3*	*1268*
14:00:00	*33*	*648*	*0*	*681*	*6*	*1345*
Totals:	111	2391	0	2502	9	4952

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
10:00:00	*0*	*0*	*0*	*0*	*0*
11:00:00	*0*	*522*	*15*	*537*	*7*
12:00:00	*0*	*623*	*4*	*627*	*7*
13:00:00	*0*	*608*	*14*	*622*	*8*
14:00:00	*0*	*656*	*8*	*664*	*2*
S Totals:	0	2409	41	2450	24

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds	East/West Total Approaches
	Left	Thru	Right	Grand Total		
10:00:00	*0*	*0*	*0*	*0*	*0*	*0*
11:00:00	*9*	*0*	*36*	*45*	*37*	*55*
12:00:00	*7*	*0*	*36*	*43*	*33*	*55*
13:00:00	*15*	*0*	*43*	*58*	*39*	*77*
14:00:00	*9*	*0*	*41*	*50*	*24*	*60*
Totals:	40	0	156	196	133	247

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
10:00:00	*0*	*0*	*0*	*0*	*0*
11:00:00	*4*	*0*	*6*	*10*	*29*
12:00:00	*8*	*0*	*4*	*12*	*17*
13:00:00	*12*	*1*	*6*	*19*	*25*
14:00:00	*8*	*0*	*2*	*10*	*29*
W Totals:	32	1	18	51	100

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*10:00*	*11:00*	*12:00*	*13:00*	*14:00*	*0:00*	*0:00*	*0:00*
Crossing Values:	*0*	*20*	*22*	*39*	*25*	*0*	*0*	*0*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 19-Sep-20 Site #: 2006800004

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
10:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15:00	3	3	114	114	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
10:30:00	3	0	236	122	0	0	0	0	2	1	0	0	0	0	1	1	0	0	0	0
10:45:00	11	8	356	120	0	0	0	0	4	2	0	0	0	0	3	2	0	0	0	0
11:00:00	18	7	474	118	0	0	0	0	6	2	0	0	0	0	4	1	0	0	0	0
11:15:00	25	7	630	156	0	0	0	0	6	0	0	0	0	0	4	0	0	0	0	0
11:30:00	34	9	791	161	0	0	0	0	6	0	0	0	0	0	4	0	0	0	0	0
11:45:00	40	6	945	154	0	0	0	0	7	1	0	0	0	0	5	1	0	0	0	0
12:00:00	47	7	1115	170	0	0	0	0	7	0	0	0	0	0	6	1	0	0	0	0
12:15:00	57	10	1250	135	0	0	0	0	9	2	0	0	0	0	6	0	0	0	2	2
12:30:00	62	5	1398	148	0	0	0	0	10	1	0	0	0	0	6	0	0	0	2	0
12:45:00	68	6	1548	150	0	0	0	0	10	0	0	0	0	0	8	2	0	0	2	0
13:00:00	78	10	1725	177	0	0	0	0	10	0	0	0	0	0	8	0	0	0	3	1
13:15:00	86	8	1906	181	0	0	0	0	10	0	0	0	0	0	9	1	0	0	5	2
13:30:00	90	4	2042	136	0	0	0	0	10	0	0	0	0	0	9	0	0	0	7	2
13:45:00	101	11	2205	163	0	0	0	0	12	2	0	0	0	0	10	1	0	0	7	0
14:00:00	111	10	2369	164	0	0	0	0	12	0	0	0	0	0	10	0	0	0	9	2
14:15:00	111	0	2369	0	0	0	0	0	12	0	0	0	0	0	10	0	0	0	9	0
14:15:15	111	0	2369	0	0	0	0	0	12	0	0	0	0	0	10	0	0	0	9	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 19-Sep-20 Site #: 2006800004

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
10:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15:00	2	2	0	0	9	9	0	0	0	0	0	0	0	0	0	0	0	0	7	7
10:30:00	3	1	0	0	18	9	1	1	0	0	0	0	0	0	0	0	0	0	14	7
10:45:00	5	2	0	0	28	10	1	0	0	0	0	0	0	0	0	0	0	0	18	4
11:00:00	8	3	0	0	36	8	1	0	0	0	0	0	0	0	0	0	0	0	37	19
11:15:00	9	1	0	0	45	9	1	0	0	0	1	1	0	0	0	0	0	0	45	8
11:30:00	11	2	0	0	53	8	1	0	0	0	1	0	0	0	0	0	0	0	56	11
11:45:00	13	2	0	0	62	9	1	0	0	0	1	0	0	0	0	0	0	0	62	6
12:00:00	15	2	0	0	71	9	1	0	0	0	1	0	0	0	0	0	0	0	70	8
12:15:00	16	1	0	0	79	8	1	0	0	0	1	0	0	0	0	0	0	0	73	3
12:30:00	21	5	0	0	94	15	1	0	0	0	1	0	0	0	0	0	0	0	81	8
12:45:00	26	5	0	0	105	11	1	0	0	0	1	0	0	0	0	0	0	0	100	19
13:00:00	30	4	0	0	114	9	1	0	0	0	1	0	0	0	0	0	0	0	109	9
13:15:00	32	2	0	0	127	13	1	0	0	0	1	0	0	0	0	0	0	0	117	8
13:30:00	35	3	0	0	139	12	1	0	0	0	1	0	0	0	0	0	0	0	123	6
13:45:00	36	1	0	0	146	7	1	0	0	0	1	0	0	0	0	0	0	0	127	4
14:00:00	39	3	0	0	155	9	1	0	0	0	1	0	0	0	0	0	0	0	133	6
14:15:00	39	0	0	0	155	0	1	0	0	0	1	0	0	0	0	0	0	0	133	0
14:15:15	39	0	0	0	155	0	1	0	0	0	1	0	0	0	0	0	0	0	133	0



Accu-Traffic Inc.

Count Date: 19-Sep-20 Site #: 2006800004

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
10:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15:00	0	0	110	110	5	5	0	0	0	0	0	0	0	0	0	0	0	0	3	3
10:30:00	0	0	231	121	7	2	0	0	0	0	0	0	0	0	3	3	0	0	3	0
10:45:00	0	0	370	139	14	7	0	0	0	0	0	0	0	0	3	0	0	0	7	4
11:00:00	0	0	517	147	14	0	0	0	0	0	1	1	0	0	5	2	0	0	7	0
11:15:00	0	0	671	154	16	2	0	0	1	1	1	0	0	0	5	0	0	0	11	4
11:30:00	0	0	821	150	17	1	0	0	2	1	1	0	0	0	7	2	0	0	12	1
11:45:00	0	0	976	155	18	1	0	0	3	1	1	0	0	0	8	1	0	0	14	2
12:00:00	0	0	1133	157	18	0	0	0	3	0	1	0	0	0	9	1	0	0	14	0
12:15:00	0	0	1292	159	23	5	0	0	3	0	1	0	0	0	9	0	0	0	16	2
12:30:00	0	0	1440	148	27	4	0	0	3	0	1	0	0	0	10	1	0	0	17	1
12:45:00	0	0	1582	142	30	3	0	0	3	0	1	0	0	0	10	0	0	0	19	2
13:00:00	0	0	1738	156	32	2	0	0	4	1	1	0	0	0	11	1	0	0	22	3
13:15:00	0	0	1909	171	34	2	0	0	5	1	1	0	0	0	11	0	0	0	23	1
13:30:00	0	0	2063	154	35	1	0	0	5	0	1	0	0	0	13	2	0	0	24	1
13:45:00	0	0	2232	169	38	3	0	0	5	0	1	0	0	0	13	0	0	0	24	0
14:00:00	0	0	2390	158	40	2	0	0	5	0	1	0	0	0	14	1	0	0	24	0
14:15:00	0	0	2390	0	40	0	0	0	5	0	1	0	0	0	14	0	0	0	24	0
14:15:15	0	0	2390	0	40	0	0	0	5	0	1	0	0	0	14	0	0	0	24	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 19-Sep-20 Site #: 2006800004

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
10:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	7
10:30:00	1	1	0	0	3	3	1	1	0	0	0	0	0	0	0	0	0	0	12	5
10:45:00	1	0	0	0	6	3	1	0	0	0	0	0	0	0	0	0	0	0	21	9
11:00:00	3	2	0	0	6	0	1	0	0	0	0	0	0	0	0	0	0	0	29	8
11:15:00	5	2	0	0	6	0	1	0	0	0	0	0	0	0	0	0	0	0	30	1
11:30:00	7	2	0	0	7	1	1	0	0	0	0	0	0	0	0	0	0	0	40	10
11:45:00	9	2	0	0	8	1	1	0	0	0	0	0	0	0	0	0	0	0	43	3
12:00:00	10	1	0	0	10	2	2	1	0	0	0	0	0	0	0	0	0	0	46	3
12:15:00	11	1	0	0	10	0	2	0	0	0	0	0	0	0	0	0	0	0	55	9
12:30:00	14	3	0	0	11	1	2	0	0	0	0	0	0	0	0	0	0	0	63	8
12:45:00	16	2	1	1	13	2	2	0	0	0	0	0	0	0	0	0	0	0	67	4
13:00:00	22	6	1	0	16	3	2	0	0	0	0	0	0	0	0	0	0	0	71	4
13:15:00	25	3	1	0	16	0	2	0	0	0	0	0	0	0	0	0	0	0	76	5
13:30:00	25	0	1	0	17	1	2	0	0	0	0	0	0	0	0	0	0	0	82	6
13:45:00	30	5	1	0	18	1	2	0	0	0	0	0	0	0	0	0	0	0	94	12
14:00:00	30	0	1	0	18	0	2	0	0	0	0	0	0	0	0	0	0	0	100	6
14:15:00	30	0	1	0	18	0	2	0	0	0	0	0	0	0	0	0	0	0	100	0
14:15:15	30	0	1	0	18	0	2	0	0	0	0	0	0	0	0	0	0	0	100	0

Intersection Name:	TS ID:	Line No:	Model:	IP address:	Controller Make:
Brant St @ Fairview St	151	1	ACS/3	172.22.66.2	Econolite

Type of Operation: 8 Phase Semi-Actuated

*-Start from Main Menu

No	Date			Description	Prepared by
	Y	M	D		MA
1	2016	12	6	Timing Changed(optimization) Amber & Allred changed as per OTM Book 12	

PHASE DESCRIPTION

Ph1	SBLT- Brant Street	Ph5	NBLT- Brant Street
Ph2	NB- Brant Street	Ph6	SB- Brant Street
Ph3	WBLT-Fairview Street	Ph7	EBLT-Fairview Street
Ph4	EB-Fairview Street	Ph8	WB-Fairview Street

PHASE IN USE/EXCLUSIVE PED (MM) *- 1 - 2

Phase:	1	2	3	4	5	6	7	8
Phase in Use	X	X	X	X	X	X	X	X
Exclusive PED								

CONTROLLER TIMING DATA - VEHICLE TIMING * - 2 - 1

Timing Plan: 1

	Phase: 1	2	3	4	5	6	7	8
Minimum Green	7	8	7	8	7	8	7	8
Walk		7		7		7		7
Ped. Clearance		17		17		17		17
Pedestrian Carry Over								
Vehicle Extension	3	3	3	3	3	3	3	3
MAX 1	15	40	15	35	15	40	15	35
MAX 2	15	40	15	35	15	40	15	35
Yellow Change	3	3.3	3	3.7	3	3.3	3	3.7
Red Clearance	1	3.2	1	2.7	1	3.2	1	2.7
Phase Minimum:	12	31.5	12	31.4	12	31.5	12	31.4

PHASE DATA - VEHICLE AND PEDESTRIAN RECALLS * - 2 - 8

Phase:	1	2	3	4	5	6	7	8
Lock Detector								
Vehicle Recall								
Pedestrian Recall		X				X		
MAX Recall		X				X		
Min Recall								

COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN *** - 3 - 2, - 3 - 3**

Coordinator Pattern (CP)	Cycle Length	Offset (sec)	Timing Plan	Split Pattern	Phases (sec)							
					1	2	3	4	5	6	7	8
1	110	107	1	1	18	36	12	44	12	42	21	35
2	110	70	1	2	19	34	12	45	19	34	17	40
3	120	89	1	3	22	36	20	42	22	36	13	49
4	100	0	1	4	15	36	15	34	15	36	15	34
5	120	0	1	5	17	37	19	47	17	37	14	52
10	0	0	1	10	0	0	0	0	0	0	0	0

TIME BASE: ACTION PLAN, DAY PLAN *** - 5 - 2, - 5 - 3, -5 - 4**

Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan
1	1	1	06:00	1	1
1	1	2	09:00	2	1
1	1	3	15:15	3	1
1	1	5	17:15	5	1
1	1	3	17:30	3	1
1	1	5	18:00	5	1
1	1	3	18:15	3	1
1	1	2	19:00	2	1
1	1	10	21:30	254	1
2	2	4	07:00	4	1
2	2	1	08:30	1	1
2	2	4	17:30	4	1
2	2	10	23:00	254	1
3	3	4	07:30	4	1
3	3	1	12:00	1	1
3	3	4	17:30	4	1
3	3	10	22:00	254	1

Schedule 1 = Day Plan 1
Schedule 2 = Day Plan 2
Schedule 3 = Day Plan 3

Day Plan 1 (Weekday)
Day Plan 2 (Saturday)
Day Plan 3 (Sunday, Holidays)

Action Plan 10 = free (254)

Special Programming:

TIME BASE DATA - TIME OF YEAR EVENTS *** - 5 - 5**

Events	Exception Day		MON/ MON	DOW/ DOW	WOM/ Year	Day Plan
New Year's Day	1	Fixed	1	1	0	3
Family Day	2	Float	2	2	3	3
Good Friday	3	Float	4	6	1	3
Victoria Day	4	Float	5	2	3	3
Canada Day	5	Fixed	7	1	0	3
Civic Day	6	Float	8	2	1	3
Labour Day	7	Float	9	2	1	3
Thanksgiving	8	Float	10	2	2	3
Christmas Day	9	Fixed	12	25	0	3

Sum of 1&2		Sum of 3&4		Calculated	
				Total 1-4	Total 5-8
				Actual	Actual
1&2	5&6	3&4	7&8		
54	54	56	56	110	110
53	53	57	57	110	110
58	58	62	62	120	120
51	51	49	49	100	100
54	54	66	66	120	120
0	0	0	0	0	0
0	0	0	0	0	0

Intersection Name:	TS ID:	Group NO:	IP address:
Brant St @ Blairholm Street	143		172.22.63.2
Controller Make:	**Model:**	**Firmware Rev. No:**	
Econolite	ACS/3		

Type of Operation 8 Phase Semi-Actuated

Revision

NO	Date Y	Date M	Date D	Description	Prepared by:
1	2014	11	17	Implement timings in Centracs	MA

*- Start From Main Menu

PHASE DESCRIPTION

Ph1		Ph5	
Ph2	NB - Brant St.	PH6	SB - Brant St.
Ph3		Ph7	
Ph4	EB - Duplicate Phase	Ph8	WB - Blairholm Street

CONFIGURATION (PHASE SEQ): PHASE IN USE /EXCLUSIVE PED (MM) * - 1 - 2

Phase:	1	2	3	4	5	6	7	8
Phase in Use :		X		X		X		X
Exclusive PED :								

CONTROLLER: CONTROLLER TIMING DATA - VEHICLE TIMINGS (4 available) * - 2 - 1

Timing Plan: 1

Phase:	1	2	3	4	5	6	7	8
Minimum Green :		8		8		8		8
Conditional Service Min. Green :								
Walk :		25		10		25		10
Ped. Clearance :		8		10		8		10
Pedestrians Carry Over :								
Vehicle Extension :		3		3		3		3
MAX 1 :		35		20		35		20
MAX 2 :		35		20		35		20
Yellow Change :		4		4		4		4
Red Clearance :		3		2		3		2

CONTROLLER: PHASE RECALL OPTIONS * - 2 - 8

Phase:	1	2	3	4	5	6	7	8
Lock Detector :								
Vehicle Recall :		X				X		
Pedestrian Recall :		X				X		
MAX Recall :								
Soft Recall :								

COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN * - 3 - 2, - 3 - 3

Coordinator Pattern (CP)	Cycle Length	Offset (sec)	Timing Plan	Split Pattern	Phases (sec) 1	2	3	4	5	6	7	8
1	90	55	1	1		57		33		57		33
2	100	75	1	2		67		33		67		33
3	90	73	1	3		57		33		57		33
4	85	28	1	4		52		33		52		33
10	0	0	1	10		0		0		0		0

Intersection Name:	TS ID:	Group NO:	IP address:
Brant St @ Blairholm Street	143		172.22.63.2
Controller Make:	**Model:**	**Firmware Rev. No:**	
Econolite	ACS/3		

CP # 1, 2,3,4& 10	Phase:	1	2	3	4	5	6	7	8
Coord Phase	:		X				X		
Vehicle Recall	:								
Pedestrian Recall *(3-3, 5-2)	:		X				X		
Recall to MAX Time	:								
Phase Omit	:								
Special Function Outputs	:								

Coordinator Pattern #	Prefer.	Phase 1	2	3	4	5	6	7	8
	1								
	2								

X - select "." deselect

TIME BASE: ACTION PLAN, DAY PLAN *** - 5 - 2, - 5 - 3, - 5 - 4**

Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan
1	1	1	07:30	1	1
1	1	10	09:00	254	1
1	1	1	09:15	1	1
1	1	2	09:30	2	1
1	1	3	15:30	3	1
1	1	4	19:00	4	1
1	1	10	22:00	254	1
2	2	4	07:30	4	1
2	2	1	09:30	1	1
2	2	4	16:00	4	1
2	2	10	23:00	254	1
3	3	4	08:30	4	1
3	3	1	10:30	1	1
3	3	4	17:00	4	1
3	3	10	20:30	254	1

Schedule 1 = Day Plan 1
Schedule 2 = Day Plan 2
Schedule 3 = Day Plan 3

Day Plan 1 (Weekday)
Day Plan 2 (Saturday)
Day Plan 3 (Sunday, Holidays)

Action Plan 10 = free (254)

TIME BASE DATA - TIME OF YEAR EVENTS *** - 5 - 5**

Events	Exception Day		MON/ MON	DOW/ DOM	WOM/ Year	Day Plan
New Year's Day	1	Fixed	01	1	0	3
Family Day	2	Float	2	2	3	3
Good Friday	3	Float	04	6	1	3
Victoria Day	4	Float	05	2	3	3
Canada Day	5	Fixed	07	1	0	3
Civic Day	6	Float	08	2	1	3
Labour Day	7	Float	09	2	1	3
Thanksgiving	8	Float	10	2	2	3
Christmas Day	9	Fixed	12	25	0	3

Intersection Name:	TS ID:	Group NO:	IP address:
Brant St @ Ghent Ave	142		172.22.64.2

Controller Make:	Model:	Firmware Rev. No:	
Econolite	ACS/3		

Type of Operation 8 Phase Semi-Actuated

Revision

NO	Date Y	Date M	Date D	Description	Prepared by:
2	2014	12	4	Changed offsets Pattern 2	BP

*- Start From Main Menu

PHASE DESCRIPTION

Ph1		Ph5	
Ph2	NB - Brant St.	PH6	SB - Brant St.
Ph3		Ph7	
Ph4	EB / WB- Ghent Ave	Ph8	

CONFIGURATION (PHASE SEQ): PHASE IN USE /EXCLUSIVE PED (MM) * - 1 - 2

Phase:	1	2	3	4	5	6	7	8
Phase in Use :		X		X		X		
Exclusive PED :								

CONTROLLER: CONTROLLER TIMING DATA - VEHICLE TIMINGS (4 available) * - 2 - 1

Timing Plan: 1

Phase:	1	2	3	4	5	6	7	8
Minimum Green :		8		8		8		
Conditional Service Min. Green :								
Walk :		16		15		16		
Ped. Clearance :		10		16		10		
Pedestrians Carry Over :								
Vehicle Extension :		3		3		3		
MAX 1 :		35		25		35		
MAX 2 :		35		25		35		
Yellow Change :		4		4		4		
Red Clearance :		3		3		3		

CONTROLLER: PHASE RECALL OPTIONS * - 2 - 8

Phase:	1	2	3	4	5	6	7	8
Lock Detector :								
Vehicle Recall :		X				X		
Pedestrian Recall :		X				X		
MAX Recall :								
Soft Recall :								

COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN * - 3 - 2, - 3 - 3

Coordinator Pattern (CP)	Cycle Length	Offset (sec)	Timing Plan	Split Pattern	Phases (sec) 1	2	3	4	5	6	7	8
1	90	63	1	1		49		41		49		
2	100	85	1	2		49		51		49		
3	90	88	1	3		49		41		49		
4	85	12	1	4		44		41		44		
10	0	0	1	10		0		0		0		

Intersection Name:	TS ID:	Group NO:	IP address:
Brant St @ Ghent Ave	142		172.22.64.2
Controller Make:	**Model:**	**Firmware Rev. No:**	
Econolite	ACS/3		

CP # 1, 2,3,4& 10	Phase:	1	2	3	4	5	6	7	8
Coord Phase	:		X				X		
Vehicle Recall	:								
Pedestrian Recall *(3-3, 5-2)	:		X				X		
Recall to MAX Time	:								
Phase Omit	:								
Special Function Outputs	:								

Coordinator Pattern #	Prefer.	Phase 1	2	3	4	5	6	7	8
	1								
	2								

X - select "." deselect

TIME BASE: ACTION PLAN, DAY PLAN *** - 5 - 2, - 5 - 3, - 5 - 4**

Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan
1	1	1	07:30	1	1
1	1	2	09:30	2	1
1	1	3	15:30	3	1
1	1	4	19:00	4	1
1	1	10	22:00	254	1
2	2	4	07:30	4	1
2	2	1	09:30	1	1
2	2	4	16:00	4	1
2	2	10	23:00	254	1
3	3	4	08:30	4	1
3	3	1	10:30	1	1
3	3	4	17:00	4	1
3	3	10	20:30	254	1

Schedule 1 = Day Plan 1
Schedule 2 = Day Plan 2
Schedule 3 = Day Plan 3

Day Plan 1 (Weekday)
Day Plan 2 (Saturday)
Day Plan 3 (Sunday, Holidays)

Action Plan 10 = free (254)

TIME BASE DATA - TIME OF YEAR EVENTS *** - 5 - 5**

Events	Exception Day		MON/ MON	DOW/ DOM	WOM/ Year	Day Plan
New Year's Day	1	Fixed	01	1	0	3
Family Day	2	Float	2	2	3	3
Good Friday	3	Float	04	6	1	3
Victoria Day	4	Float	05	2	3	3
Canada Day	5	Fixed	07	1	0	3
Civic Day	6	Float	08	2	1	3
Labour Day	7	Float	09	2	1	3
Thanksgiving	8	Float	10	2	2	3
Christmas Day	9	Fixed	12	25	0	3

Intersection Name:	TS ID:	Group NO:	IP address:
Brant St @ Prospect Street	141		172.22.65.2

Controller Make:	Model:	Firmware Rev. No:	
Econolite	ACS/3		

Type of Operation 4 Phase Semi-Actuated

Revision

NO	Date Y	Date M	Date D	Description	Prepared by:
1	2014	11	17	Implement timings in Centracs	MA

*- Start From Main Menu

PHASE DESCRIPTION

Ph1	SB LT - Brant St.	Ph5	
Ph2	NB/SB - Brant St.	PH6	
Ph3		Ph7	
Ph4	EB/WB - Prospect Street	Ph8	

CONFIGURATION (PHASE SEQ): PHASE IN USE /EXCLUSIVE PED (MM) * - 1 - 2

Phase:	1	2	3	4	5	6	7	8
Phase in Use :	X	X		X				
Exclusive PED :								

CONTROLLER: CONTROLLER TIMING DATA - VEHICLE TIMINGS (4 available) * - 2 - 1

Timing Plan: 1

Phase:	1	2	3	4	5	6	7	8
Minimum Green :	6	8		8				
Conditional Service Min. Green :								
Walk :		23		12				
Ped. Clearance :		11		13				
Pedestrians Carry Over :								
Vehicle Extension :	3	3		3				
MAX 1 :	10	35		25				
MAX 2 :	10	35		25				
Yellow Change :	3	4		4				
Red Clearance :		3		3				

CONTROLLER: PHASE RECALL OPTIONS * - 2 - 8

Phase:	1	2	3	4	5	6	7	8
Lock Detector :								
Vehicle Recall :		X						
Pedestrian Recall :		X						
MAX Recall :								
Soft Recall :								

COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN * - 3 - 2, - 3 - 3

Coordinator Pattern (CP)	Cycle Length	Offset (sec)	Timing Plan	Split Pattern	Phases (sec) 1	2	3	4	5	6	7	8
1	90	43	1	1	12	55		23				
2	100	88	1	2	11	66		23				
3	90	85	1	3	12	55		23				
4	85	0	1	4	12	50		23				
10	0	0	1	10	0	0		0				

Intersection Name:		TS ID:	Group NO:	IP address:
Brant St @ Prospect Street		141		172.22.65.2
Controller Make:	**Model:**		**Firmware Rev. No:**	
Econolite	ACS/3			

CP # 1, 2,3,4& 10	Phase:	1	2	3	4	5	6	7	8
Coord Phase	:		X						
Vehicle Recall	:								
Pedestrian Recall *(3-3, 5-2)	:		X						
Recall to MAX Time	:								
Phase Omit	:								
Special Function Outputs	:								

Coordinator Pattern #	Prefer.	Phase 1	2	3	4	5	6	7	8
	1								
	2								

X - select "." deselect

TIME BASE: ACTION PLAN, DAY PLAN *** - 5 - 2, - 5 - 3, - 5 - 4**

Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan
1	1	1	07:30	1	1
1	1	2	09:30	2	1
1	1	3	15:30	3	1
1	1	4	19:00	4	1
1	1	10	22:00	254	1
2	2	4	07:30	4	1
2	2	1	09:30	1	1
2	2	4	16:00	4	1
2	2	10	23:00	254	1
3	3	4	08:30	4	1
3	3	1	10:30	1	1
3	3	4	17:00	4	1
3	3	10	20:30	254	1

Schedule 1 = Day Plan 1
Schedule 2 = Day Plan 2
Schedule 3 = Day Plan 3

Day Plan 1 (Weekday)
Day Plan 2 (Saturday)
Day Plan 3 (Sunday, Holidays)

Action Plan 10 = free (254)

TIME BASE DATA - TIME OF YEAR EVENTS *** - 5 - 5**

Events	Exception Day		MON/ MON	DOW/ DOM	WOM/ Year	Day Plan
New Year's Day	1	Fixed	01	1	0	3
Family Day	2	Float	2	2	3	3
Good Friday	3	Float	04	6	1	3
Victoria Day	4	Float	05	2	3	3
Canada Day	5	Fixed	07	1	0	3
Civic Day	6	Float	08	2	1	3
Labour Day	7	Float	09	2	1	3
Thanksgiving	8	Float	10	2	2	3
Christmas Day	9	Fixed	12	25	0	3

Appendix C

Base Year Operations

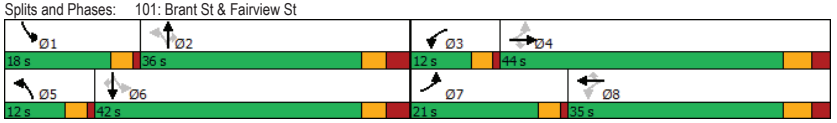


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	316	993	230	112	315	143	165	564	241	215	651	141
Future Volume (vph)	316	993	230	112	315	143	165	564	241	215	651	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.408			0.150			0.229			0.173		
Satd. Flow (perm)	760	3539	1583	279	3539	1583	427	3539	1583	322	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			250			193			192			153
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	343	1079	250	122	342	155	179	613	262	234	708	153
Shared Lane Traffic (%)												
Lane Group Flow (vph)	343	1079	250	122	342	155	179	613	262	234	708	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)		3.6			3.6			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	21.0	44.0	44.0	12.0	35.0	35.0	12.0	36.0	36.0	18.0	42.0	42.0
Total Split (%)	19.1%	40.0%	40.0%	10.9%	31.8%	31.8%	10.9%	32.7%	32.7%	16.4%	38.2%	38.2%
Maximum Green (s)	17.0	37.6	37.6	8.0	28.6	28.6	8.0	29.5	29.5	14.0	35.5	35.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	48.7	36.8	36.8	37.0	29.1	29.1	34.0	25.8	25.8	42.0	30.5	30.5
Actuated g/C Ratio	0.49	0.37	0.37	0.37	0.29	0.29	0.34	0.26	0.26	0.42	0.31	0.31
v/c Ratio	0.65	0.82	0.34	0.55	0.33	0.26	0.70	0.67	0.47	0.73	0.65	0.26
Control Delay	23.5	35.5	4.4	27.0	29.8	3.1	36.7	37.4	12.5	33.6	33.2	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.5	35.5	4.4	27.0	29.8	3.1	36.7	37.4	12.5	33.6	33.2	5.4
LOS	C	D	A	C	C	A	D	D	B	C	C	A
Approach Delay		28.4			22.6			31.1			29.4	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 99.5			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 28.5		Intersection LOS: C	
Intersection Capacity Utilization 74.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	343	1079	250	122	342	155	179	613	262	234	708	153
v/c Ratio	0.65	0.82	0.34	0.55	0.33	0.26	0.70	0.67	0.47	0.73	0.65	0.26
Control Delay	23.5	35.5	4.4	27.0	29.8	3.1	36.7	37.4	12.5	33.6	33.2	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.5	35.5	4.4	27.0	29.8	3.1	36.7	37.4	12.5	33.6	33.2	5.4
Queue Length 50th (m)	43.8	105.9	0.0	13.5	29.8	0.0	23.9	62.4	11.7	32.4	68.3	0.0
Queue Length 95th (m)	72.9	144.5	16.7	27.1	45.6	8.7	#39.8	81.6	34.6	#56.7	87.9	13.9
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	547	1444	794	226	1119	632	255	1155	646	344	1372	707
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.75	0.31	0.54	0.31	0.25	0.70	0.53	0.41	0.68	0.52	0.22

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	316	993	230	112	315	143	165	564	241	215	651	141
Future Volume (vph)	316	993	230	112	315	143	165	564	241	215	651	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.41	1.00	1.00	0.15	1.00	1.00	0.23	1.00	1.00	0.17	1.00	1.00
Satd. Flow (perm)	759	3539	1583	279	3539	1583	426	3539	1583	323	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	343	1079	250	122	342	155	179	613	262	234	708	153
RTOR Reduction (vph)	0	0	157	0	0	110	0	0	142	0	0	106
Lane Group Flow (vph)	343	1079	93	122	342	45	179	613	120	234	708	47
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	46.3	34.4	34.4	34.6	26.7	26.7	31.4	23.3	23.3	40.0	27.9	27.9
Effective Green, g (s)	46.3	36.8	36.8	34.6	29.1	29.1	31.4	25.8	25.8	40.0	30.4	30.4
Actuated g/C Ratio	0.47	0.37	0.37	0.35	0.29	0.29	0.32	0.26	0.26	0.40	0.31	0.31
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	513	1312	587	216	1038	464	244	920	411	315	1084	485
v/s Ratio Prot	c0.11	c0.30		0.04	0.10		0.06	0.17		c0.09	0.20	
v/s Ratio Perm	0.21		0.06	0.15		0.03	0.17		0.08	c0.20		0.03
v/c Ratio	0.67	0.82	0.16	0.56	0.33	0.10	0.73	0.67	0.29	0.74	0.65	0.10
Uniform Delay, d1	18.0	28.2	20.8	24.3	27.4	25.5	26.4	32.8	29.4	22.2	29.8	24.6
Progression 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
Incremental Delay, d2	3.3	4.3	0.1	3.4	0.2	0.1	10.8	1.8	0.4	9.1	1.4	0.1
Delay (s)	21.3	32.5	21.0	27.7	27.6	25.6	37.2	34.7	29.8	31.3	31.3	24.7
Level of Service	C	C	C	C	C	C	D	C	C	C	C	C
Approach Delay (s)		28.5			27.1			33.9			30.3	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.79			
Actuated Cycle Length (s)	99.2	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	74.5%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	9	15	52	7	73	24	736	38	83	829	81
Future Volume (vph)	31	9	15	52	7	73	24	736	38	83	829	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.908			0.864			0.993			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1691	0	1770	1609	0	1770	3514	0	1770	3493	0
Flt Permitted	0.701			0.740			0.235			0.293		
Satd. Flow (perm)	1306	1691	0	1378	1609	0	438	3514	0	546	3493	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			79			9			19	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	10	16	57	8	79	26	800	41	90	901	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	26	0	57	87	0	26	841	0	90	989	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	12.7	12.7		12.7	12.7		36.0	36.0		46.0	36.0	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.62	0.62		0.79	0.62	
v/c Ratio	0.12	0.07		0.19	0.21		0.10	0.39		0.14	0.45	
Control Delay	24.7	16.0		25.4	9.5		8.8	8.9		2.8	9.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	24.7	16.0		25.4	9.5		8.8	8.9		2.8	9.4	
LOS	C	B		C	A		A	A		A	A	
Approach Delay		20.9			15.8			8.9			8.9	
Approach LOS		C			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 58			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 9.7		Intersection LOS: A	
Intersection Capacity Utilization 51.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	34	26	57	87	26	841	90	989
v/c Ratio	0.12	0.07	0.19	0.21	0.10	0.39	0.14	0.45
Control Delay	24.7	16.0	25.4	9.5	8.8	8.9	2.8	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.7	16.0	25.4	9.5	8.8	8.9	2.8	9.4
Queue Length 50th (m)	3.2	0.9	5.5	0.7	1.4	28.4	1.9	35.1
Queue Length 95th (m)	12.3	7.9	17.9	12.7	5.6	47.8	5.8	58.4
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	461	608	487	620	373	2992	706	2976
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.04	0.12	0.14	0.07	0.28	0.13	0.33

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	9	15	52	7	73	24	736	38	83	829	81
Future Volume (vph)	31	9	15	52	7	73	24	736	38	83	829	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1691		1770	1609		1770	3513		1770	3492	
Flt Permitted	0.70	1.00		0.74	1.00		0.24	1.00		0.29	1.00	
Satd. Flow (perm)	1305	1691		1379	1609		438	3513		545	3492	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	10	16	57	8	79	26	800	41	90	901	88
RTOR Reduction (vph)	0	13	0	0	66	0	0	4	0	0	8	0
Lane Group Flow (vph)	34	13	0	57	21	0	26	837	0	90	981	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	6.8	6.8		6.8	6.8		31.4	31.4		36.3	31.4	
Effective Green, g (s)	9.8	9.8		9.8	9.8		34.4	34.4		42.3	34.4	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.57	0.57		0.70	0.57	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	212	275		224	262		250	2010		544	1998	
v/s Ratio Prot		0.01			0.01			0.24		c0.02	c0.28	
v/s Ratio Perm	0.03			c0.04			0.06			0.09		
v/c Ratio	0.16	0.05		0.25	0.08		0.10	0.42		0.17	0.49	
Uniform Delay, d1	21.6	21.2		22.0	21.3		5.8	7.2		3.0	7.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.1		0.6	0.1		0.2	0.1		0.1	0.2	
Delay (s)	22.0	21.3		22.6	21.5		6.0	7.4		3.1	7.8	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		21.7			21.9			7.3			7.4	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	8.8	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.39			
Actuated Cycle Length (s)	60.1	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	51.7%	ICU Level of Service	A	
Analysis Period (min)	15			

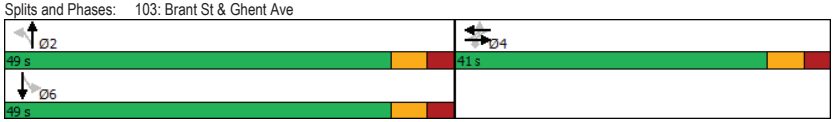
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	232	20	22	9	26	11	639	29	31	759	112
Future Volume (vph)	131	232	20	22	9	26	11	639	29	31	759	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.939			0.993			0.981	
Flt Protected		0.982			0.981		0.950			0.950		
Satd. Flow (prot)	0	1829	1583	0	1716	0	1770	3514	0	1770	3472	0
Flt Permitted		0.860			0.816		0.209			0.311		
Satd. Flow (perm)	0	1602	1583	0	1427	0	389	3514	0	579	3472	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		28			7			26	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.5			333.4			75.4			150.5	
Travel Time (s)		17.5			24.0			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	142	252	22	24	10	28	12	695	32	34	825	122
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	394	22	0	62	0	12	727	0	34	947	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		23.3	23.3		23.3		26.0	26.0		26.0	26.0	
Actuated g/C Ratio		0.40	0.40		0.40		0.45	0.45		0.45	0.45	
v/c Ratio		0.61	0.03		0.10		0.07	0.46		0.13	0.60	
Control Delay		19.2	1.5		8.3		12.4	12.7		12.7	14.2	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		19.2	1.5		8.3		12.4	12.7		12.7	14.2	
LOS		B	A		A		B	B		B	B	
Approach Delay		18.3			8.3			12.7			14.2	
Approach LOS		B			A			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 57.8			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 14.3		Intersection LOS: B	
Intersection Capacity Utilization 57.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	394	22	62	12	727	34	947
v/c Ratio	0.61	0.03	0.10	0.07	0.46	0.13	0.60
Control Delay	19.2	1.5	8.3	12.4	12.7	12.7	14.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	1.5	8.3	12.4	12.7	12.7	14.2
Queue Length 50th (m)	31.8	0.0	2.1	0.7	25.8	2.0	35.7
Queue Length 95th (m)	73.2	1.6	9.9	4.4	55.5	8.9	76.0
Internal Link Dist (m)	218.5		309.4		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	1091	1093	981	311	2816	463	2786
Starvation Cap Reductn	0	0	0	0	0	0	58
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.02	0.06	0.04	0.26	0.07	0.35

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	232	20	22	9	26	11	639	29	31	759	112
Future Volume (vph)	131	232	20	22	9	26	11	639	29	31	759	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.94		1.00	0.99		1.00	0.98	
Flt Protected		0.98	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1830	1583		1716		1770	3516		1770	3471	
Flt Permitted		0.86	1.00		0.82		0.21	1.00		0.31	1.00	
Satd. Flow (perm)		1603	1583		1428		390	3516		580	3471	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	142	252	22	24	10	28	12	695	32	34	825	122
RTOR Reduction (vph)	0	0	13	0	17	0	0	4	0	0	14	0
Lane Group Flow (vph)	0	394	9	0	45	0	12	723	0	34	933	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		20.1	20.1		20.1		22.8	22.8		22.8	22.8	
Effective Green, g (s)		23.1	23.1		23.1		25.8	25.8		25.8	25.8	
Actuated g/C Ratio		0.41	0.41		0.41		0.45	0.45		0.45	0.45	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		650	642		579		176	1594		262	1573	
v/s Ratio Prot								0.21			c0.27	
v/s Ratio Perm		c0.25	0.01		0.03		0.03			0.06		
v/c Ratio		0.61	0.01		0.08		0.07	0.45		0.13	0.59	
Uniform Delay, d1		13.3	10.1		10.4		8.8	10.7		9.0	11.6	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.6	0.0		0.1		0.2	0.2		0.2	0.6	
Delay (s)		14.9	10.1		10.4		8.9	10.9		9.3	12.2	
Level of Service		B	B		B		A	B		A	B	
Approach Delay (s)		14.7			10.4			10.9			12.1	
Approach LOS		B			B			B			B	

Intersection Summary					
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.60				
Actuated Cycle Length (s)	56.9	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	57.1%	ICU Level of Service		B	
Analysis Period (min)	15				

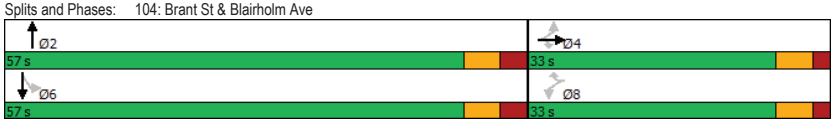
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	4	7	37	0	103	0	552	15	43	673	0
Future Volume (vph)	15	4	7	37	0	103	0	552	15	43	673	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.996				
Flt Protected		0.962		0.950						0.950		
Satd. Flow (prot)	0	1792	1583	1770	0	1583	0	3525	0	1770	1863	0
Flt Permitted		0.962		0.744						0.419		
Satd. Flow (perm)	0	1792	1583	1386	0	1583	0	3525	0	780	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			112		5				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		34.6			305.8			317.1			241.2	
Travel Time (s)		2.5			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	4	8	40	0	112	0	600	16	47	732	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	20	8	40	0	112	0	616	0	47	732	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		8.7	8.7	10.7		10.7		31.5		31.5	31.5	
Actuated g/C Ratio		0.19	0.19	0.24		0.24		0.69		0.69	0.69	
v/c Ratio		0.06	0.02	0.12		0.24		0.25		0.09	0.57	
Control Delay		18.2	0.1	17.4		6.3		4.2		4.3	7.6	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		18.2	0.1	17.4		6.3		4.2		4.3	7.6	
LOS		B	A	B		A		A		A	A	
Approach Delay		13.1			9.2			4.2			7.4	
Approach LOS		B			A			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 45.4			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 6.4		Intersection LOS: A	
Intersection Capacity Utilization 57.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	20	8	40	112	616	47	732
v/c Ratio	0.06	0.02	0.12	0.24	0.25	0.09	0.57
Control Delay	18.2	0.1	17.4	6.3	4.2	4.3	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.2	0.1	17.4	6.3	4.2	4.3	7.6
Queue Length 50th (m)	1.3	0.0	2.5	0.0	10.4	1.3	32.1
Queue Length 95th (m)	6.7	0.0	10.5	10.6	18.2	4.6	64.6
Internal Link Dist (m)	10.6				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	1109	998	921	1090	3473	768	1836
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.04	0.10	0.18	0.06	0.40

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	4	7	37	0	103	0	552	15	43	673	0
Future Volume (vph)	15	4	7	37	0	103	0	552	15	43	673	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.96	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1791	1583	1770		1583		3525		1770	1863	
Flt Permitted		0.96	1.00	0.74		1.00		1.00		0.42	1.00	
Satd. Flow (perm)		1791	1583	1386		1583		3525		780	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	4	8	40	0	112	0	600	16	47	732	0
RTOR Reduction (vph)	0	0	7	0	0	92	0	2	0	0	0	0
Lane Group Flow (vph)	0	20	1	40	0	20	0	614	0	47	732	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		6.3	6.3	6.3		6.3		27.2		27.2	27.2	
Effective Green, g (s)		6.3	6.3	8.3		8.3		30.2		30.2	30.2	
Actuated g/C Ratio		0.14	0.14	0.18		0.18		0.65		0.65	0.65	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		242	214	247		282		2289		506	1209	
v/s Ratio Prot								0.17			c0.39	
v/s Ratio Perm		0.01	0.00	c0.03		0.01				0.06		
v/c Ratio		0.08	0.01	0.16		0.07		0.27		0.09	0.61	
Uniform Delay, d1		17.6	17.4	16.2		15.9		3.5		3.0	4.7	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.0	0.3		0.1		0.1		0.1	0.9	
Delay (s)		17.7	17.4	16.5		16.0		3.5		3.1	5.6	
Level of Service		B	B	B		B		A		A	A	
Approach Delay (s)		17.6			16.1			3.5			5.4	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	5.9	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	46.5	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	57.1%	ICU Level of Service	B	
Analysis Period (min)	15			

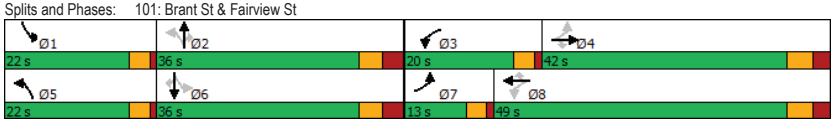
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	199	732	247	190	1375	411	140	731	171	219	594	406
Future Volume (vph)	199	732	247	190	1375	411	140	731	171	219	594	406
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.103			0.164			0.243			0.125		
Satd. Flow (perm)	192	3539	1583	305	3539	1583	453	3539	1583	233	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			268			300			140			274
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	216	796	268	207	1495	447	152	795	186	238	646	441
Shared Lane Traffic (%)												
Lane Group Flow (vph)	216	796	268	207	1495	447	152	795	186	238	646	441
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	13.0	42.0	42.0	20.0	49.0	49.0	22.0	36.0	36.0	22.0	36.0	36.0
Total Split (%)	10.8%	35.0%	35.0%	16.7%	40.8%	40.8%	18.3%	30.0%	30.0%	18.3%	30.0%	30.0%
Maximum Green (s)	9.0	35.6	35.6	16.0	42.6	42.6	18.0	29.5	29.5	18.0	29.5	29.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	50.2	41.2	41.2	56.8	45.1	45.1	42.6	30.9	30.9	49.5	34.5	34.5
Actuated g/C Ratio	0.43	0.35	0.35	0.49	0.39	0.39	0.37	0.27	0.27	0.43	0.30	0.30
v/c Ratio	1.05	0.64	0.37	0.66	1.09	0.56	0.51	0.84	0.36	0.79	0.62	0.67
Control Delay	107.4	35.4	5.1	28.3	87.6	12.1	27.0	50.2	12.4	45.3	38.4	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	107.4	35.4	5.1	28.3	87.6	12.1	27.0	50.2	12.4	45.3	38.4	18.7
LOS	F	D	A	C	F	B	C	D	B	D	D	B
Approach Delay		41.2			66.2			40.9			33.1	
Approach LOS		D			E			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 116.3			
Natural Cycle: 135			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.09			
Intersection Signal Delay: 48.4		Intersection LOS: D	
Intersection Capacity Utilization 94.7%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Queues
101: Brant St & Fairview St

Base Year (2022)
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	216	796	268	207	1495	447	152	795	186	238	646	441
v/c Ratio	1.05	0.64	0.37	0.66	1.09	0.56	0.51	0.84	0.36	0.79	0.62	0.67
Control Delay	107.4	35.4	5.1	28.3	87.6	12.1	27.0	50.2	12.4	45.3	38.4	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	107.4	35.4	5.1	28.3	87.6	12.1	27.0	50.2	12.4	45.3	38.4	18.7
Queue Length 50th (m)	~41.3	85.7	0.0	28.1	~218.8	25.0	22.2	96.0	8.4	37.1	70.0	33.9
Queue Length 95th (m)	#96.4	114.5	19.2	45.6	#270.2	59.5	36.5	#123.6	28.3	#71.6	94.6	75.3
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	205	1252	733	354	1371	797	392	975	537	338	1064	667
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	0.64	0.37	0.58	1.09	0.56	0.39	0.82	0.35	0.70	0.61	0.66

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
101: Brant St & Fairview St

Base Year (2022)
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	199	732	247	190	1375	411	140	731	171	219	594	406
Future Volume (vph)	199	732	247	190	1375	411	140	731	171	219	594	406
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.10	1.00	1.00	0.16	1.00	1.00	0.24	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)	192	3539	1583	306	3539	1583	452	3539	1583	233	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	216	796	268	207	1495	447	152	795	186	238	646	441
RTOR Reduction (vph)	0	0	173	0	0	184	0	0	103	0	0	193
Lane Group Flow (vph)	216	796	95	207	1495	263	152	795	83	238	646	248
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	47.8	38.8	38.8	55.6	42.7	42.7	40.1	28.4	28.4	47.3	32.0	32.0
Effective Green, g (s)	47.8	41.2	41.2	55.6	45.1	45.1	40.1	30.9	30.9	47.3	34.5	34.5
Actuated g/C Ratio	0.41	0.35	0.35	0.48	0.39	0.39	0.34	0.27	0.27	0.41	0.30	0.30
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	201	1253	560	308	1372	613	288	940	420	296	1049	469
v/s Ratio Prot	c0.08	0.22		c0.07	c0.42		0.05	c0.22		c0.11	0.18	
v/s Ratio Perm	0.36		0.06	0.25		0.17	0.13		0.05	0.22		0.16
v/c Ratio	1.07	0.64	0.17	0.67	1.09	0.43	0.53	0.85	0.20	0.80	0.62	0.53
Uniform Delay, d1	29.7	31.3	25.8	21.2	35.6	26.2	28.0	40.4	33.1	27.6	35.2	34.1
Progression 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
Incremental Delay, d2	84.7	1.1	0.1	5.7	52.6	0.5	1.7	7.1	0.2	14.6	1.1	1.1
Delay (s)	114.5	32.4	25.9	26.9	88.2	26.6	29.8	47.5	33.3	42.2	36.3	35.2
Level of Service	F	C	C	C	F	C	C	D	C	D	D	D
Approach Delay (s)		44.9			69.5			42.8			37.0	
Approach LOS		D			E			D			D	

Intersection Summary				
HCM 2000 Control Delay	51.7	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.97			
Actuated Cycle Length (s)	116.3	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	94.7%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	18	40	99	10	165	14	972	54	102	911	56
Future Volume (vph)	115	18	40	99	10	165	14	972	54	102	911	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.898			0.859			0.992			0.991	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1673	0	1770	1600	0	1770	3511	0	1770	3507	0
Flt Permitted	0.543			0.716			0.197			0.176		
Satd. Flow (perm)	1011	1673	0	1334	1600	0	367	3511	0	328	3507	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		43			179			10			11	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	20	43	108	11	179	15	1057	59	111	990	61
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	63	0	108	190	0	15	1116	0	111	1051	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	16.9	16.9		16.9	16.9		38.8	38.8		50.6	38.8	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.54	0.54		0.70	0.54	
v/c Ratio	0.53	0.15		0.35	0.37		0.08	0.59		0.25	0.55	
Control Delay	37.7	13.9		30.8	8.2		10.0	13.0		4.7	12.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.1		0.0	0.0	
Total Delay	37.7	13.9		30.8	8.2		10.0	13.1		4.7	12.5	
LOS	D	B		C	A		A	B		A	B	
Approach Delay		29.7			16.4			13.0			11.7	
Approach LOS		C			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 71.8			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 14.0		Intersection LOS: B	
Intersection Capacity Utilization 65.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	125	63	108	190	15	1116	111	1051
v/c Ratio	0.53	0.15	0.35	0.37	0.08	0.59	0.25	0.55
Control Delay	37.7	13.9	30.8	8.2	10.0	13.0	4.7	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	37.7	13.9	30.8	8.2	10.0	13.1	4.7	12.5
Queue Length 50th (m)	16.5	2.3	13.6	1.3	1.1	58.6	4.5	53.7
Queue Length 95th (m)	#40.4	13.3	32.7	18.9	4.2	79.1	8.5	72.7
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	287	506	379	582	265	2539	490	2536
Starvation Cap Reductn	0	0	0	0	0	352	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.12	0.28	0.33	0.06	0.51	0.23	0.41

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	18	40	99	10	165	14	972	54	102	911	56
Future Volume (vph)	115	18	40	99	10	165	14	972	54	102	911	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1672		1770	1600		1770	3511		1770	3508	
Flt Permitted	0.54	1.00		0.72	1.00		0.20	1.00		0.18	1.00	
Satd. Flow (perm)	1012	1672		1334	1600		368	3511		328	3508	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	20	43	108	11	179	15	1057	59	111	990	61
RTOR Reduction (vph)	0	33	0	0	137	0	0	5	0	0	5	0
Lane Group Flow (vph)	125	30	0	108	53	0	15	1111	0	111	1046	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	13.7	13.7		13.7	13.7		35.6	35.6		40.9	35.6	
Effective Green, g (s)	16.7	16.7		16.7	16.7		38.6	38.6		46.9	38.6	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.54	0.54		0.66	0.54	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	236	389		311	373		198	1892		382	1891	
v/s Ratio Prot		0.02			0.03			c0.32		c0.03	0.30	
v/s Ratio Perm	c0.12			0.08			0.04			0.16		
v/c Ratio	0.53	0.08		0.35	0.14		0.08	0.59		0.29	0.55	
Uniform Delay, d1	24.0	21.4		22.9	21.8		7.9	11.1		5.9	10.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	0.1		0.7	0.2		0.2	0.5		0.4	0.4	
Delay (s)	26.2	21.5		23.6	21.9		8.1	11.6		6.3	11.2	
Level of Service	C	C		C	C		A	B		A	B	
Approach Delay (s)		24.6			22.5			11.6			10.7	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	71.6	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	65.0%	ICU Level of Service	C	
Analysis Period (min)	15			

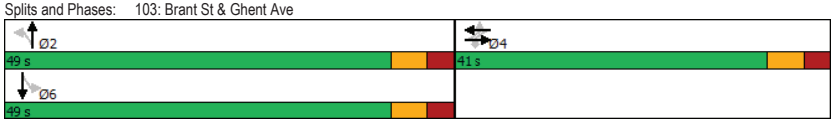
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	141	25	14	25	54	40	11	862	22	33	811	180
Future Volume (vph)	141	25	14	25	54	40	11	862	22	33	811	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.955			0.996			0.973	
Flt Protected		0.959			0.990		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1761	0	1770	3525	0	1770	3444	0
Flt Permitted		0.728			0.911		0.193			0.236		
Satd. Flow (perm)	0	1356	1583	0	1621	0	360	3525	0	440	3444	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		34			4			42	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.5			333.4			75.4			150.5	
Travel Time (s)		17.5			24.0			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	153	27	15	27	59	43	12	937	24	36	882	196
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	180	15	0	129	0	12	961	0	36	1078	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		16.7	16.7		16.7		27.0	27.0		27.0	27.0	
Actuated g/C Ratio		0.32	0.32		0.32		0.52	0.52		0.52	0.52	
v/c Ratio		0.41	0.03		0.24		0.06	0.52		0.16	0.60	
Control Delay		17.8	0.6		11.9		8.5	10.0		9.8	10.5	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		17.8	0.6		11.9		8.5	10.0		9.8	10.5	
LOS		B	A		B		A	A		A	B	
Approach Delay		16.5			11.9			9.9			10.5	
Approach LOS		B			B			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 52			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 10.8		Intersection LOS: B	
Intersection Capacity Utilization 51.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	180	15	129	12	961	36	1078
v/c Ratio	0.41	0.03	0.24	0.06	0.52	0.16	0.60
Control Delay	17.8	0.6	11.9	8.5	10.0	9.8	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.8	0.6	11.9	8.5	10.0	9.8	10.5
Queue Length 50th (m)	12.1	0.0	5.9	0.5	27.5	1.6	31.1
Queue Length 95th (m)	33.8	0.6	19.9	3.3	56.7	7.4	64.9
Internal Link Dist (m)	218.5		309.4		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	998	1178	1202	315	3091	385	3025
Starvation Cap Reductn	0	0	0	0	0	0	51
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.01	0.11	0.04	0.31	0.09	0.36

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	141	25	14	25	54	40	11	862	22	33	811	180
Future Volume (vph)	141	25	14	25	54	40	11	862	22	33	811	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.95		1.00	1.00		1.00	0.97	
Flt Protected		0.96	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1787	1583		1760		1770	3526		1770	3443	
Flt Permitted		0.73	1.00		0.91		0.19	1.00		0.24	1.00	
Satd. Flow (perm)		1356	1583		1621		359	3526		439	3443	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	153	27	15	27	59	43	12	937	24	36	882	196
RTOR Reduction (vph)	0	0	10	0	23	0	0	2	0	0	20	0
Lane Group Flow (vph)	0	180	5	0	106	0	12	959	0	36	1058	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		13.6	13.6		13.6		23.9	23.9		23.9	23.9	
Effective Green, g (s)		16.6	16.6		16.6		26.9	26.9		26.9	26.9	
Actuated g/C Ratio		0.32	0.32		0.32		0.52	0.52		0.52	0.52	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		437	510		522		187	1841		229	1798	
v/s Ratio Prot								0.27			c0.31	
v/s Ratio Perm		c0.13	0.00		0.07		0.03			0.08		
v/c Ratio		0.41	0.01		0.20		0.06	0.52		0.16	0.59	
Uniform Delay, d1		13.6	11.9		12.7		6.1	8.1		6.4	8.5	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.6	0.0		0.2		0.1	0.3		0.3	0.5	
Delay (s)		14.3	11.9		12.8		6.2	8.3		6.7	9.0	
Level of Service		B	B		B		A	A		A	A	
Approach Delay (s)		14.1			12.8			8.3			8.9	
Approach LOS		B			B			A			A	

Intersection Summary					
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.52				
Actuated Cycle Length (s)	51.5	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	51.5%	ICU Level of Service		A	
Analysis Period (min)	15				

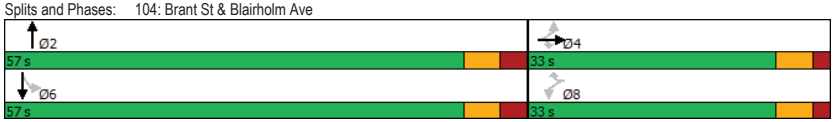
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	5	20	18	0	71	0	770	17	46	671	0
Future Volume (vph)	16	5	20	18	0	71	0	770	17	46	671	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.997				
Flt Protected		0.963		0.950						0.950		
Satd. Flow (prot)	0	1794	1583	1770	0	1583	0	3529	0	1770	1863	0
Flt Permitted		0.963		0.743						0.316		
Satd. Flow (perm)	0	1794	1583	1384	0	1583	0	3529	0	589	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			77		4				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		51.0			305.8			317.1			241.2	
Travel Time (s)		3.7			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	5	22	20	0	77	0	837	18	50	729	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	22	22	20	0	77	0	855	0	50	729	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		8.4	8.4	10.5		10.5		32.7		32.7	32.7	
Actuated g/C Ratio		0.18	0.18	0.23		0.23		0.71		0.71	0.71	
v/c Ratio		0.07	0.07	0.06		0.18		0.34		0.12	0.55	
Control Delay		18.4	3.6	16.9		6.7		4.4		4.6	7.1	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		18.4	3.6	16.9		6.7		4.4		4.6	7.1	
LOS		B	A	B		A		A		A	A	
Approach Delay		11.0			8.8			4.4			7.0	
Approach LOS		B			A			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 46.2			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 5.9		Intersection LOS: A	
Intersection Capacity Utilization 57.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	22	22	20	77	855	50	729
v/c Ratio	0.07	0.07	0.06	0.18	0.34	0.12	0.55
Control Delay	18.4	3.6	16.9	6.7	4.4	4.6	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.4	3.6	16.9	6.7	4.4	4.6	7.1
Queue Length 50th (m)	1.6	0.0	1.4	0.0	15.7	1.5	32.0
Queue Length 95th (m)	7.1	2.6	6.3	8.8	24.2	4.8	58.8
Internal Link Dist (m)	27.0				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	1089	979	902	1059	3504	585	1850
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.02	0.02	0.07	0.24	0.09	0.39

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	5	20	18	0	71	0	770	17	46	671	0
Future Volume (vph)	16	5	20	18	0	71	0	770	17	46	671	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.96	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1793	1583	1770		1583		3528		1770	1863	
Flt Permitted		0.96	1.00	0.74		1.00		1.00		0.32	1.00	
Satd. Flow (perm)		1793	1583	1384		1583		3528		590	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	5	22	20	0	77	0	837	18	50	729	0
RTOR Reduction (vph)	0	0	19	0	0	64	0	1	0	0	0	0
Lane Group Flow (vph)	0	22	3	20	0	13	0	854	0	50	729	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		6.1	6.1	6.1		6.1		28.4		28.4	28.4	
Effective Green, g (s)		6.1	6.1	8.1		8.1		31.4		31.4	31.4	
Actuated g/C Ratio		0.13	0.13	0.17		0.17		0.66		0.66	0.66	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		230	203	236		269		2332		390	1231	
v/s Ratio Prot								0.24			c0.39	
v/s Ratio Perm		0.01	0.00	c0.01		0.01				0.08		
v/c Ratio		0.10	0.01	0.08		0.05		0.37		0.13	0.59	
Uniform Delay, d1		18.3	18.1	16.6		16.5		3.6		3.0	4.5	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.2	0.0	0.2		0.1		0.1		0.1	0.8	
Delay (s)		18.4	18.1	16.7		16.6		3.7		3.1	5.3	
Level of Service		B	B	B		B		A		A	A	
Approach Delay (s)		18.3			16.6			3.7			5.1	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	5.4	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.51			
Actuated Cycle Length (s)	47.5	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	57.0%	ICU Level of Service	B	
Analysis Period (min)	15			

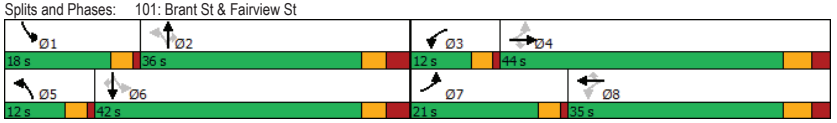
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	298	712	202	124	666	227	197	534	133	223	542	156
Future Volume (vph)	298	712	202	124	666	227	197	534	133	223	542	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.140			0.288			0.320			0.184		
Satd. Flow (perm)	261	3539	1583	536	3539	1583	596	3539	1583	343	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			220			247			192			170
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	324	774	220	135	724	247	214	580	145	242	589	170
Shared Lane Traffic (%)												
Lane Group Flow (vph)	324	774	220	135	724	247	214	580	145	242	589	170
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	21.0	44.0	44.0	12.0	35.0	35.0	12.0	36.0	36.0	18.0	42.0	42.0
Total Split (%)	19.1%	40.0%	40.0%	10.9%	31.8%	31.8%	10.9%	32.7%	32.7%	16.4%	38.2%	38.2%
Maximum Green (s)	17.0	37.6	37.6	8.0	28.6	28.6	8.0	29.5	29.5	14.0	35.5	35.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	47.9	36.0	36.0	34.9	27.0	27.0	32.4	24.3	24.3	40.4	28.8	28.8
Actuated g/C Ratio	0.49	0.37	0.37	0.36	0.28	0.28	0.33	0.25	0.25	0.42	0.30	0.30
v/c Ratio	0.83	0.59	0.30	0.46	0.74	0.40	0.72	0.66	0.27	0.74	0.56	0.29
Control Delay	41.9	27.5	4.4	21.4	37.6	6.0	36.8	37.0	2.9	33.6	31.1	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.9	27.5	4.4	21.4	37.6	6.0	36.8	37.0	2.9	33.6	31.1	5.4
LOS	D	C	A	C	D	A	D	D	A	C	C	A
Approach Delay		27.2			28.6			31.7			27.3	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 97.1			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 28.5		Intersection LOS: C	
Intersection Capacity Utilization 75.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Queues
101: Brant St & Fairview St

Base Year (2022)
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	324	774	220	135	724	247	214	580	145	242	589	170
v/c Ratio	0.83	0.59	0.30	0.46	0.74	0.40	0.72	0.66	0.27	0.74	0.56	0.29
Control Delay	41.9	27.5	4.4	21.4	37.6	6.0	36.8	37.0	2.9	33.6	31.1	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.9	27.5	4.4	21.4	37.6	6.0	36.8	37.0	2.9	33.6	31.1	5.4
Queue Length 50th (m)	45.7	66.3	0.0	14.7	70.4	0.0	28.6	57.3	0.0	32.8	53.4	0.0
Queue Length 95th (m)	#105.7	94.7	15.9	29.1	99.8	19.0	#50.4	77.0	6.6	#57.6	71.6	14.7
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	397	1483	791	297	1149	680	297	1186	658	354	1408	732
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.52	0.28	0.45	0.63	0.36	0.72	0.49	0.22	0.68	0.42	0.23

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
101: Brant St & Fairview St

Base Year (2022)
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	298	712	202	124	666	227	197	534	133	223	542	156
Future Volume (vph)	298	712	202	124	666	227	197	534	133	223	542	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.14	1.00	1.00	0.29	1.00	1.00	0.32	1.00	1.00	0.18	1.00	1.00
Satd. Flow (perm)	261	3539	1583	537	3539	1583	597	3539	1583	342	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	324	774	220	135	724	247	214	580	145	242	589	170
RTOR Reduction (vph)	0	0	138	0	0	178	0	0	109	0	0	119
Lane Group Flow (vph)	324	774	82	135	724	69	214	580	36	242	589	51
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	45.4	33.5	33.5	32.4	24.5	24.5	29.8	21.7	21.7	38.4	26.3	26.3
Effective Green, g (s)	45.4	35.9	35.9	32.4	26.9	26.9	29.8	24.2	24.2	38.4	28.8	28.8
Actuated g/C Ratio	0.47	0.37	0.37	0.34	0.28	0.28	0.31	0.25	0.25	0.40	0.30	0.30
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	386	1313	587	280	984	440	282	885	396	323	1054	471
v/s Ratio Prot	c0.15	0.22		0.04	0.20		0.06	0.16		c0.10	0.17	
v/s Ratio Perm	c0.25		0.05	0.12		0.04	0.17		0.02	c0.20		0.03
v/c Ratio	0.84	0.59	0.14	0.48	0.74	0.16	0.76	0.66	0.09	0.75	0.56	0.11
Uniform Delay, d1	23.3	24.5	20.2	23.3	31.7	26.3	27.2	32.5	27.8	22.0	28.6	24.6
Progression 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
Incremental Delay, d2	14.7	0.7	0.1	1.3	2.9	0.2	11.1	1.8	0.1	9.2	0.6	0.1
Delay (s)	38.0	25.2	20.3	24.6	34.6	26.5	38.4	34.3	27.9	31.2	29.2	24.7
Level of Service	D	C	C	C	C	C	D	C	C	C	C	C
Approach Delay (s)		27.5			31.6			34.2			28.9	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	30.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.80			
Actuated Cycle Length (s)	96.7	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	75.4%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	7	14	60	11	106	12	769	34	94	774	35
Future Volume (vph)	55	7	14	60	11	106	12	769	34	94	774	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.902			0.864			0.994			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1680	0	1770	1609	0	1770	3518	0	1770	3518	0
Flt Permitted	0.676			0.742			0.272			0.274		
Satd. Flow (perm)	1259	1680	0	1382	1609	0	507	3518	0	510	3518	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			115			8			8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	8	15	65	12	115	13	836	37	102	841	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	60	23	0	65	127	0	13	873	0	102	879	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	13.0	13.0		13.0	13.0		33.7	33.7		44.0	33.7	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.60	0.60		0.78	0.60	
v/c Ratio	0.21	0.06		0.21	0.28		0.04	0.42		0.16	0.42	
Control Delay	24.0	14.7		23.8	8.5		8.8	9.9		3.2	9.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	24.0	14.7		23.8	8.5		8.8	9.9		3.2	9.9	
LOS	C	B		C	A		A	A		A	A	
Approach Delay		21.4			13.7			9.9			9.2	
Approach LOS		C			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 56.5			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.42			
Intersection Signal Delay: 10.4		Intersection LOS: B	
Intersection Capacity Utilization 49.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Queues
102: Brant St & Grahams Ln/Prospect St

Base Year (2022)
SAT Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	60	23	65	127	13	873	102	879
v/c Ratio	0.21	0.06	0.21	0.28	0.04	0.42	0.16	0.42
Control Delay	24.0	14.7	23.8	8.5	8.8	9.9	3.2	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.0	14.7	23.8	8.5	8.8	9.9	3.2	9.9
Queue Length 50th (m)	5.4	0.7	5.9	1.1	0.7	30.7	2.3	31.0
Queue Length 95th (m)	17.8	6.7	18.6	14.8	3.5	53.3	6.9	53.6
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	451	611	495	650	444	3086	682	3086
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.04	0.13	0.20	0.03	0.28	0.15	0.28

Intersection Summary

HCM Signalized Intersection Capacity Analysis
102: Brant St & Grahams Ln/Prospect St

Base Year (2022)
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	7	14	60	11	106	12	769	34	94	774	35
Future Volume (vph)	55	7	14	60	11	106	12	769	34	94	774	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1681		1770	1610		1770	3517		1770	3516	
Flt Permitted	0.68	1.00		0.74	1.00		0.27	1.00		0.27	1.00	
Satd. Flow (perm)	1258	1681		1383	1610		507	3517		511	3516	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	8	15	65	12	115	13	836	37	102	841	38
RTOR Reduction (vph)	0	12	0	0	95	0	0	4	0	0	4	0
Lane Group Flow (vph)	60	11	0	65	32	0	13	869	0	102	875	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	7.2	7.2		7.2	7.2		29.2	29.2		34.3	29.2	
Effective Green, g (s)	10.2	10.2		10.2	10.2		32.2	32.2		40.3	32.2	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.55	0.55		0.69	0.55	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	219	293		241	280		279	1935		526	1935	
v/s Ratio Prot		0.01			0.02			0.25		c0.03	c0.25	
v/s Ratio Perm	c0.05			0.05			0.03			0.11		
v/c Ratio	0.27	0.04		0.27	0.11		0.05	0.45		0.19	0.45	
Uniform Delay, d1	20.9	20.1		20.9	20.3		6.1	7.9		3.3	7.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.1		0.6	0.2		0.1	0.2		0.2	0.2	
Delay (s)	21.6	20.1		21.5	20.5		6.1	8.0		3.4	8.0	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		21.2			20.9			8.0			7.6	
Approach LOS		C			C			A			A	

Intersection Summary					
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.37				
Actuated Cycle Length (s)	58.5	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	49.2%	ICU Level of Service		A	
Analysis Period (min)	15				

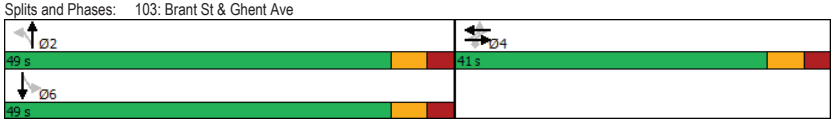
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	15	8	17	14	32	14	690	17	38	709	95
Future Volume (vph)	85	15	8	17	14	32	14	690	17	38	709	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.931			0.996			0.982	
Flt Protected		0.959			0.987		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1712	0	1770	3525	0	1770	3476	0
Flt Permitted		0.710			0.892		0.292			0.339		
Satd. Flow (perm)	0	1323	1583	0	1547	0	544	3525	0	631	3476	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		35			4			23	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.5			333.4			75.4			150.5	
Travel Time (s)		17.5			24.0			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	92	16	9	18	15	35	15	750	18	41	771	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	108	9	0	68	0	15	768	0	41	874	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		12.8	12.8		12.8		24.6	24.6		24.6	24.6	
Actuated g/C Ratio		0.32	0.32		0.32		0.61	0.61		0.61	0.61	
v/c Ratio		0.26	0.02		0.13		0.05	0.36		0.11	0.41	
Control Delay		13.6	0.0		7.7		6.4	6.7		6.9	7.0	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		13.6	0.0		7.7		6.4	6.7		6.9	7.0	
LOS		B	A		A		A	A		A	A	
Approach Delay		12.5			7.7			6.7			7.0	
Approach LOS		B			A			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 40.5			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.41			
Intersection Signal Delay: 7.2		Intersection LOS: A	
Intersection Capacity Utilization 50.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	108	9	68	15	768	41	874
v/c Ratio	0.26	0.02	0.13	0.05	0.36	0.11	0.41
Control Delay	13.6	0.0	7.7	6.4	6.7	6.9	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.6	0.0	7.7	6.4	6.7	6.9	7.0
Queue Length 50th (m)	5.3	0.0	1.5	0.5	15.7	1.3	18.1
Queue Length 95th (m)	17.2	0.0	8.8	2.9	31.4	5.9	36.2
Internal Link Dist (m)	218.5		309.4		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	1182	1419	1386	532	3451	618	3403
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.01	0.05	0.03	0.22	0.07	0.26

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	15	8	17	14	32	14	690	17	38	709	95
Future Volume (vph)	85	15	8	17	14	32	14	690	17	38	709	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.93		1.00	1.00		1.00	0.98	
Flt Protected		0.96	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1787	1583		1711		1770	3527		1770	3477	
Flt Permitted		0.71	1.00		0.89		0.29	1.00		0.34	1.00	
Satd. Flow (perm)		1323	1583		1547		543	3527		632	3477	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	92	16	9	18	15	35	15	750	18	41	771	103
RTOR Reduction (vph)	0	0	7	0	26	0	0	2	0	0	10	0
Lane Group Flow (vph)	0	108	2	0	42	0	15	766	0	41	864	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		7.6	7.6		7.6		20.4	20.4		20.4	20.4	
Effective Green, g (s)		10.6	10.6		10.6		23.4	23.4		23.4	23.4	
Actuated g/C Ratio		0.25	0.25		0.25		0.56	0.56		0.56	0.56	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		333	399		390		302	1965		352	1937	
v/s Ratio Prot								0.22			c0.25	
v/s Ratio Perm		c0.08	0.00		0.03		0.03			0.06		
v/c Ratio		0.32	0.01		0.11		0.05	0.39		0.12	0.45	
Uniform Delay, d1		12.8	11.8		12.1		4.2	5.3		4.4	5.5	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.6	0.0		0.1		0.1	0.1		0.1	0.2	
Delay (s)		13.4	11.8		12.2		4.3	5.4		4.6	5.6	
Level of Service		B	B		B		A	A		A	A	
Approach Delay (s)		13.2			12.2			5.4			5.6	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	6.2	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.41			
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	50.4%	ICU Level of Service	A	
Analysis Period (min)	15			

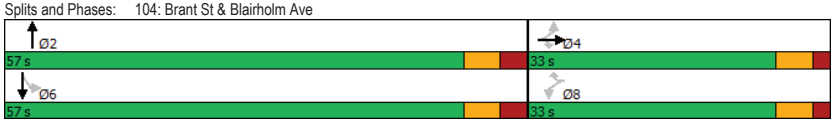
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	0	5	10	0	41	0	662	8	33	668	0
Future Volume (vph)	14	0	5	10	0	41	0	662	8	33	668	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.998				
Flt Protected		0.950		0.950						0.950		
Satd. Flow (prot)	0	1770	1583	1770	0	1583	0	3532	0	1770	1863	0
Flt Permitted		0.950		0.748						0.375		
Satd. Flow (perm)	0	1770	1583	1393	0	1583	0	3532	0	699	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			48		2				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		55.3			305.8			317.1			241.2	
Travel Time (s)		4.0			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	0	5	11	0	45	0	720	9	36	726	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	5	11	0	45	0	729	0	36	726	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		8.5	8.5	10.7		10.7		35.9		35.9	35.9	
Actuated g/C Ratio		0.19	0.19	0.24		0.24		0.80		0.80	0.80	
v/c Ratio		0.04	0.01	0.03		0.11		0.26		0.06	0.49	
Control Delay		19.6	0.0	17.9		7.3		3.1		3.6	5.4	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		19.6	0.0	17.9		7.3		3.1		3.6	5.4	
LOS		B	A	B		A		A		A	A	
Approach Delay		14.7			9.4			3.1			5.3	
Approach LOS		B			A			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 45			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 4.6		Intersection LOS: A	
Intersection Capacity Utilization 56.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	15	5	11	45	729	36	726
v/c Ratio	0.04	0.01	0.03	0.11	0.26	0.06	0.49
Control Delay	19.6	0.0	17.9	7.3	3.1	3.6	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.6	0.0	17.9	7.3	3.1	3.6	5.4
Queue Length 50th (m)	1.5	0.0	1.0	0.0	12.8	1.0	31.7
Queue Length 95th (m)	5.4	0.0	4.2	6.3	19.1	3.3	55.9
Internal Link Dist (m)	31.3				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	1131	1028	956	1102	3477	688	1834
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.00	0.01	0.04	0.21	0.05	0.40

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	0	5	10	0	41	0	662	8	33	668	0
Future Volume (vph)	14	0	5	10	0	41	0	662	8	33	668	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.95	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1770	1583	1770		1583		3533		1770	1863	
Flt Permitted		0.95	1.00	0.75		1.00		1.00		0.37	1.00	
Satd. Flow (perm)		1770	1583	1393		1583		3533		698	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	0	5	11	0	45	0	720	9	36	726	0
RTOR Reduction (vph)	0	0	5	0	0	39	0	1	0	0	0	0
Lane Group Flow (vph)	0	15	0	11	0	6	0	728	0	36	726	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		4.0	4.0	4.0		4.0		30.5		30.5	30.5	
Effective Green, g (s)		4.0	4.0	6.0		6.0		33.5		33.5	33.5	
Actuated g/C Ratio		0.08	0.08	0.13		0.13		0.71		0.71	0.71	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		149	133	175		199		2491		492	1313	
v/s Ratio Prot								0.21			c0.39	
v/s Ratio Perm		0.01	0.00	0.01		0.00				0.05		
v/c Ratio		0.10	0.00	0.06		0.03		0.29		0.07	0.55	
Uniform Delay, d1		20.1	19.9	18.3		18.2		2.6		2.2	3.4	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.3	0.0	0.2		0.1		0.1		0.1	0.5	
Delay (s)		20.4	19.9	18.4		18.3		2.7		2.2	3.9	
Level of Service		C	B	B		B		A		A	A	
Approach Delay (s)		20.3			18.3			2.7			3.8	
Approach LOS		C			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	4.0	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio	0.50			
Actuated Cycle Length (s)	47.5	Sum of lost time (s)		10.0
Intersection Capacity Utilization	56.8%	ICU Level of Service		B
Analysis Period (min)	15			

c Critical Lane Group

Appendix D

Trip Generation Calculations

Phase 1

ITE Land Use	Units	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
222 - Multifamily Housing, High-Rise (Units)	444	48	69	**117**	42	42	**84**	17	23	**40**
822 - Stip Retial Plaza, <40k (/1,000ft^2 GFA)	8.85	13	8	**21**	29	29	**58**	30	28	**58**
Phase 1 Total Trip Generation		61	77	**138**	71	71	**142**	47	51	**98**
LUC 822 Pass-by PM Peak Hour	*40%*				*-12*	*-12*	*-24*			
LUC 822 Pass-by SAT Peak Hour	*31%*							*-9*	*-9*	*-18*
Internal Capture - AM Peak Hour	*3%*	*-2*	*-2*	*-4*						
Internal Capture - PM Peak Hour	*1%*				*-1*	*-1*	*-2*			
Internal Capture - SAT Peak Hour	*0%*							*0*	*0*	*0*
Phase 1 Net Trip Generation		**59**	**75**	**134**	**58**	**58**	**116**	**38**	**42**	**80**

222: AM T = 0.28(X) - 7.17 / PM Ln(T) = 0.95Ln(X) - 1.36 / SAT Average Rate 0.09

822: AM Avg Rate 2.36 / PM Avg Rate 6.59 / SAT Avg Rate 6.57

Phase 2

ITE Land Use	Units	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
222 - Multifamily Housing, High-Rise (Units)	283	30	42	**72**	27	28	**55**	11	14	**25**
822 - Stip Retial Plaza, <40k (/1,000ft^2 GFA)	7.65	11	7	**18**	25	25	**50**	25	25	**50**
Phase 2 Total Trip Generation		41	49	**90**	52	53	**105**	36	39	**75**
LUC 822 Pass-by PM Peak Hour	*40%*				*-10*	*-10*	*-20*			
LUC 822 Pass-by SAT Peak Hour	*31%*							*-8*	*-8*	*-16*
Internal Capture - AM Peak Hour	*2%*	*-1*	*-1*	*-2*						
Internal Capture - PM Peak Hour	*2%*				*-1*	*-1*	*-2*			
Internal Capture - SAT Peak Hour	*0%*							*0*	*0*	*0*
Phase 2 Net Trip Generation		**40**	**48**	**88**	**41**	**42**	**83**	**28**	**31**	**59**

222: AM T = 0.28(X) - 7.17 / PM Ln(T) = 0.95Ln(X) - 1.36 / SAT Average Rate 0.09

822: AM Avg Rate 2.36 / PM Avg Rate 6.59 / SAT Avg Rate 6.57

Phase 3

ITE Land Use	Units	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
221 - Multifamily Housing, Mid-Rise (Units)	120	5	30	**35**	21	8	**29**	14	18	**32**
822 - Stip Retial Plaza, <40k (/1,000ft^2 GFA)	5.87	8	6	**14**	19	20	**39**	20	19	**39**
Phase 3 Total Trip Generation		13	36	**49**	40	28	**68**	34	37	**71**
LUC 822 Pass-by PM Peak Hour	*40%*				*-8*	*-8*	*-16*			
LUC 822 Pass-by SAT Peak Hour	*31%*							*-6*	*-6*	*-12*
Internal Capture - AM Peak Hour	*0%*	*0*	*0*	*0*						
Internal Capture - PM Peak Hour	*0%*				*0*	*0*	*0*			
Internal Capture - SAT Peak Hour	*0%*							*0*	*0*	*0*
Phase 3 Net Trip Generation		**13**	**36**	**49**	**32**	**20**	**52**	**28**	**31**	**59**

221: AM LT = 0.25(X) + 5.35 / PM T = 0.29(X) - 6.26 / SAT Average Rate 0.27

822: AM Avg Rate 2.36 / PM Avg Rate 6.59 / SAT Avg Rate 6.57

All Phases

ITE Land Use	Units	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
221 - Multifamily Housing, Mid-Rise (Units)	120	5	30	**35**	21	8	**29**	14	18	**32**
222 - Multifamily Housing, High-Rise (Units)	727	78	111	**189**	69	70	**139**	28	37	**65**
822 - Stip Retial Plaza, <40k (/1,000ft^2 GFA)	22.37	32	21	**53**	73	74	**147**	75	72	**147**
All Phases Total Trip Generation		115	162	**277**	163	152	**315**	117	127	**244**
LUC 820 Pass-by PM Peak Hour	*40%*	*0*	*0*	0	*-30*	*-30*	-60	*0*	*0*	0
LUC 820 Pass-by SAT Peak Hour	*31%*	*0*	*0*	0	*0*	*0*	0	*-23*	*-23*	-46
Internal Capture - AM Peak Hour	*3%/2%/0%*	*-3*	*-3*	-6	*0*	*0*	0	*0*	*0*	0
Internal Capture - PM Peak Hour	*2%/0%/0%*	*0*	*0*	0	*-2*	*-2*	-4	*0*	*0*	0
Internal Capture - SAT Peak Hour	*0%/0%/0%*	*0*	*0*	0	*0*	*0*	0	*0*	*0*	0
All Phases Net Trip Generation		**112**	**159**	**271**	**131**	**120**	**251**	**94**	**104**	**198**

Appendix E

NCHRP Internal Capture

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	200403	**Organization:**	PTSL
Project Location:	Brant/Ghent Burlington	**Performed By:**	AE
Scenario Description:	Phase 1	**Date:**	Sep-22
Analysis Year:	2027	**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	9	1000 Sq. ft	21	13	8
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	444	Units	117	48	69
Hotel				0		
All Other Land Uses[2]				0		
Total				138	61	77

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail	1.13	3%	5%	1.18	15%	5%
Restaurant		15%				
Cinema/Entertainment						
Residential	1.16	15%	5%	1.16	15%	5%
Hotel						
All Other Land Uses[2]	1.00	15%	5%	1.00	15%	5%

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	160	71	89
Internal Capture Percentage	3%	3%	2%
External Vehicle-Trips[3]	110	50	60
External Transit-Trips[4]	21	8	13
External Non-Motorized Trips[4]	8	4	4

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	7%	11%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	1%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	200403
Analysis Period:	AM Street Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.13	13	15	1.18	8	9
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.16	48	56	1.16	69	80
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	3		1	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	1	16	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		5	0	0	0	0
Retail	0		0	0	1	0
Restaurant	0	1		0	3	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	3	0	0		0
Hotel	0	1	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	1	14	15	12	0	1
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	55	56	38	8	3
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	1	8	9	6	1	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	79	80	54	12	4
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	200403	**Organization:**	PTSL
Project Location:	Brant/Ghent Burlington	**Performed By:**	AE
Scenario Description:	Phase 1	**Date:**	Sep-22
Analysis Year:	2027	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	9	1000 Sq. ft	58	29	29
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	444	Units	84	42	42
Hotel				0		
All Other Land Uses[2]				0		
Total				142	71	71

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail	1.13	15%	5%	1.18	15%	5%
Restaurant						
Cinema/Entertainment						
Residential	1.16	15%	5%	1.16	15%	5%
Hotel						
All Other Land Uses[2]	1.00	15%	5%	1.00	15%	5%

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	165	82	83
Internal Capture Percentage	1%	1%	1%
External Vehicle-Trips[3]	113	57	56
External Transit-Trips[4]	24	12	12
External Non-Motorized Trips[4]	8	4	4

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	0%	3%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	200403
Analysis Period:	PM Street Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.13	29	33	1.18	29	34
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.16	42	49	1.16	42	49
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	10		4	0	5	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	0	10	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		11	0	0	0	0
Retail	0		0	0	1	0
Restaurant	0	3		0	2	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	6	0	0		0
Hotel	0	1	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	33	33	23	5	2
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	48	49	34	7	2
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	1	33	34	22	5	2
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	49	49	34	7	2
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	200403	**Organization:**	PTSL
Project Location:	Brant/Ghent Burlington	**Performed By:**	AE
Scenario Description:	Phase 1	**Date:**	Sep-22
Analysis Year:	2027	**Checked By:**	
Analysis Period:	**SAT Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	9	1000 Sq. ft	58	30	28
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	444	Units	40	17	23
Hotel				0		
All Other Land Uses[2]				0		
Total				98	47	51

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail	1.13	15%	5%	1.18	15%	5%
Restaurant						
Cinema/Entertainment						
Residential	1.16	15%	5%	1.16	15%	5%
Hotel						
All Other Land Uses[2]	1.00	15%	5%	1.00	15%	5%

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	114	54	60
Internal Capture Percentage	0%	0%	0%
External Vehicle-Trips[3]	79	38	41
External Transit-Trips[4]	17	8	9
External Non-Motorized Trips[4]	6	3	3

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	0%	0%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	0%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	200403
Analysis Period:	SAT Street Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.13	30	34	1.18	28	33
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.16	17	20	1.16	23	27
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	10		4	0	5	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	0	5	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		11	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	3		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	6	0	0		0
Hotel	0	1	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	34	34	24	5	2
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	20	20	14	3	1
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	33	33	22	5	2
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	27	27	19	4	1
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	200403	**Organization:**	PTSL
Project Location:	Brant/Ghent Burlington	**Performed By:**	AE
Scenario Description:	Phase 2	**Date:**	Sep-22
Analysis Year:	2028	**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	8	1000 Sq. ft	18	11	7
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	283	Units	72	30	42
Hotel				0		
All Other Land Uses[2]				0		
Total				90	41	49

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail	1.13	3%	5%	1.18	15%	5%
Restaurant		15%				
Cinema/Entertainment						
Residential	1.16	15%	5%	1.16	15%	5%
Hotel						
All Other Land Uses[2]	1.00	15%	5%	1.00	15%	5%

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	104	47	57
Internal Capture Percentage	2%	2%	2%
External Vehicle-Trips[3]	72	33	39
External Transit-Trips[4]	13	5	8
External Non-Motorized Trips[4]	5	3	2

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	0%	13%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	3%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	200403
Analysis Period:	AM Street Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.13	11	12	1.18	7	8
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.16	30	35	1.16	42	49
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	2		1	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	0	10	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		4	0	0	0	0
Retail	0		0	0	1	0
Restaurant	0	1		0	2	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	2	0	0		0
Hotel	0	0	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	12	12	10	0	1
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	34	35	23	5	2
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	1	7	8	5	1	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	49	49	34	7	2
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	200403	**Organization:**	PTSL
Project Location:	Brant/Ghent Burlington	**Performed By:**	AE
Scenario Description:	Phase 2	**Date:**	Sep-22
Analysis Year:	2028	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	8	1000 Sq. ft	50	25	25
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	283	Units	55	27	28
Hotel				0		
All Other Land Uses[2]				0		
Total				105	52	53

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail	1.13	15%	5%	1.18	15%	5%
Restaurant						
Cinema/Entertainment						
Residential	1.16	15%	5%	1.16	15%	5%
Hotel						
All Other Land Uses[2]	1.00	15%	5%	1.00	15%	5%

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	121	59	62
Internal Capture Percentage	2%	2%	2%
External Vehicle-Trips[3]	82	40	42
External Transit-Trips[4]	18	9	9
External Non-Motorized Trips[4]	6	3	3

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	0%	3%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	3%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	200403
Analysis Period:	PM Street Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.13	25	28	1.18	25	30
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.16	27	31	1.16	28	32
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	9		4	0	4	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	0	6	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		9	0	0	0	0
Retail	0		0	0	1	0
Restaurant	0	2		0	2	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	5	0	0		0
Hotel	0	1	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	28	28	20	4	1
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	30	31	20	5	2
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	1	29	30	20	4	1
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	32	32	22	5	2
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	200403	**Organization:**	PTSL
Project Location:	Brant/Ghent Burlington	**Performed By:**	AE
Scenario Description:	Phase 2	**Date:**	Sep-22
Analysis Year:	2028	**Checked By:**	
Analysis Period:	**SAT Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	8	1000 Sq. ft	50	25	25
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	283	Units	25	11	14
Hotel				0		
All Other Land Uses[2]				0		
Total				75	36	39

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail	1.13	15%	5%	1.18	15%	5%
Restaurant						
Cinema/Entertainment						
Residential	1.16	15%	5%	1.16	15%	5%
Hotel						
All Other Land Uses[2]	1.00	15%	5%	1.00	15%	5%

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	87	41	46
Internal Capture Percentage	0%	0%	0%
External Vehicle-Trips[3]	59	29	30
External Transit-Trips[4]	13	6	7
External Non-Motorized Trips[4]	5	2	3

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	0%	0%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	0%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	200403
Analysis Period:	SAT Street Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.13	25	28	1.18	25	30
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.16	11	13	1.16	14	16
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	9		4	0	4	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	3	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		9	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	2		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	5	0	0		0
Hotel	0	1	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	28	28	20	4	1
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	13	13	9	2	1
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	30	30	19	5	2
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	16	16	11	2	1
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	200403	**Organization:**	PTSL
Project Location:	Brant/Ghent Burlington	**Performed By:**	AE
Scenario Description:	Phase 3	**Date:**	Sep-22
Analysis Year:	2029	**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	6	1000 Sq. ft	14	8	6
Restaurant				0		
Cinema/Entertainment				0		
Residential	221	120	Units	35	5	30
Hotel				0		
All Other Land Uses[2]				0		
Total				49	13	36

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail	1.13	3%	5%	1.18	15%	5%
Restaurant		15%				
Cinema/Entertainment						
Residential	1.16	15%	5%	1.16	15%	5%
Hotel						
All Other Land Uses[2]	1.00	15%	5%	1.00	15%	5%

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	57	15	42
Internal Capture Percentage	0%	0%	0%
External Vehicle-Trips[3]	41	12	29
External Transit-Trips[4]	7	1	6
External Non-Motorized Trips[4]	2	0	2

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	0%	0%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	0%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	200403
Analysis Period:	AM Street Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.13	8	9	1.18	6	7
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.16	5	6	1.16	30	35
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	2		1	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	0	7	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	1		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	2	0	0		0
Hotel	0	0	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	9	9	8	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	6	6	4	1	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	7	7	5	1	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	35	35	24	5	2
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	200403	**Organization:**	PTSL
Project Location:	Brant/Ghent Burlington	**Performed By:**	AE
Scenario Description:	Phase 3	**Date:**	Sep-22
Analysis Year:	2029	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	6	1000 Sq. ft	39	19	20
Restaurant				0		
Cinema/Entertainment				0		
Residential	221	120	Units	29	21	8
Hotel				0		
All Other Land Uses[2]				0		
Total				68	40	28

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail	1.13	15%	5%	1.18	15%	5%
Restaurant						
Cinema/Entertainment						
Residential	1.16	15%	5%	1.16	15%	5%
Hotel						
All Other Land Uses[2]	1.00	15%	5%	1.00	15%	5%

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	78	45	33
Internal Capture Percentage	0%	0%	0%
External Vehicle-Trips[3]	54	31	23
External Transit-Trips[4]	12	7	5
External Non-Motorized Trips[4]	3	2	1

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	0%	0%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	0%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	200403
Analysis Period:	PM Street Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.13	19	21	1.18	20	24
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.16	21	24	1.16	8	9
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	7		3	0	3	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	2	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		7	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	2		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	4	0	0		0
Hotel	0	1	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	21	21	15	3	1
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	24	24	16	4	1
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	24	24	16	4	1
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	9	9	7	1	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	200403	**Organization:**	PTSL
Project Location:	Brant/Ghent Burlington	**Performed By:**	AE
Scenario Description:	Phase 3	**Date:**	Sep-22
Analysis Year:	2029	**Checked By:**	
Analysis Period:	**SAT Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	6	1000 Sq. ft	39	20	19
Restaurant				0		
Cinema/Entertainment				0		
Residential	221	120	Units	32	14	18
Hotel				0		
All Other Land Uses[2]				0		
Total				71	34	37

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail	1.13	15%	5%	1.18	15%	5%
Restaurant						
Cinema/Entertainment						
Residential	1.16	15%	5%	1.16	15%	5%
Hotel						
All Other Land Uses[2]	1.00	15%	5%	1.00	15%	5%

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	82	39	43
Internal Capture Percentage	0%	0%	0%
External Vehicle-Trips[3]	58	28	30
External Transit-Trips[4]	11	5	6
External Non-Motorized Trips[4]	4	2	2

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	0%	0%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	0%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	200403
Analysis Period:	SAT Street Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.13	20	23	1.18	19	22
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.16	14	16	1.16	18	21
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	6		3	0	3	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	4	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		7	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	2		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	4	0	0		0
Hotel	0	1	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	23	23	17	3	1
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	16	16	11	2	1
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	22	22	15	3	1
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	21	21	15	3	1
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

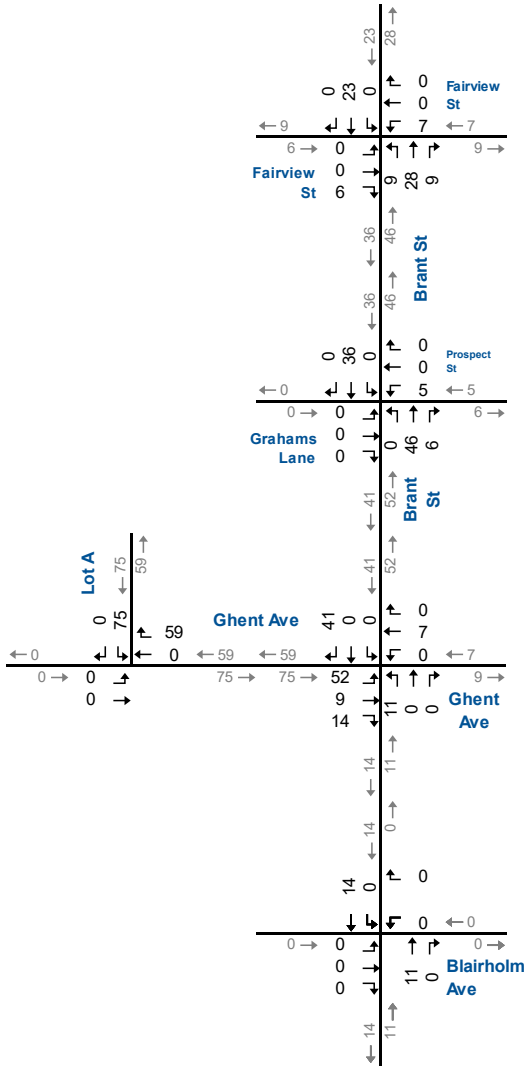
[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

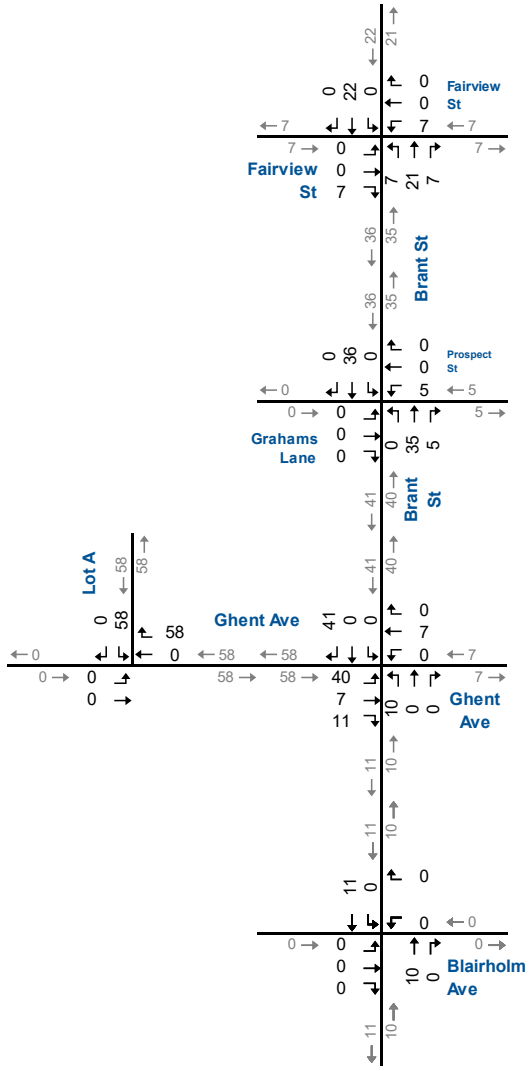
Appendix F

Site Trip and Pass-by Assignments

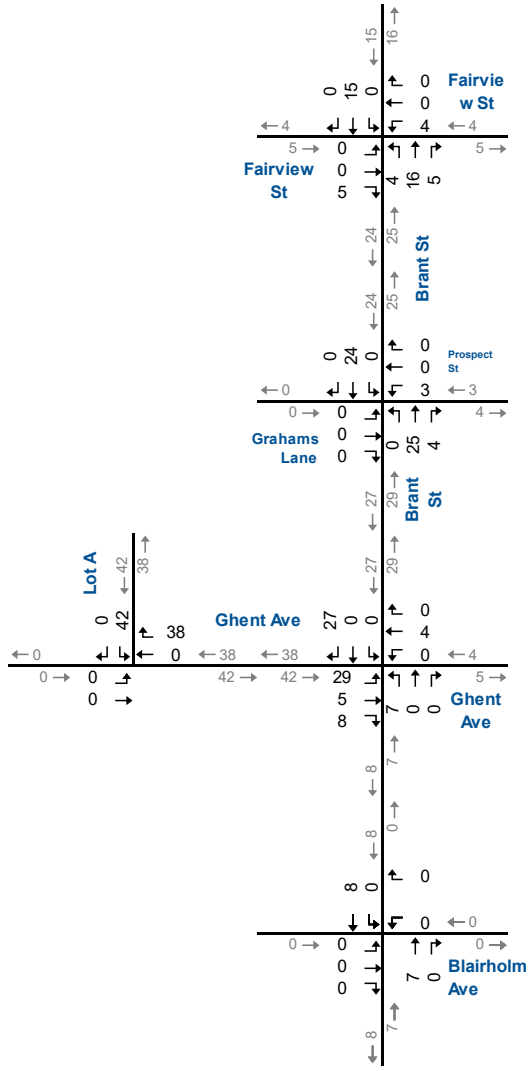
AM Peak Hour



PM Peak Hour



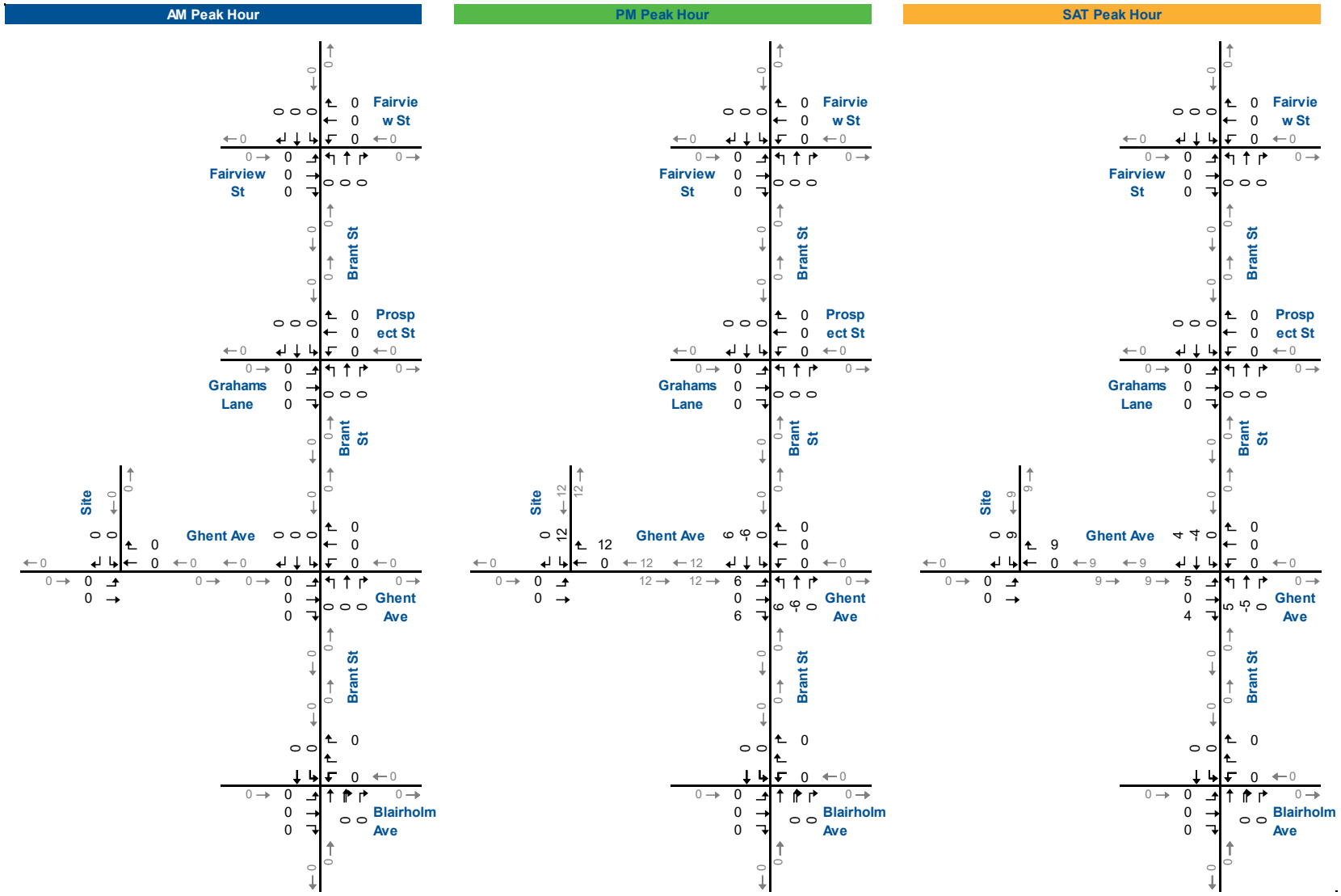
SAT Peak Hour



Phase 1 Site Generated Traffic Volumes

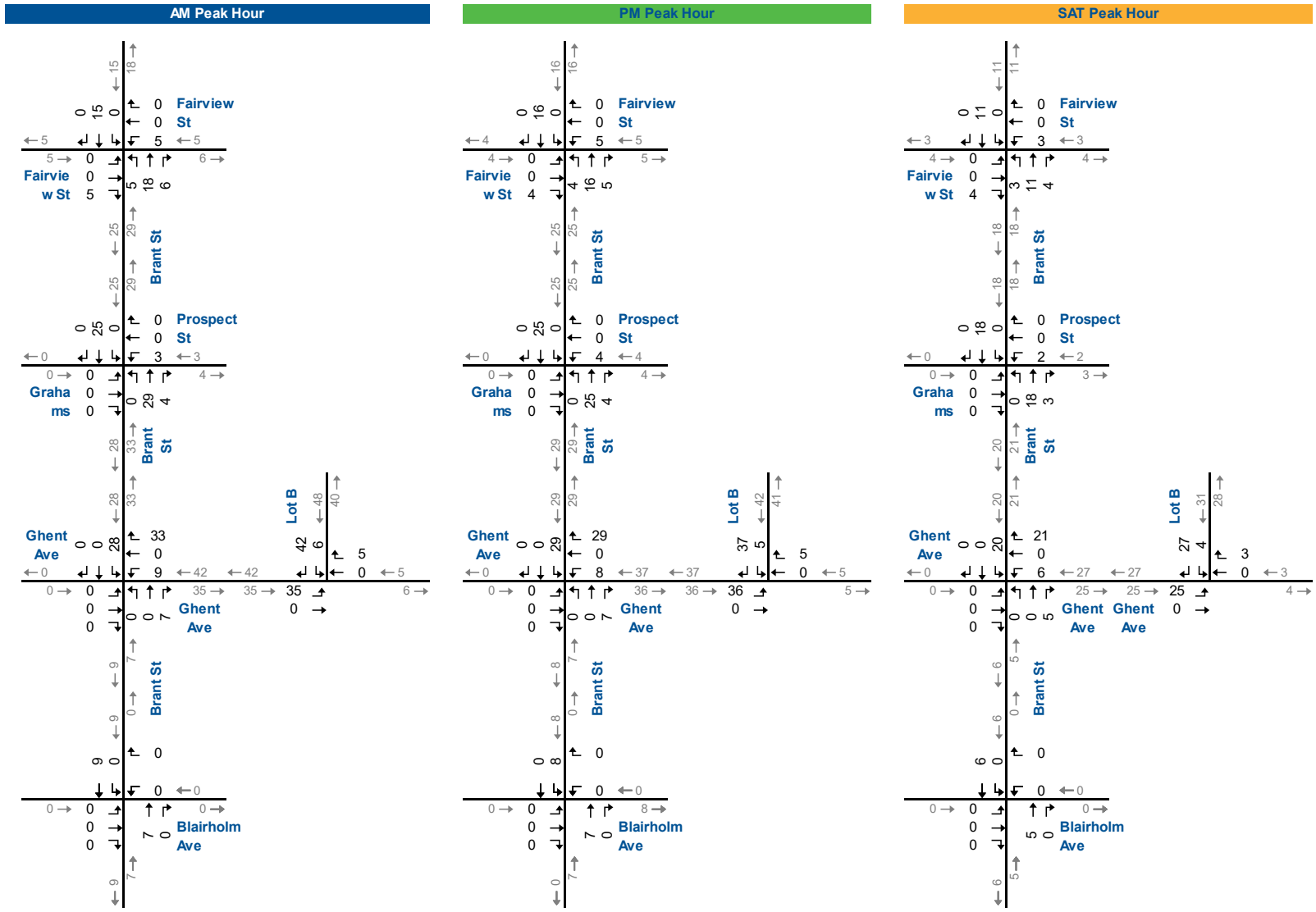
Brant St / Ghent Ave, Burlington TIS
200403

Figure 1A



Phase 1 Pass-By Traffic Volumes

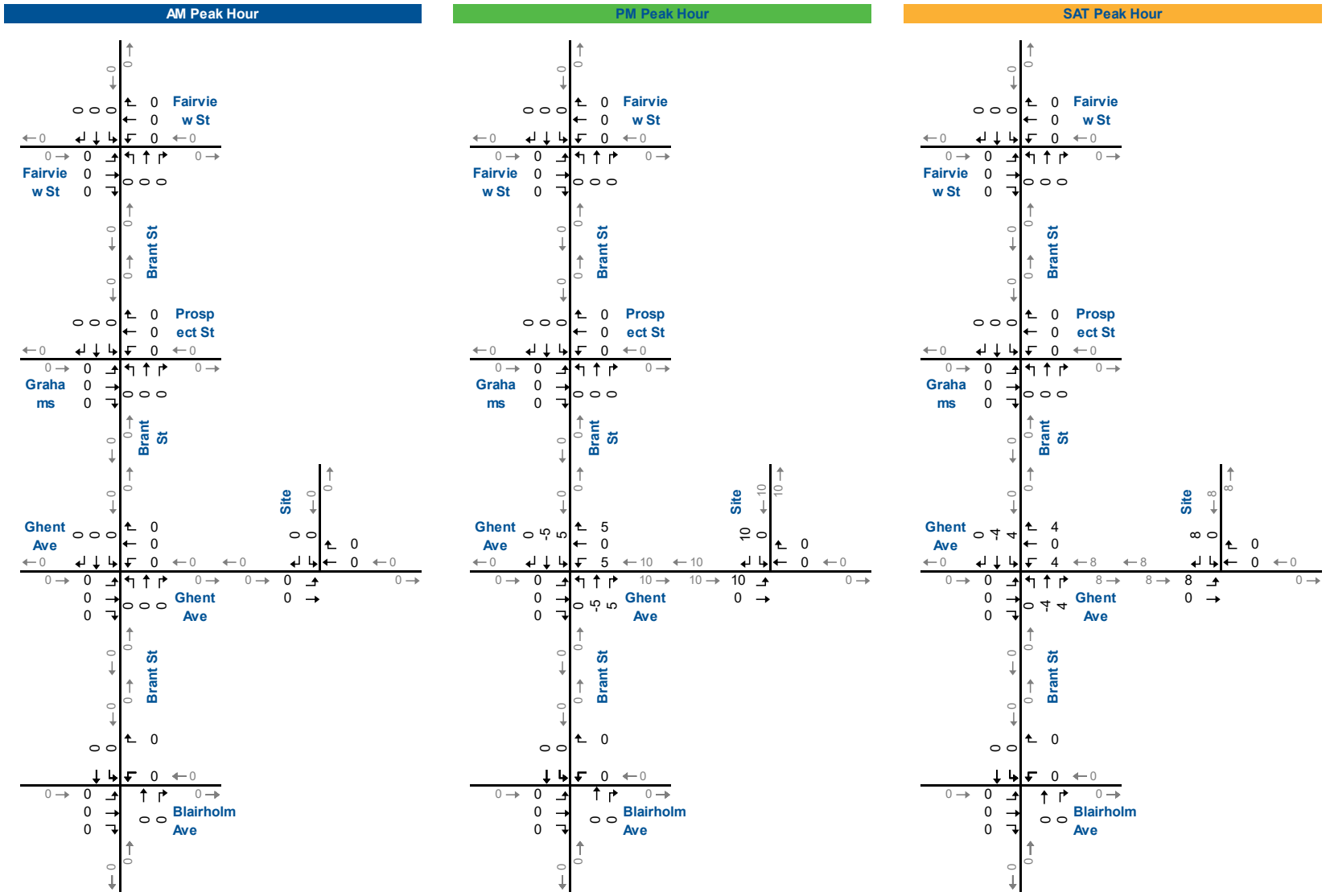
Figure 1B



Phase 2 Site Generated Traffic Volumes

Brant St / Ghent Ave, Burlington TIS
200403

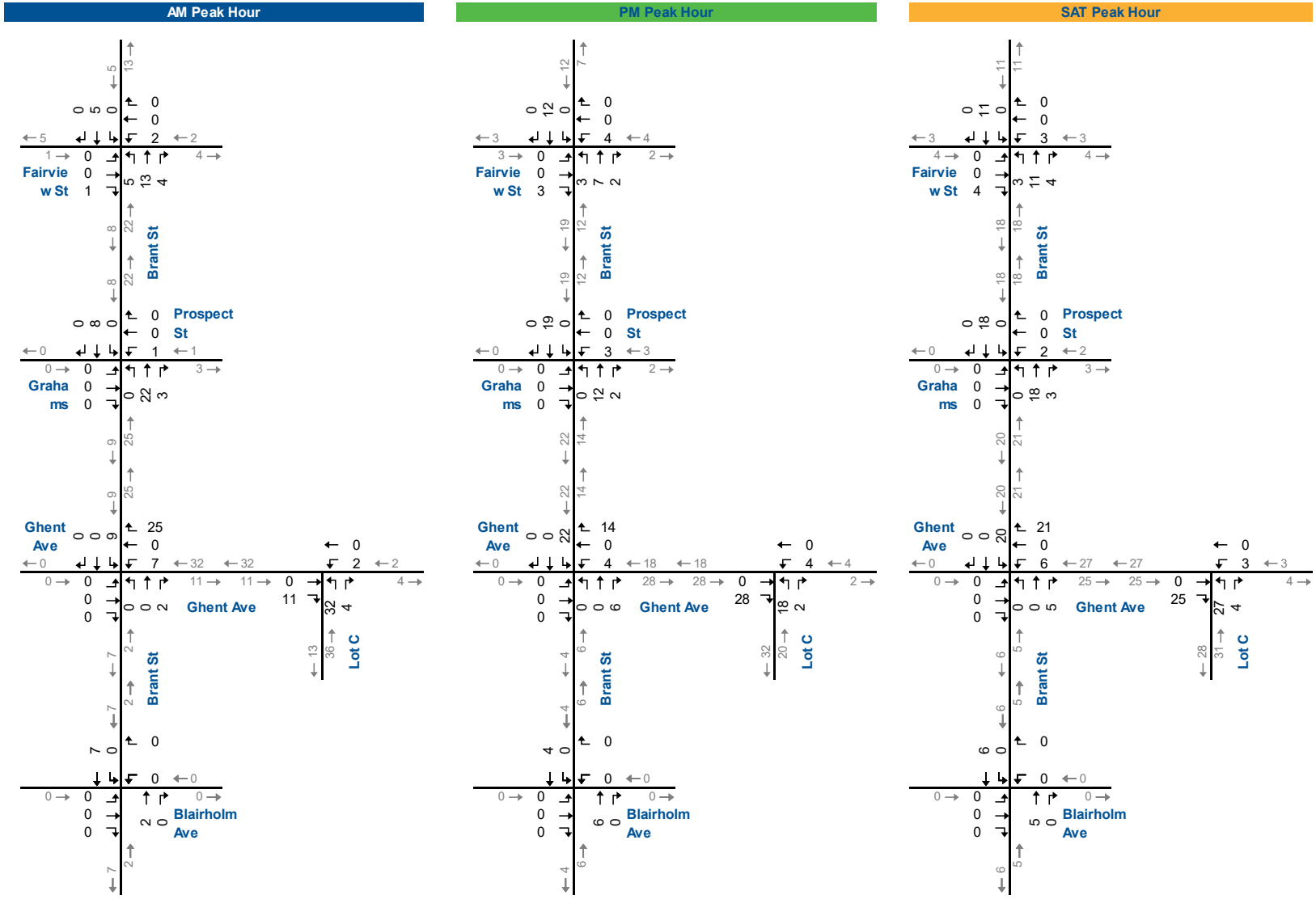
Figure 2A



Phase 2 Pass-By Traffic Volumes

Brant St / Ghent Ave, Burlington TIS
200403

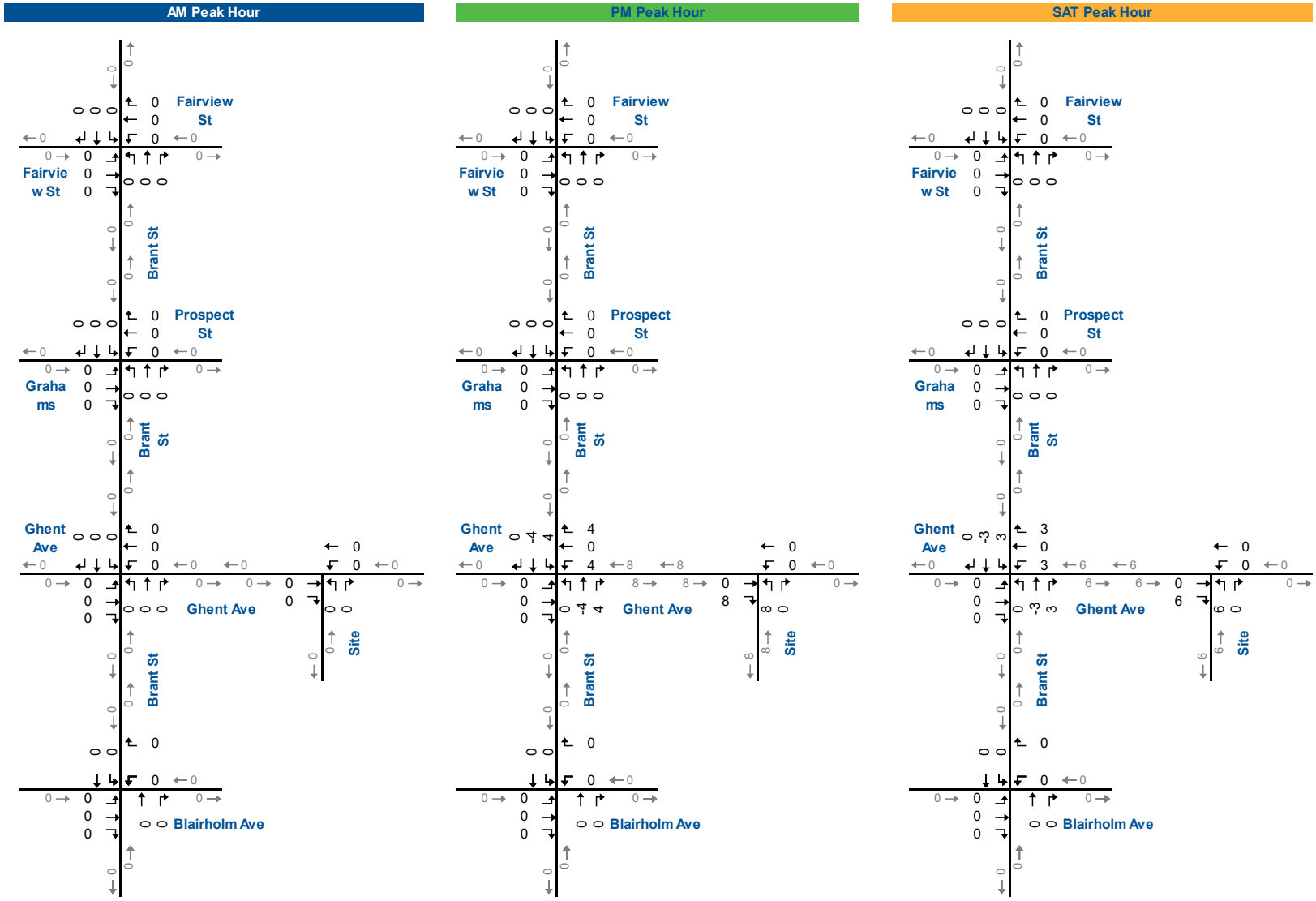
Figure 2B



Phase 3 Site Generated Traffic Volumes

Brant St / Ghent Ave, Burlington TIS
200403

Figure 3A



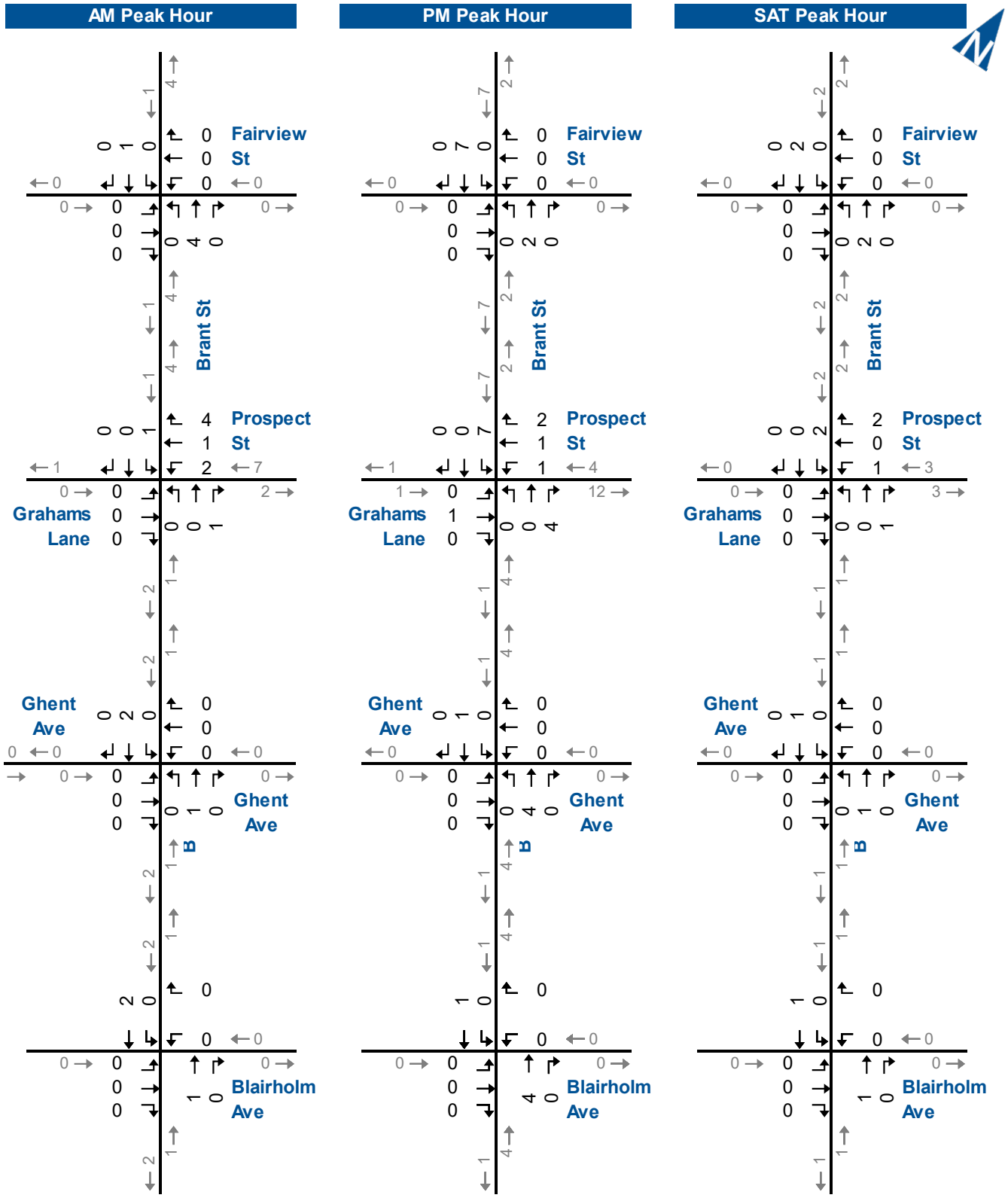
Phase 3 Pass-By Traffic Volumes

Brant St / Ghent Ave, Burlington TIS
200403

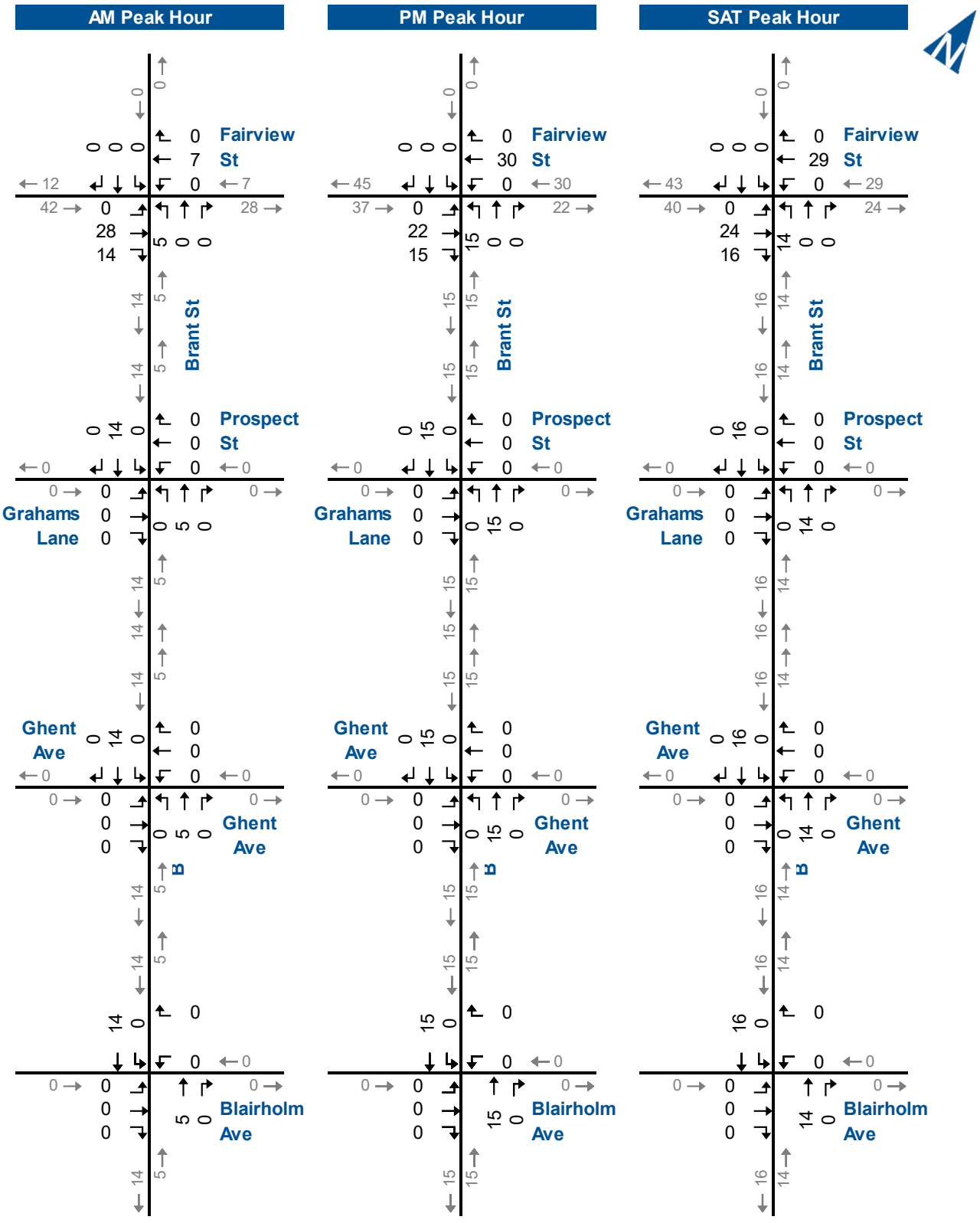
Figure 3B

Appendix G

Background Development Traffic Volumes



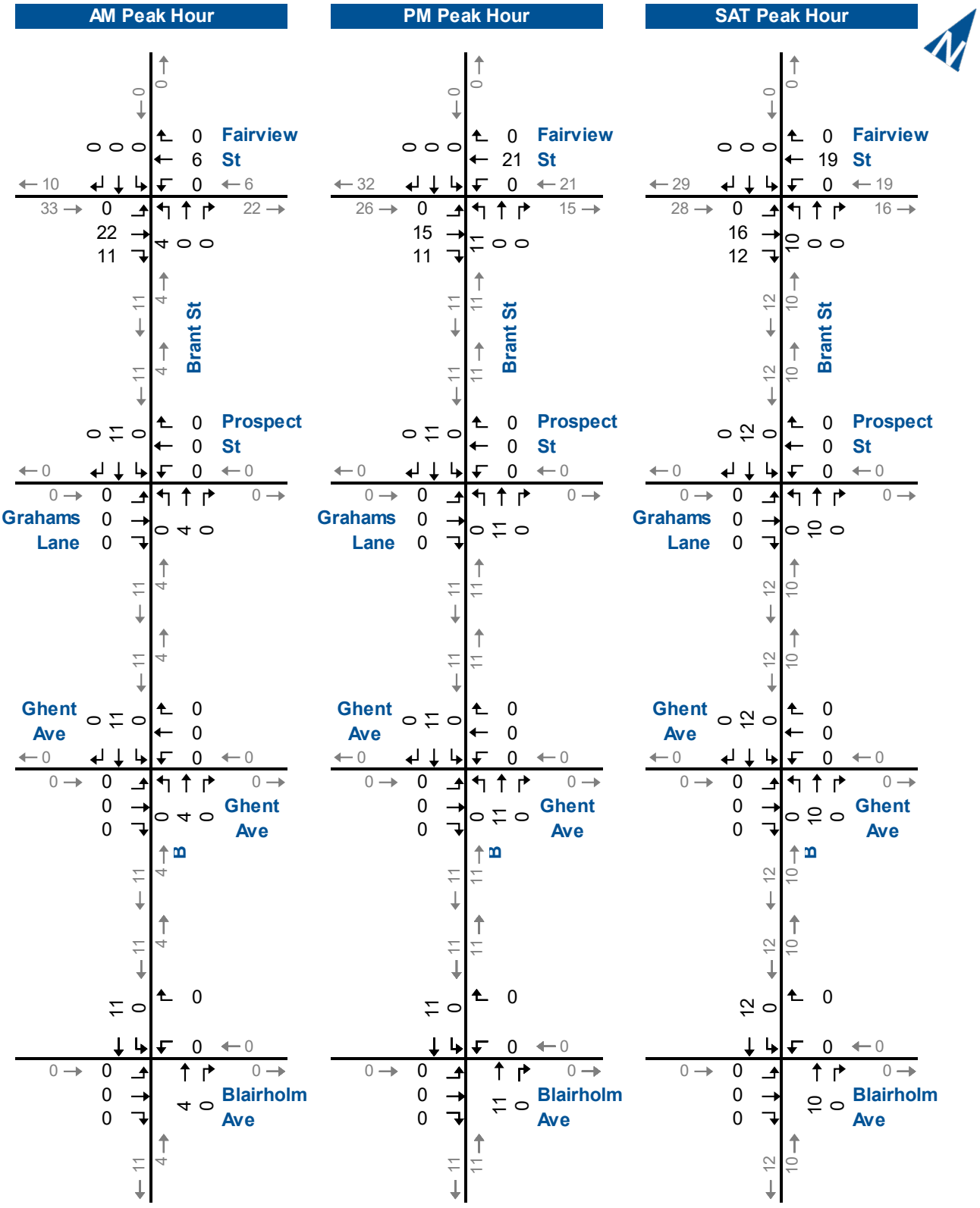
2095 Prospect Street Traffic Volumes



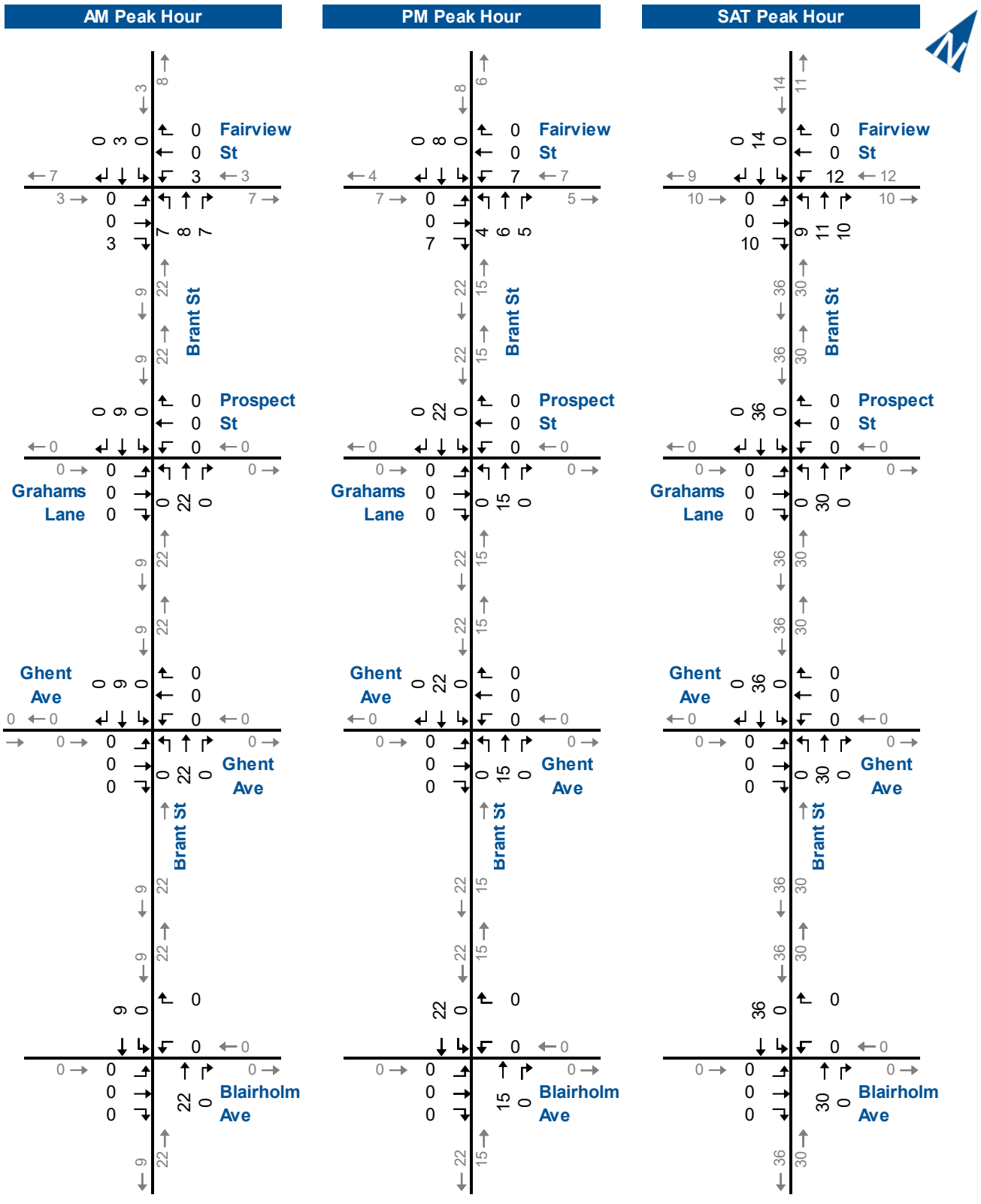
1134-1146 Plains Road East Phase 1 (2027) Traffic Volumes

Brant St / Ghent Ave, Burlington TIS
200403

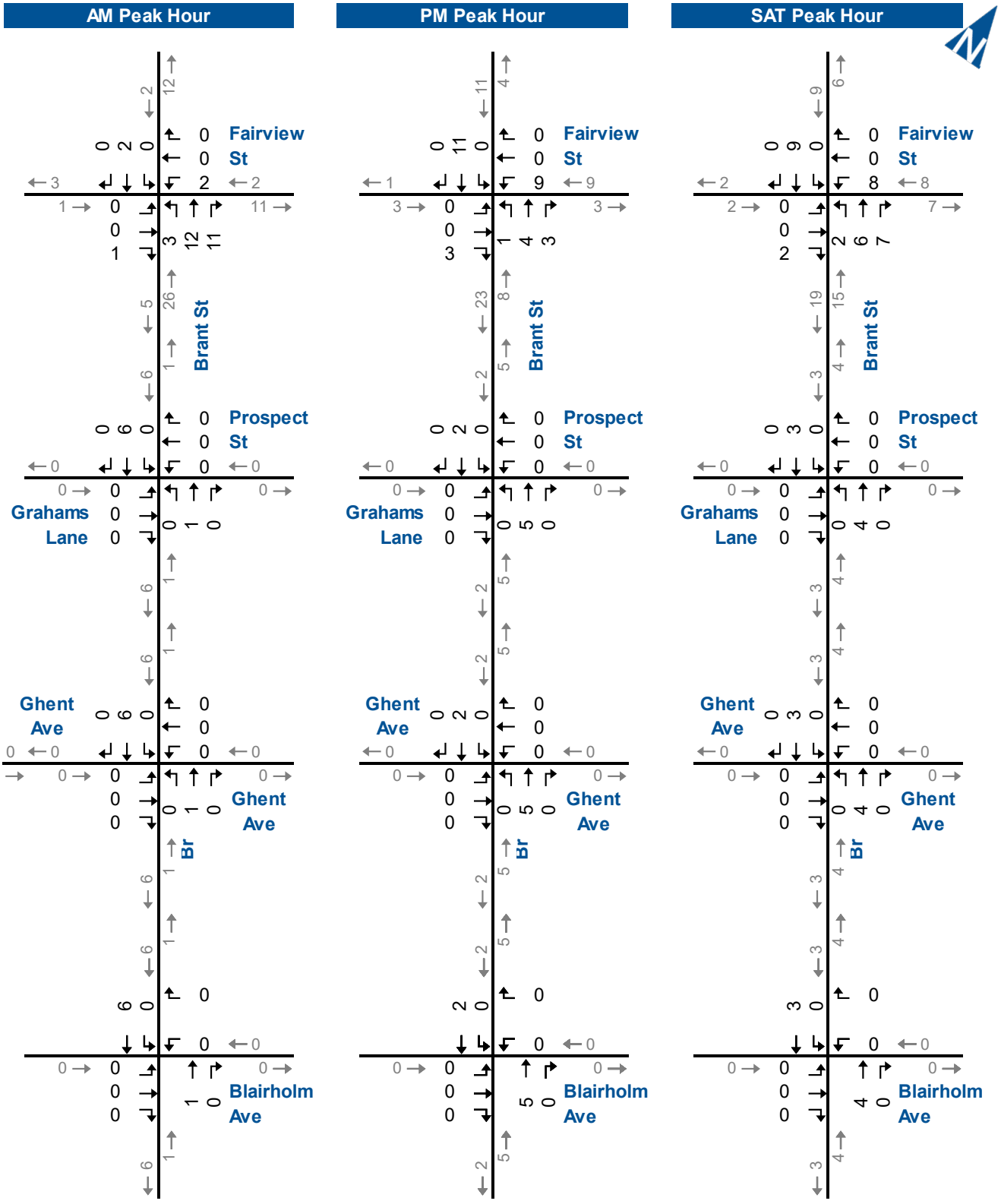
Figure B



1134-1146 Plains Road East Phase 2 (2029) Traffic Volumes



535-551 Brant Street Traffic Volumes



849-855 Brant Street Traffic Volumes

Brant St / Ghent Ave, Burlington TIS
200403

Figure E

Appendix H1

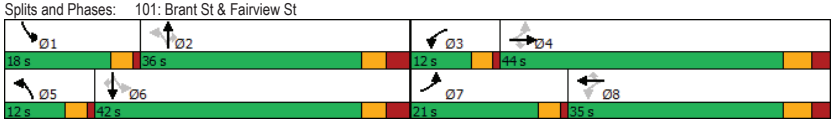
Background – Phase 1 Operations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	339	1115	276	125	351	153	196	629	276	231	704	151
Future Volume (vph)	339	1115	276	125	351	153	196	629	276	231	704	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.376			0.141			0.204			0.137		
Satd. Flow (perm)	700	3539	1583	263	3539	1583	380	3539	1583	255	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			260			193			192			164
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	368	1212	300	136	382	166	213	684	300	251	765	164
Shared Lane Traffic (%)												
Lane Group Flow (vph)	368	1212	300	136	382	166	213	684	300	251	765	164
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	21.0	44.0	44.0	12.0	35.0	35.0	12.0	36.0	36.0	18.0	42.0	42.0
Total Split (%)	19.1%	40.0%	40.0%	10.9%	31.8%	31.8%	10.9%	32.7%	32.7%	16.4%	38.2%	38.2%
Maximum Green (s)	17.0	37.6	37.6	8.0	28.6	28.6	8.0	29.5	29.5	14.0	35.5	35.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	51.0	39.1	39.1	38.6	30.8	30.8	36.0	28.0	28.0	45.1	33.3	33.3
Actuated g/C Ratio	0.49	0.37	0.37	0.37	0.30	0.30	0.34	0.27	0.27	0.43	0.32	0.32
v/c Ratio	0.73	0.91	0.40	0.65	0.37	0.28	0.89	0.72	0.53	0.83	0.68	0.27
Control Delay	28.0	43.4	6.5	34.6	31.3	4.0	61.4	39.7	15.5	45.7	34.2	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.0	43.4	6.5	34.6	31.3	4.0	61.4	39.7	15.5	45.7	34.2	5.1
LOS	C	D	A	C	C	A	E	D	B	D	C	A
Approach Delay		34.5			25.3			37.5			32.6	
Approach LOS		C			C			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 104.4			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 33.5		Intersection LOS: C	
Intersection Capacity Utilization 81.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	368	1212	300	136	382	166	213	684	300	251	765	164
v/c Ratio	0.73	0.91	0.40	0.65	0.37	0.28	0.89	0.72	0.53	0.83	0.68	0.27
Control Delay	28.0	43.4	6.5	34.6	31.3	4.0	61.4	39.7	15.5	45.7	34.2	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.0	43.4	6.5	34.6	31.3	4.0	61.4	39.7	15.5	45.7	34.2	5.1
Queue Length 50th (m)	51.5	133.3	5.6	16.3	35.4	0.0	29.1	71.4	18.5	35.1	75.3	0.0
Queue Length 95th (m)	79.2	#184.2	25.7	#37.9	50.7	11.0	#64.5	92.3	45.5	#77.0	96.4	14.5
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	517	1363	770	213	1057	608	238	1091	620	314	1295	683
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.89	0.39	0.64	0.36	0.27	0.89	0.63	0.48	0.80	0.59	0.24

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	339	1115	276	125	351	153	196	629	276	231	704	151
Future Volume (vph)	339	1115	276	125	351	153	196	629	276	231	704	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.38	1.00	1.00	0.14	1.00	1.00	0.20	1.00	1.00	0.14	1.00	1.00
Satd. Flow (perm)	700	3539	1583	262	3539	1583	380	3539	1583	256	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	368	1212	300	136	382	166	213	684	300	251	765	164
RTOR Reduction (vph)	0	0	162	0	0	117	0	0	141	0	0	112
Lane Group Flow (vph)	368	1212	138	136	382	49	213	684	159	251	765	52
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	48.6	36.8	36.8	36.2	28.4	28.4	33.4	25.4	25.4	42.8	30.8	30.8
Effective Green, g (s)	48.6	39.2	39.2	36.2	30.8	30.8	33.4	27.9	27.9	42.8	33.3	33.3
Actuated g/C Ratio	0.47	0.38	0.38	0.35	0.30	0.30	0.32	0.27	0.27	0.41	0.32	0.32
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	492	1330	594	203	1045	467	228	946	423	299	1129	505
v/s Ratio Prot	c0.12	c0.34		0.05	0.11		0.07	0.19		c0.11	0.22	
v/s Ratio Perm	0.23		0.09	0.18		0.03	c0.23		0.10	0.24		0.03
v/c Ratio	0.75	0.91	0.23	0.67	0.37	0.10	0.93	0.72	0.38	0.84	0.68	0.10
Uniform Delay, d1	19.4	30.9	22.3	27.0	29.0	26.7	30.4	34.7	31.1	23.8	30.8	25.0
Progression 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
Incremental Delay, d2	6.1	9.6	0.2	8.1	0.2	0.1	41.5	2.8	0.6	18.3	1.6	0.1
Delay (s)	25.6	40.5	22.5	35.1	29.2	26.8	71.9	37.5	31.7	42.1	32.5	25.1
Level of Service	C	D	C	D	C	C	E	D	C	D	C	C
Approach Delay (s)		34.7			29.8			42.1			33.5	
Approach LOS		C			C			D			C	

Intersection Summary				
HCM 2000 Control Delay	35.5	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.88			
Actuated Cycle Length (s)	104.3	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	81.4%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	10	16	58	9	82	26	821	43	90	929	87
Future Volume (vph)	33	10	16	58	9	82	26	821	43	90	929	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.909			0.865			0.992			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1693	0	1770	1611	0	1770	3511	0	1770	3493	0
Flt Permitted	0.693			0.739			0.202			0.259		
Satd. Flow (perm)	1291	1693	0	1377	1611	0	376	3511	0	482	3493	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17			89			10			18	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	36	11	17	63	10	89	28	892	47	98	1010	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	28	0	63	99	0	28	939	0	98	1105	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	13.2	13.2		13.2	13.2		40.6	40.6		50.7	40.6	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.64	0.64		0.80	0.64	
v/c Ratio	0.13	0.08		0.22	0.24		0.12	0.41		0.16	0.49	
Control Delay	27.5	17.3		28.5	10.2		9.0	8.9		2.9	9.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	27.5	17.3		28.5	10.2		9.0	8.9		2.9	9.6	
LOS	C	B		C	B		A	A		A	A	
Approach Delay		23.1			17.3			8.9			9.0	
Approach LOS		C			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 63			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 9.9		Intersection LOS: A	
Intersection Capacity Utilization 55.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Queues
102: Brant St & Grahams Ln/Prospect St

Background - Phase 1
AM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	36	28	63	99	28	939	98	1105
v/c Ratio	0.13	0.08	0.22	0.24	0.12	0.41	0.16	0.49
Control Delay	27.5	17.3	28.5	10.2	9.0	8.9	2.9	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.5	17.3	28.5	10.2	9.0	8.9	2.9	9.6
Queue Length 50th (m)	3.8	1.1	6.7	1.0	1.5	33.7	2.2	42.3
Queue Length 95th (m)	13.7	8.7	20.9	14.5	6.1	56.2	6.4	69.6
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	424	568	452	590	300	2802	655	2789
Starvation Cap Reductn	0	0	0	0	0	284	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.05	0.14	0.17	0.09	0.37	0.15	0.40

Intersection Summary

HCM Signalized Intersection Capacity Analysis
102: Brant St & Grahams Ln/Prospect St

Background - Phase 1
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	10	16	58	9	82	26	821	43	90	929	87
Future Volume (vph)	33	10	16	58	9	82	26	821	43	90	929	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.87		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1693		1770	1612		1770	3513		1770	3494	
Flt Permitted	0.69	1.00		0.74	1.00		0.20	1.00		0.26	1.00	
Satd. Flow (perm)	1291	1693		1377	1612		377	3513		482	3494	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	36	11	17	63	10	89	28	892	47	98	1010	95
RTOR Reduction (vph)	0	14	0	0	75	0	0	4	0	0	7	0
Lane Group Flow (vph)	36	14	0	63	24	0	28	935	0	98	1098	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	7.1	7.1		7.1	7.1		35.9	35.9		40.8	35.9	
Effective Green, g (s)	10.1	10.1		10.1	10.1		38.9	38.9		46.8	38.9	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.60	0.60		0.72	0.60	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	200	263		214	250		225	2105		504	2094	
v/s Ratio Prot		0.01			0.01			0.27		c0.02	c0.31	
v/s Ratio Perm	0.03			c0.05			0.07			0.12		
v/c Ratio	0.18	0.05		0.29	0.10		0.12	0.44		0.19	0.52	
Uniform Delay, d1	23.8	23.3		24.2	23.5		5.6	7.1		3.0	7.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.1		0.8	0.2		0.2	0.2		0.2	0.2	
Delay (s)	24.2	23.4		25.0	23.7		5.9	7.2		3.2	7.8	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		23.9			24.2			7.2			7.5	
Approach LOS		C			C			A			A	

Intersection Summary					
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.43				
Actuated Cycle Length (s)	64.9	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	55.0%	ICU Level of Service		A	
Analysis Period (min)	15				

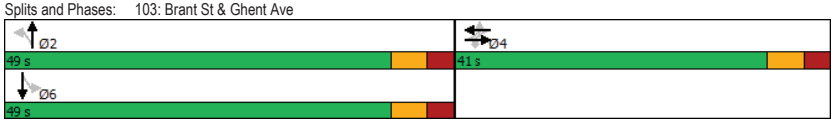
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	25	21	24	10	28	12	718	31	33	856	120
Future Volume (vph)	140	25	21	24	10	28	12	718	31	33	856	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.940			0.994			0.982	
Flt Protected		0.959			0.981		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1718	0	1770	3518	0	1770	3476	0
Flt Permitted		0.712			0.850		0.203			0.300		
Satd. Flow (perm)	0	1326	1583	0	1488	0	378	3518	0	559	3476	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		30			7			24	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.5			333.4			75.4			150.5	
Travel Time (s)		17.5			24.0			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	27	23	26	11	30	13	780	34	36	930	130
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	179	23	0	67	0	13	814	0	36	1060	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		16.4	16.4		16.4		27.9	27.9		27.9	27.9	
Actuated g/C Ratio		0.31	0.31		0.31		0.53	0.53		0.53	0.53	
v/c Ratio		0.43	0.04		0.14		0.07	0.43		0.12	0.57	
Control Delay		18.2	2.3		9.5		8.3	8.8		8.7	10.1	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		18.2	2.3		9.5		8.3	8.8		8.7	10.1	
LOS		B	A		A		A	A		A	B	
Approach Delay		16.4			9.5			8.8			10.0	
Approach LOS		B			A			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 52.5			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 10.1		Intersection LOS: B	
Intersection Capacity Utilization 50.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	179	23	67	13	814	36	1060
v/c Ratio	0.43	0.04	0.14	0.07	0.43	0.12	0.57
Control Delay	18.2	2.3	9.5	8.3	8.8	8.7	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.2	2.3	9.5	8.3	8.8	8.7	10.1
Queue Length 50th (m)	11.8	0.0	2.2	0.5	21.4	1.5	30.2
Queue Length 95th (m)	33.1	2.1	10.8	3.3	44.4	6.8	62.0
Internal Link Dist (m)	218.5		309.4		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	958	1157	1083	326	3044	483	3010
Starvation Cap Reductn	0	0	0	0	0	0	45
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.02	0.06	0.04	0.27	0.07	0.36

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	25	21	24	10	28	12	718	31	33	856	120
Future Volume (vph)	140	25	21	24	10	28	12	718	31	33	856	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.94		1.00	0.99		1.00	0.98	
Flt Protected		0.96	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1787	1583		1717		1770	3517		1770	3474	
Flt Permitted		0.71	1.00		0.85		0.20	1.00		0.30	1.00	
Satd. Flow (perm)		1326	1583		1488		378	3517		559	3474	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	27	23	26	11	30	13	780	34	36	930	130
RTOR Reduction (vph)	0	0	16	0	21	0	0	3	0	0	11	0
Lane Group Flow (vph)	0	179	7	0	46	0	13	811	0	36	1049	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		13.3	13.3		13.3		24.8	24.8		24.8	24.8	
Effective Green, g (s)		16.3	16.3		16.3		27.8	27.8		27.8	27.8	
Actuated g/C Ratio		0.31	0.31		0.31		0.53	0.53		0.53	0.53	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		414	495		465		201	1876		298	1853	
v/s Ratio Prot								0.23			c0.30	
v/s Ratio Perm		c0.14	0.00		0.03		0.03			0.06		
v/c Ratio		0.43	0.01		0.10		0.06	0.43		0.12	0.57	
Uniform Delay, d1		14.2	12.4		12.7		5.9	7.4		6.1	8.1	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.7	0.0		0.1		0.1	0.2		0.2	0.4	
Delay (s)		15.0	12.4		12.8		6.0	7.5		6.2	8.5	
Level of Service		B	B		B		A	A		A	A	
Approach Delay (s)		14.7			12.8			7.5			8.4	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	8.8	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	52.1	Sum of lost time (s)		8.0
Intersection Capacity Utilization	50.8%	ICU Level of Service		A
Analysis Period (min)	15			

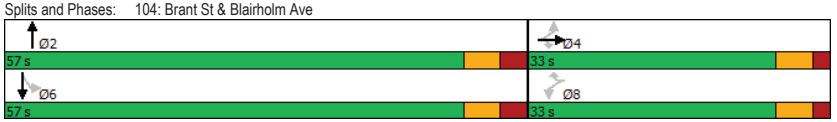
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	4	8	40	0	110	0	625	16	46	764	0
Future Volume (vph)	16	4	8	40	0	110	0	625	16	46	764	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.996				
Flt Protected		0.961		0.950						0.950		
Satd. Flow (prot)	0	1790	1583	1770	0	1583	0	3525	0	1770	1863	0
Flt Permitted		0.961		0.744						0.385		
Satd. Flow (perm)	0	1790	1583	1386	0	1583	0	3525	0	717	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			120		5				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		34.6			305.8			317.1			241.2	
Travel Time (s)		2.5			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	4	9	43	0	120	0	679	17	50	830	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	21	9	43	0	120	0	696	0	50	830	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		8.9	8.9	11.0		11.0		35.8		35.8	35.8	
Actuated g/C Ratio		0.18	0.18	0.22		0.22		0.72		0.72	0.72	
v/c Ratio		0.07	0.03	0.14		0.27		0.27		0.10	0.62	
Control Delay		21.6	0.1	20.8		7.1		4.0		4.0	8.0	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		21.6	0.1	20.8		7.1		4.0		4.0	8.0	
LOS		C	A	C		A		A		A	A	
Approach Delay		15.2			10.7			4.0			7.7	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 49.7			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 6.7		Intersection LOS: A	
Intersection Capacity Utilization 61.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Queues
104: Brant St & Blairholm Ave

Background - Phase 1
AM Peak Hour

Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	21	9	43	120	696	50	830
v/c Ratio	0.07	0.03	0.14	0.27	0.27	0.10	0.62
Control Delay	21.6	0.1	20.8	7.1	4.0	4.0	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.6	0.1	20.8	7.1	4.0	4.0	8.0
Queue Length 50th (m)	1.5	0.0	3.0	0.0	12.1	1.5	40.1
Queue Length 95th (m)	8.0	0.0	12.8	12.3	20.4	4.7	78.7
Internal Link Dist (m)	10.6				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	1025	927	853	1020	3385	688	1789
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.05	0.12	0.21	0.07	0.46

Intersection Summary

HCM Signalized Intersection Capacity Analysis
104: Brant St & Blairholm Ave

Background - Phase 1
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	4	8	40	0	110	0	625	16	46	764	0
Future Volume (vph)	16	4	8	40	0	110	0	625	16	46	764	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.96	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1790	1583	1770		1583		3526		1770	1863	
Flt Permitted		0.96	1.00	0.74		1.00		1.00		0.38	1.00	
Satd. Flow (perm)		1790	1583	1385		1583		3526		717	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	4	9	43	0	120	0	679	17	50	830	0
RTOR Reduction (vph)	0	0	8	0	0	100	0	2	0	0	0	0
Lane Group Flow (vph)	0	21	1	43	0	20	0	694	0	50	830	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		6.4	6.4	6.4		6.4		31.4		31.4	31.4	
Effective Green, g (s)		6.4	6.4	8.4		8.4		34.4		34.4	34.4	
Actuated g/C Ratio		0.13	0.13	0.17		0.17		0.68		0.68	0.68	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		225	199	229		261		2387		485	1261	
v/s Ratio Prot								0.20			c0.45	
v/s Ratio Perm		0.01	0.00	c0.03		0.01				0.07		
v/c Ratio		0.09	0.01	0.19		0.08		0.29		0.10	0.66	
Uniform Delay, d1		19.6	19.4	18.3		17.9		3.3		2.8	4.8	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.2	0.0	0.4		0.1		0.1		0.1	1.3	
Delay (s)		19.8	19.4	18.7		18.0		3.4		2.9	6.0	
Level of Service		B	B	B		B		A		A	A	
Approach Delay (s)		19.7			18.2			3.4			5.9	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	6.2	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	50.8	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	61.9%	ICU Level of Service	B	
Analysis Period (min)	15			

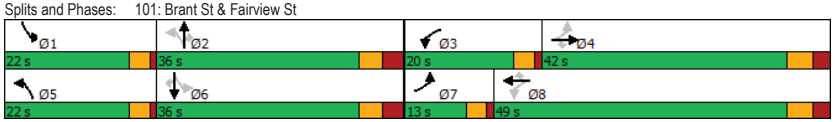
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	213	822	301	220	1525	441	181	796	191	235	663	435
Future Volume (vph)	213	822	301	220	1525	441	181	796	191	235	663	435
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.108			0.105			0.169			0.127		
Satd. Flow (perm)	201	3539	1583	196	3539	1583	315	3539	1583	237	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			327			290			140			233
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	232	893	327	239	1658	479	197	865	208	255	721	473
Shared Lane Traffic (%)												
Lane Group Flow (vph)	232	893	327	239	1658	479	197	865	208	255	721	473
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	13.0	42.0	42.0	20.0	49.0	49.0	22.0	36.0	36.0	22.0	36.0	36.0
Total Split (%)	10.8%	35.0%	35.0%	16.7%	40.8%	40.8%	18.3%	30.0%	30.0%	18.3%	30.0%	30.0%
Maximum Green (s)	9.0	35.6	35.6	16.0	42.6	42.6	18.0	29.5	29.5	18.0	29.5	29.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	48.6	39.6	39.6	57.6	45.0	45.0	45.6	31.8	31.8	50.1	34.0	34.0
Actuated g/C Ratio	0.41	0.34	0.34	0.49	0.38	0.38	0.39	0.27	0.27	0.42	0.29	0.29
v/c Ratio	1.15	0.75	0.44	0.83	1.23	0.61	0.67	0.91	0.39	0.83	0.71	0.76
Control Delay	137.6	40.4	5.2	49.5	141.9	14.9	33.8	56.2	14.8	49.6	42.5	28.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	137.6	40.4	5.2	49.5	141.9	14.9	33.8	56.2	14.8	49.6	42.5	28.3
LOS	F	D	A	D	F	B	C	E	B	D	D	C
Approach Delay		48.0			107.0			45.9			39.1	
Approach LOS		D			F			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 117.9			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.23			
Intersection Signal Delay: 67.0		Intersection LOS: E	
Intersection Capacity Utilization 102.3%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Queues
101: Brant St & Fairview St

Background - Phase 1
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	232	893	327	239	1658	479	197	865	208	255	721	473
v/c Ratio	1.15	0.75	0.44	0.83	1.23	0.61	0.67	0.91	0.39	0.83	0.71	0.76
Control Delay	137.6	40.4	5.2	49.5	141.9	14.9	33.8	56.2	14.8	49.6	42.5	28.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	137.6	40.4	5.2	49.5	141.9	14.9	33.8	56.2	14.8	49.6	42.5	28.3
Queue Length 50th (m)	~52.1	105.7	0.0	38.9	~268.7	35.9	29.6	109.4	12.9	41.5	82.4	54.9
Queue Length 95th (m)	#104.8	132.0	20.8	#78.8	#314.7	72.9	47.4	#148.0	34.7	#83.8	110.1	#107.5
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	202	1187	748	310	1352	783	354	961	531	335	1020	622
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.15	0.75	0.44	0.77	1.23	0.61	0.56	0.90	0.39	0.76	0.71	0.76

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
101: Brant St & Fairview St

Background - Phase 1
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	213	822	301	220	1525	441	181	796	191	235	663	435
Future Volume (vph)	213	822	301	220	1525	441	181	796	191	235	663	435
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.11	1.00	1.00	0.10	1.00	1.00	0.17	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	200	3539	1583	195	3539	1583	315	3539	1583	237	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	232	893	327	239	1658	479	197	865	208	255	721	473
RTOR Reduction (vph)	0	0	217	0	0	179	0	0	102	0	0	166
Lane Group Flow (vph)	232	893	110	239	1658	300	197	865	106	255	721	307
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	46.2	37.2	37.2	55.7	42.7	42.7	43.0	29.2	29.2	47.6	31.5	31.5
Effective Green, g (s)	46.2	39.6	39.6	55.7	45.1	45.1	43.0	31.7	31.7	47.6	34.0	34.0
Actuated g/C Ratio	0.39	0.34	0.34	0.47	0.38	0.38	0.36	0.27	0.27	0.40	0.29	0.29
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	198	1188	531	285	1353	605	285	951	425	305	1020	456
v/s Ratio Prot	c0.09	0.25		0.10	c0.47		0.08	c0.24		c0.11	0.20	
v/s Ratio Perm	0.37		0.07	0.29		0.19	0.17		0.07	0.22		0.19
v/c Ratio	1.17	0.75	0.21	0.84	1.23	0.50	0.69	0.91	0.25	0.84	0.71	0.67
Uniform Delay, d1	29.9	34.8	27.9	28.9	36.4	27.7	28.3	41.7	33.8	29.8	37.5	37.1
Progression 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
Incremental Delay, d2	117.9	2.7	0.2	18.9	108.2	0.6	7.1	12.3	0.3	17.7	2.3	3.9
Delay (s)	147.8	37.5	28.1	47.9	144.6	28.4	35.4	54.0	34.1	47.5	39.8	41.0
Level of Service	F	D	C	D	F	C	D	D	C	D	D	D
Approach Delay (s)		53.0			111.5			47.8			41.5	
Approach LOS		D			F			D			D	

Intersection Summary				
HCM 2000 Control Delay	70.7	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.06			
Actuated Cycle Length (s)	117.9	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	102.3%	ICU Level of Service	G	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	20	43	107	12	179	15	1088	62	116	1027	60
Future Volume (vph)	123	20	43	107	12	179	15	1088	62	116	1027	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.898			0.859			0.992			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1673	0	1770	1600	0	1770	3511	0	1770	3511	0
Flt Permitted	0.489			0.712			0.162			0.143		
Satd. Flow (perm)	911	1673	0	1326	1600	0	302	3511	0	266	3511	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		47			195			10			11	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	134	22	47	116	13	195	16	1183	67	126	1116	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	134	69	0	116	208	0	16	1250	0	126	1181	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	17.9	17.9		17.9	17.9		44.2	44.2		56.1	44.2	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.57	0.57		0.72	0.57	
v/c Ratio	0.64	0.17		0.38	0.40		0.09	0.63		0.32	0.59	
Control Delay	47.8	14.4		33.6	8.4		10.5	13.7		5.5	13.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.3		0.0	0.0	
Total Delay	47.8	14.4		33.6	8.4		10.5	14.0		5.5	13.1	
LOS	D	B		C	A		B	B		A	B	
Approach Delay		36.4			17.5			13.9			12.4	
Approach LOS		D			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 78.2			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 15.1		Intersection LOS: B	
Intersection Capacity Utilization 70.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	134	69	116	208	16	1250	126	1181
v/c Ratio	0.64	0.17	0.38	0.40	0.09	0.63	0.32	0.59
Control Delay	47.8	14.4	33.6	8.4	10.5	13.7	5.5	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	47.8	14.4	33.6	8.4	10.5	14.0	5.5	13.1
Queue Length 50th (m)	21.0	3.0	17.0	1.8	1.2	70.2	5.1	64.2
Queue Length 95th (m)	#50.9	14.2	34.9	19.9	4.6	94.4	9.5	86.7
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	231	459	336	551	205	2396	432	2396
Starvation Cap Reductn	0	0	0	0	0	450	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.15	0.35	0.38	0.08	0.64	0.29	0.49

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	20	43	107	12	179	15	1088	62	116	1027	60
Future Volume (vph)	123	20	43	107	12	179	15	1088	62	116	1027	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1672		1770	1601		1770	3511		1770	3510	
Flt Permitted	0.49	1.00		0.71	1.00		0.16	1.00		0.14	1.00	
Satd. Flow (perm)	912	1672		1326	1601		302	3511		266	3510	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	134	22	47	116	13	195	16	1183	67	126	1116	65
RTOR Reduction (vph)	0	36	0	0	151	0	0	4	0	0	5	0
Lane Group Flow (vph)	134	33	0	116	57	0	16	1246	0	126	1176	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	14.8	14.8		14.8	14.8		41.0	41.0		46.6	41.0	
Effective Green, g (s)	17.8	17.8		17.8	17.8		44.0	44.0		52.6	44.0	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.56	0.56		0.67	0.56	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	207	379		301	363		169	1970		343	1969	
v/s Ratio Prot		0.02			0.04			c0.35		c0.04	0.34	
v/s Ratio Perm	c0.15			0.09			0.05			0.21		
v/c Ratio	0.65	0.09		0.39	0.16		0.09	0.63		0.37	0.60	
Uniform Delay, d1	27.5	23.9		25.7	24.3		8.0	11.7		6.9	11.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.8	0.1		0.8	0.2		0.2	0.7		0.7	0.5	
Delay (s)	34.3	24.0		26.5	24.5		8.2	12.4		7.5	11.8	
Level of Service	C	C		C	C		A	B		A	B	
Approach Delay (s)		30.8			25.2			12.3			11.4	
Approach LOS		C			C			B			B	

Intersection Summary					
HCM 2000 Control Delay	14.5	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.59				
Actuated Cycle Length (s)	78.4	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	70.3%	ICU Level of Service		C	
Analysis Period (min)	15				

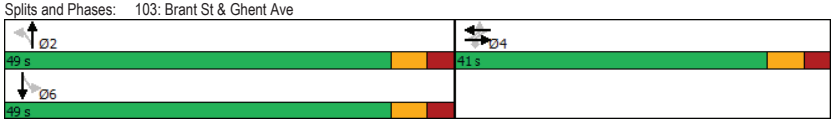
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	27	15	27	58	43	12	974	24	35	921	193
Future Volume (vph)	151	27	15	27	58	43	12	974	24	35	921	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.954			0.996			0.974	
Flt Protected		0.959			0.990		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1759	0	1770	3525	0	1770	3447	0
Flt Permitted		0.702			0.909		0.154			0.193		
Satd. Flow (perm)	0	1308	1583	0	1615	0	287	3525	0	360	3447	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		35			4			39	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.5			333.4			75.4			150.5	
Travel Time (s)		17.5			24.0			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	164	29	16	29	63	47	13	1059	26	38	1001	210
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	193	16	0	139	0	13	1085	0	38	1211	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		18.3	18.3		18.3		30.8	30.8		30.8	30.8	
Actuated g/C Ratio		0.32	0.32		0.32		0.54	0.54		0.54	0.54	
v/c Ratio		0.46	0.03		0.26		0.08	0.57		0.20	0.65	
Control Delay		21.1	0.6		13.8		9.4	10.8		11.3	11.6	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		21.1	0.6		13.8		9.4	10.8		11.3	11.6	
LOS		C	A		B		A	B		B	B	
Approach Delay		19.5			13.8			10.8			11.6	
Approach LOS		B			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 57.5			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 12.0		Intersection LOS: B	
Intersection Capacity Utilization 55.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	193	16	139	13	1085	38	1211
v/c Ratio	0.46	0.03	0.26	0.08	0.57	0.20	0.65
Control Delay	21.1	0.6	13.8	9.4	10.8	11.3	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.1	0.6	13.8	9.4	10.8	11.3	11.6
Queue Length 50th (m)	15.4	0.0	7.5	0.6	36.2	1.9	41.5
Queue Length 95th (m)	41.9	0.6	24.5	3.8	71.0	8.4	82.1
Internal Link Dist (m)	218.5		309.4		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	882	1083	1100	233	2869	293	2812
Starvation Cap Reductn	0	0	0	0	0	0	102
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.01	0.13	0.06	0.38	0.13	0.45

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	27	15	27	58	43	12	974	24	35	921	193
Future Volume (vph)	151	27	15	27	58	43	12	974	24	35	921	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.95		1.00	1.00		1.00	0.97	
Flt Protected		0.96	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1787	1583		1759		1770	3526		1770	3447	
Flt Permitted		0.70	1.00		0.91		0.15	1.00		0.19	1.00	
Satd. Flow (perm)		1308	1583		1616		286	3526		359	3447	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	164	29	16	29	63	47	13	1059	26	38	1001	210
RTOR Reduction (vph)	0	0	11	0	24	0	0	2	0	0	18	0
Lane Group Flow (vph)	0	193	5	0	115	0	13	1083	0	38	1193	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		15.2	15.2		15.2		27.6	27.6		27.6	27.6	
Effective Green, g (s)		18.2	18.2		18.2		30.6	30.6		30.6	30.6	
Actuated g/C Ratio		0.32	0.32		0.32		0.54	0.54		0.54	0.54	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		419	507		517		154	1899		193	1857	
v/s Ratio Prot								0.31			c0.35	
v/s Ratio Perm		c0.15	0.00		0.07		0.05			0.11		
v/c Ratio		0.46	0.01		0.22		0.08	0.57		0.20	0.64	
Uniform Delay, d1		15.4	13.2		14.1		6.3	8.7		6.8	9.2	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.8	0.0		0.2		0.2	0.4		0.5	0.8	
Delay (s)		16.2	13.2		14.3		6.6	9.1		7.3	10.0	
Level of Service		B	B		B		A	A		A	B	
Approach Delay (s)		16.0			14.3			9.1			9.9	
Approach LOS		B			B			A			A	

Intersection Summary					
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.57				
Actuated Cycle Length (s)	56.8	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	55.5%	ICU Level of Service		B	
Analysis Period (min)	15				

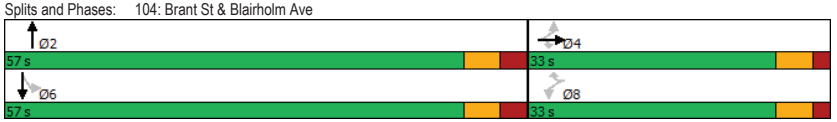
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	5	21	19	0	76	0	876	18	49	770	0
Future Volume (vph)	17	5	21	19	0	76	0	876	18	49	770	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.997				
Flt Protected		0.962		0.950						0.950		
Satd. Flow (prot)	0	1792	1583	1770	0	1583	0	3529	0	1770	1863	0
Flt Permitted		0.962		0.742						0.275		
Satd. Flow (perm)	0	1792	1583	1382	0	1583	0	3529	0	512	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			83		4				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		51.0			305.8			317.1			241.2	
Travel Time (s)		3.7			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	5	23	21	0	83	0	952	20	53	837	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	23	23	21	0	83	0	972	0	53	837	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		8.6	8.6	10.7		10.7		37.4		37.4	37.4	
Actuated g/C Ratio		0.17	0.17	0.21		0.21		0.73		0.73	0.73	
v/c Ratio		0.08	0.08	0.07		0.21		0.37		0.14	0.61	
Control Delay		22.0	4.0	20.4		7.6		4.2		4.4	7.4	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		22.0	4.0	20.4		7.6		4.2		4.4	7.4	
LOS		C	A	C		A		A		A	A	
Approach Delay		13.0			10.2			4.2			7.3	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 50.9			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 6.1		Intersection LOS: A	
Intersection Capacity Utilization 62.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	23	23	21	83	972	53	837
v/c Ratio	0.08	0.08	0.07	0.21	0.37	0.14	0.61
Control Delay	22.0	4.0	20.4	7.6	4.2	4.4	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	4.0	20.4	7.6	4.2	4.4	7.4
Queue Length 50th (m)	1.8	0.0	1.6	0.0	18.7	1.6	40.7
Queue Length 95th (m)	8.4	3.0	7.6	10.2	28.0	4.9	72.6
Internal Link Dist (m)	27.0				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	1001	906	829	983	3354	486	1771
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.03	0.03	0.08	0.29	0.11	0.47

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	5	21	19	0	76	0	876	18	49	770	0
Future Volume (vph)	17	5	21	19	0	76	0	876	18	49	770	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.96	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1793	1583	1770		1583		3528		1770	1863	
Flt Permitted		0.96	1.00	0.74		1.00		1.00		0.28	1.00	
Satd. Flow (perm)		1793	1583	1383		1583		3528		512	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	5	23	21	0	83	0	952	20	53	837	0
RTOR Reduction (vph)	0	0	20	0	0	70	0	1	0	0	0	0
Lane Group Flow (vph)	0	23	3	21	0	13	0	971	0	53	837	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		6.1	6.1	6.1		6.1		33.0		33.0	33.0	
Effective Green, g (s)		6.1	6.1	8.1		8.1		36.0		36.0	36.0	
Actuated g/C Ratio		0.12	0.12	0.16		0.16		0.69		0.69	0.69	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		209	185	215		246		2437		353	1287	
v/s Ratio Prot								0.28			c0.45	
v/s Ratio Perm		0.01	0.00	c0.02		0.01				0.10		
v/c Ratio		0.11	0.01	0.10		0.05		0.40		0.15	0.65	
Uniform Delay, d1		20.6	20.3	18.9		18.7		3.4		2.8	4.5	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.2	0.0	0.2		0.1		0.1		0.2	1.2	
Delay (s)		20.8	20.4	19.1		18.8		3.5		3.0	5.7	
Level of Service		C	C	B		B		A		A	A	
Approach Delay (s)		20.6			18.9			3.5			5.5	
Approach LOS		C			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	5.6	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	52.1	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	62.2%	ICU Level of Service	B	
Analysis Period (min)	15			

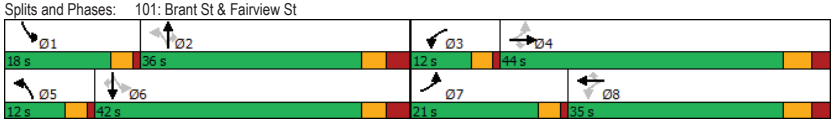
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	319	803	257	153	762	243	246	592	160	239	606	167
Future Volume (vph)	319	803	257	153	762	243	246	592	160	239	606	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.129			0.219			0.276			0.153		
Satd. Flow (perm)	240	3539	1583	408	3539	1583	514	3539	1583	285	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			279			264			192			182
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	347	873	279	166	828	264	267	643	174	260	659	182
Shared Lane Traffic (%)												
Lane Group Flow (vph)	347	873	279	166	828	264	267	643	174	260	659	182
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	21.0	44.0	44.0	12.0	35.0	35.0	12.0	36.0	36.0	18.0	42.0	42.0
Total Split (%)	19.1%	40.0%	40.0%	10.9%	31.8%	31.8%	10.9%	32.7%	32.7%	16.4%	38.2%	38.2%
Maximum Green (s)	17.0	37.6	37.6	8.0	28.6	28.6	8.0	29.5	29.5	14.0	35.5	35.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	50.6	38.6	38.6	37.4	29.5	29.5	34.8	26.7	26.7	43.9	32.1	32.1
Actuated g/C Ratio	0.49	0.38	0.38	0.36	0.29	0.29	0.34	0.26	0.26	0.43	0.31	0.31
v/c Ratio	0.93	0.66	0.36	0.65	0.82	0.41	0.98	0.70	0.31	0.83	0.60	0.29
Control Delay	60.0	30.1	4.3	31.3	42.4	5.9	77.9	39.1	4.9	44.2	32.3	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.0	30.1	4.3	31.3	42.4	5.9	77.9	39.1	4.9	44.2	32.3	5.1
LOS	E	C	A	C	D	A	E	D	A	D	C	A
Approach Delay		32.2			33.3			43.1			30.6	
Approach LOS		C			C			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 102.8			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 34.5		Intersection LOS: C	
Intersection Capacity Utilization 82.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Queues
101: Brant St & Fairview St

Background - Phase 1
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	347	873	279	166	828	264	267	643	174	260	659	182
v/c Ratio	0.93	0.66	0.36	0.65	0.82	0.41	0.98	0.70	0.31	0.83	0.60	0.29
Control Delay	60.0	30.1	4.3	31.3	42.4	5.9	77.9	39.1	4.9	44.2	32.3	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.0	30.1	4.3	31.3	42.4	5.9	77.9	39.1	4.9	44.2	32.3	5.1
Queue Length 50th (m)	55.9	80.6	0.0	19.3	86.5	0.0	37.8	66.2	0.0	36.6	62.4	0.0
Queue Length 95th (m)	#121.5	109.5	17.3	#36.2	117.2	19.4	#86.2	86.2	12.8	#77.5	81.2	15.0
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	372	1386	790	255	1074	664	272	1109	627	326	1317	703
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.63	0.35	0.65	0.77	0.40	0.98	0.58	0.28	0.80	0.50	0.26

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
101: Brant St & Fairview St

Background - Phase 1
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	319	803	257	153	762	243	246	592	160	239	606	167
Future Volume (vph)	319	803	257	153	762	243	246	592	160	239	606	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.13	1.00	1.00	0.22	1.00	1.00	0.28	1.00	1.00	0.15	1.00	1.00
Satd. Flow (perm)	240	3539	1583	407	3539	1583	514	3539	1583	285	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	347	873	279	166	828	264	267	643	174	260	659	182
RTOR Reduction (vph)	0	0	174	0	0	188	0	0	129	0	0	125
Lane Group Flow (vph)	347	873	105	166	828	76	267	643	45	260	659	57
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	48.2	36.2	36.2	35.1	27.1	27.1	32.3	24.2	24.2	41.6	29.5	29.5
Effective Green, g (s)	48.2	38.6	38.6	35.1	29.5	29.5	32.3	26.7	26.7	41.6	32.0	32.0
Actuated g/C Ratio	0.47	0.38	0.38	0.34	0.29	0.29	0.31	0.26	0.26	0.41	0.31	0.31
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	367	1330	594	245	1016	454	260	920	411	309	1102	493
v/s Ratio Prot	c0.16	0.25		0.05	0.23		c0.08	0.18		c0.11	0.19	
v/s Ratio Perm	c0.29		0.07	0.18		0.05	c0.24		0.03	0.23		0.04
v/c Ratio	0.95	0.66	0.18	0.68	0.81	0.17	1.03	0.70	0.11	0.84	0.60	0.12
Uniform Delay, d1	28.4	26.6	21.4	25.1	34.1	27.4	32.3	34.4	28.9	23.6	29.9	25.2
Progression 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
Incremental Delay, d2	32.9	1.2	0.1	7.2	5.1	0.2	62.9	2.3	0.1	18.3	0.9	0.1
Delay (s)	61.2	27.7	21.6	32.3	39.2	27.6	95.3	36.7	29.1	41.9	30.8	25.3
Level of Service	E	C	C	C	D	C	F	D	C	D	C	C
Approach Delay (s)		34.3			35.8			49.9			32.5	
Approach LOS		C			D			D			C	

Intersection Summary				
HCM 2000 Control Delay	37.7	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.93			
Actuated Cycle Length (s)	102.7	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	82.5%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	8	15	65	12	116	13	882	37	103	897	38
Future Volume (vph)	59	8	15	65	12	116	13	882	37	103	897	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.904			0.864			0.994			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1684	0	1770	1609	0	1770	3518	0	1770	3518	0
Flt Permitted	0.633			0.741			0.227			0.233		
Satd. Flow (perm)	1179	1684	0	1380	1609	0	423	3518	0	434	3518	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			126			8			8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	64	9	16	71	13	126	14	959	40	112	975	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	64	25	0	71	139	0	14	999	0	112	1016	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	13.7	13.7		13.7	13.7		40.0	40.0		50.5	40.0	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.63	0.63		0.79	0.63	
v/c Ratio	0.25	0.07		0.24	0.31		0.05	0.45		0.20	0.46	
Control Delay	28.7	16.7		27.9	9.4		8.7	10.0		3.4	10.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	28.7	16.7		27.9	9.4		8.7	10.0		3.4	10.0	
LOS	C	B		C	A		A	A		A	B	
Approach Delay		25.3			15.7			10.0			9.4	
Approach LOS		C			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 63.6			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay: 10.7		Intersection LOS: B	
Intersection Capacity Utilization 60.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Queues
102: Brant St & Grahams Ln/Prospect St

Background - Phase 1
SAT Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	64	25	71	139	14	999	112	1016
v/c Ratio	0.25	0.07	0.24	0.31	0.05	0.45	0.20	0.46
Control Delay	28.7	16.7	27.9	9.4	8.7	10.0	3.4	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.7	16.7	27.9	9.4	8.7	10.0	3.4	10.0
Queue Length 50th (m)	6.8	0.9	7.5	1.3	0.8	38.3	2.7	39.2
Queue Length 95th (m)	21.4	7.8	22.7	17.0	3.8	66.5	8.3	68.2
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	379	552	444	603	339	2827	616	2827
Starvation Cap Reductn	0	0	0	0	0	238	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.05	0.16	0.23	0.04	0.39	0.18	0.36

Intersection Summary

HCM Signalized Intersection Capacity Analysis
102: Brant St & Grahams Ln/Prospect St

Background - Phase 1
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	8	15	65	12	116	13	882	37	103	897	38
Future Volume (vph)	59	8	15	65	12	116	13	882	37	103	897	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1684		1770	1609		1770	3518		1770	3518	
Flt Permitted	0.63	1.00		0.74	1.00		0.23	1.00		0.23	1.00	
Satd. Flow (perm)	1180	1684		1380	1609		423	3518		434	3518	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	64	9	16	71	13	126	14	959	40	112	975	41
RTOR Reduction (vph)	0	13	0	0	105	0	0	3	0	0	3	0
Lane Group Flow (vph)	64	12	0	71	34	0	14	996	0	112	1013	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	7.9	7.9		7.9	7.9		35.4	35.4		40.6	35.4	
Effective Green, g (s)	10.9	10.9		10.9	10.9		38.4	38.4		46.6	38.4	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.59	0.59		0.71	0.59	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	196	280		229	267		247	2062		476	2062	
v/s Ratio Prot		0.01			0.02			0.28		c0.03	c0.29	
v/s Ratio Perm	c0.05			0.05			0.03			0.14		
v/c Ratio	0.33	0.04		0.31	0.13		0.06	0.48		0.24	0.49	
Uniform Delay, d1	24.1	22.9		24.0	23.2		5.8	7.8		3.4	7.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.1		0.8	0.2		0.1	0.2		0.3	0.2	
Delay (s)	25.0	23.0		24.8	23.5		5.9	8.0		3.7	8.1	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		24.5			23.9			8.0			7.6	
Approach LOS		C			C			A			A	

Intersection Summary					
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.41				
Actuated Cycle Length (s)	65.5	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	60.5%	ICU Level of Service		B	
Analysis Period (min)	15				

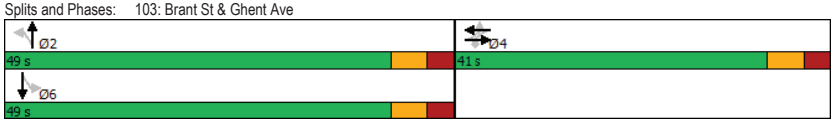
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	16	9	18	15	34	15	799	18	41	828	102
Future Volume (vph)	91	16	9	18	15	34	15	799	18	41	828	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.932			0.997			0.984	
Flt Protected		0.959			0.986		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1712	0	1770	3529	0	1770	3483	0
Flt Permitted		0.707			0.888		0.240			0.287		
Satd. Flow (perm)	0	1317	1583	0	1542	0	447	3529	0	535	3483	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		37			4			21	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.5			333.4			75.4			150.5	
Travel Time (s)		17.5			24.0			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	99	17	10	20	16	37	16	868	20	45	900	111
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	116	10	0	73	0	16	888	0	45	1011	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		13.5	13.5		13.5		27.5	27.5		27.5	27.5	
Actuated g/C Ratio		0.31	0.31		0.31		0.62	0.62		0.62	0.62	
v/c Ratio		0.29	0.02		0.15		0.06	0.40		0.13	0.46	
Control Delay		15.5	0.1		8.7		6.6	7.0		7.4	7.4	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		15.5	0.1		8.7		6.6	7.0		7.4	7.4	
LOS		B	A		A		A	A		A	A	
Approach Delay		14.3			8.7			7.0			7.4	
Approach LOS		B			A			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 44			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay: 7.7		Intersection LOS: A	
Intersection Capacity Utilization 53.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Queues
103: Brant St & Ghent Ave

Background - Phase 1
SAT Peak Hour

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	116	10	73	16	888	45	1011
v/c Ratio	0.29	0.02	0.15	0.06	0.40	0.13	0.46
Control Delay	15.5	0.1	8.7	6.6	7.0	7.4	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.5	0.1	8.7	6.6	7.0	7.4	7.4
Queue Length 50th (m)	6.6	0.0	1.9	0.6	20.0	1.6	23.5
Queue Length 95th (m)	20.3	0.0	10.3	3.2	39.6	6.9	46.5
Internal Link Dist (m)	218.5		309.4		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	1102	1333	1296	424	3348	507	3305
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.01	0.06	0.04	0.27	0.09	0.31

Intersection Summary

HCM Signalized Intersection Capacity Analysis
103: Brant St & Ghent Ave

Background - Phase 1
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	16	9	18	15	34	15	799	18	41	828	102
Future Volume (vph)	91	16	9	18	15	34	15	799	18	41	828	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.93		1.00	1.00		1.00	0.98	
Flt Protected		0.96	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1787	1583		1712		1770	3527		1770	3481	
Flt Permitted		0.71	1.00		0.89		0.24	1.00		0.29	1.00	
Satd. Flow (perm)		1316	1583		1541		446	3527		534	3481	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	99	17	10	20	16	37	16	868	20	45	900	111
RTOR Reduction (vph)	0	0	8	0	28	0	0	2	0	0	9	0
Lane Group Flow (vph)	0	116	2	0	45	0	16	886	0	45	1002	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		8.2	8.2		8.2		23.2	23.2		23.2	23.2	
Effective Green, g (s)		11.2	11.2		11.2		26.2	26.2		26.2	26.2	
Actuated g/C Ratio		0.25	0.25		0.25		0.58	0.58		0.58	0.58	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		324	390		380		257	2035		308	2008	
v/s Ratio Prot								0.25			c0.29	
v/s Ratio Perm		c0.09	0.00		0.03		0.04			0.08		
v/c Ratio		0.36	0.01		0.12		0.06	0.44		0.15	0.50	
Uniform Delay, d1		14.1	12.9		13.3		4.2	5.4		4.4	5.7	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.7	0.0		0.1		0.1	0.2		0.2	0.2	
Delay (s)		14.8	12.9		13.4		4.3	5.6		4.7	5.9	
Level of Service		B	B		B		A	A		A	A	
Approach Delay (s)		14.7			13.4			5.6			5.8	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	6.5	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.46			
Actuated Cycle Length (s)	45.4	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	53.3%	ICU Level of Service	A	
Analysis Period (min)	15			

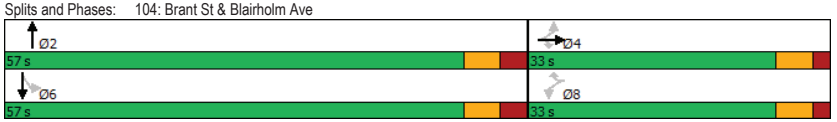
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	0	5	11	0	44	0	769	9	35	784	0
Future Volume (vph)	15	0	5	11	0	44	0	769	9	35	784	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.998				
Flt Protected		0.950		0.950						0.950		
Satd. Flow (prot)	0	1770	1583	1770	0	1583	0	3532	0	1770	1863	0
Flt Permitted		0.950		0.747						0.329		
Satd. Flow (perm)	0	1770	1583	1391	0	1583	0	3532	0	613	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			48		2				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		55.3			305.8			317.1			241.2	
Travel Time (s)		4.0			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	0	5	12	0	48	0	836	10	38	852	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	16	5	12	0	48	0	846	0	38	852	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		8.7	8.7	10.8		10.8		41.1		41.1	41.1	
Actuated g/C Ratio		0.17	0.17	0.22		0.22		0.82		0.82	0.82	
v/c Ratio		0.05	0.02	0.04		0.13		0.29		0.08	0.56	
Control Delay		23.7	0.0	21.9		9.0		2.9		3.2	5.7	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		23.7	0.0	21.9		9.0		2.9		3.2	5.7	
LOS		C	A	C		A		A		A	A	
Approach Delay		18.1			11.6			2.9			5.5	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 50			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 4.7		Intersection LOS: A	
Intersection Capacity Utilization 62.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	16	5	12	48	846	38	852
v/c Ratio	0.05	0.02	0.04	0.13	0.29	0.08	0.56
Control Delay	23.7	0.0	21.9	9.0	2.9	3.2	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	0.0	21.9	9.0	2.9	3.2	5.7
Queue Length 50th (m)	1.7	0.0	1.2	0.0	15.5	1.1	42.0
Queue Length 95th (m)	6.6	0.0	5.4	7.9	22.0	3.3	70.9
Internal Link Dist (m)	31.3				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	1036	946	874	1013	3272	567	1725
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.01	0.05	0.26	0.07	0.49

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	0	5	11	0	44	0	769	9	35	784	0
Future Volume (vph)	15	0	5	11	0	44	0	769	9	35	784	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.95	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1770	1583	1770		1583		3533		1770	1863	
Flt Permitted		0.95	1.00	0.75		1.00		1.00		0.33	1.00	
Satd. Flow (perm)		1770	1583	1392		1583		3533		612	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	0	5	12	0	48	0	836	10	38	852	0
RTOR Reduction (vph)	0	0	5	0	0	43	0	1	0	0	0	0
Lane Group Flow (vph)	0	16	0	12	0	5	0	845	0	38	852	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		4.0	4.0	4.0		4.0		35.4		35.4	35.4	
Effective Green, g (s)		4.0	4.0	6.0		6.0		38.4		38.4	38.4	
Actuated g/C Ratio		0.08	0.08	0.11		0.11		0.73		0.73	0.73	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		135	120	159		181		2589		448	1365	
v/s Ratio Prot								0.24			c0.46	
v/s Ratio Perm		0.01	0.00	0.01		0.00				0.06		
v/c Ratio		0.12	0.00	0.08		0.03		0.33		0.08	0.62	
Uniform Delay, d1		22.6	22.4	20.7		20.6		2.5		2.0	3.4	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.4	0.0	0.2		0.1		0.1		0.1	0.9	
Delay (s)		23.0	22.4	20.9		20.7		2.5		2.1	4.3	
Level of Service		C	C	C		C		A		A	A	
Approach Delay (s)		22.8			20.7			2.5			4.2	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	4.2	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	52.4	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	62.9%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Appendix H2

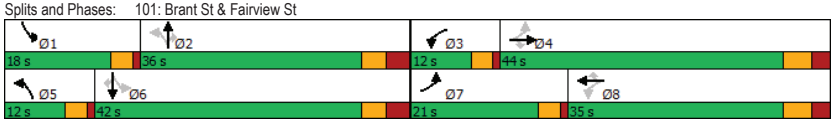
Background – Phase 2 Operations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	349	1147	283	129	361	158	201	647	284	237	725	156
Future Volume (vph)	349	1147	283	129	361	158	201	647	284	237	725	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.371			0.136			0.190			0.133		
Satd. Flow (perm)	691	3539	1583	253	3539	1583	354	3539	1583	248	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			254			193			192			170
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	379	1247	308	140	392	172	218	703	309	258	788	170
Shared Lane Traffic (%)												
Lane Group Flow (vph)	379	1247	308	140	392	172	218	703	309	258	788	170
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	21.0	44.0	44.0	12.0	35.0	35.0	12.0	36.0	36.0	18.0	42.0	42.0
Total Split (%)	19.1%	40.0%	40.0%	10.9%	31.8%	31.8%	10.9%	32.7%	32.7%	16.4%	38.2%	38.2%
Maximum Green (s)	17.0	37.6	37.6	8.0	28.6	28.6	8.0	29.5	29.5	14.0	35.5	35.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	52.0	40.1	40.1	39.6	31.7	31.7	36.6	28.6	28.6	46.0	34.1	34.1
Actuated g/C Ratio	0.49	0.38	0.38	0.37	0.30	0.30	0.34	0.27	0.27	0.43	0.32	0.32
v/c Ratio	0.75	0.93	0.41	0.68	0.37	0.28	0.95	0.74	0.54	0.86	0.69	0.27
Control Delay	29.7	46.0	7.2	37.1	31.5	4.4	74.2	40.5	16.2	50.4	34.9	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.7	46.0	7.2	37.1	31.5	4.4	74.2	40.5	16.2	50.4	34.9	5.1
LOS	C	D	A	D	C	A	E	D	B	D	C	A
Approach Delay		36.7			26.0			40.4			34.0	
Approach LOS		D			C			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 106.1			
Natural Cycle: 105			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 35.5		Intersection LOS: D	
Intersection Capacity Utilization 83.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Queues
101: Brant St & Fairview St

Background - Phase 2
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	379	1247	308	140	392	172	218	703	309	258	788	170
v/c Ratio	0.75	0.93	0.41	0.68	0.37	0.28	0.95	0.74	0.54	0.86	0.69	0.27
Control Delay	29.7	46.0	7.2	37.1	31.5	4.4	74.2	40.5	16.2	50.4	34.9	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.7	46.0	7.2	37.1	31.5	4.4	74.2	40.5	16.2	50.4	34.9	5.1
Queue Length 50th (m)	54.1	140.8	7.8	17.1	36.8	0.0	29.9	73.8	20.2	37.2	78.3	0.0
Queue Length 95th (m)	#85.8	#192.8	28.9	#41.5	52.1	12.4	#70.8	95.3	48.0	#81.9	99.8	14.7
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	511	1336	756	209	1058	608	229	1069	612	309	1270	677
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.93	0.41	0.67	0.37	0.28	0.95	0.66	0.50	0.83	0.62	0.25

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
101: Brant St & Fairview St

Background - Phase 2
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	349	1147	283	129	361	158	201	647	284	237	725	156
Future Volume (vph)	349	1147	283	129	361	158	201	647	284	237	725	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.37	1.00	1.00	0.14	1.00	1.00	0.19	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	690	3539	1583	253	3539	1583	354	3539	1583	248	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	379	1247	308	140	392	172	218	703	309	258	788	170
RTOR Reduction (vph)	0	0	158	0	0	120	0	0	140	0	0	115
Lane Group Flow (vph)	379	1247	150	140	392	52	218	703	169	258	788	55
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	49.6	37.7	37.7	37.3	29.4	29.4	34.1	26.1	26.1	43.6	31.6	31.6
Effective Green, g (s)	49.6	40.1	40.1	37.3	31.8	31.8	34.1	28.6	28.6	43.6	34.1	34.1
Actuated g/C Ratio	0.47	0.38	0.38	0.35	0.30	0.30	0.32	0.27	0.27	0.41	0.32	0.32
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	487	1337	598	201	1060	474	220	953	426	295	1137	508
v/s Ratio Prot	c0.12	c0.35		0.05	0.11		0.07	0.20		c0.11	0.22	
v/s Ratio Perm	0.24		0.09	0.19		0.03	c0.24		0.11	0.25		0.03
v/c Ratio	0.78	0.93	0.25	0.70	0.37	0.11	0.99	0.74	0.40	0.87	0.69	0.11
Uniform Delay, d1	19.9	31.7	22.7	27.5	29.3	26.9	31.8	35.3	31.7	25.3	31.4	25.3
Progression 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
Incremental Delay, d2	7.7	11.9	0.2	10.0	0.2	0.1	57.9	3.0	0.6	23.7	1.8	0.1
Delay (s)	27.5	43.6	22.9	37.5	29.5	27.0	89.7	38.3	32.3	49.0	33.3	25.4
Level of Service	C	D	C	D	C	C	F	D	C	D	C	C
Approach Delay (s)		37.2			30.5			45.9			35.5	
Approach LOS		D			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	38.0	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.92			
Actuated Cycle Length (s)	106.1	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	83.4%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	10	17	59	9	85	27	845	44	93	956	89
Future Volume (vph)	34	10	17	59	9	85	27	845	44	93	956	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.907			0.865			0.993			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1690	0	1770	1611	0	1770	3514	0	1770	3493	0
Flt Permitted	0.691			0.738			0.194			0.250		
Satd. Flow (perm)	1287	1690	0	1375	1611	0	361	3514	0	466	3493	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			92			10			18	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	37	11	18	64	10	92	29	918	48	101	1039	97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	29	0	64	102	0	29	966	0	101	1136	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	13.4	13.4		13.4	13.4		41.6	41.6		51.6	41.6	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.65	0.65		0.81	0.65	
v/c Ratio	0.14	0.08		0.22	0.25		0.12	0.42		0.17	0.50	
Control Delay	28.0	17.2		28.9	10.2		9.2	8.9		2.9	9.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	28.0	17.2		28.9	10.2		9.2	9.0		2.9	9.7	
LOS	C	B		C	B		A	A		A	A	
Approach Delay		23.3			17.4			9.0			9.1	
Approach LOS		C			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 64			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 10.0		Intersection LOS: B	
Intersection Capacity Utilization 55.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Queues
102: Brant St & Grahams Ln/Prospect St

Background - Phase 2
AM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	37	29	64	102	29	966	101	1136
v/c Ratio	0.14	0.08	0.22	0.25	0.12	0.42	0.17	0.50
Control Delay	28.0	17.2	28.9	10.2	9.2	8.9	2.9	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.0	17.2	28.9	10.2	9.2	9.0	2.9	9.7
Queue Length 50th (m)	4.0	1.2	7.1	1.1	1.6	35.4	2.3	44.3
Queue Length 95th (m)	14.0	8.7	21.1	14.5	6.3	58.8	6.6	73.4
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	418	560	446	585	283	2766	643	2751
Starvation Cap Reductn	0	0	0	0	0	325	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.05	0.14	0.17	0.10	0.40	0.16	0.41

Intersection Summary

HCM Signalized Intersection Capacity Analysis
102: Brant St & Grahams Ln/Prospect St

Background - Phase 2
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	10	17	59	9	85	27	845	44	93	956	89
Future Volume (vph)	34	10	17	59	9	85	27	845	44	93	956	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1689		1770	1611		1770	3513		1770	3494	
Flt Permitted	0.69	1.00		0.74	1.00		0.19	1.00		0.25	1.00	
Satd. Flow (perm)	1287	1689		1375	1611		361	3513		465	3494	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	37	11	18	64	10	92	29	918	48	101	1039	97
RTOR Reduction (vph)	0	15	0	0	78	0	0	4	0	0	7	0
Lane Group Flow (vph)	37	14	0	64	24	0	29	962	0	101	1129	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	7.2	7.2		7.2	7.2		36.8	36.8		41.7	36.8	
Effective Green, g (s)	10.2	10.2		10.2	10.2		39.8	39.8		47.7	39.8	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.60	0.60		0.72	0.60	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	199	261		212	249		218	2121		493	2110	
v/s Ratio Prot		0.01			0.02			0.27		c0.02	c0.32	
v/s Ratio Perm	0.03			c0.05			0.08			0.12		
v/c Ratio	0.19	0.05		0.30	0.10		0.13	0.45		0.20	0.54	
Uniform Delay, d1	24.2	23.7		24.7	23.9		5.6	7.1		3.0	7.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.1		0.8	0.2		0.3	0.2		0.2	0.3	
Delay (s)	24.7	23.8		25.5	24.1		5.9	7.3		3.2	7.9	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		24.3			24.6			7.2			7.5	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.44			
Actuated Cycle Length (s)	65.9	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	55.9%	ICU Level of Service	B	
Analysis Period (min)	15			

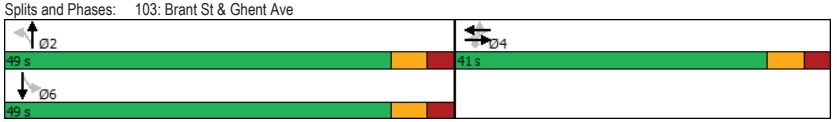
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	25	22	24	10	29	12	739	32	34	880	124
Future Volume (vph)	145	25	22	24	10	29	12	739	32	34	880	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.937			0.994			0.981	
Flt Protected		0.959			0.982		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1714	0	1770	3518	0	1770	3472	0
Flt Permitted		0.709			0.853		0.192			0.289		
Satd. Flow (perm)	0	1321	1583	0	1489	0	358	3518	0	538	3472	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		32			7			25	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.5			333.4			75.4			150.5	
Travel Time (s)		17.5			24.0			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	158	27	24	26	11	32	13	803	35	37	957	135
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	185	24	0	69	0	13	838	0	37	1092	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		16.9	16.9		16.9		28.8	28.8		28.8	28.8	
Actuated g/C Ratio		0.31	0.31		0.31		0.53	0.53		0.53	0.53	
v/c Ratio		0.45	0.05		0.14		0.07	0.45		0.13	0.59	
Control Delay		18.8	2.4		9.6		8.6	9.1		9.0	10.4	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		18.8	2.4		9.6		8.6	9.1		9.0	10.4	
LOS		B	A		A		A	A		A	B	
Approach Delay		16.9			9.6			9.1			10.4	
Approach LOS		B			A			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 53.9			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 10.5		Intersection LOS: B	
Intersection Capacity Utilization 51.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	185	24	69	13	838	37	1092
v/c Ratio	0.45	0.05	0.14	0.07	0.45	0.13	0.59
Control Delay	18.8	2.4	9.6	8.6	9.1	9.0	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.8	2.4	9.6	8.6	9.1	9.0	10.4
Queue Length 50th (m)	12.7	0.0	2.2	0.6	23.0	1.6	32.5
Queue Length 95th (m)	35.2	2.3	11.1	3.5	47.7	7.2	67.0
Internal Link Dist (m)	218.5		309.4		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	930	1128	1057	303	2984	456	2948
Starvation Cap Reductn	0	0	0	0	0	0	57
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.02	0.07	0.04	0.28	0.08	0.38

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	25	22	24	10	29	12	739	32	34	880	124
Future Volume (vph)	145	25	22	24	10	29	12	739	32	34	880	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.94		1.00	0.99		1.00	0.98	
Flt Protected		0.96	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1786	1583		1714		1770	3517		1770	3474	
Flt Permitted		0.71	1.00		0.85		0.19	1.00		0.29	1.00	
Satd. Flow (perm)		1321	1583		1490		358	3517		538	3474	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	158	27	24	26	11	32	13	803	35	37	957	135
RTOR Reduction (vph)	0	0	16	0	22	0	0	3	0	0	12	0
Lane Group Flow (vph)	0	185	8	0	47	0	13	835	0	37	1080	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		13.8	13.8		13.8		25.7	25.7		25.7	25.7	
Effective Green, g (s)		16.8	16.8		16.8		28.7	28.7		28.7	28.7	
Actuated g/C Ratio		0.31	0.31		0.31		0.54	0.54		0.54	0.54	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		414	497		467		192	1886		288	1863	
v/s Ratio Prot								0.24			c0.31	
v/s Ratio Perm		c0.14	0.00		0.03		0.04			0.07		
v/c Ratio		0.45	0.02		0.10		0.07	0.44		0.13	0.58	
Uniform Delay, d1		14.6	12.6		13.0		6.0	7.5		6.2	8.3	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.8	0.0		0.1		0.1	0.2		0.2	0.4	
Delay (s)		15.4	12.7		13.1		6.1	7.7		6.4	8.8	
Level of Service		B	B		B		A	A		A	A	
Approach Delay (s)		15.1			13.1			7.7			8.7	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.53			
Actuated Cycle Length (s)	53.5	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	51.6%	ICU Level of Service	A	
Analysis Period (min)	15			

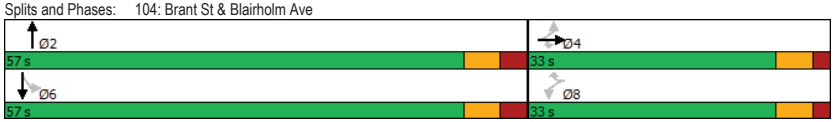
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	4	8	41	0	114	0	643	17	47	785	0
Future Volume (vph)	17	4	8	41	0	114	0	643	17	47	785	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.996				
Flt Protected		0.961		0.950						0.950		
Satd. Flow (prot)	0	1790	1583	1770	0	1583	0	3525	0	1770	1863	0
Flt Permitted		0.961		0.743						0.375		
Satd. Flow (perm)	0	1790	1583	1384	0	1583	0	3525	0	699	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			124		5				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		34.6			305.8			317.1			241.2	
Travel Time (s)		2.5			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	4	9	45	0	124	0	699	18	51	853	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	22	9	45	0	124	0	717	0	51	853	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		9.0	9.0	11.1		11.1		36.7		36.7	36.7	
Actuated g/C Ratio		0.18	0.18	0.22		0.22		0.72		0.72	0.72	
v/c Ratio		0.07	0.03	0.15		0.28		0.28		0.10	0.63	
Control Delay		22.4	0.1	21.6		7.3		3.9		4.0	8.1	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		22.4	0.1	21.6		7.3		3.9		4.0	8.1	
LOS		C	A	C		A		A		A	A	
Approach Delay		16.0			11.1			3.9			7.9	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 50.7			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 6.8		Intersection LOS: A	
Intersection Capacity Utilization 63.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	22	9	45	124	717	51	853
v/c Ratio	0.07	0.03	0.15	0.28	0.28	0.10	0.63
Control Delay	22.4	0.1	21.6	7.3	3.9	4.0	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.4	0.1	21.6	7.3	3.9	4.0	8.1
Queue Length 50th (m)	1.6	0.0	3.2	0.0	12.5	1.5	42.2
Queue Length 95th (m)	8.4	0.0	13.7	12.8	21.4	4.8	83.0
Internal Link Dist (m)	10.6				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	1009	914	838	1007	3345	663	1768
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.05	0.12	0.21	0.08	0.48

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	4	8	41	0	114	0	643	17	47	785	0
Future Volume (vph)	17	4	8	41	0	114	0	643	17	47	785	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.96	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1790	1583	1770		1583		3526		1770	1863	
Flt Permitted		0.96	1.00	0.74		1.00		1.00		0.38	1.00	
Satd. Flow (perm)		1790	1583	1384		1583		3526		699	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	4	9	45	0	124	0	699	18	51	853	0
RTOR Reduction (vph)	0	0	8	0	0	104	0	2	0	0	0	0
Lane Group Flow (vph)	0	22	1	45	0	20	0	715	0	51	853	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		6.5	6.5	6.5		6.5		32.3		32.3	32.3	
Effective Green, g (s)		6.5	6.5	8.5		8.5		35.3		35.3	35.3	
Actuated g/C Ratio		0.13	0.13	0.16		0.16		0.68		0.68	0.68	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		224	198	227		259		2402		476	1269	
v/s Ratio Prot								0.20			c0.46	
v/s Ratio Perm		0.01	0.00	c0.03		0.01				0.07		
v/c Ratio		0.10	0.01	0.20		0.08		0.30		0.11	0.67	
Uniform Delay, d1		20.1	19.8	18.7		18.3		3.3		2.8	4.8	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.2	0.0	0.4		0.1		0.1		0.1	1.4	
Delay (s)		20.2	19.8	19.1		18.5		3.4		2.9	6.3	
Level of Service		C	B	B		B		A		A	A	
Approach Delay (s)		20.1			18.6			3.4			6.1	
Approach LOS		C			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	6.4	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	51.8	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	63.0%	ICU Level of Service	B	
Analysis Period (min)	15			

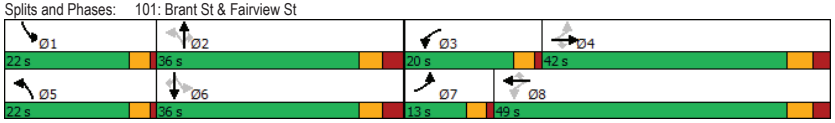
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	846	309	226	1570	454	186	819	197	242	682	448
Future Volume (vph)	220	846	309	226	1570	454	186	819	197	242	682	448
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.108			0.098			0.156			0.126		
Satd. Flow (perm)	201	3539	1583	183	3539	1583	291	3539	1583	235	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			336			290			140			228
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	239	920	336	246	1707	493	202	890	214	263	741	487
Shared Lane Traffic (%)												
Lane Group Flow (vph)	239	920	336	246	1707	493	202	890	214	263	741	487
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	13.0	42.0	42.0	20.0	49.0	49.0	22.0	36.0	36.0	22.0	36.0	36.0
Total Split (%)	10.8%	35.0%	35.0%	16.7%	40.8%	40.8%	18.3%	30.0%	30.0%	18.3%	30.0%	30.0%
Maximum Green (s)	9.0	35.6	35.6	16.0	42.6	42.6	18.0	29.5	29.5	18.0	29.5	29.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	48.3	39.3	39.3	57.7	45.0	45.0	46.2	32.0	32.0	50.5	34.2	34.2
Actuated g/C Ratio	0.41	0.33	0.33	0.49	0.38	0.38	0.39	0.27	0.27	0.43	0.29	0.29
v/c Ratio	1.19	0.78	0.45	0.86	1.27	0.63	0.70	0.93	0.40	0.84	0.73	0.79
Control Delay	152.5	42.0	5.3	55.3	159.6	15.9	35.9	59.2	15.5	52.1	43.2	30.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	152.5	42.0	5.3	55.3	159.6	15.9	35.9	59.2	15.5	52.1	43.2	30.9
LOS	F	D	A	E	F	B	D	E	B	D	D	C
Approach Delay		51.4			120.1			48.4			40.7	
Approach LOS		D			F			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 118.4			
Natural Cycle: 135			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.27			
Intersection Signal Delay: 73.4		Intersection LOS: E	
Intersection Capacity Utilization 105.0%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	239	920	336	246	1707	493	202	890	214	263	741	487
v/c Ratio	1.19	0.78	0.45	0.86	1.27	0.63	0.70	0.93	0.40	0.84	0.73	0.79
Control Delay	152.5	42.0	5.3	55.3	159.6	15.9	35.9	59.2	15.5	52.1	43.2	30.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	152.5	42.0	5.3	55.3	159.6	15.9	35.9	59.2	15.5	52.1	43.2	30.9
Queue Length 50th (m)	~56.0	110.5	0.0	42.4	~283.2	39.6	30.4	114.0	14.2	44.1	85.8	60.7
Queue Length 95th (m)	#109.0	137.1	21.0	#85.5	#327.7	78.2	51.3	#155.0	36.5	#88.8	113.5	#121.9
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	201	1174	749	304	1346	781	347	956	529	334	1022	619
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.19	0.78	0.45	0.81	1.27	0.63	0.58	0.93	0.40	0.79	0.73	0.79

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	846	309	226	1570	454	186	819	197	242	682	448
Future Volume (vph)	220	846	309	226	1570	454	186	819	197	242	682	448
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.11	1.00	1.00	0.10	1.00	1.00	0.16	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	202	3539	1583	182	3539	1583	291	3539	1583	235	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	239	920	336	246	1707	493	202	890	214	263	741	487
RTOR Reduction (vph)	0	0	224	0	0	180	0	0	102	0	0	162
Lane Group Flow (vph)	239	920	112	246	1707	313	202	890	112	263	741	325
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	45.9	36.9	36.9	55.6	42.6	42.6	43.6	29.5	29.5	48.0	31.7	31.7
Effective Green, g (s)	45.9	39.3	39.3	55.6	45.0	45.0	43.6	32.0	32.0	48.0	34.2	34.2
Actuated g/C Ratio	0.39	0.33	0.33	0.47	0.38	0.38	0.37	0.27	0.27	0.41	0.29	0.29
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	197	1175	525	282	1346	602	283	957	428	306	1023	457
v/s Ratio Prot	c0.09	0.26		0.11	c0.48		0.08	c0.25		c0.12	0.21	
v/s Ratio Perm	0.38		0.07	0.30		0.20	0.18		0.07	0.23		0.21
v/c Ratio	1.21	0.78	0.21	0.87	1.27	0.52	0.71	0.93	0.26	0.86	0.72	0.71
Uniform Delay, d1	30.2	35.7	28.4	31.5	36.6	28.3	28.4	42.1	33.9	30.7	37.8	37.6
Progression 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
Incremental Delay, d2	133.3	3.5	0.2	24.3	126.7	0.8	8.3	14.8	0.3	20.6	2.6	5.2
Delay (s)	163.6	39.1	28.6	55.7	163.4	29.1	36.6	56.9	34.2	51.3	40.4	42.8
Level of Service	F	D	C	E	F	C	D	E	C	D	D	D
Approach Delay (s)		56.7			125.5			50.0			43.1	
Approach LOS		E			F			D			D	

Intersection Summary				
HCM 2000 Control Delay	77.4	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.09			
Actuated Cycle Length (s)	118.3	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	105.0%	ICU Level of Service	G	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	21	44	110	12	184	15	1120	64	120	1056	62
Future Volume (vph)	127	21	44	110	12	184	15	1120	64	120	1056	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.899			0.859			0.992			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1675	0	1770	1600	0	1770	3511	0	1770	3511	0
Flt Permitted	0.477			0.711			0.154			0.134		
Satd. Flow (perm)	889	1675	0	1324	1600	0	287	3511	0	250	3511	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		48			200			11			11	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	138	23	48	120	13	200	16	1217	70	130	1148	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	138	71	0	120	213	0	16	1287	0	130	1215	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	18.2	18.2		18.2	18.2		45.2	45.2		57.2	45.2	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.57	0.57		0.72	0.57	
v/c Ratio	0.68	0.17		0.40	0.41		0.10	0.64		0.34	0.61	
Control Delay	50.8	14.4		34.2	8.4		10.6	14.0		5.8	13.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.4		0.0	0.0	
Total Delay	50.8	14.4		34.2	8.4		10.6	14.3		5.8	13.3	
LOS	D	B		C	A		B	B		A	B	
Approach Delay		38.5			17.7			14.3			12.6	
Approach LOS		D			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 79.6			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 15.5		Intersection LOS: B	
Intersection Capacity Utilization 72.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	138	71	120	213	16	1287	130	1215
v/c Ratio	0.68	0.17	0.40	0.41	0.10	0.64	0.34	0.61
Control Delay	50.8	14.4	34.2	8.4	10.6	14.0	5.8	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Total Delay	50.8	14.4	34.2	8.4	10.6	14.3	5.8	13.3
Queue Length 50th (m)	22.6	3.2	18.3	1.8	1.2	73.7	5.3	67.3
Queue Length 95th (m)	#53.3	14.5	36.1	20.2	4.6	98.7	9.7	90.4
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	220	452	328	547	191	2344	418	2344
Starvation Cap Reductn	0	0	0	0	0	471	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.16	0.37	0.39	0.08	0.69	0.31	0.52

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	21	44	110	12	184	15	1120	64	120	1056	62
Future Volume (vph)	127	21	44	110	12	184	15	1120	64	120	1056	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1674		1770	1600		1770	3510		1770	3510	
Flt Permitted	0.48	1.00		0.71	1.00		0.15	1.00		0.13	1.00	
Satd. Flow (perm)	889	1674		1324	1600		286	3510		250	3510	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	138	23	48	120	13	200	16	1217	70	130	1148	67
RTOR Reduction (vph)	0	37	0	0	155	0	0	5	0	0	5	0
Lane Group Flow (vph)	138	34	0	120	58	0	16	1282	0	130	1210	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	15.1	15.1		15.1	15.1		42.0	42.0		47.6	42.0	
Effective Green, g (s)	18.1	18.1		18.1	18.1		45.0	45.0		53.6	45.0	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.56	0.56		0.67	0.56	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	201	380		300	363		161	1981		332	1981	
v/s Ratio Prot		0.02			0.04			c0.37		c0.04	0.34	
v/s Ratio Perm	c0.16			0.09			0.06			0.22		
v/c Ratio	0.69	0.09		0.40	0.16		0.10	0.65		0.39	0.61	
Uniform Delay, d1	28.2	24.3		26.2	24.7		8.0	11.9		7.3	11.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.3	0.1		0.9	0.2		0.3	0.7		0.8	0.6	
Delay (s)	37.5	24.4		27.1	24.9		8.3	12.6		8.0	12.1	
Level of Service	D	C		C	C		A	B		A	B	
Approach Delay (s)		33.1			25.7			12.6			11.7	
Approach LOS		C			C			B			B	

Intersection Summary					
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.61				
Actuated Cycle Length (s)	79.7	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	72.0%	ICU Level of Service		C	
Analysis Period (min)	15				

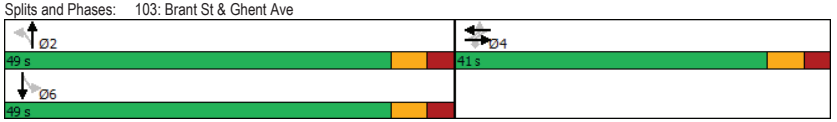
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	28	15	28	60	44	12	1002	24	36	947	199
Future Volume (vph)	156	28	15	28	60	44	12	1002	24	36	947	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.955			0.997			0.974	
Flt Protected		0.959			0.990		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1761	0	1770	3529	0	1770	3447	0
Flt Permitted		0.693			0.908		0.143			0.182		
Satd. Flow (perm)	0	1291	1583	0	1615	0	266	3529	0	339	3447	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		34			4			39	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.5			333.4			75.4			150.5	
Travel Time (s)		17.5			24.0			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	170	30	16	30	65	48	13	1089	26	39	1029	216
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	200	16	0	143	0	13	1115	0	39	1245	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		19.1	19.1		19.1		31.8	31.8		31.8	31.8	
Actuated g/C Ratio		0.32	0.32		0.32		0.54	0.54		0.54	0.54	
v/c Ratio		0.48	0.03		0.26		0.09	0.59		0.22	0.67	
Control Delay		22.0	0.5		14.3		10.0	11.3		12.1	12.2	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		22.0	0.5		14.3		10.0	11.3		12.1	12.2	
LOS		C	A		B		A	B		B	B	
Approach Delay		20.4			14.3			11.3			12.2	
Approach LOS		C			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 59.3			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 12.6		Intersection LOS: B	
Intersection Capacity Utilization 56.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	200	16	143	13	1115	39	1245
v/c Ratio	0.48	0.03	0.26	0.09	0.59	0.22	0.67
Control Delay	22.0	0.5	14.3	10.0	11.3	12.1	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	0.5	14.3	10.0	11.3	12.1	12.2
Queue Length 50th (m)	16.7	0.0	8.2	0.6	39.2	2.0	45.0
Queue Length 95th (m)	44.5	0.6	25.7	3.9	76.1	9.1	88.3
Internal Link Dist (m)	218.5		309.4		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	846	1054	1071	209	2786	267	2728
Starvation Cap Reductn	0	0	0	0	0	0	106
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.02	0.13	0.06	0.40	0.15	0.47

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	28	15	28	60	44	12	1002	24	36	947	199
Future Volume (vph)	156	28	15	28	60	44	12	1002	24	36	947	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.95		1.00	1.00		1.00	0.97	
Flt Protected		0.96	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1787	1583		1760		1770	3527		1770	3447	
Flt Permitted		0.69	1.00		0.91		0.14	1.00		0.18	1.00	
Satd. Flow (perm)		1291	1583		1614		266	3527		340	3447	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	170	30	16	30	65	48	13	1089	26	39	1029	216
RTOR Reduction (vph)	0	0	11	0	23	0	0	2	0	0	18	0
Lane Group Flow (vph)	0	200	5	0	120	0	13	1113	0	39	1227	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		16.0	16.0		16.0		28.6	28.6		28.6	28.6	
Effective Green, g (s)		19.0	19.0		19.0		31.6	31.6		31.6	31.6	
Actuated g/C Ratio		0.32	0.32		0.32		0.54	0.54		0.54	0.54	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		418	513		523		143	1901		183	1858	
v/s Ratio Prot								0.32			c0.36	
v/s Ratio Perm		c0.15	0.00		0.07		0.05			0.11		
v/c Ratio		0.48	0.01		0.23		0.09	0.59		0.21	0.66	
Uniform Delay, d1		15.8	13.4		14.5		6.5	9.1		7.0	9.7	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.9	0.0		0.2		0.3	0.5		0.6	0.9	
Delay (s)		16.7	13.4		14.7		6.8	9.6		7.6	10.6	
Level of Service		B	B		B		A	A		A	B	
Approach Delay (s)		16.5			14.7			9.5			10.5	
Approach LOS		B			B			A			B	

Intersection Summary				
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	58.6	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	56.6%	ICU Level of Service	B	
Analysis Period (min)	15			

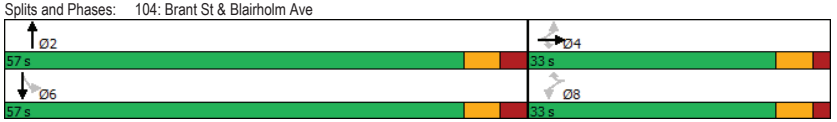
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	6	22	20	0	78	0	901	19	51	792	0
Future Volume (vph)	18	6	22	20	0	78	0	901	19	51	792	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.997				
Flt Protected		0.964		0.950						0.950		
Satd. Flow (prot)	0	1796	1583	1770	0	1583	0	3529	0	1770	1863	0
Flt Permitted		0.964		0.740						0.266		
Satd. Flow (perm)	0	1796	1583	1378	0	1583	0	3529	0	495	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			85		4				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		51.0			305.8			317.1			241.2	
Travel Time (s)		3.7			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	7	24	22	0	85	0	979	21	55	861	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	27	24	22	0	85	0	1000	0	55	861	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		8.6	8.6	10.7		10.7		38.4		38.4	38.4	
Actuated g/C Ratio		0.17	0.17	0.21		0.21		0.74		0.74	0.74	
v/c Ratio		0.09	0.08	0.08		0.22		0.38		0.15	0.62	
Control Delay		22.8	4.5	21.2		7.9		4.2		4.5	7.6	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		22.8	4.5	21.2		7.9		4.2		4.5	7.6	
LOS		C	A	C		A		A		A	A	
Approach Delay		14.2			10.6			4.2			7.4	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 51.9			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 6.2		Intersection LOS: A	
Intersection Capacity Utilization 63.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	27	24	22	85	1000	55	861
v/c Ratio	0.09	0.08	0.08	0.22	0.38	0.15	0.62
Control Delay	22.8	4.5	21.2	7.9	4.2	4.5	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.8	4.5	21.2	7.9	4.2	4.5	7.6
Queue Length 50th (m)	2.2	0.0	1.7	0.0	19.5	1.7	42.8
Queue Length 95th (m)	9.5	3.2	8.1	10.7	29.0	5.1	76.7
Internal Link Dist (m)	27.0				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	987	892	814	969	3320	466	1753
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.03	0.09	0.30	0.12	0.49

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	6	22	20	0	78	0	901	19	51	792	0
Future Volume (vph)	18	6	22	20	0	78	0	901	19	51	792	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.96	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1796	1583	1770		1583		3528		1770	1863	
Flt Permitted		0.96	1.00	0.74		1.00		1.00		0.27	1.00	
Satd. Flow (perm)		1796	1583	1378		1583		3528		496	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	7	24	22	0	85	0	979	21	55	861	0
RTOR Reduction (vph)	0	0	21	0	0	72	0	1	0	0	0	0
Lane Group Flow (vph)	0	27	3	22	0	13	0	999	0	55	861	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		6.1	6.1	6.1		6.1		34.0		34.0	34.0	
Effective Green, g (s)		6.1	6.1	8.1		8.1		37.0		37.0	37.0	
Actuated g/C Ratio		0.11	0.11	0.15		0.15		0.70		0.70	0.70	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		206	181	210		241		2458		345	1298	
v/s Ratio Prot								0.28			c0.46	
v/s Ratio Perm		0.02	0.00	c0.02		0.01				0.11		
v/c Ratio		0.13	0.02	0.10		0.05		0.41		0.16	0.66	
Uniform Delay, d1		21.1	20.8	19.4		19.2		3.4		2.7	4.5	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.3	0.0	0.2		0.1		0.1		0.2	1.3	
Delay (s)		21.4	20.9	19.6		19.3		3.5		3.0	5.8	
Level of Service		C	C	B		B		A		A	A	
Approach Delay (s)		21.2			19.4			3.5			5.7	
Approach LOS		C			B			A			A	

Intersection Summary					
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.59				
Actuated Cycle Length (s)	53.1	Sum of lost time (s)		10.0	
Intersection Capacity Utilization	63.4%	ICU Level of Service		B	
Analysis Period (min)	15				

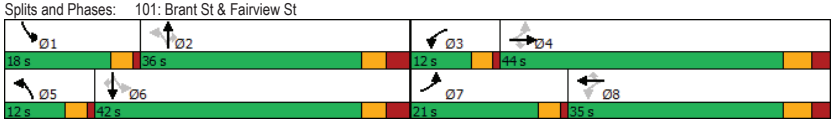
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	329	826	263	157	784	251	253	609	164	246	624	172
Future Volume (vph)	329	826	263	157	784	251	253	609	164	246	624	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.127			0.202			0.266			0.145		
Satd. Flow (perm)	237	3539	1583	376	3539	1583	495	3539	1583	270	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			271			261			192			187
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	358	898	286	171	852	273	275	662	178	267	678	187
Shared Lane Traffic (%)												
Lane Group Flow (vph)	358	898	286	171	852	273	275	662	178	267	678	187
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	21.0	44.0	44.0	12.0	35.0	35.0	12.0	36.0	36.0	18.0	42.0	42.0
Total Split (%)	19.1%	40.0%	40.0%	10.9%	31.8%	31.8%	10.9%	32.7%	32.7%	16.4%	38.2%	38.2%
Maximum Green (s)	17.0	37.6	37.6	8.0	28.6	28.6	8.0	29.5	29.5	14.0	35.5	35.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	50.9	38.9	38.9	37.9	29.8	29.8	35.3	27.3	27.3	44.7	32.7	32.7
Actuated g/C Ratio	0.49	0.37	0.37	0.37	0.29	0.29	0.34	0.26	0.26	0.43	0.32	0.32
v/c Ratio	0.97	0.68	0.38	0.70	0.84	0.43	1.03	0.71	0.32	0.86	0.61	0.30
Control Delay	69.0	30.9	5.2	35.1	44.0	6.8	90.9	39.5	5.2	49.1	32.6	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.0	30.9	5.2	35.1	44.0	6.8	90.9	39.5	5.2	49.1	32.6	5.0
LOS	E	C	A	D	D	A	F	D	A	D	C	A
Approach Delay		35.0			35.0			46.7			31.9	
Approach LOS		D			C			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 103.8			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 36.9		Intersection LOS: D	
Intersection Capacity Utilization 84.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	358	898	286	171	852	273	275	662	178	267	678	187
v/c Ratio	0.97	0.68	0.38	0.70	0.84	0.43	1.03	0.71	0.32	0.86	0.61	0.30
Control Delay	69.0	30.9	5.2	35.1	44.0	6.8	90.9	39.5	5.2	49.1	32.6	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.0	30.9	5.2	35.1	44.0	6.8	90.9	39.5	5.2	49.1	32.6	5.0
Queue Length 50th (m)	59.7	84.5	2.0	20.2	90.5	1.9	~41.8	68.5	0.0	37.8	64.7	0.0
Queue Length 95th (m)	#127.7	113.7	20.2	#43.5	#124.2	22.0	#92.2	89.0	13.8	#83.7	83.8	15.2
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	368	1372	779	245	1063	658	267	1097	623	320	1303	701
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.65	0.37	0.70	0.80	0.41	1.03	0.60	0.29	0.83	0.52	0.27

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	329	826	263	157	784	251	253	609	164	246	624	172
Future Volume (vph)	329	826	263	157	784	251	253	609	164	246	624	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.13	1.00	1.00	0.20	1.00	1.00	0.27	1.00	1.00	0.15	1.00	1.00
Satd. Flow (perm)	237	3539	1583	376	3539	1583	496	3539	1583	271	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	358	898	286	171	852	273	275	662	178	267	678	187
RTOR Reduction (vph)	0	0	169	0	0	186	0	0	131	0	0	128
Lane Group Flow (vph)	358	898	117	171	852	87	275	662	47	267	678	59
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	48.5	36.5	36.5	35.4	27.4	27.4	32.8	24.8	24.8	42.3	30.3	30.3
Effective Green, g (s)	48.5	38.9	38.9	35.4	29.8	29.8	32.8	27.3	27.3	42.3	32.8	32.8
Actuated g/C Ratio	0.47	0.38	0.38	0.34	0.29	0.29	0.32	0.26	0.26	0.41	0.32	0.32
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	363	1327	593	235	1016	454	255	931	416	305	1119	500
v/s Ratio Prot	c0.16	0.25		0.06	0.24		c0.08	0.19		c0.11	0.19	
v/s Ratio Perm	c0.30		0.07	0.19		0.05	c0.26		0.03	0.24		0.04
v/c Ratio	0.99	0.68	0.20	0.73	0.84	0.19	1.08	0.71	0.11	0.88	0.61	0.12
Uniform Delay, d1	29.7	27.1	21.9	25.6	34.7	27.9	32.5	34.6	29.0	23.9	30.0	25.2
Progression 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
Incremental Delay, d2	43.2	1.4	0.2	10.7	6.2	0.2	78.8	2.6	0.1	23.2	0.9	0.1
Delay (s)	72.8	28.5	22.0	36.3	40.9	28.1	111.3	37.2	29.1	47.2	30.9	25.3
Level of Service	E	C	C	D	D	C	F	D	C	D	C	C
Approach Delay (s)		37.6			37.6			54.2			33.8	
Approach LOS		D			D			D			C	

Intersection Summary				
HCM 2000 Control Delay	40.4	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.98			
Actuated Cycle Length (s)	103.7	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	84.5%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	8	15	67	12	119	13	907	39	106	922	39
Future Volume (vph)	61	8	15	67	12	119	13	907	39	106	922	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.904			0.864			0.994			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1684	0	1770	1609	0	1770	3518	0	1770	3518	0
Flt Permitted	0.634			0.741			0.208			0.214		
Satd. Flow (perm)	1181	1684	0	1380	1609	0	387	3518	0	399	3518	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			129			8			8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	9	16	73	13	129	14	986	42	115	1002	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	66	25	0	73	142	0	14	1028	0	115	1044	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	13.5	13.5		13.5	13.5		38.0	38.0		50.0	38.0	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.56	0.56		0.74	0.56	
v/c Ratio	0.28	0.07		0.27	0.34		0.06	0.52		0.23	0.53	
Control Delay	29.5	16.8		28.7	9.5		9.0	10.9		3.8	11.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	29.5	16.8		28.7	9.5		9.0	10.9		3.8	11.0	
LOS	C	B		C	A		A	B		A	B	
Approach Delay		26.0			16.0			10.9			10.3	
Approach LOS		C			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 67.6			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 11.6		Intersection LOS: B	
Intersection Capacity Utilization 61.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	66	25	73	142	14	1028	115	1044
v/c Ratio	0.28	0.07	0.27	0.34	0.06	0.52	0.23	0.53
Control Delay	29.5	16.8	28.7	9.5	9.0	10.9	3.8	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	16.8	28.7	9.5	9.0	10.9	3.8	11.0
Queue Length 50th (m)	7.1	0.9	7.8	1.3	0.8	40.4	2.8	41.3
Queue Length 95th (m)	22.0	7.8	23.4	17.1	3.9	70.2	8.6	71.8
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	342	500	400	558	301	2743	546	2743
Starvation Cap Reductn	0	0	0	0	0	251	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.05	0.18	0.25	0.05	0.41	0.21	0.38

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	8	15	67	12	119	13	907	39	106	922	39
Future Volume (vph)	61	8	15	67	12	119	13	907	39	106	922	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1684		1770	1609		1770	3518		1770	3518	
Flt Permitted	0.63	1.00		0.74	1.00		0.21	1.00		0.21	1.00	
Satd. Flow (perm)	1180	1684		1380	1609		388	3518		398	3518	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	9	16	73	13	129	14	986	42	115	1002	42
RTOR Reduction (vph)	0	13	0	0	104	0	0	4	0	0	4	0
Lane Group Flow (vph)	66	12	0	73	38	0	14	1024	0	115	1040	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	10.4	10.4		10.4	10.4		34.9	34.9		40.4	34.9	
Effective Green, g (s)	13.4	13.4		13.4	13.4		37.9	37.9		46.4	37.9	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.56	0.56		0.68	0.56	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	233	332		272	318		216	1966		444	1966	
v/s Ratio Prot		0.01			0.02			0.29		c0.03	c0.30	
v/s Ratio Perm	c0.06			0.05			0.04			0.14		
v/c Ratio	0.28	0.04		0.27	0.12		0.06	0.52		0.26	0.53	
Uniform Delay, d1	23.1	22.0		23.0	22.4		6.8	9.3		4.4	9.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.0		0.5	0.2		0.1	0.3		0.3	0.3	
Delay (s)	23.8	22.0		23.6	22.5		7.0	9.6		4.7	9.6	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		23.3			22.9			9.5			9.1	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.42			
Actuated Cycle Length (s)	67.8	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	61.4%	ICU Level of Service	B	
Analysis Period (min)	15			

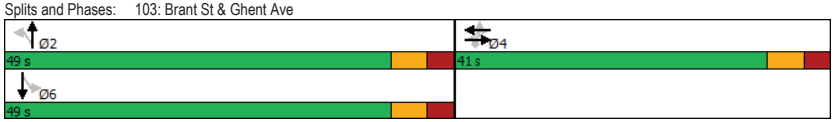
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	17	9	19	15	35	15	821	19	42	851	105
Future Volume (vph)	94	17	9	19	15	35	15	821	19	42	851	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.932			0.997			0.984	
Flt Protected		0.959			0.986		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1712	0	1770	3529	0	1770	3483	0
Flt Permitted		0.706			0.885		0.230			0.277		
Satd. Flow (perm)	0	1315	1583	0	1536	0	428	3529	0	516	3483	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		38			4			21	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.5			333.4			75.4			150.5	
Travel Time (s)		17.5			24.0			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	102	18	10	21	16	38	16	892	21	46	925	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	120	10	0	75	0	16	913	0	46	1039	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		13.8	13.8		13.8		27.9	27.9		27.9	27.9	
Actuated g/C Ratio		0.31	0.31		0.31		0.63	0.63		0.63	0.63	
v/c Ratio		0.30	0.02		0.15		0.06	0.41		0.14	0.48	
Control Delay		15.9	0.1		8.8		6.7	7.2		7.7	7.6	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		15.9	0.1		8.8		6.7	7.2		7.7	7.6	
LOS		B	A		A		A	A		A	A	
Approach Delay		14.7			8.8			7.2			7.6	
Approach LOS		B			A			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 44.6			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 7.9		Intersection LOS: A	
Intersection Capacity Utilization 54.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	120	10	75	16	913	46	1039
v/c Ratio	0.30	0.02	0.15	0.06	0.41	0.14	0.48
Control Delay	15.9	0.1	8.8	6.7	7.2	7.7	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.9	0.1	8.8	6.7	7.2	7.7	7.6
Queue Length 50th (m)	7.0	0.0	2.0	0.6	21.2	1.7	24.9
Queue Length 95th (m)	21.4	0.0	10.6	3.3	42.1	7.2	49.4
Internal Link Dist (m)	218.5		309.4		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	1088	1318	1277	403	3320	485	3278
Starvation Cap Reductn	0	0	0	0	0	0	6
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.01	0.06	0.04	0.28	0.09	0.32

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	17	9	19	15	35	15	821	19	42	851	105
Future Volume (vph)	94	17	9	19	15	35	15	821	19	42	851	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.93		1.00	1.00		1.00	0.98	
Flt Protected		0.96	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1787	1583		1711		1770	3527		1770	3481	
Flt Permitted		0.71	1.00		0.89		0.23	1.00		0.28	1.00	
Satd. Flow (perm)		1315	1583		1536		428	3527		515	3481	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	102	18	10	21	16	38	16	892	21	46	925	114
RTOR Reduction (vph)	0	0	8	0	29	0	0	2	0	0	9	0
Lane Group Flow (vph)	0	120	2	0	46	0	16	911	0	46	1030	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		8.4	8.4		8.4		23.7	23.7		23.7	23.7	
Effective Green, g (s)		11.4	11.4		11.4		26.7	26.7		26.7	26.7	
Actuated g/C Ratio		0.25	0.25		0.25		0.58	0.58		0.58	0.58	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		325	391		379		247	2042		298	2016	
v/s Ratio Prot								0.26			c0.30	
v/s Ratio Perm		c0.09	0.00		0.03		0.04			0.09		
v/c Ratio		0.37	0.01		0.12		0.06	0.45		0.15	0.51	
Uniform Delay, d1		14.4	13.1		13.5		4.2	5.5		4.5	5.8	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.7	0.0		0.1		0.1	0.2		0.2	0.2	
Delay (s)		15.1	13.1		13.6		4.4	5.7		4.7	6.0	
Level of Service		B	B		B		A	A		A	A	
Approach Delay (s)		14.9			13.6			5.6			6.0	
Approach LOS		B			B			A			A	

Intersection Summary					
HCM 2000 Control Delay	6.6	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.47				
Actuated Cycle Length (s)	46.1	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	54.3%	ICU Level of Service		A	
Analysis Period (min)	15				

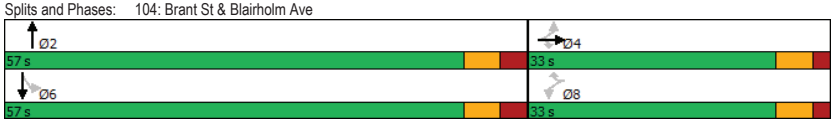
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	0	6	11	0	45	0	790	9	36	806	0
Future Volume (vph)	15	0	6	11	0	45	0	790	9	36	806	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.998				
Flt Protected		0.950		0.950						0.950		
Satd. Flow (prot)	0	1770	1583	1770	0	1583	0	3532	0	1770	1863	0
Flt Permitted		0.950		0.747						0.320		
Satd. Flow (perm)	0	1770	1583	1391	0	1583	0	3532	0	596	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			49		2				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		55.3			305.8			317.1			241.2	
Travel Time (s)		4.0			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	0	7	12	0	49	0	859	10	39	876	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	16	7	12	0	49	0	869	0	39	876	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		8.7	8.7	10.9		10.9		42.3		42.3	42.3	
Actuated g/C Ratio		0.17	0.17	0.21		0.21		0.83		0.83	0.83	
v/c Ratio		0.05	0.02	0.04		0.13		0.30		0.08	0.57	
Control Delay		24.6	0.2	22.8		9.3		2.9		3.2	5.7	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		24.6	0.2	22.8		9.3		2.9		3.2	5.7	
LOS		C	A	C		A		A		A	A	
Approach Delay		17.2			12.0			2.9			5.6	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 51.2			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 4.7		Intersection LOS: A	
Intersection Capacity Utilization 64.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	16	7	12	49	869	39	876
v/c Ratio	0.05	0.02	0.04	0.13	0.30	0.08	0.57
Control Delay	24.6	0.2	22.8	9.3	2.9	3.2	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.6	0.2	22.8	9.3	2.9	3.2	5.7
Queue Length 50th (m)	1.8	0.0	1.3	0.0	16.1	1.1	44.3
Queue Length 95th (m)	6.9	0.0	5.6	8.3	22.6	3.4	74.5
Internal Link Dist (m)	31.3				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	1013	926	855	992	3226	544	1701
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.01	0.05	0.27	0.07	0.51

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	0	6	11	0	45	0	790	9	36	806	0
Future Volume (vph)	15	0	6	11	0	45	0	790	9	36	806	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.95	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1770	1583	1770		1583		3533		1770	1863	
Flt Permitted		0.95	1.00	0.75		1.00		1.00		0.32	1.00	
Satd. Flow (perm)		1770	1583	1392		1583		3533		596	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	0	7	12	0	49	0	859	10	39	876	0
RTOR Reduction (vph)	0	0	6	0	0	44	0	1	0	0	0	0
Lane Group Flow (vph)	0	16	1	12	0	5	0	868	0	39	876	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		4.0	4.0	4.0		4.0		36.6		36.6	36.6	
Effective Green, g (s)		4.0	4.0	6.0		6.0		39.6		39.6	39.6	
Actuated g/C Ratio		0.07	0.07	0.11		0.11		0.74		0.74	0.74	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		132	118	155		177		2610		440	1376	
v/s Ratio Prot								0.25			c0.47	
v/s Ratio Perm		0.01	0.00	0.01		0.00				0.07		
v/c Ratio		0.12	0.00	0.08		0.03		0.33		0.09	0.64	
Uniform Delay, d1		23.2	23.0	21.3		21.2		2.4		2.0	3.5	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.4	0.0	0.2		0.1		0.1		0.1	1.0	
Delay (s)		23.6	23.0	21.5		21.3		2.5		2.0	4.4	
Level of Service		C	C	C		C		A		A	A	
Approach Delay (s)		23.4			21.3			2.5			4.3	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	4.3	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	64.1%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Appendix H3

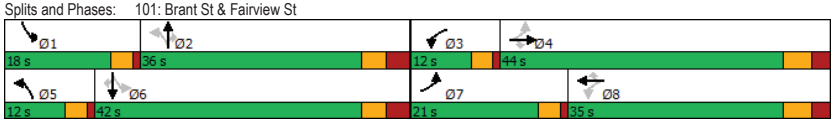
Background – Full Build Out Operations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	360	1180	291	132	371	163	207	666	292	245	747	160
Future Volume (vph)	360	1180	291	132	371	163	207	666	292	245	747	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.359			0.137			0.180			0.131		
Satd. Flow (perm)	669	3539	1583	255	3539	1583	335	3539	1583	244	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			250			193			192			174
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	391	1283	316	143	403	177	225	724	317	266	812	174
Shared Lane Traffic (%)												
Lane Group Flow (vph)	391	1283	316	143	403	177	225	724	317	266	812	174
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	21.0	44.0	44.0	12.0	35.0	35.0	12.0	36.0	36.0	18.0	42.0	42.0
Total Split (%)	19.1%	40.0%	40.0%	10.9%	31.8%	31.8%	10.9%	32.7%	32.7%	16.4%	38.2%	38.2%
Maximum Green (s)	17.0	37.6	37.6	8.0	28.6	28.6	8.0	29.5	29.5	14.0	35.5	35.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	52.0	40.1	40.1	39.4	31.5	31.5	37.1	29.1	29.1	46.8	34.8	34.8
Actuated g/C Ratio	0.49	0.38	0.38	0.37	0.29	0.29	0.35	0.27	0.27	0.44	0.33	0.33
v/c Ratio	0.79	0.97	0.42	0.70	0.39	0.29	1.00	0.75	0.56	0.88	0.70	0.28
Control Delay	32.6	51.7	8.0	38.7	32.0	4.8	88.2	41.1	16.7	54.0	35.2	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	51.7	8.0	38.7	32.0	4.8	88.2	41.1	16.7	54.0	35.2	5.0
LOS	C	D	A	D	C	A	F	D	B	D	D	A
Approach Delay		41.0			26.7			43.4			35.0	
Approach LOS		D			C			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 106.8			
Natural Cycle: 105			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 38.2		Intersection LOS: D	
Intersection Capacity Utilization 85.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	391	1283	316	143	403	177	225	724	317	266	812	174
v/c Ratio	0.79	0.97	0.42	0.70	0.39	0.29	1.00	0.75	0.56	0.88	0.70	0.28
Control Delay	32.6	51.7	8.0	38.7	32.0	4.8	88.2	41.1	16.7	54.0	35.2	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	51.7	8.0	38.7	32.0	4.8	88.2	41.1	16.7	54.0	35.2	5.0
Queue Length 50th (m)	57.2	149.1	9.7	17.8	38.4	0.0	31.0	76.6	21.8	39.7	81.3	0.0
Queue Length 95th (m)	#95.0	#202.0	31.7	#43.1	53.5	13.5	#77.0	98.4	50.6	#86.9	103.4	14.7
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	501	1328	750	208	1044	603	224	1062	609	307	1261	676
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.97	0.42	0.69	0.39	0.29	1.00	0.68	0.52	0.87	0.64	0.26

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	360	1180	291	132	371	163	207	666	292	245	747	160
Future Volume (vph)	360	1180	291	132	371	163	207	666	292	245	747	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.36	1.00	1.00	0.14	1.00	1.00	0.18	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	669	3539	1583	255	3539	1583	336	3539	1583	243	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	391	1283	316	143	403	177	225	724	317	266	812	174
RTOR Reduction (vph)	0	0	156	0	0	125	0	0	140	0	0	117
Lane Group Flow (vph)	391	1283	160	143	403	52	225	724	177	266	812	57
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	49.6	37.7	37.7	37.1	29.2	29.2	34.6	26.6	26.6	44.3	32.3	32.3
Effective Green, g (s)	49.6	40.1	40.1	37.1	31.6	31.6	34.6	29.1	29.1	44.3	34.8	34.8
Actuated g/C Ratio	0.46	0.38	0.38	0.35	0.30	0.30	0.32	0.27	0.27	0.41	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	479	1328	594	200	1047	468	216	964	431	296	1153	515
v/s Ratio Prot	c0.13	c0.36		0.05	0.11		0.08	0.20		c0.12	0.23	
v/s Ratio Perm	0.25		0.10	0.19		0.03	c0.26		0.11	0.26		0.04
v/c Ratio	0.82	0.97	0.27	0.71	0.38	0.11	1.04	0.75	0.41	0.90	0.70	0.11
Uniform Delay, d1	20.5	32.7	23.2	28.0	29.9	27.4	31.9	35.5	31.8	26.4	31.5	25.2
Progression 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
Incremental Delay, d2	10.3	17.1	0.2	11.5	0.2	0.1	72.6	3.3	0.6	27.7	2.0	0.1
Delay (s)	30.8	49.8	23.4	39.4	30.1	27.5	104.5	38.9	32.5	54.1	33.5	25.3
Level of Service	C	D	C	D	C	C	F	D	C	D	C	C
Approach Delay (s)		41.8			31.3			48.9			36.7	
Approach LOS		D			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.96			
Actuated Cycle Length (s)	106.8	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	85.4%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	10	17	61	9	87	27	870	45	95	983	92
Future Volume (vph)	35	10	17	61	9	87	27	870	45	95	983	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.907			0.864			0.993			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1690	0	1770	1609	0	1770	3514	0	1770	3493	0
Flt Permitted	0.689			0.738			0.186			0.241		
Satd. Flow (perm)	1283	1690	0	1375	1609	0	346	3514	0	449	3493	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			95			10			18	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	11	18	66	10	95	29	946	49	103	1068	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	29	0	66	105	0	29	995	0	103	1168	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	13.4	13.4		13.4	13.4		42.9	42.9		53.0	42.9	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.65	0.65		0.81	0.65	
v/c Ratio	0.14	0.08		0.23	0.26		0.13	0.43		0.18	0.51	
Control Delay	28.6	17.4		29.7	10.2		9.4	9.0		3.0	9.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.1		0.0	0.0	
Total Delay	28.6	17.4		29.7	10.2		9.4	9.0		3.0	9.8	
LOS	C	B		C	B		A	A		A	A	
Approach Delay		23.8			17.7			9.1			9.2	
Approach LOS		C			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 65.5			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay: 10.1		Intersection LOS: B	
Intersection Capacity Utilization 56.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	38	29	66	105	29	995	103	1168
v/c Ratio	0.14	0.08	0.23	0.26	0.13	0.43	0.18	0.51
Control Delay	28.6	17.4	29.7	10.2	9.4	9.0	3.0	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	28.6	17.4	29.7	10.2	9.4	9.0	3.0	9.8
Queue Length 50th (m)	4.3	1.2	7.7	1.1	1.7	37.4	2.4	46.8
Queue Length 95th (m)	14.2	8.7	21.6	14.8	6.5	61.8	6.9	77.2
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	405	546	434	573	267	2715	626	2701
Starvation Cap Reductn	0	0	0	0	0	361	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.05	0.15	0.18	0.11	0.42	0.16	0.43

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	10	17	61	9	87	27	870	45	95	983	92
Future Volume (vph)	35	10	17	61	9	87	27	870	45	95	983	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1689		1770	1610		1770	3513		1770	3494	
Flt Permitted	0.69	1.00		0.74	1.00		0.19	1.00		0.24	1.00	
Satd. Flow (perm)	1284	1689		1375	1610		346	3513		448	3494	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	11	18	66	10	95	29	946	49	103	1068	100
RTOR Reduction (vph)	0	15	0	0	81	0	0	4	0	0	7	0
Lane Group Flow (vph)	38	14	0	66	24	0	29	991	0	103	1161	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	7.3	7.3		7.3	7.3		38.2	38.2		43.2	38.2	
Effective Green, g (s)	10.3	10.3		10.3	10.3		41.2	41.2		49.2	41.2	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.61	0.61		0.73	0.61	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	195	257		209	245		211	2144		483	2132	
v/s Ratio Prot		0.01			0.02			0.28		c0.03	c0.33	
v/s Ratio Perm	0.03			c0.05			0.08			0.13		
v/c Ratio	0.19	0.05		0.32	0.10		0.14	0.46		0.21	0.54	
Uniform Delay, d1	25.0	24.4		25.5	24.6		5.6	7.1		3.1	7.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.1		0.9	0.2		0.3	0.2		0.2	0.3	
Delay (s)	25.5	24.5		26.3	24.8		5.9	7.3		3.3	8.0	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		25.1			25.4			7.3			7.6	
Approach LOS		C			C			A			A	

Intersection Summary					
HCM 2000 Control Delay	9.1	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.45				
Actuated Cycle Length (s)	67.5	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	56.8%	ICU Level of Service		B	
Analysis Period (min)	15				

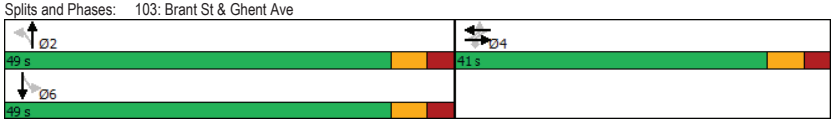
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	149	26	23	25	10	30	13	760	33	35	906	127
Future Volume (vph)	149	26	23	25	10	30	13	760	33	35	906	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.937			0.994			0.982	
Flt Protected		0.959			0.981		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1712	0	1770	3518	0	1770	3476	0
Flt Permitted		0.708			0.850		0.183			0.279		
Satd. Flow (perm)	0	1319	1583	0	1484	0	341	3518	0	520	3476	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		33			7			24	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.5			333.4			75.4			150.5	
Travel Time (s)		17.5			24.0			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	162	28	25	27	11	33	14	826	36	38	985	138
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	190	25	0	71	0	14	862	0	38	1123	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		17.2	17.2		17.2		29.9	29.9		29.9	29.9	
Actuated g/C Ratio		0.31	0.31		0.31		0.54	0.54		0.54	0.54	
v/c Ratio		0.46	0.05		0.15		0.08	0.45		0.14	0.59	
Control Delay		19.8	2.6		10.0		8.8	9.1		9.1	10.6	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		19.8	2.6		10.0		8.8	9.1		9.1	10.6	
LOS		B	A		A		A	A		A	B	
Approach Delay		17.8			10.0			9.1			10.5	
Approach LOS		B			A			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 55.4			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 10.7		Intersection LOS: B	
Intersection Capacity Utilization 52.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	190	25	71	14	862	38	1123
v/c Ratio	0.46	0.05	0.15	0.08	0.45	0.14	0.59
Control Delay	19.8	2.6	10.0	8.8	9.1	9.1	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.8	2.6	10.0	8.8	9.1	9.1	10.6
Queue Length 50th (m)	13.9	0.0	2.4	0.6	24.3	1.7	34.7
Queue Length 95th (m)	37.8	2.5	11.8	3.7	49.7	7.3	70.1
Internal Link Dist (m)	218.5		309.4		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	906	1102	1030	283	2923	432	2891
Starvation Cap Reductn	0	0	0	0	0	0	75
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.02	0.07	0.05	0.29	0.09	0.40

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	149	26	23	25	10	30	13	760	33	35	906	127
Future Volume (vph)	149	26	23	25	10	30	13	760	33	35	906	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.94		1.00	0.99		1.00	0.98	
Flt Protected		0.96	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1787	1583		1713		1770	3517		1770	3474	
Flt Permitted		0.71	1.00		0.85		0.18	1.00		0.28	1.00	
Satd. Flow (perm)		1319	1583		1484		341	3517		521	3474	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	162	28	25	27	11	33	14	826	36	38	985	138
RTOR Reduction (vph)	0	0	17	0	23	0	0	3	0	0	11	0
Lane Group Flow (vph)	0	190	8	0	48	0	14	859	0	38	1112	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		14.1	14.1		14.1		26.8	26.8		26.8	26.8	
Effective Green, g (s)		17.1	17.1		17.1		29.8	29.8		29.8	29.8	
Actuated g/C Ratio		0.31	0.31		0.31		0.54	0.54		0.54	0.54	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		410	493		462		185	1909		282	1885	
v/s Ratio Prot								0.24			c0.32	
v/s Ratio Perm		c0.14	0.00		0.03		0.04			0.07		
v/c Ratio		0.46	0.02		0.10		0.08	0.45		0.13	0.59	
Uniform Delay, d1		15.2	13.1		13.5		6.0	7.6		6.2	8.4	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.8	0.0		0.1		0.2	0.2		0.2	0.5	
Delay (s)		16.0	13.1		13.6		6.2	7.8		6.4	8.9	
Level of Service		B	B		B		A	A		A	A	
Approach Delay (s)		15.7			13.6			7.7			8.8	
Approach LOS		B			B			A			A	

Intersection Summary					
HCM 2000 Control Delay	9.2	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.54				
Actuated Cycle Length (s)	54.9	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	52.4%	ICU Level of Service		A	
Analysis Period (min)	15				

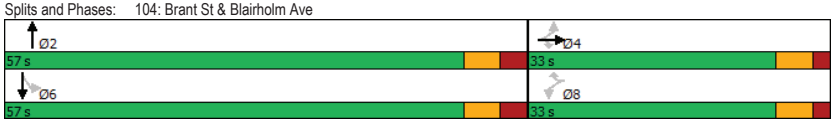
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	5	8	41	0	117	0	661	17	49	808	0
Future Volume (vph)	17	5	8	41	0	117	0	661	17	49	808	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.996				
Flt Protected		0.962		0.950						0.950		
Satd. Flow (prot)	0	1792	1583	1770	0	1583	0	3525	0	1770	1863	0
Flt Permitted		0.962		0.742						0.367		
Satd. Flow (perm)	0	1792	1583	1382	0	1583	0	3525	0	684	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			127		5				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		34.6			305.8			317.1			241.2	
Travel Time (s)		2.5			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	5	9	45	0	127	0	718	18	53	878	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	23	9	45	0	127	0	736	0	53	878	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		9.0	9.0	11.1		11.1		38.4		38.4	38.4	
Actuated g/C Ratio		0.17	0.17	0.21		0.21		0.73		0.73	0.73	
v/c Ratio		0.07	0.03	0.15		0.29		0.28		0.11	0.64	
Control Delay		23.6	0.1	22.8		7.6		3.8		4.0	8.1	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		23.6	0.1	22.8		7.6		3.8		4.0	8.1	
LOS		C	A	C		A		A		A	A	
Approach Delay		17.0			11.5			3.8			7.9	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 52.4			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 6.8		Intersection LOS: A	
Intersection Capacity Utilization 64.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	23	9	45	127	736	53	878
v/c Ratio	0.07	0.03	0.15	0.29	0.28	0.11	0.64
Control Delay	23.6	0.1	22.8	7.6	3.8	4.0	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.6	0.1	22.8	7.6	3.8	4.0	8.1
Queue Length 50th (m)	1.9	0.0	3.5	0.0	12.9	1.5	44.4
Queue Length 95th (m)	9.0	0.0	14.2	13.3	21.8	4.9	87.4
Internal Link Dist (m)	10.6				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	980	887	812	982	3303	641	1745
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.06	0.13	0.22	0.08	0.50

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	5	8	41	0	117	0	661	17	49	808	0
Future Volume (vph)	17	5	8	41	0	117	0	661	17	49	808	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.96	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1793	1583	1770		1583		3526		1770	1863	
Flt Permitted		0.96	1.00	0.74		1.00		1.00		0.37	1.00	
Satd. Flow (perm)		1793	1583	1383		1583		3526		683	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	5	9	45	0	127	0	718	18	53	878	0
RTOR Reduction (vph)	0	0	8	0	0	107	0	2	0	0	0	0
Lane Group Flow (vph)	0	23	1	45	0	20	0	734	0	53	878	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		6.5	6.5	6.5		6.5		34.0		34.0	34.0	
Effective Green, g (s)		6.5	6.5	8.5		8.5		37.0		37.0	37.0	
Actuated g/C Ratio		0.12	0.12	0.16		0.16		0.69		0.69	0.69	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		217	192	219		251		2438		472	1288	
v/s Ratio Prot								0.21			c0.47	
v/s Ratio Perm		0.01	0.00	c0.03		0.01				0.08		
v/c Ratio		0.11	0.01	0.21		0.08		0.30		0.11	0.68	
Uniform Delay, d1		20.9	20.7	19.6		19.2		3.2		2.8	4.8	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.2	0.0	0.5		0.1		0.1		0.1	1.5	
Delay (s)		21.1	20.7	20.0		19.3		3.3		2.9	6.3	
Level of Service		C	C	C		B		A		A	A	
Approach Delay (s)		21.0			19.5			3.3			6.1	
Approach LOS		C			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	6.5	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.62			
Actuated Cycle Length (s)	53.5	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	64.2%	ICU Level of Service	C	
Analysis Period (min)	15			

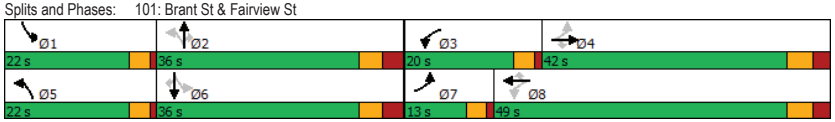
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	226	870	317	232	1616	468	190	844	203	249	702	462
Future Volume (vph)	226	870	317	232	1616	468	190	844	203	249	702	462
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.109			0.099			0.141			0.126		
Satd. Flow (perm)	203	3539	1583	184	3539	1583	263	3539	1583	235	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			345			291			140			223
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	246	946	345	252	1757	509	207	917	221	271	763	502
Shared Lane Traffic (%)												
Lane Group Flow (vph)	246	946	345	252	1757	509	207	917	221	271	763	502
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	13.0	42.0	42.0	20.0	49.0	49.0	22.0	36.0	36.0	22.0	36.0	36.0
Total Split (%)	10.8%	35.0%	35.0%	16.7%	40.8%	40.8%	18.3%	30.0%	30.0%	18.3%	30.0%	30.0%
Maximum Green (s)	9.0	35.6	35.6	16.0	42.6	42.6	18.0	29.5	29.5	18.0	29.5	29.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	48.0	39.0	39.0	57.8	45.0	45.0	46.4	32.0	32.0	50.8	34.2	34.2
Actuated g/C Ratio	0.40	0.33	0.33	0.49	0.38	0.38	0.39	0.27	0.27	0.43	0.29	0.29
v/c Ratio	1.22	0.81	0.46	0.87	1.31	0.65	0.73	0.96	0.42	0.86	0.75	0.82
Control Delay	164.7	43.7	5.3	56.8	176.4	16.9	39.4	64.2	16.2	54.7	44.2	33.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	164.7	43.7	5.3	56.8	176.4	16.9	39.4	64.2	16.2	54.7	44.2	33.9
LOS	F	D	A	E	F	B	D	E	B	D	D	C
Approach Delay		54.4			132.2			52.5			42.7	
Approach LOS		D			F			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 118.6			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.31			
Intersection Signal Delay: 79.7		Intersection LOS: E	
Intersection Capacity Utilization 107.7%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Queues
101: Brant St & Fairview St

Background - Full Build Out
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	246	946	345	252	1757	509	207	917	221	271	763	502
v/c Ratio	1.22	0.81	0.46	0.87	1.31	0.65	0.73	0.96	0.42	0.86	0.75	0.82
Control Delay	164.7	43.7	5.3	56.8	176.4	16.9	39.4	64.2	16.2	54.7	44.2	33.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	164.7	43.7	5.3	56.8	176.4	16.9	39.4	64.2	16.2	54.7	44.2	33.9
Queue Length 50th (m)	~59.4	114.7	0.0	44.0	~296.8	43.6	31.3	118.6	15.6	46.4	89.4	67.1
Queue Length 95th (m)	#112.9	142.1	21.2	#89.5	#341.6	83.8	55.5	#162.6	38.8	#93.6	117.7	#132.8
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	201	1163	752	304	1343	781	339	955	529	334	1021	615
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.22	0.81	0.46	0.83	1.31	0.65	0.61	0.96	0.42	0.81	0.75	0.82

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
101: Brant St & Fairview St

Background - Full Build Out
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	226	870	317	232	1616	468	190	844	203	249	702	462
Future Volume (vph)	226	870	317	232	1616	468	190	844	203	249	702	462
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.11	1.00	1.00	0.10	1.00	1.00	0.14	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	204	3539	1583	184	3539	1583	263	3539	1583	235	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	246	946	345	252	1757	509	207	917	221	271	763	502
RTOR Reduction (vph)	0	0	231	0	0	180	0	0	102	0	0	159
Lane Group Flow (vph)	246	946	114	252	1757	329	207	917	119	271	763	343
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	45.6	36.6	36.6	55.6	42.6	42.6	43.8	29.5	29.5	48.2	31.7	31.7
Effective Green, g (s)	45.6	39.0	39.0	55.6	45.0	45.0	43.8	32.0	32.0	48.2	34.2	34.2
Actuated g/C Ratio	0.38	0.33	0.33	0.47	0.38	0.38	0.37	0.27	0.27	0.41	0.29	0.29
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	197	1164	520	287	1343	601	279	955	427	309	1021	456
v/s Ratio Prot	c0.09	0.27		0.11	c0.50		0.09	c0.26		c0.12	0.22	
v/s Ratio Perm	0.39		0.07	0.30		0.21	0.18		0.08	0.23		0.22
v/c Ratio	1.25	0.81	0.22	0.88	1.31	0.55	0.74	0.96	0.28	0.88	0.75	0.75
Uniform Delay, d1	30.6	36.4	28.7	32.1	36.8	28.8	28.6	42.6	34.1	31.4	38.2	38.3
Progression 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
Incremental Delay, d2	146.9	4.4	0.2	24.7	144.2	1.0	10.2	20.1	0.4	23.2	3.0	6.9
Delay (s)	177.5	40.8	28.9	56.7	180.9	29.8	38.8	62.7	34.5	54.5	41.3	45.2
Level of Service	F	D	C	E	F	C	D	E	C	D	D	D
Approach Delay (s)		60.0			138.0			54.4			44.9	
Approach LOS		E			F			D			D	

Intersection Summary				
HCM 2000 Control Delay	83.9	HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio	1.12			
Actuated Cycle Length (s)	118.5	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	107.7%	ICU Level of Service	G	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	21	46	114	12	190	16	1152	65	123	1087	64
Future Volume (vph)	131	21	46	114	12	190	16	1152	65	123	1087	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.897			0.859			0.992			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1671	0	1770	1600	0	1770	3511	0	1770	3511	0
Flt Permitted	0.453			0.709			0.139			0.121		
Satd. Flow (perm)	844	1671	0	1321	1600	0	259	3511	0	225	3511	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50			207			10			11	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	142	23	50	124	13	207	17	1252	71	134	1182	70
Shared Lane Traffic (%)												
Lane Group Flow (vph)	142	73	0	124	220	0	17	1323	0	134	1252	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	18.4	18.4		18.4	18.4		46.0	46.0		60.5	46.0	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.55	0.55		0.73	0.55	
v/c Ratio	0.76	0.18		0.42	0.43		0.12	0.68		0.37	0.64	
Control Delay	59.9	14.4		35.0	8.4		11.4	15.2		6.4	14.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.7		0.0	0.0	
Total Delay	59.9	14.4		35.0	8.4		11.4	15.8		6.4	14.4	
LOS	E	B		D	A		B	B		A	B	
Approach Delay		44.5			18.0			15.8			13.7	
Approach LOS		D			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 82.9			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 17.0		Intersection LOS: B	
Intersection Capacity Utilization 73.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	142	73	124	220	17	1323	134	1252
v/c Ratio	0.76	0.18	0.42	0.43	0.12	0.68	0.37	0.64
Control Delay	59.9	14.4	35.0	8.4	11.4	15.2	6.4	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0
Total Delay	59.9	14.4	35.0	8.4	11.4	15.8	6.4	14.4
Queue Length 50th (m)	24.0	3.3	19.3	1.8	1.3	77.0	5.5	70.4
Queue Length 95th (m)	#57.3	14.7	37.3	20.5	5.0	104.0	10.5	95.4
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	196	426	307	530	161	2194	390	2194
Starvation Cap Reductn	0	0	0	0	0	475	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.17	0.40	0.42	0.11	0.77	0.34	0.57

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	21	46	114	12	190	16	1152	65	123	1087	64
Future Volume (vph)	131	21	46	114	12	190	16	1152	65	123	1087	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1671		1770	1600		1770	3511		1770	3510	
Flt Permitted	0.45	1.00		0.71	1.00		0.14	1.00		0.12	1.00	
Satd. Flow (perm)	843	1671		1322	1600		260	3511		225	3510	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	142	23	50	124	13	207	17	1252	71	134	1182	70
RTOR Reduction (vph)	0	39	0	0	161	0	0	4	0	0	5	0
Lane Group Flow (vph)	142	34	0	124	59	0	17	1319	0	134	1247	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	15.3	15.3		15.3	15.3		42.9	42.9		50.3	42.9	
Effective Green, g (s)	18.3	18.3		18.3	18.3		45.9	45.9		56.3	45.9	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.56	0.56		0.68	0.56	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	186	370		292	354		144	1951		347	1950	
v/s Ratio Prot		0.02			0.04			c0.38		c0.05	0.36	
v/s Ratio Perm	c0.17			0.09			0.07			0.21		
v/c Ratio	0.76	0.09		0.42	0.17		0.12	0.68		0.39	0.64	
Uniform Delay, d1	30.1	25.5		27.6	26.0		8.7	13.1		7.9	12.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	16.8	0.1		1.0	0.2		0.4	0.9		0.7	0.7	
Delay (s)	47.0	25.7		28.6	26.2		9.1	14.0		8.6	13.3	
Level of Service	D	C		C	C		A	B		A	B	
Approach Delay (s)		39.7			27.1			13.9			12.9	
Approach LOS		D			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	82.6	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	73.7%	ICU Level of Service	D	
Analysis Period (min)	15			

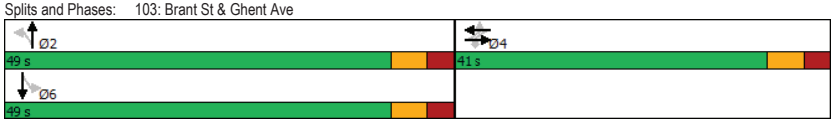
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	28	16	28	61	46	13	1031	25	38	974	205
Future Volume (vph)	160	28	16	28	61	46	13	1031	25	38	974	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.954			0.996			0.974	
Flt Protected		0.959			0.990		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1759	0	1770	3525	0	1770	3447	0
Flt Permitted		0.685			0.909		0.133			0.172		
Satd. Flow (perm)	0	1276	1583	0	1615	0	248	3525	0	320	3447	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		35			4			39	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.5			333.4			75.4			150.5	
Travel Time (s)		17.5			24.0			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	174	30	17	30	66	50	14	1121	27	41	1059	223
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	204	17	0	146	0	14	1148	0	41	1282	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		19.6	19.6		19.6		32.6	32.6		32.6	32.6	
Actuated g/C Ratio		0.32	0.32		0.32		0.54	0.54		0.54	0.54	
v/c Ratio		0.50	0.03		0.27		0.11	0.61		0.24	0.69	
Control Delay		22.6	0.8		14.5		10.6	11.7		13.1	12.7	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		22.6	0.8		14.5		10.6	11.7		13.1	12.7	
LOS		C	A		B		B	B		B	B	
Approach Delay		21.0			14.5			11.7			12.8	
Approach LOS		C			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 60.7			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 13.0		Intersection LOS: B	
Intersection Capacity Utilization 57.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	204	17	146	14	1148	41	1282
v/c Ratio	0.50	0.03	0.27	0.11	0.61	0.24	0.69
Control Delay	22.6	0.8	14.5	10.6	11.7	13.1	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.6	0.8	14.5	10.6	11.7	13.1	12.7
Queue Length 50th (m)	18.2	0.0	8.9	0.7	42.5	2.2	49.2
Queue Length 95th (m)	45.4	0.9	26.0	4.3	80.8	10.1	94.3
Internal Link Dist (m)	218.5		309.4		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	818	1032	1049	191	2722	247	2669
Starvation Cap Reductn	0	0	0	0	0	0	113
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.02	0.14	0.07	0.42	0.17	0.50

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	28	16	28	61	46	13	1031	25	38	974	205
Future Volume (vph)	160	28	16	28	61	46	13	1031	25	38	974	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.95		1.00	1.00		1.00	0.97	
Flt Protected		0.96	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1787	1583		1759		1770	3527		1770	3447	
Flt Permitted		0.69	1.00		0.91		0.13	1.00		0.17	1.00	
Satd. Flow (perm)		1276	1583		1615		248	3527		320	3447	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	174	30	17	30	66	50	14	1121	27	41	1059	223
RTOR Reduction (vph)	0	0	11	0	24	0	0	2	0	0	18	0
Lane Group Flow (vph)	0	204	6	0	122	0	14	1146	0	41	1264	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		16.5	16.5		16.5		29.5	29.5		29.5	29.5	
Effective Green, g (s)		19.5	19.5		19.5		32.5	32.5		32.5	32.5	
Actuated g/C Ratio		0.32	0.32		0.32		0.54	0.54		0.54	0.54	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		414	514		524		134	1910		173	1867	
v/s Ratio Prot								0.32			c0.37	
v/s Ratio Perm		c0.16	0.00		0.08		0.06			0.13		
v/c Ratio		0.49	0.01		0.23		0.10	0.60		0.24	0.68	
Uniform Delay, d1		16.3	13.7		14.8		6.7	9.3		7.2	10.0	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.9	0.0		0.2		0.3	0.5		0.7	1.0	
Delay (s)		17.2	13.7		15.0		7.0	9.9		7.9	10.9	
Level of Service		B	B		B		A	A		A	B	
Approach Delay (s)		16.9			15.0			9.8			10.8	
Approach LOS		B			B			A			B	

Intersection Summary					
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.61				
Actuated Cycle Length (s)	60.0	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	57.7%	ICU Level of Service		B	
Analysis Period (min)	15				

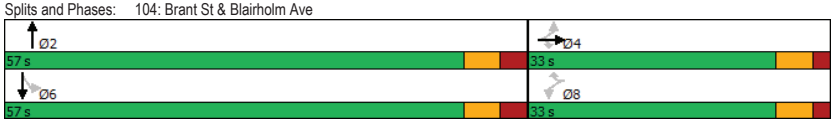
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	6	23	20	0	81	0	812	19	52	828	0
Future Volume (vph)	18	6	23	20	0	81	0	812	19	52	828	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.997				
Flt Protected		0.964		0.950						0.950		
Satd. Flow (prot)	0	1796	1583	1770	0	1583	0	3529	0	1770	1863	0
Flt Permitted		0.964		0.740						0.301		
Satd. Flow (perm)	0	1796	1583	1378	0	1583	0	3529	0	561	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			88		4				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		51.0			305.8			317.1			241.2	
Travel Time (s)		3.7			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	7	25	22	0	88	0	883	21	57	900	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	27	25	22	0	88	0	904	0	57	900	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		8.6	8.6	10.8		10.8		41.3		41.3	41.3	
Actuated g/C Ratio		0.16	0.16	0.20		0.20		0.75		0.75	0.75	
v/c Ratio		0.10	0.09	0.08		0.23		0.34		0.13	0.64	
Control Delay		24.6	4.7	23.0		8.3		3.7		4.0	7.6	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		24.6	4.7	23.0		8.3		3.7		4.0	7.6	
LOS		C	A	C		A		A		A	A	
Approach Delay		15.1			11.3			3.7			7.4	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 54.8			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 6.2		Intersection LOS: A	
Intersection Capacity Utilization 65.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	27	25	22	88	904	57	900
v/c Ratio	0.10	0.09	0.08	0.23	0.34	0.13	0.64
Control Delay	24.6	4.7	23.0	8.3	3.7	4.0	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.6	4.7	23.0	8.3	3.7	4.0	7.6
Queue Length 50th (m)	2.4	0.0	1.8	0.0	17.0	1.7	46.5
Queue Length 95th (m)	10.1	3.4	8.6	11.2	25.3	5.0	83.3
Internal Link Dist (m)	27.0				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	938	850	773	927	3221	512	1700
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.03	0.09	0.28	0.11	0.53

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	6	23	20	0	81	0	812	19	52	828	0
Future Volume (vph)	18	6	23	20	0	81	0	812	19	52	828	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.96	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1796	1583	1770		1583		3527		1770	1863	
Flt Permitted		0.96	1.00	0.74		1.00		1.00		0.30	1.00	
Satd. Flow (perm)		1796	1583	1378		1583		3527		561	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	7	25	22	0	88	0	883	21	57	900	0
RTOR Reduction (vph)	0	0	22	0	0	75	0	1	0	0	0	0
Lane Group Flow (vph)	0	27	3	22	0	13	0	903	0	57	900	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		6.1	6.1	6.1		6.1		36.9		36.9	36.9	
Effective Green, g (s)		6.1	6.1	8.1		8.1		39.9		39.9	39.9	
Actuated g/C Ratio		0.11	0.11	0.14		0.14		0.71		0.71	0.71	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		195	172	199		228		2512		399	1327	
v/s Ratio Prot								0.26			c0.48	
v/s Ratio Perm		0.02	0.00	c0.02		0.01				0.10		
v/c Ratio		0.14	0.02	0.11		0.06		0.36		0.14	0.68	
Uniform Delay, d1		22.6	22.3	20.8		20.7		3.1		2.6	4.5	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.3	0.0	0.2		0.1		0.1		0.2	1.4	
Delay (s)		22.9	22.3	21.1		20.8		3.2		2.7	5.9	
Level of Service		C	C	C		C		A		A	A	
Approach Delay (s)		22.6			20.8			3.2			5.7	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	5.8	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	56.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	65.2%	ICU Level of Service	C	
Analysis Period (min)	15			

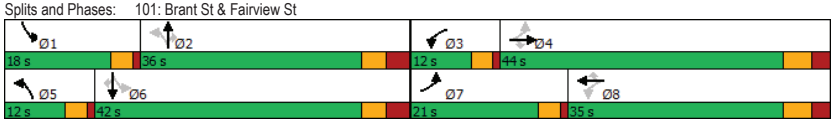
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	339	850	270	161	806	258	259	627	168	254	642	178
Future Volume (vph)	339	850	270	161	806	258	259	627	168	254	642	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.127			0.184			0.258			0.137		
Satd. Flow (perm)	237	3539	1583	343	3539	1583	481	3539	1583	255	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			263			257			192			193
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	368	924	293	175	876	280	282	682	183	276	698	193
Shared Lane Traffic (%)												
Lane Group Flow (vph)	368	924	293	175	876	280	282	682	183	276	698	193
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	21.0	44.0	44.0	12.0	35.0	35.0	12.0	36.0	36.0	18.0	42.0	42.0
Total Split (%)	19.1%	40.0%	40.0%	10.9%	31.8%	31.8%	10.9%	32.7%	32.7%	16.4%	38.2%	38.2%
Maximum Green (s)	17.0	37.6	37.6	8.0	28.6	28.6	8.0	29.5	29.5	14.0	35.5	35.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	51.1	39.1	39.1	38.1	30.0	30.0	35.8	27.8	27.8	45.5	33.5	33.5
Actuated g/C Ratio	0.49	0.37	0.37	0.36	0.29	0.29	0.34	0.27	0.27	0.43	0.32	0.32
v/c Ratio	1.01	0.70	0.39	0.75	0.86	0.44	1.07	0.73	0.33	0.89	0.62	0.30
Control Delay	78.5	31.8	6.0	40.0	46.0	7.6	103.4	40.1	5.5	55.3	32.8	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.5	31.8	6.0	40.0	46.0	7.6	103.4	40.1	5.5	55.3	32.8	5.0
LOS	E	C	A	D	D	A	F	D	A	E	C	A
Approach Delay		37.9			37.1			50.1			33.5	
Approach LOS		D			D			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 104.7			
Natural Cycle: 105			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.07			
Intersection Signal Delay: 39.4		Intersection LOS: D	
Intersection Capacity Utilization 86.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Queues
101: Brant St & Fairview St

Background - Full Build Out
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	368	924	293	175	876	280	282	682	183	276	698	193
v/c Ratio	1.01	0.70	0.39	0.75	0.86	0.44	1.07	0.73	0.33	0.89	0.62	0.30
Control Delay	78.5	31.8	6.0	40.0	46.0	7.6	103.4	40.1	5.5	55.3	32.8	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.5	31.8	6.0	40.0	46.0	7.6	103.4	40.1	5.5	55.3	32.8	5.0
Queue Length 50th (m)	~67.7	89.0	4.1	21.1	95.1	3.6	~45.2	71.2	0.0	41.1	67.0	0.0
Queue Length 95th (m)	#133.4	117.7	23.3	#49.6	#134.3	24.8	#97.4	92.0	14.7	#90.9	86.6	15.5
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	365	1357	769	234	1052	651	263	1085	618	314	1289	699
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.68	0.38	0.75	0.83	0.43	1.07	0.63	0.30	0.88	0.54	0.28

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
101: Brant St & Fairview St

Background - Full Build Out
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	339	850	270	161	806	258	259	627	168	254	642	178
Future Volume (vph)	339	850	270	161	806	258	259	627	168	254	642	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.13	1.00	1.00	0.18	1.00	1.00	0.26	1.00	1.00	0.14	1.00	1.00
Satd. Flow (perm)	236	3539	1583	342	3539	1583	480	3539	1583	254	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	368	924	293	175	876	280	282	682	183	276	698	193
RTOR Reduction (vph)	0	0	165	0	0	183	0	0	134	0	0	131
Lane Group Flow (vph)	368	924	128	175	876	97	282	682	49	276	698	62
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	48.7	36.7	36.7	35.6	27.6	27.6	33.3	25.3	25.3	43.1	31.1	31.1
Effective Green, g (s)	48.7	39.1	39.1	35.6	30.0	30.0	33.3	27.8	27.8	43.1	33.6	33.6
Actuated g/C Ratio	0.47	0.37	0.37	0.34	0.29	0.29	0.32	0.27	0.27	0.41	0.32	0.32
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	360	1321	591	225	1014	453	251	939	420	304	1135	508
v/s Ratio Prot	c0.17	0.26		0.06	0.25		c0.09	0.19		c0.12	0.20	
v/s Ratio Perm	c0.31		0.08	0.20		0.06	c0.27		0.03	0.25		0.04
v/c Ratio	1.02	0.70	0.22	0.78	0.86	0.21	1.12	0.73	0.12	0.91	0.61	0.12
Uniform Delay, d1	30.5	27.8	22.4	26.2	35.4	28.4	32.7	35.0	29.1	25.9	30.1	25.1
Progression 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
Incremental Delay, d2	53.2	1.6	0.2	15.5	7.8	0.2	94.1	2.8	0.1	28.9	1.0	0.1
Delay (s)	83.7	29.5	22.5	41.6	43.2	28.6	126.8	37.8	29.3	54.8	31.1	25.2
Level of Service	F	C	C	D	D	C	F	D	C	D	C	C
Approach Delay (s)		40.8			39.9			58.3			35.7	
Approach LOS		D			D			E			D	

Intersection Summary				
HCM 2000 Control Delay	43.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	1.01			
Actuated Cycle Length (s)	104.7	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	86.5%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	8	16	69	13	123	14	933	40	109	948	40
Future Volume (vph)	63	8	16	69	13	123	14	933	40	109	948	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.902			0.864			0.994			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1680	0	1770	1609	0	1770	3518	0	1770	3518	0
Flt Permitted	0.615			0.740			0.200			0.205		
Satd. Flow (perm)	1146	1680	0	1378	1609	0	373	3518	0	382	3518	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17			134			8			8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	68	9	17	75	14	134	15	1014	43	118	1030	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	26	0	75	148	0	15	1057	0	118	1073	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	13.7	13.7		13.7	13.7		39.2	39.2		51.2	39.2	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.57	0.57		0.74	0.57	
v/c Ratio	0.30	0.07		0.27	0.35		0.07	0.53		0.24	0.54	
Control Delay	30.6	16.7		29.3	9.6		9.2	11.0		3.9	11.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	30.6	16.7		29.3	9.6		9.2	11.1		3.9	11.1	
LOS	C	B		C	A		A	B		A	B	
Approach Delay		26.7			16.2			11.0			10.4	
Approach LOS		C			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 69			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay: 11.8		Intersection LOS: B	
Intersection Capacity Utilization 62.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	68	26	75	148	15	1057	118	1073
v/c Ratio	0.30	0.07	0.27	0.35	0.07	0.53	0.24	0.54
Control Delay	30.6	16.7	29.3	9.6	9.2	11.0	3.9	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.6	16.7	29.3	9.6	9.2	11.1	3.9	11.1
Queue Length 50th (m)	7.6	1.0	8.4	1.5	0.8	42.5	3.0	43.4
Queue Length 95th (m)	22.7	8.0	24.0	17.6	4.2	73.7	8.9	75.4
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	326	490	392	554	285	2691	532	2691
Starvation Cap Reductn	0	0	0	0	0	290	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.05	0.19	0.27	0.05	0.44	0.22	0.40

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	8	16	69	13	123	14	933	40	109	948	40
Future Volume (vph)	63	8	16	69	13	123	14	933	40	109	948	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1680		1770	1610		1770	3518		1770	3518	
Flt Permitted	0.61	1.00		0.74	1.00		0.20	1.00		0.21	1.00	
Satd. Flow (perm)	1146	1680		1379	1610		372	3518		382	3518	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	68	9	17	75	14	134	15	1014	43	118	1030	43
RTOR Reduction (vph)	0	14	0	0	108	0	0	3	0	0	3	0
Lane Group Flow (vph)	68	12	0	75	40	0	15	1054	0	118	1070	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	10.6	10.6		10.6	10.6		36.1	36.1		41.6	36.1	
Effective Green, g (s)	13.6	13.6		13.6	13.6		39.1	39.1		47.6	39.1	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.57	0.57		0.69	0.57	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	225	330		271	316		210	1987		433	1987	
v/s Ratio Prot		0.01			0.03			0.30		c0.03	c0.30	
v/s Ratio Perm	c0.06			0.05			0.04			0.15		
v/c Ratio	0.30	0.04		0.28	0.13		0.07	0.53		0.27	0.54	
Uniform Delay, d1	23.7	22.5		23.6	22.9		6.8	9.3		4.5	9.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.0		0.6	0.2		0.1	0.3		0.3	0.3	
Delay (s)	24.5	22.5		24.2	23.1		7.0	9.6		4.8	9.7	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		24.0			23.5			9.6			9.2	
Approach LOS		C			C			A			A	

Intersection Summary					
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.44				
Actuated Cycle Length (s)	69.2	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	62.4%	ICU Level of Service		B	
Analysis Period (min)	15				

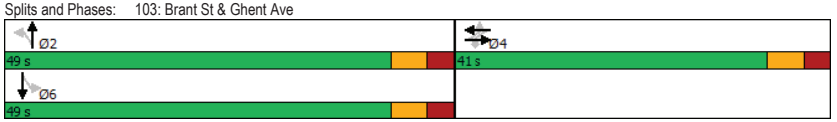
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	17	9	19	16	36	16	844	19	43	875	108
Future Volume (vph)	97	17	9	19	16	36	16	844	19	43	875	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.932			0.997			0.984	
Flt Protected		0.959			0.987		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1714	0	1770	3529	0	1770	3483	0
Flt Permitted		0.704			0.888		0.219			0.266		
Satd. Flow (perm)	0	1311	1583	0	1542	0	408	3529	0	495	3483	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		39			4			21	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.5			333.4			75.4			150.5	
Travel Time (s)		17.5			24.0			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	105	18	10	21	17	39	17	917	21	47	951	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	123	10	0	77	0	17	938	0	47	1068	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		14.0	14.0		14.0		28.4	28.4		28.4	28.4	
Actuated g/C Ratio		0.31	0.31		0.31		0.63	0.63		0.63	0.63	
v/c Ratio		0.30	0.02		0.15		0.07	0.42		0.15	0.49	
Control Delay		16.2	0.1		9.0		6.9	7.3		7.9	7.8	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		16.2	0.1		9.0		6.9	7.3		7.9	7.8	
LOS		B	A		A		A	A		A	A	
Approach Delay		15.0			9.0			7.3			7.8	
Approach LOS		B			A			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 45.3			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 8.0		Intersection LOS: A	
Intersection Capacity Utilization 55.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	123	10	77	17	938	47	1068
v/c Ratio	0.30	0.02	0.15	0.07	0.42	0.15	0.49
Control Delay	16.2	0.1	9.0	6.9	7.3	7.9	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.2	0.1	9.0	6.9	7.3	7.9	7.8
Queue Length 50th (m)	7.4	0.0	2.1	0.6	22.3	1.8	26.4
Queue Length 95th (m)	22.4	0.0	11.0	3.5	44.3	7.6	52.2
Internal Link Dist (m)	218.5		309.4		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	1072	1304	1268	380	3292	462	3250
Starvation Cap Reductn	0	0	0	0	0	0	17
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.01	0.06	0.04	0.28	0.10	0.33

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	17	9	19	16	36	16	844	19	43	875	108
Future Volume (vph)	97	17	9	19	16	36	16	844	19	43	875	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.93		1.00	1.00		1.00	0.98	
Flt Protected		0.96	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1786	1583		1712		1770	3527		1770	3481	
Flt Permitted		0.70	1.00		0.89		0.22	1.00		0.27	1.00	
Satd. Flow (perm)		1311	1583		1541		409	3527		496	3481	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	105	18	10	21	17	39	17	917	21	47	951	117
RTOR Reduction (vph)	0	0	8	0	29	0	0	2	0	0	9	0
Lane Group Flow (vph)	0	123	2	0	48	0	17	936	0	47	1059	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		8.6	8.6		8.6		24.1	24.1		24.1	24.1	
Effective Green, g (s)		11.6	11.6		11.6		27.1	27.1		27.1	27.1	
Actuated g/C Ratio		0.25	0.25		0.25		0.58	0.58		0.58	0.58	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		325	393		382		237	2046		287	2020	
v/s Ratio Prot								0.27			c0.30	
v/s Ratio Perm		c0.09	0.00		0.03		0.04			0.09		
v/c Ratio		0.38	0.01		0.12		0.07	0.46		0.16	0.52	
Uniform Delay, d1		14.6	13.2		13.6		4.3	5.6		4.5	5.9	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.7	0.0		0.1		0.1	0.2		0.3	0.2	
Delay (s)		15.3	13.2		13.8		4.4	5.8		4.8	6.2	
Level of Service		B	B		B		A	A		A	A	
Approach Delay (s)		15.1			13.8			5.7			6.1	
Approach LOS		B			B			A			A	

Intersection Summary					
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.48				
Actuated Cycle Length (s)	46.7	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	55.3%	ICU Level of Service		B	
Analysis Period (min)	15				

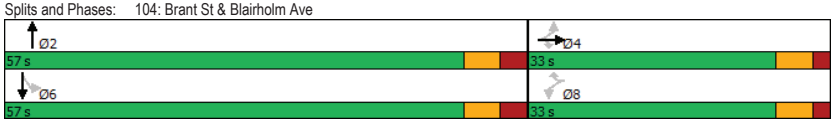
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	0	6	11	0	47	0	812	9	38	828	0
Future Volume (vph)	16	0	6	11	0	47	0	812	9	38	828	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.998				
Flt Protected		0.950		0.950						0.950		
Satd. Flow (prot)	0	1770	1583	1770	0	1583	0	3532	0	1770	1863	0
Flt Permitted		0.950		0.746						0.311		
Satd. Flow (perm)	0	1770	1583	1390	0	1583	0	3532	0	579	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			51		2				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		55.3			305.8			317.1			241.2	
Travel Time (s)		4.0			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	0	7	12	0	51	0	883	10	41	900	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	17	7	12	0	51	0	893	0	41	900	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		8.7	8.7	10.9		10.9		43.8		43.8	43.8	
Actuated g/C Ratio		0.17	0.17	0.21		0.21		0.83		0.83	0.83	
v/c Ratio		0.06	0.02	0.04		0.14		0.30		0.09	0.58	
Control Delay		25.7	0.2	23.8		9.5		2.8		3.2	5.8	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		25.7	0.2	23.8		9.5		2.8		3.2	5.8	
LOS		C	A	C		A		A		A	A	
Approach Delay		18.2			12.2			2.8			5.6	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 52.7			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 4.7		Intersection LOS: A	
Intersection Capacity Utilization 65.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	17	7	12	51	893	41	900
v/c Ratio	0.06	0.02	0.04	0.14	0.30	0.09	0.58
Control Delay	25.7	0.2	23.8	9.5	2.8	3.2	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.7	0.2	23.8	9.5	2.8	3.2	5.8
Queue Length 50th (m)	2.0	0.0	1.3	0.0	16.7	1.2	46.5
Queue Length 95th (m)	7.3	0.0	5.7	8.5	23.2	3.5	77.9
Internal Link Dist (m)	31.3				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	986	903	831	967	3170	519	1672
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.01	0.05	0.28	0.08	0.54

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	0	6	11	0	47	0	812	9	38	828	0
Future Volume (vph)	16	0	6	11	0	47	0	812	9	38	828	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.95	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1770	1583	1770		1583		3533		1770	1863	
Flt Permitted		0.95	1.00	0.75		1.00		1.00		0.31	1.00	
Satd. Flow (perm)		1770	1583	1390		1583		3533		580	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	0	7	12	0	51	0	883	10	41	900	0
RTOR Reduction (vph)	0	0	6	0	0	45	0	1	0	0	0	0
Lane Group Flow (vph)	0	17	1	12	0	6	0	892	0	41	900	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		4.0	4.0	4.0		4.0		38.2		38.2	38.2	
Effective Green, g (s)		4.0	4.0	6.0		6.0		41.2		41.2	41.2	
Actuated g/C Ratio		0.07	0.07	0.11		0.11		0.75		0.75	0.75	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		128	114	151		172		2636		432	1390	
v/s Ratio Prot								0.25			c0.48	
v/s Ratio Perm		0.01	0.00	0.01		0.00				0.07		
v/c Ratio		0.13	0.00	0.08		0.03		0.34		0.09	0.65	
Uniform Delay, d1		24.0	23.8	22.1		22.0		2.4		1.9	3.4	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.5	0.0	0.2		0.1		0.1		0.1	1.0	
Delay (s)		24.4	23.8	22.3		22.1		2.5		2.0	4.5	
Level of Service		C	C	C		C		A		A	A	
Approach Delay (s)		24.3			22.1			2.5			4.4	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	4.3	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	55.2	Sum of lost time (s)		10.0
Intersection Capacity Utilization	65.2%	ICU Level of Service		C
Analysis Period (min)	15			

c Critical Lane Group

Appendix H4

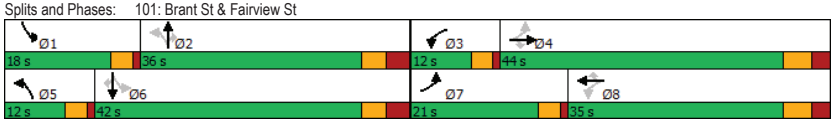
Background – Five Year Horizon Operations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	378	1238	304	139	390	171	216	699	306	257	785	169
Future Volume (vph)	378	1238	304	139	390	171	216	699	306	257	785	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.337			0.139			0.164			0.127		
Satd. Flow (perm)	628	3539	1583	259	3539	1583	305	3539	1583	237	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			242			193			192			184
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	411	1346	330	151	424	186	235	760	333	279	853	184
Shared Lane Traffic (%)												
Lane Group Flow (vph)	411	1346	330	151	424	186	235	760	333	279	853	184
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	21.0	44.0	44.0	12.0	35.0	35.0	12.0	36.0	36.0	18.0	42.0	42.0
Total Split (%)	19.1%	40.0%	40.0%	10.9%	31.8%	31.8%	10.9%	32.7%	32.7%	16.4%	38.2%	38.2%
Maximum Green (s)	17.0	37.6	37.6	8.0	28.6	28.6	8.0	29.5	29.5	14.0	35.5	35.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	52.0	40.0	40.0	39.1	31.1	31.1	38.0	30.0	30.0	48.0	36.0	36.0
Actuated g/C Ratio	0.48	0.37	0.37	0.36	0.29	0.29	0.35	0.28	0.28	0.44	0.33	0.33
v/c Ratio	0.85	1.03	0.45	0.74	0.42	0.31	1.09	0.77	0.58	0.92	0.72	0.28
Control Delay	39.2	66.4	9.4	42.7	33.0	5.5	113.2	42.0	17.9	61.5	35.7	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	66.4	9.4	42.7	33.0	5.5	113.2	42.0	17.9	61.5	35.7	4.9
LOS	D	E	A	D	C	A	F	D	B	E	D	A
Approach Delay		52.0			28.2			48.6			36.9	
Approach LOS		D			C			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 108			
Natural Cycle: 105			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.09			
Intersection Signal Delay: 44.3		Intersection LOS: D	
Intersection Capacity Utilization 88.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Queues
101: Brant St & Fairview St

Background - Five Year Horizon
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	411	1346	330	151	424	186	235	760	333	279	853	184
v/c Ratio	0.85	1.03	0.45	0.74	0.42	0.31	1.09	0.77	0.58	0.92	0.72	0.28
Control Delay	39.2	66.4	9.4	42.7	33.0	5.5	113.2	42.0	17.9	61.5	35.7	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	66.4	9.4	42.7	33.0	5.5	113.2	42.0	17.9	61.5	35.7	4.9
Queue Length 50th (m)	62.0	~174.2	13.3	19.1	41.1	0.0	~37.7	81.5	25.3	43.8	86.7	0.0
Queue Length 95th (m)	#112.1	#217.9	37.1	#47.2	56.3	15.5	#88.9	104.2	55.5	#95.2	109.8	15.2
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	482	1311	738	205	1019	593	215	1049	604	303	1246	676
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	1.03	0.45	0.74	0.42	0.31	1.09	0.72	0.55	0.92	0.68	0.27

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
101: Brant St & Fairview St

Background - Five Year Horizon
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	378	1238	304	139	390	171	216	699	306	257	785	169
Future Volume (vph)	378	1238	304	139	390	171	216	699	306	257	785	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.34	1.00	1.00	0.14	1.00	1.00	0.16	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	627	3539	1583	260	3539	1583	305	3539	1583	237	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	411	1346	330	151	424	186	235	760	333	279	853	184
RTOR Reduction (vph)	0	0	152	0	0	132	0	0	139	0	0	123
Lane Group Flow (vph)	411	1346	178	151	424	54	235	760	194	279	853	61
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	49.6	37.6	37.6	36.7	28.7	28.7	35.5	27.5	27.5	45.5	33.5	33.5
Effective Green, g (s)	49.6	40.0	40.0	36.7	31.1	31.1	35.5	30.0	30.0	45.5	36.0	36.0
Actuated g/C Ratio	0.46	0.37	0.37	0.34	0.29	0.29	0.33	0.28	0.28	0.42	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	466	1310	586	200	1019	455	208	983	439	298	1179	527
v/s Ratio Prot	c0.14	c0.38		0.06	0.12		c0.08	0.21		c0.12	0.24	
v/s Ratio Perm	0.27		0.11	0.20		0.03	c0.29		0.12	0.27		0.04
v/c Ratio	0.88	1.03	0.30	0.76	0.42	0.12	1.13	0.77	0.44	0.94	0.72	0.12
Uniform Delay, d1	22.0	34.0	24.1	28.8	31.1	28.3	31.6	35.9	32.1	28.2	31.6	25.0
Progression 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
Incremental Delay, d2	17.5	32.1	0.3	14.9	0.3	0.1	101.7	3.8	0.7	35.3	2.2	0.1
Delay (s)	39.5	66.1	24.4	43.7	31.4	28.5	133.3	39.7	32.8	63.5	33.9	25.1
Level of Service	D	E	C	D	C	C	F	D	C	E	C	C
Approach Delay (s)		54.3			33.1			54.5			38.9	
Approach LOS		D			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	47.7	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	1.02			
Actuated Cycle Length (s)	108.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	88.9%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	11	18	64	9	91	29	912	48	100	1032	97
Future Volume (vph)	37	11	18	64	9	91	29	912	48	100	1032	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.906			0.864			0.993			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1688	0	1770	1609	0	1770	3514	0	1770	3493	0
Flt Permitted	0.687			0.736			0.171			0.226		
Satd. Flow (perm)	1280	1688	0	1371	1609	0	319	3514	0	421	3493	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20			99			10			18	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	12	20	70	10	99	32	991	52	109	1122	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	32	0	70	109	0	32	1043	0	109	1227	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	13.7	13.7		13.7	13.7		45.0	45.0		55.2	45.0	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.66	0.66		0.81	0.66	
v/c Ratio	0.16	0.09		0.25	0.27		0.15	0.45		0.20	0.53	
Control Delay	29.7	17.6		31.0	10.3		10.0	9.1		3.1	10.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.1		0.0	0.0	
Total Delay	29.7	17.6		31.0	10.3		10.0	9.2		3.1	10.0	
LOS	C	B		C	B		A	A		A	A	
Approach Delay		24.3			18.4			9.2			9.4	
Approach LOS		C			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 67.8			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 10.3		Intersection LOS: B	
Intersection Capacity Utilization 58.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	40	32	70	109	32	1043	109	1227
v/c Ratio	0.16	0.09	0.25	0.27	0.15	0.45	0.20	0.53
Control Delay	29.7	17.6	31.0	10.3	10.0	9.1	3.1	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	29.7	17.6	31.0	10.3	10.0	9.2	3.1	10.0
Queue Length 50th (m)	4.8	1.4	8.6	1.2	1.9	40.4	2.6	51.2
Queue Length 95th (m)	14.8	9.3	22.7	15.0	7.5	67.0	7.4	84.2
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	392	531	420	562	239	2639	603	2625
Starvation Cap Reductn	0	0	0	0	0	406	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.06	0.17	0.19	0.13	0.47	0.18	0.47

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	11	18	64	9	91	29	912	48	100	1032	97
Future Volume (vph)	37	11	18	64	9	91	29	912	48	100	1032	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1688		1770	1609		1770	3513		1770	3494	
Flt Permitted	0.69	1.00		0.74	1.00		0.17	1.00		0.23	1.00	
Satd. Flow (perm)	1279	1688		1372	1609		319	3513		421	3494	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	12	20	70	10	99	32	991	52	109	1122	105
RTOR Reduction (vph)	0	17	0	0	84	0	0	4	0	0	7	0
Lane Group Flow (vph)	40	15	0	70	25	0	32	1039	0	109	1220	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	7.5	7.5		7.5	7.5		40.3	40.3		45.3	40.3	
Effective Green, g (s)	10.5	10.5		10.5	10.5		43.3	43.3		51.3	43.3	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.62	0.62		0.73	0.62	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	192	253		206	242		197	2179		464	2167	
v/s Ratio Prot		0.01			0.02			0.30		c0.03	c0.35	
v/s Ratio Perm	0.03			c0.05			0.10			0.15		
v/c Ratio	0.21	0.06		0.34	0.10		0.16	0.48		0.23	0.56	
Uniform Delay, d1	26.0	25.4		26.5	25.6		5.6	7.1		3.1	7.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.1		1.0	0.2		0.4	0.2		0.3	0.3	
Delay (s)	26.5	25.5		27.5	25.8		6.0	7.3		3.4	8.1	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		26.1			26.5			7.3			7.7	
Approach LOS		C			C			A			A	

Intersection Summary					
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.47				
Actuated Cycle Length (s)	69.8	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	58.5%	ICU Level of Service		B	
Analysis Period (min)	15				

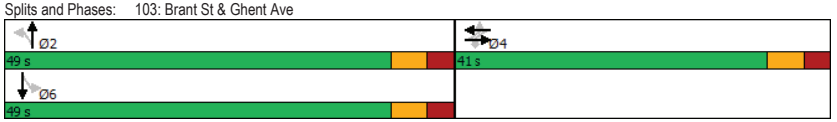
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	28	24	26	11	31	13	797	35	37	950	134
Future Volume (vph)	157	28	24	26	11	31	13	797	35	37	950	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.938			0.994			0.981	
Flt Protected		0.959			0.981		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1714	0	1770	3518	0	1770	3472	0
Flt Permitted		0.706			0.848		0.166			0.262		
Satd. Flow (perm)	0	1315	1583	0	1482	0	309	3518	0	488	3472	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		34			7			25	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.5			333.4			75.4			150.5	
Travel Time (s)		17.5			24.0			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	171	30	26	28	12	34	14	866	38	40	1033	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	201	26	0	74	0	14	904	0	40	1179	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		17.9	17.9		17.9		31.1	31.1		31.1	31.1	
Actuated g/C Ratio		0.31	0.31		0.31		0.54	0.54		0.54	0.54	
v/c Ratio		0.49	0.05		0.15		0.08	0.47		0.15	0.62	
Control Delay		21.2	2.8		10.5		9.1	9.4		9.5	11.1	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		21.2	2.8		10.5		9.1	9.4		9.5	11.1	
LOS		C	A		B		A	A		A	B	
Approach Delay		19.1			10.5			9.4			11.0	
Approach LOS		B			B			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 57.2			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 11.2		Intersection LOS: B	
Intersection Capacity Utilization 54.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	201	26	74	14	904	40	1179
v/c Ratio	0.49	0.05	0.15	0.08	0.47	0.15	0.62
Control Delay	21.2	2.8	10.5	9.1	9.4	9.5	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.2	2.8	10.5	9.1	9.4	9.5	11.1
Queue Length 50th (m)	15.6	0.0	2.7	0.6	27.1	1.9	39.0
Queue Length 95th (m)	42.1	2.8	12.8	3.7	53.6	8.0	76.7
Internal Link Dist (m)	218.5		309.4		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	878	1073	1001	250	2859	396	2825
Starvation Cap Reductn	0	0	0	0	0	0	92
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.02	0.07	0.06	0.32	0.10	0.43

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	28	24	26	11	31	13	797	35	37	950	134
Future Volume (vph)	157	28	24	26	11	31	13	797	35	37	950	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.94		1.00	0.99		1.00	0.98	
Flt Protected		0.96	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1787	1583		1715		1770	3517		1770	3473	
Flt Permitted		0.71	1.00		0.85		0.17	1.00		0.26	1.00	
Satd. Flow (perm)		1316	1583		1481		309	3517		487	3473	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	171	30	26	28	12	34	14	866	38	40	1033	146
RTOR Reduction (vph)	0	0	18	0	23	0	0	3	0	0	11	0
Lane Group Flow (vph)	0	201	8	0	51	0	14	901	0	40	1168	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		14.8	14.8		14.8		28.0	28.0		28.0	28.0	
Effective Green, g (s)		17.8	17.8		17.8		31.0	31.0		31.0	31.0	
Actuated g/C Ratio		0.31	0.31		0.31		0.55	0.55		0.55	0.55	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		412	496		464		168	1919		265	1895	
v/s Ratio Prot								0.26			c0.34	
v/s Ratio Perm		c0.15	0.01		0.03		0.05			0.08		
v/c Ratio		0.49	0.02		0.11		0.08	0.47		0.15	0.62	
Uniform Delay, d1		15.8	13.5		13.9		6.1	7.9		6.4	8.8	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.9	0.0		0.1		0.2	0.2		0.3	0.6	
Delay (s)		16.7	13.5		14.0		6.4	8.1		6.7	9.4	
Level of Service		B	B		B		A	A		A	A	
Approach Delay (s)		16.3			14.0			8.0			9.3	
Approach LOS		B			B			A			A	

Intersection Summary					
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.57				
Actuated Cycle Length (s)	56.8	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	54.2%	ICU Level of Service		A	
Analysis Period (min)	15				

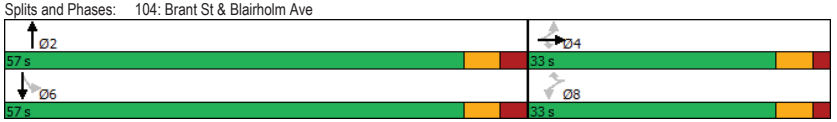
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	5	8	44	0	123	0	693	18	51	847	0
Future Volume (vph)	18	5	8	44	0	123	0	693	18	51	847	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.996				
Flt Protected		0.962		0.950						0.950		
Satd. Flow (prot)	0	1792	1583	1770	0	1583	0	3525	0	1770	1863	0
Flt Permitted		0.962		0.741						0.351		
Satd. Flow (perm)	0	1792	1583	1380	0	1583	0	3525	0	654	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			134		5				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		34.6			305.8			317.1			241.2	
Travel Time (s)		2.5			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	5	9	48	0	134	0	753	20	55	921	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	25	9	48	0	134	0	773	0	55	921	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		8.9	8.9	10.9		10.9		42.2		42.2	42.2	
Actuated g/C Ratio		0.16	0.16	0.19		0.19		0.74		0.74	0.74	
v/c Ratio		0.09	0.03	0.18		0.32		0.29		0.11	0.66	
Control Delay		25.3	0.2	24.7		8.1		3.7		3.9	8.4	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		25.3	0.2	24.7		8.1		3.7		3.9	8.4	
LOS		C	A	C		A		A		A	A	
Approach Delay		18.6			12.5			3.7			8.1	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 56.7			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 7.0		Intersection LOS: A	
Intersection Capacity Utilization 66.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	25	9	48	134	773	55	921
v/c Ratio	0.09	0.03	0.18	0.32	0.29	0.11	0.66
Control Delay	25.3	0.2	24.7	8.1	3.7	3.9	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.3	0.2	24.7	8.1	3.7	3.9	8.4
Queue Length 50th (m)	2.2	0.0	4.1	0.0	13.7	1.6	48.6
Queue Length 95th (m)	9.8	0.0	15.3	13.9	23.5	5.1	97.7
Internal Link Dist (m)	10.6				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	880	802	728	898	3232	599	1708
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.01	0.07	0.15	0.24	0.09	0.54

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	5	8	44	0	123	0	693	18	51	847	0
Future Volume (vph)	18	5	8	44	0	123	0	693	18	51	847	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.96	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1791	1583	1770		1583		3525		1770	1863	
Flt Permitted		0.96	1.00	0.74		1.00		1.00		0.35	1.00	
Satd. Flow (perm)		1791	1583	1380		1583		3525		654	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	5	9	48	0	134	0	753	20	55	921	0
RTOR Reduction (vph)	0	0	8	0	0	114	0	1	0	0	0	0
Lane Group Flow (vph)	0	25	1	48	0	20	0	772	0	55	921	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		6.8	6.8	6.8		6.8		38.1		38.1	38.1	
Effective Green, g (s)		6.8	6.8	8.8		8.8		41.1		41.1	41.1	
Actuated g/C Ratio		0.12	0.12	0.15		0.15		0.71		0.71	0.71	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		210	185	209		240		2502		464	1322	
v/s Ratio Prot								0.22			c0.49	
v/s Ratio Perm		0.01	0.00	c0.03		0.01				0.08		
v/c Ratio		0.12	0.01	0.23		0.08		0.31		0.12	0.70	
Uniform Delay, d1		22.9	22.6	21.6		21.1		3.1		2.7	4.8	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.3	0.0	0.6		0.2		0.1		0.1	1.6	
Delay (s)		23.1	22.6	22.1		21.2		3.2		2.8	6.4	
Level of Service		C	C	C		C		A		A	A	
Approach Delay (s)		23.0			21.5			3.2			6.2	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	57.9	Sum of lost time (s)		10.0
Intersection Capacity Utilization	66.2%	ICU Level of Service		C
Analysis Period (min)	15			

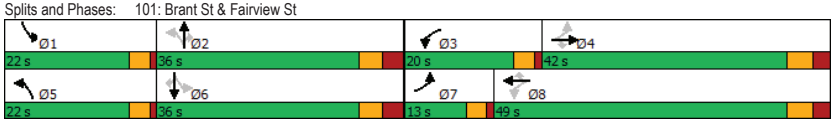
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	238	913	331	243	1696	492	198	886	213	262	737	486
Future Volume (vph)	238	913	331	243	1696	492	198	886	213	262	737	486
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.110			0.100			0.136			0.125		
Satd. Flow (perm)	205	3539	1583	186	3539	1583	253	3539	1583	233	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			360			291			140			217
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	259	992	360	264	1843	535	215	963	232	285	801	528
Shared Lane Traffic (%)												
Lane Group Flow (vph)	259	992	360	264	1843	535	215	963	232	285	801	528
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	13.0	42.0	42.0	20.0	49.0	49.0	22.0	36.0	36.0	22.0	36.0	36.0
Total Split (%)	10.8%	35.0%	35.0%	16.7%	40.8%	40.8%	18.3%	30.0%	30.0%	18.3%	30.0%	30.0%
Maximum Green (s)	9.0	35.6	35.6	16.0	42.6	42.6	18.0	29.5	29.5	18.0	29.5	29.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	47.6	38.6	38.6	58.0	45.0	45.0	46.7	32.0	32.0	51.3	34.4	34.4
Actuated g/C Ratio	0.40	0.32	0.32	0.49	0.38	0.38	0.39	0.27	0.27	0.43	0.29	0.29
v/c Ratio	1.29	0.86	0.48	0.89	1.38	0.69	0.75	1.01	0.44	0.89	0.78	0.86
Control Delay	192.8	47.3	5.4	61.2	206.6	18.8	42.1	76.1	17.4	59.1	45.9	39.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	192.8	47.3	5.4	61.2	206.6	18.8	42.1	76.1	17.4	59.1	45.9	39.4
LOS	F	D	A	E	F	B	D	E	B	E	D	D
Approach Delay		61.4			154.0			61.2			46.1	
Approach LOS		E			F			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 119.1			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.38			
Intersection Signal Delay: 91.6		Intersection LOS: F	
Intersection Capacity Utilization 112.4%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Queues
101: Brant St & Fairview St

Background - Five Year Horizon
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	259	992	360	264	1843	535	215	963	232	285	801	528
v/c Ratio	1.29	0.86	0.48	0.89	1.38	0.69	0.75	1.01	0.44	0.89	0.78	0.86
Control Delay	192.8	47.3	5.4	61.2	206.6	18.8	42.1	76.1	17.4	59.1	45.9	39.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	192.8	47.3	5.4	61.2	206.6	18.8	42.1	76.1	17.4	59.1	45.9	39.4
Queue Length 50th (m)	~65.8	122.5	0.0	47.2	~320.1	50.7	33.3	~133.3	17.8	50.9	95.7	77.7
Queue Length 95th (m)	#120.9	#159.5	21.8	#95.9	#364.6	93.7	58.9	#175.6	42.0	#102.2	#125.7	#149.8
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	200	1147	756	303	1337	779	335	950	527	332	1022	611
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.29	0.86	0.48	0.87	1.38	0.69	0.64	1.01	0.44	0.86	0.78	0.86

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
101: Brant St & Fairview St

Background - Five Year Horizon
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	238	913	331	243	1696	492	198	886	213	262	737	486
Future Volume (vph)	238	913	331	243	1696	492	198	886	213	262	737	486
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.11	1.00	1.00	0.10	1.00	1.00	0.14	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	206	3539	1583	185	3539	1583	253	3539	1583	234	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	259	992	360	264	1843	535	215	963	232	285	801	528
RTOR Reduction (vph)	0	0	243	0	0	181	0	0	102	0	0	154
Lane Group Flow (vph)	259	992	117	264	1843	354	215	963	130	285	801	374
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	45.2	36.2	36.2	55.6	42.6	42.6	44.2	29.5	29.5	49.0	31.9	31.9
Effective Green, g (s)	45.2	38.6	38.6	55.6	45.0	45.0	44.2	32.0	32.0	49.0	34.4	34.4
Actuated g/C Ratio	0.38	0.32	0.32	0.47	0.38	0.38	0.37	0.27	0.27	0.41	0.29	0.29
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	196	1146	513	291	1337	598	281	950	425	316	1022	457
v/s Ratio Prot	c0.10	0.28		0.12	c0.52		0.09	c0.27		c0.13	0.23	
v/s Ratio Perm	0.40		0.07	0.31		0.22	0.19		0.08	0.24		0.24
v/c Ratio	1.32	0.87	0.23	0.91	1.38	0.59	0.77	1.01	0.30	0.90	0.78	0.82
Uniform Delay, d1	31.1	37.8	29.4	33.4	37.0	29.7	29.1	43.5	34.7	32.5	38.9	39.4
Progression 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
Incremental Delay, d2	175.7	7.0	0.2	29.7	175.1	1.6	11.7	32.6	0.4	27.2	4.0	10.9
Delay (s)	206.9	44.8	29.6	63.1	212.1	31.3	40.8	76.2	35.1	59.7	42.9	50.3
Level of Service	F	D	C	E	F	C	D	E	D	E	D	D
Approach Delay (s)		67.5			160.6			64.0			48.3	
Approach LOS		E			F			E			D	

Intersection Summary				
HCM 2000 Control Delay	96.4	HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio	1.18			
Actuated Cycle Length (s)	119.1	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	112.4%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	23	48	119	13	199	17	1209	69	129	1140	67
Future Volume (vph)	138	23	48	119	13	199	17	1209	69	129	1140	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.899			0.859			0.992			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1675	0	1770	1600	0	1770	3511	0	1770	3511	0
Flt Permitted	0.432			0.707			0.125			0.106		
Satd. Flow (perm)	805	1675	0	1317	1600	0	233	3511	0	197	3511	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52			213			11			11	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	150	25	52	129	14	216	18	1314	75	140	1239	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	150	77	0	129	230	0	18	1389	0	140	1312	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	19.1	19.1		19.1	19.1		47.6	47.6		62.1	47.6	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.56	0.56		0.73	0.56	
v/c Ratio	0.83	0.19		0.44	0.44		0.14	0.71		0.42	0.67	
Control Delay	71.1	14.4		35.6	8.6		12.2	15.9		9.0	15.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	1.2		0.0	0.0	
Total Delay	71.1	14.4		35.6	8.6		12.2	17.1		9.0	15.1	
LOS	E	B		D	A		B	B		A	B	
Approach Delay		51.9			18.3			17.0			14.5	
Approach LOS		D			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 85.2			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 18.4		Intersection LOS: B	
Intersection Capacity Utilization 76.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	150	77	129	230	18	1389	140	1312
v/c Ratio	0.83	0.19	0.44	0.44	0.14	0.71	0.42	0.67
Control Delay	71.1	14.4	35.6	8.6	12.2	15.9	9.0	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0
Total Delay	71.1	14.4	35.6	8.6	12.2	17.1	9.0	15.1
Queue Length 50th (m)	26.0	3.6	20.2	2.4	1.4	83.5	5.7	76.3
Queue Length 95th (m)	#62.7	15.2	38.6	21.5	5.4	112.5	16.0	102.5
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	180	415	295	523	140	2116	366	2116
Starvation Cap Reductn	0	0	0	0	0	458	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.19	0.44	0.44	0.13	0.84	0.38	0.62

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	23	48	119	13	199	17	1209	69	129	1140	67
Future Volume (vph)	138	23	48	119	13	199	17	1209	69	129	1140	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1674		1770	1600		1770	3511		1770	3510	
Flt Permitted	0.43	1.00		0.71	1.00		0.12	1.00		0.11	1.00	
Satd. Flow (perm)	805	1674		1317	1600		232	3511		197	3510	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	150	25	52	129	14	216	18	1314	75	140	1239	73
RTOR Reduction (vph)	0	40	0	0	165	0	0	5	0	0	5	0
Lane Group Flow (vph)	150	37	0	129	65	0	18	1384	0	140	1307	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	16.1	16.1		16.1	16.1		44.7	44.7		52.1	44.7	
Effective Green, g (s)	19.1	19.1		19.1	19.1		47.7	47.7		58.1	47.7	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.56	0.56		0.68	0.56	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	180	375		295	358		129	1965		326	1965	
v/s Ratio Prot		0.02			0.04			c0.39		c0.05	0.37	
v/s Ratio Perm	c0.19			0.10			0.08			0.24		
v/c Ratio	0.83	0.10		0.44	0.18		0.14	0.70		0.43	0.67	
Uniform Delay, d1	31.5	26.2		28.4	26.7		9.0	13.6		9.2	13.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	26.8	0.1		1.0	0.2		0.5	1.2		0.9	0.9	
Delay (s)	58.3	26.3		29.5	27.0		9.4	14.8		10.1	14.0	
Level of Service	E	C		C	C		A	B		B	B	
Approach Delay (s)		47.5			27.9			14.7			13.6	
Approach LOS		D			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	85.2	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	76.7%	ICU Level of Service	D	
Analysis Period (min)	15			

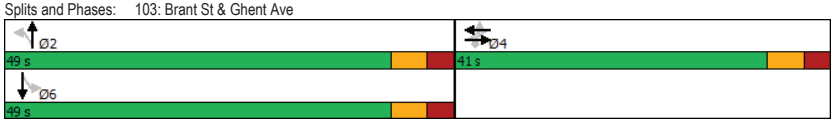
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	30	17	30	65	48	13	1081	26	39	1021	215
Future Volume (vph)	169	30	17	30	65	48	13	1081	26	39	1021	215
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.955			0.997			0.974	
Flt Protected		0.959			0.990		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1761	0	1770	3529	0	1770	3447	0
Flt Permitted		0.669			0.903		0.118			0.154		
Satd. Flow (perm)	0	1246	1583	0	1606	0	220	3529	0	287	3447	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		34			4			40	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.5			333.4			75.4			150.5	
Travel Time (s)		17.5			24.0			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	184	33	18	33	71	52	14	1175	28	42	1110	234
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	217	18	0	156	0	14	1203	0	42	1344	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		20.9	20.9		20.9		34.0	34.0		34.0	34.0	
Actuated g/C Ratio		0.33	0.33		0.33		0.54	0.54		0.54	0.54	
v/c Ratio		0.53	0.03		0.28		0.12	0.63		0.27	0.72	
Control Delay		24.1	1.1		15.3		11.8	12.7		15.1	14.0	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.1	
Total Delay		24.1	1.1		15.3		11.8	12.7		15.1	14.0	
LOS		C	A		B		B	B		B	B	
Approach Delay		22.3			15.3			12.6			14.0	
Approach LOS		C			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 63.4			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 14.2		Intersection LOS: B	
Intersection Capacity Utilization 59.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	217	18	156	14	1203	42	1344
v/c Ratio	0.53	0.03	0.28	0.12	0.63	0.27	0.72
Control Delay	24.1	1.1	15.3	11.8	12.7	15.1	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	24.1	1.1	15.3	11.8	12.7	15.1	14.0
Queue Length 50th (m)	21.1	0.0	10.6	0.8	48.8	2.5	57.0
Queue Length 95th (m)	48.5	1.1	27.9	4.6	91.3	11.4	107.5
Internal Link Dist (m)	218.5		309.4		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	770	996	1005	163	2617	213	2566
Starvation Cap Reductn	0	0	0	0	0	0	157
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.02	0.16	0.09	0.46	0.20	0.56

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	30	17	30	65	48	13	1081	26	39	1021	215
Future Volume (vph)	169	30	17	30	65	48	13	1081	26	39	1021	215
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.95		1.00	1.00		1.00	0.97	
Flt Protected		0.96	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1787	1583		1760		1770	3527		1770	3447	
Flt Permitted		0.67	1.00		0.90		0.12	1.00		0.15	1.00	
Satd. Flow (perm)		1246	1583		1606		220	3527		287	3447	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	184	33	18	33	71	52	14	1175	28	42	1110	234
RTOR Reduction (vph)	0	0	12	0	23	0	0	2	0	0	18	0
Lane Group Flow (vph)	0	217	6	0	133	0	14	1201	0	42	1326	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		17.7	17.7		17.7		30.8	30.8		30.8	30.8	
Effective Green, g (s)		20.7	20.7		20.7		33.8	33.8		33.8	33.8	
Actuated g/C Ratio		0.33	0.33		0.33		0.54	0.54		0.54	0.54	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		412	524		531		118	1907		155	1864	
v/s Ratio Prot								0.34			c0.38	
v/s Ratio Perm		c0.17	0.00		0.08		0.06			0.15		
v/c Ratio		0.53	0.01		0.25		0.12	0.63		0.27	0.71	
Uniform Delay, d1		16.9	14.0		15.2		7.0	10.0		7.7	10.7	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.2	0.0		0.2		0.5	0.7		0.9	1.3	
Delay (s)		18.1	14.0		15.5		7.5	10.7		8.7	12.0	
Level of Service		B	B		B		A	B		A	B	
Approach Delay (s)		17.8			15.5			10.6			11.9	
Approach LOS		B			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	62.5	Sum of lost time (s)		8.0
Intersection Capacity Utilization	59.8%	ICU Level of Service		B
Analysis Period (min)	15			

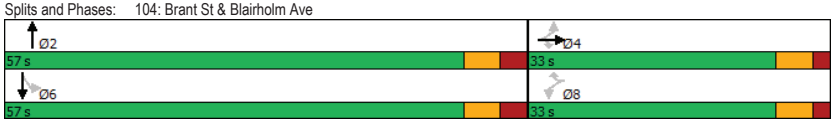
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	6	24	22	0	85	0	971	20	55	854	0
Future Volume (vph)	19	6	24	22	0	85	0	971	20	55	854	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.997				
Flt Protected		0.964		0.950						0.950		
Satd. Flow (prot)	0	1796	1583	1770	0	1583	0	3529	0	1770	1863	0
Flt Permitted		0.964		0.739						0.244		
Satd. Flow (perm)	0	1796	1583	1377	0	1583	0	3529	0	455	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			92		4				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		51.0			305.8			317.1			241.2	
Travel Time (s)		3.7			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	7	26	24	0	92	0	1055	22	60	928	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	28	26	24	0	92	0	1077	0	60	928	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		8.6	8.6	10.7		10.7		43.3		43.3	43.3	
Actuated g/C Ratio		0.15	0.15	0.19		0.19		0.76		0.76	0.76	
v/c Ratio		0.10	0.09	0.09		0.25		0.40		0.17	0.65	
Control Delay		25.9	5.1	24.3		8.6		4.0		4.5	7.7	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		25.9	5.1	24.3		8.6		4.0		4.5	7.7	
LOS		C	A	C		A		A		A	A	
Approach Delay		15.9			11.9			4.0			7.5	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 56.8			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 6.2		Intersection LOS: A	
Intersection Capacity Utilization 66.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	28	26	24	92	1077	60	928
v/c Ratio	0.10	0.09	0.09	0.25	0.40	0.17	0.65
Control Delay	25.9	5.1	24.3	8.6	4.0	4.5	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.9	5.1	24.3	8.6	4.0	4.5	7.7
Queue Length 50th (m)	2.6	0.0	2.1	0.0	21.6	1.8	49.4
Queue Length 95th (m)	10.7	3.8	9.4	11.8	31.8	5.6	88.4
Internal Link Dist (m)	27.0				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	902	819	743	896	3146	405	1661
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.03	0.10	0.34	0.15	0.56

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	6	24	22	0	85	0	971	20	55	854	0
Future Volume (vph)	19	6	24	22	0	85	0	971	20	55	854	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.96	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1795	1583	1770		1583		3528		1770	1863	
Flt Permitted		0.96	1.00	0.74		1.00		1.00		0.24	1.00	
Satd. Flow (perm)		1795	1583	1377		1583		3528		454	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	7	26	24	0	92	0	1055	22	60	928	0
RTOR Reduction (vph)	0	0	23	0	0	79	0	1	0	0	0	0
Lane Group Flow (vph)	0	28	3	24	0	13	0	1076	0	60	928	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		6.1	6.1	6.1		6.1		38.8		38.8	38.8	
Effective Green, g (s)		6.1	6.1	8.1		8.1		41.8		41.8	41.8	
Actuated g/C Ratio		0.11	0.11	0.14		0.14		0.72		0.72	0.72	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		189	166	192		221		2546		327	1344	
v/s Ratio Prot								0.30			c0.50	
v/s Ratio Perm		0.02	0.00	c0.02		0.01				0.13		
v/c Ratio		0.15	0.02	0.12		0.06		0.42		0.18	0.69	
Uniform Delay, d1		23.5	23.2	21.8		21.6		3.2		2.6	4.5	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.4	0.0	0.3		0.1		0.1		0.3	1.5	
Delay (s)		23.9	23.3	22.1		21.7		3.3		2.9	6.0	
Level of Service		C	C	C		C		A		A	A	
Approach Delay (s)		23.6			21.8			3.3			5.8	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	5.9	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.62			
Actuated Cycle Length (s)	57.9	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	66.6%	ICU Level of Service	C	
Analysis Period (min)	15			

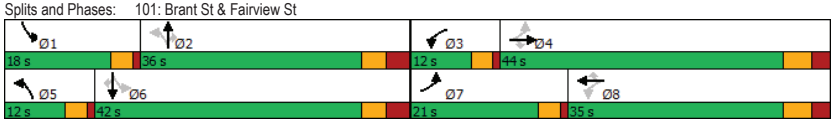
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	356	892	282	168	845	272	271	658	176	267	673	187
Future Volume (vph)	356	892	282	168	845	272	271	658	176	267	673	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.124			0.155			0.238			0.133		
Satd. Flow (perm)	231	3539	1583	289	3539	1583	443	3539	1583	248	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			250			250			192			203
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	387	970	307	183	918	296	295	715	191	290	732	203
Shared Lane Traffic (%)												
Lane Group Flow (vph)	387	970	307	183	918	296	295	715	191	290	732	203
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	21.0	44.0	44.0	12.0	35.0	35.0	12.0	36.0	36.0	18.0	42.0	42.0
Total Split (%)	19.1%	40.0%	40.0%	10.9%	31.8%	31.8%	10.9%	32.7%	32.7%	16.4%	38.2%	38.2%
Maximum Green (s)	17.0	37.6	37.6	8.0	28.6	28.6	8.0	29.5	29.5	14.0	35.5	35.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	51.7	39.7	39.7	38.7	30.6	30.6	36.6	28.6	28.6	46.6	34.6	34.6
Actuated g/C Ratio	0.49	0.37	0.37	0.36	0.29	0.29	0.34	0.27	0.27	0.44	0.33	0.33
v/c Ratio	1.08	0.74	0.41	0.85	0.90	0.47	1.17	0.75	0.34	0.94	0.64	0.31
Control Delay	99.1	33.3	7.4	54.1	49.8	9.2	136.9	41.2	6.0	64.5	33.3	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	99.1	33.3	7.4	54.1	49.8	9.2	136.9	41.2	6.0	64.5	33.3	4.9
LOS	F	C	A	D	D	A	F	D	A	E	C	A
Approach Delay		43.8			41.8			59.1			36.0	
Approach LOS		D			D			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 106.3			
Natural Cycle: 105			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.17			
Intersection Signal Delay: 44.9		Intersection LOS: D	
Intersection Capacity Utilization 90.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Queues
101: Brant St & Fairview St

Background - Five Year Horizon
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	387	970	307	183	918	296	295	715	191	290	732	203
v/c Ratio	1.08	0.74	0.41	0.85	0.90	0.47	1.17	0.75	0.34	0.94	0.64	0.31
Control Delay	99.1	33.3	7.4	54.1	49.8	9.2	136.9	41.2	6.0	64.5	33.3	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	99.1	33.3	7.4	54.1	49.8	9.2	136.9	41.2	6.0	64.5	33.3	4.9
Queue Length 50th (m)	~79.6	96.8	8.2	22.7	102.9	7.5	~48.1	75.4	0.0	45.4	71.2	0.0
Queue Length 95th (m)	#144.5	125.4	29.4	#61.2	#144.9	31.1	#108.3	97.2	16.6	#99.7	91.5	15.7
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	359	1334	752	216	1034	639	252	1067	611	309	1267	697
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.08	0.73	0.41	0.85	0.89	0.46	1.17	0.67	0.31	0.94	0.58	0.29

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
101: Brant St & Fairview St

Background - Five Year Horizon
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	356	892	282	168	845	272	271	658	176	267	673	187
Future Volume (vph)	356	892	282	168	845	272	271	658	176	267	673	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.12	1.00	1.00	0.16	1.00	1.00	0.24	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	231	3539	1583	289	3539	1583	443	3539	1583	248	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	387	970	307	183	918	296	295	715	191	290	732	203
RTOR Reduction (vph)	0	0	157	0	0	178	0	0	140	0	0	137
Lane Group Flow (vph)	387	970	150	183	918	118	295	715	51	290	732	66
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	49.2	37.2	37.2	36.2	28.2	28.2	34.1	26.1	26.1	44.1	32.1	32.1
Effective Green, g (s)	49.2	39.6	39.6	36.2	30.6	30.6	34.1	28.6	28.6	44.1	34.6	34.6
Actuated g/C Ratio	0.46	0.37	0.37	0.34	0.29	0.29	0.32	0.27	0.27	0.42	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	353	1319	590	210	1019	456	242	953	426	303	1153	515
v/s Ratio Prot	c0.18	0.27		0.07	0.26		c0.09	0.20		c0.13	0.21	
v/s Ratio Perm	c0.33		0.09	0.23		0.07	c0.30		0.03	0.27		0.04
v/c Ratio	1.10	0.74	0.25	0.87	0.90	0.26	1.22	0.75	0.12	0.96	0.63	0.13
Uniform Delay, d1	31.1	28.8	23.1	27.1	36.3	29.1	32.8	35.5	29.3	27.9	30.4	25.2
Progression 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
Incremental Delay, d2	76.3	2.2	0.2	30.2	10.8	0.3	130.0	3.4	0.1	39.8	1.2	0.1
Delay (s)	107.4	30.9	23.3	57.3	47.2	29.4	162.7	38.9	29.4	67.7	31.6	25.3
Level of Service	F	C	C	E	D	C	F	D	C	E	C	C
Approach Delay (s)		47.3			44.7			67.8			39.1	
Approach LOS		D			D			E			D	

Intersection Summary				
HCM 2000 Control Delay	49.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	1.09			
Actuated Cycle Length (s)	106.2	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	90.0%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	8	17	73	13	129	14	978	42	114	993	42
Future Volume (vph)	66	8	17	73	13	129	14	978	42	114	993	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.900			0.864			0.994			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1676	0	1770	1609	0	1770	3518	0	1770	3518	0
Flt Permitted	0.592			0.740			0.186			0.191		
Satd. Flow (perm)	1103	1676	0	1378	1609	0	346	3518	0	356	3518	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			140			8			8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	9	18	79	14	140	15	1063	46	124	1079	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	72	27	0	79	154	0	15	1109	0	124	1125	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	14.0	14.0		14.0	14.0		41.3	41.3		53.3	41.3	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.58	0.58		0.75	0.58	
v/c Ratio	0.33	0.08		0.29	0.36		0.07	0.54		0.27	0.55	
Control Delay	32.4	16.7		30.5	9.6		9.4	11.2		4.1	11.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.1		0.0	0.0	
Total Delay	32.4	16.7		30.5	9.6		9.4	11.3		4.1	11.3	
LOS	C	B		C	A		A	B		A	B	
Approach Delay		28.1			16.7			11.3			10.6	
Approach LOS		C			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 71.4			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 12.1		Intersection LOS: B	
Intersection Capacity Utilization 64.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	72	27	79	154	15	1109	124	1125
v/c Ratio	0.33	0.08	0.29	0.36	0.07	0.54	0.27	0.55
Control Delay	32.4	16.7	30.5	9.6	9.4	11.2	4.1	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	32.4	16.7	30.5	9.6	9.4	11.3	4.1	11.3
Queue Length 50th (m)	8.7	1.0	9.5	1.6	0.9	47.2	3.4	48.2
Queue Length 95th (m)	23.8	8.2	25.1	17.8	4.3	79.1	9.3	80.7
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	302	472	377	542	254	2590	510	2590
Starvation Cap Reductn	0	0	0	0	0	352	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.06	0.21	0.28	0.06	0.50	0.24	0.43

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	8	17	73	13	129	14	978	42	114	993	42
Future Volume (vph)	66	8	17	73	13	129	14	978	42	114	993	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1676		1770	1609		1770	3517		1770	3518	
Flt Permitted	0.59	1.00		0.74	1.00		0.19	1.00		0.19	1.00	
Satd. Flow (perm)	1104	1676		1378	1609		346	3517		355	3518	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	9	18	79	14	140	15	1063	46	124	1079	46
RTOR Reduction (vph)	0	15	0	0	113	0	0	3	0	0	3	0
Lane Group Flow (vph)	72	12	0	79	41	0	15	1106	0	124	1122	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	10.9	10.9		10.9	10.9		38.2	38.2		43.8	38.2	
Effective Green, g (s)	13.9	13.9		13.9	13.9		41.2	41.2		49.8	41.2	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.57	0.57		0.69	0.57	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	214	324		267	311		198	2020		416	2021	
v/s Ratio Prot		0.01			0.03			0.31		c0.04	c0.32	
v/s Ratio Perm	c0.07			0.06			0.04			0.17		
v/c Ratio	0.34	0.04		0.30	0.13		0.08	0.55		0.30	0.55	
Uniform Delay, d1	24.9	23.5		24.7	23.9		6.8	9.5		4.7	9.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	0.0		0.6	0.2		0.2	0.3		0.4	0.3	
Delay (s)	25.9	23.5		25.3	24.1		6.9	9.8		5.1	9.9	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		25.2			24.5			9.7			9.4	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.46			
Actuated Cycle Length (s)	71.7	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	64.1%	ICU Level of Service	C	
Analysis Period (min)	15			

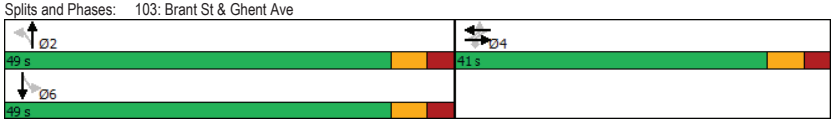
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	18	10	20	17	38	17	884	20	45	916	114
Future Volume (vph)	102	18	10	20	17	38	17	884	20	45	916	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.932			0.997			0.983	
Flt Protected		0.959			0.987		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1714	0	1770	3529	0	1770	3479	0
Flt Permitted		0.703			0.888		0.203			0.250		
Satd. Flow (perm)	0	1310	1583	0	1542	0	378	3529	0	466	3479	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		41			4			21	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		242.5			333.4			75.4			150.5	
Travel Time (s)		17.5			24.0			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	111	20	11	22	18	41	18	961	22	49	996	124
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	131	11	0	81	0	18	983	0	49	1120	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		14.4	14.4		14.4		30.3	30.3		30.3	30.3	
Actuated g/C Ratio		0.30	0.30		0.30		0.63	0.63		0.63	0.63	
v/c Ratio		0.33	0.02		0.16		0.08	0.44		0.17	0.51	
Control Delay		17.5	0.1		9.5		7.2	7.6		8.3	8.1	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		17.5	0.1		9.5		7.2	7.6		8.3	8.1	
LOS		B	A		A		A	A		A	A	
Approach Delay		16.1			9.5			7.5			8.1	
Approach LOS		B			A			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 48			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay: 8.4		Intersection LOS: A	
Intersection Capacity Utilization 57.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	131	11	81	18	983	49	1120
v/c Ratio	0.33	0.02	0.16	0.08	0.44	0.17	0.51
Control Delay	17.5	0.1	9.5	7.2	7.6	8.3	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.5	0.1	9.5	7.2	7.6	8.3	8.1
Queue Length 50th (m)	8.6	0.0	2.4	0.7	24.8	1.9	29.6
Queue Length 95th (m)	25.2	0.0	12.0	3.8	48.8	8.1	58.2
Internal Link Dist (m)	218.5		309.4		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	1040	1267	1233	344	3212	424	3167
Starvation Cap Reductn	0	0	0	0	0	0	48
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.01	0.07	0.05	0.31	0.12	0.36

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	18	10	20	17	38	17	884	20	45	916	114
Future Volume (vph)	102	18	10	20	17	38	17	884	20	45	916	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.93		1.00	1.00		1.00	0.98	
Flt Protected		0.96	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1787	1583		1712		1770	3527		1770	3480	
Flt Permitted		0.70	1.00		0.89		0.20	1.00		0.25	1.00	
Satd. Flow (perm)		1309	1583		1540		379	3527		466	3480	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	111	20	11	22	18	41	18	961	22	49	996	124
RTOR Reduction (vph)	0	0	8	0	31	0	0	2	0	0	9	0
Lane Group Flow (vph)	0	131	3	0	50	0	18	981	0	49	1111	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		9.2	9.2		9.2		26.2	26.2		26.2	26.2	
Effective Green, g (s)		12.2	12.2		12.2		29.2	29.2		29.2	29.2	
Actuated g/C Ratio		0.25	0.25		0.25		0.59	0.59		0.59	0.59	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		323	390		380		224	2084		275	2057	
v/s Ratio Prot								0.28			c0.32	
v/s Ratio Perm		c0.10	0.00		0.03		0.05			0.11		
v/c Ratio		0.41	0.01		0.13		0.08	0.47		0.18	0.54	
Uniform Delay, d1		15.6	14.0		14.5		4.3	5.7		4.6	6.1	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.8	0.0		0.2		0.2	0.2		0.3	0.3	
Delay (s)		16.4	14.0		14.6		4.5	5.9		4.9	6.4	
Level of Service		B	B		B		A	A		A	A	
Approach Delay (s)		16.2			14.6			5.9			6.3	
Approach LOS		B			B			A			A	

Intersection Summary					
HCM 2000 Control Delay	7.0	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.50				
Actuated Cycle Length (s)	49.4	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	57.3%	ICU Level of Service		B	
Analysis Period (min)	15				

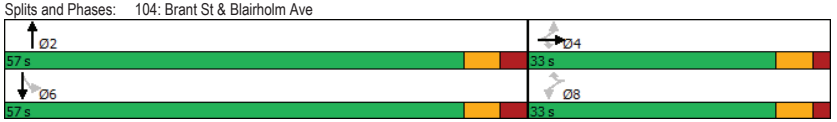
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	0	6	12	0	49	0	851	10	39	867	0
Future Volume (vph)	17	0	6	12	0	49	0	851	10	39	867	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.998				
Flt Protected		0.950		0.950						0.950		
Satd. Flow (prot)	0	1770	1583	1770	0	1583	0	3532	0	1770	1863	0
Flt Permitted		0.950		0.746						0.297		
Satd. Flow (perm)	0	1770	1583	1390	0	1583	0	3532	0	553	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			53		2				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		55.3			305.8			317.1			241.2	
Travel Time (s)		4.0			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	0	7	13	0	53	0	925	11	42	942	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	18	7	13	0	53	0	936	0	42	942	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		8.7	8.7	10.9		10.9		46.7		46.7	46.7	
Actuated g/C Ratio		0.16	0.16	0.20		0.20		0.84		0.84	0.84	
v/c Ratio		0.07	0.02	0.05		0.15		0.32		0.09	0.60	
Control Delay		27.6	0.2	25.8		10.0		2.7		3.1	5.9	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		27.6	0.2	25.8		10.0		2.7		3.1	5.9	
LOS		C	A	C		A		A		A	A	
Approach Delay		19.9			13.1			2.7			5.8	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 55.6			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 4.8		Intersection LOS: A	
Intersection Capacity Utilization 67.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	18	7	13	53	936	42	942
v/c Ratio	0.07	0.02	0.05	0.15	0.32	0.09	0.60
Control Delay	27.6	0.2	25.8	10.0	2.7	3.1	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.6	0.2	25.8	10.0	2.7	3.1	5.9
Queue Length 50th (m)	2.2	0.0	1.5	0.0	17.8	1.2	51.0
Queue Length 95th (m)	8.0	0.0	6.4	9.1	24.5	3.5	85.2
Internal Link Dist (m)	31.3				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	932	856	786	918	3083	483	1626
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.02	0.06	0.30	0.09	0.58

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	0	6	12	0	49	0	851	10	39	867	0
Future Volume (vph)	17	0	6	12	0	49	0	851	10	39	867	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.95	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1770	1583	1770		1583		3533		1770	1863	
Flt Permitted		0.95	1.00	0.75		1.00		1.00		0.30	1.00	
Satd. Flow (perm)		1770	1583	1389		1583		3533		552	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	0	7	13	0	53	0	925	11	42	942	0
RTOR Reduction (vph)	0	0	7	0	0	48	0	0	0	0	0	0
Lane Group Flow (vph)	0	18	0	13	0	5	0	936	0	42	942	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		4.0	4.0	4.0		4.0		41.0		41.0	41.0	
Effective Green, g (s)		4.0	4.0	6.0		6.0		44.0		44.0	44.0	
Actuated g/C Ratio		0.07	0.07	0.10		0.10		0.76		0.76	0.76	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		122	109	143		163		2680		418	1413	
v/s Ratio Prot								0.26			c0.51	
v/s Ratio Perm		0.01	0.00	0.01		0.00				0.08		
v/c Ratio		0.15	0.00	0.09		0.03		0.35		0.10	0.67	
Uniform Delay, d1		25.4	25.1	23.5		23.4		2.3		1.8	3.4	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.6	0.0	0.3		0.1		0.1		0.1	1.2	
Delay (s)		26.0	25.2	23.8		23.5		2.4		1.9	4.6	
Level of Service		C	C	C		C		A		A	A	
Approach Delay (s)		25.7			23.5			2.4			4.5	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	4.4	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio	0.62			
Actuated Cycle Length (s)	58.0	Sum of lost time (s)		10.0
Intersection Capacity Utilization	67.3%	ICU Level of Service		C
Analysis Period (min)	15			

c Critical Lane Group

Appendix I1

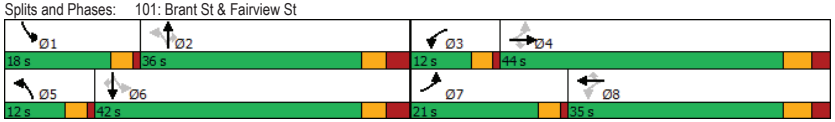
Total – Phase 1 Operations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	339	1115	282	132	351	153	205	657	285	231	727	151
Future Volume (vph)	339	1115	282	132	351	153	205	657	285	231	727	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.375			0.140			0.192			0.132		
Satd. Flow (perm)	699	3539	1583	261	3539	1583	358	3539	1583	246	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			253			193			192			164
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	368	1212	307	143	382	166	223	714	310	251	790	164
Shared Lane Traffic (%)												
Lane Group Flow (vph)	368	1212	307	143	382	166	223	714	310	251	790	164
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	21.0	44.0	44.0	12.0	35.0	35.0	12.0	36.0	36.0	18.0	42.0	42.0
Total Split (%)	19.1%	40.0%	40.0%	10.9%	31.8%	31.8%	10.9%	32.7%	32.7%	16.4%	38.2%	38.2%
Maximum Green (s)	17.0	37.6	37.6	8.0	28.6	28.6	8.0	29.5	29.5	14.0	35.5	35.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	51.2	39.3	39.3	38.9	31.0	31.0	36.8	28.8	28.8	46.1	34.2	34.2
Actuated g/C Ratio	0.49	0.37	0.37	0.37	0.29	0.29	0.35	0.27	0.27	0.44	0.32	0.32
v/c Ratio	0.73	0.92	0.41	0.68	0.37	0.28	0.96	0.74	0.54	0.83	0.69	0.26
Control Delay	28.5	44.6	7.3	37.4	31.6	4.0	75.8	40.3	16.2	47.2	34.5	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.5	44.6	7.3	37.4	31.6	4.0	75.8	40.3	16.2	47.2	34.5	5.1
LOS	C	D	A	D	C	A	E	D	B	D	C	A
Approach Delay		35.4			26.2			40.6			33.1	
Approach LOS		D			C			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 105.5			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 34.9		Intersection LOS: C	
Intersection Capacity Utilization 82.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Queues
101: Brant St & Fairview St

Total - Phase 1
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	368	1212	307	143	382	166	223	714	310	251	790	164
v/c Ratio	0.73	0.92	0.41	0.68	0.37	0.28	0.96	0.74	0.54	0.83	0.69	0.26
Control Delay	28.5	44.6	7.3	37.4	31.6	4.0	75.8	40.3	16.2	47.2	34.5	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.5	44.6	7.3	37.4	31.6	4.0	75.8	40.3	16.2	47.2	34.5	5.1
Queue Length 50th (m)	52.6	135.5	7.8	17.6	36.0	0.0	30.7	75.3	20.4	35.6	78.4	0.0
Queue Length 95th (m)	79.2	#184.2	28.8	#42.3	50.7	11.0	#73.5	97.0	48.3	#78.4	100.2	14.5
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	512	1347	759	211	1044	602	232	1077	615	310	1280	677
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.90	0.40	0.68	0.37	0.28	0.96	0.66	0.50	0.81	0.62	0.24

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
101: Brant St & Fairview St

Total - Phase 1
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	339	1115	282	132	351	153	205	657	285	231	727	151
Future Volume (vph)	339	1115	282	132	351	153	205	657	285	231	727	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.37	1.00	1.00	0.14	1.00	1.00	0.19	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	698	3539	1583	261	3539	1583	358	3539	1583	246	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	368	1212	307	143	382	166	223	714	310	251	790	164
RTOR Reduction (vph)	0	0	159	0	0	117	0	0	140	0	0	111
Lane Group Flow (vph)	368	1212	148	143	382	49	223	714	170	251	790	53
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	48.8	36.9	36.9	36.5	28.6	28.6	34.3	26.3	26.3	43.7	31.7	31.7
Effective Green, g (s)	48.8	39.3	39.3	36.5	31.0	31.0	34.3	28.8	28.8	43.7	34.2	34.2
Actuated g/C Ratio	0.46	0.37	0.37	0.35	0.29	0.29	0.33	0.27	0.27	0.41	0.32	0.32
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	487	1319	590	203	1040	465	223	967	432	295	1148	513
v/s Ratio Prot	c0.12	c0.34		0.05	0.11		0.08	0.20		c0.11	0.22	
v/s Ratio Perm	0.23		0.09	0.19		0.03	c0.25		0.11	0.24		0.03
v/c Ratio	0.76	0.92	0.25	0.70	0.37	0.10	1.00	0.74	0.39	0.85	0.69	0.10
Uniform Delay, d1	19.9	31.5	22.9	27.5	29.4	27.1	31.6	34.9	31.2	24.4	31.0	24.9
Progression 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
Incremental Delay, d2	6.6	10.3	0.2	10.6	0.2	0.1	60.3	3.0	0.6	20.3	1.7	0.1
Delay (s)	26.4	41.8	23.1	38.1	29.7	27.2	91.9	37.9	31.8	44.7	32.7	25.0
Level of Service	C	D	C	D	C	C	F	D	C	D	C	C
Approach Delay (s)		35.8			30.8			46.0			34.1	
Approach LOS		D			C			D			C	

Intersection Summary				
HCM 2000 Control Delay	37.2	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.91			
Actuated Cycle Length (s)	105.4	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	82.9%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	10	16	63	9	82	26	867	49	90	965	87
Future Volume (vph)	33	10	16	63	9	82	26	867	49	90	965	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.909			0.865			0.992			0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1693	0	1770	1611	0	1770	3511	0	1770	3497	0
Flt Permitted	0.693			0.739			0.191			0.239		
Satd. Flow (perm)	1291	1693	0	1377	1611	0	356	3511	0	445	3497	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17			89			10			17	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	36	11	17	68	10	89	28	942	53	98	1049	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	28	0	68	99	0	28	995	0	98	1144	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	13.5	13.5		13.5	13.5		41.9	41.9		52.0	41.9	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.65	0.65		0.81	0.65	
v/c Ratio	0.13	0.08		0.24	0.24		0.12	0.44		0.17	0.50	
Control Delay	28.1	17.5		29.3	10.3		9.3	9.1		3.0	9.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	28.1	17.5		29.3	10.3		9.3	9.2		3.0	9.8	
LOS	C	B		C	B		A	A		A	A	
Approach Delay		23.5			18.0			9.2			9.2	
Approach LOS		C			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 64.5			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 10.2		Intersection LOS: B	
Intersection Capacity Utilization 56.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Queues
102: Brant St & Grahams Ln/Prospect St

Total - Phase 1
AM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	36	28	68	99	28	995	98	1144
v/c Ratio	0.13	0.08	0.24	0.24	0.12	0.44	0.17	0.50
Control Delay	28.1	17.5	29.3	10.3	9.3	9.1	3.0	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.1	17.5	29.3	10.3	9.3	9.2	3.0	9.8
Queue Length 50th (m)	3.9	1.2	7.6	1.1	1.6	37.3	2.3	45.2
Queue Length 95th (m)	13.7	8.7	22.1	14.5	6.3	62.1	6.7	75.1
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	416	557	444	580	278	2747	628	2738
Starvation Cap Reductn	0	0	0	0	0	321	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.05	0.15	0.17	0.10	0.41	0.16	0.42

Intersection Summary

HCM Signalized Intersection Capacity Analysis
102: Brant St & Grahams Ln/Prospect St

Total - Phase 1
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	10	16	63	9	82	26	867	49	90	965	87
Future Volume (vph)	33	10	16	63	9	82	26	867	49	90	965	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.87		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1693		1770	1612		1770	3511		1770	3495	
Flt Permitted	0.69	1.00		0.74	1.00		0.19	1.00		0.24	1.00	
Satd. Flow (perm)	1291	1693		1377	1612		356	3511		446	3495	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	36	11	17	68	10	89	28	942	53	98	1049	95
RTOR Reduction (vph)	0	14	0	0	75	0	0	4	0	0	7	0
Lane Group Flow (vph)	36	14	0	68	24	0	28	991	0	98	1137	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	7.4	7.4		7.4	7.4		37.2	37.2		42.1	37.2	
Effective Green, g (s)	10.4	10.4		10.4	10.4		40.2	40.2		48.1	40.2	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.60	0.60		0.72	0.60	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	201	264		215	252		215	2122		479	2112	
v/s Ratio Prot		0.01			0.01			0.28		c0.02	c0.33	
v/s Ratio Perm	0.03			c0.05			0.08			0.12		
v/c Ratio	0.18	0.05		0.32	0.09		0.13	0.47		0.20	0.54	
Uniform Delay, d1	24.3	23.9		24.9	24.0		5.6	7.2		3.1	7.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.1		0.8	0.2		0.3	0.2		0.2	0.3	
Delay (s)	24.8	23.9		25.7	24.2		5.9	7.4		3.3	8.0	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		24.4			24.8			7.4			7.6	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	9.1	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.44			
Actuated Cycle Length (s)	66.5	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	56.3%	ICU Level of Service	B	
Analysis Period (min)	15			

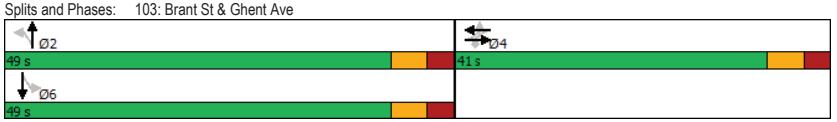
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	34	35	24	17	28	23	718	31	33	856	161
Future Volume (vph)	192	34	35	24	17	28	23	718	31	33	856	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.945			0.994			0.976	
Flt Protected		0.959			0.983		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1730	0	1770	3518	0	1770	3454	0
Flt Permitted		0.707			0.853		0.175			0.289		
Satd. Flow (perm)	0	1317	1583	0	1502	0	326	3518	0	538	3454	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		30			7			34	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		97.4			333.4			75.4			150.5	
Travel Time (s)		7.0			24.0			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	209	37	38	26	18	30	25	780	34	36	930	175
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	246	38	0	74	0	25	814	0	36	1105	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		19.7	19.7		19.7		28.8	28.8		28.8	28.8	
Actuated g/C Ratio		0.35	0.35		0.35		0.51	0.51		0.51	0.51	
v/c Ratio		0.54	0.07		0.14		0.15	0.46		0.13	0.63	
Control Delay		20.9	4.5		10.1		11.9	10.5		10.4	12.3	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		20.9	4.5		10.1		11.9	10.5		10.4	12.3	
LOS		C	A		B		B	B		B	B	
Approach Delay		18.7			10.1			10.6			12.3	
Approach LOS		B			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 56.9			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 12.4		Intersection LOS: B	
Intersection Capacity Utilization 54.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Queues
103: Brant St & Ghent Ave

Total - Phase 1
AM Peak Hour

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	246	38	74	25	814	36	1105
v/c Ratio	0.54	0.07	0.14	0.15	0.46	0.13	0.63
Control Delay	20.9	4.5	10.1	11.9	10.5	10.4	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.9	4.5	10.1	11.9	10.5	10.4	12.3
Queue Length 50th (m)	19.0	0.0	2.9	1.3	25.4	1.8	38.0
Queue Length 95th (m)	50.5	4.6	12.6	6.7	54.0	8.1	79.3
Internal Link Dist (m)	73.4		309.4		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	899	1096	1035	267	2887	441	2839
Starvation Cap Reductn	0	0	0	0	0	0	82
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.03	0.07	0.09	0.28	0.08	0.40

Intersection Summary

HCM Signalized Intersection Capacity Analysis
103: Brant St & Ghent Ave

Total - Phase 1
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	34	35	24	17	28	23	718	31	33	856	161
Future Volume (vph)	192	34	35	24	17	28	23	718	31	33	856	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.95		1.00	0.99		1.00	0.98	
Flt Protected		0.96	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1787	1583		1730		1770	3517		1770	3455	
Flt Permitted		0.71	1.00		0.85		0.18	1.00		0.29	1.00	
Satd. Flow (perm)		1317	1583		1502		327	3517		538	3455	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	209	37	38	26	18	30	25	780	34	36	930	175
RTOR Reduction (vph)	0	0	25	0	20	0	0	3	0	0	17	0
Lane Group Flow (vph)	0	246	13	0	54	0	25	811	0	36	1088	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		16.6	16.6		16.6		25.6	25.6		25.6	25.6	
Effective Green, g (s)		19.6	19.6		19.6		28.6	28.6		28.6	28.6	
Actuated g/C Ratio		0.35	0.35		0.35		0.51	0.51		0.51	0.51	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		459	552		523		166	1789		273	1758	
v/s Ratio Prot								0.23			c0.31	
v/s Ratio Perm		c0.19	0.01		0.04		0.08			0.07		
v/c Ratio		0.54	0.02		0.10		0.15	0.45		0.13	0.62	
Uniform Delay, d1		14.7	12.0		12.4		7.3	8.8		7.3	9.9	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.2	0.0		0.1		0.4	0.2		0.2	0.7	
Delay (s)		15.9	12.0		12.5		7.8	9.0		7.5	10.6	
Level of Service		B	B		B		A	A		A	B	
Approach Delay (s)		15.4			12.5			9.0			10.5	
Approach LOS		B			B			A			B	

Intersection Summary				
HCM 2000 Control Delay	10.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	56.2	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	54.6%	ICU Level of Service	A	
Analysis Period (min)	15			

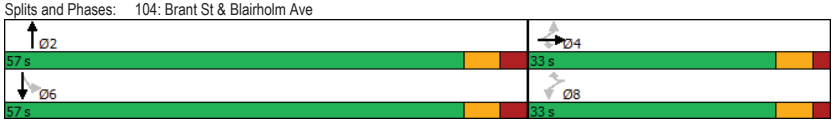
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	4	8	40	0	110	0	636	16	46	778	0
Future Volume (vph)	16	4	8	40	0	110	0	636	16	46	778	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.996				
Flt Protected		0.961		0.950						0.950		
Satd. Flow (prot)	0	1790	1583	1770	0	1583	0	3525	0	1770	1863	0
Flt Permitted		0.961		0.744						0.379		
Satd. Flow (perm)	0	1790	1583	1386	0	1583	0	3525	0	706	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			120		5				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		34.6			305.8			317.1			241.2	
Travel Time (s)		2.5			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	4	9	43	0	120	0	691	17	50	846	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	21	9	43	0	120	0	708	0	50	846	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		8.9	8.9	11.1		11.1		36.6		36.6	36.6	
Actuated g/C Ratio		0.18	0.18	0.22		0.22		0.72		0.72	0.72	
v/c Ratio		0.07	0.03	0.14		0.27		0.28		0.10	0.63	
Control Delay		22.2	0.1	21.3		7.3		3.9		4.0	8.0	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		22.2	0.1	21.3		7.3		3.9		4.0	8.0	
LOS		C	A	C		A		A		A	A	
Approach Delay		15.5			11.0			3.9			7.8	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 50.5			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 6.7		Intersection LOS: A	
Intersection Capacity Utilization 62.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Queues
104: Brant St & Blairholm Ave

Total - Phase 1
AM Peak Hour

Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	21	9	43	120	708	50	846
v/c Ratio	0.07	0.03	0.14	0.27	0.28	0.10	0.63
Control Delay	22.2	0.1	21.3	7.3	3.9	4.0	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	0.1	21.3	7.3	3.9	4.0	8.0
Queue Length 50th (m)	1.6	0.0	3.1	0.0	12.3	1.5	41.5
Queue Length 95th (m)	8.1	0.0	13.1	12.6	20.8	4.7	80.9
Internal Link Dist (m)	10.6				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	1012	915	841	1008	3360	673	1776
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.05	0.12	0.21	0.07	0.48

Intersection Summary

HCM Signalized Intersection Capacity Analysis
104: Brant St & Blairholm Ave

Total - Phase 1
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	4	8	40	0	110	0	636	16	46	778	0
Future Volume (vph)	16	4	8	40	0	110	0	636	16	46	778	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.96	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1790	1583	1770		1583		3526		1770	1863	
Flt Permitted		0.96	1.00	0.74		1.00		1.00		0.38	1.00	
Satd. Flow (perm)		1790	1583	1385		1583		3526		706	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	4	9	43	0	120	0	691	17	50	846	0
RTOR Reduction (vph)	0	0	8	0	0	100	0	2	0	0	0	0
Lane Group Flow (vph)	0	21	1	43	0	20	0	706	0	50	846	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		6.5	6.5	6.5		6.5		32.2		32.2	32.2	
Effective Green, g (s)		6.5	6.5	8.5		8.5		35.2		35.2	35.2	
Actuated g/C Ratio		0.13	0.13	0.16		0.16		0.68		0.68	0.68	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		225	199	227		260		2400		480	1268	
v/s Ratio Prot								0.20			c0.45	
v/s Ratio Perm		0.01	0.00	c0.03		0.01				0.07		
v/c Ratio		0.09	0.01	0.19		0.08		0.29		0.10	0.67	
Uniform Delay, d1		20.0	19.8	18.6		18.3		3.3		2.8	4.8	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.2	0.0	0.4		0.1		0.1		0.1	1.3	
Delay (s)		20.2	19.8	19.0		18.4		3.4		2.9	6.2	
Level of Service		C	B	B		B		A		A	A	
Approach Delay (s)		20.1			18.6			3.4			6.0	
Approach LOS		C			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	6.3	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	51.7	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	62.6%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	185	140	59	75	0
Future Volume (vph)	0	185	140	59	75	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.956			
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	3383	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1863	3383	0	1770	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		145.2	97.4		63.4	
Travel Time (s)		10.5	7.0		4.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	201	152	64	82	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	201	216	0	82	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		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
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	20.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	185	140	59	75	0
Future Volume (Veh/h)	0	185	140	59	75	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	201	152	64	82	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			98			
pX, platoon unblocked						
vC, conflicting volume	216				385	108
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	216				385	108
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				86	100
cM capacity (veh/h)	1351				591	925

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	201	101	115	82
Volume Left	0	0	0	82
Volume Right	0	0	64	0
cSH	1351	1700	1700	591
Volume to Capacity	0.00	0.06	0.07	0.14
Queue Length 95th (m)	0.0	0.0	0.0	3.8
Control Delay (s)	0.0	0.0	0.0	12.1
Lane LOS				B
Approach Delay (s)	0.0	0.0		12.1
Approach LOS				B

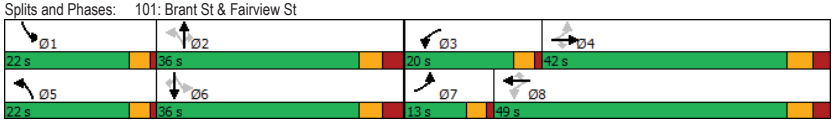
Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	20.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	213	822	308	227	1525	441	188	817	198	235	685	435
Future Volume (vph)	213	822	308	227	1525	441	188	817	198	235	685	435
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.108			0.101			0.149			0.127		
Satd. Flow (perm)	201	3539	1583	188	3539	1583	278	3539	1583	237	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			335			290			140			226
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	232	893	335	247	1658	479	204	888	215	255	745	473
Shared Lane Traffic (%)												
Lane Group Flow (vph)	232	893	335	247	1658	479	204	888	215	255	745	473
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	13.0	42.0	42.0	20.0	49.0	49.0	22.0	36.0	36.0	22.0	36.0	36.0
Total Split (%)	10.8%	35.0%	35.0%	16.7%	40.8%	40.8%	18.3%	30.0%	30.0%	18.3%	30.0%	30.0%
Maximum Green (s)	9.0	35.6	35.6	16.0	42.6	42.6	18.0	29.5	29.5	18.0	29.5	29.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	48.2	39.2	39.2	57.7	45.0	45.0	46.2	32.0	32.0	50.0	33.9	33.9
Actuated g/C Ratio	0.41	0.33	0.33	0.49	0.38	0.38	0.39	0.27	0.27	0.42	0.29	0.29
v/c Ratio	1.15	0.76	0.45	0.85	1.23	0.61	0.71	0.93	0.41	0.83	0.73	0.77
Control Delay	139.4	40.9	5.3	54.2	143.2	14.9	37.2	58.5	15.6	50.0	43.6	29.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	139.4	40.9	5.3	54.2	143.2	14.9	37.2	58.5	15.6	50.0	43.6	29.6
LOS	F	D	A	D	F	B	D	E	B	D	D	C
Approach Delay		48.4			108.2			48.1			40.2	
Approach LOS		D			F			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 118.1			
Natural Cycle: 135			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.23			
Intersection Signal Delay: 68.0		Intersection LOS: E	
Intersection Capacity Utilization 102.9%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Queues
101: Brant St & Fairview St

Total - Phase 1
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	232	893	335	247	1658	479	204	888	215	255	745	473
v/c Ratio	1.15	0.76	0.45	0.85	1.23	0.61	0.71	0.93	0.41	0.83	0.73	0.77
Control Delay	139.4	40.9	5.3	54.2	143.2	14.9	37.2	58.5	15.6	50.0	43.6	29.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	139.4	40.9	5.3	54.2	143.2	14.9	37.2	58.5	15.6	50.0	43.6	29.6
Queue Length 50th (m)	~52.1	105.7	0.0	41.9	~268.7	35.9	30.7	113.2	14.3	41.8	86.5	57.1
Queue Length 95th (m)	#104.8	132.0	21.0	#85.6	#314.7	72.9	53.3	#154.2	36.7	#83.8	114.4	#114.8
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	201	1175	749	306	1349	782	344	959	530	335	1015	615
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.15	0.76	0.45	0.81	1.23	0.61	0.59	0.93	0.41	0.76	0.73	0.77

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
101: Brant St & Fairview St

Total - Phase 1
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	213	822	308	227	1525	441	188	817	198	235	685	435
Future Volume (vph)	213	822	308	227	1525	441	188	817	198	235	685	435
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.11	1.00	1.00	0.10	1.00	1.00	0.15	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	202	3539	1583	189	3539	1583	278	3539	1583	237	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	232	893	335	247	1658	479	204	888	215	255	745	473
RTOR Reduction (vph)	0	0	224	0	0	179	0	0	102	0	0	161
Lane Group Flow (vph)	232	893	111	247	1658	300	204	888	113	255	745	312
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	45.9	36.9	36.9	55.7	42.7	42.7	43.7	29.5	29.5	47.5	31.4	31.4
Effective Green, g (s)	45.9	39.3	39.3	55.7	45.1	45.1	43.7	32.0	32.0	47.5	33.9	33.9
Actuated g/C Ratio	0.39	0.33	0.33	0.47	0.38	0.38	0.37	0.27	0.27	0.40	0.29	0.29
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	197	1176	526	287	1350	604	282	958	428	304	1014	454
v/s Ratio Prot	c0.09	0.25		0.11	c0.47		0.09	c0.25		c0.11	0.21	
v/s Ratio Perm	0.37		0.07	0.30		0.19	0.18		0.07	0.22		0.20
v/c Ratio	1.18	0.76	0.21	0.86	1.23	0.50	0.72	0.93	0.26	0.84	0.73	0.69
Uniform Delay, d1	30.1	35.2	28.3	30.5	36.5	27.9	28.4	42.0	33.8	29.9	38.1	37.4
Progression 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
Incremental Delay, d2	120.2	2.9	0.2	22.2	109.4	0.6	8.9	14.4	0.3	18.0	2.8	4.3
Delay (s)	150.4	38.1	28.5	52.7	146.0	28.5	37.2	56.4	34.2	47.9	40.9	41.7
Level of Service	F	D	C	D	F	C	D	E	C	D	D	D
Approach Delay (s)		53.7			112.7			49.8			42.4	
Approach LOS		D			F			D			D	

Intersection Summary				
HCM 2000 Control Delay	71.6	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.07			
Actuated Cycle Length (s)	118.2	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	102.9%	ICU Level of Service	G	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	20	43	112	12	179	15	1123	67	116	1063	60
Future Volume (vph)	123	20	43	112	12	179	15	1123	67	116	1063	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.898			0.859			0.992			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1673	0	1770	1600	0	1770	3511	0	1770	3511	0
Flt Permitted	0.483			0.712			0.153			0.134		
Satd. Flow (perm)	900	1673	0	1326	1600	0	285	3511	0	250	3511	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		47			195			11			10	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	134	22	47	122	13	195	16	1221	73	126	1155	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	134	69	0	122	208	0	16	1294	0	126	1220	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	17.9	17.9		17.9	17.9		45.4	45.4		57.4	45.4	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.57	0.57		0.72	0.57	
v/c Ratio	0.66	0.17		0.41	0.41		0.10	0.64		0.33	0.61	
Control Delay	49.6	14.4		34.5	8.5		10.6	13.9		5.6	13.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.4		0.0	0.0	
Total Delay	49.6	14.4		34.5	8.5		10.6	14.2		5.6	13.3	
LOS	D	B		C	A		B	B		A	B	
Approach Delay		37.7			18.1			14.2			12.5	
Approach LOS		D			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 79.5			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 15.4		Intersection LOS: B	
Intersection Capacity Utilization 71.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Queues
102: Brant St & Grahams Ln/Prospect St

Total - Phase 1
PM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	134	69	122	208	16	1294	126	1220
v/c Ratio	0.66	0.17	0.41	0.41	0.10	0.64	0.33	0.61
Control Delay	49.6	14.4	34.5	8.5	10.6	13.9	5.6	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Total Delay	49.6	14.4	34.5	8.5	10.6	14.2	5.6	13.3
Queue Length 50th (m)	21.8	3.1	18.7	1.8	1.2	74.0	5.1	67.6
Queue Length 95th (m)	#51.3	14.2	36.5	19.9	4.6	99.7	9.5	91.2
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	223	451	329	544	190	2347	419	2347
Starvation Cap Reductn	0	0	0	0	0	473	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.15	0.37	0.38	0.08	0.69	0.30	0.52

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
102: Brant St & Grahams Ln/Prospect St

Total - Phase 1
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	20	43	112	12	179	15	1123	67	116	1063	60
Future Volume (vph)	123	20	43	112	12	179	15	1123	67	116	1063	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1672		1770	1601		1770	3509		1770	3511	
Flt Permitted	0.48	1.00		0.71	1.00		0.15	1.00		0.13	1.00	
Satd. Flow (perm)	901	1672		1326	1601		286	3509		249	3511	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	134	22	47	122	13	195	16	1221	73	126	1155	65
RTOR Reduction (vph)	0	37	0	0	151	0	0	5	0	0	4	0
Lane Group Flow (vph)	134	32	0	122	57	0	16	1289	0	126	1216	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	14.8	14.8		14.8	14.8		42.3	42.3		47.9	42.3	
Effective Green, g (s)	17.8	17.8		17.8	17.8		45.3	45.3		53.9	45.3	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.57	0.57		0.68	0.57	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	201	373		296	357		162	1994		332	1995	
v/s Ratio Prot		0.02			0.04			c0.37		c0.04	0.35	
v/s Ratio Perm	c0.15			0.09			0.06			0.22		
v/c Ratio	0.67	0.09		0.41	0.16		0.10	0.65		0.38	0.61	
Uniform Delay, d1	28.2	24.5		26.5	24.9		7.9	11.7		7.1	11.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.1	0.1		0.9	0.2		0.3	0.7		0.7	0.5	
Delay (s)	36.3	24.6		27.4	25.1		8.1	12.5		7.9	11.9	
Level of Service	D	C		C	C		A	B		A	B	
Approach Delay (s)		32.3			26.0			12.4			11.5	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	79.7	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	71.4%	ICU Level of Service	C	
Analysis Period (min)	15			

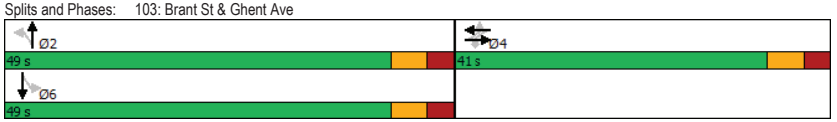
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	197	34	32	27	65	43	28	968	24	35	915	240
Future Volume (vph)	197	34	32	27	65	43	28	968	24	35	915	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.957			0.996			0.969	
Flt Protected		0.959			0.990		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1765	0	1770	3525	0	1770	3429	0
Flt Permitted		0.682			0.908		0.128			0.183		
Satd. Flow (perm)	0	1270	1583	0	1619	0	238	3525	0	341	3429	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		32			4			52	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		104.6			333.4			75.4			150.5	
Travel Time (s)		7.5			24.0			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	37	35	29	71	47	30	1052	26	38	995	261
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	251	35	0	147	0	30	1078	0	38	1256	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		22.8	22.8		22.8		32.8	32.8		32.8	32.8	
Actuated g/C Ratio		0.36	0.36		0.36		0.51	0.51		0.51	0.51	
v/c Ratio		0.56	0.06		0.25		0.25	0.60		0.22	0.71	
Control Delay		23.3	4.0		14.0		17.3	13.4		14.5	14.8	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		23.3	4.0		14.0		17.3	13.4		14.5	14.9	
LOS		C	A		B		B	B		B	B	
Approach Delay		20.9			14.0			13.5			14.9	
Approach LOS		C			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 64.2			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 14.9		Intersection LOS: B	
Intersection Capacity Utilization 59.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Queues
103: Brant St & Ghent Ave

Total - Phase 1
PM Peak Hour

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	251	35	147	30	1078	38	1256
v/c Ratio	0.56	0.06	0.25	0.25	0.60	0.22	0.71
Control Delay	23.3	4.0	14.0	17.3	13.4	14.5	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.3	4.0	14.0	17.3	13.4	14.5	14.9
Queue Length 50th (m)	23.6	0.0	9.4	1.8	43.6	2.3	53.0
Queue Length 95th (m)	55.6	4.2	26.0	9.7	88.3	10.7	108.2
Internal Link Dist (m)	80.6		309.4		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	782	993	1009	175	2596	251	2538
Starvation Cap Reductn	0	0	0	0	0	0	107
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.04	0.15	0.17	0.42	0.15	0.52

Intersection Summary

HCM Signalized Intersection Capacity Analysis
103: Brant St & Ghent Ave

Total - Phase 1
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	197	34	32	27	65	43	28	968	24	35	915	240
Future Volume (vph)	197	34	32	27	65	43	28	968	24	35	915	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.96		1.00	1.00		1.00	0.97	
Flt Protected		0.96	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1787	1583		1765		1770	3526		1770	3429	
Flt Permitted		0.68	1.00		0.91		0.13	1.00		0.18	1.00	
Satd. Flow (perm)		1270	1583		1618		239	3526		341	3429	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	37	35	29	71	47	30	1052	26	38	995	261
RTOR Reduction (vph)	0	0	22	0	21	0	0	2	0	0	25	0
Lane Group Flow (vph)	0	251	13	0	126	0	30	1076	0	38	1231	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		19.6	19.6		19.6		29.6	29.6		29.6	29.6	
Effective Green, g (s)		22.6	22.6		22.6		32.6	32.6		32.6	32.6	
Actuated g/C Ratio		0.36	0.36		0.36		0.52	0.52		0.52	0.52	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		454	566		578		123	1818		175	1768	
v/s Ratio Prot								0.31			c0.36	
v/s Ratio Perm		c0.20	0.01		0.08		0.13			0.11		
v/c Ratio		0.55	0.02		0.22		0.24	0.59		0.22	0.70	
Uniform Delay, d1		16.3	13.1		14.1		8.5	10.7		8.3	11.6	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.5	0.0		0.2		1.0	0.5		0.6	1.2	
Delay (s)		17.7	13.2		14.3		9.5	11.2		9.0	12.8	
Level of Service		B	B		B		A	B		A	B	
Approach Delay (s)		17.2			14.3			11.1			12.7	
Approach LOS		B			B			B			B	

Intersection Summary					
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.64				
Actuated Cycle Length (s)	63.2	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	59.0%	ICU Level of Service		B	
Analysis Period (min)	15				

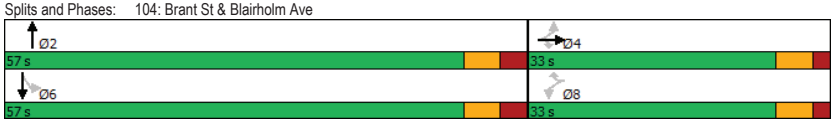
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	5	21	19	0	76	0	886	18	49	781	0
Future Volume (vph)	17	5	21	19	0	76	0	886	18	49	781	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.997				
Flt Protected		0.962		0.950						0.950		
Satd. Flow (prot)	0	1792	1583	1770	0	1583	0	3529	0	1770	1863	0
Flt Permitted		0.962		0.742						0.272		
Satd. Flow (perm)	0	1792	1583	1382	0	1583	0	3529	0	507	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			83		4				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		51.0			305.8			317.1			241.2	
Travel Time (s)		3.7			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	5	23	21	0	83	0	963	20	53	849	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	23	23	21	0	83	0	983	0	53	849	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		8.6	8.6	10.7		10.7		38.0		38.0	38.0	
Actuated g/C Ratio		0.17	0.17	0.21		0.21		0.74		0.74	0.74	
v/c Ratio		0.08	0.08	0.07		0.21		0.38		0.14	0.62	
Control Delay		22.3	4.1	20.8		7.8		4.2		4.4	7.5	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		22.3	4.1	20.8		7.8		4.2		4.4	7.5	
LOS		C	A	C		A		A		A	A	
Approach Delay		13.2			10.4			4.2			7.3	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 51.4			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 6.1		Intersection LOS: A	
Intersection Capacity Utilization 62.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Queues
104: Brant St & Blairholm Ave

Total - Phase 1
PM Peak Hour

Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	23	23	21	83	983	53	849
v/c Ratio	0.08	0.08	0.07	0.21	0.38	0.14	0.62
Control Delay	22.3	4.1	20.8	7.8	4.2	4.4	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.3	4.1	20.8	7.8	4.2	4.4	7.5
Queue Length 50th (m)	1.9	0.0	1.6	0.0	19.0	1.6	41.6
Queue Length 95th (m)	8.5	2.9	7.6	10.4	28.2	5.0	74.5
Internal Link Dist (m)	27.0				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	993	898	822	975	3342	480	1764
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.03	0.03	0.09	0.29	0.11	0.48

Intersection Summary

HCM Signalized Intersection Capacity Analysis
104: Brant St & Blairholm Ave

Total - Phase 1
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	5	21	19	0	76	0	886	18	49	781	0
Future Volume (vph)	17	5	21	19	0	76	0	886	18	49	781	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.96	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1793	1583	1770		1583		3528		1770	1863	
Flt Permitted		0.96	1.00	0.74		1.00		1.00		0.27	1.00	
Satd. Flow (perm)		1793	1583	1383		1583		3528		507	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	5	23	21	0	83	0	963	20	53	849	0
RTOR Reduction (vph)	0	0	20	0	0	70	0	1	0	0	0	0
Lane Group Flow (vph)	0	23	3	21	0	13	0	982	0	53	849	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		6.0	6.0	6.0		6.0		33.6		33.6	33.6	
Effective Green, g (s)		6.0	6.0	8.0		8.0		36.6		36.6	36.6	
Actuated g/C Ratio		0.11	0.11	0.15		0.15		0.70		0.70	0.70	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		204	180	210		240		2454		352	1296	
v/s Ratio Prot								0.28			c0.46	
v/s Ratio Perm		0.01	0.00	c0.02		0.01				0.10		
v/c Ratio		0.11	0.01	0.10		0.05		0.40		0.15	0.66	
Uniform Delay, d1		20.9	20.7	19.2		19.1		3.4		2.7	4.5	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.2	0.0	0.2		0.1		0.1		0.2	1.2	
Delay (s)		21.2	20.7	19.4		19.2		3.5		2.9	5.7	
Level of Service		C	C	B		B		A		A	A	
Approach Delay (s)		20.9			19.2			3.5			5.5	
Approach LOS		C			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	5.6	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	52.6	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	62.8%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	192	261	70	70	0
Future Volume (vph)	0	192	261	70	70	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.968			
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	3426	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1863	3426	0	1770	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		138.0	104.6		69.7	
Travel Time (s)		9.9	7.5		5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	209	284	76	76	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	209	360	0	76	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		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
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	20.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	192	261	70	70	0
Future Volume (Veh/h)	0	192	261	70	70	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	209	284	76	76	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			105			
pX, platoon unblocked						
vC, conflicting volume	360				531	180
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	360				531	180
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				84	100
cM capacity (veh/h)	1195				478	832

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	209	189	171	76
Volume Left	0	0	0	76
Volume Right	0	0	76	0
cSH	1195	1700	1700	478
Volume to Capacity	0.00	0.11	0.10	0.16
Queue Length 95th (m)	0.0	0.0	0.0	4.5
Control Delay (s)	0.0	0.0	0.0	13.9
Lane LOS				B
Approach Delay (s)	0.0	0.0		13.9
Approach LOS				B

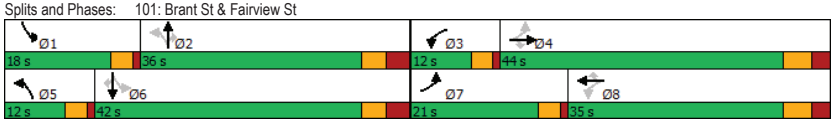
Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	20.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	319	803	262	157	762	243	250	608	165	239	621	167
Future Volume (vph)	319	803	262	157	762	243	250	608	165	239	621	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.129			0.217			0.266			0.146		
Satd. Flow (perm)	240	3539	1583	404	3539	1583	495	3539	1583	272	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			273			263			192			182
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	347	873	285	171	828	264	272	661	179	260	675	182
Shared Lane Traffic (%)												
Lane Group Flow (vph)	347	873	285	171	828	264	272	661	179	260	675	182
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	21.0	44.0	44.0	12.0	35.0	35.0	12.0	36.0	36.0	18.0	42.0	42.0
Total Split (%)	19.1%	40.0%	40.0%	10.9%	31.8%	31.8%	10.9%	32.7%	32.7%	16.4%	38.2%	38.2%
Maximum Green (s)	17.0	37.6	37.6	8.0	28.6	28.6	8.0	29.5	29.5	14.0	35.5	35.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	50.7	38.6	38.6	37.6	29.5	29.5	35.3	27.2	27.2	44.4	32.6	32.6
Actuated g/C Ratio	0.49	0.37	0.37	0.36	0.29	0.29	0.34	0.26	0.26	0.43	0.32	0.32
v/c Ratio	0.94	0.66	0.37	0.68	0.82	0.41	1.01	0.71	0.32	0.84	0.61	0.29
Control Delay	61.0	30.4	5.0	33.1	42.8	6.0	86.8	39.4	5.2	46.0	32.5	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.0	30.4	5.0	33.1	42.8	6.0	86.8	39.4	5.2	46.0	32.5	5.1
LOS	E	C	A	C	D	A	F	D	A	D	C	A
Approach Delay		32.7			33.8			45.5			31.2	
Approach LOS		C			C			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 103.4			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 35.5		Intersection LOS: D	
Intersection Capacity Utilization 83.1%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Queues
101: Brant St & Fairview St

Total - Phase 1
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	347	873	285	171	828	264	272	661	179	260	675	182
v/c Ratio	0.94	0.66	0.37	0.68	0.82	0.41	1.01	0.71	0.32	0.84	0.61	0.29
Control Delay	61.0	30.4	5.0	33.1	42.8	6.0	86.8	39.4	5.2	46.0	32.5	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.0	30.4	5.0	33.1	42.8	6.0	86.8	39.4	5.2	46.0	32.5	5.1
Queue Length 50th (m)	56.4	81.4	1.6	20.2	87.3	0.2	~40.5	68.4	0.0	36.6	64.3	0.0
Queue Length 95th (m)	#121.5	109.5	19.7	#39.9	117.2	19.6	#90.2	88.8	14.0	#79.5	83.3	15.0
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	371	1379	783	253	1068	661	268	1103	625	321	1310	700
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.63	0.36	0.68	0.78	0.40	1.01	0.60	0.29	0.81	0.52	0.26

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
101: Brant St & Fairview St

Total - Phase 1
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	319	803	262	157	762	243	250	608	165	239	621	167
Future Volume (vph)	319	803	262	157	762	243	250	608	165	239	621	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.13	1.00	1.00	0.22	1.00	1.00	0.27	1.00	1.00	0.15	1.00	1.00
Satd. Flow (perm)	240	3539	1583	403	3539	1583	495	3539	1583	273	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	347	873	285	171	828	264	272	661	179	260	675	182
RTOR Reduction (vph)	0	0	171	0	0	188	0	0	132	0	0	125
Lane Group Flow (vph)	347	873	114	171	828	76	272	661	47	260	675	57
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	48.2	36.2	36.2	35.1	27.1	27.1	32.8	24.7	24.7	42.1	30.0	30.0
Effective Green, g (s)	48.2	38.6	38.6	35.1	29.5	29.5	32.8	27.2	27.2	42.1	32.5	32.5
Actuated g/C Ratio	0.47	0.37	0.37	0.34	0.29	0.29	0.32	0.26	0.26	0.41	0.31	0.31
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	365	1323	592	243	1011	452	257	932	417	305	1114	498
v/s Ratio Prot	c0.16	0.25		0.05	0.23		c0.08	0.19		c0.11	0.19	
v/s Ratio Perm	c0.29		0.07	0.18		0.05	c0.25		0.03	0.24		0.04
v/c Ratio	0.95	0.66	0.19	0.70	0.82	0.17	1.06	0.71	0.11	0.85	0.61	0.12
Uniform Delay, d1	28.6	26.8	21.8	25.4	34.4	27.6	32.2	34.4	28.8	23.7	29.9	25.1
Progression 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
Incremental Delay, d2	34.3	1.2	0.2	8.9	5.3	0.2	72.4	2.5	0.1	19.9	0.9	0.1
Delay (s)	63.0	28.0	21.9	34.3	39.6	27.8	104.6	36.9	29.0	43.6	30.9	25.2
Level of Service	E	C	C	C	D	C	F	D	C	D	C	C
Approach Delay (s)		34.9			36.4			52.2			32.9	
Approach LOS		C			D			D			C	

Intersection Summary

HCM 2000 Control Delay	38.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	103.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	8	15	68	12	116	13	907	41	103	921	38
Future Volume (vph)	59	8	15	68	12	116	13	907	41	103	921	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.904			0.864			0.993			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1684	0	1770	1609	0	1770	3514	0	1770	3518	0
Flt Permitted	0.629			0.741			0.220			0.223		
Satd. Flow (perm)	1172	1684	0	1380	1609	0	410	3514	0	415	3518	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			126			8			7	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	64	9	16	74	13	126	14	986	45	112	1001	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	64	25	0	74	139	0	14	1031	0	112	1042	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	13.7	13.7		13.7	13.7		40.8	40.8		51.3	40.8	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.63	0.63		0.80	0.63	
v/c Ratio	0.26	0.07		0.25	0.31		0.05	0.46		0.20	0.47	
Control Delay	29.1	16.9		28.5	9.5		8.7	10.0		3.5	10.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	29.1	16.9		28.5	9.5		8.7	10.0		3.5	10.1	
LOS	C	B		C	A		A	B		A	B	
Approach Delay		25.7			16.1			10.0			9.4	
Approach LOS		C			B			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 64.4			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay: 10.8		Intersection LOS: B	
Intersection Capacity Utilization 61.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Queues
102: Brant St & Grahams Ln/Prospect St

Total - Phase 1
SAT Peak Hour

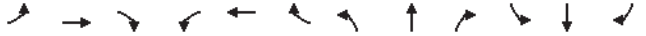


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	64	25	74	139	14	1031	112	1042
v/c Ratio	0.26	0.07	0.25	0.31	0.05	0.46	0.20	0.47
Control Delay	29.1	16.9	28.5	9.5	8.7	10.0	3.5	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.1	16.9	28.5	9.5	8.7	10.0	3.5	10.1
Queue Length 50th (m)	6.8	0.9	7.9	1.3	0.8	40.0	2.7	40.7
Queue Length 95th (m)	21.4	7.8	23.7	17.0	3.8	69.5	8.3	70.6
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	372	545	438	597	325	2789	602	2792
Starvation Cap Reductn	0	0	0	0	0	248	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.05	0.17	0.23	0.04	0.41	0.19	0.37

Intersection Summary

HCM Signalized Intersection Capacity Analysis
102: Brant St & Grahams Ln/Prospect St

Total - Phase 1
SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	8	15	68	12	116	13	907	41	103	921	38
Future Volume (vph)	59	8	15	68	12	116	13	907	41	103	921	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1684		1770	1609		1770	3516		1770	3518	
Flt Permitted	0.63	1.00		0.74	1.00		0.22	1.00		0.22	1.00	
Satd. Flow (perm)	1171	1684		1380	1609		409	3516		416	3518	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	64	9	16	74	13	126	14	986	45	112	1001	41
RTOR Reduction (vph)	0	13	0	0	105	0	0	3	0	0	3	0
Lane Group Flow (vph)	64	12	0	74	34	0	14	1028	0	112	1039	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	7.9	7.9		7.9	7.9		36.3	36.3		41.5	36.3	
Effective Green, g (s)	10.9	10.9		10.9	10.9		39.3	39.3		47.5	39.3	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.59	0.59		0.72	0.59	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	192	276		226	264		242	2081		464	2082	
v/s Ratio Prot		0.01			0.02			0.29		c0.03	c0.30	
v/s Ratio Perm	c0.05			0.05			0.03			0.14		
v/c Ratio	0.33	0.04		0.33	0.13		0.06	0.49		0.24	0.50	
Uniform Delay, d1	24.5	23.4		24.5	23.7		5.7	7.8		3.4	7.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.1		0.9	0.2		0.1	0.2		0.3	0.2	
Delay (s)	25.6	23.4		25.4	23.9		5.8	8.0		3.7	8.0	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		25.0			24.4			8.0			7.6	
Approach LOS		C			C			A			A	

Intersection Summary					
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.42				
Actuated Cycle Length (s)	66.4	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	61.1%	ICU Level of Service		B	
Analysis Period (min)	15				

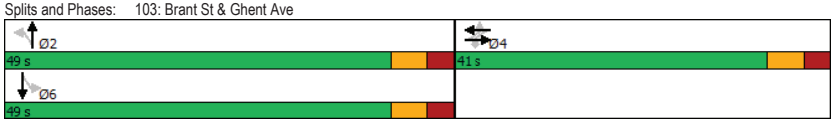
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	21	21	18	19	34	27	794	18	41	824	133
Future Volume (vph)	125	21	21	18	19	34	27	794	18	41	824	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.936			0.997			0.979	
Flt Protected		0.959			0.987		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1721	0	1770	3529	0	1770	3465	0
Flt Permitted		0.703			0.901		0.212			0.273		
Satd. Flow (perm)	0	1310	1583	0	1571	0	395	3529	0	509	3465	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		37			4			29	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.6			333.4			75.4			150.5	
Travel Time (s)		7.2			24.0			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	136	23	23	20	21	37	29	863	20	45	896	145
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	159	23	0	78	0	29	883	0	45	1041	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		15.4	15.4		15.4		27.0	27.0		27.0	27.0	
Actuated g/C Ratio		0.30	0.30		0.30		0.53	0.53		0.53	0.53	
v/c Ratio		0.40	0.04		0.16		0.14	0.47		0.17	0.56	
Control Delay		17.4	2.3		9.1		9.1	8.8		9.0	9.5	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		17.4	2.3		9.1		9.1	8.8		9.0	9.5	
LOS		B	A		A		A	A		A	A	
Approach Delay		15.5			9.1			8.8			9.5	
Approach LOS		B			A			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 50.6			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 9.7		Intersection LOS: A	
Intersection Capacity Utilization 55.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Queues
103: Brant St & Ghent Ave

Total - Phase 1
SAT Peak Hour

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	159	23	78	29	883	45	1041
v/c Ratio	0.40	0.04	0.16	0.14	0.47	0.17	0.56
Control Delay	17.4	2.3	9.1	9.1	8.8	9.0	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	2.3	9.1	9.1	8.8	9.0	9.5
Queue Length 50th (m)	10.0	0.0	2.3	1.2	22.7	1.8	27.8
Queue Length 95th (m)	28.9	2.1	11.4	5.9	46.3	8.0	56.7
Internal Link Dist (m)	75.6		309.4		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	980	1196	1185	351	3140	452	3085
Starvation Cap Reductn	0	0	0	0	0	0	28
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.02	0.07	0.08	0.28	0.10	0.34

Intersection Summary

HCM Signalized Intersection Capacity Analysis
103: Brant St & Ghent Ave

Total - Phase 1
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	21	21	18	19	34	27	794	18	41	824	133
Future Volume (vph)	125	21	21	18	19	34	27	794	18	41	824	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.94		1.00	1.00		1.00	0.98	
Flt Protected		0.96	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1786	1583		1721		1770	3527		1770	3465	
Flt Permitted		0.70	1.00		0.90		0.21	1.00		0.27	1.00	
Satd. Flow (perm)		1309	1583		1571		394	3527		508	3465	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	136	23	23	20	21	37	29	863	20	45	896	145
RTOR Reduction (vph)	0	0	16	0	26	0	0	2	0	0	13	0
Lane Group Flow (vph)	0	159	7	0	52	0	29	881	0	45	1028	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		12.3	12.3		12.3		23.9	23.9		23.9	23.9	
Effective Green, g (s)		15.3	15.3		15.3		26.9	26.9		26.9	26.9	
Actuated g/C Ratio		0.30	0.30		0.30		0.54	0.54		0.54	0.54	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		398	482		478		211	1889		272	1856	
v/s Ratio Prot								0.25			c0.30	
v/s Ratio Perm		c0.12	0.00		0.03		0.07			0.09		
v/c Ratio		0.40	0.01		0.11		0.14	0.47		0.17	0.55	
Uniform Delay, d1		13.8	12.2		12.5		5.8	7.2		5.9	7.7	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.7	0.0		0.1		0.3	0.2		0.3	0.4	
Delay (s)		14.5	12.2		12.7		6.1	7.4		6.2	8.0	
Level of Service		B	B		B		A	A		A	A	
Approach Delay (s)		14.2			12.7			7.4			8.0	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.50			
Actuated Cycle Length (s)	50.2	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	55.4%	ICU Level of Service	B	
Analysis Period (min)	15			

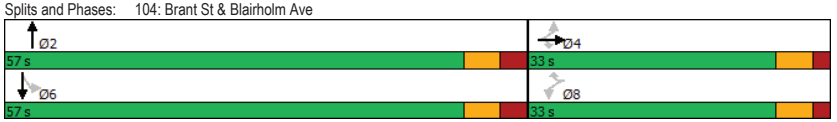
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	0	5	11	0	44	0	776	9	35	792	0
Future Volume (vph)	15	0	5	11	0	44	0	776	9	35	792	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.998				
Flt Protected		0.950		0.950						0.950		
Satd. Flow (prot)	0	1770	1583	1770	0	1583	0	3532	0	1770	1863	0
Flt Permitted		0.950		0.747						0.326		
Satd. Flow (perm)	0	1770	1583	1391	0	1583	0	3532	0	607	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			48		2				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		55.3			305.8			317.1			241.2	
Travel Time (s)		4.0			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	0	5	12	0	48	0	843	10	38	861	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	16	5	12	0	48	0	853	0	38	861	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		8.7	8.7	10.8		10.8		41.5		41.5	41.5	
Actuated g/C Ratio		0.17	0.17	0.21		0.21		0.82		0.82	0.82	
v/c Ratio		0.05	0.02	0.04		0.13		0.29		0.08	0.56	
Control Delay		24.1	0.0	22.3		9.2		2.9		3.2	5.7	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		24.1	0.0	22.3		9.2		2.9		3.2	5.7	
LOS		C	A	C		A		A		A	A	
Approach Delay		18.3			11.8			2.9			5.6	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 50.4			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 4.7		Intersection LOS: A	
Intersection Capacity Utilization 63.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Queues
104: Brant St & Blairholm Ave

Total - Phase 1
SAT Peak Hour

Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	16	5	12	48	853	38	861
v/c Ratio	0.05	0.02	0.04	0.13	0.29	0.08	0.56
Control Delay	24.1	0.0	22.3	9.2	2.9	3.2	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.1	0.0	22.3	9.2	2.9	3.2	5.7
Queue Length 50th (m)	1.8	0.0	1.3	0.0	15.7	1.1	42.8
Queue Length 95th (m)	6.7	0.0	5.5	8.1	22.3	3.3	72.4
Internal Link Dist (m)	31.3				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	1028	939	867	1005	3253	559	1716
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.01	0.05	0.26	0.07	0.50

Intersection Summary

HCM Signalized Intersection Capacity Analysis
104: Brant St & Blairholm Ave

Total - Phase 1
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	0	5	11	0	44	0	776	9	35	792	0
Future Volume (vph)	15	0	5	11	0	44	0	776	9	35	792	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.95	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1770	1583	1770		1583		3533		1770	1863	
Flt Permitted		0.95	1.00	0.75		1.00		1.00		0.33	1.00	
Satd. Flow (perm)		1770	1583	1392		1583		3533		607	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	0	5	12	0	48	0	843	10	38	861	0
RTOR Reduction (vph)	0	0	5	0	0	43	0	1	0	0	0	0
Lane Group Flow (vph)	0	16	0	12	0	5	0	852	0	38	861	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		4.0	4.0	4.0		4.0		35.9		35.9	35.9	
Effective Green, g (s)		4.0	4.0	6.0		6.0		38.9		38.9	38.9	
Actuated g/C Ratio		0.08	0.08	0.11		0.11		0.74		0.74	0.74	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		133	119	157		179		2597		446	1369	
v/s Ratio Prot								0.24			c0.46	
v/s Ratio Perm		0.01	0.00	0.01		0.00				0.06		
v/c Ratio		0.12	0.00	0.08		0.03		0.33		0.09	0.63	
Uniform Delay, d1		22.8	22.6	21.0		20.9		2.4		2.0	3.4	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.4	0.0	0.2		0.1		0.1		0.1	0.9	
Delay (s)		23.2	22.6	21.2		20.9		2.5		2.1	4.4	
Level of Service		C	C	C		C		A		A	A	
Approach Delay (s)		23.1			21.0			2.5			4.3	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	4.2	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	52.9	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	63.4%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	115	131	47	51	0
Future Volume (vph)	0	115	131	47	51	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.960			
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	3398	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1863	3398	0	1770	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		142.9	99.6		79.1	
Travel Time (s)		10.3	7.2		5.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	125	142	51	55	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	125	193	0	55	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		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
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	16.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	115	131	47	51	0
Future Volume (Veh/h)	0	115	131	47	51	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	125	142	51	55	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			100			
pX, platoon unblocked						
vC, conflicting volume	193				292	96
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	193				292	96
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	100
cM capacity (veh/h)	1378				675	941

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	125	95	98	55
Volume Left	0	0	0	55
Volume Right	0	0	51	0
cSH	1378	1700	1700	675
Volume to Capacity	0.00	0.06	0.06	0.08
Queue Length 95th (m)	0.0	0.0	0.0	2.1
Control Delay (s)	0.0	0.0	0.0	10.8
Lane LOS				B
Approach Delay (s)	0.0	0.0		10.8
Approach LOS				B

Intersection Summary				
Average Delay		1.6		
Intersection Capacity Utilization		16.1%	ICU Level of Service	A
Analysis Period (min)		15		

Appendix I2

Total – Phase 2 Operations

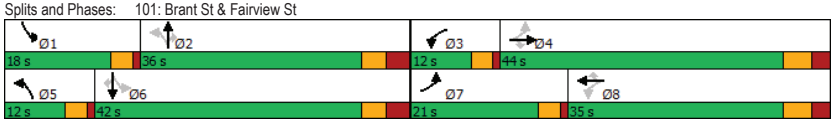


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	349	1147	294	141	361	158	215	693	299	237	763	156
Future Volume (vph)	349	1147	294	141	361	158	215	693	299	237	763	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.367			0.137			0.174			0.128		
Satd. Flow (perm)	684	3539	1583	255	3539	1583	324	3539	1583	238	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			244			193			192			170
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	379	1247	320	153	392	172	234	753	325	258	829	170
Shared Lane Traffic (%)												
Lane Group Flow (vph)	379	1247	320	153	392	172	234	753	325	258	829	170
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	21.0	44.0	44.0	12.0	35.0	35.0	12.0	36.0	36.0	18.0	42.0	42.0
Total Split (%)	19.1%	40.0%	40.0%	10.9%	31.8%	31.8%	10.9%	32.7%	32.7%	16.4%	38.2%	38.2%
Maximum Green (s)	17.0	37.6	37.6	8.0	28.6	28.6	8.0	29.5	29.5	14.0	35.5	35.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	52.0	40.0	40.0	39.7	31.7	31.7	37.8	29.8	29.8	47.5	35.5	35.5
Actuated g/C Ratio	0.48	0.37	0.37	0.37	0.29	0.29	0.35	0.28	0.28	0.44	0.33	0.33
v/c Ratio	0.77	0.95	0.43	0.74	0.38	0.29	1.06	0.77	0.56	0.86	0.71	0.27
Control Delay	31.0	48.7	8.7	43.4	32.1	4.4	103.2	41.6	17.2	51.5	35.3	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.0	48.7	8.7	43.4	32.1	4.4	103.2	41.6	17.2	51.5	35.3	5.0
LOS	C	D	A	D	C	A	F	D	B	D	D	A
Approach Delay		38.7			27.9			46.6			34.6	
Approach LOS		D			C			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 107.5			
Natural Cycle: 105			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.06			
Intersection Signal Delay: 38.2		Intersection LOS: D	
Intersection Capacity Utilization 85.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Queues
101: Brant St & Fairview St

Total - Phase 2
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	379	1247	320	153	392	172	234	753	325	258	829	170
v/c Ratio	0.77	0.95	0.43	0.74	0.38	0.29	1.06	0.77	0.56	0.86	0.71	0.27
Control Delay	31.0	48.7	8.7	43.4	32.1	4.4	103.2	41.6	17.2	51.5	35.3	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.0	48.7	8.7	43.4	32.1	4.4	103.2	41.6	17.2	51.5	35.3	5.0
Queue Length 50th (m)	55.8	144.1	11.4	19.3	37.6	0.0	~34.7	80.5	23.6	38.2	83.6	0.0
Queue Length 95th (m)	#86.5	#192.8	33.9	#48.6	52.1	12.4	#85.7	103.2	53.1	#83.5	106.1	14.7
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	503	1317	742	207	1044	603	221	1054	606	304	1252	670
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.95	0.43	0.74	0.38	0.29	1.06	0.71	0.54	0.85	0.66	0.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
101: Brant St & Fairview St

Total - Phase 2
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	349	1147	294	141	361	158	215	693	299	237	763	156
Future Volume (vph)	349	1147	294	141	361	158	215	693	299	237	763	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.37	1.00	1.00	0.14	1.00	1.00	0.17	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	684	3539	1583	254	3539	1583	323	3539	1583	238	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	379	1247	320	153	392	172	234	753	325	258	829	170
RTOR Reduction (vph)	0	0	153	0	0	121	0	0	139	0	0	114
Lane Group Flow (vph)	379	1247	167	153	392	51	234	753	186	258	829	56
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	49.6	37.6	37.6	37.3	29.3	29.3	35.3	27.3	27.3	45.0	33.0	33.0
Effective Green, g (s)	49.6	40.0	40.0	37.3	31.7	31.7	35.3	29.8	29.8	45.0	35.5	35.5
Actuated g/C Ratio	0.46	0.37	0.37	0.35	0.29	0.29	0.33	0.28	0.28	0.42	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	480	1316	589	200	1043	466	213	981	438	294	1168	522
v/s Ratio Prot	c0.12	c0.35		0.06	0.11		c0.08	0.21		c0.11	0.23	
v/s Ratio Perm	0.24		0.11	0.21		0.03	c0.28		0.12	0.25		0.04
v/c Ratio	0.79	0.95	0.28	0.77	0.38	0.11	1.10	0.77	0.43	0.88	0.71	0.11
Uniform Delay, d1	20.6	32.7	23.7	28.3	30.1	27.6	31.7	35.7	31.8	26.2	31.5	25.0
Progression 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
Incremental Delay, d2	8.4	14.0	0.3	15.9	0.2	0.1	90.5	3.7	0.7	24.2	2.0	0.1
Delay (s)	29.0	46.8	24.0	44.2	30.3	27.7	122.2	39.3	32.5	50.4	33.5	25.1
Level of Service	C	D	C	D	C	C	F	D	C	D	C	C
Approach Delay (s)		39.5			32.6			52.4			35.8	
Approach LOS		D			C			D			D	

Intersection Summary

HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	107.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	85.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	10	17	67	9	85	27	920	54	93	1017	89
Future Volume (vph)	34	10	17	67	9	85	27	920	54	93	1017	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.907			0.865			0.992			0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1690	0	1770	1611	0	1770	3511	0	1770	3497	0
Flt Permitted	0.691			0.738			0.177			0.220		
Satd. Flow (perm)	1287	1690	0	1375	1611	0	330	3511	0	410	3497	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			92			11			17	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	37	11	18	73	10	92	29	1000	59	101	1105	97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	29	0	73	102	0	29	1059	0	101	1202	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	13.8	13.8		13.8	13.8		44.4	44.4		54.5	44.4	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.66	0.66		0.81	0.66	
v/c Ratio	0.14	0.08		0.26	0.25		0.13	0.46		0.19	0.52	
Control Delay	29.0	17.6		30.6	10.3		9.6	9.3		3.2	10.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.1		0.0	0.0	
Total Delay	29.0	17.6		30.6	10.3		9.6	9.3		3.2	10.0	
LOS	C	B		C	B		A	A		A	A	
Approach Delay		24.0			18.8			9.4			9.4	
Approach LOS		C			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 67.2			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 10.4		Intersection LOS: B	
Intersection Capacity Utilization 58.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Queues
102: Brant St & Grahams Ln/Prospect St

Total - Phase 2
AM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	37	29	73	102	29	1059	101	1202
v/c Ratio	0.14	0.08	0.26	0.25	0.13	0.46	0.19	0.52
Control Delay	29.0	17.6	30.6	10.3	9.6	9.3	3.2	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	29.0	17.6	30.6	10.3	9.6	9.3	3.2	10.0
Queue Length 50th (m)	4.4	1.3	8.8	1.2	1.7	41.4	2.4	49.9
Queue Length 95th (m)	13.9	8.7	23.4	14.5	6.7	68.7	7.0	82.2
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	398	535	425	562	249	2655	597	2646
Starvation Cap Reductn	0	0	0	0	0	384	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.05	0.17	0.18	0.12	0.47	0.17	0.45

Intersection Summary

HCM Signalized Intersection Capacity Analysis
102: Brant St & Grahams Ln/Prospect St

Total - Phase 2
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	10	17	67	9	85	27	920	54	93	1017	89
Future Volume (vph)	34	10	17	67	9	85	27	920	54	93	1017	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1689		1770	1611		1770	3510		1770	3496	
Flt Permitted	0.69	1.00		0.74	1.00		0.18	1.00		0.22	1.00	
Satd. Flow (perm)	1287	1689		1375	1611		330	3510		410	3496	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	37	11	18	73	10	92	29	1000	59	101	1105	97
RTOR Reduction (vph)	0	15	0	0	78	0	0	4	0	0	7	0
Lane Group Flow (vph)	37	14	0	73	24	0	29	1055	0	101	1195	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	7.6	7.6		7.6	7.6		39.7	39.7		44.7	39.7	
Effective Green, g (s)	10.6	10.6		10.6	10.6		42.7	42.7		50.7	42.7	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.62	0.62		0.73	0.62	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	196	258		210	246		203	2162		456	2154	
v/s Ratio Prot		0.01			0.01			0.30		c0.03	c0.34	
v/s Ratio Perm	0.03			c0.05			0.09			0.14		
v/c Ratio	0.19	0.05		0.35	0.10		0.14	0.49		0.22	0.56	
Uniform Delay, d1	25.6	25.1		26.3	25.2		5.6	7.3		3.2	7.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.1		1.0	0.2		0.3	0.2		0.2	0.3	
Delay (s)	26.1	25.2		27.3	25.4		5.9	7.5		3.5	8.1	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		25.7			26.2			7.4			7.7	
Approach LOS		C			C			A			A	

Intersection Summary					
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.47				
Actuated Cycle Length (s)	69.3	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	58.0%	ICU Level of Service		B	
Analysis Period (min)	15				

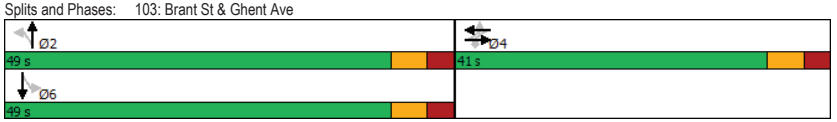
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	197	34	36	33	17	62	23	739	39	62	880	165
Future Volume (vph)	197	34	36	33	17	62	23	739	39	62	880	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.925			0.993			0.976	
Flt Protected		0.959			0.985		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1697	0	1770	3514	0	1770	3454	0
Flt Permitted		0.719			0.862		0.162			0.271		
Satd. Flow (perm)	0	1339	1583	0	1485	0	302	3514	0	505	3454	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		67			8			34	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		97.4			104.7			75.4			150.5	
Travel Time (s)		7.0			7.5			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	37	39	36	18	67	25	803	42	67	957	179
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	251	39	0	121	0	25	845	0	67	1136	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		21.4	21.4		21.4		30.0	30.0		30.0	30.0	
Actuated g/C Ratio		0.36	0.36		0.36		0.50	0.50		0.50	0.50	
v/c Ratio		0.53	0.07		0.21		0.17	0.48		0.27	0.65	
Control Delay		21.4	4.6		9.1		13.2	11.4		13.5	13.4	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		21.4	4.6		9.1		13.2	11.4		13.5	13.4	
LOS		C	A		A		B	B		B	B	
Approach Delay		19.1			9.1			11.4			13.4	
Approach LOS		B			A			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 60			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 13.2		Intersection LOS: B	
Intersection Capacity Utilization 65.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Queues
103: Brant St & Ghent Ave

Total - Phase 2
AM Peak Hour

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	251	39	121	25	845	67	1136
v/c Ratio	0.53	0.07	0.21	0.17	0.48	0.27	0.65
Control Delay	21.4	4.6	9.1	13.2	11.4	13.5	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.4	4.6	9.1	13.2	11.4	13.5	13.4
Queue Length 50th (m)	21.1	0.0	3.8	1.4	28.8	3.9	42.7
Queue Length 95th (m)	54.8	5.1	16.9	7.3	61.5	15.4	90.1
Internal Link Dist (m)	73.4		80.7		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	889	1067	1009	235	2741	393	2700
Starvation Cap Reductn	0	0	0	0	0	0	107
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.04	0.12	0.11	0.31	0.17	0.44

Intersection Summary

HCM Signalized Intersection Capacity Analysis
103: Brant St & Ghent Ave

Total - Phase 2
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	197	34	36	33	17	62	23	739	39	62	880	165
Future Volume (vph)	197	34	36	33	17	62	23	739	39	62	880	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.93		1.00	0.99		1.00	0.98	
Flt Protected		0.96	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1787	1583		1698		1770	3513		1770	3456	
Flt Permitted		0.72	1.00		0.86		0.16	1.00		0.27	1.00	
Satd. Flow (perm)		1339	1583		1486		301	3513		506	3456	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	37	39	36	18	67	25	803	42	67	957	179
RTOR Reduction (vph)	0	0	25	0	43	0	0	4	0	0	17	0
Lane Group Flow (vph)	0	251	14	0	78	0	25	841	0	67	1119	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		18.2	18.2		18.2		26.7	26.7		26.7	26.7	
Effective Green, g (s)		21.2	21.2		21.2		29.7	29.7		29.7	29.7	
Actuated g/C Ratio		0.36	0.36		0.36		0.50	0.50		0.50	0.50	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		481	569		534		151	1771		255	1742	
v/s Ratio Prot								0.24			c0.32	
v/s Ratio Perm		c0.19	0.01		0.05		0.08			0.13		
v/c Ratio		0.52	0.02		0.15		0.17	0.47		0.26	0.64	
Uniform Delay, d1		14.9	12.2		12.7		7.9	9.5		8.3	10.7	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.0	0.0		0.1		0.5	0.2		0.6	0.8	
Delay (s)		15.9	12.2		12.9		8.4	9.7		8.9	11.5	
Level of Service		B	B		B		A	A		A	B	
Approach Delay (s)		15.4			12.9			9.7			11.4	
Approach LOS		B			B			A			B	

Intersection Summary				
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	58.9	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	65.6%	ICU Level of Service	C	
Analysis Period (min)	15			

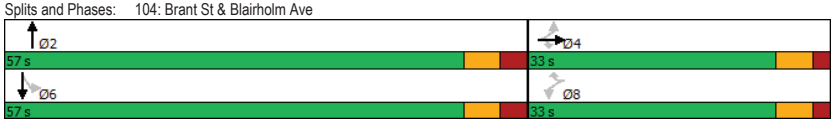
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	4	8	41	0	114	0	661	17	47	808	0
Future Volume (vph)	17	4	8	41	0	114	0	661	17	47	808	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.996				
Flt Protected		0.961		0.950						0.950		
Satd. Flow (prot)	0	1790	1583	1770	0	1583	0	3525	0	1770	1863	0
Flt Permitted		0.961		0.743						0.367		
Satd. Flow (perm)	0	1790	1583	1384	0	1583	0	3525	0	684	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			124		5				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		34.6			305.8			317.1			241.2	
Travel Time (s)		2.5			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	4	9	45	0	124	0	718	18	51	878	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	22	9	45	0	124	0	736	0	51	878	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		9.0	9.0	11.1		11.1		38.6		38.6	38.6	
Actuated g/C Ratio		0.17	0.17	0.21		0.21		0.74		0.74	0.74	
v/c Ratio		0.07	0.03	0.15		0.29		0.28		0.10	0.64	
Control Delay		23.6	0.1	22.8		7.6		3.8		3.9	8.1	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		23.6	0.1	22.8		7.6		3.8		3.9	8.1	
LOS		C	A	C		A		A		A	A	
Approach Delay		16.8			11.6			3.8			7.9	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 52.5			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 6.8		Intersection LOS: A	
Intersection Capacity Utilization 64.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Queues
104: Brant St & Blairholm Ave

Total - Phase 2
AM Peak Hour

Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	22	9	45	124	736	51	878
v/c Ratio	0.07	0.03	0.15	0.29	0.28	0.10	0.64
Control Delay	23.6	0.1	22.8	7.6	3.8	3.9	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.6	0.1	22.8	7.6	3.8	3.9	8.1
Queue Length 50th (m)	1.8	0.0	3.5	0.0	12.9	1.5	44.4
Queue Length 95th (m)	8.7	0.0	14.2	13.1	21.8	4.8	87.4
Internal Link Dist (m)	10.6				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	977	885	811	979	3303	641	1745
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.06	0.13	0.22	0.08	0.50

Intersection Summary

HCM Signalized Intersection Capacity Analysis
104: Brant St & Blairholm Ave

Total - Phase 2
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	4	8	41	0	114	0	661	17	47	808	0
Future Volume (vph)	17	4	8	41	0	114	0	661	17	47	808	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.96	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1790	1583	1770		1583		3526		1770	1863	
Flt Permitted		0.96	1.00	0.74		1.00		1.00		0.37	1.00	
Satd. Flow (perm)		1790	1583	1384		1583		3526		683	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	4	9	45	0	124	0	718	18	51	878	0
RTOR Reduction (vph)	0	0	8	0	0	104	0	2	0	0	0	0
Lane Group Flow (vph)	0	22	1	45	0	20	0	734	0	51	878	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		6.5	6.5	6.5		6.5		34.1		34.1	34.1	
Effective Green, g (s)		6.5	6.5	8.5		8.5		37.1		37.1	37.1	
Actuated g/C Ratio		0.12	0.12	0.16		0.16		0.69		0.69	0.69	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		217	191	219		251		2440		472	1289	
v/s Ratio Prot								0.21			c0.47	
v/s Ratio Perm		0.01	0.00	c0.03		0.01				0.07		
v/c Ratio		0.10	0.01	0.21		0.08		0.30		0.11	0.68	
Uniform Delay, d1		21.0	20.7	19.6		19.2		3.2		2.7	4.8	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.2	0.0	0.5		0.1		0.1		0.1	1.5	
Delay (s)		21.2	20.7	20.1		19.3		3.3		2.8	6.3	
Level of Service		C	C	C		B		A		A	A	
Approach Delay (s)		21.0			19.5			3.3			6.1	
Approach LOS		C			B			A			A	

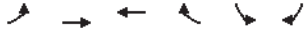
Intersection Summary				
HCM 2000 Control Delay	6.5	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.62			
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	64.2%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	191	145	59	75	0
Future Volume (vph)	0	191	145	59	75	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.957			
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	3387	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1863	3387	0	1770	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		145.2	97.4		63.4	
Travel Time (s)		10.5	7.0		4.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	208	158	64	82	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	208	222	0	82	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		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
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	20.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	191	145	59	75	0
Future Volume (Veh/h)	0	191	145	59	75	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	208	158	64	82	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			98			
pX, platoon unblocked						
vC, conflicting volume	222				398	111
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	222				398	111
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				86	100
cM capacity (veh/h)	1344				580	921

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	208	105	117	82
Volume Left	0	0	0	82
Volume Right	0	0	64	0
cSH	1344	1700	1700	580
Volume to Capacity	0.00	0.06	0.07	0.14
Queue Length 95th (m)	0.0	0.0	0.0	3.9
Control Delay (s)	0.0	0.0	0.0	12.2
Lane LOS				B
Approach Delay (s)	0.0	0.0		12.2
Approach LOS				B

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	20.9%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	35	101	70	5	6	42
Future Volume (vph)	35	101	70	5	6	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.992		0.883	
Flt Protected		0.987			0.993	
Satd. Flow (prot)	0	1839	1848	0	1633	0
Flt Permitted		0.987			0.993	
Satd. Flow (perm)	0	1839	1848	0	1633	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		104.7	228.7		42.9	
Travel Time (s)		7.5	16.5		3.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	110	76	5	7	46
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	148	81	0	53	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		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
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	23.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	35	101	70	5	6	42
Future Volume (Veh/h)	35	101	70	5	6	42
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	110	76	5	7	46
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		105				
pX, platoon unblocked						
vC, conflicting volume	81				264	78
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	81				264	78
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				99	95
cM capacity (veh/h)	1517				706	982

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	148	81	53
Volume Left	38	0	7
Volume Right	0	5	46
cSH	1517	1700	934
Volume to Capacity	0.03	0.05	0.06
Queue Length 95th (m)	0.6	0.0	1.4
Control Delay (s)	2.1	0.0	9.1
Lane LOS	A		A
Approach Delay (s)	2.1	0.0	9.1
Approach LOS			A

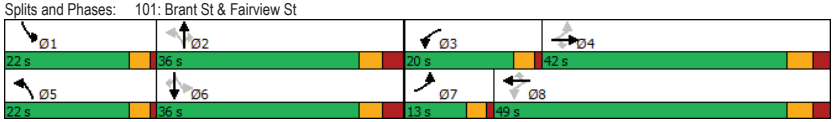
Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	23.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	846	320	238	1570	454	197	856	209	242	720	448
Future Volume (vph)	220	846	320	238	1570	454	197	856	209	242	720	448
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.110			0.099			0.136			0.128		
Satd. Flow (perm)	205	3539	1583	184	3539	1583	253	3539	1583	238	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			348			290			140			218
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	239	920	348	259	1707	493	214	930	227	263	783	487
Shared Lane Traffic (%)												
Lane Group Flow (vph)	239	920	348	259	1707	493	214	930	227	263	783	487
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	13.0	42.0	42.0	20.0	49.0	49.0	22.0	36.0	36.0	22.0	36.0	36.0
Total Split (%)	10.8%	35.0%	35.0%	16.7%	40.8%	40.8%	18.3%	30.0%	30.0%	18.3%	30.0%	30.0%
Maximum Green (s)	9.0	35.6	35.6	16.0	42.6	42.6	18.0	29.5	29.5	18.0	29.5	29.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	47.8	38.8	38.8	57.9	45.0	45.0	46.7	32.0	32.0	50.0	33.7	33.7
Actuated g/C Ratio	0.40	0.33	0.33	0.49	0.38	0.38	0.39	0.27	0.27	0.42	0.28	0.28
v/c Ratio	1.19	0.79	0.46	0.88	1.27	0.63	0.75	0.97	0.43	0.85	0.78	0.80
Control Delay	151.9	42.7	5.3	58.8	159.6	15.9	41.5	66.4	16.8	52.4	45.7	33.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	151.9	42.7	5.3	58.8	159.6	15.9	41.5	66.4	16.8	52.4	45.7	33.1
LOS	F	D	A	E	F	B	D	E	B	D	D	C
Approach Delay		51.4			120.1			54.3			42.8	
Approach LOS		D			F			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 118.4			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.27			
Intersection Signal Delay: 74.7		Intersection LOS: E	
Intersection Capacity Utilization 106.0%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Queues
101: Brant St & Fairview St

Total - Phase 2
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	239	920	348	259	1707	493	214	930	227	263	783	487
v/c Ratio	1.19	0.79	0.46	0.88	1.27	0.63	0.75	0.97	0.43	0.85	0.78	0.80
Control Delay	151.9	42.7	5.3	58.8	159.6	15.9	41.5	66.4	16.8	52.4	45.7	33.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	151.9	42.7	5.3	58.8	159.6	15.9	41.5	66.4	16.8	52.4	45.7	33.1
Queue Length 50th (m)	~55.4	110.5	0.0	46.0	~283.2	39.6	33.0	121.0	16.8	44.2	93.0	64.1
Queue Length 95th (m)	#108.3	137.1	21.2	#93.7	#327.7	78.2	58.6	#166.4	40.7	#88.4	121.3	#125.8
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	201	1158	752	304	1346	781	336	956	529	334	1007	606
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.19	0.79	0.46	0.85	1.27	0.63	0.64	0.97	0.43	0.79	0.78	0.80

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
101: Brant St & Fairview St

Total - Phase 2
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	846	320	238	1570	454	197	856	209	242	720	448
Future Volume (vph)	220	846	320	238	1570	454	197	856	209	242	720	448
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.11	1.00	1.00	0.10	1.00	1.00	0.14	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	205	3539	1583	184	3539	1583	253	3539	1583	239	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	239	920	348	259	1707	493	214	930	227	263	783	487
RTOR Reduction (vph)	0	0	234	0	0	180	0	0	102	0	0	156
Lane Group Flow (vph)	239	920	114	259	1707	313	214	930	125	263	783	331
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	45.4	36.4	36.4	55.7	42.7	42.7	44.1	29.5	29.5	47.5	31.2	31.2
Effective Green, g (s)	45.4	38.8	38.8	55.7	45.1	45.1	44.1	32.0	32.0	47.5	33.7	33.7
Actuated g/C Ratio	0.38	0.33	0.33	0.47	0.38	0.38	0.37	0.27	0.27	0.40	0.28	0.28
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	197	1159	518	291	1348	602	281	956	427	306	1007	450
v/s Ratio Prot	c0.09	0.26		0.11	c0.48		0.09	c0.26		c0.12	0.22	
v/s Ratio Perm	0.37		0.07	0.30		0.20	0.19		0.08	0.23		0.21
v/c Ratio	1.21	0.79	0.22	0.89	1.27	0.52	0.76	0.97	0.29	0.86	0.78	0.74
Uniform Delay, d1	30.6	36.2	28.8	32.3	36.7	28.3	28.8	42.8	34.2	30.6	38.9	38.3
Progression 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
Incremental Delay, d2	133.3	3.8	0.2	26.8	125.9	0.8	11.5	22.6	0.4	20.6	3.8	6.2
Delay (s)	164.0	40.0	29.1	59.1	162.5	29.1	40.3	65.3	34.6	51.2	42.7	44.5
Level of Service	F	D	C	E	F	C	D	E	C	D	D	D
Approach Delay (s)		57.1			124.9			56.3			44.7	
Approach LOS		E			F			E			D	

Intersection Summary				
HCM 2000 Control Delay	78.5	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.10			
Actuated Cycle Length (s)	118.4	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	106.0%	ICU Level of Service	G	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	21	44	119	12	184	15	1180	73	120	1117	62
Future Volume (vph)	127	21	44	119	12	184	15	1180	73	120	1117	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.899			0.859			0.991			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1675	0	1770	1600	0	1770	3507	0	1770	3511	0
Flt Permitted	0.468			0.711			0.139			0.118		
Satd. Flow (perm)	872	1675	0	1324	1600	0	259	3507	0	220	3511	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		48			200			11			10	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	138	23	48	129	13	200	16	1283	79	130	1214	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	138	71	0	129	213	0	16	1362	0	130	1281	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	18.2	18.2		18.2	18.2		47.0	47.0		59.1	47.0	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.58	0.58		0.73	0.58	
v/c Ratio	0.71	0.17		0.44	0.42		0.11	0.67		0.36	0.63	
Control Delay	54.4	14.5		35.5	8.5		11.0	14.5		6.2	13.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.6		0.0	0.0	
Total Delay	54.4	14.5		35.5	8.5		11.0	15.0		6.2	13.7	
LOS	D	B		D	A		B	B		A	B	
Approach Delay		40.8			18.7			15.0			13.0	
Approach LOS		D			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 81.4			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 16.1		Intersection LOS: B	
Intersection Capacity Utilization 74.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Queues
102: Brant St & Grahams Ln/Prospect St

Total - Phase 2
PM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	138	71	129	213	16	1362	130	1281
v/c Ratio	0.71	0.17	0.44	0.42	0.11	0.67	0.36	0.63
Control Delay	54.4	14.5	35.5	8.5	11.0	14.5	6.2	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0
Total Delay	54.4	14.5	35.5	8.5	11.0	15.0	6.2	13.7
Queue Length 50th (m)	23.1	3.3	20.1	1.9	1.2	80.6	5.3	73.2
Queue Length 95th (m)	#54.3	14.6	38.6	20.3	4.8	109.1	10.3	98.8
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	210	439	318	537	167	2270	395	2273
Starvation Cap Reductn	0	0	0	0	0	464	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.16	0.41	0.40	0.10	0.75	0.33	0.56

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
102: Brant St & Grahams Ln/Prospect St

Total - Phase 2
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	21	44	119	12	184	15	1180	73	120	1117	62
Future Volume (vph)	127	21	44	119	12	184	15	1180	73	120	1117	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1674		1770	1600		1770	3508		1770	3511	
Flt Permitted	0.47	1.00		0.71	1.00		0.14	1.00		0.12	1.00	
Satd. Flow (perm)	872	1674		1324	1600		258	3508		221	3511	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	138	23	48	129	13	200	16	1283	79	130	1214	67
RTOR Reduction (vph)	0	37	0	0	156	0	0	5	0	0	4	0
Lane Group Flow (vph)	138	34	0	129	57	0	16	1357	0	130	1277	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	15.1	15.1		15.1	15.1		43.9	43.9		49.6	43.9	
Effective Green, g (s)	18.1	18.1		18.1	18.1		46.9	46.9		55.6	46.9	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.57	0.57		0.68	0.57	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	193	370		293	354		148	2013		315	2015	
v/s Ratio Prot		0.02			0.04			c0.39		c0.04	0.36	
v/s Ratio Perm	c0.16			0.10			0.06			0.24		
v/c Ratio	0.72	0.09		0.44	0.16		0.11	0.67		0.41	0.63	
Uniform Delay, d1	29.4	25.3		27.4	25.7		7.9	12.1		7.9	11.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.9	0.1		1.1	0.2		0.3	0.9		0.9	0.7	
Delay (s)	41.3	25.4		28.5	25.9		8.2	13.0		8.8	12.3	
Level of Service	D	C		C	C		A	B		A	B	
Approach Delay (s)		35.9			26.9			12.9			12.0	
Approach LOS		D			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	81.7	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	74.0%	ICU Level of Service	D	
Analysis Period (min)	15			

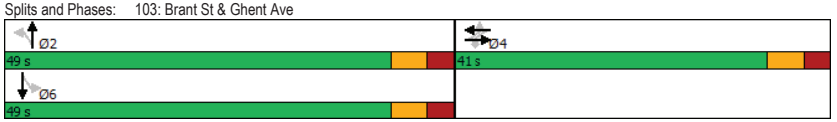
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	202	35	32	41	67	78	28	991	36	70	936	246
Future Volume (vph)	202	35	32	41	67	78	28	991	36	70	936	246
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.943			0.995			0.969	
Flt Protected		0.959			0.989		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1737	0	1770	3522	0	1770	3429	0
Flt Permitted		0.614			0.886		0.118			0.168		
Satd. Flow (perm)	0	1144	1583	0	1556	0	220	3522	0	313	3429	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		49			6			52	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		104.6			103.0			75.4			150.5	
Travel Time (s)		7.5			7.4			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	220	38	35	45	73	85	30	1077	39	76	1017	267
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	258	35	0	203	0	30	1116	0	76	1284	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		24.8	24.8		24.8		34.7	34.7		34.7	34.7	
Actuated g/C Ratio		0.36	0.36		0.36		0.51	0.51		0.51	0.51	
v/c Ratio		0.62	0.06		0.34		0.27	0.62		0.48	0.72	
Control Delay		26.5	3.9		14.5		19.3	14.5		25.4	16.1	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.1	
Total Delay		26.5	3.9		14.5		19.3	14.5		25.4	16.1	
LOS		C	A		B		B	B		C	B	
Approach Delay		23.8			14.5			14.6			16.6	
Approach LOS		C			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 68			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 16.4		Intersection LOS: B	
Intersection Capacity Utilization 77.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	258	35	203	30	1116	76	1284
v/c Ratio	0.62	0.06	0.34	0.27	0.62	0.48	0.72
Control Delay	26.5	3.9	14.5	19.3	14.5	25.4	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	26.5	3.9	14.5	19.3	14.5	25.4	16.1
Queue Length 50th (m)	27.5	0.0	14.1	2.1	51.1	6.0	61.4
Queue Length 95th (m)	60.1	4.2	34.2	10.5	95.6	25.0	115.7
Internal Link Dist (m)	80.6		79.0		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	665	940	924	154	2474	219	2422
Starvation Cap Reductn	0	0	0	0	0	0	168
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.04	0.22	0.19	0.45	0.35	0.57

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	202	35	32	41	67	78	28	991	36	70	936	246
Future Volume (vph)	202	35	32	41	67	78	28	991	36	70	936	246
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.94		1.00	0.99		1.00	0.97	
Flt Protected		0.96	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1787	1583		1738		1770	3521		1770	3429	
Flt Permitted		0.61	1.00		0.89		0.12	1.00		0.17	1.00	
Satd. Flow (perm)		1144	1583		1557		220	3521		313	3429	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	220	38	35	45	73	85	30	1077	39	76	1017	267
RTOR Reduction (vph)	0	0	22	0	31	0	0	3	0	0	25	0
Lane Group Flow (vph)	0	258	13	0	172	0	30	1113	0	76	1259	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		21.6	21.6		21.6		31.5	31.5		31.5	31.5	
Effective Green, g (s)		24.6	24.6		24.6		34.5	34.5		34.5	34.5	
Actuated g/C Ratio		0.37	0.37		0.37		0.51	0.51		0.51	0.51	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		419	580		570		113	1810		160	1763	
v/s Ratio Prot								0.32			c0.37	
v/s Ratio Perm		c0.23	0.01		0.11		0.14			0.24		
v/c Ratio		0.62	0.02		0.30		0.27	0.61		0.47	0.71	
Uniform Delay, d1		17.4	13.6		15.1		9.2	11.6		10.5	12.5	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.7	0.0		0.3		1.3	0.6		2.2	1.4	
Delay (s)		20.1	13.6		15.4		10.4	12.2		12.7	13.9	
Level of Service		C	B		B		B	B		B	B	
Approach Delay (s)		19.3			15.4			12.2			13.8	
Approach LOS		B			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	67.1	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	77.3%	ICU Level of Service	D	
Analysis Period (min)	15			

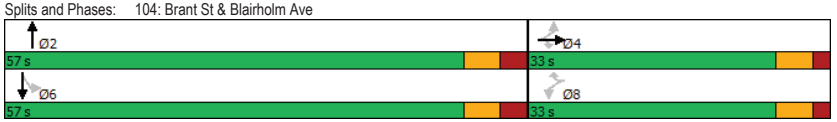
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	6	22	20	0	78	0	918	19	59	803	0
Future Volume (vph)	18	6	22	20	0	78	0	918	19	59	803	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.997				
Flt Protected		0.964		0.950						0.950		
Satd. Flow (prot)	0	1796	1583	1770	0	1583	0	3529	0	1770	1863	0
Flt Permitted		0.964		0.740						0.260		
Satd. Flow (perm)	0	1796	1583	1378	0	1583	0	3529	0	484	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			85		4				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		51.0			305.8			317.1			241.2	
Travel Time (s)		3.7			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	7	24	22	0	85	0	998	21	64	873	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	27	24	22	0	85	0	1019	0	64	873	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		8.6	8.6	10.7		10.7		39.5		39.5	39.5	
Actuated g/C Ratio		0.16	0.16	0.20		0.20		0.75		0.75	0.75	
v/c Ratio		0.09	0.08	0.08		0.22		0.39		0.18	0.63	
Control Delay		23.5	4.5	21.8		8.0		4.1		4.7	7.6	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		23.5	4.5	21.8		8.0		4.1		4.7	7.6	
LOS		C	A	C		A		A		A	A	
Approach Delay		14.5			10.8			4.1			7.4	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 52.9			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 6.1		Intersection LOS: A	
Intersection Capacity Utilization 63.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	27	24	22	85	1019	64	873
v/c Ratio	0.09	0.08	0.08	0.22	0.39	0.18	0.63
Control Delay	23.5	4.5	21.8	8.0	4.1	4.7	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.5	4.5	21.8	8.0	4.1	4.7	7.6
Queue Length 50th (m)	2.3	0.0	1.7	0.0	20.0	2.0	43.9
Queue Length 95th (m)	9.8	3.2	8.3	10.8	29.7	6.0	78.4
Internal Link Dist (m)	27.0				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	970	877	799	954	3290	451	1736
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.03	0.09	0.31	0.14	0.50

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	6	22	20	0	78	0	918	19	59	803	0
Future Volume (vph)	18	6	22	20	0	78	0	918	19	59	803	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.96	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1796	1583	1770		1583		3528		1770	1863	
Flt Permitted		0.96	1.00	0.74		1.00		1.00		0.26	1.00	
Satd. Flow (perm)		1796	1583	1378		1583		3528		485	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	7	24	22	0	85	0	998	21	64	873	0
RTOR Reduction (vph)	0	0	21	0	0	72	0	1	0	0	0	0
Lane Group Flow (vph)	0	27	3	22	0	13	0	1018	0	64	873	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		6.1	6.1	6.1		6.1		35.0		35.0	35.0	
Effective Green, g (s)		6.1	6.1	8.1		8.1		38.0		38.0	38.0	
Actuated g/C Ratio		0.11	0.11	0.15		0.15		0.70		0.70	0.70	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		202	178	206		237		2478		340	1308	
v/s Ratio Prot								0.29			c0.47	
v/s Ratio Perm		0.02	0.00	c0.02		0.01				0.13		
v/c Ratio		0.13	0.02	0.11		0.05		0.41		0.19	0.67	
Uniform Delay, d1		21.6	21.3	19.9		19.7		3.4		2.8	4.5	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.3	0.0	0.2		0.1		0.1		0.3	1.3	
Delay (s)		21.9	21.4	20.1		19.8		3.5		3.0	5.8	
Level of Service		C	C	C		B		A		A	A	
Approach Delay (s)		21.7			19.9			3.5			5.6	
Approach LOS		C			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	54.1	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	63.9%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	198	268	70	70	0
Future Volume (vph)	0	198	268	70	70	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.969			
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	3429	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1863	3429	0	1770	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		138.0	104.6		69.7	
Travel Time (s)		9.9	7.5		5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	215	291	76	76	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	215	367	0	76	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		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
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	198	268	70	70	0
Future Volume (Veh/h)	0	198	268	70	70	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	215	291	76	76	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			105			
pX, platoon unblocked						
vC, conflicting volume	367				544	184
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	367				544	184
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				84	100
cM capacity (veh/h)	1188				469	827

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	215	194	173	76
Volume Left	0	0	0	76
Volume Right	0	0	76	0
cSH	1188	1700	1700	469
Volume to Capacity	0.00	0.11	0.10	0.16
Queue Length 95th (m)	0.0	0.0	0.0	4.6
Control Delay (s)	0.0	0.0	0.0	14.2
Lane LOS				B
Approach Delay (s)	0.0	0.0		14.2
Approach LOS				B

Intersection Summary				
Average Delay		1.6		
Intersection Capacity Utilization		21.0%	ICU Level of Service	A
Analysis Period (min)		15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	46	95	137	5	5	47
Future Volume (vph)	46	95	137	5	5	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.996		0.877	
Flt Protected		0.984			0.996	
Satd. Flow (prot)	0	1833	1855	0	1627	0
Flt Permitted		0.984			0.996	
Satd. Flow (perm)	0	1833	1855	0	1627	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		103.0	230.4		53.7	
Travel Time (s)		7.4	16.6		3.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	50	103	149	5	5	51
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	153	154	0	56	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		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
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	28.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	46	95	137	5	5	47
Future Volume (Veh/h)	46	95	137	5	5	47
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	50	103	149	5	5	51
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		103				
pX, platoon unblocked						
vC, conflicting volume	154				354	152
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	154				354	152
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				99	94
cM capacity (veh/h)	1426				621	895

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	153	154	56
Volume Left	50	0	5
Volume Right	0	5	51
cSH	1426	1700	861
Volume to Capacity	0.04	0.09	0.07
Queue Length 95th (m)	0.9	0.0	1.7
Control Delay (s)	2.7	0.0	9.5
Lane LOS	A		A
Approach Delay (s)	2.7	0.0	9.5
Approach LOS			A

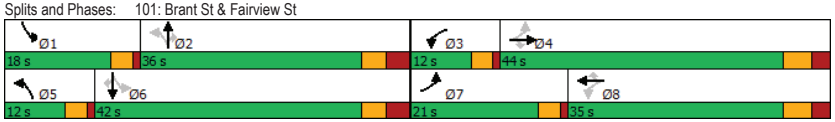
Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	28.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	329	826	272	164	784	251	260	636	173	246	650	172
Future Volume (vph)	329	826	272	164	784	251	260	636	173	246	650	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.127			0.199			0.249			0.136		
Satd. Flow (perm)	237	3539	1583	371	3539	1583	464	3539	1583	253	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			262			257			192			187
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	358	898	296	178	852	273	283	691	188	267	707	187
Shared Lane Traffic (%)												
Lane Group Flow (vph)	358	898	296	178	852	273	283	691	188	267	707	187
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	21.0	44.0	44.0	12.0	35.0	35.0	12.0	36.0	36.0	18.0	42.0	42.0
Total Split (%)	19.1%	40.0%	40.0%	10.9%	31.8%	31.8%	10.9%	32.7%	32.7%	16.4%	38.2%	38.2%
Maximum Green (s)	17.0	37.6	37.6	8.0	28.6	28.6	8.0	29.5	29.5	14.0	35.5	35.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	51.0	38.9	38.9	37.9	29.9	29.9	35.9	27.9	27.9	45.5	33.4	33.4
Actuated g/C Ratio	0.49	0.37	0.37	0.36	0.29	0.29	0.34	0.27	0.27	0.44	0.32	0.32
v/c Ratio	0.98	0.68	0.39	0.74	0.84	0.43	1.09	0.73	0.33	0.87	0.62	0.30
Control Delay	71.1	31.3	6.2	38.4	44.6	7.1	109.3	40.1	5.8	51.7	32.9	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.1	31.3	6.2	38.4	44.6	7.1	109.3	40.1	5.8	51.7	32.9	5.0
LOS	E	C	A	D	D	A	F	D	A	D	C	A
Approach Delay		35.7			35.9			51.4			32.7	
Approach LOS		D			D			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 104.5			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.09			
Intersection Signal Delay: 38.6		Intersection LOS: D	
Intersection Capacity Utilization 85.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Queues
101: Brant St & Fairview St

Total - Phase 2
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	358	898	296	178	852	273	283	691	188	267	707	187
v/c Ratio	0.98	0.68	0.39	0.74	0.84	0.43	1.09	0.73	0.33	0.87	0.62	0.30
Control Delay	71.1	31.3	6.2	38.4	44.6	7.1	109.3	40.1	5.8	51.7	32.9	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.1	31.3	6.2	38.4	44.6	7.1	109.3	40.1	5.8	51.7	32.9	5.0
Queue Length 50th (m)	60.8	86.1	4.7	21.6	92.0	2.5	~40.7	72.3	0.0	39.0	68.2	0.0
Queue Length 95th (m)	#127.7	113.7	24.1	#48.3	#124.2	22.9	#99.3	93.3	15.8	#86.4	87.8	15.2
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	366	1361	770	242	1055	652	259	1089	620	314	1293	697
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.66	0.38	0.74	0.81	0.42	1.09	0.63	0.30	0.85	0.55	0.27

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
101: Brant St & Fairview St

Total - Phase 2
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	329	826	272	164	784	251	260	636	173	246	650	172
Future Volume (vph)	329	826	272	164	784	251	260	636	173	246	650	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.13	1.00	1.00	0.20	1.00	1.00	0.25	1.00	1.00	0.14	1.00	1.00
Satd. Flow (perm)	237	3539	1583	370	3539	1583	464	3539	1583	253	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	358	898	296	178	852	273	283	691	188	267	707	187
RTOR Reduction (vph)	0	0	164	0	0	184	0	0	138	0	0	127
Lane Group Flow (vph)	358	898	132	178	852	89	283	691	50	267	707	60
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	48.5	36.5	36.5	35.4	27.4	27.4	33.4	25.4	25.4	43.0	31.0	31.0
Effective Green, g (s)	48.5	38.9	38.9	35.4	29.8	29.8	33.4	27.9	27.9	43.0	33.5	33.5
Actuated g/C Ratio	0.46	0.37	0.37	0.34	0.29	0.29	0.32	0.27	0.27	0.41	0.32	0.32
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	361	1318	589	232	1010	451	248	945	423	301	1135	507
v/s Ratio Prot	c0.16	0.25		0.06	0.24		c0.09	0.20		c0.12	0.20	
v/s Ratio Perm	c0.30		0.08	0.20		0.06	c0.28		0.03	0.25		0.04
v/c Ratio	0.99	0.68	0.22	0.77	0.84	0.20	1.14	0.73	0.12	0.89	0.62	0.12
Uniform Delay, d1	30.1	27.5	22.4	26.1	35.1	28.3	32.4	34.8	28.9	25.1	30.1	25.0
Progression 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
Incremental Delay, d2	45.0	1.5	0.2	14.1	6.5	0.2	100.6	2.9	0.1	25.3	1.1	0.1
Delay (s)	75.0	29.0	22.6	40.1	41.6	28.5	132.9	37.8	29.1	50.4	31.2	25.1
Level of Service	E	C	C	D	D	C	F	D	C	D	C	C
Approach Delay (s)		38.4			38.7			59.5			34.6	
Approach LOS		D			D			E			C	

Intersection Summary

HCM 2000 Control Delay	42.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	104.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	8	15	72	12	119	13	950	46	106	964	39
Future Volume (vph)	61	8	15	72	12	119	13	950	46	106	964	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.904			0.864			0.993			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1684	0	1770	1609	0	1770	3514	0	1770	3518	0
Flt Permitted	0.625			0.741			0.196			0.198		
Satd. Flow (perm)	1164	1684	0	1380	1609	0	365	3514	0	369	3518	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			129			9			7	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	9	16	78	13	129	14	1033	50	115	1048	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	66	25	0	78	142	0	14	1083	0	115	1090	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	13.6	13.6		13.6	13.6		40.0	40.0		51.9	40.0	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.57	0.57		0.75	0.57	
v/c Ratio	0.29	0.07		0.29	0.34		0.07	0.54		0.24	0.54	
Control Delay	30.7	17.2		29.9	9.7		9.0	10.9		3.8	11.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.1		0.0	0.0	
Total Delay	30.7	17.2		29.9	9.7		9.0	11.0		3.8	11.0	
LOS	C	B		C	A		A	B		A	B	
Approach Delay		27.0			16.9			11.0			10.3	
Approach LOS		C			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 69.6			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay: 11.7		Intersection LOS: B	
Intersection Capacity Utilization 62.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Queues
102: Brant St & Grahams Ln/Prospect St

Total - Phase 2
SAT Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	66	25	78	142	14	1083	115	1090
v/c Ratio	0.29	0.07	0.29	0.34	0.07	0.54	0.24	0.54
Control Delay	30.7	17.2	29.9	9.7	9.0	10.9	3.8	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	30.7	17.2	29.9	9.7	9.0	11.0	3.8	11.0
Queue Length 50th (m)	7.6	1.0	8.9	1.4	0.8	43.9	2.9	44.3
Queue Length 95th (m)	22.1	7.8	24.6	17.1	4.0	75.3	8.6	76.1
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	327	484	388	545	275	2655	523	2657
Starvation Cap Reductn	0	0	0	0	0	313	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.05	0.20	0.26	0.05	0.46	0.22	0.41

Intersection Summary

HCM Signalized Intersection Capacity Analysis
102: Brant St & Grahams Ln/Prospect St

Total - Phase 2
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	8	15	72	12	119	13	950	46	106	964	39
Future Volume (vph)	61	8	15	72	12	119	13	950	46	106	964	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1684		1770	1609		1770	3515		1770	3519	
Flt Permitted	0.63	1.00		0.74	1.00		0.20	1.00		0.20	1.00	
Satd. Flow (perm)	1165	1684		1380	1609		365	3515		370	3519	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	9	16	78	13	129	14	1033	50	115	1048	42
RTOR Reduction (vph)	0	13	0	0	104	0	0	4	0	0	3	0
Lane Group Flow (vph)	66	12	0	78	38	0	14	1079	0	115	1087	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	10.5	10.5		10.5	10.5		36.9	36.9		42.4	36.9	
Effective Green, g (s)	13.5	13.5		13.5	13.5		39.9	39.9		48.4	39.9	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.57	0.57		0.69	0.57	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	225	325		266	310		208	2006		426	2008	
v/s Ratio Prot		0.01			0.02			0.31		c0.03	c0.31	
v/s Ratio Perm	c0.06			0.06			0.04			0.15		
v/c Ratio	0.29	0.04		0.29	0.12		0.07	0.54		0.27	0.54	
Uniform Delay, d1	24.1	22.9		24.1	23.3		6.7	9.3		4.5	9.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.0		0.6	0.2		0.1	0.3		0.3	0.3	
Delay (s)	24.8	23.0		24.7	23.5		6.8	9.6		4.8	9.6	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		24.3			23.9			9.5			9.2	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.44			
Actuated Cycle Length (s)	69.9	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	62.5%	ICU Level of Service	B	
Analysis Period (min)	15			

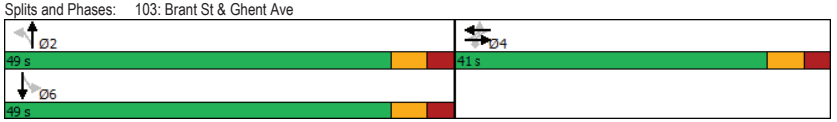
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	22	21	29	19	60	27	812	28	66	843	136
Future Volume (vph)	128	22	21	29	19	60	27	812	28	66	843	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.926			0.995			0.979	
Flt Protected		0.959			0.987		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1702	0	1770	3522	0	1770	3465	0
Flt Permitted		0.741			0.886		0.203			0.260		
Satd. Flow (perm)	0	1380	1583	0	1528	0	378	3522	0	484	3465	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		65			5			29	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.6			99.8			75.4			150.5	
Travel Time (s)		7.2			7.2			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	139	24	23	32	21	65	29	883	30	72	916	148
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	163	23	0	118	0	29	913	0	72	1064	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		15.6	15.6		15.6		27.1	27.1		27.1	27.1	
Actuated g/C Ratio		0.31	0.31		0.31		0.53	0.53		0.53	0.53	
v/c Ratio		0.39	0.04		0.23		0.14	0.49		0.28	0.57	
Control Delay		17.2	2.3		8.6		9.4	9.0		11.3	9.8	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		17.2	2.3		8.6		9.4	9.0		11.3	9.8	
LOS		B	A		A		A	A		B	A	
Approach Delay		15.3			8.6			9.0			9.9	
Approach LOS		B			A			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 50.9			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 9.9		Intersection LOS: A	
Intersection Capacity Utilization 59.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Queues
103: Brant St & Ghent Ave

Total - Phase 2
SAT Peak Hour

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	163	23	118	29	913	72	1064
v/c Ratio	0.39	0.04	0.23	0.14	0.49	0.28	0.57
Control Delay	17.2	2.3	8.6	9.4	9.0	11.3	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.2	2.3	8.6	9.4	9.0	11.3	9.8
Queue Length 50th (m)	10.4	0.0	3.1	1.2	24.1	3.2	29.2
Queue Length 95th (m)	29.6	2.1	14.6	6.1	49.2	12.9	59.6
Internal Link Dist (m)	75.6		75.8		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	1028	1191	1155	336	3131	430	3083
Starvation Cap Reductn	0	0	0	0	0	0	38
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.02	0.10	0.09	0.29	0.17	0.35

Intersection Summary

HCM Signalized Intersection Capacity Analysis
103: Brant St & Ghent Ave

Total - Phase 2
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	22	21	29	19	60	27	812	28	66	843	136
Future Volume (vph)	128	22	21	29	19	60	27	812	28	66	843	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.93		1.00	1.00		1.00	0.98	
Flt Protected		0.96	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1787	1583		1701		1770	3522		1770	3465	
Flt Permitted		0.74	1.00		0.89		0.20	1.00		0.26	1.00	
Satd. Flow (perm)		1379	1583		1527		378	3522		484	3465	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	139	24	23	32	21	65	29	883	30	72	916	148
RTOR Reduction (vph)	0	0	16	0	45	0	0	2	0	0	13	0
Lane Group Flow (vph)	0	163	7	0	73	0	29	911	0	72	1051	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		12.5	12.5		12.5		24.0	24.0		24.0	24.0	
Effective Green, g (s)		15.5	15.5		15.5		27.0	27.0		27.0	27.0	
Actuated g/C Ratio		0.31	0.31		0.31		0.53	0.53		0.53	0.53	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		423	485		468		202	1883		258	1852	
v/s Ratio Prot								0.26			c0.30	
v/s Ratio Perm		c0.12	0.00		0.05		0.08			0.15		
v/c Ratio		0.39	0.01		0.16		0.14	0.48		0.28	0.57	
Uniform Delay, d1		13.8	12.2		12.7		5.9	7.4		6.4	7.8	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.6	0.0		0.2		0.3	0.2		0.6	0.4	
Delay (s)		14.3	12.2		12.9		6.3	7.6		7.0	8.2	
Level of Service		B	B		B		A	A		A	A	
Approach Delay (s)		14.1			12.9			7.5			8.2	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.50			
Actuated Cycle Length (s)	50.5	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	59.2%	ICU Level of Service	B	
Analysis Period (min)	15			

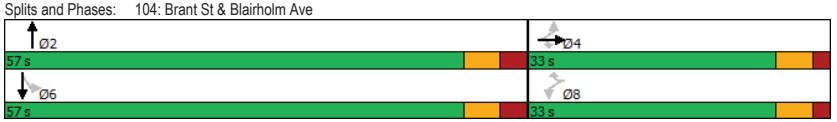
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	0	6	11	0	45	0	802	9	36	820	0
Future Volume (vph)	15	0	6	11	0	45	0	802	9	36	820	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.998				
Flt Protected		0.950		0.950						0.950		
Satd. Flow (prot)	0	1770	1583	1770	0	1583	0	3532	0	1770	1863	0
Flt Permitted		0.950		0.747						0.315		
Satd. Flow (perm)	0	1770	1583	1391	0	1583	0	3532	0	587	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			49		2				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		55.3			305.8			317.1			241.2	
Travel Time (s)		4.0			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	0	7	12	0	49	0	872	10	39	891	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	16	7	12	0	49	0	882	0	39	891	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		8.7	8.7	10.9		10.9		43.4		43.4	43.4	
Actuated g/C Ratio		0.17	0.17	0.21		0.21		0.83		0.83	0.83	
v/c Ratio		0.05	0.02	0.04		0.13		0.30		0.08	0.58	
Control Delay		25.3	0.2	23.5		9.5		2.8		3.1	5.7	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		25.3	0.2	23.5		9.5		2.8		3.1	5.7	
LOS		C	A	C		A		A		A	A	
Approach Delay		17.7			12.3			2.8			5.6	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 52.3			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 4.7		Intersection LOS: A	
Intersection Capacity Utilization 64.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Queues
104: Brant St & Blairholm Ave

Total - Phase 2
SAT Peak Hour

Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	16	7	12	49	882	39	891
v/c Ratio	0.05	0.02	0.04	0.13	0.30	0.08	0.58
Control Delay	25.3	0.2	23.5	9.5	2.8	3.1	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.3	0.2	23.5	9.5	2.8	3.1	5.7
Queue Length 50th (m)	1.9	0.0	1.3	0.0	16.4	1.1	45.6
Queue Length 95th (m)	7.0	0.0	5.6	8.4	23.0	3.4	76.6
Internal Link Dist (m)	31.3				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	993	909	838	974	3181	528	1678
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.01	0.05	0.28	0.07	0.53

Intersection Summary

HCM Signalized Intersection Capacity Analysis
104: Brant St & Blairholm Ave

Total - Phase 2
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	0	6	11	0	45	0	802	9	36	820	0
Future Volume (vph)	15	0	6	11	0	45	0	802	9	36	820	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.95	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1770	1583	1770		1583		3533		1770	1863	
Flt Permitted		0.95	1.00	0.75		1.00		1.00		0.32	1.00	
Satd. Flow (perm)		1770	1583	1392		1583		3533		587	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	0	7	12	0	49	0	872	10	39	891	0
RTOR Reduction (vph)	0	0	6	0	0	44	0	1	0	0	0	0
Lane Group Flow (vph)	0	16	1	12	0	5	0	881	0	39	891	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		4.0	4.0	4.0		4.0		37.8		37.8	37.8	
Effective Green, g (s)		4.0	4.0	6.0		6.0		40.8		40.8	40.8	
Actuated g/C Ratio		0.07	0.07	0.11		0.11		0.74		0.74	0.74	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		129	115	152		173		2630		437	1387	
v/s Ratio Prot								0.25			c0.48	
v/s Ratio Perm		0.01	0.00	0.01		0.00				0.07		
v/c Ratio		0.12	0.00	0.08		0.03		0.34		0.09	0.64	
Uniform Delay, d1		23.8	23.6	21.9		21.8		2.4		1.9	3.4	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.4	0.0	0.2		0.1		0.1		0.1	1.0	
Delay (s)		24.2	23.6	22.1		21.9		2.5		2.0	4.5	
Level of Service		C	C	C		C		A		A	A	
Approach Delay (s)		24.0			21.9			2.5			4.4	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	4.3	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	64.8%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	118	135	47	51	0
Future Volume (vph)	0	118	135	47	51	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.961			
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	3401	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1863	3401	0	1770	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		142.9	99.6		79.1	
Travel Time (s)		10.3	7.2		5.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	128	147	51	55	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	128	198	0	55	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		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
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	16.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	118	135	47	51	0
Future Volume (Veh/h)	0	118	135	47	51	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	128	147	51	55	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			100			
pX, platoon unblocked						
vC, conflicting volume	198				300	99
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	198				300	99
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	100
cM capacity (veh/h)	1372				667	937

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	128	98	100	55
Volume Left	0	0	0	55
Volume Right	0	0	51	0
cSH	1372	1700	1700	667
Volume to Capacity	0.00	0.06	0.06	0.08
Queue Length 95th (m)	0.0	0.0	0.0	2.1
Control Delay (s)	0.0	0.0	0.0	10.9
Lane LOS				B
Approach Delay (s)	0.0	0.0		10.9
Approach LOS				B

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	16.2%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	33	81	78	3	4	35
Future Volume (vph)	33	81	78	3	4	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.995		0.878	
Flt Protected		0.986			0.995	
Satd. Flow (prot)	0	1837	1853	0	1627	0
Flt Permitted		0.986			0.995	
Satd. Flow (perm)	0	1837	1853	0	1627	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		99.8	233.6		59.5	
Travel Time (s)		7.2	16.8		4.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	36	88	85	3	4	38
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	124	88	0	42	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		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
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	22.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	81	78	3	4	35
Future Volume (Veh/h)	33	81	78	3	4	35
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	36	88	85	3	4	38
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		100				
pX, platoon unblocked						
vC, conflicting volume	88				246	86
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	88				246	86
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				99	96
cM capacity (veh/h)	1508				724	972

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	124	88	42
Volume Left	36	0	4
Volume Right	0	3	38
cSH	1508	1700	941
Volume to Capacity	0.02	0.05	0.04
Queue Length 95th (m)	0.6	0.0	1.1
Control Delay (s)	2.3	0.0	9.0
Lane LOS	A		A
Approach Delay (s)	2.3	0.0	9.0
Approach LOS			A

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	22.8%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix I3

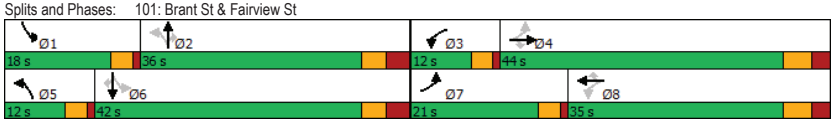
Total – Full Build Out Operations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	360	1180	303	146	371	163	226	725	311	245	790	160
Future Volume (vph)	360	1180	303	146	371	163	226	725	311	245	790	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.356			0.137			0.161			0.126		
Satd. Flow (perm)	663	3539	1583	255	3539	1583	300	3539	1583	235	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			238			193			192			174
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	391	1283	329	159	403	177	246	788	338	266	859	174
Shared Lane Traffic (%)												
Lane Group Flow (vph)	391	1283	329	159	403	177	246	788	338	266	859	174
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	21.0	44.0	44.0	12.0	35.0	35.0	12.0	36.0	36.0	18.0	42.0	42.0
Total Split (%)	19.1%	40.0%	40.0%	10.9%	31.8%	31.8%	10.9%	32.7%	32.7%	16.4%	38.2%	38.2%
Maximum Green (s)	17.0	37.6	37.6	8.0	28.6	28.6	8.0	29.5	29.5	14.0	35.5	35.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	52.0	40.0	40.0	39.5	31.5	31.5	38.3	30.3	30.3	48.2	36.2	36.2
Actuated g/C Ratio	0.48	0.37	0.37	0.37	0.29	0.29	0.35	0.28	0.28	0.45	0.33	0.33
v/c Ratio	0.80	0.98	0.45	0.78	0.39	0.30	1.14	0.80	0.58	0.88	0.73	0.27
Control Delay	34.0	55.3	9.6	47.5	32.6	4.9	131.6	42.9	18.2	55.0	35.8	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	55.3	9.6	47.5	32.6	4.9	131.6	42.9	18.2	55.0	35.8	5.0
LOS	C	E	A	D	C	A	F	D	B	E	D	A
Approach Delay		43.7			29.2			52.7			35.6	
Approach LOS		D			C			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 108.2			
Natural Cycle: 105			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.14			
Intersection Signal Delay: 42.0		Intersection LOS: D	
Intersection Capacity Utilization 88.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Queues
101: Brant St & Fairview St

Total - Full Build Out
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	391	1283	329	159	403	177	246	788	338	266	859	174
v/c Ratio	0.80	0.98	0.45	0.78	0.39	0.30	1.14	0.80	0.58	0.88	0.73	0.27
Control Delay	34.0	55.3	9.6	47.5	32.6	4.9	131.6	42.9	18.2	55.0	35.8	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	55.3	9.6	47.5	32.6	4.9	131.6	42.9	18.2	55.0	35.8	5.0
Queue Length 50th (m)	58.0	150.7	13.7	20.2	38.7	0.0	~43.5	85.4	26.5	40.5	87.5	0.0
Queue Length 95th (m)	#95.6	#202.0	37.6	#52.3	53.5	13.5	#96.3	108.8	56.9	#88.4	111.0	14.7
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	492	1308	735	205	1030	597	215	1046	603	303	1243	668
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.98	0.45	0.78	0.39	0.30	1.14	0.75	0.56	0.88	0.69	0.26

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
101: Brant St & Fairview St

Total - Full Build Out
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	360	1180	303	146	371	163	226	725	311	245	790	160
Future Volume (vph)	360	1180	303	146	371	163	226	725	311	245	790	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.36	1.00	1.00	0.14	1.00	1.00	0.16	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	662	3539	1583	256	3539	1583	299	3539	1583	234	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	391	1283	329	159	403	177	246	788	338	266	859	174
RTOR Reduction (vph)	0	0	150	0	0	125	0	0	138	0	0	116
Lane Group Flow (vph)	391	1283	179	159	403	52	246	788	200	266	859	58
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	49.6	37.6	37.6	37.1	29.1	29.1	35.8	27.8	27.8	45.7	33.7	33.7
Effective Green, g (s)	49.6	40.0	40.0	37.1	31.5	31.5	35.8	30.3	30.3	45.7	36.2	36.2
Actuated g/C Ratio	0.46	0.37	0.37	0.34	0.29	0.29	0.33	0.28	0.28	0.42	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	472	1308	585	199	1030	460	207	991	443	296	1184	529
v/s Ratio Prot	c0.13	c0.36		0.06	0.11		c0.09	0.22		c0.12	0.24	
v/s Ratio Perm	0.25		0.11	0.21		0.03	c0.30		0.13	0.26		0.04
v/c Ratio	0.83	0.98	0.31	0.80	0.39	0.11	1.19	0.80	0.45	0.90	0.73	0.11
Uniform Delay, d1	21.3	33.7	24.2	28.8	30.7	28.1	31.5	36.1	32.1	27.4	31.6	24.9
Progression 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
Incremental Delay, d2	11.4	20.3	0.3	19.7	0.2	0.1	122.7	4.5	0.7	27.7	2.2	0.1
Delay (s)	32.7	54.0	24.5	48.5	30.9	28.2	154.2	40.6	32.8	55.1	33.9	25.0
Level of Service	C	D	C	D	C	C	F	D	C	E	C	C
Approach Delay (s)		45.0			34.1			59.0			37.0	
Approach LOS		D			C			E			D	

Intersection Summary				
HCM 2000 Control Delay	45.2	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	1.02			
Actuated Cycle Length (s)	108.2	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	88.4%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	10	17	70	9	87	27	967	58	95	1052	92
Future Volume (vph)	35	10	17	70	9	87	27	967	58	95	1052	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.907			0.864			0.992			0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1690	0	1770	1609	0	1770	3511	0	1770	3497	0
Flt Permitted	0.689			0.738			0.168			0.204		
Satd. Flow (perm)	1283	1690	0	1375	1609	0	313	3511	0	380	3497	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			95			11			17	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	11	18	76	10	95	29	1051	63	103	1143	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	29	0	76	105	0	29	1114	0	103	1243	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	13.9	13.9		13.9	13.9		46.2	46.2		56.3	46.2	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.67	0.67		0.81	0.67	
v/c Ratio	0.15	0.08		0.27	0.26		0.14	0.47		0.20	0.53	
Control Delay	29.8	17.8		31.7	10.4		9.8	9.4		3.3	10.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.1		0.0	0.0	
Total Delay	29.8	17.8		31.7	10.4		9.8	9.5		3.3	10.1	
LOS	C	B		C	B		A	A		A	B	
Approach Delay		24.6			19.3			9.6			9.6	
Approach LOS		C			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 69.2			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 10.6		Intersection LOS: B	
Intersection Capacity Utilization 59.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Queues
102: Brant St & Grahams Ln/Prospect St

Total - Full Build Out
AM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	38	29	76	105	29	1114	103	1243
v/c Ratio	0.15	0.08	0.27	0.26	0.14	0.47	0.20	0.53
Control Delay	29.8	17.8	31.7	10.4	9.8	9.4	3.3	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	29.8	17.8	31.7	10.4	9.8	9.5	3.3	10.1
Queue Length 50th (m)	4.8	1.4	9.8	1.2	1.7	45.5	2.6	53.4
Queue Length 95th (m)	14.3	8.7	24.2	14.7	6.9	74.5	7.3	87.6
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	384	519	412	549	231	2595	572	2586
Starvation Cap Reductn	0	0	0	0	0	434	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.06	0.18	0.19	0.13	0.52	0.18	0.48

Intersection Summary

HCM Signalized Intersection Capacity Analysis
102: Brant St & Grahams Ln/Prospect St

Total - Full Build Out
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	10	17	70	9	87	27	967	58	95	1052	92
Future Volume (vph)	35	10	17	70	9	87	27	967	58	95	1052	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1689		1770	1610		1770	3509		1770	3497	
Flt Permitted	0.69	1.00		0.74	1.00		0.17	1.00		0.20	1.00	
Satd. Flow (perm)	1284	1689		1375	1610		312	3509		381	3497	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	11	18	76	10	95	29	1051	63	103	1143	100
RTOR Reduction (vph)	0	15	0	0	81	0	0	4	0	0	6	0
Lane Group Flow (vph)	38	14	0	76	24	0	29	1110	0	103	1237	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	7.8	7.8		7.8	7.8		41.5	41.5		46.5	41.5	
Effective Green, g (s)	10.8	10.8		10.8	10.8		44.5	44.5		52.5	44.5	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.62	0.62		0.74	0.62	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	194	255		208	243		194	2190		436	2182	
v/s Ratio Prot		0.01			0.02			0.32		c0.03	c0.35	
v/s Ratio Perm	0.03			c0.06			0.09			0.15		
v/c Ratio	0.20	0.05		0.37	0.10		0.15	0.51		0.24	0.57	
Uniform Delay, d1	26.5	25.9		27.2	26.1		5.6	7.4		3.3	7.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.1		1.1	0.2		0.4	0.2		0.3	0.3	
Delay (s)	26.9	26.0		28.3	26.2		5.9	7.6		3.6	8.1	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		26.5			27.1			7.5			7.8	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.48			
Actuated Cycle Length (s)	71.3	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	59.2%	ICU Level of Service	B	
Analysis Period (min)	15			

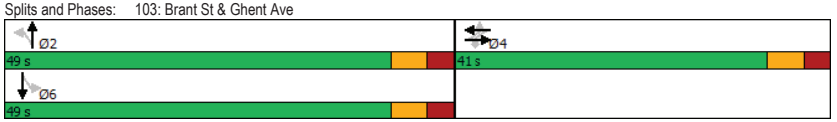
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	201	35	37	41	17	88	24	760	42	72	906	168
Future Volume (vph)	201	35	37	41	17	88	24	760	42	72	906	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.918			0.992			0.976	
Flt Protected		0.959			0.986		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1686	0	1770	3511	0	1770	3454	0
Flt Permitted		0.674			0.860		0.149			0.257		
Satd. Flow (perm)	0	1255	1583	0	1471	0	278	3511	0	479	3454	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		96			9			34	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		97.4			62.4			75.4			150.5	
Travel Time (s)		7.0			4.5			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	218	38	40	45	18	96	26	826	46	78	985	183
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	256	40	0	159	0	26	872	0	78	1168	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		22.9	22.9		22.9		31.0	31.0		31.0	31.0	
Actuated g/C Ratio		0.37	0.37		0.37		0.50	0.50		0.50	0.50	
v/c Ratio		0.56	0.07		0.27		0.19	0.50		0.33	0.68	
Control Delay		22.5	4.6		8.5		15.0	12.3		16.1	14.6	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		22.5	4.6		8.5		15.0	12.3		16.1	14.7	
LOS		C	A		A		B	B		B	B	
Approach Delay		20.1			8.5			12.4			14.7	
Approach LOS		C			A			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 62.5			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 14.1		Intersection LOS: B	
Intersection Capacity Utilization 66.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	256	40	159	26	872	78	1168
v/c Ratio	0.56	0.07	0.27	0.19	0.50	0.33	0.68
Control Delay	22.5	4.6	8.5	15.0	12.3	16.1	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.5	4.6	8.5	15.0	12.3	16.1	14.7
Queue Length 50th (m)	23.0	0.0	4.7	1.5	32.0	5.0	47.6
Queue Length 95th (m)	57.0	5.1	19.4	8.3	68.6	19.5	101.0
Internal Link Dist (m)	73.4		38.4		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	802	1029	974	209	2647	360	2611
Starvation Cap Reductn	0	0	0	0	0	0	102
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.04	0.16	0.12	0.33	0.22	0.47

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	201	35	37	41	17	88	24	760	42	72	906	168
Future Volume (vph)	201	35	37	41	17	88	24	760	42	72	906	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.92		1.00	0.99		1.00	0.98	
Flt Protected		0.96	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1787	1583		1687		1770	3511		1770	3456	
Flt Permitted		0.67	1.00		0.86		0.15	1.00		0.26	1.00	
Satd. Flow (perm)		1256	1583		1472		277	3511		479	3456	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	218	38	40	45	18	96	26	826	46	78	985	183
RTOR Reduction (vph)	0	0	25	0	61	0	0	4	0	0	17	0
Lane Group Flow (vph)	0	256	15	0	98	0	26	868	0	78	1151	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		19.6	19.6		19.6		27.8	27.8		27.8	27.8	
Effective Green, g (s)		22.6	22.6		22.6		30.8	30.8		30.8	30.8	
Actuated g/C Ratio		0.37	0.37		0.37		0.50	0.50		0.50	0.50	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		462	582		541		138	1761		240	1733	
v/s Ratio Prot								0.25			c0.33	
v/s Ratio Perm		c0.20	0.01		0.07		0.09			0.16		
v/c Ratio		0.55	0.03		0.18		0.19	0.49		0.33	0.66	
Uniform Delay, d1		15.4	12.4		13.1		8.4	10.1		9.1	11.4	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.4	0.0		0.2		0.7	0.2		0.8	1.0	
Delay (s)		16.8	12.4		13.3		9.1	10.3		9.9	12.4	
Level of Service		B	B		B		A	B		A	B	
Approach Delay (s)		16.2			13.3			10.3			12.2	
Approach LOS		B			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.62			
Actuated Cycle Length (s)	61.4	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	66.7%	ICU Level of Service	C	
Analysis Period (min)	15			

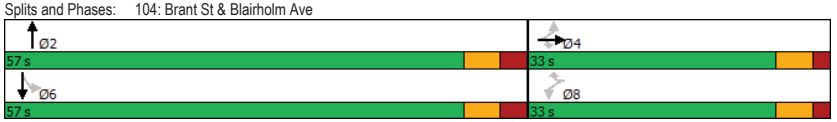
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	5	8	42	0	117	0	681	17	49	838	0
Future Volume (vph)	17	5	8	42	0	117	0	681	17	49	838	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.996				
Flt Protected		0.962		0.950						0.950		
Satd. Flow (prot)	0	1792	1583	1770	0	1583	0	3525	0	1770	1863	0
Flt Permitted		0.962		0.742						0.358		
Satd. Flow (perm)	0	1792	1583	1382	0	1583	0	3525	0	667	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			127		5				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		34.6			305.8			317.1			241.2	
Travel Time (s)		2.5			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	5	9	46	0	127	0	740	18	53	911	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	23	9	46	0	127	0	758	0	53	911	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		9.1	9.1	11.2		11.2		40.7		40.7	40.7	
Actuated g/C Ratio		0.17	0.17	0.20		0.20		0.74		0.74	0.74	
v/c Ratio		0.08	0.03	0.16		0.30		0.29		0.11	0.66	
Control Delay		25.0	0.1	24.2		7.9		3.7		3.8	8.2	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		25.0	0.1	24.2		7.9		3.7		3.8	8.2	
LOS		C	A	C		A		A		A	A	
Approach Delay		18.0			12.2			3.7			8.0	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 54.7			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 6.9		Intersection LOS: A	
Intersection Capacity Utilization 65.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Queues
104: Brant St & Blairholm Ave

Total - Full Build Out
AM Peak Hour

Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	23	9	46	127	758	53	911
v/c Ratio	0.08	0.03	0.16	0.30	0.29	0.11	0.66
Control Delay	25.0	0.1	24.2	7.9	3.7	3.8	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.0	0.1	24.2	7.9	3.7	3.8	8.2
Queue Length 50th (m)	2.0	0.0	3.8	0.0	13.4	1.5	47.7
Queue Length 95th (m)	9.2	0.0	14.9	13.6	22.6	4.9	94.0
Internal Link Dist (m)	10.6				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	940	853	779	948	3243	613	1713
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.06	0.13	0.23	0.09	0.53

Intersection Summary

HCM Signalized Intersection Capacity Analysis
104: Brant St & Blairholm Ave

Total - Full Build Out
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	5	8	42	0	117	0	681	17	49	838	0
Future Volume (vph)	17	5	8	42	0	117	0	681	17	49	838	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.96	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1793	1583	1770		1583		3527		1770	1863	
Flt Permitted		0.96	1.00	0.74		1.00		1.00		0.36	1.00	
Satd. Flow (perm)		1793	1583	1383		1583		3527		666	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	5	9	46	0	127	0	740	18	53	911	0
RTOR Reduction (vph)	0	0	8	0	0	108	0	1	0	0	0	0
Lane Group Flow (vph)	0	23	1	46	0	19	0	757	0	53	911	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		6.5	6.5	6.5		6.5		36.3		36.3	36.3	
Effective Green, g (s)		6.5	6.5	8.5		8.5		39.3		39.3	39.3	
Actuated g/C Ratio		0.12	0.12	0.15		0.15		0.70		0.70	0.70	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		208	184	210		241		2484		469	1312	
v/s Ratio Prot								0.21			c0.49	
v/s Ratio Perm		0.01	0.00	c0.03		0.01				0.08		
v/c Ratio		0.11	0.01	0.22		0.08		0.30		0.11	0.69	
Uniform Delay, d1		22.1	21.8	20.7		20.3		3.1		2.7	4.8	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.2	0.0	0.5		0.1		0.1		0.1	1.6	
Delay (s)		22.3	21.8	21.3		20.4		3.2		2.8	6.4	
Level of Service		C	C	C		C		A		A	A	
Approach Delay (s)		22.2			20.7			3.2			6.2	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	6.6	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	55.8	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	65.8%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	197	149	59	75	0
Future Volume (vph)	0	197	149	59	75	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.958			
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	3391	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1863	3391	0	1770	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		145.2	97.4		63.4	
Travel Time (s)		10.5	7.0		4.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	214	162	64	82	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	214	226	0	82	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		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
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	197	149	59	75	0
Future Volume (Veh/h)	0	197	149	59	75	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	214	162	64	82	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			98			
pX, platoon unblocked						
vC, conflicting volume	226				408	113
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	226				408	113
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				86	100
cM capacity (veh/h)	1340				571	918

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	214	108	118	82
Volume Left	0	0	0	82
Volume Right	0	0	64	0
cSH	1340	1700	1700	571
Volume to Capacity	0.00	0.06	0.07	0.14
Queue Length 95th (m)	0.0	0.0	0.0	4.0
Control Delay (s)	0.0	0.0	0.0	12.4
Lane LOS				B
Approach Delay (s)	0.0	0.0		12.4
Approach LOS				B

Intersection Summary				
Average Delay		1.9		
Intersection Capacity Utilization		21.2%	ICU Level of Service	A
Analysis Period (min)		15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	35	107	74	5	6	42
Future Volume (vph)	35	107	74	5	6	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.992		0.883	
Flt Protected		0.988			0.993	
Satd. Flow (prot)	0	1840	1848	0	1633	0
Flt Permitted		0.988			0.993	
Satd. Flow (perm)	0	1840	1848	0	1633	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		42.3	228.7		42.9	
Travel Time (s)		3.0	16.5		3.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	116	80	5	7	46
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	154	85	0	53	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		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
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	24.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	35	107	74	5	6	42
Future Volume (Veh/h)	35	107	74	5	6	42
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	116	80	5	7	46
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		105				
pX, platoon unblocked						
vC, conflicting volume	85				274	82
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	85				274	82
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				99	95
cM capacity (veh/h)	1512				697	977

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	154	85	53
Volume Left	38	0	7
Volume Right	0	5	46
cSH	1512	1700	928
Volume to Capacity	0.03	0.05	0.06
Queue Length 95th (m)	0.6	0.0	1.5
Control Delay (s)	2.0	0.0	9.1
Lane LOS	A		A
Approach Delay (s)	2.0	0.0	9.1
Approach LOS			A

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	24.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	138	11	2	114	32	4
Future Volume (vph)	138	11	2	114	32	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.990				0.986	
Flt Protected				0.999	0.957	
Satd. Flow (prot)	1844	0	0	1861	1758	0
Flt Permitted				0.999	0.957	
Satd. Flow (perm)	1844	0	0	1861	1758	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	62.4			42.3	65.1	
Travel Time (s)	4.5			3.0	4.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	150	12	2	124	35	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	162	0	0	126	39	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	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
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	17.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	138	11	2	114	32	4
Future Volume (Veh/h)	138	11	2	114	32	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	150	12	2	124	35	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	62					
pX, platoon unblocked						
vC, conflicting volume			162		284	156
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			162		284	156
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	100
cM capacity (veh/h)			1417		705	890

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	162	126	39
Volume Left	0	2	35
Volume Right	12	0	4
cSH	1700	1417	721
Volume to Capacity	0.10	0.00	0.05
Queue Length 95th (m)	0.0	0.0	1.4
Control Delay (s)	0.0	0.1	10.3
Lane LOS		A	B
Approach Delay (s)	0.0	0.1	10.3
Approach LOS			B

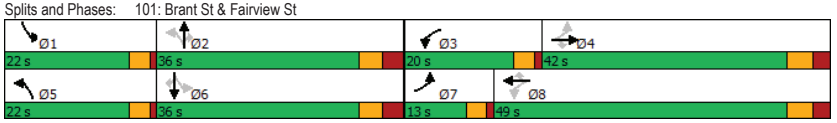
Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	17.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	226	870	331	248	1616	468	204	888	217	249	752	462
Future Volume (vph)	226	870	331	248	1616	468	204	888	217	249	752	462
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.111			0.100			0.135			0.128		
Satd. Flow (perm)	207	3539	1583	186	3539	1583	251	3539	1583	238	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			360			291			140			214
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	246	946	360	270	1757	509	222	965	236	271	817	502
Shared Lane Traffic (%)												
Lane Group Flow (vph)	246	946	360	270	1757	509	222	965	236	271	817	502
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	13.0	42.0	42.0	20.0	49.0	49.0	22.0	36.0	36.0	22.0	36.0	36.0
Total Split (%)	10.8%	35.0%	35.0%	16.7%	40.8%	40.8%	18.3%	30.0%	30.0%	18.3%	30.0%	30.0%
Maximum Green (s)	9.0	35.6	35.6	16.0	42.6	42.6	18.0	29.5	29.5	18.0	29.5	29.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	47.5	38.5	38.5	58.0	45.0	45.0	46.9	32.0	32.0	50.2	33.7	33.7
Actuated g/C Ratio	0.40	0.32	0.32	0.49	0.38	0.38	0.40	0.27	0.27	0.42	0.28	0.28
v/c Ratio	1.22	0.82	0.48	0.91	1.31	0.65	0.77	1.01	0.45	0.86	0.81	0.83
Control Delay	164.0	44.4	5.4	63.3	176.4	16.9	43.6	75.2	17.7	55.0	47.6	36.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	164.0	44.4	5.4	63.3	176.4	16.9	43.6	75.2	17.7	55.0	47.6	36.3
LOS	F	D	A	E	F	B	D	E	B	E	D	D
Approach Delay		54.3			132.3			60.7			45.3	
Approach LOS		D			F			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 118.6			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.31			
Intersection Signal Delay: 81.4		Intersection LOS: F	
Intersection Capacity Utilization 108.9%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	246	946	360	270	1757	509	222	965	236	271	817	502
v/c Ratio	1.22	0.82	0.48	0.91	1.31	0.65	0.77	1.01	0.45	0.86	0.81	0.83
Control Delay	164.0	44.4	5.4	63.3	176.4	16.9	43.6	75.2	17.7	55.0	47.6	36.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	164.0	44.4	5.4	63.3	176.4	16.9	43.6	75.2	17.7	55.0	47.6	36.3
Queue Length 50th (m)	~58.7	114.7	0.0	48.9	~296.8	43.6	35.0	~133.8	18.6	46.8	98.8	70.6
Queue Length 95th (m)	#112.2	142.1	21.8	#99.6	#341.6	83.8	61.5	#176.2	43.3	#93.1	#134.6	#136.3
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	201	1149	757	304	1343	781	335	955	529	334	1005	603
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.22	0.82	0.48	0.89	1.31	0.65	0.66	1.01	0.45	0.81	0.81	0.83

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	226	870	331	248	1616	468	204	888	217	249	752	462
Future Volume (vph)	226	870	331	248	1616	468	204	888	217	249	752	462
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.11	1.00	1.00	0.10	1.00	1.00	0.14	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	206	3539	1583	186	3539	1583	252	3539	1583	239	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	246	946	360	270	1757	509	222	965	236	271	817	502
RTOR Reduction (vph)	0	0	243	0	0	181	0	0	102	0	0	153
Lane Group Flow (vph)	246	946	117	270	1757	328	222	965	134	271	817	349
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	45.1	36.1	36.1	55.6	42.6	42.6	44.5	29.6	29.6	47.7	31.2	31.2
Effective Green, g (s)	45.1	38.5	38.5	55.6	45.0	45.0	44.5	32.1	32.1	47.7	33.7	33.7
Actuated g/C Ratio	0.38	0.32	0.32	0.47	0.38	0.38	0.38	0.27	0.27	0.40	0.28	0.28
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	197	1148	513	294	1342	600	285	957	428	309	1005	449
v/s Ratio Prot	c0.09	0.27		0.12	c0.50		0.10	c0.27		c0.12	0.23	
v/s Ratio Perm	0.38		0.07	0.31		0.21	0.19		0.08	0.23		0.22
v/c Ratio	1.25	0.82	0.23	0.92	1.31	0.55	0.78	1.01	0.31	0.88	0.81	0.78
Uniform Delay, d1	31.0	36.9	29.2	33.4	36.8	28.8	29.0	43.2	34.5	31.3	39.5	39.0
Progression 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
Incremental Delay, d2	146.9	4.9	0.2	31.7	144.6	1.0	12.6	31.2	0.4	23.2	5.1	8.2
Delay (s)	177.9	41.8	29.4	65.0	181.4	29.8	41.6	74.4	34.9	54.5	44.6	47.2
Level of Service	F	D	C	E	F	C	D	E	C	D	D	D
Approach Delay (s)		60.5			138.6			62.7			47.1	
Approach LOS		E			F			E			D	

Intersection Summary				
HCM 2000 Control Delay	85.9	HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio	1.14			
Actuated Cycle Length (s)	118.6	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	108.9%	ICU Level of Service	G	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	21	46	126	12	190	16	1224	76	123	1167	64
Future Volume (vph)	131	21	46	126	12	190	16	1224	76	123	1167	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.897			0.859			0.991			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1671	0	1770	1600	0	1770	3507	0	1770	3511	0
Flt Permitted	0.443			0.709			0.121			0.103		
Satd. Flow (perm)	825	1671	0	1321	1600	0	225	3507	0	192	3511	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50			207			12			10	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	142	23	50	137	13	207	17	1330	83	134	1268	70
Shared Lane Traffic (%)												
Lane Group Flow (vph)	142	73	0	137	220	0	17	1413	0	134	1338	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	18.4	18.4		18.4	18.4		47.9	47.9		62.4	47.9	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.56	0.56		0.74	0.56	
v/c Ratio	0.79	0.18		0.48	0.43		0.13	0.71		0.40	0.67	
Control Delay	65.5	14.4		37.0	8.5		12.1	15.8		8.6	15.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	1.2		0.0	0.0	
Total Delay	65.5	14.4		37.0	8.5		12.1	17.0		8.6	15.0	
LOS	E	B		D	A		B	B		A	B	
Approach Delay		48.1			19.4			16.9			14.4	
Approach LOS		D			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 84.8			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 18.0		Intersection LOS: B	
Intersection Capacity Utilization 76.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Queues
102: Brant St & Grahams Ln/Prospect St

Total - Full Build Out
PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	142	73	137	220	17	1413	134	1338
v/c Ratio	0.79	0.18	0.48	0.43	0.13	0.71	0.40	0.67
Control Delay	65.5	14.4	37.0	8.5	12.1	15.8	8.6	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0
Total Delay	65.5	14.4	37.0	8.5	12.1	17.0	8.6	15.0
Queue Length 50th (m)	24.2	3.3	21.5	1.8	1.3	85.8	5.5	78.5
Queue Length 95th (m)	#58.1	14.7	40.9	20.5	5.2	115.7	15.2	106.0
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	186	416	298	522	136	2133	366	2135
Starvation Cap Reductn	0	0	0	0	0	453	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.18	0.46	0.42	0.13	0.84	0.37	0.63

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
102: Brant St & Grahams Ln/Prospect St

Total - Full Build Out
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	21	46	126	12	190	16	1224	76	123	1167	64
Future Volume (vph)	131	21	46	126	12	190	16	1224	76	123	1167	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1671		1770	1600		1770	3508		1770	3511	
Flt Permitted	0.44	1.00		0.71	1.00		0.12	1.00		0.10	1.00	
Satd. Flow (perm)	826	1671		1322	1600		225	3508		192	3511	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	142	23	50	137	13	207	17	1330	83	134	1268	70
RTOR Reduction (vph)	0	39	0	0	162	0	0	5	0	0	4	0
Lane Group Flow (vph)	142	34	0	137	58	0	17	1408	0	134	1334	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	15.3	15.3		15.3	15.3		44.9	44.9		52.3	44.9	
Effective Green, g (s)	18.3	18.3		18.3	18.3		47.9	47.9		58.3	47.9	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.57	0.57		0.69	0.57	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	178	361		285	346		127	1986		326	1987	
v/s Ratio Prot		0.02			0.04			c0.40		c0.05	0.38	
v/s Ratio Perm	c0.17			0.10			0.08			0.23		
v/c Ratio	0.80	0.09		0.48	0.17		0.13	0.71		0.41	0.67	
Uniform Delay, d1	31.4	26.5		29.0	27.0		8.6	13.3		9.0	12.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	21.5	0.1		1.3	0.2		0.5	1.2		0.8	0.9	
Delay (s)	52.9	26.6		30.3	27.2		9.1	14.5		9.8	13.7	
Level of Service	D	C		C	C		A	B		A	B	
Approach Delay (s)		44.0			28.4			14.4			13.4	
Approach LOS		D			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	84.6	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	76.0%	ICU Level of Service	D	
Analysis Period (min)	15			

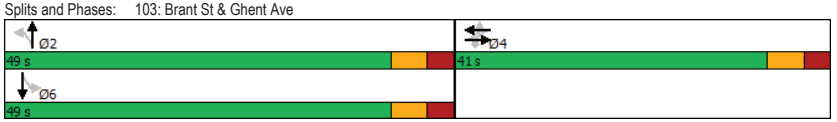
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	206	35	33	49	68	98	29	1016	47	98	959	252
Future Volume (vph)	206	35	33	49	68	98	29	1016	47	98	959	252
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.938			0.993			0.969	
Flt Protected		0.959			0.989		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1728	0	1770	3514	0	1770	3429	0
Flt Permitted		0.573			0.877		0.114			0.160		
Satd. Flow (perm)	0	1067	1583	0	1532	0	212	3514	0	298	3429	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		57			7			52	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		104.6			64.6			75.4			150.5	
Travel Time (s)		7.5			4.7			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	224	38	36	53	74	107	32	1104	51	107	1042	274
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	262	36	0	234	0	32	1155	0	107	1316	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		26.4	26.4		26.4		38.6	38.6		38.6	38.6	
Actuated g/C Ratio		0.36	0.36		0.36		0.53	0.53		0.53	0.53	
v/c Ratio		0.69	0.06		0.40		0.29	0.62		0.69	0.72	
Control Delay		31.7	4.0		16.2		20.6	14.8		42.4	16.3	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.3	
Total Delay		31.7	4.0		16.2		20.6	14.8		42.4	16.6	
LOS		C	A		B		C	B		D	B	
Approach Delay		28.3			16.2			15.0			18.5	
Approach LOS		C			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 73.5			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 18.0		Intersection LOS: B	
Intersection Capacity Utilization 80.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	262	36	234	32	1155	107	1316
v/c Ratio	0.69	0.06	0.40	0.29	0.62	0.69	0.72
Control Delay	31.7	4.0	16.2	20.6	14.8	42.4	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay	31.7	4.0	16.2	20.6	14.8	42.4	16.6
Queue Length 50th (m)	36.3	0.0	20.9	2.5	58.9	11.0	70.2
Queue Length 95th (m)	63.4	4.3	39.4	11.6	100.4	#45.7	120.3
Internal Link Dist (m)	80.6		40.6		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	572	871	848	138	2294	194	2255
Starvation Cap Reductn	0	0	0	0	0	0	327
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.04	0.28	0.23	0.50	0.55	0.68

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	206	35	33	49	68	98	29	1016	47	98	959	252
Future Volume (vph)	206	35	33	49	68	98	29	1016	47	98	959	252
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.94		1.00	0.99		1.00	0.97	
Flt Protected		0.96	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1786	1583		1728		1770	3516		1770	3429	
Flt Permitted		0.57	1.00		0.88		0.11	1.00		0.16	1.00	
Satd. Flow (perm)		1067	1583		1533		213	3516		297	3429	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	224	38	36	53	74	107	32	1104	51	107	1042	274
RTOR Reduction (vph)	0	0	23	0	36	0	0	3	0	0	24	0
Lane Group Flow (vph)	0	262	13	0	198	0	32	1152	0	107	1292	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		23.2	23.2		23.2		35.4	35.4		35.4	35.4	
Effective Green, g (s)		26.2	26.2		26.2		38.4	38.4		38.4	38.4	
Actuated g/C Ratio		0.36	0.36		0.36		0.53	0.53		0.53	0.53	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		385	571		553		112	1859		157	1813	
v/s Ratio Prot								0.33			c0.38	
v/s Ratio Perm		c0.25	0.01		0.13		0.15			0.36		
v/c Ratio		0.68	0.02		0.36		0.29	0.62		0.68	0.71	
Uniform Delay, d1		19.7	15.0		17.0		9.5	12.0		12.6	12.9	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.9	0.0		0.4		1.4	0.6		11.5	1.3	
Delay (s)		24.5	15.0		17.4		10.9	12.6		24.1	14.3	
Level of Service		C	B		B		B	B		C	B	
Approach Delay (s)		23.4			17.4			12.6			15.0	
Approach LOS		C			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.70			
Actuated Cycle Length (s)	72.6	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	80.1%	ICU Level of Service	D	
Analysis Period (min)	15			

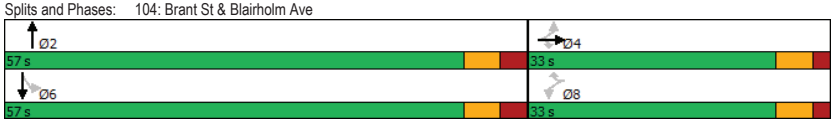
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	6	23	20	0	81	0	949	19	60	830	0
Future Volume (vph)	18	6	23	20	0	81	0	949	19	60	830	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.997				
Flt Protected		0.964		0.950						0.950		
Satd. Flow (prot)	0	1796	1583	1770	0	1583	0	3529	0	1770	1863	0
Flt Permitted		0.964		0.740						0.250		
Satd. Flow (perm)	0	1796	1583	1378	0	1583	0	3529	0	466	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			88		4				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		51.0			305.8			317.1			241.2	
Travel Time (s)		3.7			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	7	25	22	0	88	0	1032	21	65	902	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	27	25	22	0	88	0	1053	0	65	902	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		8.6	8.6	10.8		10.8		41.5		41.5	41.5	
Actuated g/C Ratio		0.16	0.16	0.20		0.20		0.75		0.75	0.75	
v/c Ratio		0.10	0.09	0.08		0.23		0.39		0.18	0.64	
Control Delay		24.8	4.8	23.1		8.3		4.0		4.7	7.6	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		24.8	4.8	23.1		8.3		4.0		4.7	7.6	
LOS		C	A	C		A		A		A	A	
Approach Delay		15.2			11.3			4.0			7.4	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 55			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 6.2		Intersection LOS: A	
Intersection Capacity Utilization 65.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	27	25	22	88	1053	65	902
v/c Ratio	0.10	0.09	0.08	0.23	0.39	0.18	0.64
Control Delay	24.8	4.8	23.1	8.3	4.0	4.7	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.8	4.8	23.1	8.3	4.0	4.7	7.6
Queue Length 50th (m)	2.4	0.0	1.8	0.0	21.0	2.0	46.6
Queue Length 95th (m)	10.0	3.5	8.5	11.3	31.0	6.0	83.6
Internal Link Dist (m)	27.0				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	935	847	770	924	3214	424	1697
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.03	0.10	0.33	0.15	0.53

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	6	23	20	0	81	0	949	19	60	830	0
Future Volume (vph)	18	6	23	20	0	81	0	949	19	60	830	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.96	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1796	1583	1770		1583		3529		1770	1863	
Flt Permitted		0.96	1.00	0.74		1.00		1.00		0.25	1.00	
Satd. Flow (perm)		1796	1583	1378		1583		3529		466	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	7	25	22	0	88	0	1032	21	65	902	0
RTOR Reduction (vph)	0	0	22	0	0	75	0	1	0	0	0	0
Lane Group Flow (vph)	0	27	3	22	0	13	0	1052	0	65	902	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		6.1	6.1	6.1		6.1		37.1		37.1	37.1	
Effective Green, g (s)		6.1	6.1	8.1		8.1		40.1		40.1	40.1	
Actuated g/C Ratio		0.11	0.11	0.14		0.14		0.71		0.71	0.71	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		194	171	198		228		2518		332	1329	
v/s Ratio Prot								0.30			c0.48	
v/s Ratio Perm		0.02	0.00	c0.02		0.01				0.14		
v/c Ratio		0.14	0.02	0.11		0.06		0.42		0.20	0.68	
Uniform Delay, d1		22.7	22.4	20.9		20.8		3.3		2.7	4.5	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.3	0.0	0.2		0.1		0.1		0.3	1.4	
Delay (s)		23.0	22.4	21.2		20.9		3.4		3.0	5.9	
Level of Service		C	C	C		C		A		A	A	
Approach Delay (s)		22.7			20.9			3.4			5.7	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	56.2	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	65.4%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	204	277	70	70	0
Future Volume (vph)	0	204	277	70	70	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.970			
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	3433	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1863	3433	0	1770	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		138.0	104.6		69.7	
Travel Time (s)		9.9	7.5		5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	222	301	76	76	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	222	377	0	76	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		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
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	204	277	70	70	0
Future Volume (Veh/h)	0	204	277	70	70	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	222	301	76	76	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			105			
pX, platoon unblocked						
vC, conflicting volume	377				561	188
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	377				561	188
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				83	100
cM capacity (veh/h)	1178				458	821

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	222	201	176	76
Volume Left	0	0	0	76
Volume Right	0	0	76	0
cSH	1178	1700	1700	458
Volume to Capacity	0.00	0.12	0.10	0.17
Queue Length 95th (m)	0.0	0.0	0.0	4.7
Control Delay (s)	0.0	0.0	0.0	14.4
Lane LOS				B
Approach Delay (s)	0.0	0.0		14.4
Approach LOS				B

Intersection Summary				
Average Delay		1.6		
Intersection Capacity Utilization		21.3%	ICU Level of Service	A
Analysis Period (min)		15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	46	100	145	5	5	47
Future Volume (vph)	46	100	145	5	5	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.996		0.877	
Flt Protected		0.985			0.996	
Satd. Flow (prot)	0	1835	1855	0	1627	0
Flt Permitted		0.985			0.996	
Satd. Flow (perm)	0	1835	1855	0	1627	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		38.5	230.4		53.7	
Travel Time (s)		2.8	16.6		3.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	50	109	158	5	5	51
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	159	163	0	56	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		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
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	46	100	145	5	5	47
Future Volume (Veh/h)	46	100	145	5	5	47
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	50	109	158	5	5	51
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		103				
pX, platoon unblocked						
vC, conflicting volume	163				370	160
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	163				370	160
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				99	94
cM capacity (veh/h)	1416				609	885

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	159	163	56
Volume Left	50	0	5
Volume Right	0	5	51
cSH	1416	1700	850
Volume to Capacity	0.04	0.10	0.07
Queue Length 95th (m)	0.9	0.0	1.7
Control Delay (s)	2.6	0.0	9.5
Lane LOS	A		A
Approach Delay (s)	2.6	0.0	9.5
Approach LOS			A

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	144	36	4	188	26	2
Future Volume (vph)	144	36	4	188	26	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.973				0.991	
Flt Protected				0.999	0.955	
Satd. Flow (prot)	1812	0	0	1861	1763	0
Flt Permitted				0.999	0.955	
Satd. Flow (perm)	1812	0	0	1861	1763	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	64.6			38.5	67.5	
Travel Time (s)	4.7			2.8	4.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	157	39	4	204	28	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	196	0	0	208	30	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	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
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	144	36	4	188	26	2
Future Volume (Veh/h)	144	36	4	188	26	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	157	39	4	204	28	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	65					
pX, platoon unblocked			0.98		0.98	0.98
vC, conflicting volume			196		388	176
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			175		371	155
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	100
cM capacity (veh/h)			1379		618	876

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	196	208	30
Volume Left	0	4	28
Volume Right	39	0	2
cSH	1700	1379	630
Volume to Capacity	0.12	0.00	0.05
Queue Length 95th (m)	0.0	0.1	1.2
Control Delay (s)	0.0	0.2	11.0
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	11.0
Approach LOS			B

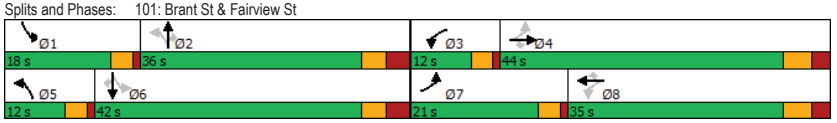
Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	339	850	283	171	806	258	269	665	181	254	679	178
Future Volume (vph)	339	850	283	171	806	258	269	665	181	254	679	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.126			0.181			0.233			0.133		
Satd. Flow (perm)	235	3539	1583	337	3539	1583	434	3539	1583	248	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			252			252			192			193
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	368	924	308	186	876	280	292	723	197	276	738	193
Shared Lane Traffic (%)												
Lane Group Flow (vph)	368	924	308	186	876	280	292	723	197	276	738	193
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	21.0	44.0	44.0	12.0	35.0	35.0	12.0	36.0	36.0	18.0	42.0	42.0
Total Split (%)	19.1%	40.0%	40.0%	10.9%	31.8%	31.8%	10.9%	32.7%	32.7%	16.4%	38.2%	38.2%
Maximum Green (s)	17.0	37.6	37.6	8.0	28.6	28.6	8.0	29.5	29.5	14.0	35.5	35.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	51.2	39.2	39.2	38.1	30.1	30.1	36.6	28.6	28.6	46.5	34.4	34.4
Actuated g/C Ratio	0.48	0.37	0.37	0.36	0.28	0.28	0.35	0.27	0.27	0.44	0.33	0.33
v/c Ratio	1.02	0.71	0.41	0.81	0.87	0.44	1.16	0.76	0.35	0.90	0.64	0.30
Control Delay	81.8	32.3	7.4	47.3	46.9	8.0	134.0	41.1	6.5	56.2	33.2	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.8	32.3	7.4	47.3	46.9	8.0	134.0	41.1	6.5	56.2	33.2	5.0
LOS	F	C	A	D	D	A	F	D	A	E	C	A
Approach Delay		38.9			38.8			57.8			34.0	
Approach LOS		D			D			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 105.7			
Natural Cycle: 105			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.16			
Intersection Signal Delay: 42.1		Intersection LOS: D	
Intersection Capacity Utilization 88.1%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Queues
101: Brant St & Fairview St

Total - Full Build Out
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	368	924	308	186	876	280	292	723	197	276	738	193
v/c Ratio	1.02	0.71	0.41	0.81	0.87	0.44	1.16	0.76	0.35	0.90	0.64	0.30
Control Delay	81.8	32.3	7.4	47.3	46.9	8.0	134.0	41.1	6.5	56.2	33.2	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.8	32.3	7.4	47.3	46.9	8.0	134.0	41.1	6.5	56.2	33.2	5.0
Queue Length 50th (m)	~70.5	91.1	8.0	23.3	97.2	4.5	~47.7	76.5	0.8	41.8	72.0	0.0
Queue Length 95th (m)	#133.8	117.7	29.3	#56.9	#134.3	26.0	#100.1	98.4	17.8	#92.0	92.4	15.5
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	361	1343	757	230	1041	643	251	1074	614	311	1276	694
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.02	0.69	0.41	0.81	0.84	0.44	1.16	0.67	0.32	0.89	0.58	0.28

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
101: Brant St & Fairview St

Total - Full Build Out
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	339	850	283	171	806	258	269	665	181	254	679	178
Future Volume (vph)	339	850	283	171	806	258	269	665	181	254	679	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.13	1.00	1.00	0.18	1.00	1.00	0.23	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	235	3539	1583	336	3539	1583	435	3539	1583	248	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	368	924	308	186	876	280	292	723	197	276	738	193
RTOR Reduction (vph)	0	0	159	0	0	180	0	0	140	0	0	130
Lane Group Flow (vph)	368	924	149	186	876	100	292	723	57	276	738	63
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	48.8	36.8	36.8	35.7	27.7	27.7	34.1	26.1	26.1	44.0	32.0	32.0
Effective Green, g (s)	48.8	39.2	39.2	35.7	30.1	30.1	34.1	28.6	28.6	44.0	34.5	34.5
Actuated g/C Ratio	0.46	0.37	0.37	0.34	0.28	0.28	0.32	0.27	0.27	0.42	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	356	1312	587	222	1007	450	241	957	428	303	1155	516
v/s Ratio Prot	c0.17	0.26		0.06	0.25		c0.09	0.20		c0.12	0.21	
v/s Ratio Perm	c0.31		0.09	0.22		0.06	c0.30		0.04	0.26		0.04
v/c Ratio	1.03	0.70	0.25	0.84	0.87	0.22	1.21	0.76	0.13	0.91	0.64	0.12
Uniform Delay, d1	30.8	28.3	23.1	27.1	35.9	28.9	32.5	35.3	29.2	26.6	30.3	25.0
Progression 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
Incremental Delay, d2	56.7	1.7	0.2	23.2	8.1	0.3	127.2	3.4	0.1	29.8	1.2	0.1
Delay (s)	87.4	30.1	23.3	50.3	44.1	29.1	159.7	38.8	29.3	56.4	31.5	25.1
Level of Service	F	C	C	D	D	C	F	D	C	E	C	C
Approach Delay (s)		42.0			41.8			66.4			36.1	
Approach LOS		D			D			E			D	

Intersection Summary				
HCM 2000 Control Delay	46.1	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	1.05			
Actuated Cycle Length (s)	105.7	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	88.1%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	8	16	76	13	123	14	994	50	109	1008	40
Future Volume (vph)	63	8	16	76	13	123	14	994	50	109	1008	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.902			0.864			0.993			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1680	0	1770	1609	0	1770	3514	0	1770	3518	0
Flt Permitted	0.605			0.740			0.183			0.185		
Satd. Flow (perm)	1127	1680	0	1378	1609	0	341	3514	0	345	3518	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17			134			9			7	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	68	9	17	83	14	134	15	1080	54	118	1096	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	26	0	83	148	0	15	1134	0	118	1139	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	13.8	13.8		13.8	13.8		41.6	41.6		53.6	41.6	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.58	0.58		0.75	0.58	
v/c Ratio	0.31	0.08		0.31	0.35		0.08	0.55		0.26	0.56	
Control Delay	32.0	17.1		31.1	9.8		9.3	11.1		4.0	11.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.1		0.0	0.0	
Total Delay	32.0	17.1		31.1	9.8		9.3	11.2		4.0	11.2	
LOS	C	B		C	A		A	B		A	B	
Approach Delay		27.9			17.5			11.2			10.5	
Approach LOS		C			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 71.5			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 12.0		Intersection LOS: B	
Intersection Capacity Utilization 64.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Queues
102: Brant St & Grahams Ln/Prospect St

Total - Full Build Out
SAT Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	68	26	83	148	15	1134	118	1139
v/c Ratio	0.31	0.08	0.31	0.35	0.08	0.55	0.26	0.56
Control Delay	32.0	17.1	31.1	9.8	9.3	11.1	4.0	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	32.0	17.1	31.1	9.8	9.3	11.2	4.0	11.2
Queue Length 50th (m)	8.2	1.0	10.0	1.6	0.9	47.7	3.1	48.1
Queue Length 95th (m)	22.8	8.0	25.9	17.6	4.3	81.4	8.9	82.0
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	308	472	377	537	250	2585	505	2587
Starvation Cap Reductn	0	0	0	0	0	351	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.06	0.22	0.28	0.06	0.51	0.23	0.44

Intersection Summary

HCM Signalized Intersection Capacity Analysis
102: Brant St & Grahams Ln/Prospect St

Total - Full Build Out
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	8	16	76	13	123	14	994	50	109	1008	40
Future Volume (vph)	63	8	16	76	13	123	14	994	50	109	1008	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1680		1770	1610		1770	3514		1770	3519	
Flt Permitted	0.60	1.00		0.74	1.00		0.18	1.00		0.18	1.00	
Satd. Flow (perm)	1126	1680		1379	1610		341	3514		344	3519	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	68	9	17	83	14	134	15	1080	54	118	1096	43
RTOR Reduction (vph)	0	14	0	0	108	0	0	4	0	0	3	0
Lane Group Flow (vph)	68	12	0	83	40	0	15	1130	0	118	1136	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	10.7	10.7		10.7	10.7		38.6	38.6		44.1	38.6	
Effective Green, g (s)	13.7	13.7		13.7	13.7		41.6	41.6		50.1	41.6	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.58	0.58		0.70	0.58	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	214	320		263	307		197	2035		408	2038	
v/s Ratio Prot		0.01			0.02			0.32		c0.03	c0.32	
v/s Ratio Perm	c0.06			0.06			0.04			0.17		
v/c Ratio	0.32	0.04		0.32	0.13		0.08	0.56		0.29	0.56	
Uniform Delay, d1	25.0	23.7		25.0	24.1		6.6	9.4		4.6	9.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	0.0		0.7	0.2		0.2	0.3		0.4	0.3	
Delay (s)	25.9	23.7		25.7	24.3		6.8	9.7		5.0	9.7	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		25.3			24.8			9.7			9.3	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.46			
Actuated Cycle Length (s)	71.8	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	64.1%	ICU Level of Service	C	
Analysis Period (min)	15			

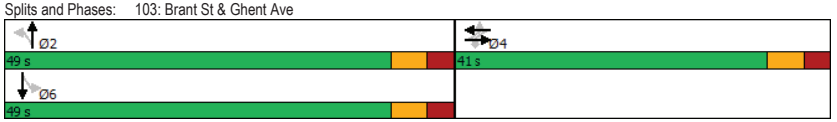
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	22	21	38	20	85	28	832	36	90	864	139
Future Volume (vph)	131	22	21	38	20	85	28	832	36	90	864	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.920			0.994			0.979	
Flt Protected		0.959			0.987		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1691	0	1770	3518	0	1770	3465	0
Flt Permitted		0.691			0.883		0.194			0.247		
Satd. Flow (perm)	0	1287	1583	0	1513	0	361	3518	0	460	3465	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		92			7			29	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.6			63.8			75.4			150.5	
Travel Time (s)		7.2			4.6			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	142	24	23	41	22	92	30	904	39	98	939	151
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	166	23	0	155	0	30	943	0	98	1090	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		16.5	16.5		16.5		28.4	28.4		28.4	28.4	
Actuated g/C Ratio		0.31	0.31		0.31		0.53	0.53		0.53	0.53	
v/c Ratio		0.42	0.04		0.29		0.16	0.50		0.40	0.59	
Control Delay		19.9	2.5		9.4		9.5	9.2		14.2	10.0	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		19.9	2.5		9.4		9.5	9.2		14.2	10.0	
LOS		B	A		A		A	A		B	A	
Approach Delay		17.8			9.4			9.2			10.3	
Approach LOS		B			A			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 53.3			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 10.4		Intersection LOS: B	
Intersection Capacity Utilization 60.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	166	23	155	30	943	98	1090
v/c Ratio	0.42	0.04	0.29	0.16	0.50	0.40	0.59
Control Delay	19.9	2.5	9.4	9.5	9.2	14.2	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	2.5	9.4	9.5	9.2	14.2	10.0
Queue Length 50th (m)	11.6	0.0	4.0	1.3	26.4	4.9	31.7
Queue Length 95th (m)	36.6	2.2	20.1	6.4	53.4	18.9	64.1
Internal Link Dist (m)	75.6		39.8		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	939	1168	1129	316	3083	403	3040
Starvation Cap Reductn	0	0	0	0	0	0	115
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.02	0.14	0.09	0.31	0.24	0.37

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	22	21	38	20	85	28	832	36	90	864	139
Future Volume (vph)	131	22	21	38	20	85	28	832	36	90	864	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.92		1.00	0.99		1.00	0.98	
Flt Protected		0.96	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1786	1583		1691		1770	3517		1770	3466	
Flt Permitted		0.69	1.00		0.88		0.19	1.00		0.25	1.00	
Satd. Flow (perm)		1287	1583		1513		361	3517		460	3466	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	142	24	23	41	22	92	30	904	39	98	939	151
RTOR Reduction (vph)	0	0	16	0	63	0	0	3	0	0	13	0
Lane Group Flow (vph)	0	166	7	0	92	0	30	940	0	98	1077	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		13.3	13.3		13.3		25.2	25.2		25.2	25.2	
Effective Green, g (s)		16.3	16.3		16.3		28.2	28.2		28.2	28.2	
Actuated g/C Ratio		0.31	0.31		0.31		0.54	0.54		0.54	0.54	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		399	491		469		193	1889		247	1861	
v/s Ratio Prot								0.27			c0.31	
v/s Ratio Perm		c0.13	0.00		0.06		0.08			0.21		
v/c Ratio		0.42	0.01		0.20		0.16	0.50		0.40	0.58	
Uniform Delay, d1		14.3	12.5		13.3		6.1	7.7		7.1	8.2	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.7	0.0		0.2		0.4	0.2		1.1	0.4	
Delay (s)		15.0	12.5		13.5		6.5	7.9		8.2	8.6	
Level of Service		B	B		B		A	A		A	A	
Approach Delay (s)		14.7			13.5			7.8			8.6	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	9.1	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	52.5	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	60.1%	ICU Level of Service	B	
Analysis Period (min)	15			

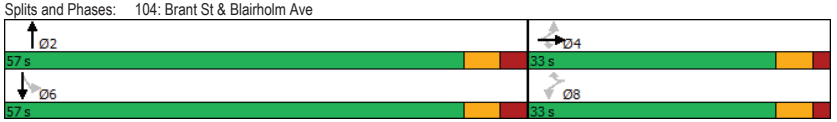
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	0	6	11	0	47	0	829	9	38	848	0
Future Volume (vph)	16	0	6	11	0	47	0	829	9	38	848	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.998				
Flt Protected		0.950		0.950						0.950		
Satd. Flow (prot)	0	1770	1583	1770	0	1583	0	3532	0	1770	1863	0
Flt Permitted		0.950		0.746						0.305		
Satd. Flow (perm)	0	1770	1583	1390	0	1583	0	3532	0	568	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			51		2				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		55.3			305.8			317.1			241.2	
Travel Time (s)		4.0			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	0	7	12	0	51	0	901	10	41	922	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	17	7	12	0	51	0	911	0	41	922	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		8.7	8.7	10.8		10.8		45.5		45.5	45.5	
Actuated g/C Ratio		0.16	0.16	0.20		0.20		0.84		0.84	0.84	
v/c Ratio		0.06	0.02	0.04		0.14		0.31		0.09	0.59	
Control Delay		26.7	0.2	24.8		9.9		2.7		3.1	5.8	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		26.7	0.2	24.8		9.9		2.7		3.1	5.8	
LOS		C	A	C		A		A		A	A	
Approach Delay		19.0			12.7			2.7			5.7	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 54.4			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 4.7		Intersection LOS: A	
Intersection Capacity Utilization 66.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	17	7	12	51	911	41	922
v/c Ratio	0.06	0.02	0.04	0.14	0.31	0.09	0.59
Control Delay	26.7	0.2	24.8	9.9	2.7	3.1	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.7	0.2	24.8	9.9	2.7	3.1	5.8
Queue Length 50th (m)	2.0	0.0	1.4	0.0	17.2	1.2	48.9
Queue Length 95th (m)	7.4	0.0	5.9	8.7	23.6	3.4	81.2
Internal Link Dist (m)	31.3				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	951	873	802	936	3118	501	1644
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.01	0.05	0.29	0.08	0.56

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	0	6	11	0	47	0	829	9	38	848	0
Future Volume (vph)	16	0	6	11	0	47	0	829	9	38	848	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.95	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1770	1583	1770		1583		3533		1770	1863	
Flt Permitted		0.95	1.00	0.75		1.00		1.00		0.31	1.00	
Satd. Flow (perm)		1770	1583	1390		1583		3533		568	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	0	7	12	0	51	0	901	10	41	922	0
RTOR Reduction (vph)	0	0	7	0	0	46	0	0	0	0	0	0
Lane Group Flow (vph)	0	17	0	12	0	5	0	911	0	41	922	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		4.0	4.0	4.0		4.0		39.9		39.9	39.9	
Effective Green, g (s)		4.0	4.0	6.0		6.0		42.9		42.9	42.9	
Actuated g/C Ratio		0.07	0.07	0.11		0.11		0.75		0.75	0.75	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		124	111	146		166		2663		428	1404	
v/s Ratio Prot								0.26			c0.49	
v/s Ratio Perm		0.01	0.00	0.01		0.00				0.07		
v/c Ratio		0.14	0.00	0.08		0.03		0.34		0.10	0.66	
Uniform Delay, d1		24.8	24.6	23.0		22.8		2.3		1.9	3.4	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.5	0.0	0.2		0.1		0.1		0.1	1.1	
Delay (s)		25.3	24.6	23.2		22.9		2.4		2.0	4.5	
Level of Service		C	C	C		C		A		A	A	
Approach Delay (s)		25.1			23.0			2.4			4.4	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	4.3	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	56.9	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	66.3%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	122	139	47	51	0
Future Volume (vph)	0	122	139	47	51	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.962			
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	3405	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1863	3405	0	1770	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		142.9	99.6		79.1	
Travel Time (s)		10.3	7.2		5.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	133	151	51	55	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	133	202	0	55	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		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
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	16.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	122	139	47	51	0
Future Volume (Veh/h)	0	122	139	47	51	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	133	151	51	55	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			100			
pX, platoon unblocked						
vC, conflicting volume	202				310	101
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	202				310	101
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	100
cM capacity (veh/h)	1367				658	935

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	133	101	101	55
Volume Left	0	0	0	55
Volume Right	0	0	51	0
cSH	1367	1700	1700	658
Volume to Capacity	0.00	0.06	0.06	0.08
Queue Length 95th (m)	0.0	0.0	0.0	2.2
Control Delay (s)	0.0	0.0	0.0	11.0
Lane LOS				B
Approach Delay (s)	0.0	0.0		11.0
Approach LOS				B

Intersection Summary				
Average Delay		1.5		
Intersection Capacity Utilization		16.4%	ICU Level of Service	A
Analysis Period (min)		15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	33	88	83	3	4	35
Future Volume (vph)	33	88	83	3	4	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.996		0.878	
Flt Protected		0.987			0.995	
Satd. Flow (prot)	0	1839	1855	0	1627	0
Flt Permitted		0.987			0.995	
Satd. Flow (perm)	0	1839	1855	0	1627	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		36.1	233.6		59.5	
Travel Time (s)		2.6	16.8		4.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	36	96	90	3	4	38
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	132	93	0	42	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		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
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	88	83	3	4	35
Future Volume (Veh/h)	33	88	83	3	4	35
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	36	96	90	3	4	38
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		100				
pX, platoon unblocked						
vC, conflicting volume	93				260	92
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	93				260	92
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				99	96
cM capacity (veh/h)	1501				712	966

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	132	93	42
Volume Left	36	0	4
Volume Right	0	3	38
cSH	1501	1700	934
Volume to Capacity	0.02	0.05	0.04
Queue Length 95th (m)	0.6	0.0	1.1
Control Delay (s)	2.2	0.0	9.0
Lane LOS	A		A
Approach Delay (s)	2.2	0.0	9.0
Approach LOS			A

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	117	31	3	115	33	4
Future Volume (vph)	117	31	3	115	33	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.971				0.986	
Flt Protected				0.999	0.957	
Satd. Flow (prot)	1809	0	0	1861	1758	0
Flt Permitted				0.999	0.957	
Satd. Flow (perm)	1809	0	0	1861	1758	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	63.8			36.1	76.5	
Travel Time (s)	4.6			2.6	5.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	127	34	3	125	36	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	161	0	0	128	40	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	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
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	18.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	117	31	3	115	33	4
Future Volume (Veh/h)	117	31	3	115	33	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	127	34	3	125	36	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	64					
pX, platoon unblocked						
vC, conflicting volume			161		275	144
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			161		275	144
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	100
cM capacity (veh/h)			1418		713	903

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	161	128	40
Volume Left	0	3	36
Volume Right	34	0	4
cSH	1700	1418	728
Volume to Capacity	0.09	0.00	0.05
Queue Length 95th (m)	0.0	0.1	1.4
Control Delay (s)	0.0	0.2	10.2
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	10.2
Approach LOS			B

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	18.5%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix I4

Total – Five Year Horizon Operations

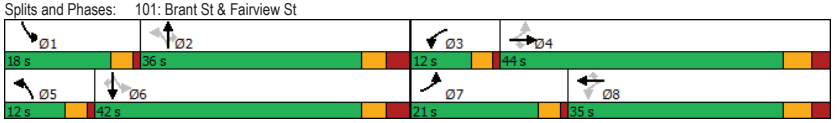


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	378	1238	316	153	390	171	235	758	325	257	828	169
Future Volume (vph)	378	1238	316	153	390	171	235	758	325	257	828	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.335			0.139			0.141			0.124		
Satd. Flow (perm)	624	3539	1583	259	3539	1583	263	3539	1583	231	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			232			193			192			184
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	411	1346	343	166	424	186	255	824	353	279	900	184
Shared Lane Traffic (%)												
Lane Group Flow (vph)	411	1346	343	166	424	186	255	824	353	279	900	184
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	21.0	44.0	44.0	12.0	35.0	35.0	12.0	36.0	36.0	18.0	42.0	42.0
Total Split (%)	19.1%	40.0%	40.0%	10.9%	31.8%	31.8%	10.9%	32.7%	32.7%	16.4%	38.2%	38.2%
Maximum Green (s)	17.0	37.6	37.6	8.0	28.6	28.6	8.0	29.5	29.5	14.0	35.5	35.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	52.0	40.0	40.0	39.1	31.1	31.1	38.8	30.8	30.8	48.9	36.8	36.8
Actuated g/C Ratio	0.48	0.37	0.37	0.36	0.29	0.29	0.36	0.28	0.28	0.45	0.34	0.34
v/c Ratio	0.86	1.04	0.47	0.82	0.42	0.32	1.25	0.82	0.60	0.93	0.75	0.28
Control Delay	40.3	69.2	10.9	52.5	33.4	5.5	170.0	44.3	19.5	63.4	36.6	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.3	69.2	10.9	52.5	33.4	5.5	170.0	44.3	19.5	63.4	36.6	4.9
LOS	D	E	B	D	C	A	F	D	B	E	D	A
Approach Delay		54.0			30.8			60.6			37.8	
Approach LOS		D			C			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 108.9			
Natural Cycle: 105			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.25			
Intersection Signal Delay: 48.6		Intersection LOS: D	
Intersection Capacity Utilization 91.9%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	411	1346	343	166	424	186	255	824	353	279	900	184
v/c Ratio	0.86	1.04	0.47	0.82	0.42	0.32	1.25	0.82	0.60	0.93	0.75	0.28
Control Delay	40.3	69.2	10.9	52.5	33.4	5.5	170.0	44.3	19.5	63.4	36.6	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.3	69.2	10.9	52.5	33.4	5.5	170.0	44.3	19.5	63.4	36.6	4.9
Queue Length 50th (m)	62.0	~174.2	17.0	21.2	41.1	0.0	~52.6	90.4	29.9	44.3	93.2	0.0
Queue Length 95th (m)	#112.4	#217.9	42.5	#55.5	56.3	15.5	#106.4	114.9	61.6	#96.2	117.5	15.2
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	477	1300	728	203	1009	589	204	1040	601	301	1235	672
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	1.04	0.47	0.82	0.42	0.32	1.25	0.79	0.59	0.93	0.73	0.27

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	378	1238	316	153	390	171	235	758	325	257	828	169
Future Volume (vph)	378	1238	316	153	390	171	235	758	325	257	828	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.33	1.00	1.00	0.14	1.00	1.00	0.14	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)	623	3539	1583	260	3539	1583	263	3539	1583	231	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	411	1346	343	166	424	186	255	824	353	279	900	184
RTOR Reduction (vph)	0	0	147	0	0	133	0	0	138	0	0	122
Lane Group Flow (vph)	411	1346	196	166	424	53	255	824	215	279	900	62
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	49.7	37.7	37.7	36.7	28.7	28.7	36.3	28.3	28.3	46.3	34.3	34.3
Effective Green, g (s)	49.7	40.1	40.1	36.7	31.1	31.1	36.3	30.8	30.8	46.3	36.8	36.8
Actuated g/C Ratio	0.46	0.37	0.37	0.34	0.29	0.29	0.33	0.28	0.28	0.43	0.34	0.34
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	463	1303	582	198	1010	452	198	1000	447	296	1195	534
v/s Ratio Prot	c0.14	c0.38		0.06	0.12		c0.09	0.23		c0.12	0.25	
v/s Ratio Perm	0.27		0.12	0.22		0.03	c0.33		0.14	0.28		0.04
v/c Ratio	0.89	1.03	0.34	0.84	0.42	0.12	1.29	0.82	0.48	0.94	0.75	0.12
Uniform Delay, d1	22.5	34.4	24.8	29.5	31.6	28.8	31.1	36.5	32.4	29.1	32.0	24.8
Progression 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
Incremental Delay, d2	18.2	33.8	0.3	25.4	0.3	0.1	162.1	5.6	0.8	37.1	2.7	0.1
Delay (s)	40.8	68.2	25.2	54.9	31.9	28.9	193.1	42.1	33.2	66.1	34.8	24.9
Level of Service	D	E	C	D	C	C	F	D	C	E	C	C
Approach Delay (s)		55.8			36.1			66.8			39.9	
Approach LOS		E			D			E			D	

Intersection Summary				
HCM 2000 Control Delay	52.1	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	1.09			
Actuated Cycle Length (s)	108.9	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	91.9%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	11	18	73	9	91	29	1009	61	100	1101	97
Future Volume (vph)	37	11	18	73	9	91	29	1009	61	100	1101	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.906			0.864			0.991			0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1688	0	1770	1609	0	1770	3507	0	1770	3497	0
Flt Permitted	0.687			0.736			0.154			0.191		
Satd. Flow (perm)	1280	1688	0	1371	1609	0	287	3507	0	356	3497	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20			99			11			17	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	12	20	79	10	99	32	1097	66	109	1197	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	32	0	79	109	0	32	1163	0	109	1302	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	14.1	14.1		14.1	14.1		47.8	47.8		57.9	47.8	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.67	0.67		0.82	0.67	
v/c Ratio	0.16	0.09		0.29	0.27		0.17	0.49		0.22	0.55	
Control Delay	30.4	17.5		32.5	10.4		10.7	9.7		3.5	10.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.2		0.0	0.0	
Total Delay	30.4	17.5		32.5	10.4		10.7	9.8		3.5	10.4	
LOS	C	B		C	B		B	A		A	B	
Approach Delay		24.6			19.6			9.9			9.9	
Approach LOS		C			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 71			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 10.9		Intersection LOS: B	
Intersection Capacity Utilization 60.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Queues
102: Brant St & Grahams Ln/Prospect St

Total - Five Year Horizon
AM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	40	32	79	109	32	1163	109	1302
v/c Ratio	0.16	0.09	0.29	0.27	0.17	0.49	0.22	0.55
Control Delay	30.4	17.5	32.5	10.4	10.7	9.7	3.5	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	30.4	17.5	32.5	10.4	10.7	9.8	3.5	10.4
Queue Length 50th (m)	5.4	1.6	10.9	1.3	2.0	49.4	2.8	58.8
Queue Length 95th (m)	14.8	9.3	25.1	14.9	8.0	80.5	7.8	95.3
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	372	505	399	538	207	2542	550	2537
Starvation Cap Reductn	0	0	0	0	0	482	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.06	0.20	0.20	0.15	0.56	0.20	0.51

Intersection Summary

HCM Signalized Intersection Capacity Analysis
102: Brant St & Grahams Ln/Prospect St

Total - Five Year Horizon
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	11	18	73	9	91	29	1009	61	100	1101	97
Future Volume (vph)	37	11	18	73	9	91	29	1009	61	100	1101	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1688		1770	1609		1770	3509		1770	3496	
Flt Permitted	0.69	1.00		0.74	1.00		0.15	1.00		0.19	1.00	
Satd. Flow (perm)	1279	1688		1372	1609		287	3509		356	3496	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	12	20	79	10	99	32	1097	66	109	1197	105
RTOR Reduction (vph)	0	17	0	0	84	0	0	4	0	0	6	0
Lane Group Flow (vph)	40	15	0	79	25	0	32	1159	0	109	1296	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	8.0	8.0		8.0	8.0		43.1	43.1		48.1	43.1	
Effective Green, g (s)	11.0	11.0		11.0	11.0		46.1	46.1		54.1	46.1	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.63	0.63		0.74	0.63	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	192	254		206	242		180	2212		418	2204	
v/s Ratio Prot		0.01			0.02			0.33		c0.03	c0.37	
v/s Ratio Perm	0.03			c0.06			0.11			0.16		
v/c Ratio	0.21	0.06		0.38	0.10		0.18	0.52		0.26	0.59	
Uniform Delay, d1	27.2	26.6		28.0	26.8		5.6	7.4		3.5	7.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.1		1.2	0.2		0.5	0.2		0.3	0.4	
Delay (s)	27.8	26.7		29.2	27.0		6.1	7.7		3.8	8.3	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		27.3			27.9			7.6			8.0	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.50			
Actuated Cycle Length (s)	73.1	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	60.9%	ICU Level of Service	B	
Analysis Period (min)	15			

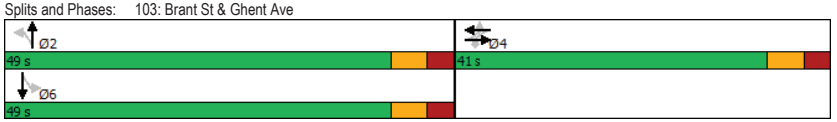
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	37	38	42	18	89	24	797	44	74	950	175
Future Volume (vph)	209	37	38	42	18	89	24	797	44	74	950	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.920			0.992			0.977	
Flt Protected		0.959			0.986		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1690	0	1770	3511	0	1770	3458	0
Flt Permitted		0.665			0.857		0.133			0.240		
Satd. Flow (perm)	0	1239	1583	0	1469	0	248	3511	0	447	3458	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		97			9			33	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		97.4			62.4			75.4			150.5	
Travel Time (s)		7.0			4.5			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	227	40	41	46	20	97	26	866	48	80	1033	190
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	267	41	0	163	0	26	914	0	80	1223	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		23.9	23.9		23.9		32.8	32.8		32.8	32.8	
Actuated g/C Ratio		0.37	0.37		0.37		0.50	0.50		0.50	0.50	
v/c Ratio		0.59	0.07		0.27		0.21	0.52		0.36	0.70	
Control Delay		24.0	4.7		8.7		16.3	12.8		17.4	15.4	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		24.0	4.7		8.7		16.3	12.8		17.4	15.4	
LOS		C	A		A		B	B		B	B	
Approach Delay		21.4			8.7			12.9			15.6	
Approach LOS		C			A			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 65.3			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 14.9		Intersection LOS: B	
Intersection Capacity Utilization 68.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	267	41	163	26	914	80	1223
v/c Ratio	0.59	0.07	0.27	0.21	0.52	0.36	0.70
Control Delay	24.0	4.7	8.7	16.3	12.8	17.4	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.0	4.7	8.7	16.3	12.8	17.4	15.4
Queue Length 50th (m)	25.9	0.0	5.2	1.6	36.2	5.5	54.2
Queue Length 95th (m)	60.2	5.3	20.0	8.6	73.0	20.8	108.1
Internal Link Dist (m)	73.4		38.4		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	750	977	927	180	2551	324	2519
Starvation Cap Reductn	0	0	0	0	0	0	121
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.04	0.18	0.14	0.36	0.25	0.51

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	37	38	42	18	89	24	797	44	74	950	175
Future Volume (vph)	209	37	38	42	18	89	24	797	44	74	950	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.92		1.00	0.99		1.00	0.98	
Flt Protected		0.96	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1787	1583		1689		1770	3511		1770	3457	
Flt Permitted		0.67	1.00		0.86		0.13	1.00		0.24	1.00	
Satd. Flow (perm)		1239	1583		1468		248	3511		447	3457	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	227	40	41	46	20	97	26	866	48	80	1033	190
RTOR Reduction (vph)	0	0	26	0	61	0	0	4	0	0	16	0
Lane Group Flow (vph)	0	267	15	0	102	0	26	910	0	80	1207	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		20.7	20.7		20.7		29.6	29.6		29.6	29.6	
Effective Green, g (s)		23.7	23.7		23.7		32.6	32.6		32.6	32.6	
Actuated g/C Ratio		0.37	0.37		0.37		0.51	0.51		0.51	0.51	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		456	583		541		125	1780		226	1752	
v/s Ratio Prot								0.26			c0.35	
v/s Ratio Perm		c0.22	0.01		0.07		0.10			0.18		
v/c Ratio		0.59	0.03		0.19		0.21	0.51		0.35	0.69	
Uniform Delay, d1		16.3	12.9		13.8		8.7	10.5		9.5	12.0	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.9	0.0		0.2		0.8	0.2		1.0	1.1	
Delay (s)		18.3	13.0		13.9		9.6	10.8		10.5	13.2	
Level of Service		B	B		B		A	B		B	B	
Approach Delay (s)		17.6			13.9			10.8			13.0	
Approach LOS		B			B			B			B	

Intersection Summary					
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.64				
Actuated Cycle Length (s)	64.3	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	68.7%	ICU Level of Service		C	
Analysis Period (min)	15				

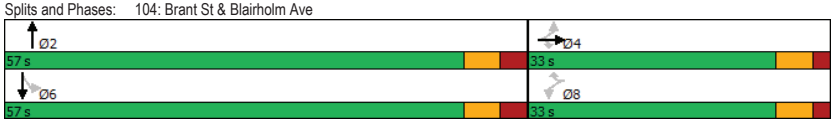
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	5	8	44	0	123	0	713	18	51	877	0
Future Volume (vph)	18	5	8	44	0	123	0	713	18	51	877	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.996				
Flt Protected		0.962		0.950						0.950		
Satd. Flow (prot)	0	1792	1583	1770	0	1583	0	3525	0	1770	1863	0
Flt Permitted		0.962		0.741						0.337		
Satd. Flow (perm)	0	1792	1583	1380	0	1583	0	3525	0	628	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			134		5				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		34.6			305.8			317.1			241.2	
Travel Time (s)		2.5			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	5	9	48	0	134	0	775	20	55	953	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	25	9	48	0	134	0	795	0	55	953	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		8.8	8.8	10.8		10.8		42.6		42.6	42.6	
Actuated g/C Ratio		0.14	0.14	0.18		0.18		0.69		0.69	0.69	
v/c Ratio		0.10	0.03	0.20		0.35		0.33		0.13	0.74	
Control Delay		26.2	0.2	25.9		8.3		4.1		4.0	10.3	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		26.2	0.2	25.9		8.3		4.1		4.0	10.3	
LOS		C	A	C		A		A		A	B	
Approach Delay		19.3			13.0			4.1			9.9	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 61.5			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 8.1		Intersection LOS: A	
Intersection Capacity Utilization 67.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	25	9	48	134	795	55	953
v/c Ratio	0.10	0.03	0.20	0.35	0.33	0.13	0.74
Control Delay	26.2	0.2	25.9	8.3	4.1	4.0	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.2	0.2	25.9	8.3	4.1	4.0	10.3
Queue Length 50th (m)	2.3	0.0	4.4	0.0	14.3	1.6	52.2
Queue Length 95th (m)	9.8	0.0	15.3	13.9	24.2	5.2	105.3
Internal Link Dist (m)	10.6				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	797	730	659	826	3077	548	1626
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.01	0.07	0.16	0.26	0.10	0.59

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	5	8	44	0	123	0	713	18	51	877	0
Future Volume (vph)	18	5	8	44	0	123	0	713	18	51	877	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.96	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1791	1583	1770		1583		3526		1770	1863	
Flt Permitted		0.96	1.00	0.74		1.00		1.00		0.34	1.00	
Satd. Flow (perm)		1791	1583	1380		1583		3526		628	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	5	9	48	0	134	0	775	20	55	953	0
RTOR Reduction (vph)	0	0	8	0	0	110	0	2	0	0	0	0
Lane Group Flow (vph)	0	25	1	48	0	24	0	793	0	55	953	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		8.8	8.8	8.8		8.8		39.5		39.5	39.5	
Effective Green, g (s)		8.8	8.8	10.8		10.8		42.5		42.5	42.5	
Actuated g/C Ratio		0.14	0.14	0.18		0.18		0.69		0.69	0.69	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		257	227	243		278		2444		435	1291	
v/s Ratio Prot								0.23			c0.51	
v/s Ratio Perm		0.01	0.00	c0.03		0.01				0.09		
v/c Ratio		0.10	0.01	0.20		0.08		0.32		0.13	0.74	
Uniform Delay, d1		22.8	22.5	21.6		21.1		3.7		3.2	5.9	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.2	0.0	0.4		0.1		0.1		0.1	2.2	
Delay (s)		23.0	22.5	22.0		21.2		3.8		3.3	8.2	
Level of Service		C	C	C		C		A		A	A	
Approach Delay (s)		22.8			21.4			3.8			7.9	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.65			
Actuated Cycle Length (s)	61.3	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	67.8%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	207	157	59	75	0
Future Volume (vph)	0	207	157	59	75	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.959			
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	3394	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1863	3394	0	1770	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		145.2	97.4		63.4	
Travel Time (s)		10.5	7.0		4.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	225	171	64	82	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	225	235	0	82	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		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
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	207	157	59	75	0
Future Volume (Veh/h)	0	207	157	59	75	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	225	171	64	82	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			98			
pX, platoon unblocked						
vC, conflicting volume	235				428	118
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	235				428	118
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				85	100
cM capacity (veh/h)	1329				555	912

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	225	114	121	82
Volume Left	0	0	0	82
Volume Right	0	0	64	0
cSH	1329	1700	1700	555
Volume to Capacity	0.00	0.07	0.07	0.15
Queue Length 95th (m)	0.0	0.0	0.0	4.1
Control Delay (s)	0.0	0.0	0.0	12.6
Lane LOS				B
Approach Delay (s)	0.0	0.0		12.6
Approach LOS				B

Intersection Summary				
Average Delay		1.9		
Intersection Capacity Utilization		21.7%	ICU Level of Service	A
Analysis Period (min)		15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	35	112	77	5	6	42
Future Volume (vph)	35	112	77	5	6	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.992		0.883	
Flt Protected		0.988			0.993	
Satd. Flow (prot)	0	1840	1848	0	1633	0
Flt Permitted		0.988			0.993	
Satd. Flow (perm)	0	1840	1848	0	1633	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		42.3	228.7		42.9	
Travel Time (s)		3.0	16.5		3.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	122	84	5	7	46
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	160	89	0	53	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		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
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	24.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	35	112	77	5	6	42
Future Volume (Veh/h)	35	112	77	5	6	42
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	122	84	5	7	46
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		105				
pX, platoon unblocked						
vC, conflicting volume	89				284	86
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	89				284	86
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				99	95
cM capacity (veh/h)	1506				688	972

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	160	89	53
Volume Left	38	0	7
Volume Right	0	5	46
cSH	1506	1700	922
Volume to Capacity	0.03	0.05	0.06
Queue Length 95th (m)	0.6	0.0	1.5
Control Delay (s)	1.9	0.0	9.1
Lane LOS	A		A
Approach Delay (s)	1.9	0.0	9.1
Approach LOS			A

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	24.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	143	11	2	117	32	4
Future Volume (vph)	143	11	2	117	32	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.990				0.986	
Flt Protected				0.999	0.957	
Satd. Flow (prot)	1844	0	0	1861	1758	0
Flt Permitted				0.999	0.957	
Satd. Flow (perm)	1844	0	0	1861	1758	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	62.4			42.3	65.1	
Travel Time (s)	4.5			3.0	4.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	155	12	2	127	35	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	167	0	0	129	39	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	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
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	18.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	143	11	2	117	32	4
Future Volume (Veh/h)	143	11	2	117	32	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	155	12	2	127	35	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	62					
pX, platoon unblocked			1.00		1.00	1.00
vC, conflicting volume			167		292	161
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			165		291	159
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	100
cM capacity (veh/h)			1411		698	885

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	167	129	39
Volume Left	0	2	35
Volume Right	12	0	4
cSH	1700	1411	714
Volume to Capacity	0.10	0.00	0.05
Queue Length 95th (m)	0.0	0.0	1.4
Control Delay (s)	0.0	0.1	10.3
Lane LOS		A	B
Approach Delay (s)	0.0	0.1	10.3
Approach LOS			B

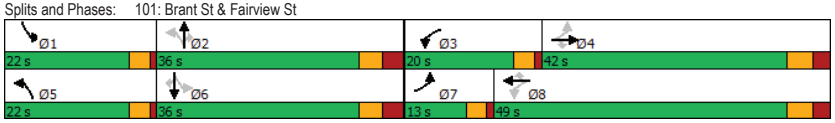
Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	18.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	238	913	345	259	1696	492	212	930	227	262	787	486
Future Volume (vph)	238	913	345	259	1696	492	212	930	227	262	787	486
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.112			0.101			0.136			0.127		
Satd. Flow (perm)	209	3539	1583	188	3539	1583	253	3539	1583	237	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			361			291			140			211
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	259	992	375	282	1843	535	230	1011	247	285	855	528
Shared Lane Traffic (%)												
Lane Group Flow (vph)	259	992	375	282	1843	535	230	1011	247	285	855	528
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	13.0	42.0	42.0	20.0	49.0	49.0	22.0	36.0	36.0	22.0	36.0	36.0
Total Split (%)	10.8%	35.0%	35.0%	16.7%	40.8%	40.8%	18.3%	30.0%	30.0%	18.3%	30.0%	30.0%
Maximum Green (s)	9.0	35.6	35.6	16.0	42.6	42.6	18.0	29.5	29.5	18.0	29.5	29.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	47.1	38.1	38.1	58.0	45.0	45.0	47.2	32.0	32.0	51.0	33.9	33.9
Actuated g/C Ratio	0.40	0.32	0.32	0.49	0.38	0.38	0.40	0.27	0.27	0.43	0.28	0.28
v/c Ratio	1.29	0.88	0.50	0.93	1.38	0.69	0.78	1.06	0.47	0.89	0.85	0.88
Control Delay	192.1	48.5	6.2	68.3	206.6	18.8	45.4	89.8	18.8	58.8	49.9	41.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	192.1	48.5	6.2	68.3	206.6	18.8	45.4	89.8	18.8	58.8	49.9	41.8
LOS	F	D	A	E	F	B	D	F	B	E	D	D
Approach Delay		61.6			154.2			71.2			48.8	
Approach LOS		E			F			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 119.1			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.38			
Intersection Signal Delay: 93.7		Intersection LOS: F	
Intersection Capacity Utilization 113.6%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Queues
101: Brant St & Fairview St

Total - Five Year Horizon
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	259	992	375	282	1843	535	230	1011	247	285	855	528
v/c Ratio	1.29	0.88	0.50	0.93	1.38	0.69	0.78	1.06	0.47	0.89	0.85	0.88
Control Delay	192.1	48.5	6.2	68.3	206.6	18.8	45.4	89.8	18.8	58.8	49.9	41.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	192.1	48.5	6.2	68.3	206.6	18.8	45.4	89.8	18.8	58.8	49.9	41.8
Queue Length 50th (m)	~65.2	122.5	2.4	52.2	~320.1	50.7	36.7	~146.3	20.9	51.3	105.7	80.6
Queue Length 95th (m)	#120.3	#159.5	25.7	#106.6	#364.6	93.7	64.4	#188.6	46.7	#101.6	#145.0	#152.2
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	200	1132	751	303	1337	779	335	950	527	333	1008	601
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.29	0.88	0.50	0.93	1.38	0.69	0.69	1.06	0.47	0.86	0.85	0.88

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
101: Brant St & Fairview St

Total - Five Year Horizon
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	238	913	345	259	1696	492	212	930	227	262	787	486
Future Volume (vph)	238	913	345	259	1696	492	212	930	227	262	787	486
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.11	1.00	1.00	0.10	1.00	1.00	0.14	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	209	3539	1583	188	3539	1583	253	3539	1583	237	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	259	992	375	282	1843	535	230	1011	247	285	855	528
RTOR Reduction (vph)	0	0	246	0	0	181	0	0	102	0	0	151
Lane Group Flow (vph)	259	992	129	282	1843	354	230	1011	145	285	855	377
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	44.7	35.7	35.7	55.6	42.6	42.6	44.7	29.5	29.5	48.5	31.4	31.4
Effective Green, g (s)	44.7	38.1	38.1	55.6	45.0	45.0	44.7	32.0	32.0	48.5	33.9	33.9
Actuated g/C Ratio	0.38	0.32	0.32	0.47	0.38	0.38	0.38	0.27	0.27	0.41	0.28	0.28
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	196	1132	506	298	1337	598	288	950	425	316	1007	450
v/s Ratio Prot	c0.10	0.28		0.13	c0.52		0.10	c0.29		c0.13	0.24	
v/s Ratio Perm	0.40		0.08	0.31		0.22	0.20		0.09	0.24		0.24
v/c Ratio	1.32	0.88	0.26	0.95	1.38	0.59	0.80	1.06	0.34	0.90	0.85	0.84
Uniform Delay, d1	31.5	38.3	30.0	34.6	37.0	29.7	29.4	43.5	35.1	32.4	40.2	40.0
Progression 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
Incremental Delay, d2	175.7	7.8	0.3	37.6	175.1	1.6	14.3	47.9	0.5	27.2	6.8	12.8
Delay (s)	207.2	46.1	30.3	72.2	212.1	31.3	43.7	91.4	35.5	59.6	47.0	52.8
Level of Service	F	D	C	E	F	C	D	F	D	E	D	D
Approach Delay (s)		68.1			160.9			74.8			51.0	
Approach LOS		E			F			E			D	

Intersection Summary				
HCM 2000 Control Delay	98.8	HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio	1.20			
Actuated Cycle Length (s)	119.1	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	113.6%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	23	48	131	13	199	17	1281	80	129	1220	67
Future Volume (vph)	138	23	48	131	13	199	17	1281	80	129	1220	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.899			0.859			0.991			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1675	0	1770	1600	0	1770	3507	0	1770	3511	0
Flt Permitted	0.424			0.707			0.106			0.088		
Satd. Flow (perm)	790	1675	0	1317	1600	0	197	3507	0	164	3511	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52			206			12			10	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	150	25	52	142	14	216	18	1392	87	140	1326	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	150	77	0	142	230	0	18	1479	0	140	1399	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	19.1	19.1		19.1	19.1		49.1	49.1		63.7	49.1	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.57	0.57		0.73	0.57	
v/c Ratio	0.87	0.19		0.49	0.45		0.16	0.74		0.44	0.70	
Control Delay	78.2	14.5		37.5	9.4		13.5	16.9		12.0	15.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	2.3		0.0	0.0	
Total Delay	78.2	14.5		37.5	9.4		13.5	19.2		12.0	15.9	
LOS	E	B		D	A		B	B		B	B	
Approach Delay		56.6			20.1			19.2			15.6	
Approach LOS		E			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 86.8			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 20.1		Intersection LOS: C	
Intersection Capacity Utilization 79.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	150	77	142	230	18	1479	140	1399
v/c Ratio	0.87	0.19	0.49	0.45	0.16	0.74	0.44	0.70
Control Delay	78.2	14.5	37.5	9.4	13.5	16.9	12.0	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0
Total Delay	78.2	14.5	37.5	9.4	13.5	19.2	12.0	15.9
Queue Length 50th (m)	26.1	3.6	22.4	3.4	1.4	93.1	5.7	84.7
Queue Length 95th (m)	#63.4	15.2	42.2	22.9	5.7	125.1	20.6	113.8
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	173	408	289	512	115	2071	343	2072
Starvation Cap Reductn	0	0	0	0	0	437	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.19	0.49	0.45	0.16	0.91	0.41	0.68

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	23	48	131	13	199	17	1281	80	129	1220	67
Future Volume (vph)	138	23	48	131	13	199	17	1281	80	129	1220	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1674		1770	1600		1770	3508		1770	3512	
Flt Permitted	0.42	1.00		0.71	1.00		0.11	1.00		0.09	1.00	
Satd. Flow (perm)	789	1674		1317	1600		197	3508		164	3512	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	150	25	52	142	14	216	18	1392	87	140	1326	73
RTOR Reduction (vph)	0	41	0	0	161	0	0	5	0	0	4	0
Lane Group Flow (vph)	150	36	0	142	69	0	18	1474	0	140	1395	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	16.0	16.0		16.0	16.0		46.1	46.1		53.7	46.1	
Effective Green, g (s)	19.0	19.0		19.0	19.0		49.1	49.1		59.7	49.1	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.57	0.57		0.69	0.57	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	172	366		288	350		111	1986		309	1988	
v/s Ratio Prot		0.02			0.04			c0.42		c0.06	0.40	
v/s Ratio Perm	c0.19			0.11			0.09			0.26		
v/c Ratio	0.87	0.10		0.49	0.20		0.16	0.74		0.45	0.70	
Uniform Delay, d1	32.7	27.0		29.6	27.6		9.0	14.1		10.7	13.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	35.1	0.1		1.3	0.3		0.7	1.5		1.1	1.1	
Delay (s)	67.8	27.1		31.0	27.9		9.7	15.6		11.7	14.7	
Level of Service	E	C		C	C		A	B		B	B	
Approach Delay (s)		54.0			29.1			15.5			14.4	
Approach LOS		D			C			B			B	

Intersection Summary					
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.72				
Actuated Cycle Length (s)	86.7	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	79.1%	ICU Level of Service		D	
Analysis Period (min)	15				

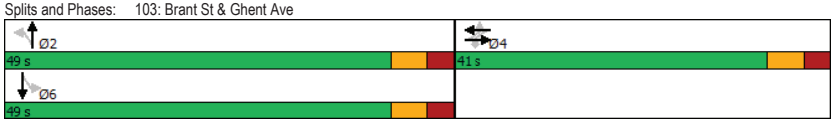
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	37	34	51	72	100	29	1066	48	99	1006	262
Future Volume (vph)	215	37	34	51	72	100	29	1066	48	99	1006	262
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.939			0.994			0.969	
Flt Protected		0.959			0.989		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1730	0	1770	3518	0	1770	3429	0
Flt Permitted		0.554			0.872		0.105			0.148		
Satd. Flow (perm)	0	1032	1583	0	1525	0	196	3518	0	276	3429	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		49			7			52	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		104.6			64.6			75.4			150.5	
Travel Time (s)		7.5			4.7			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	234	40	37	55	78	109	32	1159	52	108	1093	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	274	37	0	242	0	32	1211	0	108	1378	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		27.8	27.8		27.8		43.2	43.2		43.2	43.2	
Actuated g/C Ratio		0.35	0.35		0.35		0.55	0.55		0.55	0.55	
v/c Ratio		0.76	0.06		0.43		0.30	0.63		0.72	0.73	
Control Delay		37.4	4.1		17.8		22.1	15.5		48.2	17.1	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.7	
Total Delay		37.4	4.1		17.8		22.1	15.5		48.2	17.9	
LOS		D	A		B		C	B		D	B	
Approach Delay		33.4			17.8			15.6			20.1	
Approach LOS		C			B			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 79.2			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 19.5		Intersection LOS: B	
Intersection Capacity Utilization 82.8%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	274	37	242	32	1211	108	1378
v/c Ratio	0.76	0.06	0.43	0.30	0.63	0.72	0.73
Control Delay	37.4	4.1	17.8	22.1	15.5	48.2	17.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.7
Total Delay	37.4	4.1	17.8	22.1	15.5	48.2	17.9
Queue Length 50th (m)	39.0	0.0	23.2	2.6	66.3	12.2	79.5
Queue Length 95th (m)	68.5	4.5	42.3	12.2	107.5	#47.8	130.0
Internal Link Dist (m)	80.6		40.6		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	494	782	755	114	2051	160	2017
Starvation Cap Reductn	0	0	0	0	0	0	313
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.05	0.32	0.28	0.59	0.68	0.81

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	37	34	51	72	100	29	1066	48	99	1006	262
Future Volume (vph)	215	37	34	51	72	100	29	1066	48	99	1006	262
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.94		1.00	0.99		1.00	0.97	
Flt Protected		0.96	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1786	1583		1730		1770	3516		1770	3429	
Flt Permitted		0.55	1.00		0.87		0.10	1.00		0.15	1.00	
Satd. Flow (perm)		1032	1583		1525		195	3516		277	3429	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	234	40	37	55	78	109	32	1159	52	108	1093	285
RTOR Reduction (vph)	0	0	24	0	32	0	0	3	0	0	24	0
Lane Group Flow (vph)	0	274	13	0	210	0	32	1208	0	108	1354	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		24.7	24.7		24.7		40.2	40.2		40.2	40.2	
Effective Green, g (s)		27.7	27.7		27.7		43.2	43.2		43.2	43.2	
Actuated g/C Ratio		0.35	0.35		0.35		0.55	0.55		0.55	0.55	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		362	555		535		106	1925		151	1877	
v/s Ratio Prot								0.34			c0.39	
v/s Ratio Perm		c0.27	0.01		0.14		0.16			0.39		
v/c Ratio		0.76	0.02		0.39		0.30	0.63		0.72	0.72	
Uniform Delay, d1		22.6	16.8		19.3		9.7	12.3		13.3	13.4	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		8.7	0.0		0.5		1.6	0.6		14.9	1.4	
Delay (s)		31.4	16.8		19.7		11.3	12.9		28.1	14.7	
Level of Service		C	B		B		B	B		C	B	
Approach Delay (s)		29.6			19.7			12.9			15.7	
Approach LOS		C			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	78.9	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	82.8%	ICU Level of Service	E	
Analysis Period (min)	15			

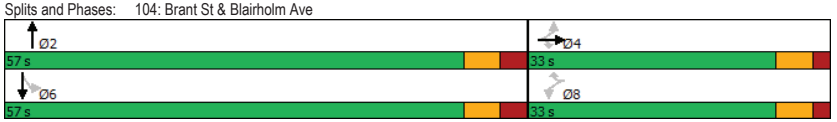
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	6	24	22	0	85	0	994	20	63	869	0
Future Volume (vph)	19	6	24	22	0	85	0	994	20	63	869	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.997				
Flt Protected		0.964		0.950						0.950		
Satd. Flow (prot)	0	1796	1583	1770	0	1583	0	3529	0	1770	1863	0
Flt Permitted		0.964		0.739						0.237		
Satd. Flow (perm)	0	1796	1583	1377	0	1583	0	3529	0	441	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			92		4				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		51.0			305.8			317.1			241.2	
Travel Time (s)		3.7			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	7	26	24	0	92	0	1080	22	68	945	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	28	26	24	0	92	0	1102	0	68	945	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		8.6	8.6	10.7		10.7		44.4		44.4	44.4	
Actuated g/C Ratio		0.15	0.15	0.18		0.18		0.77		0.77	0.77	
v/c Ratio		0.10	0.09	0.09		0.25		0.41		0.20	0.66	
Control Delay		26.5	5.2	24.9		8.7		3.9		4.8	7.8	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		26.5	5.2	24.9		8.7		3.9		4.8	7.8	
LOS		C	A	C		A		A		A	A	
Approach Delay		16.2			12.1			3.9			7.6	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 57.9			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 6.3		Intersection LOS: A	
Intersection Capacity Utilization 67.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	28	26	24	92	1102	68	945
v/c Ratio	0.10	0.09	0.09	0.25	0.41	0.20	0.66
Control Delay	26.5	5.2	24.9	8.7	3.9	4.8	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.5	5.2	24.9	8.7	3.9	4.8	7.8
Queue Length 50th (m)	2.6	0.0	2.2	0.0	22.4	2.2	51.4
Queue Length 95th (m)	10.7	3.8	9.4	11.8	33.0	6.5	92.1
Internal Link Dist (m)	27.0				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	883	803	727	879	3091	386	1631
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.03	0.10	0.36	0.18	0.58

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	6	24	22	0	85	0	994	20	63	869	0
Future Volume (vph)	19	6	24	22	0	85	0	994	20	63	869	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.96	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1795	1583	1770		1583		3529		1770	1863	
Flt Permitted		0.96	1.00	0.74		1.00		1.00		0.24	1.00	
Satd. Flow (perm)		1795	1583	1377		1583		3529		441	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	7	26	24	0	92	0	1080	22	68	945	0
RTOR Reduction (vph)	0	0	23	0	0	79	0	1	0	0	0	0
Lane Group Flow (vph)	0	28	3	24	0	13	0	1101	0	68	945	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		6.1	6.1	6.1		6.1		40.0		40.0	40.0	
Effective Green, g (s)		6.1	6.1	8.1		8.1		43.0		43.0	43.0	
Actuated g/C Ratio		0.10	0.10	0.14		0.14		0.73		0.73	0.73	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		185	163	188		216		2567		320	1355	
v/s Ratio Prot								0.31			c0.51	
v/s Ratio Perm		0.02	0.00	c0.02		0.01				0.15		
v/c Ratio		0.15	0.02	0.13		0.06		0.43		0.21	0.70	
Uniform Delay, d1		24.1	23.8	22.4		22.2		3.2		2.6	4.5	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.4	0.0	0.3		0.1		0.1		0.3	1.6	
Delay (s)		24.5	23.8	22.7		22.3		3.3		2.9	6.0	
Level of Service		C	C	C		C		A		A	A	
Approach Delay (s)		24.2			22.4			3.3			5.8	
Approach LOS		C			C			A			A	

Intersection Summary					
HCM 2000 Control Delay	5.9	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.63				
Actuated Cycle Length (s)	59.1	Sum of lost time (s)		10.0	
Intersection Capacity Utilization	67.4%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	214	291	70	70	0
Future Volume (vph)	0	214	291	70	70	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.971			
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	3437	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1863	3437	0	1770	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		138.0	104.6		69.7	
Travel Time (s)		9.9	7.5		5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	233	316	76	76	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	233	392	0	76	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		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
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	214	291	70	70	0
Future Volume (Veh/h)	0	214	291	70	70	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	233	316	76	76	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			105			
pX, platoon unblocked						
vC, conflicting volume	392				587	196
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	392				587	196
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				83	100
cM capacity (veh/h)	1163				441	812

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	233	211	181	76
Volume Left	0	0	0	76
Volume Right	0	0	76	0
cSH	1163	1700	1700	441
Volume to Capacity	0.00	0.12	0.11	0.17
Queue Length 95th (m)	0.0	0.0	0.0	4.9
Control Delay (s)	0.0	0.0	0.0	14.9
Lane LOS				B
Approach Delay (s)	0.0	0.0		14.9
Approach LOS				B

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	21.8%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	46	105	152	5	5	47
Future Volume (vph)	46	105	152	5	5	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.996		0.877	
Flt Protected		0.985			0.996	
Satd. Flow (prot)	0	1835	1855	0	1627	0
Flt Permitted		0.985			0.996	
Satd. Flow (perm)	0	1835	1855	0	1627	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		38.5	230.4		53.7	
Travel Time (s)		2.8	16.6		3.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	50	114	165	5	5	51
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	164	170	0	56	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		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
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	29.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	46	105	152	5	5	47
Future Volume (Veh/h)	46	105	152	5	5	47
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	50	114	165	5	5	51
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		103				
pX, platoon unblocked						
vC, conflicting volume	170				382	168
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	170				382	168
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				99	94
cM capacity (veh/h)	1407				599	877

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	164	170	56
Volume Left	50	0	5
Volume Right	0	5	51
cSH	1407	1700	842
Volume to Capacity	0.04	0.10	0.07
Queue Length 95th (m)	0.9	0.0	1.7
Control Delay (s)	2.5	0.0	9.6
Lane LOS	A		A
Approach Delay (s)	2.5	0.0	9.6
Approach LOS			A

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	29.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	149	36	4	195	26	2
Future Volume (vph)	149	36	4	195	26	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.974				0.991	
Flt Protected				0.999	0.955	
Satd. Flow (prot)	1814	0	0	1861	1763	0
Flt Permitted				0.999	0.955	
Satd. Flow (perm)	1814	0	0	1861	1763	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	64.6			38.5	67.5	
Travel Time (s)	4.7			2.8	4.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	162	39	4	212	28	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	201	0	0	216	30	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	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
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	23.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	149	36	4	195	26	2
Future Volume (Veh/h)	149	36	4	195	26	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	162	39	4	212	28	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	65					
pX, platoon unblocked			0.98		0.98	0.98
vC, conflicting volume			201		402	182
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			179		383	159
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	100
cM capacity (veh/h)			1373		608	871

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	201	216	30
Volume Left	0	4	28
Volume Right	39	0	2
cSH	1700	1373	620
Volume to Capacity	0.12	0.00	0.05
Queue Length 95th (m)	0.0	0.1	1.2
Control Delay (s)	0.0	0.2	11.1
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	11.1
Approach LOS			B

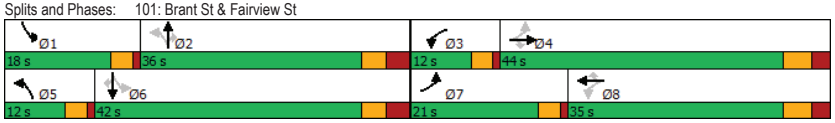
Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	23.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	356	892	295	178	845	272	281	696	189	267	710	187
Future Volume (vph)	356	892	295	178	845	272	281	696	189	267	710	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		100.0	30.0		0.0	25.0		20.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			80.0			70.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.124			0.152			0.214			0.129		
Satd. Flow (perm)	231	3539	1583	283	3539	1583	399	3539	1583	240	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			241			245			192			203
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.3			233.0			295.9			242.7	
Travel Time (s)		16.9			16.8			21.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	387	970	321	193	918	296	305	757	205	290	772	203
Shared Lane Traffic (%)												
Lane Group Flow (vph)	387	970	321	193	918	296	305	757	205	290	772	203
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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0
Minimum Split (s)	11.5	30.4	30.4	11.5	30.4	30.4	11.5	30.5	30.5	22.0	30.5	30.5
Total Split (s)	21.0	44.0	44.0	12.0	35.0	35.0	12.0	36.0	36.0	18.0	42.0	42.0
Total Split (%)	19.1%	40.0%	40.0%	10.9%	31.8%	31.8%	10.9%	32.7%	32.7%	16.4%	38.2%	38.2%
Maximum Green (s)	17.0	37.6	37.6	8.0	28.6	28.6	8.0	29.5	29.5	14.0	35.5	35.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	3.2	3.2	1.0	3.2	3.2
Lost Time Adjust (s)	0.0	-2.4	-2.4	0.0	-2.4	-2.4	0.0	-2.5	-2.5	0.0	-2.5	-2.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	51.7	39.7	39.7	38.7	30.7	30.7	37.5	29.5	29.5	47.5	35.5	35.5
Actuated g/C Ratio	0.48	0.37	0.37	0.36	0.29	0.29	0.35	0.28	0.28	0.44	0.33	0.33
v/c Ratio	1.09	0.74	0.43	0.91	0.91	0.47	1.27	0.78	0.36	0.95	0.66	0.31
Control Delay	102.7	33.9	8.9	65.6	51.0	9.6	173.0	42.1	7.2	67.3	33.8	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	102.7	33.9	8.9	65.6	51.0	9.6	173.0	42.1	7.2	67.3	33.8	4.9
LOS	F	C	A	E	D	A	F	D	A	E	C	A
Approach Delay		45.0			44.3			68.0			36.8	
Approach LOS		D			D			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 107.2			
Natural Cycle: 105			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.27			
Intersection Signal Delay: 48.2		Intersection LOS: D	
Intersection Capacity Utilization 91.6%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 101: Brant St & Fairview St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	387	970	321	193	918	296	305	757	205	290	772	203
v/c Ratio	1.09	0.74	0.43	0.91	0.91	0.47	1.27	0.78	0.36	0.95	0.66	0.31
Control Delay	102.7	33.9	8.9	65.6	51.0	9.6	173.0	42.1	7.2	67.3	33.8	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	102.7	33.9	8.9	65.6	51.0	9.6	173.0	42.1	7.2	67.3	33.8	4.9
Queue Length 50th (m)	~83.0	100.0	12.0	25.0	105.8	8.6	~57.4	81.1	2.1	46.4	76.2	0.0
Queue Length 95th (m)	#144.5	125.4	35.0	#69.7	#144.9	32.2	#114.4	103.7	19.7	#101.0	97.4	15.7
Internal Link Dist (m)		211.3			209.0			271.9			218.7	
Turn Bay Length (m)			100.0	30.0			25.0		20.0	40.0		
Base Capacity (vph)	355	1321	742	213	1024	632	241	1057	607	306	1255	692
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.09	0.73	0.43	0.91	0.90	0.47	1.27	0.72	0.34	0.95	0.62	0.29

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	356	892	295	178	845	272	281	696	189	267	710	187
Future Volume (vph)	356	892	295	178	845	272	281	696	189	267	710	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.12	1.00	1.00	0.15	1.00	1.00	0.21	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	231	3539	1583	283	3539	1583	399	3539	1583	240	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	387	970	321	193	918	296	305	757	205	290	772	203
RTOR Reduction (vph)	0	0	152	0	0	175	0	0	139	0	0	136
Lane Group Flow (vph)	387	970	169	193	918	121	305	757	66	290	772	67
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	49.3	37.3	37.3	36.3	28.3	28.3	35.0	27.0	27.0	45.0	33.0	33.0
Effective Green, g (s)	49.3	39.7	39.7	36.3	30.7	30.7	35.0	29.5	29.5	45.0	35.5	35.5
Actuated g/C Ratio	0.46	0.37	0.37	0.34	0.29	0.29	0.33	0.28	0.28	0.42	0.33	0.33
Clearance Time (s)	4.0	6.4	6.4	4.0	6.4	6.4	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	350	1310	586	206	1013	453	232	973	435	300	1171	524
v/s Ratio Prot	c0.18	0.27		0.07	0.26		c0.10	0.21		c0.13	0.22	
v/s Ratio Perm	c0.33		0.11	0.25		0.08	c0.33		0.04	0.28		0.04
v/c Ratio	1.11	0.74	0.29	0.94	0.91	0.27	1.31	0.78	0.15	0.97	0.66	0.13
Uniform Delay, d1	31.5	29.3	23.8	28.8	36.9	29.6	32.5	35.8	29.4	28.7	30.7	25.0
Progression 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
Incremental Delay, d2	79.7	2.3	0.3	44.7	11.4	0.3	168.8	4.0	0.2	42.5	1.4	0.1
Delay (s)	111.2	31.6	24.1	73.6	48.2	29.9	201.3	39.8	29.5	71.2	32.0	25.2
Level of Service	F	C	C	E	D	C	F	D	C	E	C	C
Approach Delay (s)		48.5			47.8			77.0			39.9	
Approach LOS		D			D			E			D	

Intersection Summary				
HCM 2000 Control Delay	52.8	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	1.13			
Actuated Cycle Length (s)	107.2	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	91.6%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	8	17	80	13	129	14	1039	52	114	1053	42
Future Volume (vph)	66	8	17	80	13	129	14	1039	52	114	1053	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	20.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	60.0			40.0			10.0			30.0		
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
Frt		0.900			0.864			0.993			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1676	0	1770	1609	0	1770	3514	0	1770	3518	0
Flt Permitted	0.582			0.740			0.170			0.171		
Satd. Flow (perm)	1084	1676	0	1378	1609	0	317	3514	0	319	3518	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			140			9			7	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		345.0			113.4			150.5			295.9	
Travel Time (s)		24.8			8.2			10.8			21.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	9	18	87	14	140	15	1129	57	124	1145	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	72	27	0	87	154	0	15	1186	0	124	1191	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			3.6			3.6	
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
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		4	4		2	2		1	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		6.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		41.0	41.0		10.0	41.0	
Total Split (s)	23.0	23.0		23.0	23.0		55.0	55.0		12.0	55.0	
Total Split (%)	25.6%	25.6%		25.6%	25.6%		61.1%	61.1%		13.3%	61.1%	
Maximum Green (s)	16.0	16.0		16.0	16.0		48.0	48.0		9.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		0.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lead/Lag							Lag	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Walk Time (s)	12.0	12.0		12.0	12.0		23.0	23.0			23.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	14.1	14.1		14.1	14.1		43.8	43.8		55.8	43.8	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.59	0.59		0.75	0.59	
v/c Ratio	0.35	0.08		0.33	0.37		0.08	0.57		0.28	0.57	
Control Delay	34.1	17.2		32.5	9.9		9.4	11.4		4.3	11.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.1		0.0	0.0	
Total Delay	34.1	17.2		32.5	9.9		9.4	11.5		4.3	11.4	
LOS	C	B		C	A		A	B		A	B	
Approach Delay		29.5			18.0			11.5			10.7	
Approach LOS		C			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 74			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 12.3		Intersection LOS: B	
Intersection Capacity Utilization 65.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 102: Brant St & Grahams Ln/Prospect St



Queues
102: Brant St & Grahams Ln/Prospect St

Total - Five Year Horizon
SAT Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	72	27	87	154	15	1186	124	1191
v/c Ratio	0.35	0.08	0.33	0.37	0.08	0.57	0.28	0.57
Control Delay	34.1	17.2	32.5	9.9	9.4	11.4	4.3	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	34.1	17.2	32.5	9.9	9.4	11.5	4.3	11.4
Queue Length 50th (m)	9.3	1.1	11.2	1.7	0.9	52.5	3.4	53.0
Queue Length 95th (m)	23.9	8.2	27.1	17.8	4.3	87.2	9.3	87.7
Internal Link Dist (m)		321.0		89.4		126.5		271.9
Turn Bay Length (m)	30.0		20.0		15.0		20.0	
Base Capacity (vph)	286	456	364	528	224	2495	482	2497
Starvation Cap Reductn	0	0	0	0	0	404	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.06	0.24	0.29	0.07	0.57	0.26	0.48

Intersection Summary

HCM Signalized Intersection Capacity Analysis
102: Brant St & Grahams Ln/Prospect St

Total - Five Year Horizon
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	8	17	80	13	129	14	1039	52	114	1053	42
Future Volume (vph)	66	8	17	80	13	129	14	1039	52	114	1053	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		0.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1676		1770	1609		1770	3514		1770	3519	
Flt Permitted	0.58	1.00		0.74	1.00		0.17	1.00		0.17	1.00	
Satd. Flow (perm)	1084	1676		1378	1609		316	3514		319	3519	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	9	18	87	14	140	15	1129	57	124	1145	46
RTOR Reduction (vph)	0	15	0	0	114	0	0	4	0	0	3	0
Lane Group Flow (vph)	72	12	0	87	40	0	15	1182	0	124	1188	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			4			2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	11.0	11.0		11.0	11.0		40.7	40.7		46.3	40.7	
Effective Green, g (s)	14.0	14.0		14.0	14.0		43.7	43.7		52.3	43.7	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.59	0.59		0.70	0.59	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	204	315		259	303		185	2066		392	2069	
v/s Ratio Prot		0.01			0.03			0.34		c0.04	c0.34	
v/s Ratio Perm	c0.07			0.06			0.05			0.19		
v/c Ratio	0.35	0.04		0.34	0.13		0.08	0.57		0.32	0.57	
Uniform Delay, d1	26.2	24.7		26.1	25.1		6.6	9.5		4.9	9.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.1		0.8	0.2		0.2	0.4		0.5	0.4	
Delay (s)	27.3	24.7		26.9	25.3		6.8	9.9		5.4	9.9	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		26.6			25.9			9.8			9.5	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.48			
Actuated Cycle Length (s)	74.3	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	65.8%	ICU Level of Service	C	
Analysis Period (min)	15			

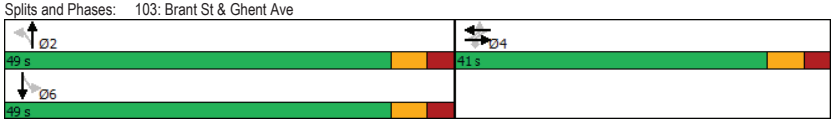
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	23	22	39	21	87	29	872	37	92	905	145
Future Volume (vph)	136	23	22	39	21	87	29	872	37	92	905	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		15.0	0.0		0.0	25.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			30.0			20.0		
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
Frt			0.850		0.920			0.994			0.979	
Flt Protected		0.959			0.987		0.950			0.950		
Satd. Flow (prot)	0	1786	1583	0	1691	0	1770	3518	0	1770	3465	0
Flt Permitted		0.680			0.883		0.176			0.229		
Satd. Flow (perm)	0	1267	1583	0	1513	0	328	3518	0	427	3465	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		88			7			29	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.6			63.8			75.4			150.5	
Travel Time (s)		7.2			4.6			5.4			10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	148	25	24	42	23	95	32	948	40	100	984	158
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	173	24	0	160	0	32	988	0	100	1142	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			3.6			3.6	
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
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		34.0	34.0		34.0	34.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-3.0	-3.0		-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		17.2	17.2		17.2		29.3	29.3		29.3	29.3	
Actuated g/C Ratio		0.31	0.31		0.31		0.53	0.53		0.53	0.53	
v/c Ratio		0.44	0.05		0.30		0.18	0.53		0.44	0.61	
Control Delay		20.8	2.7		10.1		10.6	9.7		16.2	10.6	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		20.8	2.7		10.1		10.6	9.7		16.2	10.6	
LOS		C	A		B		B	A		B	B	
Approach Delay		18.6			10.1			9.7			11.1	
Approach LOS		B			B			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 54.9			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 11.1		Intersection LOS: B	
Intersection Capacity Utilization 61.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 103: Brant St & Ghent Ave



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	173	24	160	32	988	100	1142
v/c Ratio	0.44	0.05	0.30	0.18	0.53	0.44	0.61
Control Delay	20.8	2.7	10.1	10.6	9.7	16.2	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.8	2.7	10.1	10.6	9.7	16.2	10.6
Queue Length 50th (m)	12.7	0.0	4.8	1.5	29.4	5.4	35.6
Queue Length 95th (m)	38.8	2.5	21.9	7.2	58.6	21.0	71.0
Internal Link Dist (m)	75.6		39.8		51.4		126.5
Turn Bay Length (m)		15.0		25.0		15.0	
Base Capacity (vph)	926	1170	1129	276	2960	359	2919
Starvation Cap Reductn	0	0	0	0	0	0	118
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.02	0.14	0.12	0.33	0.28	0.41

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	23	22	39	21	87	29	872	37	92	905	145
Future Volume (vph)	136	23	22	39	21	87	29	872	37	92	905	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.92		1.00	0.99		1.00	0.98	
Flt Protected		0.96	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1786	1583		1691		1770	3518		1770	3466	
Flt Permitted		0.68	1.00		0.88		0.18	1.00		0.23	1.00	
Satd. Flow (perm)		1267	1583		1513		327	3518		426	3466	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	148	25	24	42	23	95	32	948	40	100	984	158
RTOR Reduction (vph)	0	0	16	0	60	0	0	3	0	0	13	0
Lane Group Flow (vph)	0	173	8	0	100	0	32	985	0	100	1129	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		14.0	14.0		14.0		26.1	26.1		26.1	26.1	
Effective Green, g (s)		17.0	17.0		17.0		29.1	29.1		29.1	29.1	
Actuated g/C Ratio		0.31	0.31		0.31		0.54	0.54		0.54	0.54	
Clearance Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		398	497		475		175	1892		229	1864	
v/s Ratio Prot								0.28			c0.33	
v/s Ratio Perm		c0.14	0.00		0.07		0.10			0.23		
v/c Ratio		0.43	0.02		0.21		0.18	0.52		0.44	0.61	
Uniform Delay, d1		14.7	12.8		13.6		6.4	8.0		7.5	8.6	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.8	0.0		0.2		0.5	0.3		1.3	0.6	
Delay (s)		15.5	12.8		13.8		6.9	8.3		8.9	9.1	
Level of Service		B	B		B		A	A		A	A	
Approach Delay (s)		15.2			13.8			8.2			9.1	
Approach LOS		B			B			A			A	

Intersection Summary					
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.54				
Actuated Cycle Length (s)	54.1	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	61.7%	ICU Level of Service		B	
Analysis Period (min)	15				

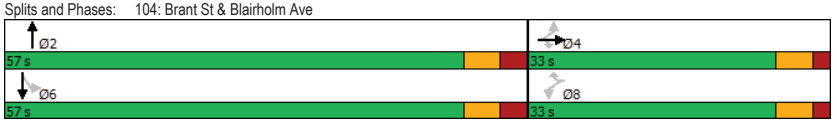
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	0	6	12	0	49	0	868	10	39	887	0
Future Volume (vph)	17	0	6	12	0	49	0	868	10	39	887	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	10.0		0.0	0.0		0.0	10.0		0.0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (m)	7.5			20.0			7.5			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.998				
Flt Protected		0.950		0.950						0.950		
Satd. Flow (prot)	0	1770	1583	1770	0	1583	0	3532	0	1770	1863	0
Flt Permitted		0.950		0.746						0.291		
Satd. Flow (perm)	0	1770	1583	1390	0	1583	0	3532	0	542	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			53		2				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		55.3			305.8			317.1			241.2	
Travel Time (s)		4.0			22.0			22.8			17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	0	7	13	0	53	0	943	11	42	964	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	18	7	13	0	53	0	954	0	42	964	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			3.6			3.6	
Link Offset(m)		1.0			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
Number of Detectors	1	2	1	1		1		2		1	2	
Detector Template	Left	Thru	Right	Left		Right		Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0		2.0		10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0		2.0		0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		0.6						0.6			0.6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8		8		2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0		8.0		8.0	8.0	
Minimum Split (s)	20.0	20.0	20.0	20.0		20.0		43.0		42.0	42.0	
Total Split (s)	33.0	33.0	33.0	33.0		33.0		57.0		57.0	57.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%		36.7%		63.3%		63.3%	63.3%	
Maximum Green (s)	27.0	27.0	27.0	27.0		27.0		50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		3.0		3.0	3.0	
Lost Time Adjust (s)		0.0	0.0	-2.0		-2.0		-3.0		-3.0	-3.0	
Total Lost Time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Recall Mode	None	None	None	None		None		Min		Min	Min	
Walk Time (s)	10.0	10.0	10.0	10.0		10.0		25.0		25.0	25.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0		10.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0	0		0		0		0	0	
Act Effct Green (s)		8.7	8.7	10.8		10.8		47.8		47.8	47.8	
Actuated g/C Ratio		0.15	0.15	0.19		0.19		0.84		0.84	0.84	
v/c Ratio		0.07	0.02	0.05		0.15		0.32		0.09	0.61	
Control Delay		28.1	0.2	26.2		10.1		2.7		3.0	6.0	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		28.1	0.2	26.2		10.1		2.7		3.0	6.0	
LOS		C	A	C		B		A		A	A	
Approach Delay		20.3			13.3			2.7			5.9	
Approach LOS		C			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 56.7			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 4.8		Intersection LOS: A	
Intersection Capacity Utilization 68.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 104: Brant St & Blairholm Ave



Lane Group	EBT	EBR	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	18	7	13	53	954	42	964
v/c Ratio	0.07	0.02	0.05	0.15	0.32	0.09	0.61
Control Delay	28.1	0.2	26.2	10.1	2.7	3.0	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.1	0.2	26.2	10.1	2.7	3.0	6.0
Queue Length 50th (m)	2.3	0.0	1.6	0.0	18.3	1.2	53.5
Queue Length 95th (m)	8.0	0.0	6.4	9.1	25.2	3.6	90.1
Internal Link Dist (m)	31.3				293.1		217.2
Turn Bay Length (m)			10.0			10.0	
Base Capacity (vph)	912	838	769	899	3048	467	1607
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.02	0.06	0.31	0.09	0.60

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	0	6	12	0	49	0	868	10	39	887	0
Future Volume (vph)	17	0	6	12	0	49	0	868	10	39	887	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	4.0		4.0		4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95		1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00		1.00	1.00	
Flt Protected		0.95	1.00	0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1770	1583	1770		1583		3533		1770	1863	
Flt Permitted		0.95	1.00	0.75		1.00		1.00		0.29	1.00	
Satd. Flow (perm)		1770	1583	1389		1583		3533		541	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	0	7	13	0	53	0	943	11	42	964	0
RTOR Reduction (vph)	0	0	7	0	0	48	0	0	0	0	0	0
Lane Group Flow (vph)	0	18	0	13	0	5	0	954	0	42	964	0
Turn Type	Perm	NA	Perm	Perm		Perm		NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		4.0	4.0	4.0		4.0		42.2		42.2	42.2	
Effective Green, g (s)		4.0	4.0	6.0		6.0		45.2		45.2	45.2	
Actuated g/C Ratio		0.07	0.07	0.10		0.10		0.76		0.76	0.76	
Clearance Time (s)		6.0	6.0	6.0		6.0		7.0		7.0	7.0	
Vehicle Extension (s)		3.0	3.0	3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		119	106	140		160		2697		413	1422	
v/s Ratio Prot								0.27			c0.52	
v/s Ratio Perm		0.01	0.00	0.01		0.00				0.08		
v/c Ratio		0.15	0.00	0.09		0.03		0.35		0.10	0.68	
Uniform Delay, d1		26.0	25.7	24.1		24.0		2.3		1.8	3.4	
Progression Factor		1.00	1.00	1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2		0.6	0.0	0.3		0.1		0.1		0.1	1.3	
Delay (s)		26.6	25.8	24.4		24.1		2.3		1.9	4.7	
Level of Service		C	C	C		C		A		A	A	
Approach Delay (s)		26.4			24.1			2.3			4.6	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	4.5	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.63			
Actuated Cycle Length (s)	59.2	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	68.4%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	128	146	47	51	0
Future Volume (vph)	0	128	146	47	51	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.964			
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	3412	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1863	3412	0	1770	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		142.9	99.6		79.1	
Travel Time (s)		10.3	7.2		5.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	139	159	51	55	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	139	210	0	55	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		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
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	16.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	128	146	47	51	0
Future Volume (Veh/h)	0	128	146	47	51	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	139	159	51	55	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			100			
pX, platoon unblocked						
vC, conflicting volume	210				324	105
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	210				324	105
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				91	100
cM capacity (veh/h)	1358				645	929

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	139	106	104	55
Volume Left	0	0	0	55
Volume Right	0	0	51	0
cSH	1358	1700	1700	645
Volume to Capacity	0.00	0.06	0.06	0.09
Queue Length 95th (m)	0.0	0.0	0.0	2.2
Control Delay (s)	0.0	0.0	0.0	11.1
Lane LOS				B
Approach Delay (s)	0.0	0.0		11.1
Approach LOS				B

Intersection Summary				
Average Delay		1.5		
Intersection Capacity Utilization		16.7%	ICU Level of Service	A
Analysis Period (min)		15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	33	92	87	3	4	35
Future Volume (vph)	33	92	87	3	4	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.996		0.878	
Flt Protected		0.987			0.995	
Satd. Flow (prot)	0	1839	1855	0	1627	0
Flt Permitted		0.987			0.995	
Satd. Flow (perm)	0	1839	1855	0	1627	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		36.1	233.6		59.5	
Travel Time (s)		2.6	16.8		4.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	36	100	95	3	4	38
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	136	98	0	42	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		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
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	23.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	92	87	3	4	35
Future Volume (Veh/h)	33	92	87	3	4	35
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	36	100	95	3	4	38
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		100				
pX, platoon unblocked						
vC, conflicting volume	98				268	96
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	98				268	96
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				99	96
cM capacity (veh/h)	1495				703	960

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	136	98	42
Volume Left	36	0	4
Volume Right	0	3	38
cSH	1495	1700	928
Volume to Capacity	0.02	0.06	0.05
Queue Length 95th (m)	0.6	0.0	1.1
Control Delay (s)	2.1	0.0	9.1
Lane LOS	A		A
Approach Delay (s)	2.1	0.0	9.1
Approach LOS			A

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	23.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	121	31	3	119	33	4
Future Volume (vph)	121	31	3	119	33	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.972				0.986	
Flt Protected				0.999	0.957	
Satd. Flow (prot)	1811	0	0	1861	1758	0
Flt Permitted				0.999	0.957	
Satd. Flow (perm)	1811	0	0	1861	1758	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	63.8			36.1	76.5	
Travel Time (s)	4.6			2.6	5.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	132	34	3	129	36	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	166	0	0	132	40	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	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
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	18.7%	ICU Level of Service	A
Analysis Period (min)	15		

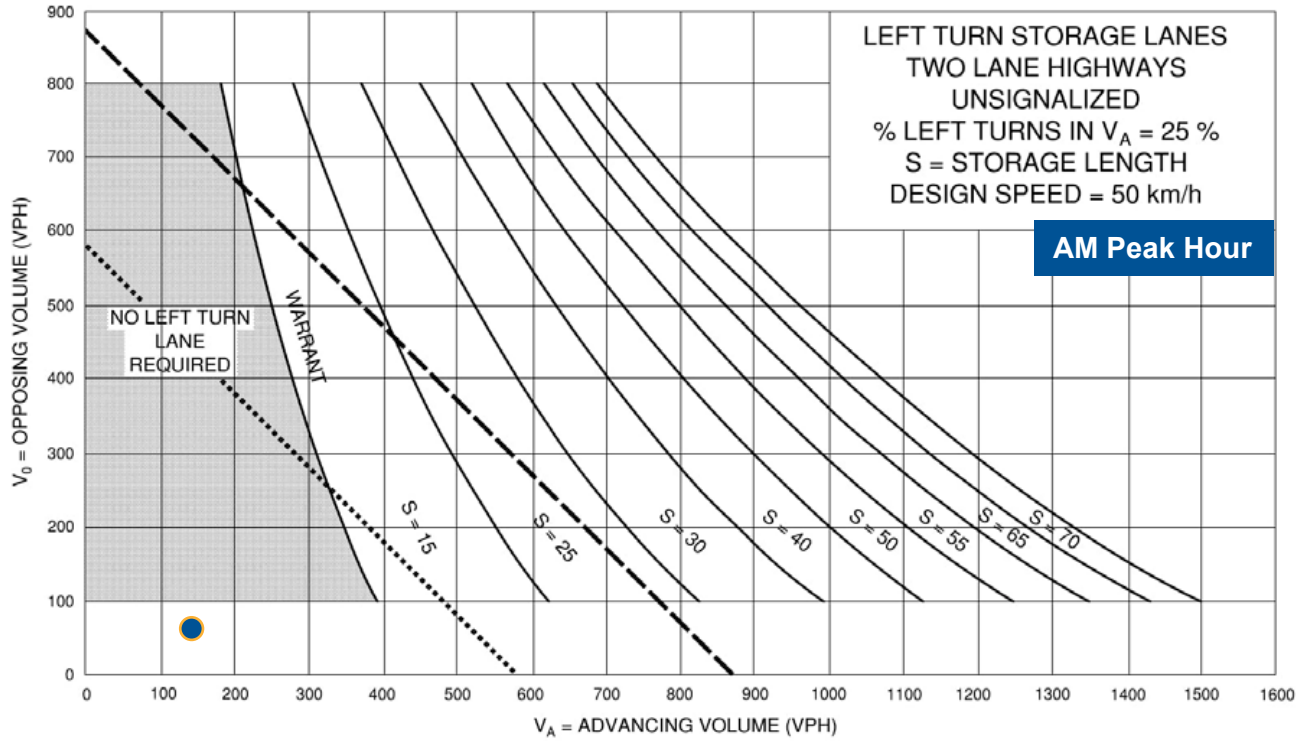
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	121	31	3	119	33	4
Future Volume (Veh/h)	121	31	3	119	33	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	132	34	3	129	36	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	64					
pX, platoon unblocked			1.00		1.00	1.00
vC, conflicting volume			166		284	149
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			165		283	148
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	100
cM capacity (veh/h)			1412		705	898

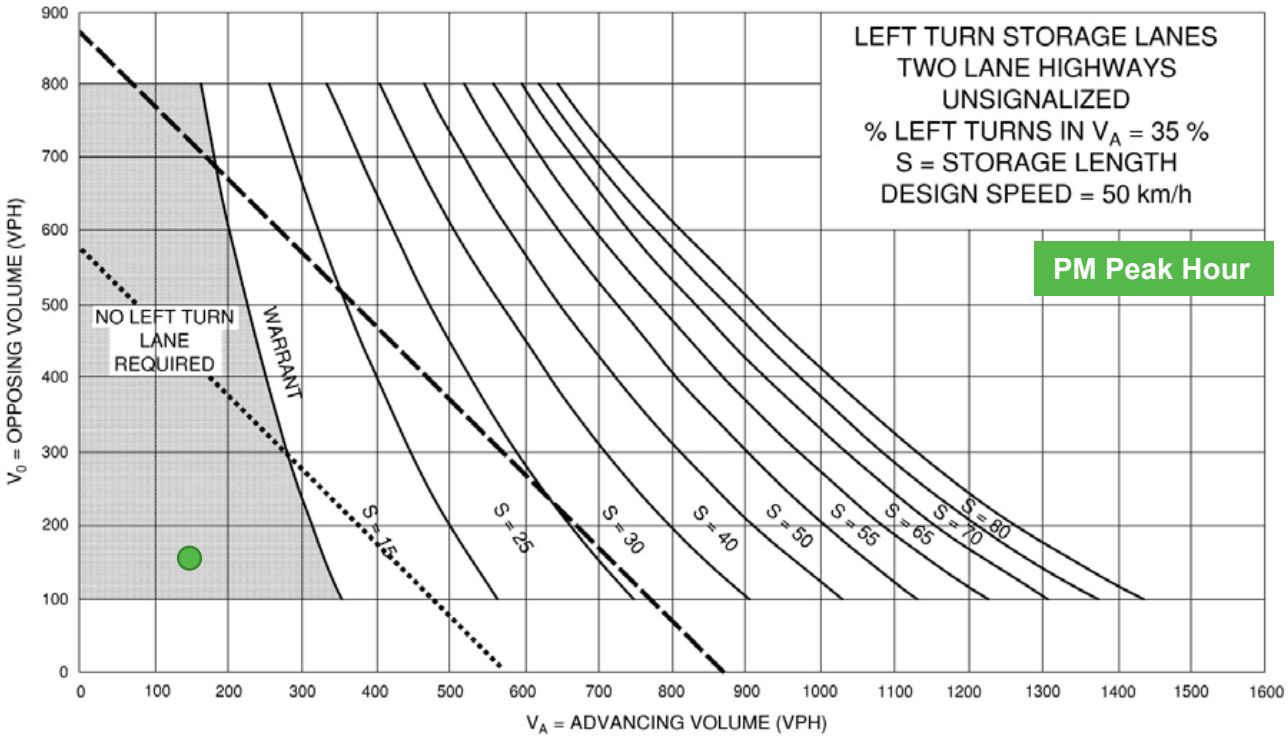
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	166	132	40
Volume Left	0	3	36
Volume Right	34	0	4
cSH	1700	1412	721
Volume to Capacity	0.10	0.00	0.06
Queue Length 95th (m)	0.0	0.1	1.4
Control Delay (s)	0.0	0.2	10.3
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	10.3
Approach LOS			B

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	18.7%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix J

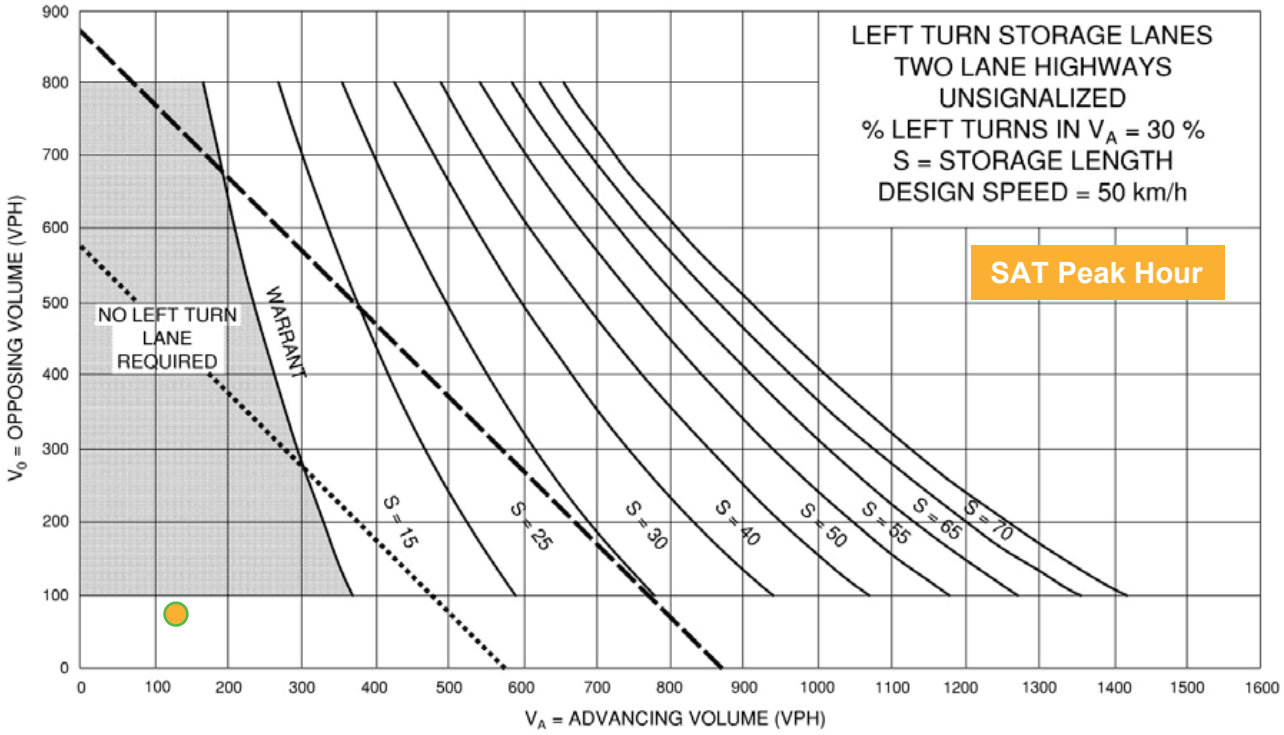
Left-Turn Lane Warrant Nomographs



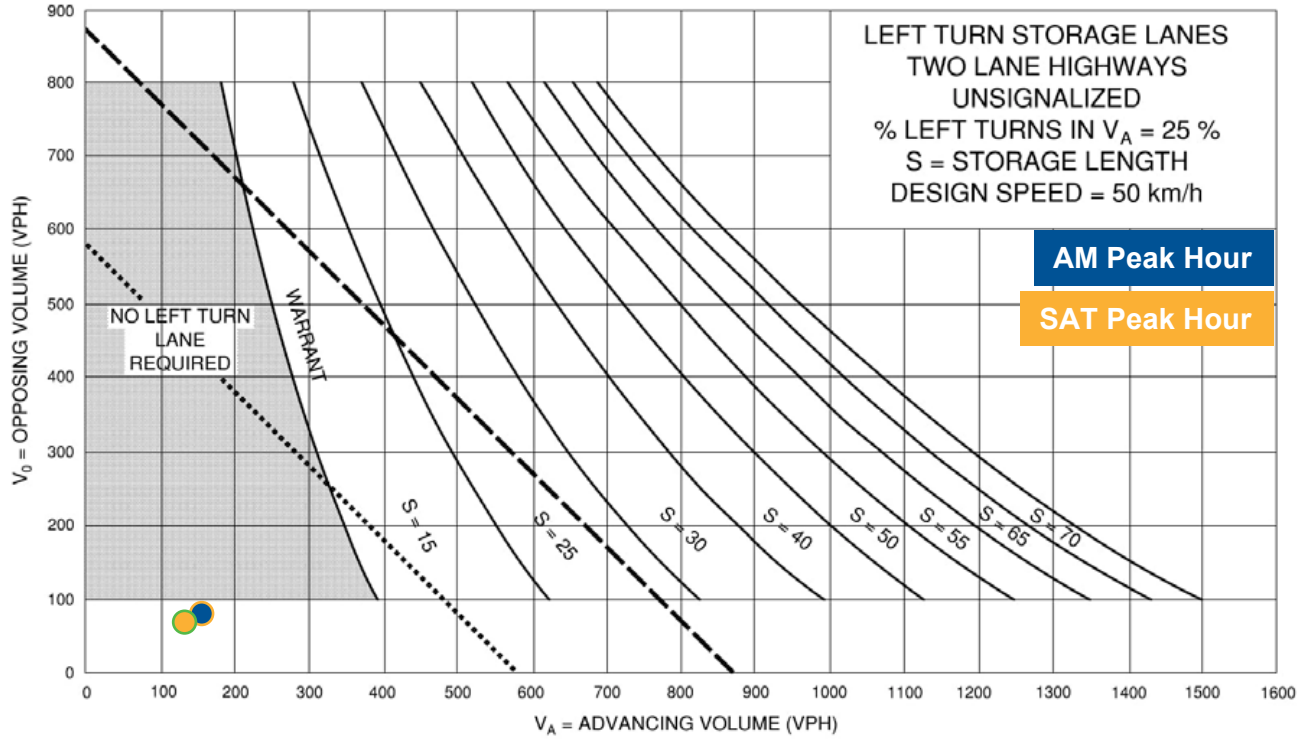


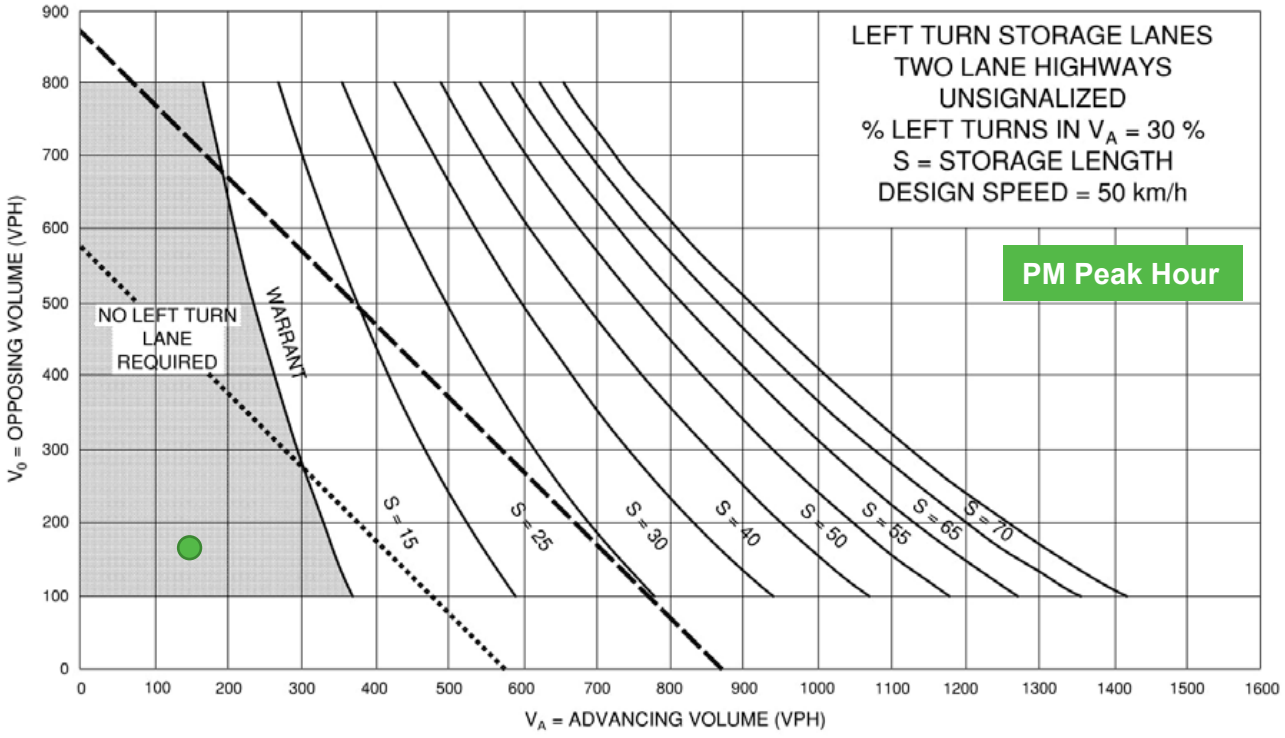
paradigm TRANSPORTATION SOLUTIONS LIMITED

Eastbound Left-Turn Lane
Ghent Avenue and Lot B Driveway
Total – Phase 2 Volumes



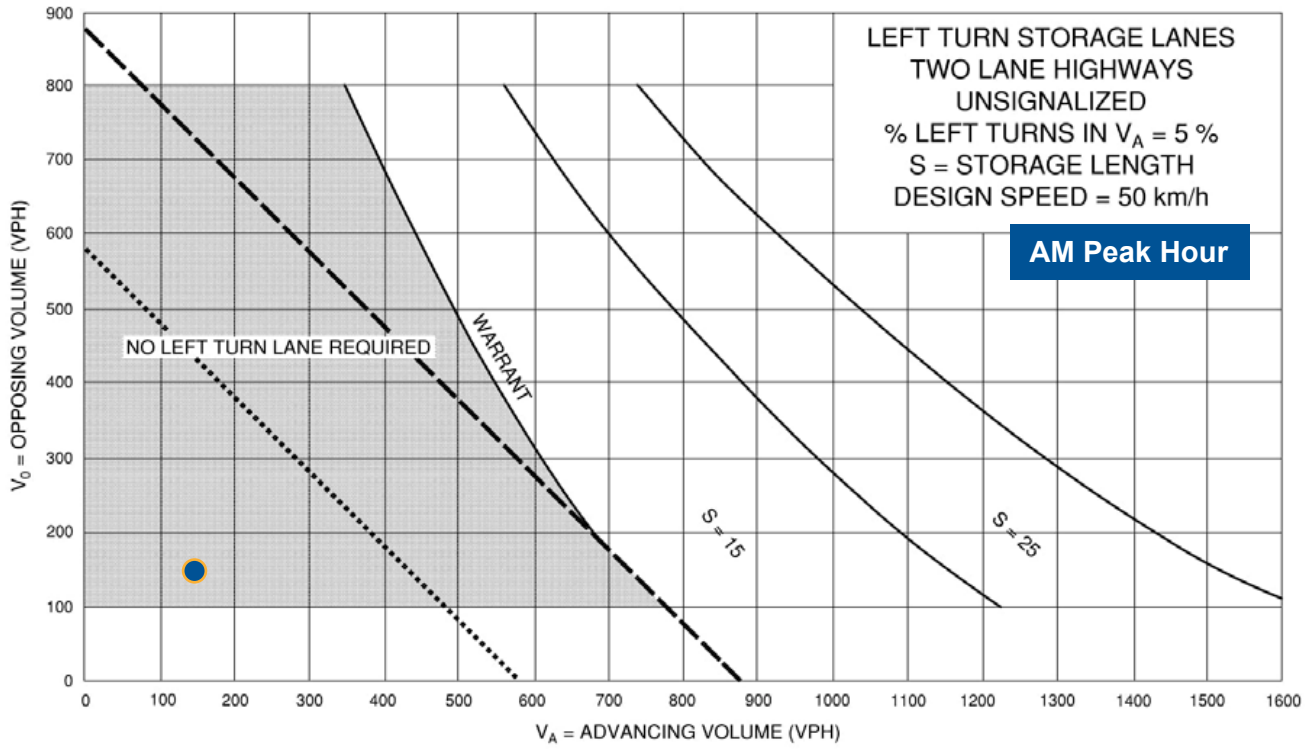
Eastbound Left-Turn Lane
Ghent Avenue and Lot B Driveway
Total – Phase 2 Volumes

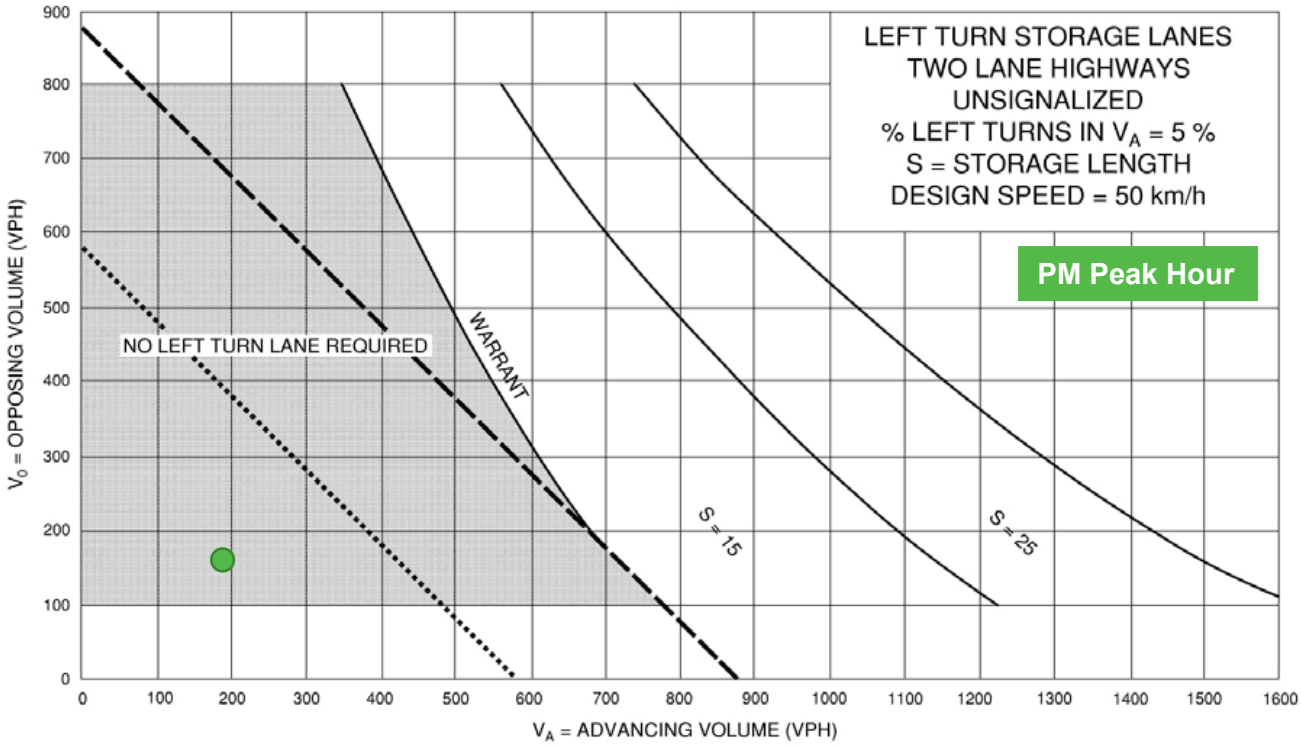




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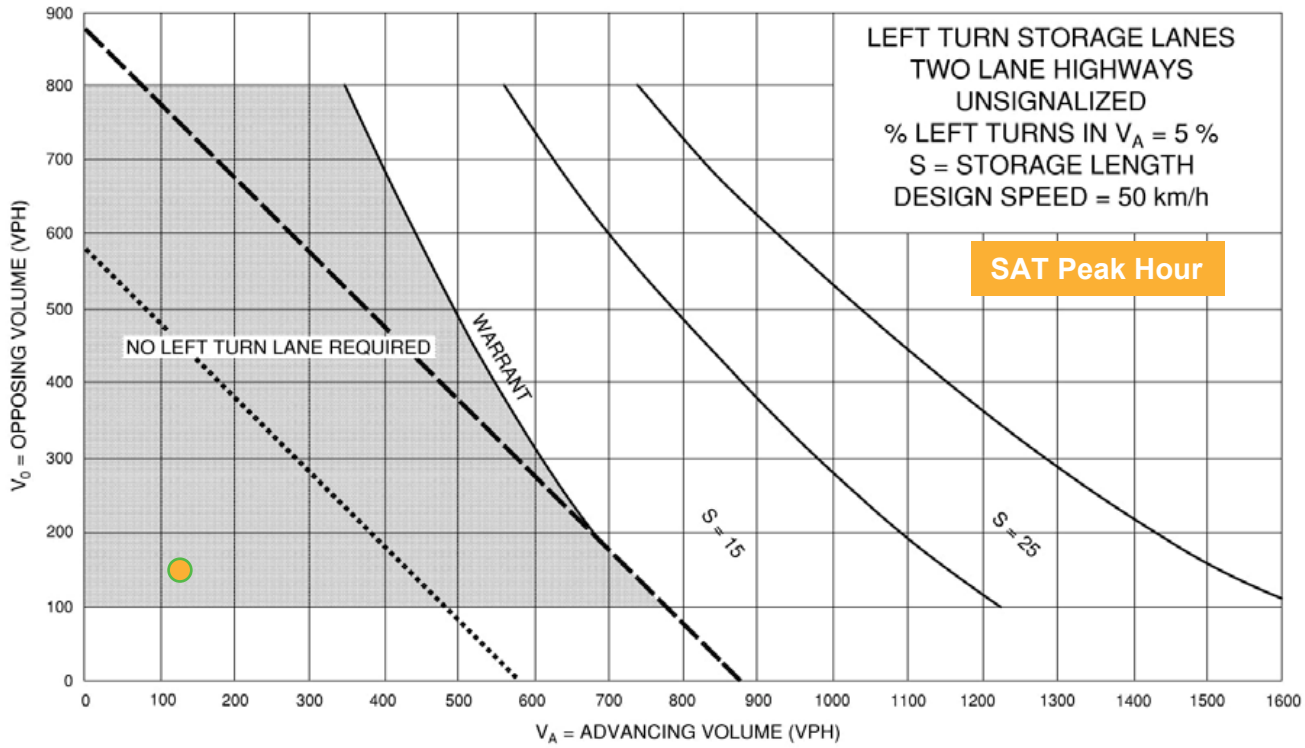
Eastbound Left-Turn Lane
Ghent Avenue and Lot B Driveway
Total – Five Year Horizon Volumes



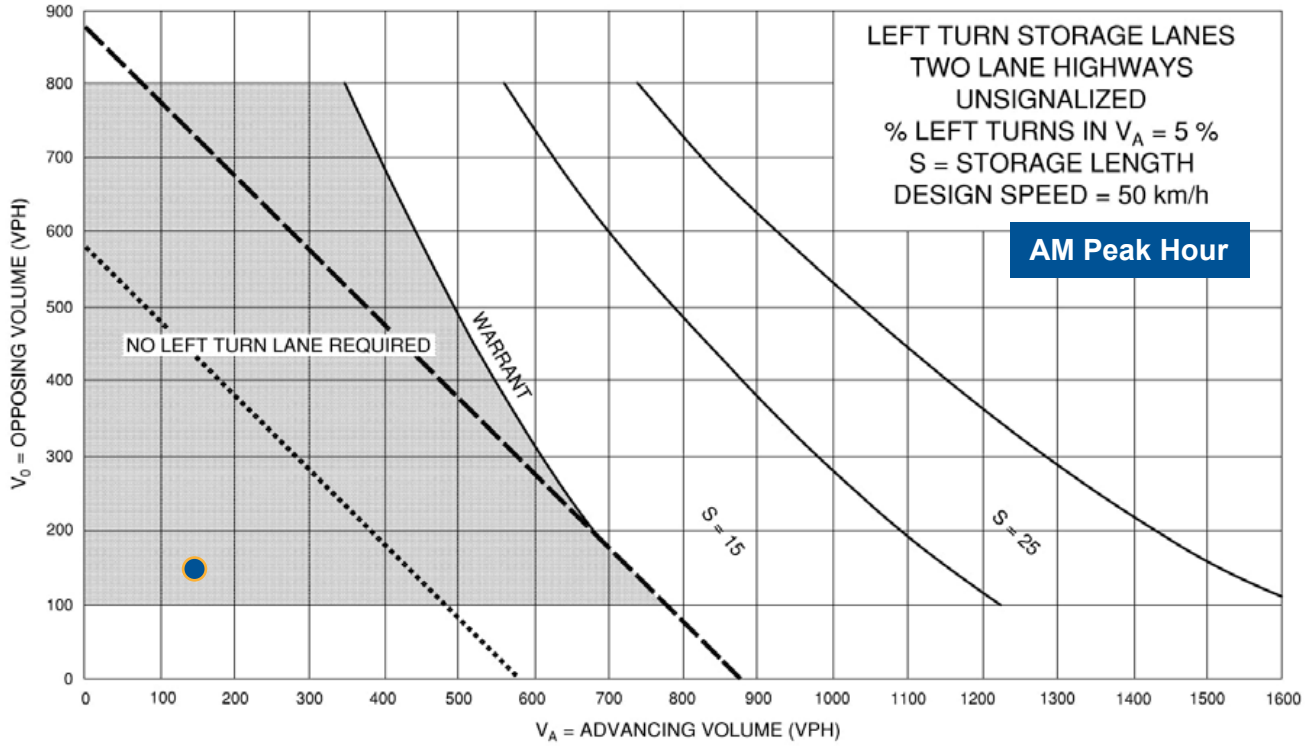


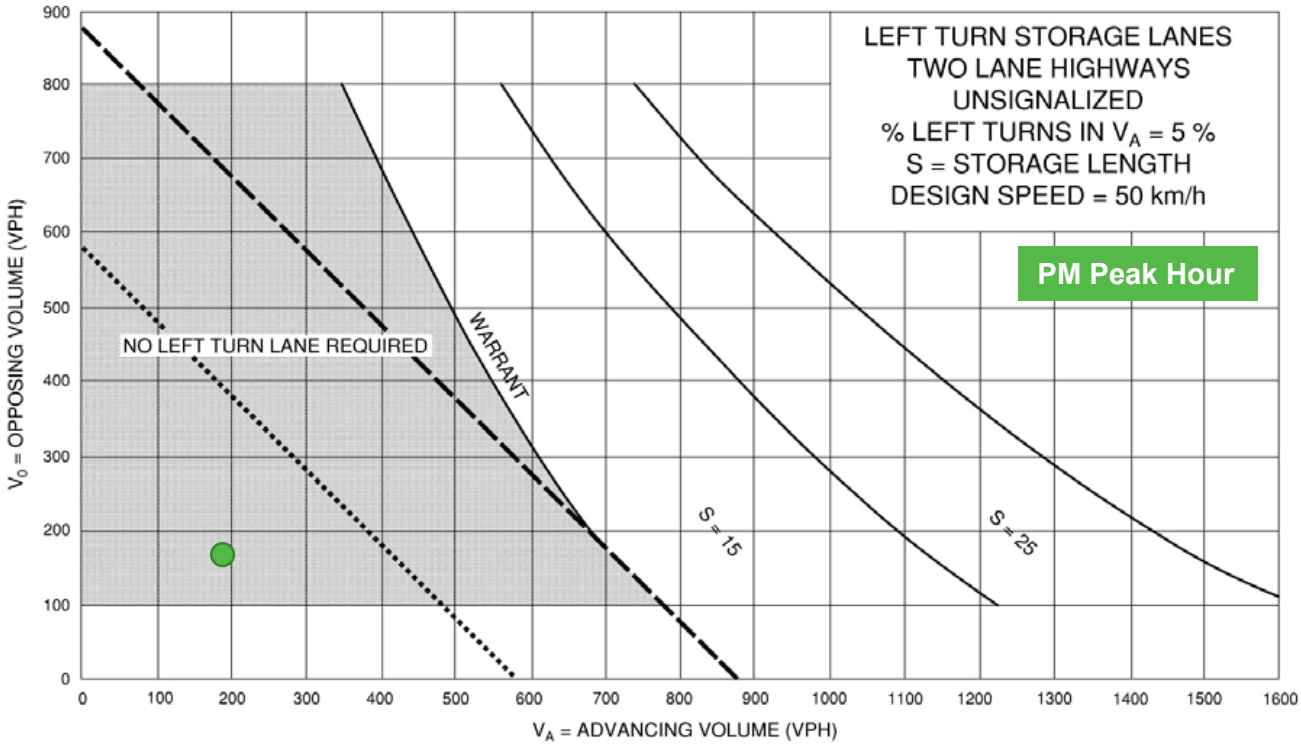
paradigm TRANSPORTATION SOLUTIONS LIMITED

Westbound Left-Turn Lane
Ghent Avenue and Lot C Driveway
Total – Full Build Out Volumes



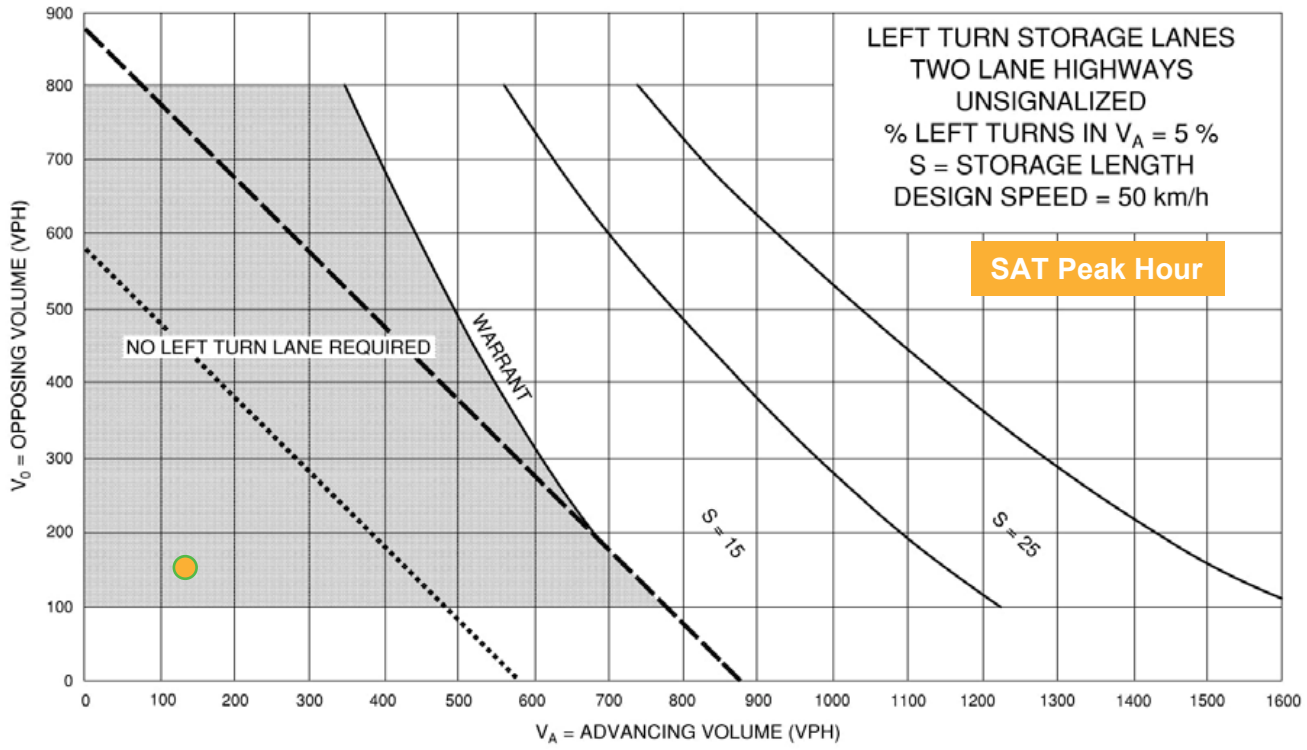
Westbound Left-Turn Lane
Ghent Avenue and Lot C Driveway
Total – Full Build Out Volumes





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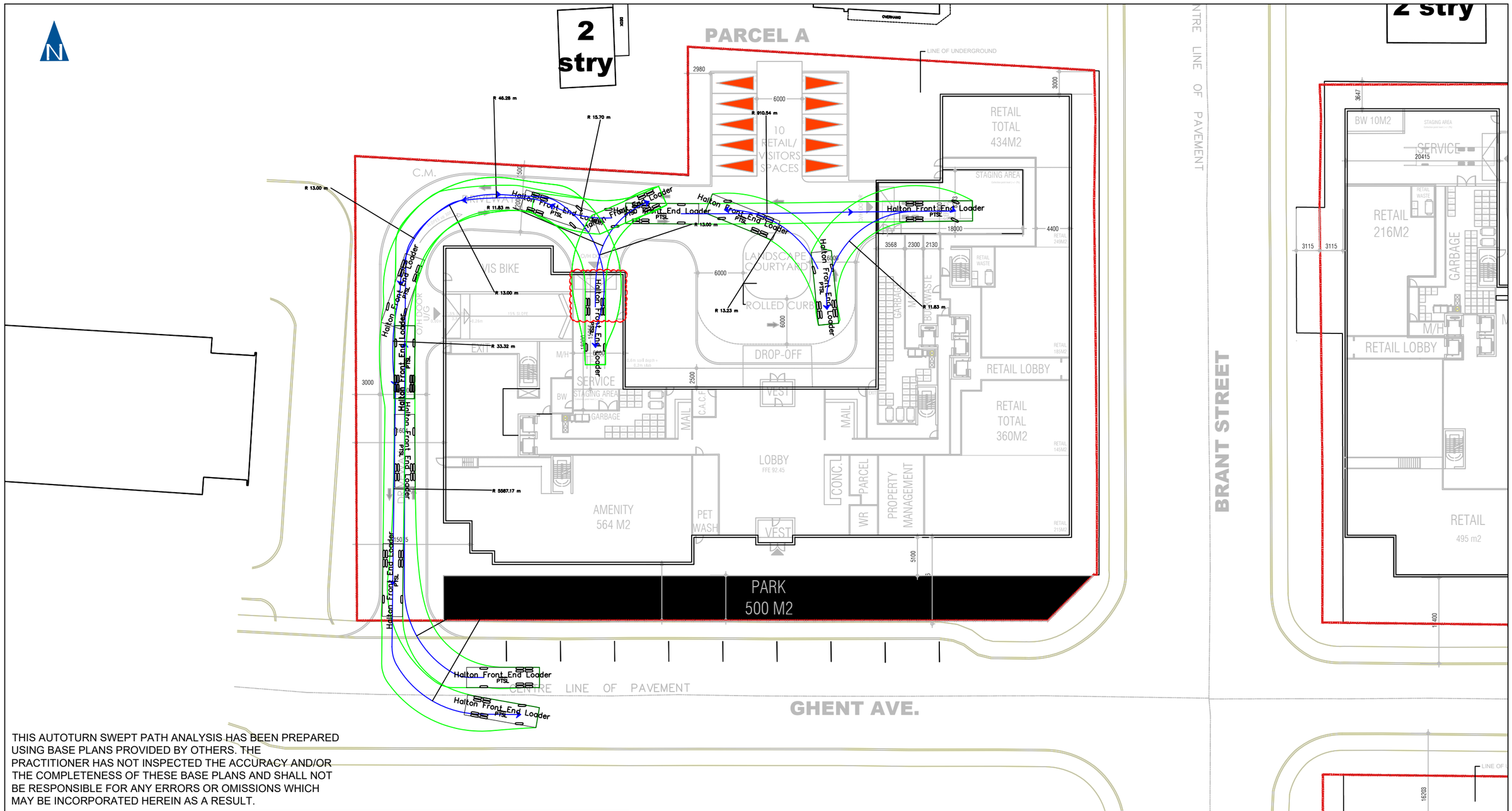
Westbound Left-Turn Lane
Ghent Avenue and Lot C Driveway
Total – Five Year Horizon Volumes



Westbound Left-Turn Lane
Ghent Avenue and Lot C Driveway
Total – Five Year Horizon Volumes

Appendix K

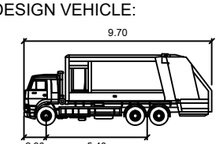
AutoTURN Analysis



THIS AUTOTURN SWEPT PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



Halton Front End Loader

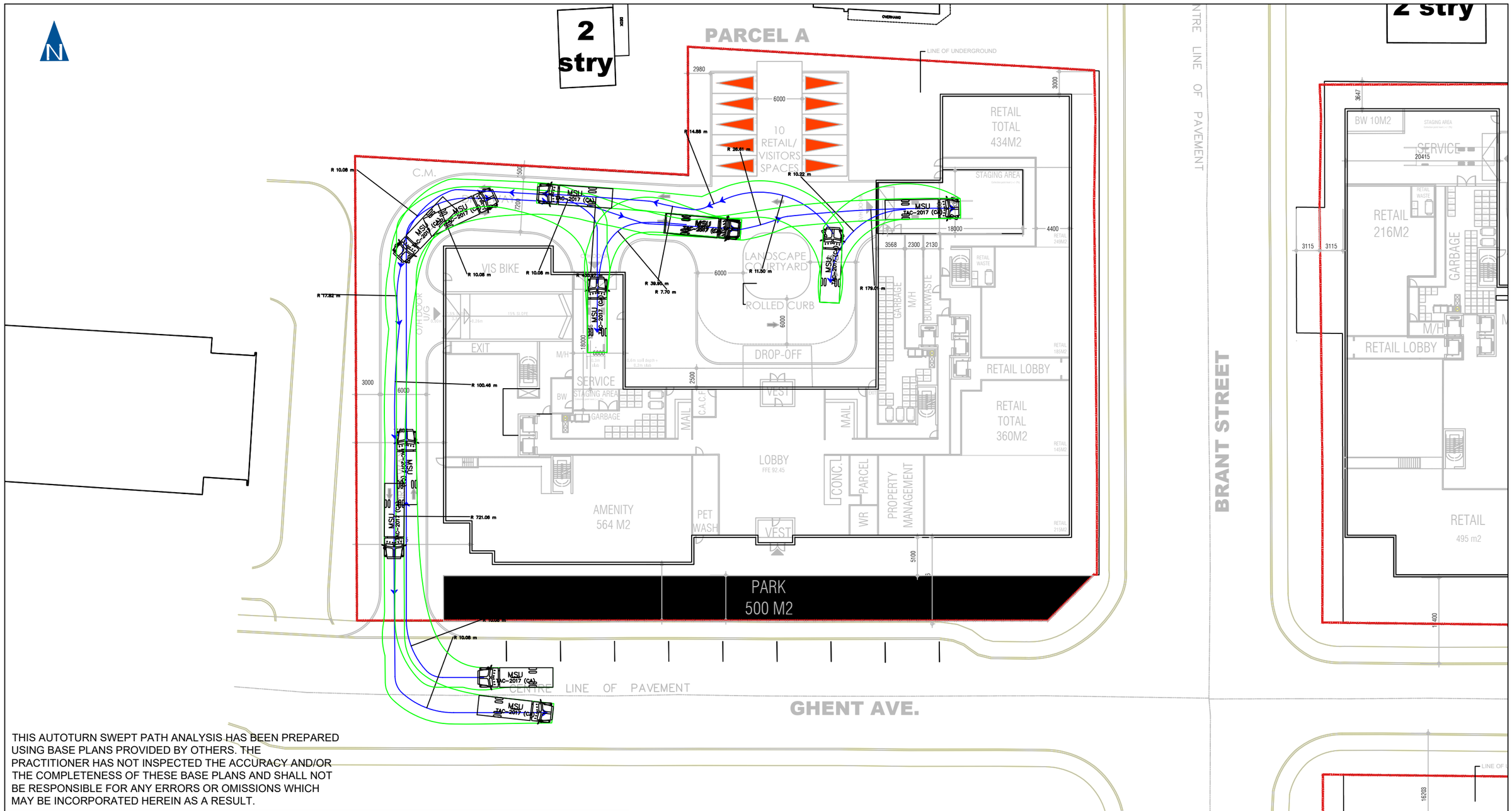
meters

Width	: 2.70
Track	: 2.70
Lock to Lock Time	: 6.0
Steering Angle	: 24.5

AUTOTURN ASSESSMENT - LOT A
BRANT + GHENT
BURLINGTON ON

paradigm TRANSPORTATION SOLUTIONS LIMITED

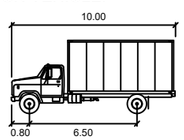
PROJECT NO.: 200403	DATE: SEPTEMBER 2021	SCALE: 1:500	DRAWING NO.:
DRAWN: SC	DESIGN: SC	CHECK: EB	LOT A-1



THIS AUTOTURN SWEPT PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



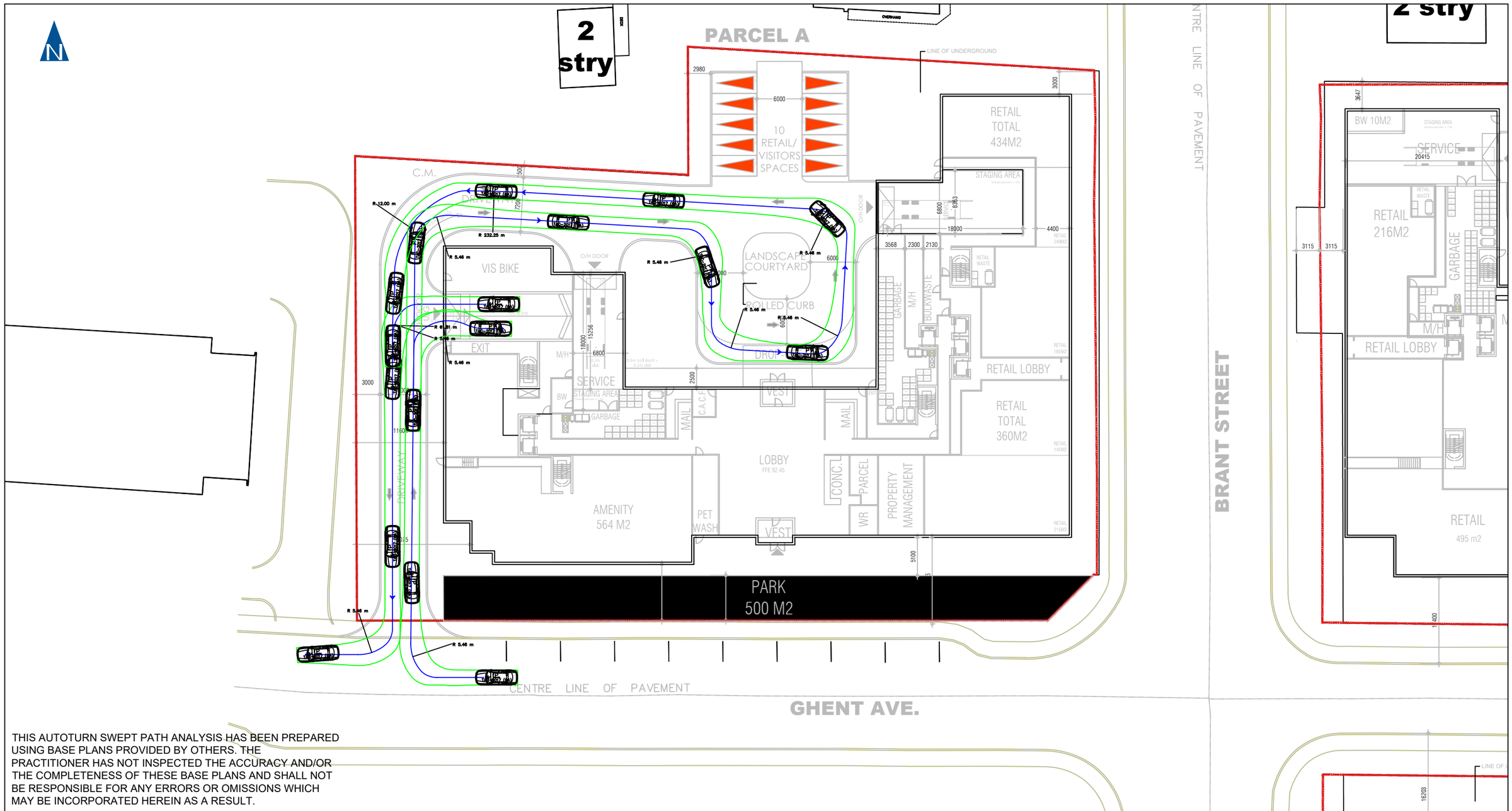
MSU

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.2

AUTOTURN ASSESSMENT - LOT A
BRANT + GHENT
BURLINGTON ON

paradigm TRANSPORTATION SOLUTIONS LIMITED

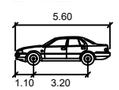
PROJECT NO.: 200403	DATE: SEPTEMBER 2021	SCALE: 1:500	DRAWING NO.:
DRAWN: SC	DESIGN: SC	CHECK: EB	LOT A-2



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NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



P

	meters
Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

AUTOTURN ASSESSMENT - LOT A
BRANT + GHENT
BURLINGTON ON

paradigm TRANSPORTATION SOLUTIONS LIMITED

PROJECT NO.: 200403	DATE: SEPTEMBER 2021	SCALE: 1:500	DRAWING NO.:
DRAWN: SC	DESIGN: SC	CHECK: EB	LOT A-3

2 stry

7 stry

PARCEL B

1 stry

PARK
1375 M2

RETAIL
TOTAL
434M2

STAGING AREA

RETAIL LOBBY

RETAIL
TOTAL
360M2

BRANT STREET

CENTRE LINE OF PAVEMENT

LINE OF UNDERGROUND

BW 10M2

RETAIL
216M2

GARBAGE

ROLLED CURB

M/H

MAIL

RETAIL LOBBY

DRIVEWAY

PROPERTY MANAGEMENT

RETAIL
495 m2

WR

C.

LOBBY
FFE 92.20

PARCEL

C.A.C.F

A/L

PET WASH

AMENITY
163 m2

8RETAIL/VISITORS

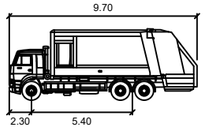
Halton Front End Loader PTSL

R 47.33 m
R 38.09 m
R 13.00 m
R 19.83 m
R 38.32 m
R 15.63 m
R 22.92 m
R 252.44 m

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NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



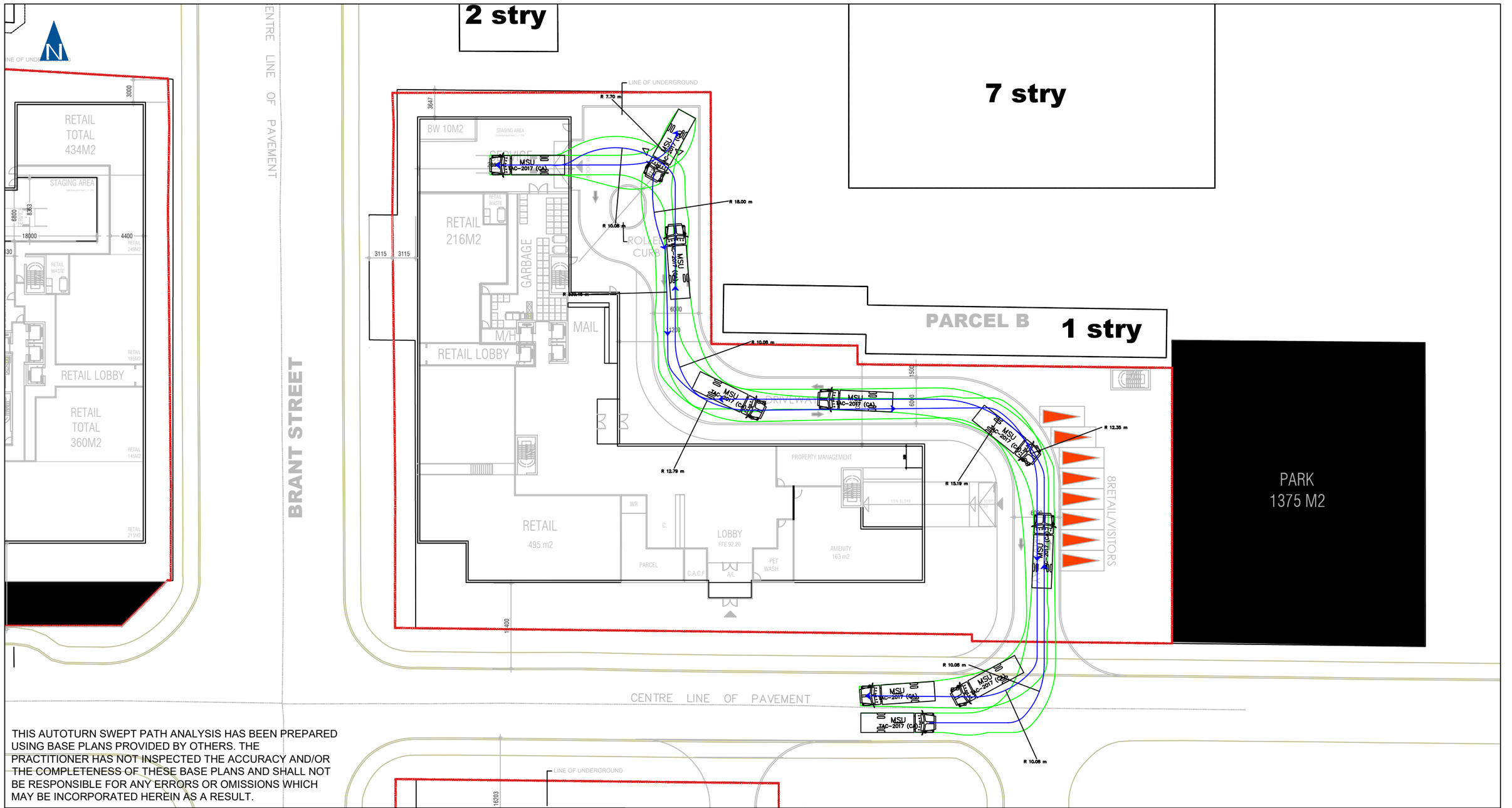
Halton Front End Loader

	meters
Width	: 2.70
Track	: 2.70
Lock to Lock Time	: 6.0
Steering Angle	: 24.5

AUTOTURN ASSESSMENT - LOT B
BRANT + GHENT
BURLINGTON ON

paradigm TRANSPORTATION SOLUTIONS LIMITED

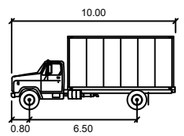
PROJECT NO.: 200403	DATE: SEPTEMBER 2021	SCALE: 1:500	DRAWING NO.: LOT B-1
DRAWN: SC	DESIGN: SC	CHECK: EB	



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NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



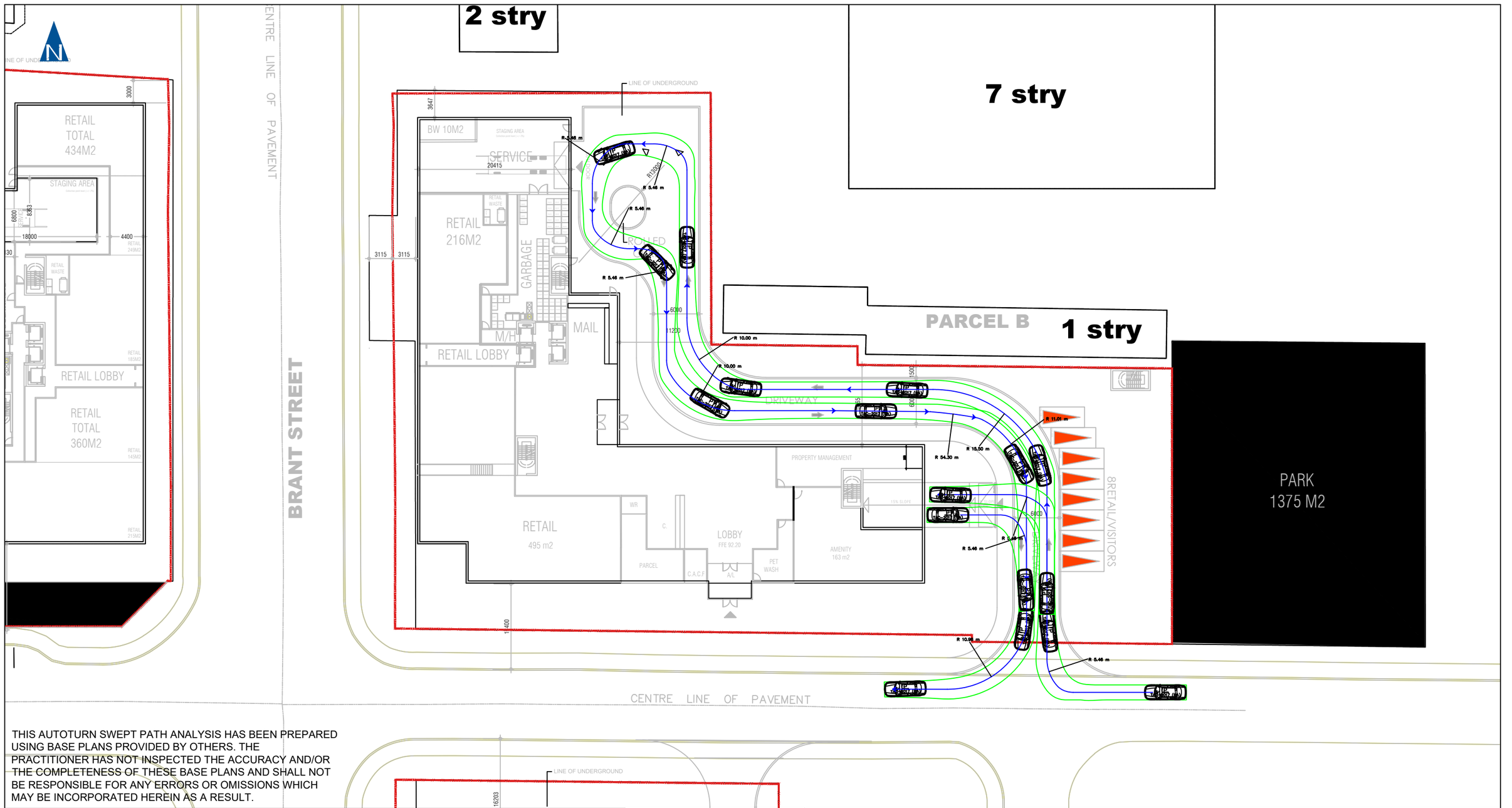
MSU

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.2

AUTOTURN ASSESSMENT - LOT B
BRANT + GHENT
BURLINGTON ON

paradigm TRANSPORTATION SOLUTIONS LIMITED

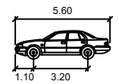
PROJECT NO.: 200403	DATE: SEPTEMBER 2021	SCALE: 1:500	DRAWING NO.: LOT B-2
DRAWN: SC	DESIGN: SC	CHECK: EB	



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NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



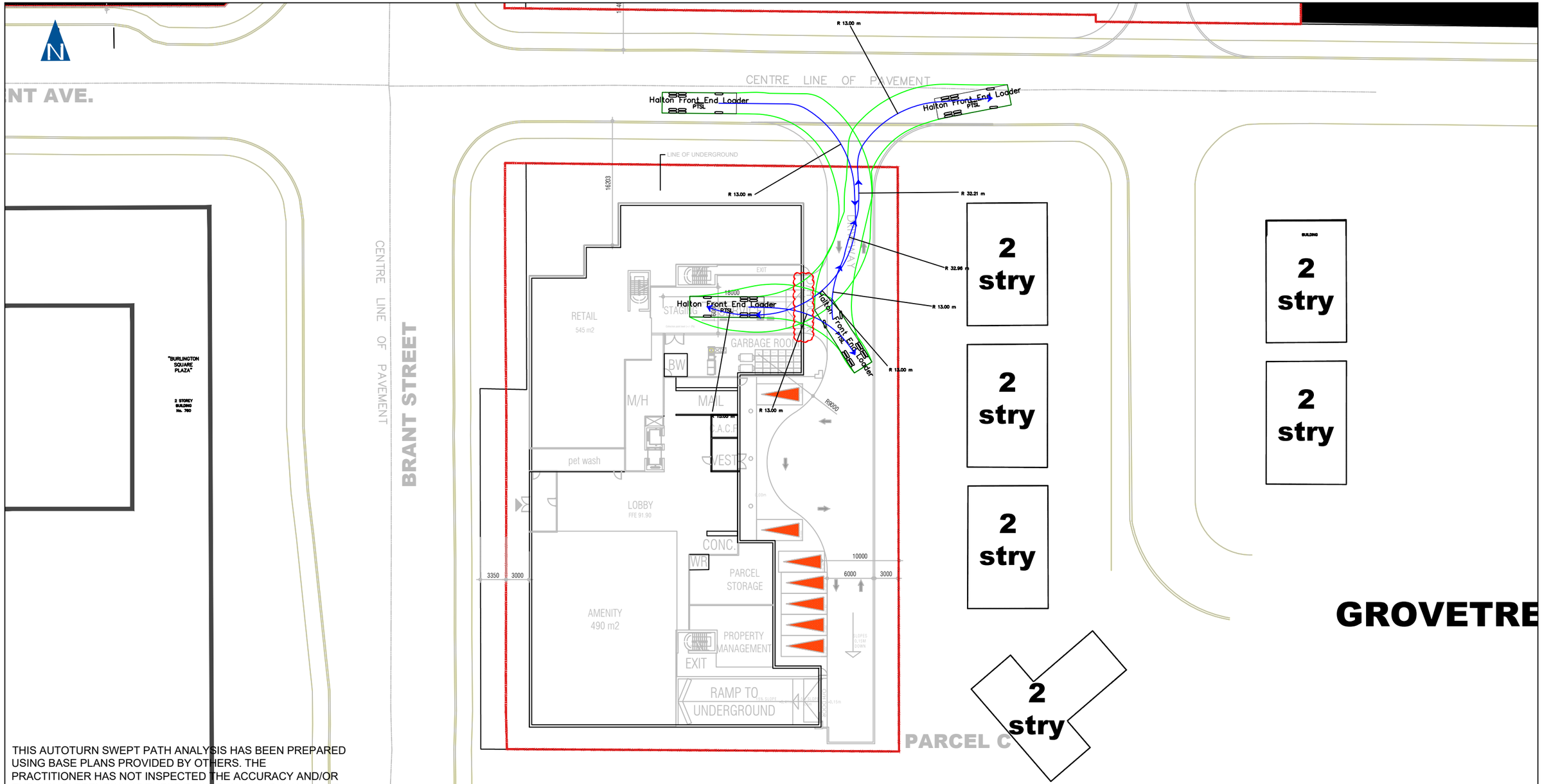
P

	meters
Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

AUTOTURN ASSESSMENT - LOT B
BRANT + GHENT
BURLINGTON ON

paradigm TRANSPORTATION SOLUTIONS LIMITED

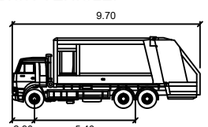
PROJECT NO.: 200403	DATE: SEPTEMBER 2021	SCALE: 1:500	DRAWING NO.: LOT B-3
DRAWN: SC	DESIGN: SC	CHECK: EB	



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NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



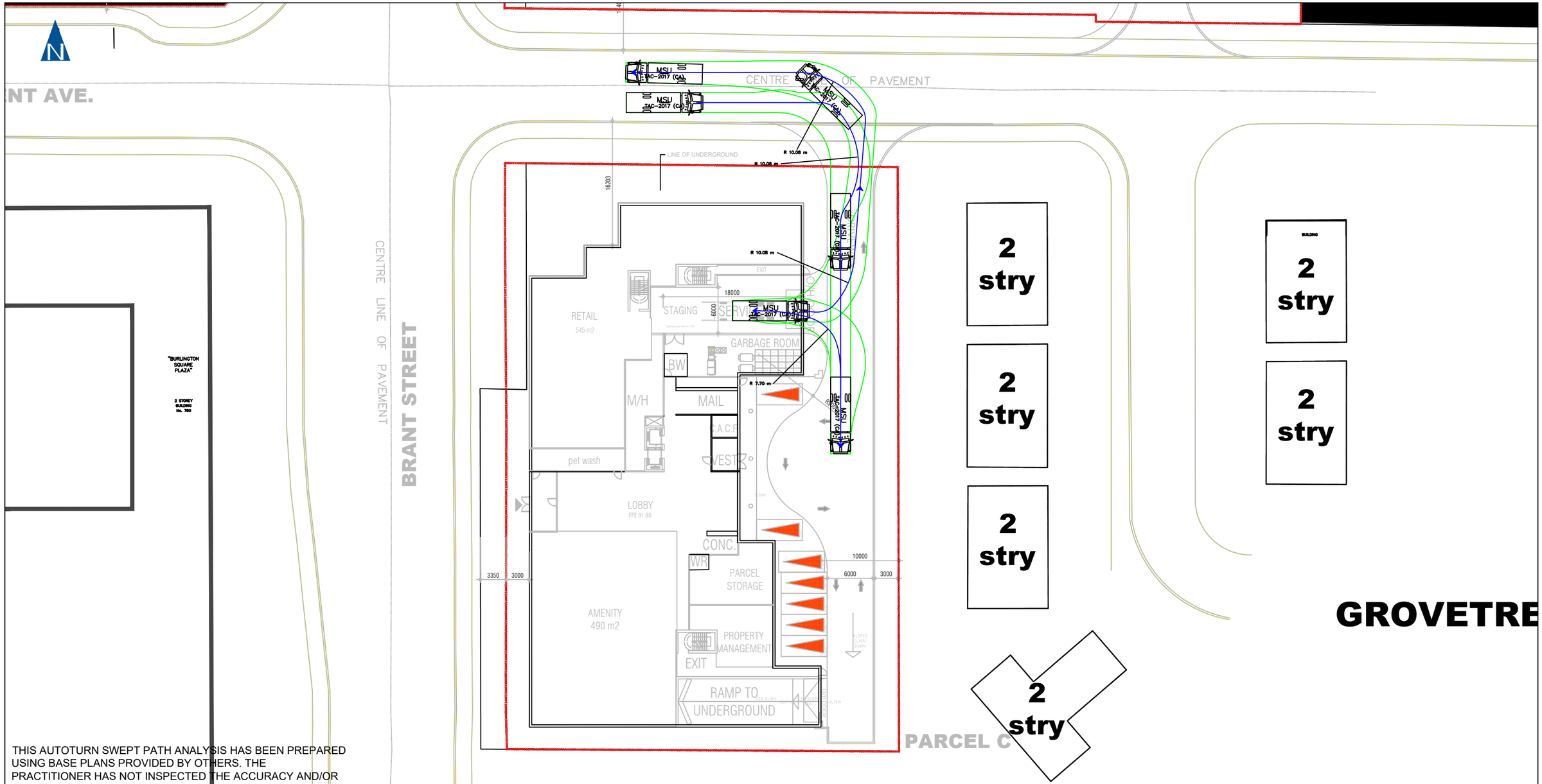
Halton Front End Loader

	meters
Width	: 2.70
Track	: 2.70
Lock to Lock Time	: 6.0
Steering Angle	: 24.5

AUTOTURN ASSESSMENT - LOT C
BRANT + GHENT
BURLINGTON ON

paradigm TRANSPORTATION SOLUTIONS LIMITED

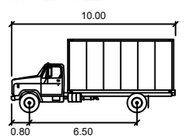
PROJECT NO.: 200403	DATE: SEPTEMBER 2021	SCALE: 1:500	DRAWING NO.: LOT C-1
DRAWN: SC	DESIGN: SC	CHECK: EB	



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NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



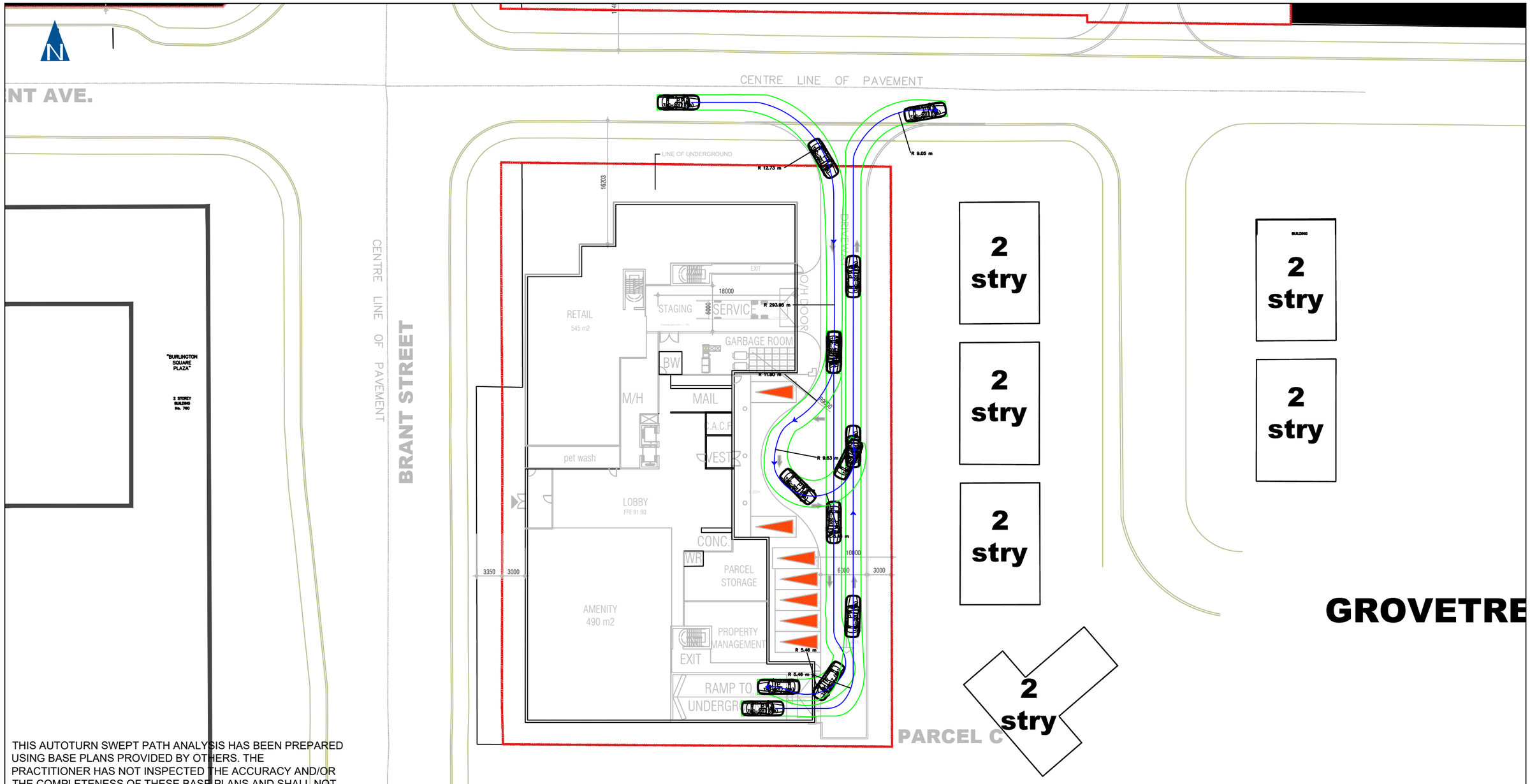
MSU

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.2

AUTOTURN ASSESSMENT - LOT C
BRANT + GHENT
BURLINGTON ON

paradigm TRANSPORTATION SOLUTIONS LIMITED

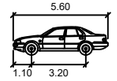
PROJECT NO.: 200403	DATE: SEPTEMBER 2021	SCALE: 1:500	DRAWING NO.: LOT C-2
DRAWN: SC	DESIGN: SC	CHECK: EB	



THIS AUTOTURN SWEPT PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



P

	meters
Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

AUTOTURN ASSESSMENT - LOT C
BRANT + GHENT
BURLINGTON ON

paradigm TRANSPORTATION SOLUTIONS LIMITED

PROJECT NO.: 200403	DATE: SEPTEMBER 2021	SCALE: 1:500	DRAWING NO.: LOT C-3
DRAWN: SC	DESIGN: SC	CHECK: EB	