1010 Downsview Drive and 355 Plains Road East City of Burlington Transportation Impact Study and Parking Study

Paradigm Transportation Solutions Limited

May 2022
210771

ptsl.com

Project Summary

Project Number
210771

May 2022

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355 Plains Holdings Inc.

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1010 Downsview Drive & 355 Plains Road East, City of Burlington Transportation Impact Study and Parking Study



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Executive Summary

Content

335 Plains Holdings Inc. & 355 Plains Holdings Inc. retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Transportation Impact Study (TIS) and Parking Study for the proposed development of 1010 Downsview Drive and 355 Plains Road East in the City of Burlington. This report is part of a required Zoning By-law Amendment and Official Plan Amendment.

This study determines the impacts of the development traffic on the surrounding road network, forecasts the site's parking demand and identifies the improvements recommended to accommodate the site generated traffic.

Development Concept

The subject lands are on the northwest and northeast corner of the Plains Road East and Downsview Drive intersection. The development concept includes two mid-rise buildings ranging in height from 8 to 11 storeys and stacked townhouses. The number of residential units is approximately 584 units. Approximately 629 m^2 of ground floor retail space is proposed. Vehicle access is proposed by two driveways to Downsview Drive located directly opposite each other approximately 85 metres north of Plains Road East. Build-out is estimated to occur by year 2027.

Conclusion

Transportation Impact Study

The main findings and conclusions of this study are as follows:

- **Base Year Traffic Conditions**: Critical movements are noted at the Plains Road East intersections with Gallagher Road/Shadeland Avenue and Filmandale Road/Lindley Commons.
- **Site Trip Generation**: The subject site is forecast to generate approximately 248 and 272 new vehicle trips during the AM and PM peak hours, respectively.
- **Transportation Demand Management**: The site concept plan includes TDM measures intended to assist in mitigating the site's transportation and parking impacts. TDM measures are aimed at walking, transit, cycling, parking, and

education/promotion. To encourage cycling, the City is planning a protected bikeway on Plains Road East.

- **Background Traffic Conditions**: The noted queue lengths and localized congestion identified under base year conditions are forecast to continue to occur.
- **Total Traffic Conditions**: The capacity issues identified under background conditions are forecast to continue to occur. Two additional critical movements are noted at the Plains Road East and Downsview Drive intersection because of site-generated traffic.
- **Remedial Measures**: Signals are not warranted on Plains Road East at Filmandale Road/Lindley Commons and Dovercourt Avenue under background conditions.

  The City should consider extending the southbound left-turn storage lane length on Gallagher Road to provide 35 metres of storage. The need for the additional storage is an existing condition.

Parking Study

- The site's parking supply is identified as 750 spaces (1.28 spaces per unit). The site's vehicle parking supply is allocated as:
  - Occupant parking – 723 spaces (1.24 spaces per unit);
  - Visitor parking – 27 spaces (0.05 spaces per unit);
- The allocation of parking between occupants and visitors requires adjustment. With a comprehensive TDM program, a minimum occupant parking ratio of 0.90 spaces per unit and a minimum visitor parking ratio of 0.10 spaces per unit is supportable. The zoning requirements for retail parking will be provided. Visitor parking can be accommodated at grade or within the parking structures.

Recommendations

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

- The site's TDM program be implemented and monitored over time to help manage the site's transportation and parking impacts.
- 292 long-term and 64 short-term bicycle parking spaces be provided on the site plan. Long-term bicycle parking should be provided in secure indoor rooms/areas with bicycle repair



stations. The parking will be conveniently located at-grade and in the parking structure. The short-term bicycle parking should be located at grade near primary building entrances;

- In conjunction with the site's TDM program, that the site's parking supply be designed to provide for a minimum of 0.90 spaces per units for occupant and a minimum of 0.10 spaces per unit for residential visitors. The zoning requirements for retail parking will be provided.
- The City consider extending the southbound left-turn storage length at the Plains Road East and Shadeland Avenue/ Gallagher Road intersection to provide 35 metres of storage to accommodate the existing and forecast background traffic.

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1 Introduction

335 Plains Holdings Inc. & 355 Plains Holdings Inc. retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Transportation Impact Study (TIS) and Parking Study for the proposed development at 1010 Downsview Drive and 355 Plains Road East in the City of Burlington. This report is part of a required Zoning By-law Amendment and Official Plan Amendment.

Figure 1.1 illustrates the site location.

The scope of the study includes:

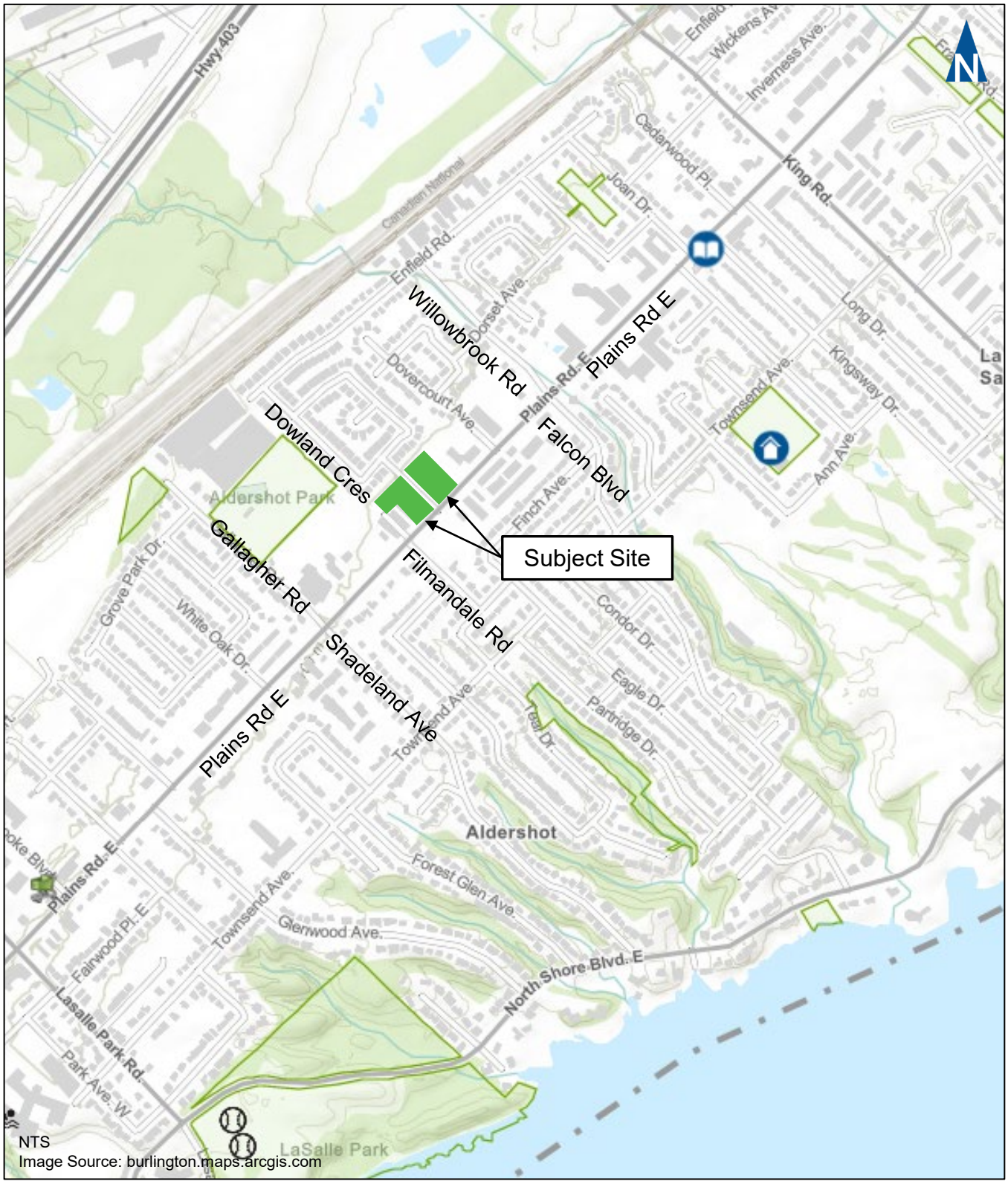
- Determine and assess the current study area traffic conditions;
- Forecast the additional traffic generated by the proposed development;
- Analyze the impacts of the additional traffic on the study area road network;
- Recommend necessary remedial measures required to mitigate the transportation impacts; and
- Forecast the parking demand of the proposed development.

Appendix A contains the pre-study consultation correspondence with the City of Burlington. The study generally follows the Halton Region TIS Guidelines[1][2].

The study area intersections assessed include:

- Plains Road East at Gallagher Road/Shadeland Avenue (signalized);
- Plains Road East at Filmandale Road/Lindley Commons (unsignalized);
- Plains Road East at Downsview Drive (signalized);
- Plains Road East at Dovercourt Avenue (unsignalized);
- Plains Road East at Willowbrook Road/Falcon Boulevard (signalized);
- Downsview Drive at Dowland Crescent (unsignalized); and
- The proposed site driveways to Downsview Drive (unsignalized).

[1] *Transportation Impact Study Guidelines*, Halton Region, January 2015
[2] *Regional Guidelines for Using Synchro Version 6.0*, Halton Region, January 2006.



NTS
Image Source: burlington.maps.arcgis.com

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Site Location

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Figure 1.1

2 Existing Conditions

2.1 Road Network

The characteristics of the roadways within the study area are described generally as follows:

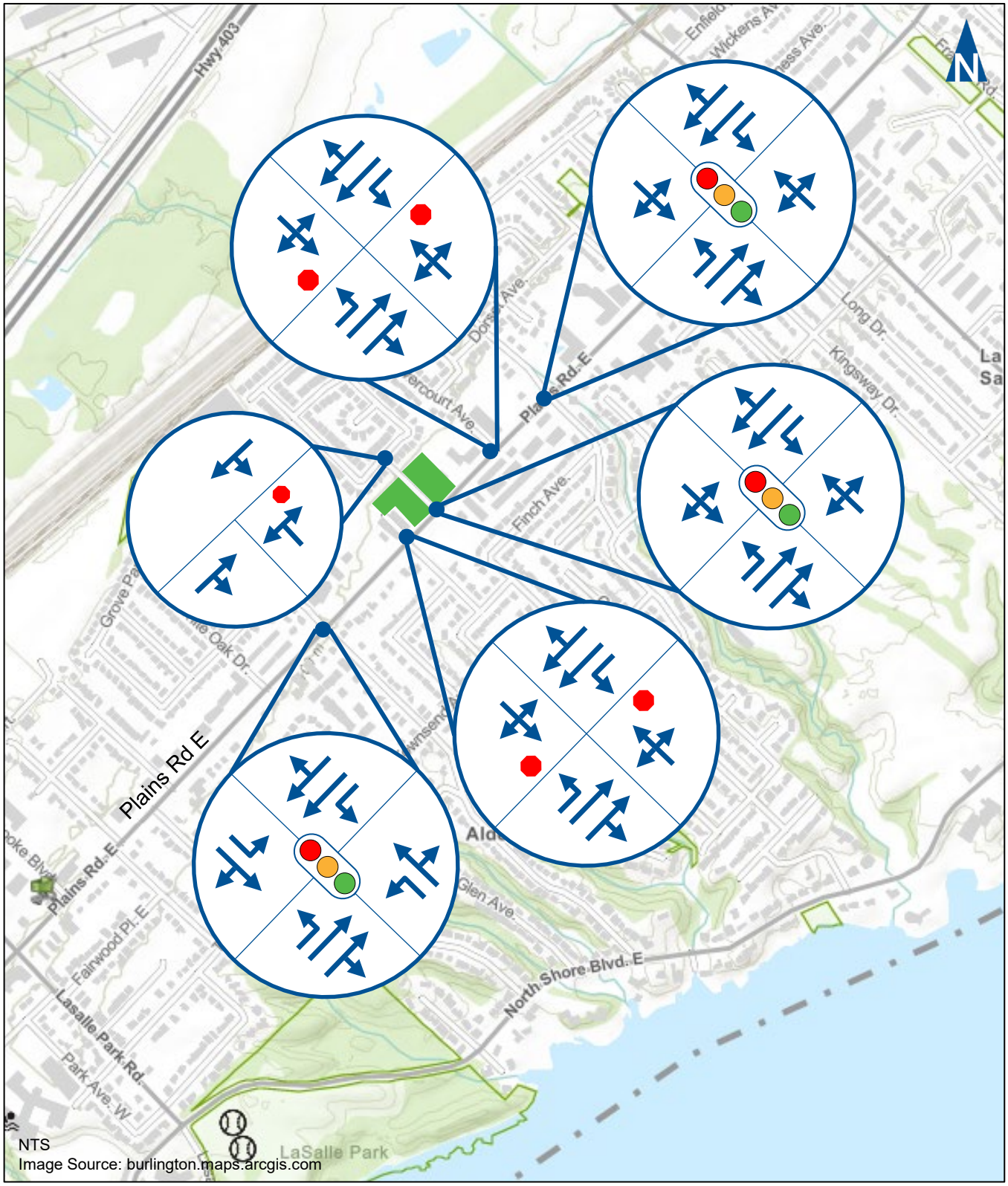
- **Plains Road East** is an east/west multi-purpose arterial[3] road with two lanes in each direction and a centre two-way left-turn lane (TWLTL). The road has a posted speed limit of 60 km/h and during school bell times, a flashing posted speed limit of 40 km/h is in effect within the study area. The intersections with Gallagher Road/Shadeland Avenue, Downsview Drive, and Willowbrook Road/Falcon Boulevard are signalized. The intersections with Filmandale Road/Lindley Commons and Dovercourt Avenue are stop controlled on the north and south approaches. On-street parking is not permitted within the study area.
- **Gallagher Road/Shadeland Avenue** is a north/south collector road. The road has one lane in each direction and a posted speed limit of 40 km/h. On-street parking restrictions are noted along the frontage of the Holy Rosary Catholic Elementary School.
- **Filmandale Road** is a north/south local road. The road has one lane in each direction and a posted speed limit of 40 km/h. A private driveway forms the north leg of the Filmandale Road and Plains Road East intersection. No on-street parking restrictions are noted in the study area.
- **Downsview Drive** is a north/south local road. The road has one lane in each direction and a posted speed limit of 40 km/h. A private driveway forms the south leg of the Downsview Drive and Plains Road East intersection. No on-street parking restrictions are noted in the study area.
- **Dovercourt Avenue** is a north/south local road. The road has one lane in each direction and a posted speed limit of 40 km/h. A private driveway forms the south leg of the Dovercourt Avenue and Plains Road East intersection. On-street parking is not permitted on the east side of the road and a parking lot is present on the west side of the road.
- **Willowbrook Road/Falcon Boulevard** is a north/south local road. The road has one lane in each direction and a posted

[3] *Classification of Transportation Facilities*, City of Burlington, May 2010.

speed limit of 40 km/h. On-street parking is not permitted on the west side of the road south of Plains Road East.

- **Dowland Crescent** is a north/south and east/west local road. The road has one lane in each direction and a posted speed limit of 40 km/h. No on-street parking restrictions are noted in the study area.

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



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Image Source: burlington.maps.arcgis.com

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Existing Lane Configuration & Traffic Control

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Figure 2.1

2.2 Pedestrian Network

All signalized intersections in the study area provide crosswalks and pedestrian pushbuttons. **Figure 2.2** illustrates the existing sidewalks within the study area.

Sidewalks are provided on both sides of Plains Road East, Downsview Drive, and Dowland Crescent. Sidewalks are provided on one side of Gallagher Road/Shadeland Avenue and Falcon Boulevard. No sidewalks are not present on Filmandale Road, Dovercourt Avenue, and Willowbrook Road.

2.3 Cycling Network

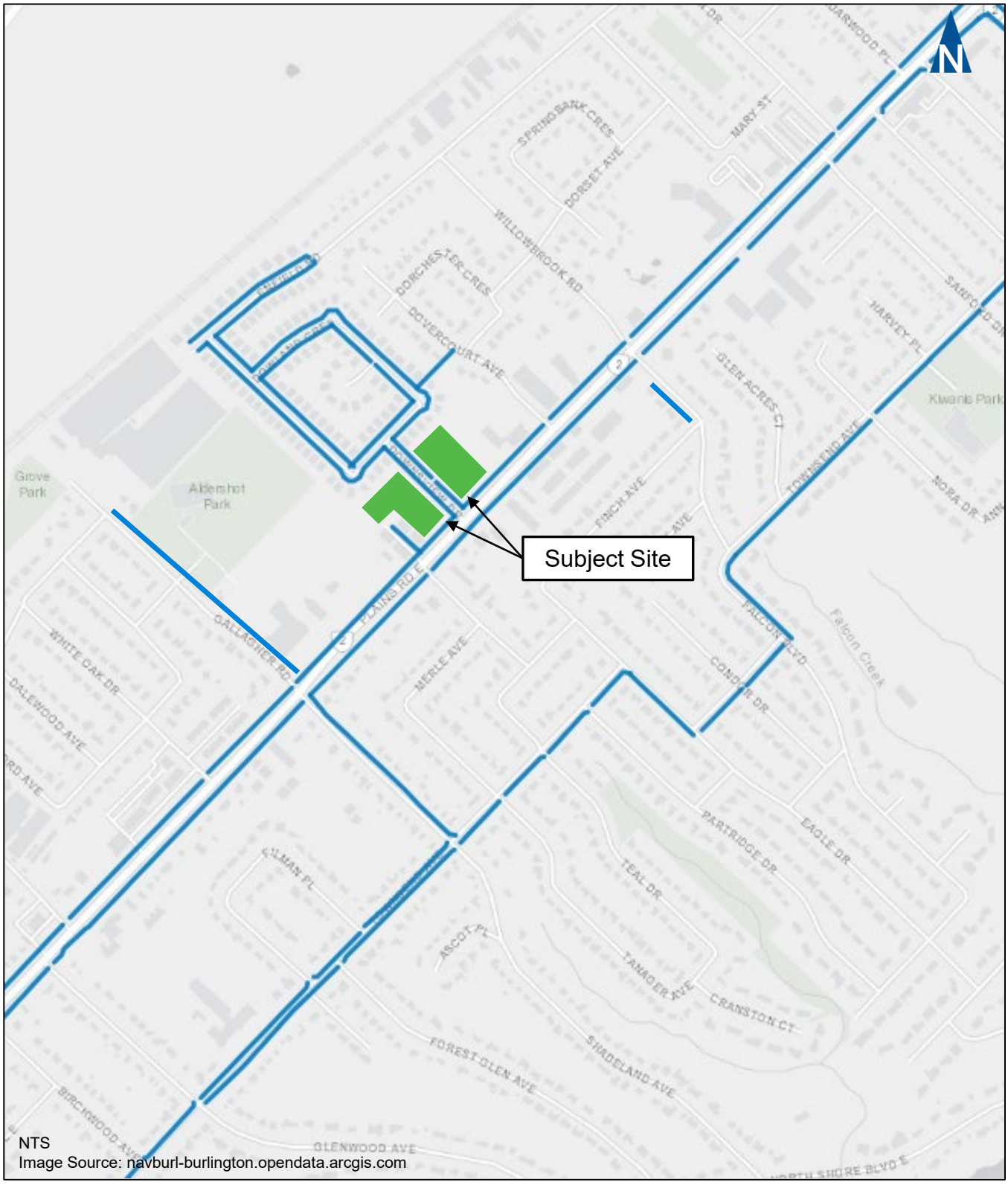
The City of Burlington's bicycle network provides a variety of cycling facilities within the immediate area. **Figure 2.3** illustrates the existing cycling network[4].

On-street bicycle lanes are provided in both directions along Plains Road East, east of Shadeland Avenue/Gallagher Road.

The City of Burlington's Cycling Plan[5] identifies a Protected Bikeway along Plains Road East and a Shared Use Lane on Filmandale Road and Falcon Boulevard south of Plains Road East. 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 bikeway is identified as short-term in the City of Burlington Cycling Plan. The first phase of the Plains Road bikeway is from Spring Gardens Road to Waterdown Road with construction planned for Year 2022. The timing for the construction of the bikeway across the site's Plains Road East frontage is unknown.

Figure 2.4 illustrates the proposed cycling network.

[4] City of Burlington Cycling Plan – 08/01/2019. Map 1 – Existing Network
[5] Ibid. Map 5 – Proposed Network. Map 7 – Proposed Project Priority



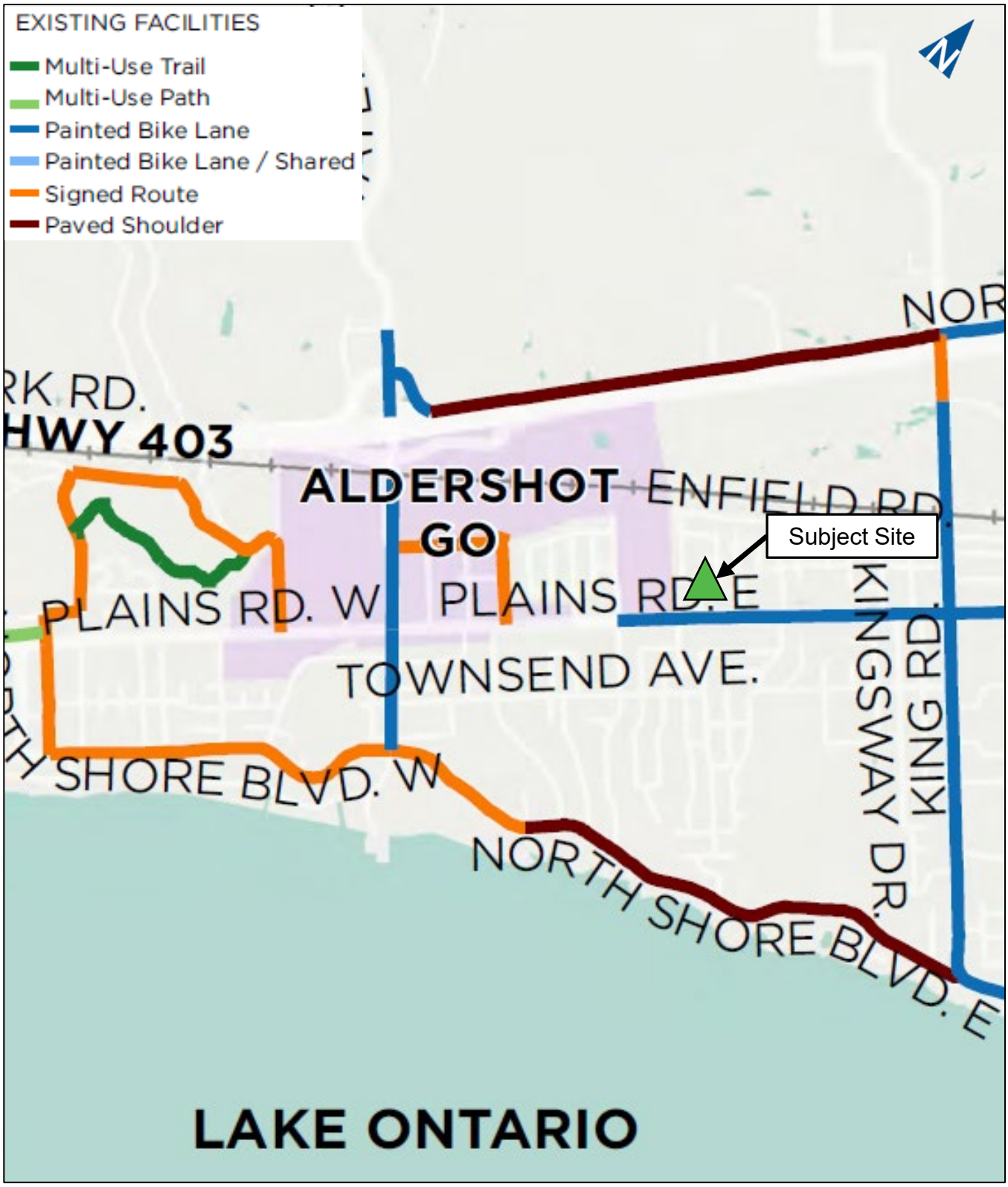
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Image Source: navburl-burlington.opendata.arcgis.com

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Existing Pedestrian Network

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Figure 2.2



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Existing Cycling Network

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Figure 2.3



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Proposed Cycling Network

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Figure 2.4

2.4 Transit Service

Burlington Transit operates two routes adjacent to the subject site. **Table 2.1** summarizes the existing routes, service headways and schedule. **Figure 2.5** illustrates the existing transit network.

The closest eastbound and westbound transit stops are located adjacent to the subject site at the Plains Road East intersection with Downsview Drive. **Figure 2.6** illustrates the nearby transit stops. The transit stops near the Willowbrook Road/Falcon Boulevard intersection are also GO Transit Bus stops.

TABLE 2.1: EXISTING TRANSIT ROUTES

Route	Description
Burlington Transit Route 1/101 (Plains/Plains Express) *	Offers service 7-days a week between the Appleby GO Station and the City of Hamilton (King & James). Weekday headways range from 10-15 minutes depending on time of day. Weekend headways are in the order of 15-30 minutes.
Burlington Transit Route 4 (Central)	Offers service 7-days a week between the Appleby GO Station and Aldershot GO Station. Weekday and weekend headways are in the order of 60 minutes.

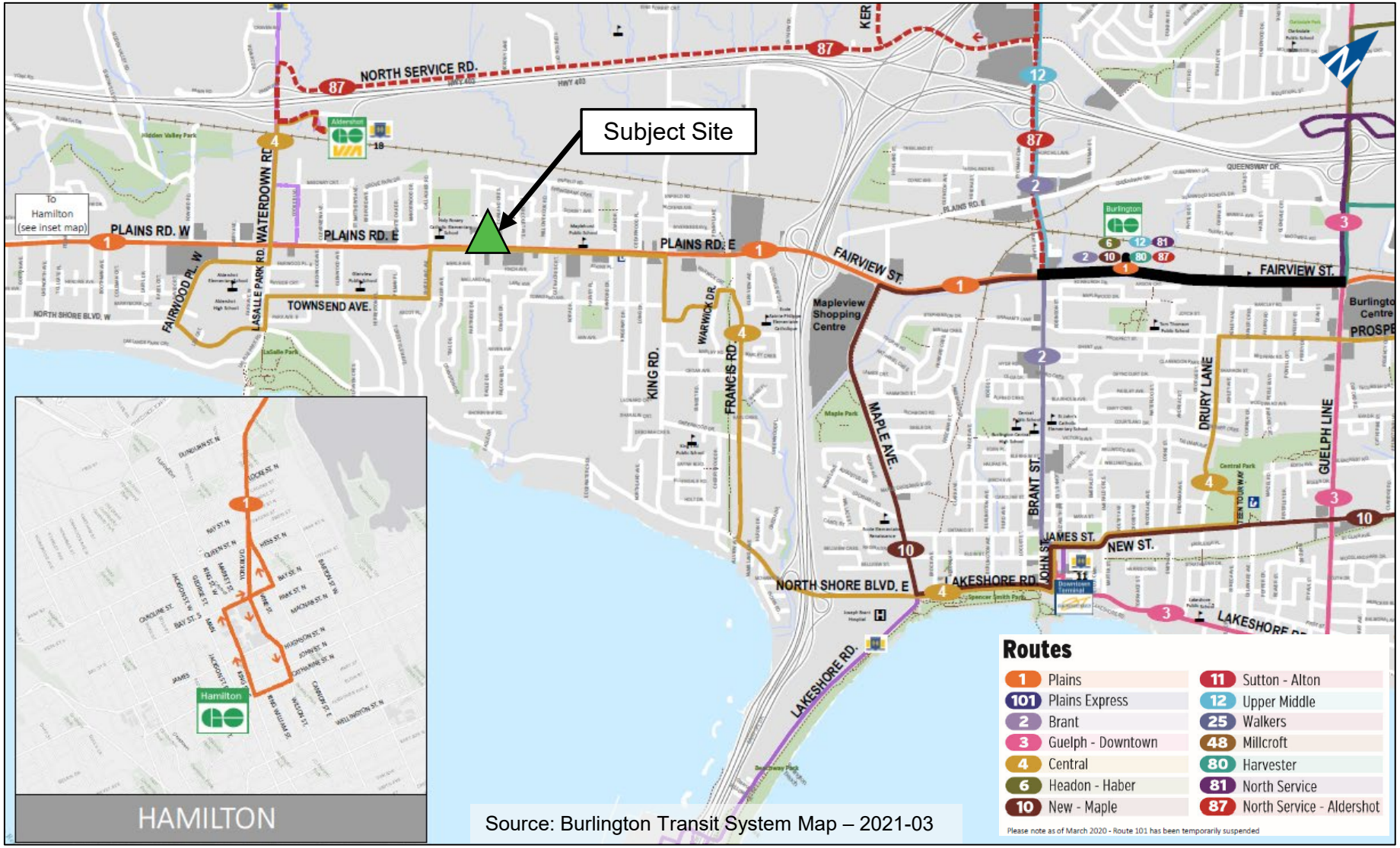
Burlington Transit provides accessible transportation services in addition to the regular transit routes.

The Aldershot GO Station provides GO Transit Bus, GO Transit Train, Hamilton Street Railway (HSR) transit and Via Rail services. The Aldershot GO Station functions as a turnaround point for other Burlington Transit routes.

The walking distance to the Aldershot GO Station is about 15-minutes (1.2 kilometres). The threshold for most walking trips is approximately a 1.6 kilometres distance[6]. The Aldershot GO Station is near the upper limit for walking distance. The travel time to the station by bus is about

[6] OTM Book 15 - Pedestrian Crossing Treatments

9-15 minutes (depending on the route). The station is about a 4-minute bike ride from the subject site.

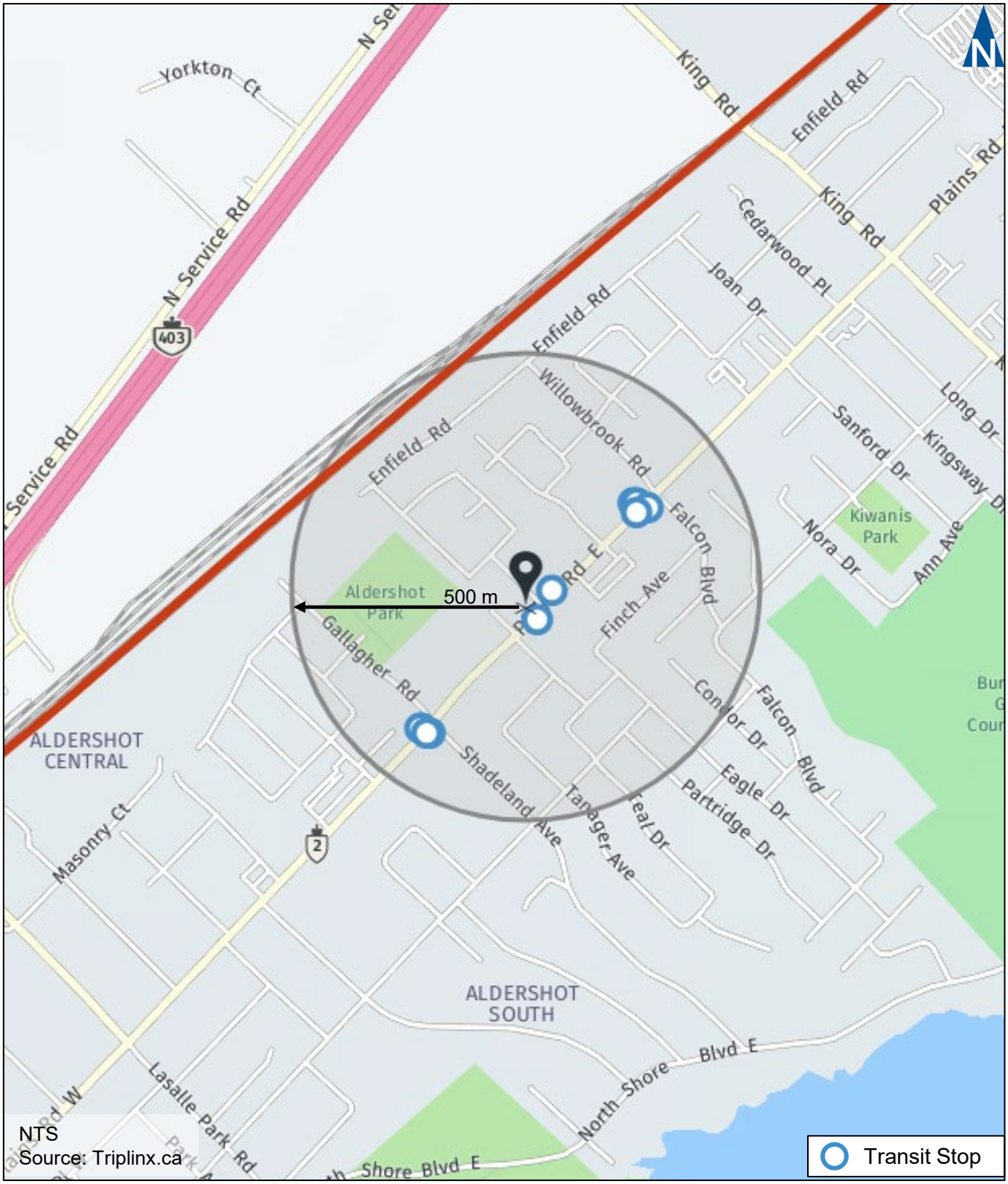


Source: Burlington Transit System Map – 2021-03

Existing Transit Network

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Figure 2.5



NTS
Source: Triplinx.ca

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Existing Transit Stops

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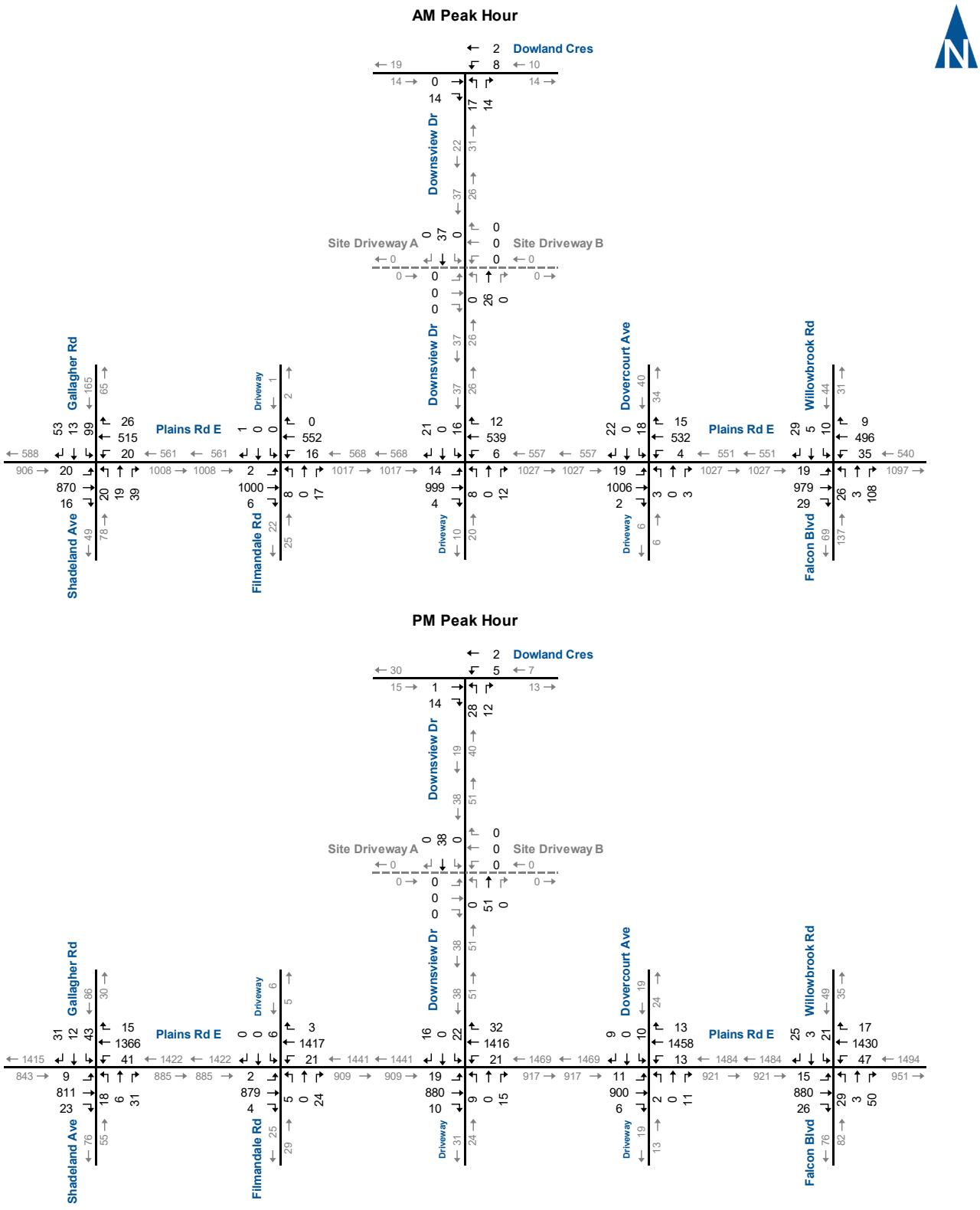
Figure 2.6

2.5 Traffic Volumes

Existing turning movement counts were provided by the City of Burlington and collected by Paradigm and Pyramid Traffic Inc. between 2019 and 2022. Historical count data was increased to Year 2022 conditions using a generalized growth rate of 1% per annum as confirmed by City staff during pre-study consultation.

Due to abnormal traffic patterns caused by the COVID-19 pandemic, the traffic volumes were compared to historical data collected by the City of Burlington (April 2019). A factor of 1.30 was applied to adjust the traffic volumes to pre-pandemic conditions. Traffic volumes on Plains Road East were balanced between intersections. In addition, the April 2019 turning movement count volumes recorded for the north leg of the Plains Road East intersection with Gallagher Road were used to reflect typical school volumes.

Figure 2.7 illustrates the base year AM and PM peak hour traffic volumes at the study area intersections. **Appendix B** contains the existing count data and signal timings.



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Base Year Traffic

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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 wanting 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 intersections in the study area were evaluated under base year conditions using Synchro 10 and HCM 2000 procedures. The intersection analysis considered three separate measures of performance:

- The LOS for each turning movement;
- The volume to capacity ratio (v/c) for each movement; and
- The 95th percentile queue lengths using Synchro 10.

Under the Region's TIS Guidelines, the operational analysis must include identification of signalized and unsignalized intersections where:

- v/c for through or shared through/turning movements that exceed 0.85 at a signalized intersection;
- v/c for exclusive turning movements that exceed 0.95 at a signalized intersection;
- The 95th percentile queues for an individual movement are projected to exceed available turning lane storage; and
- LOS, based on average delay per vehicle on individual movements, operate at LOS E or LOS F for unsignalized intersections.

Table 2.2 and **Table 2.3** summarize the level of service conditions. The operations of the study area intersections were evaluated with the base year turning movement volumes and signal timings. The following critical movements are noted:

- Plains Road East at Gallagher Road/Shadeland Avenue:

    - Southbound left-turn: The 95th percentile queue length is estimated to exceed the current available storage length by approximately 17 metres during the AM peak hour and 3 metres during the PM peak hour.
- Plains Road East at Filmandale Road/Lindley Commons:
    - Southbound approach: The approach is estimated to operate at LOS E (v/c < 0.10) during the PM peak hour.

Appendix C contains the detailed Synchro 10 reports.

To accommodate the forecast southbound left-turn queue at the Plains Road East and Shadeland Avenue/Gallagher Road intersection, the city can consider extending the left-turn lane to provide 35 metres of storage.

TABLE 2.2: BASE YEAR TRAFFIC OPERATIONS – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Overall
AM Peak Hour	Shadeland Ave/Gallagher Rd & Plains Rd E	TCS	LOS	A	A	>	A	A	A	>	A	C	C	>	C	D	C	>	D	A
			Delay	4	5	>	5	5	5	>	5	34	34	>	34	39	34	>	37	10
			V/C	0.04	0.38	>		0.07	0.23	>		0.09	0.09	>		0.46	0.09	>		0.39
			Q	4	50	>		5	33	>		9	13	>		32	13	>		
			Stor.	45	-	>		30	-	>		15	-	>		15	-	>		
			Avail.	41	-	>		25	-	>		6	-	>		-17	-	>		
	Filmandale Rd/Lindley Common & Plains Rd E	TWSC	LOS	<	A	>	A	B	A	>	A	<	B	>	B	<	A	>	A	
			Delay	<	0	>	0	11	0	>	0	<	15	>	15	<	10	>	10	
			V/C	<	0.32	>		0.03	0.23	>		<	0.07	>		<	0.00	>		
			Q	<	0	>		1	0	>		<	2	>		<	0	>		
			Stor.	<	-	>		30	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		29	-	>		<	-	>		<	-	>		
	Driveway/Downsview Dr & Plains Rd E	TCS	LOS	A	A	>	A	A	A	>	A	<	D	>	D	<	D	>	D	A
			Delay	1	2	>	2	1	2	>	2	<	42	>	42	<	43	>	43	3
			V/C	0.02	0.37	>		0.02	0.21	>		<	0.02	>		<	0.08	>		0.35
			Q	1	26	>		1	14	>		<	5	>		<	10	>		
			Stor.	30	-	>		15	-	>		<	-	>		<	-	>		
			Avail.	29	-	>		14	-	>		<	-	>		<	-	>		
	Driveway/Dovercourt Ave & Plains Rd E	TWSC	LOS	A	A	>	A	<	A	>	A	<	C	>	C	<	B	>	B	
			Delay	9	0	>	0	<	0	>	0	<	17	>	17	<	13	>	13	
			V/C	0.02	0.43	>		<	0.18	>		<	0.02	>		<	0.09	>		
			Q	1	0	>		<	0	>		<	0	>		<	2	>		
			Stor.	30	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	29	-	>		<	-	>		<	-	>		<	-	>		
	Falcon Blvd/Willowbrook Rd & Plains Rd E	TCS	LOS	A	A	>	A	A	A	>	A	<	D	>	D	<	D	>	D	A
			Delay	2	3	>	3	2	3	>	3	<	40	>	40	<	39	>	39	7
			V/C	0.04	0.41	>		0.11	0.21	>		<	0.24	>		<	0.13	>		0.38
			Q	2	34	>		4	18	>		<	22	>		<	12	>		
			Stor.	30	-	>		25	-	>		<	-	>		<	-	>		
			Avail.	28	-	>		21	-	>		<	-	>		<	-	>		
	Downsview Dr & Dowland Cres	TWSC	LOS		A	>	A	<	A		A	A		>	A					
			Delay		0	>	0	<	6		6	9		>	9					
			V/C		0.01	>		<	0.01			0.04		>						
			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 2.3: BASE YEAR TRAFFIC OPERATIONS – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Overall
PM Peak Hour	Shadeland Ave/Gallagher Rd & Plains Rd E	TCS	LOS	A	A	>	A	A	A	>	A	D	D	>	D	D	D	>	D	A
			Delay	3	3	>	3	3	3	>	3	40	39	>	39	42	39	>	40	6
			V/C	0.05	0.33	>		0.11	0.55	>		0.13	0.06	>		0.29	0.09	>		0.51
			Q	2	35	>		4	44	>		10	10	>		18	12	>		
			Stor.	45	-	>		30	-	>		15	-	>		15	-	>		
			Avail.	43	-	>		26	-	>		5	-	>		-3	-	>		
	Filmandale Rd/Lindley Common & Plains Rd E	TWSC	LOS	<	A	>	A	B	A	>	A	<	B	>	B	<	E	>	E	
			Delay	<	0	>	0	11	0	>	0	<	14	>	14	<	39	>	39	
			V/C	<	0.30	>		0.04	0.64	>		<	0.07	>		<	0.06	>		
			Q	<	0	>		1	0	>		<	2	>		<	2	>		
			Stor.	<	-	>		30	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		29	-	>		<	-	>		<	-	>		
	Driveway/Downsview Dr & Plains Rd E	TCS	LOS	A	A	>	A	A	A	>	A	<	D	>	D	<	D	>	D	A
			Delay	3	2	>	2	2	3	>	3	<	41	>	41	<	42	>	42	4
			V/C	0.11	0.35	>		0.06	0.58	>		<	0.02	>		<	0.09	>		0.53
			Q	2	22	>		1	36	>		<	6	>		<	11	>		
			Stor.	30	-	>		15	-	>		<	-	>		<	-	>		
			Avail.	28	-	>		14	-	>		<	-	>		<	-	>		
	Driveway/Dovercourt Ave & Plains Rd E	TWSC	LOS	B	A	>	A	<	A	>	A	<	B	>	B	<	C	>	C	
			Delay	13	0	>	0	<	0	>	0	<	12	>	12	<	22	>	22	
			V/C	0.02	0.36	>		<	0.45	>		<	0.02	>		<	0.08	>		
			Q	1	0	>		<	0	>		<	1	>		<	2	>		
			Stor.	30	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	29	-	>		<	-	>		<	-	>		<	-	>		
	Falcon Blvd/Willowbrook Rd & Plains Rd E	TCS	LOS	A	A	>	A	A	A	>	A	<	D	>	D	<	D	>	D	A
			Delay	3	2	>	2	2	4	>	4	<	42	>	42	<	42	>	42	5
			V/C	0.09	0.36	>		0.14	0.58	>		<	0.27	>		<	0.23	>		0.54
			Q	2	28	>		6	76	>		<	20	>		<	15	>		
			Stor.	30	-	>		25	-	>		<	-	>		<	-	>		
			Avail.	28	-	>		19	-	>		<	-	>		<	-	>		
	Downsview Dr & Dowland Cres	TWSC	LOS		A	>	A	<	A		A	A		>	A					
			Delay		0	>	0	<	5		5	9		>	9					
			V/C		0.01	>		<	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

3 Development Concept

3.1 Development Description

The subject lands are on the northwest and northeast corners of the Plains Road East and Downsview Drive intersection. The lands are comprised of 1010 Downsview Drive and 355 Plains Road East. Collectively these lands are referred to as the Subject Site for the purpose of this report.

The development concept includes two mid-rise buildings ranging in height from 8 to 11 storeys. The mid-rise buildings are located at the front of the property near Plains Road East. Stacked townhouses are proposed towards the rear of the site.

Figure 3.1 illustrates the site concept plan. **Table 3.1** summarizes the site statistics. Build-out is estimated to occur by year 2027.

TABLE 3.1: DEVELOPMENT CONCEPT

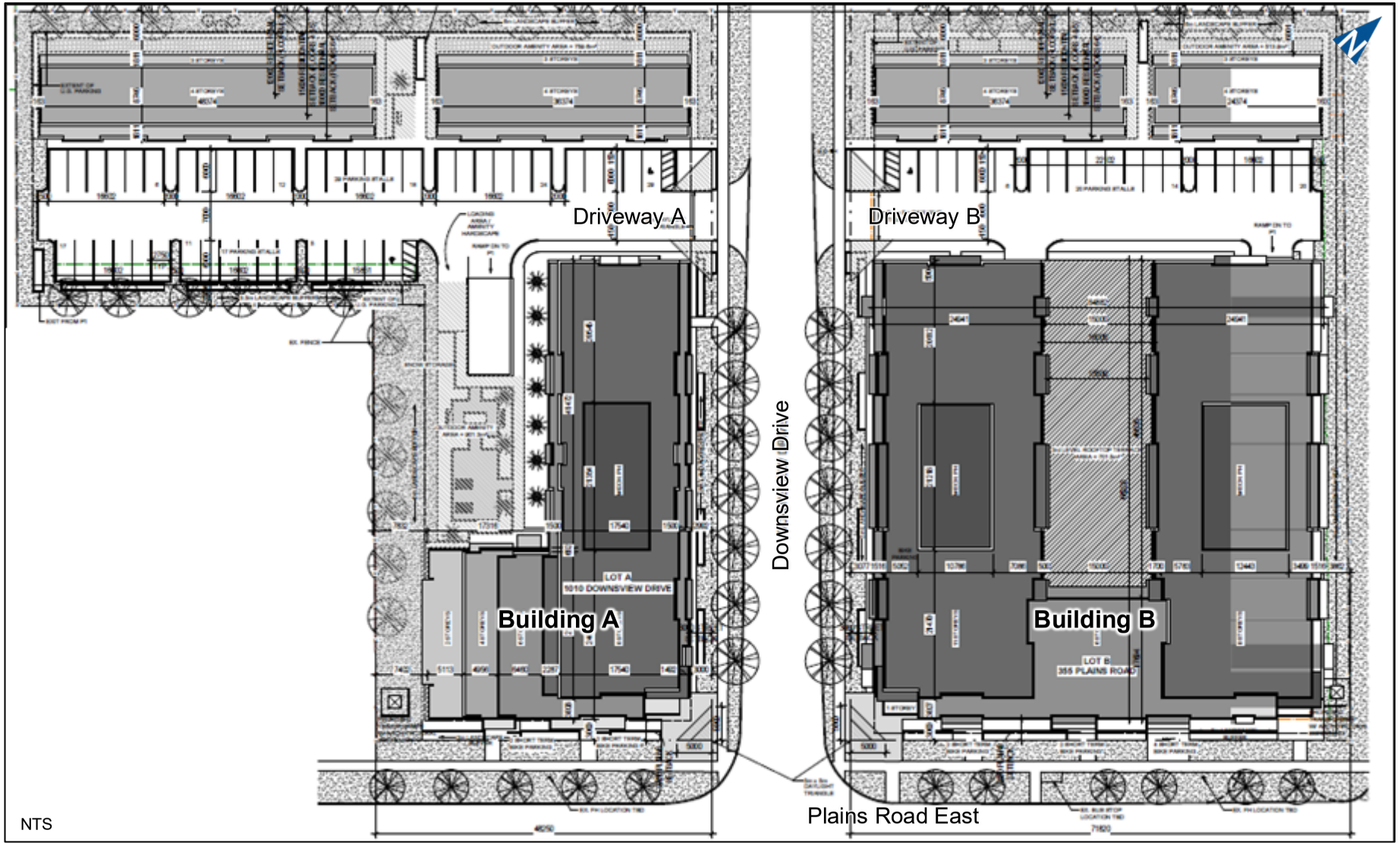
	Building A	Building B	Total
	1010 Downsview Dr	355 Plains Rd E	
Apartment Units	141 units	347 units	**488 units**
Stacked Townhouses	56 units	40 units	**96 units**
Residential Units	197 units	387 units	**584 units**
Ground Floor Retail	3,087 sq.ft.	3,679 sq.ft.	**6,766 sq.ft.**
Parking Supply (Total)	262	488	**750 spaces**
Short-Term Bicycle Parking	27	37	**64 spaces**
Long-Term Bicycle Parking (Lockers & Bike Rooms)	99 spaces	193 spaces	**292 spaces**

Direct sidewalk connections linking the buildings to the existing sidewalks along Plains Road East and Downsview Drive are proposed. The existing sidewalks along Downsview Drive will be extended through the site driveway.

Vehicle access is proposed by two driveways to Downsview Drive located directly opposite each other approximately 85 metres north of Plains Road East. The site driveway approaches are assumed to be stop controlled. Visibility triangles (5 metre x 5 metre) are proposed on the driveway approaches to Downsview Drive.

The site's parking demand is proposed to be accommodated on-site by 750 parking spaces. **Section 6** outlines the site's parking demand.

The layout of the subject site can be enhanced by providing a convenient pick-up/drop-off location for passengers or on-demand delivery vehicles. The site plan design can be reviewed at Site Plan Approval (SPA) to incorporate convenient pick-up/drop-off locations. Possible options may include layby areas on Downsview Drive or layby areas on-site.



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Site Concept

1010 Downsview Drive & 355 Plains Road East
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Figure 3.1

3.2 Trip Generation Estimate

The Institute of Transportation Engineers (ITE) Trip Generation[7] methods predict the site trip generation. The following land use codes were used to estimate the site's trip generation:

- Multifamily Housing (Mid-Rise) - Not Close to Rail Transit (221)
- Strip Retail Plaza (<40k GFA) (822)

Table 3.2 summarizes the estimated trip generation. The subject site is forecast to generate approximately 248 and 272 new vehicle trips during the AM and PM peak hours, respectively. A modal split was not applied to the site generated traffic volumes used in the analysis to remain conservative.

TABLE 3.2: TRIP GENERATION ESTIMATE

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	Sum	In	Out	Sum
Apartment Units (LUC 221)[1]	53	180	**233**	139	89	**228**
Retail (LUC 822)[2]	9	6	**15**	22	22	**44**
Total Generation	**62**	**186**	**248**	**161**	**111**	**272**

LUC 221 Regression Equations. AM T = 0.44(X) - 11.61 | PM T = 0.39(X) + 0.34

LUC 822 Average Rates. AM T = 2.36 per 1,000 GFA | PM T = 6.59 per 1,000 GFA

3.3 Trip Distribution and Assignment

The site generated trips were assigned to the road network based on existing travel patterns as the surrounding land uses are primarily residential. **Table 3.3** summarizes the estimated site trip distribution.

TABLE 3.3: ESTIMATED TRIP DISTRIBUTION

Origin/Destination	AM Peak Hour		PM Peak Hour	
	Inbound	Outbound	Inbound	Outbound
East via Plain Road East	46%	43%	63%	58%
West via Plains Road East	54%	57%	37%	42%
Total	**100%**	**100%**	**100%**	**100%**

[7] Trip Generation Manual 11th Edition Institute of Transportation Engineers



Figure 3.2 illustrates the site generated traffic volumes.

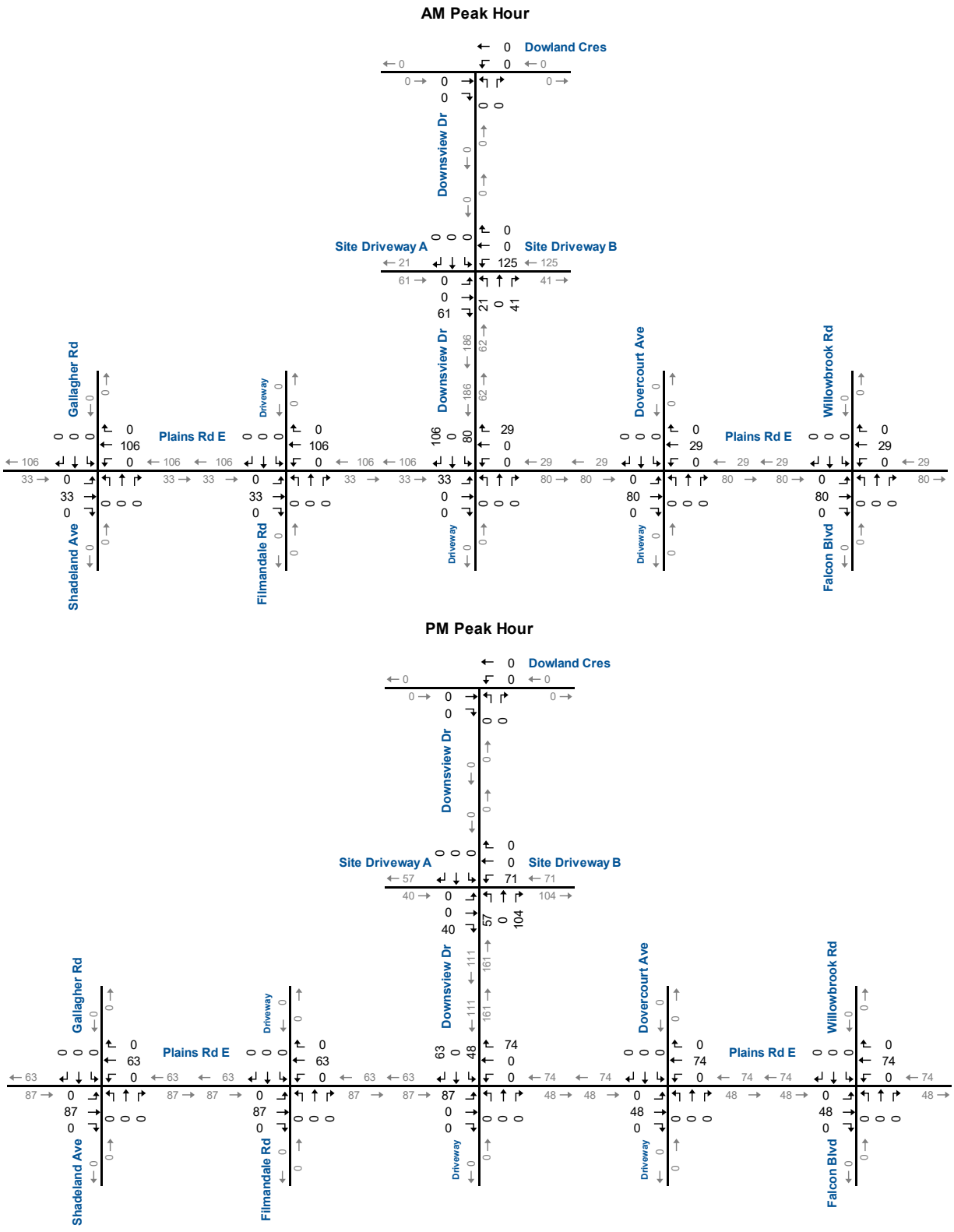
Site generated traffic is expected to be attracted to/from Plains Road East. Little traffic, if any, would be expected to travel north along Downland Crescent through the residential area to the north on a regular basis.

It is possible that residents of the site may travel north through the residential area to access the larger road network. Infiltration through the neighbourhood is unlikely given the discontinuous and indirect layout of the road network, a speed limit of 40 km/h, and the presence of stop control at many of the local area intersections.

The estimated travel time for a vehicle to navigate between the site driveways and the Plains Road East intersection with Willowbrook Road/Falcon Boulevard via Plains Road East is approximately 29 seconds. This is the approximate time needed to travel a distance of 430 metres. The delays experienced by drivers caused by congestion along the Plains Road East corridor is minimal (Table 2.1).

The estimated travel time for a vehicle to navigate between the site driveways and the Plains Road East intersection with Willowbrook Road/Falcon Boulevard via Dowland Crescent, Enfield Road and Willowbrook Road is approximately 113 seconds. This is the approximate time needed to travel a distance of 1,255 metres.

Based on travel time alone, there would be no advantage for drivers to infiltration through the neighbourhood to gain access to the larger road network.



Site Generated Traffic

1010 Downsview Drive & 355 Plains Road East
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Figure 3.2

3.4 Transportation Demand Management

TDM refers to ways of making the capacity of our roads more efficient by reducing vehicle demands. TDM approaches consider how people's choices of travel mode are affected by land use patterns, development design, parking availability, parking cost, and the relative cost, convenience, and availability of alternative modes of travel.

Various TDM strategies are used to influence those factors so that the alternatives are more competitive with driving alone and potentially reduce the reliance on automobiles.

To help manage the site's transportation and parking impacts, a Transportation Demand Management (TDM) program is proposed. The following TDM measures are included in the site plan (e.g., bicycle parking) or will be provided by the site operator (e.g., transit passes) as part to the development program:

- **Walking**
  - Safe, attractive, and direct walkways for pedestrians linking building entrances with public sidewalks;
  - All on-site sidewalks will conform to the City of Burlington's design standards and the Accessibility for Ontarians with Disabilities Act (AODA) design standards;
  - A continuous sidewalk along the subject site's frontage with Plains Road East and Downsview Drive; and
  - The outdoor space will have amenities such as benches, seating areas and/or pedestrian scale lighting.
- **Cycling**
  - 292 long-term bicycle parking spaces (0.50 spaces per unit)[8]. Long-term bicycle parking is proposed in bike rooms and storage lockers;
  - 64 short-term bicycle parking spaces (0.11 spaces per unit)[9];
  - Long-term bicycle parking will be provided in secure indoor rooms/areas with bicycle repair stations. The parking will be conveniently located at-grade and in the parking structure;
  - Short-term bicycle parking is located at grade near primary building entrances;

[8] Burlington City-Wide Parking Standards Review Consolidated Report Prepared for City of Burlington by IBI Group, July 2017. Exhibit 7.4: Recommended Bicycle Parking Standards

[9] Ibid.

- Curb cut ramps adjacent to any bicycle parking will be considered to allow for improved accessibility; and
- An Active Transportation (AT) connection will be established between Downsview Drive and Plains Road East to connect the site to the existing and proposed cycling infrastructure along Plains Road East.

- **Transit Infrastructure**
  - A one-time subsidized transit pass will be provided to occupants who do not purchase or need parking;
  - Proposed sidewalks connect directly to the adjacent Burlington Transit stops; and
  - Provision of transit screens or message boards that indicate when the next bus is arriving/departing.
- **Parking Infrastructure**
  - Reduced parking supply due to proximity to transit;
  - Parking is unbundled from the cost of the units;
  - The parking supply will be managed to limit the sale of spaces to buyer to be a maximum of 2 space per unit;
  - Parking costs will reflect the full cost of building and operating the parking facility; and
  - Visitor parking will be monitored and enforced to avoid disruption to the local community.
- **Carshare**
  - The site operator will explore the feasibility of providing a carshare vehicle and space at grade as an amenity for residents and the local community. At present no carshare programs operate in the City of Burlington.
- **Wayfinding, Travel Planning, Education/Promotion**
  - Travel planning resources will be provided to residents (individualized marketing, active transportation maps, community resources, transit schedules);
  - Wayfinding signage will be provided in the Lobby or near the main entrance; and
  - Marketing material will promote a strong TDM brand.

The above TDM measures can assist in mitigating the site's transportation and parking impacts on the adjacent road network, promote a strong and vibrant economy, and create a livable community that has a balanced transportation network. The monitoring and adjustment of the site's TDM program will be critical to the site's success.

To form a sustainable and balanced transportation system the city is working towards improvements to public transit and active transportation (AT) infrastructure to reduce the use of single-occupant vehicles and create a balanced transportation system.

TDM encourages sustainable travel choices by supporting alternative transportation options over the convention of driving alone.

By shifting travel to public transit and AT, intersection operations could be expected to maintain the status-quo (capacity constraint during peak hours) or possibly improve if fewer vehicles transverse the intersections during the peak hours of a typical weekday.

4 Future Traffic Conditions

A five-year horizon from the date of the study (Year 2027) has been assessed. The likely future traffic volumes near the subject site are estimated to consist of:

- Future background traffic estimates;
- Level of service analysis for background traffic (pre-development);
- Future total traffic estimates; and
- Level of service analysis for total traffic (post-development).

4.1 Forecast Traffic

The likely future traffic volumes near the subject site are estimated to consist of:

- Increased non-site traffic (generalized background traffic growth);
- Traffic generated by the build-out of nearby in-stream developments; and
- Traffic generated by the subject site.

The non-site traffic increase is the generalized traffic growth near the subject site, which is anticipated to follow the average increase in population in the area. During pre-study consultations, City staff confirmed an annual growth rate of 1% per annum.

During pre-study consultations, City staff requested the inclusion of traffic generated by the following nearby in-stream developments:

- 35 Plains Road East, a mixed-use development estimated to contain approximately 72 residential units with ground floor commercial space[10];
- 40-70 Plains Road East, a residential development estimated to contain approximately 360 units[11];

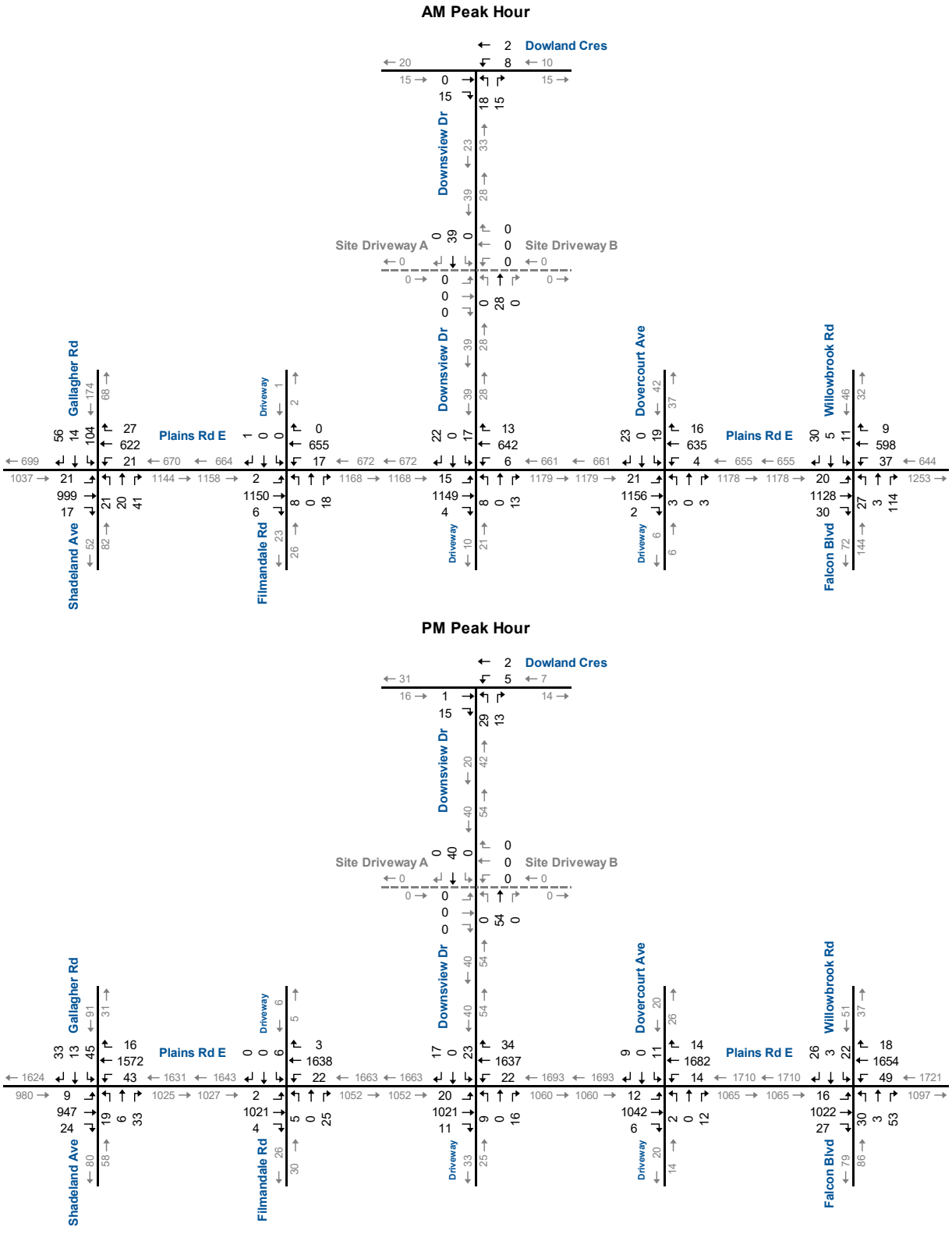
[10] *35 Plains Road East Traffic Impact Study, Parking Study & TDM Options Report*, Paradigm Transportation Solutions Limited, April 2016.
[11] *40 & 70 Plains Road East Transportation Impact Assessment*, Paradigm Transportation Solutions Limited, December 2020.

- 53-71 Plains Road East, a mixed-use development estimated to contain approximately 450 residential units with ground floor commercial space[12];
- 92 Plains Road East, a mixed-use development estimated to contain approximately 24 residential units with ground floor office space[13];
- 284-292 Plains Road East, a residential development estimated to contain approximately 117 units [14]; and
- 484 Plains Road East, a mixed-use development estimated to contain approximately 397 residential units with ground floor commercial space[15].

Appendix D contains the detailed traffic forecast for the adjacent development applications from the respective traffic studies.

Figure 4.1 illustrates the forecast background traffic volumes for the AM and PM peak hours. **Figure 4.2** illustrates the total traffic volumes for the AM and PM peak hours.

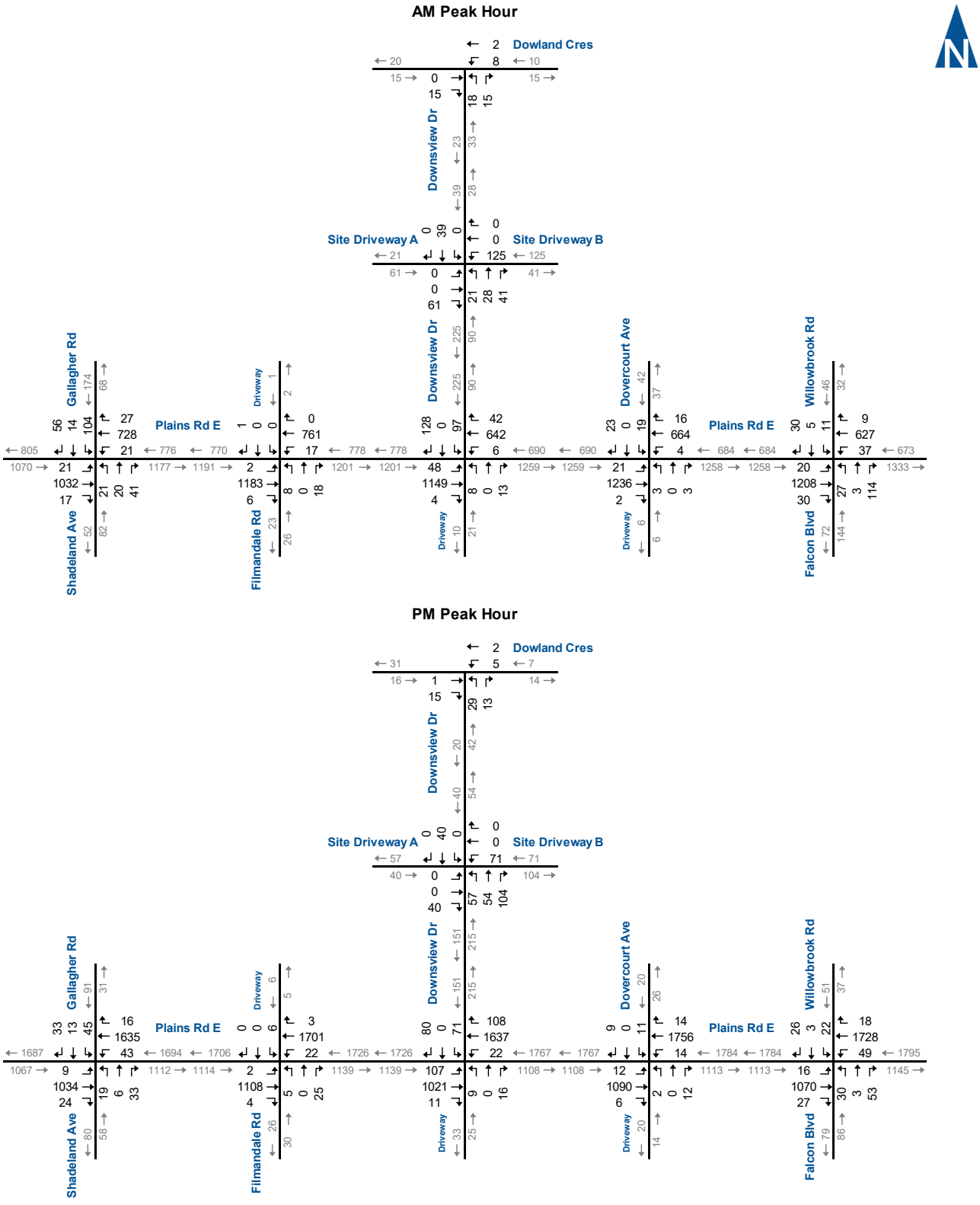
[12] *53 & 71 Plains Road East Transportation Impact Study, Parking Study & TDM Options Report*, Paradigm Transportation Solutions Limited, December 2017.
[13] *92 Plains Road East Traffic Impact Statement*, MMM Group Limited, April 2015.
[14] *284-292 Plains Road East Transportation Impact Study*, Paradigm Transportation Solutions Limited, September 2021.
[15] *484 Plains Road East Mixed-Use Development Transportation Impact Study*, BA Consulting Group Ltd., October 2017.



Background Traffic

1010 Downsview Drive & 355 Plains Road East
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Figure 4.1



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Total Traffic

1010 Downsview Drive & 355 Plains Road East
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Figure 4.2

4.2 Forecast Traffic Operations

4.2.1 Background Traffic Operations

The study area intersection operational analysis followed the same methodology used for base year conditions. Signal timings were optimized and no changes to the background lane configurations are assumed.

Table 4.1 and **Table 4.2** summarize the level of service conditions. The following critical movements are noted:

- Plains Road East at Gallagher Road/Shadeland Avenue:
  - Southbound left-turn: The 95th percentile queue length is forecast to exceed the current available storage length by approximately 18 metres during the AM peak hour and 4 metres during the PM peak hour.
- Plains Road East at Filmandale Road/Lindley Commons:
  - Southbound approach: The approach is forecast to operate at LOS F (v/c < 0.10) during the PM peak hour.

Appendix E contains the detailed Synchro 10 reports.

The above noted capacity deficiencies are forecast to occur under background conditions. These deficiencies are not related or are a result of the development of the subject site.

The queuing issue forecast for the southbound left-turn movement at the Plains Road East and Gallagher Road/Shadeland Avenue intersection is expected to continue to occur. The forecast queue length remains unchanged compared to the base year traffic operations.

TABLE 4.1: BACKGROUND TRAFFIC OPERATIONS – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Overall
AM Peak Hour	Shadeland Ave/Gallagher Rd & Plains Rd E	TCS	LOS	A	A	>	A	A	A	>	A	C	C	>	C	D	C	>	D	A
			Delay	4	6	>	6	6	6	>	6	34	34	>	34	39	34	>	37	10
			V/C	0.05	0.43	>		0.09	0.28	>		0.09	0.10	>		0.47	0.09	>		0.44
			Q	4	61	>		6	47	>		10	13	>		33	13	>		
			Stor.	45	-	>		30	-	>		15	-	>		15	-	>		
			Avail.	41	-	>		24	-	>		5	-	>		-18	-	>		
	Filmandale Rd/Lindley Common & Plains Rd E	TWSC	LOS	<	A	>	A	B	A	>	A	<	C	>	C	<	B	>	B	
			Delay	<	0	>	0	12	0	>	0	<	16	>	16	<	10	>	10	
			V/C	<	0.36	>		0.03	0.27	>		<	0.08	>		<	0.00	>		
			Q	<	0	>		1	0	>		<	2	>		<	0	>		
			Stor.	<	-	>		30	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		29	-	>		<	-	>		<	-	>		
	Driveway/Downsview Dr & Plains Rd E	TCS	LOS	A	A	>	A	A	A	>	A	<	D	>	D	<	D	>	D	A
			Delay	2	2	>	2	2	2	>	2	<	41	>	41	<	41	>	41	4
			V/C	0.03	0.44	>		0.02	0.25	>		<	0.02	>		<	0.08	>		0.40
			Q	1	31	>		1	17	>		<	5	>		<	11	>		
			Stor.	30	-	>		15	-	>		<	-	>		<	-	>		
			Avail.	29	-	>		14	-	>		<	-	>		<	-	>		
	Driveway/Dovercourt Ave & Plains Rd E	TWSC	LOS	A	A	>	A	<	A	>	A	<	C	>	C	<	B	>	B	
			Delay	9	0	>	0	<	0	>	0	<	18	>	18	<	14	>	14	
			V/C	0.03	0.49	>		<	0.21	>		<	0.02	>		<	0.10	>		
			Q	1	0	>		<	0	>		<	1	>		<	3	>		
			Stor.	30	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	29	-	>		<	-	>		<	-	>		<	-	>		
	Falcon Blvd/Willowbrook Rd & Plains Rd E	TCS	LOS	A	A	>	A	A	A	>	A	<	D	>	D	<	D	>	D	A
			Delay	3	4	>	4	3	3	>	3	<	40	>	40	<	39	>	39	7
			V/C	0.05	0.47	>		0.14	0.25	>		<	0.31	>		<	0.14	>		0.45
			Q	3	50	>		5	24	>		<	25	>		<	12	>		
			Stor.	30	-	>		25	-	>		<	-	>		<	-	>		
			Avail.	27	-	>		20	-	>		<	-	>		<	-	>		
	Downsview Dr & Dowland Cres	TWSC	LOS		A	>	A	<	A		A	A		>	A					
			Delay		0	>	0	<	6		6	9		>	9					
			V/C		0.01	>		<	0.01			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 4.2: BACKGROUND TRAFFIC OPERATIONS – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Overall
PM Peak Hour	Shadeland Ave/Gallagher Rd & Plains Rd E	TCS	LOS	A	A	>	A	A	A	>	A	D	D	>	D	D	D	>	D	A
			Delay	3	4	>	4	3	4	>	4	40	39	>	39	42	40	>	41	6
			V/C	0.07	0.38	>		0.14	0.63	>		0.13	0.06	>		0.30	0.16	>		0.58
			Q	2	44	>		4	56	>		10	10	>		19	15	>		
			Stor.	45	-	>		30	-	>		15	-	>		15	-	>		
			Avail.	43	-	>		26	-	>		5	-	>		-4	-	>		
	Filmandale Rd/Lindley Common & Plains Rd E	TWSC	LOS	<	A	>	A	B	A	>	A	<	B	>	B	<	F	>	F	
			Delay	<	0	>	0	12	0	>	0	<	14	>	14	<	56	>	56	
			V/C	<	0.35	>		0.05	0.74	>		<	0.08	>		<	0.09	>		
			Q	<	0	>		1	0	>		<	2	>		<	2	>		
			Stor.	<	-	>		30	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		29	-	>		<	-	>		<	-	>		
	Driveway/Downsview Dr & Plains Rd E	TCS	LOS	A	A	>	A	A	A	>	A	<	D	>	D	<	D	>	D	A
			Delay	4	2	>	2	2	3	>	3	<	41	>	41	<	42	>	42	4
			V/C	0.17	0.41	>		0.08	0.67	>		<	0.02	>		<	0.12	>		0.61
			Q	2	26	>		1	42	>		<	7	>		<	12	>		
			Stor.	30	-	>		15	-	>		<	-	>		<	-	>		
			Avail.	28	-	>		14	-	>		<	-	>		<	-	>		
	Driveway/Dovercourt Ave & Plains Rd E	TWSC	LOS	B	A	>	A	<	A	>	A	<	B	>	B	<	D	>	D	
			Delay	14	0	>	0	<	1	>	0	<	12	>	12	<	28	>	28	
			V/C	0.03	0.42	>		<	0.52	>		<	0.03	>		<	0.11	>		
			Q	1	0	>		<	1	>		<	1	>		<	3	>		
			Stor.	30	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	29	-	>		<	-	>		<	-	>		<	-	>		
	Falcon Blvd/Willowbrook Rd & Plains Rd E	TCS	LOS	A	A	>	A	A	A	>	A	<	D	>	D	<	D	>	D	A
			Delay	4	3	>	3	2	5	>	5	<	42	>	42	<	42	>	42	6
			V/C	0.13	0.42	>		0.17	0.67	>		<	0.28	>		<	0.27	>		0.62
			Q	2	33	>		6	104	>		<	20	>		<	16	>		
			Stor.	30	-	>		25	-	>		<	-	>		<	-	>		
			Avail.	28	-	>		19	-	>		<	-	>		<	-	>		
	Downsview Dr & Dowland Cres	TWSC	LOS		A	>	A	<	A		A	A		>	A					
			Delay		0	>	0	<	5		5	9		>	9					
			V/C		0.01	>		<	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

4.2.2 Total Traffic Operations

The study area intersection operational analysis followed the same methodology used for background traffic conditions. Signal timings were optimized and no changes to the background lane configurations are assumed.

Table 4.3 and **Table 4.4** summarize the level of service conditions. Increases in delay and queueing are expected from the addition of the site-generated traffic.

The capacity issues forecast to occur under background traffic conditions are expected to continue to occur with the development of the subject site. The following additional critical movements are noted because of site-generated traffic volumes:

- Plains Road East at Downsview Drive:
  - Eastbound left-turn: The 95th percentile queue length is forecast to exceed the current available storage length by approximately 9 metres during the PM peak hour.
  - Westbound shared through-right movement: The v/c ratio is forecast to be greater than 0.85 during the PM peak hour.

The additional eastbound left-turn storage on Plains Road East at Downsview Drive can be accommodated by the existing TWLTL.

The driveway approaches to Downsview Drive are forecast to operate with delays in the LOS A to B range with a v/c ratio of less than 0.25 during the AM and PM peak hours. The queue lengths on the driveway approaches are forecast to be 6 metres or less. and are not anticipated to spill back into the upstream intersections.

The queue lengths on the Downsview Drive approaches to the site driveways are forecast to be less than 5 metres and are not anticipated to spill into the upstream intersections.

The queuing issue forecast for the southbound left-turn movement at the Plains Road East and Gallagher Road/Shadeland Avenue intersection is expected to continue to occur. The forecast queue length remains unchanged compared to the background traffic operations. Site generated traffic is not expected to contribute volumes to these movements.

Appendix F contains the detailed Synchro 10 reports.

TABLE 4.3: TOTAL TRAFFIC OPERATIONS – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Overall
AM Peak Hour	Shadeland Ave/Gallagher Rd & Plains Rd E	TCS	LOS	A	A	>	A	A	A	>	A	C	C	>	C	D	C	>	D	A
			Delay	4	6	>	6	3	3	>	3	34	34	>	34	39	34	>	37	8
			V/C	0.06	0.45	>		0.09	0.32	>		0.09	0.10	>		0.47	0.09	>		0.45
			Q	4	65	>		2	16	>		10	13	>		33	13	>		
			Stor.	45	-	>		30	-	>		15	-	>		15	-	>		
			Avail.	41	-	>		28	-	>		5	-	>		-18	-	>		
	Filmandale Rd/Lindley Common & Plains Rd E	TWSC	LOS	<	A	>	A	B	A	>	A	<	C	>	C	<	A	>	A	
			Delay	<	0	>	0	12	0	>	0	<	16	>	16	<	10	>	10	
			V/C	<	0.37	>		0.03	0.32	>		<	0.08	>		<	0.00	>		
			Q	<	0	>		1	0	>		<	2	>		<	0	>		
			Stor.	<	-	>		30	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		29	-	>		<	-	>		<	-	>		
	Driveway/Downsview Dr & Plains Rd E	TCS	LOS	A	A	>	A	A	A	>	A	<	C	>	C	<	D	>	D	A
			Delay	4	5	>	5	4	5	>	5	<	31	>	31	<	40	>	40	9
			V/C	0.12	0.51	>		0.03	0.31	>		<	0.02	>		<	0.63	>		0.54
			Q	5	38	>		2	40	>		<	4	>		<	50	>		
			Stor.	30	-	>		15	-	>		<	-	>		<	-	>		
			Avail.	25	-	>		13	-	>		<	-	>		<	-	>		
	Driveway/Dovercourt Ave & Plains Rd E	TWSC	LOS	A	A	>	A	<	A	>	A	<	C	>	C	<	B	>	B	
			Delay	9	0	>	0	<	0	>	0	<	18	>	18	<	14	>	14	
			V/C	0.03	0.53	>		<	0.22	>		<	0.02	>		<	0.10	>		
			Q	1	0	>		<	0	>		<	1	>		<	3	>		
			Stor.	30	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	29	-	>		<	-	>		<	-	>		<	-	>		
	Falcon Blvd/Willowbrook Rd & Plains Rd E	TCS	LOS	A	A	>	A	A	A	>	A	<	D	>	D	<	D	>	D	A
			Delay	1	2	>	2	3	3	>	3	<	40	>	40	<	38	>	38	6
			V/C	0.05	0.51	>		0.16	0.26	>		<	0.40	>		<	0.12	>		0.49
			Q	1	12	>		6	27	>		<	30	>		<	12	>		
			Stor.	30	-	>		25	-	>		<	-	>		<	-	>		
			Avail.	29	-	>		19	-	>		<	-	>		<	-	>		
	Downsview Dr & Dowland Cres	TWSC	LOS		A	>	A	<	A		A	A		>	A					
			Delay		0	>	0	<	6		6	9		>	9					
			V/C		0.01	>		<	0.01			0.05		>						
			Q		0	>		<	0			1		>						
	Downsview Dr & Site Driveway A/Site Driveway B	TWSC	LOS	<	A	>	A	<	B	>	B	<	A	>	A	<	A	>	A	
			Delay	<	9	>	9	<	11	>	11	<	2	>	2	<	0	>	0	
			V/C	<	0.06	>		<	0.20	>		<	0.01	>		<	0.00	>		
			Q	<	2	>		<	6	>		<	1	>		<	0	>		

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 4.4: TOTAL TRAFFIC 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	Shadeland Ave/Gallagher Rd & Plains Rd E	TCS	LOS	A	A	>	A	A	A	>	A	D	D	>	D	D	D	>	D	A
			Delay	3	4	>	4	1	1	>	1	44	43	>	44	47	44	>	46	4
			V/C	0.08	0.41	>		0.15	0.64	>		0.14	0.06	>		0.32	0.17	>		0.60
			Q	2	50	>		0	8	>		11	11	>		21	16	>		
			Stor.	45	-	>		30	-	>		15	-	>		15	-	>		
			Avail.	43	-	>		30	-	>		4	-	>		-6	-	>		
	Filmandale Rd/Lindley Common & Plains Rd E	TWSC	LOS	<	A	>	A	B	A	>	A	<	C	>	C	<	E	>	E	
			Delay	<	0	>	0	12	0	>	0	<	15	>	15	<	42	>	42	
			V/C	<	0.38	>		0.05	0.77	>		<	0.09	>		<	0.07	>		
			Q	<	0	>		1	0	>		<	2	>		<	2	>		
			Stor.	<	-	>		30	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		29	-	>		<	-	>		<	-	>		
	Driveway/Downsview Dr & Plains Rd E	TCS	LOS	C	A	>	A	A	B	>	B	<	D	>	D	<	D	>	D	B
			Delay	32	5	>	7	6	15	>	14	<	39	>	39	<	45	>	45	14
			V/C	0.59	0.44	>		0.09	0.87	>		<	0.02	>		<	0.54	>		0.78
			Q	39	59	>		3	123	>		<	2	>		<	41	>		
			Stor.	30	-	>		15	-	>		<	-	>		<	-	>		
			Avail.	-9	-	>		12	-	>		<	-	>		<	-	>		
	Driveway/Dovercourt Ave & Plains Rd E	TWSC	LOS	C	A	>	A	<	A	>	A	<	B	>	B	<	D	>	D	
			Delay	15	0	>	0	<	1	>	0	<	12	>	12	<	31	>	31	
			V/C	0.03	0.44	>		<	0.54	>		<	0.03	>		<	0.13	>		
			Q	1	0	>		<	1	>		<	1	>		<	3	>		
			Stor.	30	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	29	-	>		<	-	>		<	-	>		<	-	>		
	Falcon Blvd/Willowbrook Rd & Plains Rd E	TCS	LOS	A	A	>	A	A	A	>	A	<	D	>	D	<	D	>	D	A
			Delay	3	2	>	2	2	5	>	4	<	47	>	47	<	48	>	48	5
			V/C	0.14	0.43	>		0.18	0.69	>		<	0.30	>		<	0.32	>		0.65
			Q	1	16	>		6	116	>		<	22	>		<	18	>		
			Stor.	30	-	>		25	-	>		<	-	>		<	-	>		
			Avail.	29	-	>		19	-	>		<	-	>		<	-	>		
	Downsview Dr & Dowland Cres	TWSC	LOS		A	>	A	<	A		A	A		>	A					
			Delay		0	>	0	<	5		5	9		>	9					
			V/C		0.01	>		<	0.00			0.06		>						
			Q		0	>		<	0			1		>						
	Downsview Dr & Site Driveway A/Site Driveway B	TWSC	LOS	<	A	>	A	<	B	>	B	<	A	>	A	<	A	>	A	
			Delay	<	9	>	9	<	12	>	12	<	2	>	2	<	0	>	0	
			V/C	<	0.04	>		<	0.13	>		<	0.04	>		<	0.00	>		
			Q	<	1	>		<	3	>		<	1	>		<	0	>		

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Avail. - Available Storage (m)
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< / > - Shared with through movement

5 Remedial Measures

5.1 Signal Warrant

The Filmandale Road/Lindley Commons and Dovercourt Avenue approaches with Plains Road East are forecast to operate with high levels of delay. The intersections were assessed using the Ontario Traffic Manual (OTM Book 12 – Justification 7) signal warrant[16] procedures. **Appendix G** contains the warrant analysis.

Based on the warrant analysis, signals are not warranted on Plains Road East at Filmandale Road/Lindley Commons and Dovercourt Avenue under background conditions based on Warrant 1 – Minimum Vehicle Volume. It is not recommended to implement traffic signals at these locations.

5.2 Auxiliary Turn Lanes

Under base year, background, and total horizons, the 95th percentile southbound left-turn queue at the Plains Road East and Gallagher Road/Shadeland Avenue intersection is forecast to exceed the existing storage length. The City should consider extending the storage lane length to provide 35 metres of storage. The need for the additional storage is an existing condition.

[16] *Ontario Traffic Manual Book 12*, Ministry of Transportation of Ontario, July 2001.

6 Parking Justification

6.1 Proposed Parking Supply

6.1.1 Vehicle Parking

The site's parking demand is proposed to be accommodated on site. **Table 6.1** summarizes the parking supply for the site.

TABLE 6.1: PROPOSED PARKING SUPPLY

	Building A	Building B	Overall
	1010 Downsview Dr	355 Plains Rd E	
Total Units	197	387	**584**
Retail GFA (sq.ft.)	3,087	3,679	**6,766**
Occupant Parking	247	476	**723**
Visitor Parking	15	12	**27**
Total Parking	**262**	**488**	**750**
Occupant Ratio	1.25	1.23	**1.24**
Visitor Ratio	0.08	0.03	**0.05**

Parking on the 1010 Downsview Drive property consists of 46 at-grade spaces and 216 structured parking spaces. The structured parking spaces are accessed by a ramp located within the site

Parking on the 355 Plains Road East property consists of 52 at-grade spaces and 436 structured parking spaces, of which 48 spaces are tandem. Tandem parking spaces will need to be managed by the site operator and must be assigned to one residential unit. The structured parking spaces are accessed by two ramps located within the site.

The parking supply is reduced when compared to the City's Zoning By-law 2020 requirements to reflect the future intensification of Plains Road East.

6.1.2 Bicycle Parking

The site statistics indicate that 64 short-term bicycle parking spaces are provided on site. The short-term bicycle parking spaces are provided on the ground floor level of the building. Long-term bicycle parking is not identified on the site plan. **Section 3.4** summarizes the recommended bicycle parking infrastructure for the site. Bike rooms and storage lockers will contain the site's long-term bicycle parking

supply. The location and design of the long-term bicycle parking areas will be address at SPA.

6.2 Zoning By-law Parking Requirements

6.2.1 Vehicle Parking

The City's Zoning By-law 2020 regulates the amount of parking for the subject site. **Table 6.2** summarizes the site's Zoning By-law 2020 parking requirements[17].

The proposed parking supply does not conform with the city's zoning requirements. The site's parking supply is considered deficient by five (5) spaces when compared to the zoning requirements. The amount of on-site parking assigned to residents exceeds the zoning requirements. The visitor parking is undersupplied.

TABLE 6.2: ZONING BY-LAW PARKING REQUIREMENT

Land Use	Units	Ratio		Calculation		
		O	V	O	V	Total
Apartment Units	488	1.00	0.25	488	122	**610**
Stacked Townhouse Units	96	1.00	0.25	96	24	**120**
Retail Store (m^2) 3.5 per 100 m^2	629		3.5	0	22	**22**
			Total	**584**	**168**	**752**
			Supply	723	27	750
			Surplus/Deficiency	139	-141	-2

6.2.2 Bicycle Parking

The City's Zoning By-law 2020 regulates the amount of bicycle parking for the subject site. Only the retail land use has a bicycle parking requirement in the Zoning by-law. A total of three (3) bicycle parking spaces are required[18] to satisfy the by-law. **Section 3.4** summarizes the recommended bicycle parking infrastructure for the site. The site's bicycle parking supply will exceed the zoning requirements.

[17] *Table 1.2.6 – By-law 2020*, City of Burlington, October 2019.
[18] Lbid. Table 1.2.8.

6.3 Local Parking Survey Data

A proven method of estimating parking demands is to survey existing sites with the same land use. Local surveys are a real-world reflection of parking demand.

Paradigm and City of Burlington Staff previously collected parking data for apartment buildings within the City. The parking utilization surveys were undertaken at seven different sites. The sites include:

- 1284 Guelph Line – 78 units – 4 observations by Paradigm;
- 551 Maple Avenue – 186 units – 4 observations by Paradigm;
- 360 Pearl Street – 75 units – 4 observations by Paradigm and 6 observations by the City.
- 442 Maple Avenue – 135 units – 6 observations by the City;
- 505 Locust Street – 117 units – 6 observations by the City;
- 2121 Lakeshore Road – 39 units – 4 observations by the City; and
- 1477 Lakeshore Road – 60 units – 6 observations by the City.

Parking demand data collected by Paradigm was collected in 15-minute intervals from 16:00 to 22:00 on weekdays (Tuesday-Thursday) between April and November 2016. The City collected spot observations between 20:00 and 23:00 on weekdays (Tuesday or Thursdays).

The collected parking utilization data is in line with industry standard data collection methods and is representative of parking demand at local multi-family buildings.

The following parking demands were observed:

- Paradigm
  - Occupant demands range from 0.68 to 0.83 spaces per unit.
  - Visitor demands range from 0.08 to 0.24 spaces per unit.
- City
  - Occupant demands range from 0.86 to 1.25 spaces per unit.
  - Visitor demands range from 0.00 to 0.06 spaces per unit.

Figure 6.1 illustrates the data plots for the occupant and visitor parking. **Table 6.3** summarizes the site's forecast parking demands using the proxy site data.

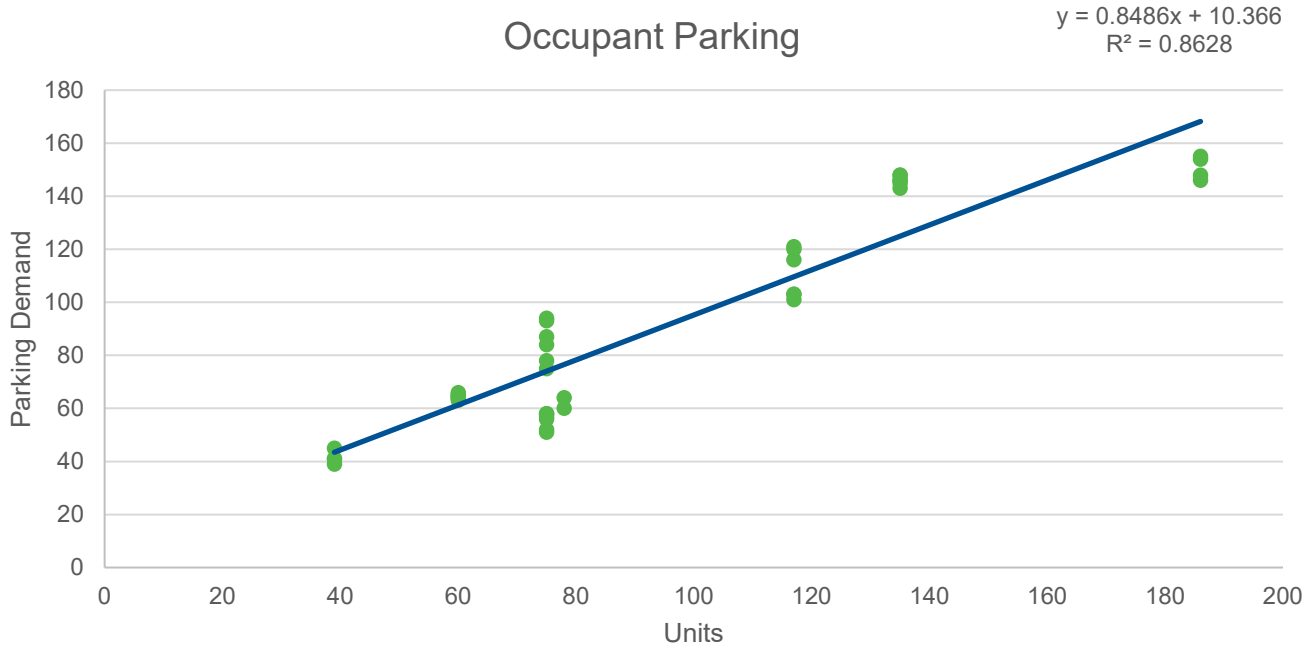


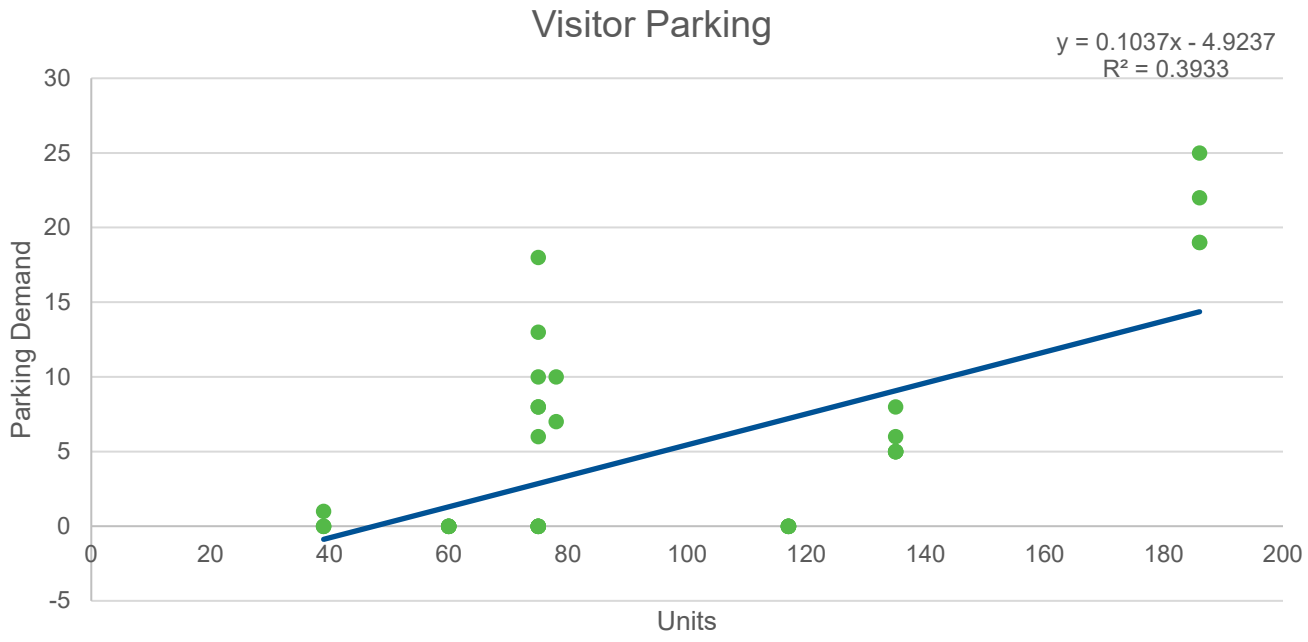
Based on the Burlington market parking utilization studies, the forecast parking demand for the subject site is estimated to be approximately 506 occupant parking spaces and 56 visitor parking spaces or 562 total parking spaces for the residential land use. When the zoning by-law parking requirements for the retail land uses is considered (22 spaces) the site's overall parking demand is forecast to be 584 spaces (1.01 spaces per unit). With parking for 750 vehicles proposed, the site's parking demand is estimated to be less than the proposed supply.

TABLE 6.3: PROXY SITE DATA FORECAST PARKING DEMAND

	Estimated Parking Demand			
	O	V	Retail	Sum
Demand	506	56	22	**584**
Supply	723		27	**750**
Surplus/Deficiency	**217**		**-54**	**163**

With the comprehensive TDM program outlined in **Section 3.4**, a minimum occupant parking ratio of 0.90 spaces per unit and a minimum visitor parking ratio of 0.10 spaces per unit is supportable. The zoning requirements for retail parking will be provided.





paradigm TRANSPORTATION SOLUTIONS LIMITED

Occupant & Visitor Parking Data Plot

1010 Downsview Drive & 355 Plains Road East
210771

Figure 6.1

6.4 Vehicle Ownership

Vehicle ownership data from the Transportation Tomorrow Survey (TTS) for apartment units in zones surrounding GO Transit stations along the Lakeshore West Line between Hamilton GO Centre and Port Credit (Mississauga) was reviewed. Findings indicate approximately 25% of residents living in apartments units do not own a vehicle.

Table 6.4 summarizes the vehicle ownership characteristics for apartment units for zones surrounding the GO Transit stations along the Lakeshore West Line. The survey data suggests that vehicle ownership for apartment units is approximately 0.94 vehicles per unit. **Appendix H** contains the TTS data.

TABLE 6.4: VEHICLES PER HOUSEHOLD (2016 TTS)

Dwelling Unit Type	Number of Vehicles in Household					Total Vehicles
	0	1	2	3	4	
Apartment	0	19,434	11,194	1,188	272	32,088
Percentage	0%	61%	35%	4%	1%	100%
Vehicles per Unit	0.00	0.57	0.33	0.03	0.01	0.94

Using this methodology, the parking demand for occupants is estimated to be 549 spaces. With an occupant parking supply of 723 spaces, the site's occupant parking demand is estimated to exceed supply by 174 spaces.

Visitor parking is not included in this calculation as TTS does not provide data for visitor parking. The site's visitor parking demand using proxy site data is estimated to be 56 spaces.

Retail parking is not included in this calculation as no TTS data is available. The site's retail parking demand is assumed to be consistent with the city's zoning requirement of 22 spaces (Section 6.2.1).

Using vehicle ownership data, proxy data, and zoning by-law calculations the site's parking demand is forecast to be 627 spaces.

The applicant intends to unbundle parking from unit cost and sell them separately. Occupant parking is proposed to be capped at no more than 2.00 spaces per unit meaning no occupant could park more than two vehicles on-site. Removing three and four vehicle households from the TTS data set results in a vehicle ownership rate for apartment units of approximately 0.90 vehicles per unit. This would result in a reduction of 24 spaces for occupants.

6.5 Parking Reduction

The City of Burlington currently does not have a method for calculating a parking reduction based on a proposed TDM program.

The Region of Waterloo TDM Checklist[19] was reviewed to determine potential parking reductions based on the TDM plan outlined in **Section 3.4**.

With the TDM measures proposed, the site's potential parking reduction is calculated to be 12% of the parking requirement. The reduction in parking is related to:

- **Pedestrian & Cyclist Orientation – 4% reduction**
  - Development incorporates functional building entrances that are oriented to public space or to locations where pedestrians and transit users arrive from such as a street, square, park, or plaza – 1% reduction.
  - Continuous sidewalks are provided along both sides of all adjacent public streets and pedestrian walkways are provided through large parking areas to link the building with the public street sidewalk system – 1% reduction.
  - Non-Residential: Development provides secure bike storage for 4% of the building occupants – 1% reduction.
  - Provision of active uses at-grade along street frontages – 1% reduction.
- **Public Transportation Access – 3% reduction**
  - Located within 600 metres of a transit route with 15-minute headways (or less) or is in a designated mixed-use corridor or node – 3% reduction.
- **Parking – 1 % reduction**
  - 75% of parking or more is located underground or in a structure – 1% reduction.
- **Trip Reduction Incentives – 4% reduction**
  - The building owner/occupant will provide subsidized transit passes for all occupants – 2% reduction; and
  - The building owner/occupant agrees to charge for parking as a separate cost to occupants – 2% reduction.

[19] Region of Waterloo Report P-13-088, Proposed Revisions to the Regional Transportation Impact Study Guidelines, September 18, 2013

A 12% reduction to the staff supported Zoning By-law rates results in a parking demand of 664 spaces. With 750 spaces proposed, the site's parking demand is estimated to be less than the proposed supply. The site's parking demand is forecast to be contained on-site.

Appendix I contains the Region of Waterloo TDM Checklist.

6.6 Summary

Using several different methodologies, the site's parking demand is forecast to be in order of 587 to 755 spaces, depending upon the methodology used to forecast the demand. **Table 6.5** summarizes the parking demand estimates.

With a comprehensive TDM program, the site's parking supply of 750 spaces is sufficient to accommodate the site's parking demand. The allocation of parking between occupants and visitors requires adjustment. A minimum of 56 spaces (0.09 spaces per unit) should be assigned to visitors to the apartment units. The zoning requirements for retail parking will be provided (22 spaces). Visitor parking can be accommodated at grade or within the parking structures.

The transition from an automobile-dependent environment to one that is transit-supportive will require strategies to assist in shifting mode choice and enabling the emergence of a pedestrian-friendly and transit-supportive environment through TDM measures.

To support the proposed parking supply, a shift in travel modes and vehicle ownership for residents plus the integration of TDM measures will be critical to the development's success.

TABLE 6.5: SUMMARY OF PARKING DEMAND ESTIMATES

Methodology	Estimated Parking Demand			
	O	V	Retail	Sum
City of Burlington Zoning By-law	584	146	22	**752**
Burlington Parking Proxy Data	506	56	22	**584**
Transportation Tomorrow Survey	549	56	22	**627**
Burlington Parking Proxy Data with TDM	446	49	22	**517**

7 Conclusions & Recommendations

7.1 Conclusions

Transportation Impact Study

The main findings and conclusions of this study are as follows:

- **Base Year Traffic Conditions**: Critical movements are noted at the Plains Road East intersections with Gallagher Road/Shadeland Avenue and Filmandale Road/Lindley Commons.
- **Site Trip Generation**: The subject site is forecast to generate approximately 248 and 272 new vehicle trips during the AM and PM peak hours, respectively.
- **Transportation Demand Management**: The site concept plan includes TDM measures intended to assist in mitigating the site's transportation and parking impacts. TDM measures are aimed at walking, transit, cycling, parking, and education/promotion. To encourage cycling, the City is planning a protected bikeway on Plains Road East.
- **Background Traffic Conditions**: The noted queue lengths and localized congestion identified under base year conditions are forecast to continue to occur.
- **Total Traffic Conditions**: The capacity issues identified under background conditions are forecast to continue to occur. Two additional critical movements are noted at the Plains Road East and Downsview Drive intersection because of site-generated traffic.
- **Remedial Measures**: Signals are not warranted on Plains Road East at Filmandale Road/Lindley Commons and Dovercourt Avenue under background conditions.

  The City should consider extending the southbound left-turn storage lane length on Gallagher Road to provide 35 metres of storage. The need for the additional storage is an existing condition.



Parking Study

- The site's parking supply is identified as 750 spaces (1.28 spaces per unit). The site's vehicle parking supply is allocated as:
  - Occupant parking – 723 spaces (1.24 spaces per unit);
  - Visitor parking – 27 spaces (0.05 spaces per unit);
- The allocation of parking between occupants and visitors requires adjustment. With a comprehensive TDM program, a minimum occupant parking ratio of 0.90 spaces per unit and a minimum visitor parking ratio of 0.10 spaces per unit is supportable. The zoning requirements for retail parking will be provided. Visitor parking can be accommodated at grade or within the parking structures.

7.2 Recommendations

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

- The site's TDM program be implemented and monitored over time to help manage the site's transportation and parking impacts.
- 292 long-term and 64 short-term bicycle parking spaces be provided on the site plan. Long-term bicycle parking should be provided in secure indoor rooms/areas with bicycle repair stations. The parking will be conveniently located at-grade and in the parking structure. The short-term bicycle parking should be located at grade near primary building entrances;
- In conjunction with the site's TDM program, that the site's parking supply be designed to provide for a minimum of 0.90 spaces per units for occupant and a minimum of 0.10 spaces per unit for residential visitors. The zoning requirements for retail parking will be provided.
- The City consider extending the southbound left-turn storage length at the Plains Road East and Shadeland Avenue/ Gallagher Road intersection to provide 35 metres of storage to accommodate the existing and forecast background traffic.

Appendix A

Pre-Study Consultation

Scott Catton

From: Lucas, Steve <Steve.Lucas@burlington.ca>
Sent: 24-Jan-22 16:55
To: Stefan Hajgato; Ozimkovic , Danijel
Cc: Scott Catton
Subject: RE: 210771 (335-355 Plains Rd E Transportation Study) Terms of Reference

Hello Stefan,

Please see our comments below in blue!

Cheers,

Steve Lucas
Transportation Planning Technologist
Transportation Services Department – City of Burlington

(905) 335-7671 ext.7691
Steve.Lucas@burlington.ca

From: Stefan Hajgato <shajgato@ptsl.com>
Sent: Monday, January 17, 2022 12:51 PM
To: Lucas, Steve <Steve.Lucas@burlington.ca>; Ozimkovic , Danijel <Danijel.Ozimkovic@burlington.ca>
Cc: Scott Catton <scatton@ptsl.com>
Subject: 210771 (335-355 Plains Rd E Transportation Study) Terms of Reference

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Dan and Steve,

We've been retained to complete a Transportation and Parking Study for the proposed development of 335 & 355 Plains Road East. The subject lands on the northwest and northeast quadrants of the Plains Road East intersection with Downsview Drive.

On the west side of Downsview Drive (Site 'A'), the site concept plan includes an 8-storey mid-rise building with approximately 141 units and approximately 56 townhouse units. Parking is noted in the site statistics to be 247 spaces (1.25 spaces / unit). On the east side of Downsview Drive (Site 'B'), the site concept includes an 11-storey high-rise building with approximately 341 units and approximately 40 townhouse units. Parking is noted in the site statistics to be 476 spaces (1.25 spaces / unit). Approximately 629 m^2 (6,766 sq.ft.) of ground floor commercial land uses are proposed across the two buildings with 27 proposed parking spaces.

Build-out is estimated to occur by Year 2027. A copy of the current site concept plan is attached.

Can you please review our proposed scope of work and provide comment?
Key items I would like to have input on include:

1. Method to develop baseline volumes for analysis. See our suggested approach below;
2. Adjacent developments to include in the traffic forecast;
3. Suggested generalized Growth rate of 1% per annum (consistent with the previous studies along Plains Road; and

4. Any planned geometric or traffic control improvements at the intersections in the study area (I don't think there will be any as the road was recently reconstructed).

Transportation Impact Study

Study Area Intersections:

- Plains Road East at Gallagher Road/Shadeland Avenue (signalized);
- Plains Road East at Downsview Drive (signalized);
- Plains Road East at Willowbrook Road/Falcon Boulevard (signalized); and
- The site driveway(s) to Downsview Drive (unsignalized).
- Downsview Drive at Dowland Crescent (Unsignalized)
- Filmandale Road / Lindley Common at Plains Road East (unsignalized)
- Dovercourt Avenue / Private Lane at Plains Road East (unsignalized)

Study Horizon

- 5-years from the date of the study (Year 2027).

Analysis Periods

- Weekday AM and PM peak hour

Existing Data

- Weekday Turning Movement Count (TMC) data to be obtained from City.
    - Plains Road East at Gallagher Road/Shadeland Avenue; - Year 2019
    - Plains Road East at Downsview Drive - Year 2020
    - Plains Road East at Willowbrook Road/Falcon Boulevard.- Year 2019
    - Please connect with Florin Patrau to confirm the availability of any additional TMC's at the identified intersections above. Florin.Patrau@burlington.ca
- No new (Year 2022) TMC data will be collected.
- Base Year Forecast - The historical TMC data will be increased to a year 2022 condition using a growth rate of 1% per annum. Traffic volumes on Plains Road East through the Downsview intersection will be balanced (increased) to better match upstream or downstream flows. The base year traffic volumes will be circulated to City Staff for review and comment.
    - We have no concerns with the detailed approach above for the base forecast year and the proposed growth rate of 1%.
- Existing signal timing plans to be obtained from the City.

Analysis

- Synchro 10, HCM 2000 analysis

Background Traffic

- Generalized growth rate of 1% per annum.

Active Development Applications:

- 284-292 Plains Road East;
- 53-71 Plains Road East;
- 484 Plains Road East;
- 40-70 Plains Road East; and
- Additional sites to be identified by City Staff.
- Please see the following URL's below:
    - https://www.burlington.ca/en/services-for-you/92-Plains-Road-East.asp
    - https://www.burlington.ca/en/services-for-you/35-Plains-Road.asp

Future Road Improvements

- Plains Road East Bikeway (Year TBD)
- Additional improvements (if any) to be identified by City Staff

Trip Generation

- ITE Trip Generation Data 11th Edition
    - LUC 221 – Multifamily Housing, Mid-Rise (578 Apartment and Townhouse Units)
    - LUC 822 – Strip Retail Plaza (<40k GFA) – 629 m^2 (6,766 sq.ft.).

- The AM trip generation is estimated to be 259 trips. The PM trip generation is estimated to be 269 trips.

Modal Split Reductions:

- None for analysis purposes.

Site Traffic Distribution

- Existing travel patterns/TTS data

Parking Study

We will calculate the parking supply required for the proposed development by the municipal zoning by-law. If the planned parking supply does not meet the by-law requirement, we will forecast peak parking demand based on the rates obtained from the Institute of Transportation Engineers (ITE) Parking Generation (5th Edition). This forecast will be further refined through consideration of typical auto ownership characteristics for land uses of this nature.

If the planned parking supply for the proposed development will adequately serve the forecast peak demand, we will provide a justification for the proposed number of spaces, recognizing site constraints, local conditions and potential spillover impacts. If not, we will identify parking management measures that could be considered to alleviate the projected supply deficit (e.g., transit, active transportation, TDM strategies, shared parking). This may include use of legal on-street and off-site parking nearby.

Report

We will document the study methodologies, findings and conclusions in a report. The report will include appendices containing the detailed analysis results and any data collected.

Regards,

Stefan Hajgato, P.Eng.
Transportation Engineer
(He/Him)

Paradigm Transportation Solutions Limited
150 Pinebush Road, Unit 5A, Cambridge ON N1R 8J8
p: 519.896.3163 x209
e: shajgato@ptsl.com
w: www.ptsl.com

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Appendix B

Existing Data



200862-Plains Rd E & Shadeland 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

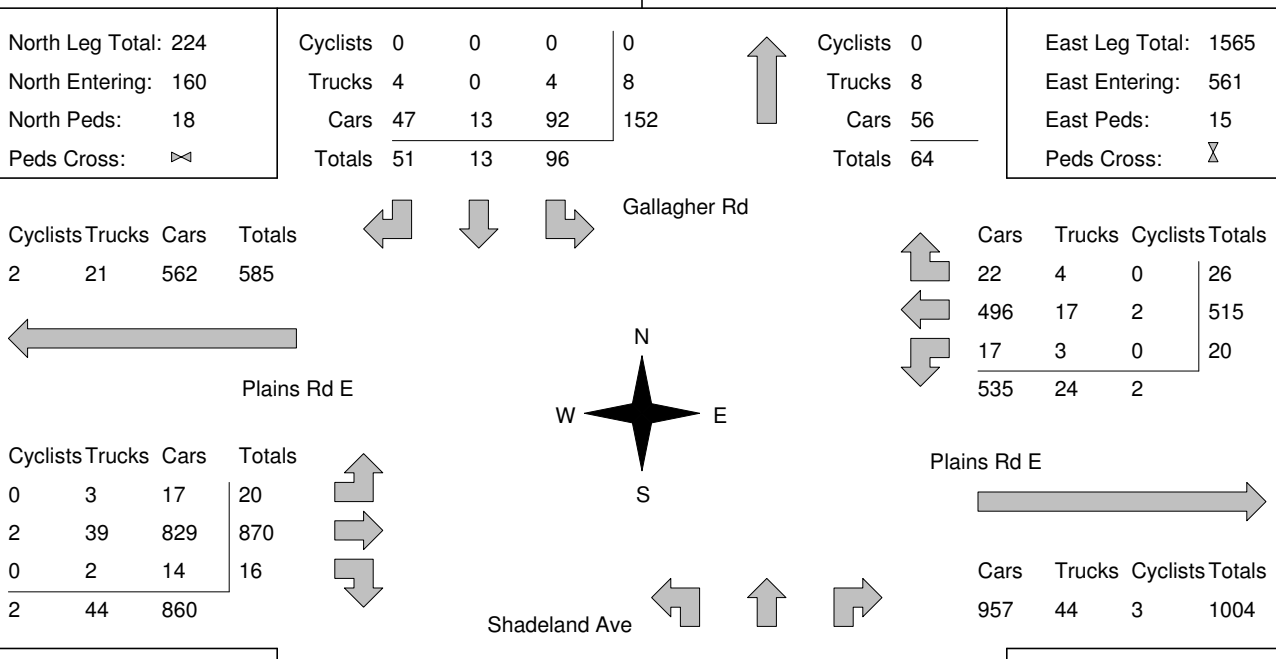
Municipality: Burlington
Site #: 0000200862
Intersection: Plains Rd E & Shadeland Ave
TFR File #: 1
Count date: 25-Apr-2019

Weather conditions:
Sunny

Person(s) who counted:
Nick

**** Signalized Intersection ****

Major Road: Plains Rd E runs W/E



Comments

200862-Plains Rd E & Shadeland Ave

Mid-day Peak Diagram

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

One Hour Peak
From: 11:45:00
To: 12:45:00

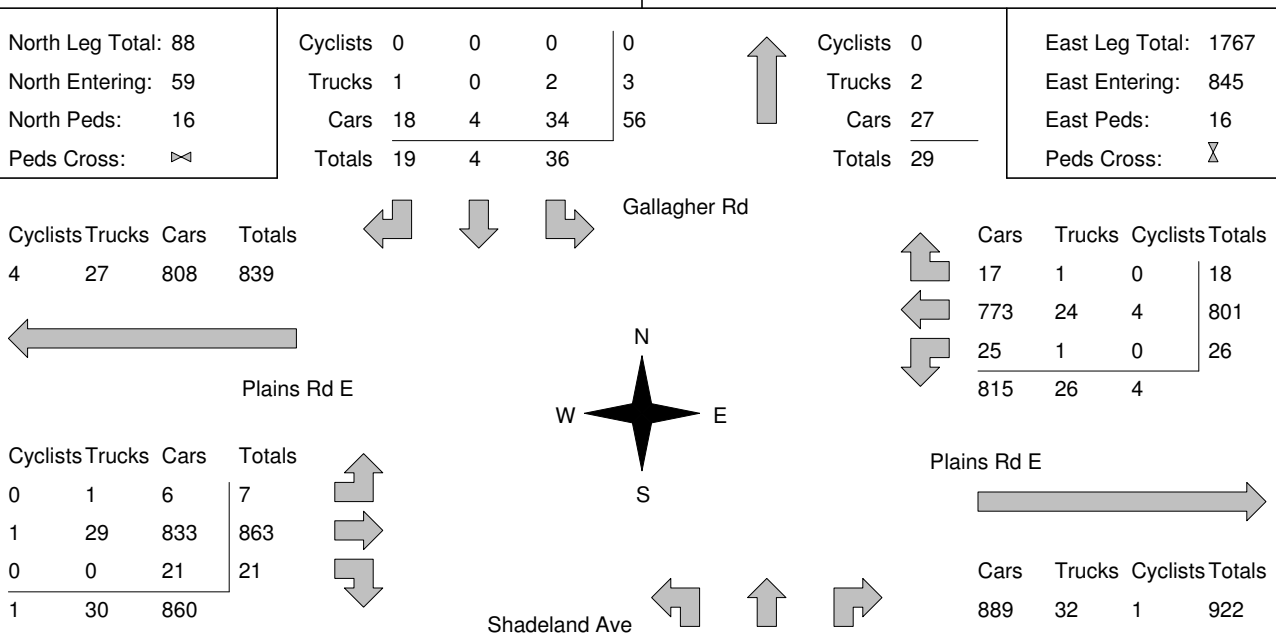
Municipality: Burlington
Site #: 0000200862
Intersection: Plains Rd E & Shadeland Ave
TFR File #: 1
Count date: 25-Apr-2019

Weather conditions:
Sunny

Person(s) who counted:
Nick

**** Signalized Intersection ****

Major Road: Plains Rd E runs W/E



Comments

200862-Plains Rd E & Shadeland 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 #: 0000200862
Intersection: Plains Rd E & Shadeland Ave
TFR File #: 1
Count date: 25-Apr-2019

Weather conditions:
Sunny

Person(s) who counted:
Nick

**** Signalized Intersection ****

Major Road: Plains Rd E runs W/E

North Leg Total: 116
North Entering: 86
North Peds: 14
Peds Cross: ⋈

Cyclists	0	0	0	0
Trucks	2	0	1	3
Cars	29	12	42	83
Totals	31	12	43	

Cyclists	1
Trucks	1
Cars	28
Totals	30

East Leg Total: 2307
East Entering: 1422
East Peds: 11
Peds Cross: ⧖

Gallagher Rd

Cyclists	Trucks	Cars	Totals
6	36	1373	1415

Cars	Trucks	Cyclists	Totals
15	0	0	15
1327	33	6	1366
39	2	0	41
1381	35	6	

Plains Rd E

N
W E
S

Cyclists	Trucks	Cars	Totals
0	1	8	9
5	12	794	811
0	2	21	23
5	15	823	

Plains Rd E

Cars	Trucks	Cyclists	Totals
866	13	6	885

Shadeland Ave

Peds Cross: ⧖
West Peds: 2
West Entering: 843
West Leg Total: 2258

Cars	72
Trucks	4
Cyclists	0
Totals	76

Cars	17	5	30	52
Trucks	1	0	0	1
Cyclists	0	1	1	2
Totals	18	6	31	

Peds Cross: ⋈
South Peds: 9
South Entering: 55
South Leg Total: 131

Comments

200862-Plains Rd E & Shadeland Ave

Total Count Diagram

Municipality: Burlington
Site #: 0000200862
Intersection: Plains Rd E & Shadeland Ave
TFR File #: 1
Count date: 25-Apr-2019

Weather conditions:
Sunny

Person(s) who counted:
Nick

**** Signalized Intersection ****

Major Road: Plains Rd E runs W/E

North Leg Total: 887
North Entering: 642
North Peds: 129
Peds Cross: ⋈

Cyclists	0	2	0	2
Trucks	16	0	13	29
Cars	201	46	364	611
Totals	217	48	377	

Cyclists	1
Trucks	21
Cars	223
Totals	245

East Leg Total: 14204
East Entering: 7128
East Peds: 77
Peds Cross: ⧖

Gallagher Rd

Cyclists	Trucks	Cars	Totals
27	221	6882	7130

Cars	Trucks	Cyclists	Totals
122	8	0	130
6545	199	27	6771
215	12	0	227
6882	219	27	

Plains Rd E

N
W E
S

Cyclists	Trucks	Cars	Totals
0	12	61	73
27	202	6200	6429
2	8	173	183
29	222	6434	

Plains Rd E

Cars	Trucks	Cyclists	Totals
6821	224	31	7076

Shadeland Ave

Peds Cross: ⧖
West Peds: 39
West Entering: 6685
West Leg Total: 13815

Cars	434
Trucks	20
Cyclists	4
Totals	458

Cars	136	40	257	433
Trucks	6	1	9	16
Cyclists	0	1	4	5
Totals	142	42	270	

Peds Cross: ⋈
South Peds: 67
South Entering: 454
South Leg Total: 912

Comments

200862-Plains Rd E & Shadeland Ave
Traffic Count Summary

Intersection: Plains Rd E & Shadeland Ave | **Count Date:** 25-Apr-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	18	4	11	33	11	82
9:00:00	96	13	51	160	18	235
11:00:00	0	0	0	0	0	0
12:00:00	40	2	22	64	21	117
13:00:00	28	4	19	51	14	97
14:00:00	19	2	14	35	7	91
15:00:00	0	0	0	0	0	0
16:00:00	91	7	42	140	30	213
17:00:00	46	12	38	96	16	156
18:00:00	39	4	20	63	12	105
Totals:	377	48	217	642	129	1096

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	12	3	34	49	2
9:00:00	19	18	38	75	1
11:00:00	0	0	0	0	0
12:00:00	19	4	30	53	11
13:00:00	17	2	27	46	4
14:00:00	15	3	38	56	5
15:00:00	0	0	0	0	0
16:00:00	28	3	42	73	16
17:00:00	18	3	39	60	10
18:00:00	14	6	22	42	18
Totals:	142	42	270	454	67

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	14	420	9	443	1	1395
9:00:00	20	515	26	561	15	1467
11:00:00	0	0	0	0	0	0
12:00:00	28	724	16	768	9	1549
13:00:00	21	805	15	841	16	1722
14:00:00	24	755	11	790	3	1573
15:00:00	0	0	0	0	0	0
16:00:00	42	987	11	1040	16	1875
17:00:00	41	1316	15	1372	8	2227
18:00:00	37	1249	27	1313	9	2005
Totals:	227	6771	130	7128	77	13813

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	8	928	16	952	3
9:00:00	20	870	16	906	7
11:00:00	0	0	0	0	0
12:00:00	9	747	25	781	7
13:00:00	10	849	22	881	7
14:00:00	3	754	26	783	2
15:00:00	0	0	0	0	0
16:00:00	8	803	24	835	7
17:00:00	10	818	27	855	2
18:00:00	5	660	27	692	4
Totals:	73	6429	183	6685	39

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:	38	155	79	72	42	149	86	72

Plains Rd E @ Gallagher Rd

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 10:00:00

One Hour Peak
From: 9:00:00
To: 10:00:00

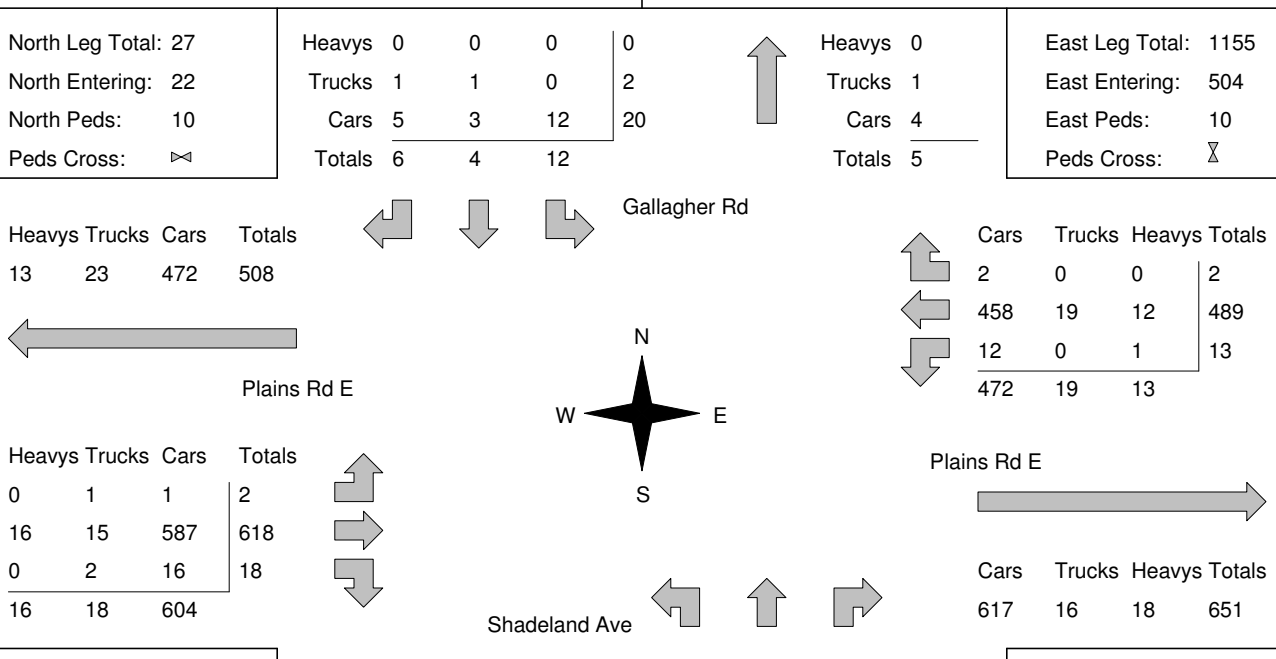
Municipality: Burlington
Site #: 0000000001
Intersection: Plains Rd E & Gallagher Rd
TFR File #: 1
Count date: 18-Aug-2020

Weather conditions:
Sunny/Dry

Person(s) who counted:
Greg

**** Signalized Intersection ****

Major Road: Plains Rd E runs W/E



Comments

Plains Rd E @ Gallagher Rd

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 13:00:00

One Hour Peak
From: 11:30:00
To: 12:30:00

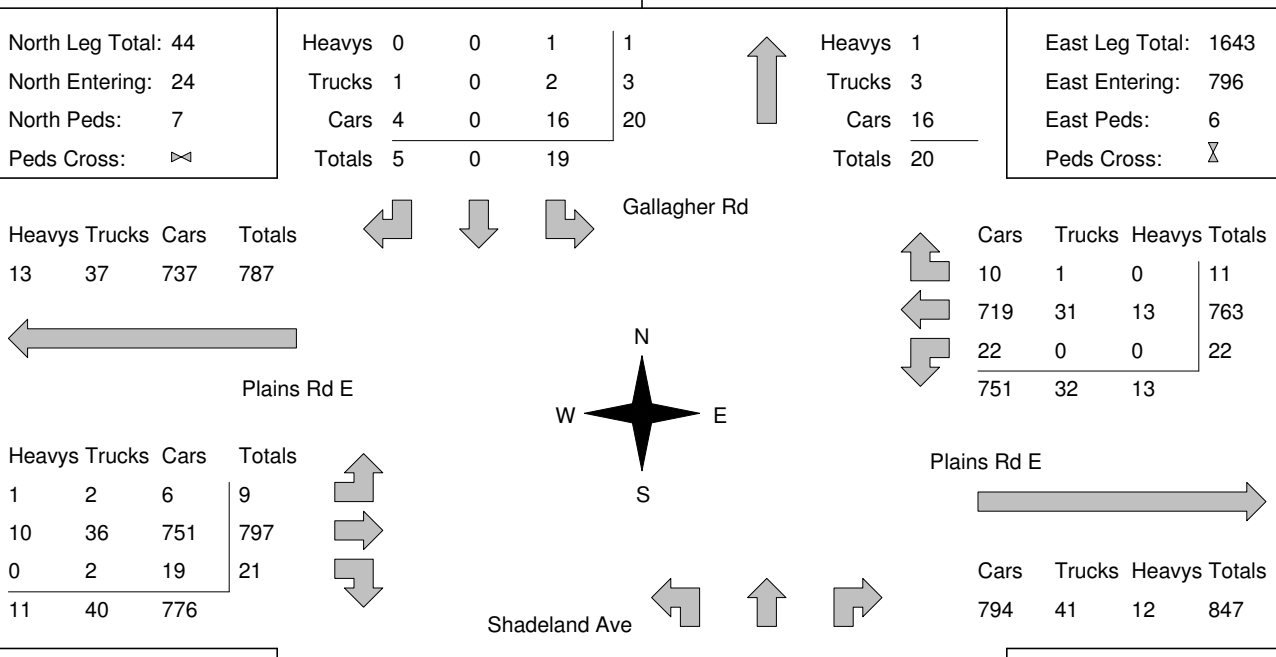
Municipality: Burlington
Site #: 0000000001
Intersection: Plains Rd E & Gallagher Rd
TFR File #: 1
Count date: 18-Aug-2020

Weather conditions:
Sunny/Dry

Person(s) who counted:
Greg

**** Signalized Intersection ****

Major Road: Plains Rd E runs W/E



Comments

Plains Rd E @ Gallagher Rd

Afternoon Peak Diagram

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

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

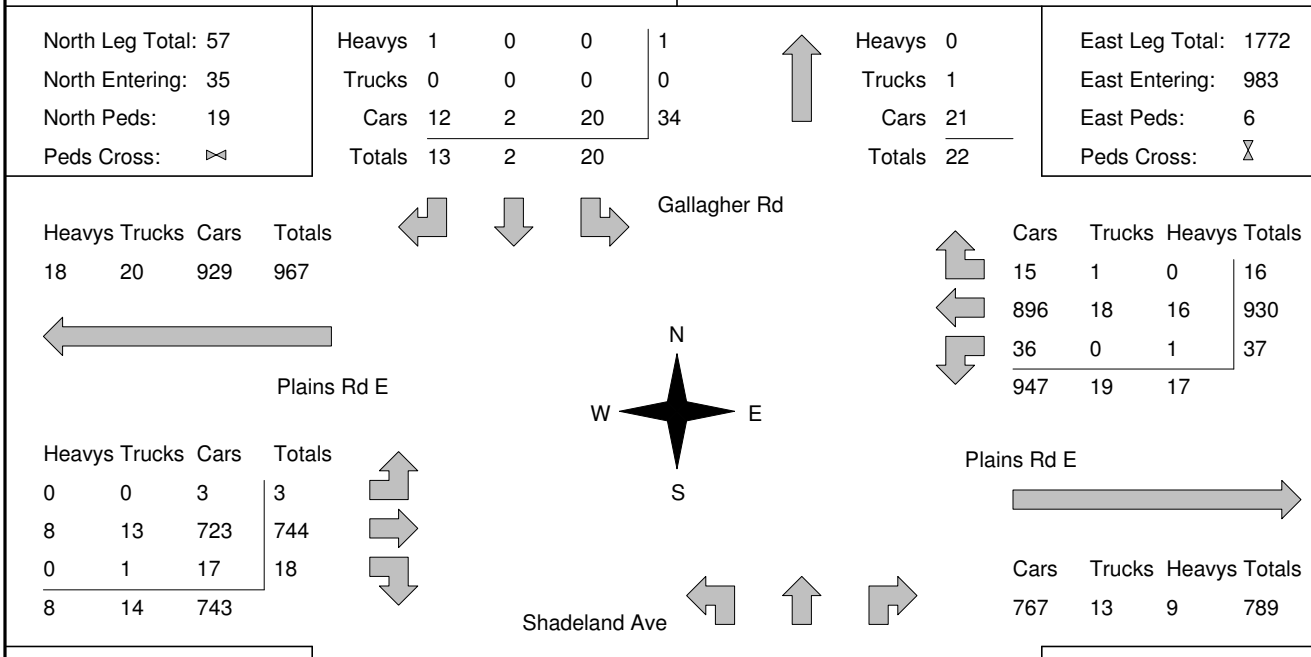
Municipality: Burlington
Site #: 0000000001
Intersection: Plains Rd E & Gallagher Rd
TFR File #: 1
Count date: 18-Aug-2020

Weather conditions:
Sunny/Dry

Person(s) who counted:
Greg

**** Signalized Intersection ****

Major Road: Plains Rd E runs W/E



Comments

Plains Rd E @ Gallagher Rd

Total Count Diagram

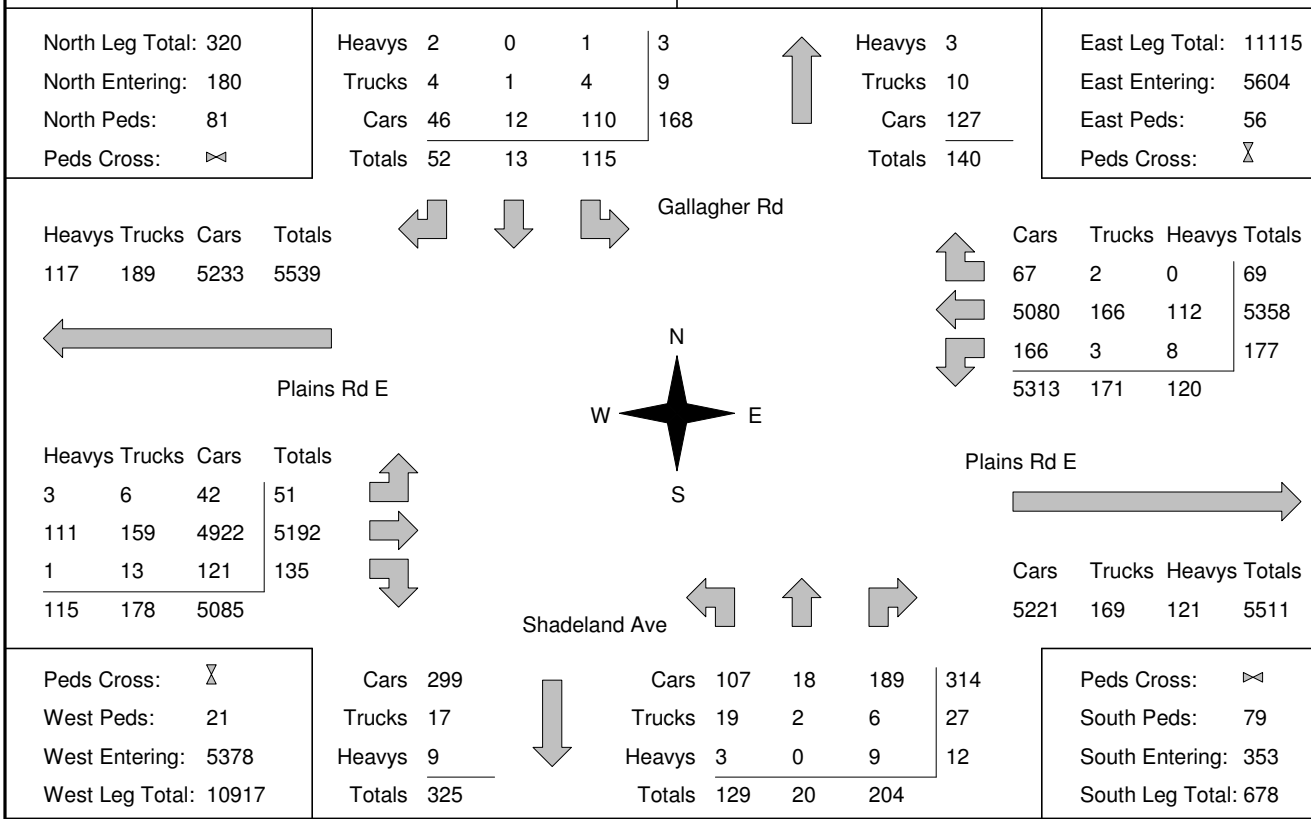
Municipality: Burlington
Site #: 0000000001
Intersection: Plains Rd E & Gallagher Rd
TFR File #: 1
Count date: 18-Aug-2020

Weather conditions:
Sunny/Dry

Person(s) who counted:
Greg

**** Signalized Intersection ****

Major Road: Plains Rd E runs W/E



Comments

Plains Rd E @ Filmandale Rd

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 10:00:00

One Hour Peak
From: 9:00:00
To: 10:00:00

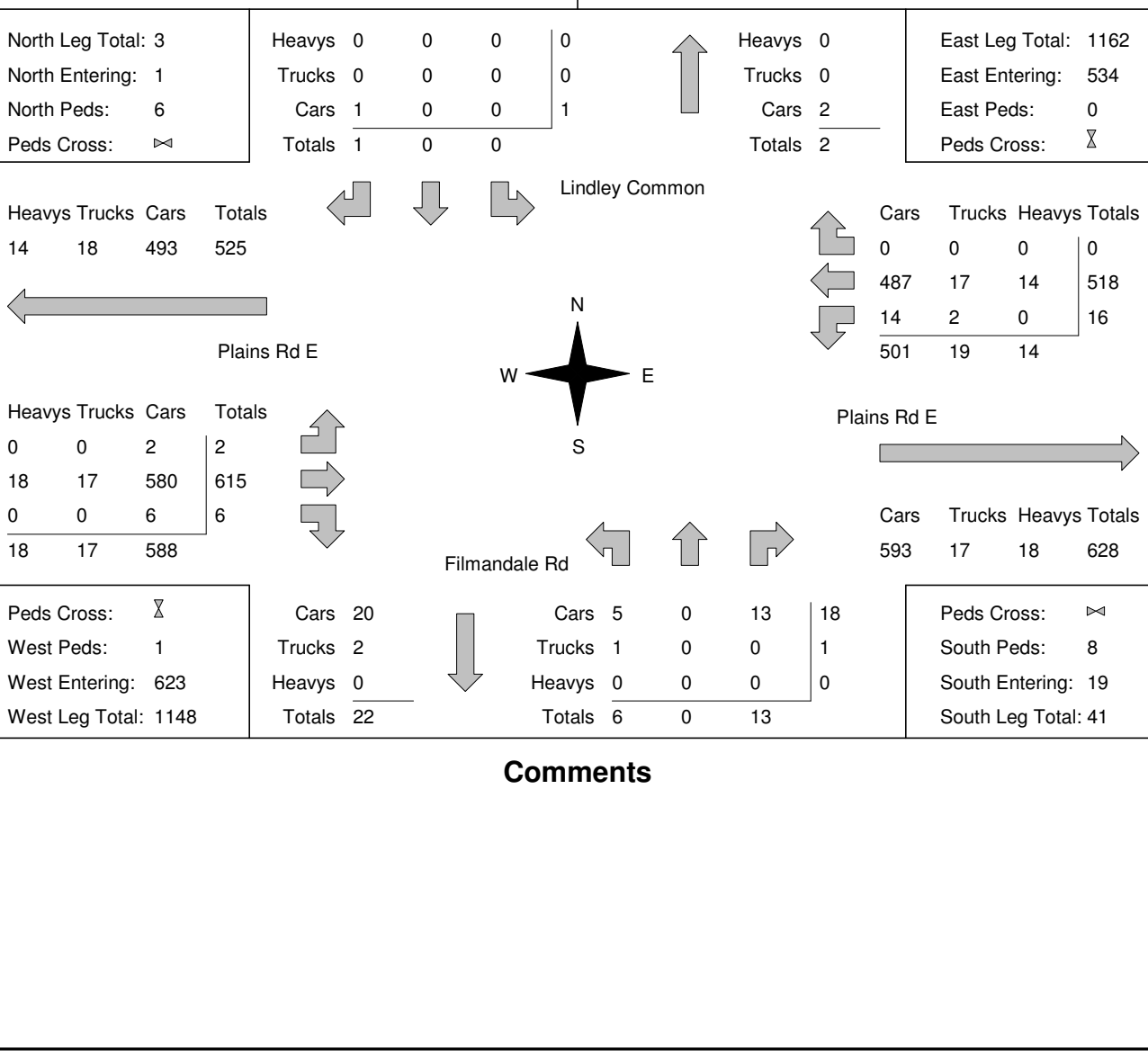
Municipality: Burlington
Site #: 0000000002
Intersection: Plains Rd E & Filmandale Rd
TFR File #: 2
Count date: 19-Aug-2020

Weather conditions:
Sunny/Dry

Person(s) who counted:
Teresa

**** Non-Signalized Intersection ****

Major Road: Plains Rd E runs W/E



Comments

Plains Rd E @ Filmandale Rd

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 13:00:00

One Hour Peak
From: 11:45:00
To: 12:45:00

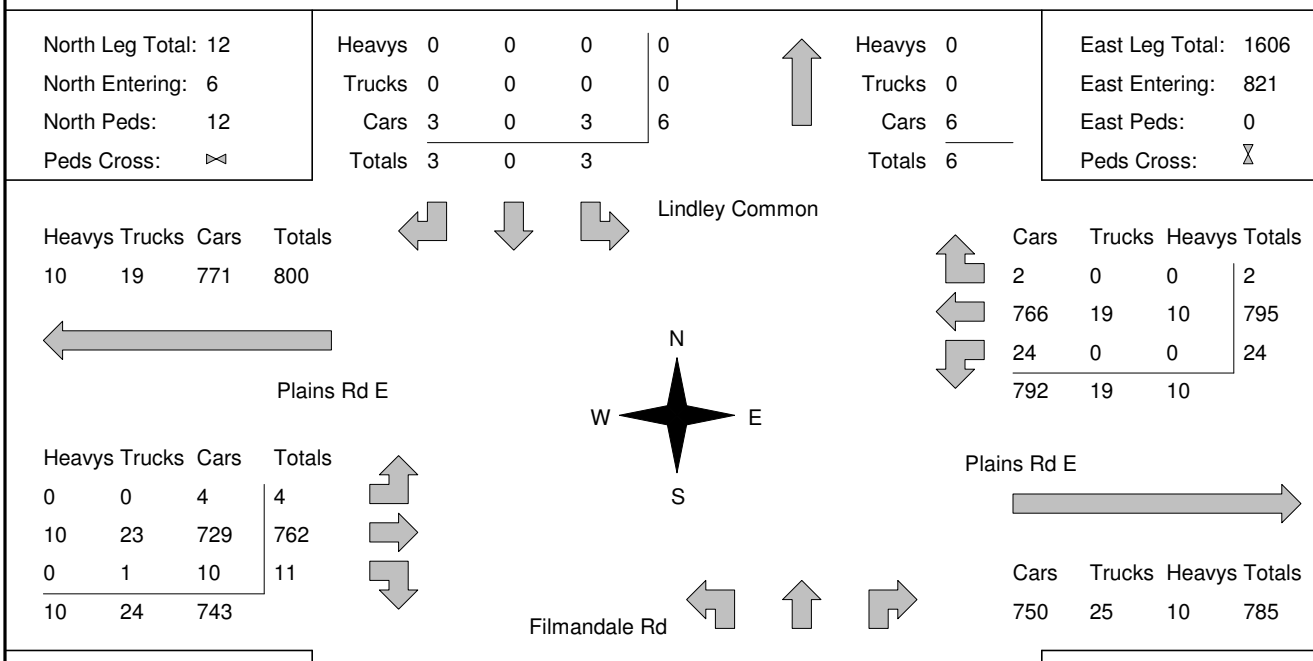
Municipality: Burlington
Site #: 0000000002
Intersection: Plains Rd E & Filmandale Rd
TFR File #: 2
Count date: 19-Aug-2020

Weather conditions:
Sunny/Dry

Person(s) who counted:
Teresa

**** Non-Signalized Intersection ****

Major Road: Plains Rd E runs W/E



Comments

Plains Rd E @ Filmandale Rd

Afternoon Peak Diagram

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

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

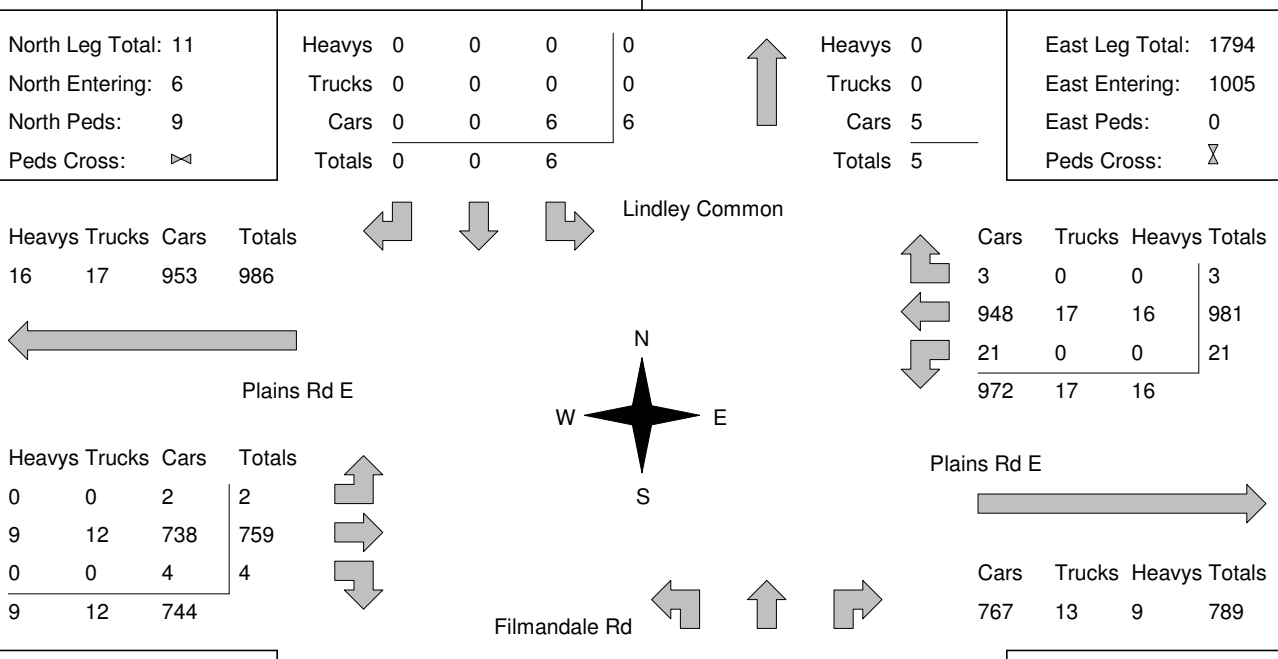
Municipality: Burlington
Site #: 0000000002
Intersection: Plains Rd E & Filmandale Rd
TFR File #: 2
Count date: 19-Aug-2020

Weather conditions:
Sunny/Dry

Person(s) who counted:
Teresa

**** Non-Signalized Intersection ****

Major Road: Plains Rd E runs W/E



Comments

Plains Rd E @ Filmandale Rd

Total Count Diagram

Municipality: Burlington
Site #: 0000000002
Intersection: Plains Rd E & Filmandale Rd
TFR File #: 2
Count date: 19-Aug-2020

Weather conditions:
Sunny/Dry

Person(s) who counted:
Teresa

**** Non-Signalized Intersection ****

Major Road: Plains Rd E runs W/E

North Leg Total:	53
North Entering:	25
North Peds:	86
Peds Cross:	⋈

Heavys	0	0	0	0
Trucks	0	0	0	0
Cars	5	0	20	25
Totals	5	0	20	

Heavys	0
Trucks	0
Cars	28
Totals	28

East Leg Total:	11190
East Entering:	5832
East Peds:	3
Peds Cross:	⧖

Lindley Common

Heavys	Trucks	Cars	Totals
110	156	5453	5719

Cars	Trucks	Heavys	Totals
17	0	0	17
5414	155	110	5679
133	3	0	136
5564	158	110	

Plains Rd E

N
W E
S

Heavys	Trucks	Cars	Totals
0	0	10	10
108	137	4948	5193
2	3	59	64
110	140	5017	

Plains Rd E

Cars	Trucks	Heavys	Totals
5109	141	108	5358

Filmandale Rd

Peds Cross:	⧖
West Peds:	5
West Entering:	5267
West Leg Total:	10986

Cars	192
Trucks	6
Heavys	2
Totals	200

Cars	34	1	141	176
Trucks	1	0	4	5
Heavys	0	0	0	0
Totals	35	1	145	

Peds Cross:	⋈
South Peds:	74
South Entering:	181
South Leg Total:	381

Comments

Plains Rd E @ Downsview Dr

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 10:00:00

One Hour Peak
From: 9:00:00
To: 10:00:00

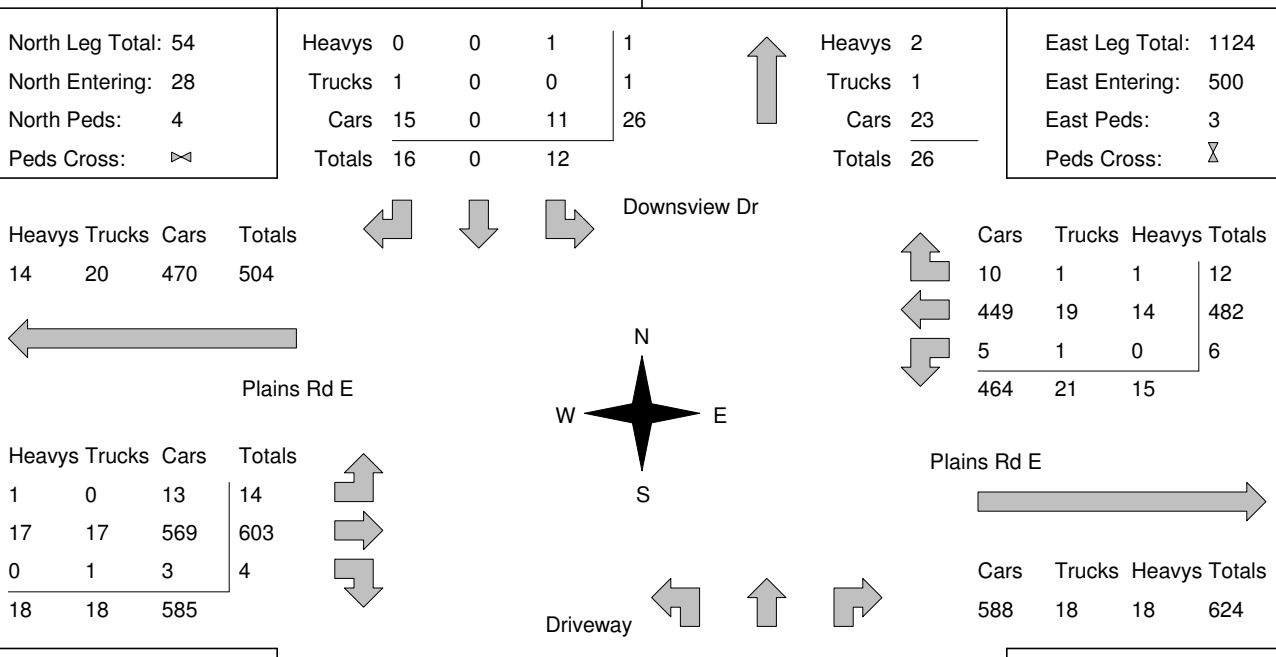
Municipality: Burlington
Site #: 0000000003
Intersection: Plains Rd E & Downsview Dr
TFR File #: 3
Count date: 19-Aug-2020

Weather conditions:
Sunny/Dry

Person(s) who counted:
Ela

**** Signalized Intersection ****

Major Road: Plains Rd E runs W/E



Comments

Plains Rd E @ Downsview Dr

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 13:00:00

One Hour Peak
From: 11:30:00
To: 12:30:00

Municipality: Burlington
Site #: 0000000003
Intersection: Plains Rd E & Downsview Dr
TFR File #: 3
Count date: 19-Aug-2020

Weather conditions:
Sunny/Dry

Person(s) who counted:
Ela

**** Signalized Intersection ****

Major Road: Plains Rd E runs W/E

North Leg Total: 63
North Entering: 29
North Peds: 5
Peds Cross: ⋈

Heavys	0	0	1	1
Trucks	2	0	2	4
Cars	14	0	10	24
Totals	16	0	13	

Heavys	1
Trucks	0
Cars	33
Totals	34

East Leg Total: 1629
East Entering: 804
East Peds: 2
Peds Cross: ⧖

Downsview Dr

Heavys	Trucks	Cars	Totals
10	26	764	800

Cars	Trucks	Heavys	Totals
14	0	0	14
746	24	10	780
10	0	0	10
770	24	10	

Plains Rd E

N
W E
S

Heavys	Trucks	Cars	Totals
1	0	19	20
7	33	760	800
0	1	3	4
8	34	782	

Plains Rd E

Cars	Trucks	Heavys	Totals
782	35	8	825

Driveway

Peds Cross: ⧖
West Peds: 1
West Entering: 824
West Leg Total: 1624

Cars	13
Trucks	1
Heavys	0
Totals	14

Cars	4	0	12	16
Trucks	0	0	0	0
Heavys	0	0	0	0
Totals	4	0	12	

Peds Cross: ⋈
South Peds: 8
South Entering: 16
South Leg Total: 30

Comments

Plains Rd E @ Downsview Dr

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 #: 0000000003
Intersection: Plains Rd E & Downsview Dr
TFR File #: 3
Count date: 19-Aug-2020

Weather conditions:
Sunny/Dry

Person(s) who counted:
Ela

**** Signalized Intersection ****

Major Road: Plains Rd E runs W/E

North Leg Total:	89
North Entering:	38
North Peds:	10
Peds Cross:	⋈

Heavys	0	0	0	0
Trucks	0	0	0	0
Cars	16	0	22	38
Totals	16	0	22	

Heavys	0
Trucks	0
Cars	51
Totals	51

East Leg Total:	1852
East Entering:	1037
East Peds:	11
Peds Cross:	⧖

Downsview Dr

Heavys	Trucks	Cars	Totals
17	18	974	1009

Cars	Trucks	Heavys	Totals
32	0	0	32
949	18	17	984
21	0	0	21
1002	18	17	

Plains Rd E

N
W E
S

Heavys	Trucks	Cars	Totals
0	0	19	19
9	17	752	778
0	0	10	10
9	17	781	

Plains Rd E

Cars	Trucks	Heavys	Totals
788	18	9	815

Driveway

Peds Cross:	⧖
West Peds:	2
West Entering:	807
West Leg Total:	1816

Cars	31			
Trucks	0			
Heavys	0			
Totals	31			

Cars	9	0	14	23
Trucks	0	0	1	1
Heavys	0	0	0	0
Totals	9	0	15	

Peds Cross:	⋈
South Peds:	17
South Entering:	24
South Leg Total:	55

Comments

Plains Rd E @ Downsview Dr

Total Count Diagram

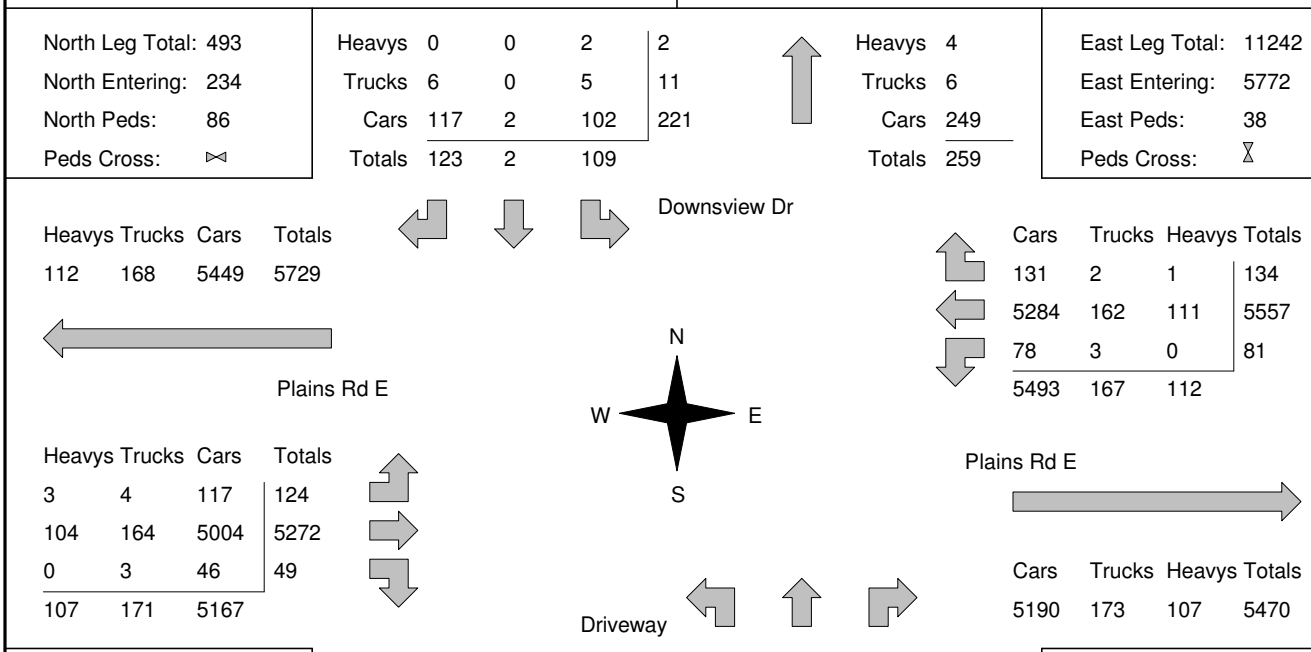
Municipality: Burlington
Site #: 0000000003
Intersection: Plains Rd E & Downsview Dr
TFR File #: 3
Count date: 19-Aug-2020

Weather conditions:
Sunny/Dry

Person(s) who counted:
Ela

**** Signalized Intersection ****

Major Road: Plains Rd E runs W/E



Comments

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Plains Road E & Dovercourt Avenue
Site Code: 210771
Start Date: 02/15/2022

Turning Movement Data

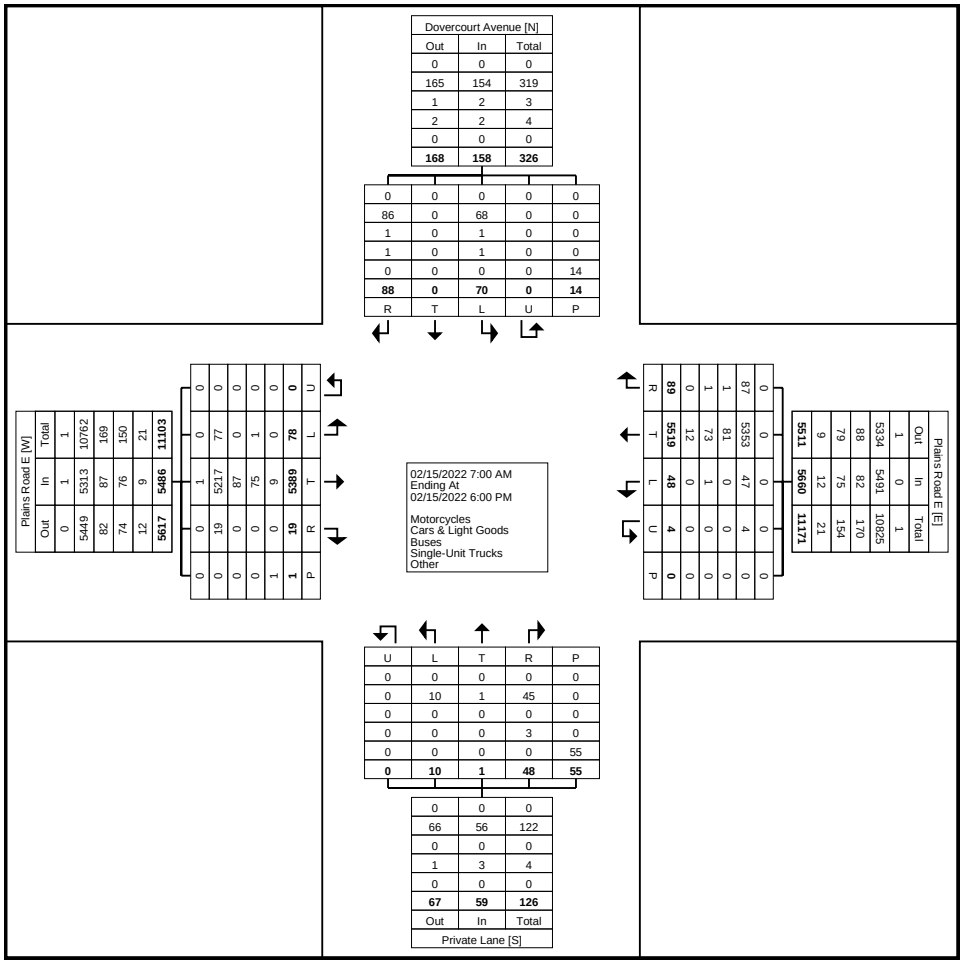
Start Time	Plains Road E Eastbound						Plains Road E Westbound						Private Lane Northbound						Dovercourt Avenue Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	100	0	0	0	100	0	52	3	0	0	55	0	0	1	0	0	1	2	0	2	0	0	4	160
7:15 AM	1	120	0	0	0	121	0	81	3	0	0	84	0	0	3	0	0	3	1	0	2	0	0	3	211
7:30 AM	2	148	0	0	0	150	0	91	2	0	0	93	0	0	3	0	0	3	2	0	4	0	0	6	252
7:45 AM	5	210	0	0	0	215	0	139	7	0	0	146	0	0	1	0	1	1	4	0	7	0	0	11	373
Hourly Total	8	578	0	0	0	586	0	363	15	0	0	378	0	0	8	0	1	8	9	0	15	0	0	24	996
8:00 AM	4	187	0	0	0	191	4	123	1	0	0	128	0	0	0	0	0	0	4	0	4	0	1	8	327
8:15 AM	4	184	1	0	0	189	0	152	3	0	0	155	2	0	0	0	0	2	2	0	2	0	0	4	350
8:30 AM	6	180	1	0	1	187	0	129	4	0	0	133	0	0	1	0	1	1	4	0	4	0	1	8	329
8:45 AM	7	165	0	0	0	172	2	115	6	0	0	123	0	0	1	0	0	1	5	0	7	0	0	12	308
Hourly Total	21	716	2	0	1	739	6	519	14	0	0	539	2	0	2	0	1	4	15	0	17	0	2	32	1314
9:00 AM	3	154	1	0	0	158	0	126	2	0	0	128	0	0	1	0	0	1	4	0	6	0	1	10	297
9:15 AM	0	158	1	0	0	159	2	106	1	0	0	109	0	0	1	0	0	1	2	0	3	0	0	5	274
9:30 AM	1	168	0	0	0	169	1	111	1	0	0	113	0	0	1	0	0	1	1	0	3	0	0	4	287
9:45 AM	1	147	0	0	0	148	1	125	0	1	0	127	0	0	1	0	0	1	0	0	3	0	0	3	279
Hourly Total	5	627	2	0	0	634	4	468	4	1	0	477	0	0	4	0	0	4	7	0	15	0	1	22	1137
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	2	160	1	0	0	163	0	142	2	0	0	144	0	0	0	0	3	0	0	0	2	0	0	2	309
11:15 AM	2	194	0	0	0	196	1	140	0	0	0	141	1	0	2	0	3	3	2	0	1	0	0	3	343
11:30 AM	1	180	0	0	0	181	1	174	3	0	0	178	0	0	0	0	0	0	1	0	0	0	0	1	360
11:45 AM	2	167	0	0	0	169	0	150	2	0	0	152	0	0	0	0	1	0	2	0	4	0	0	6	327
Hourly Total	7	701	1	0	0	709	2	606	7	0	0	615	1	0	2	0	7	3	5	0	7	0	0	12	1339
12:00 PM	3	183	2	0	0	188	2	177	3	0	0	182	1	0	1	0	3	2	1	0	2	0	2	3	375
12:15 PM	1	189	1	0	0	191	1	186	0	0	0	187	1	0	3	0	1	4	2	0	1	0	0	3	385
12:30 PM	3	170	0	0	0	173	3	157	4	1	0	165	0	0	3	0	1	3	1	0	3	0	0	4	345
12:45 PM	1	163	1	0	0	165	2	166	2	0	0	170	1	0	3	0	1	4	1	0	3	0	2	4	343
Hourly Total	8	705	4	0	0	717	8	686	9	1	0	704	3	0	10	0	6	13	5	0	9	0	4	14	1448
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	3	185	1	0	0	189	1	232	5	1	0	239	0	1	0	0	5	1	1	0	1	0	0	2	431
3:15 PM	2	199	1	0	0	202	1	229	3	1	0	234	1	0	1	0	5	2	1	0	2	0	0	3	441
3:30 PM	2	177	0	0	0	179	2	231	1	0	0	234	1	0	0	0	4	1	4	0	1	0	1	5	419
3:45 PM	4	181	0	0	0	185	3	214	2	0	0	219	0	0	0	0	4	0	2	0	2	0	1	4	408
Hourly Total	11	742	2	0	0	755	7	906	11	2	0	926	2	1	1	0	18	4	8	0	6	0	2	14	1699
4:00 PM	2	157	0	0	0	159	1	272	5	0	0	278	0	0	1	0	8	1	6	0	2	0	3	8	446
4:15 PM	3	166	0	0	0	169	3	252	3	0	0	258	0	0	2	0	3	2	2	0	3	0	0	5	434
4:30 PM	1	183	0	0	0	184	4	245	4	0	0	253	0	0	1	0	5	1	3	0	3	0	0	6	444

4:45 PM	2	181	1	0	0	184	6	254	1	0	0	261	0	0	2	0	1	2	1	0	2	0	0	3	450
Hourly Total	8	687	1	0	0	696	14	1023	13	0	0	1050	0	0	6	0	17	6	12	0	10	0	3	22	1774
5:00 PM	3	176	0	0	0	179	2	259	6	0	0	267	1	0	1	0	0	2	4	0	2	0	0	6	454
5:15 PM	5	168	5	0	0	178	1	273	2	0	0	276	1	0	7	0	1	8	2	0	2	0	0	4	466
5:30 PM	1	147	2	0	0	150	3	212	4	0	0	219	0	0	1	0	1	1	2	0	5	0	0	7	377
5:45 PM	1	142	0	0	0	143	1	204	4	0	0	209	0	0	6	0	3	6	1	0	0	0	2	1	359
Hourly Total	10	633	7	0	0	650	7	948	16	0	0	971	2	0	15	0	5	17	9	0	9	0	2	18	1656
Grand Total	78	5389	19	0	1	5486	48	5519	89	4	0	5660	10	1	48	0	55	59	70	0	88	0	14	158	11363
Approach %	1.4	98.2	0.3	0.0	-	-	0.8	97.5	1.6	0.1	-	-	16.9	1.7	81.4	0.0	-	-	44.3	0.0	55.7	0.0	-	-	-
Total %	0.7	47.4	0.2	0.0	-	48.3	0.4	48.6	0.8	0.0	-	49.8	0.1	0.0	0.4	0.0	-	0.5	0.6	0.0	0.8	0.0	-	1.4	-
Motorcycles	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0
Cars & Light Goods	77	5217	19	0	-	5313	47	5353	87	4	-	5491	10	1	45	0	-	56	68	0	86	0	-	154	11014
% Cars & Light Goods	98.7	96.8	100.0	-	-	96.8	97.9	97.0	97.8	100.0	-	97.0	100.0	100.0	93.8	-	-	94.9	97.1	-	97.7	-	-	97.5	96.9
Buses	0	87	0	0	-	87	0	81	1	0	-	82	0	0	0	0	-	0	1	0	1	0	-	2	171
% Buses	0.0	1.6	0.0	-	-	1.6	0.0	1.5	1.1	0.0	-	1.4	0.0	0.0	0.0	-	-	0.0	1.4	-	1.1	-	-	1.3	1.5
Single-Unit Trucks	1	75	0	0	-	76	1	73	1	0	-	75	0	0	3	0	-	3	1	0	1	0	-	2	156
% Single-Unit Trucks	1.3	1.4	0.0	-	-	1.4	2.1	1.3	1.1	0.0	-	1.3	0.0	0.0	6.3	-	-	5.1	1.4	-	1.1	-	-	1.3	1.4
Articulated Trucks	0	6	0	0	-	6	0	11	0	0	-	11	0	0	0	0	-	0	0	0	0	0	-	0	17
% Articulated Trucks	0.0	0.1	0.0	-	-	0.1	0.0	0.2	0.0	0.0	-	0.2	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.1
Bicycles on Road	0	3	0	0	-	3	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	4
% Bicycles on Road	0.0	0.1	0.0	-	-	0.1	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	54	-	-	-	-	-	14	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	98.2	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Plains Road E & Dovercourt Avenue
Site Code: 210771
Start Date: 02/15/2022



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
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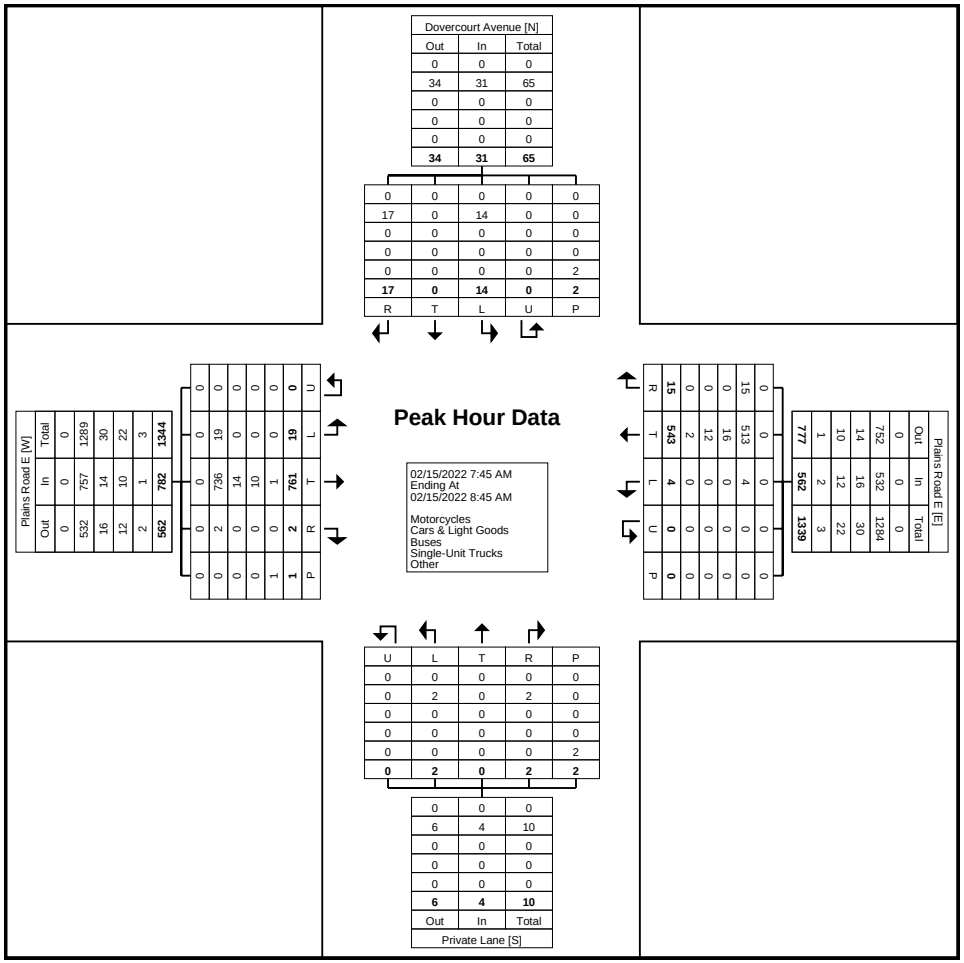
Turning Movement Peak Hour Data (7:45 AM)

Start Time	Plains Road E Eastbound						Plains Road E Westbound						Private Lane Northbound						Dovercourt Avenue Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:45 AM	5	210	0	0	0	215	0	139	7	0	0	146	0	0	1	0	1	1	4	0	7	0	0	11	373
8:00 AM	4	187	0	0	0	191	4	123	1	0	0	128	0	0	0	0	0	0	4	0	4	0	1	8	327
8:15 AM	4	184	1	0	0	189	0	152	3	0	0	155	2	0	0	0	0	2	2	0	2	0	0	4	350
8:30 AM	6	180	1	0	1	187	0	129	4	0	0	133	0	0	1	0	1	1	4	0	4	0	1	8	329
Total	19	761	2	0	1	782	4	543	15	0	0	562	2	0	2	0	2	4	14	0	17	0	2	31	1379
Approach %	2.4	97.3	0.3	0.0	-	-	0.7	96.6	2.7	0.0	-	-	50.0	0.0	50.0	0.0	-	-	45.2	0.0	54.8	0.0	-	-	-
Total %	1.4	55.2	0.1	0.0	-	56.7	0.3	39.4	1.1	0.0	-	40.8	0.1	0.0	0.1	0.0	-	0.3	1.0	0.0	1.2	0.0	-	2.2	-
PHF	0.792	0.906	0.500	0.000	-	0.909	0.250	0.893	0.536	0.000	-	0.906	0.250	0.000	0.500	0.000	-	0.500	0.875	0.000	0.607	0.000	-	0.705	0.924
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0
Cars & Light Goods	19	736	2	0	-	757	4	513	15	0	-	532	2	0	2	0	-	4	14	0	17	0	-	31	1324
% Cars & Light Goods	100.0	96.7	100.0	-	-	96.8	100.0	94.5	100.0	-	-	94.7	100.0	-	100.0	-	-	100.0	100.0	-	100.0	-	-	100.0	96.0
Buses	0	14	0	0	-	14	0	16	0	0	-	16	0	0	0	0	-	0	0	0	0	0	-	0	30
% Buses	0.0	1.8	0.0	-	-	1.8	0.0	2.9	0.0	-	-	2.8	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	2.2
Single-Unit Trucks	0	10	0	0	-	10	0	12	0	0	-	12	0	0	0	0	-	0	0	0	0	0	-	0	22
% Single-Unit Trucks	0.0	1.3	0.0	-	-	1.3	0.0	2.2	0.0	-	-	2.1	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	1.6
Articulated Trucks	0	1	0	0	-	1	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	3
% Articulated Trucks	0.0	0.1	0.0	-	-	0.1	0.0	0.4	0.0	-	-	0.4	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.2
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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Start Date: 02/15/2022



Turning Movement Peak Hour Data Plot (7:45 AM)

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Count Name: Plains Road E & Dovercourt Avenue
Site Code: 210771
Start Date: 02/15/2022

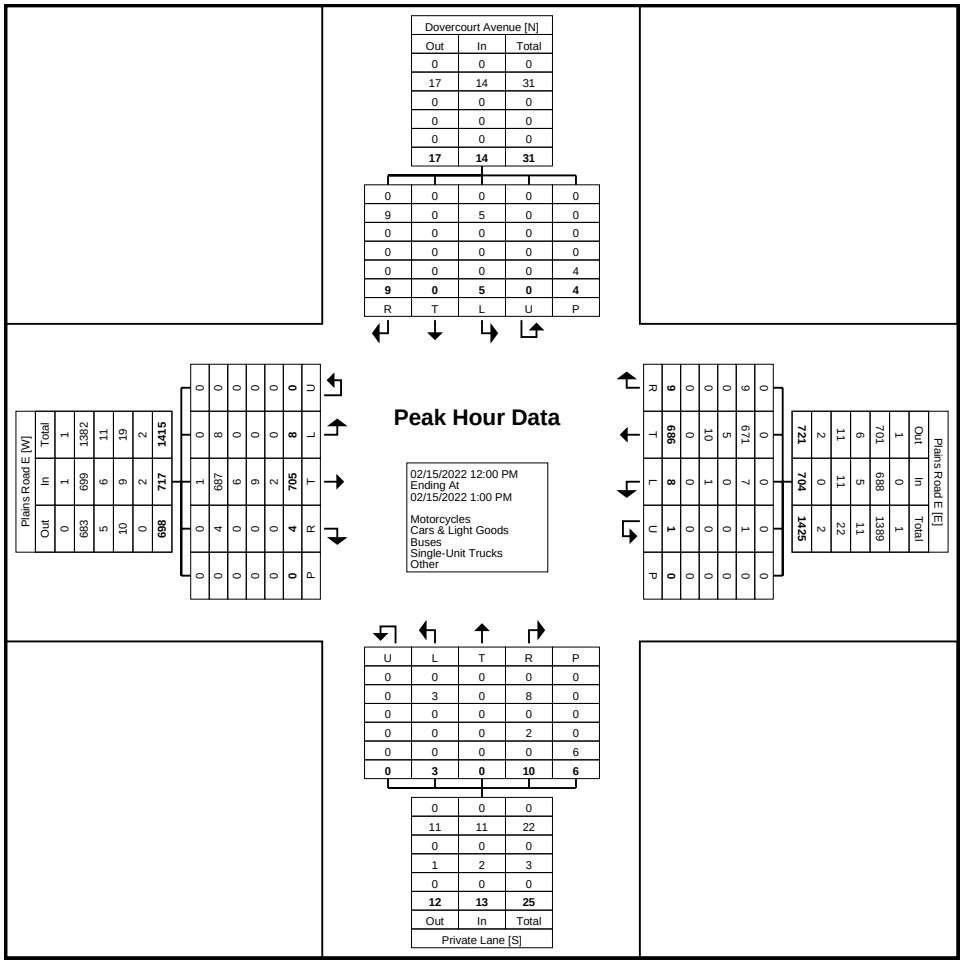
Turning Movement Peak Hour Data (12:00 PM)

Start Time	Plains Road E Eastbound						Plains Road E Westbound						Private Lane Northbound						Dovercourt Avenue Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
12:00 PM	3	183	2	0	0	188	2	177	3	0	0	182	1	0	1	0	3	2	1	0	2	0	2	3	375
12:15 PM	1	189	1	0	0	191	1	186	0	0	0	187	1	0	3	0	1	4	2	0	1	0	0	3	385
12:30 PM	3	170	0	0	0	173	3	157	4	1	0	165	0	0	3	0	1	3	1	0	3	0	0	4	345
12:45 PM	1	163	1	0	0	165	2	166	2	0	0	170	1	0	3	0	1	4	1	0	3	0	2	4	343
Total	8	705	4	0	0	717	8	686	9	1	0	704	3	0	10	0	6	13	5	0	9	0	4	14	1448
Approach %	1.1	98.3	0.6	0.0	-	-	1.1	97.4	1.3	0.1	-	-	23.1	0.0	76.9	0.0	-	-	35.7	0.0	64.3	0.0	-	-	-
Total %	0.6	48.7	0.3	0.0	-	49.5	0.6	47.4	0.6	0.1	-	48.6	0.2	0.0	0.7	0.0	-	0.9	0.3	0.0	0.6	0.0	-	1.0	-
PHF	0.667	0.933	0.500	0.000	-	0.938	0.667	0.922	0.563	0.250	-	0.941	0.750	0.000	0.833	0.000	-	0.813	0.625	0.000	0.750	0.000	-	0.875	0.940
Motorcycles	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Motorcycles	0.0	0.1	0.0	-	-	0.1	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.1
Cars & Light Goods	8	687	4	0	-	699	7	671	9	1	-	688	3	0	8	0	-	11	5	0	9	0	-	14	1412
% Cars & Light Goods	100.0	97.4	100.0	-	-	97.5	87.5	97.8	100.0	100.0	-	97.7	100.0	-	80.0	-	-	84.6	100.0	-	100.0	-	-	100.0	97.5
Buses	0	6	0	0	-	6	0	5	0	0	-	5	0	0	0	0	-	0	0	0	0	0	-	0	11
% Buses	0.0	0.9	0.0	-	-	0.8	0.0	0.7	0.0	0.0	-	0.7	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.8
Single-Unit Trucks	0	9	0	0	-	9	1	10	0	0	-	11	0	0	2	0	-	2	0	0	0	0	-	0	22
% Single-Unit Trucks	0.0	1.3	0.0	-	-	1.3	12.5	1.5	0.0	0.0	-	1.6	0.0	-	20.0	-	-	15.4	0.0	-	0.0	-	-	0.0	1.5
Articulated Trucks	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	2
% Articulated Trucks	0.0	0.3	0.0	-	-	0.3	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	6	-	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Plains Road E & Dovercourt Avenue
Site Code: 210771
Start Date: 02/15/2022



Turning Movement Peak Hour Data Plot (12:00 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Plains Road E & Dovercourt Avenue
Site Code: 210771
Start Date: 02/15/2022

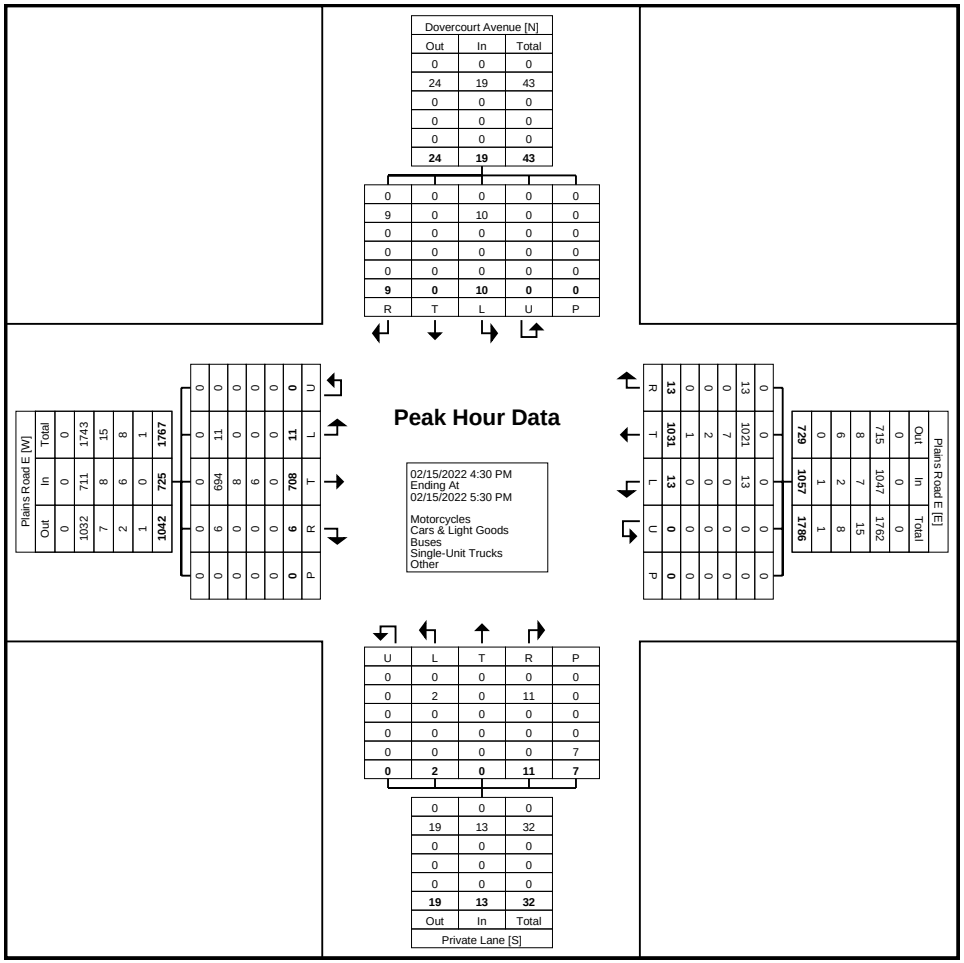
Turning Movement Peak Hour Data (4:30 PM)

Start Time	Plains Road E Eastbound						Plains Road E Westbound						Private Lane Northbound						Dovercourt Avenue Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:30 PM	1	183	0	0	0	184	4	245	4	0	0	253	0	0	1	0	5	1	3	0	3	0	0	6	444
4:45 PM	2	181	1	0	0	184	6	254	1	0	0	261	0	0	2	0	1	2	1	0	2	0	0	3	450
5:00 PM	3	176	0	0	0	179	2	259	6	0	0	267	1	0	1	0	0	2	4	0	2	0	0	6	454
5:15 PM	5	168	5	0	0	178	1	273	2	0	0	276	1	0	7	0	1	8	2	0	2	0	0	4	466
Total	11	708	6	0	0	725	13	1031	13	0	0	1057	2	0	11	0	7	13	10	0	9	0	0	19	1814
Approach %	1.5	97.7	0.8	0.0	-	-	1.2	97.5	1.2	0.0	-	-	15.4	0.0	84.6	0.0	-	-	52.6	0.0	47.4	0.0	-	-	-
Total %	0.6	39.0	0.3	0.0	-	40.0	0.7	56.8	0.7	0.0	-	58.3	0.1	0.0	0.6	0.0	-	0.7	0.6	0.0	0.5	0.0	-	1.0	-
PHF	0.550	0.967	0.300	0.000	-	0.985	0.542	0.944	0.542	0.000	-	0.957	0.500	0.000	0.393	0.000	-	0.406	0.625	0.000	0.750	0.000	-	0.792	0.973
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0
Cars & Light Goods	11	694	6	0	-	711	13	1021	13	0	-	1047	2	0	11	0	-	13	10	0	9	0	-	19	1790
% Cars & Light Goods	100.0	98.0	100.0	-	-	98.1	100.0	99.0	100.0	-	-	99.1	100.0	-	100.0	-	-	100.0	100.0	-	100.0	-	-	100.0	98.7
Buses	0	8	0	0	-	8	0	7	0	0	-	7	0	0	0	0	-	0	0	0	0	0	-	0	15
% Buses	0.0	1.1	0.0	-	-	1.1	0.0	0.7	0.0	-	-	0.7	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.8
Single-Unit Trucks	0	6	0	0	-	6	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	8
% Single-Unit Trucks	0.0	0.8	0.0	-	-	0.8	0.0	0.2	0.0	-	-	0.2	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.4
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	-	-	0.1	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	7	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Plains Road E & Dovercourt Avenue
Site Code: 210771
Start Date: 02/15/2022



Turning Movement Peak Hour Data Plot (4:30 PM)

200788-Plains Road @ Falcon

Morning Peak Diagram

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

One Hour Peak
From: 7:30:00
To: 8:30:00

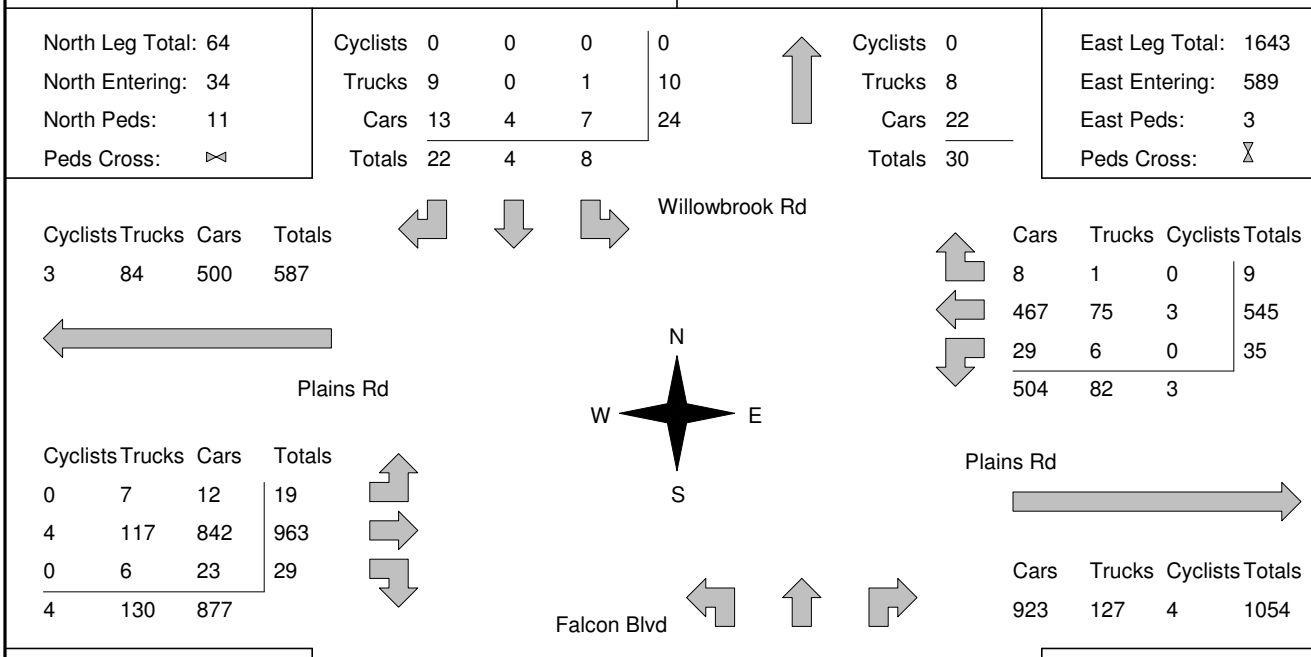
Municipality: Burlington
Site #: 0000200788
Intersection: Plains Rd & Falcon Blvd
TFR File #: 1
Count date: 25-Apr-2019

Weather conditions:
Sunny

Person(s) who counted:
Leo

**** Signalized Intersection ****

Major Road: Plains Rd runs W/E



Comments

200788-Plains Road @ Falcon

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

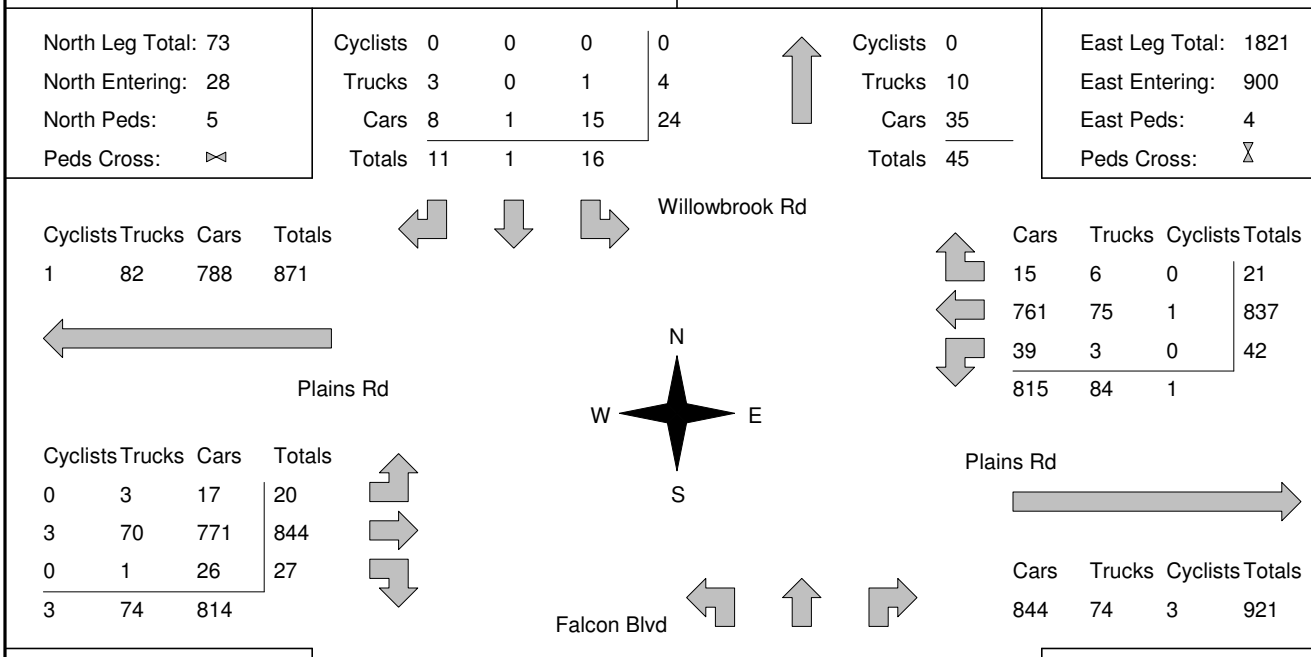
Municipality: Burlington
Site #: 0000200788
Intersection: Plains Rd & Falcon Blvd
TFR File #: 1
Count date: 25-Apr-2019

Weather conditions:
Sunny

Person(s) who counted:
Leo

**** Signalized Intersection ****

Major Road: Plains Rd runs W/E



Comments

200788-Plains Road @ Falcon

Afternoon Peak Diagram

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

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

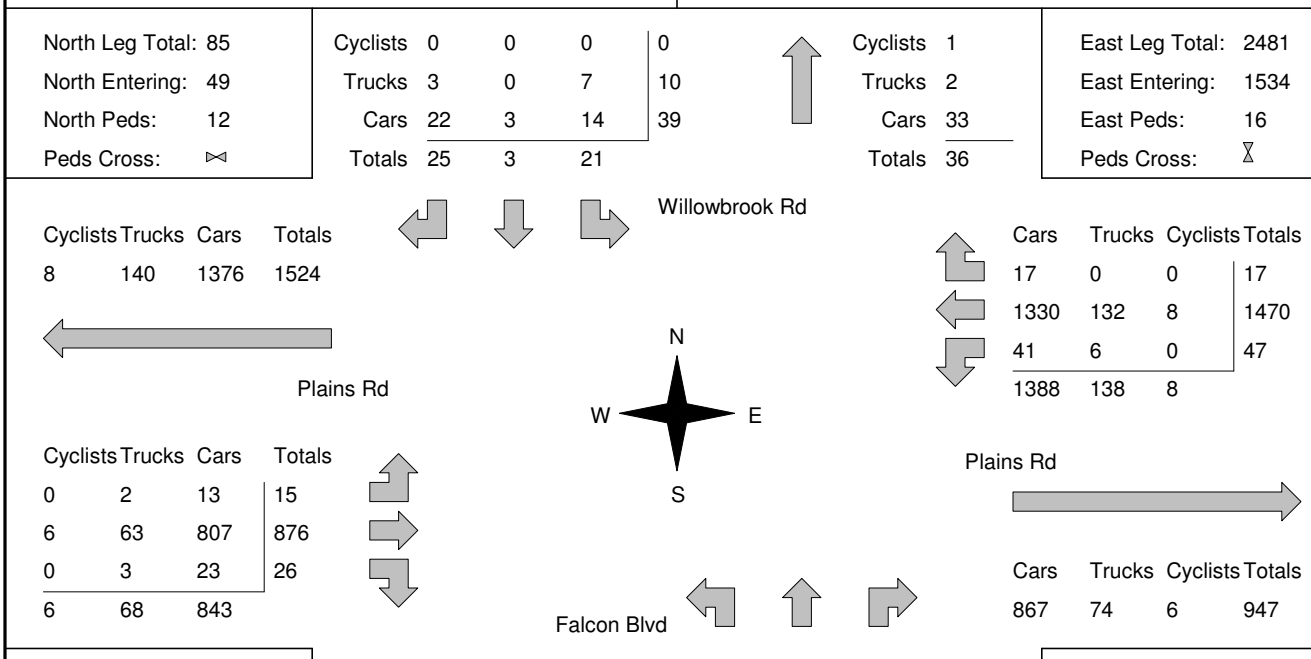
Municipality: Burlington
Site #: 0000200788
Intersection: Plains Rd & Falcon Blvd
TFR File #: 1
Count date: 25-Apr-2019

Weather conditions:
Sunny

Person(s) who counted:
Leo

**** Signalized Intersection ****

Major Road: Plains Rd runs W/E



Comments

200788-Plains Road @ Falcon

Total Count Diagram

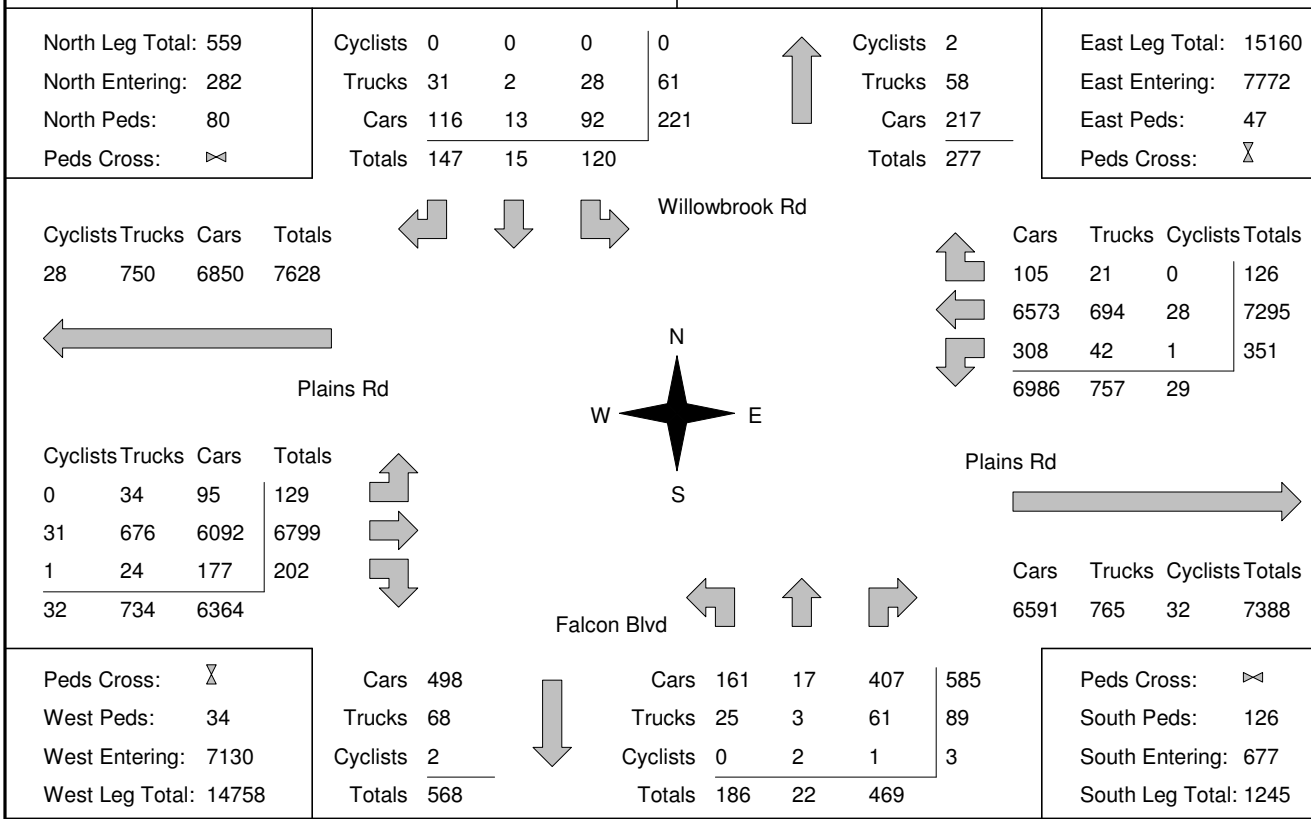
Municipality: Burlington
Site #: 0000200788
Intersection: Plains Rd & Falcon Blvd
TFR File #: 1
Count date: 25-Apr-2019

Weather conditions:
Sunny

Person(s) who counted:
Leo

**** Signalized Intersection ****

Major Road: Plains Rd runs W/E



Comments

200788-Plains Road @ Falcon
Traffic Count Summary

Intersection: Plains Rd & Falcon Blvd | **Count Date:** 25-Apr-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	13	2	15	30	10	123
9:00:00	9	2	18	29	5	136
11:00:00	0	0	0	0	0	0
12:00:00	17	1	14	32	11	101
13:00:00	16	1	11	28	5	116
14:00:00	21	2	26	49	13	121
15:00:00	0	0	0	0	0	0
16:00:00	12	1	17	30	17	119
17:00:00	18	3	26	47	11	126
18:00:00	14	3	20	37	8	117
Totals:	120	15	147	282	80	959

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	23	1	69	93	7
9:00:00	18	5	84	107	6
11:00:00	0	0	0	0	0
12:00:00	19	2	48	69	22
13:00:00	23	4	61	88	25
14:00:00	22	3	47	72	16
15:00:00	0	0	0	0	0
16:00:00	29	1	59	89	31
17:00:00	28	4	47	79	11
18:00:00	24	2	54	80	8
Totals:	186	22	469	677	126

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	22	405	8	435	2	1420
9:00:00	28	591	11	630	7	1565
11:00:00	0	0	0	0	0	0
12:00:00	41	751	18	810	6	1629
13:00:00	42	837	21	900	4	1791
14:00:00	39	819	13	871	1	1723
15:00:00	0	0	0	0	0	0
16:00:00	71	1056	21	1148	6	2089
17:00:00	51	1399	13	1463	13	2389
18:00:00	57	1437	21	1515	8	2296
Totals:	351	7295	126	7772	47	14902

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	16	937	32	985	4
9:00:00	30	872	33	935	1
11:00:00	0	0	0	0	0
12:00:00	15	783	21	819	9
13:00:00	20	844	27	891	1
14:00:00	9	820	23	852	4
15:00:00	0	0	0	0	0
16:00:00	12	908	21	941	8
17:00:00	15	886	25	926	3
18:00:00	12	749	20	781	4
Totals:	129	6799	202	7130	34

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:	44	40	53	48	51	56	66	53

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Downsview Drive & Dowland Cres
Site Code: 210771
Start Date: 02/15/2022

Turning Movement Data

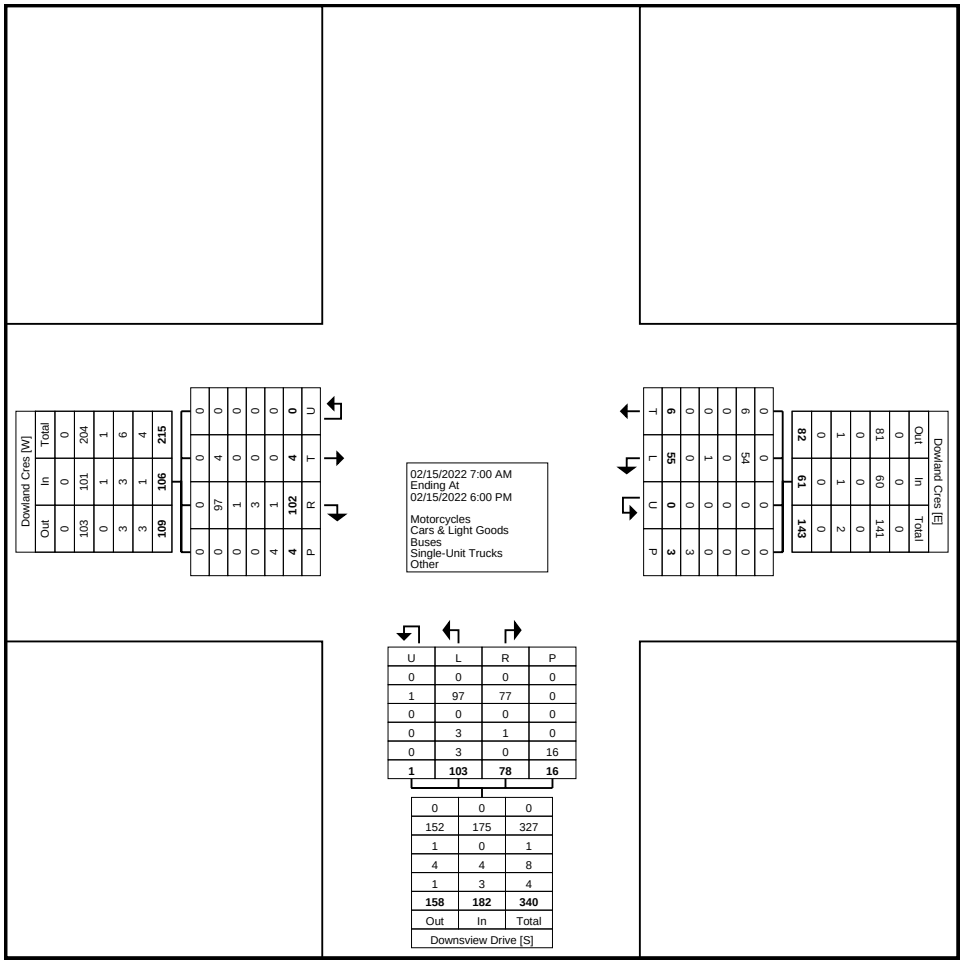
Start Time	Dowland Cres Eastbound					Dowland Cres Westbound					Downsview Drive Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
7:00 AM	0	2	0	0	2	0	0	0	0	0	0	1	0	2	1	3
7:15 AM	0	4	0	0	4	2	0	0	0	2	3	2	0	0	5	11
7:30 AM	0	3	0	0	3	3	1	0	0	4	4	1	0	0	5	12
7:45 AM	0	4	0	0	4	3	0	0	0	3	0	0	0	0	0	7
Hourly Total	0	13	0	0	13	8	1	0	0	9	7	4	0	2	11	33
8:00 AM	0	2	0	0	2	2	0	0	0	2	2	2	0	0	4	8
8:15 AM	0	1	0	0	1	2	0	0	1	2	2	2	0	4	4	7
8:30 AM	0	8	0	0	8	1	0	0	0	1	1	2	0	0	3	12
8:45 AM	0	6	0	0	6	0	2	0	0	2	1	1	0	1	2	10
Hourly Total	0	17	0	0	17	5	2	0	1	7	6	7	0	5	13	37
9:00 AM	0	3	0	0	3	3	0	0	0	3	2	3	0	0	5	11
9:15 AM	0	2	0	0	2	0	0	0	1	0	4	4	0	1	8	10
9:30 AM	0	3	0	0	3	5	0	0	0	5	6	3	0	3	9	17
9:45 AM	0	4	0	0	4	3	0	0	0	3	3	0	0	0	3	10
Hourly Total	0	12	0	0	12	11	0	0	1	11	15	10	0	4	25	48
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	0	3	0	0	3	1	0	0	0	1	1	2	0	0	3	7
11:15 AM	0	3	0	1	3	0	0	0	0	0	6	1	0	1	7	10
11:30 AM	0	1	0	0	1	5	0	0	0	5	2	5	0	0	7	13
11:45 AM	1	2	0	0	3	2	0	0	0	2	2	2	0	0	4	9
Hourly Total	1	9	0	1	10	8	0	0	0	8	11	10	0	1	21	39
12:00 PM	0	3	0	0	3	1	0	0	0	1	2	4	0	0	6	10
12:15 PM	0	2	0	0	2	2	0	0	0	2	1	2	0	0	3	7
12:30 PM	0	3	0	0	3	1	0	0	0	1	3	4	0	1	7	11
12:45 PM	0	4	0	0	4	2	0	0	0	2	4	3	0	0	7	13
Hourly Total	0	12	0	0	12	6	0	0	0	6	10	13	0	1	23	41
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	0	4	0	0	4	2	0	0	0	2	3	4	0	0	7	13
3:15 PM	1	3	0	1	4	2	0	0	1	2	4	3	0	0	7	13
3:30 PM	0	2	0	0	2	2	0	0	0	2	2	2	1	0	5	9
3:45 PM	0	4	0	1	4	2	1	0	0	3	2	2	0	1	4	11
Hourly Total	1	13	0	2	14	8	1	0	1	9	11	11	1	1	23	46
4:00 PM	0	2	0	0	2	0	0	0	0	0	9	4	0	0	13	15
4:15 PM	0	5	0	1	5	2	0	0	0	2	2	2	0	0	4	11
4:30 PM	0	3	0	0	3	3	0	0	0	3	12	4	0	0	16	22
4:45 PM	1	4	0	0	5	0	2	0	0	2	5	2	0	0	7	14

Hourly Total	1	14	0	1	15	5	2	0	0	7	28	12	0	0	40	62
5:00 PM	0	5	0	0	5	0	0	0	0	0	4	3	0	0	7	12
5:15 PM	0	4	0	0	4	1	0	0	0	1	2	5	0	2	7	12
5:30 PM	0	2	0	0	2	0	0	0	0	0	7	0	0	0	7	9
5:45 PM	1	1	0	0	2	3	0	0	0	3	2	3	0	0	5	10
Hourly Total	1	12	0	0	13	4	0	0	0	4	15	11	0	2	26	43
Grand Total	4	102	0	4	106	55	6	0	3	61	103	78	1	16	182	349
Approach %	3.8	96.2	0.0	-	-	90.2	9.8	0.0	-	-	56.6	42.9	0.5	-	-	-
Total %	1.1	29.2	0.0	-	30.4	15.8	1.7	0.0	-	17.5	29.5	22.3	0.3	-	52.1	-
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Cars & Light Goods	4	97	0	-	101	54	6	0	-	60	97	77	1	-	175	336
% Cars & Light Goods	100.0	95.1	-	-	95.3	98.2	100.0	-	-	98.4	94.2	98.7	100.0	-	96.2	96.3
Buses	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Buses	0.0	1.0	-	-	0.9	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.3
Single-Unit Trucks	0	3	0	-	3	1	0	0	-	1	3	1	0	-	4	8
% Single-Unit Trucks	0.0	2.9	-	-	2.8	1.8	0.0	-	-	1.6	2.9	1.3	0.0	-	2.2	2.3
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Road	0	1	0	-	1	0	0	0	-	0	3	0	0	-	3	4
% Bicycles on Road	0.0	1.0	-	-	0.9	0.0	0.0	-	-	0.0	2.9	0.0	0.0	-	1.6	1.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	4	-	-	-	-	3	-	-	-	-	16	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Downsview Drive & Dowland Cres
Site Code: 210771
Start Date: 02/15/2022



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Downsview Drive & Dowland Cres
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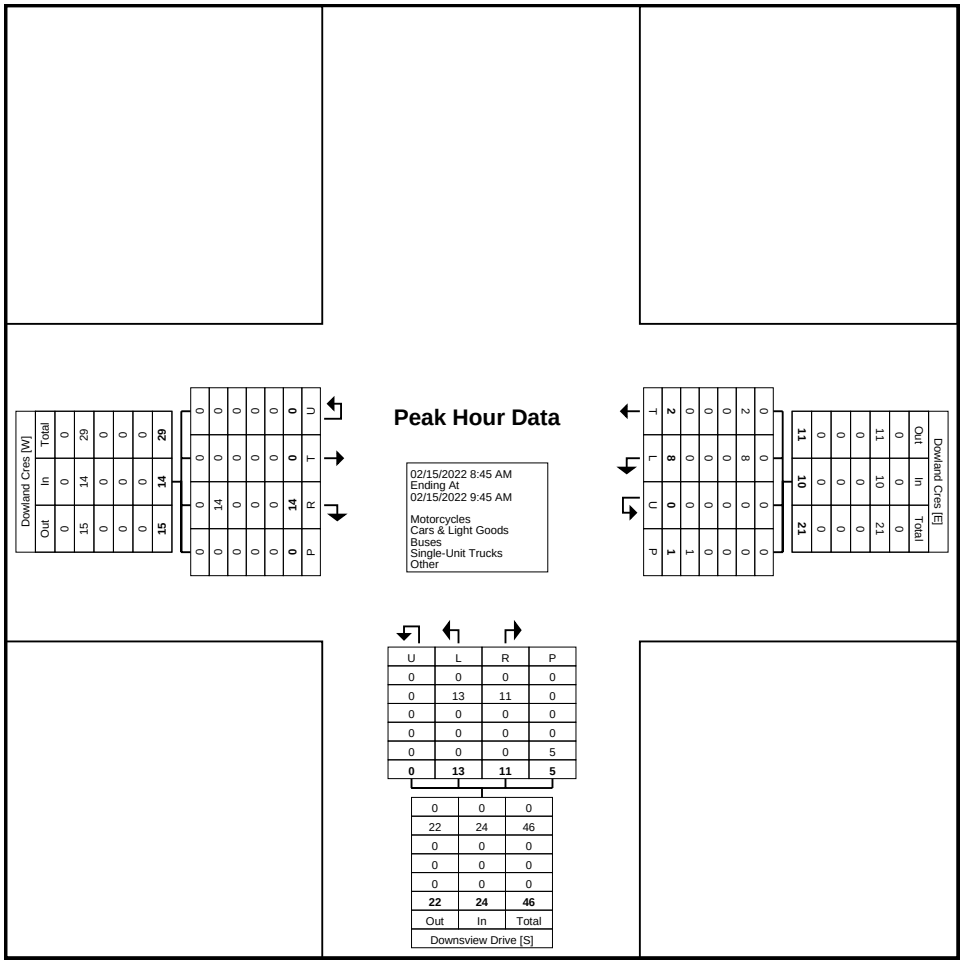
Turning Movement Peak Hour Data (8:45 AM)

Start Time	Dowland Cres Eastbound					Dowland Cres Westbound					Downsview Drive Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
8:45 AM	0	6	0	0	6	0	2	0	0	2	1	1	0	1	2	10
9:00 AM	0	3	0	0	3	3	0	0	0	3	2	3	0	0	5	11
9:15 AM	0	2	0	0	2	0	0	0	1	0	4	4	0	1	8	10
9:30 AM	0	3	0	0	3	5	0	0	0	5	6	3	0	3	9	17
Total	0	14	0	0	14	8	2	0	1	10	13	11	0	5	24	48
Approach %	0.0	100.0	0.0	-	-	80.0	20.0	0.0	-	-	54.2	45.8	0.0	-	-	-
Total %	0.0	29.2	0.0	-	29.2	16.7	4.2	0.0	-	20.8	27.1	22.9	0.0	-	50.0	-
PHF	0.000	0.583	0.000	-	0.583	0.400	0.250	0.000	-	0.500	0.542	0.688	0.000	-	0.667	0.706
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	-	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	0	14	0	-	14	8	2	0	-	10	13	11	0	-	24	48
% Cars & Light Goods	-	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	-	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Single-Unit Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Single-Unit Trucks	-	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	-	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Downsview Drive & Dowland Cres
Site Code: 210771
Start Date: 02/15/2022



Turning Movement Peak Hour Data Plot (8:45 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Downsview Drive & Dowland Cres
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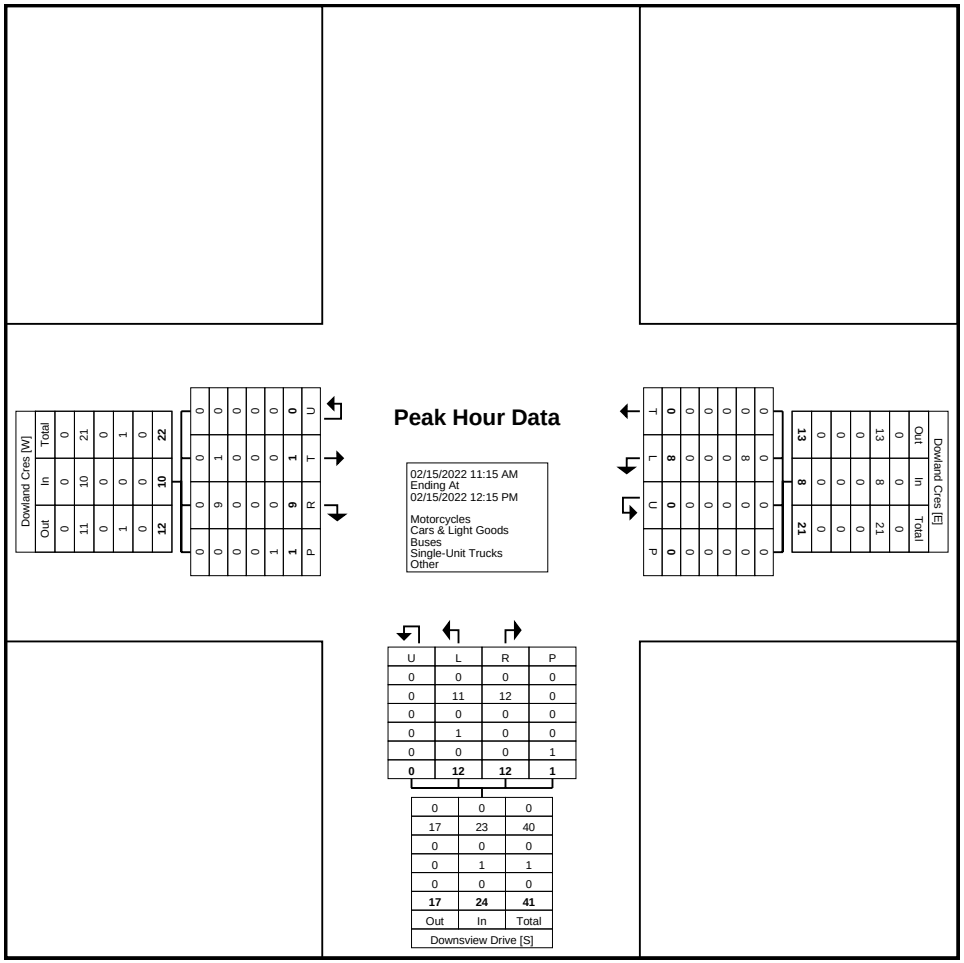
Turning Movement Peak Hour Data (11:15 AM)

Start Time	Dowland Cres Eastbound					Dowland Cres Westbound					Downsview Drive Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
11:15 AM	0	3	0	1	3	0	0	0	0	0	6	1	0	1	7	10
11:30 AM	0	1	0	0	1	5	0	0	0	5	2	5	0	0	7	13
11:45 AM	1	2	0	0	3	2	0	0	0	2	2	2	0	0	4	9
12:00 PM	0	3	0	0	3	1	0	0	0	1	2	4	0	0	6	10
Total	1	9	0	1	10	8	0	0	0	8	12	12	0	1	24	42
Approach %	10.0	90.0	0.0	-	-	100.0	0.0	0.0	-	-	50.0	50.0	0.0	-	-	-
Total %	2.4	21.4	0.0	-	23.8	19.0	0.0	0.0	-	19.0	28.6	28.6	0.0	-	57.1	-
PHF	0.250	0.750	0.000	-	0.833	0.400	0.000	0.000	-	0.400	0.500	0.600	0.000	-	0.857	0.808
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	-	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	1	9	0	-	10	8	0	0	-	8	11	12	0	-	23	41
% Cars & Light Goods	100.0	100.0	-	-	100.0	100.0	-	-	-	100.0	91.7	100.0	-	-	95.8	97.6
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	-	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Single-Unit Trucks	0	0	0	-	0	0	0	0	-	0	1	0	0	-	1	1
% Single-Unit Trucks	0.0	0.0	-	-	0.0	0.0	-	-	-	0.0	8.3	0.0	-	-	4.2	2.4
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	-	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	-	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
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Count Name: Downsview Drive & Dowland Cres
Site Code: 210771
Start Date: 02/15/2022



Turning Movement Peak Hour Data Plot (11:15 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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519-896-3163 cbowness@ptsl.com

Count Name: Downsview Drive & Dowland Cres
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Start Date: 02/15/2022

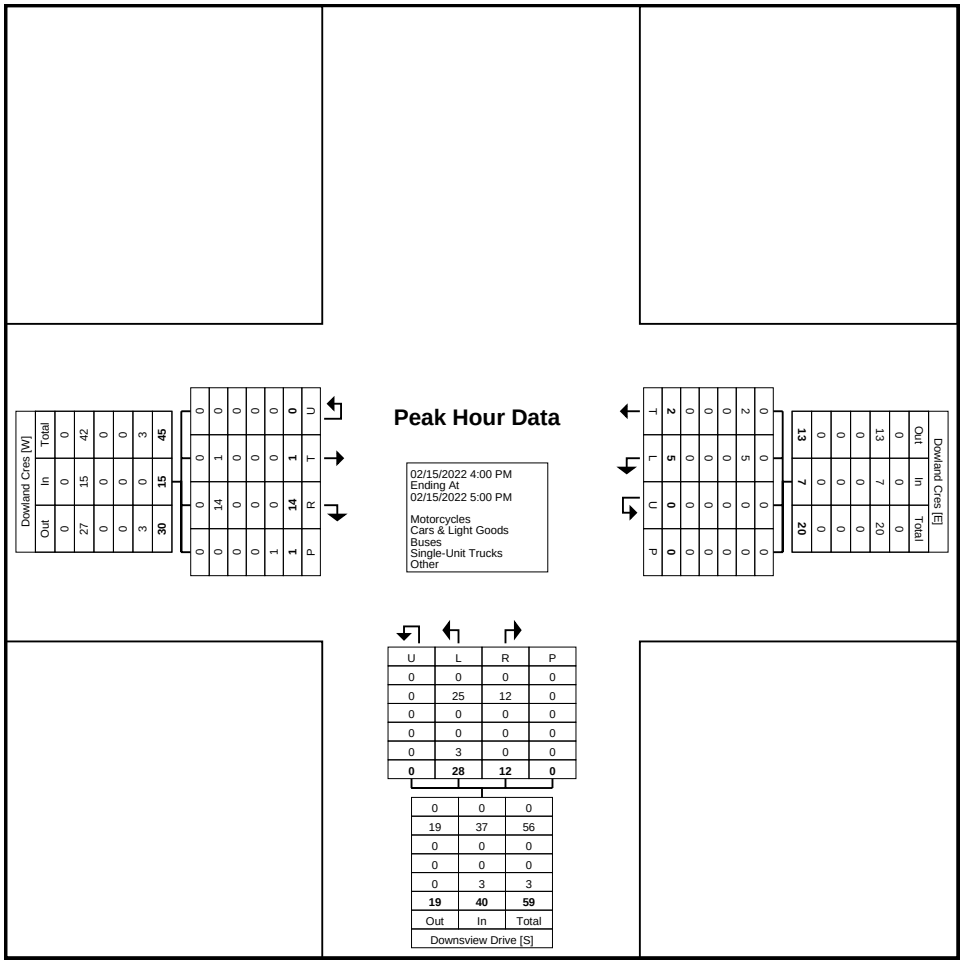
Turning Movement Peak Hour Data (4:00 PM)

Start Time	Dowland Cres Eastbound					Dowland Cres Westbound					Downsview Drive Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
4:00 PM	0	2	0	0	2	0	0	0	0	0	9	4	0	0	13	15
4:15 PM	0	5	0	1	5	2	0	0	0	2	2	2	0	0	4	11
4:30 PM	0	3	0	0	3	3	0	0	0	3	12	4	0	0	16	22
4:45 PM	1	4	0	0	5	0	2	0	0	2	5	2	0	0	7	14
Total	1	14	0	1	15	5	2	0	0	7	28	12	0	0	40	62
Approach %	6.7	93.3	0.0	-	-	71.4	28.6	0.0	-	-	70.0	30.0	0.0	-	-	-
Total %	1.6	22.6	0.0	-	24.2	8.1	3.2	0.0	-	11.3	45.2	19.4	0.0	-	64.5	-
PHF	0.250	0.700	0.000	-	0.750	0.417	0.250	0.000	-	0.583	0.583	0.750	0.000	-	0.625	0.705
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	1	14	0	-	15	5	2	0	-	7	25	12	0	-	37	59
% Cars & Light Goods	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	89.3	100.0	-	-	92.5	95.2
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Single-Unit Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Single-Unit Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	3	0	0	-	3	3
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	10.7	0.0	-	-	7.5	4.8
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Downsview Drive & Dowland Cres
Site Code: 210771
Start Date: 02/15/2022



Turning Movement Peak Hour Data Plot (4:00 PM)

Intersection Name:	TS ID:	Line No:	Model:	IP address:	Controller Make:
Plains Road @ Shadeland	115	4	ACS/3	172.22.17.2	Econolite

Type of Operation: 8 Phase Semi-Actuated

*-Start from Main Menu

No	Date			Description	Prepared by
	Y	M	D		EN
4	2017	9	25	Split 5 timings adjusted and Day Plan adjusted to help with student drop off/Pick up.	

PHASE DESCRIPTION

Ph1		Ph5	
Ph2	EB - Plains Road	Ph6	WB - Plains Road
Ph3		Ph7	
Ph4	NB - Shadeland Avenue	Ph8	SB - Shadeland Avenue

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 TIMING DATA - VEHICLE TIMING * - 2 - 1

Timing Plan: 1

	Phase: 1	2	3	4	5	6	7	8
Minimum Green		8		8		8		8
Walk		28		12		28		12
Ped. Clearance		7		16		7		16
Pedestrian Carry Over								
Vehicle Extension		3		5		3		5
MAX 1		35		25		35		25
MAX 2		35		25		35		25
Yellow Change		4		4		4		4
Red Clearance		2		3		2		3
Phase Minimum:	**1**	**42**	**1**	**36**	**1**	**42**	**1**	**36**

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	100	26	1	1		65		35		65		35
2	90	29	1	2		55		35		55		35
3	100	77	1	3		65		35		65		35
4	85	84	1	4		49		36		49		36
5	100	25	1	5		48		52		48		52
10	0	0	1	10		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	4	06:00	4	
1	1	1	07:00	1	
1	1	5	08:15	5	
1	1	1	08:45	1	
1	1	2	09:00	2	
1	1	5	14:45	5	
1	1	3	15:30	3	
1	1	4	19:00	4	
1	1	10	22:00	254	
2	2	4	08:00	4	
2	2	3	10:30	3	
2	2	4	17:00	4	
2	2	10	21:00	254	
3	3	4	09:30	4	
3	3	2	12:00	2	
3	3	4	17:00	4	
3	3	10	21:00	254	

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

Intersection Name:	TS ID:	Line No:	Model:	IP address:	Controller Make:
Plains @ Downsview	114	4	ACS/3	172.22.18.2	Econolite

Type of Operation: 8 Phase Semi-Actuated

*-Start from Main Menu

No	Date			Description	Prepared by
	Y	M	D		MA
3	2019	11	18	Full Signal	

PHASE DESCRIPTION

Ph1		Ph5	
Ph2	EB/WB - Plains Road	Ph6	
Ph3		Ph7	
Ph4	NB/SB - Downsview Drive	Ph8	

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

Phase:	1	2	3	4	5	6	7	8
Phase in Use		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		8		8				
Walk		28		10				
Ped. Clearance		7		11				
Pedestrian Carry Over								
Vehicle Extension		3		3				
MAX 1		35		25				
MAX 2		35		25				
Yellow Change		4		3				
Red Clearance		2		4				
Phase Minimum:	**1**	**42**	**1**	**29**	**1**	**1**	**1**	**1**

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

Phase:	1	2	3	4	5	6	7	8
Lock Detector								
Vehicle Recall								
Pedestrian Recall		X						
MAX Recall		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	100	29	1	1		70		30				
2	90	8	1	2		60		30				
3	100	74	1	3		70		30				
4	85	13	1	4		55		30				
10	0	0	1	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	4	06:00	4	1
1	1	1	07:00	1	1
1	1	2	09:00	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	08:00	4	1
2	2	3	10:30	3	1
2	2	4	17:00	4	1
2	2	10	21:00	10	1
3	3	4	09:30	4	1
3	3	2	12:00	2	1
3	3	4	17:00	4	1
3	3	10	21:00	10	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)

Note:

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

Intersection Name:	TS ID:	Line No:	Model:	IP address:	Controller Make:
Plains @ Falcon	118	4	ACS/3	172.22.19.2	Econolite

Type of Operation: 8 Phase Semi-Actuated

*-Start from Main Menu

No	Date			Description	Prepared by
	Y	M	D		BP
3	2017	5	3	SS Walk and FDW adjusted, MS Walk adjusted, Splits adjusted to meet min	

PHASE DESCRIPTION

Ph1		Ph5	
Ph2	EB - Plains Road	Ph6	WB - Plains Road
Ph3		Ph7	
Ph4	NB - Falcon Boulevard	Ph8	SB - Willowbrook Road

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 TIMING DATA - VEHICLE TIMING * - 2 - 1

Timing Plan: 1

	Phase: 1	2	3	4	5	6	7	8
Minimum Green		8		8		8		8
Walk		8		8		8		8
Ped. Clearance		8		15		8		15
Pedestrian Carry Over								
Vehicle Extension		3		3		3		3
MAX 1		35		25		35		25
MAX 2		35		25		35		25
Yellow Change		4		4		4		4
Red Clearance		2		3		2		3
Phase Minimum:	**1**	**23**	**1**	**31**	**1**	**23**	**1**	**31**

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	100	32	1	1		69		31		69		31
2	90	78	1	2		59		31		59		31
3	100	71	1	3		69		31		69		31
4	85	27	1	4		54		31		54		31
10	0	0	1	10		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	4	06:00	4	1
1	1	1	07:00	1	1
1	1	2	09:00	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	08:00	4	1
2	2	3	10:30	3	1
2	2	4	17:00	4	1
2	2	10	21:00	254	1
3	3	4	09:30	4	1
3	3	2	12:00	2	1
3	3	4	17:00	4	1
3	3	10	21:00	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)

Note:

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

Appendix C

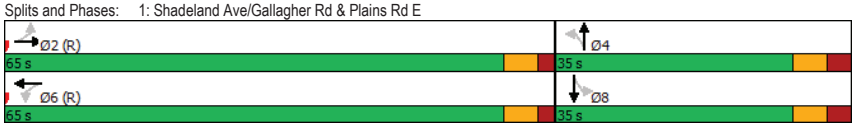
Base Year Traffic Operations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	870	16	20	515	26	20	19	39	99	13	53
Future Volume (vph)	20	870	16	20	515	26	20	19	39	99	13	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	45.0		0.0	30.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	1.00		0.99	0.98		0.99	0.98	
Frt		0.997			0.993			0.898			0.880	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1517	3454	0	1517	3453	0	1745	1610	0	1678	1547	0
Flt Permitted	0.424			0.275			0.711			0.717		
Satd. Flow (perm)	670	3454	0	439	3453	0	1297	1610	0	1248	1547	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			9			42			57	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		129.9			251.7			89.7			84.4	
Travel Time (s)		11.7			22.7			8.1			7.6	
Confl. Peds. (#/hr)	18		1	1		18	7		15	15		7
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	15%	4%	13%	15%	3%	15%	0%	6%	3%	4%	0%	8%
Adj. Flow (vph)	22	935	17	22	554	28	22	20	42	106	14	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	952	0	22	582	0	22	62	0	106	71	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	42.0	42.0		42.0	42.0		35.0	35.0		35.0	35.0	
Total Split (s)	65.0	65.0		65.0	65.0		35.0	35.0		35.0	35.0	
Total Split (%)	65.0%	65.0%		65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Maximum Green (s)	59.0	59.0		59.0	59.0		28.0	28.0		28.0	28.0	
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		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-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	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	28.0	28.0		28.0	28.0		12.0	12.0		12.0	12.0	
Flash Dont Walk (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	73.4	73.4		73.4	73.4		18.6	18.6		18.6	18.6	
Actuated g/C Ratio	0.73	0.73		0.73	0.73		0.19	0.19		0.19	0.19	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.04	0.38		0.07	0.23		0.09	0.19		0.46	0.21	
Control Delay	5.0	5.8		6.7	5.5		32.1	15.9		41.6	13.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	5.0	5.8		6.7	5.5		32.1	15.9		41.6	13.1	
LOS	A	A		A	A		C	B		D	B	
Approach Delay		5.8			5.5			20.1			30.1	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	1.0	30.0		1.0	15.3		3.6	3.2		18.5	2.3	
Queue Length 95th (m)	3.8	49.7		4.9	33.0		9.4	13.0		32.2	12.7	
Internal Link Dist (m)		105.9			227.7			65.7			60.4	
Turn Bay Length (m)	45.0			30.0			15.0			15.0		
Base Capacity (vph)	491	2536		322	2536		402	528		386	518	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.04	0.38		0.07	0.23		0.05	0.12		0.27	0.14	

Intersection Summary		
Area Type:	Other	
Cycle Length: 100		
Actuated Cycle Length: 100		
Offset: 26 (26%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green		
Natural Cycle: 80		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.46		
Intersection Signal Delay: 8.7	Intersection LOS: A	
Intersection Capacity Utilization 50.3%	ICU Level of Service A	
Analysis Period (min) 15		

Splits and Phases: 1: Shadeland Ave/Gallagher Rd & Plains Rd E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	870	16	20	515	26	20	19	39	99	13	53
Future Volume (vph)	20	870	16	20	515	26	20	19	39	99	13	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	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	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.90		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1500	3455		1517	3453		1733	1611		1653	1546	
Flt Permitted	0.42	1.00		0.27	1.00		0.71	1.00		0.72	1.00	
Satd. Flow (perm)	670	3455		439	3453		1297	1611		1247	1546	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	22	935	17	22	554	28	22	20	42	106	14	57
RTOR Reduction (vph)	0	1	0	0	2	0	0	34	0	0	46	0
Lane Group Flow (vph)	22	951	0	22	580	0	22	28	0	106	25	0
Confl. Peds. (#/hr)	18		1	1		18	7		15	15		7
Heavy Vehicles (%)	15%	4%	13%	15%	3%	15%	0%	6%	3%	4%	0%	8%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	71.4	71.4		71.4	71.4		15.6	15.6		15.6	15.6	
Effective Green, g (s)	73.4	73.4		73.4	73.4		18.6	18.6		18.6	18.6	
Actuated g/C Ratio	0.73	0.73		0.73	0.73		0.19	0.19		0.19	0.19	
Clearance Time (s)	6.0	6.0		6.0	6.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	491	2535		322	2534		241	299		231	287	
v/s Ratio Prot		c0.28			0.17			0.02			0.02	
v/s Ratio Perm	0.03			0.05			0.02			c0.09		
v/c Ratio	0.04	0.38		0.07	0.23		0.09	0.09		0.46	0.09	
Uniform Delay, d1	3.7	4.9		3.7	4.3		33.7	33.7		36.2	33.7	
Progression Factor	1.00	1.00		1.22	1.12		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.4		0.4	0.2		0.3	0.3		3.0	0.3	
Delay (s)	3.8	5.3		5.0	5.0		34.0	34.0		39.2	33.9	
Level of Service	A	A		A	A		C	C		D	C	
Approach Delay (s)		5.3			5.0			34.0			37.1	
Approach LOS		A			A			C			D	

Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.3%	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)	2	1000	6	16	552	0	8	0	17	0	0	1
Future Volume (vph)	2	1000	6	16	552	0	8	0	17	0	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	0.0		0.0	30.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999						0.910			0.865	
Flt Protected				0.950				0.984				
Satd. Flow (prot)	0	3404	0	1544	3406	0	0	1610	0	0	1644	0
Flt Permitted				0.950				0.984				
Satd. Flow (perm)	0	3404	0	1544	3406	0	0	1610	0	0	1644	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		251.7			86.0			84.7			62.2	
Travel Time (s)		22.7			7.7			7.6			5.6	
Confl. Peds. (#/hr)	6		8	8		6	1					1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	6%	0%	13%	6%	0%	17%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	1064	6	17	587	0	9	0	18	0	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1072	0	17	587	0	0	27	0	0	1	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	1000	6	16	552	0	8	0	17	0	0	1
Future Volume (Veh/h)	2	1000	6	16	552	0	8	0	17	0	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	2	1064	6	17	587	0	9	0	18	0	0	1
Pedestrians		1						8			6	
Lane Width (m)		3.6						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						1			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		252			86							
pX, platoon unblocked	0.98			0.93			0.93	0.93	0.93	0.93	0.93	0.98
vC, conflicting volume	593			1078			1408	1706	543	1181	1709	300
vC1, stage 1 conf vol							1079	1079		627	627	
vC2, stage 2 conf vol							330	627		554	1082	
vCu, unblocked vol	555			923			1221	1539	345	977	1543	258
tC, single (s)	4.1			4.4			7.8	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.8	5.5		6.5	5.5	
tF (s)	2.2			2.3			3.7	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			96	100	97	100	100	100
cM capacity (veh/h)	1004			617			228	276	604	376	266	731

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	534	538	17	391	196	27	1
Volume Left	2	0	17	0	0	9	0
Volume Right	0	6	0	0	0	18	1
cSH	1004	1700	617	1700	1700	389	731
Volume to Capacity	0.00	0.32	0.03	0.23	0.12	0.07	0.00
Queue Length 95th (m)	0.0	0.0	0.6	0.0	0.0	1.7	0.0
Control Delay (s)	0.1	0.0	11.0	0.0	0.0	14.9	9.9
Lane LOS	A		B			B	A
Approach Delay (s)	0.0		0.3			14.9	9.9
Approach LOS						B	A

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	44.1%	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)	14	999	4	6	539	12	8	0	12	16	0	21
Future Volume (vph)	14	999	4	6	539	12	8	0	12	16	0	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	30.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00			0.99			0.99	
Frt		0.999			0.997			0.920			0.924	
Flt Protected	0.950			0.950				0.980			0.979	
Satd. Flow (prot)	1631	3400	0	1491	3355	0	0	1593	0	0	1595	0
Flt Permitted	0.431			0.258				0.892			0.849	
Satd. Flow (perm)	738	3400	0	404	3355	0	0	1448	0	0	1381	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			5			33			33	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		86.0			180.5			90.8			91.8	
Travel Time (s)		7.7			16.2			8.2			8.3	
Confl. Peds. (#/hr)	4		11	11		4	2		3	3		2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	7%	6%	25%	17%	7%	17%	0%	0%	11%	8%	0%	6%
Adj. Flow (vph)	15	1063	4	6	573	13	9	0	13	17	0	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	1067	0	6	586	0	0	22	0	0	39	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Detector Phase	2	2		2	2		4	4		4	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	42.0	42.0		42.0	42.0		29.0	29.0		29.0	29.0	
Total Split (s)	70.0	70.0		70.0	70.0		30.0	30.0		30.0	30.0	
Total Split (%)	70.0%	70.0%		70.0%	70.0%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	64.0	64.0		64.0	64.0		23.0	23.0		23.0	23.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		4.0	4.0		4.0	4.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-3.0			-3.0	
Total Lost Time (s)	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	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	28.0	28.0		28.0	28.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	7.0	7.0		7.0	7.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	88.4	88.4		88.4	88.4			11.2			11.2	
Actuated g/C Ratio	0.88	0.88		0.88	0.88			0.11			0.11	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.02	0.36		0.02	0.20			0.12			0.21	
Control Delay	1.8	1.9		2.0	1.7			10.4			19.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	1.8	1.9		2.0	1.7			10.4			19.6	
LOS	A	A		A	A			B			B	
Approach Delay		1.9			1.7			10.4			19.6	
Approach LOS		A			A			B			B	
Queue Length 50th (m)	0.4	19.2		0.2	9.8			0.0			1.1	
Queue Length 95th (m)	m1.2	25.5		m0.8	13.8			4.9			10.5	
Internal Link Dist (m)		62.0			156.5			66.8			67.8	
Turn Bay Length (m)	30.0			15.0								
Base Capacity (vph)	652	3005		357	2965			400			383	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.02	0.36		0.02	0.20			0.06			0.10	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 29 (29%), Referenced to phase 2:EBWB and 6:, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.36			
Intersection Signal Delay: 2.3		Intersection LOS: A	
Intersection Capacity Utilization 43.5%		ICU Level of Service A	
Analysis Period (min) 15			

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

Splits and Phases: 3: Driveway/Downsview Dr & Plains Rd E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	999	4	6	539	12	8	0	12	16	0	21
Future Volume (vph)	14	999	4	6	539	12	8	0	12	16	0	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.92			0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1627	3401		1486	3354			1592			1591	
Flt Permitted	0.43	1.00		0.26	1.00			0.89			0.85	
Satd. Flow (perm)	738	3401		403	3354			1449			1380	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	15	1063	4	6	573	13	9	0	13	17	0	22
RTOR Reduction (vph)	0	0	0	0	1	0	0	20	0	0	30	0
Lane Group Flow (vph)	15	1067	0	6	585	0	0	2	0	0	9	0
Confl. Peds. (#/hr)	4		11	11		4	2		3	3		2
Heavy Vehicles (%)	7%	6%	25%	17%	7%	17%	0%	0%	11%	8%	0%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	82.0	82.0		82.0	82.0			5.0			5.0	
Effective Green, g (s)	84.0	84.0		84.0	84.0			8.0			8.0	
Actuated g/C Ratio	0.84	0.84		0.84	0.84			0.08			0.08	
Clearance Time (s)	6.0	6.0		6.0	6.0			7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	619	2856		338	2817			115			110	
v/s Ratio Prot		c0.31			0.17							
v/s Ratio Perm	0.02			0.01				0.00			c0.01	
v/c Ratio	0.02	0.37		0.02	0.21			0.02			0.08	
Uniform Delay, d1	1.3	1.9		1.3	1.6			42.4			42.6	
Progression Factor	0.88	0.80		0.97	0.95			1.00			1.00	
Incremental Delay, d2	0.1	0.4		0.1	0.2			0.1			0.3	
Delay (s)	1.2	1.8		1.4	1.6			42.4			42.9	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		1.8			1.6			42.4			42.9	
Approach LOS		A			A			D			D	

Intersection Summary					
HCM 2000 Control Delay	3.2	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.35				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	43.5%	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)	19	1006	2	4	532	15	3	0	3	18	0	22
Future Volume (vph)	19	1006	2	4	532	15	3	0	3	18	0	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.996			0.932			0.926	
Flt Protected	0.950							0.976			0.978	
Satd. Flow (prot)	1745	3574	0	0	3494	0	0	1728	0	0	1721	0
Flt Permitted	0.950							0.976			0.978	
Satd. Flow (perm)	1745	3574	0	0	3494	0	0	1728	0	0	1721	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		180.5			156.8			37.6			164.5	
Travel Time (s)		16.2			14.1			3.4			14.8	
Confl. Peds. (#/hr)	2		2	2		2	1					1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	21	1093	2	4	578	16	3	0	3	20	0	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	1095	0	0	598	0	0	6	0	0	44	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.2%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	1006	2	4	532	15	3	0	3	18	0	22
Future Volume (Veh/h)	19	1006	2	4	532	15	3	0	3	18	0	22
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	21	1093	2	4	578	16	3	0	3	20	0	24
Pedestrians		1						2			2	
Lane Width (m)		3.5						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		180			157							
pX, platoon unblocked				0.95			0.95	0.95	0.95	0.95	0.95	
vC, conflicting volume	596			1097			1460	1742	550	1188	1735	300
vC1, stage 1 conf vol							1138	1138		596	596	
vC2, stage 2 conf vol							322	604		592	1139	
vCu, unblocked vol	596			989			1373	1671	411	1085	1663	300
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			99	100	99	95	100	97
cM capacity (veh/h)	989			668			221	252	563	366	252	700

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1
Volume Total	21	729	366	293	305	6	44
Volume Left	21	0	0	4	0	3	20
Volume Right	0	0	2	0	16	3	24
cSH	989	1700	1700	668	1700	317	495
Volume to Capacity	0.02	0.43	0.22	0.01	0.18	0.02	0.09
Queue Length 95th (m)	0.5	0.0	0.0	0.1	0.0	0.4	2.2
Control Delay (s)	8.7	0.0	0.0	0.2	0.0	16.6	13.0
Lane LOS	A			A		C	B
Approach Delay (s)	0.2			0.1		16.6	13.0
Approach LOS						C	B

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	38.2%	ICU Level of Service	A	
Analysis Period (min)	15			

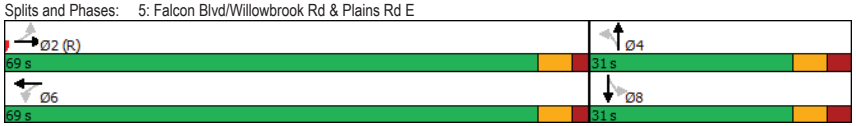
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	979	29	35	496	9	26	3	108	10	5	29
Future Volume (vph)	19	979	29	35	496	9	26	3	108	10	5	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	30.0		0.0	25.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98	1.00		1.00	1.00			0.99			0.99	
Frt		0.996			0.997			0.894			0.910	
Flt Protected	0.950			0.950				0.990			0.989	
Satd. Flow (prot)	1274	3200	0	1491	3156	0	0	1529	0	0	1300	0
Flt Permitted	0.462			0.261				0.933			0.862	
Satd. Flow (perm)	610	3200	0	409	3156	0	0	1440	0	0	1133	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			4			110			30	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		156.8			201.9			127.7			186.5	
Travel Time (s)		14.1			18.2			11.5			16.8	
Confl. Peds. (#/hr)	11		5	5		11	2		3	3		2
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	37%	12%	21%	17%	14%	11%	0%	0%	11%	13%	0%	41%
Adj. Flow (vph)	19	999	30	36	506	9	27	3	110	10	5	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	1029	0	36	515	0	0	140	0	0	45	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		31.0	31.0		31.0	31.0	
Total Split (s)	69.0	69.0		69.0	69.0		31.0	31.0		31.0	31.0	
Total Split (%)	69.0%	69.0%		69.0%	69.0%		31.0%	31.0%		31.0%	31.0%	
Maximum Green (s)	63.0	63.0		63.0	63.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-3.0			-3.0	
Total Lost Time (s)	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	
Recall Mode	C-Max	C-Max		None	None		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	8.0	8.0		8.0	8.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	79.3	79.3		79.3	79.3			12.7			12.7	
Actuated g/C Ratio	0.79	0.79		0.79	0.79			0.13			0.13	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.04	0.41		0.11	0.21			0.50			0.26	
Control Delay	2.7	3.3		3.7	2.9			18.4			22.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	2.7	3.3		3.7	2.9			18.4			22.9	
LOS	A	A		A	A			B			C	
Approach Delay		3.3			3.0			18.4			22.9	
Approach LOS		A			A			B			C	
Queue Length 50th (m)	0.5	18.6		1.1	8.8			5.4			2.7	
Queue Length 95th (m)	m2.1	34.1		4.5	17.9			21.7			12.1	
Internal Link Dist (m)		132.8			177.9			103.7			162.5	
Turn Bay Length (m)	30.0			25.0								
Base Capacity (vph)	483	2538		324	2503			469			327	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.04	0.41		0.11	0.21			0.30			0.14	

Intersection Summary		
Area Type:	Other	
Cycle Length: 100		
Actuated Cycle Length: 100		
Offset: 32 (32%), Referenced to phase 2:EBTL, Start of Green		
Natural Cycle: 60		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.50		
Intersection Signal Delay: 4.9	Intersection LOS: A	
Intersection Capacity Utilization 47.3%	ICU Level of Service A	
Analysis Period (min) 15		

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

Splits and Phases: 5: Falcon Blvd/Willowbrook Rd & Plains Rd E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	979	29	35	496	9	26	3	108	10	5	29
Future Volume (vph)	19	979	29	35	496	9	26	3	108	10	5	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	0.98	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.89			0.91	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1252	3198		1487	3157			1528			1300	
Flt Permitted	0.46	1.00		0.26	1.00			0.93			0.86	
Satd. Flow (perm)	609	3198		409	3157			1440			1132	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	19	999	30	36	506	9	27	3	110	10	5	30
RTOR Reduction (vph)	0	1	0	0	1	0	0	96	0	0	26	0
Lane Group Flow (vph)	19	1028	0	36	514	0	0	44	0	0	19	0
Confl. Peds. (#/hr)	11		5	5		11	2		3	3		2
Heavy Vehicles (%)	37%	12%	21%	17%	14%	11%	0%	0%	11%	13%	0%	41%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	77.3	77.3		77.3	77.3			9.7			9.7	
Effective Green, g (s)	79.3	79.3		79.3	79.3			12.7			12.7	
Actuated g/C Ratio	0.79	0.79		0.79	0.79			0.13			0.13	
Clearance Time (s)	6.0	6.0		6.0	6.0			7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	482	2536		324	2503			182			143	
v/s Ratio Prot		c0.32			0.16							
v/s Ratio Perm	0.03			0.09				c0.03			0.02	
v/c Ratio	0.04	0.41		0.11	0.21			0.24			0.13	
Uniform Delay, d1	2.2	3.2		2.3	2.6			39.3			38.8	
Progression Factor	0.91	0.84		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.5		0.2	0.0			0.7			0.4	
Delay (s)	2.2	3.1		2.5	2.6			40.0			39.2	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		3.1			2.6			40.0			39.2	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	14	8	2	17	14
Future Volume (vph)	0	14	8	2	17	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.5	3.3	3.6	3.3	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865				0.939	
Flt Protected				0.962	0.973	
Satd. Flow (prot)	1644	0	0	1828	1678	0
Flt Permitted				0.962	0.973	
Satd. Flow (perm)	1644	0	0	1828	1678	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	65.1			78.0	67.5	
Travel Time (s)	5.9			7.0	6.1	
Confl. Peds. (#/hr)		5	5			1
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	20	11	3	24	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	0	0	14	44	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	17.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	14	8	2	17	14
Future Volume (Veh/h)	0	14	8	2	17	14
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Hourly flow rate (vph)	0	20	11	3	24	20
Pedestrians				1	5	
Lane Width (m)				3.6	3.3	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			25		40	16
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			25		40	16
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	98
cM capacity (veh/h)			1596		966	1064

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	20	14	44
Volume Left	0	11	24
Volume Right	20	0	20
cSH	1700	1596	1008
Volume to Capacity	0.01	0.01	0.04
Queue Length 95th (m)	0.0	0.2	1.0
Control Delay (s)	0.0	5.7	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	5.7	8.7
Approach LOS			A

Intersection Summary			
Average Delay		6.0	
Intersection Capacity Utilization		17.4%	ICU Level of Service A
Analysis Period (min)		15	

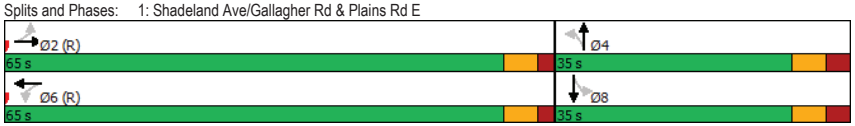
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	811	23	41	1366	15	18	6	31	43	12	31
Future Volume (vph)	9	811	23	41	1366	15	18	6	31	43	12	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	45.0		0.0	30.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00	0.98		0.99	0.99	
Frt		0.996			0.998			0.876			0.891	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1572	3549	0	1662	3531	0	1646	1632	0	1711	1606	0
Flt Permitted	0.140			0.294			0.726			0.730		
Satd. Flow (perm)	231	3549	0	513	3531	0	1255	1632	0	1300	1606	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			2			34			34	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		129.9			251.7			89.7			84.4	
Travel Time (s)		7.8			15.1			8.1			7.6	
Confl. Peds. (#/hr)	14		9	9		14	2		11	11		2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	11%	1%	9%	5%	2%	0%	6%	0%	0%	2%	0%	6%
Adj. Flow (vph)	10	901	26	46	1518	17	20	7	34	48	13	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	10	927	0	46	1535	0	20	41	0	48	47	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	42.0	42.0		42.0	42.0		35.0	35.0		35.0	35.0	
Total Split (s)	65.0	65.0		65.0	65.0		35.0	35.0		35.0	35.0	
Total Split (%)	65.0%	65.0%		65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Maximum Green (s)	59.0	59.0		59.0	59.0		28.0	28.0		28.0	28.0	
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		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-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	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	28.0	28.0		28.0	28.0		12.0	12.0		12.0	12.0	
Flash Dont Walk (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	81.6	81.6		81.6	81.6		14.2	14.2		14.2	14.2	
Actuated g/C Ratio	0.82	0.82		0.82	0.82		0.14	0.14		0.14	0.14	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.05	0.32		0.11	0.53		0.11	0.16		0.26	0.18	
Control Delay	4.0	3.5		3.6	3.8		37.5	16.3		40.9	18.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	4.0	3.5		3.6	3.8		37.5	16.3		40.9	18.5	
LOS	A	A		A	A		D	B		D	B	
Approach Delay		3.5			3.8			23.2			29.8	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	0.4	22.2		1.7	37.7		3.4	1.2		8.4	2.2	
Queue Length 95th (m)	1.9	35.2		m3.8	43.6		9.8	10.0		18.2	11.8	
Internal Link Dist (m)		105.9			227.7			65.7			60.4	
Turn Bay Length (m)	45.0			30.0			15.0			15.0		
Base Capacity (vph)	188	2897		418	2882		389	529		403	521	
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	0.05	0.32		0.11	0.53		0.05	0.08		0.12	0.09	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 77 (77%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 5.1		Intersection LOS: A	
Intersection Capacity Utilization 57.4%		ICU Level of Service B	
Analysis Period (min) 15			

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

Splits and Phases: 1: Shadeland Ave/Gallagher Rd & Plains Rd E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	811	23	41	1366	15	18	6	31	43	12	31
Future Volume (vph)	9	811	23	41	1366	15	18	6	31	43	12	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	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	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.88		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1569	3548		1656	3533		1643	1631		1692	1607	
Flt Permitted	0.14	1.00		0.29	1.00		0.73	1.00		0.73	1.00	
Satd. Flow (perm)	232	3548		512	3533		1256	1631		1300	1607	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	10	901	26	46	1518	17	20	7	34	48	13	34
RTOR Reduction (vph)	0	1	0	0	0	0	0	30	0	0	30	0
Lane Group Flow (vph)	10	926	0	46	1535	0	20	11	0	48	17	0
Confl. Peds. (#/hr)	14		9	9		14	2		11	11		2
Heavy Vehicles (%)	11%	1%	9%	5%	2%	0%	6%	0%	0%	2%	0%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	77.4	77.4		77.4	77.4		9.6	9.6		9.6	9.6	
Effective Green, g (s)	79.4	79.4		79.4	79.4		12.6	12.6		12.6	12.6	
Actuated g/C Ratio	0.79	0.79		0.79	0.79		0.13	0.13		0.13	0.13	
Clearance Time (s)	6.0	6.0		6.0	6.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	184	2817		406	2805		158	205		163	202	
v/s Ratio Prot		0.26			c0.43			0.01			0.01	
v/s Ratio Perm	0.04			0.09			0.02			c0.04		
v/c Ratio	0.05	0.33		0.11	0.55		0.13	0.06		0.29	0.09	
Uniform Delay, d1	2.2	2.9		2.3	3.8		38.8	38.5		39.7	38.6	
Progression Factor	1.00	1.00		0.93	0.74		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.3		0.5	0.7		0.8	0.2		2.1	0.4	
Delay (s)	2.8	3.2		2.7	3.4		39.6	38.7		41.8	39.0	
Level of Service	A	A		A	A		D	D		D	D	
Approach Delay (s)		3.2			3.4			39.0			40.4	
Approach LOS		A			A			D			D	

Intersection Summary					
HCM 2000 Control Delay	5.5	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.51				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	57.4%	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)	2	879	4	21	1417	3	5	0	24	6	0	0
Future Volume (vph)	2	879	4	21	1417	3	5	0	24	6	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	0.0		0.0	30.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999						0.889				
Flt Protected				0.950				0.991			0.950	
Satd. Flow (prot)	0	3404	0	1544	3406	0	0	1625	0	0	1805	0
Flt Permitted				0.950				0.991			0.950	
Satd. Flow (perm)	0	3404	0	1544	3406	0	0	1625	0	0	1805	0
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		251.7			86.0			84.7			62.2	
Travel Time (s)		15.1			5.2			7.6			5.6	
Confl. Peds. (#/hr)	9		12	12		9						
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	6%	0%	13%	6%	0%	17%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	1010	5	24	1629	3	6	0	28	7	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1017	0	24	1632	0	0	34	0	0	7	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.3%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	879	4	21	1417	3	5	0	24	6	0	0
Future Volume (Veh/h)	2	879	4	21	1417	3	5	0	24	6	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	2	1010	5	24	1629	3	6	0	28	7	0	0
Pedestrians								12			9	
Lane Width (m)								3.6			3.6	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		252			86							
pX, platoon unblocked	0.83			0.94			0.86	0.86	0.94	0.86	0.86	0.83
vC, conflicting volume	1641			1027			1891	2718	520	2224	2718	825
vC1, stage 1 conf vol							1028	1028		1688	1688	
vC2, stage 2 conf vol							862	1689		537	1031	
vCu, unblocked vol	1363			904			1403	2365	365	1791	2366	381
tC, single (s)	4.1			4.4			7.8	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.8	5.5		6.5	5.5	
tF (s)	2.2			2.3			3.7	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			96			97	100	95	94	100	100
cM capacity (veh/h)	421			636			218	141	594	112	141	513

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	507	510	24	1086	546	34	7
Volume Left	2	0	24	0	0	6	7
Volume Right	0	5	0	0	3	28	0
cSH	421	1700	636	1700	1700	456	112
Volume to Capacity	0.00	0.30	0.04	0.64	0.32	0.07	0.06
Queue Length 95th (m)	0.1	0.0	0.9	0.0	0.0	1.8	1.5
Control Delay (s)	0.1	0.0	10.9	0.0	0.0	13.5	39.4
Lane LOS	A		B			B	E
Approach Delay (s)	0.1		0.2			13.5	39.4
Approach LOS						B	E

Intersection Summary					
Average Delay		0.4			
Intersection Capacity Utilization		49.3%	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)	19	880	10	21	1416	32	9	0	15	22	0	16
Future Volume (vph)	19	880	10	21	1416	32	9	0	15	22	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	30.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		0.99	1.00			0.98			0.99	
Frt		0.998			0.997			0.915			0.942	
Flt Protected	0.950			0.950				0.982			0.972	
Satd. Flow (prot)	1631	3390	0	1491	3354	0	0	1569	0	0	1613	0
Flt Permitted	0.133			0.278				0.890			0.808	
Satd. Flow (perm)	228	3390	0	434	3354	0	0	1421	0	0	1330	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			5			33			33	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		86.0			179.3			90.8			90.8	
Travel Time (s)		5.2			10.8			8.2			8.2	
Confl. Peds. (#/hr)	10		17	17		10	2		11	11		2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	6%	25%	17%	7%	17%	0%	0%	11%	8%	0%	6%
Adj. Flow (vph)	21	978	11	23	1573	36	10	0	17	24	0	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	989	0	23	1609	0	0	27	0	0	42	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Detector Phase	2	2		2	2		4	4		4	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	42.0	42.0		42.0	42.0		29.0	29.0		29.0	29.0	
Total Split (s)	70.0	70.0		70.0	70.0		30.0	30.0		30.0	30.0	
Total Split (%)	70.0%	70.0%		70.0%	70.0%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	64.0	64.0		64.0	64.0		23.0	23.0		23.0	23.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		4.0	4.0		4.0	4.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-3.0			-3.0	
Total Lost Time (s)	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	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	28.0	28.0		28.0	28.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	7.0	7.0		7.0	7.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	84.5	84.5		84.5	84.5			11.3			11.3	
Actuated g/C Ratio	0.84	0.84		0.84	0.84			0.11			0.11	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.11	0.35		0.06	0.57			0.14			0.23	
Control Delay	3.3	2.3		2.3	2.9			13.2			20.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	3.3	2.3		2.3	2.9			13.2			20.9	
LOS	A	A		A	A			B			C	
Approach Delay		2.3			2.9			13.3			20.9	
Approach LOS		A			A			B			C	
Queue Length 50th (m)	0.6	18.8		0.7	30.3			0.0			1.6	
Queue Length 95th (m)	2.2	22.4		m1.4	35.5			6.5			11.2	
Internal Link Dist (m)		62.0			155.3			66.8			66.8	
Turn Bay Length (m)	30.0			15.0								
Base Capacity (vph)	192	2864		366	2834			393			370	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.11	0.35		0.06	0.57			0.07			0.11	

Intersection Summary		
Area Type:	Other	
Cycle Length: 100		
Actuated Cycle Length: 100		
Offset: 74 (74%), Referenced to phase 2:EBWB and 6:, Start of Green		
Natural Cycle: 75		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.57		
Intersection Signal Delay: 3.1	Intersection LOS: A	
Intersection Capacity Utilization 56.8%	ICU Level of Service B	
Analysis Period (min) 15		

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

Splits and Phases: 3: Driveway/Downsview Dr & Plains Rd E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	880	10	21	1416	32	9	0	15	22	0	16
Future Volume (vph)	19	880	10	21	1416	32	9	0	15	22	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.98			0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			0.99	
Frt	1.00	1.00		1.00	1.00			0.92			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1629	3392		1483	3353			1567			1600	
Flt Permitted	0.13	1.00		0.28	1.00			0.89			0.81	
Satd. Flow (perm)	228	3392		435	3353			1421			1330	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	21	978	11	23	1573	36	10	0	17	24	0	18
RTOR Reduction (vph)	0	0	0	0	1	0	0	24	0	0	30	0
Lane Group Flow (vph)	21	989	0	23	1608	0	0	3	0	0	12	0
Confl. Peds. (#/hr)	10		17	17		10	2		11	11		2
Heavy Vehicles (%)	7%	6%	25%	17%	7%	17%	0%	0%	11%	8%	0%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	80.3	80.3		80.3	80.3			6.7			6.7	
Effective Green, g (s)	82.3	82.3		82.3	82.3			9.7			9.7	
Actuated g/C Ratio	0.82	0.82		0.82	0.82			0.10			0.10	
Clearance Time (s)	6.0	6.0		6.0	6.0			7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	187	2791		358	2759			137			129	
v/s Ratio Prot		0.29			c0.48							
v/s Ratio Perm	0.09			0.05				0.00			c0.01	
v/c Ratio	0.11	0.35		0.06	0.58			0.02			0.09	
Uniform Delay, d1	1.7	2.2		1.7	3.0			40.8			41.1	
Progression Factor	0.89	0.85		0.93	0.67			1.00			1.00	
Incremental Delay, d2	1.2	0.3		0.3	0.8			0.1			0.3	
Delay (s)	2.7	2.2		1.8	2.8			40.9			41.5	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		2.2			2.8			40.9			41.5	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	3.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	100.0	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)	11	900	6	13	1458	13	2	0	11	10	0	9
Future Volume (vph)	11	900	6	13	1458	13	2	0	11	10	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999			0.999			0.886			0.936	
Flt Protected	0.950							0.992			0.974	
Satd. Flow (prot)	1745	3571	0	0	3606	0	0	1670	0	0	1732	0
Flt Permitted	0.950							0.992			0.974	
Satd. Flow (perm)	1745	3571	0	0	3606	0	0	1670	0	0	1732	0
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		179.3			157.0			36.7			165.5	
Travel Time (s)		10.8			9.4			3.3			14.9	
Confl. Peds. (#/hr)			7	7								
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	11	928	6	13	1503	13	2	0	11	10	0	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	934	0	0	1529	0	0	13	0	0	19	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	900	6	13	1458	13	2	0	11	10	0	9
Future Volume (Veh/h)	11	900	6	13	1458	13	2	0	11	10	0	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	11	928	6	13	1503	13	2	0	11	10	0	9
Pedestrians								7				
Lane Width (m)								3.6				
Walking Speed (m/s)								1.2				
Percent Blockage								1				
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		179			157							
pX, platoon unblocked	0.83			0.94			0.86	0.86	0.94	0.86	0.86	0.83
vC, conflicting volume	1516			941			1746	2502	474	2032	2498	758
vC1, stage 1 conf vol							960	960		1536	1536	
vC2, stage 2 conf vol							786	1542		497	963	
vCu, unblocked vol	1209			821			1245	2128	326	1579	2124	294
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			99	100	98	93	100	98
cM capacity (veh/h)	484			768			271	167	634	149	174	587

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1
Volume Total	11	619	315	764	764	13	19
Volume Left	11	0	0	13	0	2	10
Volume Right	0	0	6	0	13	11	9
cSH	484	1700	1700	768	1700	526	231
Volume to Capacity	0.02	0.36	0.19	0.02	0.45	0.02	0.08
Queue Length 95th (m)	0.5	0.0	0.0	0.4	0.0	0.6	2.0
Control Delay (s)	12.6	0.0	0.0	0.5	0.0	12.0	22.0
Lane LOS	B			A		B	C
Approach Delay (s)	0.1			0.2		12.0	22.0
Approach LOS						B	C

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	59.8%	ICU Level of Service	B	
Analysis Period (min)	15			

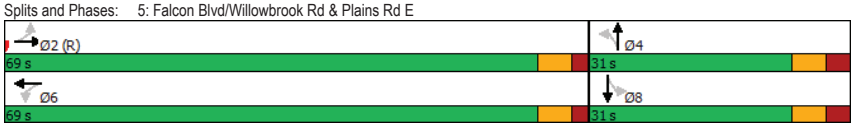
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	880	26	47	1430	17	29	3	50	21	3	25
Future Volume (vph)	15	880	26	47	1430	17	29	3	50	21	3	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	30.0		0.0	25.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		0.99	1.00			0.98			0.98	
Frt		0.996			0.998			0.917			0.931	
Flt Protected	0.950			0.950				0.983			0.979	
Satd. Flow (prot)	1544	3351	0	1544	3306	0	0	1514	0	0	1425	0
Flt Permitted	0.140			0.281				0.888			0.792	
Satd. Flow (perm)	228	3351	0	454	3306	0	0	1365	0	0	1144	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			2			54			27	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		157.0			209.5			129.5			187.7	
Travel Time (s)		9.4			12.6			11.7			16.9	
Confl. Peds. (#/hr)	12		9	9		12	4		16	16		4
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	13%	7%	12%	13%	9%	0%	17%	0%	8%	33%	0%	12%
Adj. Flow (vph)	16	946	28	51	1538	18	31	3	54	23	3	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	974	0	51	1556	0	0	88	0	0	53	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		31.0	31.0		31.0	31.0	
Total Split (s)	69.0	69.0		69.0	69.0		31.0	31.0		31.0	31.0	
Total Split (%)	69.0%	69.0%		69.0%	69.0%		31.0%	31.0%		31.0%	31.0%	
Maximum Green (s)	63.0	63.0		63.0	63.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-3.0			-3.0	
Total Lost Time (s)	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	
Recall Mode	C-Max	C-Max		None	None		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	8.0	8.0		8.0	8.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	83.3	83.3		83.3	83.3			12.5			12.5	
Actuated g/C Ratio	0.83	0.83		0.83	0.83			0.12			0.12	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.08	0.35		0.13	0.56			0.40			0.32	
Control Delay	3.7	2.8		3.7	4.7			23.9			28.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	3.7	2.8		3.7	4.7			23.9			28.1	
LOS	A	A		A	A			C			C	
Approach Delay		2.8			4.7			23.9			28.1	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	0.5	18.2		1.6	42.4			6.1			4.7	
Queue Length 95th (m)	m2.1	28.5		5.5	75.7			19.5			15.3	
Internal Link Dist (m)		133.0			185.5			105.5			163.7	
Turn Bay Length (m)	30.0			25.0								
Base Capacity (vph)	189	2792		378	2754			407			328	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.08	0.35		0.13	0.56			0.22			0.16	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 71 (71%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 5.1		Intersection LOS: A	
Intersection Capacity Utilization 58.7%		ICU Level of Service B	
Analysis Period (min) 15			

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

Splits and Phases: 5: Falcon Blvd/Willowbrook Rd & Plains Rd E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	880	26	47	1430	17	29	3	50	21	3	25
Future Volume (vph)	15	880	26	47	1430	17	29	3	50	21	3	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.98			0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			0.99	
Frt	1.00	1.00		1.00	1.00			0.92			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1540	3350		1534	3307			1511			1415	
Flt Permitted	0.14	1.00		0.28	1.00			0.89			0.79	
Satd. Flow (perm)	227	3350		454	3307			1366			1145	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	16	946	28	51	1538	18	31	3	54	23	3	27
RTOR Reduction (vph)	0	1	0	0	0	0	0	48	0	0	24	0
Lane Group Flow (vph)	16	973	0	51	1556	0	0	40	0	0	29	0
Confl. Peds. (#/hr)	12		9	9		12	4		16	16		4
Heavy Vehicles (%)	13%	7%	12%	13%	9%	0%	17%	0%	8%	33%	0%	12%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	79.1	79.1		79.1	79.1			7.9			7.9	
Effective Green, g (s)	81.1	81.1		81.1	81.1			10.9			10.9	
Actuated g/C Ratio	0.81	0.81		0.81	0.81			0.11			0.11	
Clearance Time (s)	6.0	6.0		6.0	6.0			7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	184	2716		368	2681			148			124	
v/s Ratio Prot		0.29			c0.47							
v/s Ratio Perm	0.07			0.11				c0.03			0.03	
v/c Ratio	0.09	0.36		0.14	0.58			0.27			0.23	
Uniform Delay, d1	1.9	2.5		2.0	3.4			40.9			40.7	
Progression Factor	0.93	0.87		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.9	0.4		0.2	0.3			1.0			1.0	
Delay (s)	2.7	2.5		2.2	3.7			41.9			41.7	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		2.5			3.6			41.9			41.7	
Approach LOS		A			A			D			D	

Intersection Summary					
HCM 2000 Control Delay	5.2	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.54				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	58.7%	ICU Level of Service		B	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1	14	5	2	28	12
Future Volume (vph)	1	14	5	2	28	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.5	3.3	3.6	3.3	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.871				0.959	
Flt Protected				0.966	0.966	
Satd. Flow (prot)	1655	0	0	1835	1701	0
Flt Permitted				0.966	0.966	
Satd. Flow (perm)	1655	0	0	1835	1701	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	61.5			80.6	68.8	
Travel Time (s)	5.5			7.3	6.2	
Confl. Peds. (#/hr)					1	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	1	20	7	3	39	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	21	0	0	10	56	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	14.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1	14	5	2	28	12
Future Volume (Veh/h)	1	14	5	2	28	12
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Hourly flow rate (vph)	1	20	7	3	39	17
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			21		29	11
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			21		29	11
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		96	98
cM capacity (veh/h)			1608		986	1076

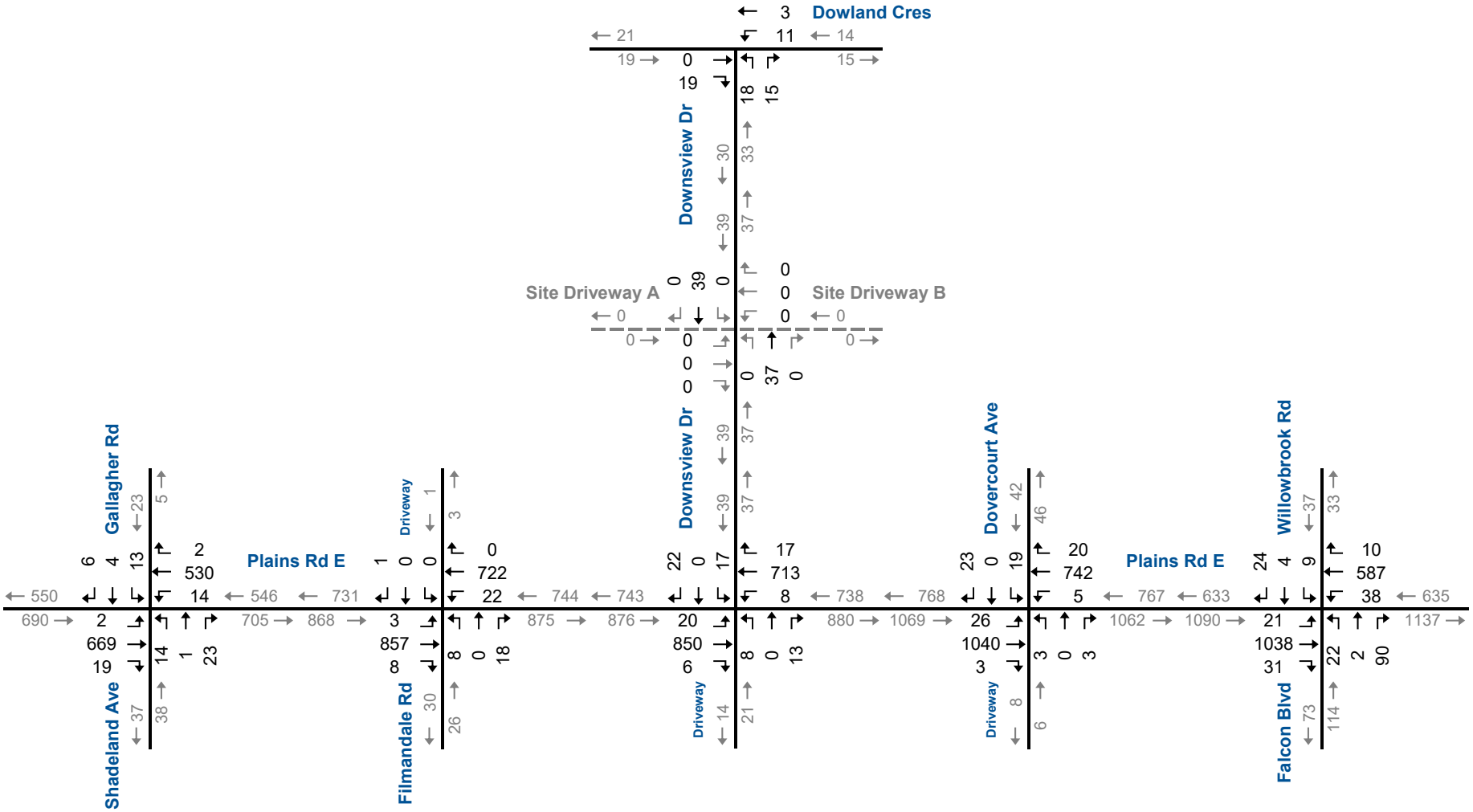
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	21	10	56
Volume Left	0	7	39
Volume Right	20	0	17
cSH	1700	1608	1011
Volume to Capacity	0.01	0.00	0.06
Queue Length 95th (m)	0.0	0.1	1.3
Control Delay (s)	0.0	5.1	8.8
Lane LOS		A	A
Approach Delay (s)	0.0	5.1	8.8
Approach LOS			A

Intersection Summary				
Average Delay		6.2		
Intersection Capacity Utilization		14.5%	ICU Level of Service	A
Analysis Period (min)		15		

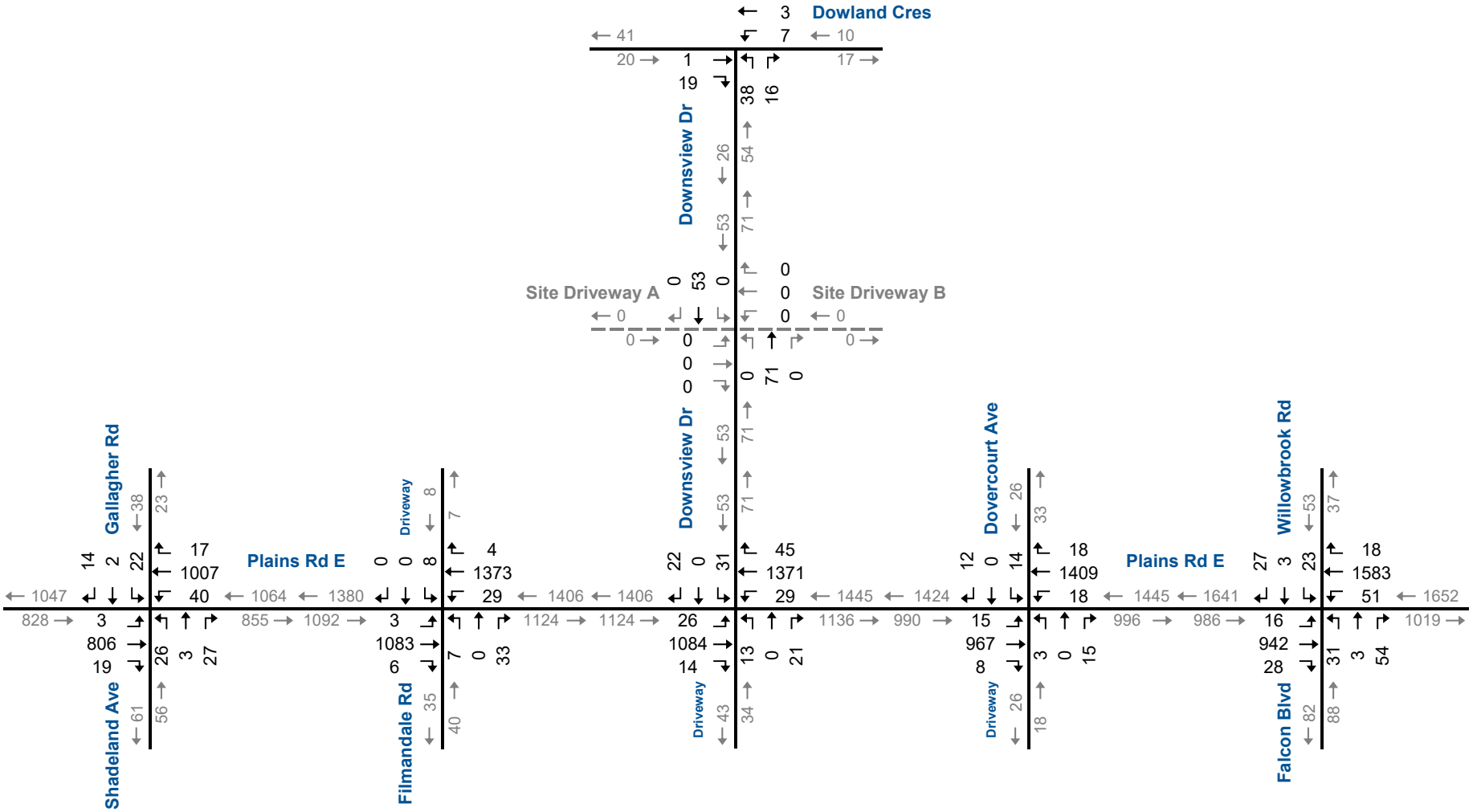
Appendix D

Background Traffic Forecast

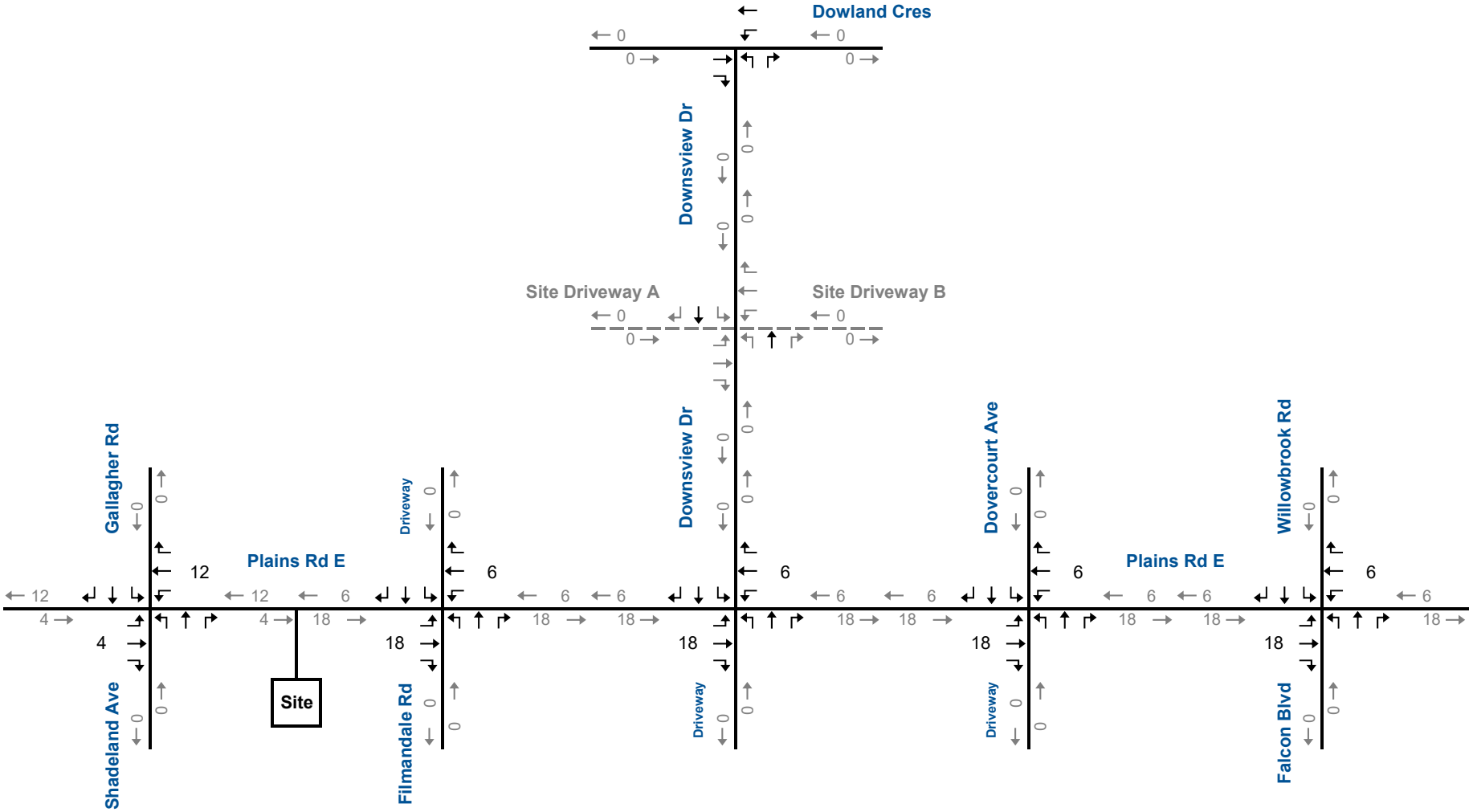
General Growth - AM Peak Hour



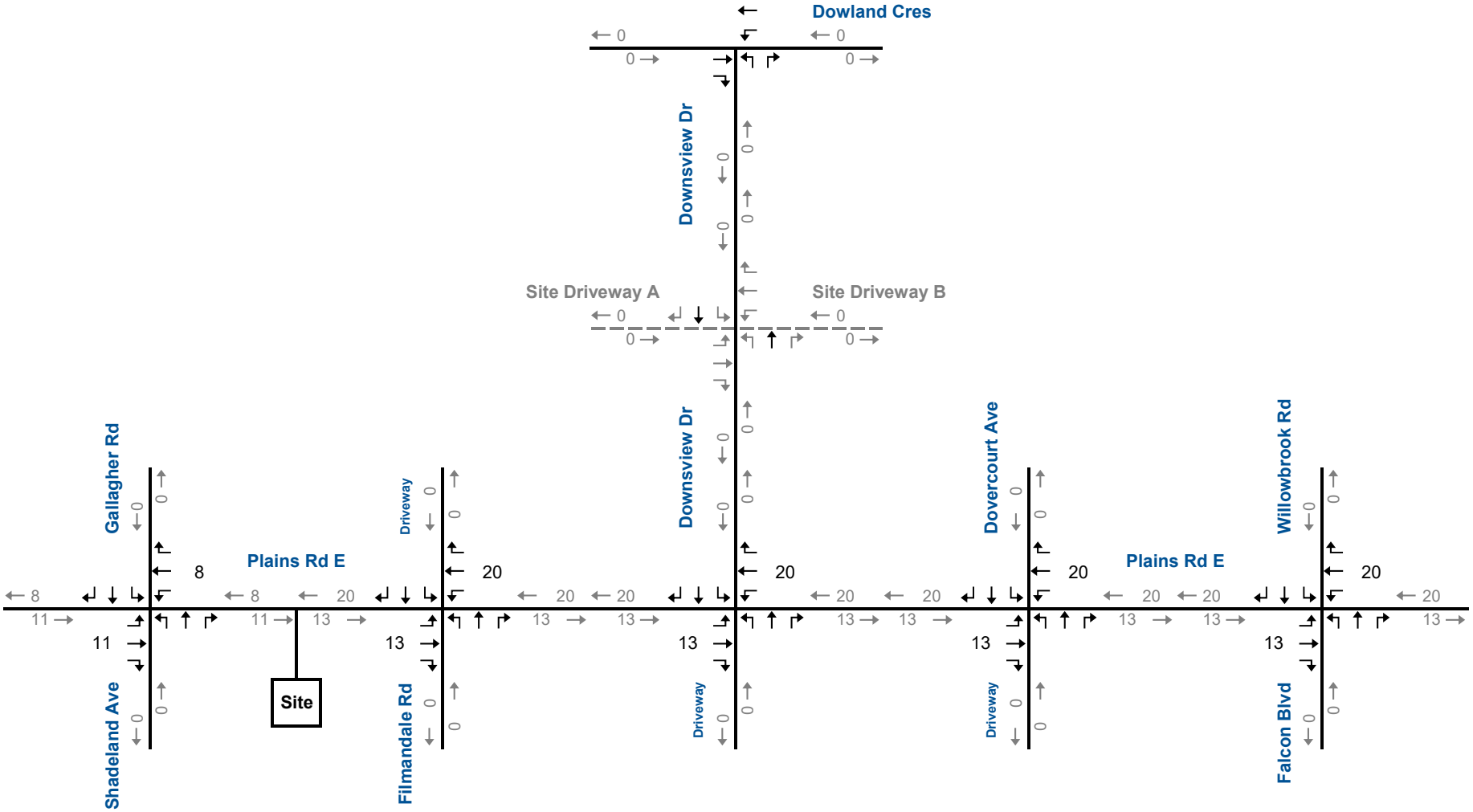
General Growth - PM Peak Hour



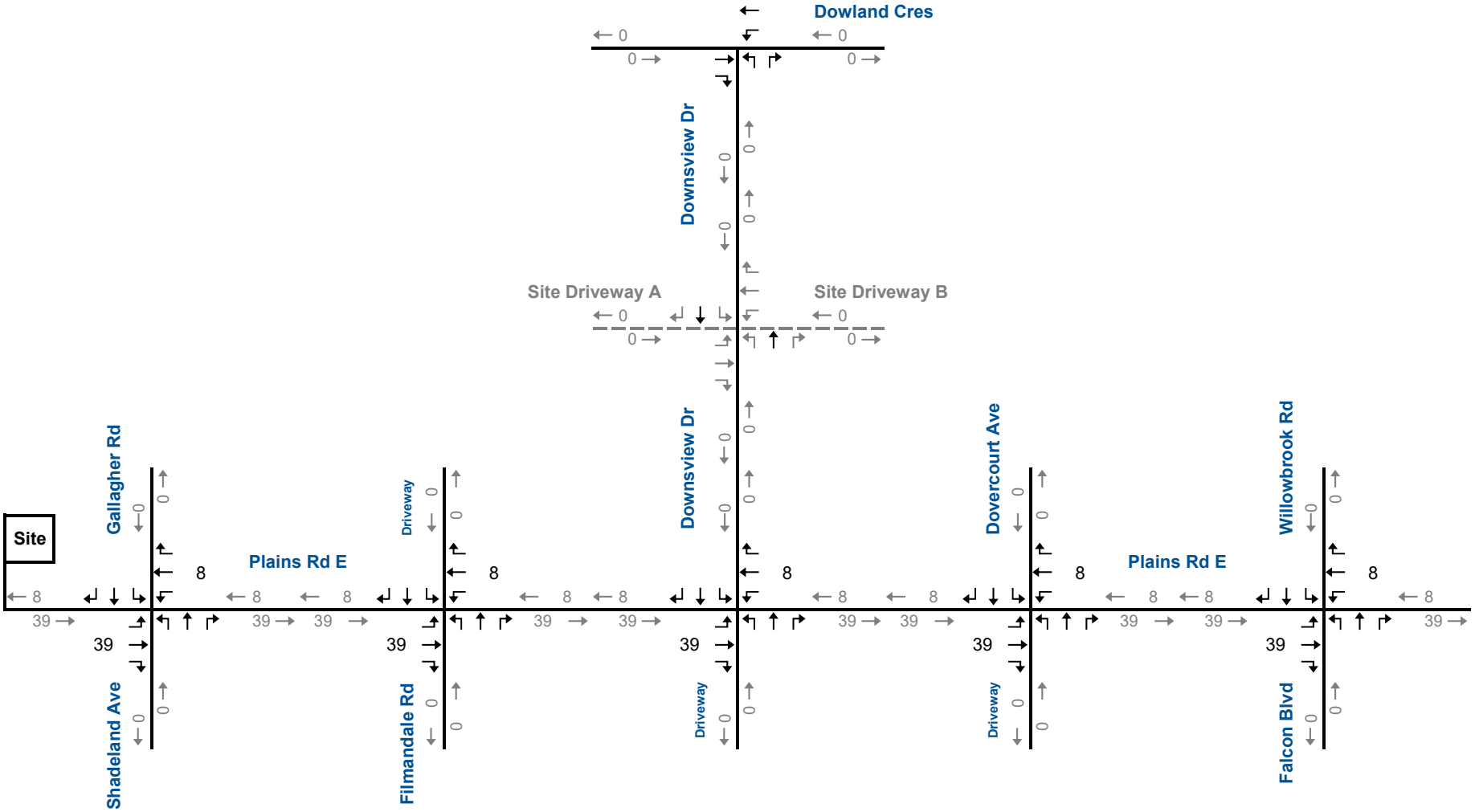
284-292 Plains Road East - Site Traffic - AM Peak Hour



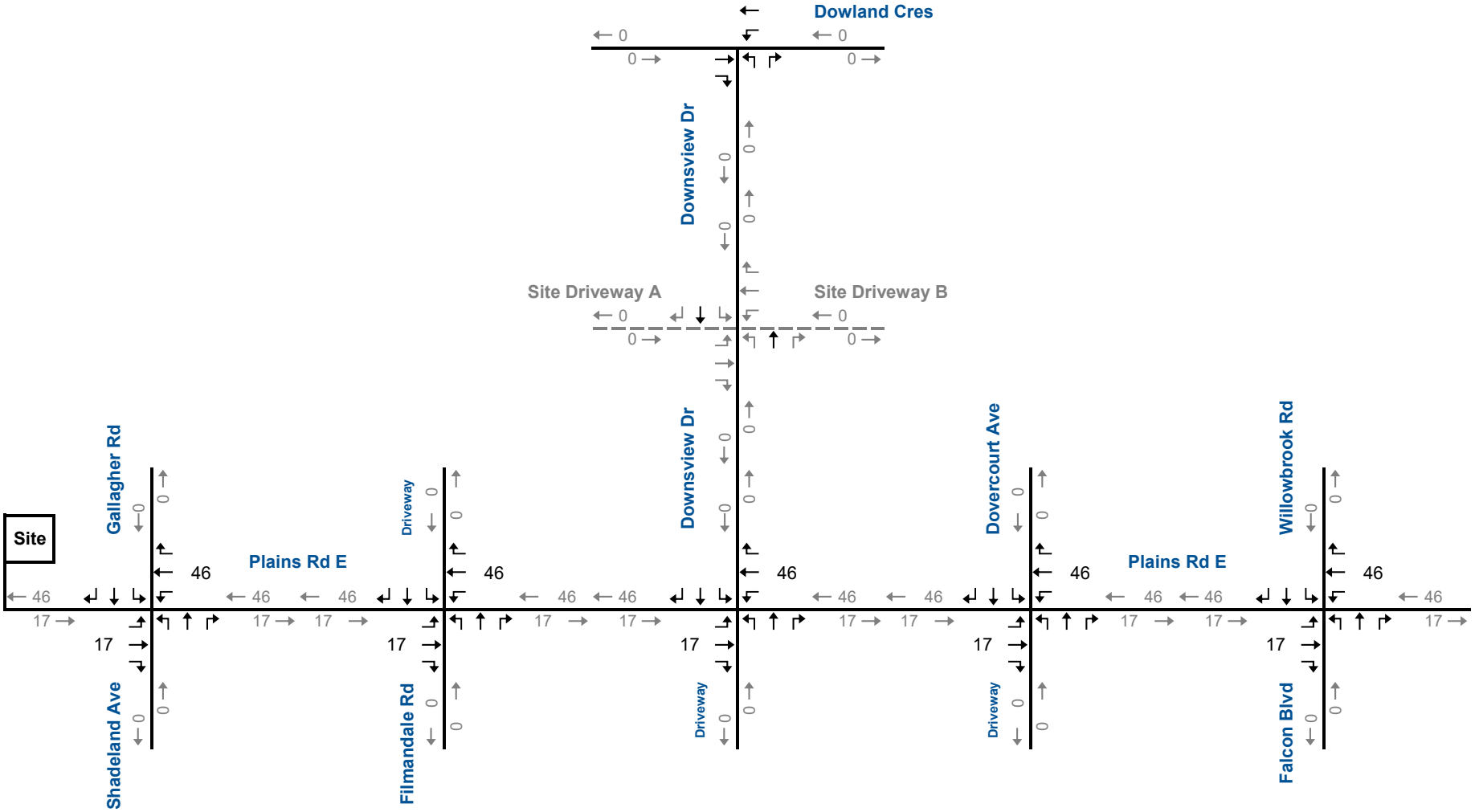
284-292 Plains Road East - Site Traffic - PM Peak Hour



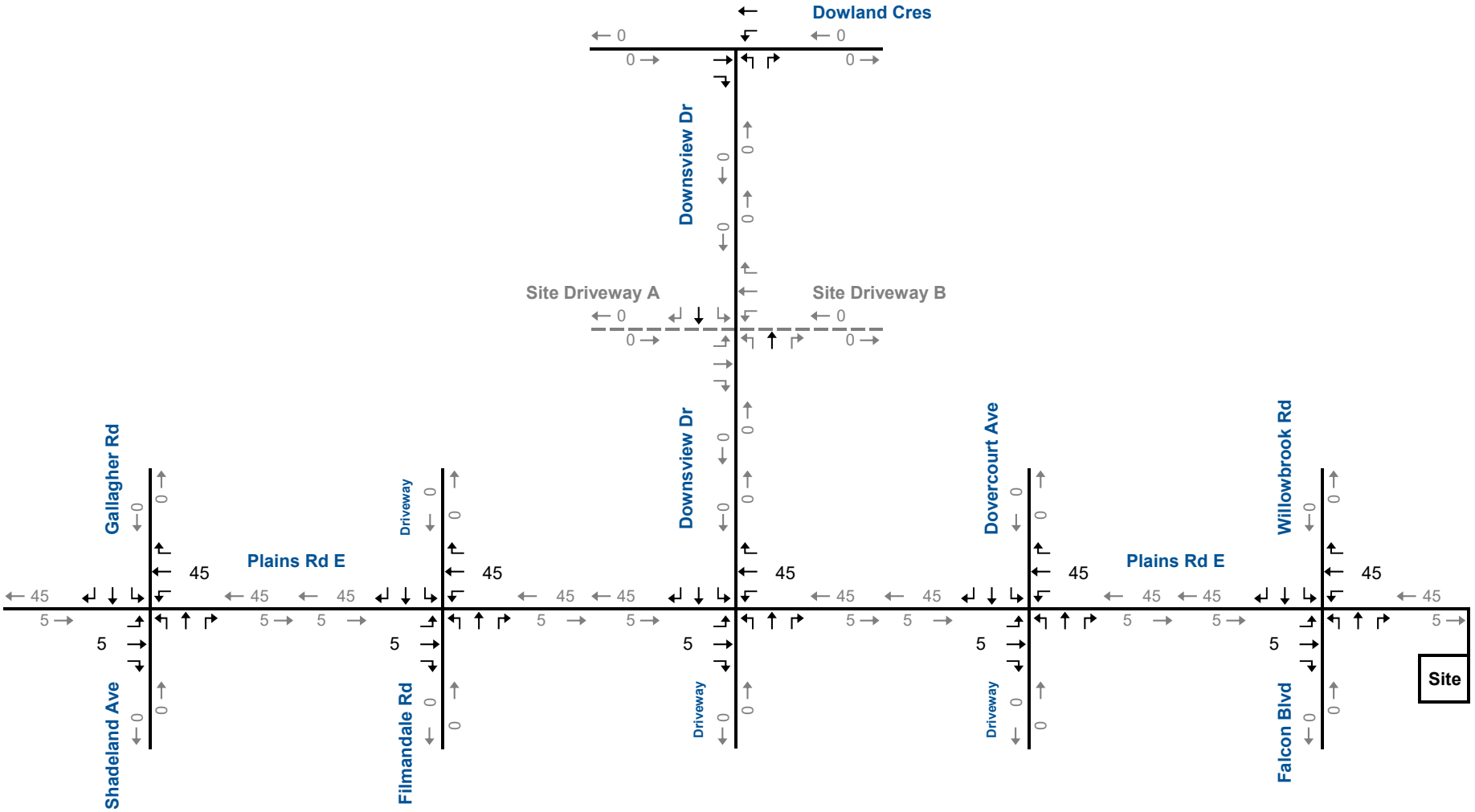
53 & 71 Plains Road East - Site Traffic - AM Peak Hour



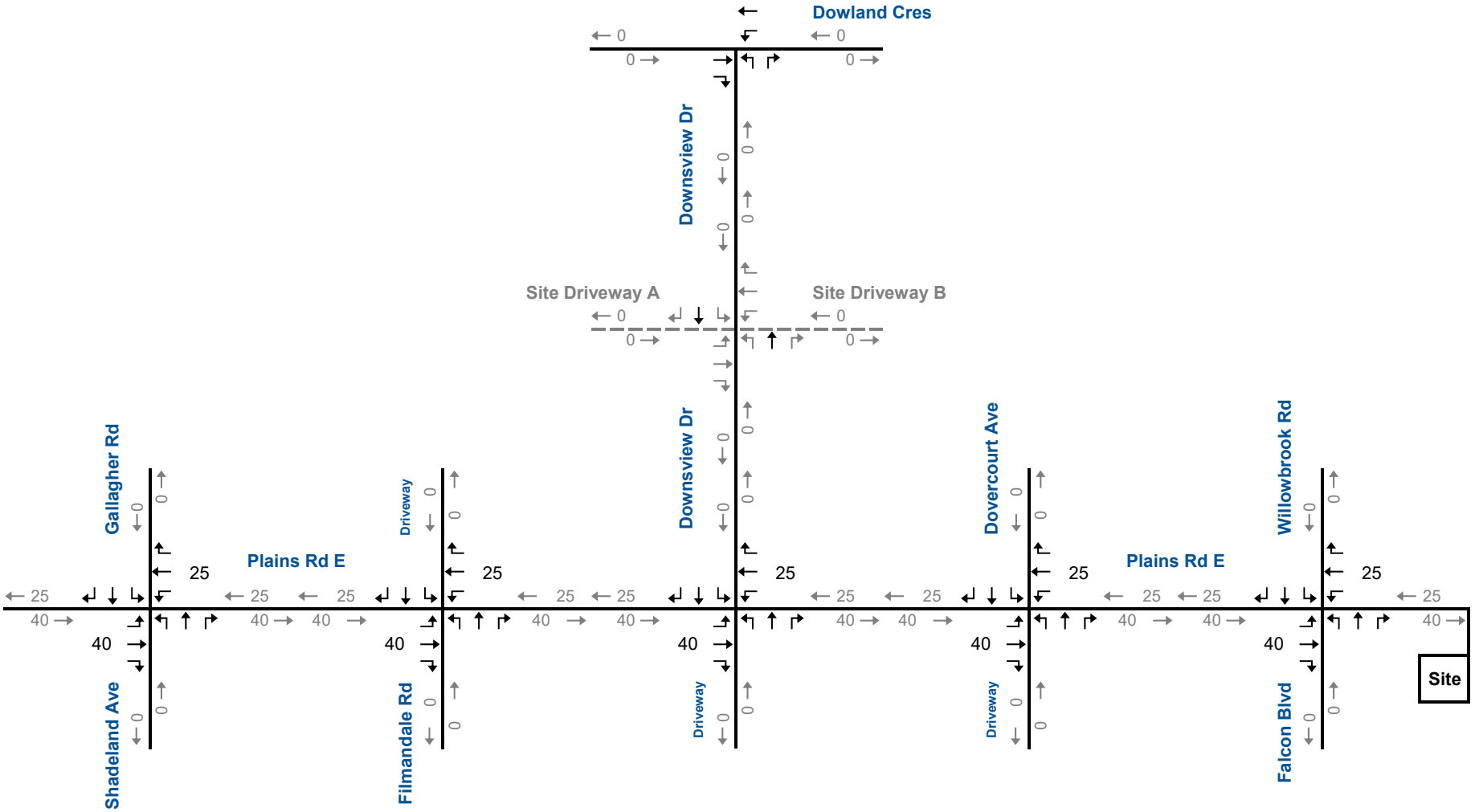
53 & 71 Plains Road East - Site Traffic - PM Peak Hour



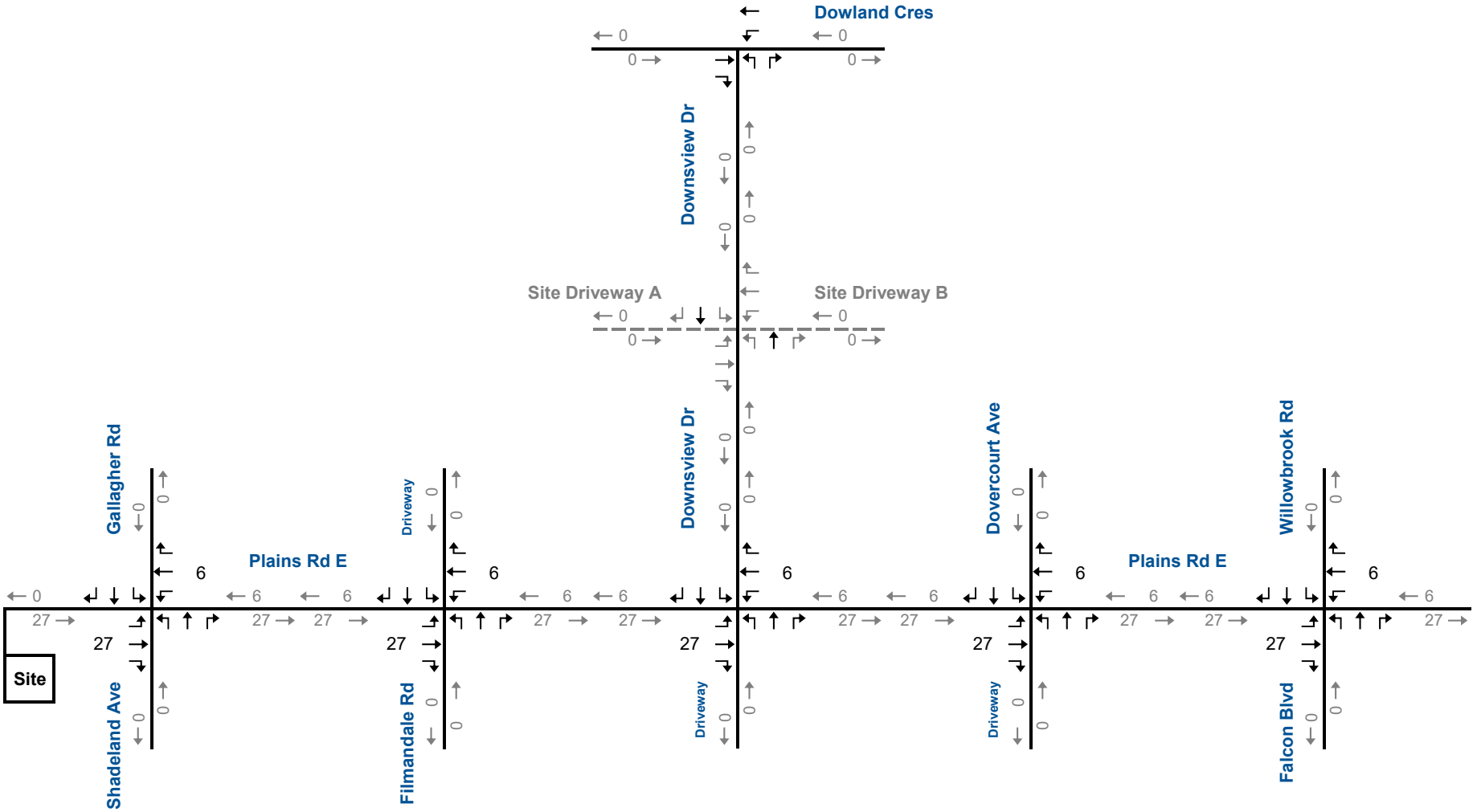
484 Plains Road East - Site Traffic - AM Peak Hour



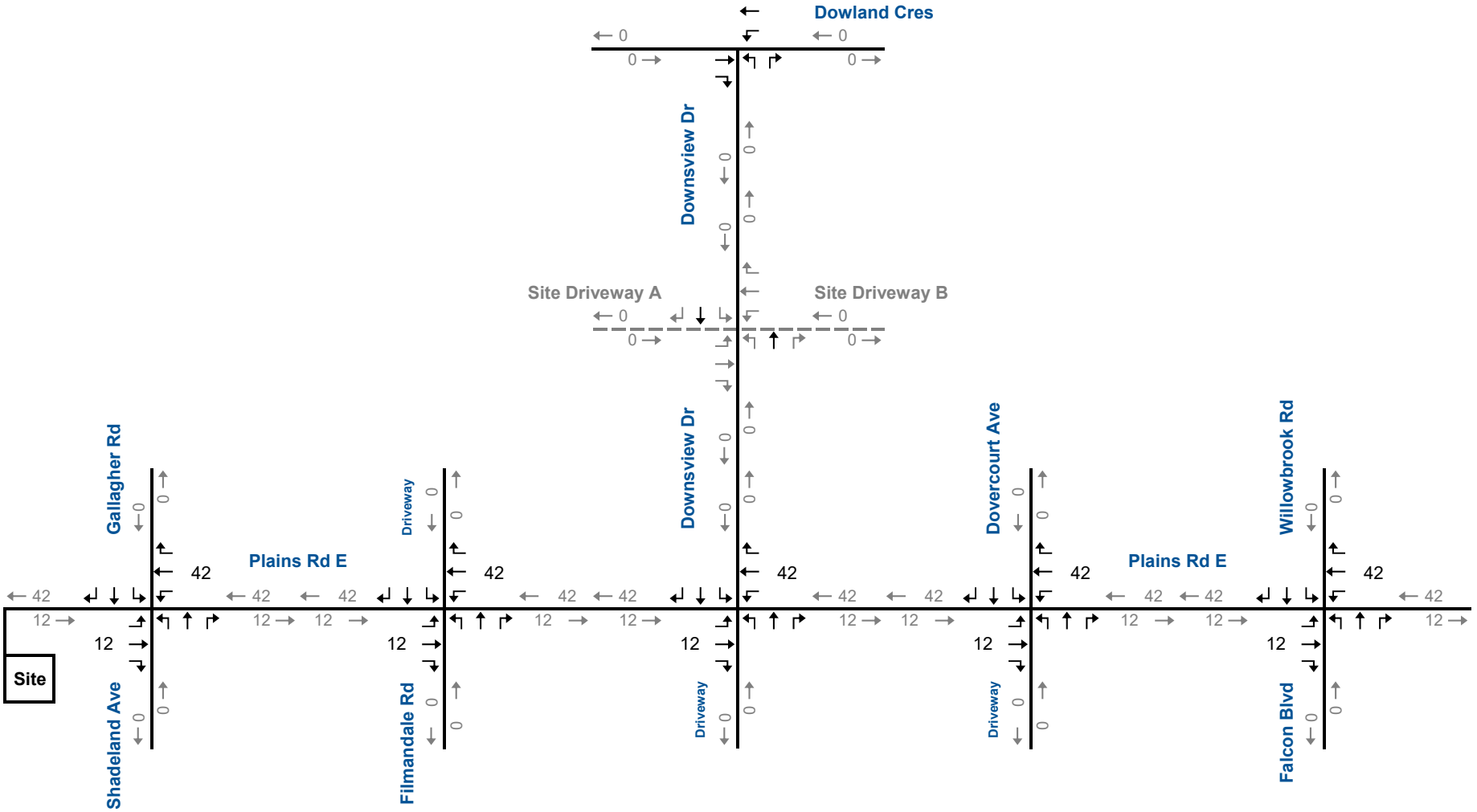
484 Plains Road East - Site Traffic - PM Peak Hour



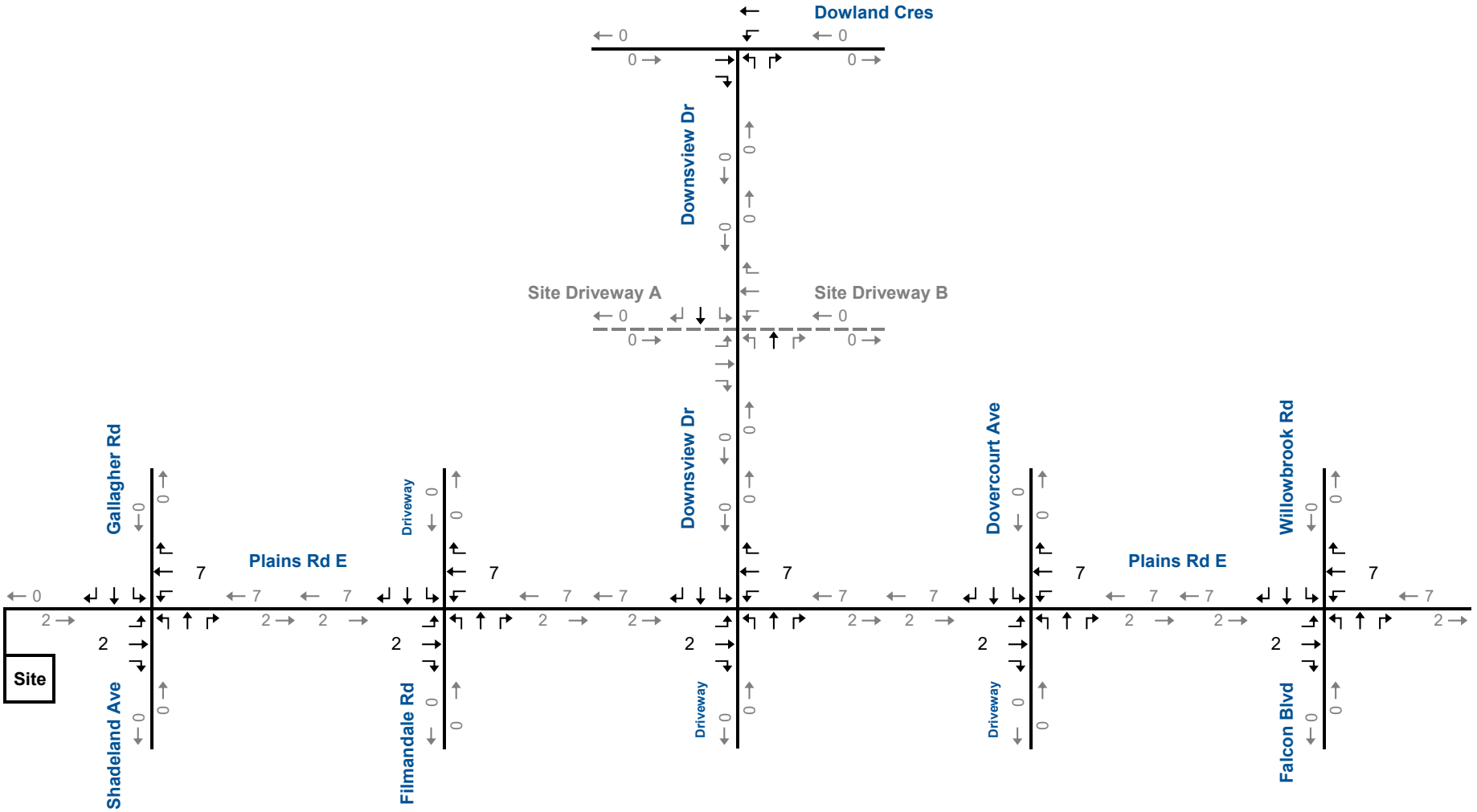
40-70 Plains Road East - Site Traffic - AM Peak Hour



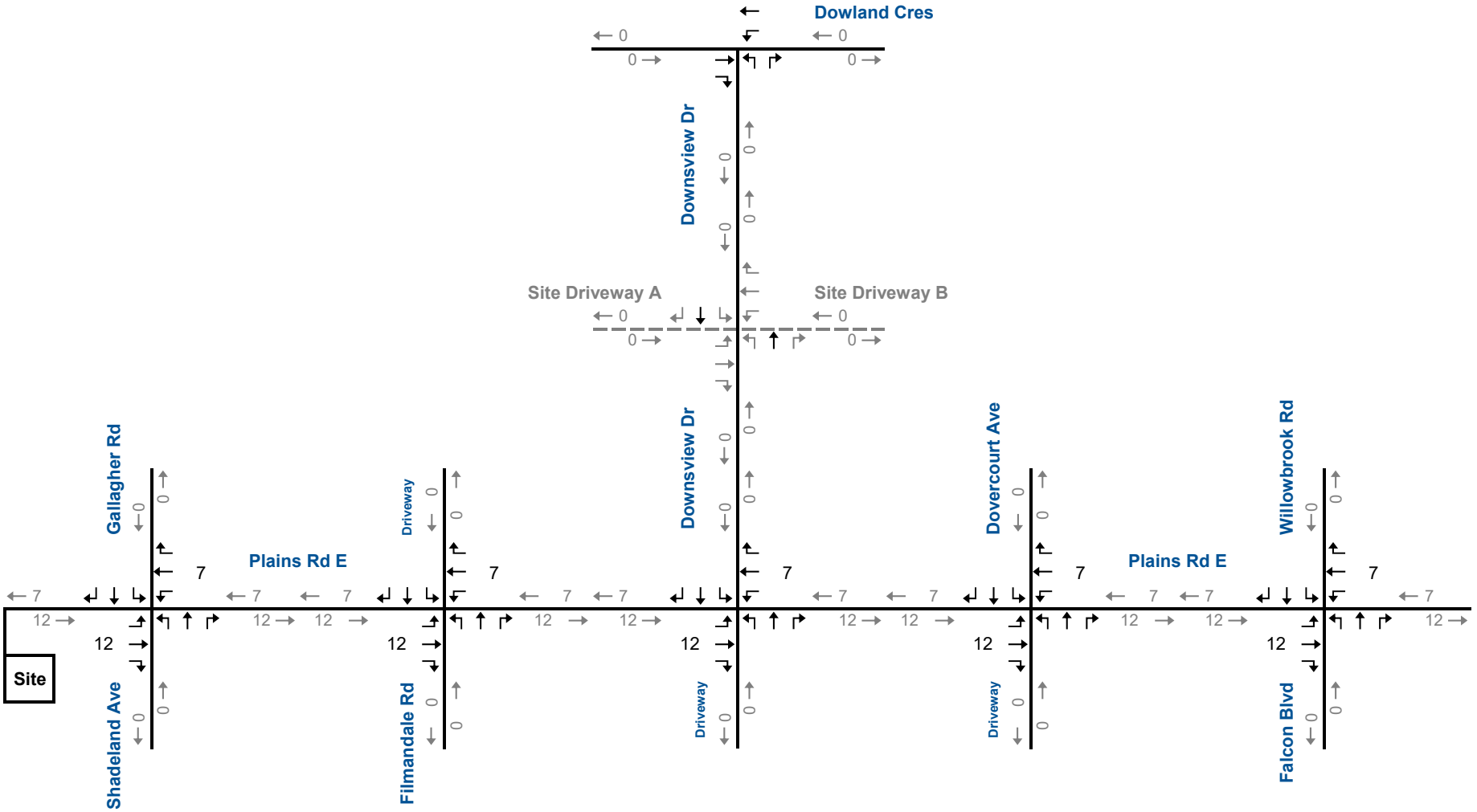
40-70 Plains Road East - Site Traffic - PM Peak Hour



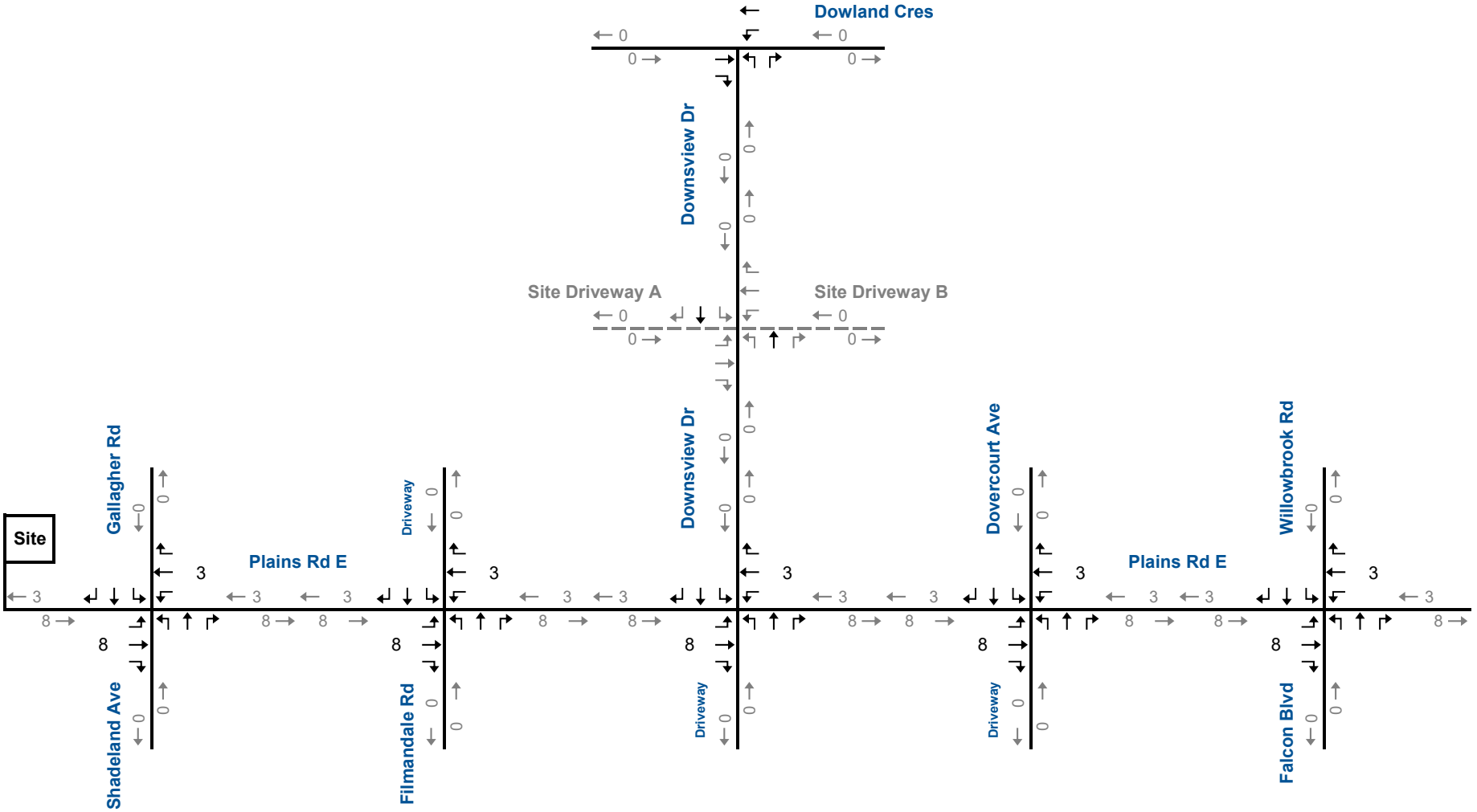
92 Plains Road East - Site Traffic - AM Peak Hour



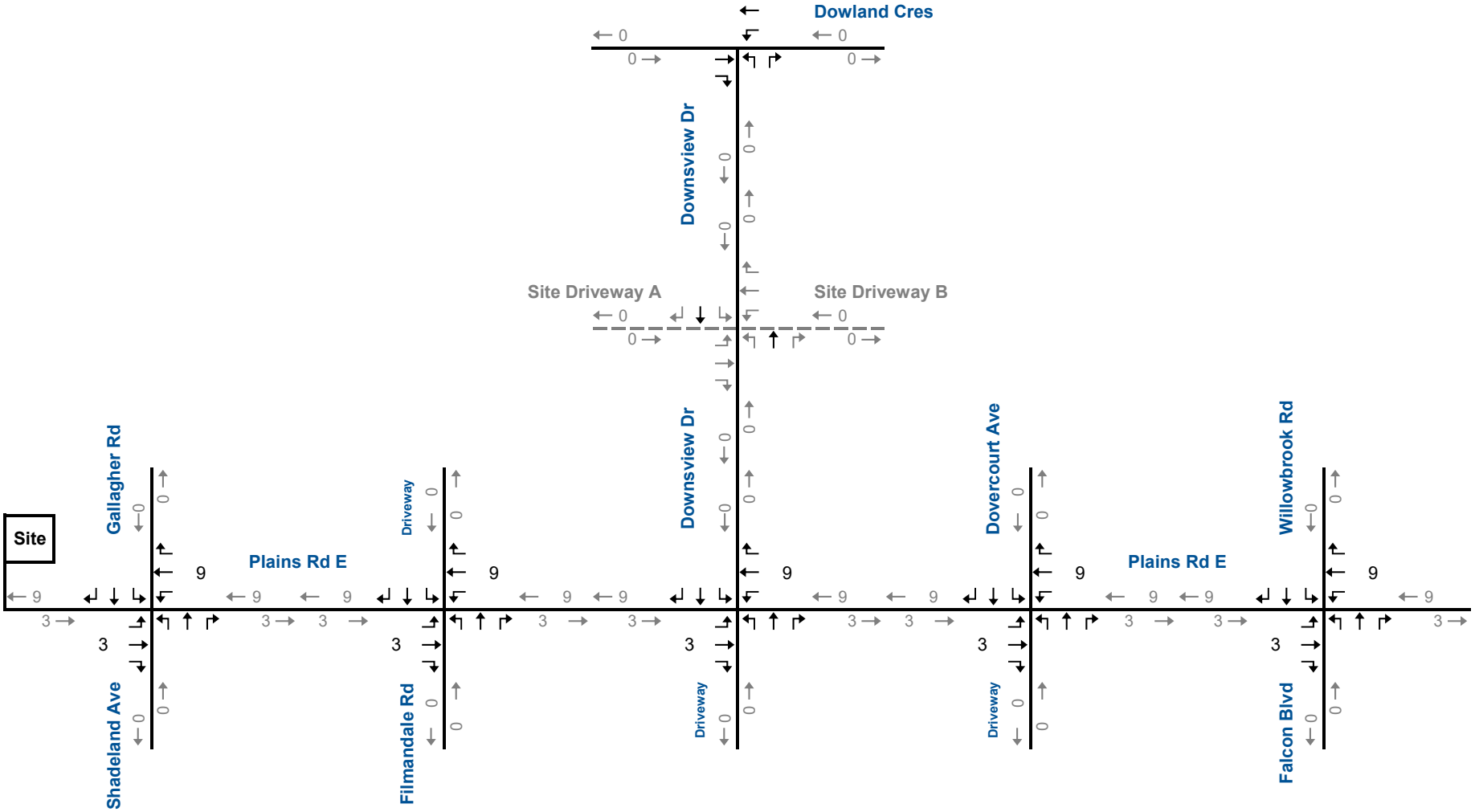
92 Plains Road East - Site Traffic - PM Peak Hour



35 Plains Road East - Site Traffic - AM Peak Hour



35 Plains Road East - Site Traffic - PM Peak Hour



Appendix E

Background Traffic Operations

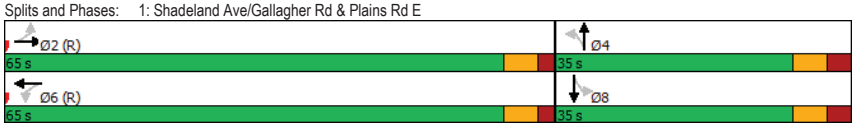


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	999	17	21	622	27	21	20	41	104	14	56
Future Volume (vph)	21	999	17	21	622	27	21	20	41	104	14	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	45.0		0.0	30.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	1.00		0.99	0.98		0.99	0.98	
Frt		0.998			0.994			0.900			0.880	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1517	3458	0	1517	3461	0	1745	1614	0	1678	1547	0
Flt Permitted	0.371			0.230			0.708			0.714		
Satd. Flow (perm)	587	3458	0	367	3461	0	1292	1614	0	1242	1547	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			8			44			60	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		129.9			251.7			89.7			84.4	
Travel Time (s)		11.7			22.7			8.1			7.6	
Confl. Peds. (#/hr)	18		1	1		18	7		15	15		7
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	15%	4%	13%	15%	3%	15%	0%	6%	3%	4%	0%	8%
Adj. Flow (vph)	23	1074	18	23	669	29	23	22	44	112	15	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	1092	0	23	698	0	23	66	0	112	75	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	42.0	42.0		42.0	42.0		35.0	35.0		35.0	35.0	
Total Split (s)	65.0	65.0		65.0	65.0		35.0	35.0		35.0	35.0	
Total Split (%)	65.0%	65.0%		65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Maximum Green (s)	59.0	59.0		59.0	59.0		28.0	28.0		28.0	28.0	
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		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-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	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	28.0	28.0		28.0	28.0		12.0	12.0		12.0	12.0	
Flash Dont Walk (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	72.9	72.9		72.9	72.9		19.1	19.1		19.1	19.1	
Actuated g/C Ratio	0.73	0.73		0.73	0.73		0.19	0.19		0.19	0.19	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.05	0.43		0.09	0.28		0.09	0.19		0.47	0.22	
Control Delay	5.4	6.5		8.2	6.5		31.7	15.5		41.5	12.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	5.4	6.5		8.2	6.5		31.7	15.5		41.5	12.7	
LOS	A	A		A	A		C	B		D	B	
Approach Delay		6.5			6.6			19.7			30.0	
Approach LOS		A			A			B			C	
Queue Length 50th (m)	1.1	37.3		1.1	19.6		3.7	3.5		19.5	2.4	
Queue Length 95th (m)	4.1	61.3		6.2	47.4		9.6	13.3		33.3	12.9	
Internal Link Dist (m)		105.9			227.7			65.7			60.4	
Turn Bay Length (m)	45.0			30.0			15.0			15.0		
Base Capacity (vph)	427	2521		267	2524		400	530		385	520	
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	0.05	0.43		0.09	0.28		0.06	0.12		0.29	0.14	

Intersection Summary		
Area Type:	Other	
Cycle Length: 100		
Actuated Cycle Length: 100		
Offset: 26 (26%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green		
Natural Cycle: 80		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.47		
Intersection Signal Delay: 9.2	Intersection LOS: A	
Intersection Capacity Utilization 50.5%	ICU Level of Service A	
Analysis Period (min) 15		

Splits and Phases: 1: Shadeland Ave/Gallagher Rd & Plains Rd E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	999	17	21	622	27	21	20	41	104	14	56
Future Volume (vph)	21	999	17	21	622	27	21	20	41	104	14	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	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	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.90		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1503	3456		1517	3460		1733	1614		1653	1547	
Flt Permitted	0.37	1.00		0.23	1.00		0.71	1.00		0.71	1.00	
Satd. Flow (perm)	586	3456		368	3460		1292	1614		1242	1547	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	23	1074	18	23	669	29	23	22	44	112	15	60
RTOR Reduction (vph)	0	1	0	0	2	0	0	36	0	0	49	0
Lane Group Flow (vph)	23	1091	0	23	696	0	23	30	0	112	26	0
Confl. Peds. (#/hr)	18		1	1		18	7		15	15		7
Heavy Vehicles (%)	15%	4%	13%	15%	3%	15%	0%	6%	3%	4%	0%	8%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	70.9	70.9		70.9	70.9		16.1	16.1		16.1	16.1	
Effective Green, g (s)	72.9	72.9		72.9	72.9		19.1	19.1		19.1	19.1	
Actuated g/C Ratio	0.73	0.73		0.73	0.73		0.19	0.19		0.19	0.19	
Clearance Time (s)	6.0	6.0		6.0	6.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	427	2519		268	2522		246	308		237	295	
v/s Ratio Prot		c0.32			0.20			0.02			0.02	
v/s Ratio Perm	0.04			0.06			0.02			c0.09		
v/c Ratio	0.05	0.43		0.09	0.28		0.09	0.10		0.47	0.09	
Uniform Delay, d1	3.8	5.4		3.9	4.6		33.3	33.4		36.0	33.3	
Progression Factor	1.00	1.00		1.40	1.23		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.5		0.6	0.3		0.3	0.3		3.1	0.3	
Delay (s)	4.1	5.9		6.1	5.9		33.7	33.6		39.1	33.6	
Level of Service	A	A		A	A		C	C		D	C	
Approach Delay (s)		5.9			5.9			33.7			36.9	
Approach LOS		A			A			C			D	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.5%	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)	2	1150	6	17	655	0	8	0	18	0	0	1
Future Volume (vph)	2	1150	6	17	655	0	8	0	18	0	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	0.0		0.0	30.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999						0.908			0.865	
Flt Protected				0.950				0.984				
Satd. Flow (prot)	0	3404	0	1544	3406	0	0	1610	0	0	1644	0
Flt Permitted				0.950				0.984				
Satd. Flow (perm)	0	3404	0	1544	3406	0	0	1610	0	0	1644	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		251.7			86.0			84.7			62.2	
Travel Time (s)		22.7			7.7			7.6			5.6	
Confl. Peds. (#/hr)	6		8	8		6	1					1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	6%	0%	13%	6%	0%	17%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	1223	6	18	697	0	9	0	19	0	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1231	0	18	697	0	0	28	0	0	1	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	1150	6	17	655	0	8	0	18	0	0	1
Future Volume (Veh/h)	2	1150	6	17	655	0	8	0	18	0	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	2	1223	6	18	697	0	9	0	19	0	0	1
Pedestrians		1						8			6	
Lane Width (m)		3.6						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						1			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		252			86							
pX, platoon unblocked	0.97			0.89			0.90	0.90	0.89	0.90	0.90	0.97
vC, conflicting volume	703			1237			1624	1977	622	1374	1980	356
vC1, stage 1 conf vol							1238	1238		739	739	
vC2, stage 2 conf vol							386	739		634	1241	
vCu, unblocked vol	625			1013			1314	1704	321	1036	1708	265
tC, single (s)	4.1			4.4			7.8	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.8	5.5		6.5	5.5	
tF (s)	2.2			2.3			3.7	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			95	100	97	100	100	100
cM capacity (veh/h)	930			544			192	240	600	341	228	710

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	614	618	18	465	232	28	1
Volume Left	2	0	18	0	0	9	0
Volume Right	0	6	0	0	0	19	1
cSH	930	1700	544	1700	1700	357	710
Volume to Capacity	0.00	0.36	0.03	0.27	0.14	0.08	0.00
Queue Length 95th (m)	0.0	0.0	0.8	0.0	0.0	1.9	0.0
Control Delay (s)	0.1	0.0	11.8	0.0	0.0	15.9	10.1
Lane LOS	A		B			C	B
Approach Delay (s)	0.0		0.3			15.9	10.1
Approach LOS						C	B

Intersection Summary					
Average Delay	0.4				
Intersection Capacity Utilization	48.3%	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)	15	1149	4	6	642	13	8	0	13	17	0	22
Future Volume (vph)	15	1149	4	6	642	13	8	0	13	17	0	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	30.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00			0.99			0.99	
Frt					0.997			0.918			0.924	
Flt Protected	0.950			0.950				0.981			0.979	
Satd. Flow (prot)	1631	3403	0	1491	3356	0	0	1588	0	0	1595	0
Flt Permitted	0.384			0.212				0.879			0.848	
Satd. Flow (perm)	658	3403	0	332	3356	0	0	1421	0	0	1379	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			4			33			33	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		86.0			180.5			90.8			91.8	
Travel Time (s)		7.7			16.2			8.2			8.3	
Confl. Peds. (#/hr)	4		11	11		4	2		3	3		2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	7%	6%	25%	17%	7%	17%	0%	0%	11%	8%	0%	6%
Adj. Flow (vph)	16	1222	4	6	683	14	9	0	14	18	0	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	1226	0	6	697	0	0	23	0	0	41	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Detector Phase	2	2		2	2		4	4		4	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	42.0	42.0		42.0	42.0		29.0	29.0		29.0	29.0	
Total Split (s)	70.0	70.0		70.0	70.0		30.0	30.0		30.0	30.0	
Total Split (%)	70.0%	70.0%		70.0%	70.0%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	64.0	64.0		64.0	64.0		23.0	23.0		23.0	23.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		4.0	4.0		4.0	4.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-3.0			-3.0	
Total Lost Time (s)	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	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	28.0	28.0		28.0	28.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	7.0	7.0		7.0	7.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	84.5	84.5		84.5	84.5			11.3			11.3	
Actuated g/C Ratio	0.84	0.84		0.84	0.84			0.11			0.11	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.03	0.43		0.02	0.25			0.12			0.22	
Control Delay	1.9	2.5		2.2	2.2			11.0			20.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	1.9	2.5		2.2	2.2			11.0			20.3	
LOS	A	A		A	A			B			C	
Approach Delay		2.5			2.2			11.0			20.3	
Approach LOS		A			A			B			C	
Queue Length 50th (m)	0.4	23.5		0.2	12.3			0.0			1.4	
Queue Length 95th (m)	m1.1	31.2		m0.8	17.1			5.3			11.0	
Internal Link Dist (m)		62.0			156.5			66.8			67.8	
Turn Bay Length (m)	30.0			15.0								
Base Capacity (vph)	556	2877		280	2838			393			382	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.03	0.43		0.02	0.25			0.06			0.11	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 29 (29%), Referenced to phase 2:EBWB and 6:, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 2.8		Intersection LOS: A	
Intersection Capacity Utilization 46.3%		ICU Level of Service A	
Analysis Period (min) 15			

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

Splits and Phases: 3: Driveway/Downsview Dr & Plains Rd E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	1149	4	6	642	13	8	0	13	17	0	22
Future Volume (vph)	15	1149	4	6	642	13	8	0	13	17	0	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.92			0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1627	3402		1487	3356			1586			1592	
Flt Permitted	0.38	1.00		0.21	1.00			0.88			0.85	
Satd. Flow (perm)	658	3402		332	3356			1421			1379	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	16	1222	4	6	683	14	9	0	14	18	0	23
RTOR Reduction (vph)	0	0	0	0	1	0	0	21	0	0	30	0
Lane Group Flow (vph)	16	1226	0	6	696	0	0	2	0	0	11	0
Confl. Peds. (#/hr)	4		11	11		4	2		3	3		2
Heavy Vehicles (%)	7%	6%	25%	17%	7%	17%	0%	0%	11%	8%	0%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	80.3	80.3		80.3	80.3			6.7			6.7	
Effective Green, g (s)	82.3	82.3		82.3	82.3			9.7			9.7	
Actuated g/C Ratio	0.82	0.82		0.82	0.82			0.10			0.10	
Clearance Time (s)	6.0	6.0		6.0	6.0			7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	541	2799		273	2761			137			133	
v/s Ratio Prot		c0.36			0.21							
v/s Ratio Perm	0.02			0.02				0.00			c0.01	
v/c Ratio	0.03	0.44		0.02	0.25			0.02			0.08	
Uniform Delay, d1	1.6	2.4		1.6	2.0			40.8			41.1	
Progression Factor	0.90	0.80		0.97	0.96			1.00			1.00	
Incremental Delay, d2	0.1	0.5		0.1	0.2			0.0			0.3	
Delay (s)	1.5	2.4		1.7	2.1			40.9			41.4	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		2.4			2.1			40.9			41.4	
Approach LOS		A			A			D			D	

Intersection Summary					
HCM 2000 Control Delay	3.5	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.40				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	46.3%	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)	21	1156	2	4	635	16	3	0	3	19	0	23
Future Volume (vph)	21	1156	2	4	635	16	3	0	3	19	0	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.996			0.932			0.927	
Flt Protected	0.950							0.976			0.978	
Satd. Flow (prot)	1745	3574	0	0	3494	0	0	1728	0	0	1723	0
Flt Permitted	0.950							0.976			0.978	
Satd. Flow (perm)	1745	3574	0	0	3494	0	0	1728	0	0	1723	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		180.5			156.8			37.6			164.5	
Travel Time (s)		16.2			14.1			3.4			14.8	
Confl. Peds. (#/hr)	2		2	2		2	1					1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	23	1257	2	4	690	17	3	0	3	21	0	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	1259	0	0	711	0	0	6	0	0	46	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	1156	2	4	635	16	3	0	3	19	0	23
Future Volume (Veh/h)	21	1156	2	4	635	16	3	0	3	19	0	23
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	1257	2	4	690	17	3	0	3	21	0	25
Pedestrians		1						2			2	
Lane Width (m)		3.5						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		180			157							
pX, platoon unblocked	0.98			0.91			0.91	0.91	0.91	0.91	0.91	0.98
vC, conflicting volume	709			1261			1685	2023	632	1386	2016	356
vC1, stage 1 conf vol							1306	1306		708	708	
vC2, stage 2 conf vol							379	717		678	1307	
vCu, unblocked vol	673			1083			1486	1855	389	1159	1847	315
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			99			98	100	99	94	100	96
cM capacity (veh/h)	912			590			185	215	557	333	215	675

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1
Volume Total	23	838	421	349	362	6	46
Volume Left	23	0	0	4	0	3	21
Volume Right	0	0	2	0	17	3	25
cSH	912	1700	1700	590	1700	277	459
Volume to Capacity	0.03	0.49	0.25	0.01	0.21	0.02	0.10
Queue Length 95th (m)	0.6	0.0	0.0	0.2	0.0	0.5	2.5
Control Delay (s)	9.1	0.0	0.0	0.2	0.0	18.3	13.7
Lane LOS	A			A		C	B
Approach Delay (s)	0.2			0.1		18.3	13.7
Approach LOS						C	B

Intersection Summary					
Average Delay	0.5				
Intersection Capacity Utilization	42.3%	ICU Level of Service		A	
Analysis Period (min)	15				

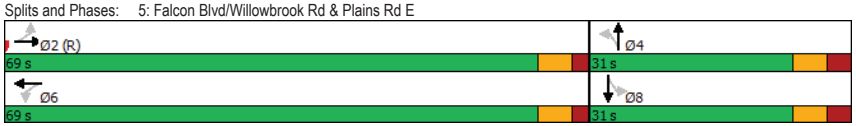
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1128	30	37	598	9	27	3	114	11	5	30
Future Volume (vph)	20	1128	30	37	598	9	27	3	114	11	5	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	30.0		0.0	25.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	1.00			0.99			0.99	
Frt		0.996			0.998			0.893			0.911	
Flt Protected	0.950			0.950				0.991			0.988	
Satd. Flow (prot)	1274	3201	0	1491	3159	0	0	1528	0	0	1302	0
Flt Permitted	0.414			0.217				0.933			0.855	
Satd. Flow (perm)	548	3201	0	340	3159	0	0	1438	0	0	1126	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			3			102			31	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		156.8			201.9			127.7			186.5	
Travel Time (s)		14.1			18.2			11.5			16.8	
Confl. Peds. (#/hr)	11		5	5		11	2		3	3		2
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	37%	12%	21%	17%	14%	11%	0%	0%	11%	13%	0%	41%
Adj. Flow (vph)	20	1151	31	38	610	9	28	3	116	11	5	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	20	1182	0	38	619	0	0	147	0	0	47	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		31.0	31.0		31.0	31.0	
Total Split (s)	69.0	69.0		69.0	69.0		31.0	31.0		31.0	31.0	
Total Split (%)	69.0%	69.0%		69.0%	69.0%		31.0%	31.0%		31.0%	31.0%	
Maximum Green (s)	63.0	63.0		63.0	63.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-3.0			-3.0	
Total Lost Time (s)	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	
Recall Mode	C-Max	C-Max		None	None		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	8.0	8.0		8.0	8.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	78.7	78.7		78.7	78.7			13.3			13.3	
Actuated g/C Ratio	0.79	0.79		0.79	0.79			0.13			0.13	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.05	0.47		0.14	0.25			0.53			0.27	
Control Delay	3.9	4.4		4.6	3.3			21.1			22.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	3.9	4.4		4.6	3.3			21.1			22.4	
LOS	A	A		A	A			C			C	
Approach Delay		4.3			3.4			21.1			22.4	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	0.5	24.3		1.2	11.6			8.1			2.8	
Queue Length 95th (m)	m2.7	49.8		5.2	23.5			24.8			12.5	
Internal Link Dist (m)		132.8			177.9			103.7			162.5	
Turn Bay Length (m)	30.0			25.0								
Base Capacity (vph)	430	2518		267	2485			462			326	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.05	0.47		0.14	0.25			0.32			0.14	

Intersection Summary		
Area Type:	Other	
Cycle Length: 100		
Actuated Cycle Length: 100		
Offset: 32 (32%), Referenced to phase 2:EBTL, Start of Green		
Natural Cycle: 60		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.53		
Intersection Signal Delay: 5.7	Intersection LOS: A	
Intersection Capacity Utilization 50.6%	ICU Level of Service A	
Analysis Period (min) 15		

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

Splits and Phases: 5: Falcon Blvd/Willowbrook Rd & Plains Rd E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1128	30	37	598	9	27	3	114	11	5	30
Future Volume (vph)	20	1128	30	37	598	9	27	3	114	11	5	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.89			0.91	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1255	3201		1488	3159			1527			1302	
Flt Permitted	0.41	1.00		0.22	1.00			0.93			0.85	
Satd. Flow (perm)	547	3201		340	3159			1438			1126	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	20	1151	31	38	610	9	28	3	116	11	5	31
RTOR Reduction (vph)	0	1	0	0	1	0	0	88	0	0	27	0
Lane Group Flow (vph)	20	1181	0	38	618	0	0	59	0	0	20	0
Confl. Peds. (#/hr)	11		5	5		11	2		3	3		2
Heavy Vehicles (%)	37%	12%	21%	17%	14%	11%	0%	0%	11%	13%	0%	41%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	76.7	76.7		76.7	76.7			10.3			10.3	
Effective Green, g (s)	78.7	78.7		78.7	78.7			13.3			13.3	
Actuated g/C Ratio	0.79	0.79		0.79	0.79			0.13			0.13	
Clearance Time (s)	6.0	6.0		6.0	6.0			7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	430	2519		267	2486			191			149	
v/s Ratio Prot		c0.37			0.20							
v/s Ratio Perm	0.04			0.11				c0.04			0.02	
v/c Ratio	0.05	0.47		0.14	0.25			0.31			0.14	
Uniform Delay, d1	2.4	3.6		2.6	2.8			39.2			38.3	
Progression Factor	1.18	0.95		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	0.6		0.2	0.1			0.9			0.4	
Delay (s)	3.0	4.0		2.8	2.9			40.1			38.7	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		4.0			2.9			40.1			38.7	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	7.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	15	8	2	18	15
Future Volume (vph)	0	15	8	2	18	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.5	3.3	3.6	3.3	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865				0.938	
Flt Protected				0.962	0.974	
Satd. Flow (prot)	1644	0	0	1828	1678	0
Flt Permitted				0.962	0.974	
Satd. Flow (perm)	1644	0	0	1828	1678	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	65.1			78.0	67.5	
Travel Time (s)	5.9			7.0	6.1	
Confl. Peds. (#/hr)		5	5			1
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	21	11	3	25	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	21	0	0	14	46	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	17.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	15	8	2	18	15
Future Volume (Veh/h)	0	15	8	2	18	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Hourly flow rate (vph)	0	21	11	3	25	21
Pedestrians				1	5	
Lane Width (m)				3.6	3.3	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			26		40	16
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			26		40	16
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		97	98
cM capacity (veh/h)			1595		966	1063

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	21	14	46
Volume Left	0	11	25
Volume Right	21	0	21
cSH	1700	1595	1008
Volume to Capacity	0.01	0.01	0.05
Queue Length 95th (m)	0.0	0.2	1.1
Control Delay (s)	0.0	5.7	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	5.7	8.7
Approach LOS			A

Intersection Summary			
Average Delay		6.0	
Intersection Capacity Utilization		17.4%	ICU Level of Service A
Analysis Period (min)		15	

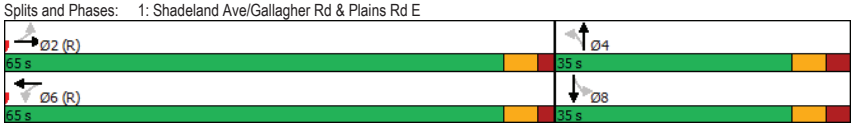
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	947	24	43	1572	16	19	6	33	45	13	33
Future Volume (vph)	9	947	24	43	1572	16	19	6	33	45	13	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	45.0		0.0	30.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00	1.00		1.00	0.98		0.99	0.99	
Frt		0.996			0.998			0.874			0.891	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1572	3550	0	1662	3531	0	1646	1628	0	1711	1606	0
Flt Permitted	0.102			0.246			0.724			0.728		
Satd. Flow (perm)	169	3550	0	429	3531	0	1252	1628	0	1296	1606	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			2			37			21	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		129.9			251.7			89.7			84.4	
Travel Time (s)		7.8			15.1			8.1			7.6	
Confl. Peds. (#/hr)	14		9	9		14	2		11	11		2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	11%	1%	9%	5%	2%	0%	6%	0%	0%	2%	0%	6%
Adj. Flow (vph)	10	1052	27	48	1747	18	21	7	37	50	14	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	10	1079	0	48	1765	0	21	44	0	50	51	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	42.0	42.0		42.0	42.0		35.0	35.0		35.0	35.0	
Total Split (s)	65.0	65.0		65.0	65.0		35.0	35.0		35.0	35.0	
Total Split (%)	65.0%	65.0%		65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Maximum Green (s)	59.0	59.0		59.0	59.0		28.0	28.0		28.0	28.0	
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		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-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	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	28.0	28.0		28.0	28.0		12.0	12.0		12.0	12.0	
Flash Dont Walk (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	81.5	81.5		81.5	81.5		14.3	14.3		14.3	14.3	
Actuated g/C Ratio	0.82	0.82		0.82	0.82		0.14	0.14		0.14	0.14	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.07	0.37		0.14	0.61		0.12	0.17		0.27	0.21	
Control Delay	4.7	3.9		4.3	4.4		37.4	15.8		41.0	26.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	4.7	3.9		4.3	4.4		37.4	15.8		41.0	26.4	
LOS	A	A		A	A		D	B		D	C	
Approach Delay		3.9			4.4			22.8			33.6	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	0.4	27.6		1.8	43.6		3.6	1.2		8.8	5.2	
Queue Length 95th (m)	2.0	43.8		m4.0	56.4		9.9	10.2		18.9	14.9	
Internal Link Dist (m)		105.9			227.7			65.7			60.4	
Turn Bay Length (m)	45.0			30.0			15.0			15.0		
Base Capacity (vph)	137	2893		349	2877		388	530		401	512	
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	0.37		0.14	0.61		0.05	0.08		0.12	0.10	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 77 (77%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 5.6		Intersection LOS: A	
Intersection Capacity Utilization 63.2%		ICU Level of Service B	
Analysis Period (min) 15			

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

Splits and Phases: 1: Shadeland Ave/Gallagher Rd & Plains Rd E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	947	24	43	1572	16	19	6	33	45	13	33
Future Volume (vph)	9	947	24	43	1572	16	19	6	33	45	13	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	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	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.87		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1570	3551		1657	3533		1643	1627		1692	1606	
Flt Permitted	0.10	1.00		0.25	1.00		0.72	1.00		0.73	1.00	
Satd. Flow (perm)	169	3551		430	3533		1252	1627		1297	1606	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	10	1052	27	48	1747	18	21	7	37	50	14	37
RTOR Reduction (vph)	0	1	0	0	0	0	0	32	0	0	18	0
Lane Group Flow (vph)	10	1078	0	48	1765	0	21	12	0	50	33	0
Confl. Peds. (#/hr)	14		9	9		14	2		11	11		2
Heavy Vehicles (%)	11%	1%	9%	5%	2%	0%	6%	0%	0%	2%	0%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	77.3	77.3		77.3	77.3		9.7	9.7		9.7	9.7	
Effective Green, g (s)	79.3	79.3		79.3	79.3		12.7	12.7		12.7	12.7	
Actuated g/C Ratio	0.79	0.79		0.79	0.79		0.13	0.13		0.13	0.13	
Clearance Time (s)	6.0	6.0		6.0	6.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	134	2815		340	2801		159	206		164	203	
v/s Ratio Prot		0.30			c0.50			0.01			0.02	
v/s Ratio Perm	0.06			0.11			0.02			c0.04		
v/c Ratio	0.07	0.38		0.14	0.63		0.13	0.06		0.30	0.16	
Uniform Delay, d1	2.3	3.1		2.4	4.3		38.8	38.4		39.6	38.9	
Progression Factor	1.00	1.00		1.03	0.73		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.4		0.7	0.9		0.8	0.2		2.2	0.8	
Delay (s)	3.4	3.5		3.2	4.0		39.5	38.6		41.8	39.7	
Level of Service	A	A		A	A		D	D		D	D	
Approach Delay (s)		3.5			3.9			38.9			40.8	
Approach LOS		A			A			D			D	

Intersection Summary					
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.58				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	63.2%	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)	2	1021	4	22	1638	3	5	0	25	6	0	0
Future Volume (vph)	2	1021	4	22	1638	3	5	0	25	6	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	0.0		0.0	30.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999						0.888				
Flt Protected				0.950				0.992			0.950	
Satd. Flow (prot)	0	3403	0	1544	3406	0	0	1626	0	0	1805	0
Flt Permitted				0.950				0.992			0.950	
Satd. Flow (perm)	0	3403	0	1544	3406	0	0	1626	0	0	1805	0
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		251.7			86.0			84.7			62.2	
Travel Time (s)		15.1			5.2			7.6			5.6	
Confl. Peds. (#/hr)	9		12	12		9						
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	6%	0%	13%	6%	0%	17%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	1174	5	25	1883	3	6	0	29	7	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1181	0	25	1886	0	0	35	0	0	7	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.4%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	1021	4	22	1638	3	5	0	25	6	0	0
Future Volume (Veh/h)	2	1021	4	22	1638	3	5	0	25	6	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	2	1174	5	25	1883	3	6	0	29	7	0	0
Pedestrians								12			9	
Lane Width (m)								3.6			3.6	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		252			86							
pX, platoon unblocked	0.76			0.92			0.80	0.80	0.92	0.80	0.80	0.76
vC, conflicting volume	1895			1191			2184	3138	602	2564	3138	952
vC1, stage 1 conf vol							1192	1192		1944	1944	
vC2, stage 2 conf vol							992	1945		620	1195	
vCu, unblocked vol	1549			1024			1511	2698	380	1983	2699	310
tC, single (s)	4.1			4.4			7.8	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.8	5.5		6.5	5.5	
tF (s)	2.2			2.3			3.7	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			95			97	100	95	91	100	100
cM capacity (veh/h)	328			554			183	105	565	77	105	523

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	589	592	25	1255	631	35	7
Volume Left	2	0	25	0	0	6	7
Volume Right	0	5	0	0	3	29	0
cSH	328	1700	554	1700	1700	416	77
Volume to Capacity	0.01	0.35	0.05	0.74	0.37	0.08	0.09
Queue Length 95th (m)	0.1	0.0	1.1	0.0	0.0	2.1	2.2
Control Delay (s)	0.2	0.0	11.8	0.0	0.0	14.4	56.0
Lane LOS	A		B			B	F
Approach Delay (s)	0.1		0.2			14.4	56.0
Approach LOS						B	F

Intersection Summary				
Average Delay		0.4		
Intersection Capacity Utilization		55.4%	ICU Level of Service	B
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1021	11	22	1637	34	9	0	16	23	0	17
Future Volume (vph)	20	1021	11	22	1637	34	9	0	16	23	0	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	30.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00	1.00			0.98			0.99	
Frt		0.998			0.997			0.913			0.943	
Flt Protected	0.950			0.950				0.982			0.972	
Satd. Flow (prot)	1631	3391	0	1491	3355	0	0	1563	0	0	1615	0
Flt Permitted	0.095			0.233				0.898			0.806	
Satd. Flow (perm)	163	3391	0	364	3355	0	0	1428	0	0	1328	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			4			33			33	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		86.0			179.3			90.8			90.8	
Travel Time (s)		5.2			10.8			8.2			8.2	
Confl. Peds. (#/hr)	10		17	17		10	2		11	11		2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	6%	25%	17%	7%	17%	0%	0%	11%	8%	0%	6%
Adj. Flow (vph)	22	1134	12	24	1819	38	10	0	18	26	0	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	1146	0	24	1857	0	0	28	0	0	45	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Detector Phase	2	2		2	2		4	4		4	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	42.0	42.0		42.0	42.0		29.0	29.0		29.0	29.0	
Total Split (s)	70.0	70.0		70.0	70.0		30.0	30.0		30.0	30.0	
Total Split (%)	70.0%	70.0%		70.0%	70.0%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	64.0	64.0		64.0	64.0		23.0	23.0		23.0	23.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		4.0	4.0		4.0	4.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-3.0			-3.0	
Total Lost Time (s)	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	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	28.0	28.0		28.0	28.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	7.0	7.0		7.0	7.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	84.4	84.4		84.4	84.4			11.4			11.4	
Actuated g/C Ratio	0.84	0.84		0.84	0.84			0.11			0.11	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.16	0.40		0.08	0.66			0.15			0.25	
Control Delay	4.8	2.5		2.5	3.3			13.9			22.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	4.8	2.5		2.5	3.3			13.9			22.1	
LOS	A	A		A	A			B			C	
Approach Delay		2.6			3.3			13.9			22.1	
Approach LOS		A			A			B			C	
Queue Length 50th (m)	0.7	22.3		0.7	36.7			0.0			2.1	
Queue Length 95th (m)	m2.2	25.8		m1.3	41.8			6.9			12.1	
Internal Link Dist (m)		62.0			155.3			66.8			66.8	
Turn Bay Length (m)	30.0			15.0								
Base Capacity (vph)	137	2862		307	2832			395			369	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.16	0.40		0.08	0.66			0.07			0.12	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 74 (74%), Referenced to phase 2:EBWB and 6:, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 3.4		Intersection LOS: A	
Intersection Capacity Utilization 63.0%		ICU Level of Service B	
Analysis Period (min) 15			

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

Splits and Phases: 3: Driveway/Downsview Dr & Plains Rd E



HCM Signalized Intersection Capacity Analysis
3: Driveway/Downsview Dr & Plains Rd E

210771
Background PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1021	11	22	1637	34	9	0	16	23	0	17
Future Volume (vph)	20	1021	11	22	1637	34	9	0	16	23	0	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.98			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	1.00		1.00	1.00			0.91			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1629	3392		1484	3355			1563			1601	
Flt Permitted	0.10	1.00		0.23	1.00			0.90			0.81	
Satd. Flow (perm)	163	3392		364	3355			1428			1327	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	22	1134	12	24	1819	38	10	0	18	26	0	19
RTOR Reduction (vph)	0	0	0	0	1	0	0	25	0	0	30	0
Lane Group Flow (vph)	22	1146	0	24	1856	0	0	3	0	0	15	0
Confl. Peds. (#/hr)	10		17	17		10	2		11	11		2
Heavy Vehicles (%)	7%	6%	25%	17%	7%	17%	0%	0%	11%	8%	0%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	80.2	80.2		80.2	80.2			6.8			6.8	
Effective Green, g (s)	82.2	82.2		82.2	82.2			9.8			9.8	
Actuated g/C Ratio	0.82	0.82		0.82	0.82			0.10			0.10	
Clearance Time (s)	6.0	6.0		6.0	6.0			7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	133	2788		299	2757			139			130	
v/s Ratio Prot		0.34			c0.55							
v/s Ratio Perm	0.13			0.07				0.00			c0.01	
v/c Ratio	0.17	0.41		0.08	0.67			0.02			0.12	
Uniform Delay, d1	1.8	2.4		1.7	3.5			40.8			41.2	
Progression Factor	0.86	0.83		0.91	0.59			1.00			1.00	
Incremental Delay, d2	2.6	0.4		0.4	1.1			0.1			0.4	
Delay (s)	4.1	2.4		2.0	3.2			40.8			41.6	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		2.4			3.1			40.8			41.6	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	3.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
4: Driveway/Dovercourt Ave & Plains Rd E

210771
Background PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	1042	6	14	1682	14	2	0	12	11	0	9
Future Volume (vph)	12	1042	6	14	1682	14	2	0	12	11	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999			0.999			0.884			0.939	
Flt Protected	0.950							0.993			0.973	
Satd. Flow (prot)	1745	3571	0	0	3606	0	0	1668	0	0	1736	0
Flt Permitted	0.950							0.993			0.973	
Satd. Flow (perm)	1745	3571	0	0	3606	0	0	1668	0	0	1736	0
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		179.3			157.0			36.7			165.5	
Travel Time (s)		10.8			9.4			3.3			14.9	
Confl. Peds. (#/hr)			7	7								
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	12	1074	6	14	1734	14	2	0	12	11	0	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	1080	0	0	1762	0	0	14	0	0	20	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	1042	6	14	1682	14	2	0	12	11	0	9
Future Volume (Veh/h)	12	1042	6	14	1682	14	2	0	12	11	0	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	12	1074	6	14	1734	14	2	0	12	11	0	9
Pedestrians								7				
Lane Width (m)								3.6				
Walking Speed (m/s)								1.2				
Percent Blockage								1				
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		179			157							
pX, platoon unblocked	0.76			0.92			0.80	0.80	0.92	0.80	0.80	0.76
vC, conflicting volume	1748			1087			2012	2884	547	2342	2880	874
vC1, stage 1 conf vol							1108	1108		1769	1769	
vC2, stage 2 conf vol							904	1776		573	1111	
vCu, unblocked vol	1347			926			1319	2414	340	1734	2409	193
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			98			99	100	98	90	100	99
cM capacity (veh/h)	392			685			232	129	607	112	136	623

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1
Volume Total	12	716	364	881	881	14	20
Volume Left	12	0	0	14	0	2	11
Volume Right	0	0	6	0	14	12	9
cSH	392	1700	1700	685	1700	493	177
Volume to Capacity	0.03	0.42	0.21	0.02	0.52	0.03	0.11
Queue Length 95th (m)	0.7	0.0	0.0	0.5	0.0	0.7	2.9
Control Delay (s)	14.5	0.0	0.0	0.6	0.0	12.5	27.9
Lane LOS	B			A		B	D
Approach Delay (s)	0.2			0.3		12.5	27.9
Approach LOS						B	D

Intersection Summary					
Average Delay	0.5				
Intersection Capacity Utilization	66.8%	ICU Level of Service		C	
Analysis Period (min)	15				



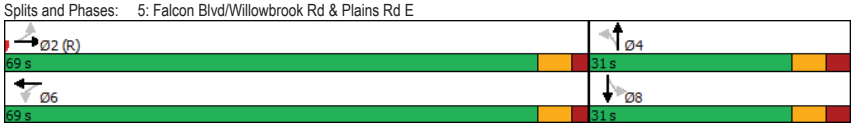
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	1022	27	49	1654	18	30	3	53	22	3	26
Future Volume (vph)	16	1022	27	49	1654	18	30	3	53	22	3	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	30.0		0.0	25.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00	1.00			0.98			0.98	
Frt		0.996			0.998			0.916			0.931	
Flt Protected	0.950			0.950				0.983			0.979	
Satd. Flow (prot)	1544	3352	0	1544	3306	0	0	1512	0	0	1425	0
Flt Permitted	0.101			0.236				0.887			0.780	
Satd. Flow (perm)	164	3352	0	382	3306	0	0	1362	0	0	1126	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			2			57			25	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		157.0			209.5			129.5			187.7	
Travel Time (s)		9.4			12.6			11.7			16.9	
Confl. Peds. (#/hr)	12		9	9		12	4		16	16		4
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	13%	7%	12%	13%	9%	0%	17%	0%	8%	33%	0%	12%
Adj. Flow (vph)	17	1099	29	53	1778	19	32	3	57	24	3	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	1128	0	53	1797	0	0	92	0	0	55	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		31.0	31.0		31.0	31.0	
Total Split (s)	69.0	69.0		69.0	69.0		31.0	31.0		31.0	31.0	
Total Split (%)	69.0%	69.0%		69.0%	69.0%		31.0%	31.0%		31.0%	31.0%	
Maximum Green (s)	63.0	63.0		63.0	63.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-3.0			-3.0	
Total Lost Time (s)	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	
Recall Mode	C-Max	C-Max		None	None		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	8.0	8.0		8.0	8.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	83.2	83.2		83.2	83.2			12.6			12.6	
Actuated g/C Ratio	0.83	0.83		0.83	0.83			0.13			0.13	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.12	0.40		0.17	0.65			0.42			0.34	
Control Delay	4.8	3.0		4.3	5.8			23.8			30.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	4.8	3.0		4.3	5.8			23.8			30.3	
LOS	A	A		A	A			C			C	
Approach Delay		3.0			5.8			23.8			30.3	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	0.5	22.8		1.7	56.9			6.3			5.4	
Queue Length 95th (m)	m2.0	32.9		6.3	103.7			19.9			16.0	
Internal Link Dist (m)		133.0			185.5			105.5			163.7	
Turn Bay Length (m)	30.0			25.0								
Base Capacity (vph)	136	2790		318	2751			409			322	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.13	0.40		0.17	0.65			0.22			0.17	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 71 (71%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 5.7		Intersection LOS: A	
Intersection Capacity Utilization 65.0%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 5: Falcon Blvd/Willowbrook Rd & Plains Rd E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	1022	27	49	1654	18	30	3	53	22	3	26
Future Volume (vph)	16	1022	27	49	1654	18	30	3	53	22	3	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.98			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	1.00		1.00	1.00			0.92			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1544	3353		1537	3308			1510			1414	
Flt Permitted	0.10	1.00		0.24	1.00			0.89			0.78	
Satd. Flow (perm)	164	3353		381	3308			1363			1127	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	17	1099	29	53	1778	19	32	3	57	24	3	28
RTOR Reduction (vph)	0	1	0	0	0	0	0	51	0	0	22	0
Lane Group Flow (vph)	17	1127	0	53	1797	0	0	41	0	0	33	0
Confl. Peds. (#/hr)	12		9	9		12	4		16	16		4
Heavy Vehicles (%)	13%	7%	12%	13%	9%	0%	17%	0%	8%	33%	0%	12%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	79.0	79.0		79.0	79.0			8.0			8.0	
Effective Green, g (s)	81.0	81.0		81.0	81.0			11.0			11.0	
Actuated g/C Ratio	0.81	0.81		0.81	0.81			0.11			0.11	
Clearance Time (s)	6.0	6.0		6.0	6.0			7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	132	2715		308	2679			149			123	
v/s Ratio Prot		0.34			c0.54							
v/s Ratio Perm	0.10			0.14				c0.03			0.03	
v/c Ratio	0.13	0.42		0.17	0.67			0.28			0.27	
Uniform Delay, d1	2.0	2.7		2.1	4.0			40.8			40.8	
Progression Factor	0.90	0.85		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.9	0.4		0.3	0.7			1.0			1.2	
Delay (s)	3.7	2.7		2.4	4.6			41.9			42.0	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		2.8			4.6			41.9			42.0	
Approach LOS		A			A			D			D	

Intersection Summary					
HCM 2000 Control Delay	5.6	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.62				
Actuated Cycle Length (s)	100.0	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	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1	15	5	2	29	13
Future Volume (vph)	1	15	5	2	29	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.5	3.3	3.6	3.3	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.871				0.959	
Flt Protected				0.966	0.966	
Satd. Flow (prot)	1655	0	0	1835	1701	0
Flt Permitted				0.966	0.966	
Satd. Flow (perm)	1655	0	0	1835	1701	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	61.5			80.6	68.8	
Travel Time (s)	5.5			7.3	6.2	
Confl. Peds. (#/hr)					1	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	1	21	7	3	41	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	22	0	0	10	59	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	14.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1	15	5	2	29	13
Future Volume (Veh/h)	1	15	5	2	29	13
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Hourly flow rate (vph)	1	21	7	3	41	18
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			22		30	12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			22		30	12
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		96	98
cM capacity (veh/h)			1607		985	1075

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	22	10	59
Volume Left	0	7	41
Volume Right	21	0	18
cSH	1700	1607	1011
Volume to Capacity	0.01	0.00	0.06
Queue Length 95th (m)	0.0	0.1	1.4
Control Delay (s)	0.0	5.1	8.8
Lane LOS		A	A
Approach Delay (s)	0.0	5.1	8.8
Approach LOS			A

Intersection Summary				
Average Delay		6.3		
Intersection Capacity Utilization		14.5%	ICU Level of Service	A
Analysis Period (min)		15		

Appendix F

Total Traffic Operations



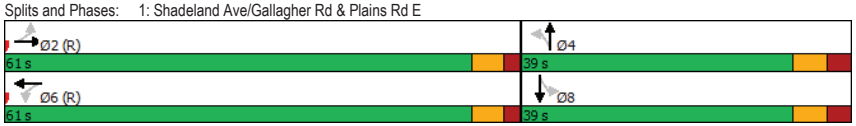
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	1032	17	21	728	27	21	20	41	104	14	56
Future Volume (vph)	21	1032	17	21	728	27	21	20	41	104	14	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	45.0		0.0	30.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	1.00		0.99	0.98		0.99	0.98	
Frt		0.998			0.995			0.900			0.880	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1517	3458	0	1517	3467	0	1745	1614	0	1678	1547	0
Flt Permitted	0.324			0.220			0.708			0.714		
Satd. Flow (perm)	514	3458	0	351	3467	0	1292	1614	0	1242	1547	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			6			44			60	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		129.9			251.7			89.7			84.4	
Travel Time (s)		11.7			22.7			8.1			7.6	
Confl. Peds. (#/hr)	18		1	1		18	7		15	15		7
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	15%	4%	13%	15%	3%	15%	0%	6%	3%	4%	0%	8%
Adj. Flow (vph)	23	1110	18	23	783	29	23	22	44	112	15	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	1128	0	23	812	0	23	66	0	112	75	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	42.0	42.0		42.0	42.0		35.0	35.0		35.0	35.0	
Total Split (s)	61.0	61.0		61.0	61.0		39.0	39.0		39.0	39.0	
Total Split (%)	61.0%	61.0%		61.0%	61.0%		39.0%	39.0%		39.0%	39.0%	
Maximum Green (s)	55.0	55.0		55.0	55.0		32.0	32.0		32.0	32.0	
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		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-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	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	28.0	28.0		28.0	28.0		12.0	12.0		12.0	12.0	
Flash Dont Walk (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	72.8	72.8		72.8	72.8		19.2	19.2		19.2	19.2	
Actuated g/C Ratio	0.73	0.73		0.73	0.73		0.19	0.19		0.19	0.19	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.06	0.45		0.09	0.32		0.09	0.19		0.47	0.22	
Control Delay	5.6	6.7		3.6	3.1		31.6	15.5		41.4	12.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	5.6	6.7		3.6	3.1		31.6	15.5		41.4	12.7	
LOS	A	A		A	A		C	B		D	B	
Approach Delay		6.7			3.1			19.6			29.9	
Approach LOS		A			A			B			C	
Queue Length 50th (m)	1.1	39.3		0.6	11.1		3.7	3.5		19.5	2.4	
Queue Length 95th (m)	4.2	64.8		m1.8	15.7		9.6	13.3		33.2	12.8	
Internal Link Dist (m)		105.9			227.7			65.7			60.4	
Turn Bay Length (m)	45.0			30.0			15.0			15.0		
Base Capacity (vph)	374	2518		255	2525		452	593		434	580	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.45		0.09	0.32		0.05	0.11		0.26	0.13	

Intersection Summary		
Area Type:	Other	
Cycle Length: 100		
Actuated Cycle Length: 100		
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green		
Natural Cycle: 80		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.47		
Intersection Signal Delay: 7.8	Intersection LOS: A	
Intersection Capacity Utilization 50.5%	ICU Level of Service A	
Analysis Period (min) 15		

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

Splits and Phases: 1: Shadeland Ave/Gallagher Rd & Plains Rd E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	1032	17	21	728	27	21	20	41	104	14	56
Future Volume (vph)	21	1032	17	21	728	27	21	20	41	104	14	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	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	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.90		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1505	3457		1517	3466		1733	1614		1653	1547	
Flt Permitted	0.32	1.00		0.22	1.00		0.71	1.00		0.71	1.00	
Satd. Flow (perm)	514	3457		351	3466		1292	1614		1242	1547	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	23	1110	18	23	783	29	23	22	44	112	15	60
RTOR Reduction (vph)	0	1	0	0	2	0	0	36	0	0	48	0
Lane Group Flow (vph)	23	1127	0	23	810	0	23	30	0	112	27	0
Confl. Peds. (#/hr)	18		1	1		18	7		15	15		7
Heavy Vehicles (%)	15%	4%	13%	15%	3%	15%	0%	6%	3%	4%	0%	8%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	70.8	70.8		70.8	70.8		16.2	16.2		16.2	16.2	
Effective Green, g (s)	72.8	72.8		72.8	72.8		19.2	19.2		19.2	19.2	
Actuated g/C Ratio	0.73	0.73		0.73	0.73		0.19	0.19		0.19	0.19	
Clearance Time (s)	6.0	6.0		6.0	6.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	374	2516		255	2523		248	309		238	297	
v/s Ratio Prot		c0.33			0.23			0.02			0.02	
v/s Ratio Perm	0.04			0.07			0.02			c0.09		
v/c Ratio	0.06	0.45		0.09	0.32		0.09	0.10		0.47	0.09	
Uniform Delay, d1	3.9	5.5		4.0	4.8		33.2	33.3		35.9	33.2	
Progression Factor	1.00	1.00		0.53	0.51		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.6		0.7	0.3		0.3	0.3		3.1	0.3	
Delay (s)	4.2	6.1		2.8	2.8		33.6	33.6		38.9	33.5	
Level of Service	A	A		A	A		C	C		D	C	
Approach Delay (s)		6.0			2.8			33.6			36.8	
Approach LOS		A			A			C			D	

Intersection Summary			
HCM 2000 Control Delay	8.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.5%	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)	2	1183	6	17	761	0	8	0	18	0	0	1
Future Volume (vph)	2	1183	6	17	761	0	8	0	18	0	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	0.0		0.0	30.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999						0.908			0.865	
Flt Protected				0.950				0.984				
Satd. Flow (prot)	0	3403	0	1544	3406	0	0	1610	0	0	1644	0
Flt Permitted				0.950				0.984				
Satd. Flow (perm)	0	3403	0	1544	3406	0	0	1610	0	0	1644	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		251.7			86.0			84.7			62.2	
Travel Time (s)		22.7			7.7			7.6			5.6	
Confl. Peds. (#/hr)	6		8	8		6	1					1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	6%	0%	13%	6%	0%	17%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	1259	6	18	810	0	9	0	19	0	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1267	0	18	810	0	0	28	0	0	1	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	1183	6	17	761	0	8	0	18	0	0	1
Future Volume (Veh/h)	2	1183	6	17	761	0	8	0	18	0	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	2	1259	6	18	810	0	9	0	19	0	0	1
Pedestrians		1						8			6	
Lane Width (m)		3.6						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						1			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		252			86							
pX, platoon unblocked	0.93			0.88			0.91	0.91	0.88	0.91	0.91	0.93
vC, conflicting volume	816			1273			1717	2126	640	1504	2129	412
vC1, stage 1 conf vol							1274	1274		852	852	
vC2, stage 2 conf vol							443	852		652	1277	
vCu, unblocked vol	656			1032			1256	1705	312	1023	1708	222
tC, single (s)	4.1			4.4			7.8	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.8	5.5		6.5	5.5	
tF (s)	2.2			2.3			3.7	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			95	100	97	100	100	100
cM capacity (veh/h)	872			529			186	231	602	324	220	729

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	632	636	18	540	270	28	1
Volume Left	2	0	18	0	0	9	0
Volume Right	0	6	0	0	0	19	1
cSH	872	1700	529	1700	1700	351	729
Volume to Capacity	0.00	0.37	0.03	0.32	0.16	0.08	0.00
Queue Length 95th (m)	0.1	0.0	0.8	0.0	0.0	2.0	0.0
Control Delay (s)	0.1	0.0	12.0	0.0	0.0	16.2	9.9
Lane LOS	A		B			C	A
Approach Delay (s)	0.0		0.3			16.2	9.9
Approach LOS						C	A

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	49.2%	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)	48	1149	4	6	642	42	8	0	13	97	0	128
Future Volume (vph)	48	1149	4	6	642	42	8	0	13	97	0	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	30.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00			0.99			0.99	
Frt					0.991			0.918			0.923	
Flt Protected	0.950			0.950				0.981			0.979	
Satd. Flow (prot)	1631	3403	0	1491	3319	0	0	1588	0	0	1593	0
Flt Permitted	0.355			0.189				0.875			0.850	
Satd. Flow (perm)	608	3403	0	296	3319	0	0	1415	0	0	1381	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			12			33			71	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		86.0			180.5			90.8			91.8	
Travel Time (s)		7.7			16.2			8.2			8.3	
Confl. Peds. (#/hr)	4		11	11		4	2		3	3		2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	7%	6%	25%	17%	7%	17%	0%	0%	11%	8%	0%	6%
Adj. Flow (vph)	51	1222	4	6	683	45	9	0	14	103	0	136
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	1226	0	6	728	0	0	23	0	0	239	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Detector Phase	2	2		2	2		4	4		4	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	42.0	42.0		42.0	42.0		29.0	29.0		29.0	29.0	
Total Split (s)	63.0	63.0		63.0	63.0		37.0	37.0		37.0	37.0	
Total Split (%)	63.0%	63.0%		63.0%	63.0%		37.0%	37.0%		37.0%	37.0%	
Maximum Green (s)	57.0	57.0		57.0	57.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		4.0	4.0		4.0	4.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-3.0			-3.0	
Total Lost Time (s)	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	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	28.0	28.0		28.0	28.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	7.0	7.0		7.0	7.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	71.0	71.0		71.0	71.0			21.0			21.0	
Actuated g/C Ratio	0.71	0.71		0.71	0.71			0.21			0.21	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.12	0.51		0.03	0.31			0.07			0.69	
Control Delay	5.3	5.4		6.7	6.2			6.8			35.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	5.3	5.4		6.7	6.2			6.8			35.0	
LOS	A	A		A	A			A			D	
Approach Delay		5.4			6.2			6.8			35.0	
Approach LOS		A			A			A			D	
Queue Length 50th (m)	2.2	31.2		0.3	22.5			0.0			30.3	
Queue Length 95th (m)	5.4	38.3		m1.6	39.5			4.2			50.2	
Internal Link Dist (m)		62.0			156.5			66.8			67.8	
Turn Bay Length (m)	30.0			15.0								
Base Capacity (vph)	431	2417		210	2360			489			503	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.12	0.51		0.03	0.31			0.05			0.48	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 14 (14%), Referenced to phase 2:EBWB and 6:, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 8.8		Intersection LOS: A	
Intersection Capacity Utilization 64.7%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 3: Driveway/Downsview Dr & Plains Rd E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	1149	4	6	642	42	8	0	13	97	0	128
Future Volume (vph)	48	1149	4	6	642	42	8	0	13	97	0	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.92			0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1627	3402		1488	3318			1586			1590	
Flt Permitted	0.35	1.00		0.19	1.00			0.87			0.85	
Satd. Flow (perm)	608	3402		297	3318			1415			1381	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	51	1222	4	6	683	45	9	0	14	103	0	136
RTOR Reduction (vph)	0	0	0	0	3	0	0	18	0	0	56	0
Lane Group Flow (vph)	51	1226	0	6	725	0	0	5	0	0	183	0
Confl. Peds. (#/hr)	4		11	11		4	2		3	3		2
Heavy Vehicles (%)	7%	6%	25%	17%	7%	17%	0%	0%	11%	8%	0%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	69.0	69.0		69.0	69.0			18.0			18.0	
Effective Green, g (s)	71.0	71.0		71.0	71.0			21.0			21.0	
Actuated g/C Ratio	0.71	0.71		0.71	0.71			0.21			0.21	
Clearance Time (s)	6.0	6.0		6.0	6.0			7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	431	2415		210	2355			297			290	
v/s Ratio Prot		c0.36			0.22							
v/s Ratio Perm	0.08			0.02				0.00			c0.13	
v/c Ratio	0.12	0.51		0.03	0.31			0.02			0.63	
Uniform Delay, d1	4.6	6.6		4.3	5.4			31.3			36.0	
Progression Factor	0.73	0.62		0.97	0.95			1.00			1.00	
Incremental Delay, d2	0.5	0.7		0.2	0.3			0.0			4.4	
Delay (s)	3.9	4.8		4.4	5.4			31.3			40.4	
Level of Service	A	A		A	A			C			D	
Approach Delay (s)		4.7			5.4			31.3			40.4	
Approach LOS		A			A			C			D	

Intersection Summary					
HCM 2000 Control Delay	9.0	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.54				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	64.7%	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)	21	1236	2	4	664	16	3	0	3	19	0	23
Future Volume (vph)	21	1236	2	4	664	16	3	0	3	19	0	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.997			0.932			0.927	
Flt Protected	0.950							0.976			0.978	
Satd. Flow (prot)	1745	3574	0	0	3497	0	0	1728	0	0	1723	0
Flt Permitted	0.950							0.976			0.978	
Satd. Flow (perm)	1745	3574	0	0	3497	0	0	1728	0	0	1723	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		180.5			156.8			37.6			164.5	
Travel Time (s)		16.2			14.1			3.4			14.8	
Confl. Peds. (#/hr)	2		2	2		2	1					1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	23	1343	2	4	722	17	3	0	3	21	0	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	1345	0	0	743	0	0	6	0	0	46	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	1236	2	4	664	16	3	0	3	19	0	23
Future Volume (Veh/h)	21	1236	2	4	664	16	3	0	3	19	0	23
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	1343	2	4	722	17	3	0	3	21	0	25
Pedestrians		1						2			2	
Lane Width (m)		3.5						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		180			157							
pX, platoon unblocked	0.98			0.84			0.85	0.85	0.84	0.85	0.85	0.98
vC, conflicting volume	741			1347			1787	2141	674	1461	2134	372
vC1, stage 1 conf vol							1392	1392		740	740	
vC2, stage 2 conf vol							395	749		720	1393	
vCu, unblocked vol	683			1022			1438	1856	218	1054	1847	306
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			99			98	100	100	94	100	96
cM capacity (veh/h)	895			573			184	210	662	345	210	677

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1
Volume Total	23	895	450	365	378	6	46
Volume Left	23	0	0	4	0	3	21
Volume Right	0	0	2	0	17	3	25
cSH	895	1700	1700	573	1700	288	470
Volume to Capacity	0.03	0.53	0.26	0.01	0.22	0.02	0.10
Queue Length 95th (m)	0.6	0.0	0.0	0.2	0.0	0.5	2.5
Control Delay (s)	9.1	0.0	0.0	0.2	0.0	17.8	13.5
Lane LOS	A			A		C	B
Approach Delay (s)	0.2			0.1		17.8	13.5
Approach LOS						C	B

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	44.6%	ICU Level of Service	A	
Analysis Period (min)	15			

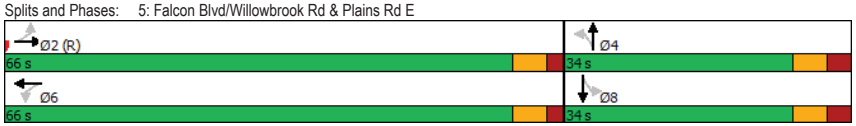
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1208	30	37	627	9	27	3	114	11	5	30
Future Volume (vph)	20	1208	30	37	627	9	27	3	114	11	5	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	30.0		0.0	25.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00			1.00			0.99			0.99	
Frt		0.996			0.998			0.893			0.911	
Flt Protected	0.950			0.950				0.991			0.988	
Satd. Flow (prot)	1274	3201	0	1491	3159	0	0	1528	0	0	1302	0
Flt Permitted	0.399			0.194				0.930			0.883	
Satd. Flow (perm)	529	3201	0	305	3159	0	0	1433	0	0	1163	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			3			75			31	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		156.8			201.9			127.7			186.5	
Travel Time (s)		14.1			18.2			11.5			16.8	
Confl. Peds. (#/hr)	11		5	5		11	2		3	3		2
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	37%	12%	21%	17%	14%	11%	0%	0%	11%	13%	0%	41%
Adj. Flow (vph)	20	1233	31	38	640	9	28	3	116	11	5	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	20	1264	0	38	649	0	0	147	0	0	47	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		31.0	31.0		31.0	31.0	
Total Split (s)	66.0	66.0		66.0	66.0		34.0	34.0		34.0	34.0	
Total Split (%)	66.0%	66.0%		66.0%	66.0%		34.0%	34.0%		34.0%	34.0%	
Maximum Green (s)	60.0	60.0		60.0	60.0		27.0	27.0		27.0	27.0	
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		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-3.0			-3.0	
Total Lost Time (s)	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	
Recall Mode	C-Max	C-Max		None	None		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	8.0	8.0		8.0	8.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	77.6	77.6		77.6	77.6			14.4			14.4	
Actuated g/C Ratio	0.78	0.78		0.78	0.78			0.14			0.14	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.05	0.51		0.16	0.26			0.54			0.24	
Control Delay	1.2	1.6		5.5	3.8			27.2			20.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	1.2	1.6		5.5	3.8			27.2			20.9	
LOS	A	A		A	A			C			C	
Approach Delay		1.6			3.9			27.2			20.9	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	0.3	8.5		1.4	14.1			12.9			2.8	
Queue Length 95th (m)	m0.6	11.8		5.9	26.7			29.8			12.2	
Internal Link Dist (m)		132.8			177.9			103.7			162.5	
Turn Bay Length (m)	30.0			25.0								
Base Capacity (vph)	410	2484		236	2451			482			370	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.05	0.51		0.16	0.26			0.30			0.13	

Intersection Summary		
Area Type:	Other	
Cycle Length: 100		
Actuated Cycle Length: 100		
Offset: 42 (42%), Referenced to phase 2:EBTL, Start of Green		
Natural Cycle: 60		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.54		
Intersection Signal Delay: 4.5	Intersection LOS: A	
Intersection Capacity Utilization 52.8%	ICU Level of Service A	
Analysis Period (min) 15		

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

Splits and Phases: 5: Falcon Blvd/Willowbrook Rd & Plains Rd E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1208	30	37	627	9	27	3	114	11	5	30
Future Volume (vph)	20	1208	30	37	627	9	27	3	114	11	5	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.89			0.91	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1257	3202		1488	3159			1527			1302	
Flt Permitted	0.40	1.00		0.19	1.00			0.93			0.88	
Satd. Flow (perm)	527	3202		304	3159			1433			1163	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	20	1233	31	38	640	9	28	3	116	11	5	31
RTOR Reduction (vph)	0	1	0	0	1	0	0	64	0	0	27	0
Lane Group Flow (vph)	20	1263	0	38	648	0	0	83	0	0	20	0
Confl. Peds. (#/hr)	11		5	5		11	2		3	3		2
Heavy Vehicles (%)	37%	12%	21%	17%	14%	11%	0%	0%	11%	13%	0%	41%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	75.6	75.6		75.6	75.6			11.4			11.4	
Effective Green, g (s)	77.6	77.6		77.6	77.6			14.4			14.4	
Actuated g/C Ratio	0.78	0.78		0.78	0.78			0.14			0.14	
Clearance Time (s)	6.0	6.0		6.0	6.0			7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	408	2484		235	2451			206			167	
v/s Ratio Prot		c0.39			0.21							
v/s Ratio Perm	0.04			0.12				c0.06			0.02	
v/c Ratio	0.05	0.51		0.16	0.26			0.40			0.12	
Uniform Delay, d1	2.6	4.1		2.9	3.2			38.9			37.3	
Progression Factor	0.28	0.21		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	0.7		0.3	0.1			1.3			0.3	
Delay (s)	0.9	1.5		3.2	3.2			40.2			37.6	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		1.5			3.2			40.2			37.6	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	5.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	15	8	2	18	15
Future Volume (vph)	0	15	8	2	18	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.5	3.3	3.6	3.3	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865				0.938	
Flt Protected				0.962	0.974	
Satd. Flow (prot)	1644	0	0	1828	1678	0
Flt Permitted				0.962	0.974	
Satd. Flow (perm)	1644	0	0	1828	1678	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	65.1			78.0	67.5	
Travel Time (s)	5.9			7.0	6.1	
Confl. Peds. (#/hr)		5	5			1
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	21	11	3	25	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	21	0	0	14	46	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	17.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	15	8	2	18	15
Future Volume (Veh/h)	0	15	8	2	18	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Hourly flow rate (vph)	0	21	11	3	25	21
Pedestrians				1	5	
Lane Width (m)				3.6	3.3	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			26		40	16
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			26		40	16
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		97	98
cM capacity (veh/h)			1595		966	1063

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	21	14	46
Volume Left	0	11	25
Volume Right	21	0	21
cSH	1700	1595	1008
Volume to Capacity	0.01	0.01	0.05
Queue Length 95th (m)	0.0	0.2	1.1
Control Delay (s)	0.0	5.7	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	5.7	8.7
Approach LOS			A

Intersection Summary				
Average Delay			6.0	
Intersection Capacity Utilization			17.4%	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)	0	0	61	125	0	0	21	28	41	0	39	0
Future Volume (vph)	0	0	61	125	0	0	21	28	41	0	39	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865						0.938				
Flt Protected					0.950			0.988				
Satd. Flow (prot)	0	1611	0	0	1770	0	0	1726	0	0	1863	0
Flt Permitted					0.950			0.988				
Satd. Flow (perm)	0	1611	0	0	1770	0	0	1726	0	0	1863	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		73.3			74.4			91.8			67.5	
Travel Time (s)		6.6			6.7			8.3			6.1	
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)	0	0	66	136	0	0	23	30	45	0	42	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	66	0	0	136	0	0	98	0	0	42	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization 32.1%			ICU Level of Service A	
Analysis Period (min) 15				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	61	125	0	0	21	28	41	0	39	0
Future Volume (Veh/h)	0	0	61	125	0	0	21	28	41	0	39	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	66	136	0	0	23	30	45	0	42	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)								92				
pX, platoon unblocked												
vC, conflicting volume	140	163	42	206	140	52	42			75		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	140	163	42	206	140	52	42			75		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	94	80	100	100	99			100		
cM capacity (veh/h)	820	719	1029	695	740	1015	1567			1524		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	66	136	98	42
Volume Left	0	136	23	0
Volume Right	66	0	45	0
cSH	1029	695	1567	1524
Volume to Capacity	0.06	0.20	0.01	0.00
Queue Length 95th (m)	1.6	5.5	0.3	0.0
Control Delay (s)	8.7	11.4	1.8	0.0
Lane LOS	A	B	A	
Approach Delay (s)	8.7	11.4	1.8	0.0
Approach LOS	A	B		

Intersection Summary				
Average Delay			6.8	
Intersection Capacity Utilization			32.1%	ICU Level of Service
Analysis Period (min)			15	

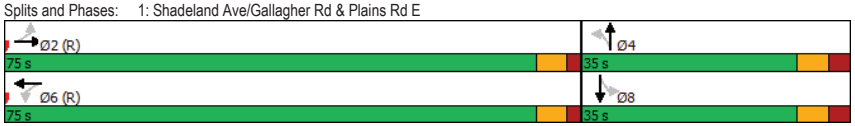
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	1034	24	43	1635	16	19	6	33	45	13	33
Future Volume (vph)	9	1034	24	43	1635	16	19	6	33	45	13	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	45.0		0.0	30.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00	1.00		1.00	0.98		0.99	0.99	
Frt		0.997			0.999			0.874			0.891	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1572	3554	0	1662	3535	0	1646	1626	0	1711	1605	0
Flt Permitted	0.095			0.221			0.724			0.728		
Satd. Flow (perm)	157	3554	0	386	3535	0	1252	1626	0	1295	1605	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			2			37			22	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		129.9			251.7			89.7			84.4	
Travel Time (s)		7.8			15.1			8.1			7.6	
Confl. Peds. (#/hr)	14		9	9		14	2		11	11		2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	11%	1%	9%	5%	2%	0%	6%	0%	0%	2%	0%	6%
Adj. Flow (vph)	10	1149	27	48	1817	18	21	7	37	50	14	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	10	1176	0	48	1835	0	21	44	0	50	51	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	42.0	42.0		42.0	42.0		35.0	35.0		35.0	35.0	
Total Split (s)	75.0	75.0		75.0	75.0		35.0	35.0		35.0	35.0	
Total Split (%)	68.2%	68.2%		68.2%	68.2%		31.8%	31.8%		31.8%	31.8%	
Maximum Green (s)	69.0	69.0		69.0	69.0		28.0	28.0		28.0	28.0	
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		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-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	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	28.0	28.0		28.0	28.0		12.0	12.0		12.0	12.0	
Flash Dont Walk (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	91.1	91.1		91.1	91.1		14.7	14.7		14.7	14.7	
Actuated g/C Ratio	0.83	0.83		0.83	0.83		0.13	0.13		0.13	0.13	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.08	0.40		0.15	0.63		0.13	0.18		0.29	0.22	
Control Delay	4.7	3.8		1.0	0.9		42.2	17.5		46.3	28.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	4.7	3.8		1.0	0.9		42.2	17.5		46.3	28.9	
LOS	A	A		A	A		D	B		D	C	
Approach Delay		3.8			0.9			25.5			37.5	
Approach LOS		A			A			C			D	
Queue Length 50th (m)	0.4	32.1		0.2	3.2		4.0	1.3		9.8	5.6	
Queue Length 95th (m)	2.1	50.0		m0.4	7.5		10.9	10.8		20.6	16.0	
Internal Link Dist (m)		105.9			227.7			65.7			60.4	
Turn Bay Length (m)	45.0			30.0			15.0			15.0		
Base Capacity (vph)	130	2944		319	2928		352	484		364	468	
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	0.08	0.40		0.15	0.63		0.06	0.09		0.14	0.11	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 26 (24%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 3.6		Intersection LOS: A	
Intersection Capacity Utilization 64.9%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 1: Shadeland Ave/Gallagher Rd & Plains Rd E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	1034	24	43	1635	16	19	6	33	45	13	33
Future Volume (vph)	9	1034	24	43	1635	16	19	6	33	45	13	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	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	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.87		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1570	3553		1658	3533		1642	1626		1690	1606	
Flt Permitted	0.09	1.00		0.22	1.00		0.72	1.00		0.73	1.00	
Satd. Flow (perm)	157	3553		386	3533		1251	1626		1296	1606	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	10	1149	27	48	1817	18	21	7	37	50	14	37
RTOR Reduction (vph)	0	1	0	0	0	0	0	33	0	0	19	0
Lane Group Flow (vph)	10	1175	0	48	1835	0	21	11	0	50	32	0
Confl. Peds. (#/hr)	14		9	9		14	2		11	11		2
Heavy Vehicles (%)	11%	1%	9%	5%	2%	0%	6%	0%	0%	2%	0%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	86.9	86.9		86.9	86.9		10.1	10.1		10.1	10.1	
Effective Green, g (s)	88.9	88.9		88.9	88.9		13.1	13.1		13.1	13.1	
Actuated g/C Ratio	0.81	0.81		0.81	0.81		0.12	0.12		0.12	0.12	
Clearance Time (s)	6.0	6.0		6.0	6.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	126	2871		311	2855		148	193		154	191	
v/s Ratio Prot		0.33			c0.52			0.01			0.02	
v/s Ratio Perm	0.06			0.12			0.02			c0.04		
v/c Ratio	0.08	0.41		0.15	0.64		0.14	0.06		0.32	0.17	
Uniform Delay, d1	2.2	3.0		2.3	4.2		43.4	43.0		44.4	43.5	
Progression Factor	1.00	1.00		0.12	0.07		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	0.4		0.6	0.6		0.9	0.3		2.6	0.9	
Delay (s)	3.4	3.5		0.9	0.9		44.3	43.3		47.0	44.4	
Level of Service	A	A		A	A		D	D		D	D	
Approach Delay (s)		3.5			0.9			43.6			45.7	
Approach LOS		A			A			D			D	

Intersection Summary					
HCM 2000 Control Delay	4.1	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.60				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	64.9%	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)	2	1108	4	22	1701	3	5	0	25	6	0	0
Future Volume (vph)	2	1108	4	22	1701	3	5	0	25	6	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	0.0		0.0	30.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999						0.888				
Flt Protected				0.950				0.992			0.950	
Satd. Flow (prot)	0	3403	0	1544	3406	0	0	1626	0	0	1805	0
Flt Permitted				0.950				0.992			0.950	
Satd. Flow (perm)	0	3403	0	1544	3406	0	0	1626	0	0	1805	0
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		251.7			86.0			84.7			62.2	
Travel Time (s)		15.1			5.2			7.6			5.6	
Confl. Peds. (#/hr)	9		12	12		9						
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	6%	0%	13%	6%	0%	17%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	1274	5	25	1955	3	6	0	29	7	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1281	0	25	1958	0	0	35	0	0	7	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.1%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	1108	4	22	1701	3	5	0	25	6	0	0
Future Volume (Veh/h)	2	1108	4	22	1701	3	5	0	25	6	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	2	1274	5	25	1955	3	6	0	29	7	0	0
Pedestrians								12			9	
Lane Width (m)								3.6			3.6	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		252			86							
pX, platoon unblocked	0.53			0.91			0.57	0.57	0.91	0.57	0.57	0.53
vC, conflicting volume	1967			1291			2320	3310	652	2686	3310	988
vC1, stage 1 conf vol							1292	1292		2016	2016	
vC2, stage 2 conf vol							1028	2017		670	1295	
vCu, unblocked vol	1039			1112			1073	2797	406	1710	2798	0
tC, single (s)	4.1			4.4			7.8	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.8	5.5		6.5	5.5	
tF (s)	2.2			2.3			3.7	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			95			96	100	95	93	100	100
cM capacity (veh/h)	354			505			168	115	538	105	113	570

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	639	642	25	1303	655	35	7
Volume Left	2	0	25	0	0	6	7
Volume Right	0	5	0	0	3	29	0
cSH	354	1700	505	1700	1700	391	105
Volume to Capacity	0.01	0.38	0.05	0.77	0.39	0.09	0.07
Queue Length 95th (m)	0.1	0.0	1.2	0.0	0.0	2.2	1.6
Control Delay (s)	0.2	0.0	12.5	0.0	0.0	15.1	41.8
Lane LOS	A		B			C	E
Approach Delay (s)	0.1		0.2			15.1	41.8
Approach LOS						C	E

Intersection Summary					
Average Delay		0.4			
Intersection Capacity Utilization		57.1%	ICU Level of Service		B
Analysis Period (min)		15			

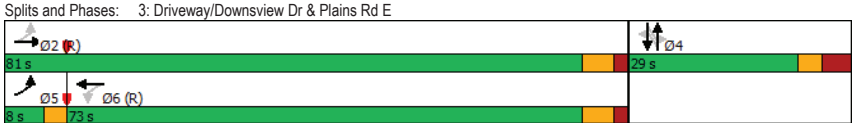
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	1021	11	22	1637	108	9	0	16	71	0	80
Future Volume (vph)	107	1021	11	22	1637	108	9	0	16	71	0	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	30.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		0.99	1.00			0.98			0.98	
Frt		0.998			0.991			0.913			0.928	
Flt Protected	0.950			0.950				0.982			0.977	
Satd. Flow (prot)	1631	3391	0	1491	3317	0	0	1561	0	0	1598	0
Flt Permitted	0.053			0.248				0.875			0.836	
Satd. Flow (perm)	91	3391	0	387	3317	0	0	1390	0	0	1357	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			12			60			60	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		86.0			179.3			90.8			90.8	
Travel Time (s)		5.2			10.8			8.2			8.2	
Confl. Peds. (#/hr)	10		17	17		10	2		11	11		2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	6%	25%	17%	7%	17%	0%	0%	11%	8%	0%	6%
Adj. Flow (vph)	119	1134	12	24	1819	120	10	0	18	79	0	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	119	1146	0	24	1939	0	0	28	0	0	168	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			4			4	
Permitted Phases	2			6			4			4		
Detector Phase	5	2		6	6		4	4		4	4	
Switch Phase												
Minimum Initial (s)	5.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	8.0	42.0		42.0	42.0		29.0	29.0		29.0	29.0	
Total Split (s)	8.0	81.0		73.0	73.0		29.0	29.0		29.0	29.0	
Total Split (%)	7.3%	73.6%		66.4%	66.4%		26.4%	26.4%		26.4%	26.4%	
Maximum Green (s)	5.0	75.0		67.0	67.0		22.0	22.0		22.0	22.0	
Yellow Time (s)	3.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0		2.0	2.0		4.0	4.0		4.0	4.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-3.0			-3.0	
Total Lost Time (s)	1.0	4.0		4.0	4.0			4.0			4.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	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	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)		28.0		28.0	28.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)		7.0		7.0	7.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	
Act Effct Green (s)	87.4	84.4		74.0	74.0			17.6			17.6	
Actuated g/C Ratio	0.79	0.77		0.67	0.67			0.16			0.16	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.59	0.44		0.09	0.87			0.10			0.63	
Control Delay	31.7	5.3		8.3	16.1			2.3			37.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	31.7	5.3		8.3	16.1			2.3			37.1	
LOS	C	A		A	B			A			D	
Approach Delay		7.8			16.1			2.3			37.1	
Approach LOS		A			B			A			D	
Queue Length 50th (m)	11.5	35.1		1.6	81.3			0.0			21.7	
Queue Length 95th (m)	#39.0	59.1		m2.8	#123.0			1.7			40.6	
Internal Link Dist (m)		62.0			155.3			66.8			66.8	
Turn Bay Length (m)	30.0			15.0								
Base Capacity (vph)	203	2601		260	2236			362			354	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.59	0.44		0.09	0.87			0.08			0.47	

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 106 (96%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.87		
Intersection Signal Delay: 13.9	Intersection LOS: B	
Intersection Capacity Utilization 78.0%	ICU Level of Service D	
Analysis Period (min) 15		

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

Splits and Phases: 3: Driveway/Downsview Dr & Plains Rd E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	1021	11	22	1637	108	9	0	16	71	0	80
Future Volume (vph)	107	1021	11	22	1637	108	9	0	16	71	0	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	1.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.98			0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			0.99	
Frt	1.00	1.00		1.00	0.99			0.91			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1631	3392		1483	3316			1561			1586	
Flt Permitted	0.05	1.00		0.25	1.00			0.87			0.84	
Satd. Flow (perm)	92	3392		387	3316			1390			1357	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	119	1134	12	24	1819	120	10	0	18	79	0	89
RTOR Reduction (vph)	0	0	0	0	4	0	0	24	0	0	50	0
Lane Group Flow (vph)	119	1146	0	24	1935	0	0	4	0	0	118	0
Confl. Peds. (#/hr)	10		17	17		10	2		11	11		2
Heavy Vehicles (%)	7%	6%	25%	17%	7%	17%	0%	0%	11%	8%	0%	6%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			4			4	
Permitted Phases	2			6			4			4		
Actuated Green, G (s)	82.4	82.4		72.0	72.0			14.6			14.6	
Effective Green, g (s)	84.4	84.4		74.0	74.0			17.6			17.6	
Actuated g/C Ratio	0.77	0.77		0.67	0.67			0.16			0.16	
Clearance Time (s)	3.0	6.0		6.0	6.0			7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	202	2602		260	2230			222			217	
v/s Ratio Prot	c0.05	0.34			c0.58							
v/s Ratio Perm	0.40			0.06				0.00			c0.09	
v/c Ratio	0.59	0.44		0.09	0.87			0.02			0.54	
Uniform Delay, d1	25.1	4.5		6.3	14.2			38.9			42.5	
Progression Factor	1.11	0.93		0.95	0.75			1.00			1.00	
Incremental Delay, d2	4.1	0.5		0.6	4.0			0.0			2.8	
Delay (s)	31.9	4.7		6.5	14.6			39.0			45.2	
Level of Service	C	A		A	B			D			D	
Approach Delay (s)		7.3			14.5			39.0			45.2	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	78.0%	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)	12	1090	6	14	1756	14	2	0	12	11	0	9
Future Volume (vph)	12	1090	6	14	1756	14	2	0	12	11	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999			0.999			0.884			0.939	
Flt Protected	0.950							0.993			0.973	
Satd. Flow (prot)	1745	3571	0	0	3606	0	0	1668	0	0	1736	0
Flt Permitted	0.950							0.993			0.973	
Satd. Flow (perm)	1745	3571	0	0	3606	0	0	1668	0	0	1736	0
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		179.3			157.0			36.7			165.5	
Travel Time (s)		10.8			9.4			3.3			14.9	
Confl. Peds. (#/hr)			7	7								
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	12	1124	6	14	1810	14	2	0	12	11	0	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	1130	0	0	1838	0	0	14	0	0	20	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	1090	6	14	1756	14	2	0	12	11	0	9
Future Volume (Veh/h)	12	1090	6	14	1756	14	2	0	12	11	0	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	12	1124	6	14	1810	14	2	0	12	11	0	9
Pedestrians								7				
Lane Width (m)								3.6				
Walking Speed (m/s)								1.2				
Percent Blockage								1				
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		179			157							
pX, platoon unblocked	0.75			0.89			0.80	0.80	0.89	0.80	0.80	0.75
vC, conflicting volume	1824			1137			2100	3010	572	2443	3006	912
vC1, stage 1 conf vol							1158	1158		1845	1845	
vC2, stage 2 conf vol							942	1852		598	1161	
vCu, unblocked vol	1431			909			1269	2401	274	1696	2396	214
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			98			99	100	98	89	100	98
cM capacity (veh/h)	361			671			230	117	646	98	126	597

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1
Volume Total	12	749	381	919	919	14	20
Volume Left	12	0	0	14	0	2	11
Volume Right	0	0	6	0	14	12	9
cSH	361	1700	1700	671	1700	513	158
Volume to Capacity	0.03	0.44	0.22	0.02	0.54	0.03	0.13
Queue Length 95th (m)	0.8	0.0	0.0	0.5	0.0	0.6	3.2
Control Delay (s)	15.3	0.0	0.0	0.6	0.0	12.2	31.1
Lane LOS	C			A		B	D
Approach Delay (s)	0.2			0.3		12.2	31.1
Approach LOS						B	D

Intersection Summary					
Average Delay	0.5				
Intersection Capacity Utilization	68.8%	ICU Level of Service		C	
Analysis Period (min)	15				



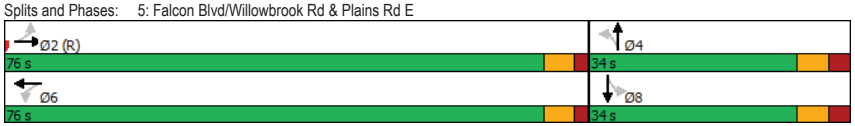
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	1070	27	49	1728	18	30	3	53	22	3	26
Future Volume (vph)	16	1070	27	49	1728	18	30	3	53	22	3	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Storage Length (m)	30.0		0.0	25.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.98			0.98	
Frt		0.996			0.998			0.916			0.931	
Flt Protected	0.950			0.950				0.983			0.979	
Satd. Flow (prot)	1544	3352	0	1544	3306	0	0	1510	0	0	1424	0
Flt Permitted	0.093			0.223				0.880			0.754	
Satd. Flow (perm)	151	3352	0	362	3306	0	0	1349	0	0	1088	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			2			57			22	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		157.0			209.5			129.5			187.7	
Travel Time (s)		9.4			12.6			11.7			16.9	
Confl. Peds. (#/hr)	12		9	9		12	4		16	16		4
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	13%	7%	12%	13%	9%	0%	17%	0%	8%	33%	0%	12%
Adj. Flow (vph)	17	1151	29	53	1858	19	32	3	57	24	3	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	1180	0	53	1877	0	0	92	0	0	55	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		31.0	31.0		31.0	31.0	
Total Split (s)	76.0	76.0		76.0	76.0		34.0	34.0		34.0	34.0	
Total Split (%)	69.1%	69.1%		69.1%	69.1%		30.9%	30.9%		30.9%	30.9%	
Maximum Green (s)	70.0	70.0		70.0	70.0		27.0	27.0		27.0	27.0	
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		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-3.0			-3.0	
Total Lost Time (s)	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	
Recall Mode	C-Max	C-Max		None	None		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	8.0	8.0		8.0	8.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	93.0	93.0		93.0	93.0			12.8			12.8	
Actuated g/C Ratio	0.85	0.85		0.85	0.85			0.12			0.12	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.13	0.42		0.17	0.67			0.44			0.38	
Control Delay	3.5	1.6		4.2	5.9			26.7			37.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	3.5	1.6		4.2	5.9			26.7			37.0	
LOS	A	A		A	A			C			D	
Approach Delay		1.6			5.8			26.7			37.0	
Approach LOS		A			A			C			D	
Queue Length 50th (m)	0.3	12.2		1.8	64.3			7.0			6.7	
Queue Length 95th (m)	m0.8	16.0		6.4	115.6			21.5			18.3	
Internal Link Dist (m)		133.0			185.5			105.5			163.7	
Turn Bay Length (m)	30.0			25.0								
Base Capacity (vph)	127	2834		306	2795			409			312	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.13	0.42		0.17	0.67			0.22			0.18	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 8 (7%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 5.4		Intersection LOS: A	
Intersection Capacity Utilization 67.1%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 5: Falcon Blvd/Willowbrook Rd & Plains Rd E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	1070	27	49	1728	18	30	3	53	22	3	26
Future Volume (vph)	16	1070	27	49	1728	18	30	3	53	22	3	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.98			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	1.00		1.00	1.00			0.92			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1544	3353		1537	3308			1508			1413	
Flt Permitted	0.09	1.00		0.22	1.00			0.88			0.75	
Satd. Flow (perm)	151	3353		361	3308			1350			1089	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	17	1151	29	53	1858	19	32	3	57	24	3	28
RTOR Reduction (vph)	0	1	0	0	0	0	0	51	0	0	20	0
Lane Group Flow (vph)	17	1179	0	53	1877	0	0	41	0	0	35	0
Confl. Peds. (#/hr)	12		9	9		12	4		16	16		4
Heavy Vehicles (%)	13%	7%	12%	13%	9%	0%	17%	0%	8%	33%	0%	12%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	88.8	88.8		88.8	88.8			8.2			8.2	
Effective Green, g (s)	90.8	90.8		90.8	90.8			11.2			11.2	
Actuated g/C Ratio	0.83	0.83		0.83	0.83			0.10			0.10	
Clearance Time (s)	6.0	6.0		6.0	6.0			7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	124	2767		297	2730			137			110	
v/s Ratio Prot		0.35			c0.57							
v/s Ratio Perm	0.11			0.15				0.03			c0.03	
v/c Ratio	0.14	0.43		0.18	0.69			0.30			0.32	
Uniform Delay, d1	1.9	2.6		2.0	3.9			45.8			45.9	
Progression Factor	0.46	0.40		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.1	0.4		0.3	0.7			1.2			1.7	
Delay (s)	3.0	1.5		2.3	4.6			47.0			47.6	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		1.5			4.5			47.0			47.6	
Approach LOS		A			A			D			D	

Intersection Summary					
HCM 2000 Control Delay	5.3	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.65				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	67.1%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1	15	5	2	29	13
Future Volume (vph)	1	15	5	2	29	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.5	3.3	3.6	3.3	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.871				0.959	
Flt Protected				0.966	0.966	
Satd. Flow (prot)	1655	0	0	1835	1701	0
Flt Permitted				0.966	0.966	
Satd. Flow (perm)	1655	0	0	1835	1701	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	61.5			80.6	68.8	
Travel Time (s)	5.5			7.3	6.2	
Confl. Peds. (#/hr)					1	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	1	21	7	3	41	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	22	0	0	10	59	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	14.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1	15	5	2	29	13
Future Volume (Veh/h)	1	15	5	2	29	13
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Hourly flow rate (vph)	1	21	7	3	41	18
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			22		30	12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			22		30	12
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		96	98
cM capacity (veh/h)			1607		985	1075

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	22	10	59
Volume Left	0	7	41
Volume Right	21	0	18
cSH	1700	1607	1011
Volume to Capacity	0.01	0.00	0.06
Queue Length 95th (m)	0.0	0.1	1.4
Control Delay (s)	0.0	5.1	8.8
Lane LOS		A	A
Approach Delay (s)	0.0	5.1	8.8
Approach LOS			A

Intersection Summary				
Average Delay		6.3		
Intersection Capacity Utilization		14.5%	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)	0	0	40	71	0	0	57	54	104	0	40	0
Future Volume (vph)	0	0	40	71	0	0	57	54	104	0	40	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865						0.935				
Flt Protected					0.950			0.987				
Satd. Flow (prot)	0	1611	0	0	1770	0	0	1719	0	0	1863	0
Flt Permitted					0.950			0.987				
Satd. Flow (perm)	0	1611	0	0	1770	0	0	1719	0	0	1863	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		74.9			71.7			90.8			68.8	
Travel Time (s)		6.7			6.5			8.2			6.2	
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)	0	0	43	77	0	0	62	59	113	0	43	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	43	0	0	77	0	0	234	0	0	43	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.3%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	40	71	0	0	57	54	104	0	40	0
Future Volume (Veh/h)	0	0	40	71	0	0	57	54	104	0	40	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	43	77	0	0	62	59	113	0	43	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)								91				
pX, platoon unblocked												
vC, conflicting volume	282	339	43	326	282	116	43			172		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	282	339	43	326	282	116	43			172		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	96	87	100	100	96			100		
cM capacity (veh/h)	650	559	1027	583	601	937	1566			1405		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	43	77	234	43
Volume Left	0	77	62	0
Volume Right	43	0	113	0
cSH	1027	583	1566	1405
Volume to Capacity	0.04	0.13	0.04	0.00
Queue Length 95th (m)	1.0	3.4	0.9	0.0
Control Delay (s)	8.7	12.1	2.2	0.0
Lane LOS	A	B	A	
Approach Delay (s)	8.7	12.1	2.2	0.0
Approach LOS	A	B		

Intersection Summary				
Average Delay		4.6		
Intersection Capacity Utilization		36.3%	ICU Level of Service	A
Analysis Period (min)		15		

Appendix G

Traffic Signal Warrants

Signal Justification Calculation for Forecasted Volumes
(OTM Book 12 - Justification 7)

Horizon Year: 2027 Background
Region/City/Township: Burlington

Major Street: Plains Road East
Minor Street: Filmandale Rd/Lindley Cmns
North/South?: N

Number of Approach Lanes: 2 or more
Tee Intersection? N
Flow Conditions: Restricted

PM Forecast Only? N

Warrant Results		
150% Satisfied	No	Justification for new intersections with forecast traffic
120% Satisfied	No	Justification for existing intersections with forecast traffic

Time Period	Major Street						Minor Street						
	Plains Road East						Filmandale Rd/Lindley Cmns						
	Eastbound			Westbound			Northbound			Southbound			Peds
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Crossing
AM Peak Hour	2	1150	6	17	655	0	8	0	18	0	0	1	1
PM Peak Hour	2	1021	4	22	1638	3	5	0	25	6	0	0	0
Avg. Hourly Volume	1	543	3	10	573	1	3	0	11	2	0	0	0

Warrant	AHV
1A - All	1146
1B - Minor	16
2A - Major	1130
2B - Cross	5

Warrant 1 - Minimum Vehicular Volume

	Approach Lanes	1		2 or more		Average Hourly Volume
1A	Flow Conditions	Free	Restricted	Free	Restricted	
					X	
	All Approaches	480	720	600	900	1146
					% Fulfilled	127%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
					X	
	Minor Street Approaches	120	170	120	170	16
					% Fulfilled	9%

Warrant 2 - Delay To Cross Traffic

	Approach Lanes	1		2 or more		Average Hourly Volume
2A	Flow Conditions	Free	Restricted	Free	Restricted	
					X	
	Major Street Approaches	480	720	600	900	1130
					% Fulfilled	126%

	Approach Lanes	1		2 or more		Average Hourly Volume
2B	Flow Conditions	Free	Restricted	Free	Restricted	
					X	
	Traffic Crossing Major Street	50	75	50	75	5
					% Fulfilled	7%

Signal Justification Calculation for Forecasted Volumes
(OTM Book 12 - Justification 7)

Horizon Year: 2027 Background
Region/City/Township: Burlington

Major Street: Plains Road East
Minor Street: Dovercourt Ave/Private Dwy
North/South?: N

Number of Approach Lanes: 2 or more
Tee Intersection? N
Flow Conditions: Restricted

PM Forecast Only? N

Warrant Results		
150% Satisfied	No	Justification for new intersections with forecast traffic
120% Satisfied	No	Justification for existing intersections with forecast traffic

Time Period	Major Street						Minor Street						
	Plains Road East						Dovercourt Ave/Private Dwy						
	Eastbound			Westbound			Northbound			Southbound			Peds
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Crossing
AM Peak Hour	21	1156	2	4	635	16	3	0	3	19	0	23	1
PM Peak Hour	12	1042	6	14	1682	14	2	0	12	11	0	9	0
Avg. Hourly Volume	8	550	2	5	579	8	1	0	4	8	0	8	0

Warrant	AHV
1A - All	1172
1B - Minor	21
2A - Major	1151
2B - Cross	9

Warrant 1 - Minimum Vehicular Volume

	Approach Lanes	1		2 or more		Average Hourly Volume
1A	Flow Conditions	Free	Restricted	Free	Restricted	
					X	
	All Approaches	480	720	600	900	1172
					% Fulfilled	130%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
					X	
	Minor Street Approaches	120	170	120	170	21
					% Fulfilled	12%

Warrant 2 - Delay To Cross Traffic

	Approach Lanes	1		2 or more		Average Hourly Volume
2A	Flow Conditions	Free	Restricted	Free	Restricted	
					X	
	Major Street Approaches	480	720	600	900	1151
					% Fulfilled	128%

	Approach Lanes	1		2 or more		Average Hourly Volume
2B	Flow Conditions	Free	Restricted	Free	Restricted	
					X	
	Traffic Crossing Major Street	50	75	50	75	9
					% Fulfilled	12%

Appendix H

TTS Vehicle Ownership Data

Wed Apr 08 2020 16:03:34 GMT-0400 (Eastern Daylight Time) - Run Time: 1807ms

Vehicle Ownership by Unit Type for Zones containing GO Stations + all boundary zones

Cross Tabulation Query Form - Household - 2016 v1.1

Row: Type of dwelling unit - dwell_type
Column: No. of vehicles in household - n_vehicle

Filters:
2006 GTA zone of household - gta06_hhld In 3877,3648,3642,3877,3878,3646,3647,3639,3614,3644,3879,3640,4021,4020,4(

Household 2016
Table:

,0,1,2,3,4,5,6
House,1374,9344,19724,5881,1689,519,155
Apartment,8814,19434,5597,396,68,0,0
Townhouse,243,3982,3630,722,161,0,0

	0	1	2	3	4	5	6	Total Units
House	1374	9344	19724	5881	1689	519	155	38686
Apartment	8814	19434	5597	396	68	0	0	34309
Townhouse	243	3982	3630	722	161	0	0	8738

	0	1	2	3	4	5	6	Total Veh
House	0	9344	39448	17643	6756	2595	930	76716
Apartment	0	19434	11194	1188	272	0	0	32088
Townhouse	0	3982	7260	2166	644	0	0	14052

Appendix I

Region of Waterloo TDM Worksheet

Region of Waterloo

Parking Management Worksheet

Version 9/18/2013

Appendix

Case Study: 210771 **Site Context:** 1010 Downsview Dr & 355 Plains Rd E

Date: 2022-04-18 **Reduction Worksheet No:**

"**Urban Growth Centres -** (UGC) area classification includes the Downtown / Uptown and RT Station Areas of Kitchener, Waterloo and Cambridge.

"**Intensification Corridor**" (IC) classification is applied to sites within 800 metres of the future CTC line

"**Other**" classification applies to all other sites

Please highlight the cell percentages applicable to your development under the appropriate classification. Please note that the Parking Management Worksheet and the Transportation Demand Management (TDM) Checklist are not designed for residential properties, but can be used for mixed-use developments. Local municipalities are the decision-making bodies with respect to consideration of parking reductions below Zoning By-law requirements.

TABLE A	Pedestrian and Cyclist Orientation			
In creating an environment that supports pedestrian and cycling activity, the public realm must be accessible, safe, and comfortable to encourage movement on the street and in the surrounding area(s). These facilities and features should encourage walking and cycling.				
	Features	**UGC**	**IC**	**Other**
A1	Development incorporates functional building entrances that are oriented to public space or to locations where pedestrians and transit users arrive from such as a street, square, park or plaza.	1%	1%	1%
A2	Continuous sidewalks (1.5m min. width) are provided along both sides of all adjacent public streets and pedestrian walkways (1.5m min width) are provided through large parking areas to link the building with the public street sidewalk system	0%	0%	1%
A3	Non-Residential: Development provides secure bike storage for 4% of the building occupants	2%	2%	1%
A4	Shower and change facilities provided on-site consistent with LEED requirements.	1%	1%	1%
A5	Provision of active uses at-grade along street frontages.	1%	1%	1%
	Category Maximum	**4%**	**4%**	**4%**
	Available Parking Reduction			**4%**

TABLE B	Public Transportation Access			
The availability and proximity of convenient public transit service with direct pedestrian linkages to the building will provide viable travel options for employees, visitors and residents.				
	Features	**UGC**	**IC**	**Other**
B1	Bus shelters with seating are provided at the transit stop immediately adjacent to the development, in consultation with Transportation Planning at the Region of Waterloo	0%	0%	1%
B2	Information regarding public transit routes, schedules and fares are provided in an accessible and visible location on site and in adjacent bus stops	0%	0%	1%
B3a	Located in an UGC or within 800 m of a future Rapid Transit Station	24%	12%	0%

B3b	Located within 600m a transit route with 15 minute headways (or less) or is located in a designated mixed use corridor or node. **Note: Points are awarded for either B3a, B3b or B3c only. Please choose whichever represents the highest order of transit.**	-	-	3%
B3c	Located within 400 metres of a bus service with headways of 15 min to 30 min. **Note: Points are awarded for either B3a, B3b or B3c only. Please choose whichever represents the highest order of transit.**	-	-	1%
	Category Maximum	**24%**	**12%**	**5%**
	Available Parking Reduction			**3%**

TABLE C	**Parking**			
Vehicle parking facilities can affect the character, travel mode and cost of a development. Reducing parking supply to match expected demand can have a positive influence on the selection of alternative travel modes.				
	Features	**UGC**	**IC**	**Other**
C1	Provides priority parking for carpooling/vanpooling participants equivalent to 5% of employee spaces	0%	0%	5%
C2	Commercial Uses: Provide car-share spaces equivalent to 2% of building occupants	2%	2%	0%
C3	Implements paid parking system on all or part of the site (e.g. parking permits, paid parking zones near main entrances)	2%	2%	1%
C4	Parking is not located on major street frontage.	0%	0%	1%
C5	25% to 50% of parking is located underground or in a structure	2%	1%	0%
C6	50% to 75% of parking is located underground or in a structure	4%	2%	0%
C7	75% of parking or more is located underground or in a structure	5%	3%	0%
	Category Maximum	**6%**	**4%**	**6%**
	Available Parking Reduction			**1%**

Sample Parking Reduction Worksheet **FORM-2**

Case Study: 210771 **Site Context:**
Date: 2022-04-18 **Worksheet No:**

TABLE D	Trip Reduction Incentives			
A formal TDM plan will identify specific initiatives that will be initiated in order to encourage reduced single occupant vehicle travel.				
	Features	**UGC**	**IC**	**Other**
D1	The building owner/occupant will provide a ride matching service for car/vanpooling	0%	0%	1%
D2	The building owner/occupant will provide emergency ride home options	3%	2%	1%
D3	The building owner/occupant will provide subsidized transit passes for all occupants for a period of two years	10%	4%	2%
D4	The building owner/occupant agrees to charge for parking as a separate cost to occupants	10%	5%	2%
D5	The building owner/occupant agrees to provide reduced cost for users of car/van pool, bicycle, moped/motorcycle spaces	0%	0%	1%
D6	The development agrees to join Travelwise (TMA) that provides the same services outlined under items D1 and D2	9%	6%	4%
	Category Maximum	**23%**	**11%**	**7%**
	Available Parking Reduction			**4%**

TABLE E	Parking Reduction Summary				
Please indicate the total reduction available based upon Tables A through D above.					
Category	**Reduction Achieved**	**Maximum Achievable Reduction**			**Comments**
		UGC	**IC**	**Other**	
Pedestrian & Cyclist Orientation	**4%**	4%	4%	4%	
Public Transit Access	**3%**	24%	12%	5%	
Parking	**1%**	6%	4%	6%	
Trip Reduction Incentives	**4%**	23%	11%	7%	
TOTAL	**12%**	**57%**	**31%**	**22%**	

TABLE F	TOTAL REDUCTION ACHIEVED	12%

Comments: