823 King Street
Town of Midland

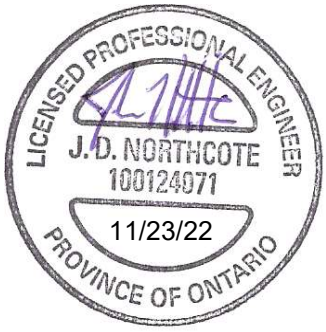
Traffic Impact Study for
Pratt Development Inc.

Type of Document:
Final Report

Project Number:
JDE – 22041

Date Submitted:
November 23rd, 2022

John Northcote, P.Eng.
Professional License #: 100124071



ENGINEERING

JD Northcote Engineering Inc.
86 Cumberland Street
Barrie, ON
705.725.4035
www.JDEngineering.ca

Legal Notification

This report was prepared by **JD Northcote Engineering Inc.** for the account of **Pratt Development Inc**.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. **JD Northcote Engineering Inc.** accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this project.

Executive Summary

This report summarizes the traffic impact study prepared for the proposed residential development located between King Street and William Street, south of Christine Drive, municipally known as 823 King Street, in the Town of Midland [Town], County of Simcoe [County]. The report assesses the impact of traffic related to the development on the adjacent roadway and provides recommendations to accommodate this traffic in a safe and efficient manner.

The proposed development is anticipated to include 138 single-detached units and 129 townhouse units. Access to the development is provided via one full-movement intersection onto King Street [West Access] and an extension of Pratt Avenue.

The scope of this analysis includes a review of the following intersections:

- King Street / West Access;
- Pratt Avenue / Galloway Boulevard;
- William Street / Galloway Boulevard; and
- King Street / Galloway Boulevard.

Conclusions

1. The proposed development is expected to generate a total of 152 AM and 200 PM peak hour trips.
2. Detailed intersection counts were commissioned by JD Engineering at the study intersections.
3. An intersection operation analysis was completed at the study area intersections, using the existing and background (2025, 2030 and 2035) traffic volumes, with consideration for the projected adjacent development traffic growth and without the proposed development traffic. This enabled a review of existing and future traffic deficiencies that would be present without the influence of the proposed development. The following improvements are recommended:

   Background 2035

   King Street / Galloway Boulevard & Driveway

   - Southbound advanced left turn phase (9 seconds green time); and
   - Cycle length of 90 and 100 seconds during the AM and PM peak hours, respectively.
4. An estimate of the amount of traffic that would be generated by the Subject Site was prepared and assigned to the study area streets and intersections.
5. An intersection operation analysis was completed under total (2025, 2030 and 2035) traffic volumes with the proposed development operational at the study area intersections. No improvements (other than the planned conversion to a 3-lane profile on William Street) are recommended within the study area.
6. The proposed Site Accesses will operate efficiently with one-way stop control for egress movements. A single lane for ingress and egress movements will provide the necessary capacity to convey the traffic volume generated by the proposed development.
7. The location of the proposed West Access on King Street is considered appropriate for the intended use. There is an opportunity to remove the southern driveway onto King Street for the commercial property to the north and provide access directly via Street A. This configuration would provide the Transportation Association of Canada Design Guide for Canadian Roads (2017) [TAC] minimum spacing between Street A and the next existing

driveway to the north. Similarly, there is an opportunity to remove the existing driveway onto King Street for the commercial property to the south and provide access directly via Street A. This configuration would provide the TAC minimum spacing between Street A and the next existing driveway to the south.

8. The sight distance available for the proposed West Access is suitable for the intended use.
9. In summary, the proposed development will not cause any operational issues and will not add significant delay or congestion to the local roadway network.

Table of Contents

List of Tables

List of Figures

List of Appendices

1 Introduction

1.1 Background

Pratt Development Inc. [the Developer] is proposing a residential development located between King Street and William Street, south of Christine Drive, municipally known as 823 King Street, in the Town of Midland County. The proposed development is anticipated to include 138 single-detached units and 129 townhouse units. Access to the development is provided via one full-movement intersection onto King Street [West Access] and an extension of Pratt Avenue.

It is anticipated that ultimate build-out will occur by 2025.

The Developer has retained **JD Northcote Engineering Inc.** [JD Engineering] to prepare this traffic impact study in support of the proposed development.

1.2 Study Area

Figure 1 shows the location of the subject site and study area intersections in relation to the surrounding area. The Draft Plan of Subdivision by MHBC Planning is provided in **Appendix A**.

The subject site is bound by King Street to the west, industrial and residential lands to the east, residential lands to the north and future industrial lands (currently undeveloped) to the south.

Through consultation with the Town and MTO, the following intersections are included in the traffic impact study:

- King Street / West Access;
- Pratt Avenue / Galloway Boulevard;
- William Street / Galloway Boulevard; and
- King Street / Galloway Boulevard.

Figure 1 – Proposed Site Location and Study Area

1.3 Study Scope and Objectives

The purpose of this study is to identify the potential impacts to traffic flow at the site accesses and on the surrounding roadway network. The study analysis includes the following tasks:

- Consult with the Town and MTO to address any traffic-related issues or concerns they have with the proposed development;
- Determine existing traffic volumes and circulation patterns;
- Estimate future traffic volumes if the proposed development was not constructed, including the impact of additional proposed developments in the area;
- Complete level-of-service [LOS] analysis of horizon year (without the proposed development) traffic conditions and identify operational deficiencies;
- Estimate the amount of traffic that would be generated by the proposed development and assign to the roadway network;
- Complete LOS analysis of horizon year (with the proposed development) traffic conditions and identify additional operational deficiencies;
- Identify improvement options to address operational deficiencies;
- Review the proposed intersection spacing;
- Review the available sight distance at the proposed site access driveway; and
- Document findings and recommendations in a final report.

1.4 Horizon Year and Analysis Periods

Traffic scenarios for the existing year, ultimate buildout horizon year (2025), 5-year post-buildout horizon year (2030) and 10-year post-buildout horizon year (2035) were selected for analysis of traffic operations in the study area. The weekday morning [AM] and weekday afternoon [PM] peak hours have been selected as the analysis periods for this study.

2 Information Gathering

2.1 Street and Intersection Characteristics

William Street is a three-lane arterial road (two southbound lanes and one northbound lane) with a rural cross-section through the study area. William Street has a sidewalk on the east side of the road through the study area. William Street has a posted speed limit of 50 km/h and is under the jurisdiction of the Town.

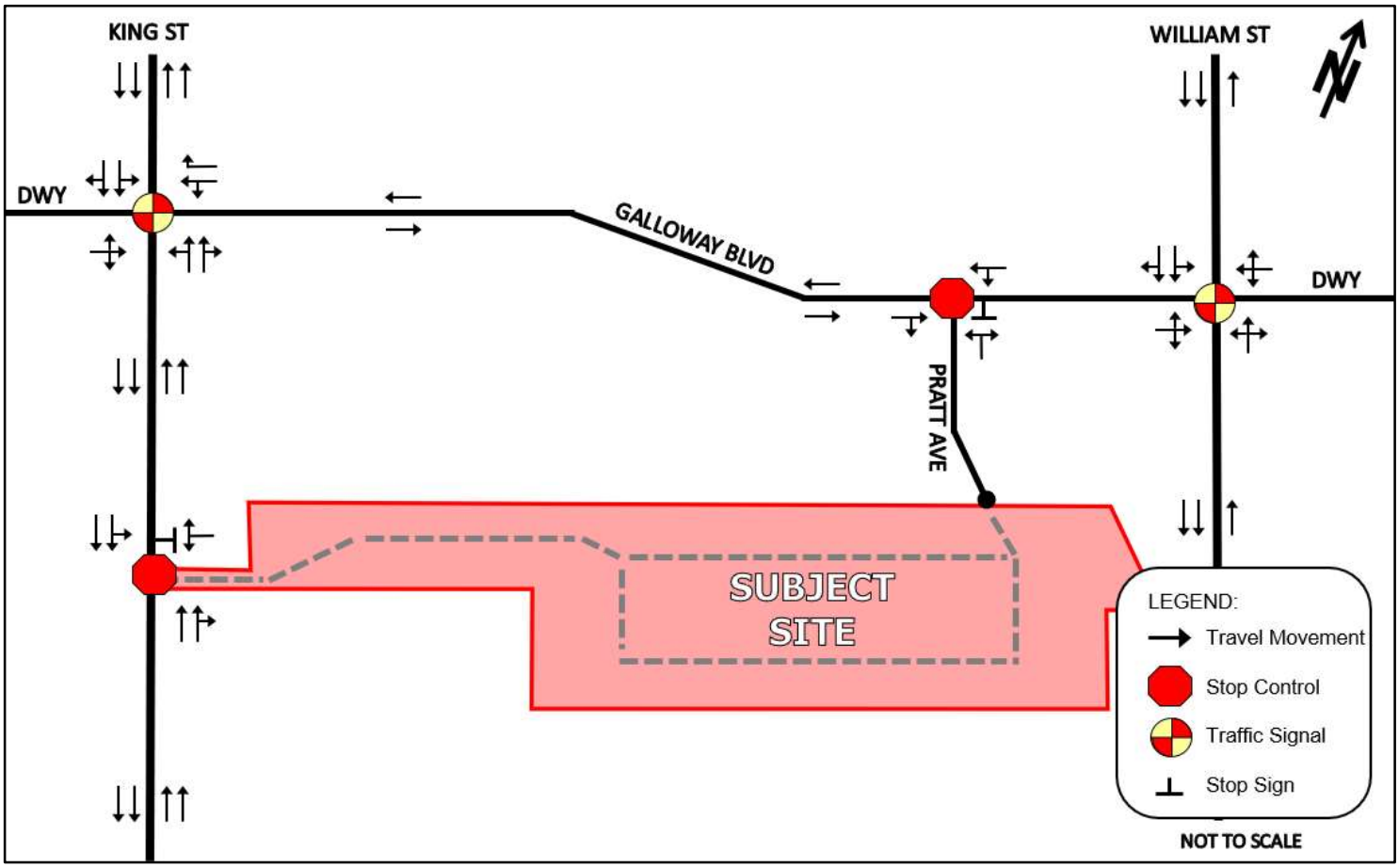
King Street is a four-lane arterial road with an urban cross-section and sidewalk on both sides of the road. King Street has a posted speed limit of 50 km/h and is under the jurisdiction of the Town.

Galloway Boulevard is a two-lane collector road with an urban cross-section and sidewalk on the south side of the road. Galloway Boulevard has a posted speed limit of 50 km/h and is under the jurisdiction of the Town.

Pratt Avenue is a two-lane local road with an urban cross-section and sidewalk on the west side of the road. Pratt Avenue has an unposted (assumed) speed limit of 50 km/h and is under the jurisdiction of the Town.

The existing intersection spacing and lane configuration within the study area is illustrated in **Figure 2**.

Figure 2 – Existing (2022) Intersection Spacing and Lane Configuration within Study Area



2.2 Local Transportation Infrastructure Improvements

Based on the Town's Multi-Modal Transportation Master Plan [TMP] (November 2019), the following improvement is listed as a short-term improvement (0-5 years):

- King Street;
  - Construction of separated bike lanes on both sides of the road from Yonge Street to Highway 12; and

- Pratt Avenue;
  - Install on-road painted bike lanes on both sides of the road.

The following improvements are listed as medium-term improvements (5-10 years):

- William Street;
  - Convert to a three-lane cross-section including a centre turn lane south of Chain Gate Drive;
  - Construction of separated bike lanes on both sides of the road from Bay Street to Galloway Boulevard;
  - Extension of the existing sidewalk on the road from Southwinds Crescent to Highway 12.

2.3 Transit Access

The Midland South bus route provides bus service to various points of interest within the Town, travelling along Birchwood Drive, Galloway Boulevard, and William Street, adjacent the study area.

This bus operates between 06:45 – 17:45 on weekdays and 08:45 – 16:45 on Saturdays with service every 60 minutes. There is no bus service on Sundays or Holidays. This bus route provides a "flag on" service where passengers are not required to be at a bus stop and can flag down the bus along its route to get on the bus. The closest bus shelter is located at the intersection of Galloway Boulevard / Algonquin Drive.

2.4 Development Growth

In review of the Town's development information and through discussions with Town planning staff, the following developments have been noted for consideration with respect to impacts on the local traffic volumes / infrastructure capacity:

- 786 William Street development – 80 apartment units;
- Tiffin By The Lake – 47 residential units (20 units remaining);
- 16928 Highway 12 – 93 room hotel, 33,817 ft^2 conference centre and 85,541 ft^2 commercial/retail space; and
- Hanson Development – 1,703 residential units and 3,300 m^2 (35,000 ft^2) commercial space;
- 16533 Highway 12.

Figure 3 illustrates the location of the above developments in relation to the subject site.

Figure 3 – Adjacent Development Location

2.4.1 Development Growth Traffic Generation

Traffic volumes generated by the 786 William Street, 16982 Highway 12, 16533 Highway 12 and Hanson development have been determined based on their respective traffic impact studies (Excerpts provided in **Appendix B**). For the remaining developments, traffic volumes have been calculated based on the data provided in the Institute of Transportation Engineers [ITE] Trip Generation Manual (11th Edition) [ITE Trip Generation Manual].

The following ITE land uses have been applied to estimate the traffic from the adjacent developments:

- ITE land use 210 (Single-Family Detached Housing) – General Urban/Suburban Setting; and
- ITE land use 220 (Multifamily Housing (Low-Rise)) – General Urban/Suburban Setting

The AM and PM peak hour traffic generation for the adjacent developments do not exactly align with the AM and PM peak hour in the traffic counts; consequently, we have applied the peak hour of adjacent street traffic values provided in the ITE Trip Generation Manual.

For trip rates showing a strong statistical relationship, fitted curve equations have been utilized. **Table 1** summarizes the utilized trips generation rates and equations.

Table 1 – ITE Traffic Generation Rates & Equations

Land Use	Trip Basis	AM Peak Hour			PM/EVE Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Single-Family Detached ITE Land Use: 210	equation (units)	Ln(T) = 0.91 Ln(X) + 0.12			Ln(T) = 0.94 Ln(X) + 0.27		
	distribution	26%	74%	100%	63%	37%	100%

The estimated trip generation of the adjacent developments is illustrated below in **Table 2**.

Table 2 – Estimated Traffic Generation – Adjacent Developments

Development	Land Use	Size	AM Peak Hour			PM Peak Hour		
			IN	OUT	TOTAL	IN	OUT	TOTAL
Tiffin By The Lake	Single-Family Detached	47 (20 remaining)	4	13	17	14	8	22

The future phasing assumptions of the adjacent development lands are summarized in **Table 3**.

Table 3 – Adjacent Developments Phasing Details

Development	% Build Out		
	2025	2030	2035
786 William Street	100%	100%	100%
Tiffin By The Lake	100%	100%	100%
16928 Highway 12	100%	100%	100%
Hanson Development	25%	50%	100%
16533 Highway 12	100%	100%	100%

2.4.2 Adjacent Development Traffic Volume Assignment

For the noted adjacent developments that did not have available traffic studies, traffic volumes have been distributed to the study area road network based on the traffic distribution developed in Section 4.4, in context with the location of each development area.

The assignment of the adjacent development volumes through the study area road network is illustrated in **Figure 4** through **Figure 11**.

2.5 Background Traffic Growth

2.5.1 Population & Employment Growth

The 2021 census profile for the Town of Midland indicates that the population has increased from 16,864 in 2016 to 17,817 in 2021, translating to an average annual increase of 1.11%.

As per the Town's TMP, the Town's population is projected to grow to 26,881 in 2041 translating to an average annual increase of 2.08%.

The Town's employment population is projected to grow from 13,786 persons in 2016 to 16,487 persons in 2041, translating to an annual growth rate of 0.72%.

2.5.2 Traffic Growth

In review of the available data published by MTO, the Annual Average Daily Traffic (AADT) volumes on Highway 12 for the period of 2010 to 2016 shows an average annual decrease 2.6% for the road section east of the Towns limits. West of the Towns limits, an average annual increase of 2.2% is shown.

2.5.3 Other Studies

In review of the *Proposed Mixed-Use Development - 16928 Highway 12 Traffic Impact Study Update* (WSP Canada Inc., September 29, 2021), a growth rate of 1.25% per annum was utilized for all through movements on Highway 12 and King Street. No growth rates were applied to turning movements at the study intersections (specifically Highway 12 / King Street) as they were assumed to be accounted for in the consideration of adjacent development volumes

The *Hanson Development Traffic Impact Study* (MMM Group, August 2016) utilized the same 1.25% per annum growth rate for all east-west and north-south directional movements. It is noted that this growth rate was assumed to include the entirety of the traffic growth related to any other developments in the local area.

2.5.4 Overall Background Growth Rate

In consideration of the historic growth for the Town, growth projections utilized for other transportation reports in the area and further noting that extensive consideration has been given to traffic generated by adjacent developments in the study area, a background growth rate of 1.25% per annum has been applied to through movements on King Street/William Street and turning movements to/from Galloway Boulevard.

2.6 Traffic Counts

Detailed turning movement traffic and pedestrian counts were commissioned by JD Engineering at the study intersections. **Table 4** summarizes the traffic count data collection information.

Table 4 – Traffic Count Data

Intersection (N-S Street / E-W Street)	Count Date	AM Peak Hour	PM Peak Hour	Source
King St / Galloway Park Entrance	Thursday May 26, 2022	07:45 – 08:45	16:15 – 17:15	JD Eng.*
Pratt Ave / Galloway Blvd	Thursday May 26, 2022	07:30 – 08:30	16:45 – 17:45	JD Eng.*
William St / Galloway Blvd	Thursday May 26, 2022	07:30 – 08:30	16:00 – 17:00	JD Eng.*
King St / Galloway Blvd	Thursday May 26, 2022	07:45 – 08:45	16:15 – 17:15	JD Eng.*

*Traffic counts were completed by Accu-Traffic Inc. on behalf of JD Engineering.

Detailed traffic count data can be found in **Appendix C**. It is noted that the timing of the May 2022 traffic counts occurred after the lifting of the public health restrictions related to the COVID-19 pandemic. Consequently, the traffic counts reflect typical traffic operations.

Traffic volumes at the Galloway Park Entrance are relatively low (1 AM and 2 PM vehicles), making it apparent that peak summer operations at the soccer fields were not occurring at the time of the counts. In order to consider the peak seasonal volumes, traffic volumes at the Galloway Park Entrance have been estimated based on the following ITE land use:

- ITE land use 488 (Soccer Complex).

The traffic rates and estimated trip generation for the soccer fields is summarized in **Table 5**.

Table 5 – Galloway Park Traffic Generation

Land Use	Trip Basis	AM Peak Hour			PM Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Single-Family Detached ITE Land Use: 210	Fields	0.60	0.39	0.99	10.84	5.59	16.43
Galloway Park	3 units	2	1	3	32	17	49
Total		**2**	**1**	**3**	**32**	**17**	**49**

Traffic volumes have been distributed to the study area road network based on the traffic distribution developed in Section 4.4, in context with the location Galloway Park Entrance. It is noted that a secondary entrance to the soccer fields is available via Brandon Street from Highway 12 to the south. However, in order to create a conservative scenario, all soccer traffic has been assigned to the Galloway Park Entrance (main entrance).

2.7 Existing Traffic Volumes

The 2022 existing AM and PM peak hour traffic volumes at the study area are illustrated in **Figure 12**, established based on the conducted traffic counts, in addition to the estimated soccer field traffic.

2.8 Horizon Year Traffic Volumes

The background (2025, 2030 and 2035) horizon year traffic volumes are illustrated in **Figure 13** through **Figure 15**. The background volumes are based on the existing (2022) traffic volumes, adjusted to reflect the annual background growth rate of 1.25% in addition to the noted adjacent development traffic volumes (outlined in Section 2.4).

3 Intersection Operation without Proposed Development

3.1 Introduction

Existing and background horizon operational conditions were established to determine how the street network within the study area is currently functioning without the proposed development. This provides a base case scenario to compare with future development scenarios. Traffic operations within the study area were evaluated using the existing and future background traffic volumes with the existing road configuration and traffic control. The intersection performance was measured using the

traffic analysis software, Synchro 11, a deterministic model that employs Highway Capacity Manual and Intersection Capacity Utilization methodologies for analyzing intersection operations. These procedures are accepted by provincial and municipal agencies throughout North America.

Synchro 11 enables the study area to be graphically defined in terms of streets and intersections, along with their geometric and traffic control characteristics. The user is able to evaluate both signalized and unsignalized intersections in relation to each other, thus not only providing level of service for the individual intersections, but also enabling an assessment of the impact the various intersections in a network have on each other in terms of spacing, traffic congestion, delay, and queuing.

The intersection operations were also evaluated in terms of the LOS. LOS is a common measure of the quality of performance at an intersection and is defined in terms of vehicular delay. This delay includes deceleration delay, queue move-up time, stopped delay, and acceleration delay. LOS is expressed on a scale of A through F, where LOS A represents very little delay (i.e. less than 10 seconds per vehicle) and LOS F represents very high delay (i.e. greater than 50 seconds per vehicle for a stop sign controlled intersection and greater than 80 seconds per vehicle for a signalized intersection).

The LOS criteria for signalized and stop sign-controlled intersections are shown in **Table 6**. A description of traffic performance characteristics is included for each LOS.

Table 6 – Level of Service Criteria for Intersections

LOS	LOS Description	Control Delay (seconds per vehicle)	
		Signalized Intersections	**Stop Controlled Intersections**
A	Very low delay; most vehicles do not stop (**Excellent**)	less than 10.0	less than 10.0
B	Higher delay; more vehicles stop (**Very Good**)	between 10.0 and 20.0	between 10.0 and 15.0
C	Higher level of congestion; number of vehicles stopping is significant, although many still pass through intersection without stopping **(Good**)	between 20.0 and 35.0	between 15.0 and 25.0
D	Congestion becomes noticeable; vehicles must sometimes wait through more than one red light; many vehicles stop (**Satisfactory**)	between 35.0 and 55.0	between 25.0 and 35.0
E	Vehicles must often wait through more than one red light; considered by many agencies to be the limit of **acceptable** delay	between 55.0 and 80.0	between 35.0 and 50.0
F	This level is considered to be unacceptable to most drivers; occurs when arrival flow rates exceed the capacity of the intersection (**Unacceptable**)	greater than 80.0	greater than 50.0

3.2 Existing Intersection Operation

The results of the LOS analysis under existing (2022) traffic volumes during the AM and PM peak hour can be found below in **Table 7**. Existing intersection geometry and traffic control have been utilized for this scenario. Town staff provided signal timing plans in the form of an Engineering Opinion Letter entitled *King Street & Galloway Boulevard, William Street & Galloway Boulevard Intersection Review* (Cansult Tatham Transportation Consultants, February 13, 2006) [Cansult Review]. Based on our correspondence with Town staff, it is our understanding that the Cansult Review this is the latest information available and will likely require updating as dictated by the results of our traffic analyses.

For the purpose of this study, we have used the signal timings noted in the Cansult Review for the existing (2022) year, and have provided recommended adjustments for the proceeding background horizon years.

Detailed output of the Synchro analysis can be found in **Appendix D**.

Table 7 – Existing (2022) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Storage	Model				Storage	Model
King St / Galloway Blvd & Driveway (signalized)	0.50	12.8	B	-	-	0.42	9.5	A	-	-
EB	0.07	18.7	B	-	-	0.01	21.2	C	-	-
WBTL	0.54	22.8	C	-	23	0.38	23.7	C	-	18
WBR	0.09	18.8	B	60	4	0.03	21.3	C	60	5
NB	0.30	9.3	A	-	23	0.35	7.5	A	-	29
SB	0.49	11.4	B	-	29	0.44	8.4	A	-	34
William St / Galloway Blvd & Driveway (signalized)	0.56	9.8	A	-	-	0.45	7.5	A	-	-
EB	0.37	24.9	C	-	-	0.19	24.6	C	-	-
WB	0.11	23.0	C	-	-	0.18	24.5	C	-	-
NB	0.60	8.4	A	-	55	0.50	6.5	A	-	46
SB	0.19	4.2	A	-	14	0.30	4.4	A	-	19
Pratt Ave / Galloway Blvd (unsignalized)	-	1.0	A	-	-	-	1.3	A	-	-
EB	0.07	0.0	-	-	-	0.06	0.0	-	-	-
WB	0.01	0.8	A	-	-	0.01	1.1	A	-	-
NB	0.02	9.3	A	-	-	0.02	9.4	A	-	-
King St / West Access (unsignalized)	-	0.0	A	-	-	-	0.4	A	-	-
WB	0.00	10.0	B	-	-	0.04	12.9	B	-	1.0

The results of the LOS analysis indicate that all intersections are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queue in the southbound direction at the King Street / Galloway Boulevard intersection will extend past the existing entrance to the Parkview Apartments. This blockage is not unexpected given the nominal spacing between the existing driveway and the southbound stop bar (approximately 9 metres). It is recommended that the Town consider restricting the existing entrance to a right-in/right-out configuration, in order to avoid any potential queuing for northbound left tuning vehicles, given the proximity to the King Street / Galloway Boulevard intersection.

The anticipated 95th percentile queue in the northbound direction at the William Street / Galloway Boulevard intersection will extend past the existing Circle K on William Street. However, such queues are not considered problematic given the provision of an alternate access point for the development from Birchwood Drive. Consequently, no additional improvements are recommended.

The remaining anticipated 95th percentile queues at the study intersections will not result in any adverse operational or traffic safety concerns.

An analysis was completed for left turn movements at the unsignalized intersections, based on the criteria outlined in Appendix 9A of the Ontario Ministry of Transportation Design Supplement for TAC Geometric Design Guide for Canadian Roads June 2017 [MTO DS]. Based on MTO DS criteria, an exclusive southbound left turn lane is warranted at the King Street / West Access (Galloway Park Entrance) intersection (results provided in **Appendix H**). However, it is noted that the warrant is only triggered during the PM peak hour and no operational or queuing issues occur at the intersection. Furthermore, the east lane (median lane) is expected to act as a defacto left turn lane while the west lane (curb lane) allows for southbound vehicles to maneuver the turning vehicles. As such, no improvements are recommended.

A review of the need for an additional auxiliary right turn lanes at the unsignalized intersections was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all turning movements; consequently, auxiliary right turn lanes are not recommended.

Further consideration for traffic signal improvements were considered at the unsignalized intersections based on the Ontario Traffic Manual Book 12 *Signal Justification*. The results indicate that traffic signals are not warranted at the intersection (results are provided in **Appendix I**).
No additional improvements are recommended within the study area.

3.3 Background (2025) Intersection Operation

The results of the LOS analysis under background (2025) traffic volumes during the AM and PM peak hour can be found below in **Table 8**. Existing intersection geometry has been utilized for this scenario and traffic control have been utilized for this scenario. Detailed output of the Synchro analysis can be found in **Appendix E**.

Table 8 – Background (2025) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Storage	Model				Storage	Model
King St / Galloway Blvd & Driveway (signalized)	0.59	13.6	B	-	-	0.53	10.3	B	-	-
EB	0.07	18.5	B	-	-	0.01	21.1	C	-	-
WBTL	0.55	23.0	C	-	23	0.39	23.6	C	-	19
WBR	0.09	18.6	B	60	5	0.04	21.2	C	60	5
NB	0.37	10.0	B	-	31	0.43	8.2	A	-	38
SB	0.61	13.2	B	-	37	0.58	10.1	B	-	49
William St / Galloway Blvd & Driveway (signalized)	0.68	11.0	B	-	-	0.61	8.8	A	-	-
EB	0.38	24.8	C	-	-	0.23	24.4	C	-	-
WB	0.11	22.8	C	-	-	0.17	24.0	C	-	-
NB	0.74	12.0	B	-	79	0.68	9.4	A	-	79
SB	0.28	4.7	A	-	21	0.38	4.9	A	-	25
Pratt Ave / Galloway Blvd (unsignalized)	-	1.0	A	-	-	-	1.3	A	-	-
EB	0.08	0.0	-	-	-	0.06	0.0	-	-	-
WB	0.01	0.8	A	-	-	0.01	1.1	A	-	-
NB	0.02	9.3	A	-	-	0.02	9.4	A	-	-
King St / West Access (unsignalized)	-	0.0	A	-	-	-	0.4	A	-	-
WB	0.00	10.5	B	-	-	0.05	15.2	C	-	1.0

The results of the LOS analysis indicate that all intersections are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queue in the southbound direction at the King Street / Galloway Boulevard intersection will extend past the existing entrance to the Parkview Apartments. It is again noted that this blockage is not unexpected and consideration be given to converting the existing entrance to a right-in/right-out configuration.

The anticipated 95th percentile queue in the northbound direction at the direction at the King Street / Galloway Boulevard intersection will extend past the existing entrance to the Midland Chrysler/Ram Dealership. However, such queues are not considered problematic given the provision of an alternate access point for the development from Birchwood Drive. Consequently, no additional improvements are recommended.

The anticipated 95th percentile queue in the northbound direction at the William Street / Galloway Boulevard intersection will extend past the existing Circle K on William Street. It is again noted that such queues are not considered problematic given the provision of an alternate access point for the development from Birchwood Drive. Consequently, no additional improvements are recommended.

The remaining anticipated 95th percentile queues at the study intersections will not result in any adverse operational or traffic safety concerns.

An analysis was completed for left turn movements at the unsignalized intersections, based on the criteria outlined in Appendix 9A of the MTO DS. Based on MTO DS criteria, an exclusive southbound

left turn lane is warranted at the King Street / West Access (Galloway Park Entrance) intersection (results provided in **Appendix H**). However, it is again noted that the warrant is only triggered during the PM peak hour and no operational or queuing issues occur at the intersection. Furthermore, the east lane (median lane) is expected to act as a defacto left turn lane while the west lane (curb lane) allows for southbound vehicles to maneuver the turning vehicles. As such, no improvements are recommended.

A review of the need for an additional auxiliary right turn lanes at the unsignalized intersections was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all turning movements; consequently, auxiliary right turn lanes are not recommended.

Further consideration for traffic signal improvements were considered at the unsignalized intersections based on the Ontario Traffic Manual Book 12 *Signal Justification*. The results indicate that traffic signals are not warranted at the intersection (results are provided in **Appendix I**).
No additional improvements are recommended within the study area.

No additional improvements are recommended within the study area.

3.4 Background (2030) Intersection Operation

The results of the LOS analysis under background (2030) traffic volumes during the AM and PM peak hour can be found below in **Table 9**. The improvement of William Street to a three-lane profile (as discussed in Section 2.2) has been utilized for this scenario. Detailed output of the Synchro analysis can be found in **Appendix E**.

Table 9 – Background (2030) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Storage	Model				Storage	Model
King St / Galloway Blvd & Driveway (signalized)	0.66	14.8	B	-	-	0.62	11.5	B	-	-
EB	0.07	18.0	B	-	-	0.01	20.9	C	-	-
WBTL	0.58	23.1	C	-	25	0.41	23.6	C	-	20
WBR	0.10	18.2	B	60	4	0.04	21.0	C	60	6
NB	0.45	10.9	B	-	38	0.49	8.8	A	-	44
SB	0.71	15.7	B	-	43	0.70	12.2	B	-	63
William St / Galloway Blvd & Driveway (signalized)	0.52	10.1	B	-	-	0.58	9.3	B	-	-
EB	0.36	25.6	C	-	-	0.26	26.6	C	-	-
WB	0.09	23.6	C	-	-	0.18	26.0	C	-	-
NBL	0.25	6.1	A	TWLTL	12	0.15	4.4	A	TWLTL	6
NBTR	0.56	8.3	A	-	57	0.59	7.3	A	-	69
SBL	0.07	4.6	A	TWLTL	5	0.09	3.8	A	TWLTL	4
SBTR	0.47	7.1	A	-	53	0.64	8.0	A	-	72
Pratt Ave / Galloway Blvd (unsignalized)	-	0.9	A	-	-	-	1.2	A	-	-
EB	0.08	0.0	-	-	-	0.07	0.0	-	-	-
WB	0.01	0.7	A	-	-	0.01	1.0	A	-	-
NB	0.02	9.4	A	-	-	0.02	9.5	A	-	-
King St / West Access (unsignalized)	-	0.0	A	-	-	-	0.4	A	-	-
WB	0.00	11.0	B	-	-	0.06	17.2	C	-	2.0

The results of the LOS analysis indicate that all intersections are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queue in the southbound direction at the King Street / Galloway Boulevard intersection will extend past the existing entrance to the Parkview Apartments. It is again noted that this blockage is not unexpected and consideration be given to converting the existing entrance to a right-in/right-out configuration.

The anticipated 95th percentile queue in the northbound direction at the direction at the King Street / Galloway Boulevard intersection will extend past the existing entrance to the Midland Chrysler/Ram Dealership. It is again noted that such queues are not considered problematic given the provision of an alternate access point for the development from Birchwood Drive. Consequently, no additional improvements are recommended.

The anticipated 95th percentile queue in the northbound direction at the William Street / Galloway Boulevard intersection will extend past the existing Circle K on William Street. It is again noted that such queues are not considered problematic given the provision of an alternate access point for the development from Birchwood Drive. Consequently, no additional improvements are recommended.

The remaining anticipated 95th percentile queues at the study intersections will not result in any adverse operational or traffic safety concerns.

An analysis was completed for left turn movements at the unsignalized intersections, based on the criteria outlined in Appendix 9A of the MTO DS. Based on MTO DS criteria, an exclusive southbound left turn lane is warranted at the King Street / West Access (Galloway Park Entrance) intersection (results provided in **Appendix H**). However, it is again noted that the warrant is only triggered during the PM peak hour and no operational or queuing issues occur at the intersection. Furthermore, the east lane (median lane) is expected to act as a defacto left turn lane while the west lane (curb lane) allows for southbound vehicles to maneuver the turning vehicles. As such, no improvements are recommended.

A review of the need for an additional auxiliary right turn lanes at the unsignalized intersections was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all turning movements; consequently, auxiliary right turn lanes are not recommended.

Further consideration for traffic signal improvements were considered at the unsignalized intersections based on the Ontario Traffic Manual Book 12 *Signal Justification*. The results indicate that traffic signals are not warranted at the intersection (results are provided in **Appendix I**).
No additional improvements are recommended within the study area.

No additional improvements are recommended within the study area.

3.5 Background (2035) Intersection Operation

The results of the LOS analysis under background (2035) traffic volumes during the AM and PM peak hour can be found below in **Table 10**. The improvement of William Street to a three-lane profile (as discussed in Section 2.2) has been utilized for this scenario. Optimized signal timings have been utilized at the signalized intersections including the following:

King Street / Galloway Boulevard & Driveway

- Southbound advanced left turn phase (9 seconds green time); and
- Cycle length of 90 and 100 seconds during the AM and PM peak hours, respectively.

Detailed output of the Synchro analysis can be found in **Appendix E**.

Table 10 – Background (2035) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Storage	Model				Storage	Model
King St / Galloway Blvd & Driveway (signalized)	0.77	18.5	B	-	-	0.76	13.1	B	-	-
EB	0.09	27.7	C	-	-	0.01	34.7	C	-	-
WBTL	0.75	42.7	D	-	38	0.61	43.8	D	-	33
WBR	0.11	27.8	C	60	5	0.04	34.9	C	60	5
NB	0.56	16.3	B	-	64	0.55	11.8	B	-	78
SB	0.73	13.7	B	-	41	0.75	10.3	B	-	70
William St / Galloway Blvd & Driveway (signalized)	0.55	10.5	B	-	-	0.61	9.8	A	-	-
EB	0.38	25.6	C	-	-	0.27	26.5	C	-	-
WB	0.09	23.5	C	-	-	0.18	25.9	C	-	-
NBL	0.28	6.6	A	TWLTL	14	0.19	4.9	A	TWLTL	7
NBTR	0.60	8.9	A	-	63	0.62	7.8	A	-	76
SBL	0.08	4.7	A	TWLTL	5	0.10	3.9	A	TWLTL	4
SBTR	0.50	7.6	A	-	58	0.68	8.8	A	-	81
Pratt Ave / Galloway Blvd (unsignalized)	-	0.9	A	-	-	-	1.2	A	-	-
EB	0.09	0.0	-	-	-	0.07	0.0	-	-	-
WB	0.01	0.7	A	-	-	0.01	1.0	A	-	-
NB	0.02	9.5	A	-	-	0.02	9.5	A	-	-
King St / West Access (unsignalized)	-	0.0	A	-	-	-	0.4	B	-	-
WB	0.0	11.9	B	-	-	0.08	21.7	C	-	3.0

The results of the LOS analysis indicate that all intersections are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queue in the southbound direction at the King Street / Galloway Boulevard intersection will extend past the existing entrance to the Parkview Apartments. It is again noted that this blockage is not unexpected and consideration be given to converting the existing entrance to a right-in/right-out configuration.

The anticipated 95th percentile queue in the northbound direction at the direction at the King Street / Galloway Boulevard intersection will extend past the existing entrance to the Midland Chrysler/Ram Dealership. It is again noted that such queues are not considered problematic given the provision of an alternate access point for the development from Birchwood Drive. Consequently, no additional improvements are recommended.

The anticipated 95th percentile queue in the northbound direction at the William Street / Galloway Boulevard intersection will extend past the existing Circle K on William Street. It is again noted that such queues are not considered problematic given the provision of an alternate access point for the development from Birchwood Drive. Consequently, no additional improvements are recommended.

The anticipated 95th percentile queue in the southbound direction at the William Street / Galloway Boulevard intersection will extend to Bayview Drive on William Street. Based on our review, it is

anticipated that the queuing will clear during each cycle length and is not expected to cause any operational or traffic safety concerns. Consequently, no additional improvements are recommended.

It is again noted that such queues are not considered problematic given the provision of an alternate access point for the development from Birchwood Drive. Consequently, no additional improvements are recommended.

The remaining anticipated 95th percentile queues at the study intersections will not result in any adverse operational or safety concerns.

An analysis was completed for left turn movements at the unsignalized intersections, based on the criteria outlined in Appendix 9A of the MTO DS. Based on MTO DS criteria, an exclusive southbound left turn lane is warranted at the King Street / West Access (Galloway Park Entrance) intersection (results provided in **Appendix H**). However, it is again noted that the warrant is only triggered during the PM peak hour and no operational or queuing issues occur at the intersection. Furthermore, the east lane (median lane) is expected to act as a defacto left turn lane while the west lane (curb lane) allows for southbound vehicles to maneuver the turning vehicles. As such, no improvements are recommended.

A review of the need for an additional auxiliary right turn lanes at the unsignalized intersections was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all turning movements; consequently, auxiliary right turn lanes are not recommended.

Further consideration for traffic signal improvements were considered at the unsignalized intersections based on the Ontario Traffic Manual Book 12 *Signal Justification*. The results indicate that traffic signals are not warranted at the intersection (results are provided in **Appendix I**).
No additional improvements are recommended within the study area.

No additional improvements are recommended within the study area.

4 Proposed Development Traffic Generation and Assignment

4.1 Traffic Generation

The traffic generation for proposed development has been estimated based the type of land use, development size and data provided in the ITE Trip Generation Manual. The following ITE land use has been applied to estimate the traffic for the proposed development:

- ITE land use 210 (Single-Family Detached);
- ITE land use 220 (Multifamily Housing (Low-Rise)).

The utilized traffic rates and estimated trip generation of the proposed development is illustrated below in **Table 11**.

Table 11 – ITE Traffic Generation Trip Rates & Fitted Curve Equations (Subject Site)

Land Use	Trip Basis	AM Peak Hour			PM Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Single-Family Detached ITE Land Use: 210	equation (units)	Ln(T) = 0.91 Ln(X) + 0.12			Ln(T) = 0.94 Ln(X) + 0.27		
	distribution	26%	74%	26%	74%	26%	74%
Multifamily Housing (Low-Rise) ITE Land Use: 220	rate (units)	0.10	0.30	0.40	0.32	0.19	0.51

Table 12 – Estimated Trip Generation of the Proposed Development

Land Use	Units	AM Peak Hour			PM Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Single-Family Detached ITE Land Use: 210	138	26	74	100	85	50	135
Multifamily Housing (Low-Rise) ITE Land Use: 220	129	12	40	52	41	25	66
Total Trips	**267 units**	**38**	**114**	**152**	**126**	**74**	**200**

In order to be conservative, no transportation modal split reduction has been applied to the above-noted traffic generation calculation.

4.2 Traffic Assignment

For the purposes of this study, it has been assumed that all traffic generated by the proposed development will be new traffic and would not be in the study area if the development was not constructed.

The ITE data provides the anticipated percentage of new traffic entering and exiting during the peak hour. The distribution of traffic has been calculated based on the 2016 Transportation Tomorrow Survey [TTS] data for traffic zone 8576 retrieved using the TTS Internet Data Retrieval System [IDRS] (output attached as **Appendix E**). TTS data provides historical origin and destination work trip percentages for specific areas within the County and the Greater Toronto and Hamilton Area [GTHA].

Traffic distribution for the trips generated by the proposed development is expected to generally follow commuter travel patterns. Our analysis is based on egress traffic during the AM peak hour. Logically, the distribution of ingress traffic will follow the inverse of the exiting traffic distribution. For each of the individual areas identified in the TTS data, we have selected the probable route of travel, assuming drivers will select their route primarily based on travel time.

The distribution of trips is illustrated in **Table 13** using the methodology outlined above.

Table 13 – Proposed Development Traffic Distribution

Travel Direction (to / from)	Percent of Total Traffic Generation
Northeast via William St	15%
Northwest via King St	53%
Southeast via William St	14%
Southwest via King St	18%
TOTAL	**100%**

The site traffic assignment for buildout of the proposed developments for the AM and PM peak hour is illustrated in **Figure 16**.

4.3 Existing Traffic Redistribution

The construction of the Subject Site's internal road layout will provide an alternate route for the existing residential units to the north (Christine Drive area). The anticipated catchment areas for the residential units expected to traverse the study area intersections are illustrated in **Figure 17** and **Figure 18**. **Figure 19** illustrates the existing traffic volume redistribution.

4.4 Total Horizon Year Traffic Volumes with the Proposed Development

For the total (2025, 2030 and 2035) horizon year traffic volumes, the proposed development traffic was added to the background (2025, 2030 and 2035) traffic volumes. The resulting total (2025, 2030 and 2035) horizon year traffic volume for the AM and PM peak hour are illustrated in **Figure 20** through **Figure 22**.

5 Intersection Operation with Proposed Development

5.1 Total (2025) Intersection Operation

The results of the LOS analysis under total (2025) traffic volumes during the AM and PM peak hour can be found below in **Table 14**. Existing intersection geometry has been utilized for this scenario, including stop control for the West Access egress movement. The West Access has been modelled to include a westbound shared left/right turn lane. Detailed output of the Synchro analysis can be found in **Appendix G**.

Table 14 – Total (2025) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Storage	Model				Storage	Model
King St / Galloway Blvd & Driveway (signalized)	0.61	14.1	B	-	-	0.62	11.7	B	-	-
EB	0.07	17.9	B	-	-	0.01	20.7	C	-	-
WBTL	0.52	21.5	C	-	22	0.36	23.0	C	-	18
WBR	0.13	18.2	B	60	4	0.05	20.9	C	60	8
NB	0.40	10.4	B	-	33	0.44	8.4	A	-	39
SB	0.66	14.4	B	-	40	0.71	12.7	B	-	61
William St / Galloway Blvd & Driveway (signalized)	0.72	13.6	B	-	-	0.65	9.6	A	-	-
EB	0.45	24.0	C	-	-	0.32	24.5	C	-	-
WB	0.09	21.1	C	-	-	0.17	23.5	C	-	-
NB	0.80	16.2	B	-	91	0.72	10.6	B	-	91
SB	0.32	6.0	A	-	25	0.39	5.2	A	-	28
Pratt Ave / Galloway Blvd (unsignalized)	-	3.3	A	-	-	-	3.8	A	-	-
EB	0.09	0.0	-	-	-	0.10	0.0	-	-	-
WB	0.02	1.2	A	-	-	0.03	2.9	A	-	-
NB	0.16	10.9	B	-	-	0.15	10.7	B	-	-
King St / West Access (unsignalized)	-	1.1	A	-	-	-	1.3	B	-	-
WB	0.21	18.8	C	-	5	0.24	25.9	D	-	7
NBTR	0.26	0.0	-	-	-	0.29	0.0	-	-	-
SBTL	0.24	0.6	A	-	-	0.31	2.4	A	-	-

The results of the LOS analysis indicate that all intersections are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queue in the southbound direction at the King Street / Galloway Boulevard intersection will extend past the existing entrance to the Parkview Apartments. It is noted that this blockage is not unexpected and consideration be given to converting the existing entrance to a right-in/right-out configuration.

The anticipated 95th percentile queue in the northbound direction at the direction at the King Street / Galloway Boulevard intersection will extend past the existing entrance to the Midland Chrysler/Ram Dealership. However, such queues are not considered problematic given the provision of an alternate access point for the development from Birchwood Drive. Consequently, no additional improvements are recommended.

The anticipated 95th percentile queue in the northbound direction at the William Street / Galloway Boulevard intersection will extend past the existing Circle K on William Street. It is again noted that such queues are not considered problematic given the provision of an alternate access point for the development from Birchwood Drive. Consequently, no additional improvements are recommended.

The remaining anticipated 95th percentile queues at the study intersections will not result in any adverse operational or traffic safety concerns.

An analysis was completed for left turn movements at the unsignalized intersections, based on the criteria outlined in Appendix 9A of the MTO DS. Based on MTO DS criteria, an exclusive southbound left turn lane is warranted at the King Street / West Access (Galloway Park Entrance) intersection (results provided in **Appendix H**). However, it is again noted that the warrant is only triggered during the PM peak hour and no operational or queuing issues occur at the intersection. Furthermore, the east lane (median lane) is expected to act as a defacto left turn lane while the west lane (curb lane) allows for southbound vehicles to maneuver the turning vehicles. As such, no improvements are recommended.

A review of the need for an additional auxiliary right turn lanes at the unsignalized intersections was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all turning movements; consequently, auxiliary right turn lanes are not recommended.

Further consideration for traffic signal improvements were considered at the unsignalized intersections based on the Ontario Traffic Manual Book 12 *Signal Justification*. The results indicate that traffic signals are not warranted at the intersection (results are provided in **Appendix I**).
No additional improvements are recommended within the study area.

No additional improvements are recommended within the study area.

5.2 Total (2030) Intersection Operation

The results of the LOS analysis under total (2030) traffic volumes during the AM and PM peak hour can be found below in **Table 15**. The improvement of William Street to a three-lane profile (as discussed in Section 2.2) has been utilized for this scenario. Stop control has been assumed at the West Access egress movements. The West Access has been modelled to include a westbound shared left/right turn lane. Detailed output of the Synchro analysis can be found in **Appendix G**.

Table 15 – Total (2030) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Storage	Model				Storage	Model
King St / Galloway Blvd & Driveway (signalized)	0.69	15.8	B	-	-	0.73	14.13	B	-	-
EB	0.07	17.6	B	-	-	0.01	20.5	C	-	-
WBTL	0.54	21.8	C	-	24	0.38	23.0	C	-	19
WBR	0.22	18.5	B	60	9	0.05	20.7	C	60	8
NB	0.47	11.3	B	-	40	0.50	9.0	A	-	45
SB	0.77	17.8	B	-	46	0.84	17.6	B	-	92
William St / Galloway Blvd & Driveway (signalized)	0.56	11.2	B	-	-	0.61	9.9	A	-	-
EB	0.52	26.8	C	-	-	0.34	26.7	C	-	-
WB	0.09	22.8	C	-	-	0.18	25.5	C	-	-
NBL	0.27	6.9	A	TWLTL	14	0.20	5.0	A	TWLTL	8
NBTR	0.57	9.2	A	-	64	0.60	7.5	A	-	74
SBL	0.08	5.1	A	TWLTL	5	0.09	3.9	A	TWLTL	5
SBTR	0.49	8.1	A	-	61	0.66	8.8	A	-	71
Pratt Ave / Galloway Blvd (unsignalized)	-	3.2	A	-	-	-	3.7	A	-	-
EB	0.09	0.0	-	-	-	0.10	0.0	-	-	-
WB	0.02	1.2	A	-	-	0.03	2.8	A	-	-
NB	0.16	11.1	B	-	-	0.15	10.8	B	-	-
King St / West Access (unsignalized)	-	1.1	A	-	-	-	1.5	B	-	-
WB	0.26	22.6	C	-	8	0.32	30.7	D	-	10
NBTR	0.30	0.0	-	-	-	0.33	0.0	-	-	-
SBTL	0.27	0.6	A	-	-	0.35	2.4	A	-	-

The results of the LOS analysis indicate that all intersections are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queue in the southbound direction at the King Street / Galloway Boulevard intersection will extend past the existing entrance to the Parkview Apartments. It is again noted that this blockage is not unexpected and consideration be given to converting the existing entrance to a right-in/right-out configuration.

The anticipated 95th percentile queue in the northbound direction at the direction at the King Street / Galloway Boulevard intersection will extend past the existing entrance to the Midland Chrysler/Ram Dealership. It is again noted that such queues are not considered problematic given the provision of an alternate access point for the development from Birchwood Drive. Consequently, no additional improvements are recommended.

The anticipated 95th percentile queue in the northbound direction at the William Street / Galloway Boulevard intersection will extend past the existing Circle K on William Street. It is again noted that such queues are not considered problematic given the provision of an alternate access point for the development from Birchwood Drive. Consequently, no additional improvements are recommended.

The remaining anticipated 95th percentile queues at the study intersections will not result in any adverse operational or traffic safety concerns.

An analysis was completed for left turn movements at the unsignalized intersections, based on the criteria outlined in Appendix 9A of the MTO DS. Based on MTO DS criteria, an exclusive southbound left turn lane is warranted at the King Street / West Access (Galloway Park Entrance) intersection (results provided in **Appendix H**). However, it is again noted that the warrant is only triggered during the PM peak hour and no operational or queuing issues occur at the intersection. Furthermore, the east lane (median lane) is expected to act as a defacto left turn lane while the west lane (curb lane) allows for southbound vehicles to maneuver the turning vehicles. As such, no improvements are recommended.

A review of the need for an additional auxiliary right turn lanes at the unsignalized intersections was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all turning movements; consequently, auxiliary right turn lanes are not recommended.

Further consideration for traffic signal improvements were considered at the unsignalized intersections based on the Ontario Traffic Manual Book 12 *Signal Justification*. The results indicate that traffic signals are not warranted at the intersection (results are provided in **Appendix I**).
No additional improvements are recommended within the study area.

No additional improvements are recommended within the study area.

5.3 Total (2035) Intersection Operation

The results of the LOS analysis under total (2035) traffic volumes during the AM and PM peak hour can be found below in **Table 16**. The improvement of William Street to a three-lane profile (as discussed in Section 2.2) has been utilized for this scenario, in addition to the signal timing improvements noted in Section 3.5. Stop control has been assumed at the West Access egress movements. The West Access has been modelled to include a westbound shared left/right turn lane. Detailed output of the Synchro analysis can be found in **Appendix G**.

Table 16 – Total (2035) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Storage	Model				Storage	Model
King St / Galloway Blvd & Driveway (signalized)	0.79	18.6	B	-	-	0.86	19.7	B	-	-
EB	0.09	28.1	C	-	-	0.01	33.1	C	-	-
WBTL	0.73	41.9	D	-	37	0.47	37.3	D	-	31
WBR	0.15	28.5	C	60	5	0.06	33.4	C	60	10
NB	0.57	15.8	B	-	65	0.58	13.7	B	-	78
SB	0.76	14.4	B	-	42	0.92	22.2	C	-	90
William St / Galloway Blvd & Driveway (signalized)	0.60	11.7	B	-	-	0.65	10.5	B	-	-
EB	0.55	27.6	C	-	-	0.35	26.7	C	-	-
WB	0.09	22.8	C	-	-	0.18	25.4	C	-	-
NBL	0.30	7.4	A	TWLTL	15	0.24	5.7	A	TWLTL	9
NBTR	0.61	9.9	A	-	70	0.63	8.1	A	-	82
SBL	0.08	5.2	A	TWLTL	5	0.10	4.0	A	TWLTL	5
SBTR	0.52	8.5	A	-	65	0.71	9.7	A	-	92
Pratt Ave / Galloway Blvd (unsignalized)	-	3.2	A	-	-	-	3.6	A	-	-
EB	0.09	0.0	-	-	-	0.11	0.0	-	-	-
WB	0.02	1.1	A	-	-	0.03	2.7	A	-	-
NB	0.16	11.1	B	-	-	0.15	10.9	B	-	4.0
King St / West Access (unsignalized)	-	1.3	A	-	-	-	1.9	A	-	-
WB	0.35	32.3	D	-	12	0.45	49.4	E	-	16
NBTR	0.38	0.0	-	-	-	0.39	0.0	-	-	-
SBTL	0.30	0.7	A	-	-	0.43	2.5	A	-	

The results of the LOS analysis indicate that all intersections are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queue in the southbound direction at the King Street / Galloway Boulevard intersection will extend past the existing entrance to the Parkview Apartments. It is again noted that this blockage is not unexpected and consideration be given to converting the existing entrance to a right-in/right-out configuration.

The anticipated 95th percentile queue in the northbound direction at the direction at the King Street / Galloway Boulevard intersection will extend past the existing entrance to the Midland Chrysler/Ram Dealership. It is again noted that such queues are not considered problematic given the provision of an alternate access point for the development from Birchwood Drive. Consequently, no additional improvements are recommended.

The anticipated 95th percentile queue in the southbound direction at the William Street / Galloway Boulevard intersection will extend past Bayview Drive on William Street. Based on our review, it is anticipated that the queuing will clear during each cycle length and is not expected to cause any operational or safety concerns. Consequently, no additional improvements are recommended.

The anticipated 95th percentile queue in the northbound direction at the William Street / Galloway Boulevard intersection will extend past the existing Circle K on William Street. It is again noted that such queues are not considered problematic given the provision of an alternate access point for the development from Birchwood Drive. Consequently, no additional improvements are recommended.

The remaining anticipated 95th percentile queues at the study intersections will not result in any adverse operational or traffic safety concerns.

An analysis was completed for left turn movements at the unsignalized intersections, based on the criteria outlined in Appendix 9A of the MTO DS. Based on MTO DS criteria, an exclusive southbound left turn lane is warranted at the King Street / West Access (Galloway Park Entrance) intersection (results provided in **Appendix H**). However, it is again noted that the warrant is only triggered during the PM peak hour and no operational or queuing issues occur at the intersection. Furthermore, the east lane (median lane) is expected to act as a defacto left turn lane while the west lane (curb lane) allows for southbound vehicles to maneuver the turning vehicles. As such, no improvements are recommended.

A review of the need for an additional auxiliary right turn lanes at the unsignalized intersections was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all turning movements; consequently, auxiliary right turn lanes are not recommended.

Further consideration for traffic signal improvements were considered at the unsignalized intersections based on the Ontario Traffic Manual Book 12 *Signal Justification*. The results indicate that traffic signals are not warranted at the intersection (results are provided in **Appendix I**).
No additional improvements are recommended within the study area.

No additional improvements are recommended within the study area.

5.4 Site Access

The West Access will operate efficiently as a full-movement intersection, with one-way stop control for the westbound movements. A single ingress and egress lane will provide the necessary capacity to service the proposed development. The proposed extension of Pratt Avenue, with one northbound and one southbound lane, will provide the necessary capacity to service the proposed development.

The proposed spacing, along King Street, between the West Access and Highway 12 (Classified as a 2B Arterial), is approximately 500 metres, which is greater than the desirable intersection spacing as identified in the MTO Highway Corridor Management Manual (September 2018) Figure 4.6.10 (400 metres - desirable).

The proposed spacing between the West Access and the closest driveway to the to the north and south is less than the minimum intersection spacing requirements as identified in the Transportation Association of Canada Design Guide for Canadian Roads (2017) [TAC Guidelines] – Figure 8.8.2 (Suggested Minimum Corner Clearance to Accesses at Major Intersections) – 35 metres for arterial roads for unsignalized conditions. However, in context with the relatively moderate site generated trips expected to utilize the West Access (63 AM and 82 PM trips), the proposed spacing is considered reasonable.

Based on the existing parking lot layout for the commercial property north of Street A, there is an opportunity to remove the southern driveway onto King Street and provide access directly via Street A. This configuration would provide the 35-metre spacing between Street A and the next existing driveway to the north.

Similarly, based on the existing parking lot layout for the commercial property south of Street A, there is an opportunity to remove the existing driveway onto King Street and provide access directly via Street A. This configuration would provide the 35-metre spacing between Street A and the next existing driveway to the south.

5.5 Sight Distance Review

A review of the available sight distances for the proposed West Access was completed as part of this analysis.

The sight distance north and south of the West Access is greater than both the minimum sight stopping and intersection sight distance requirements as identified in the TAC Guidelines for a design speed of 60km/h (85 and 130 meters, respectively).

As such, there are no issue with the sight distance available for the proposed West Access.

6 Summary

Pratt Development Inc. retained **JD Engineering** to prepare this traffic impact study in support of the proposed residential development in the Town of Midland. The proposed Draft Plan of Subdivision is shown in **Appendix A**. This chapter summarizes the conclusions and recommendations from the study.

1. The proposed development is expected to generate a total of 152 AM and 200 PM peak hour trips.
2. Detailed intersection counts were commissioned by JD Engineering at the study intersections.
3. An intersection operation analysis was completed at the study area intersections, using the existing and background (2025, 2030 and 2035) traffic volumes, with consideration for the projected adjacent development traffic growth and without the proposed development traffic. This enabled a review of existing and future traffic deficiencies that would be present without the influence of the proposed development. The following improvements are recommended:

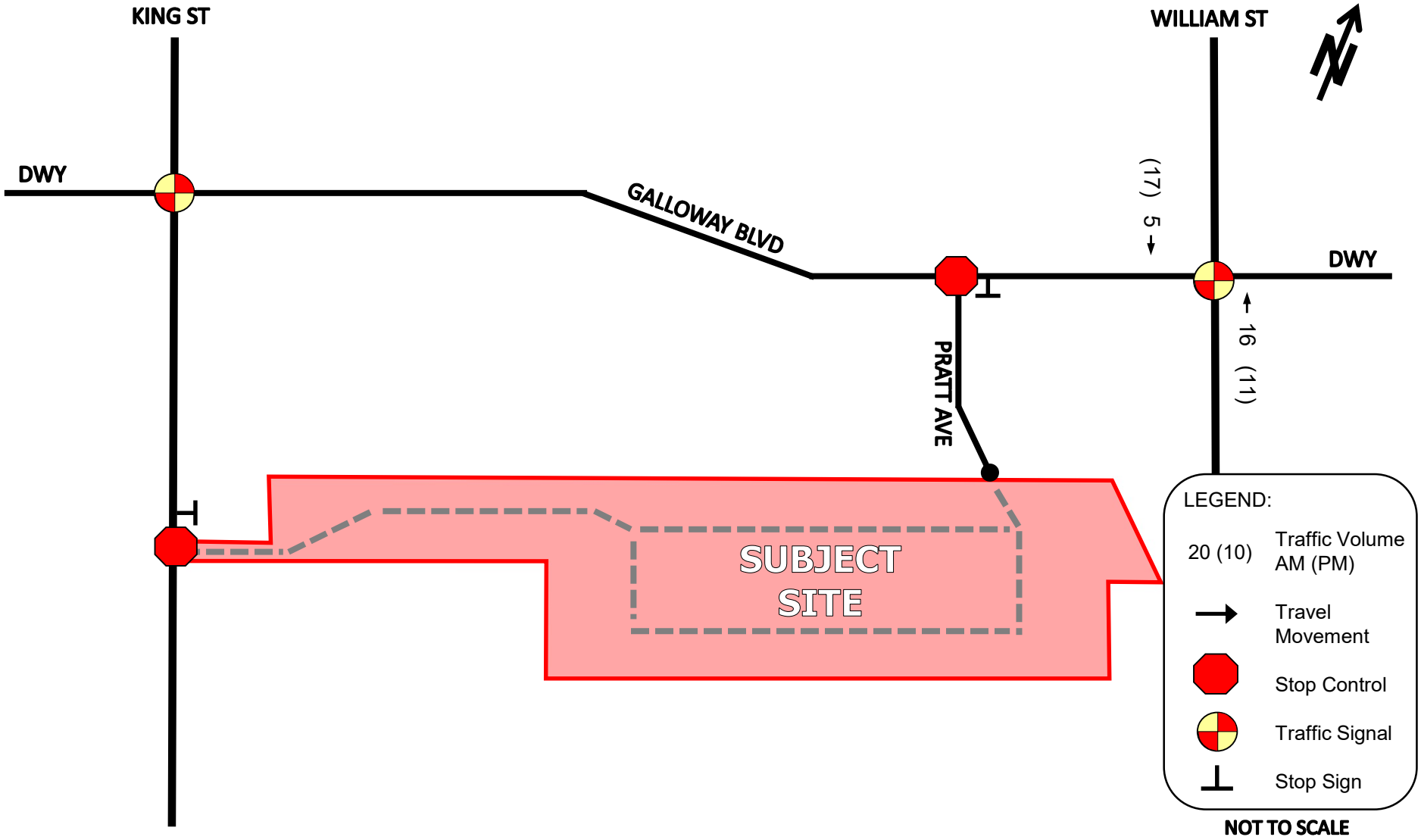
   Background 2035

   King Street / Galloway Boulevard & Driveway

   - Southbound advanced left turn phase (9 seconds green time); and
   - Cycle length of 90 and 100 seconds during the AM and PM peak hours, respectively.
4. An estimate of the amount of traffic that would be generated by the Subject Site was prepared and assigned to the study area streets and intersections.
5. An intersection operation analysis was completed under total (2025, 2030 and 2035) traffic volumes with the proposed development operational at the study area intersections. No improvements (other than the planned conversion to a 3-lane profile on William Street) are recommended within the study area.
6. The proposed Site Accesses will operate efficiently with one-way stop control for egress movements. A single lane for ingress and egress movements will provide the necessary capacity to convey the traffic volume generated by the proposed development.

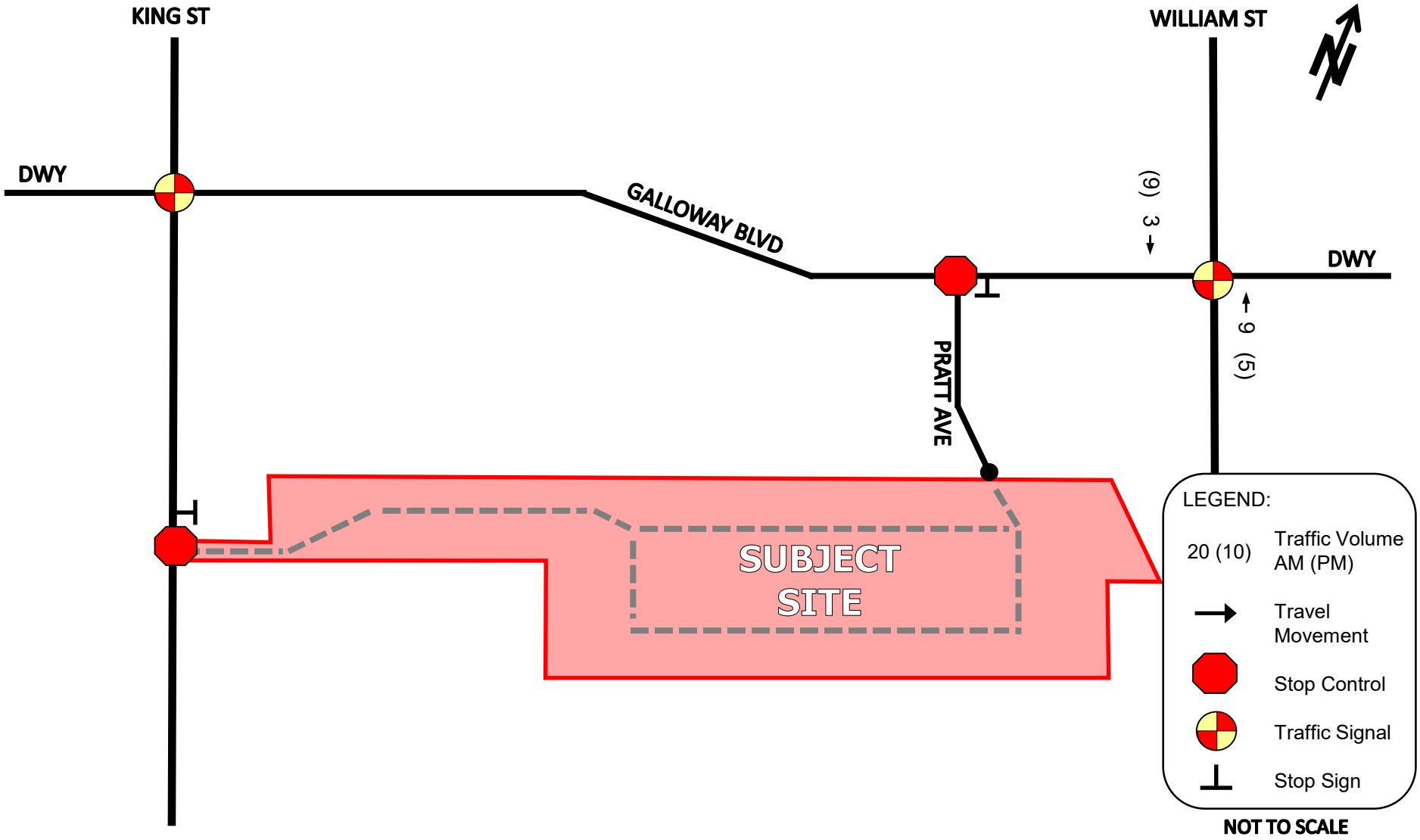
7. The location of the proposed West Access on King Street is considered appropriate for the intended use. There is an opportunity to remove the southern driveway onto King Street for the commercial property to the north and provide access directly via Street A. This configuration would provide the Transportation Association of Canada Design Guide for Canadian Roads (2017) [TAC] minimum spacing between Street A and the next existing driveway to the north. Similarly, there is an opportunity to remove the existing driveway onto King Street for the commercial property to the south and provide access directly via Street A. This configuration would provide the TAC minimum spacing between Street A and the next existing driveway to the south.
8. The sight distance available for the proposed West Access is suitable for the intended use.
9. In summary, the proposed development will not cause any operational issues and will not add significant delay or congestion to the local roadway network.

Figure 4: Adjacent Development Traffic Volumes – 786 William Street



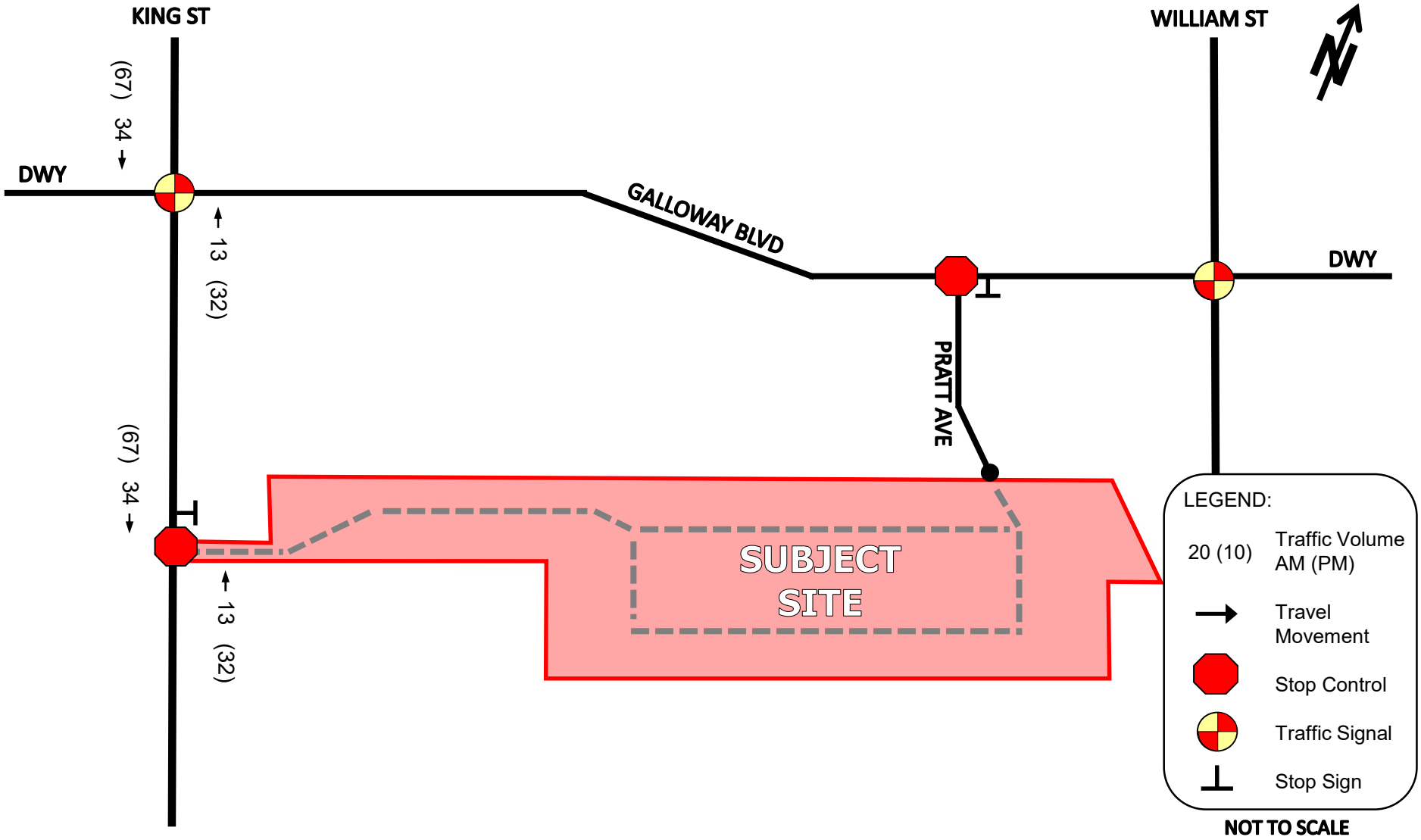
ENGINEERING

Figure 5: Adjacent Development Traffic Volumes – Tiffin By The Lake



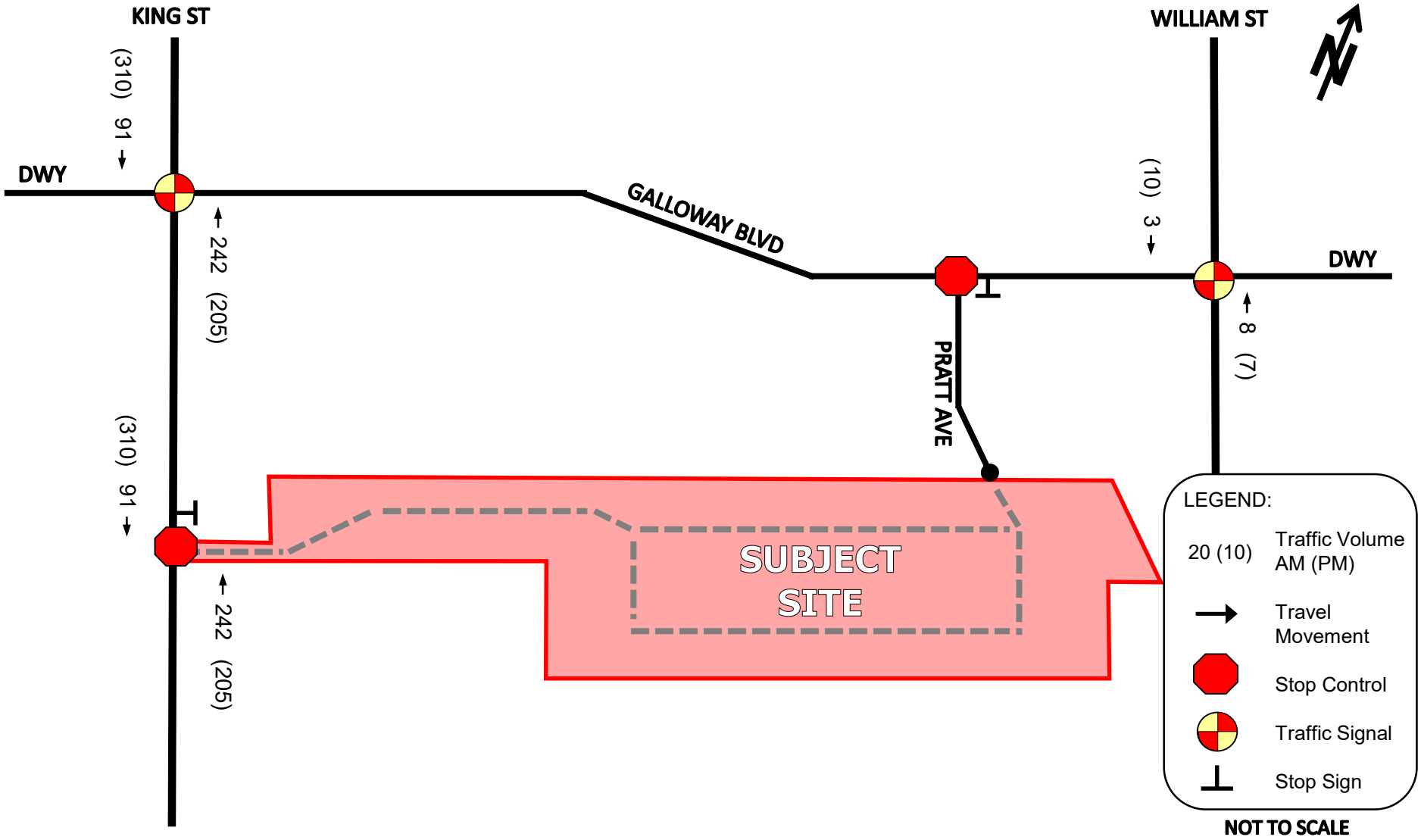
ENGINEERING

Figure 6: Adjacent Development Traffic Volumes – 16928 Highway 12



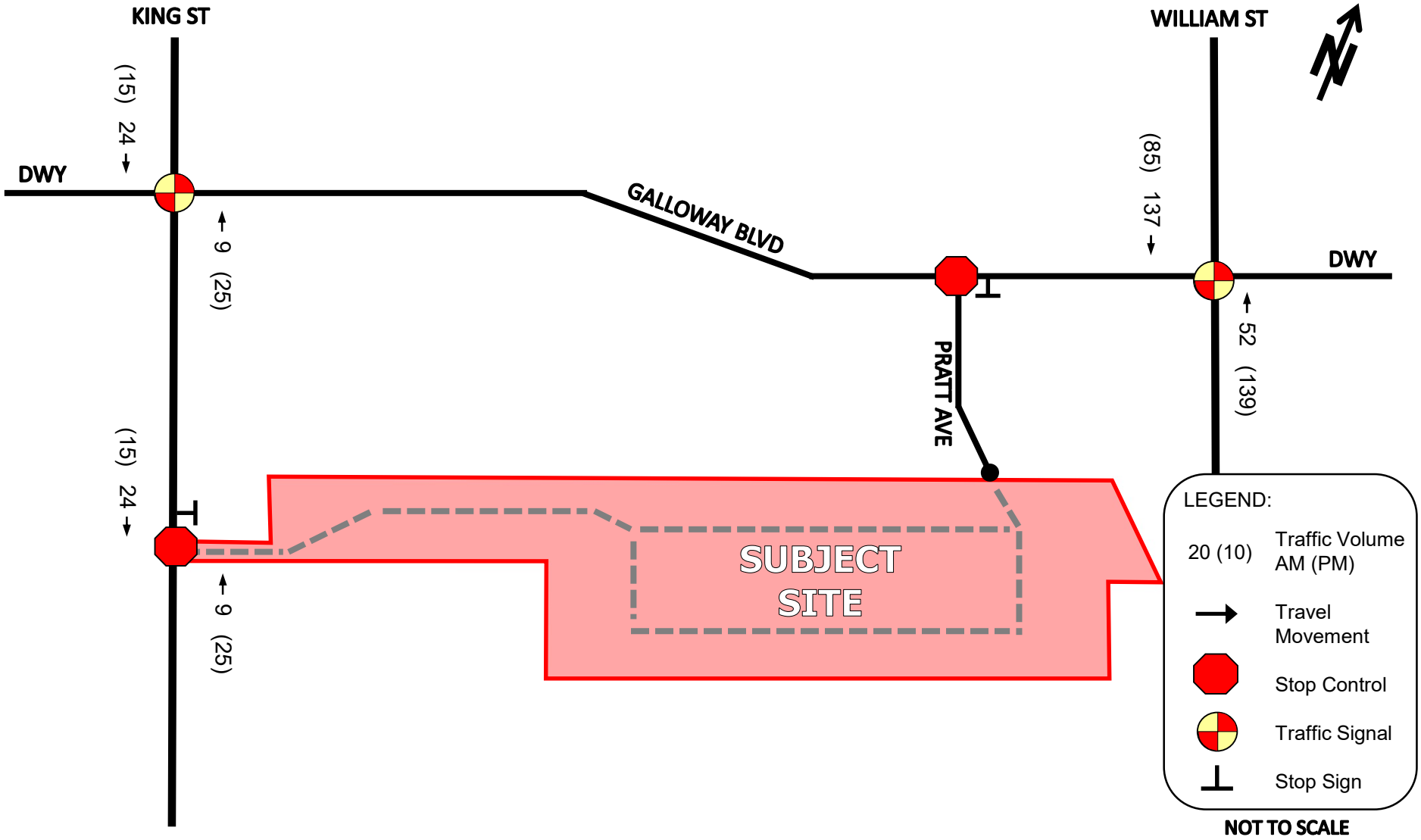
ENGINEERING

Figure 7: Adjacent Development Traffic Volumes – Hanson Development



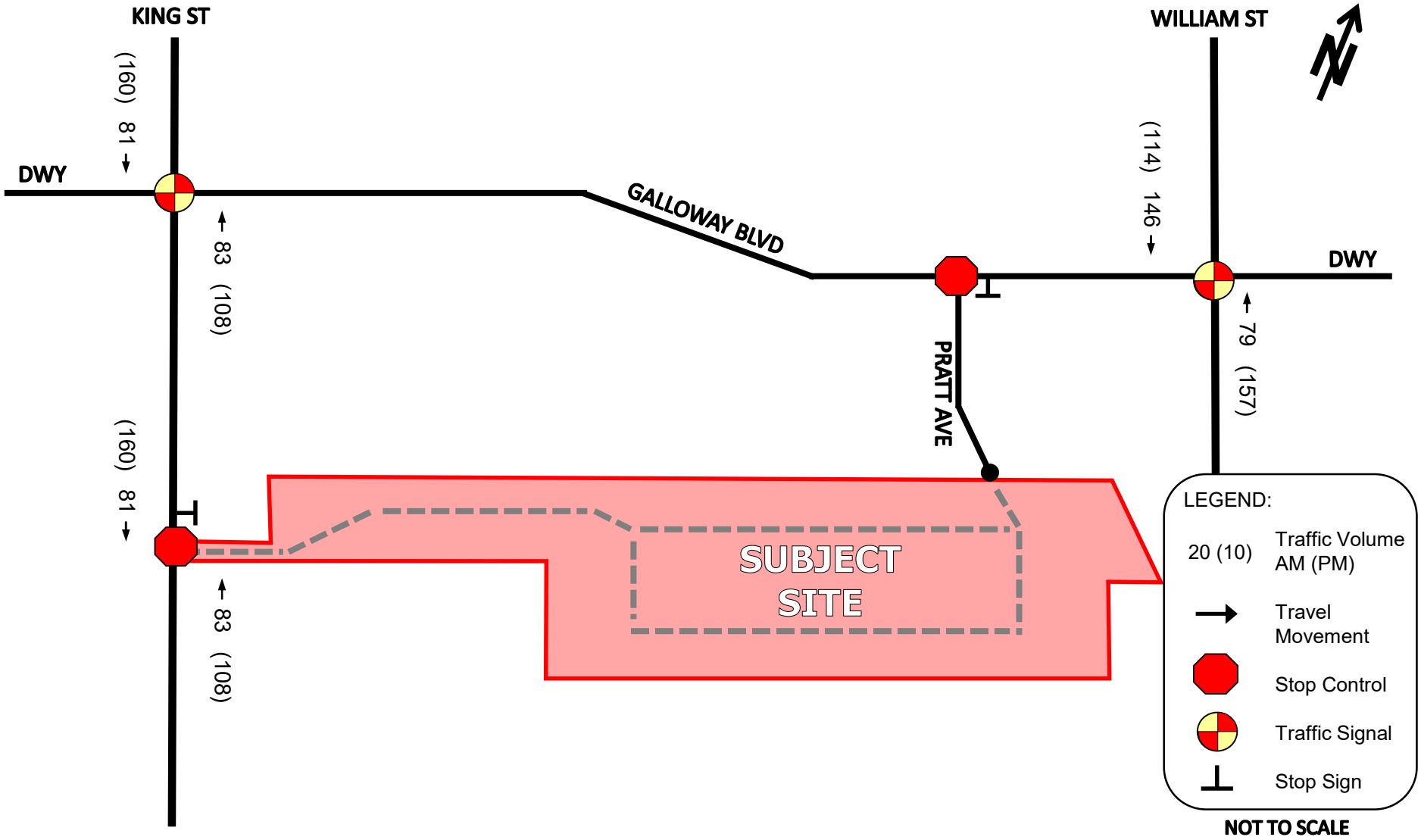
ENGINEERING

Figure 8: Adjacent Development Traffic Volumes – 16533 Highway 12



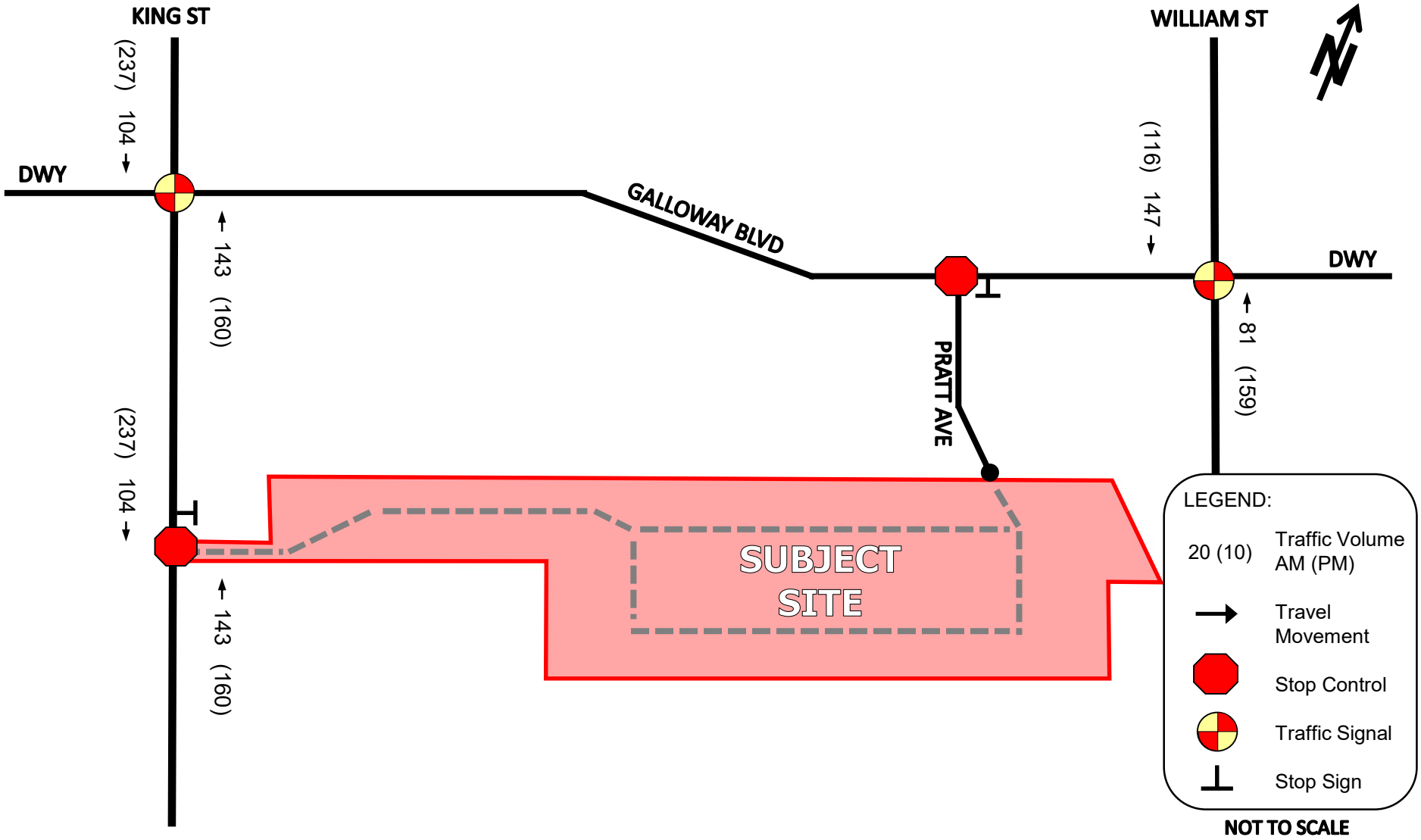
ENGINEERING

Figure 9: Adjacent Development Traffic Volumes – Total (2025)



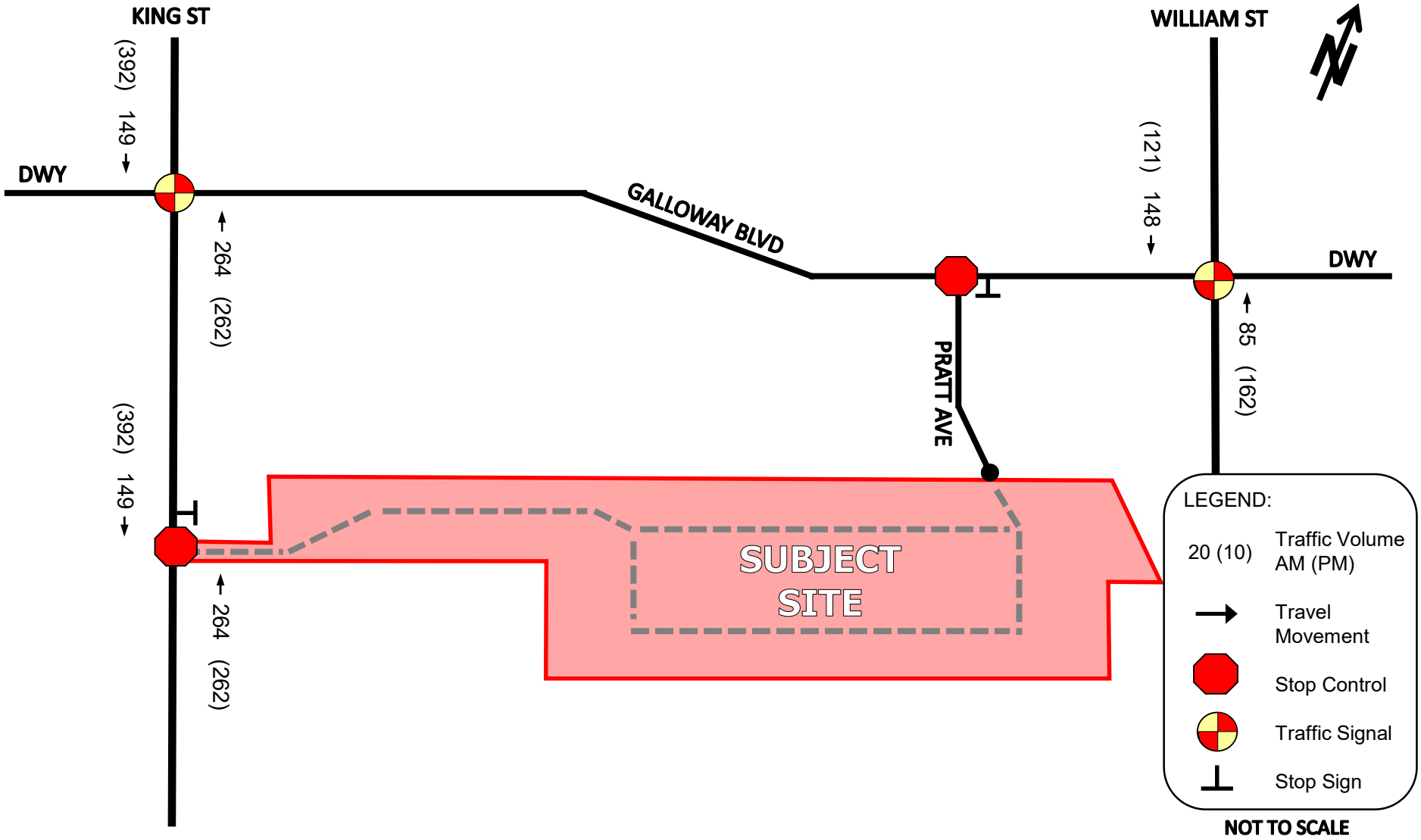
ENGINEERING

Figure 10: Adjacent Development Traffic Volumes – Total (2030)



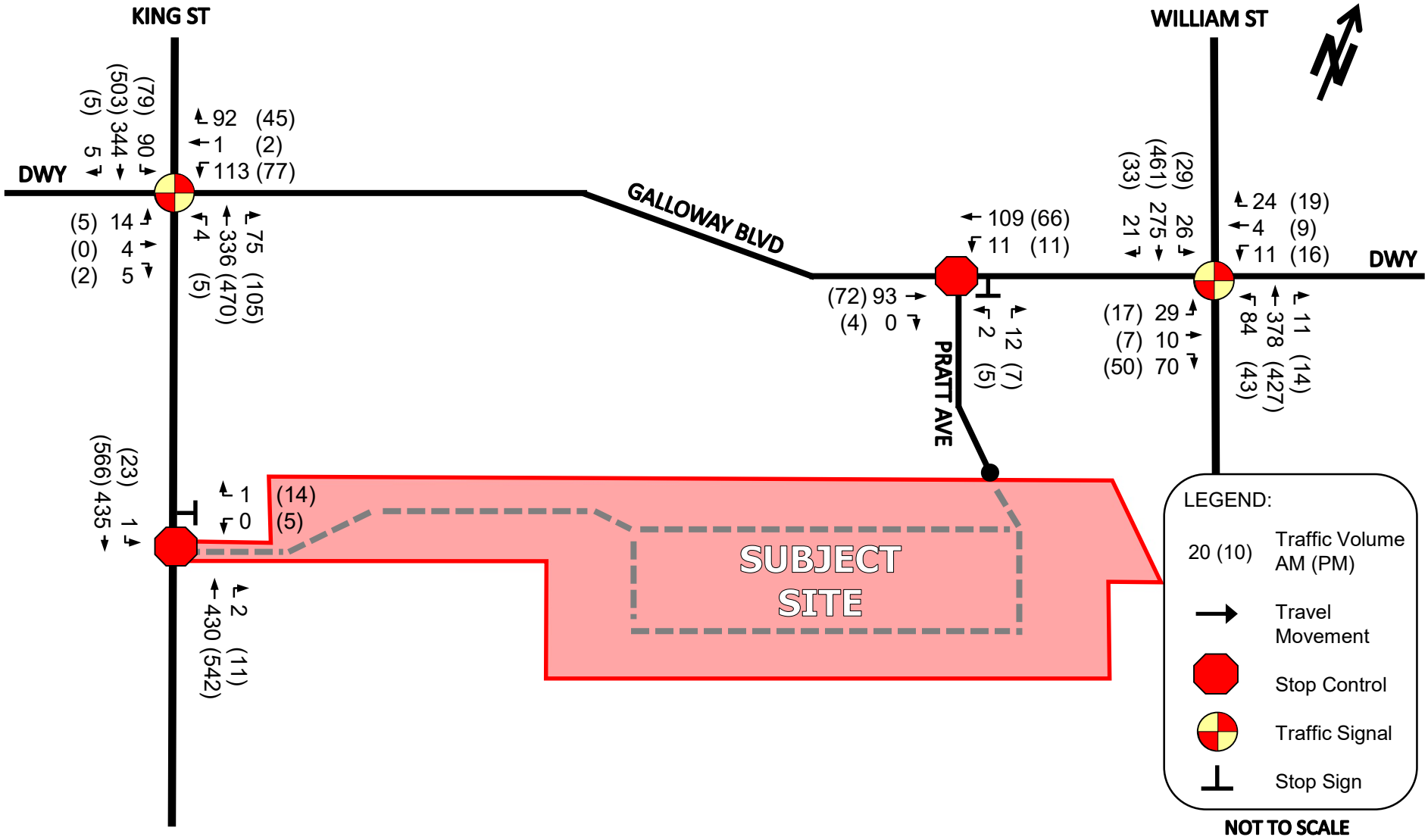
ENGINEERING

Figure 11: Adjacent Development Traffic Volumes – Total (2035)



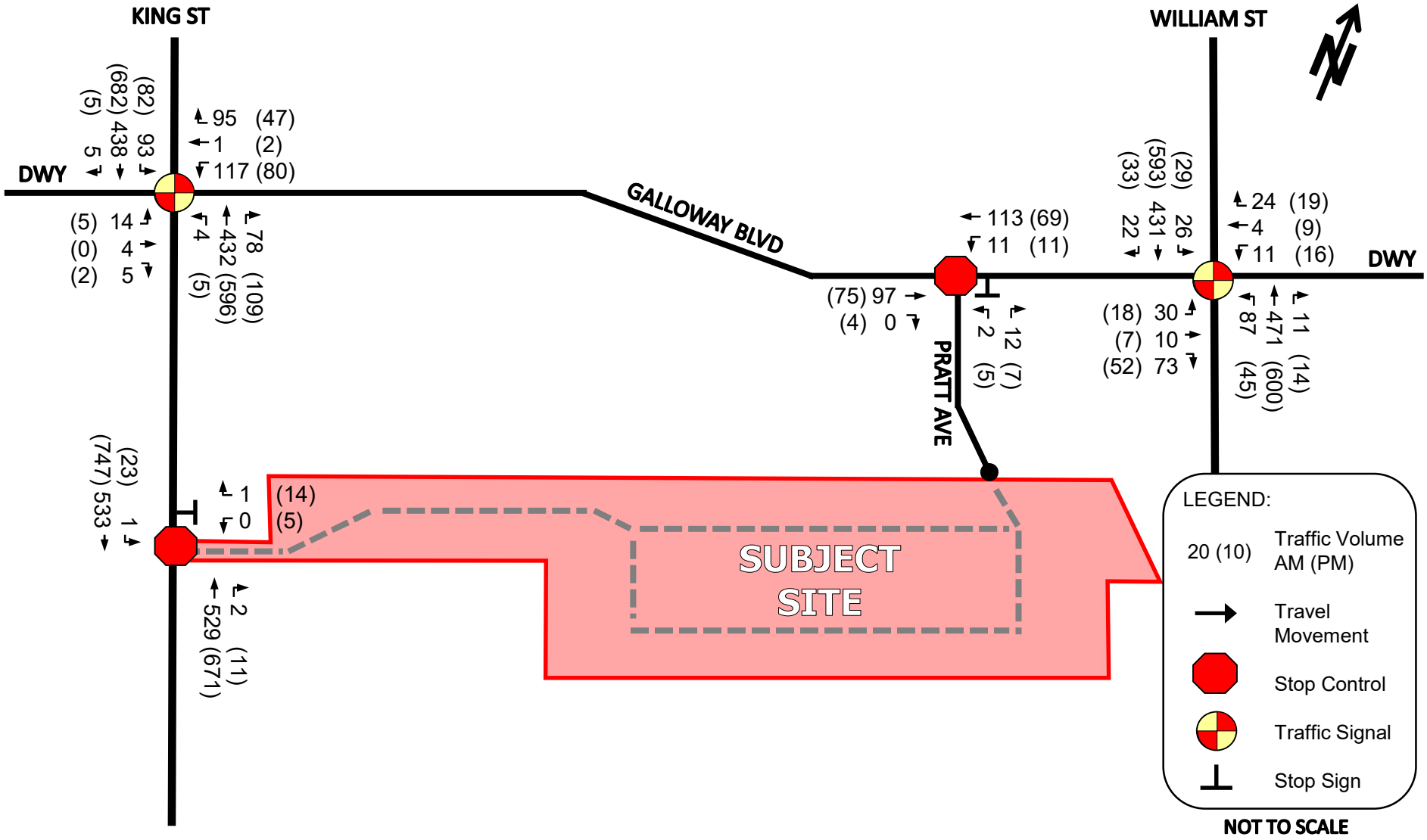
ENGINEERING

Figure 12: Existing (2022) Traffic Volumes



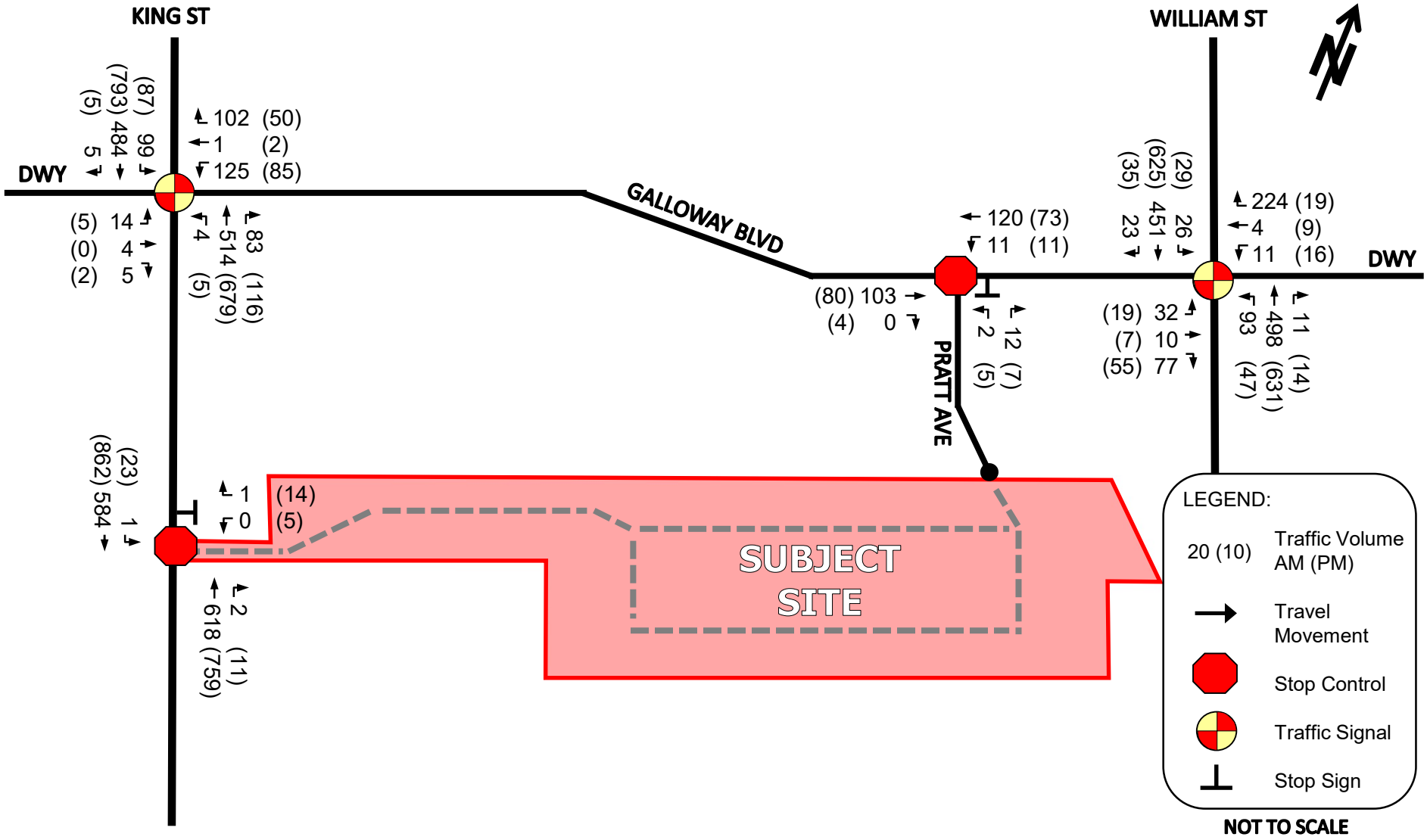
ENGINEERING

Figure 13: Background (2025) Traffic Volumes



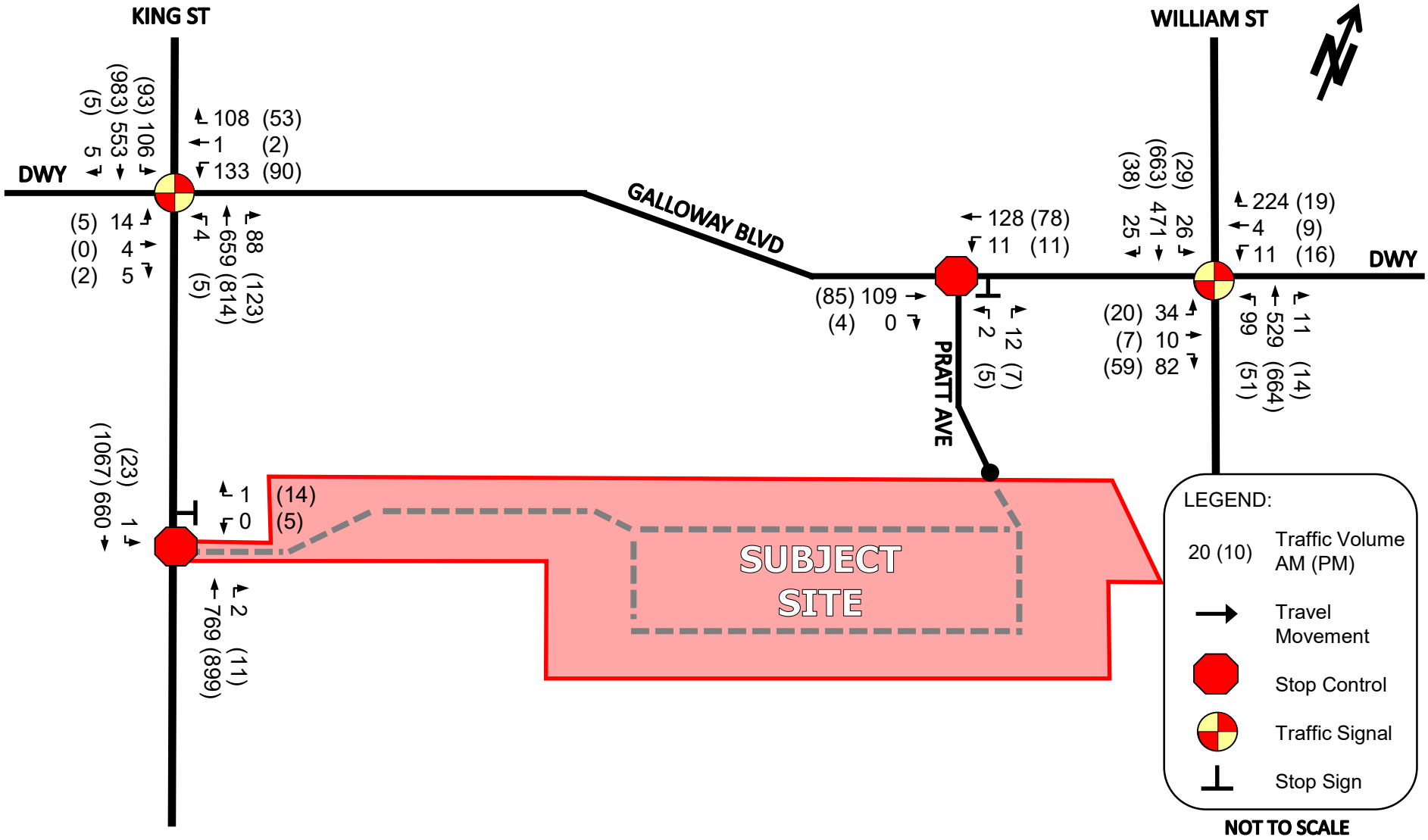
ENGINEERING

Figure 14: Background (2030) Traffic Volumes



ENGINEERING

Figure 15: Background (2035) Traffic Volumes



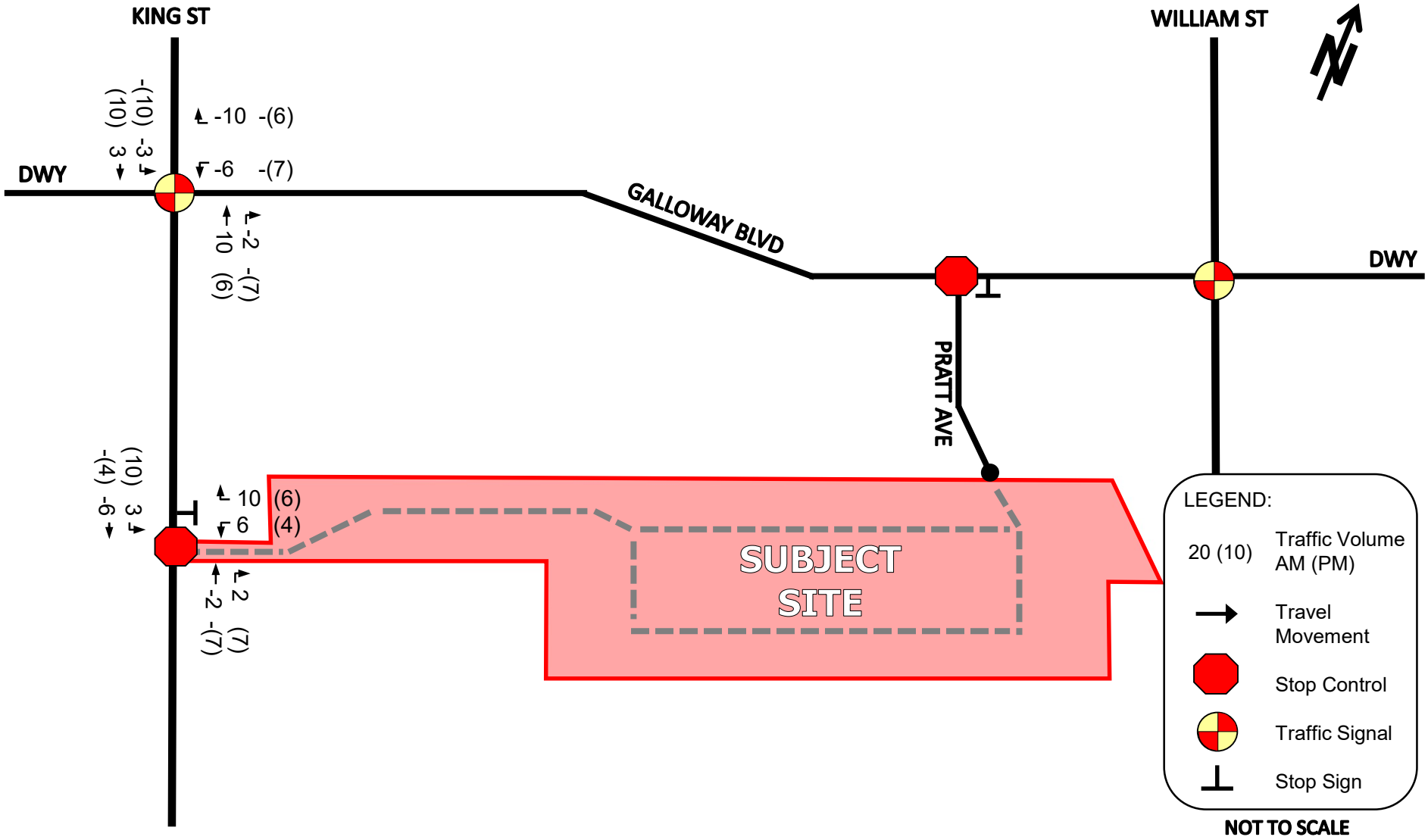
ENGINEERING

Figure 16: Traffic Redistribution Catchment Area (to/from Southwest)

Figure 17: Traffic Redistribution Catchment Area (to/from Northwest)

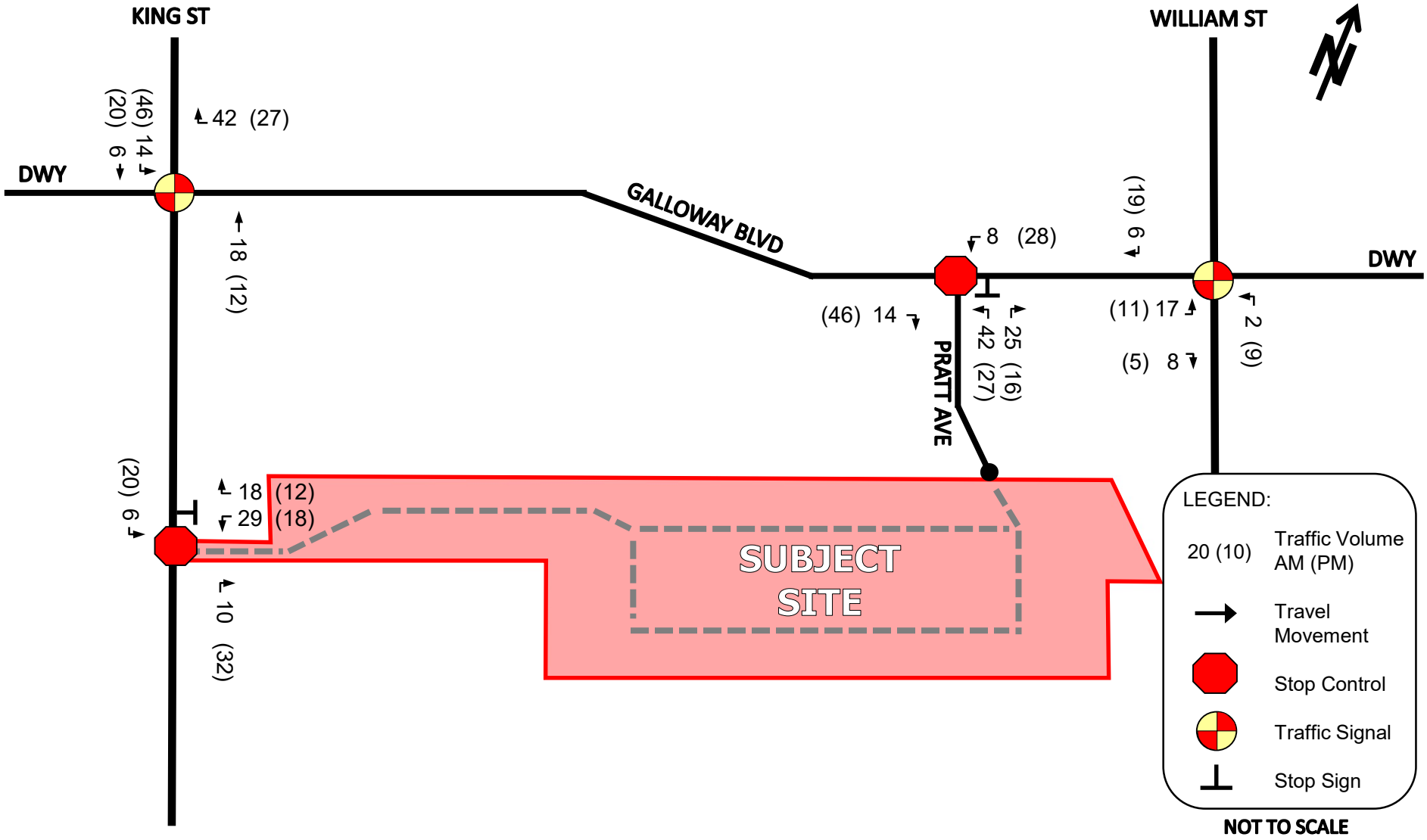
ENGINEERING

Figure 18: Existing Traffic Redistribution



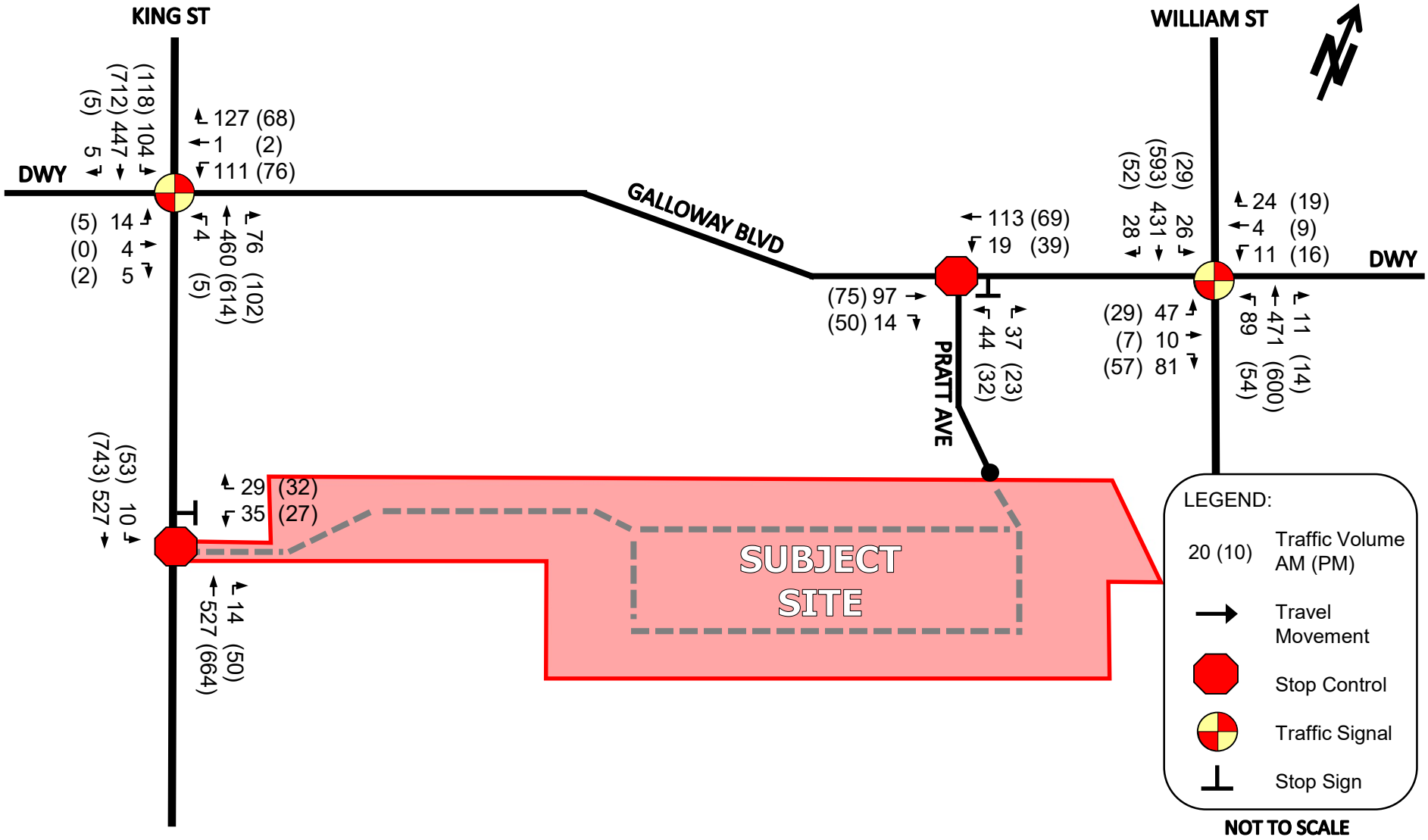
ENGINEERING

Figure 19: Site Traffic Assignment



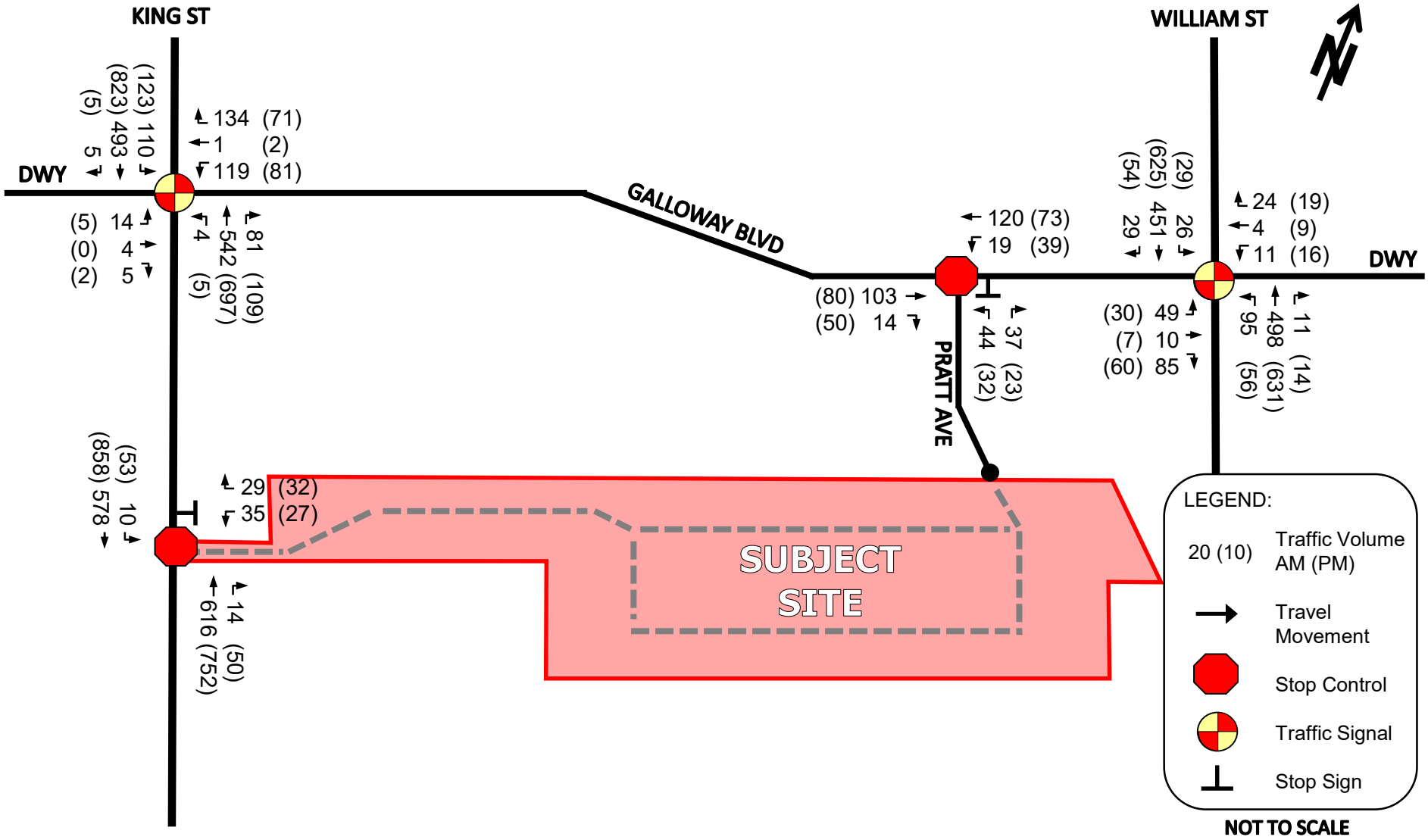
ENGINEERING

Figure 20: Total (2025) Traffic Volumes



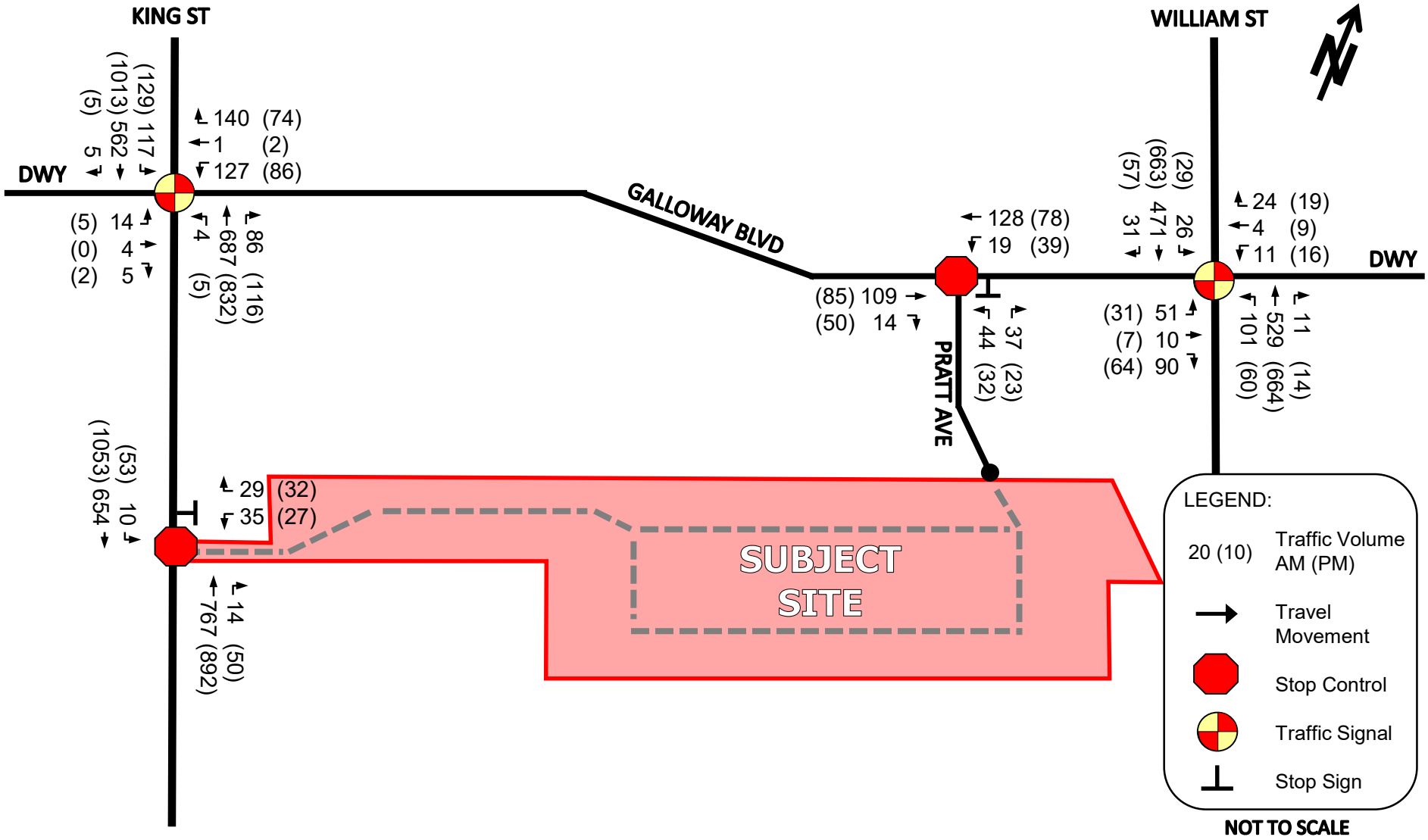
ENGINEERING

Figure 21: Total (2030) Traffic Volumes



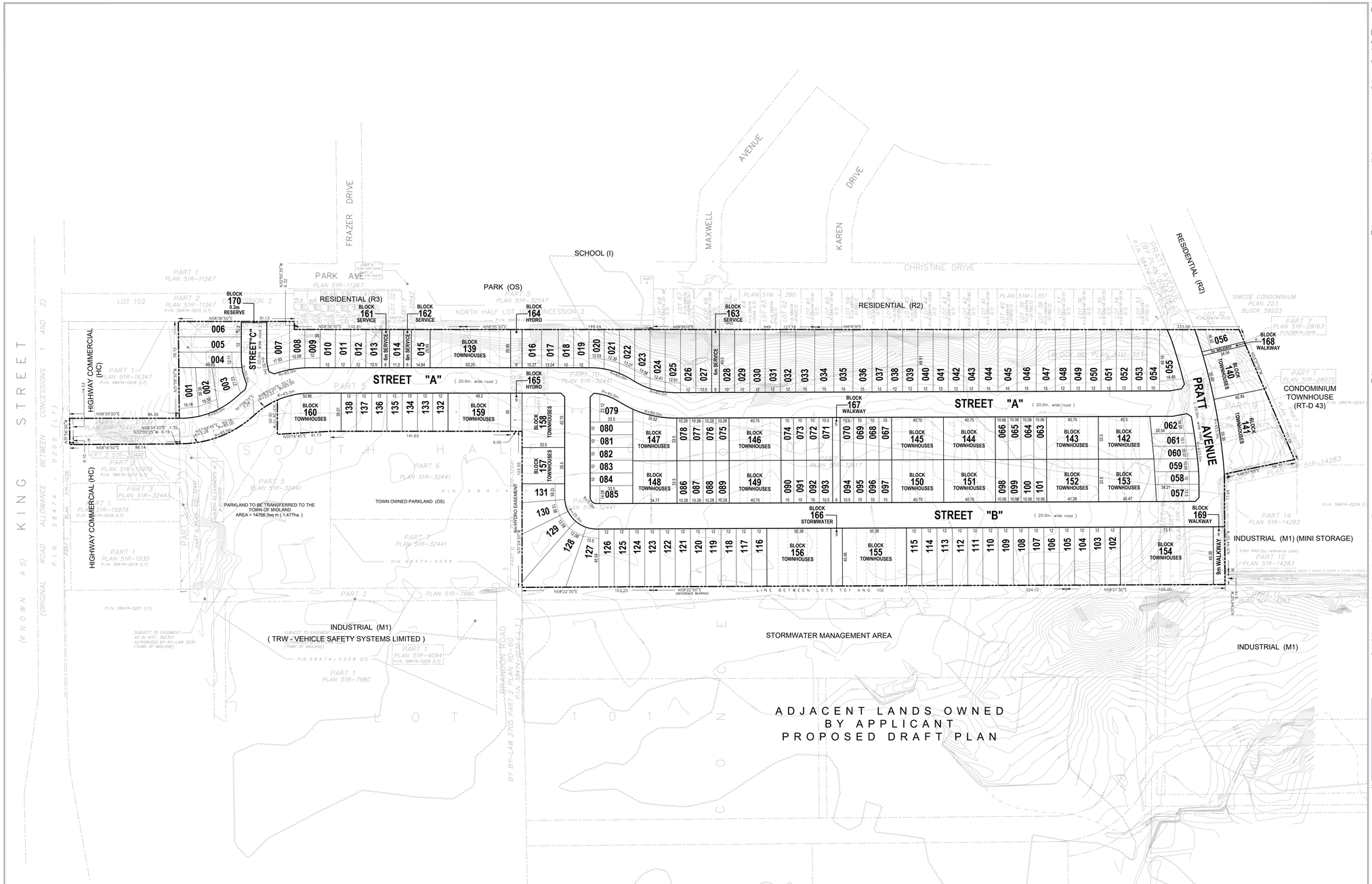
ENGINEERING

Figure 22: Total (2035) Traffic Volumes



ENGINEERING

Appendix A – Site Plan



LAND USE SUMMARY

LAND USE	LOT / BLOCK #	UNITS	AREA
SINGLE DETACHED - 10m LOTS	014, 054, 055, 057-101	48	1.738ha
SINGLE DETACHED - 12m LOTS	001-013, 015, 017-032, 037-043, 048-053, 056, 102-138	81	4.335ha
SINGLE DETACHED - 15m LOTS	016, 033-036, 044-047	9	0.633ha
TOWNHOUSE - 6m UNITS	142-153, 157, 158	80	1.860ha
TOWNHOUSE - 7.6m UNITS	139-141,154-156, 159, 160	49	1.695ha
SERVICE	161-163		0.066ha
HYDRO	164, 165		0.054ha
STORMWATER	166		0.041ha
WALKWAY	167-169		0.091ha
ROADS	PRATT AVE, STREETS A, B, & C		3.359ha
0.3m RESERVES	170		0.002ha
TOTALS		267	13.874ha

LEGAL DESCRIPTION

PART OF LOT 102, CONCESSION 2,
GEOGRAPHIC TOWNSHIP OF TAY
TOWN OF MIDLAND
COUNTY OF SIMCOE

OWNER'S CERTIFICATE

I HEREBY AUTHORIZE MACNAUGHTON HERMSEN BRITTON CLARKSON PLANNING LIMITED TO SUBMIT THIS PLAN FOR APPROVAL.

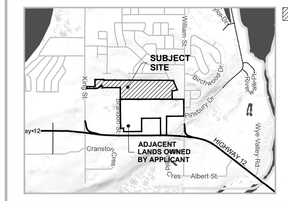
DATE: _____ _____

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

DATE: _____ _____

KEY PLAN



LEGEND

- SITE BOUNDARY
- RIGHT OF WAY LINE
- BLOCK LINE
- PARCEL FABRIC LINE
- WATERCOURSE
- WOODED AREA

REV. No.	DATE	ISSUED / REVISION	BY
01	NOV. 23, 2022	ADD PART 11 OF PLAN 51R-32441 TO PROPERTY, REVISE RESIDENTIAL LOT MIX, REVISE ROAD LAYOUT, ADD EXTRA SERVICING BLOCKS, ADD EXTRA WALKWAY BLOCKS, ADD STORMWATER BLOCK	M.M.

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT R.S.O. 1990 C.P.13 AS AMENDED

- **A.** AS SHOWN
- **B.** AS SHOWN
- **C.** AS SHOWN
- **D.** RESIDENTIAL
- **E.** AS SHOWN
- **F.** AS SHOWN
- **G.** AS SHOWN
- **H.** MUNICIPAL WATER SUPPLY (PIPED)
- **I.** SANDY/SANDY LOAM
- **J.** AS SHOWN
- **K.** ALL SERVICES AS REQUIRED
- **L.** AS SHOWN

113 COLLIER STREET
BARRIE, ON, L4M 1H2
P: 705 728 0045 F: 705 728 2010
WWW.MHBCPLAN.COM
PLANNING
URBAN DESIGN
& LANDSCAPE
ARCHITECTURE
MHBC PLANNING

STAMP

DATE SEPT. 26, 2022

FILE No. 12162F

SCALE 1:1,500 (ARCH D)

DRAWN BY M.M.

CHECKED BY K.C.

OTHER

PROJECT

PRATT RESIDENTIAL SUBDIVISION

PRATT DEVELOPMENTS INC.
27 CLAPPERTON ST. SUITE 300
BARRIE ON L4M 3E6
705-722-4500

FILE NAME DRAFT PLAN OF SUBDIVISION

DWG No. 1 of 1

SCALE BAR

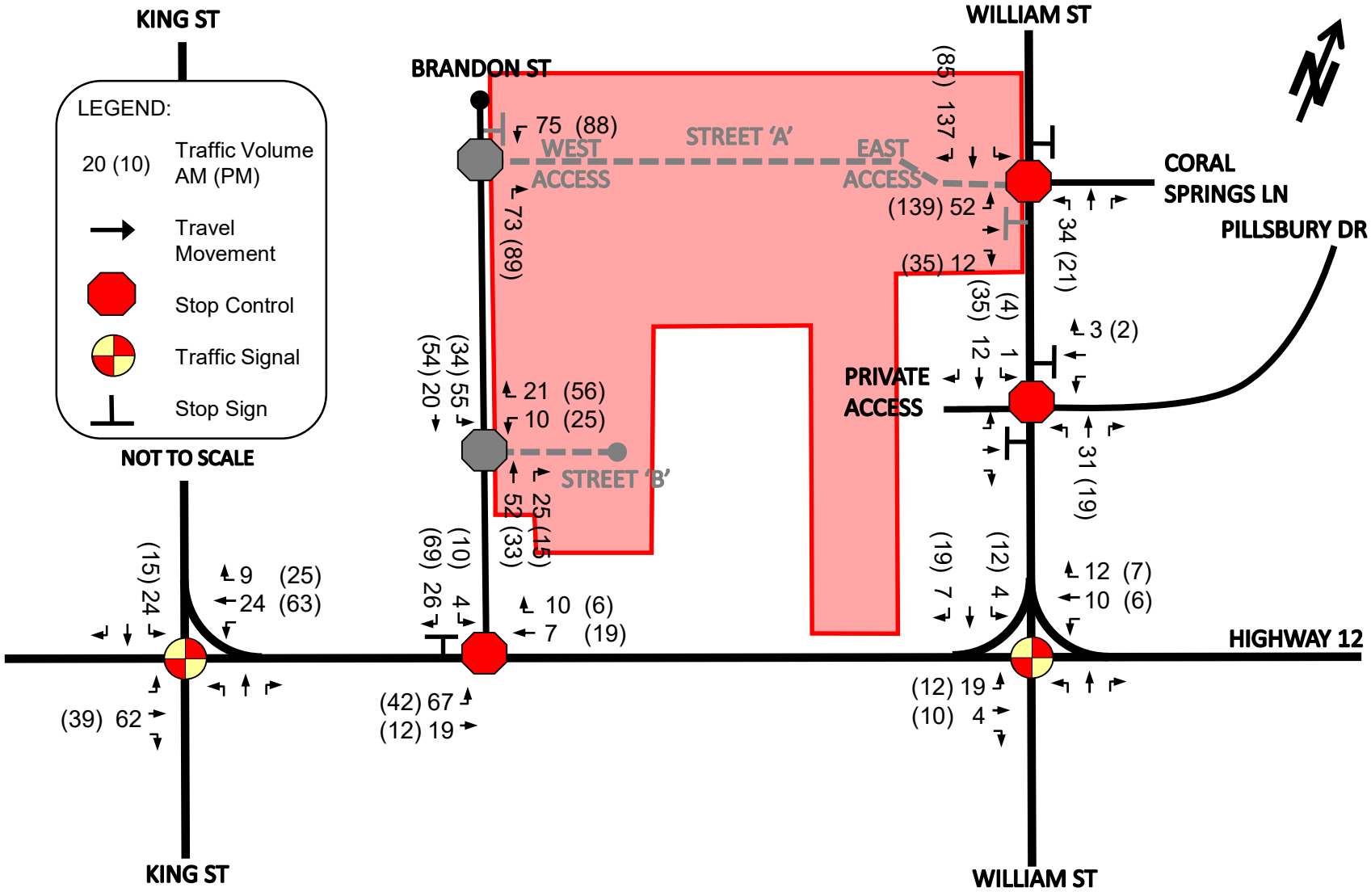
0 5 10 15 20 25 37.5 50 75 100m

MEASUREMENTS SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

N:\Brian\12162F Pratt – Residential Draft Plan of Subdivision\Drawings\Draft Plan – Redline\CAD\12162F – Residential – Draft Plan – 2022-11-23.dwg

Appendix B –
Adjacent Development Excerpts

Figure 17: Site Traffic Assignment



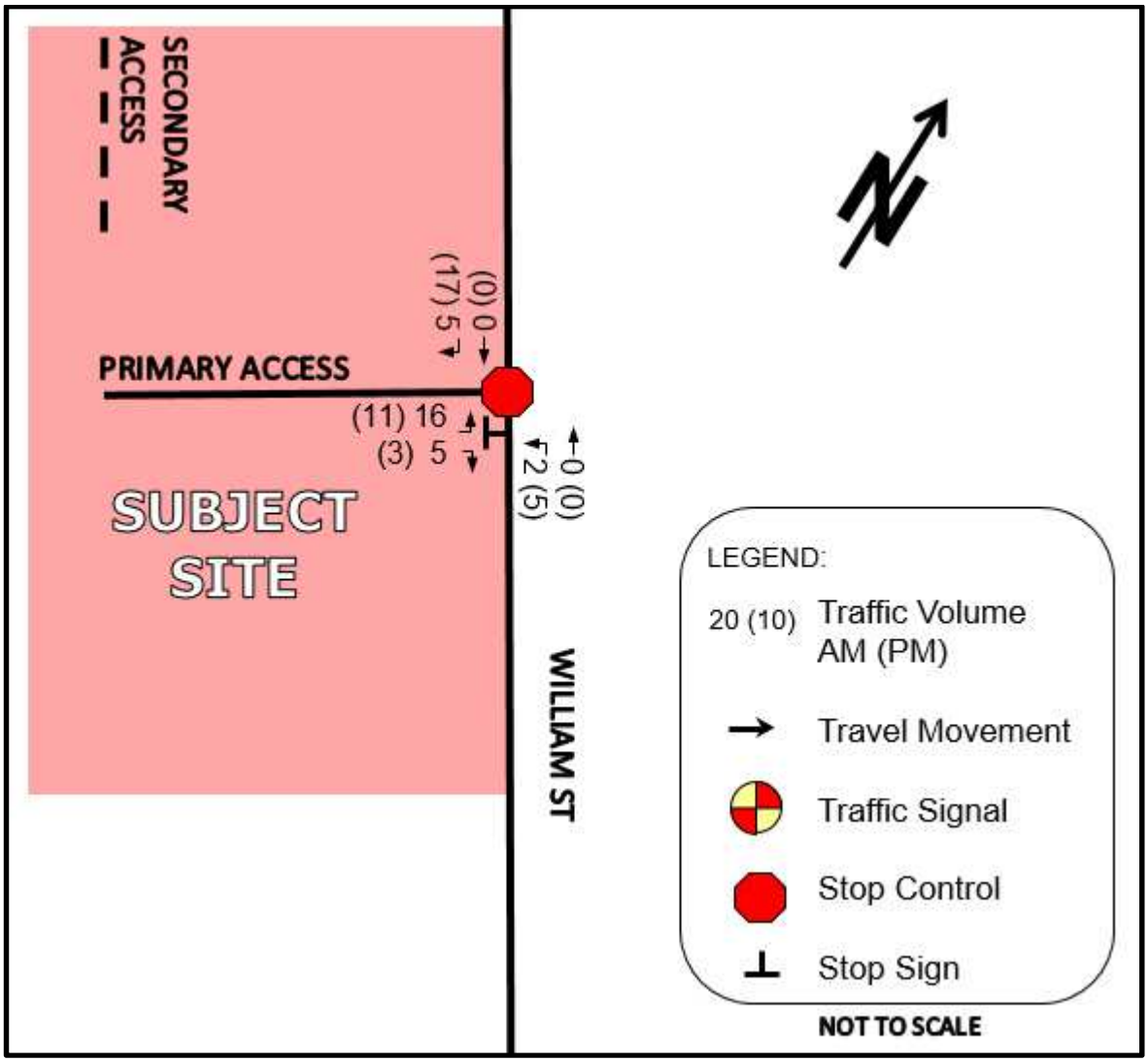
ENGINEERING

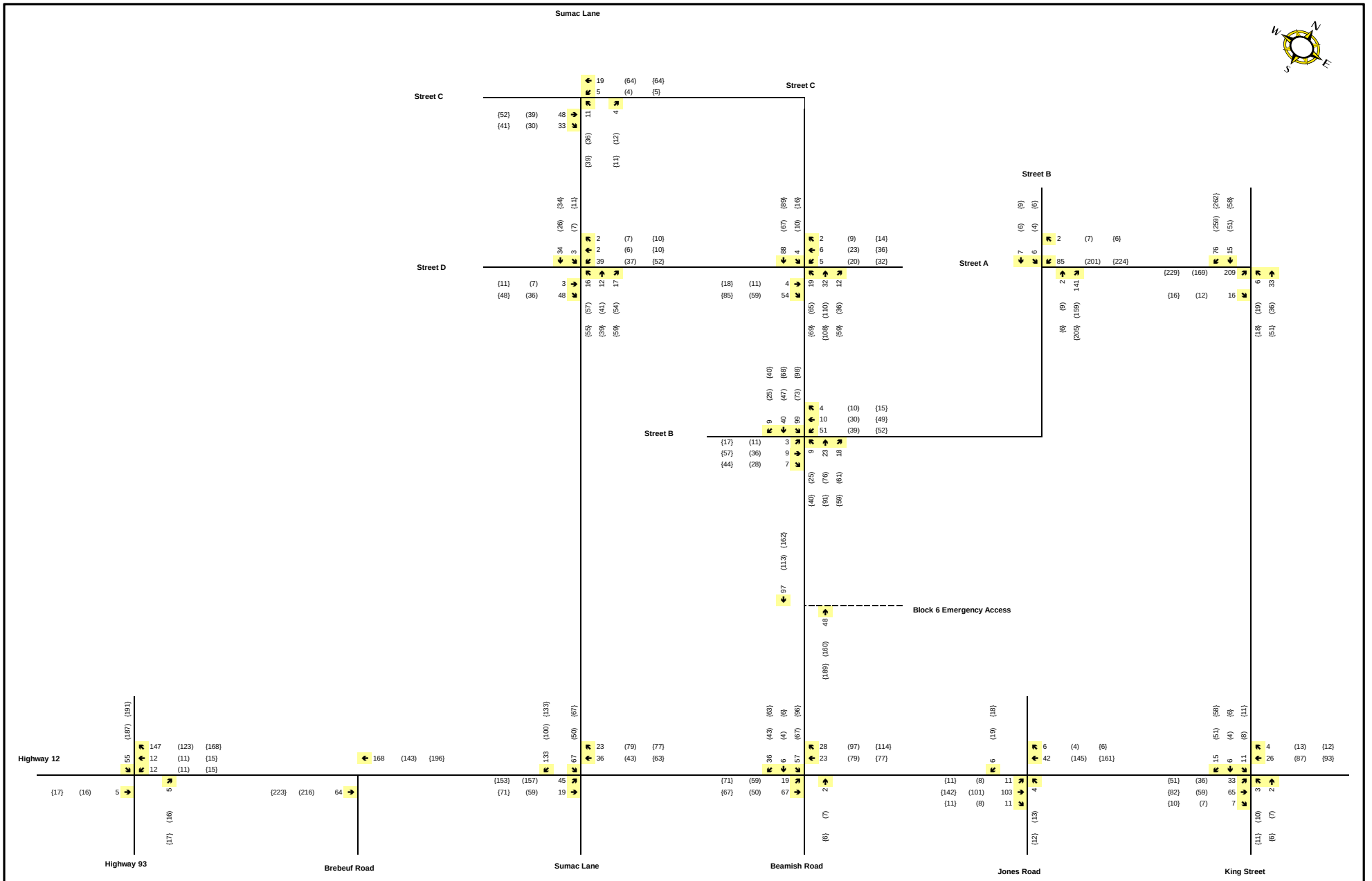
Table 3 – Proposed Development Traffic Distribution

Travel Direction (to / from)	Percentage of Total Traffic Generation
North via William Street	75%
South via William Street	25%
TOTAL	**100%**

Using the traffic distribution pattern noted above, the site traffic assignment for the proposed development was calculated for the AM and PM peak hour and is illustrated in **Figure 5**.

Figure 5 – Site Traffic Assignment



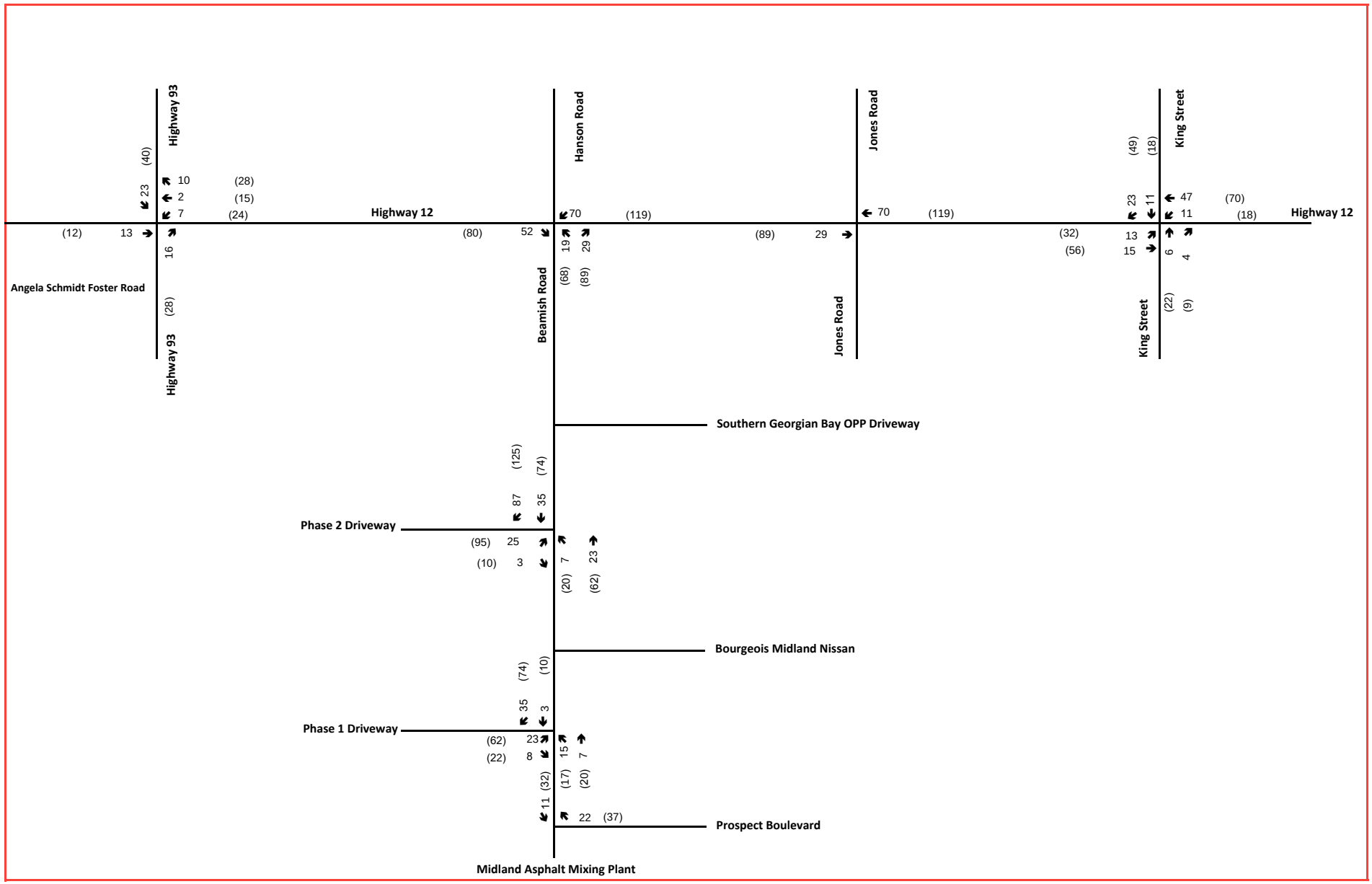


MMM GROUP

LEGEND

XX AM Peak Hour Volumes
(XX) PM Peak Hour Volumes
{XX} Saturday Peak Hour Volumes

FIGURE 10
Trip Assignment for Phases 1, 2 and 3



Legend

xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

→ Movement

Figure 3.4
Total Net Site Traffic Volumes

Appendix C –
Traffic Count Data

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Morning Peak Diagram

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

One Hour Peak
From: 7:45:00
To: 8:45:00

Municipality: Midland
Site #: 2208900001
Intersection: King St & Galloway Park Entrance
TFR File #: 1
Count date: 24-May-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

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

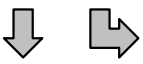
Major Road: King St runs N/S

North Leg Total: 865
North Entering: 435
North Peds: 3
Peds Cross: ⋈

Heavys	14	0	14
Trucks	1	0	1
Cars	420	0	420
Totals	435	0	

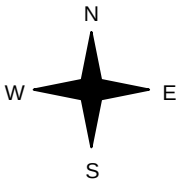
Heavys	14
Trucks	5
Cars	411
Totals	430

East Leg Total: 1
East Entering: 0
East Peds: 0
Peds Cross: ⋈



King St

Cars	Trucks	Heavys	Totals
0	0	0	0
0	0	0	0
0	0	0	



Galloway Park Entrance

Cars	Trucks	Heavys	Totals
1	0	0	1

King St

Cars	420		
Trucks	1		
Heavys	14		
Totals	435		

Cars	411	1	412
Trucks	5	0	5
Heavys	14	0	14
Totals	430	1	

Peds Cross: ⋈
South Peds: 1
South Entering: 431
South Leg Total: 866

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

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

Municipality: Midland
Site #: 2208900001
Intersection: King St & Galloway Park Entrance
TFR File #: 1
Count date: 24-May-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

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

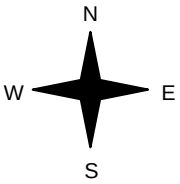
Major Road: King St runs N/S

North Leg Total: 1111
North Entering: 567
North Peds: 2
Peds Cross: ⋈

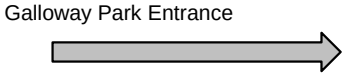
Heavys	3	0	3
Trucks	6	0	6
Cars	557	1	558
Totals	566	1	

Heavys	4
Trucks	5
Cars	535
Totals	544

East Leg Total: 4
East Entering: 2
East Peds: 2
Peds Cross: ⋈



Cars	Trucks	Heavys	Totals
2	0	0	2
0	0	0	0
2	0	0	



Cars	Trucks	Heavys	Totals
2	0	0	2

Cars	557
Trucks	6
Heavys	3
Totals	566

Cars	533	1	534
Trucks	5	0	5
Heavys	4	0	4
Totals	542	1	

Peds Cross: ⋈
South Peds: 0
South Entering: 543
South Leg Total: 1109

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Morning Peak Diagram

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

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

Municipality: Midland
Site #: 2208900002
Intersection: Galloway Blvd & Pratt Ave
TFR File #: 1
Count date: 24-May-22

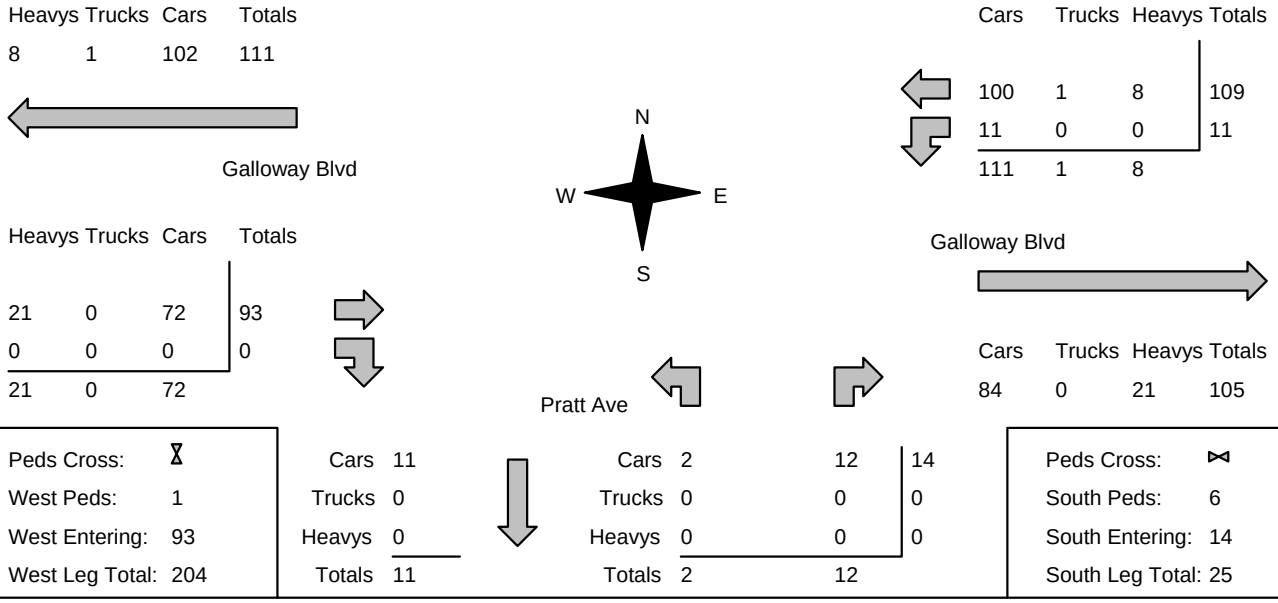
Weather conditions:

Person counted:
Person prepared:
Person checked:

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

Major Road: Galloway Blvd runs W/E

East Leg Total: 225
East Entering: 120
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 1
West Entering: 93
West Leg Total: 204

Cars 11
Trucks 0
Heavys 0
Totals 11

Cars 2 12 14
Trucks 0 0 0
Heavys 0 0 0
Totals 2 12

Peds Cross: ⋈
South Peds: 6
South Entering: 14
South Leg Total: 25

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

One Hour Peak
From: 16:45:00
To: 17:45:00

Municipality: Midland
Site #: 2208900002
Intersection: Galloway Blvd & Pratt Ave
TFR File #: 1
Count date: 24-May-22

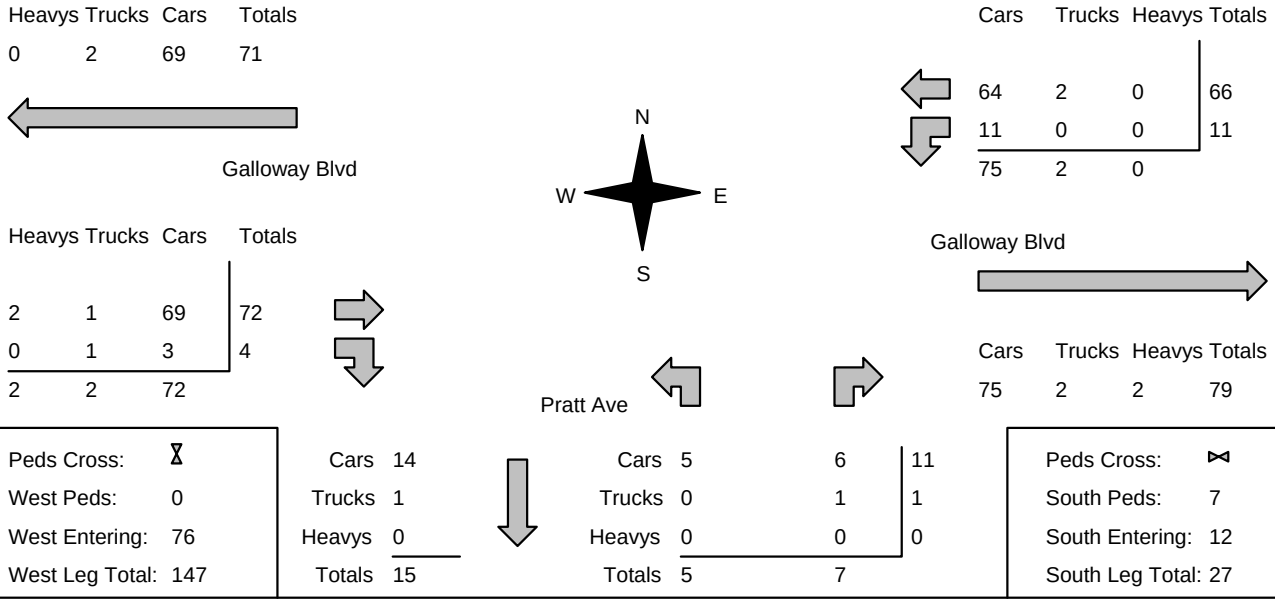
Weather conditions:

Person counted:
Person prepared:
Person checked:

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

Major Road: Galloway Blvd runs W/E

East Leg Total: 156
East Entering: 77
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 0
West Entering: 76
West Leg Total: 147

Cars 14
Trucks 1
Heavys 0
Totals 15

Cars 5 6 11
Trucks 0 1 1
Heavys 0 0 0
Totals 5 7

Peds Cross: ⋈
South Peds: 7
South Entering: 12
South Leg Total: 27

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Morning Peak Diagram

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

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

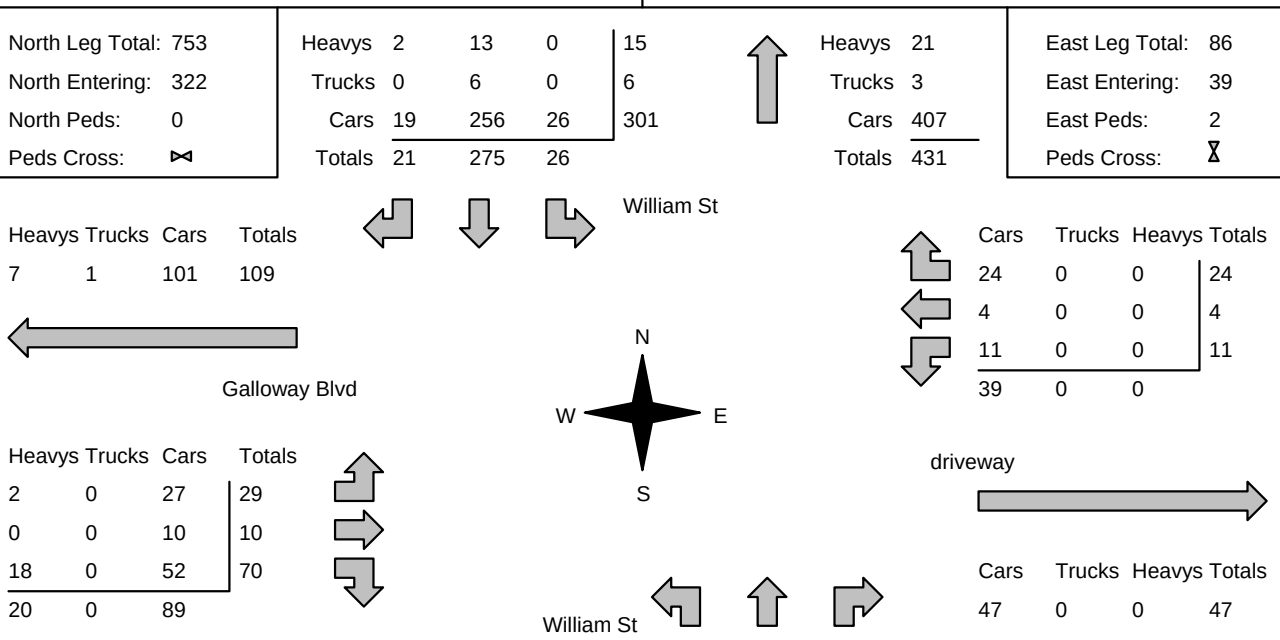
Municipality: Midland
Site #: 2208900003
Intersection: William St & Galloway Blvd
TFR File #: 1
Count date: 24-May-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: William St runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

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

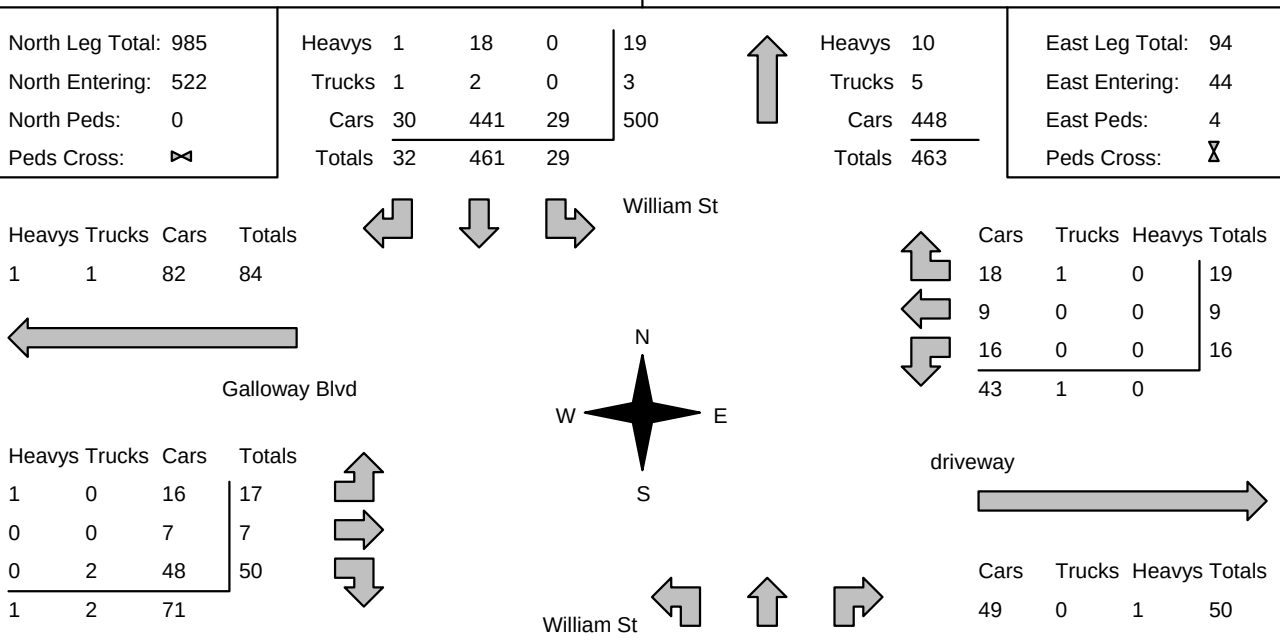
Municipality: Midland
Site #: 2208900003
Intersection: William St & Galloway Blvd
TFR File #: 1
Count date: 24-May-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: William St runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Morning Peak Diagram

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

One Hour Peak
From: 7:45:00
To: 8:45:00

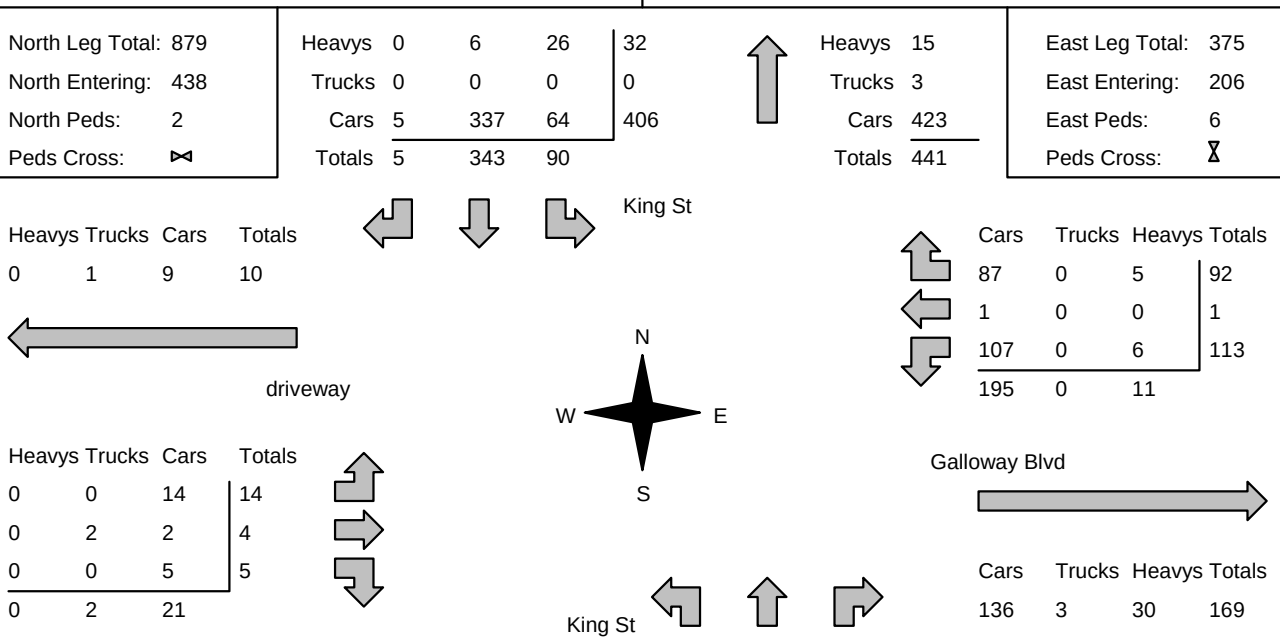
Municipality: Midland
Site #: 2208900004
Intersection: King St & Galloway Blvd
TFR File #: 1
Count date: 24-May-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: King St runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

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

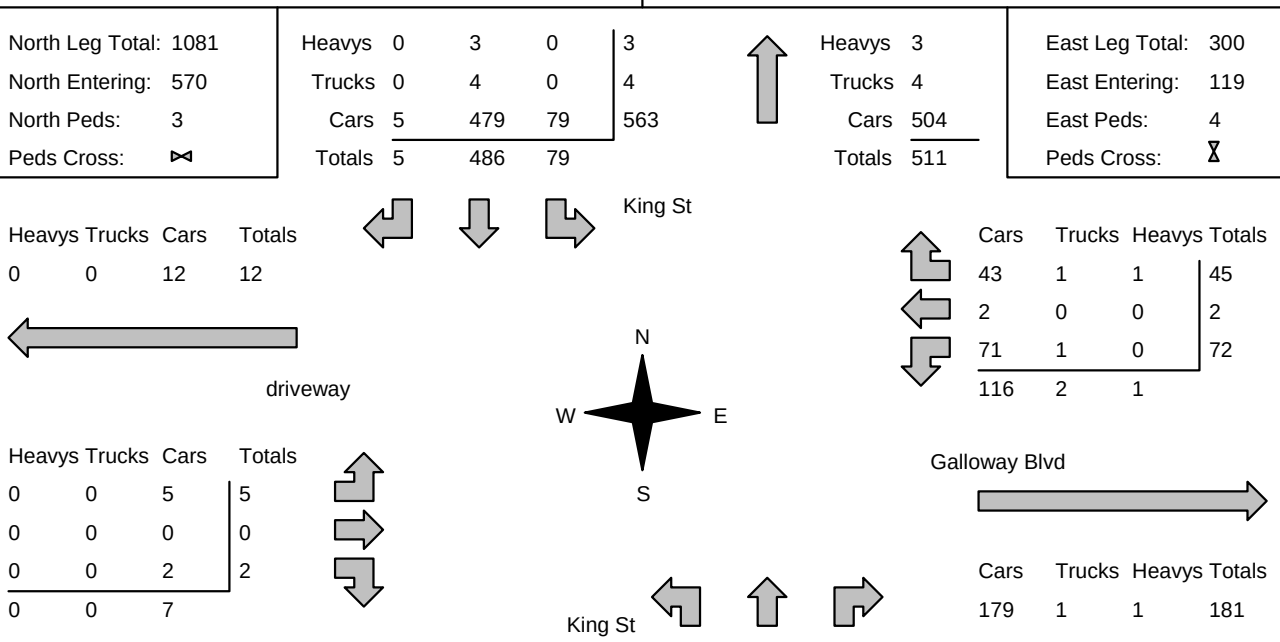
Municipality: Midland
Site #: 2208900004
Intersection: King St & Galloway Blvd
TFR File #: 1
Count date: 24-May-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: King St runs N/S



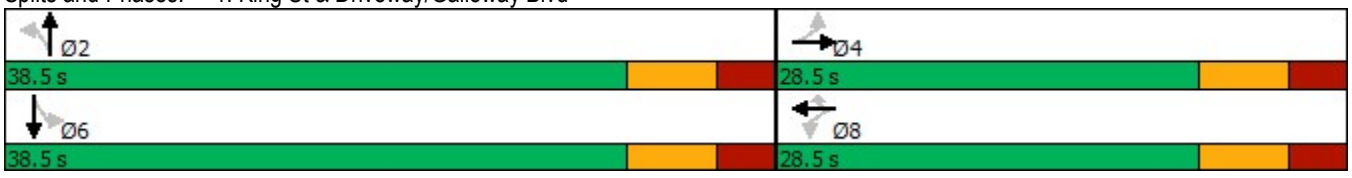
Comments

Appendix D –
Synchro Analysis Output –
Existing Traffic Volumes

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	14	4	113	1	92	4	336	90	344
Future Volume (vph)	14	4	113	1	92	4	336	90	344
Lane Group Flow (vph)	0	28	0	173	139	0	519	0	627
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		4		8			2		6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0	31.0	31.0	31.0	31.0
Minimum Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (%)	42.5%	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		7.5		7.5	7.5		7.5		7.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.09		0.54	0.29		0.31		0.49
Control Delay		15.3		27.1	5.5		8.9		12.1
Queue Delay		0.0		0.0	0.0		0.0		0.0
Total Delay		15.3		27.1	5.5		8.9		12.1
Queue Length 50th (m)		1.9		16.9	0.0		14.5		22.3
Queue Length 95th (m)		6.2		22.4	4.1		23.0		28.5
Internal Link Dist (m)		104.2		128.9			187.9		186.7
Turn Bay Length (m)									
Base Capacity (vph)		425		419	590		1685		1279
Starvation Cap Reductn		0		0	0		0		0
Spillback Cap Reductn		0		0	0		0		0
Storage Cap Reductn		0		0	0		0		0
Reduced v/c Ratio		0.07		0.41	0.24		0.31		0.49

Intersection Summary
Cycle Length: 67
Actuated Cycle Length: 65
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Splits and Phases: 1: King St & Driveway/Galloway Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	4	5	113	1	92	4	336	75	90	344	5
Future Volume (vph)	14	4	5	113	1	92	4	336	75	90	344	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5			7.5	7.5		7.5			7.5	
Lane Util. Factor		1.00			1.00	1.00		0.95			0.95	
Frpb, ped/bikes		1.00			1.00	0.98		0.99			1.00	
Flpb, ped/bikes		1.00			1.00	1.00		1.00			1.00	
Frt		0.97			1.00	0.85		0.97			1.00	
Flt Protected		0.97			0.95	1.00		1.00			0.99	
Satd. Flow (prot)		1628			1736	1529		3371			3351	
Flt Permitted		0.77			0.71	1.00		0.95			0.73	
Satd. Flow (perm)		1298			1290	1529		3201			2468	
Peak-hour factor, PHF	0.82	0.82	0.82	0.66	0.66	0.66	0.80	0.80	0.80	0.70	0.70	0.70
Adj. Flow (vph)	17	5	6	171	2	139	5	420	94	129	491	7
RTOR Reduction (vph)	0	5	0	0	0	104	0	25	0	0	1	0
Lane Group Flow (vph)	0	23	0	0	173	35	0	494	0	0	626	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		
Heavy Vehicles (%)	2%	50%	2%	5%	2%	5%	24%	4%	7%	29%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		16.2			16.2	16.2		33.7			33.7	
Effective Green, g (s)		16.2			16.2	16.2		33.7			33.7	
Actuated g/C Ratio		0.25			0.25	0.25		0.52			0.52	
Clearance Time (s)		7.5			7.5	7.5		7.5			7.5	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		324			322	381		1662			1281	
v/s Ratio Prot												
v/s Ratio Perm		0.02			c0.13	0.02		0.15			c0.25	
v/c Ratio		0.07			0.54	0.09		0.30			0.49	
Uniform Delay, d1		18.6			21.1	18.7		8.9			10.0	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.1			1.7	0.1		0.5			1.3	
Delay (s)		18.7			22.8	18.8		9.3			11.4	
Level of Service		B			C	B		A			B	
Approach Delay (s)		18.7			21.0			9.3			11.4	
Approach LOS		B			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	64.9	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	29	10	11	4	84	378	26	275
Future Volume (vph)	29	10	11	4	84	378	26	275
Lane Group Flow (vph)	0	155	0	49	0	614	0	374
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	32.0	32.0	32.0	32.0
Minimum Split (s)	24.0	24.0	24.0	24.0	38.0	38.0	38.0	38.0
Total Split (s)	24.0	24.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (%)	36.4%	36.4%	36.4%	36.4%	63.6%	63.6%	63.6%	63.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		6.0		6.0		6.0		6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.49		0.17		0.57		0.18
Control Delay		15.0		12.9		9.6		4.8
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		15.0		12.9		9.6		4.8
Queue Length 50th (m)		5.1		1.7		34.2		7.2
Queue Length 95th (m)		11.5		7.6		54.8		13.6
Internal Link Dist (m)		50.9		32.8		150.3		160.6
Turn Bay Length (m)								
Base Capacity (vph)		463		470		1080		2095
Starvation Cap Reductn		0		0		0		0
Spillback Cap Reductn		0		0		0		0
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.33		0.10		0.57		0.18

Intersection Summary
Cycle Length: 66
Actuated Cycle Length: 59.6
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 2: William St & Galloway Blvd/Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	10	70	11	4	24	84	378	11	26	275	21
Future Volume (vph)	29	10	70	11	4	24	84	378	11	26	275	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			0.95	
Frpb, ped/bikes		0.99			0.98			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.91			0.92			1.00			0.99	
Flt Protected		0.99			0.99			0.99			1.00	
Satd. Flow (prot)		1438			1672			1786			3364	
Flt Permitted		0.89			0.88			0.86			0.89	
Satd. Flow (perm)		1302			1488			1553			3008	
Peak-hour factor, PHF	0.70	0.70	0.70	0.81	0.81	0.81	0.77	0.77	0.77	0.86	0.86	0.86
Adj. Flow (vph)	41	14	100	14	5	30	109	491	14	30	320	24
RTOR Reduction (vph)	0	86	0	0	26	0	0	1	0	0	6	0
Lane Group Flow (vph)	0	69	0	0	23	0	0	613	0	0	368	0
Confl. Peds. (#/hr)	5		5	5		5	5		10	10		5
Heavy Vehicles (%)	7%	2%	26%	2%	2%	2%	7%	6%	2%	2%	7%	10%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.7			8.7			40.2			40.2	
Effective Green, g (s)		8.7			8.7			40.2			40.2	
Actuated g/C Ratio		0.14			0.14			0.66			0.66	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		186			212			1025			1985	
v/s Ratio Prot												
v/s Ratio Perm		c0.05			0.02			c0.39			0.12	
v/c Ratio		0.37			0.11			0.60			0.19	
Uniform Delay, d1		23.6			22.7			5.8			4.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.3			0.2			2.6			0.2	
Delay (s)		24.9			23.0			8.4			4.2	
Level of Service		C			C			A			A	
Approach Delay (s)		24.9			23.0			8.4			4.2	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	60.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	93	0	11	109	2	12
Future Volume (Veh/h)	93	0	11	109	2	12
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.75	0.75	0.70	0.70
Hourly flow rate (vph)	127	0	15	145	3	17
Pedestrians					10	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			137		312	137
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			137		312	137
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		100	98
cM capacity (veh/h)			1433		667	903

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	127	160	20
Volume Left	0	15	3
Volume Right	0	0	17
cSH	1700	1433	857
Volume to Capacity	0.07	0.01	0.02
Queue Length 95th (m)	0.0	0.2	0.5
Control Delay (s)	0.0	0.8	9.3
Lane LOS		A	A
Approach Delay (s)	0.0	0.8	9.3
Approach LOS			A

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	23.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	1	430	2	1	435
Future Volume (Veh/h)	0	1	430	2	1	435
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.80	0.80	0.85	0.85
Hourly flow rate (vph)	0	1	538	2	1	512
Pedestrians	5					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	802	275			545	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	802	275			545	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	320	719			1008	

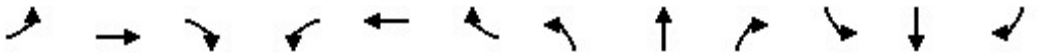
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	1	359	181	172	341
Volume Left	0	0	0	1	0
Volume Right	1	0	2	0	0
cSH	719	1700	1700	1008	1700
Volume to Capacity	0.00	0.21	0.11	0.00	0.20
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	10.0	0.0	0.0	0.1	0.0
Lane LOS	B			A	
Approach Delay (s)	10.0	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	22.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	5	0	77	2	45	5	470	79	503
Future Volume (vph)	5	0	77	2	45	5	470	79	503
Lane Group Flow (vph)	0	16	0	93	53	0	683	0	691
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		4		8			2		6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0	31.0	31.0	31.0	31.0
Minimum Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (%)	42.5%	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		7.5		7.5	7.5		7.5		7.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.04		0.28	0.12		0.33		0.41
Control Delay		0.1		22.2	4.4		8.0		9.6
Queue Delay		0.0		0.0	0.0		0.0		0.0
Total Delay		0.1		22.2	4.4		8.0		9.6
Queue Length 50th (m)		0.0		8.5	0.0		20.8		24.6
Queue Length 95th (m)		0.0		17.9	4.4		28.6		34.0
Internal Link Dist (m)		104.2		128.9			187.9		186.7
Turn Bay Length (m)									
Base Capacity (vph)		515		462	576		2067		1694
Starvation Cap Reductn		0		0	0		0		0
Spillback Cap Reductn		0		0	0		0		0
Storage Cap Reductn		0		0	0		0		0
Reduced v/c Ratio		0.03		0.20	0.09		0.33		0.41

Intersection Summary
Cycle Length: 67
Actuated Cycle Length: 61.9
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Splits and Phases: 1: King St & Driveway/Galloway Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	2	77	2	45	5	470	105	79	503	5
Future Volume (vph)	5	0	2	77	2	45	5	470	105	79	503	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5			7.5	7.5		7.5			7.5	
Lane Util. Factor		1.00			1.00	1.00		0.95			0.95	
Frpb, ped/bikes		0.99			1.00	0.98		0.99			1.00	
Flpb, ped/bikes		1.00			1.00	1.00		1.00			1.00	
Frt		0.96			1.00	0.85		0.97			1.00	
Flt Protected		0.97			0.95	1.00		1.00			0.99	
Satd. Flow (prot)		1730			1788	1544		3462			3547	
Flt Permitted		0.76			0.72	1.00		0.95			0.76	
Satd. Flow (perm)		1364			1349	1544		3286			2718	
Peak-hour factor, PHF	0.44	0.44	0.44	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	11	0	5	91	2	53	6	553	124	93	592	6
RTOR Reduction (vph)	0	13	0	0	0	43	0	22	0	0	1	0
Lane Group Flow (vph)	0	3	0	0	93	10	0	661	0	0	690	0
Confl. Peds. (#/hr)	5		5	5		5	10		5	5		10
Heavy Vehicles (%)	2%	2%	2%	2%	2%	4%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		11.7			11.7	11.7		36.8			36.8	
Effective Green, g (s)		11.7			11.7	11.7		36.8			36.8	
Actuated g/C Ratio		0.18			0.18	0.18		0.58			0.58	
Clearance Time (s)		7.5			7.5	7.5		7.5			7.5	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		251			248	284		1904			1575	
v/s Ratio Prot												
v/s Ratio Perm		0.00			c0.07	0.01		0.20			c0.25	
v/c Ratio		0.01			0.38	0.03		0.35			0.44	
Uniform Delay, d1		21.2			22.7	21.3		7.0			7.5	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.0			1.0	0.0		0.5			0.9	
Delay (s)		21.2			23.7	21.3		7.5			8.4	
Level of Service		C			C	C		A			A	
Approach Delay (s)		21.2			22.8			7.5			8.4	
Approach LOS		C			C			A			A	

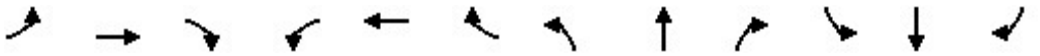
Intersection Summary			
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	63.5	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	17	1	16	9	43	427	29	461
Future Volume (vph)	17	1	16	9	43	427	29	461
Lane Group Flow (vph)	0	98	0	55	0	569	0	636
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	32.0	32.0	32.0	32.0
Minimum Split (s)	24.0	24.0	24.0	24.0	38.0	38.0	38.0	38.0
Total Split (s)	24.0	24.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (%)	36.4%	36.4%	36.4%	36.4%	63.6%	63.6%	63.6%	63.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		6.0		6.0		6.0		6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.32		0.21		0.47		0.28
Control Delay		12.3		16.1		7.2		4.8
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		12.3		16.1		7.2		4.8
Queue Length 50th (m)		2.4		2.9		28.9		13.7
Queue Length 95th (m)		7.9		9.0		45.3		18.3
Internal Link Dist (m)		50.9		32.8		150.3		160.6
Turn Bay Length (m)								
Base Capacity (vph)		486		462		1200		2246
Starvation Cap Reductn		0		0		0		0
Spillback Cap Reductn		0		0		0		0
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.20		0.12		0.47		0.28

Intersection Summary
Cycle Length: 66
Actuated Cycle Length: 60.7
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 2: William St & Galloway Blvd/Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	1	50	16	9	19	43	427	14	29	461	32
Future Volume (vph)	17	1	50	16	9	19	43	427	14	29	461	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			0.95	
Frpb, ped/bikes		0.99			0.99			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.90			0.94			1.00			0.99	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		1612			1695			1847			3461	
Flt Permitted		0.90			0.86			0.91			0.91	
Satd. Flow (perm)		1461			1493			1685			3149	
Peak-hour factor, PHF	0.69	0.69	0.69	0.79	0.79	0.79	0.85	0.85	0.85	0.82	0.82	0.82
Adj. Flow (vph)	25	1	72	20	11	24	51	502	16	35	562	39
RTOR Reduction (vph)	0	63	0	0	21	0	0	1	0	0	5	0
Lane Group Flow (vph)	0	35	0	0	34	0	0	568	0	0	631	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	6%	2%	4%	2%	2%	5%	2%	3%	7%	2%	4%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.0			8.0			42.0			42.0	
Effective Green, g (s)		8.0			8.0			42.0			42.0	
Actuated g/C Ratio		0.13			0.13			0.68			0.68	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		188			192			1141			2133	
v/s Ratio Prot												
v/s Ratio Perm		c0.02			0.02			c0.34			0.20	
v/c Ratio		0.19			0.18			0.50			0.30	
Uniform Delay, d1		24.1			24.1			4.9			4.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.5			0.4			1.6			0.4	
Delay (s)		24.6			24.5			6.4			4.4	
Level of Service		C			C			A			A	
Approach Delay (s)		24.6			24.5			6.4			4.4	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	62.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	72	4	11	66	5	7
Future Volume (Veh/h)	72	4	11	66	5	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.84	0.84	0.60	0.60
Hourly flow rate (vph)	99	5	13	79	8	12
Pedestrians					10	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			114		216	112
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			114		216	112
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			99		99	99
cM capacity (veh/h)			1461		757	901

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	104	92	20
Volume Left	0	13	8
Volume Right	5	0	12
cSH	1700	1461	838
Volume to Capacity	0.06	0.01	0.02
Queue Length 95th (m)	0.0	0.2	0.6
Control Delay (s)	0.0	1.1	9.4
Lane LOS		A	A
Approach Delay (s)	0.0	1.1	9.4
Approach LOS			A

Intersection Summary			
Average Delay		1.3	
Intersection Capacity Utilization		20.7%	ICU Level of Service A
Analysis Period (min)		15	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	14	542	11	23	566
Future Volume (Veh/h)	5	14	542	11	23	566
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.90	0.90	0.95	0.95
Hourly flow rate (vph)	5	15	602	12	24	596
Pedestrians	5					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	959	312			619	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	959	312			619	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	98			97	
cM capacity (veh/h)	247	680			953	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	20	401	213	223	397
Volume Left	5	0	0	24	0
Volume Right	15	0	12	0	0
cSH	473	1700	1700	953	1700
Volume to Capacity	0.04	0.24	0.13	0.03	0.23
Queue Length 95th (m)	1.0	0.0	0.0	0.6	0.0
Control Delay (s)	12.9	0.0	0.0	1.2	0.0
Lane LOS	B			A	
Approach Delay (s)	12.9	0.0		0.4	
Approach LOS	B				

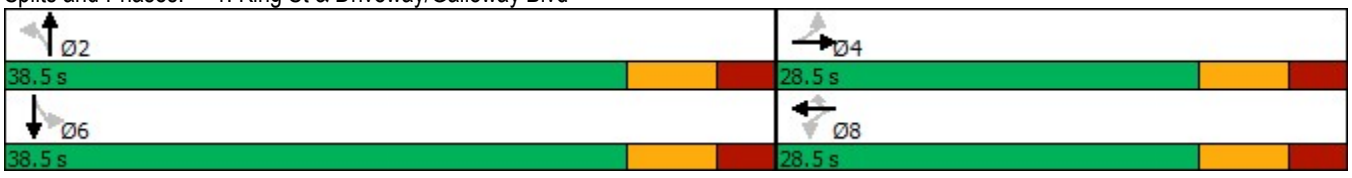
Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

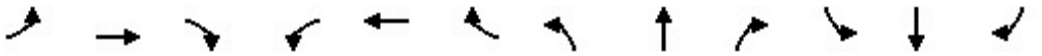
Appendix E –
Synchro Analysis Output –
Background Traffic Volumes

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	14	4	117	1	95	4	432	93	438
Future Volume (vph)	14	4	117	1	95	4	432	93	438
Lane Group Flow (vph)	0	28	0	179	144	0	643	0	766
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		4		8			2		6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0	31.0	31.0	31.0	31.0
Minimum Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (%)	42.5%	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		7.5		7.5	7.5		7.5		7.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.08		0.55	0.29		0.38		0.61
Control Delay		15.2		27.2	5.4		10.0		14.2
Queue Delay		0.0		0.0	0.0		0.0		0.0
Total Delay		15.2		27.2	5.4		10.0		14.2
Queue Length 50th (m)		1.9		17.6	0.0		19.7		29.6
Queue Length 95th (m)		6.2		23.1	4.1		30.5		36.7
Internal Link Dist (m)		104.2		128.9			187.9		186.7
Turn Bay Length (m)									
Base Capacity (vph)		426		420	595		1676		1259
Starvation Cap Reductn		0		0	0		0		0
Spillback Cap Reductn		0		0	0		0		0
Storage Cap Reductn		0		0	0		0		0
Reduced v/c Ratio		0.07		0.43	0.24		0.38		0.61

Intersection Summary
Cycle Length: 67
Actuated Cycle Length: 64.7
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Splits and Phases: 1: King St & Driveway/Galloway Blvd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	4	5	117	1	95	4	432	78	93	438	5
Future Volume (vph)	14	4	5	117	1	95	4	432	78	93	438	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5			7.5	7.5		7.5			7.5	
Lane Util. Factor		1.00			1.00	1.00		0.95			0.95	
Frpb, ped/bikes		1.00			1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00			1.00	1.00		1.00			1.00	
Frt		0.97			1.00	0.85		0.98			1.00	
Flt Protected		0.97			0.95	1.00		1.00			0.99	
Satd. Flow (prot)		1628			1736	1529		3394			3385	
Flt Permitted		0.77			0.71	1.00		0.95			0.72	
Satd. Flow (perm)		1295			1290	1529		3221			2447	
Peak-hour factor, PHF	0.82	0.82	0.82	0.66	0.66	0.66	0.80	0.80	0.80	0.70	0.70	0.70
Adj. Flow (vph)	17	5	6	177	2	144	5	540	98	133	626	7
RTOR Reduction (vph)	0	4	0	0	0	108	0	20	0	0	1	0
Lane Group Flow (vph)	0	24	0	0	179	36	0	623	0	0	765	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		
Heavy Vehicles (%)	2%	50%	2%	5%	2%	5%	24%	4%	7%	29%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		16.3			16.3	16.3		33.3			33.3	
Effective Green, g (s)		16.3			16.3	16.3		33.3			33.3	
Actuated g/C Ratio		0.25			0.25	0.25		0.52			0.52	
Clearance Time (s)		7.5			7.5	7.5		7.5			7.5	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		326			325	385		1660			1261	
v/s Ratio Prot												
v/s Ratio Perm		0.02			c0.14	0.02		0.19			c0.31	
v/c Ratio		0.07			0.55	0.09		0.38			0.61	
Uniform Delay, d1		18.4			21.0	18.5		9.4			11.0	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.1			2.0	0.1		0.7			2.2	
Delay (s)		18.5			23.0	18.6		10.1			13.2	
Level of Service		B			C	B		B			B	
Approach Delay (s)		18.5			21.0			10.1			13.2	
Approach LOS		B			C			B			B	

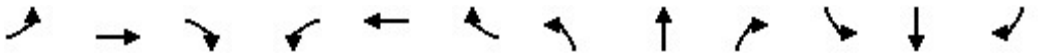
Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	64.6	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	30	10	11	4	87	471	26	431
Future Volume (vph)	30	10	11	4	87	471	26	431
Lane Group Flow (vph)	0	161	0	49	0	739	0	557
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	32.0	32.0	32.0	32.0
Minimum Split (s)	24.0	24.0	24.0	24.0	38.0	38.0	38.0	38.0
Total Split (s)	24.0	24.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (%)	36.4%	36.4%	36.4%	36.4%	63.6%	63.6%	63.6%	63.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		6.0		6.0		6.0		6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.50		0.17		0.71		0.26
Control Delay		15.0		12.8		14.2		5.3
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		15.0		12.8		14.2		5.3
Queue Length 50th (m)		5.3		1.7		49.0		11.8
Queue Length 95th (m)		11.7		7.6		78.3		21.0
Internal Link Dist (m)		50.9		32.8		150.3		160.6
Turn Bay Length (m)								
Base Capacity (vph)		466		469		1045		2116
Starvation Cap Reductn		0		0		0		0
Spillback Cap Reductn		0		0		0		0
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.35		0.10		0.71		0.26

Intersection Summary
Cycle Length: 66
Actuated Cycle Length: 59.5
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 2: William St & Galloway Blvd/Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	10	73	11	4	24	87	471	11	26	431	22
Future Volume (vph)	30	10	73	11	4	24	87	471	11	26	431	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			0.95	
Frpb, ped/bikes		0.99			0.98			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.91			0.92			1.00			0.99	
Flt Protected		0.99			0.99			0.99			1.00	
Satd. Flow (prot)		1437			1672			1790			3377	
Flt Permitted		0.89			0.87			0.84			0.90	
Satd. Flow (perm)		1300			1482			1509			3046	
Peak-hour factor, PHF	0.70	0.70	0.70	0.81	0.81	0.81	0.77	0.77	0.77	0.86	0.86	0.86
Adj. Flow (vph)	43	14	104	14	5	30	113	612	14	30	501	26
RTOR Reduction (vph)	0	89	0	0	26	0	0	1	0	0	4	0
Lane Group Flow (vph)	0	72	0	0	23	0	0	738	0	0	553	0
Confl. Peds. (#/hr)	5		5	5		5	5		10	10		5
Heavy Vehicles (%)	7%	2%	26%	2%	2%	2%	7%	6%	2%	2%	7%	10%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.8			8.8			40.0			40.0	
Effective Green, g (s)		8.8			8.8			40.0			40.0	
Actuated g/C Ratio		0.14			0.14			0.66			0.66	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		188			214			992			2003	
v/s Ratio Prot												
v/s Ratio Perm		c0.06			0.02			c0.49			0.18	
v/c Ratio		0.38			0.11			0.74			0.28	
Uniform Delay, d1		23.5			22.6			7.0			4.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.3			0.2			5.1			0.3	
Delay (s)		24.8			22.8			12.0			4.7	
Level of Service		C			C			B			A	
Approach Delay (s)		24.8			22.8			12.0			4.7	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	60.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	97	0	11	113	2	12
Future Volume (Veh/h)	97	0	11	113	2	12
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.75	0.75	0.70	0.70
Hourly flow rate (vph)	133	0	15	151	3	17
Pedestrians					10	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			143		324	143
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			143		324	143
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		100	98
cM capacity (veh/h)			1426		656	896

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	133	166	20
Volume Left	0	15	3
Volume Right	0	0	17
cSH	1700	1426	849
Volume to Capacity	0.08	0.01	0.02
Queue Length 95th (m)	0.0	0.2	0.5
Control Delay (s)	0.0	0.8	9.3
Lane LOS		A	A
Approach Delay (s)	0.0	0.8	9.3
Approach LOS			A

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	23.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	1	529	2	1	533
Future Volume (Veh/h)	0	1	529	2	1	533
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.80	0.80	0.85	0.85
Hourly flow rate (vph)	0	1	661	2	1	627
Pedestrians	5					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	982	336			668	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	982	336			668	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	245	656			907	

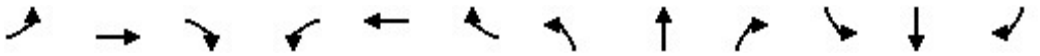
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	1	441	222	210	418
Volume Left	0	0	0	1	0
Volume Right	1	0	2	0	0
cSH	656	1700	1700	907	1700
Volume to Capacity	0.00	0.26	0.13	0.00	0.25
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	10.5	0.0	0.0	0.1	0.0
Lane LOS	B			A	
Approach Delay (s)	10.5	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	25.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	5	0	80	2	47	5	596	82	682
Future Volume (vph)	5	0	80	2	47	5	596	82	682
Lane Group Flow (vph)	0	16	0	96	55	0	835	0	904
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		4		8			2		6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0	31.0	31.0	31.0	31.0
Minimum Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (%)	42.5%	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		7.5		7.5	7.5		7.5		7.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.04		0.29	0.13		0.40		0.54
Control Delay		0.1		22.3	4.7		8.8		11.3
Queue Delay		0.0		0.0	0.0		0.0		0.0
Total Delay		0.1		22.3	4.7		8.8		11.3
Queue Length 50th (m)		0.0		8.8	0.0		28.0		36.2
Queue Length 95th (m)		0.0		18.4	4.7		37.3		49.0
Internal Link Dist (m)		104.2		128.9			187.9		186.7
Turn Bay Length (m)									
Base Capacity (vph)		515		463	578		2067		1670
Starvation Cap Reductn		0		0	0		0		0
Spillback Cap Reductn		0		0	0		0		0
Storage Cap Reductn		0		0	0		0		0
Reduced v/c Ratio		0.03		0.21	0.10		0.40		0.54

Intersection Summary
Cycle Length: 67
Actuated Cycle Length: 61.7
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Splits and Phases: 1: King St & Driveway/Galloway Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	2	80	2	47	5	596	109	82	682	5
Future Volume (vph)	5	0	2	80	2	47	5	596	109	82	682	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5			7.5	7.5		7.5			7.5	
Lane Util. Factor		1.00			1.00	1.00		0.95			0.95	
Frpb, ped/bikes		0.99			1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00			1.00	1.00		1.00			1.00	
Frt		0.96			1.00	0.85		0.98			1.00	
Flt Protected		0.97			0.95	1.00		1.00			0.99	
Satd. Flow (prot)		1730			1788	1544		3480			3554	
Flt Permitted		0.76			0.72	1.00		0.95			0.75	
Satd. Flow (perm)		1361			1349	1544		3300			2689	
Peak-hour factor, PHF	0.44	0.44	0.44	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	11	0	5	94	2	55	6	701	128	96	802	6
RTOR Reduction (vph)	0	13	0	0	0	45	0	17	0	0	0	0
Lane Group Flow (vph)	0	3	0	0	96	10	0	818	0	0	904	0
Confl. Peds. (#/hr)	5		5	5		5	10		5	5		10
Heavy Vehicles (%)	2%	2%	2%	2%	2%	4%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		11.7			11.7	11.7		36.6			36.6	
Effective Green, g (s)		11.7			11.7	11.7		36.6			36.6	
Actuated g/C Ratio		0.18			0.18	0.18		0.58			0.58	
Clearance Time (s)		7.5			7.5	7.5		7.5			7.5	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		251			249	285		1908			1554	
v/s Ratio Prot												
v/s Ratio Perm		0.00			c0.07	0.01		0.25			c0.34	
v/c Ratio		0.01			0.39	0.04		0.43			0.58	
Uniform Delay, d1		21.1			22.6	21.2		7.5			8.5	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.0			1.0	0.1		0.7			1.6	
Delay (s)		21.1			23.6	21.2		8.2			10.1	
Level of Service		C			C	C		A			B	
Approach Delay (s)		21.1			22.8			8.2			10.1	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	63.3	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

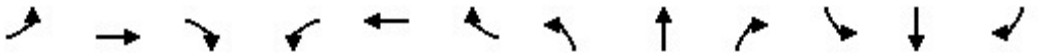
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	18	7	16	9	45	600	29	593
Future Volume (vph)	18	7	16	9	45	600	29	593
Lane Group Flow (vph)	0	111	0	55	0	775	0	798
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	32.0	32.0	32.0	32.0
Minimum Split (s)	24.0	24.0	24.0	24.0	38.0	38.0	38.0	38.0
Total Split (s)	24.0	24.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (%)	36.4%	36.4%	36.4%	36.4%	63.6%	63.6%	63.6%	63.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		6.0		6.0		6.0		6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.35		0.20		0.65		0.36
Control Delay		12.9		15.8		10.6		5.4
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		12.9		15.8		10.6		5.4
Queue Length 50th (m)		3.3		2.8		48.2		18.6
Queue Length 95th (m)		9.0		9.0		78.9		24.9
Internal Link Dist (m)		50.9		32.8		150.3		160.6
Turn Bay Length (m)								
Base Capacity (vph)		501		472		1194		2219
Starvation Cap Reductn		0		0		0		0
Spillback Cap Reductn		0		0		0		0
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.22		0.12		0.65		0.36

Intersection Summary

Cycle Length: 66
Actuated Cycle Length: 60.1
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 2: William St & Galloway Blvd/Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	7	52	16	9	19	45	600	14	29	593	33
Future Volume (vph)	18	7	52	16	9	19	45	600	14	29	593	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			0.95	
Frpb, ped/bikes		0.99			0.99			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.91			0.94			1.00			0.99	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		1633			1695			1852			3470	
Flt Permitted		0.90			0.88			0.91			0.90	
Satd. Flow (perm)		1492			1516			1688			3137	
Peak-hour factor, PHF	0.69	0.69	0.69	0.79	0.79	0.79	0.85	0.85	0.85	0.82	0.82	0.82
Adj. Flow (vph)	26	10	75	20	11	24	53	706	16	35	723	40
RTOR Reduction (vph)	0	65	0	0	21	0	0	1	0	0	4	0
Lane Group Flow (vph)	0	46	0	0	34	0	0	774	0	0	794	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	6%	2%	4%	2%	2%	5%	2%	3%	7%	2%	4%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.1			8.1			41.2			41.2	
Effective Green, g (s)		8.1			8.1			41.2			41.2	
Actuated g/C Ratio		0.13			0.13			0.67			0.67	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		197			200			1134			2108	
v/s Ratio Prot												
v/s Ratio Perm		c0.03			0.02			c0.46			0.25	
v/c Ratio		0.23			0.17			0.68			0.38	
Uniform Delay, d1		23.8			23.6			6.1			4.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.6			0.4			3.3			0.5	
Delay (s)		24.4			24.0			9.4			4.9	
Level of Service		C			C			A			A	
Approach Delay (s)		24.4			24.0			9.4			4.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	61.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	75	4	11	69	5	7
Future Volume (Veh/h)	75	4	11	69	5	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.84	0.84	0.60	0.60
Hourly flow rate (vph)	103	5	13	82	8	12
Pedestrians					10	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			118		224	116
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			118		224	116
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			99		99	99
cM capacity (veh/h)			1456		750	897

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	108	95	20
Volume Left	0	13	8
Volume Right	5	0	12
cSH	1700	1456	832
Volume to Capacity	0.06	0.01	0.02
Queue Length 95th (m)	0.0	0.2	0.6
Control Delay (s)	0.0	1.1	9.4
Lane LOS		A	A
Approach Delay (s)	0.0	1.1	9.4
Approach LOS			A

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	20.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	14	671	11	23	747
Future Volume (Veh/h)	5	14	671	11	23	747
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.90	0.90	0.95	0.95
Hourly flow rate (vph)	5	15	746	12	24	786
Pedestrians	5					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1198	384			763	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1198	384			763	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	98			97	
cM capacity (veh/h)	172	611			841	

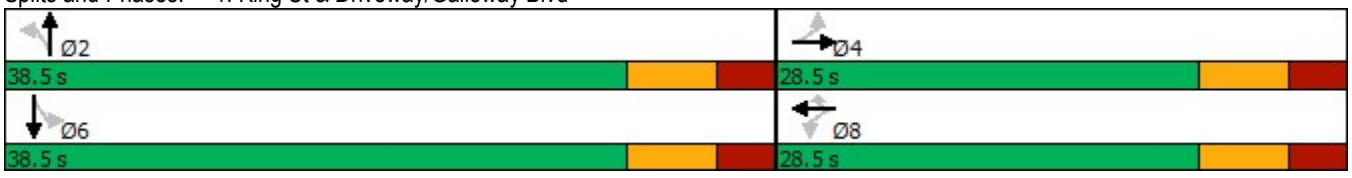
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	20	497	261	286	524
Volume Left	5	0	0	24	0
Volume Right	15	0	12	0	0
cSH	373	1700	1700	841	1700
Volume to Capacity	0.05	0.29	0.15	0.03	0.31
Queue Length 95th (m)	1.3	0.0	0.0	0.7	0.0
Control Delay (s)	15.2	0.0	0.0	1.1	0.0
Lane LOS	C			A	
Approach Delay (s)	15.2	0.0		0.4	
Approach LOS	C				

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	14	4	125	1	102	4	514	99	484
Future Volume (vph)	14	4	125	1	102	4	514	99	484
Lane Group Flow (vph)	0	28	0	191	155	0	752	0	839
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		4		8			2		6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0	31.0	31.0	31.0	31.0
Minimum Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (%)	42.5%	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		7.5		7.5	7.5		7.5		7.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.08		0.57	0.30		0.45		0.71
Control Delay		15.0		27.7	5.2		11.1		17.1
Queue Delay		0.0		0.0	0.0		0.0		0.0
Total Delay		15.0		27.7	5.2		11.1		17.1
Queue Length 50th (m)		1.9		18.9	0.0		24.5		34.9
Queue Length 95th (m)		6.2		24.4	4.0		37.4		43.1
Internal Link Dist (m)		104.2		128.9			187.9		186.7
Turn Bay Length (m)									
Base Capacity (vph)		428		424	606		1655		1180
Starvation Cap Reductn		0		0	0		0		0
Spillback Cap Reductn		0		0	0		0		0
Storage Cap Reductn		0		0	0		0		0
Reduced v/c Ratio		0.07		0.45	0.26		0.45		0.71

Intersection Summary
Cycle Length: 67
Actuated Cycle Length: 64
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Splits and Phases: 1: King St & Driveway/Galloway Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	4	5	125	1	102	4	514	83	99	484	5
Future Volume (vph)	14	4	5	125	1	102	4	514	83	99	484	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5			7.5	7.5		7.5			7.5	
Lane Util. Factor		1.00			1.00	1.00		0.95			0.95	
Frpb, ped/bikes		1.00			1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00			1.00	1.00		1.00			1.00	
Frt		0.97			1.00	0.85		0.98			1.00	
Flt Protected		0.97			0.95	1.00		1.00			0.99	
Satd. Flow (prot)		1628			1736	1530		3405			3392	
Flt Permitted		0.77			0.71	1.00		0.95			0.68	
Satd. Flow (perm)		1290			1290	1530		3232			2327	
Peak-hour factor, PHF	0.82	0.82	0.82	0.66	0.66	0.66	0.80	0.80	0.80	0.70	0.70	0.70
Adj. Flow (vph)	17	5	6	189	2	155	5	642	104	141	691	7
RTOR Reduction (vph)	0	4	0	0	0	115	0	18	0	0	1	0
Lane Group Flow (vph)	0	24	0	0	191	40	0	734	0	0	838	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		
Heavy Vehicles (%)	2%	50%	2%	5%	2%	5%	24%	4%	7%	29%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		16.5			16.5	16.5		32.5			32.5	
Effective Green, g (s)		16.5			16.5	16.5		32.5			32.5	
Actuated g/C Ratio		0.26			0.26	0.26		0.51			0.51	
Clearance Time (s)		7.5			7.5	7.5		7.5			7.5	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		332			332	394		1641			1181	
v/s Ratio Prot												
v/s Ratio Perm		0.02			c0.15	0.03		0.23			c0.36	
v/c Ratio		0.07			0.58	0.10		0.45			0.71	
Uniform Delay, d1		18.0			20.7	18.1		10.0			12.1	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.1			2.4	0.1		0.9			3.6	
Delay (s)		18.0			23.1	18.2		10.9			15.7	
Level of Service		B			C	B		B			B	
Approach Delay (s)		18.0			20.9			10.9			15.7	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	32	10	11	4	93	498	26	451
Future Volume (vph)	32	10	11	4	93	498	26	451
Lane Group Flow (vph)	0	170	0	49	0	782	0	581
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	32.0	32.0	32.0	32.0
Minimum Split (s)	24.0	24.0	24.0	24.0	38.0	38.0	38.0	38.0
Total Split (s)	24.0	24.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (%)	36.4%	36.4%	36.4%	36.4%	63.6%	63.6%	63.6%	63.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		6.0		6.0		6.0		6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.52		0.17		0.76		0.28
Control Delay		15.2		12.8		16.6		5.5
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		15.2		12.8		16.6		5.5
Queue Length 50th (m)		5.6		1.7		55.5		12.4
Queue Length 95th (m)		12.1		7.5		#94.2		22.5
Internal Link Dist (m)		50.9		32.8		150.3		160.6
Turn Bay Length (m)								
Base Capacity (vph)		469		465		1030		2104
Starvation Cap Reductn		0		0		0		0
Spillback Cap Reductn		0		0		0		0
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.36		0.11		0.76		0.28

Intersection Summary

Cycle Length: 66
Actuated Cycle Length: 59.5
Natural Cycle: 70
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: William St & Galloway Blvd/Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	10	77	11	4	24	93	498	11	26	451	23
Future Volume (vph)	32	10	77	11	4	24	93	498	11	26	451	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			0.95	
Frpb, ped/bikes		0.99			0.98			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.91			0.92			1.00			0.99	
Flt Protected		0.99			0.99			0.99			1.00	
Satd. Flow (prot)		1436			1672			1790			3377	
Flt Permitted		0.89			0.87			0.83			0.90	
Satd. Flow (perm)		1298			1470			1491			3042	
Peak-hour factor, PHF	0.70	0.70	0.70	0.81	0.81	0.81	0.77	0.77	0.77	0.86	0.86	0.86
Adj. Flow (vph)	46	14	110	14	5	30	121	647	14	30	524	27
RTOR Reduction (vph)	0	94	0	0	26	0	0	1	0	0	4	0
Lane Group Flow (vph)	0	76	0	0	23	0	0	781	0	0	577	0
Confl. Peds. (#/hr)	5		5	5		5	5		10	10		5
Heavy Vehicles (%)	7%	2%	26%	2%	2%	2%	7%	6%	2%	2%	7%	10%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.9			8.9			39.9			39.9	
Effective Green, g (s)		8.9			8.9			39.9			39.9	
Actuated g/C Ratio		0.15			0.15			0.66			0.66	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		190			215			978			1996	
v/s Ratio Prot												
v/s Ratio Perm		c0.06			0.02			c0.52			0.19	
v/c Ratio		0.40			0.11			0.80			0.29	
Uniform Delay, d1		23.5			22.5			7.6			4.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.4			0.2			6.8			0.4	
Delay (s)		24.9			22.7			14.4			4.8	
Level of Service		C			C			B			A	
Approach Delay (s)		24.9			22.7			14.4			4.8	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	60.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	103	0	11	120	2	12
Future Volume (Veh/h)	103	0	11	120	2	12
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.75	0.75	0.70	0.70
Hourly flow rate (vph)	141	0	15	160	3	17
Pedestrians					10	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			151		341	151
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			151		341	151
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		100	98
cM capacity (veh/h)			1416		642	887

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	141	175	20
Volume Left	0	15	3
Volume Right	0	0	17
cSH	1700	1416	839
Volume to Capacity	0.08	0.01	0.02
Queue Length 95th (m)	0.0	0.2	0.6
Control Delay (s)	0.0	0.7	9.4
Lane LOS		A	A
Approach Delay (s)	0.0	0.7	9.4
Approach LOS			A

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	23.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	1	618	2	1	584
Future Volume (Veh/h)	0	1	618	2	1	584
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.80	0.80	0.85	0.85
Hourly flow rate (vph)	0	1	772	2	1	687
Pedestrians	5					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1124	392			779	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1124	392			779	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	198	604			823	

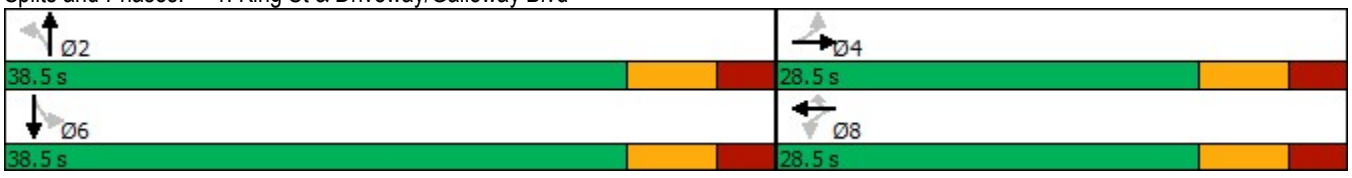
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	1	515	259	230	458
Volume Left	0	0	0	1	0
Volume Right	1	0	2	0	0
cSH	604	1700	1700	823	1700
Volume to Capacity	0.00	0.30	0.15	0.00	0.27
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	11.0	0.0	0.0	0.1	0.0
Lane LOS	B			A	
Approach Delay (s)	11.0	0.0		0.0	
Approach LOS	B				

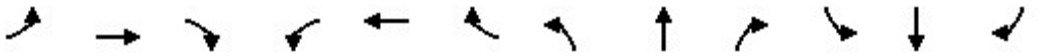
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	27.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	5	0	85	2	50	5	679	87	793
Future Volume (vph)	5	0	85	2	50	5	679	87	793
Lane Group Flow (vph)	0	16	0	102	59	0	941	0	1041
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		4		8			2		6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0	31.0	31.0	31.0	31.0
Minimum Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (%)	42.5%	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		7.5		7.5	7.5		7.5		7.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.04		0.31	0.14		0.46		0.65
Control Delay		0.1		22.4	5.2		9.5		13.5
Queue Delay		0.0		0.0	0.0		0.0		0.0
Total Delay		0.1		22.4	5.2		9.5		13.5
Queue Length 50th (m)		0.0		9.3	0.0		33.3		46.3
Queue Length 95th (m)		0.0		19.4	5.3		43.8		62.4
Internal Link Dist (m)		104.2		128.9			187.9		186.7
Turn Bay Length (m)									
Base Capacity (vph)		516		466	581		2056		1609
Starvation Cap Reductn		0		0	0		0		0
Spillback Cap Reductn		0		0	0		0		0
Storage Cap Reductn		0		0	0		0		0
Reduced v/c Ratio		0.03		0.22	0.10		0.46		0.65

Intersection Summary
Cycle Length: 67
Actuated Cycle Length: 61.2
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Splits and Phases: 1: King St & Driveway/Galloway Blvd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	2	85	2	50	5	679	116	87	793	5
Future Volume (vph)	5	0	2	85	2	50	5	679	116	87	793	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5			7.5	7.5		7.5			7.5	
Lane Util. Factor		1.00			1.00	1.00		0.95			0.95	
Frpb, ped/bikes		0.99			1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00			1.00	1.00		1.00			1.00	
Frt		0.96			1.00	0.85		0.98			1.00	
Flt Protected		0.97			0.95	1.00		1.00			1.00	
Satd. Flow (prot)		1730			1788	1544		3486			3557	
Flt Permitted		0.76			0.72	1.00		0.95			0.73	
Satd. Flow (perm)		1356			1348	1544		3303			2603	
Peak-hour factor, PHF	0.44	0.44	0.44	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	11	0	5	100	2	59	6	799	136	102	933	6
RTOR Reduction (vph)	0	13	0	0	0	48	0	16	0	0	0	0
Lane Group Flow (vph)	0	3	0	0	102	11	0	925	0	0	1041	0
Confl. Peds. (#/hr)	5		5	5		5	10		5	5		10
Heavy Vehicles (%)	2%	2%	2%	2%	2%	4%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		11.7			11.7	11.7		36.1			36.1	
Effective Green, g (s)		11.7			11.7	11.7		36.1			36.1	
Actuated g/C Ratio		0.19			0.19	0.19		0.57			0.57	
Clearance Time (s)		7.5			7.5	7.5		7.5			7.5	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		252			251	287		1898			1496	
v/s Ratio Prot												
v/s Ratio Perm		0.00			c0.08	0.01		0.28			c0.40	
v/c Ratio		0.01			0.41	0.04		0.49			0.70	
Uniform Delay, d1		20.8			22.5	20.9		7.9			9.5	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.0			1.1	0.1		0.9			2.7	
Delay (s)		20.9			23.6	21.0		8.8			12.2	
Level of Service		C			C	C		A			B	
Approach Delay (s)		20.9			22.6			8.8			12.2	
Approach LOS		C			C			A			B	

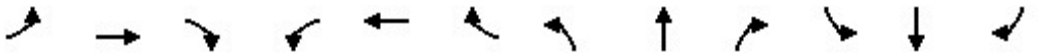
Intersection Summary			
HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	62.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	19	7	16	9	47	631	29	625
Future Volume (vph)	19	7	16	9	47	631	29	625
Lane Group Flow (vph)	0	118	0	55	0	813	0	840
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	32.0	32.0	32.0	32.0
Minimum Split (s)	24.0	24.0	24.0	24.0	38.0	38.0	38.0	38.0
Total Split (s)	24.0	24.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (%)	36.4%	36.4%	36.4%	36.4%	63.6%	63.6%	63.6%	63.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		6.0		6.0		6.0		6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.37		0.20		0.69		0.38
Control Delay		13.0		15.7		12.0		5.6
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		13.0		15.7		12.0		5.6
Queue Length 50th (m)		3.5		2.8		53.2		20.0
Queue Length 95th (m)		9.3		9.0		88.9		26.9
Internal Link Dist (m)		50.9		32.8		150.3		160.6
Turn Bay Length (m)								
Base Capacity (vph)		505		474		1183		2213
Starvation Cap Reductn		0		0		0		0
Spillback Cap Reductn		0		0		0		0
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.23		0.12		0.69		0.38

Intersection Summary
Cycle Length: 66
Actuated Cycle Length: 59.8
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 2: William St & Galloway Blvd/Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	7	55	16	9	19	47	631	14	29	625	35
Future Volume (vph)	19	7	55	16	9	19	47	631	14	29	625	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			0.95	
Frpb, ped/bikes		0.99			0.99			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.91			0.94			1.00			0.99	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		1632			1695			1852			3470	
Flt Permitted		0.90			0.88			0.90			0.90	
Satd. Flow (perm)		1489			1517			1679			3135	
Peak-hour factor, PHF	0.69	0.69	0.69	0.79	0.79	0.79	0.85	0.85	0.85	0.82	0.82	0.82
Adj. Flow (vph)	28	10	80	20	11	24	55	742	16	35	762	43
RTOR Reduction (vph)	0	69	0	0	21	0	0	1	0	0	4	0
Lane Group Flow (vph)	0	49	0	0	34	0	0	812	0	0	836	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	6%	2%	4%	2%	2%	5%	2%	3%	7%	2%	4%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.1			8.1			40.9			40.9	
Effective Green, g (s)		8.1			8.1			40.9			40.9	
Actuated g/C Ratio		0.13			0.13			0.67			0.67	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		197			201			1125			2101	
v/s Ratio Prot												
v/s Ratio Perm		c0.03			0.02			c0.48			0.27	
v/c Ratio		0.25			0.17			0.72			0.40	
Uniform Delay, d1		23.7			23.5			6.4			4.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.7			0.4			4.0			0.6	
Delay (s)		24.4			23.9			10.4			5.1	
Level of Service		C			C			B			A	
Approach Delay (s)		24.4			23.9			10.4			5.1	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	61.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	80	4	11	73	5	7
Future Volume (Veh/h)	80	4	11	73	5	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.84	0.84	0.60	0.60
Hourly flow rate (vph)	110	5	13	87	8	12
Pedestrians					10	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			125		236	122
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			125		236	122
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			99		99	99
cM capacity (veh/h)			1447		739	888

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	115	100	20
Volume Left	0	13	8
Volume Right	5	0	12
cSH	1700	1447	822
Volume to Capacity	0.07	0.01	0.02
Queue Length 95th (m)	0.0	0.2	0.6
Control Delay (s)	0.0	1.0	9.5
Lane LOS		A	A
Approach Delay (s)	0.0	1.0	9.5
Approach LOS			A

Intersection Summary			
Average Delay		1.2	
Intersection Capacity Utilization		21.1%	ICU Level of Service
Analysis Period (min)		15	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	14	759	11	23	862
Future Volume (Veh/h)	5	14	759	11	23	862
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.90	0.90	0.95	0.95
Hourly flow rate (vph)	5	15	843	12	24	907
Pedestrians	5					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1356	432			860	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1356	432			860	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	97			97	
cM capacity (veh/h)	135	568			773	

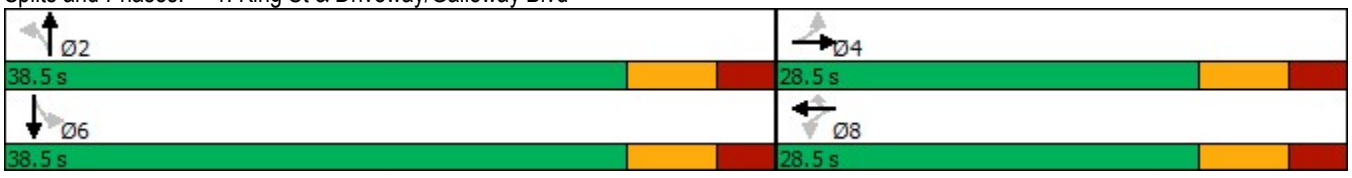
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	20	562	293	326	605
Volume Left	5	0	0	24	0
Volume Right	15	0	12	0	0
cSH	316	1700	1700	773	1700
Volume to Capacity	0.06	0.33	0.17	0.03	0.36
Queue Length 95th (m)	1.5	0.0	0.0	0.7	0.0
Control Delay (s)	17.2	0.0	0.0	1.1	0.0
Lane LOS	C			A	
Approach Delay (s)	17.2	0.0		0.4	
Approach LOS	C				

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	14	4	125	1	102	4	514	99	484
Future Volume (vph)	14	4	125	1	102	4	514	99	484
Lane Group Flow (vph)	0	28	0	191	155	0	752	0	839
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		4		8			2		6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0	31.0	31.0	31.0	31.0
Minimum Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (%)	42.5%	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		7.5		7.5	7.5		7.5		7.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.08		0.57	0.30		0.45		0.71
Control Delay		15.0		27.7	5.2		11.1		17.1
Queue Delay		0.0		0.0	0.0		0.0		0.0
Total Delay		15.0		27.7	5.2		11.1		17.1
Queue Length 50th (m)		1.9		18.9	0.0		24.5		34.9
Queue Length 95th (m)		6.2		24.4	4.0		37.4		43.1
Internal Link Dist (m)		104.2		128.9			187.9		186.7
Turn Bay Length (m)									
Base Capacity (vph)		428		424	606		1655		1180
Starvation Cap Reductn		0		0	0		0		0
Spillback Cap Reductn		0		0	0		0		0
Storage Cap Reductn		0		0	0		0		0
Reduced v/c Ratio		0.07		0.45	0.26		0.45		0.71

Intersection Summary
Cycle Length: 67
Actuated Cycle Length: 64
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Splits and Phases: 1: King St & Driveway/Galloway Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	4	5	125	1	102	4	514	83	99	484	5
Future Volume (vph)	14	4	5	125	1	102	4	514	83	99	484	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5			7.5	7.5		7.5			7.5	
Lane Util. Factor		1.00			1.00	1.00		0.95			0.95	
Frpb, ped/bikes		1.00			1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00			1.00	1.00		1.00			1.00	
Frt		0.97			1.00	0.85		0.98			1.00	
Flt Protected		0.97			0.95	1.00		1.00			0.99	
Satd. Flow (prot)		1628			1736	1530		3405			3392	
Flt Permitted		0.77			0.71	1.00		0.95			0.68	
Satd. Flow (perm)		1290			1290	1530		3232			2327	
Peak-hour factor, PHF	0.82	0.82	0.82	0.66	0.66	0.66	0.80	0.80	0.80	0.70	0.70	0.70
Adj. Flow (vph)	17	5	6	189	2	155	5	642	104	141	691	7
RTOR Reduction (vph)	0	4	0	0	0	115	0	18	0	0	1	0
Lane Group Flow (vph)	0	24	0	0	191	40	0	734	0	0	838	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		
Heavy Vehicles (%)	2%	50%	2%	5%	2%	5%	24%	4%	7%	29%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		16.5			16.5	16.5		32.5			32.5	
Effective Green, g (s)		16.5			16.5	16.5		32.5			32.5	
Actuated g/C Ratio		0.26			0.26	0.26		0.51			0.51	
Clearance Time (s)		7.5			7.5	7.5		7.5			7.5	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		332			332	394		1641			1181	
v/s Ratio Prot												
v/s Ratio Perm		0.02			c0.15	0.03		0.23			c0.36	
v/c Ratio		0.07			0.58	0.10		0.45			0.71	
Uniform Delay, d1		18.0			20.7	18.1		10.0			12.1	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.1			2.4	0.1		0.9			3.6	
Delay (s)		18.0			23.1	18.2		10.9			15.7	
Level of Service		B			C	B		B			B	
Approach Delay (s)		18.0			20.9			10.9			15.7	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	32	10	11	4	93	498	26	451
Future Volume (vph)	32	10	11	4	93	498	26	451
Lane Group Flow (vph)	0	170	0	49	121	661	30	551
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	32.0	32.0	32.0	32.0
Minimum Split (s)	24.0	24.0	24.0	24.0	38.0	38.0	38.0	38.0
Total Split (s)	24.0	24.0	24.0	24.0	46.0	46.0	46.0	46.0
Total Split (%)	34.3%	34.3%	34.3%	34.3%	65.7%	65.7%	65.7%	65.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.55		0.17	0.25	0.56	0.07	0.48
Control Delay		16.9		13.8	7.1	9.2	5.6	7.9
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		16.9		13.8	7.1	9.2	5.6	7.9
Queue Length 50th (m)		6.1		1.9	4.9	35.1	1.1	26.5
Queue Length 95th (m)		12.8		8.0	11.9	56.6	4.3	53.0
Internal Link Dist (m)		50.9		32.8		150.3		160.6
Turn Bay Length (m)					50.0		50.0	
Base Capacity (vph)		429		433	480	1176	417	1159
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		0.40		0.11	0.25	0.56	0.07	0.48

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 66.8
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 2: William St & Galloway Blvd/Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	10	77	11	4	24	93	498	11	26	451	23
Future Volume (vph)	32	10	77	11	4	24	93	498	11	26	451	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.98			0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.99	1.00	
Frt		0.91			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1424			1670		1699	1807		1779	1777	
Flt Permitted		0.89			0.90		0.41	1.00		0.34	1.00	
Satd. Flow (perm)		1287			1520		739	1807		641	1777	
Peak-hour factor, PHF	0.70	0.70	0.70	0.81	0.81	0.81	0.77	0.77	0.77	0.86	0.86	0.86
Adj. Flow (vph)	46	14	110	14	5	30	121	647	14	30	524	27
RTOR Reduction (vph)	0	91	0	0	25	0	0	1	0	0	2	0
Lane Group Flow (vph)	0	79	0	0	24	0	121	660	0	30	549	0
Confl. Peds. (#/hr)	5		5	5		5	5		10	10		5
Heavy Vehicles (%)	7%	2%	26%	2%	2%	2%	7%	6%	2%	2%	7%	10%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		11.3			11.3		43.5	43.5		43.5	43.5	
Effective Green, g (s)		11.3			11.3		43.5	43.5		43.5	43.5	
Actuated g/C Ratio		0.17			0.17		0.65	0.65		0.65	0.65	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		217			257		481	1176		417	1157	
v/s Ratio Prot								c0.37			0.31	
v/s Ratio Perm		c0.06			0.02		0.16			0.05		
v/c Ratio		0.36			0.09		0.25	0.56		0.07	0.47	
Uniform Delay, d1		24.6			23.4		4.9	6.4		4.3	5.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.0			0.2		1.3	1.9		0.3	1.4	
Delay (s)		25.6			23.6		6.1	8.3		4.6	7.3	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		25.6			23.6			8.0			7.1	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	66.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	103	0	11	120	2	12
Future Volume (Veh/h)	103	0	11	120	2	12
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.75	0.75	0.70	0.70
Hourly flow rate (vph)	141	0	15	160	3	17
Pedestrians					10	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			151		341	151
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			151		341	151
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		100	98
cM capacity (veh/h)			1416		642	887

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	141	175	20
Volume Left	0	15	3
Volume Right	0	0	17
cSH	1700	1416	839
Volume to Capacity	0.08	0.01	0.02
Queue Length 95th (m)	0.0	0.2	0.6
Control Delay (s)	0.0	0.7	9.4
Lane LOS		A	A
Approach Delay (s)	0.0	0.7	9.4
Approach LOS			A

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	23.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	1	618	2	1	584
Future Volume (Veh/h)	0	1	618	2	1	584
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.80	0.80	0.85	0.85
Hourly flow rate (vph)	0	1	772	2	1	687
Pedestrians	5					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1124	392			779	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1124	392			779	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	198	604			823	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	1	515	259	230	458
Volume Left	0	0	0	1	0
Volume Right	1	0	2	0	0
cSH	604	1700	1700	823	1700
Volume to Capacity	0.00	0.30	0.15	0.00	0.27
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	11.0	0.0	0.0	0.1	0.0
Lane LOS	B			A	
Approach Delay (s)	11.0	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	27.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	5	0	85	2	50	5	679	87	793
Future Volume (vph)	5	0	85	2	50	5	679	87	793
Lane Group Flow (vph)	0	16	0	102	59	0	941	0	1041
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		4		8			2		6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0	31.0	31.0	31.0	31.0
Minimum Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (%)	42.5%	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		7.5		7.5	7.5		7.5		7.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.04		0.31	0.14		0.46		0.65
Control Delay		0.1		22.4	5.2		9.5		13.5
Queue Delay		0.0		0.0	0.0		0.0		0.0
Total Delay		0.1		22.4	5.2		9.5		13.5
Queue Length 50th (m)		0.0		9.3	0.0		33.3		46.3
Queue Length 95th (m)		0.0		19.4	5.3		43.8		62.4
Internal Link Dist (m)		104.2		128.9			187.9		186.7
Turn Bay Length (m)									
Base Capacity (vph)		516		466	581		2056		1609
Starvation Cap Reductn		0		0	0		0		0
Spillback Cap Reductn		0		0	0		0		0
Storage Cap Reductn		0		0	0		0		0
Reduced v/c Ratio		0.03		0.22	0.10		0.46		0.65

Intersection Summary
Cycle Length: 67
Actuated Cycle Length: 61.2
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Splits and Phases: 1: King St & Driveway/Galloway Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	2	85	2	50	5	679	116	87	793	5
Future Volume (vph)	5	0	2	85	2	50	5	679	116	87	793	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5			7.5	7.5		7.5			7.5	
Lane Util. Factor		1.00			1.00	1.00		0.95			0.95	
Frpb, ped/bikes		0.99			1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00			1.00	1.00		1.00			1.00	
Frt		0.96			1.00	0.85		0.98			1.00	
Flt Protected		0.97			0.95	1.00		1.00			1.00	
Satd. Flow (prot)		1730			1788	1544		3486			3557	
Flt Permitted		0.76			0.72	1.00		0.95			0.73	
Satd. Flow (perm)		1356			1348	1544		3303			2603	
Peak-hour factor, PHF	0.44	0.44	0.44	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	11	0	5	100	2	59	6	799	136	102	933	6
RTOR Reduction (vph)	0	13	0	0	0	48	0	16	0	0	0	0
Lane Group Flow (vph)	0	3	0	0	102	11	0	925	0	0	1041	0
Confl. Peds. (#/hr)	5		5	5		5	10		5	5		10
Heavy Vehicles (%)	2%	2%	2%	2%	2%	4%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		11.7			11.7	11.7		36.1			36.1	
Effective Green, g (s)		11.7			11.7	11.7		36.1			36.1	
Actuated g/C Ratio		0.19			0.19	0.19		0.57			0.57	
Clearance Time (s)		7.5			7.5	7.5		7.5			7.5	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		252			251	287		1898			1496	
v/s Ratio Prot												
v/s Ratio Perm		0.00			c0.08	0.01		0.28			c0.40	
v/c Ratio		0.01			0.41	0.04		0.49			0.70	
Uniform Delay, d1		20.8			22.5	20.9		7.9			9.5	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.0			1.1	0.1		0.9			2.7	
Delay (s)		20.9			23.6	21.0		8.8			12.2	
Level of Service		C			C	C		A			B	
Approach Delay (s)		20.9			22.6			8.8			12.2	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	62.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	19	7	16	9	47	631	29	625
Future Volume (vph)	19	7	16	9	47	631	29	625
Lane Group Flow (vph)	0	118	0	55	55	758	35	805
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	32.0	32.0	32.0	32.0
Minimum Split (s)	24.0	24.0	24.0	24.0	38.0	38.0	38.0	38.0
Total Split (s)	24.0	24.0	24.0	24.0	46.0	46.0	46.0	46.0
Total Split (%)	34.3%	34.3%	34.3%	34.3%	65.7%	65.7%	65.7%	65.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.39		0.21	0.15	0.56	0.08	0.61
Control Delay		14.1		17.2	5.7	8.2	5.0	8.9
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		14.1		17.2	5.7	8.2	5.0	8.9
Queue Length 50th (m)		3.8		3.1	2.1	43.2	1.3	48.2
Queue Length 95th (m)		9.9		9.5	6.0	68.6	3.9	71.5
Internal Link Dist (m)		50.9		32.8		150.3		160.6
Turn Bay Length (m)					50.0		50.0	
Base Capacity (vph)		473		443	379	1344	414	1324
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		0.25		0.12	0.15	0.56	0.08	0.61

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 64
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 2: William St & Galloway Blvd/Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	7	55	16	9	19	47	631	14	29	625	35
Future Volume (vph)	19	7	55	16	9	19	47	631	14	29	625	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.98			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.91			0.94		1.00	1.00		1.00	0.99	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1618			1693		1785	1857		1785	1828	
Flt Permitted		0.90			0.88		0.28	1.00		0.31	1.00	
Satd. Flow (perm)		1477			1512		524	1857		573	1828	
Peak-hour factor, PHF	0.69	0.69	0.69	0.79	0.79	0.79	0.85	0.85	0.85	0.82	0.82	0.82
Adj. Flow (vph)	28	10	80	20	11	24	55	742	16	35	762	43
RTOR Reduction (vph)	0	70	0	0	21	0	0	1	0	0	2	0
Lane Group Flow (vph)	0	48	0	0	34	0	55	757	0	35	803	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	6%	2%	4%	2%	2%	5%	2%	3%	7%	2%	4%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.2			8.2		45.1	45.1		45.1	45.1	
Effective Green, g (s)		8.2			8.2		45.1	45.1		45.1	45.1	
Actuated g/C Ratio		0.13			0.13		0.69	0.69		0.69	0.69	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		185			189		361	1282		395	1262	
v/s Ratio Prot								0.41			c0.44	
v/s Ratio Perm		c0.03			0.02		0.10			0.06		
v/c Ratio		0.26			0.18		0.15	0.59		0.09	0.64	
Uniform Delay, d1		25.8			25.5		3.5	5.3		3.3	5.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.7			0.5		0.9	2.0		0.4	2.5	
Delay (s)		26.6			26.0		4.4	7.3		3.8	8.0	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		26.6			26.0			7.1			7.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	65.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	80	4	11	73	5	7
Future Volume (Veh/h)	80	4	11	73	5	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.84	0.84	0.60	0.60
Hourly flow rate (vph)	110	5	13	87	8	12
Pedestrians					10	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			125		236	122
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			125		236	122
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			99		99	99
cM capacity (veh/h)			1447		739	888

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	115	100	20
Volume Left	0	13	8
Volume Right	5	0	12
cSH	1700	1447	822
Volume to Capacity	0.07	0.01	0.02
Queue Length 95th (m)	0.0	0.2	0.6
Control Delay (s)	0.0	1.0	9.5
Lane LOS		A	A
Approach Delay (s)	0.0	1.0	9.5
Approach LOS			A

Intersection Summary			
Average Delay		1.2	
Intersection Capacity Utilization		21.1%	ICU Level of Service
Analysis Period (min)		15	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	14	759	11	23	862
Future Volume (Veh/h)	5	14	759	11	23	862
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.90	0.90	0.95	0.95
Hourly flow rate (vph)	5	15	843	12	24	907
Pedestrians	5					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1356	432			860	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1356	432			860	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	97			97	
cM capacity (veh/h)	135	568			773	

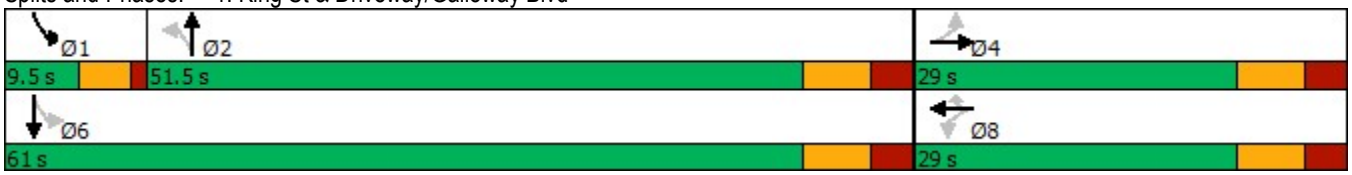
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	20	562	293	326	605
Volume Left	5	0	0	24	0
Volume Right	15	0	12	0	0
cSH	316	1700	1700	773	1700
Volume to Capacity	0.06	0.33	0.17	0.03	0.36
Queue Length 95th (m)	1.5	0.0	0.0	0.7	0.0
Control Delay (s)	17.2	0.0	0.0	1.1	0.0
Lane LOS	C			A	
Approach Delay (s)	17.2	0.0		0.4	
Approach LOS	C				

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	14	4	133	1	108	4	659	106	553
Future Volume (vph)	14	4	133	1	108	4	659	106	553
Lane Group Flow (vph)	0	28	0	204	164	0	939	0	948
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0	31.0	31.0	5.0	31.0
Minimum Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	9.5	38.5
Total Split (s)	29.0	29.0	29.0	29.0	29.0	51.5	51.5	9.5	61.0
Total Split (%)	32.2%	32.2%	32.2%	32.2%	32.2%	57.2%	57.2%	10.6%	67.8%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	3.5	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	1.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		7.5		7.5	7.5		7.5		7.5
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?						Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	Max	Max	Min	Max
v/c Ratio		0.10		0.75	0.36		0.57		0.76
Control Delay		23.8		49.9	7.3		16.6		16.9
Queue Delay		0.0		0.0	0.0		0.0		0.0
Total Delay		23.8		49.9	7.3		16.6		16.9
Queue Length 50th (m)		3.0		32.0	0.0		53.7		41.0
Queue Length 95th (m)		8.6		37.6	4.3		63.1		40.6
Internal Link Dist (m)		104.2		128.9			187.9		186.7
Turn Bay Length (m)									
Base Capacity (vph)		320		318	500		1654		1254
Starvation Cap Reductn		0		0	0		0		0
Spillback Cap Reductn		0		0	0		0		0
Storage Cap Reductn		0		0	0		0		0
Reduced v/c Ratio		0.09		0.64	0.33		0.57		0.76

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 87
Natural Cycle: 80
Control Type: Semi Act-Uncoord

Splits and Phases: 1: King St & Driveway/Galloway Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	4	5	133	1	108	4	659	88	106	553	5
Future Volume (vph)	14	4	5	133	1	108	4	659	88	106	553	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5			7.5	7.5		7.5			7.5	
Lane Util. Factor		1.00			1.00	1.00		0.95			0.95	
Frpb, ped/bikes		1.00			1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00			0.99	1.00		1.00			1.00	
Frt		0.97			1.00	0.85		0.98			1.00	
Flt Protected		0.97			0.95	1.00		1.00			0.99	
Satd. Flow (prot)		1627			1733	1527		3420			3402	
Flt Permitted		0.76			0.71	1.00		0.95			0.58	
Satd. Flow (perm)		1277			1288	1527		3248			1985	
Peak-hour factor, PHF	0.82	0.82	0.82	0.66	0.66	0.66	0.80	0.80	0.80	0.70	0.70	0.70
Adj. Flow (vph)	17	5	6	202	2	164	5	824	110	151	790	7
RTOR Reduction (vph)	0	5	0	0	0	129	0	11	0	0	0	0
Lane Group Flow (vph)	0	23	0	0	204	35	0	928	0	0	948	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		
Heavy Vehicles (%)	2%	50%	2%	5%	2%	5%	24%	4%	7%	29%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		18.5			18.5	18.5		44.1			53.6	
Effective Green, g (s)		18.5			18.5	18.5		44.1			53.6	
Actuated g/C Ratio		0.21			0.21	0.21		0.51			0.62	
Clearance Time (s)		7.5			7.5	7.5		7.5			7.5	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		271			273	324		1644			1302	
v/s Ratio Prot											c0.04	
v/s Ratio Perm		0.02			c0.16	0.02		0.29			c0.41	
v/c Ratio		0.09			0.75	0.11		0.56			0.73	
Uniform Delay, d1		27.5			32.1	27.6		14.9			11.7	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.1			10.6	0.1		1.4			2.1	
Delay (s)		27.7			42.7	27.8		16.3			13.7	
Level of Service		C			D	C		B			B	
Approach Delay (s)		27.7			36.1			16.3			13.7	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	87.1	Sum of lost time (s)	19.5
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	34	10	11	4	99	529	26	471
Future Volume (vph)	34	10	11	4	99	529	26	471
Lane Group Flow (vph)	0	180	0	49	129	701	30	577
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	32.0	32.0	32.0	32.0
Minimum Split (s)	24.0	24.0	24.0	24.0	38.0	38.0	38.0	38.0
Total Split (s)	24.0	24.0	24.0	24.0	46.0	46.0	46.0	46.0
Total Split (%)	34.3%	34.3%	34.3%	34.3%	65.7%	65.7%	65.7%	65.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.57		0.17	0.28	0.60	0.08	0.50
Control Delay		17.1		13.7	7.7	10.0	5.8	8.4
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		17.1		13.7	7.7	10.0	5.8	8.4
Queue Length 50th (m)		6.4		1.9	5.4	38.6	1.1	28.5
Queue Length 95th (m)		13.1		8.0	13.1	63.1	4.4	57.9
Internal Link Dist (m)		50.9		32.8		150.3		160.6
Turn Bay Length (m)					50.0		50.0	
Base Capacity (vph)		433		431	458	1171	383	1153
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		0.42		0.11	0.28	0.60	0.08	0.50

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 66.8
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 2: William St & Galloway Blvd/Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	10	82	11	4	24	99	529	11	26	471	25
Future Volume (vph)	34	10	82	11	4	24	99	529	11	26	471	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.98			0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.99	1.00	
Frt		0.91			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1423			1670		1700	1807		1780	1777	
Flt Permitted		0.89			0.89		0.40	1.00		0.32	1.00	
Satd. Flow (perm)		1285			1512		707	1807		593	1777	
Peak-hour factor, PHF	0.70	0.70	0.70	0.81	0.81	0.81	0.77	0.77	0.77	0.86	0.86	0.86
Adj. Flow (vph)	49	14	117	14	5	30	129	687	14	30	548	29
RTOR Reduction (vph)	0	97	0	0	25	0	0	1	0	0	2	0
Lane Group Flow (vph)	0	83	0	0	24	0	129	700	0	30	575	0
Confl. Peds. (#/hr)	5		5	5		5	5		10	10		5
Heavy Vehicles (%)	7%	2%	26%	2%	2%	2%	7%	6%	2%	2%	7%	10%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		11.4			11.4		43.3	43.3		43.3	43.3	
Effective Green, g (s)		11.4			11.4		43.3	43.3		43.3	43.3	
Actuated g/C Ratio		0.17			0.17		0.65	0.65		0.65	0.65	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		219			258		458	1173		384	1153	
v/s Ratio Prot								c0.39			0.32	
v/s Ratio Perm		c0.06			0.02		0.18			0.05		
v/c Ratio		0.38			0.09		0.28	0.60		0.08	0.50	
Uniform Delay, d1		24.5			23.3		5.0	6.7		4.3	6.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.1			0.2		1.5	2.2		0.4	1.5	
Delay (s)		25.6			23.5		6.6	8.9		4.7	7.6	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		25.6			23.5			8.6			7.5	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	66.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	109	0	11	128	2	12
Future Volume (Veh/h)	109	0	11	128	2	12
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.75	0.75	0.70	0.70
Hourly flow rate (vph)	149	0	15	171	3	17
Pedestrians					10	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			159		360	159
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			159		360	159
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	98
cM capacity (veh/h)			1407		626	878

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	149	186	20
Volume Left	0	15	3
Volume Right	0	0	17
cSH	1700	1407	828
Volume to Capacity	0.09	0.01	0.02
Queue Length 95th (m)	0.0	0.2	0.6
Control Delay (s)	0.0	0.7	9.5
Lane LOS		A	A
Approach Delay (s)	0.0	0.7	9.5
Approach LOS			A

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	24.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	1	769	2	1	660
Future Volume (Veh/h)	0	1	769	2	1	660
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.80	0.80	0.85	0.85
Hourly flow rate (vph)	0	1	961	2	1	776
Pedestrians	5					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1357	486			968	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1357	486			968	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	139	524			698	

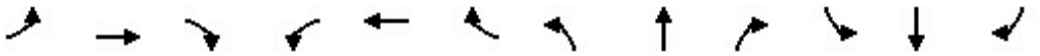
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	1	641	322	260	517
Volume Left	0	0	0	1	0
Volume Right	1	0	2	0	0
cSH	524	1700	1700	698	1700
Volume to Capacity	0.00	0.38	0.19	0.00	0.30
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	11.9	0.0	0.0	0.1	0.0
Lane LOS	B			A	
Approach Delay (s)	11.9	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	5	0	90	2	53	5	814	93	983
Future Volume (vph)	5	0	90	2	53	5	814	93	983
Lane Group Flow (vph)	0	16	0	108	62	0	1109	0	1271
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0	31.0	31.0	5.0	31.0
Minimum Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	9.0	38.5
Total Split (s)	28.5	28.5	28.5	28.5	28.5	62.5	62.5	9.0	71.5
Total Split (%)	28.5%	28.5%	28.5%	28.5%	28.5%	62.5%	62.5%	9.0%	71.5%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	3.0	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	1.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		7.5		7.5	7.5		7.5		7.5
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?						Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	Max	Max	Min	Max
v/c Ratio		0.05		0.46	0.18		0.54		0.76
Control Delay		0.3		42.5	4.3		12.4		13.6
Queue Delay		0.0		0.0	0.0		0.0		0.0
Total Delay		0.3		42.5	4.3		12.4		13.6
Queue Length 50th (m)		0.0		18.1	0.0		59.5		52.7
Queue Length 95th (m)		0.0		32.1	4.2		77.5		69.4
Internal Link Dist (m)		104.2		128.9			187.9		186.7
Turn Bay Length (m)									
Base Capacity (vph)		384		317	434		2051		1682
Starvation Cap Reductn		0		0	0		0		0
Spillback Cap Reductn		0		0	0		0		0
Storage Cap Reductn		0		0	0		0		0
Reduced v/c Ratio		0.04		0.34	0.14		0.54		0.76

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 90.2
Natural Cycle: 90
Control Type: Semi Act-Uncoord

Splits and Phases: 1: King St & Driveway/Galloway Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	2	90	2	53	5	814	123	93	983	5
Future Volume (vph)	5	0	2	90	2	53	5	814	123	93	983	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5			7.5	7.5		7.5			7.5	
Lane Util. Factor		1.00			1.00	1.00		0.95			0.95	
Frpb, ped/bikes		0.99			1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00			0.99	1.00		1.00			1.00	
Frt		0.96			1.00	0.85		0.98			1.00	
Flt Protected		0.97			0.95	1.00		1.00			1.00	
Satd. Flow (prot)		1727			1784	1541		3493			3560	
Flt Permitted		0.74			0.72	1.00		0.95			0.65	
Satd. Flow (perm)		1330			1345	1541		3308			2314	
Peak-hour factor, PHF	0.44	0.44	0.44	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	11	0	5	106	2	62	6	958	145	109	1156	6
RTOR Reduction (vph)	0	14	0	0	0	54	0	10	0	0	0	0
Lane Group Flow (vph)	0	2	0	0	108	8	0	1099	0	0	1271	0
Confl. Peds. (#/hr)	5		5	5		5	10		5	5		10
Heavy Vehicles (%)	2%	2%	2%	2%	2%	4%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		12.1			12.1	12.1		55.7			64.8	
Effective Green, g (s)		12.1			12.1	12.1		55.7			64.8	
Actuated g/C Ratio		0.13			0.13	0.13		0.61			0.71	
Clearance Time (s)		7.5			7.5	7.5		7.5			7.5	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		175			177	202		2004			1700	
v/s Ratio Prot											c0.04	
v/s Ratio Perm		0.00			c0.08	0.01		0.33			c0.49	
v/c Ratio		0.01			0.61	0.04		0.55			0.75	
Uniform Delay, d1		34.7			37.7	34.8		10.7			8.4	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.0			6.1	0.1		1.1			1.8	
Delay (s)		34.7			43.8	34.9		11.8			10.3	
Level of Service		C			D	C		B			B	
Approach Delay (s)		34.7			40.5			11.8			10.3	
Approach LOS		C			D			B			B	

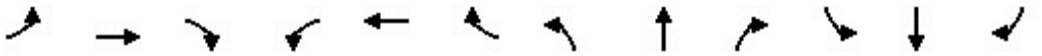
Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	91.9	Sum of lost time (s)	19.0
Intersection Capacity Utilization	88.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	20	7	16	9	51	664	29	663
Future Volume (vph)	20	7	16	9	51	664	29	663
Lane Group Flow (vph)	0	125	0	55	60	797	35	855
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	32.0	32.0	32.0	32.0
Minimum Split (s)	24.0	24.0	24.0	24.0	38.0	38.0	38.0	38.0
Total Split (s)	24.0	24.0	24.0	24.0	46.0	46.0	46.0	46.0
Total Split (%)	34.3%	34.3%	34.3%	34.3%	65.7%	65.7%	65.7%	65.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.40		0.21	0.18	0.59	0.09	0.65
Control Delay		13.9		17.1	6.3	8.7	5.2	9.8
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		13.9		17.1	6.3	8.7	5.2	9.8
Queue Length 50th (m)		3.9		3.1	2.3	47.3	1.3	53.7
Queue Length 95th (m)		9.9		9.5	6.9	75.8	4.0	80.7
Internal Link Dist (m)		50.9		32.8		150.3		160.6
Turn Bay Length (m)					50.0		50.0	
Base Capacity (vph)		479		441	341	1340	384	1320
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		0.26		0.12	0.18	0.59	0.09	0.65

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 63.8
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 2: William St & Galloway Blvd/Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	7	59	16	9	19	51	664	14	29	663	38
Future Volume (vph)	20	7	59	16	9	19	51	664	14	29	663	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.98			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.91			0.94		1.00	1.00		1.00	0.99	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1616			1693		1786	1857		1785	1828	
Flt Permitted		0.90			0.87		0.25	1.00		0.28	1.00	
Satd. Flow (perm)		1477			1501		471	1857		531	1828	
Peak-hour factor, PHF	0.69	0.69	0.69	0.79	0.79	0.79	0.85	0.85	0.85	0.82	0.82	0.82
Adj. Flow (vph)	29	10	86	20	11	24	60	781	16	35	809	46
RTOR Reduction (vph)	0	75	0	0	21	0	0	1	0	0	2	0
Lane Group Flow (vph)	0	50	0	0	34	0	60	796	0	35	853	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	6%	2%	4%	2%	2%	5%	2%	3%	7%	2%	4%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.2			8.2		44.8	44.8		44.8	44.8	
Effective Green, g (s)		8.2			8.2		44.8	44.8		44.8	44.8	
Actuated g/C Ratio		0.13			0.13		0.69	0.69		0.69	0.69	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		186			189		324	1279		365	1259	
v/s Ratio Prot								0.43			c0.47	
v/s Ratio Perm		c0.03			0.02		0.13			0.07		
v/c Ratio		0.27			0.18		0.19	0.62		0.10	0.68	
Uniform Delay, d1		25.7			25.4		3.6	5.5		3.4	5.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.8			0.5		1.3	2.3		0.5	2.9	
Delay (s)		26.5			25.9		4.9	7.8		3.9	8.8	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		26.5			25.9			7.6			8.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	85	4	11	78	5	7
Future Volume (Veh/h)	85	4	11	78	5	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.84	0.84	0.60	0.60
Hourly flow rate (vph)	116	5	13	93	8	12
Pedestrians					10	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			131		248	128
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			131		248	128
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			99		99	99
cM capacity (veh/h)			1440		727	882

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	121	106	20
Volume Left	0	13	8
Volume Right	5	0	12
cSH	1700	1440	812
Volume to Capacity	0.07	0.01	0.02
Queue Length 95th (m)	0.0	0.2	0.6
Control Delay (s)	0.0	1.0	9.5
Lane LOS		A	A
Approach Delay (s)	0.0	1.0	9.5
Approach LOS			A

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	21.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	14	899	11	23	1057
Future Volume (Veh/h)	5	14	899	11	23	1057
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.90	0.90	0.95	0.95
Hourly flow rate (vph)	5	15	999	12	24	1113
Pedestrians	5					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1614	510			1016	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1614	510			1016	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	97			96	
cM capacity (veh/h)	91	506			675	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	20	666	345	395	742
Volume Left	5	0	0	24	0
Volume Right	15	0	12	0	0
cSH	236	1700	1700	675	1700
Volume to Capacity	0.08	0.39	0.20	0.04	0.44
Queue Length 95th (m)	2.1	0.0	0.0	0.8	0.0
Control Delay (s)	21.7	0.0	0.0	1.1	0.0
Lane LOS	C			A	
Approach Delay (s)	21.7	0.0		0.4	
Approach LOS	C				

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		

Appendix F –
Transportation Tomorrow Survey – Excerpt

2006 GTA Zone of Origin: 8576

Outside Midland Planning District of Destination		Distribution NE	 NW	 SE	 SW	Total
PD 3 of Toronto	21			5.25	15.75	21
Mississauga	28			7	21	28
Welland	15			3.75	11.25	15
Barrie	113			28.25	84.75	113
Springwater	18			4.5	13.5	18
Muskoka	28			28		28
Collingwood	80				80	80
Wasaga Beach	41				41	41
Tiny	188		47		141	188
Penetanguishene	274		274			274
Midland						0
Tay	105			105		105
Severn	39			39		39
Orillia	18			18		18
	780	0	274	238.75	267.25	780
Within Midland 2006 GTA zone of Destination		Distribution NE	 NW	 SE	 SW	Total
8575	12	3	9			12
8576	425	85	170	63.75	106.25	425
8577	494	123.5	370.5			494
8578	400	100	300			400
	1331	311.5	849.5	63.75	106.25	1331
Totals	2111	311.5	1123.5	302.5	373.5	2111
Distribution %		15%	53%	14%	18%	100%

datamanagementgroup

Hello Jacob Losole

Database Index DMG TTS CCP Contact Logout

TTS Cross Tabulation

Cross Tabulation Query Form - Trip - 2016 v1.1

Filter Variables

2006 GTA zone of origin | Planning district of desti… | (Optional) Table Attribute

Group Attributes

Row Grouping | Column Grouping | Table Grouping

Grouping file: Choose File No file chosen

Filter Selection +

☑ 2006 GTA zone of origin | In

8576

And

☑ Start time of trip | In

0600-1000

Add Delete

Output

◉ Comma-delimited table ○ Column format Expansion Factor On | Click to Select Load | Load

Execute Query Select All Save As

```
Wed Jun 01 2022 10:29:12 GMT-0400 (Eastern Daylight Time) - Run Time: 2775ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: Planning district of destination - pd_dest


Filters:
(2006 GTA zone of origin - gta06_orig In 8576
and
Start time of trip - start_time In 0600-1000)

Trip 2016
Table:

,PD 3 of Toronto,Mississauga,Welland,Barrie,Springwater,Muskoka,Collingwood,Wasaga Beach,Tiny,Penetanguishene,Midlan
8576,21,28,15,113,18,28,80,41,188,274,1330,105,39,18
```

datamanagementgroup

Hello Jacob Losole

Database Index | DMG | TTS | CCP | Contact | Logout

TTS Cross Tabulation

Cross Tabulation Query Form - Trip - 2016 v1.1

Filter Variables

2006 GTA zone of origin | 2006 GTA zone of desti… | (Optional) Table Attribute

Group Attributes

Row Grouping | Column Grouping | Table Grouping

Grouping file: Choose File No file chosen

Filter Selection +

- 2006 GTA zone of origin | In | 8576
- And
- Start time of trip | In | 0600-1000
- And
- Planning district of destination | In | 131,

Add Delete

Output

Comma-delimited table | Column format | Expansion Factor On | Click to Select Load | Load

Execute Query | Select All | Save As

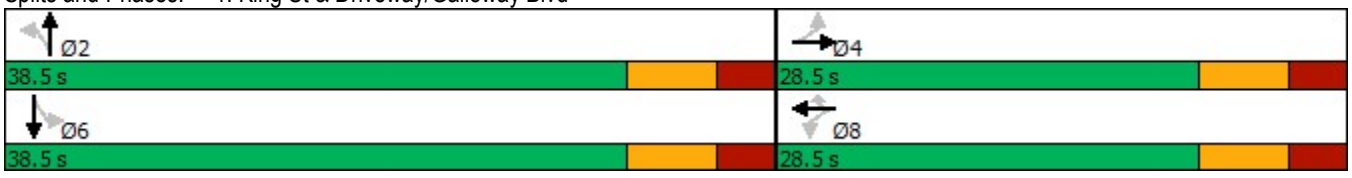
```
Wed Jun 01 2022 10:38:33 GMT-0400 (Eastern Daylight Time) - Run Time: 2997ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest


Filters:
(2006 GTA zone of origin - gta06_orig In 8576
and
Start time of trip - start_time In 0600-1000
and
Planning district of destination - pd_dest In 131, )

Trip 2016
Table:

,8575,8576,8577,8578
8576,12,425,494,400
```

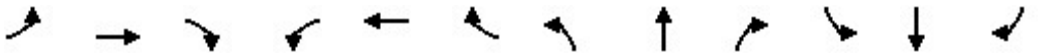
Appendix G –
Synchro Analysis Output –
Total Traffic Volumes

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	14	4	111	1	127	4	460	104	447
Future Volume (vph)	14	4	111	1	127	4	460	104	447
Lane Group Flow (vph)	0	28	0	170	192	0	675	0	795
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		4		8			2		6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0	31.0	31.0	31.0	31.0
Minimum Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (%)	42.5%	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		7.5		7.5	7.5		7.5		7.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.08		0.52	0.36		0.41		0.66
Control Delay		15.2		25.9	5.3		10.4		15.4
Queue Delay		0.0		0.0	0.0		0.0		0.0
Total Delay		15.2		25.9	5.3		10.4		15.4
Queue Length 50th (m)		1.9		16.5	0.0		21.2		31.7
Queue Length 95th (m)		6.2		21.9	3.9		32.6		39.3
Internal Link Dist (m)		104.2		128.9			187.9		186.7
Turn Bay Length (m)									
Base Capacity (vph)		436		429	636		1654		1204
Starvation Cap Reductn		0		0	0		0		0
Spillback Cap Reductn		0		0	0		0		0
Storage Cap Reductn		0		0	0		0		0
Reduced v/c Ratio		0.06		0.40	0.30		0.41		0.66

Intersection Summary
Cycle Length: 67
Actuated Cycle Length: 63.2
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Splits and Phases: 1: King St & Driveway/Galloway Blvd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	4	5	111	1	127	4	460	76	104	447	5
Future Volume (vph)	14	4	5	111	1	127	4	460	76	104	447	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5			7.5	7.5		7.5			7.5	
Lane Util. Factor		1.00			1.00	1.00		0.95			0.95	
Frpb, ped/bikes		1.00			1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00			1.00	1.00		1.00			1.00	
Frt		0.97			1.00	0.85		0.98			1.00	
Flt Protected		0.97			0.95	1.00		1.00			0.99	
Satd. Flow (prot)		1628			1737	1530		3402			3371	
Flt Permitted		0.78			0.71	1.00		0.95			0.70	
Satd. Flow (perm)		1302			1291	1530		3229			2374	
Peak-hour factor, PHF	0.82	0.82	0.82	0.66	0.66	0.66	0.80	0.80	0.80	0.70	0.70	0.70
Adj. Flow (vph)	17	5	6	168	2	192	5	575	95	149	639	7
RTOR Reduction (vph)	0	4	0	0	0	143	0	18	0	0	1	0
Lane Group Flow (vph)	0	24	0	0	170	49	0	657	0	0	794	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		
Heavy Vehicles (%)	2%	50%	2%	5%	2%	5%	24%	4%	7%	29%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		16.2			16.2	16.2		32.0			32.0	
Effective Green, g (s)		16.2			16.2	16.2		32.0			32.0	
Actuated g/C Ratio		0.26			0.26	0.26		0.51			0.51	
Clearance Time (s)		7.5			7.5	7.5		7.5			7.5	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		333			330	392		1634			1202	
v/s Ratio Prot												
v/s Ratio Perm		0.02			c0.13	0.03		0.20			c0.33	
v/c Ratio		0.07			0.52	0.13		0.40			0.66	
Uniform Delay, d1		17.8			20.1	18.1		9.7			11.6	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.1			1.4	0.1		0.7			2.9	
Delay (s)		17.9			21.5	18.2		10.4			14.4	
Level of Service		B			C	B		B			B	
Approach Delay (s)		17.9			19.7			10.4			14.4	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	63.2	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	47	10	11	4	89	471	26	431
Future Volume (vph)	47	10	11	4	89	471	26	431
Lane Group Flow (vph)	0	197	0	49	0	742	0	564
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	32.0	32.0	32.0	32.0
Minimum Split (s)	24.0	24.0	24.0	24.0	38.0	38.0	38.0	38.0
Total Split (s)	24.0	24.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (%)	36.4%	36.4%	36.4%	36.4%	63.6%	63.6%	63.6%	63.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		6.0		6.0		6.0		6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.60		0.16		0.80		0.30
Control Delay		18.5		12.2		19.4		6.4
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		18.5		12.2		19.4		6.4
Queue Length 50th (m)		8.6		1.7		49.6		11.9
Queue Length 95th (m)		15.2		7.4		#90.6		24.3
Internal Link Dist (m)		50.9		32.8		150.3		160.6
Turn Bay Length (m)								
Base Capacity (vph)		445		457		926		1884
Starvation Cap Reductn		0		0		0		0
Spillback Cap Reductn		0		0		0		0
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.44		0.11		0.80		0.30

Intersection Summary

Cycle Length: 66
Actuated Cycle Length: 63.1
Natural Cycle: 65
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: William St & Galloway Blvd/Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	10	81	11	4	24	89	471	11	26	431	28
Future Volume (vph)	47	10	81	11	4	24	89	471	11	26	431	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			0.95	
Frpb, ped/bikes		0.99			0.98			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.92			0.92			1.00			0.99	
Flt Protected		0.98			0.99			0.99			1.00	
Satd. Flow (prot)		1457			1672			1790			3369	
Flt Permitted		0.87			0.90			0.83			0.90	
Satd. Flow (perm)		1285			1519			1495			3035	
Peak-hour factor, PHF	0.70	0.70	0.70	0.81	0.81	0.81	0.77	0.77	0.77	0.86	0.86	0.86
Adj. Flow (vph)	67	14	116	14	5	30	116	612	14	30	501	33
RTOR Reduction (vph)	0	87	0	0	24	0	0	1	0	0	6	0
Lane Group Flow (vph)	0	110	0	0	25	0	0	741	0	0	558	0
Confl. Peds. (#/hr)	5		5	5		5	5		10	10		5
Heavy Vehicles (%)	7%	2%	26%	2%	2%	2%	7%	6%	2%	2%	7%	10%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		11.9			11.9			39.0			39.0	
Effective Green, g (s)		11.9			11.9			39.0			39.0	
Actuated g/C Ratio		0.19			0.19			0.62			0.62	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		243			287			926			1881	
v/s Ratio Prot												
v/s Ratio Perm		c0.09			0.02			c0.50			0.18	
v/c Ratio		0.45			0.09			0.80			0.30	
Uniform Delay, d1		22.6			21.0			9.0			5.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.3			0.1			7.2			0.4	
Delay (s)		24.0			21.1			16.2			6.0	
Level of Service		C			C			B			A	
Approach Delay (s)		24.0			21.1			16.2			6.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	62.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	97	14	19	113	44	37
Future Volume (Veh/h)	97	14	19	113	44	37
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.75	0.75	0.70	0.70
Hourly flow rate (vph)	133	19	25	151	63	53
Pedestrians					10	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			162		354	152
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			162		354	152
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		90	94
cM capacity (veh/h)			1403		627	885

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	152	176	116
Volume Left	0	25	63
Volume Right	19	0	53
cSH	1700	1403	723
Volume to Capacity	0.09	0.02	0.16
Queue Length 95th (m)	0.0	0.4	4.3
Control Delay (s)	0.0	1.2	10.9
Lane LOS		A	B
Approach Delay (s)	0.0	1.2	10.9
Approach LOS			B

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	25.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	35	29	527	14	10	527
Future Volume (Veh/h)	35	29	527	14	10	527
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.80	0.80	0.85	0.85
Hourly flow rate (vph)	38	32	659	18	12	620
Pedestrians	5					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1007	344			682	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1007	344			682	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	95			99	
cM capacity (veh/h)	233	649			896	

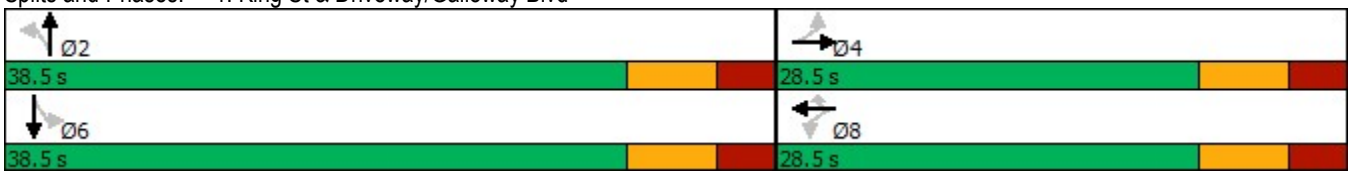
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	70	439	238	219	413
Volume Left	38	0	0	12	0
Volume Right	32	0	18	0	0
cSH	330	1700	1700	896	1700
Volume to Capacity	0.21	0.26	0.14	0.01	0.24
Queue Length 95th (m)	6.0	0.0	0.0	0.3	0.0
Control Delay (s)	18.8	0.0	0.0	0.6	0.0
Lane LOS	C			A	
Approach Delay (s)	18.8	0.0		0.2	
Approach LOS	C				

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	32.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	5	0	76	2	68	5	614	118	712
Future Volume (vph)	5	0	76	2	68	5	614	118	712
Lane Group Flow (vph)	0	16	0	91	80	0	848	0	983
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		4		8			2		6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0	31.0	31.0	31.0	31.0
Minimum Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (%)	42.5%	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		7.5		7.5	7.5		7.5		7.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.04		0.27	0.18		0.41		0.66
Control Delay		0.1		21.7	6.4		9.0		14.2
Queue Delay		0.0		0.0	0.0		0.0		0.0
Total Delay		0.1		21.7	6.4		9.0		14.2
Queue Length 50th (m)		0.0		8.3	0.0		28.7		44.1
Queue Length 95th (m)		0.0		17.5	7.5		38.3		60.5
Internal Link Dist (m)		104.2		128.9			187.9		186.7
Turn Bay Length (m)									
Base Capacity (vph)		522		468	588		2050		1493
Starvation Cap Reductn		0		0	0		0		0
Spillback Cap Reductn		0		0	0		0		0
Storage Cap Reductn		0		0	0		0		0
Reduced v/c Ratio		0.03		0.19	0.14		0.41		0.66

Intersection Summary
Cycle Length: 67
Actuated Cycle Length: 60.8
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Splits and Phases: 1: King St & Driveway/Galloway Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	2	76	2	68	5	614	102	118	712	5
Future Volume (vph)	5	0	2	76	2	68	5	614	102	118	712	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5			7.5	7.5		7.5			7.5	
Lane Util. Factor		1.00			1.00	1.00		0.95			0.95	
Frpb, ped/bikes		0.99			1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00			1.00	1.00		1.00			1.00	
Frt		0.96			1.00	0.85		0.98			1.00	
Flt Protected		0.97			0.95	1.00		1.00			0.99	
Satd. Flow (prot)		1730			1788	1544		3488			3548	
Flt Permitted		0.76			0.72	1.00		0.95			0.68	
Satd. Flow (perm)		1367			1349	1544		3305			2422	
Peak-hour factor, PHF	0.44	0.44	0.44	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	11	0	5	89	2	80	6	722	120	139	838	6
RTOR Reduction (vph)	0	13	0	0	0	65	0	16	0	0	0	0
Lane Group Flow (vph)	0	3	0	0	91	15	0	832	0	0	983	0
Confl. Peds. (#/hr)	5		5	5		5	10		5	5		10
Heavy Vehicles (%)	2%	2%	2%	2%	2%	4%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		11.7			11.7	11.7		35.8			35.8	
Effective Green, g (s)		11.7			11.7	11.7		35.8			35.8	
Actuated g/C Ratio		0.19			0.19	0.19		0.57			0.57	
Clearance Time (s)		7.5			7.5	7.5		7.5			7.5	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		255			252	289		1893			1387	
v/s Ratio Prot												
v/s Ratio Perm		0.00			c0.07	0.01		0.25			c0.41	
v/c Ratio		0.01			0.36	0.05		0.44			0.71	
Uniform Delay, d1		20.7			22.1	20.8		7.6			9.6	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.0			0.9	0.1		0.7			3.1	
Delay (s)		20.7			23.0	20.9		8.4			12.7	
Level of Service		C			C	C		A			B	
Approach Delay (s)		20.7			22.0			8.4			12.7	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	62.5	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	29	7	16	9	54	600	29	593
Future Volume (vph)	29	7	16	9	54	600	29	593
Lane Group Flow (vph)	0	135	0	55	0	786	0	821
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	32.0	32.0	32.0	32.0
Minimum Split (s)	24.0	24.0	24.0	24.0	38.0	38.0	38.0	38.0
Total Split (s)	24.0	24.0	24.0	24.0	42.0	42.0	42.0	42.0
Total Split (%)	36.4%	36.4%	36.4%	36.4%	63.6%	63.6%	63.6%	63.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		6.0		6.0		6.0		6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.42		0.20		0.68		0.37
Control Delay		14.3		15.5		12.3		5.7
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		14.3		15.5		12.3		5.7
Queue Length 50th (m)		4.8		2.8		50.9		19.2
Queue Length 95th (m)		10.8		8.9		90.5		27.5
Internal Link Dist (m)		50.9		32.8		150.3		160.6
Turn Bay Length (m)								
Base Capacity (vph)		499		470		1150		2190
Starvation Cap Reductn		0		0		0		0
Spillback Cap Reductn		0		0		0		0
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.27		0.12		0.68		0.37

Intersection Summary
Cycle Length: 66
Actuated Cycle Length: 59.4
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 2: William St & Galloway Blvd/Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	7	57	16	9	19	54	600	14	29	593	52
Future Volume (vph)	29	7	57	16	9	19	54	600	14	29	593	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			0.95	
Frpb, ped/bikes		0.99			0.99			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.92			0.94			1.00			0.99	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1639			1695			1851			3452	
Flt Permitted		0.88			0.87			0.88			0.90	
Satd. Flow (perm)		1457			1498			1643			3122	
Peak-hour factor, PHF	0.69	0.69	0.69	0.79	0.79	0.79	0.85	0.85	0.85	0.82	0.82	0.82
Adj. Flow (vph)	42	10	83	20	11	24	64	706	16	35	723	63
RTOR Reduction (vph)	0	72	0	0	21	0	0	1	0	0	7	0
Lane Group Flow (vph)	0	63	0	0	34	0	0	785	0	0	814	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	6%	2%	4%	2%	2%	5%	2%	3%	7%	2%	4%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.3			8.3			40.3			40.3	
Effective Green, g (s)		8.3			8.3			40.3			40.3	
Actuated g/C Ratio		0.14			0.14			0.67			0.67	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		199			205			1092			2076	
v/s Ratio Prot												
v/s Ratio Perm		c0.04			0.02			c0.48			0.26	
v/c Ratio		0.32			0.17			0.72			0.39	
Uniform Delay, d1		23.6			23.1			6.5			4.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.9			0.4			4.1			0.6	
Delay (s)		24.5			23.5			10.6			5.2	
Level of Service		C			C			B			A	
Approach Delay (s)		24.5			23.5			10.6			5.2	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	60.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	75	50	39	69	32	33
Future Volume (Veh/h)	75	50	39	69	32	33
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.84	0.84	0.60	0.60
Hourly flow rate (vph)	103	68	46	82	53	55
Pedestrians					10	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			181		321	147
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			181		321	147
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			97		92	94
cM capacity (veh/h)			1381		644	861

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	171	128	108
Volume Left	0	46	53
Volume Right	68	0	55
cSH	1700	1381	739
Volume to Capacity	0.10	0.03	0.15
Queue Length 95th (m)	0.0	0.8	3.9
Control Delay (s)	0.0	2.9	10.7
Lane LOS		A	B
Approach Delay (s)	0.0	2.9	10.7
Approach LOS			B

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	28.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	27	23	664	50	53	743
Future Volume (Veh/h)	27	23	664	50	53	743
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.90	0.90	0.95	0.95
Hourly flow rate (vph)	29	25	738	56	56	782
Pedestrians	5					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1274	402			799	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1274	402			799	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	80	96			93	
cM capacity (veh/h)	147	595			815	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	54	492	302	317	521
Volume Left	29	0	0	56	0
Volume Right	25	0	56	0	0
cSH	226	1700	1700	815	1700
Volume to Capacity	0.24	0.29	0.18	0.07	0.31
Queue Length 95th (m)	6.9	0.0	0.0	1.7	0.0
Control Delay (s)	25.9	0.0	0.0	2.4	0.0
Lane LOS	D			A	
Approach Delay (s)	25.9	0.0		0.9	
Approach LOS	D				

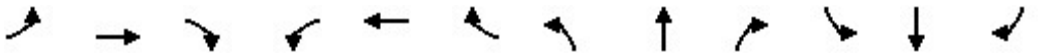
Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	14	4	119	1	134	4	542	110	493
Future Volume (vph)	14	4	119	1	134	4	542	110	493
Lane Group Flow (vph)	0	28	0	182	203	0	784	0	868
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		4		8			2		6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0	31.0	31.0	31.0	31.0
Minimum Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (%)	42.5%	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		7.5		7.5	7.5		7.5		7.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.08		0.54	0.40		0.48		0.77
Control Delay		15.0		26.5	8.4		11.4		19.6
Queue Delay		0.0		0.0	0.0		0.0		0.0
Total Delay		15.0		26.5	8.4		11.4		19.6
Queue Length 50th (m)		1.9		17.9	4.3		26.1		37.5
Queue Length 95th (m)		6.2		23.4	8.5		39.6		46.0
Internal Link Dist (m)		104.2		128.9			187.9		186.7
Turn Bay Length (m)									
Base Capacity (vph)		437		431	613		1638		1128
Starvation Cap Reductn		0		0	0		0		0
Spillback Cap Reductn		0		0	0		0		0
Storage Cap Reductn		0		0	0		0		0
Reduced v/c Ratio		0.06		0.42	0.33		0.48		0.77

Intersection Summary

Cycle Length: 67
Actuated Cycle Length: 62.9
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Splits and Phases: 1: King St & Driveway/Galloway Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	4	5	119	1	134	4	542	81	110	493	5
Future Volume (vph)	14	4	5	119	1	134	4	542	81	110	493	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5			7.5	7.5		7.5			7.5	
Lane Util. Factor		1.00			1.00	1.00		0.95			0.95	
Frpb, ped/bikes		1.00			1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00			1.00	1.00		1.00			1.00	
Frt		0.97			1.00	0.85		0.98			1.00	
Flt Protected		0.97			0.95	1.00		1.00			0.99	
Satd. Flow (prot)		1628			1737	1530		3412			3379	
Flt Permitted		0.77			0.71	1.00		0.95			0.66	
Satd. Flow (perm)		1297			1290	1530		3238			2252	
Peak-hour factor, PHF	0.82	0.82	0.82	0.66	0.66	0.66	0.80	0.80	0.80	0.70	0.70	0.70
Adj. Flow (vph)	17	5	6	180	2	203	5	678	101	157	704	7
RTOR Reduction (vph)	0	4	0	0	0	114	0	16	0	0	1	0
Lane Group Flow (vph)	0	24	0	0	182	89	0	768	0	0	867	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		
Heavy Vehicles (%)	2%	50%	2%	5%	2%	5%	24%	4%	7%	29%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		16.4			16.4	16.4		31.5			31.5	
Effective Green, g (s)		16.4			16.4	16.4		31.5			31.5	
Actuated g/C Ratio		0.26			0.26	0.26		0.50			0.50	
Clearance Time (s)		7.5			7.5	7.5		7.5			7.5	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		338			336	398		1621			1127	
v/s Ratio Prot												
v/s Ratio Perm		0.02			c0.14	0.06		0.24			c0.39	
v/c Ratio		0.07			0.54	0.22		0.47			0.77	
Uniform Delay, d1		17.5			20.0	18.3		10.3			12.7	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.1			1.8	0.3		1.0			5.1	
Delay (s)		17.6			21.8	18.5		11.3			17.8	
Level of Service		B			C	B		B			B	
Approach Delay (s)		17.6			20.1			11.3			17.8	
Approach LOS		B			C			B			B	

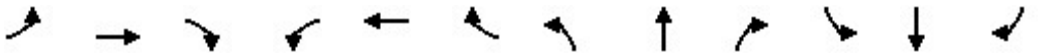
Intersection Summary			
HCM 2000 Control Delay	15.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	62.9	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	49	10	11	4	95	498	26	451
Future Volume (vph)	49	10	11	4	95	498	26	451
Lane Group Flow (vph)	0	205	0	49	123	661	30	558
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	32.0	32.0	32.0	32.0
Minimum Split (s)	24.0	24.0	24.0	24.0	38.0	38.0	38.0	38.0
Total Split (s)	24.0	24.0	24.0	24.0	46.0	46.0	46.0	46.0
Total Split (%)	34.3%	34.3%	34.3%	34.3%	65.7%	65.7%	65.7%	65.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.64		0.16	0.27	0.58	0.08	0.49
Control Delay		22.4		13.0	8.3	10.3	6.5	9.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		22.4		13.0	8.3	10.3	6.5	9.0
Queue Length 50th (m)		11.1		1.9	5.3	36.8	1.1	28.4
Queue Length 95th (m)		18.3		7.9	13.7	63.7	4.8	60.5
Internal Link Dist (m)		50.9		32.8		150.3		160.6
Turn Bay Length (m)					50.0		50.0	
Base Capacity (vph)		414		426	456	1148	397	1128
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		0.50		0.12	0.27	0.58	0.08	0.49

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 67.6
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 2: William St & Galloway Blvd/Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	10	85	11	4	24	95	498	11	26	451	29
Future Volume (vph)	49	10	85	11	4	24	95	498	11	26	451	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.98			0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.99	1.00	
Frt		0.92			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1445			1670		1699	1807		1779	1773	
Flt Permitted		0.87			0.89		0.40	1.00		0.33	1.00	
Satd. Flow (perm)		1274			1511		718	1807		625	1773	
Peak-hour factor, PHF	0.70	0.70	0.70	0.81	0.81	0.81	0.77	0.77	0.77	0.86	0.86	0.86
Adj. Flow (vph)	70	14	121	14	5	30	123	647	14	30	524	34
RTOR Reduction (vph)	0	81	0	0	24	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	124	0	0	25	0	123	660	0	30	555	0
Confl. Peds. (#/hr)	5		5	5		5	5		10	10		5
Heavy Vehicles (%)	7%	2%	26%	2%	2%	2%	7%	6%	2%	2%	7%	10%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		12.6			12.6		42.9	42.9		42.9	42.9	
Effective Green, g (s)		12.6			12.6		42.9	42.9		42.9	42.9	
Actuated g/C Ratio		0.19			0.19		0.64	0.64		0.64	0.64	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		237			282		456	1148		397	1126	
v/s Ratio Prot								c0.37			0.31	
v/s Ratio Perm		c0.10			0.02		0.17			0.05		
v/c Ratio		0.52			0.09		0.27	0.57		0.08	0.49	
Uniform Delay, d1		24.7			22.7		5.4	7.1		4.7	6.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.1			0.1		1.5	2.1		0.4	1.5	
Delay (s)		26.8			22.8		6.9	9.2		5.1	8.1	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		26.8			22.8			8.8			7.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	67.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	103	14	19	120	44	37
Future Volume (Veh/h)	103	14	19	120	44	37
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.75	0.75	0.70	0.70
Hourly flow rate (vph)	141	19	25	160	63	53
Pedestrians					10	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			170		370	160
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			170		370	160
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		90	94
cM capacity (veh/h)			1394		613	876

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	160	185	116
Volume Left	0	25	63
Volume Right	19	0	53
cSH	1700	1394	710
Volume to Capacity	0.09	0.02	0.16
Queue Length 95th (m)	0.0	0.4	4.4
Control Delay (s)	0.0	1.2	11.1
Lane LOS		A	B
Approach Delay (s)	0.0	1.2	11.1
Approach LOS			B

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	25.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	35	29	616	14	10	578
Future Volume (Veh/h)	35	29	616	14	10	578
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.80	0.80	0.85	0.85
Hourly flow rate (vph)	38	32	770	18	12	680
Pedestrians	5					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1148	399			793	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1148	399			793	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	80	95			99	
cM capacity (veh/h)	188	598			813	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	70	513	275	239	453
Volume Left	38	0	0	12	0
Volume Right	32	0	18	0	0
cSH	274	1700	1700	813	1700
Volume to Capacity	0.26	0.30	0.16	0.01	0.27
Queue Length 95th (m)	7.5	0.0	0.0	0.3	0.0
Control Delay (s)	22.6	0.0	0.0	0.6	0.0
Lane LOS	C			A	
Approach Delay (s)	22.6	0.0		0.2	
Approach LOS	C				

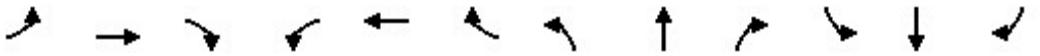
Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	33.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	5	0	81	2	71	5	697	123	823
Future Volume (vph)	5	0	81	2	71	5	697	123	823
Lane Group Flow (vph)	0	16	0	97	84	0	954	0	1119
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		4		8			2		6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0	31.0	31.0	31.0	31.0
Minimum Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (%)	42.5%	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		7.5		7.5	7.5		7.5		7.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.04		0.29	0.19		0.47		0.78
Control Delay		0.1		21.9	6.4		9.7		19.2
Queue Delay		0.0		0.0	0.0		0.0		0.0
Total Delay		0.1		21.9	6.4		9.7		19.2
Queue Length 50th (m)		0.0		8.8	0.0		34.2		57.3
Queue Length 95th (m)		0.0		18.4	7.7		44.8		#91.6
Internal Link Dist (m)		104.2		128.9			187.9		186.7
Turn Bay Length (m)									
Base Capacity (vph)		522		470	593		2043		1430
Starvation Cap Reductn		0		0	0		0		0
Spillback Cap Reductn		0		0	0		0		0
Storage Cap Reductn		0		0	0		0		0
Reduced v/c Ratio		0.03		0.21	0.14		0.47		0.78

Intersection Summary

Cycle Length: 67
Actuated Cycle Length: 60.5
Natural Cycle: 80
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: King St & Driveway/Galloway Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	2	81	2	71	5	697	109	123	823	5
Future Volume (vph)	5	0	2	81	2	71	5	697	109	123	823	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5			7.5	7.5		7.5			7.5	
Lane Util. Factor		1.00			1.00	1.00		0.95			0.95	
Frpb, ped/bikes		0.99			1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00			1.00	1.00		1.00			1.00	
Frt		0.96			1.00	0.85		0.98			1.00	
Flt Protected		0.97			0.95	1.00		1.00			0.99	
Satd. Flow (prot)		1730			1788	1544		3492			3551	
Flt Permitted		0.76			0.72	1.00		0.95			0.65	
Satd. Flow (perm)		1362			1349	1544		3307			2332	
Peak-hour factor, PHF	0.44	0.44	0.44	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	11	0	5	95	2	84	6	820	128	145	968	6
RTOR Reduction (vph)	0	13	0	0	0	68	0	15	0	0	0	0
Lane Group Flow (vph)	0	3	0	0	97	16	0	939	0	0	1119	0
Confl. Peds. (#/hr)	5		5	5		5	10		5	5		10
Heavy Vehicles (%)	2%	2%	2%	2%	2%	4%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		11.7			11.7	11.7		35.4			35.4	
Effective Green, g (s)		11.7			11.7	11.7		35.4			35.4	
Actuated g/C Ratio		0.19			0.19	0.19		0.57			0.57	
Clearance Time (s)		7.5			7.5	7.5		7.5			7.5	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		256			254	290		1885			1329	
v/s Ratio Prot												
v/s Ratio Perm		0.00			c0.07	0.01		0.28			c0.48	
v/c Ratio		0.01			0.38	0.05		0.50			0.84	
Uniform Delay, d1		20.5			22.0	20.7		8.0			11.0	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.0			1.0	0.1		0.9			6.6	
Delay (s)		20.5			23.0	20.7		9.0			17.6	
Level of Service		C			C	C		A			B	
Approach Delay (s)		20.5			22.0			9.0			17.6	
Approach LOS		C			C			A			B	

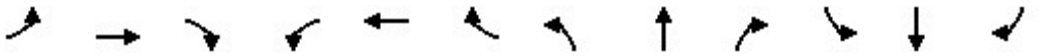
Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	62.1	Sum of lost time (s)	15.0
Intersection Capacity Utilization	84.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	30	7	16	9	56	631	29	625
Future Volume (vph)	30	7	16	9	56	631	29	625
Lane Group Flow (vph)	0	140	0	55	66	758	35	828
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	32.0	32.0	32.0	32.0
Minimum Split (s)	24.0	24.0	24.0	24.0	38.0	38.0	38.0	38.0
Total Split (s)	24.0	24.0	24.0	24.0	46.0	46.0	46.0	46.0
Total Split (%)	34.3%	34.3%	34.3%	34.3%	65.7%	65.7%	65.7%	65.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.45		0.21	0.19	0.57	0.09	0.63
Control Delay		15.6		17.0	6.6	8.5	5.3	9.7
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		15.6		17.0	6.6	8.5	5.3	9.7
Queue Length 50th (m)		5.4		3.1	2.6	43.2	1.3	50.7
Queue Length 95th (m)		11.6		9.4	7.8	73.9	4.2	80.9
Internal Link Dist (m)		50.9		32.8		150.3		160.6
Turn Bay Length (m)					50.0		50.0	
Base Capacity (vph)		472		433	353	1332	407	1306
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		0.30		0.13	0.19	0.57	0.09	0.63

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 63.6
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 2: William St & Galloway Blvd/Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	7	60	16	9	19	56	631	14	29	625	54
Future Volume (vph)	30	7	60	16	9	19	56	631	14	29	625	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.98			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.92			0.94		1.00	1.00		1.00	0.99	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1625			1693		1786	1857		1785	1818	
Flt Permitted		0.88			0.85		0.26	1.00		0.30	1.00	
Satd. Flow (perm)		1446			1469		493	1857		567	1818	
Peak-hour factor, PHF	0.69	0.69	0.69	0.79	0.79	0.79	0.85	0.85	0.85	0.82	0.82	0.82
Adj. Flow (vph)	43	10	87	20	11	24	66	742	16	35	762	66
RTOR Reduction (vph)	0	76	0	0	21	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	64	0	0	34	0	66	757	0	35	825	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	6%	2%	4%	2%	2%	5%	2%	3%	7%	2%	4%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.5			8.5		44.3	44.3		44.3	44.3	
Effective Green, g (s)		8.5			8.5		44.3	44.3		44.3	44.3	
Actuated g/C Ratio		0.13			0.13		0.68	0.68		0.68	0.68	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		189			192		337	1269		387	1242	
v/s Ratio Prot								0.41			c0.45	
v/s Ratio Perm		c0.04			0.02		0.13			0.06		
v/c Ratio		0.34			0.18		0.20	0.60		0.09	0.66	
Uniform Delay, d1		25.6			25.0		3.7	5.5		3.5	5.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.1			0.4		1.3	2.1		0.5	2.8	
Delay (s)		26.7			25.5		5.0	7.5		3.9	8.8	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		26.7			25.5			7.3			8.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	64.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	80	50	39	73	32	33
Future Volume (Veh/h)	80	50	39	73	32	33
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.84	0.84	0.60	0.60
Hourly flow rate (vph)	110	68	46	87	53	55
Pedestrians					10	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			188		333	154
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			188		333	154
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			97		92	94
cM capacity (veh/h)			1373		634	853

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	178	133	108
Volume Left	0	46	53
Volume Right	68	0	55
cSH	1700	1373	729
Volume to Capacity	0.10	0.03	0.15
Queue Length 95th (m)	0.0	0.8	3.9
Control Delay (s)	0.0	2.8	10.8
Lane LOS		A	B
Approach Delay (s)	0.0	2.8	10.8
Approach LOS			B

Intersection Summary			
Average Delay		3.7	
Intersection Capacity Utilization		29.1%	ICU Level of Service A
Analysis Period (min)		15	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	27	32	752	50	53	858
Future Volume (Veh/h)	27	32	752	50	53	858
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.90	0.90	0.95	0.95
Hourly flow rate (vph)	29	35	836	56	56	903
Pedestrians	5					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1432	451			897	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1432	451			897	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	75	94			93	
cM capacity (veh/h)	115	553			749	

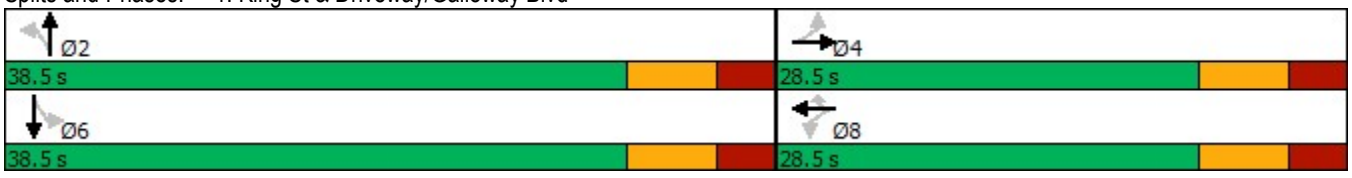
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	64	557	335	357	602
Volume Left	29	0	0	56	0
Volume Right	35	0	56	0	0
cSH	203	1700	1700	749	1700
Volume to Capacity	0.32	0.33	0.20	0.07	0.35
Queue Length 95th (m)	9.8	0.0	0.0	1.8	0.0
Control Delay (s)	30.7	0.0	0.0	2.4	0.0
Lane LOS	D			A	
Approach Delay (s)	30.7	0.0		0.9	
Approach LOS	D				

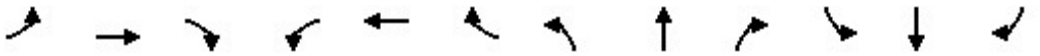
Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	14	4	127	1	140	4	687	117	562
Future Volume (vph)	14	4	127	1	140	4	687	117	562
Lane Group Flow (vph)	0	28	0	194	212	0	972	0	977
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		4		8			2		6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0	31.0	31.0	31.0	31.0
Minimum Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (%)	42.5%	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		7.5		7.5	7.5		7.5		7.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.08		0.57	0.45		0.60		0.95
Control Delay		15.0		27.3	14.4		13.2		37.3
Queue Delay		0.0		0.0	0.0		0.0		0.0
Total Delay		15.0		27.3	14.4		13.2		37.3
Queue Length 50th (m)		1.9		19.3	11.2		35.7		49.5
Queue Length 95th (m)		6.2		24.8	15.7		52.1		58.5
Internal Link Dist (m)		104.2		128.9			187.9		186.7
Turn Bay Length (m)									
Base Capacity (vph)		437		433	572		1627		1024
Starvation Cap Reductn		0		0	0		0		0
Spillback Cap Reductn		0		0	0		0		0
Storage Cap Reductn		0		0	0		0		0
Reduced v/c Ratio		0.06		0.45	0.37		0.60		0.95

Intersection Summary
Cycle Length: 67
Actuated Cycle Length: 62.7
Natural Cycle: 80
Control Type: Semi Act-Uncoord

Splits and Phases: 1: King St & Driveway/Galloway Blvd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	4	5	127	1	140	4	687	86	117	562	5
Future Volume (vph)	14	4	5	127	1	140	4	687	86	117	562	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5			7.5	7.5		7.5			7.5	
Lane Util. Factor		1.00			1.00	1.00		0.95			0.95	
Frpb, ped/bikes		1.00			1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00			1.00	1.00		1.00			1.00	
Frt		0.97			1.00	0.85		0.98			1.00	
Flt Protected		0.97			0.95	1.00		1.00			0.99	
Satd. Flow (prot)		1628			1736	1530		3425			3390	
Flt Permitted		0.77			0.71	1.00		0.95			0.60	
Satd. Flow (perm)		1290			1290	1530		3252			2062	
Peak-hour factor, PHF	0.82	0.82	0.82	0.66	0.66	0.66	0.80	0.80	0.80	0.70	0.70	0.70
Adj. Flow (vph)	17	5	6	192	2	212	5	859	108	167	803	7
RTOR Reduction (vph)	0	4	0	0	0	66	0	14	0	0	1	0
Lane Group Flow (vph)	0	24	0	0	194	146	0	958	0	0	976	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		
Heavy Vehicles (%)	2%	50%	2%	5%	2%	5%	24%	4%	7%	29%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		16.5			16.5	16.5		31.1			31.1	
Effective Green, g (s)		16.5			16.5	16.5		31.1			31.1	
Actuated g/C Ratio		0.26			0.26	0.26		0.50			0.50	
Clearance Time (s)		7.5			7.5	7.5		7.5			7.5	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		340			340	403		1615			1024	
v/s Ratio Prot												
v/s Ratio Perm		0.02			c0.15	0.10		0.29			c0.47	
v/c Ratio		0.07			0.57	0.36		0.59			0.95	
Uniform Delay, d1		17.3			20.0	18.8		11.2			15.1	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.1			2.3	0.6		1.6			18.9	
Delay (s)		17.4			22.3	19.3		12.9			34.0	
Level of Service		B			C	B		B			C	
Approach Delay (s)		17.4			20.7			12.9			34.0	
Approach LOS		B			C			B			C	

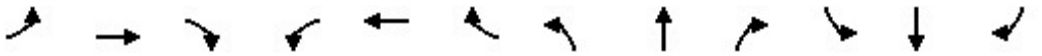
Intersection Summary			
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	62.6	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	51	10	11	4	101	529	26	471
Future Volume (vph)	51	10	11	4	101	529	26	471
Lane Group Flow (vph)	0	216	0	49	131	701	30	584
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	32.0	32.0	32.0	32.0
Minimum Split (s)	24.0	24.0	24.0	24.0	38.0	38.0	38.0	38.0
Total Split (s)	24.0	24.0	24.0	24.0	46.0	46.0	46.0	46.0
Total Split (%)	34.3%	34.3%	34.3%	34.3%	65.7%	65.7%	65.7%	65.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.67		0.16	0.30	0.61	0.08	0.52
Control Delay		23.4		13.0	9.0	11.2	6.7	9.5
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		23.4		13.0	9.0	11.2	6.7	9.5
Queue Length 50th (m)		12.0		1.9	5.9	41.7	1.2	31.2
Queue Length 95th (m)		19.2		7.9	14.8	69.4	4.9	64.7
Internal Link Dist (m)		50.9		32.8		150.3		160.6
Turn Bay Length (m)					50.0		50.0	
Base Capacity (vph)		415		423	433	1144	364	1124
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		0.52		0.12	0.30	0.61	0.08	0.52

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 67.8
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 2: William St & Galloway Blvd/Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	10	90	11	4	24	101	529	11	26	471	31
Future Volume (vph)	51	10	90	11	4	24	101	529	11	26	471	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.98			0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.99	1.00	
Frt		0.92			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1442			1670		1700	1807		1780	1773	
Flt Permitted		0.87			0.89		0.38	1.00		0.31	1.00	
Satd. Flow (perm)		1273			1504		685	1807		576	1773	
Peak-hour factor, PHF	0.70	0.70	0.70	0.81	0.81	0.81	0.77	0.77	0.77	0.86	0.86	0.86
Adj. Flow (vph)	73	14	129	14	5	30	131	687	14	30	548	36
RTOR Reduction (vph)	0	84	0	0	24	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	132	0	0	25	0	131	700	0	30	581	0
Confl. Peds. (#/hr)	5		5	5		5	5		10	10		5
Heavy Vehicles (%)	7%	2%	26%	2%	2%	2%	7%	6%	2%	2%	7%	10%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		12.8			12.8		42.9	42.9		42.9	42.9	
Effective Green, g (s)		12.8			12.8		42.9	42.9		42.9	42.9	
Actuated g/C Ratio		0.19			0.19		0.63	0.63		0.63	0.63	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		240			284		434	1145		364	1123	
v/s Ratio Prot								c0.39			0.33	
v/s Ratio Perm		c0.10			0.02		0.19			0.05		
v/c Ratio		0.55			0.09		0.30	0.61		0.08	0.52	
Uniform Delay, d1		24.9			22.6		5.6	7.4		4.8	6.8	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.7			0.1		1.8	2.4		0.4	1.7	
Delay (s)		27.6			22.8		7.4	9.9		5.2	8.5	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		27.6			22.8			9.5			8.3	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	67.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	109	14	19	128	44	37
Future Volume (Veh/h)	109	14	19	128	44	37
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.75	0.75	0.70	0.70
Hourly flow rate (vph)	149	19	25	171	63	53
Pedestrians					10	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			178		390	168
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			178		390	168
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		89	94
cM capacity (veh/h)			1384		597	867

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	168	196	116
Volume Left	0	25	63
Volume Right	19	0	53
cSH	1700	1384	696
Volume to Capacity	0.10	0.02	0.17
Queue Length 95th (m)	0.0	0.4	4.5
Control Delay (s)	0.0	1.1	11.2
Lane LOS		A	B
Approach Delay (s)	0.0	1.1	11.2
Approach LOS			B

Intersection Summary			
Average Delay		3.2	
Intersection Capacity Utilization		31.1%	ICU Level of Service A
Analysis Period (min)		15	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	35	29	767	14	10	654
Future Volume (Veh/h)	35	29	767	14	10	654
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.80	0.80	0.85	0.85
Hourly flow rate (vph)	38	32	959	18	12	769
Pedestrians	5					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1382	494			982	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1382	494			982	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	71	94			98	
cM capacity (veh/h)	132	519			689	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	70	639	338	268	513
Volume Left	38	0	0	12	0
Volume Right	32	0	18	0	0
cSH	200	1700	1700	689	1700
Volume to Capacity	0.35	0.38	0.20	0.02	0.30
Queue Length 95th (m)	11.2	0.0	0.0	0.4	0.0
Control Delay (s)	32.3	0.0	0.0	0.7	0.0
Lane LOS	D			A	
Approach Delay (s)	32.3	0.0		0.2	
Approach LOS	D				

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	35.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	5	0	86	2	74	5	832	129	1013
Future Volume (vph)	5	0	86	2	74	5	832	129	1013
Lane Group Flow (vph)	0	16	0	103	87	0	1121	0	1350
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		4		8			2		6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0	31.0	31.0	31.0	31.0
Minimum Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	38.5	38.5
Total Split (%)	42.5%	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		7.5		7.5	7.5		7.5		7.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.04		0.31	0.20		0.55		1.00
Control Delay		0.1		22.1	8.2		10.8		46.5
Queue Delay		0.0		0.0	0.0		0.0		0.0
Total Delay		0.1		22.1	8.2		10.8		46.5
Queue Length 50th (m)		0.0		9.4	1.2		43.7		~101.3
Queue Length 95th (m)		0.0		19.4	9.1		56.3		#126.4
Internal Link Dist (m)		104.2		128.9			187.9		186.7
Turn Bay Length (m)									
Base Capacity (vph)		523		472	588		2036		1345
Starvation Cap Reductn		0		0	0		0		0
Spillback Cap Reductn		0		0	0		0		0
Storage Cap Reductn		0		0	0		0		0
Reduced v/c Ratio		0.03		0.22	0.15		0.55		1.00

Intersection Summary

Cycle Length: 67
Actuated Cycle Length: 60.2
Natural Cycle: 90
Control Type: Semi Act-Uncoord
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: King St & Driveway/Galloway Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	2	86	2	74	5	832	116	129	1013	5
Future Volume (vph)	5	0	2	86	2	74	5	832	116	129	1013	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5			7.5	7.5		7.5			7.5	
Lane Util. Factor		1.00			1.00	1.00		0.95			0.95	
Frpb, ped/bikes		0.99			1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00			1.00	1.00		1.00			1.00	
Frt		0.96			1.00	0.85		0.98			1.00	
Flt Protected		0.97			0.95	1.00		1.00			0.99	
Satd. Flow (prot)		1731			1788	1545		3501			3555	
Flt Permitted		0.76			0.72	1.00		0.95			0.62	
Satd. Flow (perm)		1356			1348	1545		3310			2200	
Peak-hour factor, PHF	0.44	0.44	0.44	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	11	0	5	101	2	87	6	979	136	152	1192	6
RTOR Reduction (vph)	0	13	0	0	0	59	0	13	0	0	0	0
Lane Group Flow (vph)	0	3	0	0	103	28	0	1108	0	0	1350	0
Confl. Peds. (#/hr)	5		5	5		5	10		5	5		10
Heavy Vehicles (%)	2%	2%	2%	2%	2%	4%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		11.7			11.7	11.7		35.1			35.1	
Effective Green, g (s)		11.7			11.7	11.7		35.1			35.1	
Actuated g/C Ratio		0.19			0.19	0.19		0.57			0.57	
Clearance Time (s)		7.5			7.5	7.5		7.5			7.5	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		256			255	292		1879			1249	
v/s Ratio Prot												
v/s Ratio Perm		0.00			c0.08	0.02		0.33			c0.61	
v/c Ratio		0.01			0.40	0.10		0.59			1.08	
Uniform Delay, d1		20.4			22.0	20.7		8.7			13.3	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.0			1.0	0.1		1.4			50.2	
Delay (s)		20.4			23.0	20.8		10.0			63.5	
Level of Service		C			C	C		B			E	
Approach Delay (s)		20.4			22.0			10.0			63.5	
Approach LOS		C			C			B			E	

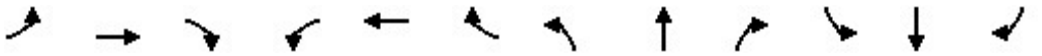
Intersection Summary			
HCM 2000 Control Delay	37.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	61.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	31	7	16	9	60	664	29	663
Future Volume (vph)	31	7	16	9	60	664	29	663
Lane Group Flow (vph)	0	148	0	55	71	797	35	879
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	32.0	32.0	32.0	32.0
Minimum Split (s)	24.0	24.0	24.0	24.0	38.0	38.0	38.0	38.0
Total Split (s)	24.0	24.0	24.0	24.0	46.0	46.0	46.0	46.0
Total Split (%)	34.3%	34.3%	34.3%	34.3%	65.7%	65.7%	65.7%	65.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.46		0.21	0.23	0.60	0.09	0.67
Control Delay		15.6		16.9	7.5	9.1	5.4	11.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		15.6		16.9	7.5	9.1	5.4	11.0
Queue Length 50th (m)		5.6		3.1	2.9	47.3	1.3	56.8
Queue Length 95th (m)		11.8		9.4	9.0	81.9	4.3	92.0
Internal Link Dist (m)		50.9		32.8		150.3		160.6
Turn Bay Length (m)					50.0		50.0	
Base Capacity (vph)		477		428	315	1329	375	1303
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		0.31		0.13	0.23	0.60	0.09	0.67

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 63.4
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 2: William St & Galloway Blvd/Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	7	64	16	9	19	60	664	14	29	663	57
Future Volume (vph)	31	7	64	16	9	19	60	664	14	29	663	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.98			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.92			0.94		1.00	1.00		1.00	0.99	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1624			1693		1786	1857		1785	1818	
Flt Permitted		0.88			0.84		0.23	1.00		0.28	1.00	
Satd. Flow (perm)		1447			1450		439	1857		525	1818	
Peak-hour factor, PHF	0.69	0.69	0.69	0.79	0.79	0.79	0.85	0.85	0.85	0.82	0.82	0.82
Adj. Flow (vph)	45	10	93	20	11	24	71	781	16	35	809	70
RTOR Reduction (vph)	0	81	0	0	21	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	67	0	0	34	0	71	796	0	35	876	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	6%	2%	4%	2%	2%	5%	2%	3%	7%	2%	4%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.5			8.5		44.1	44.1		44.1	44.1	
Effective Green, g (s)		8.5			8.5		44.1	44.1		44.1	44.1	
Actuated g/C Ratio		0.13			0.13		0.68	0.68		0.68	0.68	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		190			190		299	1267		358	1241	
v/s Ratio Prot								0.43			c0.48	
v/s Ratio Perm		c0.05			0.02		0.16			0.07		
v/c Ratio		0.35			0.18		0.24	0.63		0.10	0.71	
Uniform Delay, d1		25.5			24.9		3.9	5.7		3.5	6.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.1			0.5		1.9	2.4		0.5	3.4	
Delay (s)		26.7			25.4		5.7	8.1		4.0	9.7	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		26.7			25.4			7.9			9.5	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	64.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	85	50	39	78	32	33
Future Volume (Veh/h)	85	50	39	78	32	33
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.84	0.84	0.60	0.60
Hourly flow rate (vph)	116	68	46	93	53	55
Pedestrians					10	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			194		345	160
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			194		345	160
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			97		91	94
cM capacity (veh/h)			1366		623	846

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	184	139	108
Volume Left	0	46	53
Volume Right	68	0	55
cSH	1700	1366	720
Volume to Capacity	0.11	0.03	0.15
Queue Length 95th (m)	0.0	0.8	4.0
Control Delay (s)	0.0	2.7	10.9
Lane LOS		A	B
Approach Delay (s)	0.0	2.7	10.9
Approach LOS			B

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	29.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	27	32	892	50	53	1053
Future Volume (Veh/h)	27	32	892	50	53	1053
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.90	0.90	0.95	0.95
Hourly flow rate (vph)	29	35	991	56	56	1108
Pedestrians	5					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1690	528			1052	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1690	528			1052	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	62	93			91	
cM capacity (veh/h)	77	492			654	

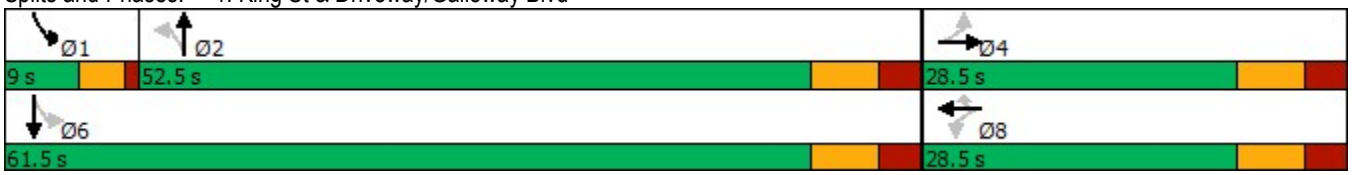
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	64	661	386	425	739
Volume Left	29	0	0	56	0
Volume Right	35	0	56	0	0
cSH	142	1700	1700	654	1700
Volume to Capacity	0.45	0.39	0.23	0.09	0.43
Queue Length 95th (m)	15.4	0.0	0.0	2.1	0.0
Control Delay (s)	49.4	0.0	0.0	2.5	0.0
Lane LOS	E			A	
Approach Delay (s)	49.4	0.0		0.9	
Approach LOS	E				

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	14	4	127	1	140	4	687	117	562
Future Volume (vph)	14	4	127	1	140	4	687	117	562
Lane Group Flow (vph)	0	28	0	194	212	0	972	0	977
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0	31.0	31.0	5.0	31.0
Minimum Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	9.0	38.5
Total Split (s)	28.5	28.5	28.5	28.5	28.5	52.5	52.5	9.0	61.5
Total Split (%)	31.7%	31.7%	31.7%	31.7%	31.7%	58.3%	58.3%	10.0%	68.3%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	3.0	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	1.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		7.5		7.5	7.5		7.5		7.5
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?						Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	Max	Max	Min	Max
v/c Ratio		0.10		0.73	0.44		0.57		0.79
Control Delay		24.2		49.1	7.9		16.1		18.6
Queue Delay		0.0		0.0	0.0		0.0		0.0
Total Delay		24.2		49.1	7.9		16.1		18.6
Queue Length 50th (m)		3.0		30.4	0.7		54.5		41.5
Queue Length 95th (m)		8.7		36.1	4.5		64.4		41.4
Internal Link Dist (m)		104.2		128.9			187.9		186.7
Turn Bay Length (m)									
Base Capacity (vph)		313		311	526		1693		1232
Starvation Cap Reductn		0		0	0		0		0
Spillback Cap Reductn		0		0	0		0		0
Storage Cap Reductn		0		0	0		0		0
Reduced v/c Ratio		0.09		0.62	0.40		0.57		0.79

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 87.1
Natural Cycle: 80
Control Type: Semi Act-Uncoord

Splits and Phases: 1: King St & Driveway/Galloway Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	4	5	127	1	140	4	687	86	117	562	5
Future Volume (vph)	14	4	5	127	1	140	4	687	86	117	562	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5			7.5	7.5		7.5			7.5	
Lane Util. Factor		1.00			1.00	1.00		0.95			0.95	
Frpb, ped/bikes		1.00			1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00			0.99	1.00		1.00			1.00	
Frt		0.97			1.00	0.85		0.98			1.00	
Flt Protected		0.97			0.95	1.00		1.00			0.99	
Satd. Flow (prot)		1627			1734	1527		3424			3390	
Flt Permitted		0.76			0.71	1.00		0.95			0.57	
Satd. Flow (perm)		1278			1288	1527		3253			1945	
Peak-hour factor, PHF	0.82	0.82	0.82	0.66	0.66	0.66	0.80	0.80	0.80	0.70	0.70	0.70
Adj. Flow (vph)	17	5	6	192	2	212	5	859	108	167	803	7
RTOR Reduction (vph)	0	5	0	0	0	164	0	10	0	0	0	0
Lane Group Flow (vph)	0	23	0	0	194	48	0	962	0	0	977	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		
Heavy Vehicles (%)	2%	50%	2%	5%	2%	5%	24%	4%	7%	29%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		18.0			18.0	18.0		45.1			54.1	
Effective Green, g (s)		18.0			18.0	18.0		45.1			54.1	
Actuated g/C Ratio		0.21			0.21	0.21		0.52			0.62	
Clearance Time (s)		7.5			7.5	7.5		7.5			7.5	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		264			266	315		1684			1291	
v/s Ratio Prot											c0.04	
v/s Ratio Perm		0.02			c0.15	0.03		0.30			c0.43	
v/c Ratio		0.09			0.73	0.15		0.57			0.76	
Uniform Delay, d1		27.9			32.3	28.3		14.4			11.8	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.1			9.6	0.2		1.4			2.6	
Delay (s)		28.1			41.9	28.5		15.8			14.4	
Level of Service		C			D	C		B			B	
Approach Delay (s)		28.1			34.9			15.8			14.4	
Approach LOS		C			C			B			B	

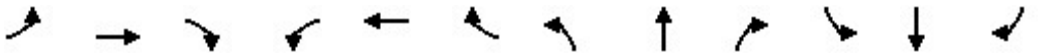
Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	87.1	Sum of lost time (s)	19.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	51	10	11	4	101	529	26	471
Future Volume (vph)	51	10	11	4	101	529	26	471
Lane Group Flow (vph)	0	216	0	49	131	701	30	584
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	32.0	32.0	32.0	32.0
Minimum Split (s)	24.0	24.0	24.0	24.0	38.0	38.0	38.0	38.0
Total Split (s)	24.0	24.0	24.0	24.0	46.0	46.0	46.0	46.0
Total Split (%)	34.3%	34.3%	34.3%	34.3%	65.7%	65.7%	65.7%	65.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.67		0.16	0.30	0.61	0.08	0.52
Control Delay		23.4		13.0	9.0	11.2	6.7	9.5
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		23.4		13.0	9.0	11.2	6.7	9.5
Queue Length 50th (m)		12.0		1.9	5.9	41.7	1.2	31.2
Queue Length 95th (m)		19.2		7.9	14.8	69.4	4.9	64.7
Internal Link Dist (m)		50.9		32.8		150.3		160.6
Turn Bay Length (m)					50.0		50.0	
Base Capacity (vph)		415		423	433	1144	364	1124
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		0.52		0.12	0.30	0.61	0.08	0.52

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 67.8
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 2: William St & Galloway Blvd/Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	10	90	11	4	24	101	529	11	26	471	31
Future Volume (vph)	51	10	90	11	4	24	101	529	11	26	471	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.98			0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		0.99	1.00	
Frt		0.92			0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1442			1670		1700	1807		1780	1773	
Flt Permitted		0.87			0.89		0.38	1.00		0.31	1.00	
Satd. Flow (perm)		1273			1504		685	1807		576	1773	
Peak-hour factor, PHF	0.70	0.70	0.70	0.81	0.81	0.81	0.77	0.77	0.77	0.86	0.86	0.86
Adj. Flow (vph)	73	14	129	14	5	30	131	687	14	30	548	36
RTOR Reduction (vph)	0	84	0	0	24	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	132	0	0	25	0	131	700	0	30	581	0
Confl. Peds. (#/hr)	5		5	5		5	5		10	10		5
Heavy Vehicles (%)	7%	2%	26%	2%	2%	2%	7%	6%	2%	2%	7%	10%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		12.8			12.8		42.9	42.9		42.9	42.9	
Effective Green, g (s)		12.8			12.8		42.9	42.9		42.9	42.9	
Actuated g/C Ratio		0.19			0.19		0.63	0.63		0.63	0.63	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		240			284		434	1145		364	1123	
v/s Ratio Prot								c0.39			0.33	
v/s Ratio Perm		c0.10			0.02		0.19			0.05		
v/c Ratio		0.55			0.09		0.30	0.61		0.08	0.52	
Uniform Delay, d1		24.9			22.6		5.6	7.4		4.8	6.8	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.7			0.1		1.8	2.4		0.4	1.7	
Delay (s)		27.6			22.8		7.4	9.9		5.2	8.5	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		27.6			22.8			9.5			8.3	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	67.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	109	14	19	128	44	37
Future Volume (Veh/h)	109	14	19	128	44	37
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.75	0.75	0.70	0.70
Hourly flow rate (vph)	149	19	25	171	63	53
Pedestrians					10	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			178		390	168
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			178		390	168
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		89	94
cM capacity (veh/h)			1384		597	867

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	168	196	116
Volume Left	0	25	63
Volume Right	19	0	53
cSH	1700	1384	696
Volume to Capacity	0.10	0.02	0.17
Queue Length 95th (m)	0.0	0.4	4.5
Control Delay (s)	0.0	1.1	11.2
Lane LOS		A	B
Approach Delay (s)	0.0	1.1	11.2
Approach LOS			B

Intersection Summary			
Average Delay		3.2	
Intersection Capacity Utilization		31.1%	ICU Level of Service A
Analysis Period (min)		15	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	35	29	767	14	10	654
Future Volume (Veh/h)	35	29	767	14	10	654
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.80	0.80	0.85	0.85
Hourly flow rate (vph)	38	32	959	18	12	769
Pedestrians	5					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1382	494			982	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1382	494			982	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	71	94			98	
cM capacity (veh/h)	132	519			689	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	70	639	338	268	513
Volume Left	38	0	0	12	0
Volume Right	32	0	18	0	0
cSH	200	1700	1700	689	1700
Volume to Capacity	0.35	0.38	0.20	0.02	0.30
Queue Length 95th (m)	11.2	0.0	0.0	0.4	0.0
Control Delay (s)	32.3	0.0	0.0	0.7	0.0
Lane LOS	D			A	
Approach Delay (s)	32.3	0.0		0.2	
Approach LOS	D				

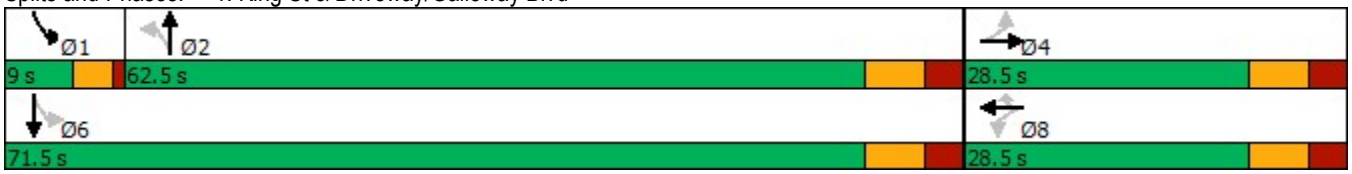
Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	35.5%	ICU Level of Service	A
Analysis Period (min)	15		

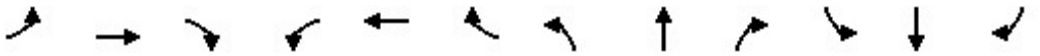
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	5	0	86	2	74	5	832	129	1013
Future Volume (vph)	5	0	86	2	74	5	832	129	1013
Lane Group Flow (vph)	0	16	0	103	87	0	1121	0	1350
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0	31.0	31.0	5.0	31.0
Minimum Split (s)	28.5	28.5	28.5	28.5	28.5	38.5	38.5	9.0	38.5
Total Split (s)	28.5	28.5	28.5	28.5	28.5	62.5	62.5	9.0	71.5
Total Split (%)	28.5%	28.5%	28.5%	28.5%	28.5%	62.5%	62.5%	9.0%	71.5%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	3.0	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	1.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		7.5		7.5	7.5		7.5		7.5
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?						Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	Max	Max	Min	Max
v/c Ratio		0.05		0.47	0.26		0.58		0.95
Control Delay		0.3		43.3	9.0		13.8		30.2
Queue Delay		0.0		0.0	0.0		0.0		0.0
Total Delay		0.3		43.3	9.0		13.8		30.2
Queue Length 50th (m)		0.0		17.2	0.0		60.6		58.1
Queue Length 95th (m)		0.0		30.8	9.6		77.4		#89.1
Internal Link Dist (m)		104.2		128.9			187.9		186.7
Turn Bay Length (m)									
Base Capacity (vph)		382		298	414		1935		1416
Starvation Cap Reductn		0		0	0		0		0
Spillback Cap Reductn		0		0	0		0		0
Storage Cap Reductn		0		0	0		0		0
Reduced v/c Ratio		0.04		0.35	0.21		0.58		0.95

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 94.6
Natural Cycle: 100
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: King St & Driveway/Galloway Blvd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	2	86	2	74	5	832	116	129	1013	5
Future Volume (vph)	5	0	2	86	2	74	5	832	116	129	1013	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5			7.5	7.5		7.5			7.5	
Lane Util. Factor		1.00			1.00	1.00		0.95			0.95	
Frpb, ped/bikes		0.99			1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00			0.99	1.00		1.00			1.00	
Frt		0.96			1.00	0.85		0.98			1.00	
Flt Protected		0.97			0.95	1.00		1.00			0.99	
Satd. Flow (prot)		1727			1784	1541		3499			3555	
Flt Permitted		0.78			0.72	1.00		0.95			0.58	
Satd. Flow (perm)		1399			1345	1541		3311			2061	
Peak-hour factor, PHF	0.44	0.44	0.44	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	11	0	5	101	2	87	6	979	136	152	1192	6
RTOR Reduction (vph)	0	13	0	0	0	73	0	10	0	0	0	0
Lane Group Flow (vph)	0	3	0	0	103	14	0	1111	0	0	1350	0
Confl. Peds. (#/hr)	5		5	5		5	10		5	5		10
Heavy Vehicles (%)	2%	2%	2%	2%	2%	4%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		15.6			15.6	15.6		55.0			64.0	
Effective Green, g (s)		15.6			15.6	15.6		55.0			64.0	
Actuated g/C Ratio		0.16			0.16	0.16		0.58			0.68	
Clearance Time (s)		7.5			7.5	7.5		7.5			7.5	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		230			221	254		1925			1473	
v/s Ratio Prot											c0.05	
v/s Ratio Perm		0.00			c0.08	0.01		0.34			c0.57	
v/c Ratio		0.01			0.47	0.06		0.58			0.92	
Uniform Delay, d1		33.0			35.7	33.3		12.5			13.0	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.0			1.6	0.1		1.3			9.2	
Delay (s)		33.1			37.3	33.4		13.7			22.2	
Level of Service		C			D	C		B			C	
Approach Delay (s)		33.1			35.5			13.7			22.2	
Approach LOS		C			D			B			C	

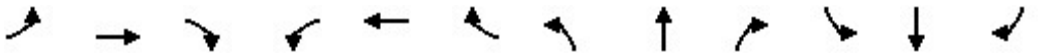
Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	94.6	Sum of lost time (s)	19.0
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	31	7	16	9	60	664	29	663
Future Volume (vph)	31	7	16	9	60	664	29	663
Lane Group Flow (vph)	0	148	0	55	71	797	35	879
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	32.0	32.0	32.0	32.0
Minimum Split (s)	24.0	24.0	24.0	24.0	38.0	38.0	38.0	38.0
Total Split (s)	24.0	24.0	24.0	24.0	46.0	46.0	46.0	46.0
Total Split (%)	34.3%	34.3%	34.3%	34.3%	65.7%	65.7%	65.7%	65.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.46		0.21	0.23	0.60	0.09	0.67
Control Delay		15.6		16.9	7.5	9.1	5.4	11.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		15.6		16.9	7.5	9.1	5.4	11.0
Queue Length 50th (m)		5.6		3.1	2.9	47.3	1.3	56.8
Queue Length 95th (m)		11.8		9.4	9.0	81.9	4.3	92.0
Internal Link Dist (m)		50.9		32.8		150.3		160.6
Turn Bay Length (m)					50.0		50.0	
Base Capacity (vph)		477		428	315	1329	375	1303
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		0.31		0.13	0.23	0.60	0.09	0.67

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 63.4
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 2: William St & Galloway Blvd/Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	7	64	16	9	19	60	664	14	29	663	57
Future Volume (vph)	31	7	64	16	9	19	60	664	14	29	663	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.98			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.92			0.94		1.00	1.00		1.00	0.99	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1624			1693		1786	1857		1785	1818	
Flt Permitted		0.88			0.84		0.23	1.00		0.28	1.00	
Satd. Flow (perm)		1447			1450		439	1857		525	1818	
Peak-hour factor, PHF	0.69	0.69	0.69	0.79	0.79	0.79	0.85	0.85	0.85	0.82	0.82	0.82
Adj. Flow (vph)	45	10	93	20	11	24	71	781	16	35	809	70
RTOR Reduction (vph)	0	81	0	0	21	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	67	0	0	34	0	71	796	0	35	876	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	6%	2%	4%	2%	2%	5%	2%	3%	7%	2%	4%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.5			8.5		44.1	44.1		44.1	44.1	
Effective Green, g (s)		8.5			8.5		44.1	44.1		44.1	44.1	
Actuated g/C Ratio		0.13			0.13		0.68	0.68		0.68	0.68	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		190			190		299	1267		358	1241	
v/s Ratio Prot								0.43			c0.48	
v/s Ratio Perm		c0.05			0.02		0.16			0.07		
v/c Ratio		0.35			0.18		0.24	0.63		0.10	0.71	
Uniform Delay, d1		25.5			24.9		3.9	5.7		3.5	6.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.1			0.5		1.9	2.4		0.5	3.4	
Delay (s)		26.7			25.4		5.7	8.1		4.0	9.7	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		26.7			25.4			7.9			9.5	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	64.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	85	50	39	78	32	33
Future Volume (Veh/h)	85	50	39	78	32	33
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.84	0.84	0.60	0.60
Hourly flow rate (vph)	116	68	46	93	53	55
Pedestrians					10	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			194		345	160
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			194		345	160
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			97		91	94
cM capacity (veh/h)			1366		623	846

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	184	139	108
Volume Left	0	46	53
Volume Right	68	0	55
cSH	1700	1366	720
Volume to Capacity	0.11	0.03	0.15
Queue Length 95th (m)	0.0	0.8	4.0
Control Delay (s)	0.0	2.7	10.9
Lane LOS		A	B
Approach Delay (s)	0.0	2.7	10.9
Approach LOS			B

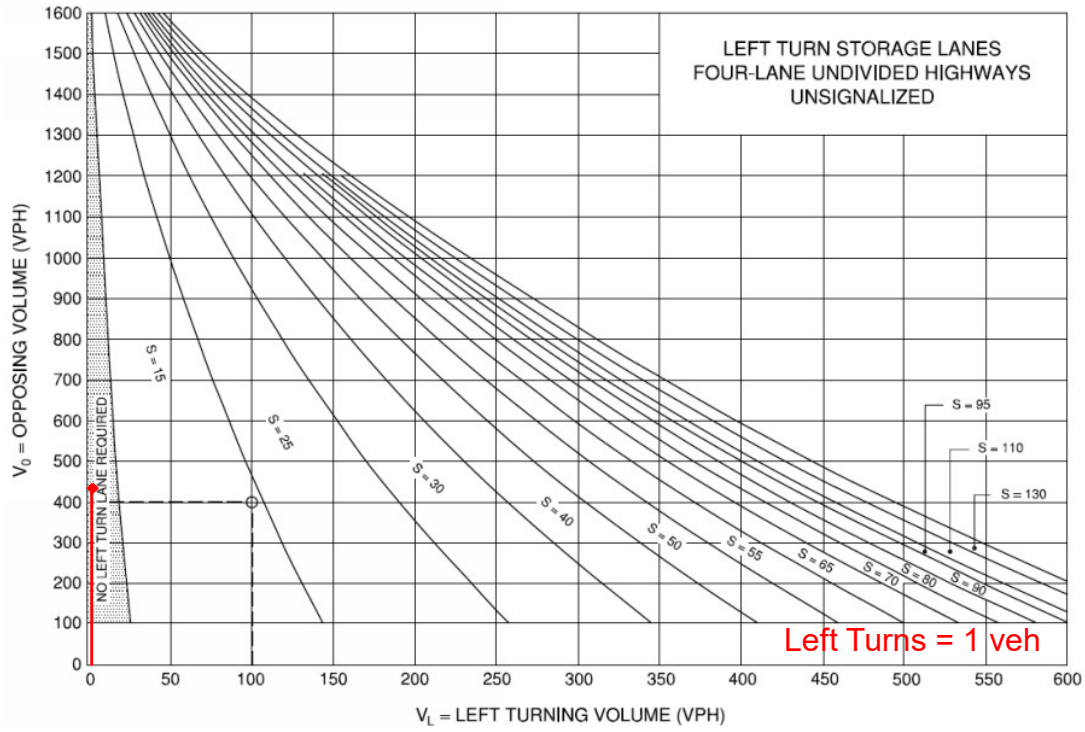
Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	29.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	27	32	892	50	53	1053
Future Volume (Veh/h)	27	32	892	50	53	1053
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.90	0.90	0.95	0.95
Hourly flow rate (vph)	29	35	991	56	56	1108
Pedestrians	5					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1690	528			1052	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1690	528			1052	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	62	93			91	
cM capacity (veh/h)	77	492			654	

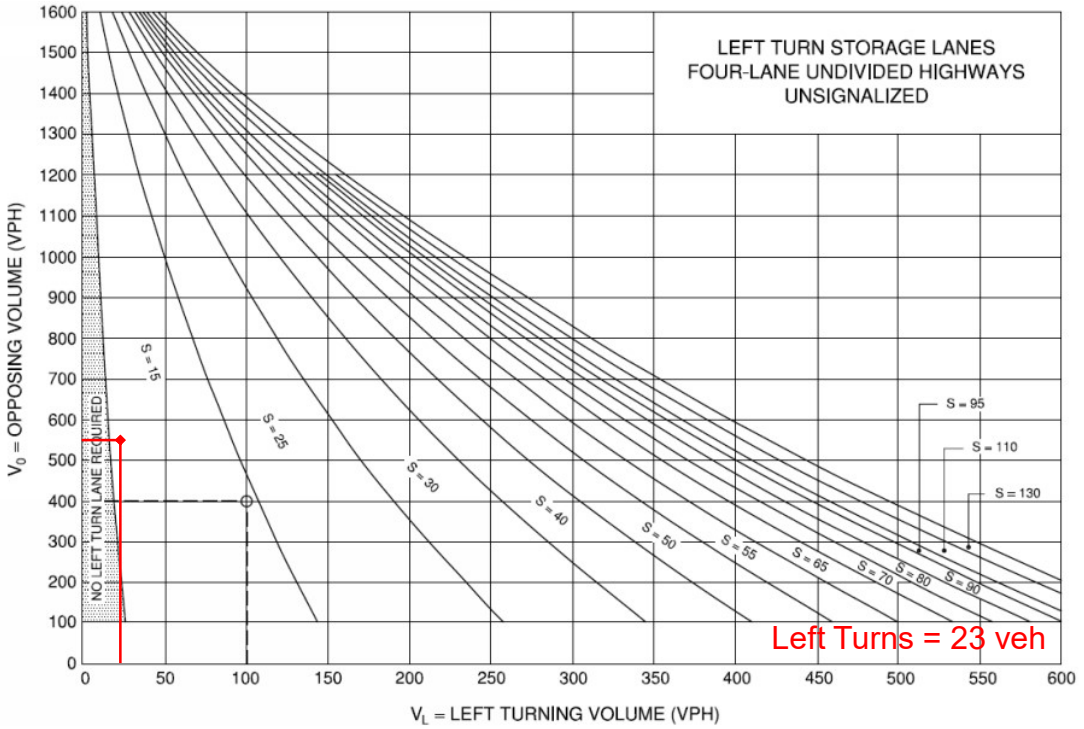
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	64	661	386	425	739
Volume Left	29	0	0	56	0
Volume Right	35	0	56	0	0
cSH	142	1700	1700	654	1700
Volume to Capacity	0.45	0.39	0.23	0.09	0.43
Queue Length 95th (m)	15.4	0.0	0.0	2.1	0.0
Control Delay (s)	49.4	0.0	0.0	2.5	0.0
Lane LOS	E			A	
Approach Delay (s)	49.4	0.0		0.9	
Approach LOS	E				

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

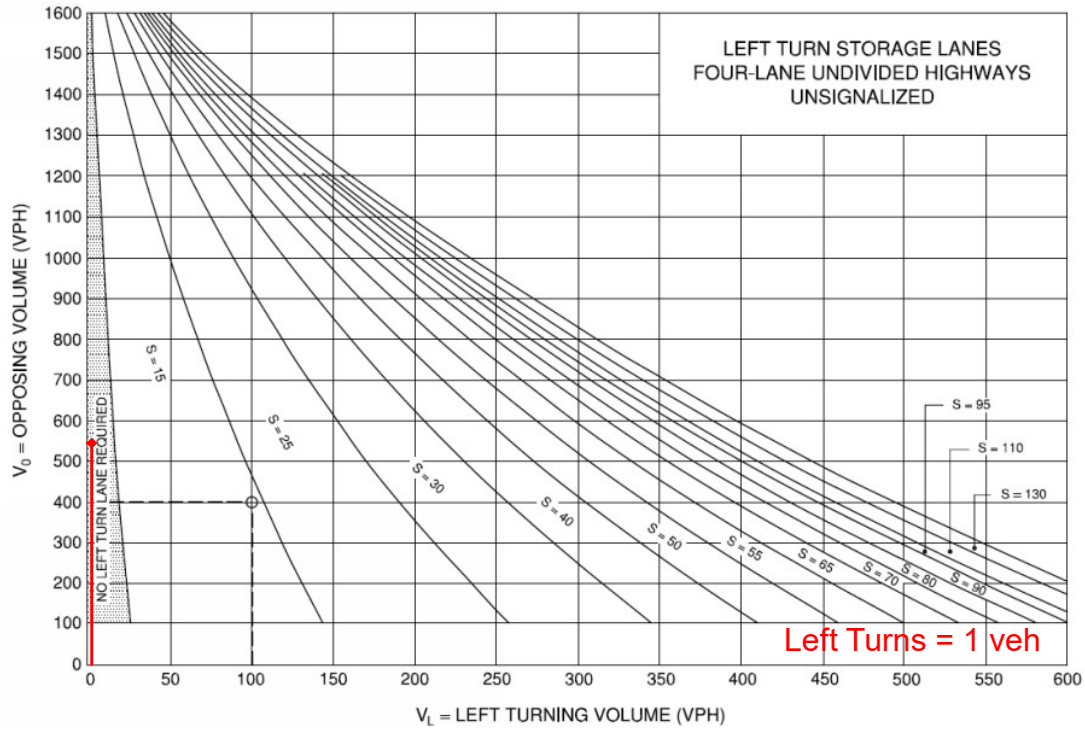
Appendix H –
MTO Left Turn Analysis



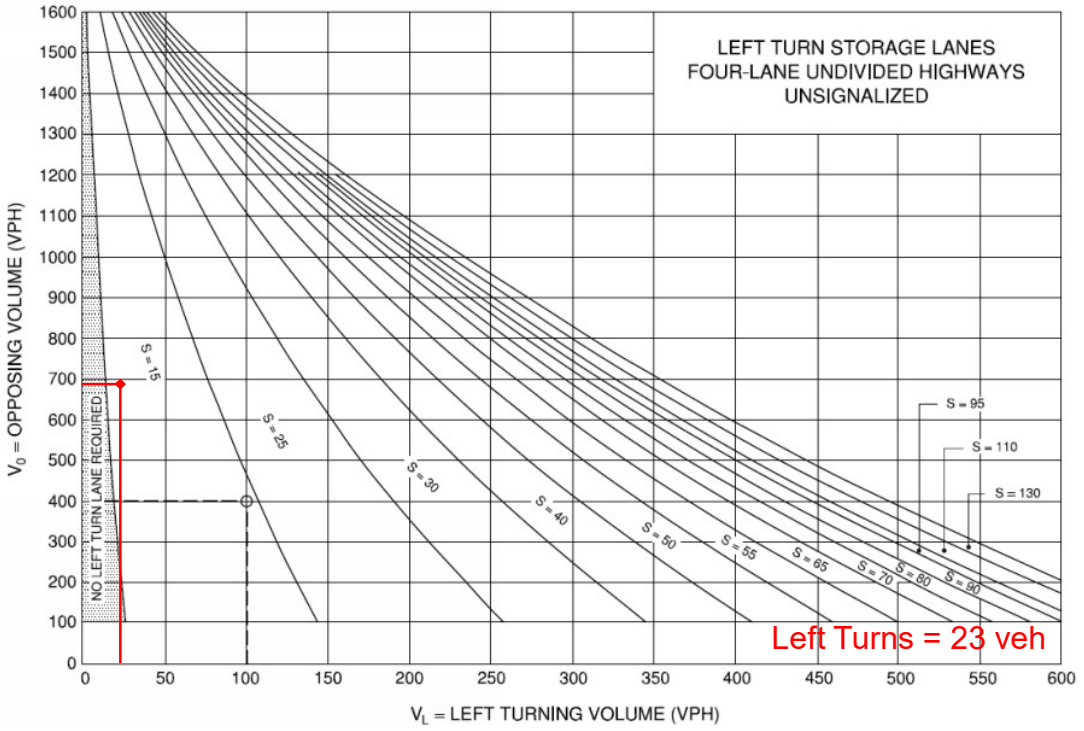
Existing (2022) AM Peak – SB on King Street at West Access



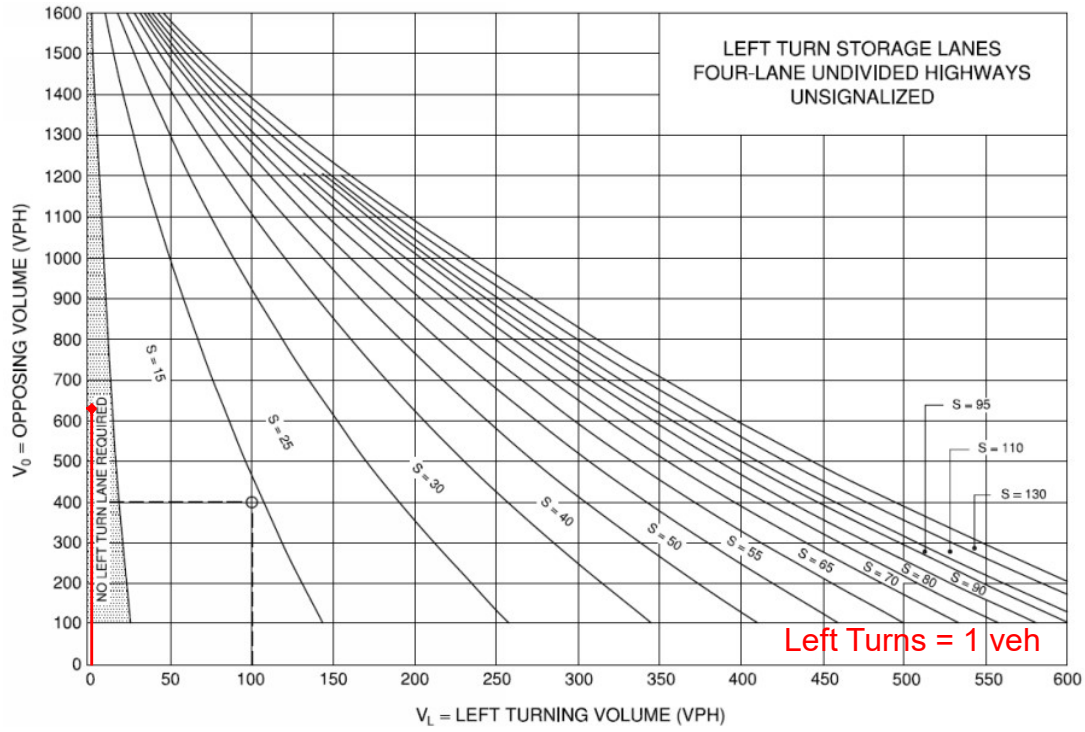
Existing (2022) PM Peak – SB on King Street at West Access



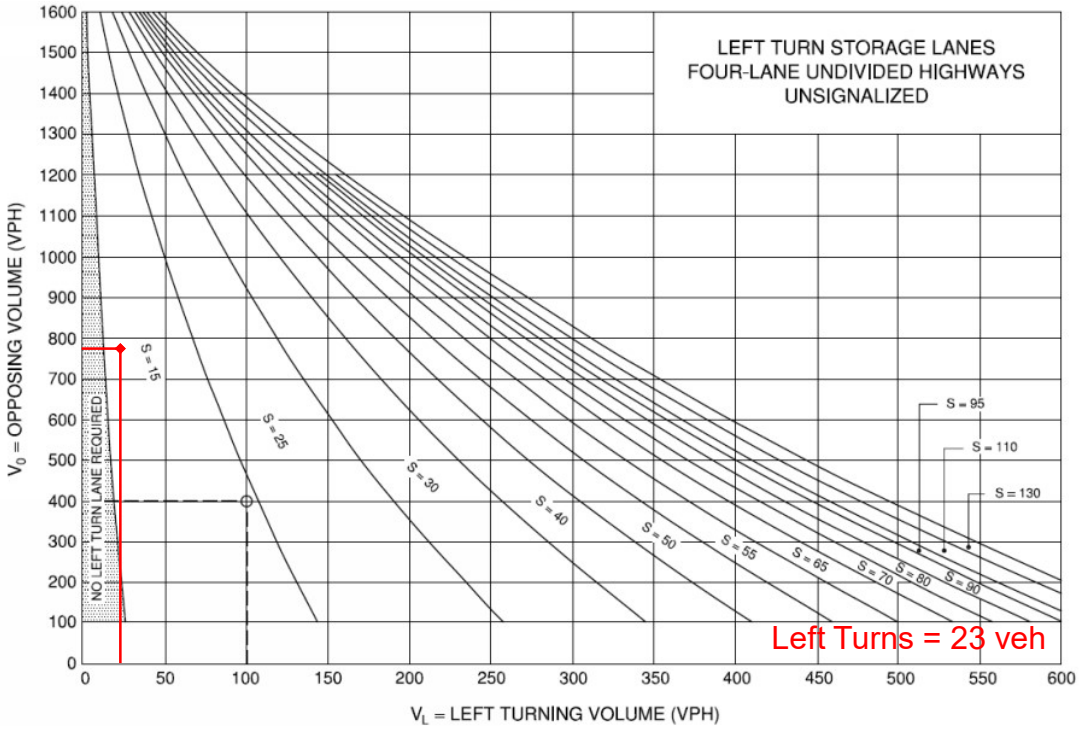
Background (2025) AM Peak – SB on King Street at West Access



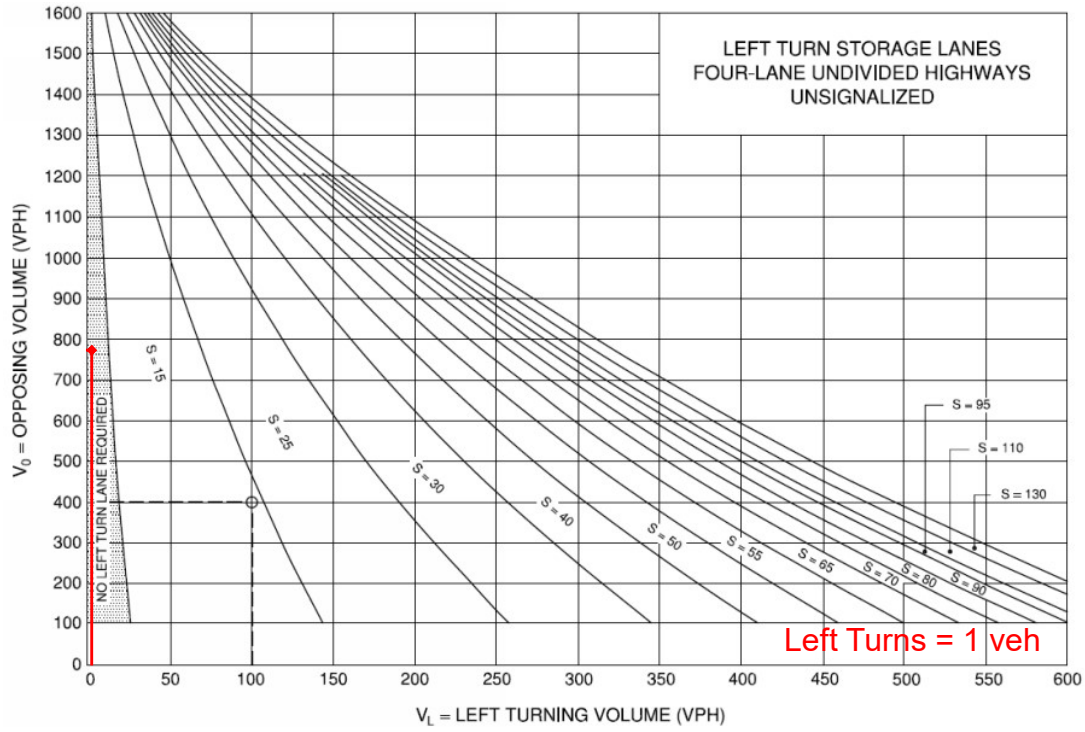
Background (2025) PM Peak – SB on King Street at West Access



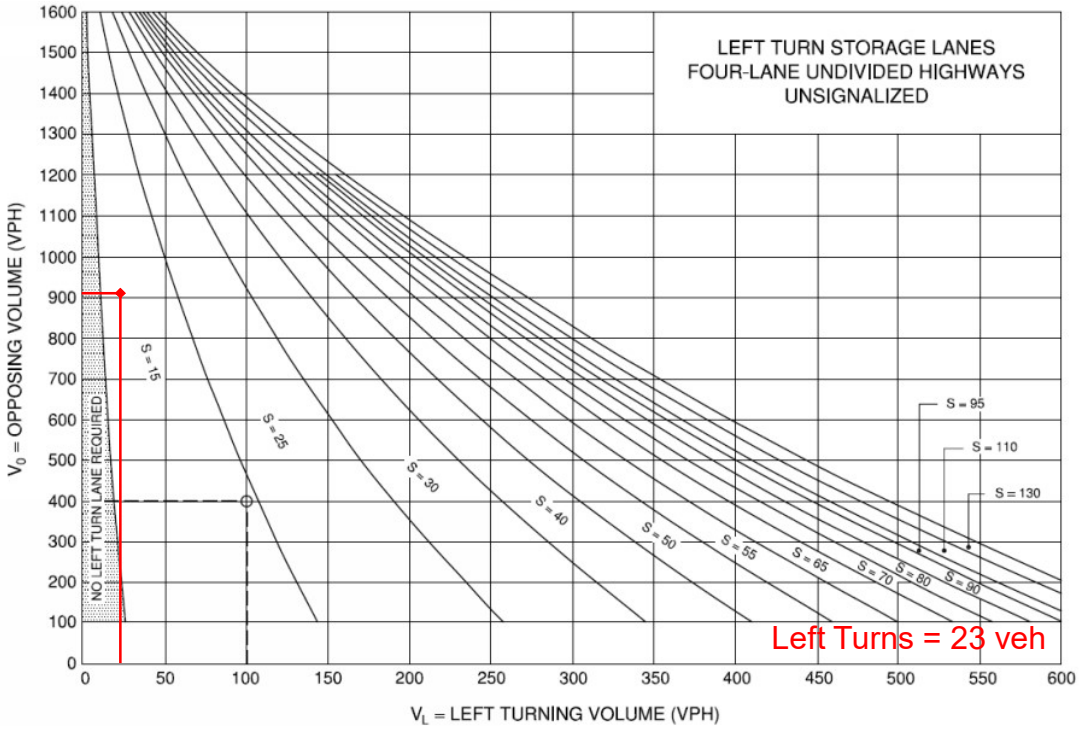
Background (2030) AM Peak – SB on King Street at West Access



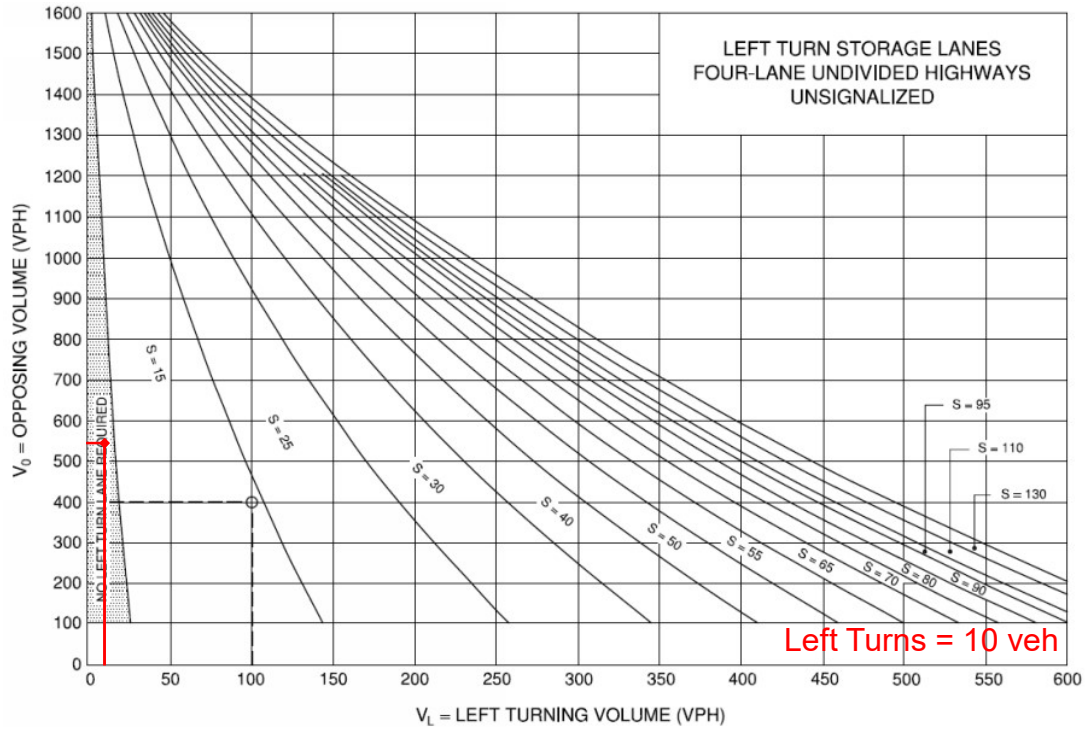
Background (2030) PM Peak – SB on King Street at West Access



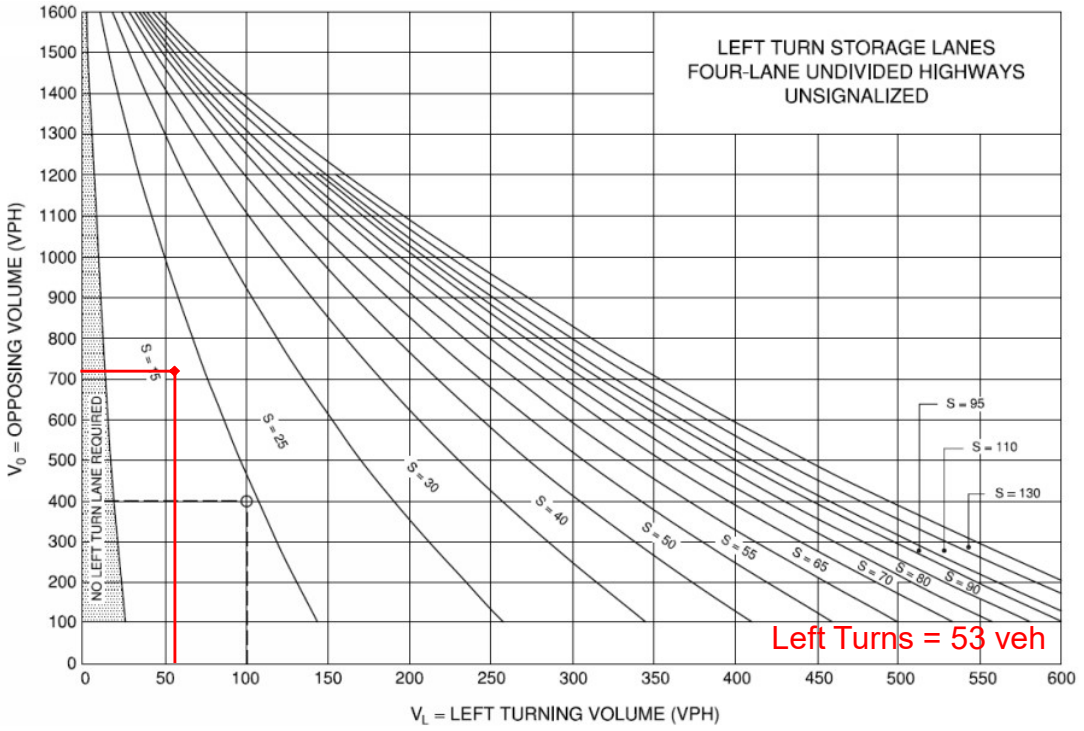
Background (2035) AM Peak – SB on King Street at West Access



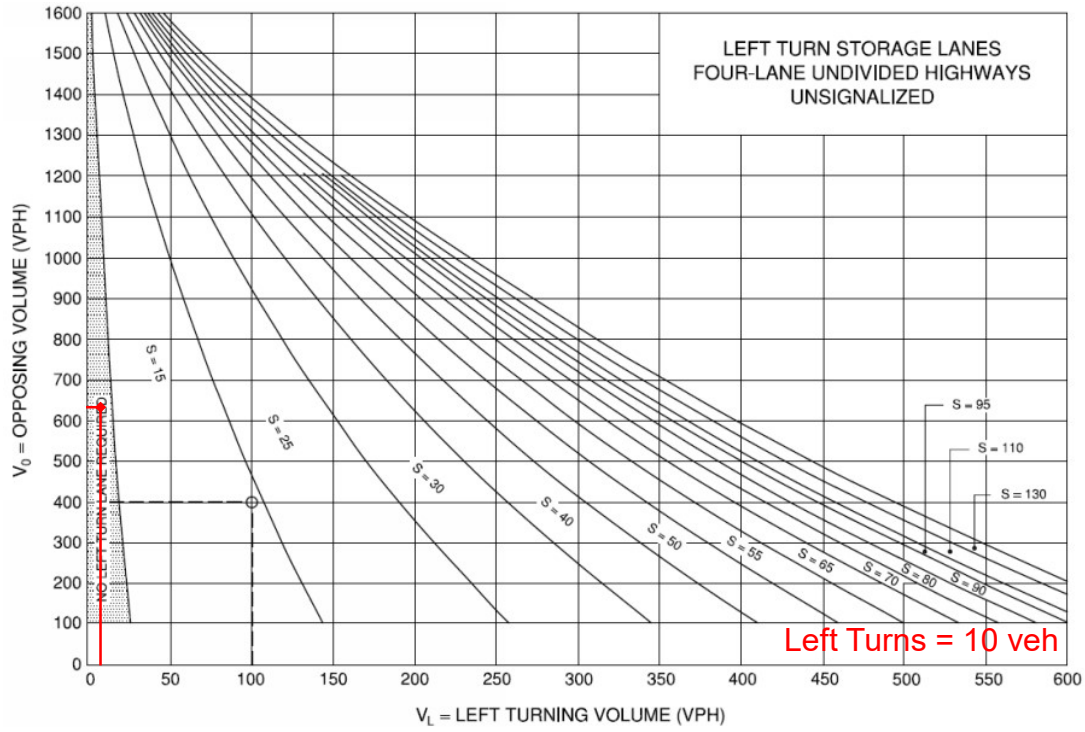
Background (2035) PM Peak – SB on King Street at West Access



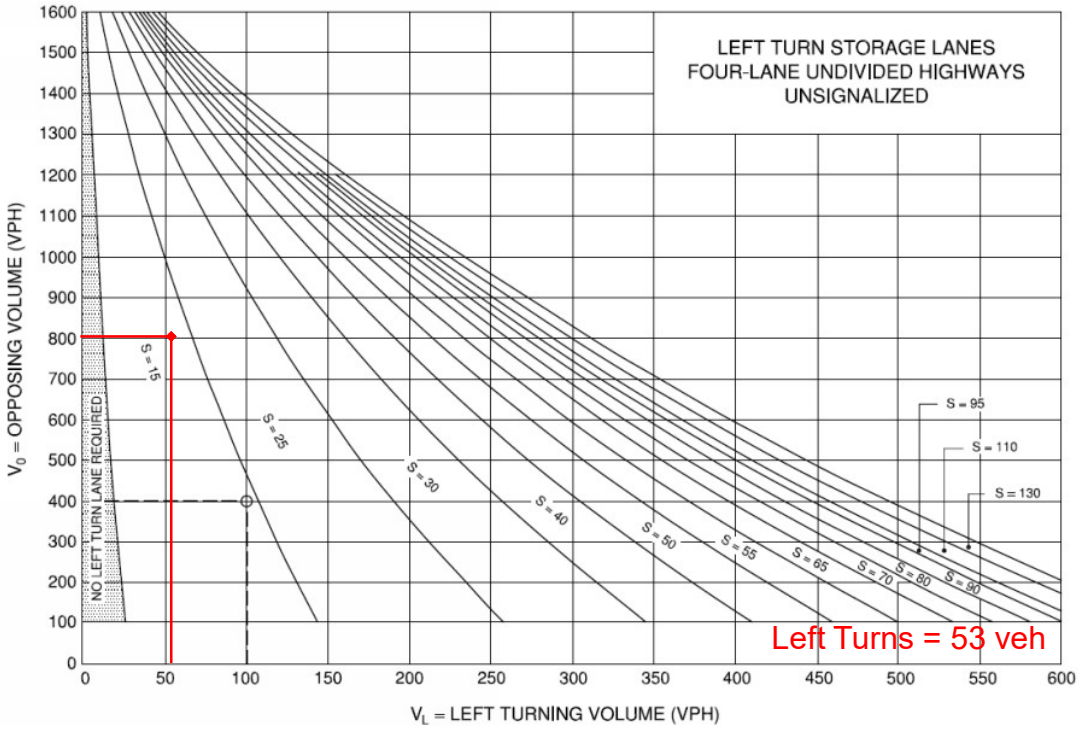
Total (2025) AM Peak – SB on King Street at West Access



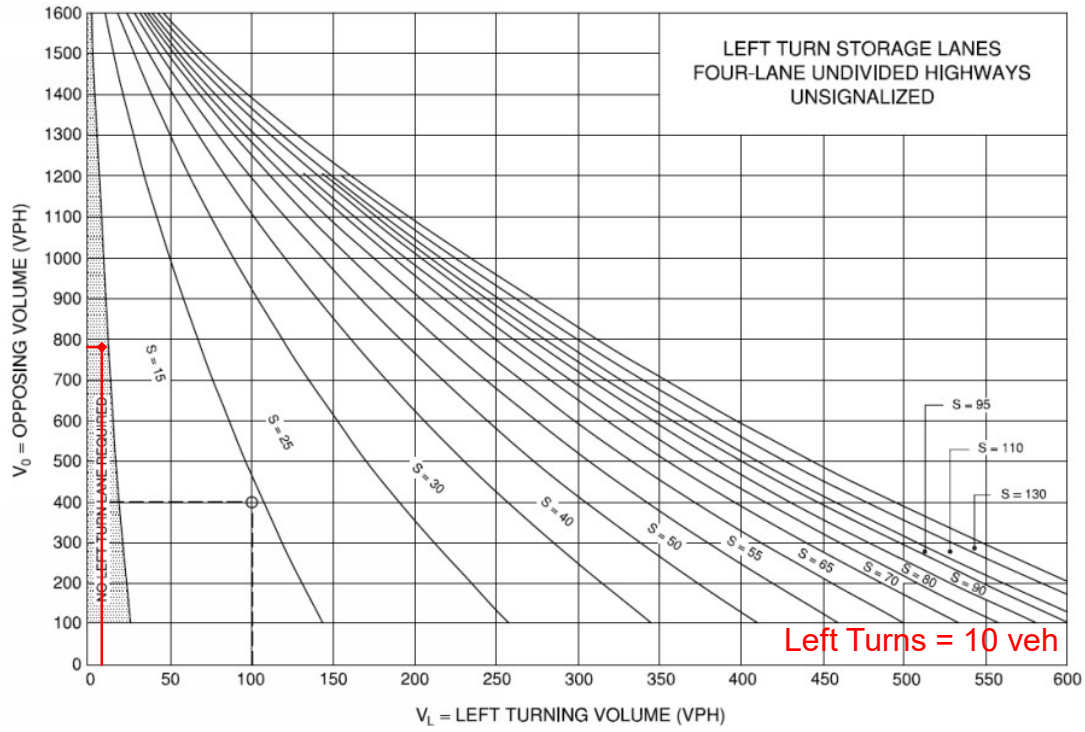
Total (2025) PM Peak – SB on King Street at West Access



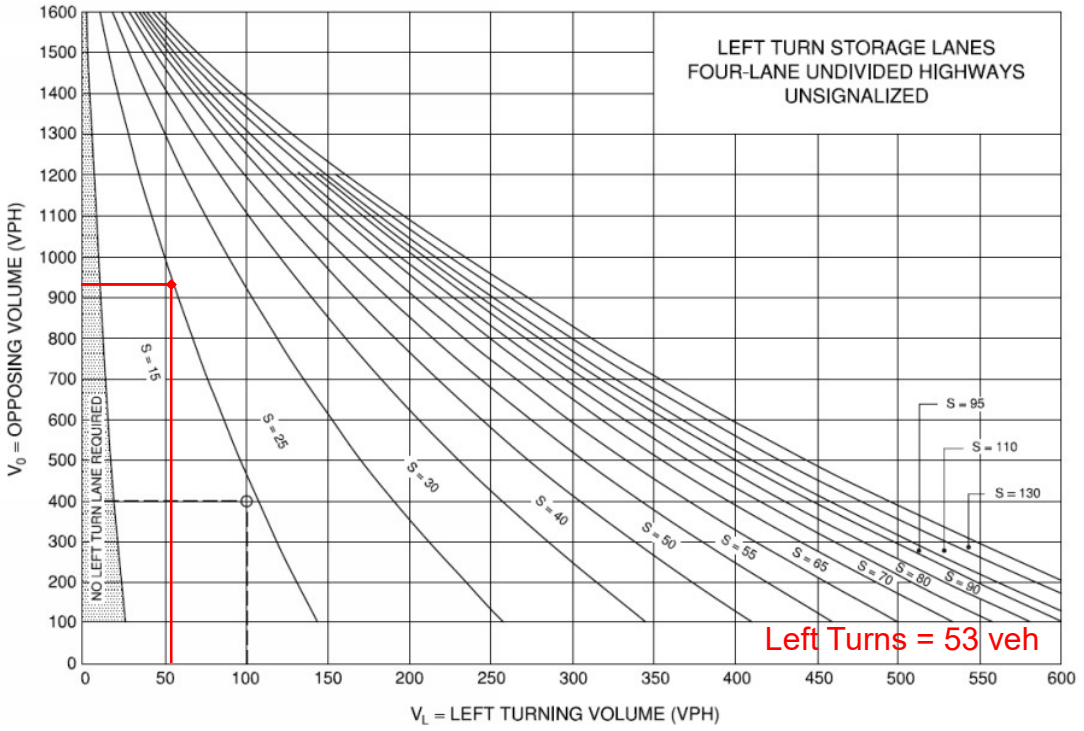
Total (2030) AM Peak – SB on King Street at West Access



Total (2030) PM Peak – SB on King Street at West Access



Total (2035) AM Peak – SB on King Street at West Access



Total (2035) PM Peak – SB on King Street at West Access

Appendix I –
OTM Signal Justification Sheets

Justification No. 7 - Total (2035) Traffic

West Access / King St

Justification	Description		Compliance			Signal Warrant	Underground Provisions Warrant
			Sectional		Entire %		
		Rest. Flow	Numerical	%			
1. Minimum Vehicluar Volume	A. Vehicle volume, all aproaches (average hour)	900	904	100%	10%	NO	YES
	B. Vehicle volume, along minor streets (average hour)	255	31	12%		NO	NO
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	900	857	95%	8%	NO	NO
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	170	16	9%		NO	NO