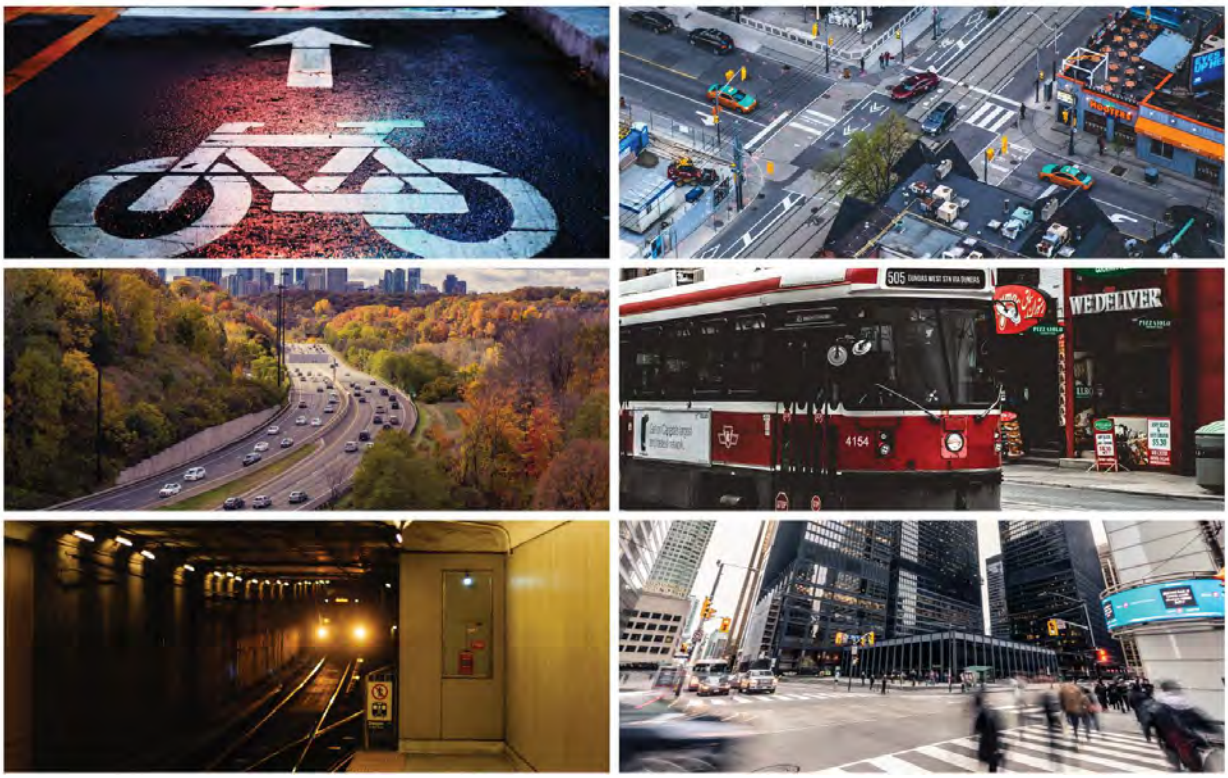
2526574 ONTARIO LIMITED

LADIES GOLF CLUB, MARKHAM

TRANSPORTATION IMPACT STUDY

MARCH 8, 2018



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LADIES GOLF CLUB, MARKHAM

TRANSPORTATION IMPACT STUDY

2526574 ONTARIO LIMITED

PROJECT NO.: 18M-00022-00
DATE: MARCH 2018

WSP
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March 8, 2018

2526574 Ontario Limited
Development Manager
4800 Dufferin Street
Toronto, ON, M3H 5S9

Attention: Michael Mestyan

Dear Sir:

Subject: Transportation Mobility Plan
Proposed Residential Development
Ladies Golf Club, Markham

WSP Canada Inc. is pleased to submit the Transportation Mobility Plan with respect to the subject site located at the southwest corner of Bayview Avenue and Royal Orchard Boulevard, in the City of Markham.

Our analysis indicates that the traffic generated by the subject site can be readily accommodated by the boundary roadway intersections, assuming the recommendations in this report are followed.

We thank you for the opportunity to complete this Mobility Plan. We would be pleased to respond to any questions should they arise.

Yours sincerely,

Greig Bumstead, PTP
Senior Project Planner, Transportation
Planning and Advisory

WSP ref.: 18M-00022-00

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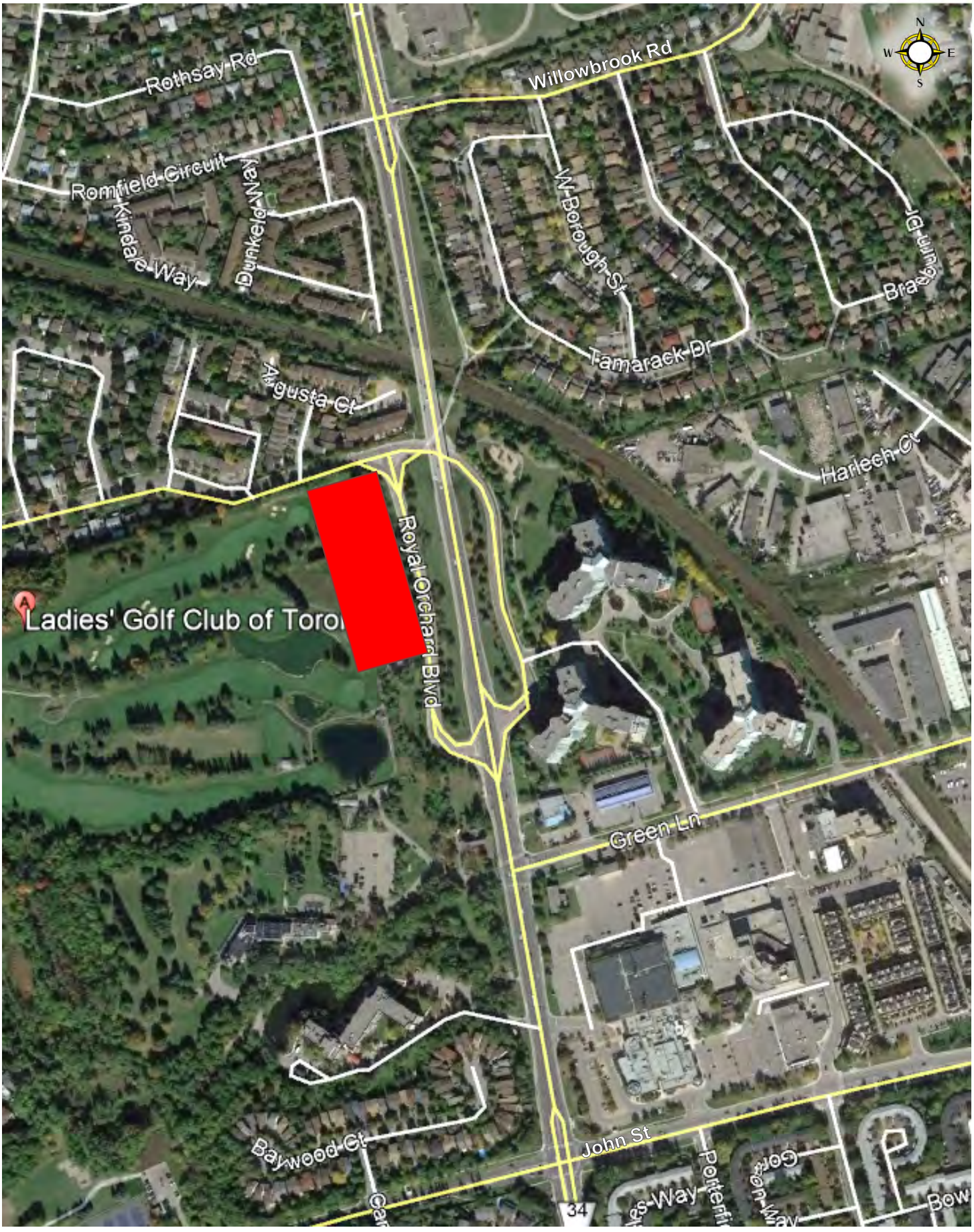
APPENDICES

1 INTRODUCTION

WSP Canada (WSP) was retained by 2526574 Ontario Limited to prepare a Transportation Mobility Plan for the proposed residential development to be constructed on a small portion (2 acres) of the eastern side of the Ladies Golf Club, on the southwest corner of Bayview Avenue and Royal Orchard Boulevard in the City of Markham. **Figure 1.1** illustrates the site location and context.

Based on the site plan and statistics dated March 1, 2018, the proposal is for the construction of two residential buildings "A" and "B", consisting of 89 and 103 units respectively. Building "A" will have two levels of underground parking while building "B" will include three levels of underground parking. The site plan is shown in **Figure 1.2.**

This study includes an estimate of the volume of peak trips generated by this proposed development, identifies the impacts of these trips on the transportation network in the area, and addresses the need for measures required to mitigate these impacts. Our study and approach and findings are documented herein.



Subject Site

Figure 1.1
Site Location

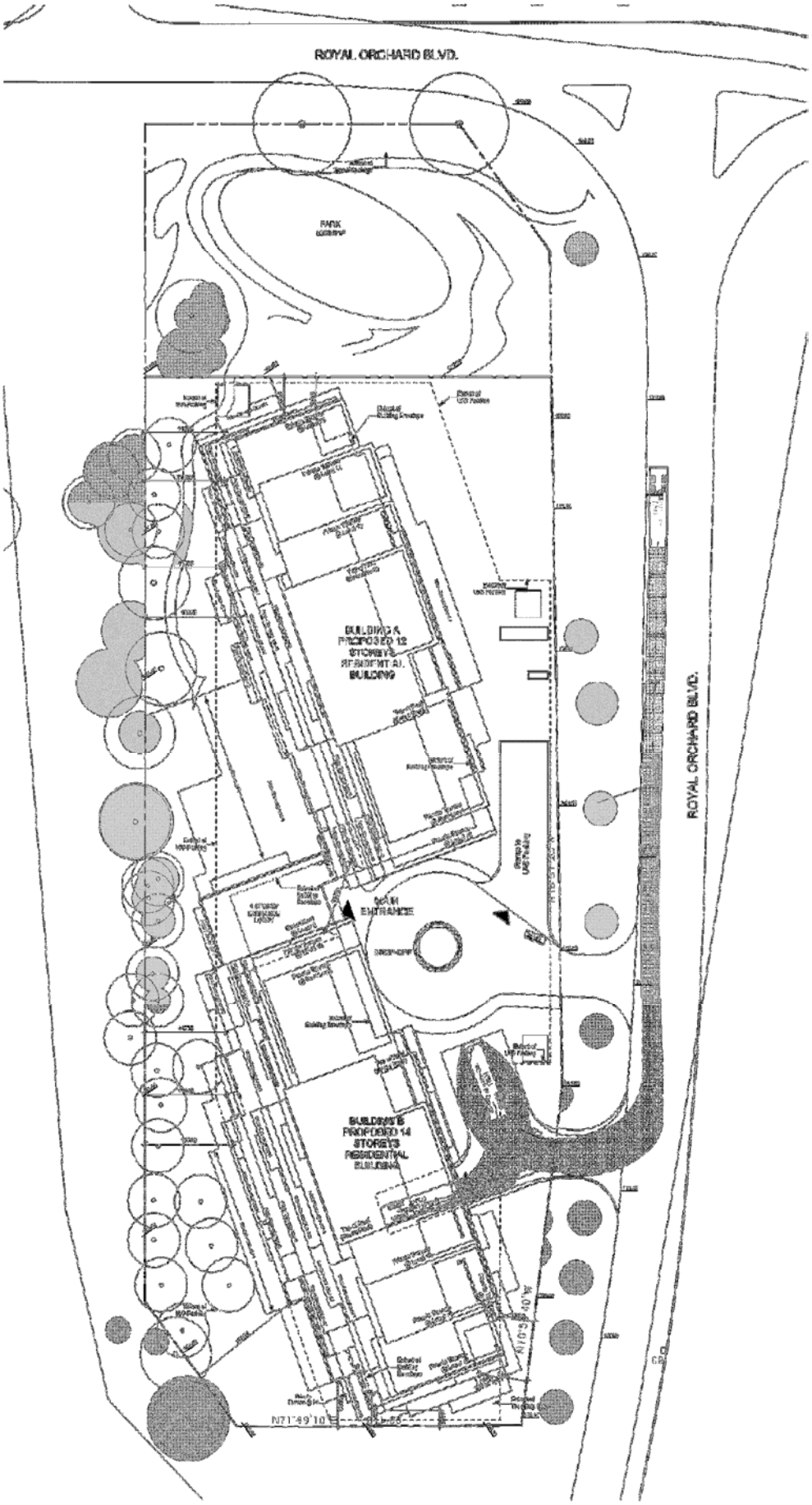


Figure 1.2
Proposed Site Plan

2 PLANS AND POLICIES

2.1 TERMS OF REFERENCE

The terms of reference for the transportation mobility plan were issued to the appropriate municipal and regional staff for review prior to completion of this study. City and Regional staff have reviewed the terms of reference and are in agreement its content. This terms of reference and related correspondence with the City and Region are attached in **Appendix A**.

2.2 BAYVIEW AVENUE ENVIRONMENTAL ASSESSMENT

A Class Environmental Assessment (Class EA) Study for Bayview Avenue from Steeles Avenue has been completed by York Region in 2017. This EA study, along with the Region's 2018 10-Year Roads and Transit Capital Construction Program was considered in the completion of this study. Further details are provided in Section 4.2.

3 EXISTING TRANSPORTATION CONDITIONS

3.1 BOUNDARY ROADWAYS

The following boundary roadways were identified within the vicinity of the subject site. These roadways are under the jurisdiction of York Region and the City of Markham.

Bayview Avenue is a Region of York north-south arterial roadway as designated by the York Region Official Plan. Within the study area, it has a four-lane cross section, with additional exclusive right and left turn lanes at the intersection with Romfield Circuit/Willowbrook Road as well as the intersections with Royal Orchard Boulevard, Green Lane, and John Street. It has a posted speed limit of 60 km/h.

Royal Orchard Boulevard is a minor collector roadway under the jurisdiction of the City of Markham. It generally run in the east-west direction. Within the study area, it has a two lane cross section. It has a posted speed limit of 40 km/h.

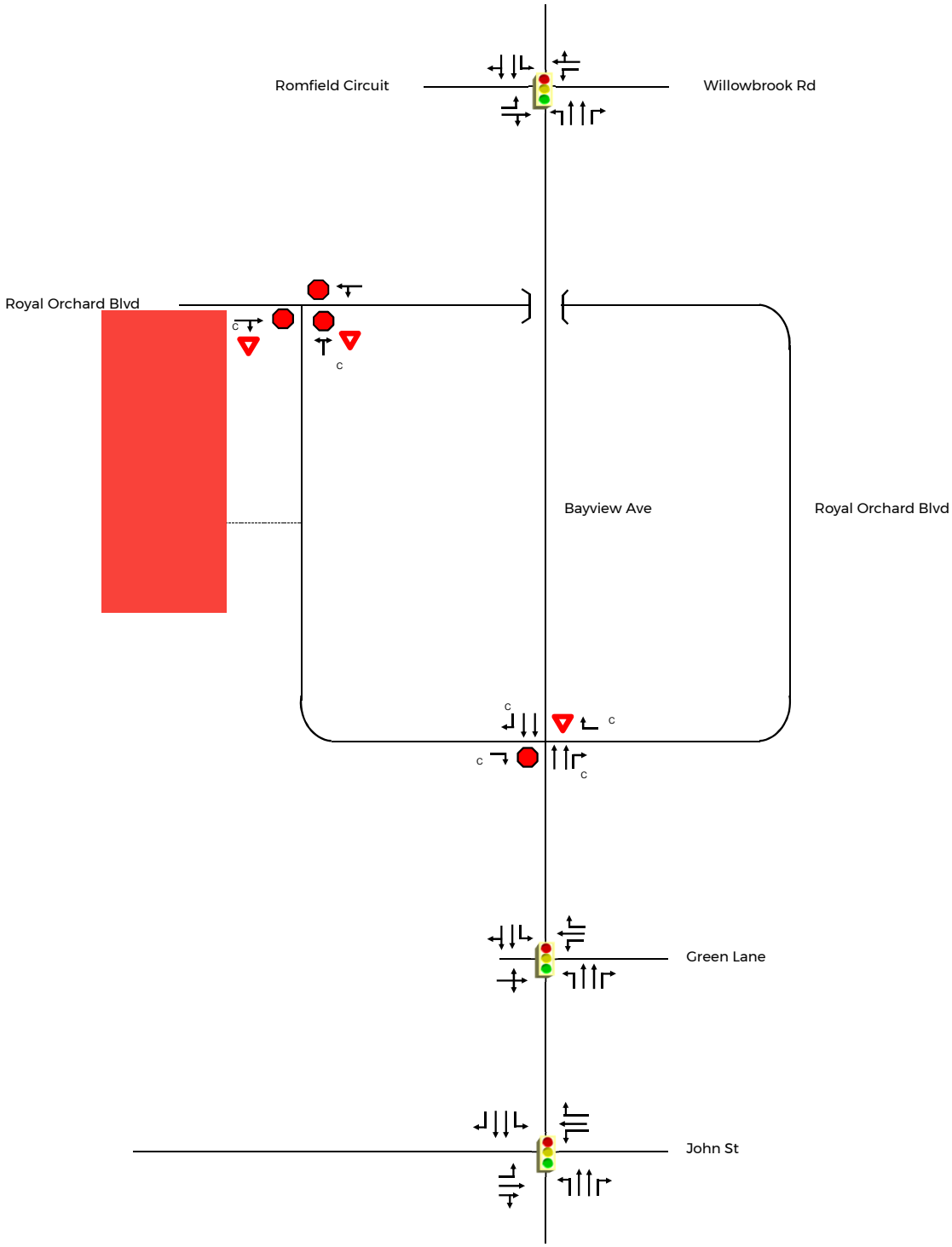
Green Lane is an east-west minor collector roadway under the jurisdiction of the City of Markham. It has a four lane cross section for two lanes in each direction. Exclusive right and left turn lanes are provided at the intersection with Bayview Avenue. It has a posted speed limit of 50 km/h.

John Street is minor collector roadway west of Bayview Avenue and a major collector roadway eastward, under the jurisdiction of the City of Markham. The general direction of this roadway is east-west. East of Bayview Avenue, it has a four lane cross section with additional exclusive left and right turn lanes. West of Bayview Avenue, it has a cross section of two lanes, one in each direction. It has a posted speed limit of 50 km/h east of Bayview Avenue and a posted speed limit of 40 km/h westward. No on-street parking is permitted.

Romfield Circuit is a local east-west minor collector roadway under the jurisdiction of the City of Markham. It has a cross section of two lanes, one in each direction. It has a posted speed limit of 40 km/h.

Willowbrook Road is also a local east-west minor collector roadway under the jurisdiction of the City of Markham. It has a two lane cross section with one lane travelling in each direction. The posted speed limit is 40 km/h on this roadway. No on-street parking is permitted on Willowbrook Road.

Figure 3.1 illustrates the existing lane configurations and intersection controls at the study intersections.



Subject Site

C Channelized Right Turn

Figure 3.1
Existing Lane Configurations

3.2 AREA TRAVEL CHARACTERISTICS

Modal split data for the study area was obtained using the 2011 Transportation Tomorrow Survey (TTS) for GTA Zones 2356 and 2362. These percentages are illustrated in **Table 3.1**. For further details regarding the development of these modal splits, please refer to **Appendix B**.

Table 3.1: Mode Split Characteristics

Travel Mode	Modal Split Percentage			
	A.M. Peak Hour		P.M. Peak Hour	
	Inbound	Outbound	Inbound	Outbound
Auto – Driver	79%	70%	79%	81%
Auto – Passenger	13%	13%	13%	13%
Transit	4%	13%	4%	6%
Walking and Cycling	4%	4%	4%	0%

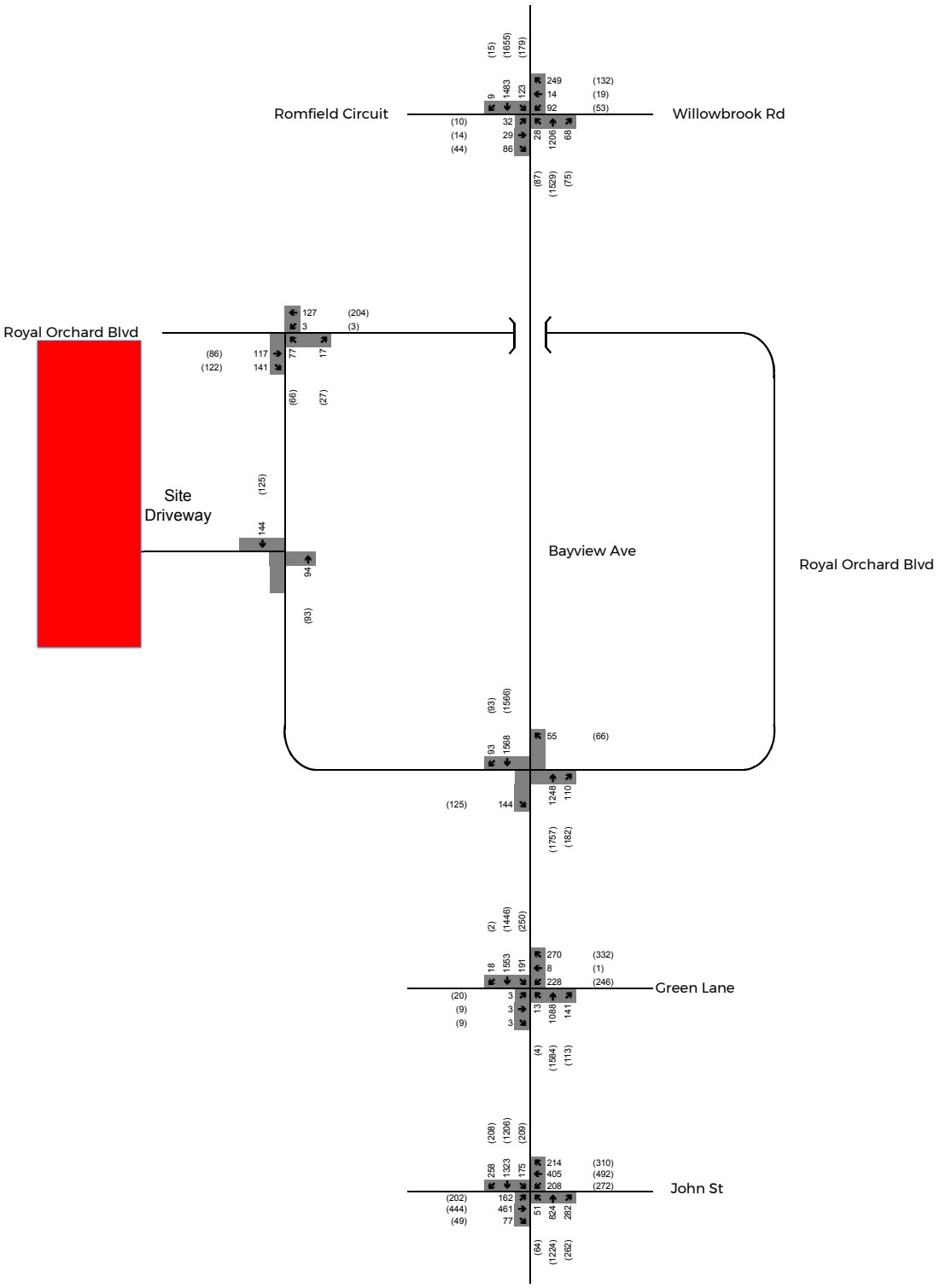
3.3 TRAFFIC DATA

Turning movement counts were undertaken by Accu-Traffic Inc. on behalf of WSP and are summarized in **Appendix C**. The counts were undertaken on February 08, 2018 the following intersections:

Intersection	Traffic Control
Bayview Avenue at Romfield Circuit/Willowbrook Road	Signalized
Bayview Avenue and Royal Orchard Boulevard	Unsignalized
Bayview Avenue and Green Lane	Signalized
Bayview Avenue and John Street	Signalized
Royal Orchard Boulevard and Royal Orchard Boulevard	Unsignalized

The signal timing plans for the above-noted signalized intersections were acquired from York Region and is included in **Appendix C**.

Existing traffic volumes along the study roadways are illustrated in **Figure 3.2**.



xx A.M. Peak Hour Traffic Volumes
(xx) P.M. Peak Hour Traffic Volumes

Subject Site

Figure 3.2
Existing Traffic Volumes

3.4 EXISTING INTERSECTION OPERATIONS

3.4.1 INPUTS AND PARAMETERS

The Synchro analysis was calibrated to more accurately reflect existing conditions based on existing traffic data as well as the York Region Transportation Mobility Plan Guidelines.

Peak hour factors were calculated on the basis of turning movement counts. For further details please refer to **Appendix C**.

Lost time adjustments were applied to left-turns at the intersections of Bayview Avenue and John Street as well as Bayview Avenue and Green Lane. The lost time applied was for the PM peak hour as the left-turn movements were observed to approach capacity and to account for the increased use of amber and all-red time when drivers experience high delays.

A saturation flow rate of 2000 vehicles per hour per lane (vphpl) was used for Bayview Avenue and John Street, as per the York Region Transportation Mobility Plan guidelines. For all other local streets, a saturation flow rate of 1900 vphpl was used.

These calibrations have been carried forward to the analyses of the future background and future total conditions.

3.4.2 PERFORMANCE ANALYSIS

The 2018 existing intersection operations were analyzed on the basis of the roadway weekday a.m. and p.m. peak hour traffic volumes illustrated in Figure 3.2. The intersections were analyzed using the Synchro Traffic Software 9.0, which incorporates analysis of intersection capacity based on the approach outlined in the Highway Capacity Manual 2000 (HCM 2000).

Appendix D provides the Level of Service (LOS) definitions according to the HCM 2000 methodology.

Table 3.2 outlines the existing levels of service. Detailed Synchro analysis worksheets are provided in **Appendix E**.

Table 3.2: Existing Intersection Operations

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	LOS (Delay in Seconds)	Critical Movement Volume/ Capacity Ratio	LOS (Delay in Seconds)	Critical Movement Volume/ Capacity Ratio
Signalized Intersections				
Bayview Avenue at Romfield Circuit/Willowbrook Road	B (20)	--	B (18)	--
Bayview Avenue and Green Lane	C (24)	WBL (0.86)	C (29)	SBL (0.96)
Bayview Avenue and John Street	D (43)	EBL (0.92) WBL (0.89) WBT (0.89) SBT (0.91)	D (49)	EBL (0.97) WBL (0.89) WBT (0.96) NBT (0.86) SBL (0.91)
Bayview Avenue and Royal Orchard Boulevard	C (24)	EBR (0.44)	C (23)	EBR (0.40)
Royal Orchard Boulevard East and Royal Orchard Boulevard West	A (9)	-	A (9)	-

1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for movements with values over 0.85.

2 For two-way stop controlled intersections, the level of service is based on the delay associated with the critical movement.

3 For all-way stop controlled intersections, the level of service is based on the overall intersection delay.

As indicated in Table 3.2, all the intersections are operating under capacity and at an acceptable LOS 'D' or better based on delays during the weekday a.m., p.m. peak hours.

Individual movements at the Bayview Avenue/ John Street intersection are expected to operate close to capacity:

- During the a.m. peak hour, the westbound through and southbound through movements; and,
- During the p.m. peak hour, the eastbound left, westbound through, and northbound through movements.

Additionally, individual movements at the Bayview Avenue / Green Lane intersection are expected to operate close to capacity for the following movements:

- During the a.m. peak hour, the westbound left movement; and,
- During the p.m. peak hour, the southbound left movement.

3.5 PUBLIC TRANSIT

3.5.1 REGULAR TRANSIT SERVICE

The subject site is served by York Region Transit, including three bus routes near the subject site:

York Region Transit Route 91 and 91A - Bayview/Bayview Limited Express operates along Bayview Avenue from Finch GO Bus Terminal to Bayview Avenue and Subrisco Avenue. The nearest bus stop to the site is on Bayview Avenue at Royal Orchard Boulevard.

York Region Transit Route 3 – Thornhill operates from Pioneer Village Terminal to Steeles Avenue and Don Mills Road via Steeles Avenue West, New Westminster Drive, Centre Street, Royal Orchard Boulevard, Willowbrook Road, Green Lane, and Leslie Street. The nearest bus stop to the site is on Royal Orchard Boulevard at Doral Gate, just north of the site.

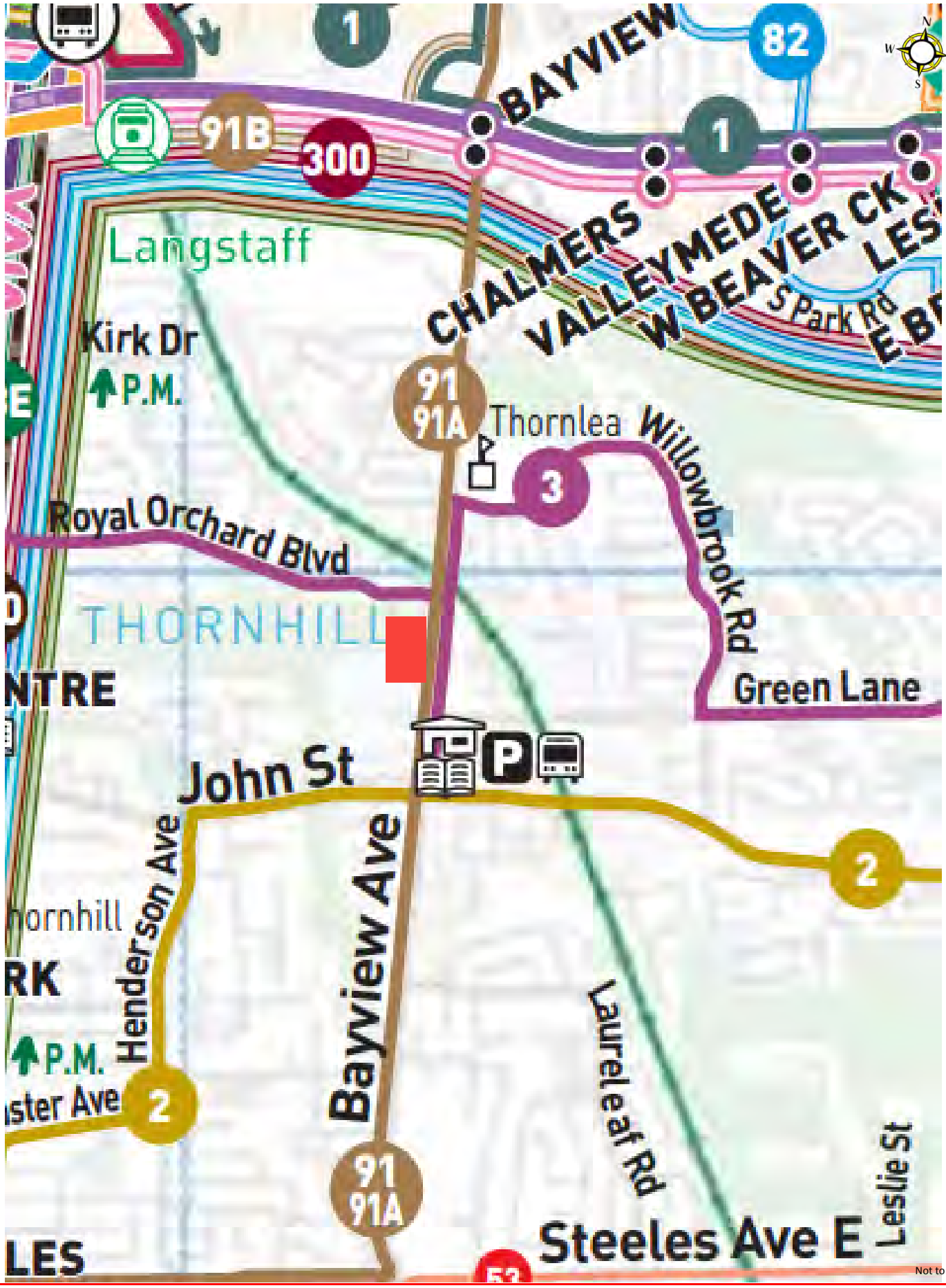
York Region Transit Route 2 – Milliken operates along John Street, Esna Park Drive, and Denison Street from Finch GO Bus Terminal to Denison Street and Highway 48 on weekdays. On weekends and holidays, the route is extended from Denison Street and Highway 48 to Box Grove Walmart. The nearest bus stop to the site is on John Street at Bayview Avenue.

Table 3.3 summarizes the above-noted transit routes, along with their approximate frequencies throughout the service period.

Figure 3.3 illustrates the York Region Transit existing route map within the study area.

Table 3.3: Existing Transit Services within the Study Area

Route	Transit Service Operating Frequencies				
	A.M. Peak	Weekday Midday	P.M. Peak	Weekday Evening	Saturday Midday
YRT Route 3	27 minutes	50 minutes	30 minutes	40 minutes	42 minutes
YRT Route 091A	26 minutes	40 minutes	26 minutes	40 minutes	54 minutes
YRT Route 91	27 minutes	40 minutes	26 minutes	40 minutes	54 minutes
YRT Route 2	20 minutes	36 minutes	20 minutes	60 minutes	35 minutes



Not to scale

Ladies Golf Club Markham

Source: City of Markham
YRT/VIVA Markham Route Map

Figure 3.3
Exisiting Transit Services

3.5.2 TRANSIT LEVEL OF SERVICE

The analysis of the transit mode is based on current day transit services as of February 2018, and no service changes have been assumed. As transit within the City of Markham is regionally operated, the transit level of service criteria is based on the requirements of the Transportation Mobility Plan Guidelines for Development Applications from York Region. **Table 3.4** summarizes the level of service criteria for the transit mode.

Table 3.4: Transit Level of Service Criteria

Level of Service	Frequency (Transit Headway)	Access to Stops	Intersection Approach	
			Delay (seconds/veh)	Volume/Capacity Ratio
A	≤ 5 minutes	90% within ≤ 200 m	≤ 10	0 to 0.60
B	> 5-10 minutes	90% within ≤ 500 m and 70% within ≤ 200 m	> 10-20	0.61 to 0.70
C	> 10-15 minutes	90% within ≤ 500 m and 50% within ≤ 200 m	> 20-35	0.71 to 0.80
D	> 15-20 minutes	100% within ≤ 600 m	> 35-55	0.81 to 0.90
E	> 20-30 minutes	100 % within ≤ 800 m	> 55-80	0.91 to 1.00
F	≥ 30 minutes	100% > 800 m	> 80	> 1.00

It should be noted that each criteria has its own level of service. For example, a LOS "C" for the transit headway criteria does not necessarily correspond with a LOS "C" for the Access to Stop criteria.

According to the York Region Transportation Mobility Plan Guidelines, the Transit LOS Targets are: C or better for Access to Transit Stops and Transit Headways, D or better for Intersection Approach.

3.5.3 PERFORMANCE ANALYSIS

The Transit Level of Service for the study area intersections during existing conditions is detailed in **Table 3.5**:

Table 3.5: Transit Level of Service (LOS) for the Subject Site

Transit Stop location	Direction	Access to Transit Stops LOS	Transit Headways LOS	Intersection Approach LOS[1]
Bayview Avenue & Romfield Circuit / Willowbrook Road	Eastbound	D	E	D
	Westbound	D	E	D
	Northbound	D	E	A
	Southbound	D	E	A
Bayview Avenue & Royal Orchard Boulevard	Eastbound	D	E	C
	Westbound	-	-	-
	Northbound	-	-	-
	Southbound	-	-	-
Royal Orchard Boulevard (West) & Royal Orchard Boulevard (East)	Eastbound	A	E	A
	Westbound	A	E	A
	Northbound	-	-	-
	Southbound	-	-	-
Bayview Avenue & Green Lane	Eastbound	-	-	-
	Westbound	-	-	-
	Northbound	D	E	C
	Southbound	D	E	A
Bayview Avenue & John Street	Eastbound (Bus Lay-by)	E	E	D
	Westbound (Bus Lay-by)	E	E	D
	Northbound (Bus Lay-by)	E	E	C
	Southbound (Bus Lay-by)	E	E	C

Note that not all above-noted transit routes have been analysed in **Table 3.5**. Some of the routes operate either as school routes for Thornlea Secondary School or for St. Robert Catholic High School. Additionally, locations where busses have a dedicated bus lane have been given an Intersection Approach LOS of A. While wait times are considered LOS "E" due to an operating frequency ranging from 20 to 30 minutes during the weekday peak periods, it should be noted that the northbound and southbound routes of 91 and 091A would overlap and provide a reduction in headways. Overall, the transit LOS at the study area intersections do not meet the Region's target LOS of C or better for Access to Transit stops and Transit Headways. However, the intersections would meet the target LOS of D or better for Intersection Approaches for the existing condition. It should be noted that the Access to Transit and Transit Headways LOS are determined solely by YRT transit planning.

[1] Does not correspond to overall intersection level of service, but corresponds to specific lane group's level of service. Refer to Appendix E

3.6 ACTIVE TRANSPORTATION INFRASTRUCTURE

Within the study area, pedestrian and cycling active infrastructure exists. Shared roadways for bike routes are available on Royal Orchard Boulevard, Green Lane, John Street, Romfield Circuit, and Willowbrook Road as depicted in City of Markham's 2017 Cycling Map.

Bayview Avenue: has sidewalks on both sides of the road with buffers.

Royal Orchard Boulevard has a sidewalk along the entire eastbound side of the roadway and a sidewalk on the southbound segment of the road that connects Royal Orchard Boulevard to southbound Bayview Avenue.

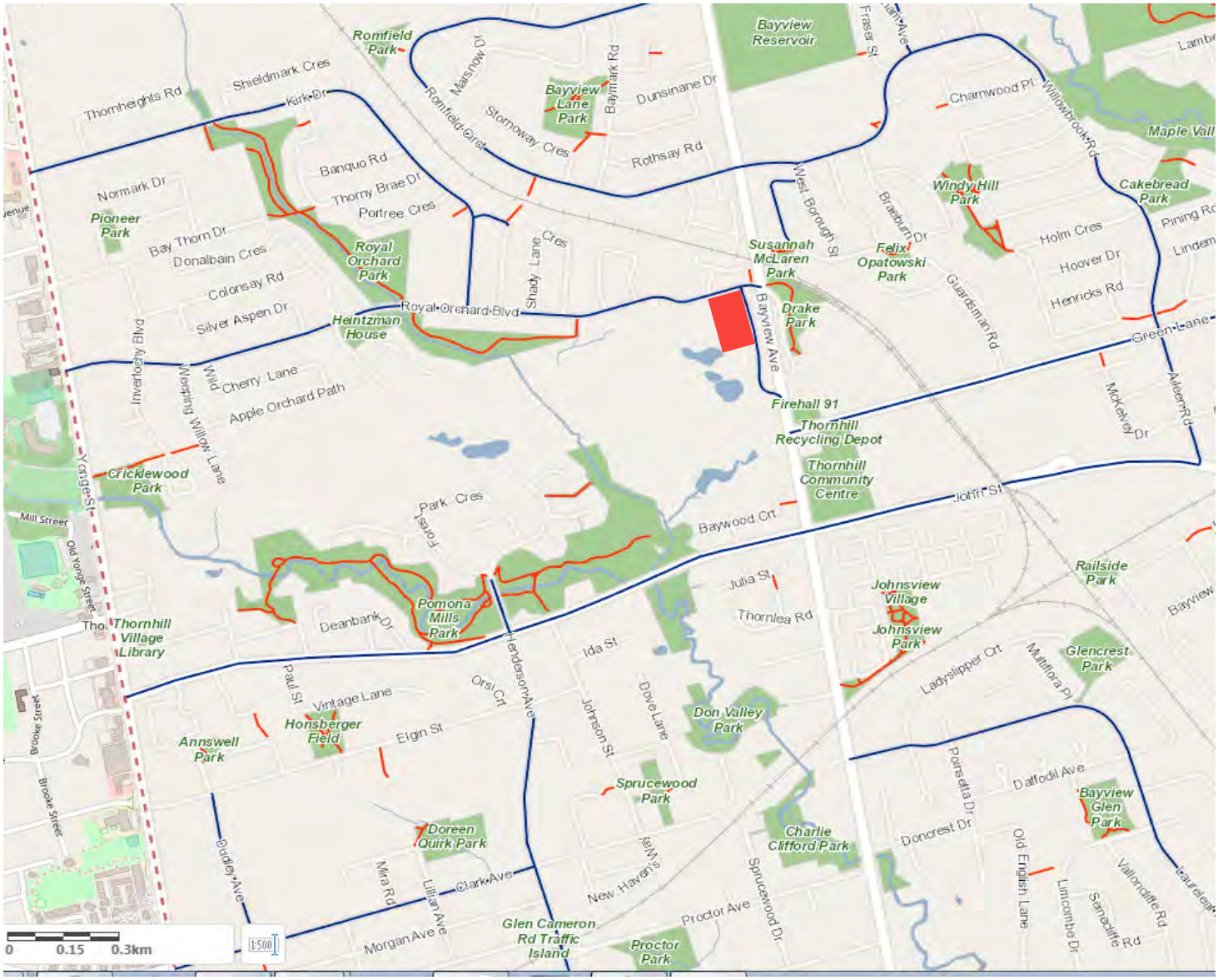
Green Lane has sidewalks on both sides of the road with buffers.

John Street has sidewalks on both sides of the road with buffers. There are no buffers east of Bayview Avenue on the westbound side.

Romfield Circuit has a sidewalk with buffers only on the eastbound side of the roadway.

Willowbrook Road has sidewalks on both sides of the road with buffers.

Figure 3.4 illustrates local active transportation infrastructure within the study area.



Not to scale

Pathways, Trails & Bike Routes
Public Pathways & Trails
Bicycle Routes
Ladies Golf Club Markham

1 km = 3 min. 16 min.

Source: York Region South Bike Map

Figure 3.4
Nearby Bicycle Routes and Trails Map

3.6.1 ACTIVE MODE LEVEL OF SERVICE

The pedestrian and bicycle level of service criteria is based on the requirements of the York Region Transportation Mobility Plan Guidelines for Development Applications. **Table 3.6** summarizes the level of service criteria for the active transportation modes.

Table 3.6: Pedestrian and Bicycle Level of Service Criteria

Level of Service	Pedestrians		Bicycles	
	Segment	Intersection	Segment	Intersection
A	≥2.0 m sidewalk with minimum 3.5 m buffer including planting and edge zone; or ≥3.0 m multi-use path	≥2.0 m sidewalk with minimum 3.5 m buffer including planting and edge zone; or ≥3.0 m multi-use path Pedestrian signal head with sufficient pedestrian clearance time Clearly delineated cross-walk	Separated cycling facilities (e.g. cycle tracks, multi-use path)	Separated cycling facilities Bicycle box or clearly delineated bicycle treatment or bicycle signal head
B	≥1.5 m sidewalk with minimum 1.0 m buffer including edge zone; or <3.0 m multi-use path	≥1.5 m sidewalk with minimum 1.0 m buffer including edge zone; or <3.0 m multi-use path Pedestrian signal head with sufficient pedestrian clearance time Clearly delineated cross-walk	≥1.8 m dedicated cycling facilities (e.g. bicycle lanes with and without buffer)	>1.8 m dedicated cycling facilities (e.g. bicycle lanes with and without buffer), Bicycle box, clearly delineated bicycle treatment or bicycle signal head
C	≥1.5 m curb-faced sidewalk (no buffer)	≥1.5 m curb-faced sidewalk (no buffer) Pedestrian signal head with sufficient pedestrian clearance time Clearly delineated cross-walk	<1.8 m dedicated cycling facilities with no buffer	<1.8 m dedicated cycling facilities with no buffer, Bicycle box, clearly delineated bicycle treatment or bicycle signal head
D	<1.5 m sidewalk	<1.5 m sidewalk Pedestrian signal head sufficient pedestrian clearance time No clearly delineated crosswalk	≤1.5 m bicycle lane with no buffer	≤1.5 m bicycle lane and no buffer Bicycle treatment
E	Paved shoulder or no sidewalk provision	Paved shoulder or no sidewalk provision No pedestrian signal head No clearly delineated cross-walk	Shared facilities (e.g. signed routes, sharrows or paved shoulder with minimum 1.2 m in constrained area)	Shared facilities (e.g. signed routes, sharrows or paved shoulder with minimum 1.2 m in constrained area) No clearly delineated bicycle treatment
F	No sidewalk provision	No sidewalk provision No pedestrian signal head Not clearly delineated cross-walk	No bicycle provision	No bicycle provision

According to the York Region Transportation Mobility Plan Guidelines, the LOS Targets is C or better for Pedestrian LOS and Bicycle LOS.

3.6.2 PERFORMANCE ANALYSIS

Table 3.7 illustrates the corresponding Level of Services for the active transportation modes within the study area.

Table 3.7: Active Transportation Level of Service Criteria for the Subject Site

Intersection	Direction	Pedestrians		Bicycles	
		Segment	Intersection	Segment	Intersection
Bayview Avenue & Romfield Circuit / Willowbrook Road	Eastbound	B	B	E	F
	Westbound	B		E	
	Northbound	B		F	
	Southbound	B		F	
Bayview Avenue & Royal Orchard Boulevard	Eastbound	N/A	B	F	F
	Westbound	N/A		E	
	Northbound	B		F	
	Southbound	B		F	
Royal Orchard Boulevard (West) & Royal Orchard Boulevard (East)	Eastbound	C	C	E	E
	Westbound	C		E	
	Northbound	N/A		E	
	Southbound	N/A		E	
Bayview Avenue & Green Lane	Eastbound	B	B	E	F
	Westbound	N/A		N/A	
	Northbound	B		F	
	Southbound	B		F	
Bayview Avenue & John Street	Eastbound	C	C	E	F
	Westbound	C		F	
	Northbound	C		F	
	Southbound	C		F	

As noted in **Table 3.7**, the study area intersections meet the Region's target pedestrian LOS of C or better. However, due to the lack of bicycle facilities along Bayview Avenue and the limited shared facilities along other minor streets, the study area intersections do not meet the Region's target bicycle LOS of C or better under existing conditions.

It should be noted that the Pedestrian and Bicycle LOS are determined by Regional and Municipal right-of-way designs for each roadway.

4 FUTURE BACKGROUND TRAFFIC CONDITIONS

4.1 TIME FRAME

The horizon year for this traffic study is 2023, reflecting a five-year horizon as per the York Region Transportation Mobility Plan Guidelines.

4.2 PLANNED TRANSPORTATION NETWORK IMPROVEMENTS

A Class Environmental Assessment (Class EA) Study for Bayview Avenue from Steeles Avenue to Elgin Mills Road has been completed by York Region and WSP in August 2017. The Bayview Avenue Class EA states the goal of the study is to be "a transportation solution that addresses existing problems and opportunities in the Bayview Avenue corridor". Some key objectives of the EA are to enhance the streetscape and create a multi-modal environment along Bayview Avenue while supporting the planned Regional growth in population and employment. The recommended transportation improvements by the Bayview Class EA for the study area are to be completed as by the year 2026.

There are currently no planned roadway improvements per the Region's "2018 10-Year Roads and Transit Capital Construction Program" for the study area intersections.

Therefore, as directed by the Region, no transportation improvements have been considered for the purposes of this traffic study.

4.3 BACKGROUND CORRIDOR TRAFFIC GROWTH

Available historical annual average daily traffic (AADT) volumes from year 2008 to 2012 along Bayview Avenue and John Street were reviewed to determine an appropriate growth rate for future scenarios. The volumes are detailed in **Tables 4.1** and **4.2**.

Table 4.1: Bayview Avenue AADT Volumes

Data Year	AADT
2008	40,022
2009	37,871
2010	40,077
2012	40,312

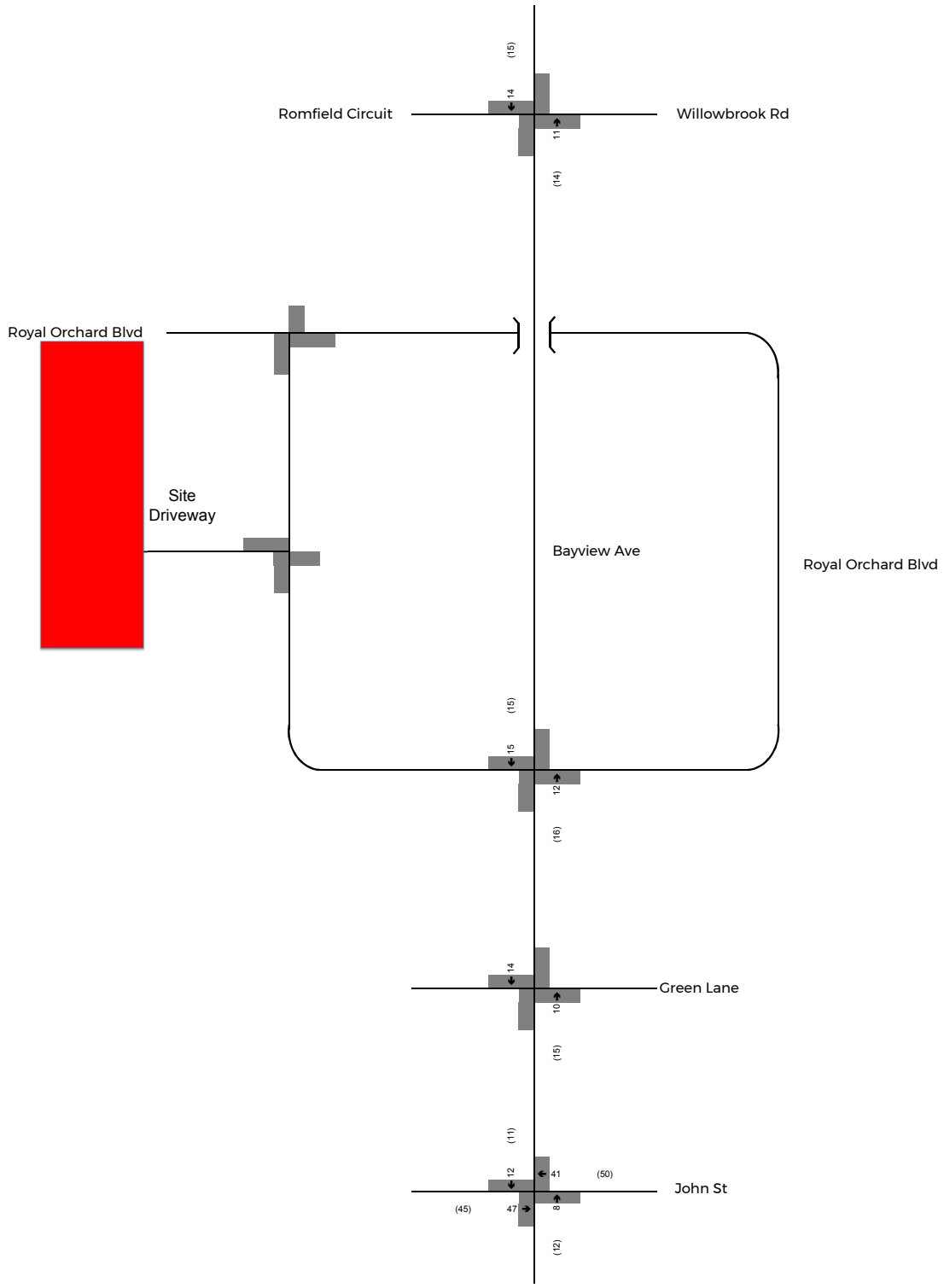
Table 4.2: John Street AADT Volumes

Data Year	AADT
2008	22,073
2009	22,514
2010	22,964
2011	19,452

As a conservative approach, AADT volumes for year 2009 for Bayview Avenue and year 2011 for John Street were excluded from the analysis as they were found to be outliers. Regression analysis was completed using this AADT data and resulted in linear average growth rates of 0.2% per annum along Bayview Avenue and 2% per annum along John Street. The growth rates were applied to through traffic volumes only. **Figure 4.1** illustrates the background through traffic growth in the road network over a 5-year horizon.

4.4 TRAFFIC INCREASES RELATED TO OTHER DEVELOPMENTS

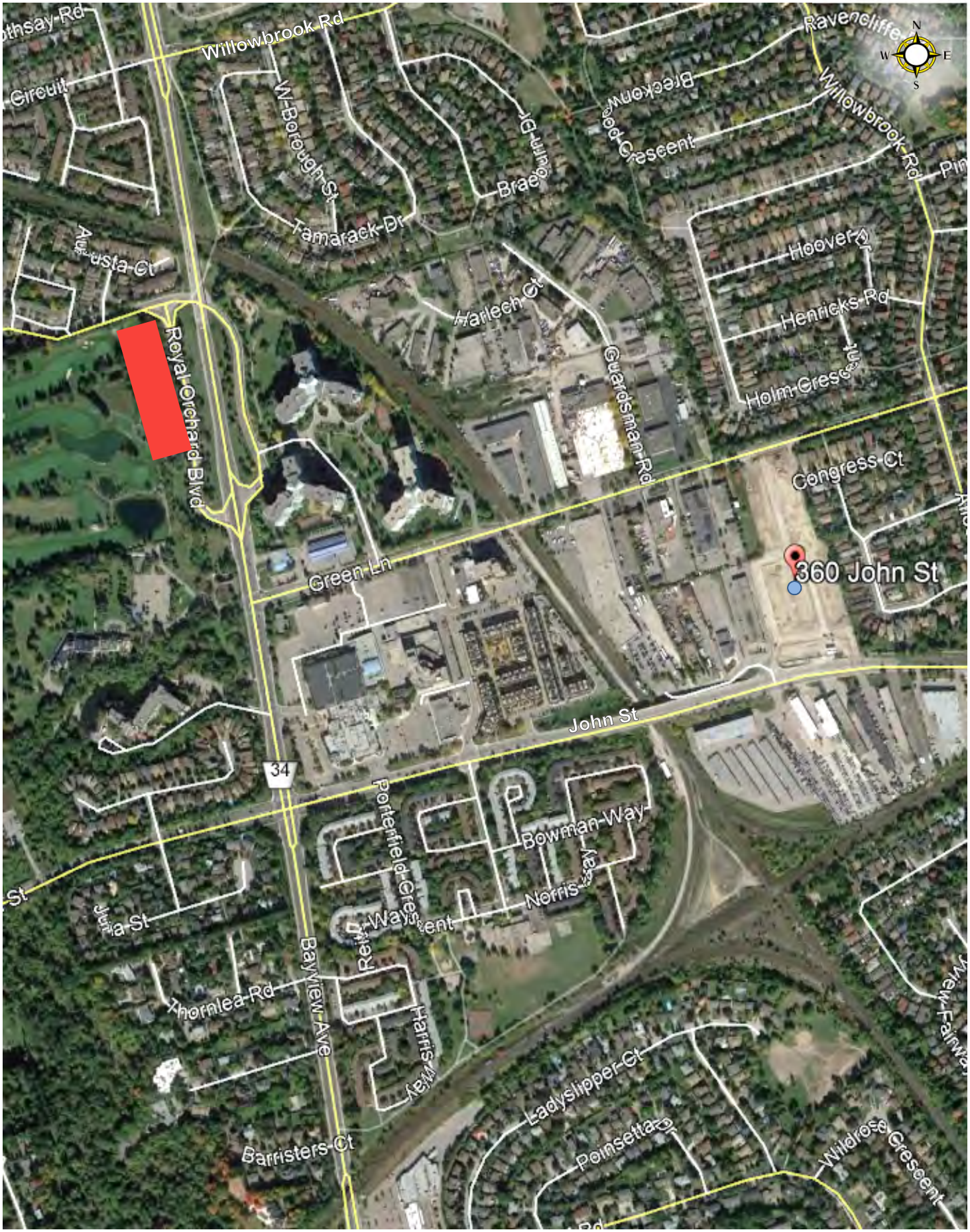
One background development was identified within the vicinity of the study area. The development is located on 360 John Street, the site plan has been approved for 101 townhouse units on June 29th 2016. **Figure 4.2** illustrates the location of the above-noted background developments.



xx A.M. Peak Hour Traffic Volumes
(xx) P.M. Peak Hour Traffic Volumes

Subject Site

Figure 4.1
5 Year Background Traffic Growth



Subject Site

Background Development Location

Figure 4.2

Future Background Development Location

4.4.1 360 JOHN STREET

As site statistic related site traffic information are currently unavailable from the City, the trip generation and distribution were developed based on "101 townhouse units facing John Street", as stated in a City of Markham memorandum published July 20, 2016.

The trips generated by the background development were estimated using the trip generation rates outlined in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition, with adjustments reflecting local modal split characteristics outlined in Section 3.2.

The trip rates utilized in this analysis are detailed in **Table 4.3**. The total vehicle trips generated are illustrated in **Table 4.4**. The non-auto trip reductions are generated based on the modal split data presented in Table 3.1**.**

Table 4.3: Background Trip Generation Rates

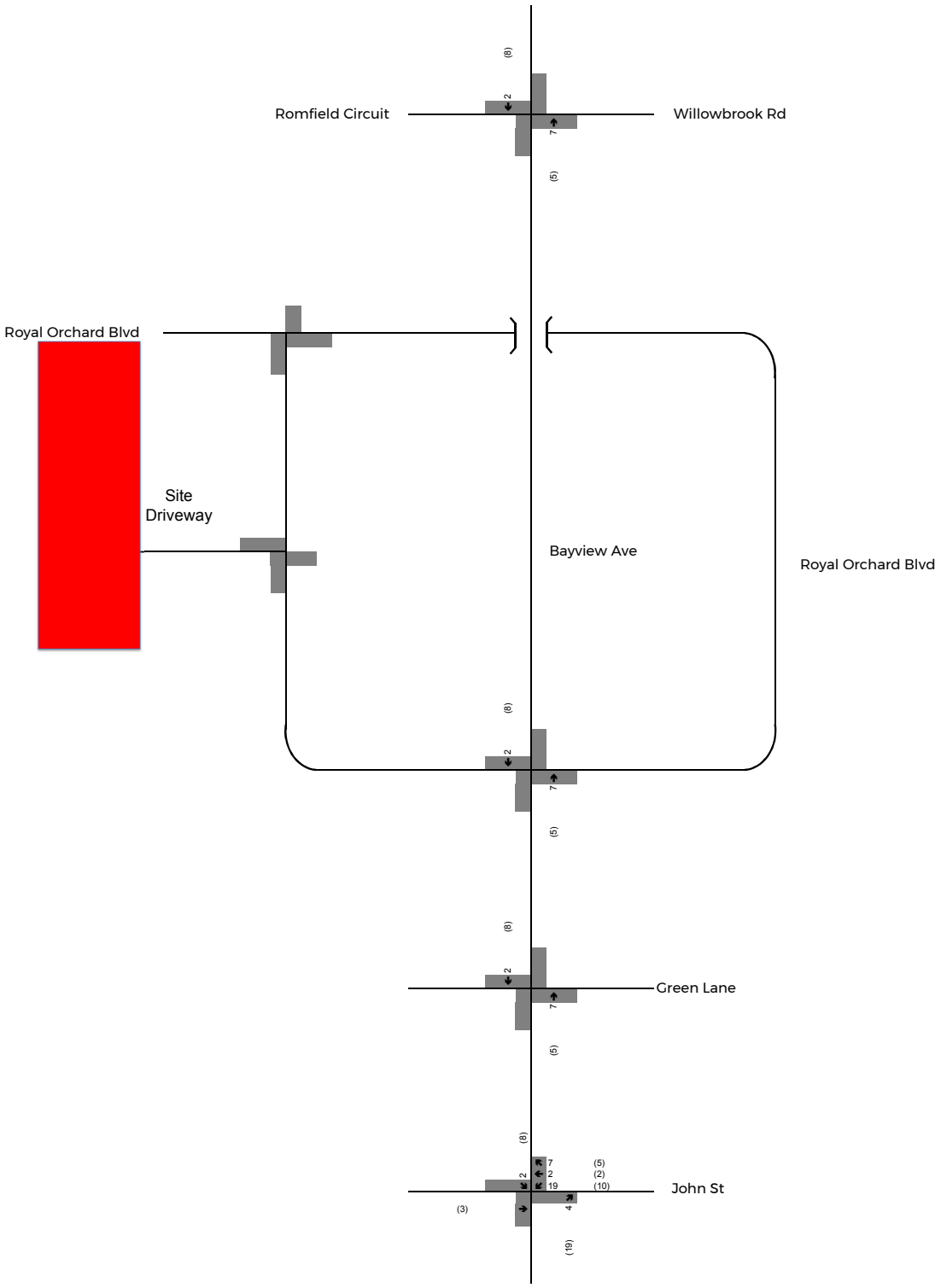
Land Use	Rate / Equation			
	A.M. Inbound	A.M. Outbound	P.M. Inbound	P.M. Outbound
ITE Land Use 230 - Residential Condominium / Townhouse (101 units)	T = 0.44X X = # of Units		T = 0.52X X = # of Units	
	17%	83%	67%	33%

Table 4.4: Background Site Generated Trips

Land Use	Basis/Parameter	Vehicle Trips			
		Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
		Inbound	Outbound	Inbound	Outbound
Residential Condominium / Townhouse (101 units)	ITE Land Use 230 (Residential Condominium / Townhouse)	8	37	35	17
	Non-Auto Trip Reduction	(1)	(6)	(3)	(1)
	Total Site Trips	**7**	**31**	**32**	**16**

A total of 7 inbound and 31 outbound trips are expected to be generated during the A.M. peak hour. 32 inbound and 16 outbound trips are expected to be generated during the P.M. peak hour.

The resulting trips were assigned to the traffic network using the methodology outlined in Section 5.2. The trips associated with the 360 John Street development are illustrated in **Figure 4.3**. For further details regarding this background development, please see **Appendix F**.



xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

Subject Site

Figure 4.3
360 John Street Generated Traffic Volumes

4.5 2023 BACKGROUND TRAFFIC OPERATIONS

4.5.1 PERFORMANCE ANALYSIS

The future background traffic volumes were developed by superimposing the background traffic growth and other development traffic onto the existing traffic volumes. The 2023 background traffic operations were analyzed on the basis of the future background traffic forecasts illustrated in **Figure 4.4**.

The resulting levels of service are outlined in **Table 4.5** with the details related to the intersection operations provided in **Appendix G**.

Table 4.5: 2023 Future Background Intersection Operations

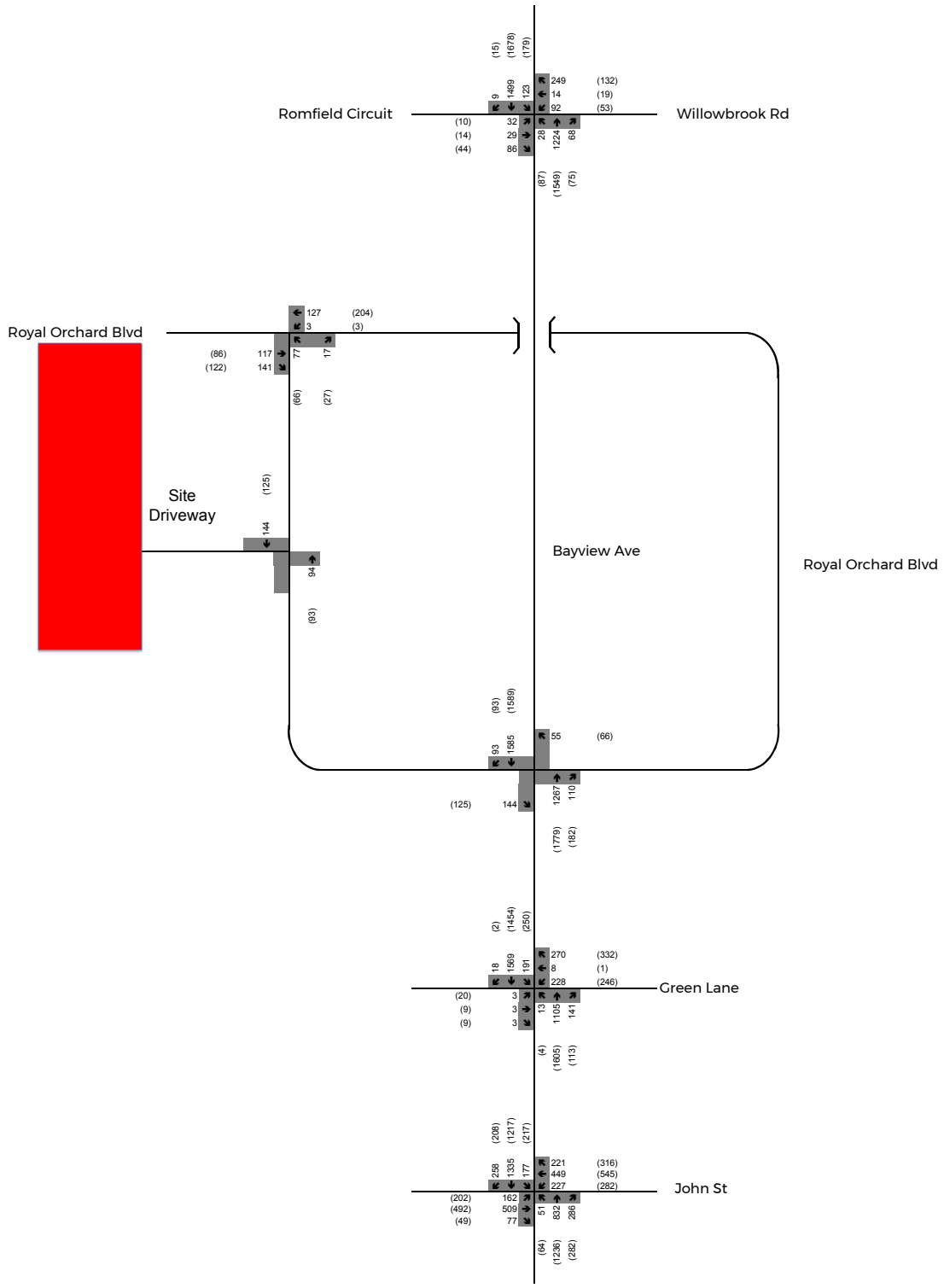
Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	LOS (Delay in Seconds)	Critical Movement Volume/ Capacity Ratio	LOS (Delay in Seconds)	Critical Movement Volume/ Capacity Ratio
Signalized Intersections				
Bayview Avenue at Romfield Circuit/Willowbrook Road	C (20)	--	B (18)	--
Bayview Avenue and Green Lane Unoptimized	C (24)	WBL (0.86)	C (31)	SBL (1.02)
Bayview Avenue and Green Lane PM Optimized (Splits only)	-	-	C (30)	WBL (0.87)
Bayview Avenue and John Street Unoptimized	D (49)	EBL (1.03) WBL (1.01) WBT (0.94) SBT (0.94)	D (52)	EBL (0.95) WBL (0.97) WBT (1.02) NBT (0.87) SBL (0.93)
Bayview Avenue and John Street Optimized (Splits only)	D (49)	EBL (0.98) WBL (0.96) WBT (0.97) SBT (0.94)	D (52)	EBL (0.97) WBL (0.95) WBT (0.98) NBT (0.90) SBL (0.92)
Unsignalized Intersections				
Bayview Avenue and Royal Orchard Boulevard	C (25)	EBR (0.44)	C (24)	EBR (0.40)
Royal Orchard Boulevard East and Royal Orchard Boulevard West	A (9)	-	A (9)	-

1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for movements with values over 0.85.
2 For two-way stop controlled intersections, the level of service is based on the delay associated with the critical movement.
3 For all-way stop controlled intersections, the level of service is based on the overall intersection delay.

As can be seen in Table 4.5, under 2023 background conditions, all of the intersections are expected to operate under capacity and at an acceptable LOS 'D' or better based on delays during the weekday a.m. and p.m. with the exception of the signalized intersections of Bayview Avenue / John Street and Bayview Avenue / Green Lane.

The intersection of Bayview Avenue / Green Lane is expected to operate over-capacity for the southbound left turn movement in the p.m. peak hour. Therefore as a mitigation measure, signal timings have been optimized to improve roadway capacity.

The intersection of Bayview Avenue / John Street is expected to operate over-capacity in the a.m. and p.m. peak hours. Therefore as a mitigation measure, signal timings have been optimized to improve roadway capacity for this intersection. It should be noted that the intersection of Bayview Avenue and John Street is expected to approach capacity within the five year horizon. Therefore, it is recommended that this intersection continue to be monitored for further roadway capacity improvements, such as the various proposed plans outlined in the Bayview EA.



xx A.M. Peak Hour Traffic Volumes
(xx) P.M. Peak Hour Traffic Volumes

Subject Site

Figure 4.4
2023 Future Background Traffic Volumes

4.6 PUBLIC TRANSIT

4.6.1 PERFORMANCE ANALYSIS

As there is no planned change or modification to public transit access relating to future background developments, the future background Transit Level of Service (LOS) is assumed to be the same as existing Transit LOS for the Access to Transit Stops and Transit Headways. However, as the traffic volumes would increase due to background traffic growth and the background development, it is recognized that the intersection approach may change. The Transit Level of Service for the future background conditions is detailed in **Table 4.6**.

Table 4.6: 2023 Future Background Transit Level of Service

Transit Stop location	Direction	Access to Transit Stops LOS	Transit Headways LOS	Intersection Approach LOS
Bayview Avenue & Romfield Circuit / Willowbrook Road	Eastbound	D	E	D
	Westbound	D	E	D
	Northbound	D	E	A
	Southbound	D	E	B
Bayview Avenue & Royal Orchard Boulevard	Eastbound	D	E	C
	Westbound	-	-	-
	Northbound	-	-	-
	Southbound	-	-	-
Royal Orchard Boulevard (West) & Royal Orchard Boulevard (East)	Eastbound	A	E	A
	Westbound	A	E	A
	Northbound	-	-	-
	Southbound	-	-	-
Bayview Avenue & Green Lane	Eastbound	-	-	-
	Westbound	-	-	-
	Northbound	D	E	B
	Southbound	D	E	B
Bayview Avenue & John Street	Eastbound (Bus Lay-by)	E	E	D
	Westbound (Bus Lay-by)	E	E	D
	Northbound (Bus Lay-by)	E	E	C
	Southbound (Bus Lay-by)	E	E	C

Overall, the transit LOS at the study area intersections do not meet the Region's target LOS of C or better for Access to Transit stops and Transit Headways. However, the intersections would meet the target LOS of D or better for Intersection Approaches for the future background condition. It should be noted that the Access to Transit and Transit Headways LOS are determined solely by YRT transit planning.

4.7 ACTIVE TRANSPORTATION INFRASTRUCTURE

As there are no planned modifications or improvements to active transportation infrastructure (sidewalks, bicycle pathways, etc.) for the future 2023 horizon year, the future background Active Transportation Level of Service (LOS) is assumed to be the same as existing Active Transportation LOS.

5 SITE GENERATED TRAFFIC

5.1 TRIP GENERATION

The vehicle trips generated by the proposed development during the weekday a.m. and p.m. peak hours were estimated using the trip generation rates outlined in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition, with adjustments to reflect local model split characteristics as shown in Table 3.1. The rates and directional split percentages used in this analysis are detailed in **Table 5.1**. The total vehicle trips generated are illustrated in **Table 5.2**, and the total person trips generated are shown in **Table 5.3**. The person trips generated are based on the modal split data presented in Table 3.1.

Table 5.1: Trip Generation Rates

Land Use	ITE Average Trip Generation Rate			
	A.M. Inbound	A.M. Outbound	P.M. Inbound	P.M. Outbound
Condominium and Townhouse Developments (230)	0.44 per Unit		0.52 per Unit	
	17%	83%	67%	33%

Table 5.2: Site Generated Vehicle Trips

Land Use	Basis/Parameter	Vehicle Trips			
		Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
		Inbound	Outbound	Inbound	Outbound
Condominium Development (192 Units)	ITE Land Use 230	14	70	67	33
	Non-Auto Trip Reduction	(1)	(12)	(5)	(2)
Total		**13**	**58**	**62**	**31**

As shown in Table 5.2, the proposed development is expected to generate 13 inbound auto trips and 58 outbound auto trips during the a.m. peak hour and 62 inbound auto trips and 31 outbound auto trips during the p.m. peak hour.

Table 5.3: Site Generated Person Trips

Parameter	A.M. Peak Hour		P.M. Peak Hour	
	Inbound	**Outbound**	**Inbound**	**Outbound**
ITE Vehicle Trips	14	70	67	33
Total Person Trips	17	83	78	38
Auto Vehicle Trips	15	69	71	36
Transit Person Trips	1	11	3	2
Active Person Trips	1	4	4	0

5.2 TRIP DISTRIBUTION

The 2011 Transportation Tomorrow Survey (TTS) findings and convenience of routings were reviewed to determine site traffic distribution and assignments for the proposed development. **Table 5.4** outlines the general trip distribution. A detailed TTS query can be found in **Appendix H**.

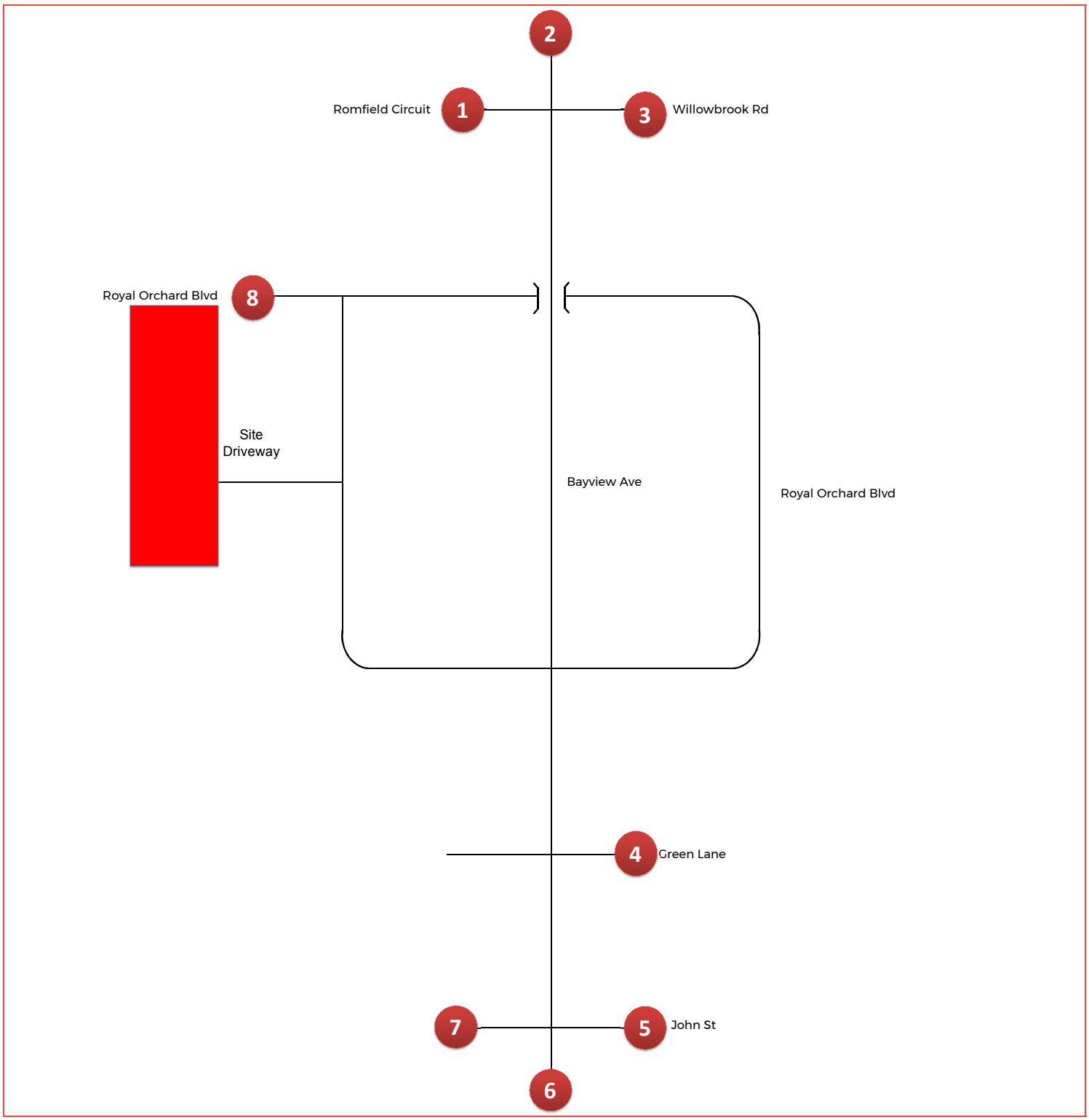
Table 5.4: Trip Distribution for the Study Area

Direction	A.M. Inbound	A.M. Outbound	P.M. Inbound	P.M. Outbound
Northwest	0%	4%	5%	12%
North	17%	6%	12%	23%
Northeast	6%	10%	6%	4%
East	5%	11%	11%	7%
Southeast	33%	13%	9%	3%
South	21%	28%	28%	25%
Southwest	10%	20%	20%	22%
West	8%	8%	9%	4%
Total	**100%**	**100%**	**100%**	**100%**

Based on the trip distribution from Table 5.4, supplemented by local information and factors such as site accesses, ease of turning movements, travel distances, quickest travel times, existing traffic congestion and delays, the auto trips were routed through the study road network, and its gateways to beyond the study area. Gateway locations can be found in **Figure 5.1** and the corresponding percentage splits are shown in **Table 5.5**. **Figure 5.2** illustrates the resulting traffic assignment to the boundary road network.

Table 5.5: Auto Trip Distribution

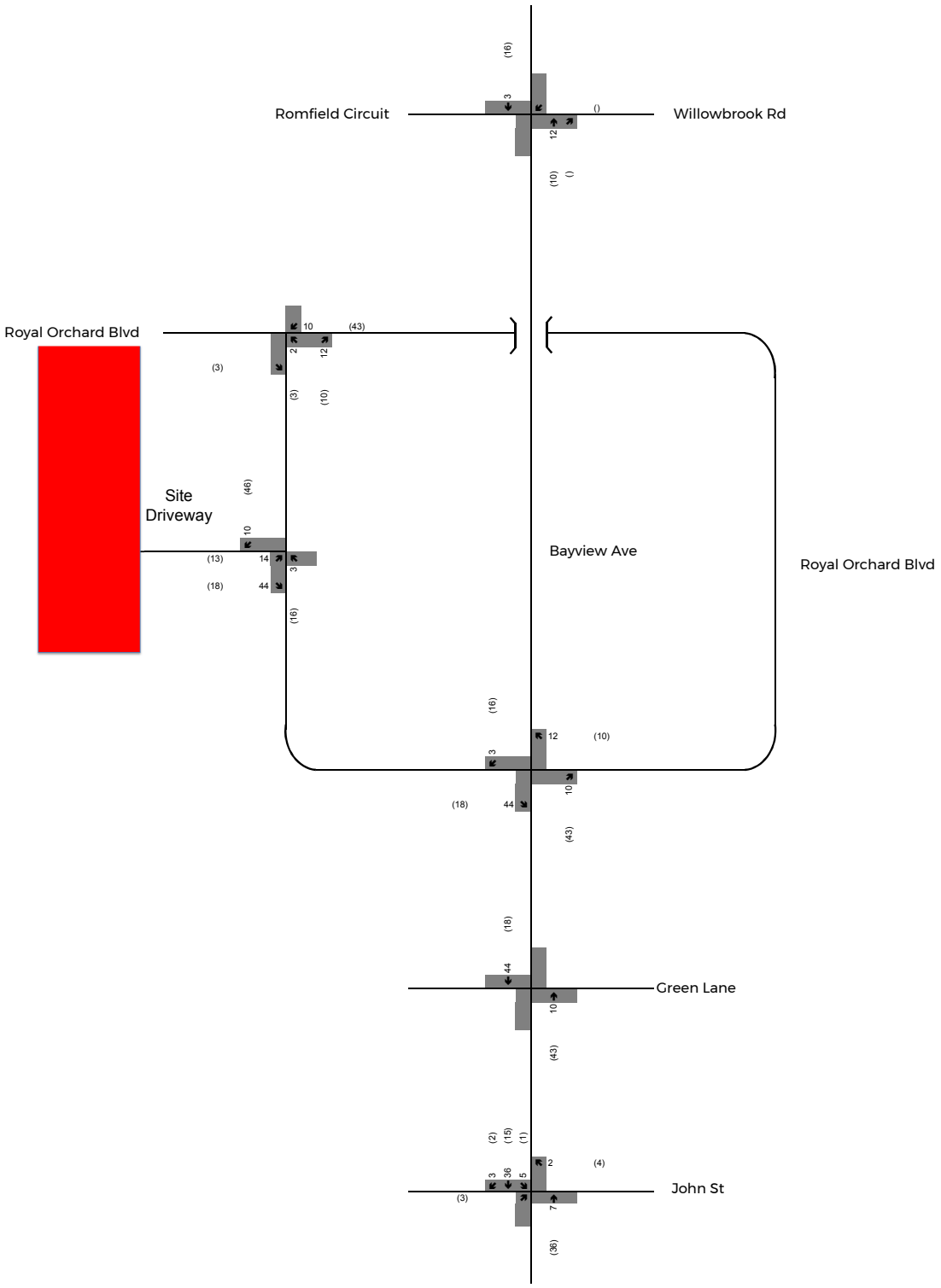
Gateway Number	Locations	AM IN	AM OUT	PM IN	PM OUT
1	**West via Romfield Circuit**	0%	0%	0%	0%
2	**North via Bayview Avenue**	23%	21%	25%	33%
3	**East via Willowbrook Road**	0%	0%	1%	1%
4	**East via Green Lane**	1%	1%	1%	0%
5	**East via John Street**	16%	9%	6%	4%
6	**South via Bayview Avenue**	54%	61%	58%	49%
7	**West via John Street**	3%	5%	5%	5%
8	**West via Royal Orchard boulevard**	3%	3%	4%	8%
Total		**100%**	**100%**	**100%**	**100%**



X Gateway Number

Subject Site

Figure 5.1
2023 Total Future Traffic Forecasts



xx A.M. Peak Hour Traffic Volumes
(xx) P.M. Peak Hour Traffic Volumes

Subject Site

Figure 5.2
Site Generated Trips

6 TOTAL FUTURE TRAFFIC CONDITIONS

6.1 BASIS OF ASSESSMENT

The total future traffic conditions were estimated by superimposing the site generated traffic volumes illustrated in Figure 5.2 onto the future background traffic volumes illustrated in Figure 4.4.

6.2 2023 TOTAL TRAFFIC OPERATIONS

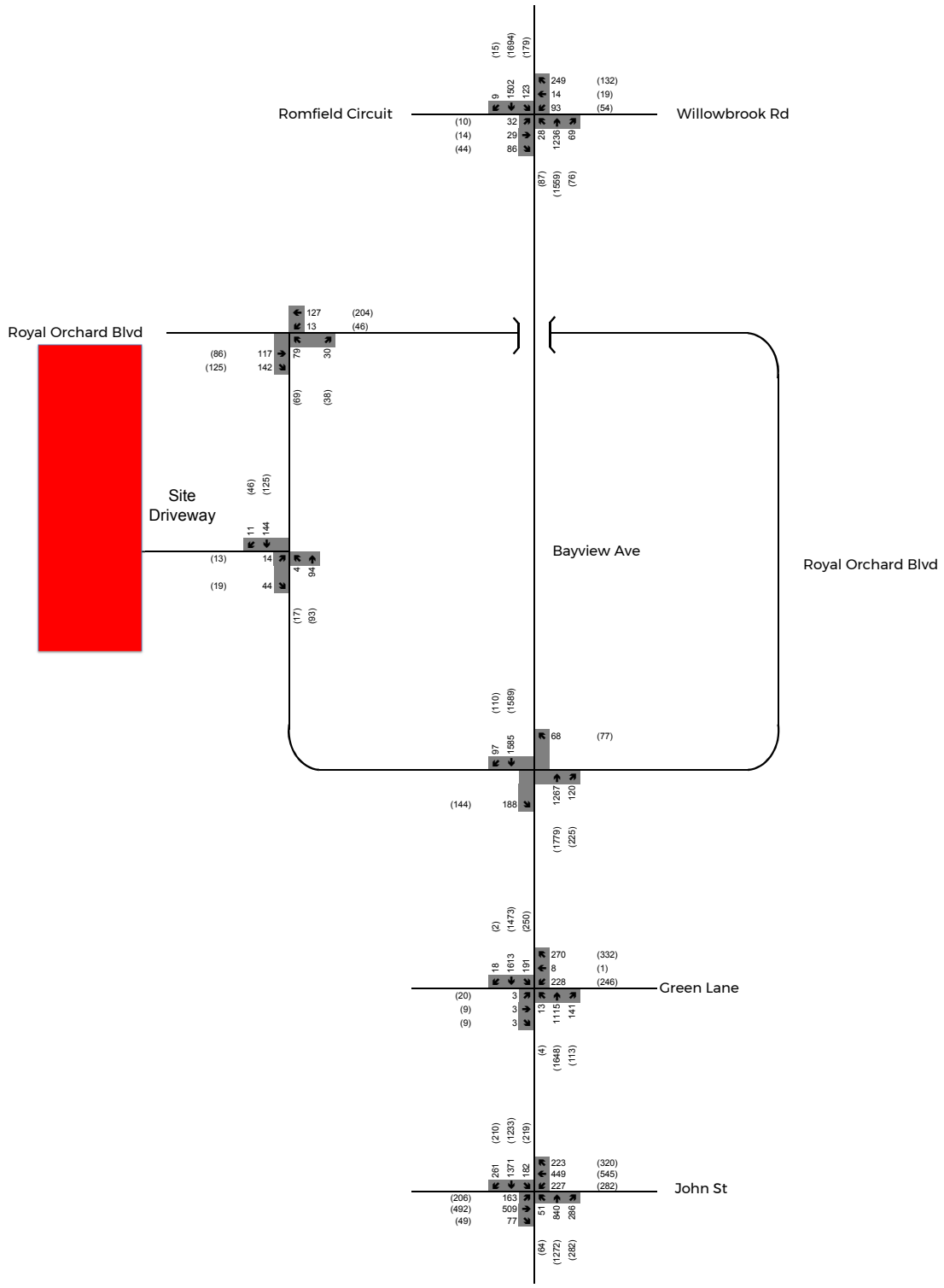
The resulting 2023 total future traffic forecasts are illustrated in **Figure 6.1**. The 2023 total future traffic operations at the study intersections were analyzed on the basis of the total future traffic forecasts. The analysis applies the same optimized signal timings as the future background analysis, where optimization was done. It should be noted that only signal timing splits have been modified; the existing cycle lengths are unchanged. The resulting levels of service are outlined in **Table 6.1**. Detailed Synchro worksheets are available in **Appendix I**.

Table 6.1: Total Future Intersection Operations

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	LOS (Delay in Seconds)	Critical Movement Volume/ Capacity Ratio	LOS (Delay in Seconds)	Critical Movement Volume/ Capacity Ratio
Signalized Intersections				
Bayview Avenue at Romfield Circuit/Willowbrook Road	C (20)	--	B (18)	--
Bayview Avenue and Green Lane	C (25)	WBL (0.86)	C (31)	WBL (0.87) NBT (0.85)
Bayview Avenue and John Street	D (50)	EBL (0.98) WBL (0.96) WBT (0.97) SBT (0.96)	D (53)	EBL (0.99) WBL (0.95) WBT (0.98) NBT (0.92) SBL (0.93)
Unsignalized Intersections				
Bayview Avenue and Royal Orchard Boulevard	D (30)	EBR (0.44)	D (26)	EBR (0.46)
Royal Orchard Boulevard East and Royal Orchard Boulevard West	A (10)	-	A (9)	-
Royal Orchard Boulevard and Site Access	A (10)	EBLR (0.08)	A (10)	EBLR (0.04)

1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for movements with values over 0.85.
2 For two-way stop controlled intersections, the level of service is based on the delay associated with the critical movement.
3 For all-way stop controlled intersections, the level of service is based on the overall intersection delay.

As can be seen in Table 6.1, during 2023 future total conditions, all of the intersections are expected to continue operating at the similar levels of service with similar delays and v/c ratios when compared to 2023 background conditions. Therefore, the subject site is expected to have a minimal impact on the surrounding traffic network.



xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

Subject Site

Figure 6.1
2023 Total Future Traffic Forecasts

6.3 PUBLIC TRANSIT

6.3.1 PERFORMANCE ANALYSIS

Since the subject development would not affect transit stops or existing transit headways, the Area to Transit Stops LOS and Transit Headways LOS stay the same as existing conditions. However, the Intersection Approach LOS is affected by site generated traffic. The corresponding Transit Level of Service is detailed in **Table 6.2**:

Table 6.2: 2023 Future Total Transit Level of Service

Transit Stop location	Direction	Access to Transit Stops LOS	Transit Headways LOS	Intersection Approach LOS
Bayview Avenue & Romfield Circuit / Willowbrook Road	Eastbound	D	E	D
	Westbound	D	E	D
	Northbound	D	E	A
	Southbound	D	E	B
Bayview Avenue & Royal Orchard Boulevard	Eastbound	D	E	C
	Westbound	-	-	-
	Northbound	-	-	-
	Southbound	-	-	-
Royal Orchard Boulevard (West) & Royal Orchard Boulevard (East)	Eastbound	A	E	A
	Westbound	A	E	A
	Northbound	-	-	-
	Southbound	-	-	-
Bayview Avenue & Green Lane	Eastbound	-	-	-
	Westbound	-	-	-
	Northbound	D	E	B
	Southbound	D	E	B
Bayview Avenue & John Street	Eastbound (Bus Lay-by)	E	E	D
	Westbound (Bus Lay-by)	E	E	D
	Northbound (Bus Lay-by)	E	E	C
	Southbound (Bus Lay-by)	E	E	C

Overall, the transit LOS at the study area intersections do not meet the Region's target LOS of C or better for Access to Transit stops and Transit Headways. However, the intersections would meet the target LOS of D or better for Intersection Approaches for the future total condition. It should be noted that the Access to Transit and Transit Headways LOS are determined solely by YRT transit planning and are beyond the scope of this study.

6.4 FUTURE TOTAL ACTIVE TRANSPORTATION LEVEL OF SERVICE

With no planned change or modification to active transportation infrastructure (sidewalks, bicycle pathways, etc.) relating to future total conditions, the future total active transportation level of service (LOS) is the same as existing active transportation LOS. Table 3.6 summarizes the level of service criteria for the active transportation mode and Table 3.7 illustrates the corresponding Level of Services for the active transportation modes within the study area.

7 SITE CIRCULATION AND LOADING

The proposed site plan was reviewed to ensure adequate maneuverability throughout the site. Swept path analyses were completed using the AutoTURN 10 software package. The vehicles used for the AutoTURN analyses were a combination of Transportation Association of Canada (TAC) vehicle templates and a custom garbage truck representation of a City of Markham front loading garbage truck. The dimensions of the vehicles are illustrated on the attached figures.

7.1 LOADING

The maneuvers for a typical City of Markham front-loading garbage truck is demonstrated in **Figure 7.1**.This demonstrates a forward-in and reverse-out maneuver of the garbage truck in/out of the loading area.

The maneuvers for a Heavy Single-Unit (HSU) delivery truck is demonstrated in **Figure 7.2**. This demonstrates a reverse-in and forward-out maneuver of a typical HSU truck in/out of the loading area.

The assessment confirms that the anticipated loading manoeuvres can be accommodated on the proposed site plan.

7.2 GROUND FLOOR CIRCULATION

The vehicular circulation for the proposed pick-up / drop-off area is provided in **Figure 7.3**. The vehicular circulation in and out of the underground parking garage ramp is provided in **Figure 7.4**. The assessment confirms that the anticipated auto circulation can be accommodated on the proposed site plan.

IN

Drop-off

178.15

174.76

177.93

ø0.30

ø0.45

INTAKE AIR SHAFT

175.39

Markham GAR Town of Markham

177.72

177.52

ø0.30

176.09

ø0.25

NGT. FICE

Guest

Guest

Moving Bldg A

Resid. #1

Resid. #2

Moving Bldg B & Waste Handling

Service #1

Loading

Suite

Suite

OUT

GT. ICE

Guest

Guest

Moving Bldg A

Resid. #1

Resid. #2

Service #1

Moving Bldg B & Waste Handling

Loading

Suite

Suite

177.93

INTAKE AIR SHAFT

ø0.45

175.39

Markham GAR Town of Markham

177.72

MLS

177.52

ø0.30

Markham GAR Town of Markham

176.09

4580

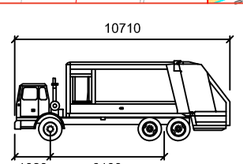
ø0.25

177.09

CB

ø0.35

CB



Markham GAR

	mm
Width	: 2560
Track	: 2560
Lock to Lock Time	: 6.0
Steering Angle	: 24.9

FIGURE 7.1

Markham Garbage Truck IN/OUT

Scale: 1:250

IN

Drop-off

178.15

174.76

177.93

ø0.30

ø0.45

INTAKE AIR SHAFT

HSU TAC-2017 (CA)

GT. ICE

Guest

Guest

Moving Bldg A

Moving Bldg B & Waste Handling

Resid. #1

Resid. #2

Service #1

175.39

177.72

MLS

Loading

177.52

Suite

OUT

177.93

GT. ICE

Guest

Guest

Moving Bldg A

Moving Bldg B & Waste Handling

Resid. #1

Resid. #2

Service #1

INTAKE AIR SHAFT

175.39

177.72

MLS

177.52

Loading

Suite

Suite

Suite

176.09

4580

ø0.45

ø0.30

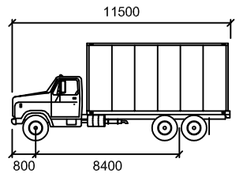
ø0.25

ø0.35

177.09

CB

CB



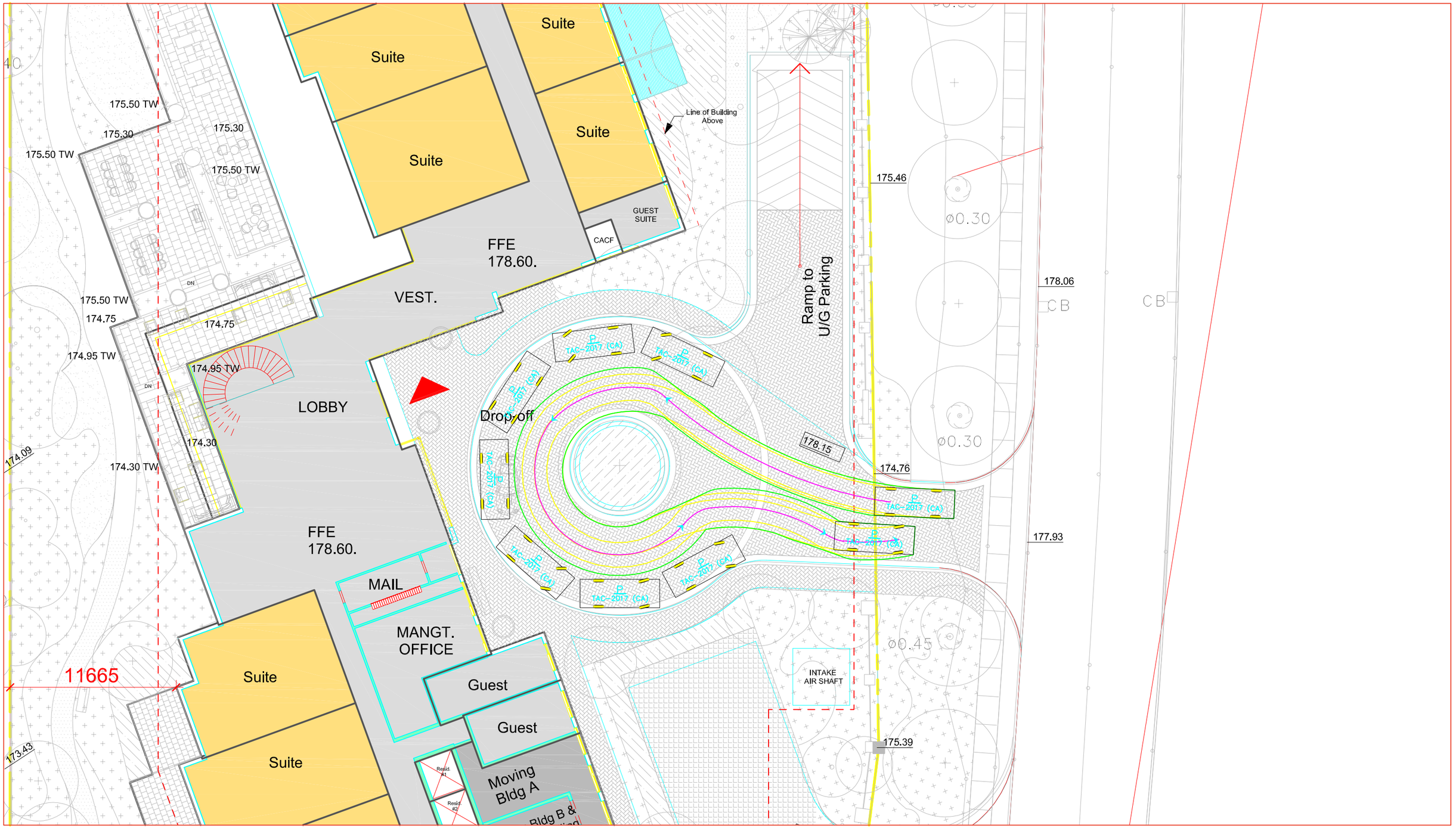
HSU

	mm
Width	: 2600
Track	: 2600
Lock to Lock Time	: 6.0
Steering Angle	: 40.0

FIGURE 7.2

HSU Truck IN/OUT

Scale: 1:250



5600

1100 3200

Passenger Vehicle

	mm
Width	: 2000
Track	: 2000
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

FIGURE 7.3

PTAC Drop-off Circulation

Scale: 1:250

Suite
Suite
Suite
Suite
Line of Building Above
GUEST SUITE
CACF
FFE 178.60.
VEST.
LOBBY
Drop-off
Ramp to U/G Parking
MAIL
MANGT. OFFICE
Guest
Guest
Suite
Suite
Moving Bldg A
Bldg B &
Resid. #1
Resid. #2
INTAKE AIR SHAFT
CB
CB
DN
DN
175.50 TW
175.30
175.30
175.50 TW
175.50 TW
175.50 TW
174.75
174.75
174.95 TW
174.95 TW
174.30
174.30 TW
174.09
173.43
11665
175.46
178.06
178.15
174.76
177.93
175.39
Ø0.30
Ø0.30
Ø0.45
TAC-2017 (CA)
TAC-2017 (CA)
TAC-2017 (CA)
TAC-2017 (CA)

5600
1100 3200

Passenger Vehicle

	mm
Width	: 2000
Track	: 2000
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

FIGURE 7.4

PTAC Access/Egress Circulation

Scale: 1:250

7.3 PARKING

7.3.1 ZONING BY-LAW 28-97 REQUIREMENTS

The subject site is located within the City of Markham and is therefore subject to the City of Markham's Zoning By-law 28-97. Based on the Zoning By-law, the subject site is to be considered as a "Multiple Dwelling" and would therefore require 1.25 parking spaces per dwelling unit for residential use and an additional 0.25 parking spaces per unit for visitor parking. **Table 7.1** outlines the applicable parking requirement and proposed parking supply.

Table 7.1 Parking Requirements based on Zoning By-law 28-97

Land Use	Zoning By-law Parking Rate	Parking Spaces Required	Parking Spaces Provided	Surplus/Deficiet
192 Condominium (Multiple Dwelling) Units	1.25 Residential Parking Spaces/ Unit	240	367	+79
	0.25 Visitor Parking Spaces / Unit	48		

Based on Zoning By-law 28-97, the subject site is required to provide 240 resident parking spaces and 48 visitor parking spaces. The subject site is proposing to provide a total of 367 parking spaces resulting in a surplus 79 spaces.

8 TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) is a general concept that includes various strategies that increase transportation system efficiency by managing the demand for travel. TDM treats mobility as a means to an end, rather than an end in itself, and emphasizes the movement of people and goods rather than motor vehicles. Generally speaking, TDM initiatives discourage single-occupant vehicle travel and encourage more efficient modes such as walking, cycling, ridesharing, public transit and teleworking, particularly under congested conditions. In the context of an already congested road network, TDM elements are an essential part of any progressive transportation and traffic plan for a proposed development.

The objective of the proposed TDM strategy is to inform, encourage and facilitate the utilization of the non-automobile travel opportunities within the study area. In order to achieve this, it is recommended that the marketing strategy for the proposed residential component highlight key characteristics based on the below items via knowledgeable sales staff and visually attractive information packages to ensure that residents and tenants are well aware of the various opportunities and incentives available to them, so as maximize the success of these TDM strategies and minimize the need for automobile use.

Two major categories of TDM measures are described herein. The first are soft measures, which involve the utilization of technology or encourage the use of existing information technology infrastructure and networks to reduce travel demand or divert them towards non-auto alternatives. The second category of measures are hard measures, requiring the implementation of physical infrastructures, such as cycling facilities or walkways.

8.1 TDM INITIATIVES

8.1.1 ON SITE MOBILITY APLTERNATIVES INFORMATION

It is important that information regarding available transit, cycling, trails and other walking facilities and connections be properly conveyed from the Region and City to residents. The owner is to contact the Region, who will in turn work with York Region Transit (YRT) to prepare information packages for the Owner to distribute. These information packages should contain information the following information:

- York Region Transit Map;
- Bus Schedules of nearby transit routes;
- “Going to school? Go Active!” information pamphlet;
- York Region cycling map; and,
- Direction to other information available on the Region’s and City’s websites.

The distribution of these information packages is to take place at the time of purchase in the developer showroom. The information provided within and provision of the information packages are subject to the Region’s discretion. The estimated cost for the Region to prepare the information packages would be $500.

Additionally, it is recommended that real-time information be made available to residents at the lobby of the condominium building. This would be provided through a television screen and displayed during weekday peak hours. The provision of this television would be the responsibility of the owner of the site.

8.1.2 TDM OUTREACH EVENT

It is recommended that the Owner host a TDM event which would operate as both a welcome event and as an opportunity for the Region, City and YRT staff to promote sustainable modes of transportation and encourage engagement and participation through presentations and Q/A sessions. As there is amenity space provided within the site, the TDM event could be held at this location. The exact time and location of the TDM event should be provided along with the information packages at the time of unit purchase. It is recommended that the TDM event be held when the site reaches a minimum residential occupancy of 50%.

The estimated cost of preparing the TDM event would be $1,000 to be borne by the Owner.

8.1.3 TRANSIT INCENTIVES

Commuters often decide on their mode choice based on a number of variables with the two most influential factors being travel time and cost. It is recommended that the Region provide pre-loaded PRESTO cards as a monetary incentive for first-time homebuyers to use public transit. Given the multitude of available transit facilities and the ability to use PRESTO cards on all GTA transit systems; tenants would have the opportunity to adopt a transit dependent life-style. Distribution of the pre-loaded PRESTO cards would be undertaken by the Region's representative and would take place at the TDM event to be held by the Owner. The pre-loaded PRESTO cards would contain approximately $75 and would be prepared by the Region and York Region Transit (YRT). The exact value and provision of the pre-loaded PRESTO cards are subject to the Region's discretion.

8.1.4 MONITORING PROGRAM

To evaluate the success of or the need for improvements to the proposed TDM measures, it is recommended that a monitoring program be put in place by the Region in collaboration with the Owner. The Region would prepare travel surveys which are to be distributed by the Owner. The first travel survey is to be conducted at the time of house closing to establish a baseline, and the following surveys are to be conducted on a biennial basis. The details and provision of a monitoring program is subject to the Region's discretion. The estimated cost of the TDM monitoring program would be $1,000.

8.2 TDM CHECKLIST

The TDM Checklist outlined in the York Region Transportation Mobility Plan Guidelines has been assessed along with the TDM recommendations made by WSP. The proposed TDM measures for the development as well as their associated costs are provided in **Table 8.1**.

Table 8.1 TDM Measures and Cost

TDM MEASURE	REQUIREMENT	RESPONSIBILITY	PROPOSED APPROACH	ESTIMATED COST
Transit Incentives (i.e. PRESTO Cards)	Yes	York Region to consider	Recommended to be provided by the Region.	$14,400 (192 households x $75)
Information Packages	Yes	York Region to consider	The owner is to contact the Region to prepare information packages.	$500
Outreach programs	Yes	York Region to Consider	It is recommended that a TDM event be held by the Owner within the building's amenity space or at the nearby future community parks.	$1,000
Pedestrian connections	Yes	Applicant	TBD	
Cycling connections	Yes	Applicant	TBD	
Ped/cycling connections to transit facilities	Yes	Applicant	TBD	
Internal ped/cycling circulation	Yes	Applicant	TBD	
Active transportation network/fine grid	Yes	Applicant	TBD	
Bicycle parking/shelter	Only applies to condos	Applicant	TBD	
Bicycle repair station	As per local bylaw	Applicant/Municipality	Not applicable	
Bicycle parking	As per local bylaw	Applicant	TBD	
Benches/receptacles	Case by case	Applicant/Municipality	TBD	
Illumination of ped/cycling connections	Case by case	Applicant/Municipality	Street lighting to be consistent with Town's Standard Engineering Drawings for *Streetlighting and Electrical standards* as well as Design Criteria and other current related documents such as Ontario Provincial Standards Drawings/Ontario Provincial Standards Specifications (Ontario Provincial Standards).	
Carpool parking	No	-	Not Applicable	

Car share	Only applies to condos	Applicant	TBD	
Shared-parking between land uses	Case by case		Not applicable	
Parking Reduction	Where appropriate		Not required	
Real time TV screen	Only applies to condos	Applicant	Recommend owner provide a TV screen in the building lobby displaying real-time transit information during weekday peak hours.	$200
Trip end facilities (i.e. showers)	No		Not applicable	
Membership with Smart Commute	Where appropriate	Applicant	Not applicable	
School travel planning	Where appropriate	Applicant/School Board/Municipality	Recommend residents contact York Region District and York Catholic District School Boards' Safe Routes to School Facilitator and York Region Public Health to participate in Active & Safe Routes to School Program.	
			Going to School? Go Active! Pamphlet to be included in information package	
Telecommute	No		Not applicable	
Monitoring program/report	Yes	York Region to consider	To be conducted as a baseline survey at the time of house closing and on a biennial basis.	$1,000
Total Estimated Cost				**$17,200**

9 CONCLUSIONS AND RECOMMENDATIONS

WSP Canada (WSP) was retained by 2526574 Ontario Limited to prepare a Transportation Mobility Plan for the proposed residential development to be constructed on a small portion (2 acres) of the eastern side of the Ladies Golf Club, on the southwest corner of Bayview Avenue and Royal Orchard Boulevard in the City of Markham. The proposal is for the construction of two residential buildings "A" and "B", consisting of 89 and 103 units respectively.

Intersection Operations

Intersection operations were analyzed on the basis of the roadway weekday a.m. and p.m. peak hours.

Under 2018 existing conditions, all the intersections are operating under capacity and at an acceptable LOS 'D' or better.

2023 future background traffic forecasts were developed based on existing traffic volumes, through traffic growth, and other area developments. No roadway or transit improvements have been included in the 2023 horizon. Under the 2023 background conditions, all of the intersections are expected to operate within capacity and at an acceptable LOS 'D' or better based on delays during the weekday a.m. and p.m., assuming signal timing optimization (splits only) at the intersections of Bayview Avenue/Green Lane and Bayview Avenue/John Street.

The proposed development is expected to generate 13 inbound auto trips and 58 outbound auto trips during the a.m. peak hour and 62 inbound auto trips and 31 outbound auto trips during the p.m. peak hour.

With the proposed development in place under the 2023 future total conditions, all of the intersections are expected to continue operating within capacity and at an acceptable LOS 'D' or better based on delay during the weekday a.m. and p.m. peak hours, with no further optimization of signal timings. The future total intersection levels of service are similar to the 2023 background conditions. Therefore, the subject site is expected to have a minimal impact on the surrounding traffic network.

Transit Level of Service

The subject site is served by York Region Transit bus services. Overall, the transit LOS at the study area intersections do not meet the Region's target LOS of C or better for Access to Transit stops and Transit Headways. However, the intersections meet the target LOS of D or better for Intersection Approaches under the existing, 2023 future background and future total conditions.

It should be noted that the Access to Transit and Transit Headways LOS are determined solely by YRT transit planning.

Pedestrian and Bicycle Level of Service

In terms of active transportation, the study area intersections meet the Region's target pedestrian LOS of C or better. However, due to the lack of bicycle facilities along Bayview Avenue and the limited shared facilities along other minor streets, the study area intersections do not meet the Region's target bicycle LOS of C or better under existing, 2023 future background and future total conditions.

It should be noted that the Pedestrian and Bicycle LOS are determined by Regional and Municipal right-of-way designs for each roadway.

Site Circulation, Loading, Parking

The proposed site plan was reviewed to ensure adequate maneuverability throughout the site. The assessment confirms that the anticipated loading manoeuvres (waste collection and delivery truck) can be accommodated

on the proposed site plan. The assessment also confirms that the anticipated auto circulation can be accommodated on the proposed site plan.

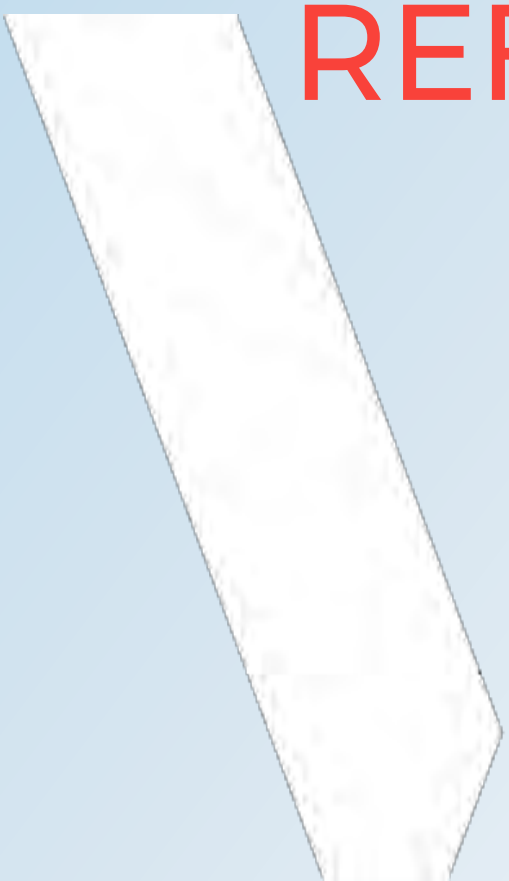
Based on Zoning By-law 28-97, the subject site is required to provide 240 resident parking spaces and 48 visitor parking spaces. A total of 367 parking spaces are proposed, resulting in a surplus of 79 spaces.

Transportation Demand Management

Transportation Demand Management (TDM) Plan has been developed for the site, to contribute to the overall transportation system efficiency by managing the demand for travel. The recommended TDM strategies discourage single-occupant vehicle travel and encourage more efficient modes such as walking, cycling, ridesharing and public transit. In the context of an already congested road network, TDM elements are an essential part of any progressive transportation and traffic plan for a proposed development.

APPENDIX

A TERMS OF REFERENCE



Proposed Residential Development at the Lades Golf Club, City of Markham, Ontario – Proposed TIS Work Program

1. Traffic Data Collection

We will undertake turning movement counts (TMCs) collection at the following intersections for typical weekday a.m. and p.m. peak periods:

- Bayview Avenue at Romfield Circuit/Willowbrook Road;
- Bayview Avenue at Royal Orchard Boulevard;
- Royal Orchard Boulevard (west) at Royal Orchard Boulevard (east);
- Bayview Avenue at Green Lane; and
- Bayview Avenue at John Street.

We will also obtain signal timing plans for the intersections that are signalized in the list above.

2. Traffic Operations

We will analyze the existing traffic conditions, as well as five-year horizon future background and total future traffic conditions at the above intersections. Future background volumes will be derived based on the general growth rate and background development information in the study area. We will request information on background developments from the City, as well as growth rate information from both the City or Region.

3. Site Generated Traffic

We will estimate the trip generation based on the trip rates outlined in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition, and apply modifications to the trip rates to reflect modal split adjustments based on the 2011 Transportation Tomorrow Survey (TTS) findings. We will also consider the proponent's proposed parking supply.

4. Trip Distribution and Assignment

We will distribute and assign the site generated traffic based on TTS data in conjunction with the existing traffic patterns.

5. Transportation Demand Management Plan

We will prepare a comprehensive Transportation Demand Management (TDM) strategy according to the nature of this project and our assessment of relevant policies, and will recommend applicable TDM measures.

6. Parking and Loading Study

We will review the City's Zoning By-law standards, and will consider the proposed TDM. Accordingly, we will provide commentary and recommendations. Similarly, we will also confirm loading space needed for this site.

7. Circulation

We will test the movements of passenger vehicles as well as fire, garbage, delivery and moving trucks throughout the site to determine if they can easily maneuver through the development.

From: Liu, Andrea <ALiu@markham.ca>
Sent: Tuesday, February 20, 2018 2:14 PM
To: Louie, Jacob
Cc: Wong, Ryan
Subject: RE: Ladies Golf Club Residential Development - TIS scope of work

Hi Jacob,

Thank you for your terms of reference submission. Our comments for the proposed traffic study scope are outlined below:

1. While it is generally recognized traffic growth along the local and collectors are likely due to developments within the immediate vicinity, a historic growth percentage should be reviewed for context. Furthermore, historic traffic growths should be considered for Bayview Avenue movements.

2. The report should include a Transit section to discuss the reductions in auto travel to the site to account for travel to/from the site by public transit. The appropriateness of transit modal split should be evaluated by examining actual modal split data (current and historic) and applying good engineering judgment.

3. Please include a section in the report to describe and comment on the internal pedestrian path connections and appropriate links among adjacent residential neighbourhoods, transit facilities, community amenity areas and parks.

4. Discussion on the proposed parking supply and parking management strategy should be included in the TDM.

The above comments are based on preliminary information. Additional scope may be required base on consultant's findings. Please contact me if you have any questions.

Regards,
Andrea

Andrea Liu, P.Eng. | Transportation Engineer | Engineering Department
City of Markham
101 Town Centre Boulevard, Markham, ON L3R 9W3
T: 905.477.7000 Ext. 3740
E: aliu@markham.ca

From: Lo, Henry
Sent: January 24, 2018 9:24 AM
To: Louie, Jacob <Jacob.Louie@wsp.com>
Cc: Liu, Andrea <ALiu@markham.ca>
Subject: RE: Ladies Golf Club Residential Development - TIS scope of work

Morning Jacob,

I have forwarded your emails to Andrea, who handles all the files within the West District. Please follow up with her regarding any other questions. She is also copied here.

Thanks,
Henry

T: 905.477.7000 Ext. 4030
E: henrylo@markham.ca

From: Louie, Jacob [mailto:Jacob.Louie@wsp.com]
Sent: Wednesday, January 24, 2018 9:10 AM
To: Wong, Ryan <Ryan.Wong@york.ca>; Lo, Henry <HenryLo@markham.ca>; Siu, Mark <MSiu@markham.ca>; Bui, Vi <Vi.Bui@york.ca>
Cc: Li, Josie <Josie.Li@wsp.com>; Bumstead, Greig <Greig.Bumstead@wsp.com>
Subject: RE: Ladies Golf Club Residential Development - TIS scope of work

Good morning!

I've attached a preliminary site plan.

Thanks

-Jacob

Jacob Louie.
Designer (EIT)
Transportation – Planning and Advisory Services

T +1 905-882-4211 x6339

100 Commerce Valley Drive West
Thornhill, Ontario L3T 0A1 Canada
LouieJ@mmm.ca

wsp.com

www.mmmgrouplimited.com | www.wspgroup.ca

Please consider the environment before printing...

From: Wong, Ryan [mailto:Ryan.Wong@york.ca]
Sent: Wednesday, January 24, 2018 8:43 AM
To: Louie, Jacob <Jacob.Louie@wsp.com>; henrylo@markham.ca; msiu@markham.ca; Bui, Vi <Vi.Bui@york.ca>
Cc: Li, Josie <Josie.Li@wsp.com>; Bumstead, Greig <Greig.Bumstead@wsp.com>
Subject: RE: Ladies Golf Club Residential Development - TIS scope of work

Good Morning Jacob,

Please include a preliminary site plan so that we can understand the proposed access arrangements.

Best Regards

From: Louie, Jacob [mailto:Jacob.Louie@wsp.com]
Sent: Tuesday, January 23, 2018 3:18 PM
To: henrylo@markham.ca; msiu@markham.ca; Wong, Ryan; Bui, Vi
Cc: Li, Josie; Bumstead, Greig
Subject: Ladies Golf Club Residential Development - TIS scope of work

Hi,

We are preparing a traffic impact study as required for a proposed residential development. The site is located northwest of the intersection of Royal Orchard Blvd and Bayview Ave, at the eastern end of the present-day Ladies Golf Club. Approximately 170 units are proposed. Please note that the site plan is still evolving and has not yet been finalized. I have attached our proposed scope of work for a TIS. Please provide comment at your earliest convenience.

Thanks. Please let me know if you need anything else from me.

-Jacob

Jacob Louie.
Designer (EIT)
Transportation – Planning and Advisory Services

T +1 905-882-4211 x6339

100 Commerce Valley Drive West
Thornhill, Ontario L3T 0A1 Canada
LouieJ@mmm.ca

wsp.com

www.mmmgrouplimited.com | www.wspgroup.ca

Please consider the environment before printing...

-LAEmHhHzdJzBlTWfa4Hgs7pbKI

From: Wong, Ryan <Ryan.Wong@york.ca>
Sent: Monday, March 05, 2018 4:04 PM
To: Bouslama, Nissrine
Cc: Li, Josie; Bumstead, Greig; Law, Jonathan; Andrea Liu (ALiu@markham.ca); Bui, Vi
Subject: RE: Ladies Golf Club Residential Development - TIS Background Developments

Hi Nissrine,

The Region's 2018-10 year Roads and Transit Capital Construction Program includes prioritized projects that can be achieved through the fiscal strategy. This Program is determined through the annual budget process which considers infrastructure needs and project recommendations identified in the Transportation Master Plan (TMP). The Program is reviewed annually to adapt to the changing environment.

As such for the purposes of the proposed development and the Transportation Mobility Plan Study, the Region requests that the operational analysis assume infrastructure improvements consistent with the 2018-10 year Roads and Transit Capital Construction Program. The study shall also include recommended mitigation measures to address any constraints identified prior to capital program improvements.

Best Regards,

From: Bouslama, Nissrine [mailto:Nissrine.Bouslama@wsp.com]
Sent: Wednesday, February 28, 2018 3:06 PM
To: Wong, Ryan
Cc: Li, Josie; Bumstead, Greig; Law, Jonathan
Subject: FW: Ladies Golf Club Residential Development - TIS Background Developments

Hi Ryan,

Further to our correspondence with the City of Markham regarding the scope of the Transport Mobility Plan for the proposed condominium development located at the Ladies Golf Club on Royal Orchard Boulevard, we have been asked to include improvements and recommendations from the Bayview EA in our study.
The plan states that a number of improvements will be implemented around our site, but it doesn't provide details about the construction program timelines for Bayview Avenue between John Street and Highway 7. I have attached the 2018 10 year Roads and Transit Capital Construction Program and the 2016 York Region TMP Maps for your reference.
Would you be able to provide us with improvements if any, scheduled to be implemented before our horizon year 2023?

Thank you for your help.

Best regards,

Nissrine Bouslama, EIT
Designer
Transportation - Planning and Advisory

T+ 1 905-882-4211 x6749

100 Commerce Valley Drive West
Thornhill, ON
L3T 0A1 Canada

wsp.com

From: Liu, Andrea [mailto:ALiu@markham.ca]
Sent: Tuesday, February 27, 2018 3:47 PM
To: Bouslama, Nissrine <Nissrine.Bouslama@wsp.com>
Cc: Li, Josie <Josie.Li@wsp.com>; Cefaratti, Rick <RCefaratti@markham.ca>
Subject: RE: Ladies Golf Club Residential Development - TIS Background Developments

Hi Nissrine,

Sorry for the confusion.
Please include the residential development at 360 John Street in your traffic analysis.
Also note that York Region has completed the Bayview Ave EA in August 2017. Any improvements and recommendations from the EA should be considered in your study.

Andrea Liu, P.Eng. | Transportation Engineer | Engineering Department
City of Markham
101 Town Centre Boulevard, Markham, ON L3R 9W3
T: 905.477.7000 Ext. 3740
E: aliu@markham.ca

From: Bouslama, Nissrine [mailto:Nissrine.Bouslama@wsp.com]
Sent: February 27, 2018 1:29 PM
To: Cefaratti, Rick <RCefaratti@markham.ca>; Liu, Andrea <ALiu@markham.ca>
Cc: Li, Josie <Josie.Li@wsp.com>
Subject: RE: Ladies Golf Club Residential Development - TIS Background Developments

Hi Rick and Andrea,

Thank you both for your responses. We are still unclear about who has taken on our request for the background developments to be included in our traffic analysis, initially made on February 7th. Would be able to let us know when we may expect a response?
Thank you very much for your help.

Best regards,

Nissrine Bouslama, EIT
Designer
Transportation - Planning and Advisory

T+ 1 905-882-4211 x6749

100 Commerce Valley Drive West
Thornhill, ON
L3T 0A1 Canada

wsp.com

From: Cefaratti, Rick [mailto:RCefaratti@markham.ca]
Sent: Monday, February 26, 2018 1:21 PM
To: Bouslama, Nissrine <Nissrine.Bouslama@wsp.com>
Cc: Liu, Andrea <ALiu@markham.ca>
Subject: RE: Ladies Golf Club Residential Development - TIS Background Developments

By copy of this message I will ask Andrea Liu, our Transportation Engineer to provide a response to your inquiry.

Sincerely,

Rick Cefaratti, M.C.I.P., R.P.P.
Planner II
Planning & Urban Design Department
City of Markham
101 Town Centre Boulevard
Markham, Ontario L3R 9W3
905- 477-7000 ext. 3675 Fax. 905-479-7773
rcefaratti@markham.ca

From: Bouslama, Nissrine [mailto:Nissrine.Bouslama@wsp.com]
Sent: February 26, 2018 1:02 PM
To: Cefaratti, Rick <RCefaratti@markham.ca>
Subject: FW: Ladies Golf Club Residential Development - TIS Background Developments

Hi Rick,

I am currently preparing a traffic impact study for a condominium development located at the Ladies Golf Club on Royal Orchard Boulevard in the City of Markham. Would you be able to provide us with the background developments to include in our future background traffic analysis?

Thank you for your help,

Best regards,

Nissrine Bouslama, EIT
Designer
Transportation - Planning and Advisory

T+ 1 905-882-4211 x6749

100 Commerce Valley Drive West
Thornhill, ON
L3T 0A1 Canada

wsp.com

From: Louie, Jacob
Sent: Friday, February 23, 2018 1:32 PM
To: Bouslama, Nissrine <Nissrine.Bouslama@wsp.com>
Subject: FW: Ladies Golf Club Residential Development - TIS Background Developments

---

From: Liu, Andrea [mailto:ALiu@markham.ca]
Sent: Tuesday, February 20, 2018 2:52 PM
To: Louie, Jacob <Jacob.Louie@wsp.com>
Cc: Cefaratti, Rick <RCefaratti@markham.ca>
Subject: RE: Ladies Golf Club Residential Development - TIS Background Developments

Hi Jacob,

Please contact Rick Cefaratti, Development Planner, for confirmation of background developments in the vicinity of the subject site.

Thanks,

Andrea Liu, P.Eng. | Transportation Engineer | Engineering Department
City of Markham
101 Town Centre Boulevard, Markham, ON L3R 9W3

T: 905.477.7000 Ext. 3740
E: aliu@markham.ca

From: Siu, Mark
Sent: February 16, 2018 4:26 PM
To: Liu, Andrea <ALiu@markham.ca>
Cc: Lo, Henry <HenryLo@markham.ca>
Subject: FW: Ladies Golf Club Residential Development - TIS Background Developments

Mark Siu, M.Eng., P.Eng. | Senior Transportation Engineer | Engineering Department
City of Markham
101 Town Centre Boulevard, Markham, ON L3R 9W3
T: 905.477.7000 Ext. 2625
E: MSiu@markham.ca

From: Louie, Jacob [mailto:Jacob.Louie@wsp.com]
Sent: Friday, February 16, 2018 3:02 PM
To: Lo, Henry <HenryLo@markham.ca>; Siu, Mark <MSiu@markham.ca>
Cc: Li, Josie <Josie.Li@wsp.com>; Bumstead, Greig <Greig.Bumstead@wsp.com>
Subject: RE: Ladies Golf Club Residential Development - TIS Background Developments

Hi there,

Can you please confirm the background developments we should consider, or direct us to where we can get this info?

Thanks

-Jacob

Jacob Louie.
Designer (EIT)
Transportation – Planning and Advisory Services

T +1 905-882-4211 x6339

100 Commerce Valley Drive West
Thornhill, Ontario L3T 0A1 Canada
LouieJ@mmm.ca

wsp.com

www.mmmgrouplimited.com | www.wspgroup.ca

Please consider the environment before printing...

From: Wong, Ryan [mailto:Ryan.Wong@york.ca]
Sent: Wednesday, February 07, 2018 4:02 PM
To: Louie, Jacob <Jacob.Louie@wsp.com>; henrylo@markham.ca; msiu@markham.ca; Bui, Vi <Vi.Bui@york.ca>
Cc: Li, Josie <Josie.Li@wsp.com>; Bumstead, Greig <Greig.Bumstead@wsp.com>
Subject: RE: Ladies Golf Club Residential Development - TIS Background Developments

Hi Jacob,

Please contact the Staff at the City of Markham to obtain information on background developments.

Best Regards,

From: Louie, Jacob [mailto:Jacob.Louie@wsp.com]
Sent: Wednesday, February 07, 2018 3:55 PM
To: Wong, Ryan; henrylo@markham.ca; msiu@markham.ca; Bui, Vi
Cc: Li, Josie; Bumstead, Greig
Subject: RE: Ladies Golf Club Residential Development - TIS Background Developments

Hi Ryan,

Thanks for your TOR confirmation comments. Could you or the appropriate person please advise on what background developments we should consider, and how we can access the relevant data/info for each of those developments?

Thanks

-Jacob

Jacob Louie.
Designer (EIT)
Transportation – Planning and Advisory Services

T +1 905-882-4211 x6339

100 Commerce Valley Drive West

Thornhill, Ontario L3T 0A1 Canada
LouieJ@mmm.ca

wsp.com

www.mmmgrouplimited.com | www.wspgroup.ca

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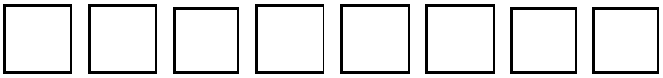
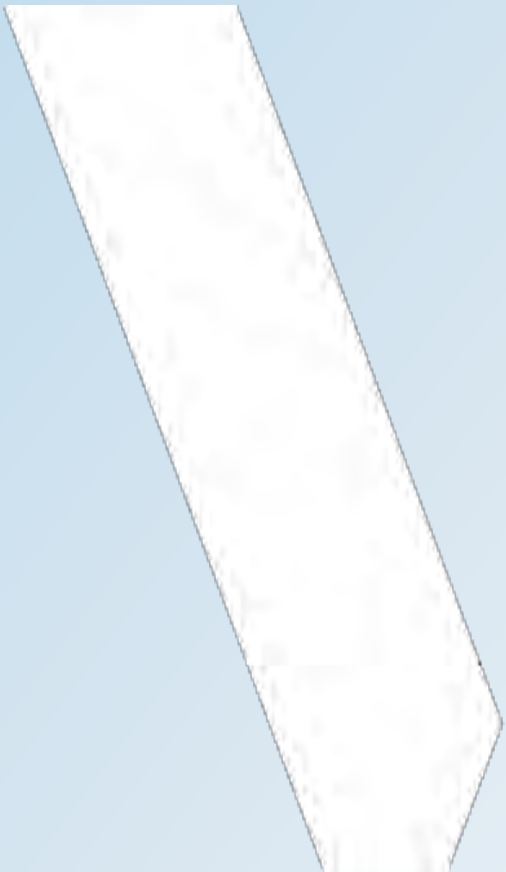
Connect with us:



APPENDIX

B MODE SPLIT



TTS Modal Split Results

AM IN

Zone	Transit excluding GO rail	Auto driver	Auto passenger	Walk
2355	0	341	70	0
2356	0	214	29	0
2358	29	139	0	41
2363	71	1416	240	81
Total	100	2110	339	122

PM IN

Zone	Transit excluding GO rail	Auto driver	Auto passenger	Walk
2355	0	341	70	0
2356	0	214	29	0
2358	29	139	0	41
2363	71	1416	240	81
Total	100	2110	339	122

AM OUT

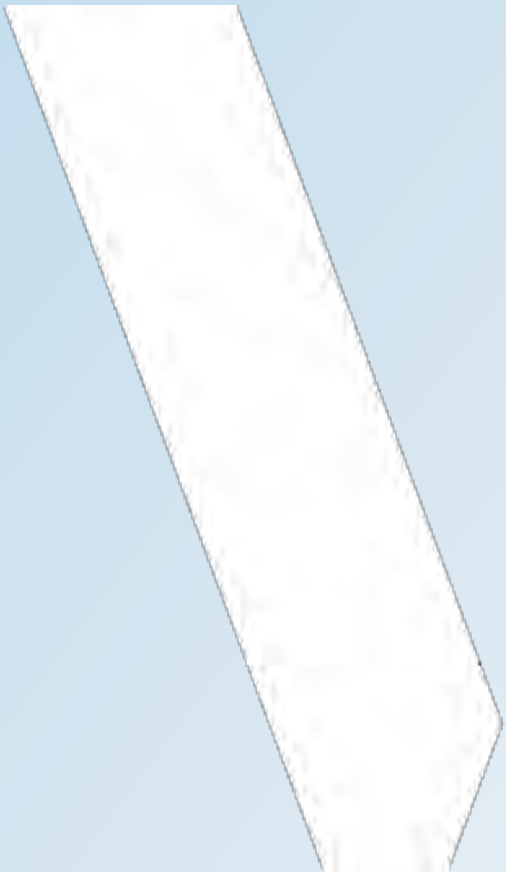
Zone	Transit excluding GO rail	Cycle	Auto driver	GO rail only	Auto passenger	Walk
2355	69	0	570	22	114	21
2356	130	0	711	0	128	41
2358	49	0	727	59	181	62
2363	391	21	1512	41	227	83
Total	639	21	3520	122	650	207

PM OUT

Zone	Transit excluding GO rail	Auto driver	Auto passenger
2355	0	170	19
2356	18	304	47
2358	0	273	63
2,363	115	1248	199
Total	133	1995	328

APPENDIX

C TRAFFIC DATA



Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Morning Peak Diagram

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

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

Municipality: Markham
Site #: 1802200001
Intersection: Bayview Ave & Romfield Circuit
TFR File #: 1
Count date: 8-Feb-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Bayview Ave runs N/S

North Leg Total: 3102
North Entering: 1615
North Peds: 29
Peds Cross: ⋈

Cyclists	0	0	0	0
Trucks	0	25	1	26
Cars	9	1458	122	1589
Totals	9	1483	123	

Cyclists	0
Trucks	29
Cars	1458
Totals	1487

East Leg Total: 575
East Entering: 355
East Peds: 63
Peds Cross: ⧗

Bayview Ave

Cyclists	Trucks	Cars	Totals
0	2	49	51

Cars	Trucks	Cyclists	Totals
246	3	0	249
14	0	0	14
89	3	0	92
349	6	0	

Romfield Circuit

N
W E
S

Cyclists	Trucks	Cars	Totals
0	1	31	32
0	3	26	29
0	1	85	86
0	5	142	

Willowbrook Rd

Cars	Trucks	Cyclists	Totals
211	9	0	220

Bayview Ave

Peds Cross: ⧗
West Peds: 8
West Entering: 147
West Leg Total: 198

Cars	1632
Trucks	29
Cyclists	0
Totals	1661

Cars	26	1181	63	1270
Trucks	2	25	5	32
Cyclists	0	0	0	0
Totals	28	1206	68	

Peds Cross: ⋈
South Peds: 29
South Entering: 1302
South Leg Total: 2963

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 18:00:00

One Hour Peak
From: 17:00:00
To: 18:00:00

Municipality: Markham
Site #: 1802200001
Intersection: Bayview Ave & Romfield Circuit
TFR File #: 1
Count date: 8-Feb-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

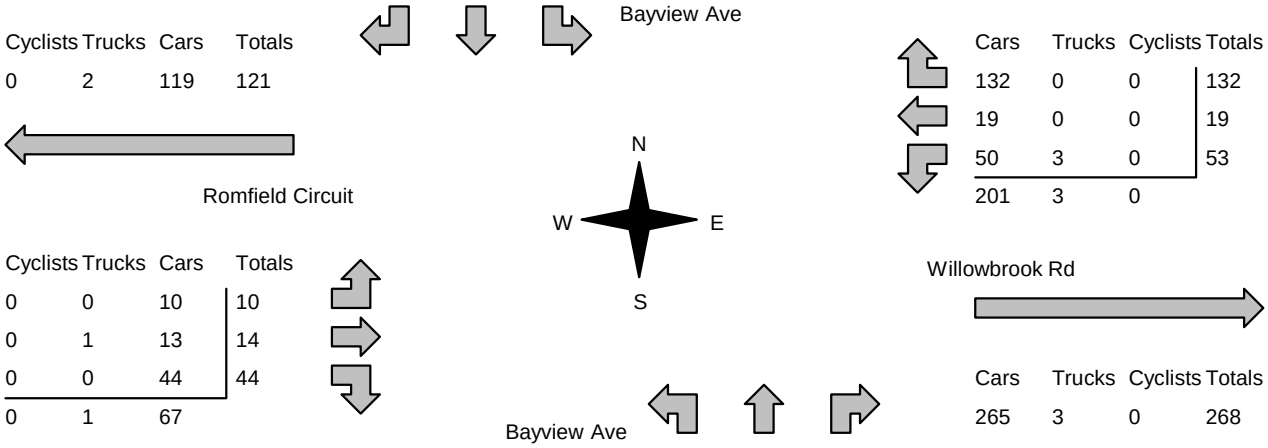
Major Road: Bayview Ave runs N/S

North Leg Total: 3520
North Entering: 1849
North Peds: 1
Peds Cross: ⋈

Cyclists	0	0	0	0
Trucks	0	16	0	16
Cars	15	1639	179	1833
Totals	15	1655	179	

Cyclists	0
Trucks	15
Cars	1656
Totals	1671

East Leg Total: 472
East Entering: 204
East Peds: 12
Peds Cross: ⧖



Cyclists	Trucks	Cars	Totals
0	2	119	121

Cars	Trucks	Cyclists	Totals
132	0	0	132
19	0	0	19
50	3	0	53
201	3	0	

Cyclists	Trucks	Cars	Totals
0	0	10	10
0	1	13	14
0	0	44	44
0	1	67	

Cars	Trucks	Cyclists	Totals
265	3	0	268

Peds Cross: ⧖
West Peds: 2
West Entering: 68
West Leg Total: 189

Cars	1733			
Trucks	19			
Cyclists	0			
Totals	1752			

Cars	85	1514	73	1672
Trucks	2	15	2	19
Cyclists	0	0	0	0
Totals	87	1529	75	

Peds Cross: ⋈
South Peds: 10
South Entering: 1691
South Leg Total: 3443

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Total Count Diagram

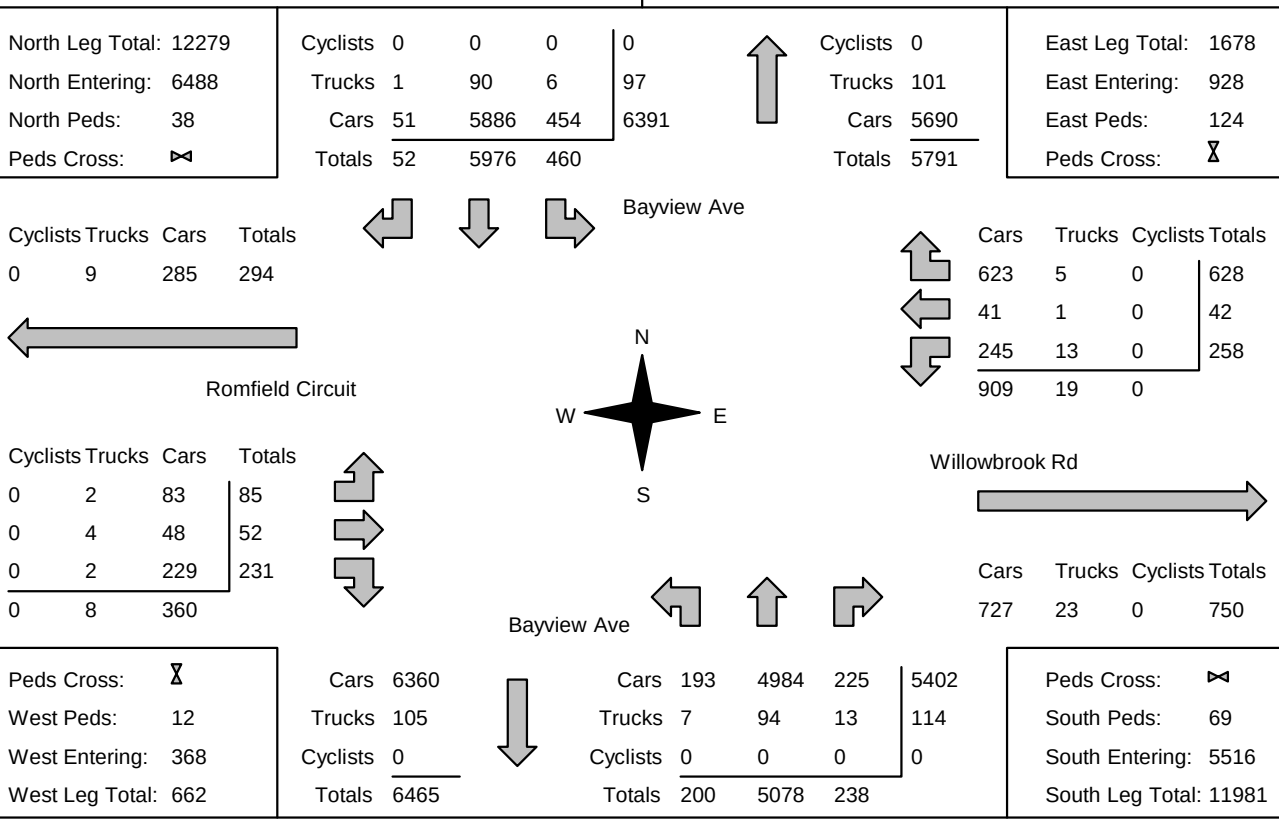
Municipality: Markham
Site #: 1802200001
Intersection: Bayview Ave & Romfield Circuit
TFR File #: 1
Count date: 8-Feb-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Bayview Ave runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: Bayview Ave & Romfield Circuit | **Count Date:** 8-Feb-18 | **Municipality:** Markham

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*50*	*1373*	*12*	*1435*	*4*
9:00:00	*123*	*1483*	*9*	*1615*	*29*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*108*	*1465*	*16*	*1589*	*4*
18:00:00	*179*	*1655*	*15*	*1849*	*1*
Totals:	460	5976	52	6488	38

North/South Total Approaches: 12004

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*14*	*675*	*19*	*708*	*14*
9:00:00	*28*	*1206*	*68*	*1302*	*29*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*71*	*1668*	*76*	*1815*	*16*
18:00:00	*87*	*1529*	*75*	*1691*	*10*
S Totals:	200	5078	238	5516	69

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*78*	*2*	*140*	*220*	*8*
9:00:00	*92*	*14*	*249*	*355*	*63*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*35*	*7*	*107*	*149*	*41*
18:00:00	*53*	*19*	*132*	*204*	*12*
Totals:	258	42	628	928	124

East/West Total Approaches: 1296

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*26*	*5*	*64*	*95*	*0*
9:00:00	*32*	*29*	*86*	*147*	*8*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*17*	*4*	*37*	*58*	*2*
18:00:00	*10*	*14*	*44*	*68*	*2*
W Totals:	85	52	231	368	12

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*0:00*	*0:00*
Crossing Values:	*0*	*127*	*211*	*0*	*79*	*93*	*0*	*0*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 8-Feb-18 Site #: 1802200001

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Cyclists - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	5	5	258	258	3	3	0	0	8	8	0	0	0	0	0	0	0	0	0	0
7:30:00	11	6	551	293	5	2	1	1	20	12	0	0	0	0	0	0	0	0	2	2
7:45:00	27	16	976	425	7	2	2	1	27	7	1	1	0	0	0	0	0	0	2	0
8:00:00	48	21	1338	362	11	4	2	0	35	8	1	0	0	0	0	0	0	0	4	2
8:15:00	78	30	1743	405	14	3	2	0	40	5	1	0	0	0	0	0	0	0	4	0
8:30:00	95	17	2111	368	17	3	2	0	44	4	1	0	0	0	0	0	0	0	4	0
8:45:00	131	36	2437	326	18	1	2	0	51	7	1	0	0	0	0	0	0	0	16	12
9:00:00	170	39	2796	359	20	2	3	1	60	9	1	0	0	0	0	0	0	0	33	17
9:15:00	170	0	2796	0	20	0	3	0	60	0	1	0	0	0	0	0	0	0	33	0
16:00:00	170	0	2796	0	20	0	3	0	60	0	1	0	0	0	0	0	0	0	33	0
16:15:00	197	27	3112	316	26	6	3	0	63	3	1	0	0	0	0	0	0	0	34	1
16:30:00	221	24	3508	396	27	1	3	0	65	2	1	0	0	0	0	0	0	0	37	3
16:45:00	248	27	3866	358	32	5	5	2	70	5	1	0	0	0	0	0	0	0	37	0
17:00:00	275	27	4247	381	36	4	6	1	74	4	1	0	0	0	0	0	0	0	37	0
17:15:00	312	37	4643	396	38	2	6	0	79	5	1	0	0	0	0	0	0	0	37	0
17:30:00	359	47	5062	419	46	8	6	0	86	7	1	0	0	0	0	0	0	0	37	0
17:45:00	406	47	5452	390	49	3	6	0	87	1	1	0	0	0	0	0	0	0	37	0
18:00:00	454	48	5886	434	51	2	6	0	90	3	1	0	0	0	0	0	0	0	38	1
18:15:00	454	0	5886	0	51	0	6	0	90	0	1	0	0	0	0	0	0	0	38	0
18:15:15	454	0	5886	0	51	0	6	0	90	0	1	0	0	0	0	0	0	0	38	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 8-Feb-18 Site #: 1802200001

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Cyclists - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	18	18	1	1	19	19	1	1	0	0	0	0	0	0	0	0	0	0	1	1
7:30:00	35	17	2	1	54	35	3	2	0	0	1	1	0	0	0	0	0	0	3	2
7:45:00	54	19	2	0	87	33	4	1	0	0	1	0	0	0	0	0	0	0	5	2
8:00:00	74	20	2	0	139	52	4	0	0	0	1	0	0	0	0	0	0	0	8	3
8:15:00	97	23	3	1	173	34	5	1	0	0	1	0	0	0	0	0	0	0	11	3
8:30:00	116	19	6	3	249	76	6	1	0	0	2	1	0	0	0	0	0	0	21	10
8:45:00	140	24	13	7	312	63	6	0	0	0	3	1	0	0	0	0	0	0	44	23
9:00:00	163	23	16	3	385	73	7	1	0	0	4	1	0	0	0	0	0	0	71	27
9:15:00	163	0	16	0	385	0	7	0	0	0	4	0	0	0	0	0	0	0	71	0
16:00:00	163	0	16	0	385	0	7	0	0	0	4	0	0	0	0	0	0	0	71	0
16:15:00	170	7	16	0	405	20	7	0	0	0	4	0	0	0	0	0	0	0	90	19
16:30:00	176	6	16	0	430	25	8	1	0	0	5	1	0	0	0	0	0	0	106	16
16:45:00	187	11	18	2	460	30	8	0	0	0	5	0	0	0	0	0	0	0	110	4
17:00:00	195	8	22	4	491	31	10	2	1	1	5	0	0	0	0	0	0	0	112	2
17:15:00	204	9	27	5	516	25	11	1	1	0	5	0	0	0	0	0	0	0	114	2
17:30:00	212	8	32	5	552	36	12	1	1	0	5	0	0	0	0	0	0	0	120	6
17:45:00	222	10	36	4	592	40	12	0	1	0	5	0	0	0	0	0	0	0	121	1
18:00:00	245	23	41	5	623	31	13	1	1	0	5	0	0	0	0	0	0	0	124	3
18:15:00	245	0	41	0	623	0	13	0	1	0	5	0	0	0	0	0	0	0	124	0
18:15:15	245	0	41	0	623	0	13	0	1	0	5	0	0	0	0	0	0	0	124	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 8-Feb-18 Site #: 1802200001

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Cyclists - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	1	1	96	96	5	5	1	1	5	5	0	0	0	0	0	0	0	0	2	2
7:30:00	2	1	237	141	8	3	2	1	14	9	1	1	0	0	0	0	0	0	4	2
7:45:00	4	2	416	179	10	2	2	0	18	4	2	1	0	0	0	0	0	0	7	3
8:00:00	12	8	650	234	16	6	2	0	25	7	3	1	0	0	0	0	0	0	14	7
8:15:00	18	6	908	258	30	14	2	0	31	6	5	2	0	0	0	0	0	0	21	7
8:30:00	24	6	1205	297	42	12	3	1	38	7	7	2	0	0	0	0	0	0	28	7
8:45:00	30	6	1534	329	68	26	4	1	43	5	7	0	0	0	0	0	0	0	34	6
9:00:00	38	8	1831	297	79	11	4	0	50	7	8	1	0	0	0	0	0	0	43	9
9:15:00	38	0	1831	0	79	0	4	0	50	0	8	0	0	0	0	0	0	0	43	0
16:00:00	38	0	1831	0	79	0	4	0	50	0	8	0	0	0	0	0	0	0	43	0
16:15:00	55	17	2248	417	98	19	5	1	54	4	10	2	0	0	0	0	0	0	48	5
16:30:00	73	18	2649	401	111	13	5	0	67	13	10	0	0	0	0	0	0	0	53	5
16:45:00	86	13	3066	417	133	22	5	0	72	5	11	1	0	0	0	0	0	0	58	5
17:00:00	108	22	3470	404	152	19	5	0	79	7	11	0	0	0	0	0	0	0	59	1
17:15:00	127	19	3872	402	169	17	6	1	86	7	11	0	0	0	0	0	0	0	62	3
17:30:00	141	14	4301	429	188	19	6	0	91	5	12	1	0	0	0	0	0	0	65	3
17:45:00	160	19	4624	323	204	16	7	1	91	0	12	0	0	0	0	0	0	0	66	1
18:00:00	193	33	4984	360	225	21	7	0	94	3	13	1	0	0	0	0	0	0	69	3
18:15:00	193	0	4984	0	225	0	7	0	94	0	13	0	0	0	0	0	0	0	69	0
18:15:15	193	0	4984	0	225	0	7	0	94	0	13	0	0	0	0	0	0	0	69	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 8-Feb-18 Site #: 1802200001

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Cyclists - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	4	4	1	1	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	8	4	2	1	27	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	14	6	3	1	44	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	25	11	5	2	64	20	1	1	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	31	6	9	4	89	25	1	0	0	0	1	1	0	0	0	0	0	0	2	2
8:30:00	41	10	13	4	113	24	1	0	2	2	1	0	0	0	0	0	0	0	2	0
8:45:00	49	8	21	8	128	15	2	1	3	1	1	0	0	0	0	0	0	0	3	1
9:00:00	56	7	31	10	149	21	2	0	3	0	1	0	0	0	0	0	0	0	8	5
9:15:00	56	0	31	0	149	0	2	0	3	0	1	0	0	0	0	0	0	0	8	0
16:00:00	56	0	31	0	149	0	2	0	3	0	1	0	0	0	0	0	0	0	8	0
16:15:00	61	5	32	1	155	6	2	0	3	0	2	1	0	0	0	0	0	0	8	0
16:30:00	65	4	33	1	165	10	2	0	3	0	2	0	0	0	0	0	0	0	10	2
16:45:00	71	6	33	0	177	12	2	0	3	0	2	0	0	0	0	0	0	0	10	0
17:00:00	73	2	35	2	185	8	2	0	3	0	2	0	0	0	0	0	0	0	10	0
17:15:00	73	0	37	2	197	12	2	0	4	1	2	0	0	0	0	0	0	0	10	0
17:30:00	76	3	42	5	209	12	2	0	4	0	2	0	0	0	0	0	0	0	12	2
17:45:00	80	4	46	4	216	7	2	0	4	0	2	0	0	0	0	0	0	0	12	0
18:00:00	83	3	48	2	229	13	2	0	4	0	2	0	0	0	0	0	0	0	12	0
18:15:00	83	0	48	0	229	0	2	0	4	0	2	0	0	0	0	0	0	0	12	0
18:15:15	83	0	48	0	229	0	2	0	4	0	2	0	0	0	0	0	0	0	12	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Morning Peak Diagram

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

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

Municipality: Markham
Site #: 1802200002
Intersection: Bayview Ave & Royal Orchard Blvd
TFR File #: 1
Count date: 8-Feb-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

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

Major Road: Bayview Ave runs N/S

North Leg Total: 2964
North Entering: 1661
North Peds: 0
Peds Cross: ⋈

Cyclists	0	0	0	0
Trucks	4	25	0	29
Cars	89	1543	0	1632
Totals	93	1568	0	

Cyclists	0
Trucks	32
Cars	1271
Totals	1303

East Leg Total: 206
East Entering: 96
East Peds: 0
Peds Cross: ⧗

Bayview Ave

Cyclists	Trucks	Cars	Totals
1	4	89	94

Royal Orchard Blvd

Cars	Trucks	Cyclists	Totals
54	1	0	55
0	0	1	1
40	0	0	40
94	1	1	

W E S

Cyclists	Trucks	Cars	Totals
0	0	0	0
0	0	0	0
0	5	139	144
0	5	139	

Royal Orchard Blvd

Cars	Trucks	Cyclists	Totals
102	8	0	110

Bayview Ave

Peds Cross: ⧗
West Peds: 1
West Entering: 144
West Leg Total: 238

Cars	1722
Trucks	30
Cyclists	0
Totals	1752

Cars	0	1217	102	1319
Trucks	0	31	8	39
Cyclists	0	0	0	0
Totals	0	1248	110	

Peds Cross: ⋈
South Peds: 0
South Entering: 1358
South Leg Total: 3110

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 18:00:00

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

Municipality: Markham
Site #: 1802200002
Intersection: Bayview Ave & Royal Orchard Blvd
TFR File #: 1
Count date: 8-Feb-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

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

Major Road: Bayview Ave runs N/S

North Leg Total:	3483			
North Entering:	1659			
North Peds:	0			
Peds Cross:	⋈			
Cyclists	0	0	0	0
Trucks	1	24	0	25
Cars	92	1542	0	1634
Totals	93	1566	0	
Cyclists	0			
Trucks	27			
Cars	1797			
Totals	1824			
East Leg Total:	248			
East Entering:	66			
East Peds:	0			
Peds Cross:	⧖			

Bayview Ave

Cyclists	Trucks	Cars	Totals
0	1	92	93

Royal Orchard Blvd

Cars	Trucks	Cyclists	Totals
64	2	0	66
0	0	0	0
0	0	0	0
64	2	0	

N
W E
S

Cyclists	Trucks	Cars	Totals
0	1	0	1
0	0	0	0
0	2	123	125
0	3	123	

Royal Orchard Blvd

Cars	Trucks	Cyclists	Totals
181	1	0	182

Bayview Ave

Peds Cross:	⧖			
West Peds:	0			
West Entering:	126			
West Leg Total:	219			
Cars	1665			
Trucks	26			
Cyclists	0			
Totals	1691			
Cars	0	1733	181	1914
Trucks	0	24	1	25
Cyclists	0	0	0	0
Totals	0	1757	182	
Peds Cross:	⋈			
South Peds:	0			
South Entering:	1939			
South Leg Total:	3630			

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Total Count Diagram

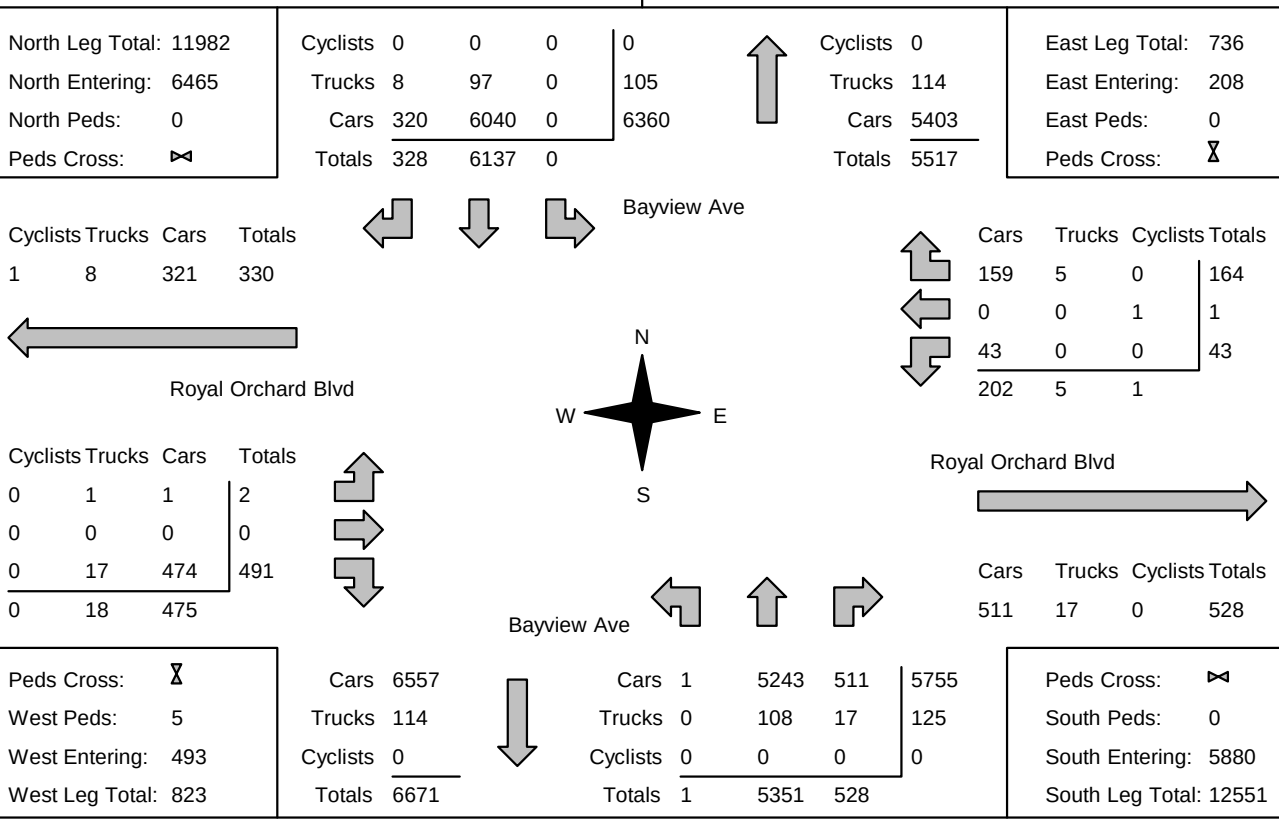
Municipality: Markham
Site #: 1802200002
Intersection: Bayview Ave & Royal Orchard Blvd
TFR File #: 1
Count date: 8-Feb-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

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

Major Road: Bayview Ave runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: Bayview Ave & Royal Orchard Blv | **Count Date:** 8-Feb-18 | **Municipality:** Markham

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*0*	*1477*	*38*	*1515*	*0*
9:00:00	*0*	*1568*	*93*	*1661*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*1443*	*94*	*1537*	*0*
18:00:00	*0*	*1649*	*103*	*1752*	*0*
Totals:	0	6137	328	6465	0

North/South Total Approaches: 12345

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*0*	*702*	*50*	*752*	*0*
9:00:00	*0*	*1248*	*110*	*1358*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*1*	*1744*	*194*	*1939*	*0*
18:00:00	*0*	*1657*	*174*	*1831*	*0*
S Totals:	1	5351	528	5880	0

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*3*	*0*	*6*	*9*	*0*
9:00:00	*40*	*1*	*55*	*96*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*0*	*70*	*70*	*0*
18:00:00	*0*	*0*	*33*	*33*	*0*
Totals:	43	1	164	208	0

East/West Total Approaches: 701

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*0*	*0*	*110*	*110*	*0*
9:00:00	*0*	*0*	*144*	*144*	*1*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*1*	*0*	*106*	*107*	*4*
18:00:00	*1*	*0*	*131*	*132*	*0*
W Totals:	2	0	491	493	5

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*0:00*	*0:00*
Crossing Values:	*0*	*3*	*41*	*0*	*1*	*1*	*0*	*0*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 8-Feb-18 Site #: 1802200002

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Cyclists - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	281	281	4	4	0	0	8	8	1	1	0	0	0	0	0	0	0	0
7:30:00	0	0	603	322	10	6	0	0	21	13	2	1	0	0	0	0	0	0	0	0
7:45:00	0	0	1049	446	25	15	0	0	29	8	2	0	0	0	0	0	0	0	0	0
8:00:00	0	0	1440	391	36	11	0	0	37	8	2	0	0	0	0	0	0	0	0	0
8:15:00	0	0	1866	426	63	27	0	0	43	6	3	1	0	0	0	0	0	0	0	0
8:30:00	0	0	2259	393	81	18	0	0	48	5	3	0	0	0	0	0	0	0	0	0
8:45:00	0	0	2609	350	96	15	0	0	54	6	4	1	0	0	0	0	0	0	0	0
9:00:00	0	0	2983	374	125	29	0	0	62	8	6	2	0	0	0	0	0	0	0	0
9:15:00	0	0	2983	0	125	0	0	0	62	0	6	0	0	0	0	0	0	0	0	0
16:00:00	0	0	2983	0	125	0	0	0	62	0	6	0	0	0	0	0	0	0	0	0
16:15:00	0	0	3288	305	149	24	0	0	65	3	7	1	0	0	0	0	0	0	0	0
16:30:00	0	0	3674	386	175	26	0	0	68	3	7	0	0	0	0	0	0	0	0	0
16:45:00	0	0	4032	358	198	23	0	0	73	5	7	0	0	0	0	0	0	0	0	0
17:00:00	0	0	4410	378	217	19	0	0	78	5	8	1	0	0	0	0	0	0	0	0
17:15:00	0	0	4809	399	235	18	0	0	84	6	8	0	0	0	0	0	0	0	0	0
17:30:00	0	0	5216	407	267	32	0	0	92	8	8	0	0	0	0	0	0	0	0	0
17:45:00	0	0	5599	383	291	24	0	0	93	1	8	0	0	0	0	0	0	0	0	0
18:00:00	0	0	6040	441	320	29	0	0	97	4	8	0	0	0	0	0	0	0	0	0
18:15:00	0	0	6040	0	320	0	0	0	97	0	8	0	0	0	0	0	0	0	0	0
18:15:15	0	0	6040	0	320	0	0	0	97	0	8	0	0	0	0	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 8-Feb-18 Site #: 1802200002

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Cyclists - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	3	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	5	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8:00:00	3	3	0	0	5	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8:15:00	8	5	0	0	5	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0
8:30:00	8	0	0	0	31	26	0	0	0	0	1	0	0	0	1	0	0	0	0	0
8:45:00	26	18	0	0	42	11	0	0	0	0	1	0	0	0	1	0	0	0	0	0
9:00:00	43	17	0	0	59	17	0	0	0	0	2	1	0	0	1	0	0	0	0	0
9:15:00	43	0	0	0	59	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0
16:00:00	43	0	0	0	59	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0
16:15:00	43	0	0	0	79	20	0	0	0	0	2	0	0	0	1	0	0	0	0	0
16:30:00	43	0	0	0	91	12	0	0	0	0	3	1	0	0	1	0	0	0	0	0
16:45:00	43	0	0	0	108	17	0	0	0	0	5	2	0	0	1	0	0	0	0	0
17:00:00	43	0	0	0	126	18	0	0	0	0	5	0	0	0	1	0	0	0	0	0
17:15:00	43	0	0	0	132	6	0	0	0	0	5	0	0	0	1	0	0	0	0	0
17:30:00	43	0	0	0	155	23	0	0	0	0	5	0	0	0	1	0	0	0	0	0
17:45:00	43	0	0	0	159	4	0	0	0	0	5	0	0	0	1	0	0	0	0	0
18:00:00	43	0	0	0	159	0	0	0	0	0	5	0	0	0	1	0	0	0	0	0
18:15:00	43	0	0	0	159	0	0	0	0	0	5	0	0	0	1	0	0	0	0	0
18:15:15	43	0	0	0	159	0	0	0	0	0	5	0	0	0	1	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 8-Feb-18 Site #: 1802200002

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Cyclists - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	100	100	9	9	0	0	6	6	1	1	0	0	0	0	0	0	0	0
7:30:00	0	0	244	144	17	8	0	0	16	10	1	0	0	0	0	0	0	0	0	0
7:45:00	0	0	425	181	26	9	0	0	21	5	1	0	0	0	0	0	0	0	0	0
8:00:00	0	0	673	248	46	20	0	0	29	8	4	3	0	0	0	0	0	0	0	0
8:15:00	0	0	951	278	76	30	0	0	37	8	8	4	0	0	0	0	0	0	0	0
8:30:00	0	0	1240	289	99	23	0	0	47	10	9	1	0	0	0	0	0	0	0	0
8:45:00	0	0	1590	350	123	24	0	0	53	6	10	1	0	0	0	0	0	0	0	0
9:00:00	0	0	1890	300	148	25	0	0	60	7	12	2	0	0	0	0	0	0	0	0
9:15:00	0	0	1890	0	148	0	0	0	60	0	12	0	0	0	0	0	0	0	0	0
16:00:00	0	0	1890	0	148	0	0	0	60	0	12	0	0	0	0	0	0	0	0	0
16:15:00	1	1	2323	433	187	39	0	0	67	7	13	1	0	0	0	0	0	0	0	0
16:30:00	1	0	2742	419	235	48	0	0	79	12	14	1	0	0	0	0	0	0	0	0
16:45:00	1	0	3177	435	293	58	0	0	83	4	14	0	0	0	0	0	0	0	0	0
17:00:00	1	0	3604	427	340	47	0	0	90	7	14	0	0	0	0	0	0	0	0	0
17:15:00	1	0	4036	432	382	42	0	0	98	8	15	1	0	0	0	0	0	0	0	0
17:30:00	1	0	4475	439	416	34	0	0	103	5	15	0	0	0	0	0	0	0	0	0
17:45:00	1	0	4829	354	465	49	0	0	104	1	17	2	0	0	0	0	0	0	0	0
18:00:00	1	0	5243	414	511	46	0	0	108	4	17	0	0	0	0	0	0	0	0	0
18:15:00	1	0	5243	0	511	0	0	0	108	0	17	0	0	0	0	0	0	0	0	0
18:15:15	1	0	5243	0	511	0	0	0	108	0	17	0	0	0	0	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 8-Feb-18 Site #: 1802200002

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Cyclists - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	18	18	0	0	0	0	1	1	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	46	28	0	0	0	0	3	2	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	66	20	0	0	0	0	5	2	0	0	0	0	0	0	0	0
8:00:00	0	0	0	0	104	38	0	0	0	0	6	1	0	0	0	0	0	0	0	0
8:15:00	0	0	0	0	129	25	0	0	0	0	8	2	0	0	0	0	0	0	0	0
8:30:00	0	0	0	0	181	52	0	0	0	0	9	1	0	0	0	0	0	0	0	0
8:45:00	0	0	0	0	210	29	0	0	0	0	10	1	0	0	0	0	0	0	1	1
9:00:00	0	0	0	0	243	33	0	0	0	0	11	1	0	0	0	0	0	0	1	0
9:15:00	0	0	0	0	243	0	0	0	0	0	11	0	0	0	0	0	0	0	1	0
16:00:00	0	0	0	0	243	0	0	0	0	0	11	0	0	0	0	0	0	0	1	0
16:15:00	0	0	0	0	268	25	0	0	0	0	13	2	0	0	0	0	0	0	4	3
16:30:00	1	1	0	0	283	15	0	0	0	0	14	1	0	0	0	0	0	0	5	1
16:45:00	1	0	0	0	311	28	0	0	0	0	15	1	0	0	0	0	0	0	5	0
17:00:00	1	0	0	0	345	34	0	0	0	0	15	0	0	0	0	0	0	0	5	0
17:15:00	1	0	0	0	381	36	0	0	0	0	16	1	0	0	0	0	0	0	5	0
17:30:00	1	0	0	0	406	25	1	1	0	0	16	0	0	0	0	0	0	0	5	0
17:45:00	1	0	0	0	440	34	1	0	0	0	17	1	0	0	0	0	0	0	5	0
18:00:00	1	0	0	0	474	34	1	0	0	0	17	0	0	0	0	0	0	0	5	0
18:15:00	1	0	0	0	474	0	1	0	0	0	17	0	0	0	0	0	0	0	5	0
18:15:15	1	0	0	0	474	0	1	0	0	0	17	0	0	0	0	0	0	0	5	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Morning Peak Diagram

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

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

Municipality: Markham
Site #: 1802200003
Intersection: Royal Orchard Blvd (east) & Royal
TFR File #: 1
Count date: 8-Feb-18

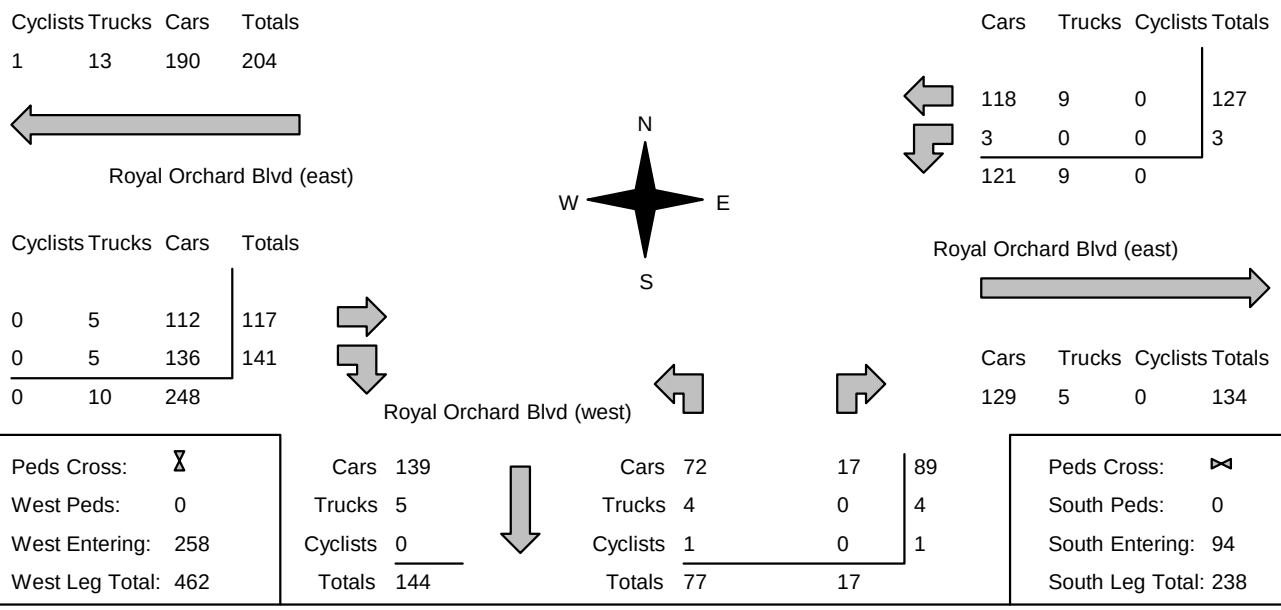
Weather conditions:

Person counted:
Person prepared:
Person checked:

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

Major Road: Royal Orchard Blvd (east) runs W/

East Leg Total: 264
East Entering: 130
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 0
West Entering: 258
West Leg Total: 462

Cars 139
Trucks 5
Cyclists 0
Totals 144

Cars 72 17 89
Trucks 4 0 4
Cyclists 1 0 1
Totals 77 17

Peds Cross: ⋈
South Peds: 0
South Entering: 94
South Leg Total: 238

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 18:00:00

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

Municipality: Markham
Site #: 1802200003
Intersection: Royal Orchard Blvd (east) & Royal
TFR File #: 1
Count date: 8-Feb-18

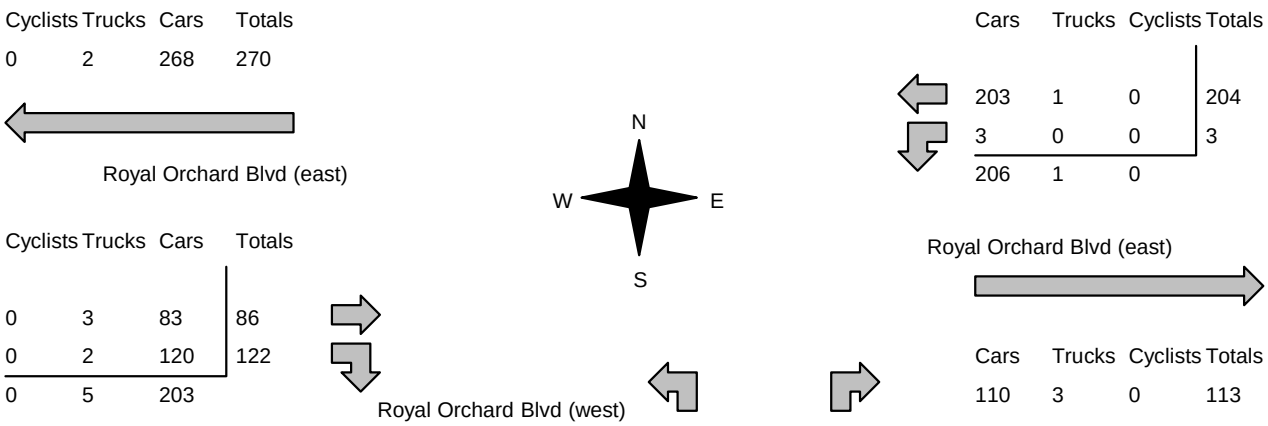
Weather conditions:

Person counted:
Person prepared:
Person checked:

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

Major Road: Royal Orchard Blvd (east) runs W/

East Leg Total: 320
East Entering: 207
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 0
West Entering: 208
West Leg Total: 478

Cars 123
Trucks 2
Cyclists 0
Totals 125

Cars 65 27 92
Trucks 1 0 1
Cyclists 0 0 0
Totals 66 27

Peds Cross: ⋈
South Peds: 0
South Entering: 93
South Leg Total: 218

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Total Count Diagram

Municipality: Markham
Site #: 1802200003
Intersection: Royal Orchard Blvd (east) & Royal
TFR File #: 1
Count date: 8-Feb-18

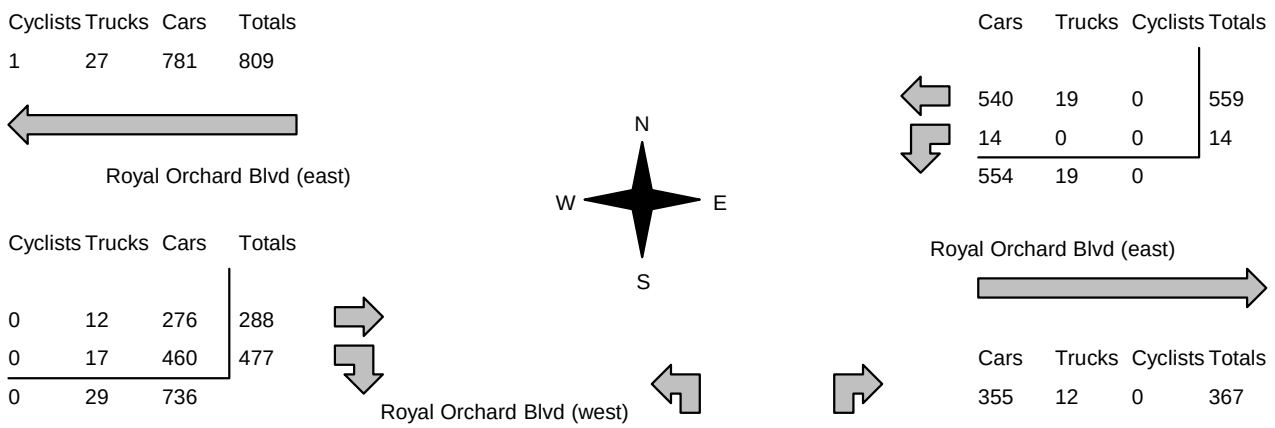
Weather conditions:

Person counted:
Person prepared:
Person checked:

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

Major Road: Royal Orchard Blvd (east) runs W/

East Leg Total: 940
East Entering: 573
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 0
West Entering: 765
West Leg Total: 1574

Cars 474
Trucks 17
Cyclists 0
Totals 491

Cars 241 79 320
Trucks 8 0 8
Cyclists 1 0 1
Totals 250 79

Peds Cross: ⋈
South Peds: 0
South Entering: 329
South Leg Total: 820

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: Royal Orchard Blvd (east) & Royal | **Count Date:** 8-Feb-18 | **Municipality:** Markham

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds	North/South Total Approaches
	Left	Thru	Right	Grand Total		
7:00:00	*0*	*0*	*0*	*0*	*0*	*0*
8:00:00	*0*	*0*	*0*	*0*	*0*	*38*
9:00:00	*0*	*0*	*0*	*0*	*0*	*94*
16:00:00	*0*	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*0*	*0*	*0*	*0*	*94*
18:00:00	*0*	*0*	*0*	*0*	*0*	*103*
Totals:	0	0	0	0	0	329

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*31*	*0*	*7*	*38*	*0*
9:00:00	*77*	*0*	*17*	*94*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*68*	*0*	*26*	*94*	*0*
18:00:00	*74*	*0*	*29*	*103*	*0*
S Totals:	250	0	79	329	0

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds	East/West Total Approaches
	Left	Thru	Right	Grand Total		
7:00:00	*0*	*0*	*0*	*0*	*0*	*0*
8:00:00	*4*	*42*	*0*	*46*	*0*	*193*
9:00:00	*3*	*127*	*0*	*130*	*0*	*388*
16:00:00	*0*	*0*	*0*	*0*	*0*	*0*
17:00:00	*5*	*181*	*0*	*186*	*0*	*370*
18:00:00	*2*	*209*	*0*	*211*	*0*	*387*
Totals:	14	559	0	573	0	1338

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*0*	*41*	*106*	*147*	*0*
9:00:00	*0*	*117*	*141*	*258*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*83*	*101*	*184*	*0*
18:00:00	*0*	*47*	*129*	*176*	*0*
W Totals:	0	288	477	765	0

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*0:00*	*0:00*
Crossing Values:	*0*	*31*	*77*	*0*	*68*	*74*	*0*	*0*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 8-Feb-18 Site #: 1802200003

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Cyclists - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 8-Feb-18 Site #: 1802200003

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Cyclists - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	1	1	8	8	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
7:30:00	2	1	15	7	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
7:45:00	3	1	28	13	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0
8:00:00	4	1	37	9	0	0	0	0	5	3	0	0	0	0	0	0	0	0	0	0
8:15:00	4	0	63	26	0	0	0	0	9	4	0	0	0	0	0	0	0	0	0	0
8:30:00	5	1	89	26	0	0	0	0	10	1	0	0	0	0	0	0	0	0	0	0
8:45:00	6	1	117	28	0	0	0	0	11	1	0	0	0	0	0	0	0	0	0	0
9:00:00	7	1	155	38	0	0	0	0	14	3	0	0	0	0	0	0	0	0	0	0
9:15:00	7	0	155	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0
16:00:00	7	0	155	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0
16:15:00	7	0	181	26	0	0	0	0	15	1	0	0	0	0	0	0	0	0	0	0
16:30:00	9	2	225	44	0	0	0	0	16	1	0	0	0	0	0	0	0	0	0	0
16:45:00	10	1	288	63	0	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0
17:00:00	12	2	334	46	0	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0
17:15:00	12	0	377	43	0	0	0	0	17	1	0	0	0	0	0	0	0	0	0	0
17:30:00	12	0	428	51	0	0	0	0	17	0	0	0	0	0	0	0	0	0	0	0
17:45:00	12	0	481	53	0	0	0	0	19	2	0	0	0	0	0	0	0	0	0	0
18:00:00	14	2	540	59	0	0	0	0	19	0	0	0	0	0	0	0	0	0	0	0
18:15:00	14	0	540	0	0	0	0	0	19	0	0	0	0	0	0	0	0	0	0	0
18:15:15	14	0	540	0	0	0	0	0	19	0	0	0	0	0	0	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 8-Feb-18 Site #: 1802200003

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Cyclists - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	3	3	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	7	4	0	0	3	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	21	14	0	0	4	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	29	8	0	0	7	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	51	22	0	0	12	5	3	1	0	0	0	0	1	1	0	0	0	0	0	0
8:30:00	64	13	0	0	17	5	3	0	0	0	0	0	1	0	0	0	0	0	0	0
8:45:00	75	11	0	0	21	4	4	1	0	0	0	0	1	0	0	0	0	0	0	0
9:00:00	101	26	0	0	24	3	6	2	0	0	0	0	1	0	0	0	0	0	0	0
9:15:00	101	0	0	0	24	0	6	0	0	0	0	0	1	0	0	0	0	0	0	0
16:00:00	101	0	0	0	24	0	6	0	0	0	0	0	1	0	0	0	0	0	0	0
16:15:00	119	18	0	0	31	7	7	1	0	0	0	0	1	0	0	0	0	0	0	0
16:30:00	139	20	0	0	36	5	7	0	0	0	0	0	1	0	0	0	0	0	0	0
16:45:00	157	18	0	0	41	5	7	0	0	0	0	0	1	0	0	0	0	0	0	0
17:00:00	167	10	0	0	50	9	8	1	0	0	0	0	1	0	0	0	0	0	0	0
17:15:00	183	16	0	0	52	2	8	0	0	0	0	0	1	0	0	0	0	0	0	0
17:30:00	204	21	0	0	63	11	8	0	0	0	0	0	1	0	0	0	0	0	0	0
17:45:00	219	15	0	0	72	9	8	0	0	0	0	0	1	0	0	0	0	0	0	0
18:00:00	241	22	0	0	79	7	8	0	0	0	0	0	1	0	0	0	0	0	0	0
18:15:00	241	0	0	0	79	0	8	0	0	0	0	0	1	0	0	0	0	0	0	0
18:15:15	241	0	0	0	79	0	8	0	0	0	0	0	1	0	0	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 8-Feb-18 Site #: 1802200003

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Cyclists - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	6	6	17	17	0	0	1	1	1	1	0	0	0	0	0	0	0	0
7:30:00	0	0	16	10	44	27	0	0	2	1	3	2	0	0	0	0	0	0	0	0
7:45:00	0	0	28	12	63	19	0	0	3	1	5	2	0	0	0	0	0	0	0	0
8:00:00	0	0	38	10	100	37	0	0	3	0	6	1	0	0	0	0	0	0	0	0
8:15:00	0	0	58	20	125	25	0	0	6	3	8	2	0	0	0	0	0	0	0	0
8:30:00	0	0	83	25	176	51	0	0	7	1	9	1	0	0	0	0	0	0	0	0
8:45:00	0	0	115	32	204	28	0	0	7	0	10	1	0	0	0	0	0	0	0	0
9:00:00	0	0	150	35	236	32	0	0	8	1	11	1	0	0	0	0	0	0	0	0
9:15:00	0	0	150	0	236	0	0	0	8	0	11	0	0	0	0	0	0	0	0	0
16:00:00	0	0	150	0	236	0	0	0	8	0	11	0	0	0	0	0	0	0	0	0
16:15:00	0	0	165	15	261	25	0	0	9	1	13	2	0	0	0	0	0	0	0	0
16:30:00	0	0	183	18	274	13	0	0	9	0	14	1	0	0	0	0	0	0	0	0
16:45:00	0	0	204	21	301	27	0	0	11	2	15	1	0	0	0	0	0	0	0	0
17:00:00	0	0	229	25	333	32	0	0	12	1	15	0	0	0	0	0	0	0	0	0
17:15:00	0	0	244	15	369	36	0	0	12	0	16	1	0	0	0	0	0	0	0	0
17:30:00	0	0	266	22	394	25	0	0	12	0	16	0	0	0	0	0	0	0	0	0
17:45:00	0	0	274	8	428	34	0	0	12	0	17	1	0	0	0	0	0	0	0	0
18:00:00	0	0	276	2	460	32	0	0	12	0	17	0	0	0	0	0	0	0	0	0
18:15:00	0	0	276	0	460	0	0	0	12	0	17	0	0	0	0	0	0	0	0	0
18:15:15	0	0	276	0	460	0	0	0	12	0	17	0	0	0	0	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Morning Peak Diagram

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

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

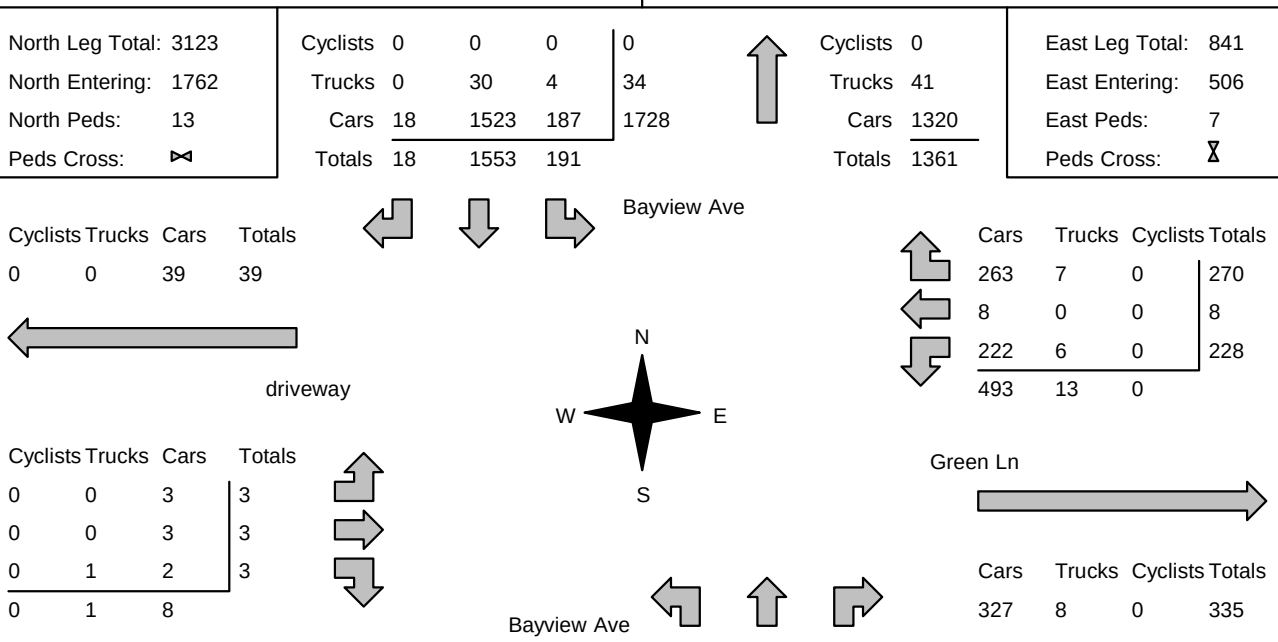
Municipality: Markham
Site #: 1802200004
Intersection: Bayview Ave & Green Ln
TFR File #: 1
Count date: 8-Feb-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Bayview Ave runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 18:00:00

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

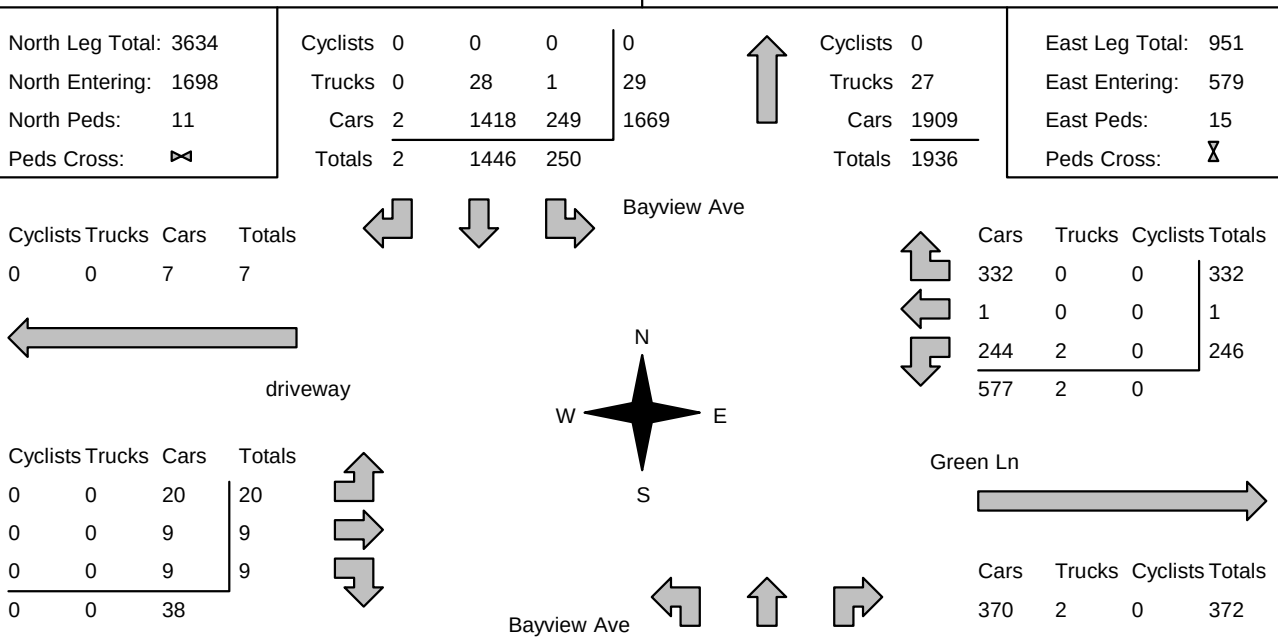
Municipality: Markham
Site #: 1802200004
Intersection: Bayview Ave & Green Ln
TFR File #: 1
Count date: 8-Feb-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Bayview Ave runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Total Count Diagram

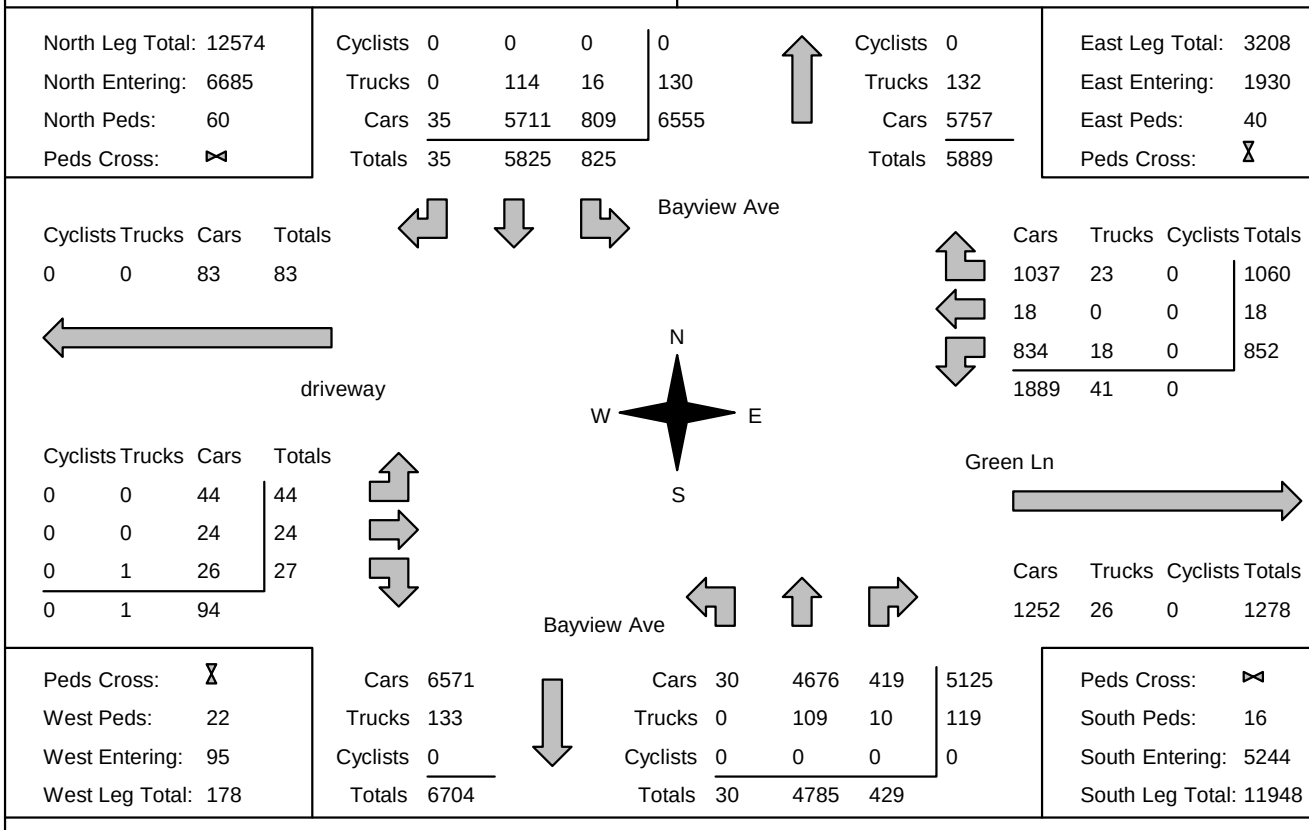
Municipality: Markham
Site #: 1802200004
Intersection: Bayview Ave & Green Ln
TFR File #: 1
Count date: 8-Feb-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Bayview Ave runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: Bayview Ave & Green Ln | **Count Date:** 8-Feb-18 | **Municipality:** Markham

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*130*	*1451*	*8*	*1589*	*20*
9:00:00	*191*	*1553*	*18*	*1762*	*13*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*229*	*1320*	*4*	*1553*	*12*
18:00:00	*275*	*1501*	*5*	*1781*	*15*
Totals:	825	5825	35	6685	60

North/South Total Approaches: *11929*

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*9*	*607*	*74*	*690*	*2*
9:00:00	*13*	*1088*	*141*	*1242*	*1*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*5*	*1580*	*118*	*1703*	*8*
18:00:00	*3*	*1510*	*96*	*1609*	*5*
S Totals:	30	4785	429	5244	16

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*147*	*5*	*150*	*302*	*5*
9:00:00	*228*	*8*	*270*	*506*	*7*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*217*	*3*	*320*	*540*	*20*
18:00:00	*260*	*2*	*320*	*582*	*8*
Totals:	852	18	1060	1930	40

East/West Total Approaches: *2025*

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*3*	*1*	*3*	*7*	*5*
9:00:00	*3*	*3*	*3*	*9*	*3*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*29*	*13*	*16*	*58*	*11*
18:00:00	*9*	*7*	*5*	*21*	*3*
W Totals:	44	24	27	95	22

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*0:00*	*0:00*
Crossing Values:	*0*	*177*	*253*	*0*	*279*	*296*	*0*	*0*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 8-Feb-18 Site #: 1802200004

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Cyclists - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	24	24	270	270	0	0	1	1	12	12	0	0	0	0	0	0	0	0	7	7
7:30:00	46	22	600	330	1	1	2	1	24	12	0	0	0	0	0	0	0	0	16	9
7:45:00	74	28	1032	432	3	2	6	4	30	6	0	0	0	0	0	0	0	0	17	1
8:00:00	123	49	1411	379	8	5	7	1	40	10	0	0	0	0	0	0	0	0	20	3
8:15:00	170	47	1816	405	11	3	8	1	48	8	0	0	0	0	0	0	0	0	26	6
8:30:00	220	50	2210	394	13	2	11	3	51	3	0	0	0	0	0	0	0	0	29	3
8:45:00	259	39	2564	354	19	6	11	0	60	9	0	0	0	0	0	0	0	0	30	1
9:00:00	310	51	2934	370	26	7	11	0	70	10	0	0	0	0	0	0	0	0	33	3
9:15:00	310	0	2934	0	26	0	11	0	70	0	0	0	0	0	0	0	0	0	33	0
16:00:00	310	0	2934	0	26	0	11	0	70	0	0	0	0	0	0	0	0	0	33	0
16:15:00	365	55	3209	275	29	3	13	2	74	4	0	0	0	0	0	0	0	0	39	6
16:30:00	422	57	3546	337	30	1	14	1	77	3	0	0	0	0	0	0	0	0	42	3
16:45:00	477	55	3879	333	30	0	14	0	84	7	0	0	0	0	0	0	0	0	43	1
17:00:00	536	59	4234	355	30	0	14	0	90	6	0	0	0	0	0	0	0	0	45	2
17:15:00	607	71	4594	360	30	0	14	0	97	7	0	0	0	0	0	0	0	0	51	6
17:30:00	671	64	4964	370	32	2	15	1	105	8	0	0	0	0	0	0	0	0	53	2
17:45:00	736	65	5313	349	33	1	16	1	109	4	0	0	0	0	0	0	0	0	58	5
18:00:00	809	73	5711	398	35	2	16	0	114	5	0	0	0	0	0	0	0	0	60	2
18:15:00	809	0	5711	0	35	0	16	0	114	0	0	0	0	0	0	0	0	0	60	0
18:15:15	809	0	5711	0	35	0	16	0	114	0	0	0	0	0	0	0	0	0	60	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 8-Feb-18 Site #: 1802200004

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Cyclists - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	21	21	0	0	19	19	1	1	0	0	1	1	0	0	0	0	0	0	2	2
7:30:00	52	31	2	2	51	32	2	1	0	0	6	5	0	0	0	0	0	0	4	2
7:45:00	88	36	3	1	86	35	4	2	0	0	6	0	0	0	0	0	0	0	5	1
8:00:00	142	54	5	2	140	54	5	1	0	0	10	4	0	0	0	0	0	0	5	0
8:15:00	193	51	6	1	208	68	8	3	0	0	12	2	0	0	0	0	0	0	5	0
8:30:00	245	52	10	4	282	74	9	1	0	0	14	2	0	0	0	0	0	0	7	2
8:45:00	318	73	11	1	353	71	11	2	0	0	15	1	0	0	0	0	0	0	10	3
9:00:00	364	46	13	2	403	50	11	0	0	0	17	2	0	0	0	0	0	0	12	2
9:15:00	364	0	13	0	403	0	11	0	0	0	17	0	0	0	0	0	0	0	12	0
16:00:00	364	0	13	0	403	0	11	0	0	0	17	0	0	0	0	0	0	0	12	0
16:15:00	416	52	13	0	483	80	13	2	0	0	19	2	0	0	0	0	0	0	15	3
16:30:00	467	51	16	3	550	67	14	1	0	0	21	2	0	0	0	0	0	0	19	4
16:45:00	519	52	16	0	644	94	15	1	0	0	21	0	0	0	0	0	0	0	24	5
17:00:00	576	57	16	0	719	75	16	1	0	0	21	0	0	0	0	0	0	0	32	8
17:15:00	658	82	17	1	812	93	16	0	0	0	21	0	0	0	0	0	0	0	33	1
17:30:00	711	53	17	0	882	70	16	0	0	0	21	0	0	0	0	0	0	0	34	1
17:45:00	781	70	18	1	965	83	17	1	0	0	22	1	0	0	0	0	0	0	39	5
18:00:00	834	53	18	0	1037	72	18	1	0	0	23	1	0	0	0	0	0	0	40	1
18:15:00	834	0	18	0	1037	0	18	0	0	0	23	0	0	0	0	0	0	0	40	0
18:15:15	834	0	18	0	1037	0	18	0	0	0	23	0	0	0	0	0	0	0	40	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 8-Feb-18 Site #: 1802200004

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Cyclists - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	5	5	94	94	10	10	0	0	7	7	0	0	0	0	0	0	0	0	0	0
7:30:00	7	2	214	120	29	19	0	0	15	8	2	2	0	0	0	0	0	0	2	2
7:45:00	9	2	371	157	41	12	0	0	19	4	2	0	0	0	0	0	0	0	2	0
8:00:00	9	0	580	209	70	29	0	0	27	8	4	2	0	0	0	0	0	0	2	0
8:15:00	10	1	816	236	95	25	0	0	33	6	4	0	0	0	0	0	0	0	2	0
8:30:00	14	4	1055	239	121	26	0	0	45	12	5	1	0	0	0	0	0	0	2	0
8:45:00	15	1	1355	300	154	33	0	0	51	6	5	0	0	0	0	0	0	0	3	1
9:00:00	22	7	1634	279	207	53	0	0	61	10	8	3	0	0	0	0	0	0	3	0
9:15:00	22	0	1634	0	207	0	0	0	61	0	8	0	0	0	0	0	0	0	3	0
16:00:00	22	0	1634	0	207	0	0	0	61	0	8	0	0	0	0	0	0	0	3	0
16:15:00	23	1	2011	377	234	27	0	0	65	4	8	0	0	0	0	0	0	0	7	4
16:30:00	24	1	2408	397	261	27	0	0	75	10	8	0	0	0	0	0	0	0	8	1
16:45:00	26	2	2792	384	288	27	0	0	80	5	8	0	0	0	0	0	0	0	11	3
17:00:00	27	1	3189	397	325	37	0	0	86	6	8	0	0	0	0	0	0	0	11	0
17:15:00	27	0	3565	376	344	19	0	0	96	10	8	0	0	0	0	0	0	0	13	2
17:30:00	28	1	3965	400	373	29	0	0	102	6	9	1	0	0	0	0	0	0	13	0
17:45:00	28	0	4290	325	395	22	0	0	107	5	9	0	0	0	0	0	0	0	16	3
18:00:00	30	2	4676	386	419	24	0	0	109	2	10	1	0	0	0	0	0	0	16	0
18:15:00	30	0	4676	0	419	0	0	0	109	0	10	0	0	0	0	0	0	0	16	0
18:15:15	30	0	4676	0	419	0	0	0	109	0	10	0	0	0	0	0	0	0	16	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 8-Feb-18 Site #: 1802200004

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Cyclists - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:30:00	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	2	1
7:45:00	1	1	1	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
8:00:00	3	2	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	5	3
8:15:00	4	1	1	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	6	1
8:30:00	5	1	1	0	4	0	0	0	0	0	1	1	0	0	0	0	0	0	7	1
8:45:00	5	0	1	0	4	0	0	0	0	0	1	0	0	0	0	0	0	0	8	1
9:00:00	6	1	4	3	5	1	0	0	0	0	1	0	0	0	0	0	0	0	8	0
9:15:00	6	0	4	0	5	0	0	0	0	0	1	0	0	0	0	0	0	0	8	0
16:00:00	6	0	4	0	5	0	0	0	0	0	1	0	0	0	0	0	0	0	8	0
16:15:00	18	12	9	5	12	7	0	0	0	0	1	0	0	0	0	0	0	0	13	5
16:30:00	23	5	12	3	15	3	0	0	0	0	1	0	0	0	0	0	0	0	15	2
16:45:00	31	8	16	4	19	4	0	0	0	0	1	0	0	0	0	0	0	0	16	1
17:00:00	35	4	17	1	21	2	0	0	0	0	1	0	0	0	0	0	0	0	19	3
17:15:00	37	2	19	2	23	2	0	0	0	0	1	0	0	0	0	0	0	0	21	2
17:30:00	43	6	21	2	24	1	0	0	0	0	1	0	0	0	0	0	0	0	21	0
17:45:00	44	1	22	1	24	0	0	0	0	0	1	0	0	0	0	0	0	0	22	1
18:00:00	44	0	24	2	26	2	0	0	0	0	1	0	0	0	0	0	0	0	22	0
18:15:00	44	0	24	0	26	0	0	0	0	0	1	0	0	0	0	0	0	0	22	0
18:15:15	44	0	24	0	26	0	0	0	0	0	1	0	0	0	0	0	0	0	22	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Morning Peak Diagram

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

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

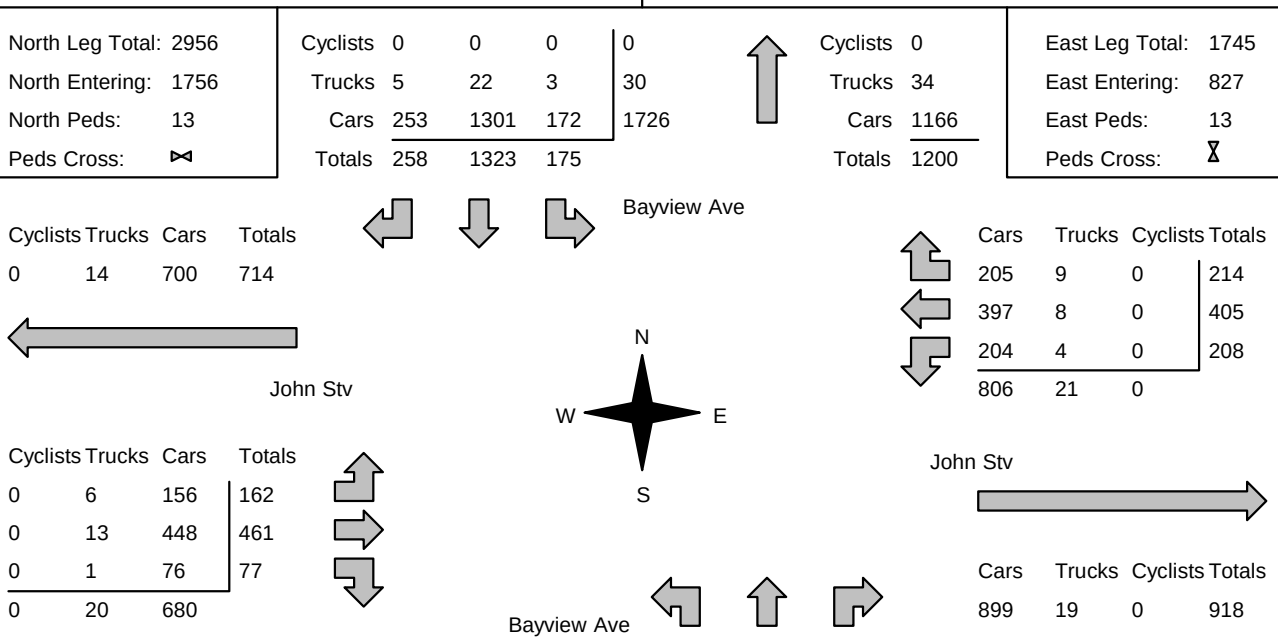
Municipality: Markham
Site #: 1802200005
Intersection: Bayview Ave & John Stv
TFR File #: 1
Count date: 8-Feb-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Bayview Ave runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 18:00:00

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

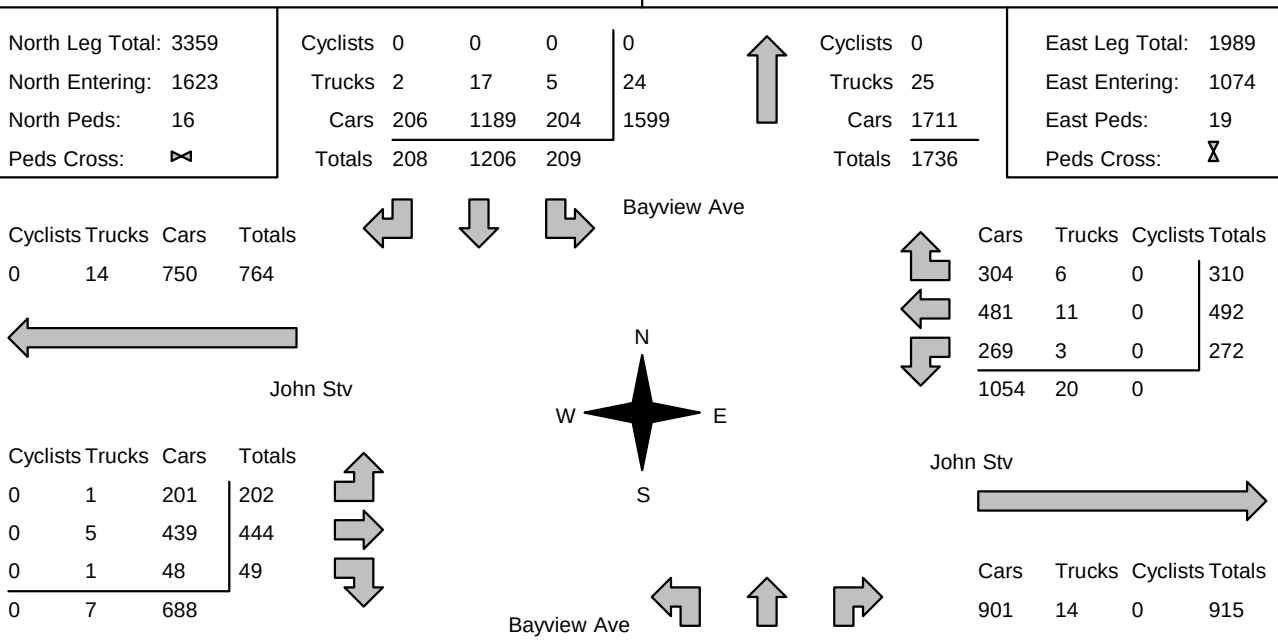
Municipality: Markham
Site #: 1802200005
Intersection: Bayview Ave & John Stv
TFR File #: 1
Count date: 8-Feb-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Bayview Ave runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Total Count Diagram

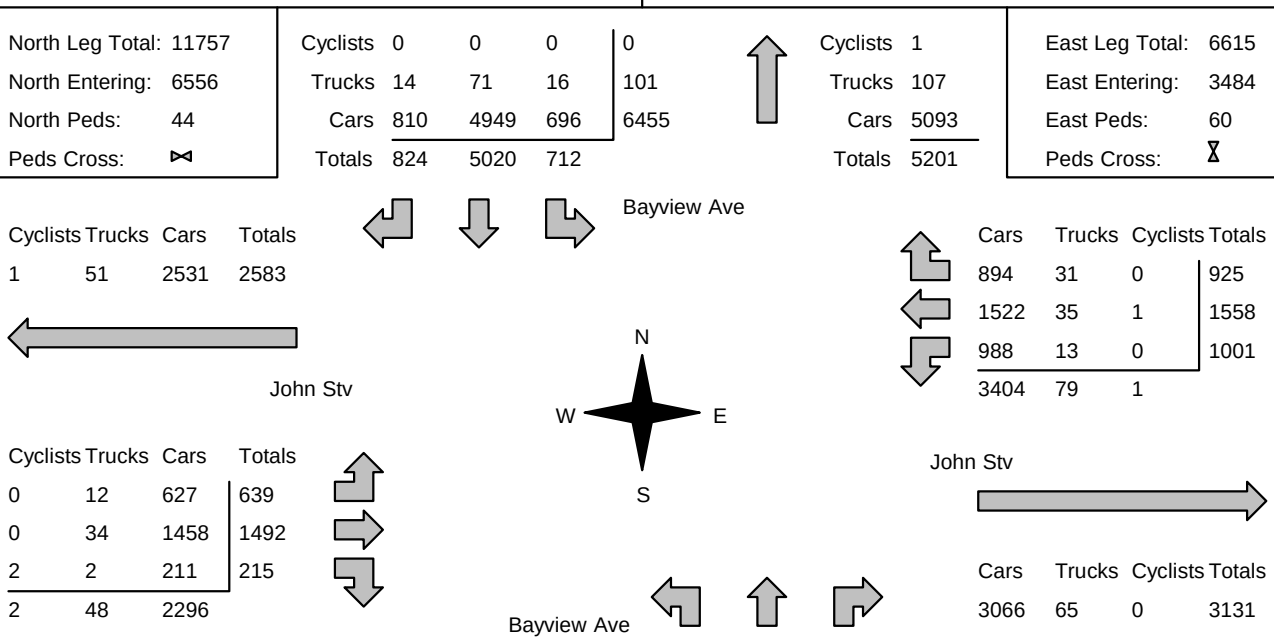
Municipality: Markham
Site #: 1802200005
Intersection: Bayview Ave & John Stv
TFR File #: 1
Count date: 8-Feb-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Bayview Ave runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: Bayview Ave & John Stv | **Count Date:** 8-Feb-18 | **Municipality:** Markham

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*126*	*1344*	*138*	*1608*	*7*
9:00:00	*175*	*1323*	*258*	*1756*	*13*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*195*	*1084*	*209*	*1488*	*9*
18:00:00	*216*	*1269*	*219*	*1704*	*15*
Totals:	712	5020	824	6556	44

North/South Total Approaches: *11321*

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*27*	*473*	*132*	*632*	*15*
9:00:00	*51*	*824*	*282*	*1157*	*11*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*55*	*1224*	*240*	*1519*	*13*
18:00:00	*68*	*1116*	*273*	*1457*	*18*
S Totals:	201	3637	927	4765	57

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*260*	*222*	*134*	*616*	*14*
9:00:00	*208*	*405*	*214*	*827*	*13*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*287*	*457*	*282*	*1026*	*16*
18:00:00	*246*	*474*	*295*	*1015*	*17*
Totals:	1001	1558	925	3484	60

East/West Total Approaches: *5830*

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*90*	*221*	*49*	*360*	*2*
9:00:00	*162*	*461*	*77*	*700*	*10*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*189*	*349*	*42*	*580*	*8*
18:00:00	*198*	*461*	*47*	*706*	*7*
W Totals:	639	1492	215	2346	27

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*0:00*	*0:00*
Crossing Values:	*0*	*594*	*855*	*0*	*955*	*951*	*0*	*0*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 8-Feb-18 Site #: 1802200005

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Cyclists - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	25	25	267	267	19	19	3	3	3	3	2	2	0	0	0	0	0	0	0	0
7:30:00	45	20	574	307	50	31	4	1	11	8	3	1	0	0	0	0	0	0	1	1
7:45:00	82	37	959	385	83	33	5	1	14	3	5	2	0	0	0	0	0	0	3	2
8:00:00	119	37	1324	365	132	49	7	2	20	6	6	1	0	0	0	0	0	0	7	4
8:15:00	163	44	1657	333	189	57	8	1	26	6	6	0	0	0	0	0	0	0	7	0
8:30:00	200	37	1991	334	258	69	8	0	32	6	6	0	0	0	0	0	0	0	9	2
8:45:00	244	44	2304	313	322	64	10	2	35	3	10	4	0	0	0	0	0	0	13	4
9:00:00	291	47	2625	321	385	63	10	0	42	7	11	1	0	0	0	0	0	0	20	7
9:15:00	291	0	2625	0	385	0	10	0	42	0	11	0	0	0	0	0	0	0	20	0
16:00:00	291	0	2625	0	385	0	10	0	42	0	11	0	0	0	0	0	0	0	20	0
16:15:00	336	45	2857	232	433	48	11	1	46	4	11	0	0	0	0	0	0	0	23	3
16:30:00	389	53	3127	270	491	58	11	0	49	3	12	1	0	0	0	0	0	0	24	1
16:45:00	424	35	3423	296	533	42	13	2	52	3	12	0	0	0	0	0	0	0	25	1
17:00:00	483	59	3695	272	593	60	13	0	56	4	12	0	0	0	0	0	0	0	29	4
17:15:00	539	56	4023	328	650	57	14	1	60	4	14	2	0	0	0	0	0	0	36	7
17:30:00	593	54	4316	293	697	47	16	2	66	6	14	0	0	0	0	0	0	0	40	4
17:45:00	641	48	4634	318	745	48	16	0	68	2	14	0	0	0	0	0	0	0	42	2
18:00:00	696	55	4949	315	810	65	16	0	71	3	14	0	0	0	0	0	0	0	44	2
18:15:00	696	0	4949	0	810	0	16	0	71	0	14	0	0	0	0	0	0	0	44	0
18:15:15	696	0	4949	0	810	0	16	0	71	0	14	0	0	0	0	0	0	0	44	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 8-Feb-18 Site #: 1802200005

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Cyclists - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	57	57	27	27	28	28	1	1	0	0	2	2	0	0	0	0	0	0	0	0
7:30:00	125	68	60	33	57	29	2	1	2	2	4	2	0	0	0	0	0	0	1	1
7:45:00	196	71	136	76	80	23	2	0	3	1	7	3	0	0	0	0	0	0	4	3
8:00:00	257	61	216	80	124	44	3	1	6	3	10	3	0	0	0	0	0	0	14	10
8:15:00	313	56	316	100	170	46	7	4	7	1	12	2	0	0	0	0	0	0	16	2
8:30:00	365	52	415	99	219	49	7	0	8	1	15	3	0	0	0	0	0	0	18	2
8:45:00	422	57	526	111	274	55	7	0	12	4	15	0	0	0	0	0	0	0	23	5
9:00:00	461	39	613	87	329	55	7	0	14	2	19	4	0	0	0	0	0	0	27	4
9:15:00	461	0	613	0	329	0	7	0	14	0	19	0	0	0	0	0	0	0	27	0
16:00:00	461	0	613	0	329	0	7	0	14	0	19	0	0	0	0	0	0	0	27	0
16:15:00	532	71	718	105	387	58	8	1	18	4	20	1	0	0	0	0	0	0	32	5
16:30:00	598	66	818	100	454	67	9	1	22	4	22	2	0	0	1	1	0	0	33	1
16:45:00	669	71	931	113	519	65	10	1	24	2	23	1	0	0	1	0	0	0	41	8
17:00:00	744	75	1057	126	607	88	11	1	26	2	23	0	0	0	1	0	0	0	43	2
17:15:00	810	66	1170	113	680	73	11	0	29	3	26	3	0	0	1	0	0	0	51	8
17:30:00	867	57	1299	129	758	78	12	1	33	4	28	2	0	0	1	0	0	0	52	1
17:45:00	923	56	1412	113	823	65	13	1	34	1	30	2	0	0	1	0	0	0	57	5
18:00:00	988	65	1522	110	894	71	13	0	35	1	31	1	0	0	1	0	0	0	60	3
18:15:00	988	0	1522	0	894	0	13	0	35	0	31	0	0	0	1	0	0	0	60	0
18:15:15	988	0	1522	0	894	0	13	0	35	0	31	0	0	0	1	0	0	0	60	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 8-Feb-18 Site #: 1802200005

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Cyclists - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	5	5	79	79	22	22	0	0	3	3	2	2	0	0	0	0	0	0	2	2
7:30:00	11	6	170	91	51	29	0	0	9	6	2	0	0	0	0	0	0	0	3	1
7:45:00	19	8	281	111	79	28	0	0	11	2	2	0	0	0	0	0	0	0	8	5
8:00:00	27	8	456	175	127	48	0	0	17	6	5	3	0	0	0	0	0	0	15	7
8:15:00	39	12	622	166	183	56	0	0	21	4	5	0	0	0	0	0	0	0	19	4
8:30:00	52	13	814	192	255	72	0	0	27	6	6	1	0	0	0	0	0	0	22	3
8:45:00	67	15	1037	223	331	76	1	1	32	5	7	1	0	0	0	0	0	0	22	0
9:00:00	77	10	1261	224	406	75	1	0	36	4	8	1	0	0	0	0	0	0	26	4
9:15:00	77	0	1261	0	406	0	1	0	36	0	8	0	0	0	0	0	0	0	26	0
16:00:00	77	0	1261	0	406	0	1	0	36	0	8	0	0	0	0	0	0	0	26	0
16:15:00	90	13	1554	293	460	54	1	0	38	2	8	0	0	0	0	0	0	0	29	3
16:30:00	106	16	1845	291	525	65	1	0	44	6	11	3	0	0	0	0	0	0	31	2
16:45:00	119	13	2177	332	595	70	2	1	48	4	11	0	0	0	0	0	0	0	35	4
17:00:00	131	12	2468	291	641	46	2	0	53	5	13	2	0	0	0	0	0	0	39	4
17:15:00	145	14	2774	306	711	70	2	0	61	8	14	1	0	0	0	0	0	0	43	4
17:30:00	169	24	3051	277	783	72	2	0	62	1	15	1	0	0	0	0	0	0	45	2
17:45:00	182	13	3315	264	843	60	2	0	63	1	15	0	0	0	1	1	0	0	54	9
18:00:00	199	17	3572	257	912	69	2	0	64	1	15	0	0	0	1	0	0	0	57	3
18:15:00	199	0	3572	0	912	0	2	0	64	0	15	0	0	0	1	0	0	0	57	0
18:15:15	199	0	3572	0	912	0	2	0	64	0	15	0	0	0	1	0	0	0	57	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 8-Feb-18 Site #: 1802200005

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Cyclists - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	14	14	23	23	8	8	1	1	2	2	0	0	0	0	0	0	0	0	0	0
7:30:00	31	17	69	46	21	13	1	0	4	2	0	0	0	0	0	0	0	0	0	0
7:45:00	60	29	137	68	36	15	1	0	6	2	0	0	0	0	0	0	0	0	2	2
8:00:00	89	29	212	75	49	13	1	0	9	3	0	0	0	0	0	0	0	0	2	0
8:15:00	127	38	309	97	70	21	1	0	11	2	0	0	0	0	0	0	0	0	3	1
8:30:00	163	36	427	118	87	17	3	2	12	1	1	1	0	0	0	0	0	0	6	3
8:45:00	205	42	532	105	105	18	5	2	16	4	1	0	0	0	0	0	0	0	10	4
9:00:00	245	40	660	128	125	20	7	2	22	6	1	0	0	0	0	0	0	0	12	2
9:15:00	245	0	660	0	125	0	7	0	22	0	1	0	0	0	0	0	0	0	12	0
16:00:00	245	0	660	0	125	0	7	0	22	0	1	0	0	0	0	0	0	0	12	0
16:15:00	289	44	732	72	134	9	8	1	23	1	1	0	0	0	0	0	1	1	17	5
16:30:00	330	41	806	74	140	6	10	2	24	1	1	0	0	0	0	0	2	1	17	0
16:45:00	387	57	907	101	150	10	10	0	24	0	2	1	0	0	0	0	2	0	18	1
17:00:00	431	44	1005	98	164	14	10	0	26	2	2	0	0	0	0	0	2	0	20	2
17:15:00	476	45	1111	106	175	11	10	0	27	1	2	0	0	0	0	0	2	0	24	4
17:30:00	531	55	1245	134	188	13	11	1	29	2	2	0	0	0	0	0	2	0	25	1
17:45:00	569	38	1350	105	197	9	12	1	31	2	2	0	0	0	0	0	2	0	27	2
18:00:00	627	58	1458	108	211	14	12	0	34	3	2	0	0	0	0	0	2	0	27	0
18:15:00	627	0	1458	0	211	0	12	0	34	0	2	0	0	0	0	0	2	0	27	0
18:15:15	627	0	1458	0	211	0	12	0	34	0	2	0	0	0	0	0	2	0	27	0

LOCATION:	Bayview Ave (YR 34) & Gre ane/ Shouldice Hospital	**MUNICIPALITY:**	Richmond Hill
CTCS:	141	**OUTER SYSTEM:**	Centracs
MODE/COMMENT:	SA	**CONTRO CABINET TYPE:**	Econolite Cobalt / TS2T1
PREPARED/CHECKED BY:	JS	**CONFLICT FLASH:**	Red & Red
PREPARATION DATE:	July 20, 2017	**DESIGN WALK SPEED:**	1.0 m/s (FDW based on full crossing at 1.2 m/s)
IMPLEMENTATION DATE:	July 20, 2017	**CHANNEL/DROP:**	

N

NEMA Phase (York)		AM 7:30-9:00 M-F, 9:00-19:00 Sat& Sun	PM 15:00-19:00 M-F	OFF 6:00-7:30, 9:00-15:00, 19:00-23:00 M-F, 19:00-23:00 Sat& Sun	Free 23:00-6:30 M-F, 23:00-9:00 Sat& Sun	Phase Mode (Fixed/Demanded/Callable)	Remarks
	Local Plan	Pattern 1	Pattern 2	Pattern 3	Pattern 99		
	System Plan	Plan 1	Plan 2	Plan 3	Plan 99		
1. NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT						Pedestrian Minimums: NSWK = 7 sec., NSFD = 26 sec. EWWK = 7 sec., EWFD = 23 sec. **Emergency vehicle pre-emption 3:** Serve NSG/NSDW min 20 secs and up to 100 secs if there are continuous emergency calls in NS direction.
2. Southbound Bayview Ave	WLK 7 FDW 26 MIN 33 EXT 0 MAX1 33 MAX2 0 AMB 4.5 ALR 2.5 SPLIT	100	100	80	0	Fixed	EW phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum EWG is 10 seconds. If ongoing vehicle demand exists on the stopbar loop, the EWG is capable of providing vehicle extensions up to the maximum green split during coordinated operation or 19 secs during Free operation. If a pedestrian call is received, the pedestrian minimum will be served. The EWWK & EWFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle demand. Unused extension time is given to the NSG.
3. NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT						
4. Eastbound Shouldice Hospital	WLK 7 FDW 23 MIN 10 EXT 3 MAX1 19 MAX2 0 AMB 4.0 ALR 4.0 SPLIT	40	40	40	0	Callable by stopbar loop and/or pushbutton; Extendable by stopbar loop.	During coordinated operation, the signal constantly cycles through main street FDW to improve response time to side street vehicle and pedestrian demand. During free plan, signal rests in NSWK and does not cycle through NSFD unless there is side street vehicle or pedestrian demand.
5. S/B Left Turn Arrow	WLK FDW MIN 7 EXT 3 MAX1 7 MAX2 0 AMB 3.0 ALR 1.0 SPLIT	12	16	12	0	Callable/Extendable by Setback Loop	NSFD reverts to NSWK if there is no side street demand at the end of the NSFD. • Increased CL from 130 to 140 secs during AM peak • Increased NSG by 10 secs during AM peak
6. Northbound Bayview Ave	WLK 7 FDW 26 MIN 33 EXT 0 MAX1 33 MAX2 0 AMB 4.5 ALR 2.5 SPLIT	88	84	68	0	Fixed	
7. NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT						
8. Westbound Green Lane	WLK 7 FDW 23 MIN 10 EXT 3 MAX1 19 MAX2 0 AMB 4.0 ALR 4.0 SPLIT	40	40	40	0	Callable by stopbar loop and/or pushbutton; Extendable by stopbar loop.	
	CL OF VP	140 106 26	140 87 26	120 82 26	0 (FREE) 0 (FREE) 0 (FREE)		

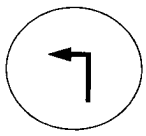
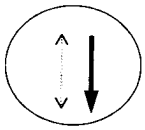
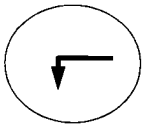
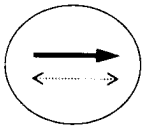
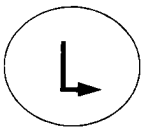
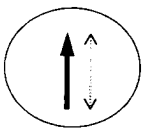
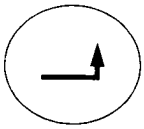
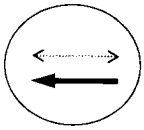
LEGEND:

SA - Semi-Actuated signal
WLK - Walk time
FDW - Flashing Don't Walk time
MIN - Minimum green time
EXT - Extension time
MAX1 - Maximum green time 1
MAX2 - Maximum green time 2
AMB - Amber
ALR -All Red
CL - Cycle Length
OF - Offset
VP - Vehicle Permissive
NSWK - North/South Walk
EWWK - East/West Walk
NSG - North/South Green
EWG - East/West Green
NSFD - North/South Flashing Don't Walk
EWFD - East/West Flashing Don't Walk
TSP - Transit Priority
APS - Audible Pedestrian Signal
RLC - Red Light Camera

NOTES:

LOCATION:	Bayview Ave (YR 34) & Joh
CTCS:	140
MODE/COMMENT:	SA
PREPARED/CHECKED BY:	JS
PREPARATION DATE:	July 20, 2017
IMPLEMENTATION DATE:	July 20, 2017
MUNICIPALITY:	Richmond Hill
PUTER SYSTEM:	Centracs
CONTR. /CABINET TYPE:	Econolite Cobalt / TS2T1
CONFLICT FLASH:	Red & Red
DESIGN WALK SPEED:	1.0 m/s (FDW based on full crossing at 1.2 m/s)
CHANNEL/DROP:	

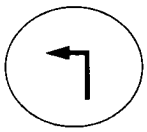
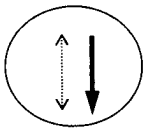
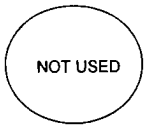
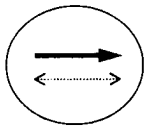
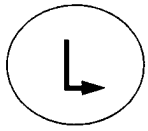
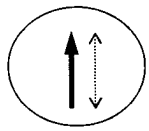
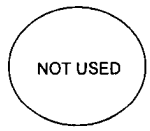
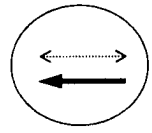
N

NEMA Phase (York)		AM 6:00-9:00 M-F, 9:00-19:00 Sat& Sun	PM 15:00-19:00 M-F	OFF 9:00-15:00, 19:00-23:00 M-F, 19:00-23:00 Sat& Sun	Free 23:00-7:00 M-F, 23:00-9:00 Sat& Sun	Phase Mode (Fixed/Demanded/Callable)	Remarks
	Local Plan	Pattern 1	Pattern 2	Pattern 3	Pattern 99		
	System Plan	Plan 1	Plan 2	Plan 3	Plan 99		
1. N/B Left Turn Arrow 	WLK FDW MIN 7 EXT 3 MAX1 7 MAX2 0 AMB 3.0 ALR 1.0 SPLIT	12	12	12	0	Callable/Extendable by Setback Loop	Pedestrian Minimums: NSWK = 7 sec., NSFD = 27 sec. EWWK = 7 sec., EWFD = 29 sec.
2. Southbound  Bayview Ave	WLK 7 FDW 27 MIN 34 EXT 0 MAX1 34 MAX2 0 AMB 4.5 ALR 2.5 SPLIT	69	66	49	0	Fixed	**Emergency vehicle pre-emption 3:** Serve NSG/NSDW min 20 secs and up to 100 secs if there are continuous emergency calls in NS direction.
3. W/B Left Turn Arrow 	WLK FDW MIN 7 EXT 3 MAX1 7 MAX2 0 AMB 3.0 ALR 1.0 SPLIT	12	15	12	0	Callable/Extendable by Setback Loop	**Emergency vehicle pre-emption 4:** Serve EWG/EWDW min 20 secs and up to 100 secs if there are continuous emergency calls in EW direction.
4. Eastbound  John St	WLK 7 FDW 29 MIN 10 EXT 3 MAX1 20 MAX2 0 AMB 4.0 ALR 4.5 SPLIT	47	47	47	0	Callable by stopbar loop and/or pushbutton; Extendable by stopbar loop.	EW phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum EWG is 10 seconds. If ongoing vehicle demand exists on the stopbar loop, the EWG is capable of providing vehicle extensions up to the maximum green split during coordinated operation or 20 secs during Free operation. If a pedestrian call is received, the pedestrian minimum will be served. The EWWK & EWFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle demand. Unused extension time is given to the NSG.
5. S/B Left Turn Arrow 	WLK FDW MIN 7 EXT 3 MAX1 7 MAX2 0 AMB 3.0 ALR 1.0 SPLIT	12	17	12	0	Callable/Extendable by Setback Loop	During coordinated operation, the signal constantly cycles through main street FDW to improve response time to side street vehicle and pedestrian demand. During free plan, signal rests in NSWK and does not cycle through NSFD unless there is side street vehicle or pedestrian demand. NSFD reverts to NSWK if there is no side street demand at the end of the NSFD.
6. Northbound  Bayview Ave	WLK 7 FDW 27 MIN 34 EXT 0 MAX1 34 MAX2 0 AMB 4.5 ALR 2.5 SPLIT	69	61	49	0	Fixed	• Increased CL from 130 to 140 secs during AM peak • Increased NSG by 10 secs during AM peak
7. E/B Left Turn Arrow 	WLK FDW MIN 7 EXT 3 MAX1 7 MAX2 0 AMB 3.0 ALR 1.0 SPLIT	12	15	12	0	Callable/Extendable by Setback Loop	**LEGEND:** SA - Semi-Actuated signal WLK - Walk time FDW - Flashing Don't Walk time MIN - Minimum green time EXT - Extension time MAX1 - Maximum green time 1 MAX2 - Maximum green time 2 AMB - Amber ALR -All Red CL - Cycle Length OF - Offset VP - Vehicle Permissive NSWK - North/South Walk EWWK - East/West Walk NSG - North/South Green EWG - East/West Green NSFD - North/South Flashing Don't Walk EWFD - East/West Flashing Don't Walk TSP - Transit Priority APS - Audible Pedestrian Signal RLC - Red Light Camera
8. Westbound  John St	WLK 7 FDW 29 MIN 10 EXT 3 MAX1 20 MAX2 0 AMB 4.0 ALR 4.5 SPLIT	47	47	47	0	Callable by stopbar loop and/or pushbutton; Extendable by stopbar loop.	
	CL OF VP	140 111 27	140 93 27	120 90 27	0 (FREE) 0 (FREE) 0 (FREE)		

NOTES:

LOCATION:	**Bayview Ave (YR 34) & Romfield Circuit S/ Willowbrook Rd**	*MUNICIPALITY:*	**Richmond Hill**
CTCS:	**142**	*COMPUTER SYSTEM:*	**Centracs**
MODE/COMMENT:	**SA**	*CONTROLLER TYPE:*	**Econolite Cobalt / TS2T1**
PREPARED/CHECKED BY:	**MQL**	*CONFLICT FLASH:*	**Red & Red**
PREPARATION DATE:	**June 19, 2017**	*DESIGN WALK SPEED:*	**1.0 m/s (FDW based on full crossing at 1.2 m/s)**
IMPLEMENTATION DATE:	**June 19, 2017**	*CHANNEL/DROP:*	

N

NEMA Phase (York)		AM 6:00-9:30 M-F, 8:00-19:00 Sat& Sun	PM 16:00-19:00 M-F	OFF 9:30-16:00, 19:00-23:00 M-F, 19:00-23:00 Sat& Sun	Free 23:00-7:00 M-F, 23:00-8:00 Sat& Sun	Phase Mode (Fixed/Demanded/Callable)	Remarks
	Local Plan	Pattern 1	Pattern 2	Pattern 3	Pattern 99		
	System Plan	Plan 1	Plan 2	Plan 3	Plan 99		
1. N/B Left Turn Arrow 	WLK FDW MIN 7 EXT 3 MAX1 7 MAX2 0 AMB 3.0 ALR 1.0 SPLIT	12	12	12	0	Callable/Extendable by Setback Loop	Pedestrian Minimums: NSWK = 7 sec., NSFD = 17 sec. EWWK = 7 sec., EWFD = 28 sec. **Emergency vehicle pre-emption 3:** Serve NSG/NSDW min 20 secs and up to 100 secs if there are continuous emergency calls in NS direction.
2. Southbound  Bayview Ave	WLK 7 FDW 17 MIN 30 EXT 0 MAX1 30 MAX2 0 AMB 4.5 ALR 2.5 SPLIT	64	64	54	0	Fixed	EW phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum EWG is 10 seconds. If ongoing vehicle demand exists on the stopbar loop, the EWG is capable of providing vehicle extensions up to the maximum green split during coordinated operation or 19 secs during Free operation. If a pedestrian call is received, the pedestrian minimum will be served. The EWWK & EWFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle demand. Unused extension time is given to the NSG.
3.  NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT						
4. Eastbound  Romfield Circuit	WLK 7 FDW 28 MIN 10 EXT 3 MAX1 19 MAX2 0 AMB 3.5 ALR 4.0 SPLIT	44	44	44	0	Callable by stopbar loop and/or pushbutton; Extendable by stopbar loop.	During coordinated operation, the signal constantly cycles through main street FDW to improve response time to side street vehicle and pedestrian demand. During free plan, signal rests in NSWK and does not cycle through NSFD unless there is side street vehicle or pedestrian demand. NSFD reverts to NSWK if there is no side street demand at the end of the NSFD.
5. S/B Left Turn Arrow 	WLK FDW MIN 7 EXT 3 MAX1 7 MAX2 0 AMB 3.0 ALR 1.0 SPLIT	12	16	20	0	Callable/Extendable by Setback Loop	**AM plan start time adjusted from 7:00 am to 6:00 am as per resident request.**
6. Northbound  Bayview Ave	WLK 7 FDW 17 MIN 30 EXT 0 MAX1 30 MAX2 0 AMB 4.5 ALR 2.5 SPLIT	64	60	46	0	Fixed	
7.  NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT						
8. Westbound  Willowbrook Rd	WLK 7 FDW 28 MIN 10 EXT 3 MAX1 19 MAX2 0 AMB 3.5 ALR 4.0 SPLIT	44	44	44	0	Callable by stopbar loop and/or pushbutton; Extendable by stopbar loop.	**LEGEND:** SA - Semi-Actuated signal WLK - Walk time FDW - Flashing Don't Walk time MIN - Minimum green time EXT - Extension time MAX1 - Maximum green time 1 MAX2 - Maximum green time 2 AMB - Amber ALR -All Red CL - Cycle Length OF - Offset VP - Vehicle Permissive NSWK - North/South Walk EWWK - East/West Walk NSG - North/South Green EWG - East/West Green NSFD - North/South Flashing Don't Walk EWFD - East/West Flashing Don't Walk TSP - Transit Priority APS - Audible Pedestrian Signal RLC - Red Light Camera
	CL OF VP	**120** **40** 17	**120** **75** 17	**110** **0** 17	**0 (FREE)** **0 (FREE)** 0 (FREE)		

NOTES:

Peak Hour Factors

Bayview Avenue & Romfield Circuit			
		Total	**PHF**
A.M.	8:00-8:15	824	**0.98**
	8:15-8:30	857	
	8:30-8:45	865	
	8:45-9:00	873	
	Total	3419	
		Total	**PHF**
P.M.	17:00-17:15	941	**0.94**
	17:15-17:30	1019	
	17:30-17:45	869	
	17:45-18:00	983	
	Total	**3812**	

PHF = peak hour volume/(maximum 15 minute volume *4)

Bayview Avenue & Royal Orchard Boulevard			
		Total	**PHF**
A.M.	8:00-8:15	813	**1.00**
	8:15-8:30	818	
	8:30-8:45	812	
	8:45-9:00	816	
	Total	3259	
		Total	**PHF**
P.M.	17:00-17:15	931	**0.97**
	17:15-17:30	936	
	17:30-17:45	949	
	17:45-18:00	974	
	Total	**3790**	

PHF = peak hour volume/(maximum 15 minute volume *4)

Royal Orchard Blvd (west) & Royal Orchard Blvd (east)			
		Total	**PHF**
A.M.	8:00-8:15	109	**0.85**
	8:15-8:30	124	
	8:30-8:45	107	
	8:45-9:00	142	
	Total	482	
		Total	**PHF**
P.M.	17:00-17:15	138	**0.92**
	17:15-17:30	126	
	17:30-17:45	114	
	17:45-18:00	130	
	Total	**508**	

PHF = peak hour volume/(maximum 15 minute volume *4)

Bayview Avenue & Green Lane			
		Total	**PHF**
A.M.	8:00-8:15	859	**0.98**
	8:15-8:30	869	
	8:30-8:45	896	
	8:45-9:00	895	
	Total	3519	
		Total	**PHF**
P.M.	17:00-17:15	976	**0.98**
	17:15-17:30	1001	
	17:30-17:45	1025	
	17:45-18:00	1014	
	Total	**4016**	

PHF = peak hour volume/(maximum 15 minute volume *4)

Bayview Avenue & John Street			
		Total	**PHF**
A.M.	8:00-8:15	1046	**0.97**
	8:15-8:30	1109	
	8:30-8:45	1149	
	8:45-9:00	1136	
	Total	4440	
		Total	**PHF**
P.M.	17:00-17:15	1220	**0.97**
	17:15-17:30	1201	
	17:30-17:45	1268	
	17:45-18:00	1253	
	Total	**4942**	

PHF = peak hour volume/(maximum 15 minute volume *4)

APPENDIX

D LEVEL OF SERVICE DEFINITIONS

LEVEL OF SERVICE DEFINITIONS AT SIGNALIZED INTERSECTIONS[1]

Level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. Specifically, level-of-service (LOS) criteria are stated in terms of the average control delay per vehicle, typically for a 15-min analysis period. The criteria are given in the table below. Delay may be measured in the field or estimated using software such as Highway Capacity Software. Delay is a complex measure and is dependent upon a number of variables, including quality of progression, the cycle length, the green ratio, and the *v/c* ratio for the lane group in question.

Level of Service	Features	Control Delay per vehicle (sec)
A	LOS A describes operations with very low delay, up to 10 sec per vehicle. This level of service occurs when progression is extremely favourable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	≤ 10
B	LOS B describes operations with delay greater than 10 and up to 20 sec per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay.	> 10 and ≤ 20
C	LOS C describes operations with delay greater than 20 and up to 35 sec per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.	> 20 and ≤ 35
D	LOS D describes operations with delay greater than 35 and up to 55 sec per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavourable progression, long cycle lengths, of high *v/c* ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	> 35 and ≤ 55
E	LOS E describes operations with delay greater than 55 and up to 80 sec per vehicle. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high *v/c* ratios. Individual cycle failures are frequent occurrences.	> 55 and ≤ 80
F	LOS F describes operations with delay in excess of 80 sec per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high *v/c* ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.	> 80

(1) Highway Capacity Manual 2000

LEVEL OF SERVICE DEFINITIONS AT UNSIGNALIZED INTERSECTIONS[1]

The level of service criteria for unsignalized intersections are given in the table below. As used here, total delay is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position. The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation.

Level of Service	Features	Average Total Delay (sec/veh)
A	Little or no traffic delay occurs. Approaches appear open, turning movements are easily made, and drivers have freedom of operation.	≤ 10
B	Short traffic delays occur. Many drivers begin to feel somewhat restricted in terms of freedom of operation.	> 10 and ≤ 15
C	Average traffic delays occur. Operations are generally stable, but drivers emerging from the minor street may experience difficulty in completing their movement. This may occasionally impact on the stability of flow on the major street.	> 15 and ≤ 25
D	Long traffic delays occur. Motorists emerging from the minor street experience significant restriction and frustration. Drivers on the major street will experience congestion and delay as drivers emerging from the minor street interfere with the major through movements.	> 25 and ≤ 35
E	Very long traffic delays occur. Operations approach the capacity of the intersection.	> 35 and ≤ 50
F	Saturation occurs, with vehicle demand exceeding the available capacity. Very long traffic delays occur.	> 50

(1) Highway Capacity Manual 2000.

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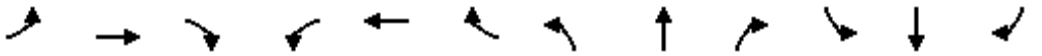
APPENDIX

E EXISTING INTERSECTION OPERATIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	29	86	92	14	249	28	1206	68	123	1483	9
Future Volume (vph)	32	29	86	92	14	249	28	1206	68	123	1483	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Total Lost time (s)		7.5		7.5	7.5		4.0	7.0	7.0	4.0	7.0	
Lane Util. Factor		0.95		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		0.98		1.00	0.97		1.00	1.00	0.91	1.00	1.00	
Flpb, ped/bikes		1.00		0.98	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		0.91		1.00	0.86		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3170		1736	1546		1789	3074	1417	1805	3074	
Flt Permitted		0.62		0.66	1.00		0.11	1.00	1.00	0.16	1.00	
Satd. Flow (perm)		1989		1199	1546		214	3074	1417	299	3074	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	33	30	88	94	14	254	29	1231	69	126	1513	9
RTOR Reduction (vph)	0	75	0	0	131	0	0	0	28	0	0	0
Lane Group Flow (vph)	0	76	0	94	137	0	29	1231	41	126	1522	0
Confl. Peds. (#/hr)	29		29	29		29	8		63	63		8
Heavy Vehicles (%)	1%	3%	1%	3%	2%	3%	2%	25%	5%	1%	25%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8			6		6	2		
Actuated Green, G (s)		14.6		14.6	14.6		63.0	58.9	58.9	69.8	62.3	
Effective Green, g (s)		14.6		14.6	14.6		63.0	58.9	58.9	69.8	62.3	
Actuated g/C Ratio		0.15		0.15	0.15		0.63	0.59	0.59	0.70	0.63	
Clearance Time (s)		7.5		7.5	7.5		4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		291		175	226		200	1819	838	323	1924	
v/s Ratio Prot					c0.09		0.01	0.40		c0.03	c0.49	
v/s Ratio Perm		0.04		0.08			0.09		0.03	0.24		
v/c Ratio		0.26		0.54	0.60		0.14	0.68	0.05	0.39	0.79	
Uniform Delay, d1		37.7		39.3	39.7		8.9	13.8	8.5	7.4	13.8	
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.5		3.2	4.5		0.3	2.0	0.1	0.8	3.4	
Delay (s)		38.1		42.5	44.3		9.2	15.9	8.6	8.2	17.2	
Level of Service		D		D	D		A	B	A	A	B	
Approach Delay (s)		38.1			43.8			15.3			16.5	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	99.5	Sum of lost time (s)	18.5
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	144	0	0	55	0	1248	110	0	1568	93
Future Volume (Veh/h)	0	0	144	0	0	55	0	1248	110	0	1568	93
Sign Control		Stop			Yield			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	144	0	0	55	0	1248	110	0	1568	93
Pedestrians		1										
Lane Width (m)		3.7										
Walking Speed (m/s)		1.1										
Percent Blockage		0										
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (m)								134				
pX, platoon unblocked	0.77	0.77		0.77	0.77	0.77				0.77		
vC, conflicting volume	2193	2817	785	2032	2817	624	1569			1248		
vC1, stage 1 conf vol	1569	1569		1248	1248							
vC2, stage 2 conf vol	624	1248		784	1569							
vCu, unblocked vol	1954	2763	785	1746	2763	0	1569			730		
tC, single (s)	7.5	6.5	7.0	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	56	100	100	93	100			100		
cM capacity (veh/h)	112	144	329	159	144	839	416			671		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	144	55	624	624	110	784	784	93
Volume Left	0	0	0	0	0	0	0	0
Volume Right	144	55	0	0	110	0	0	93
cSH	329	839	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.44	0.07	0.37	0.37	0.06	0.46	0.46	0.05
Queue Length 95th (m)	16.3	1.6	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	24.2	9.6	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C	A						
Approach Delay (s)	24.2	9.6	0.0			0.0		
Approach LOS	C	A						

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	56.8%	ICU Level of Service		B
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	117	141	3	127	77	17
Future Volume (vph)	117	141	3	127	77	17
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	138	166	4	149	91	20

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total (vph)	304	153	111
Volume Left (vph)	0	4	91
Volume Right (vph)	166	0	20
Hadj (s)	-0.24	0.04	0.12
Departure Headway (s)	4.1	4.6	5.0
Degree Utilization, x	0.35	0.19	0.15
Capacity (veh/h)	847	755	662
Control Delay (s)	9.3	8.6	8.9
Approach Delay (s)	9.3	8.6	8.9
Approach LOS	A	A	A

Intersection Summary			
Delay	9.1		
Level of Service	A		
Intersection Capacity Utilization	26.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	3	3	228	8	270	13	1088	141	191	1553	18
Future Volume (vph)	3	3	3	228	8	270	13	1088	141	191	1553	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Total Lost time (s)		8.0		8.0	8.0	8.0	7.0	7.0	7.0	4.0	7.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes		0.99		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1757		1719	1883	1481	1788	2867	1517	1754	2957	
Flt Permitted		0.94		0.75	1.00	1.00	0.12	1.00	1.00	0.19	1.00	
Satd. Flow (perm)		1686		1361	1883	1481	228	2867	1517	347	2957	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	3	3	3	233	8	276	13	1110	144	195	1585	18
RTOR Reduction (vph)	0	2	0	0	0	138	0	0	45	0	1	0
Lane Group Flow (vph)	0	7	0	233	8	138	13	1110	99	195	1602	0
Confl. Peds. (#/hr)	13		1	1		13	3		7	7		3
Heavy Vehicles (%)	2%	2%	1%	6%	2%	7%	2%	34%	4%	4%	30%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4			8		8	6		6	2		
Actuated Green, G (s)		27.1		27.1	27.1	27.1	81.3	81.3	81.3	93.2	93.2	
Effective Green, g (s)		27.1		27.1	27.1	27.1	81.3	81.3	81.3	93.2	93.2	
Actuated g/C Ratio		0.20		0.20	0.20	0.20	0.60	0.60	0.60	0.69	0.69	
Clearance Time (s)		8.0		8.0	8.0	8.0	7.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		337		272	377	296	137	1722	911	321	2036	
v/s Ratio Prot					0.00			0.39		0.04	c0.54	
v/s Ratio Perm		0.00		c0.17		0.09	0.06		0.06	0.38		
v/c Ratio		0.02		0.86	0.02	0.47	0.09	0.64	0.11	0.61	0.79	
Uniform Delay, d1		43.4		52.2	43.4	47.7	11.4	17.6	11.5	10.7	14.3	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.0		22.3	0.0	1.2	1.4	1.9	0.2	3.2	3.2	
Delay (s)		43.5		74.5	43.5	48.9	12.8	19.5	11.8	13.9	17.5	
Level of Service		D		E	D	D	B	B	B	B	B	
Approach Delay (s)		43.5			60.4			18.5			17.1	
Approach LOS		D			E			B			B	

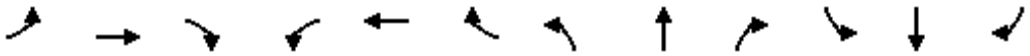
Intersection Summary			
HCM 2000 Control Delay	23.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	135.3	Sum of lost time (s)	19.0
Intersection Capacity Utilization	108.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	461	77	208	405	214	51	824	282	175	1323	258
Future Volume (vph)	162	461	77	208	405	214	51	824	282	175	1323	258
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Total Lost time (s)	4.0	8.5		4.0	8.5	8.5	4.0	7.0	7.0	4.0	7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1720	3367		1753	1872	1458	1807	3229	1542	1771	3149	1493
Flt Permitted	0.18	1.00		0.30	1.00	1.00	0.08	1.00	1.00	0.23	1.00	1.00
Satd. Flow (perm)	323	3367		550	1872	1458	146	3229	1542	436	3149	1493
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	167	475	79	214	418	221	53	849	291	180	1364	266
RTOR Reduction (vph)	0	10	0	0	0	70	0	0	80	0	0	55
Lane Group Flow (vph)	167	544	0	214	418	151	53	849	211	180	1364	211
Confl. Peds. (#/hr)	13		11	11		13	10		13	13		10
Heavy Vehicles (%)	6%	13%	1%	4%	8%	9%	1%	19%	3%	3%	22%	5%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4			8		8	6		6	2		2
Actuated Green, G (s)	42.3	34.3		42.3	34.3	34.3	69.0	63.0	63.0	73.0	65.0	65.0
Effective Green, g (s)	42.3	34.3		42.3	34.3	34.3	69.0	63.0	63.0	73.0	65.0	65.0
Actuated g/C Ratio	0.31	0.25		0.31	0.25	0.25	0.50	0.46	0.46	0.53	0.48	0.48
Clearance Time (s)	4.0	8.5		4.0	8.5	8.5	4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	181	844		240	469	365	146	1487	710	310	1496	709
v/s Ratio Prot	c0.05	0.16		0.05	0.22		0.02	0.26		c0.03	c0.43	
v/s Ratio Perm	c0.23			0.22		0.10	0.17		0.14	0.28		0.14
v/c Ratio	0.92	0.64		0.89	0.89	0.41	0.36	0.57	0.30	0.58	0.91	0.30
Uniform Delay, d1	42.6	45.8		43.0	49.5	42.8	23.7	27.0	23.1	18.5	33.2	21.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	45.1	1.7		31.1	18.7	0.8	1.5	1.6	1.1	2.8	9.9	1.1
Delay (s)	87.7	47.5		74.1	68.2	43.6	25.2	28.6	24.1	21.3	43.2	23.0
Level of Service	F	D		E	E	D	C	C	C	C	D	C
Approach Delay (s)		56.8			63.3			27.4			38.0	
Approach LOS		E			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	42.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	136.8	Sum of lost time (s)	23.5
Intersection Capacity Utilization	92.8%	ICU Level of Service	F
Analysis Period (min)	15		

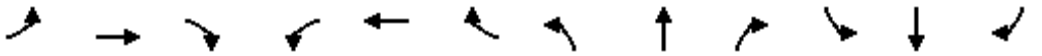
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	14	44	53	19	132	87	1529	75	179	1655	15
Future Volume (vph)	10	14	44	53	19	132	87	1529	75	179	1655	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Total Lost time (s)		7.5		7.5	7.5		4.0	7.0	7.0	4.0	7.0	
Lane Util. Factor		0.95		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		0.99		1.00	0.99		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes		1.00		0.99	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		0.90		1.00	0.87		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3178		1709	1650		1772	3804	1544	1825	3799	
Flt Permitted		0.86		0.71	1.00		0.07	1.00	1.00	0.07	1.00	
Satd. Flow (perm)		2741		1272	1650		137	3804	1544	132	3799	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	11	15	47	56	20	140	93	1627	80	190	1761	16
RTOR Reduction (vph)	0	42	0	0	124	0	0	0	33	0	0	0
Lane Group Flow (vph)	0	31	0	56	36	0	93	1627	47	190	1777	0
Confl. Peds. (#/hr)	1		10	10		1	2		12	12		2
Heavy Vehicles (%)	0%	8%	0%	6%	0%	0%	3%	1%	3%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8			6		6	2		
Actuated Green, G (s)		10.9		10.9	10.9		60.1	54.3	54.3	68.6	58.8	
Effective Green, g (s)		10.9		10.9	10.9		60.1	54.3	54.3	68.6	58.8	
Actuated g/C Ratio		0.12		0.12	0.12		0.64	0.58	0.58	0.73	0.63	
Clearance Time (s)		7.5		7.5	7.5		4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		317		147	191		188	2197	891	281	2376	
v/s Ratio Prot					0.02		0.03	0.43		c0.07	c0.47	
v/s Ratio Perm		0.01		c0.04			0.28		0.03	0.42		
v/c Ratio		0.10		0.38	0.19		0.49	0.74	0.05	0.68	0.75	
Uniform Delay, d1		37.2		38.4	37.6		12.2	14.7	8.6	22.1	12.4	
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1		1.6	0.5		2.0	2.3	0.1	6.3	2.2	
Delay (s)		37.3		40.1	38.0		14.2	16.9	8.8	28.4	14.6	
Level of Service		D		D	D		B	B	A	C	B	
Approach Delay (s)		37.3			38.6			16.4			15.9	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	94.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	125	0	0	66	0	1757	182	0	1566	93
Future Volume (Veh/h)	0	0	125	0	0	66	0	1757	182	0	1566	93
Sign Control		Stop			Yield			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	0	129	0	0	68	0	1811	188	0	1614	96
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								134				
pX, platoon unblocked	0.66	0.66		0.66	0.66	0.66				0.66		
vC, conflicting volume	2520	3425	807	2618	3425	906	1614			1811		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2276	3641	807	2424	3641	0	1614			1208		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	7.0	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	60	100	100	90	100			100		
cM capacity (veh/h)	13	3	324	7	3	715	400			380		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	129	68	906	906	188	807	807	96
Volume Left	0	0	0	0	0	0	0	0
Volume Right	129	68	0	0	188	0	0	96
cSH	324	715	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.40	0.10	0.53	0.53	0.11	0.47	0.47	0.06
Queue Length 95th (m)	14.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	23.2	10.6	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C	B						
Approach Delay (s)	23.2	10.6	0.0			0.0		
Approach LOS	C	B						

Intersection Summary				
Average Delay	1.0			
Intersection Capacity Utilization	56.9%	ICU Level of Service		B
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	86	122	3	204	66	27
Future Volume (vph)	86	122	3	204	66	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	93	133	3	222	72	29

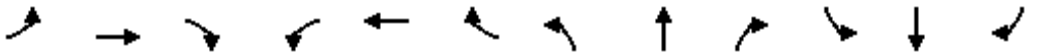
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total (vph)	226	225	101
Volume Left (vph)	0	3	72
Volume Right (vph)	133	0	29
Hadj (s)	-0.31	0.02	-0.01
Departure Headway (s)	4.1	4.4	4.9
Degree Utilization, x	0.26	0.28	0.14
Capacity (veh/h)	848	785	679
Control Delay (s)	8.5	9.1	8.6
Approach Delay (s)	8.5	9.1	8.6
Approach LOS	A	A	A

Intersection Summary			
Delay	8.8		
Level of Service	A		
Intersection Capacity Utilization	25.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	9	9	246	1	332	4	1584	113	250	1446	2
Future Volume (vph)	20	9	9	246	1	332	4	1584	113	250	1446	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Total Lost time (s)		8.0		8.0	8.0	8.0	7.0	7.0	7.0	2.0	7.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	0.97	1.00	1.00	0.95	1.00	1.00	
Flpb, ped/bikes		0.99		0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.97		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1790		1795	1921	1589	1823	3767	1535	1807	3766	
Flt Permitted		0.87		0.73	1.00	1.00	0.15	1.00	1.00	0.06	1.00	
Satd. Flow (perm)		1595		1384	1921	1589	296	3767	1535	119	3766	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	20	9	9	251	1	339	4	1616	115	255	1476	2
RTOR Reduction (vph)	0	7	0	0	0	129	0	0	30	0	0	0
Lane Group Flow (vph)	0	31	0	251	1	210	4	1616	85	255	1478	0
Confl. Peds. (#/hr)	11		5	5		11	6		15	15		6
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	2%	1%	1%	2%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4			8		8	6		6	2		
Actuated Green, G (s)		28.5		28.5	28.5	28.5	77.1	77.1	77.1	93.1	93.1	
Effective Green, g (s)		28.5		28.5	28.5	28.5	77.1	77.1	77.1	95.1	93.1	
Actuated g/C Ratio		0.21		0.21	0.21	0.21	0.56	0.56	0.56	0.70	0.68	
Clearance Time (s)		8.0		8.0	8.0	8.0	7.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		332		288	400	331	167	2126	866	255	2566	
v/s Ratio Prot					0.00			c0.43		c0.10	0.39	
v/s Ratio Perm		0.02		c0.18		0.13	0.01		0.06	0.59		
v/c Ratio		0.09		0.87	0.00	0.63	0.02	0.76	0.10	1.00	0.58	
Uniform Delay, d1		43.6		52.3	42.8	49.3	13.1	22.7	13.7	43.4	11.4	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1		23.8	0.0	3.9	0.3	2.6	0.2	56.4	0.9	
Delay (s)		43.7		76.1	42.8	53.2	13.4	25.3	13.9	99.7	12.4	
Level of Service		D		E	D	D	B	C	B	F	B	
Approach Delay (s)		43.7			62.9			24.5			25.2	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	136.6	Sum of lost time (s)	17.0
Intersection Capacity Utilization	105.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	202	444	49	272	492	310	64	1224	262	209	1206	208
Future Volume (vph)	202	444	49	272	492	310	64	1224	262	209	1206	208
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Total Lost time (s)	2.5	8.5		4.0	8.5	8.5	4.0	7.0	7.0	2.5	7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.96	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1806	3696		1785	1963	1552	1789	3767	1545	1772	3767	1558
Flt Permitted	0.10	1.00		0.35	1.00	1.00	0.10	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	194	3696		656	1963	1552	184	3767	1545	127	3767	1558
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	208	458	51	280	507	320	66	1262	270	215	1243	214
RTOR Reduction (vph)	0	6	0	0	0	91	0	0	83	0	0	59
Lane Group Flow (vph)	208	503	0	280	507	229	66	1262	187	215	1243	155
Confl. Peds. (#/hr)	16		14	14		16	8		19	19		8
Heavy Vehicles (%)	1%	2%	3%	2%	3%	2%	2%	2%	2%	3%	2%	1%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4			8		8	6		6	2		2
Actuated Green, G (s)	48.7	37.7		48.7	37.7	37.7	61.0	54.8	54.8	71.8	61.6	61.6
Effective Green, g (s)	51.7	37.7		48.7	37.7	37.7	61.0	54.8	54.8	73.3	61.6	61.6
Actuated g/C Ratio	0.37	0.27		0.35	0.27	0.27	0.44	0.39	0.39	0.52	0.44	0.44
Clearance Time (s)	4.0	8.5		4.0	8.5	8.5	4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	215	995		316	528	417	151	1474	604	236	1657	685
v/s Ratio Prot	c0.09	0.14		0.07	0.26		0.02	0.34		c0.09	0.33	
v/s Ratio Perm	c0.27			0.24		0.15	0.17		0.12	c0.38		0.10
v/c Ratio	0.97	0.51		0.89	0.96	0.55	0.44	0.86	0.31	0.91	0.75	0.23
Uniform Delay, d1	37.8	43.3		40.0	50.4	43.9	27.2	39.0	29.5	42.1	32.8	24.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	51.5	0.4		24.3	29.2	1.5	2.0	6.6	1.3	35.5	3.2	0.8
Delay (s)	89.4	43.7		64.3	79.7	45.3	29.2	45.6	30.8	77.6	35.9	25.2
Level of Service	F	D		E	E	D	C	D	C	E	D	C
Approach Delay (s)		56.9			65.8			42.4			39.9	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	48.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.5
Intersection Capacity Utilization	101.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX

F BACKGROUND DEVELOPMENT INFORMATION

MEMORANDUM

TO: Mayor and Members of Council

FROM: Jim Baird, Commissioner of Development Services

PREPARED BY: Rick Cefaratti, Planner II, West District

DATE: July 20, 2016

SUBJECT: **Hold Removal By-law**
Shining Hill Homes (John) Inc.
360 John Street, Thornhill
(North- side of John Street between Bayview Avenue and Aileen Road)
File No. ZA 15 108797

RECOMMENDATION

1. That the attached zoning by-law to remove the holding provision from zoning of the Shining Hill Homes (John) Inc. property at 360 John Street (PLAN 2382 PT LOT 6 & LOT 13), be enacted;

2. That Council approves a transfer of servicing allocation to this development that is not dependent upon the completion of infrastructure; and,

3. That Staff be authorized and directed to do all things necessary to give effect to this resolution.

COMMENT

On June 29, 2016, the Senior Development Manager of Planning & Urban Design Department endorsed site plan approval for a 101 unit street townhouse development on the subject property. The applicant is currently finalizing the project plans for submission to the City to initiate preparation of the site plan agreement.

The zoning of the property is subject to a holding provision. Building permits cannot be issued for the proposed development until Council removes the holding provision from the zoning of the property. The conditions of hold removal include Council's transfer of servicing allocation to this development that is not dependent upon the completion of infrastructure, the execution of

a site plan agreement, the conveyance of blocks to adjoining lots to the east which front onto McKelvey Drive and the conveyance of lands to the City at the terminus of Congress Court.

The applicant is requesting that the City remove the hold provision at this time to avoid having to wait until after the first Council meeting in September to commence construction. The majority of the conditions of hold removal, including the conveyance of blocks to adjoining owners, have been satisfied. Remaining conditions for the removal of the hold provision relating to the conveyance of lands to the City will be addressed through the Site Plan approval process.

The applicant has provided a written undertaking (see Attachment 1) not to compel the City to issue a full building permit for the proposed development until the site plan control agreement has been fully executed.

To avoid unduly delaying commencement of construction, staff support removing the holding provision at this time (see Attachment 2).

Attachment 1

LETTER OF UNDERTAKING

To: **Whom it May Concern**
Corporation of the City of Markham
101 Town Centre Boulevard
Markham, Ontario, L3R 9W3

July 20, 2016

Re: **360 John Street**
(North side of John Street)
Owner - Shining Hill Homes (John) Inc.

WHEREAS Shining Hill Homes (John) Inc., is the owner and applicant with respect to development approvals for the property described as 360 John Street, City of Markham, hereinafter referred to as the Subject Lands;

AND WHEREAS the applicant has formally applied to the City for removal of the holding symbol attached to the zoning category of the Subject Lands;

AND WHEREAS the City has endorsed the site plan for the applicant's development on the Subject Lands;

AND WHEREAS the applicant will be applying to the City for a conditional building permits to commence construction on the Subject Lands;

THEREFORE THE APPLICANT UNDERTAKES AND AGREES as follows:

1. to seriously commence the Subject Construction within twenty (20) business days of the issuance of the Conditional Permit, and

2. not to compel the City of Markham to issue a full building permit for the Subject Lands until the site plan control agreement has been fully executed.

IN WITNESS WHEREOF the applicant has executed this undertaking by the hands of their duly authorized signing officers in that regard.

Shining Hill Homes (John) Inc.

Date: July 20, 2016
Paul Bailey – Vice President

EXPLANATORY NOTE

BY-LAW 2016-___
A By-law to amend By-law 177-96, as amended

Shining Hill Homes (John) Inc.
360 John Street

Lands Affected
The proposed by-law amendment applies to approximately 3.13 hectares (7.70 acres) of land on the north side of John Street between the CN Rail Line and Aileen Road in the Thornhill District.

Existing Zoning
The subject lands are zoned Residential Two (Holding) [R2*513(H)] under By-law 177-96 and Community Amenity Three (Holding) [CA3*523(H)] under By-law 177-96", as amended.

Purpose and Effect
The purpose and effect of this by-law is to remove the Holding (H) symbol provision from the zoning of the subject property in order to allow a 101 unit street townhouse development on these lands including at grade commercial uses within buildings facing John Street.

BY-LAW 2016-___

A By-law to amend By-law 177-96
(Removal of Hold Provision)

WHEREAS Section 34 of the Planning Act, R.S.O. 1990, c. P.13, as amended, permits a Council to pass a by-law prohibiting the use of land, buildings or structures within a defined area or areas; and,

WHEREAS Section 36 of the Planning Act, R.S.O. 1990, c. P.13, as amended, permits a Council to pass a by-law to specify the use to which lands, buildings or structures may be put at such time in the future as the holding symbol is removed by amendment to the by-law; and,

WHEREAS Zoning By-law No. 177-96 is the governing By-law of the Corporation of the City of Markham pertaining to the subject lands; and

WHEREAS the Council of the Corporation of the City of Markham has deemed it advisable to amend Zoning By-law No. 177-96; and,

WHEREAS it has been confirmed to Council that all of the conditions required for the removal of the Holding (H) Symbol from the subject lands have been completed to the satisfaction of the City;

NOW THEREFORE the Council of the Corporation of the City of Markham enacts as follows:

1. THAT By-law 177-96 is hereby further amended as follows:

   1.1 By removing the Holding (H) provision from the **R2*513 (H) Zone** and **the CA3*523 (H) Zone** for the lands outlined on Schedule 'A' attached hereto.

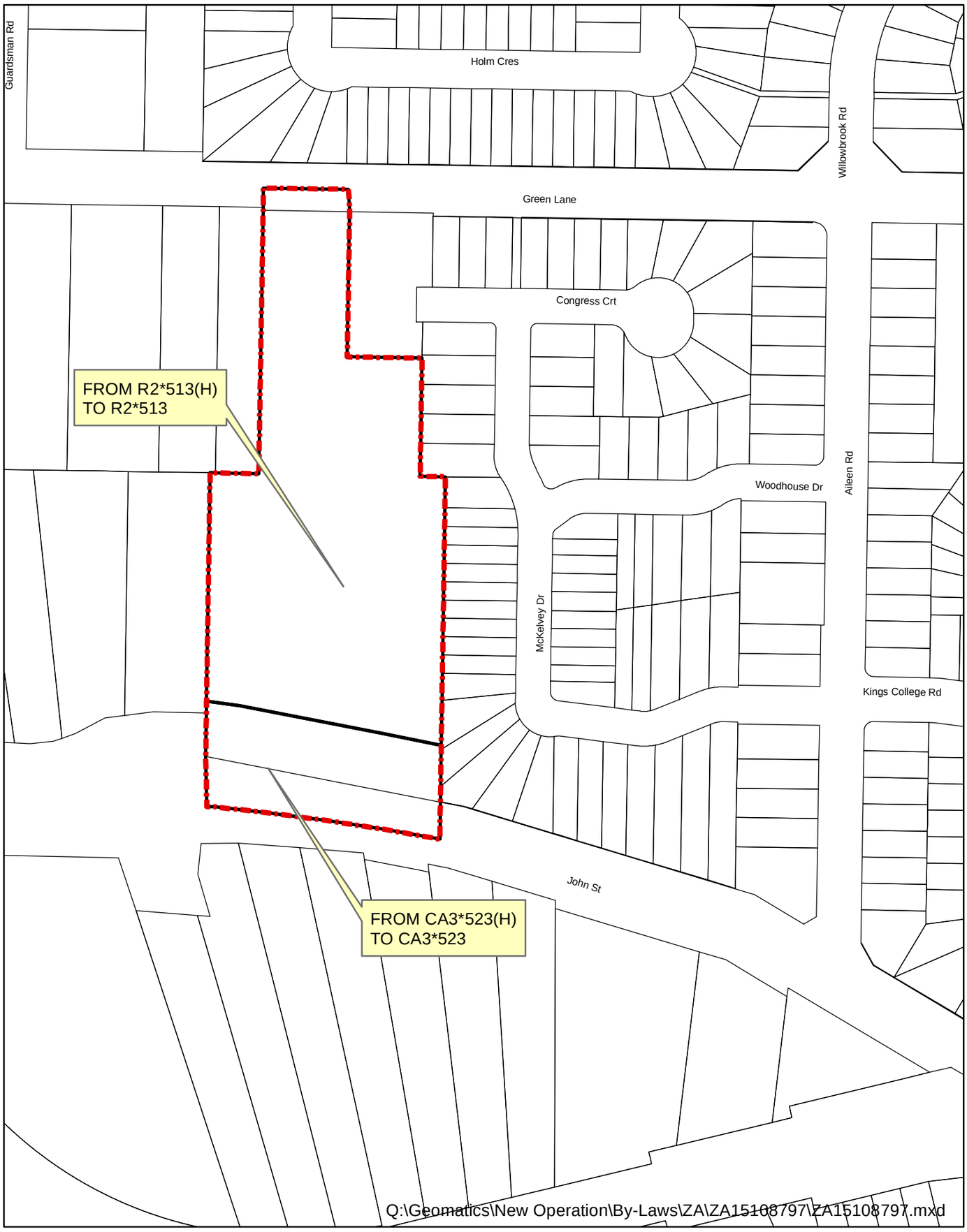
2. THAT Zoning By-law No. 177-96 is hereby amended to give effect to the foregoing, but shall in all other respects remain in full force and effect.

3. THAT this By-law shall come into effect upon final passing, pursuant to Section 34(21) of the Planning Act, 1990.

Read a first, second and third time and passed on _____, 2016.

_____	_____
Kimberley Kitteringham	Frank Scarpitti
City Clerk	Mayor

AMANDA FILE NO: ZA 15 108797



BY-LAW SCHEDULE "A" TO BY-LAW

AMENDING BY-LAW 177-96 DATED

N

BOUNDARY OF AREA COVERED BY THIS BY-LAW SCHEDULE

BOUNDARY OF ZONE DESIGNATION(S)

CA3	COMMUNITY AMENITY THREE	(H)	HOLDING PROVISION
R2	RESIDENTIAL TWO	*(No)	EXCEPTION NUMBER

MARKHAM DEVELOPMENT SERVICES COMMISSION 40 20 0 40 Meters Drawn By: DD Checked By: RC DATE:07/20/16

NOTE: This Schedule should be read in conjunction with the signed original By-Law filed with the City of Markham Clerk's Office

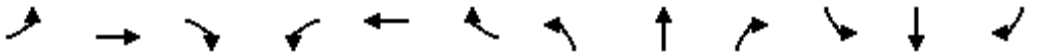
APPENDIX

G FUTURE BACKGROUND INTERSECTION OPERATIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	29	86	92	14	249	28	1224	68	123	1499	9
Future Volume (vph)	32	29	86	92	14	249	28	1224	68	123	1499	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Total Lost time (s)		7.5		7.5	7.5		4.0	7.0	7.0	4.0	7.0	
Lane Util. Factor		0.95		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		0.98		1.00	0.97		1.00	1.00	0.91	1.00	1.00	
Flpb, ped/bikes		1.00		0.98	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		0.91		1.00	0.86		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3170		1736	1546		1789	3074	1417	1805	3074	
Flt Permitted		0.62		0.66	1.00		0.11	1.00	1.00	0.15	1.00	
Satd. Flow (perm)		1989		1199	1546		207	3074	1417	290	3074	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	33	30	88	94	14	254	29	1249	69	126	1530	9
RTOR Reduction (vph)	0	75	0	0	131	0	0	0	28	0	0	0
Lane Group Flow (vph)	0	76	0	94	137	0	29	1249	41	126	1539	0
Confl. Peds. (#/hr)	29		29	29		29	8		63	63		8
Heavy Vehicles (%)	1%	3%	1%	3%	2%	3%	2%	25%	5%	1%	25%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8			6		6	2		
Actuated Green, G (s)		14.6		14.6	14.6		63.0	58.9	58.9	69.8	62.3	
Effective Green, g (s)		14.6		14.6	14.6		63.0	58.9	58.9	69.8	62.3	
Actuated g/C Ratio		0.15		0.15	0.15		0.63	0.59	0.59	0.70	0.63	
Clearance Time (s)		7.5		7.5	7.5		4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		291		175	226		196	1819	838	317	1924	
v/s Ratio Prot					c0.09		0.01	0.41		c0.03	c0.50	
v/s Ratio Perm		0.04		0.08			0.09		0.03	0.25		
v/c Ratio		0.26		0.54	0.61		0.15	0.69	0.05	0.40	0.80	
Uniform Delay, d1		37.7		39.3	39.8		9.0	14.0	8.5	7.6	13.9	
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.5		3.2	4.6		0.4	2.1	0.1	0.8	3.6	
Delay (s)		38.1		42.5	44.3		9.4	16.1	8.6	8.4	17.5	
Level of Service		D		D	D		A	B	A	A	B	
Approach Delay (s)		38.1			43.9			15.6			16.8	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	99.5	Sum of lost time (s)	18.5
Intersection Capacity Utilization	91.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	144	0	0	55	0	1267	110	0	1585	93
Future Volume (Veh/h)	0	0	144	0	0	55	0	1267	110	0	1585	93
Sign Control		Stop			Yield			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	144	0	0	55	0	1267	110	0	1585	93
Pedestrians		1										
Lane Width (m)		3.7										
Walking Speed (m/s)		1.1										
Percent Blockage		0										
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (m)								134				
pX, platoon unblocked	0.76	0.76		0.76	0.76	0.76				0.76		
vC, conflicting volume	2220	2853	794	2060	2853	634	1586			1267		
vC1, stage 1 conf vol	1586	1586		1267	1267							
vC2, stage 2 conf vol	634	1267		792	1586							
vCu, unblocked vol	1979	2808	794	1770	2808	0	1586			733		
tC, single (s)	7.5	6.5	7.0	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	56	100	100	93	100			100		
cM capacity (veh/h)	109	142	325	156	142	832	410			663		

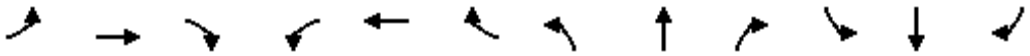
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	144	55	634	634	110	792	792	93
Volume Left	0	0	0	0	0	0	0	0
Volume Right	144	55	0	0	110	0	0	93
cSH	325	832	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.44	0.07	0.37	0.37	0.06	0.47	0.47	0.05
Queue Length 95th (m)	16.6	1.6	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	24.6	9.6	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C	A						
Approach Delay (s)	24.6	9.6	0.0			0.0		
Approach LOS	C	A						

Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	57.2%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	117	141	3	127	77	17
Future Volume (vph)	117	141	3	127	77	17
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	138	166	4	149	91	20

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total (vph)	304	153	111
Volume Left (vph)	0	4	91
Volume Right (vph)	166	0	20
Hadj (s)	-0.24	0.04	0.12
Departure Headway (s)	4.1	4.6	5.0
Degree Utilization, x	0.35	0.19	0.15
Capacity (veh/h)	847	755	662
Control Delay (s)	9.3	8.6	8.9
Approach Delay (s)	9.3	8.6	8.9
Approach LOS	A	A	A

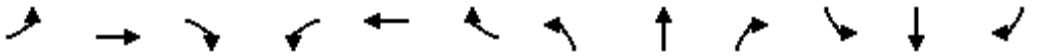
Intersection Summary			
Delay	9.1		
Level of Service	A		
Intersection Capacity Utilization	26.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	3	3	228	8	270	13	1105	141	191	1569	18
Future Volume (vph)	3	3	3	228	8	270	13	1105	141	191	1569	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Total Lost time (s)		8.0		8.0	8.0	8.0	7.0	7.0	7.0	4.0	7.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes		0.99		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1757		1719	1883	1481	1788	2867	1517	1754	2957	
Flt Permitted		0.94		0.75	1.00	1.00	0.12	1.00	1.00	0.18	1.00	
Satd. Flow (perm)		1686		1361	1883	1481	222	2867	1517	337	2957	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	3	3	3	233	8	276	13	1128	144	195	1601	18
RTOR Reduction (vph)	0	2	0	0	0	136	0	0	45	0	1	0
Lane Group Flow (vph)	0	7	0	233	8	140	13	1128	99	195	1618	0
Confl. Peds. (#/hr)	13		1	1		13	3		7	7		3
Heavy Vehicles (%)	2%	2%	1%	6%	2%	7%	2%	34%	4%	4%	30%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4			8		8	6		6	2		
Actuated Green, G (s)		27.1		27.1	27.1	27.1	81.3	81.3	81.3	93.2	93.2	
Effective Green, g (s)		27.1		27.1	27.1	27.1	81.3	81.3	81.3	93.2	93.2	
Actuated g/C Ratio		0.20		0.20	0.20	0.20	0.60	0.60	0.60	0.69	0.69	
Clearance Time (s)		8.0		8.0	8.0	8.0	7.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		337		272	377	296	133	1722	911	314	2036	
v/s Ratio Prot					0.00			0.39		0.04	c0.55	
v/s Ratio Perm		0.00		c0.17		0.09	0.06		0.07	0.39		
v/c Ratio		0.02		0.86	0.02	0.47	0.10	0.66	0.11	0.62	0.79	
Uniform Delay, d1		43.4		52.2	43.4	47.8	11.4	17.8	11.5	10.9	14.5	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.0		22.3	0.0	1.2	1.5	2.0	0.2	3.8	3.3	
Delay (s)		43.5		74.5	43.5	49.0	12.9	19.7	11.8	14.7	17.8	
Level of Service		D		E	D	D	B	B	B	B	B	
Approach Delay (s)		43.5			60.4			18.8			17.5	
Approach LOS		D			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	135.3	Sum of lost time (s)	19.0
Intersection Capacity Utilization	108.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	509	77	227	449	221	51	832	286	177	1335	258
Future Volume (vph)	162	509	77	227	449	221	51	832	286	177	1335	258
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Total Lost time (s)	4.0	8.5		4.0	8.5	8.5	4.0	7.0	7.0	4.0	7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1721	3370		1753	1872	1458	1807	3229	1542	1771	3149	1493
Flt Permitted	0.13	1.00		0.27	1.00	1.00	0.07	1.00	1.00	0.23	1.00	1.00
Satd. Flow (perm)	239	3370		495	1872	1458	130	3229	1542	421	3149	1493
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	167	525	79	234	463	228	53	858	295	182	1376	266
RTOR Reduction (vph)	0	9	0	0	0	69	0	0	82	0	0	56
Lane Group Flow (vph)	167	595	0	234	463	159	53	858	213	182	1376	210
Confl. Peds. (#/hr)	13		11	11		13	10		13	13		10
Heavy Vehicles (%)	6%	13%	1%	4%	8%	9%	1%	19%	3%	3%	22%	5%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4			8		8	6		6	2		2
Actuated Green, G (s)	44.7	36.7		44.7	36.7	36.7	68.9	62.9	62.9	72.9	64.9	64.9
Effective Green, g (s)	44.7	36.7		44.7	36.7	36.7	68.9	62.9	62.9	72.9	64.9	64.9
Actuated g/C Ratio	0.32	0.26		0.32	0.26	0.26	0.50	0.45	0.45	0.52	0.47	0.47
Clearance Time (s)	4.0	8.5		4.0	8.5	8.5	4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	162	889		231	493	384	136	1460	697	298	1469	696
v/s Ratio Prot	c0.06	0.18		0.06	0.25		0.02	0.27		c0.04	c0.44	
v/s Ratio Perm	c0.27			0.27		0.11	0.17		0.14	0.28		0.14
v/c Ratio	1.03	0.67		1.01	0.94	0.41	0.39	0.59	0.31	0.61	0.94	0.30
Uniform Delay, d1	42.8	45.8		45.2	50.1	42.3	25.3	28.4	24.2	19.7	35.2	23.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	79.1	1.9		62.6	25.8	0.7	1.8	1.7	1.1	3.7	12.6	1.1
Delay (s)	121.9	47.7		107.8	75.9	43.0	27.1	30.2	25.4	23.4	47.7	24.1
Level of Service	F	D		F	E	D	C	C	C	C	D	C
Approach Delay (s)		63.8			75.9			28.9			41.9	
Approach LOS		E			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	48.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	139.1	Sum of lost time (s)	23.5
Intersection Capacity Utilization	94.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	509	77	227	449	221	51	832	286	177	1335	258
Future Volume (vph)	162	509	77	227	449	221	51	832	286	177	1335	258
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Total Lost time (s)	4.0	8.5		4.0	8.5	8.5	4.0	7.0	7.0	4.0	7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1721	3370		1753	1872	1458	1807	3229	1542	1771	3149	1493
Flt Permitted	0.12	1.00		0.26	1.00	1.00	0.07	1.00	1.00	0.20	1.00	1.00
Satd. Flow (perm)	211	3370		482	1872	1458	141	3229	1542	377	3149	1493
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	167	525	79	234	463	228	53	858	295	182	1376	266
RTOR Reduction (vph)	0	8	0	0	0	93	0	0	81	0	0	56
Lane Group Flow (vph)	167	596	0	234	463	135	53	858	214	182	1376	210
Confl. Peds. (#/hr)	13		11	11		13	10		13	13		10
Heavy Vehicles (%)	6%	13%	1%	4%	8%	9%	1%	19%	3%	3%	22%	5%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4			8		8	6		6	2		2
Actuated Green, G (s)	45.1	35.6		45.1	35.6	35.6	63.7	58.2	58.2	74.3	64.8	64.8
Effective Green, g (s)	45.1	35.6		45.1	35.6	35.6	63.7	58.2	58.2	74.3	64.8	64.8
Actuated g/C Ratio	0.32	0.26		0.32	0.26	0.26	0.46	0.42	0.42	0.53	0.47	0.47
Clearance Time (s)	4.0	8.5		4.0	8.5	8.5	4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	171	863		243	479	373	130	1352	646	323	1469	696
v/s Ratio Prot	c0.07	0.18		0.07	0.25		0.02	0.27		c0.05	c0.44	
v/s Ratio Perm	c0.25			0.25		0.09	0.17		0.14	0.25		0.14
v/c Ratio	0.98	0.69		0.96	0.97	0.36	0.41	0.63	0.33	0.56	0.94	0.30
Uniform Delay, d1	39.7	46.7		43.0	51.1	42.3	26.5	31.9	27.2	19.7	35.1	23.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	61.3	2.4		47.1	32.3	0.6	2.1	2.3	1.4	2.2	12.6	1.1
Delay (s)	101.0	49.1		90.1	83.4	42.9	28.6	34.2	28.6	21.9	47.7	24.1
Level of Service	F	D		F	F	D	C	C	C	C	D	C
Approach Delay (s)		60.3			75.1			32.6			41.7	
Approach LOS		E			E			C			D	

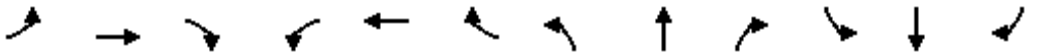
Intersection Summary			
HCM 2000 Control Delay	48.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	138.9	Sum of lost time (s)	23.5
Intersection Capacity Utilization	94.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	14	44	53	19	132	87	1549	75	179	1678	15
Future Volume (vph)	10	14	44	53	19	132	87	1549	75	179	1678	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Total Lost time (s)		7.5		7.5	7.5		4.0	7.0	7.0	4.0	7.0	
Lane Util. Factor		0.95		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		0.99		1.00	0.99		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes		1.00		0.99	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		0.90		1.00	0.87		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3178		1709	1650		1772	3804	1544	1825	3799	
Flt Permitted		0.86		0.71	1.00		0.07	1.00	1.00	0.07	1.00	
Satd. Flow (perm)		2741		1272	1650		137	3804	1544	132	3799	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	11	15	47	56	20	140	93	1648	80	190	1785	16
RTOR Reduction (vph)	0	42	0	0	124	0	0	0	33	0	0	0
Lane Group Flow (vph)	0	31	0	56	36	0	93	1648	47	190	1801	0
Confl. Peds. (#/hr)	1		10	10		1	2		12	12		2
Heavy Vehicles (%)	0%	8%	0%	6%	0%	0%	3%	1%	3%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8			6		6	2		
Actuated Green, G (s)		10.9		10.9	10.9		60.1	54.3	54.3	68.6	58.8	
Effective Green, g (s)		10.9		10.9	10.9		60.1	54.3	54.3	68.6	58.8	
Actuated g/C Ratio		0.12		0.12	0.12		0.64	0.58	0.58	0.73	0.63	
Clearance Time (s)		7.5		7.5	7.5		4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		317		147	191		188	2197	891	281	2376	
v/s Ratio Prot					0.02		0.03	0.43		c0.07	c0.47	
v/s Ratio Perm		0.01		c0.04			0.28		0.03	0.42		
v/c Ratio		0.10		0.38	0.19		0.49	0.75	0.05	0.68	0.76	
Uniform Delay, d1		37.2		38.4	37.6		12.5	14.8	8.6	22.2	12.5	
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1		1.6	0.5		2.0	2.4	0.1	6.3	2.3	
Delay (s)		37.3		40.1	38.0		14.6	17.2	8.8	28.6	14.9	
Level of Service		D		D	D		B	B	A	C	B	
Approach Delay (s)		37.3			38.6			16.7			16.2	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	18.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	94.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	82.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	125	0	0	66	0	1779	182	0	1589	93
Future Volume (Veh/h)	0	0	125	0	0	66	0	1779	182	0	1589	93
Sign Control		Stop			Yield			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	0	129	0	0	68	0	1834	188	0	1638	96
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								134				
pX, platoon unblocked	0.65	0.65		0.65	0.65	0.65				0.65		
vC, conflicting volume	2555	3472	819	2653	3472	917	1638			1834		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2320	3721	819	2470	3721	0	1638			1219		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	7.0	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	60	100	100	90	100			100		
cM capacity (veh/h)	12	3	319	6	3	706	392			372		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	129	68	917	917	188	819	819	96
Volume Left	0	0	0	0	0	0	0	0
Volume Right	129	68	0	0	188	0	0	96
cSH	319	706	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.40	0.10	0.54	0.54	0.11	0.48	0.48	0.06
Queue Length 95th (m)	14.4	2.4	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	23.8	10.6	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C	B						
Approach Delay (s)	23.8	10.6	0.0			0.0		
Approach LOS	C	B						

Intersection Summary				
Average Delay	1.0			
Intersection Capacity Utilization	57.5%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	86	122	3	204	66	27
Future Volume (vph)	86	122	3	204	66	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	93	133	3	222	72	29

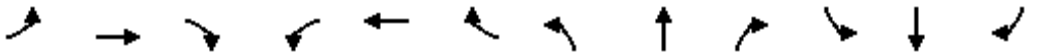
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total (vph)	226	225	101
Volume Left (vph)	0	3	72
Volume Right (vph)	133	0	29
Hadj (s)	-0.31	0.02	-0.01
Departure Headway (s)	4.1	4.4	4.9
Degree Utilization, x	0.26	0.28	0.14
Capacity (veh/h)	848	785	679
Control Delay (s)	8.5	9.1	8.6
Approach Delay (s)	8.5	9.1	8.6
Approach LOS	A	A	A

Intersection Summary			
Delay	8.8		
Level of Service	A		
Intersection Capacity Utilization	25.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	9	9	246	1	332	4	1605	113	250	1454	2
Future Volume (vph)	20	9	9	246	1	332	4	1605	113	250	1454	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Total Lost time (s)		8.0		8.0	8.0	8.0	7.0	7.0	7.0	2.0	7.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	0.97	1.00	1.00	0.95	1.00	1.00	
Flpb, ped/bikes		0.99		0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.97		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1790		1795	1921	1589	1823	3767	1535	1807	3766	
Flt Permitted		0.87		0.73	1.00	1.00	0.15	1.00	1.00	0.06	1.00	
Satd. Flow (perm)		1595		1384	1921	1589	292	3767	1535	111	3766	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	20	9	9	251	1	339	4	1638	115	255	1484	2
RTOR Reduction (vph)	0	7	0	0	0	128	0	0	30	0	0	0
Lane Group Flow (vph)	0	31	0	251	1	211	4	1638	85	255	1486	0
Confl. Peds. (#/hr)	11		5	5		11	6		15	15		6
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	2%	1%	1%	2%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4			8		8	6		6	2		
Actuated Green, G (s)		28.5		28.5	28.5	28.5	77.1	77.1	77.1	93.1	93.1	
Effective Green, g (s)		28.5		28.5	28.5	28.5	77.1	77.1	77.1	95.1	93.1	
Actuated g/C Ratio		0.21		0.21	0.21	0.21	0.56	0.56	0.56	0.70	0.68	
Clearance Time (s)		8.0		8.0	8.0	8.0	7.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		332		288	400	331	164	2126	866	251	2566	
v/s Ratio Prot					0.00			c0.43		c0.10	0.39	
v/s Ratio Perm		0.02		c0.18		0.13	0.01		0.06	0.60		
v/c Ratio		0.09		0.87	0.00	0.64	0.02	0.77	0.10	1.02	0.58	
Uniform Delay, d1		43.6		52.3	42.8	49.3	13.1	22.9	13.7	44.4	11.4	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1		23.8	0.0	4.0	0.3	2.8	0.2	61.0	1.0	
Delay (s)		43.7		76.1	42.8	53.3	13.4	25.7	13.9	105.4	12.4	
Level of Service		D		E	D	D	B	C	B	F	B	
Approach Delay (s)		43.7			63.0			24.9			26.0	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	136.6	Sum of lost time (s)	17.0
Intersection Capacity Utilization	105.8%	ICU Level of Service	G
Analysis Period (min)	15		

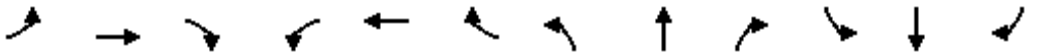
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	202	492	49	282	545	316	64	1236	282	217	1217	208
Future Volume (vph)	202	492	49	282	545	316	64	1236	282	217	1217	208
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Total Lost time (s)	2.0	8.5		4.0	7.5	8.5	4.0	7.0	7.0	2.0	7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.96	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1807	3702		1786	1963	1552	1789	3767	1545	1772	3767	1558
Flt Permitted	0.10	1.00		0.31	1.00	1.00	0.09	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	188	3702		585	1963	1552	173	3767	1545	127	3767	1558
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	208	507	51	291	562	326	66	1274	291	224	1255	214
RTOR Reduction (vph)	0	5	0	0	0	91	0	0	83	0	0	59
Lane Group Flow (vph)	208	553	0	291	562	235	66	1274	208	224	1255	155
Confl. Peds. (#/hr)	16		14	14		16	8		19	19		8
Heavy Vehicles (%)	1%	2%	3%	2%	3%	2%	2%	2%	2%	3%	2%	1%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4			8		8	6		6	2		2
Actuated Green, G (s)	49.5	38.5		49.5	38.5	38.5	61.0	54.8	54.8	71.8	61.6	61.6
Effective Green, g (s)	53.5	38.5		49.5	39.5	38.5	61.0	54.8	54.8	73.8	61.6	61.6
Actuated g/C Ratio	0.38	0.27		0.35	0.28	0.27	0.43	0.39	0.39	0.52	0.44	0.44
Clearance Time (s)	4.0	8.5		4.0	8.5	8.5	4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	220	1012		299	550	424	146	1466	601	241	1648	681
v/s Ratio Prot	c0.09	0.15		0.08	c0.29		0.02	c0.34		c0.10	0.33	
v/s Ratio Perm	0.27			0.27		0.15	0.18		0.13	0.39		0.10
v/c Ratio	0.95	0.55		0.97	1.02	0.55	0.45	0.87	0.35	0.93	0.76	0.23
Uniform Delay, d1	38.6	43.7		41.9	50.7	43.8	27.8	39.7	30.4	43.2	33.4	24.7
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	45.2	0.6		44.4	44.0	1.6	2.2	7.3	1.6	38.7	3.4	0.8
Delay (s)	83.8	44.3		86.3	94.7	45.4	30.0	46.9	31.9	81.9	36.8	25.5
Level of Service	F	D		F	F	D	C	D	C	F	D	C
Approach Delay (s)		55.0			79.0			43.6			41.3	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	52.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	140.8	Sum of lost time (s)	23.5
Intersection Capacity Utilization	102.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	9	9	246	1	332	4	1605	113	250	1454	2
Future Volume (vph)	20	9	9	246	1	332	4	1605	113	250	1454	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Total Lost time (s)		8.0		8.0	8.0	8.0	7.0	7.0	7.0	2.0	7.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	0.97	1.00	1.00	0.95	1.00	1.00	
Flpb, ped/bikes		0.99		0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.97		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1790		1795	1921	1589	1822	3767	1535	1807	3766	
Flt Permitted		0.87		0.73	1.00	1.00	0.16	1.00	1.00	0.05	1.00	
Satd. Flow (perm)		1595		1384	1921	1589	312	3767	1535	100	3766	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	20	9	9	251	1	339	4	1638	115	255	1484	2
RTOR Reduction (vph)	0	7	0	0	0	192	0	0	33	0	0	0
Lane Group Flow (vph)	0	31	0	251	1	147	4	1638	82	255	1486	0
Confl. Peds. (#/hr)	11		5	5		11	6		15	15		6
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	2%	1%	1%	2%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4			8		8	6		6	2		
Actuated Green, G (s)		28.5		28.5	28.5	28.5	72.2	72.2	72.2	93.2	93.2	
Effective Green, g (s)		28.5		28.5	28.5	28.5	72.2	72.2	72.2	95.2	93.2	
Actuated g/C Ratio		0.21		0.21	0.21	0.21	0.53	0.53	0.53	0.70	0.68	
Clearance Time (s)		8.0		8.0	8.0	8.0	7.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		332		288	400	331	164	1989	810	306	2567	
v/s Ratio Prot					0.00			c0.43		c0.12	0.39	
v/s Ratio Perm		0.02		c0.18		0.09	0.01		0.05	0.46		
v/c Ratio		0.09		0.87	0.00	0.45	0.02	0.82	0.10	0.83	0.58	
Uniform Delay, d1		43.7		52.3	42.8	47.2	15.4	26.9	16.1	43.9	11.4	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1		23.8	0.0	1.0	0.3	4.0	0.3	17.4	1.0	
Delay (s)		43.8		76.1	42.8	48.2	15.7	31.0	16.3	61.2	12.4	
Level of Service		D		E	D	D	B	C	B	E	B	
Approach Delay (s)		43.8			60.0			30.0			19.5	
Approach LOS		D			E			C			B	

Intersection Summary			
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	136.7	Sum of lost time (s)	17.0
Intersection Capacity Utilization	105.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

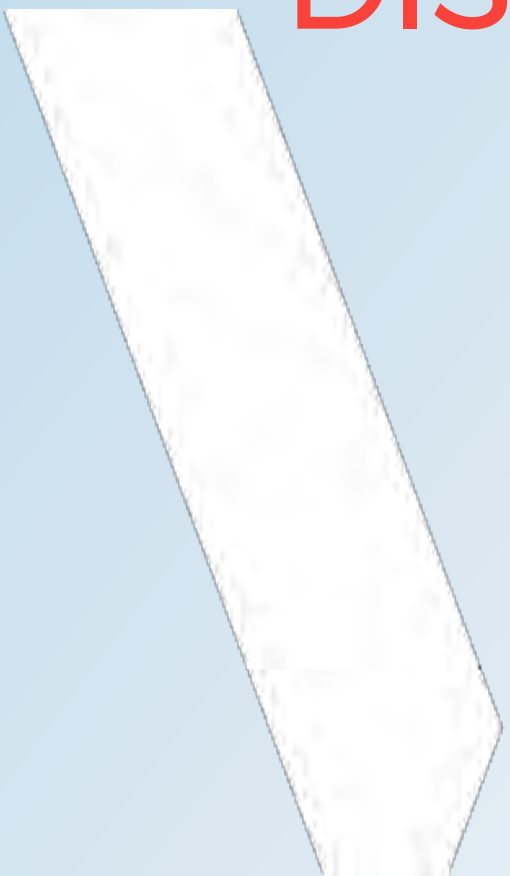
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	202	492	49	282	545	316	64	1236	282	217	1217	208
Future Volume (vph)	202	492	49	282	545	316	64	1236	282	217	1217	208
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Total Lost time (s)	2.0	8.5		4.0	7.5	8.5	4.0	7.0	7.0	2.0	7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1807	3702		1786	1963	1552	1789	3767	1545	1772	3767	1558
Flt Permitted	0.10	1.00		0.32	1.00	1.00	0.08	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	181	3702		605	1963	1552	159	3767	1545	131	3767	1558
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	208	507	51	291	562	326	66	1274	291	224	1255	214
RTOR Reduction (vph)	0	6	0	0	0	90	0	0	85	0	0	61
Lane Group Flow (vph)	208	552	0	291	562	236	66	1274	206	224	1255	153
Confl. Peds. (#/hr)	16		14	14		16	8		19	19		8
Heavy Vehicles (%)	1%	2%	3%	2%	3%	2%	2%	2%	2%	3%	2%	1%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4			8		8	6		6	2		2
Actuated Green, G (s)	50.5	40.0		50.5	40.0	40.0	59.0	52.8	52.8	69.8	59.6	59.6
Effective Green, g (s)	54.5	40.0		50.5	41.0	40.0	59.0	52.8	52.8	71.8	59.6	59.6
Actuated g/C Ratio	0.39	0.29		0.36	0.29	0.29	0.42	0.38	0.38	0.51	0.43	0.43
Clearance Time (s)	4.0	8.5		4.0	8.5	8.5	4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	215	1059		307	575	444	139	1422	583	243	1605	664
v/s Ratio Prot	c0.09	0.15		0.07	c0.29		0.02	c0.34		c0.10	0.33	
v/s Ratio Perm	0.29			0.27		0.15	0.18		0.13	0.37		0.10
v/c Ratio	0.97	0.52		0.95	0.98	0.53	0.47	0.90	0.35	0.92	0.78	0.23
Uniform Delay, d1	38.9	41.9		40.5	48.9	42.0	28.8	40.9	31.2	42.6	34.5	25.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	51.5	0.5		37.2	31.5	1.2	2.5	9.1	1.7	37.1	3.9	0.8
Delay (s)	90.4	42.3		77.8	80.4	43.2	31.3	50.0	32.9	79.7	38.4	26.3
Level of Service	F	D		E	F	D	C	D	C	E	D	C
Approach Delay (s)		55.4			69.5			46.2			42.3	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	51.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	139.8	Sum of lost time (s)	23.5
Intersection Capacity Utilization	102.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX

H TRIP DISTRIBUTION



TTS Directional Distribution: Ladies Golf Course

Notes:

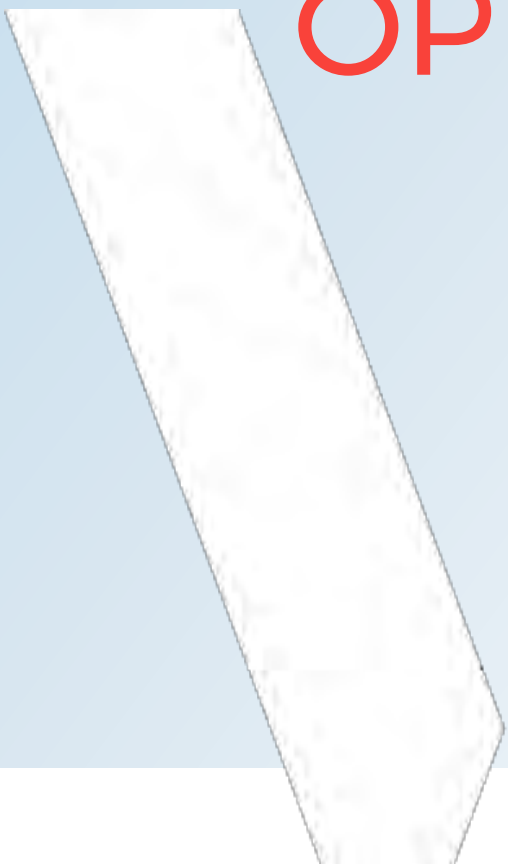
1. Directions determined based on centroid coordinates of destination/origin planning districts.

2. 'Internal' refers to trips made within the home planning district(s), while 'External' refers to trips made to areas outside of the home planning district(s).

			Internal									External								
	Time Period	Direction	NW	N	NE	E	SE	S	SW	W	Total	NW	N	NE	E	SE	S	SW	W	Total
Trips	A.M.	Inbound	0	60	22	16	121	16	22	29	286	0	0	0	0	0	60	16	0	76
		Outbound	161	174	347	263	398	342	401	257	2343	0	70	0	135	60	691	320	29	1305
	P.M.	Inbound	166	310	152	316	244	270	415	206	2079	0	48	19	29	31	574	178	51	930
		Outbound	126	217	41	38	35	103	126	35	721	0	19	0	29	0	154	99	0	301
Percentage	A.M.	Inbound	0%	17%	6%	4%	33%	4%	6%	8%	79%	0%	0%	0%	0%	0%	17%	4%	0%	21%
		Outbound	4%	5%	10%	7%	11%	9%	11%	7%	64%	0%	2%	0%	4%	2%	19%	9%	1%	36%
	P.M.	Inbound	6%	10%	5%	11%	8%	9%	14%	7%	69%	0%	2%	1%	1%	1%	19%	6%	2%	31%
		Outbound	12%	21%	4%	4%	3%	10%	12%	3%	71%	0%	2%	0%	3%	0%	15%	10%	0%	29%

APPENDIX

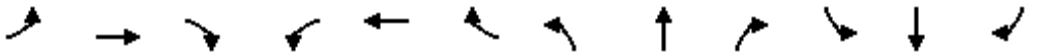
I TOTAL FUTURE INTERSECTION OPERATIONS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	29	86	93	14	249	28	1236	69	123	1502	9
Future Volume (vph)	32	29	86	93	14	249	28	1236	69	123	1502	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Total Lost time (s)		7.5		7.5	7.5		4.0	7.0	7.0	4.0	7.0	
Lane Util. Factor		0.95		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		0.98		1.00	0.97		1.00	1.00	0.91	1.00	1.00	
Flpb, ped/bikes		1.00		0.98	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		0.91		1.00	0.86		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3170		1736	1546		1789	3074	1417	1805	3074	
Flt Permitted		0.62		0.66	1.00		0.11	1.00	1.00	0.15	1.00	
Satd. Flow (perm)		1993		1199	1546		205	3074	1417	284	3074	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	33	30	88	95	14	254	29	1261	70	126	1533	9
RTOR Reduction (vph)	0	75	0	0	130	0	0	0	29	0	0	0
Lane Group Flow (vph)	0	76	0	95	138	0	29	1261	41	126	1542	0
Confl. Peds. (#/hr)	29		29	29		29	8		63	63		8
Heavy Vehicles (%)	1%	3%	1%	3%	2%	3%	2%	25%	5%	1%	25%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8			6		6	2		
Actuated Green, G (s)		14.7		14.7	14.7		63.0	58.9	58.9	69.8	62.3	
Effective Green, g (s)		14.7		14.7	14.7		63.0	58.9	58.9	69.8	62.3	
Actuated g/C Ratio		0.15		0.15	0.15		0.63	0.59	0.59	0.70	0.63	
Clearance Time (s)		7.5		7.5	7.5		4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		294		176	228		194	1817	837	313	1922	
v/s Ratio Prot					c0.09		0.01	0.41		c0.03	c0.50	
v/s Ratio Perm		0.04		0.08			0.09		0.03	0.25		
v/c Ratio		0.26		0.54	0.61		0.15	0.69	0.05	0.40	0.80	
Uniform Delay, d1		37.6		39.3	39.7		9.1	14.1	8.6	7.7	14.0	
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.5		3.2	4.5		0.4	2.2	0.1	0.8	3.6	
Delay (s)		38.1		42.5	44.3		9.5	16.3	8.7	8.6	17.7	
Level of Service		D		D	D		A	B	A	A	B	
Approach Delay (s)		38.1			43.8			15.8			17.0	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	99.6	Sum of lost time (s)	18.5
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	188	0	0	68	0	1267	120	0	1585	97
Future Volume (Veh/h)	0	0	188	0	0	68	0	1267	120	0	1585	97
Sign Control		Stop			Yield			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	188	0	0	68	0	1267	120	0	1585	97
Pedestrians		1										
Lane Width (m)		3.7										
Walking Speed (m/s)		1.1										
Percent Blockage		0										
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (m)								134				
pX, platoon unblocked	0.76	0.76		0.76	0.76	0.76				0.76		
vC, conflicting volume	2220	2853	794	2060	2853	634	1586			1267		
vC1, stage 1 conf vol	1586	1586		1267	1267							
vC2, stage 2 conf vol	634	1267		792	1586							
vCu, unblocked vol	1975	2807	794	1765	2807	0	1586			724		
tC, single (s)	7.5	6.5	7.0	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	42	100	100	92	100			100		
cM capacity (veh/h)	109	142	325	126	142	828	410			666		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	188	68	634	634	120	792	792	97
Volume Left	0	0	0	0	0	0	0	0
Volume Right	188	68	0	0	120	0	0	97
cSH	325	828	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.58	0.08	0.37	0.37	0.07	0.47	0.47	0.06
Queue Length 95th (m)	26.1	2.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	30.3	9.7	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	D	A						
Approach Delay (s)	30.3	9.7	0.0			0.0		
Approach LOS	D	A						

Intersection Summary				
Average Delay	1.9			
Intersection Capacity Utilization	59.9%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	117	142	13	127	79	30
Future Volume (vph)	117	142	13	127	79	30
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	138	167	15	149	93	35

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total (vph)	305	164	128
Volume Left (vph)	0	15	93
Volume Right (vph)	167	0	35
Hadj (s)	-0.24	0.05	0.04
Departure Headway (s)	4.2	4.6	5.0
Degree Utilization, x	0.35	0.21	0.18
Capacity (veh/h)	833	742	667
Control Delay (s)	9.5	8.8	9.0
Approach Delay (s)	9.5	8.8	9.0
Approach LOS	A	A	A

Intersection Summary			
Delay	9.2		
Level of Service	A		
Intersection Capacity Utilization	30.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	3	3	228	8	270	13	1115	141	191	1613	18
Future Volume (vph)	3	3	3	228	8	270	13	1115	141	191	1613	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Total Lost time (s)		8.0		8.0	8.0	8.0	7.0	7.0	7.0	4.0	7.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes		0.99		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1757		1719	1883	1481	1789	2867	1517	1754	2957	
Flt Permitted		0.94		0.75	1.00	1.00	0.11	1.00	1.00	0.18	1.00	
Satd. Flow (perm)		1686		1361	1883	1481	205	2867	1517	332	2957	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	3	3	3	233	8	276	13	1138	144	195	1646	18
RTOR Reduction (vph)	0	2	0	0	0	134	0	0	44	0	1	0
Lane Group Flow (vph)	0	7	0	233	8	142	13	1138	100	195	1663	0
Confl. Peds. (#/hr)	13		1	1		13	3		7	7		3
Heavy Vehicles (%)	2%	2%	1%	6%	2%	7%	2%	34%	4%	4%	30%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4			8		8	6		6	2		
Actuated Green, G (s)		27.1		27.1	27.1	27.1	81.3	81.3	81.3	93.2	93.2	
Effective Green, g (s)		27.1		27.1	27.1	27.1	81.3	81.3	81.3	93.2	93.2	
Actuated g/C Ratio		0.20		0.20	0.20	0.20	0.60	0.60	0.60	0.69	0.69	
Clearance Time (s)		8.0		8.0	8.0	8.0	7.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		337		272	377	296	123	1722	911	311	2036	
v/s Ratio Prot					0.00			0.40		0.04	c0.56	
v/s Ratio Perm		0.00		c0.17		0.10	0.06		0.07	0.39		
v/c Ratio		0.02		0.86	0.02	0.48	0.11	0.66	0.11	0.63	0.82	
Uniform Delay, d1		43.4		52.2	43.4	47.9	11.5	17.9	11.5	11.0	15.0	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.0		22.3	0.0	1.2	1.7	2.0	0.2	3.9	3.8	
Delay (s)		43.5		74.5	43.5	49.1	13.2	19.9	11.8	15.0	18.8	
Level of Service		D		E	D	D	B	B	B	B	B	
Approach Delay (s)		43.5			60.5			18.9			18.4	
Approach LOS		D			E			B			B	

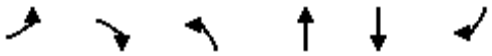
Intersection Summary			
HCM 2000 Control Delay	24.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	135.3	Sum of lost time (s)	19.0
Intersection Capacity Utilization	110.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	163	509	77	227	449	223	51	840	286	182	1371	261
Future Volume (vph)	163	509	77	227	449	223	51	840	286	182	1371	261
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Total Lost time (s)	4.0	8.5		4.0	8.5	8.5	4.0	7.0	7.0	4.0	7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1721	3370		1753	1872	1458	1807	3229	1542	1771	3149	1493
Flt Permitted	0.12	1.00		0.26	1.00	1.00	0.07	1.00	1.00	0.20	1.00	1.00
Satd. Flow (perm)	210	3370		481	1872	1458	131	3229	1542	370	3149	1493
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	168	525	79	234	463	230	53	866	295	188	1413	269
RTOR Reduction (vph)	0	8	0	0	0	93	0	0	80	0	0	56
Lane Group Flow (vph)	168	596	0	234	463	137	53	866	215	188	1413	213
Confl. Peds. (#/hr)	13		11	11		13	10		13	13		10
Heavy Vehicles (%)	6%	13%	1%	4%	8%	9%	1%	19%	3%	3%	22%	5%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4			8		8	6		6	2		2
Actuated Green, G (s)	45.1	35.6		45.1	35.6	35.6	63.6	58.1	58.1	74.4	64.9	64.9
Effective Green, g (s)	45.1	35.6		45.1	35.6	35.6	63.6	58.1	58.1	74.4	64.9	64.9
Actuated g/C Ratio	0.32	0.26		0.32	0.26	0.26	0.46	0.42	0.42	0.54	0.47	0.47
Clearance Time (s)	4.0	8.5		4.0	8.5	8.5	4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	171	863		243	479	373	126	1349	644	322	1470	697
v/s Ratio Prot	c0.07	0.18		0.07	0.25		0.02	0.27		c0.05	c0.45	
v/s Ratio Perm	c0.25			0.25		0.09	0.18		0.14	0.26		0.14
v/c Ratio	0.98	0.69		0.96	0.97	0.37	0.42	0.64	0.33	0.58	0.96	0.31
Uniform Delay, d1	39.9	46.7		43.1	51.1	42.5	27.2	32.2	27.4	19.9	35.8	23.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	63.3	2.4		47.1	32.3	0.6	2.3	2.4	1.4	2.7	15.9	1.1
Delay (s)	103.2	49.1		90.2	83.4	43.1	29.5	34.5	28.7	22.6	51.7	24.2
Level of Service	F	D		F	F	D	C	C	C	C	D	C
Approach Delay (s)		60.9			75.1			32.9			44.8	
Approach LOS		E			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	50.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	139.0	Sum of lost time (s)	23.5
Intersection Capacity Utilization	95.6%	ICU Level of Service	F
Analysis Period (min)	15		

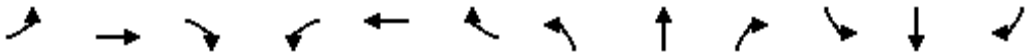
c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	44	4	94	144	11
Future Volume (Veh/h)	14	44	4	94	144	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	48	4	102	157	12
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	273	163	169			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	273	163	169			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	95	100			
cM capacity (veh/h)	714	882	1409			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	63	106	169
Volume Left	15	4	0
Volume Right	48	0	12
cSH	835	1409	1700
Volume to Capacity	0.08	0.00	0.10
Queue Length 95th (m)	1.9	0.1	0.0
Control Delay (s)	9.7	0.3	0.0
Lane LOS	A	A	
Approach Delay (s)	9.7	0.3	0.0
Approach LOS	A		

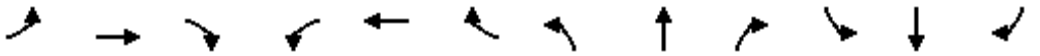
Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	18.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	14	44	54	19	132	87	1559	76	179	1694	15
Future Volume (vph)	10	14	44	54	19	132	87	1559	76	179	1694	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Total Lost time (s)		7.5		7.5	7.5		4.0	7.0	7.0	4.0	7.0	
Lane Util. Factor		0.95		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		0.99		1.00	0.99		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes		1.00		0.99	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		0.90		1.00	0.87		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3178		1709	1650		1772	3804	1544	1825	3799	
Flt Permitted		0.86		0.71	1.00		0.07	1.00	1.00	0.07	1.00	
Satd. Flow (perm)		2741		1272	1650		137	3804	1544	132	3799	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	11	15	47	57	20	140	93	1659	81	190	1802	16
RTOR Reduction (vph)	0	42	0	0	124	0	0	0	33	0	0	0
Lane Group Flow (vph)	0	31	0	57	36	0	93	1659	48	190	1818	0
Confl. Peds. (#/hr)	1		10	10		1	2		12	12		2
Heavy Vehicles (%)	0%	8%	0%	6%	0%	0%	3%	1%	3%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8			6		6	2		
Actuated Green, G (s)		10.9		10.9	10.9		60.1	54.3	54.3	68.6	58.8	
Effective Green, g (s)		10.9		10.9	10.9		60.1	54.3	54.3	68.6	58.8	
Actuated g/C Ratio		0.12		0.12	0.12		0.64	0.58	0.58	0.73	0.63	
Clearance Time (s)		7.5		7.5	7.5		4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		317		147	191		188	2197	891	281	2376	
v/s Ratio Prot					0.02		0.03	0.44		c0.07	c0.48	
v/s Ratio Perm		0.01		c0.04			0.28		0.03	0.42		
v/c Ratio		0.10		0.39	0.19		0.49	0.76	0.05	0.68	0.76	
Uniform Delay, d1		37.2		38.5	37.6		12.8	14.9	8.7	22.4	12.6	
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1		1.7	0.5		2.0	2.5	0.1	6.3	2.4	
Delay (s)		37.3		40.2	38.0		14.8	17.3	8.8	28.7	15.0	
Level of Service		D		D	D		B	B	A	C	B	
Approach Delay (s)		37.3			38.6			16.8			16.3	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	94.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	144	0	0	77	0	1779	225	0	1589	109
Future Volume (Veh/h)	0	0	144	0	0	77	0	1779	225	0	1589	109
Sign Control		Stop			Yield			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	0	148	0	0	79	0	1834	232	0	1638	112
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								134				
pX, platoon unblocked	0.61	0.61		0.61	0.61	0.61				0.61		
vC, conflicting volume	2555	3472	819	2653	3472	917	1638			1834		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2271	3773	819	2432	3773	0	1638			1091		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	7.0	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	54	100	100	88	100			100		
cM capacity (veh/h)	12	2	319	5	2	658	392			388		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	148	79	917	917	232	819	819	112
Volume Left	0	0	0	0	0	0	0	0
Volume Right	148	79	0	0	232	0	0	112
cSH	319	658	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.46	0.12	0.54	0.54	0.14	0.48	0.48	0.07
Queue Length 95th (m)	17.8	3.1	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	25.7	11.2	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	D	B						
Approach Delay (s)	25.7	11.2	0.0			0.0		
Approach LOS	D	B						

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	58.2%	ICU Level of Service		B
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	86	125	46	204	69	38
Future Volume (vph)	86	125	46	204	69	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	93	136	50	222	75	41

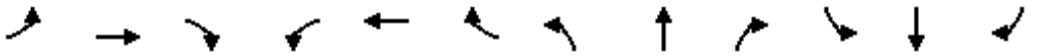
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total (vph)	229	272	116
Volume Left (vph)	0	50	75
Volume Right (vph)	136	0	41
Hadj (s)	-0.31	0.05	-0.06
Departure Headway (s)	4.2	4.5	4.9
Degree Utilization, x	0.27	0.34	0.16
Capacity (veh/h)	825	770	667
Control Delay (s)	8.7	9.8	8.9
Approach Delay (s)	8.7	9.8	8.9
Approach LOS	A	A	A

Intersection Summary			
Delay	9.2		
Level of Service	A		
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	9	9	246	1	332	4	1648	113	250	1473	2
Future Volume (vph)	20	9	9	246	1	332	4	1648	113	250	1473	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Total Lost time (s)		8.0		8.0	8.0	8.0	7.0	7.0	7.0	2.0	7.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	0.97	1.00	1.00	0.95	1.00	1.00	
Flpb, ped/bikes		0.99		0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.97		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1790		1795	1921	1589	1823	3767	1535	1807	3766	
Flt Permitted		0.87		0.73	1.00	1.00	0.16	1.00	1.00	0.05	1.00	
Satd. Flow (perm)		1595		1384	1921	1589	303	3767	1535	100	3766	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	20	9	9	251	1	339	4	1682	115	255	1503	2
RTOR Reduction (vph)	0	7	0	0	0	191	0	0	33	0	0	0
Lane Group Flow (vph)	0	31	0	251	1	148	4	1682	82	255	1505	0
Confl. Peds. (#/hr)	11		5	5		11	6		15	15		6
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	2%	1%	1%	2%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4			8		8	6		6	2		
Actuated Green, G (s)		28.5		28.5	28.5	28.5	72.2	72.2	72.2	93.2	93.2	
Effective Green, g (s)		28.5		28.5	28.5	28.5	72.2	72.2	72.2	95.2	93.2	
Actuated g/C Ratio		0.21		0.21	0.21	0.21	0.53	0.53	0.53	0.70	0.68	
Clearance Time (s)		8.0		8.0	8.0	8.0	7.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		332		288	400	331	160	1989	810	306	2567	
v/s Ratio Prot					0.00			c0.45		c0.12	0.40	
v/s Ratio Perm		0.02		c0.18		0.09	0.01		0.05	0.46		
v/c Ratio		0.09		0.87	0.00	0.45	0.03	0.85	0.10	0.83	0.59	
Uniform Delay, d1		43.7		52.3	42.8	47.2	15.4	27.5	16.1	44.2	11.5	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1		23.8	0.0	1.0	0.3	4.6	0.3	17.4	1.0	
Delay (s)		43.8		76.1	42.8	48.2	15.7	32.1	16.3	61.6	12.5	
Level of Service		D		E	D	D	B	C	B	E	B	
Approach Delay (s)		43.8			60.0			31.1			19.6	
Approach LOS		D			E			C			B	

Intersection Summary			
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	136.7	Sum of lost time (s)	17.0
Intersection Capacity Utilization	106.3%	ICU Level of Service	G
Analysis Period (min)	15		

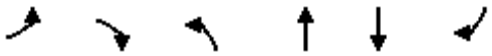
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	206	492	49	282	545	320	64	1272	282	219	1233	210
Future Volume (vph)	206	492	49	282	545	320	64	1272	282	219	1233	210
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Total Lost time (s)	2.0	8.5		4.0	7.5	8.5	4.0	7.0	7.0	2.0	7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1807	3702		1786	1963	1552	1789	3767	1545	1772	3767	1558
Flt Permitted	0.10	1.00		0.32	1.00	1.00	0.08	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	181	3702		605	1963	1552	149	3767	1545	131	3767	1558
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	212	507	51	291	562	330	66	1311	291	226	1271	216
RTOR Reduction (vph)	0	6	0	0	0	90	0	0	85	0	0	61
Lane Group Flow (vph)	212	552	0	291	562	240	66	1311	206	226	1271	155
Confl. Peds. (#/hr)	16		14	14		16	8		19	19		8
Heavy Vehicles (%)	1%	2%	3%	2%	3%	2%	2%	2%	2%	3%	2%	1%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4			8		8	6		6	2		2
Actuated Green, G (s)	50.5	40.0		50.5	40.0	40.0	59.0	52.8	52.8	69.8	59.6	59.6
Effective Green, g (s)	54.5	40.0		50.5	41.0	40.0	59.0	52.8	52.8	71.8	59.6	59.6
Actuated g/C Ratio	0.39	0.29		0.36	0.29	0.29	0.42	0.38	0.38	0.51	0.43	0.43
Clearance Time (s)	4.0	8.5		4.0	8.5	8.5	4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	215	1059		307	575	444	135	1422	583	243	1605	664
v/s Ratio Prot	c0.09	0.15		0.07	c0.29		0.02	c0.35		c0.10	0.34	
v/s Ratio Perm	0.29			0.27		0.15	0.18		0.13	0.38		0.10
v/c Ratio	0.99	0.52		0.95	0.98	0.54	0.49	0.92	0.35	0.93	0.79	0.23
Uniform Delay, d1	39.4	41.9		40.5	48.9	42.1	29.1	41.5	31.2	43.1	34.7	25.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	56.9	0.5		37.2	31.5	1.3	2.8	11.3	1.7	39.0	4.1	0.8
Delay (s)	96.3	42.3		77.8	80.4	43.5	31.8	52.8	32.9	82.2	38.8	26.4
Level of Service	F	D		E	F	D	C	D	C	F	D	C
Approach Delay (s)		57.2			69.5			48.5			43.0	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	52.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	139.8	Sum of lost time (s)	23.5
Intersection Capacity Utilization	104.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	19	16	93	125	46
Future Volume (Veh/h)	13	19	16	93	125	46
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	21	17	101	136	50
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	296	161	186			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	296	161	186			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	98	99			
cM capacity (veh/h)	687	884	1388			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	35	118	186
Volume Left	14	17	0
Volume Right	21	0	50
cSH	793	1388	1700
Volume to Capacity	0.04	0.01	0.11
Queue Length 95th (m)	1.1	0.3	0.0
Control Delay (s)	9.8	1.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.8	1.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	28.5%	ICU Level of Service	A
Analysis Period (min)	15		