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Traffic Operations Assessment PROPOSED RESTAURANT DEVELOPMENT

16054-16068 Airport Road
Town of Caledon, ON
Town File No: POPA 19-07, RZ 19-10, SPA 19-66

May 31, 2022
Project No: NT-19-052

520 Industrial Parkway South, Suite 201
Aurora, Ontario L4G 6W8

Phone: 905-503-2563

Fax: 1-877-957-2929

www.nextrans.ca

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NextEng Consulting Group Inc.

May 31, 2022

Ganni Properties Inc.

**Re: Traffic Operations Assessment Addendum
Proposed Restaurant Development
16054 – 16068 Airport Road, Town of Caledon
Our Project No. NT-19-052**

On behalf of our Client, Ganni Properties Inc., we acknowledge the City of Caledon's transportation comments with respect to our Traffic Operations Assessment, dated December 11, 2020.

The previous Traffic Operations Assessment submitted by Nextrans was in support of a restaurant with a total GFA of 232.26 m². The development proposal also included an ancillary drive-thru and 15 vehicular parking spaces. Access to the site was previously envisioned through a full movement access onto Airport Road. Subsequent to our last submission, the development proposal has been revised, and the site plan dated February 25, 2022, includes a restaurant with a total GFA of 2,500 ft² and a retail building with a GFA of 2,310 ft². An ancillary drive-thru is provided for the proposed restaurant use on-site and the site provides a total of 24 vehicular parking spaces.

Based on the comments received from Town of Caledon, our responses are provided below as follows:

- 1. While Town staff recognizes that traditionally a drive-through facility is an accessory use to a service operation such as a restaurant or bank, it is also staff's opinion that the drive-through service facility proposed as part of this application is a critical component to the success of the proposed restaurant. Staff recognize that the facility will generate high volumes of vehicular and pedestrian movement throughout the day and likely 24 hours a day with frequent deliveries of goods. The material submitted should recognize the likely intensity of the drive-through facility and the impacts on site design, traffic flow and the surrounding neighborhood. Please amend the material submitted with the application accordingly. (Town of Caledon, Development Review Services, Planning)*

Response: The revised traffic operations assessment indicates that all study area intersections, as well as the proposed site access operate with residual capacity available at all movements. As such, it is our opinion that the site traffic generated by the proposed development will have a manageable impact on the surrounding road network.

It is noted that the site plan dated February 25, 2022, illustrates that the vehicular entrance to the site is separated from the parking spaces, which previously were perpendicular to the drive aisle connecting to the site's entrance. It is our opinion that the revised site plan allows for better traffic flow as the new configuration allows for better traffic flow on-site, separating entry / exit maneuvers from parking maneuvers.

- 2. The Description of Subject Lands Section (Page 14, Paragraph 2) and the Transportation Operation Assessment Section (Page 18) of the submitted the Planning Justification Report identify 16 parking spots proposed as part of the application. Please note that the submitted site plan and Figure 2 of the Planning Justification Report (Subject Lands Conceptual Site Plan, Page 13) indicate 15 spots. (Town of Caledon, Policy, Heritage and Design Services, Policy)*

Response: It is noted that based on the site plan prepared by Dillon Consulting, dated February 25, 2022, the site will now provide a total of 24 vehicular parking spaces, two (2) of which will be barrier-free parking spaces.

3. *Airport Road is a Regional Road. The subject lands of this application are located within the Region of Peel's current Airport Road Environmental Assessment (EA) Study area (from 100m north of King Street to 300m north of Huntsmill Drive, Caledon). This study has been identified as focusing on:*
 - a. *Enhancing the safety of Airport Road by examining traffic calming measures for truck and other vehicular traffic through Caledon East.*
 - b. *Supporting the Caledon East Community Improvement Plan including streetscaping.*
 - c. *Promoting healthy living by examining infrastructure improvements for walking and cycling.*

It has been identified that this project will not be considering road widening for additional through traffic lanes along Airport Road. More information on this study can be found at:

<http://www.peelregion.ca/pw/transportation/enviro-assess/airport-road-improvements.htm>

It is recommended that further review of this application require incorporation of the findings of the completed Regional EA. (Town of Caledon, Policy, Heritage and Design Services, Policy).

Response: It is noted that the revised traffic operations assessment provides considerations regarding the effects of the recommendations made within the Airport Road EA.

4. *Development Engineering has concerns regarding the internal functionality of the site. Please demonstrate how deliveries will be made including the travel routes and turning radius as it appears that delivery trucks would have to utilize the drive through and would also block in the four parking spaces along the rear. Additionally, there appears to be insufficient space to reverse out of the parking space nearest to the garbage enclosure. (Town of Caledon, Development Review Services, Engineering)*

Response: As illustrated in Appendix I of the revised Traffic Operations Assessment, the AutoTURN analysis demonstrates that a 10-meter-long medium single unit truck can effectively maneuver into and out of the site, as well as the proposed loading space. The AutoTURN analysis also demonstrates that a Molok waste collection vehicle can access the proposed Molok bins on-site without encumbering any of the parking spaces. It is our recommendation that waste collection be scheduled during off-peak hours on-site to reduce the potential for conflicts with the waste collection vehicle and passenger vehicles.

The results of the analysis indicate that the proposed development can be supported by the existing road network, with a negligible traffic impact to the surrounding road network.

We trust that the enclosed sufficiently addresses your needs. Should you have any questions, please do not hesitate to contact the undersigned.

Yours truly,

Nextrans Consulting Engineers

A Division of NextEng Consulting Group Inc.

Prepared by:



Kristian Aviles, B.Eng.
Transportation Analyst

Approved by:



Richard Pernicky, MITE
Principal

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1.0 INTRODUCTION

Nextrans Consulting Engineers was retained by Ganni Properties Inc. (the 'Client') to undertake a Traffic Operations Assessment for a Site Plan Application in support of a proposed restaurant with ancillary drive-through located southwest of Airport Road and Walker Road, in the Town of Caledon. The location of the proposed development is illustrated in **Figure 1-1**.

Figure 1-1 – Site Location



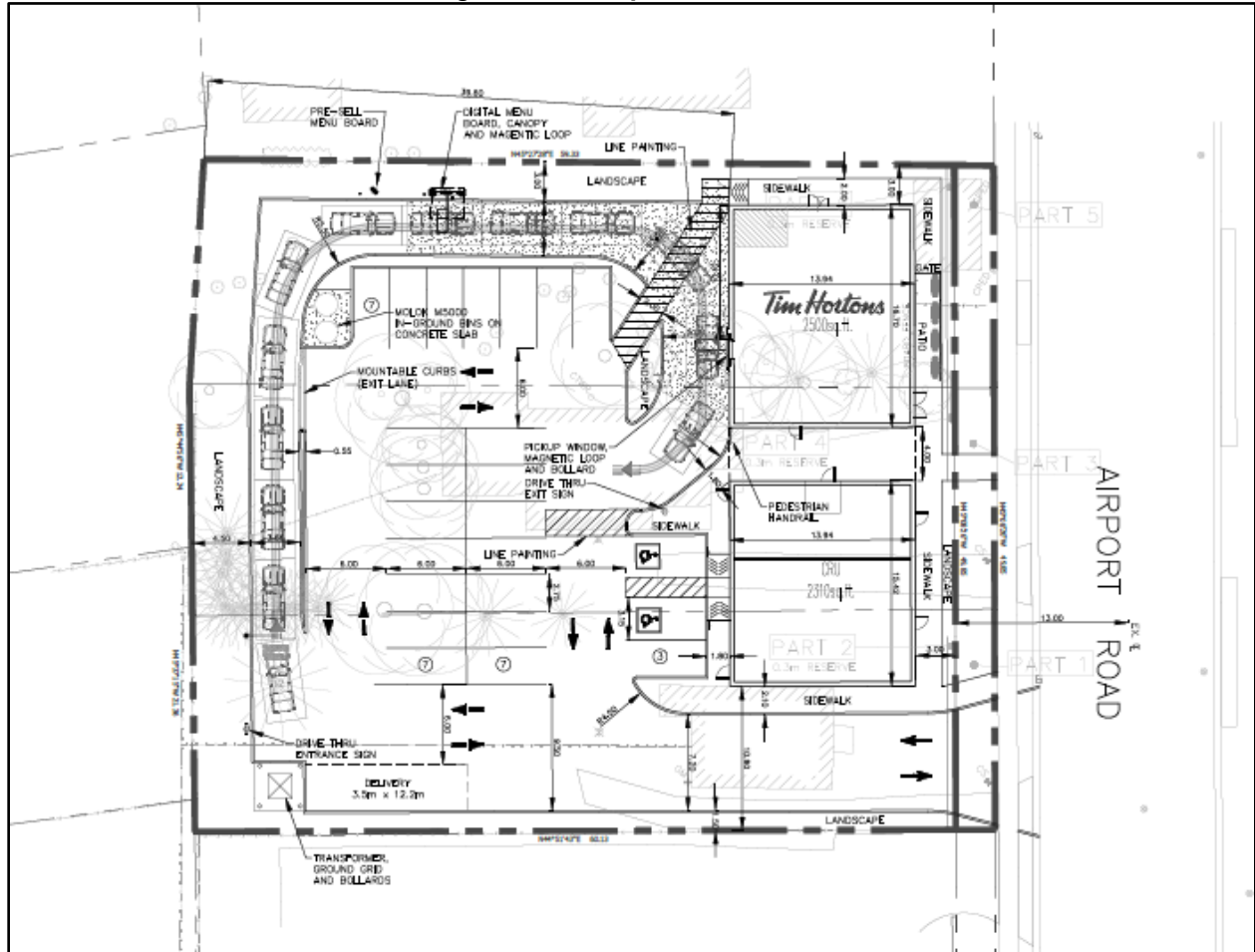
It is noted that Nextrans previously a Traffic Operations Assessment for the proposed development, dated December 11, 2020, in support of a restaurant with a total GFA of 232.26 m². The development proposal also included an ancillary drive-thru and 15 vehicular parking spaces. Access to the site was previously envisioned through a full movement access onto Airport Road.

Subsequent to our last submission, the development proposal has been revised, and the site plan dated February 25, 2022, includes a restaurant with a total GFA of 2,500 ft² and a retail building with a GFA of 2,310 ft². An ancillary drive-thru is provided for the proposed restaurant use on-site and the site provides a total of 24 vehicular parking spaces. A comparison of the site statistics is provided in **Table 1.1** and the revised site plan is illustrated in **Figure 1-2**. The full-scale site plan is enclosed in **Appendix A**.

Table 1.1 – Proposed Site Statistics

	July 25, 2019	January 27, 2021	Net Change
Restaurant GFA	2,500 ft ²	2,500 ft ²	-
Retail GFA	-	2,310 ft ²	+2,310 ft ²
Parking	15 spaces	24 spaces	+9 spaces

Figure 1-2 – Proposed Site Plan



1.1. Tertiary Plan

A tertiary plan has been prepared showing the future internal road connection from McCaffery’s Lane to Ivan Avenue. The tertiary plan is provided in **Appendix B**.

2.0 EXISTING TRAFFIC CONDITIONS

2.1. Existing Road Network

The existing subject lands are located southwest of Airport Road and Walker Road, in the Town of Caledon. The road network is described as follows:

Airport Road: Airport Road is classified as an arterial road and maintains a posted speed limit of 50 km/h. Airport Road maintains a two (2) lane cross section in the vicinity of the subject site and has layby parking provided on both sides of the roadway. Sidewalks are provided on both sides of the roadway.

Walker Road: Walker Road is classified as a local road and maintains a posted speed limit of 50 km/hr. Walker Road maintains a two (2) lane cross section in the vicinity of the subject site. Sidewalks are provided on the south side of the roadway.

Old Church Road: Old Church Road is classified as an arterial road and maintains a posted speed limit of 50 km/hr. Old Church Road maintains a two (2) lane cross section in the vicinity of the subject site and has layby parking provided on both sides of the roadway. Sidewalks are provided on both sides of the roadway.

2.2. Existing Active Transportation Network

Sidewalks

The area surrounding the proposed development is well serviced with dedicated walkways. Currently, sidewalks are available on both sides of Airport Road and Old Church Road. Sidewalks are provided on the south side of Walker Road.

Bicycle Lanes

There are no dedicated bicycle lanes within the vicinity of the subject site.

2.3. Existing Traffic Volumes

Based on the Terms of Reference established with the Region of Peel, provided in **Appendix C**, existing traffic volumes at the study area intersection of Airport Road and Old Church Road was undertaken by Spectrum Traffic on behalf of Nextrans Consulting Engineers on Tuesday, May 14, 2019 during the morning (7:00 a.m. to 10:00 a.m.) and afternoon (4:00 p.m. to 7:00 p.m.) peak periods. Additionally, existing traffic volumes at the study area intersection of Walker Road and Airport Road, dated October 9, 2019, were obtained from the Region of Peel during the morning (7:00 a.m. to 9:00 a.m.) and afternoon (3:00 p.m. to 6:00 p.m.) peak periods. Detailed existing traffic data and signal timing plan are provided in **Appendix D**.

The signal timing plan for Airport Road and Old Church Road shows the intersection as a 3-legged intersection, with signals provided for the northbound, southbound and westbound directions. However, the turning movement counts represent the intersection as a 4-legged intersection. Based on discussion with Peel Region, the eastbound direction is assumed to follow the same signal timing plan as the westbound direction, since Synchro 10 cannot analyze the intersection as a one-way stop and three-way signalized intersection. As such, the eastbound signal timing at the LCBO Site Access will follow the westbound signal timing plan on Old Church Road.

2.4. Existing Traffic Assessment

The existing volumes are illustrated in **Figure 2-1** and were analyzed using Synchro 10 software. The methodology of the software follows the procedures described and outlined in the Highway Capacity Manual, HCM 2000, published by the Transportation Research Board. The detailed results are provided in **Appendix E** and summarized in **Table 2.1**.

Figure 2-1 – Existing Traffic Volumes

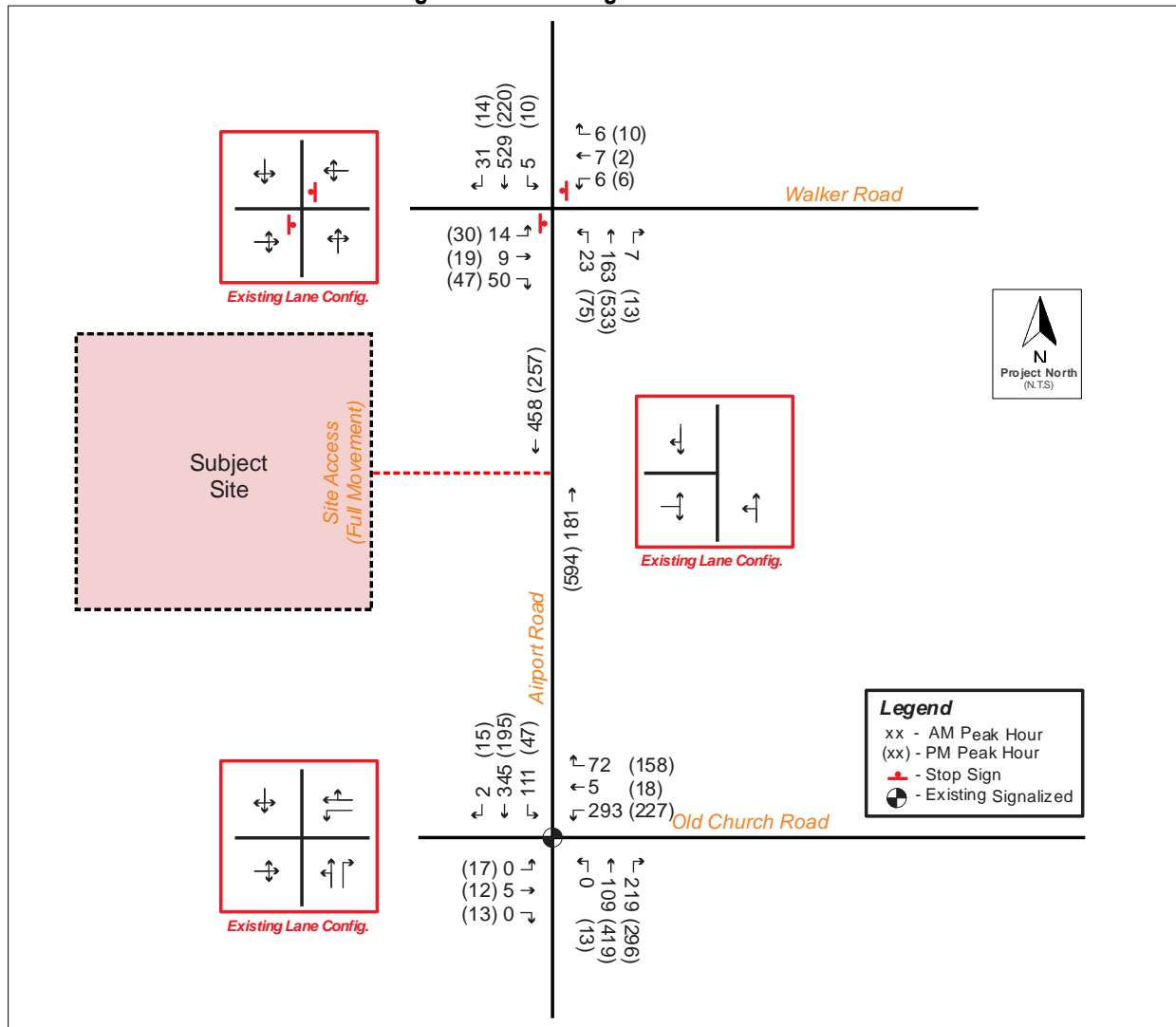


Table 2.1 – Level of Service – Existing Traffic Assessments

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		LOS (v/c)	Delay (s)	95 th Queue (m)	LOS (v/c)	Delay (s)	95 th Queue (m)
Airport Road and Walker Road (Unsignalized)	EBLTR	C (0.29)	18.5	9.0	D (0.48)	30.2	18.4
	WBLTR	C (0.12)	17.5	3.1	C (0.14)	24.0	3.8
	NBLTR	A (0.03)	1.3	0.7	A (0.07)	1.8	1.7
	SBLTR	A (0.01)	0.3	0.2	A (0.02)	0.7	0.4
Airport Road and Old Church Road / LCBO Site Access (Signalized)	Overall	B (0.77)	19.8	-	B (0.69)	16.1	-
	EBLTR	B (0.02)	14.4	1.7	B (0.11)	15.6	7.8
	WBL	C (0.78)	27.4	55.5	C (0.69)	23.8	42.7
	WBTR	B (0.09)	14.9	0.4	B (0.20)	16.1	2.4
	NBLT	B (0.18)	10.8	20.1	B (0.70)	18.2	103.0
	NBR	B (0.16)	10.7	10.8	A (0.21)	10.0	13.6
SBLTR	C (0.77)	22.3	116.7	B (0.44)	12.6	47.4	

As summarized in **Table 2.1**, under existing conditions, the study area intersections are currently operating at excellent levels of service during both peak periods with no critical movements identified.

3.0 FUTURE BACKGROUND CONDITIONS

A 5-year (2024) horizon period was selected and assumed in this analysis, which generally coincides with the full build out of the proposed development. Based on communications with the Region of Peel, Airport Road is estimated to have a 2% growth rate from the years 2021 to 2031. As such, a 2% growth rate per annum is assumed for the north-south through traffic on Airport Road. Additionally, based on communications with the Region of Peel, the anticipated construction date for Airport Road EA is 2024. As such, since the 5-year horizon year is 2024, existing lane configurations have been utilized for assessment purposes.

The future (2024) background traffic volumes are provided in **Figure 3-1. Table 3.1** summarizes the level of service at the given intersections under future background traffic conditions. Detailed output analysis can be found in **Appendix F**.

Figure 3-1 – Future (2024) Background Traffic Volumes

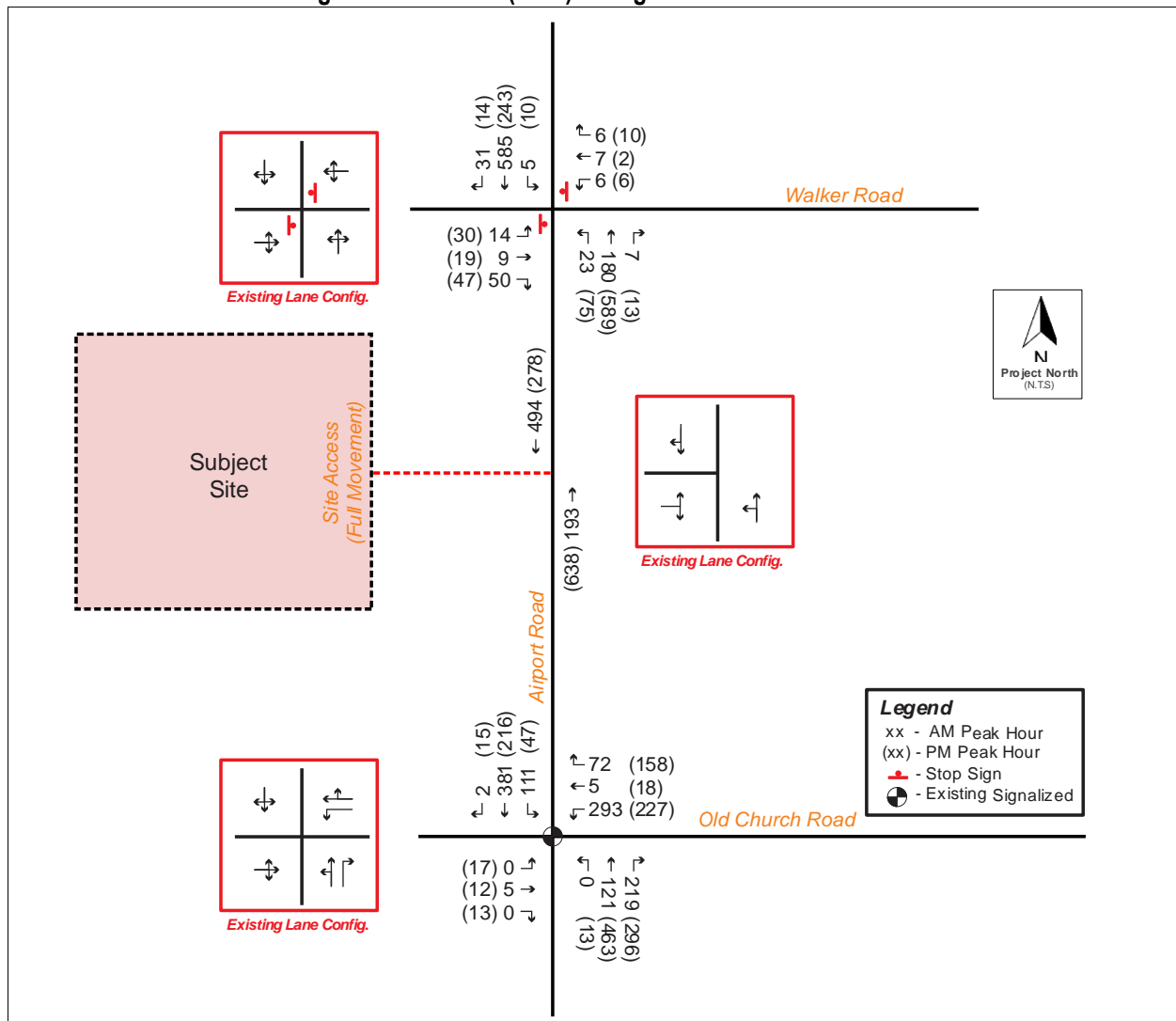


Table 3.1: Future (2024) Background Traffic Levels of Service

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		LOS (v/c)	Delay (s)	95 th Queue (m)	LOS (v/c)	Delay (s)	95 th Queue (m)
Airport Road and Walker Road (Unsignalized)	EBLTR	C (0.32)	20.6	10.2	E (0.56)	39.1	23.3
	WBLTR	C (0.14)	19.3	3.6	D (0.17)	28.4	4.6
	NBLTR	A (0.03)	1.3	0.7	A (0.07)	1.8	1.8
	SBLTR	A (0.01)	0.3	0.2	A (0.02)	0.7	0.4
Airport Road and Old Church Road / LCBO Site Access (Signalized)	Overall	B (0.79)	20.7	-	B (0.74)	17.1	-
	EBLTR	B (0.02)	14.4	1.7	B (0.11)	15.6	7.8
	WBL	C (0.78)	27.4	55.5	C (0.69)	23.8	42.7
	WBTR	B (0.09)	14.9	0.4	B (0.23)	16.3	3.8
	NBLT	B (0.20)	11.0	22.0	C (0.77)	21.1	118.3
	NBR	B (0.16)	10.7	10.8	A (0.21)	10.0	13.6
	SBLTR	C (0.81)	24.6	125.8	B (0.49)	13.5	52.6

As summarized in **Table 3.1**, it is shown that during future background traffic conditions the subject study area intersection continues to operate at acceptable level of services with no changes to expected operations.

4.0 SITE TRAFFIC

As previously identified in this report, the development proposal is to redevelop the existing subject lands to construct a restaurant with a total GFA of 2,500 ft² and a retail building with a GFA of 2,310 ft². Trip rates and site generated trips were derived from the information contained in the *Trip Generation Manual, 10th Edition* published by the Institute of Transportation Engineers (ITE) for “Fast-Food Restaurant with Drive-Through Window” (LUC 934), and for “Shopping Centre” (LUC 820).

It is noted that the average rate was used to calculate the trips generated by LUC 934 as there is no fitted curve provided for this land use. In addition, the average rate was also used to calculate trips generated by LUC 820 as the fitted curve does not accurately represent the size of the proposed development. The trip generation summary is shown in **Table 4.1**.

Table 4.1 – Site Traffic Trip Generation (Based on ITE)

ITE Land Use	Parameter	Morning Peak Hour			Afternoon Peak Hour		
		In	Out	Total	In	Out	Total
Fast-Food Restaurant with Drive-Through Window	Gross Trips	51	49	100	43	39	82
	Gross Rate	20.40	19.60	40.00	17.20	15.60	32.80
Shopping Centre	Gross Trips	1	1	2	4	5	9
	Gross Rate	0.43	0.44	0.87	0	0	0
Total	New Trips	52	50	102	47	44	91

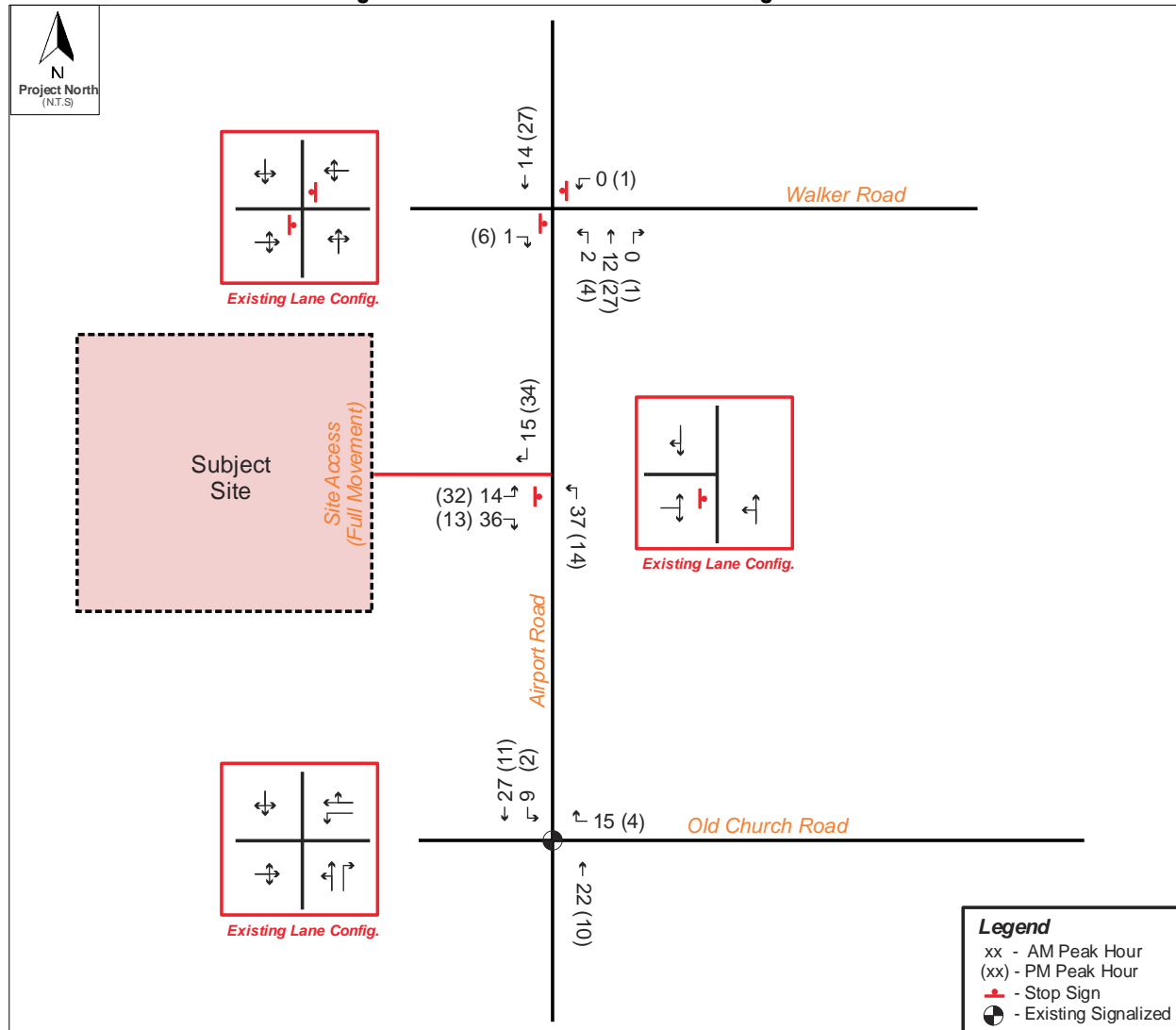
As shown in **Table 4.1**, the proposed development is anticipated to generate 102 two-way auto trips (52 inbound and 50 outbound) during the AM peak hour and 91 two-way auto trips (47 inbound and 44 outbound) during the PM peak hour.

The assumptions for the trip distribution rates are based on existing traffic patterns and routes that drivers would likely take to access the subject site and engineering judgement based on ease of site access. As a result, site trip distribution is summarized for the inbound and outbound site traffic movements during the morning and afternoon peak hour in **Tables 4.2**, with the trip assignment illustrated in **Figure 4-1**.

Table 4.2 – Site Traffic Trip Distribution

Direction	Via	AM Peak Hour		PM Peak Hour	
		Inbound	Outbound	Inbound	Outbound
Airport Road and Site Access					
North	Airport Road	28%	28%	70%	70%
South	Airport Road	72%	72%	30%	30%
Total		100%	100%	100%	100%
Airport Road and Old Church Road					
East	Old Church Road	40%	24%	27%	19%
South	Airport Road	60%	76%	73%	81%
Total		100%	100%	100%	100%
Airport Road and Walker Road					
East	Walker Road	1%	3%	2%	2%
North	Airport Road	90%	85%	81%	86%
West	Walker Road	9%	12%	17%	12%
Total		100%	100%	100%	100%

Figure 4-1 – Site Generated Traffic Assignments



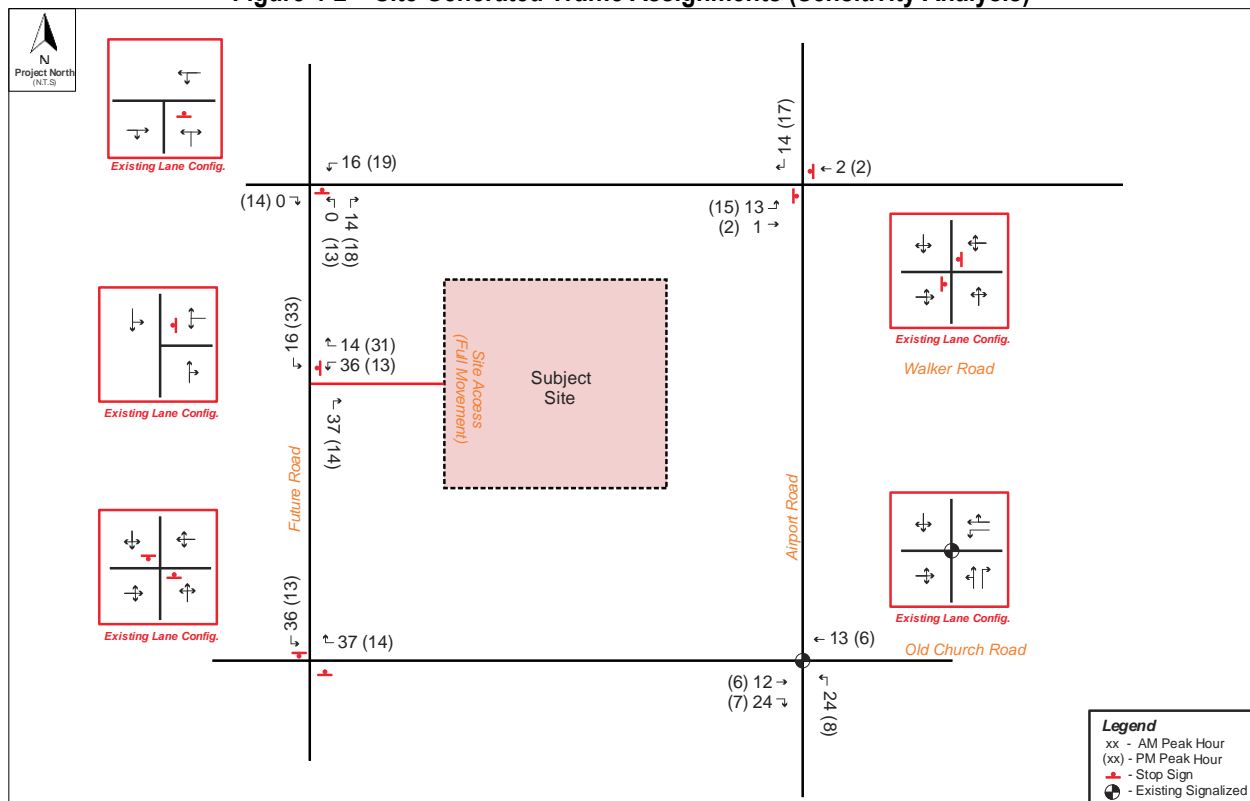
4.1. Site Traffic (Sensitivity Analysis)

Based on communications with the Region of Peel, a sensitivity analysis has been conducted based on the Tertiary Plan. The assumptions for the trip distribution rates are based on existing traffic patterns and routes that drivers would likely take to access the subject site and engineering judgement based on ease of site access. As a result, site trip distribution is summarized for the inbound and outbound site traffic movements during the morning and afternoon peak hours in **Table 4.3**, with the trip assignment illustrated in **Figure 4-2**.

Table 4.3 – Site Traffic Trip Distribution

Direction	Via	AM Peak Hour		PM Peak Hour	
		Inbound	Outbound	Inbound	Outbound
Future Road and Site Access					
North	Airport Road	28%	28%	70%	70%
South	Airport Road	72%	72%	30%	30%
Total		100%	100%	100%	100%
Airport Road and Old Church Road					
East	Old Church Road	34%	34%	45%	45%
South	Airport Road	66%	66%	55%	55%
Total		100%	100%	100%	100%
Airport Road and Walker Road					
East	Walker Road	10%	10%	7%	7%
North	Airport Road	90%	90%	93%	93%
Total		100%	100%	100%	100%

Figure 4-2 – Site Generated Traffic Assignments (Sensitivity Analysis)



5.0 FUTURE TOTAL TRAFFIC CONDITIONS

The forecasted 2024 future total traffic volumes (future background volumes plus site generated traffic volumes) are illustrated in **Figure 5-1** and were analyzed using Synchro 10 software with stopped controlled at the proposed site access. The detailed calculations are provided in **Appendix G** and summarized in **Table 5.1**.

Figure 5-1 – Future (2024) Total Traffic Volumes

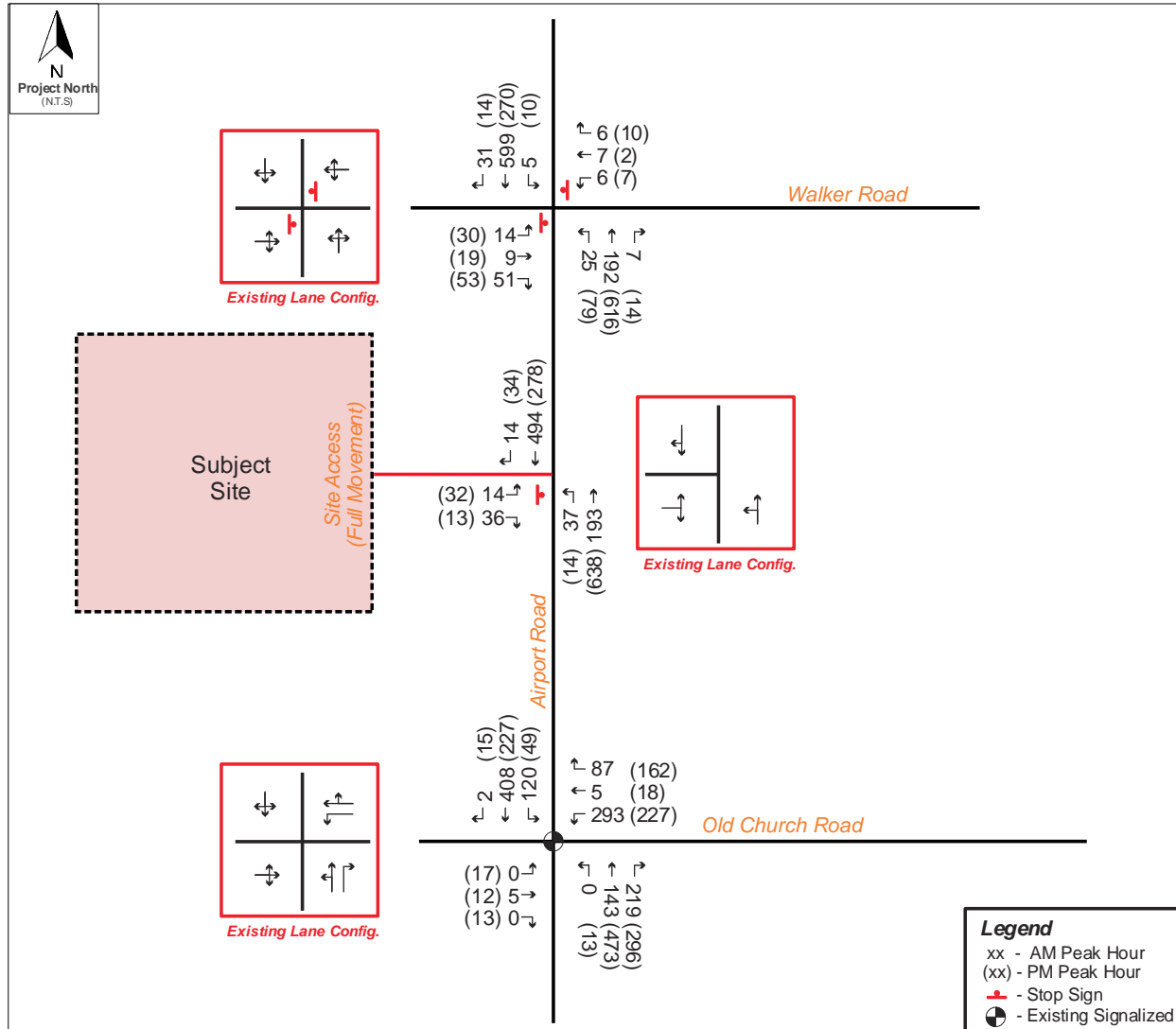


Table 5.1 – Level of Service – Future (2024) Total Traffic Assessments

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		LOS (v/c)	Delay (s)	95 th Queue (m)	LOS (v/c)	Delay (s)	95 th Queue (m)
Airport Road and Walker Road (Unsignalized)	EBLTR	C (0.33)	21.5	10.9	E (0.65)	49.0	29.3
	WBLTR	C (0.14)	20.1	3.8	E (0.22)	35.4	6.2
	NBLTR	A (0.03)	1.3	0.8	A (0.08)	2.0	1.9
	SBLTR	A (0.01)	0.3	0.2	A (0.02)	0.6	0.4
Airport Road and Old Church Road / LCBO Site Access (Signalized)	Overall	C (0.83)	22.7	-	B (0.75)	17.5	-
	EBLTR	B (0.02)	14.4	1.7	B (0.11)	15.5	7.8
	WBL	C (0.77)	27.4	56.0	C (0.69)	23.8	42.7
	WBTR	B (0.11)	15.0	0.0	B (0.25)	16.5	4.7
	NBLT	B (0.23)	11.3	25.7	C (0.78)	21.9	121.7
	NBR	B (0.16)	10.7	10.8	A (0.21)	10.0	13.6
	SBLTR	C (0.87)	29.7	139.6	B (0.53)	14.2	56.4
Airport Road and Site Access	EBLR	B (0.12)	14.0	3.0	C (0.17)	20.0	4.6
	NBLT	A (0.04)	1.7	0.9	A (0.01)	0.3	0.3

Under future total traffic conditions, the study intersections and proposed access are expected to continue operating with residual capacity at all movements, with acceptable level of service and with manageable delay and 95th percentile queue lengths during both AM and PM peak period. It is noted that the proposed full movement access operates with a LOS ‘B’ and ‘E’ during AM and PM peak hours, respectively, and with delays of 14.0 and 20.0 seconds.

A comprehensive review of the Airport Road EA has been conducted by Nextrans, and it is noted that the intersection of Airport Road and Walker Road will be redeveloped to provide dedicated turning lanes for the northbound left and southbound left and right movements. It is our opinion that the revised road configuration will further increase the capacity of all study area intersection movements, contribute to the improvement of LOS, and reduce both delay and queue lengths.

It is our opinion that restricting the proposed full movement access to right-in/right-out (RIRO) may potentially introduce additional conflicts into the travelled portion of Airport Road as a result of vehicles making illegal left turns into and out of the site, as well as northbound U-turns. The potential of illegal turns into and out of the site decreases pedestrian safety. Furthermore, it is noted that along this segment of Airport Road, there are no other existing entrances that are restricted to RIRO. **As such, it continues to be our opinion that a full movement entrance is preferable in this context.**

5.1. Future Total Traffic Condition (Sensitivity Analysis)

The forecasted 2024 future total traffic volumes (future background volumes plus site generated traffic volumes (Sensitivity Analysis)) are illustrated in **Figure 5-2** and were analyzed using Synchro 10 software with stopped controlled at the proposed site access. The detailed calculations are provided in **Appendix H** and summarized in **Table 5.2**.

Figure 5-2 – Future (2024) Total Traffic Volumes (Sensitivity Analysis)

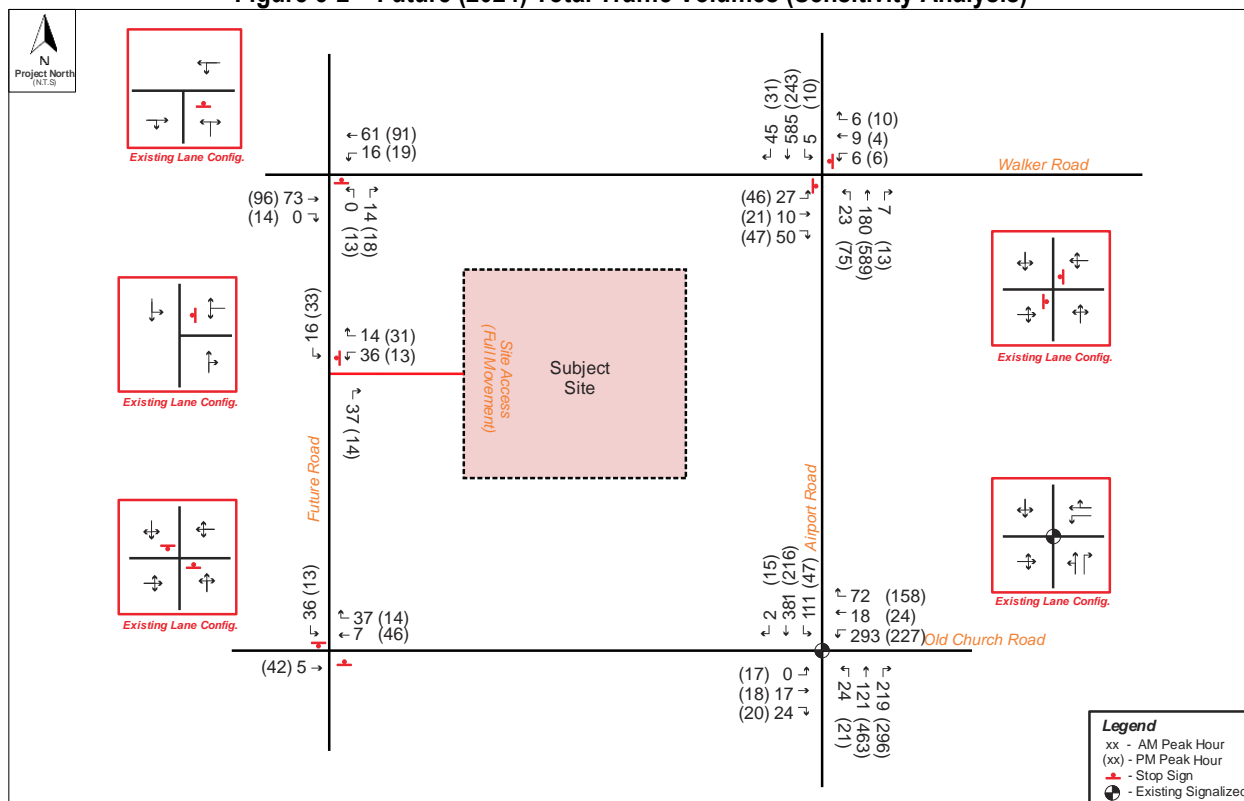


Table 5.2 – Level of Service – Future (2024) Total Traffic Assessments (Sensitivity Analysis)

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		LOS (v/c)	Delay (s)	95 th Queue (m)	LOS (v/c)	Delay (s)	95 th Queue (m)
Airport Road and Walker Road (Unsignalized)	EBLTR	D (0.43)	25.6	15.6	F (0.80)	71.8	42.4
	WBLTR	C (0.16)	20.1	4.1	D (0.22)	32.4	6.0
	NBLTR	A (0.03)	1.3	0.8	A (0.07)	1.9	1.8
	SBLTR	A (0.01)	0.3	0.2	A (0.02)	0.6	0.4
Airport Road and Old Church Road / LCBO Site Access (Signalized)	Overall	C (0.84)	23.3	-	B (0.75)	17.8	-
	EBLTR	B (0.12)	14.5	1.5	B (0.13)	15.7	9.0
	WBL	C (0.82)	30.8	59.2	C (0.69)	24.2	43.0
	WBTR	B (0.15)	14.8	1.9	B (0.25)	16.4	4.4
	NBLT	B (0.50)	16.9	43.1	C (0.79)	22.7	122.5
	NBR	B (0.16)	11.5	10.8	B (0.21)	10.1	13.6
Future Road and Walker Road (Unsignalized)	SBLTR	C (0.86)	30.7	129.0	B (0.50)	13.9	53.2
	WBLT	A (0.01)	1.6	0.3	A (0.01)	1.4	0.3
Future Road / Ivan Road and LCBO Site Access (Unsignalized)	NBLR	A (0.02)	8.7	0.4	A (0.04)	9.5	1.0
	NBLTR	A (<0.01)	0.0	0.0	A (<0.01)	0.0	0.0
Future Road and Site Access (Unsignalized)	SBLTR	A (0.04)	8.8	0.9	A (0.04)	9.2	0.4
	WBLR	A (0.02)	8.7	1.1	A (0.05)	8.7	1.1
Future Road and Site Access (Unsignalized)	SBLT	A (0.01)	7.3	0.5	A (0.02)	7.3	0.5

Under future total traffic conditions (sensitivity analysis), the study intersections and proposed accesses are expected to continue operating with acceptable level of service during both peak periods with the exception of the eastbound shared lane at the Airport Road and Walker Road intersection experiencing a failing level of service during the PM peak period. The volume to capacity ratio for this movement indicates there is residual capacity available. **As such, it is our opinion an access via the tertiary plan's future road is viable for the proposed development.**

As previously noted, it has been identified that in the Airport Road EA prepared by IBI Group, the intersection of Airport Road and Walker Road will be redeveloped to provide dedicated turning lanes for the northbound left and southbound left and right movements. It is our opinion that the proposed intersection improvements will assist to further support the site traffic generated by this development, as well as support any future traffic generated by other background developments.

5.2. Left-Turn Storage Lane Warrant Analysis

In order to distinguish whether a left turning lane is required is based on the review and application of the Ministry of Transportation Ontario's (MTO) *Geometric Design Standards for Ontario Highways* applicable nomograph. As mentioned earlier, development proposal is to convert and renovate the existing two (2) detached dwelling units into a restaurant with a drive-through, providing 232.26 m² of gross floor area. The results provided in **Figure 5-1** at the site entrance will be carried forward for left turn storage lane warrant analysis as follows:

The site access experiences the highest left turning traffic volumes during the afternoon peak hour. As a result, the estimated percentage of left turning volume in the northbound direction of 5% or less along with a 50 km/h design speed was used during the afternoon peak hour at the proposed access to determine the need of a left turn lane.

$$\begin{aligned} \text{Percentage of Left Turning Traffic} &= \frac{V_L * 100}{V_A} \\ &= \frac{13 * 100}{651} \\ &= 2\% \end{aligned}$$

Left Turning Traffic Volume, $V_L = 13$ vph

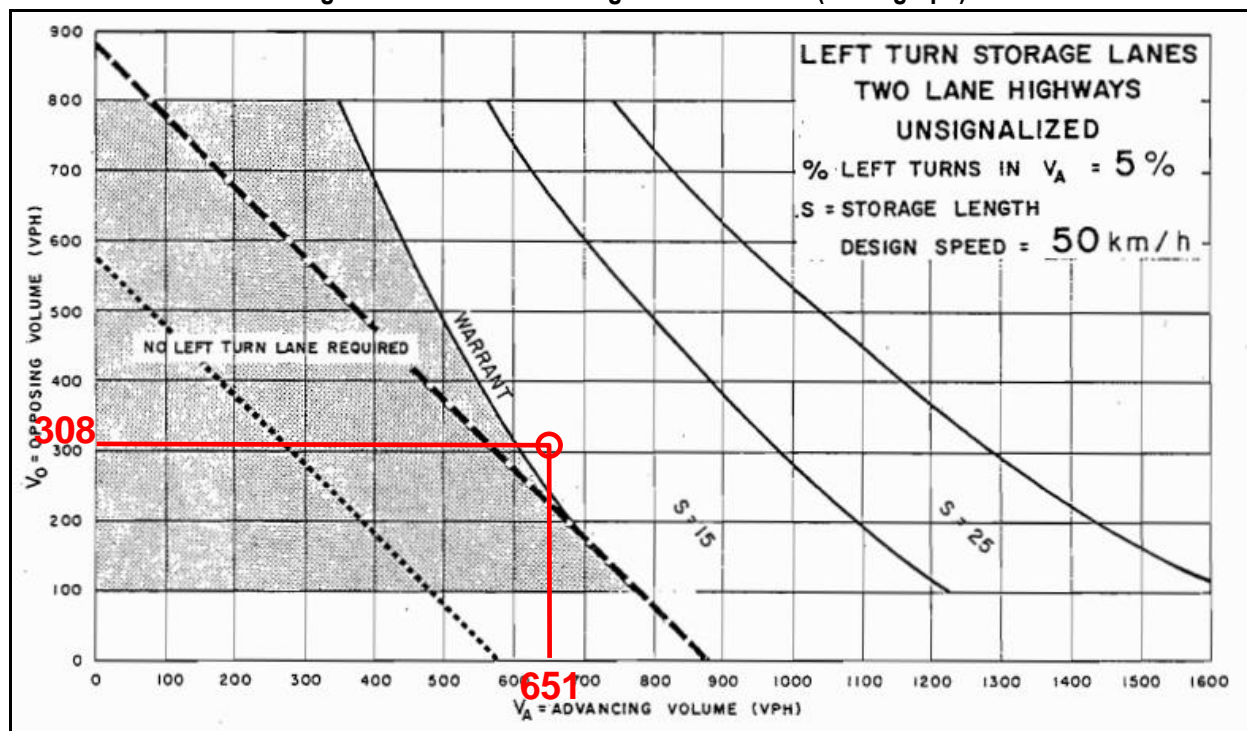
Advancing Traffic Volume, $V_A = 651$ vph

Opposing Traffic Volume, $V_O = 308$ vph

Design Speed = 50 km/h

As shown below in **Figure 5-3**, the projected traffic volumes intersect right of the warrant line area of the nomograph. Since our left turn percentage for the proposed development is 2% (i.e. 13 vehicles turning left into the site) and the nomographs do not represent percentages lower than 5% (i.e. 2.5 times greater than the percentage of the proposed development), it is our opinion a left turn lane is not required for the proposed development.

Figure 5-3 - Left Turn Storage Lane Warrants (Nomograph)



6.0 PARKING ASSESSMENT

The technical parking requirement for the proposed development is detailed in **Table 6.1**.

Table 6.1 – Vehicle Parking Requirements

Use	Gross Floor Area	Rate	Parking Requirement	Parking Provided	Difference
Restaurant	187.2 m ²	1 space per 15 m ²	12.5	24	+2
Clinic	60.9 m ²	1 space per 16.5 m ²	3.7		
Commercial	110.8 m ²	1 space per 20 m ²	5.5		
Total			21.7 ~ 22	24	+2

Based on Town of Caledon Zoning By-law dated March 2016, a minimum of 22 vehicular parking spaces will be required for the proposed development. The site plan provides for a total of 24 parking spaces, which results in a technical surplus of two (2) parking spaces. On this basis, it is our opinion that the proposed parking supply is adequate to accommodate the technical requirement.

7.0 SITE PLAN REVIEW

AutoTURN software was used to generate a vehicular turning template to confirm and demonstrate the accessibility of the proposed loading space and drive through route. As illustrated in **Appendix I**, the AutoTURN analysis demonstrates that a 10-meter-long medium single unit truck (MSU TAC-2017) can effectively maneuver into and out of the site, as well as the proposed loading space. The AutoTURN analysis also demonstrates that a Molok waste collection vehicle can access the proposed Molok bins on-site. It is recommended that waste collection be scheduled during off-peak hours on-site to reduce the potential for conflicts with the waste collection vehicle and passenger vehicles.

Based on the Environmental Assessment (EA) prepared by the Region of Peel, a 13-m R.O.W. is required from the centreline of Airport Road, as well as a dedicated northbound left turn lane at the Airport Road and Walker Road intersection. Based on the Region's Official Plan, a 15.75-m R.O.W. is required from the centreline of Airport Road when a site is located within 245-m of an intersection, resulting in an additional requirement of 2.75-m when compared to the EA Basic requirement. Based on the functional plan provided in **Figure 7-1**, a 3-m Multi-Use Path, 1.5-m landscape strip, 2.4-m layby parking and 3.5-m travel lane, as well as a dedicated northbound left turn lane at the Airport Road and Walker Road intersection can all be accommodated within the 13-m centerline R.O.W. as depicted on the site plan. As such, it is our finding through this evaluation that a 15.75-m centerline R.O.W. is not required for the subject site. **Appendix J** provides confirmation from Peel Region transportation staff that the 13-meter R.O.W. is acceptable.

It is noted that a number of the existing on-street parking spaces are eliminated to accommodate the proposed roadway and intersection improvements; however, the functional plan illustrates where lay-by parking spaces can be accommodated. In addition, it is noted that the subject site is located at the northern limit of the commercial core where there are no commercial sites that would benefit from the provision of on-street parking, as all nearby sites already provide off-street parking to accommodate the respective demands of each use.

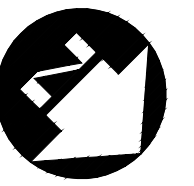
Additionally, it is NexTrans' opinion that the site access location is functional from a traffic perspective since Airport Road does not generate high volumes of traffic and can be accommodated by the existing transportation network with manageable traffic impact to the adjacent public roadways.

8.0 CONCLUSION

The findings and conclusions of our analysis are as follows:

- The development proposal includes a restaurant with a total GFA of 2,500 ft² and a retail building with a GFA of 2,310 ft². An ancillary drive-thru is provided for the proposed restaurant use on-site and the site provides a total of 24 vehicular parking spaces. Access to the site is envisioned via a full movement driveway onto Airport Road.
- The proposed development is anticipated to generate 102 two-way auto trips (52 inbound and 50 outbound) during the AM peak hour and 91 two-way auto trips (47 inbound and 44 outbound) during the PM peak hour.
- The intersection capacity analysis results (based on the methodology and procedures outlined in the Highway Capacity Manual, HCM 2000, published by the Transportation Research Board) indicate that the study intersections and existing accesses are expected to operate with excellent levels of service.
- It is our opinion that restricting the proposed full movement access to right-in/right-out (RIRO) may potentially introduce additional conflicts into the travelled portion of Airport Road as a result of vehicles making illegal left turns into and out of the site, as well as northbound U-turns. The potential of illegal turns into and out of the site decreases pedestrian safety. Furthermore, it is noted that along this segment of Airport Road, there are no other existing entrances that are restricted to RIRO. **As such, it continues to be our opinion that a full movement entrance is preferable in this context.**
- Based on Town of Caledon Zoning By-law dated March 2016, a minimum of 22 vehicular parking spaces will be required for the proposed development. The site plan provides for a total of 24 parking spaces, which results in a technical surplus of two (2) parking spaces. On this basis, it is our opinion that the proposed parking supply is adequate to accommodate the technical requirement.

- AutoTURN analysis demonstrates that a 10-meter-long medium single unit truck (MSU TAC-2017) can effectively maneuver into and out of the site, as well as the proposed loading space. The AutoTURN analysis also demonstrates that a Molok waste collection vehicle can access the proposed Molok bins on-site. It is recommended that waste collection be scheduled during off-peak hours on-site to reduce the potential for conflicts with the waste collection vehicle and passenger vehicles.



LEGEND

REVISIONS

NO	REVISION	DATE	BY
7	UPDATED PER NEW SP	Apr. 20, 22	KP
6	UPDATED PER NEW SP	Feb 11, 22	KP
5	UPDATED PER NEW SP	Dec. 23, 21	KP
4	UPDATED PER NEW SP	Dec. 20, 21	KP
3	UPDATED PER 26m ROW	May 31, 21	KP
2	TYPICAL SECTION ADDED	Apr. 26, 21	KP
1	ACCESS REVISED	Mar. 10, 21	KP

STAMP

CIVIL CONSULTANT:



Suite 201, 520 Industrial Parkway South, Aurora ON L4G 6W8
Tel: 416-274-7036, Fax: 877-957-2929
Web: www.nextrans.ca

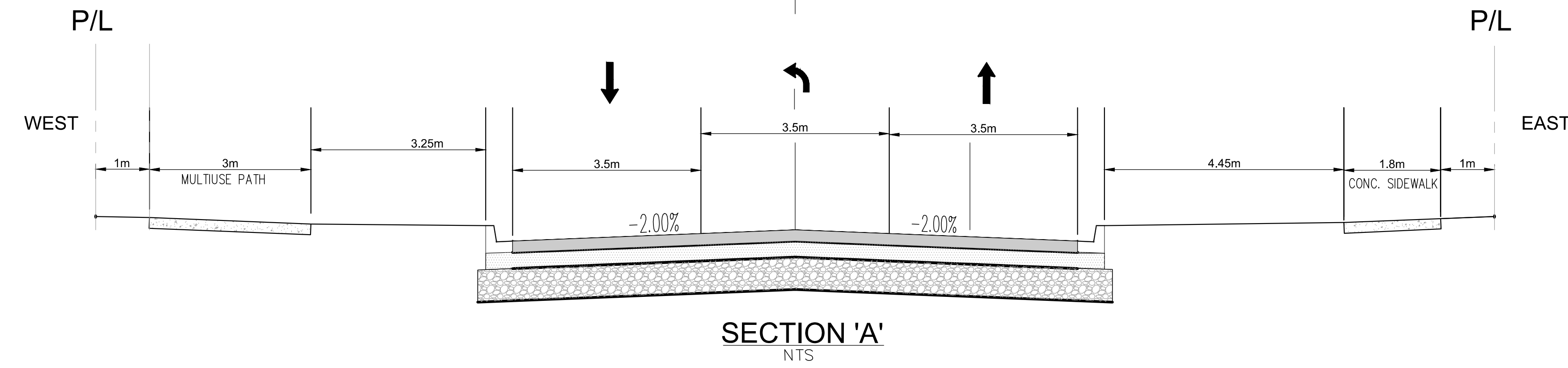
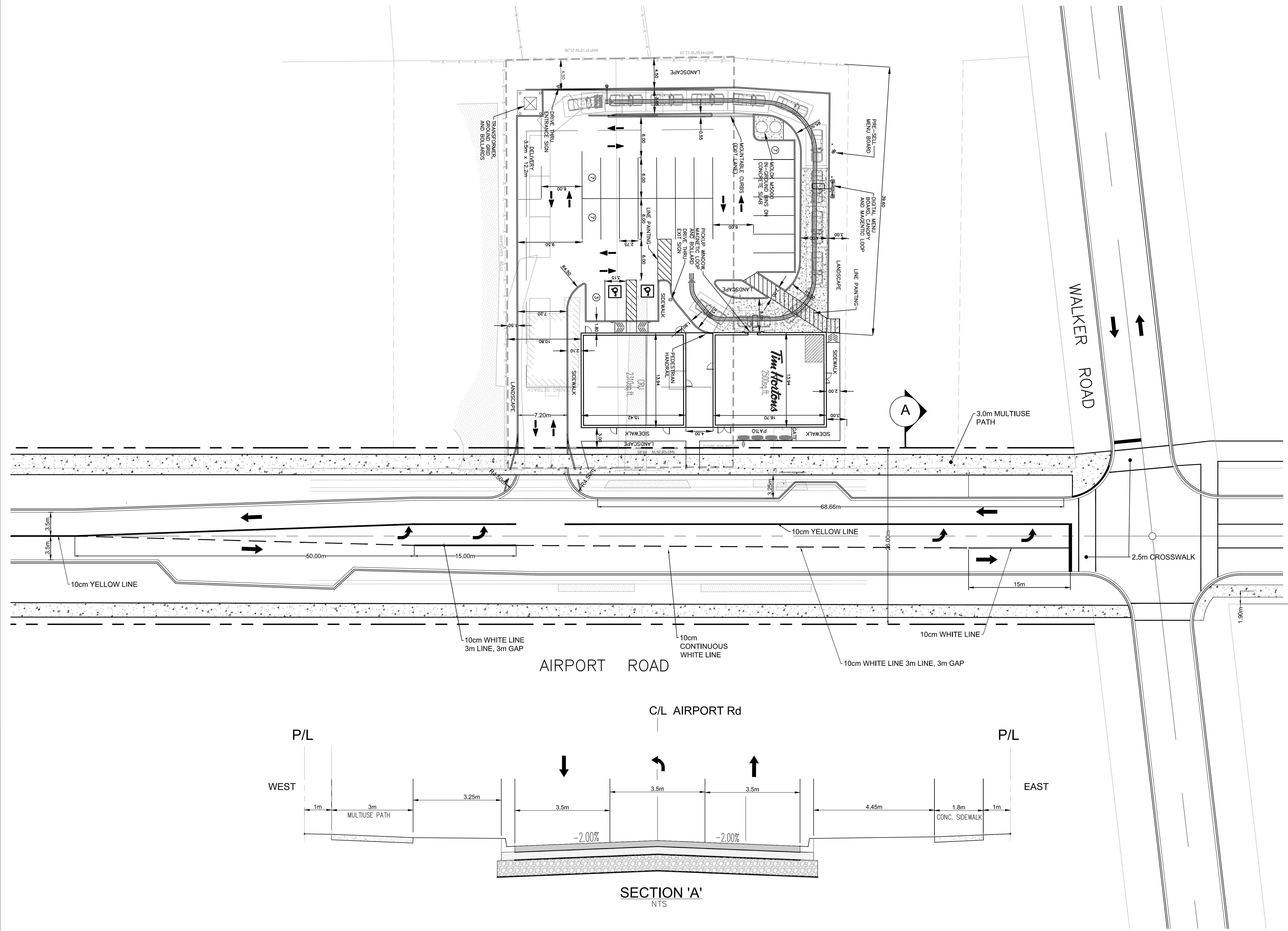
PROJECT NAME:

16054 AIRPORT ROAD
CALEDON, ONTARIO

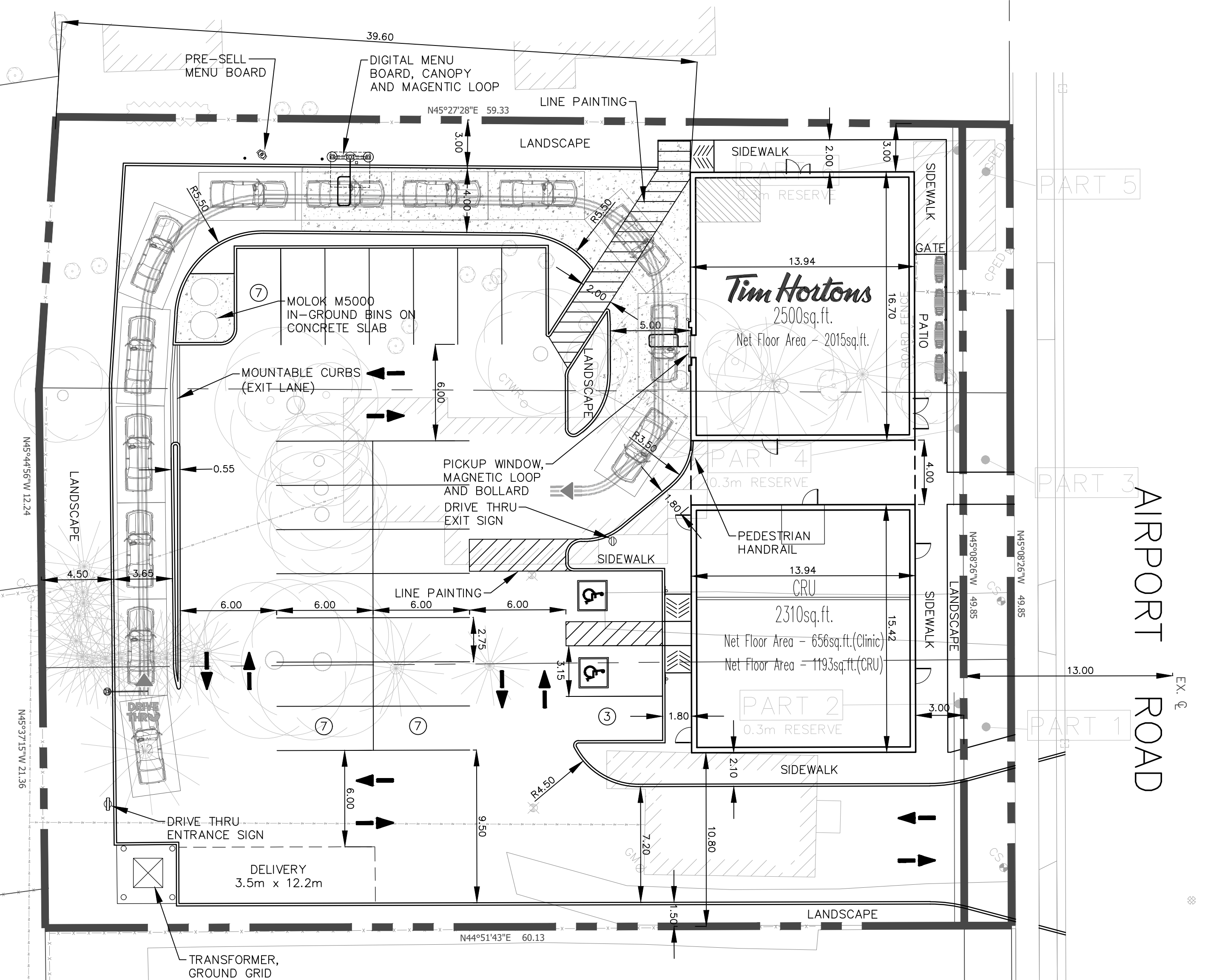
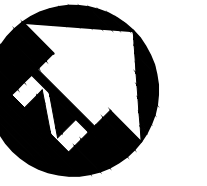
DRAWING TITLE:

FUNCTIONAL PLAN

DESIGN BY: K.P.	DATE: NOVEMBER, 2020
CHECKED BY: G.R.	PROJECT NO. NT 19-052
DRAWN BY: K.P.	DRAWING NO. FP-1



Appendix A - Proposed Site Plan



DETAILS OF DEVELOPMENT			
ZONING DESIGNATION		CV Zone	
SITE LAYOUT		REQUIRED	PROPOSED
SETBACKS	FRONT YARD	9.00 m	3.00 m
	REAR YARD	10.50 m	39.60 m
	INT. SIDE YARD	3.00 m	3.00 m
	INT. SIDE YARD	3.00 m	39.60 m
LANDSCAPE AREA (%)	MINIMUM	20.0%	23.1%
PARKING & LOADING		REQUIRED	PROPOSED
BARRIER-FREE PARKING	SPACES	1	2
	STALL LENGTH	6.00 m	6.00 m
	STALL WIDTH	3.15 m	3.15 m
STANDARD PARKING	SPACES	22 *	22
	STALL LENGTH	6.00 m	6.00 m
	STALL WIDTH	2.75 m	2.75 m
TOTAL PARKING SPACES		23	24
DRIVE AISLE WIDTH	TWO-WAY	6.00 m	6.00 m
LOADING SPACE	SPACES	1	1
	LENGTH	9.00 m	12.20 m
	WIDTH	3.50 m	3.50 m

* Parking Requirements at per Town of Caledon Zoning By-law

Restaurant = 2500 sq ft (net = 2015sq.ft)
Requires 1 space per 15sq.m. of net floor area (187.2sq.m) = 12.5 spaces

Clinic = 860 sq.ft (net = 656sq.ft)
Requires 1 space per 16.5sq.m. of net floor area (60.9sq.m) = 3.7 spaces

Commercial Retail = 1450 sq.ft (net = 1193sq.ft)
Requires 1 space per 20sq.m. of net floor area (110.8sq.m) = 5.5 spaces

Conditions of Use

Verify elevations and/or dimensions on drawing prior to use. Report any discrepancies to Dillon Consulting Limited.

Do not scale dimensions from drawing.

Do not modify drawing, re-use it, or use it for purposes other than those intended at the time of its preparation without prior written permission from Dillon Consulting Limited.



THE TDL GROUP CORP.
HEAD OFFICE
226 WYECROFT ROAD
OAKVILLE, ON
L6K 3X7
Ph (905) 339-6115
Fax (905) 845-1536



NO.	ISSUED FOR	DATE	BY
6	ISSUED FOR SP	22.05.06	JMM
5	TRANSFORMER ADDED	22.04.06	JMM
4	MECHANICAL ROOM ADDED	22.03.28	JMM
3	SIDEWALK/WALKWAYS REVISED	22.02.28	JMM
2	AS PER CITY COMMENTS	22.02.07	JMM
1	ISSUED FOR REVIEW	22.01.27	JMM

16054 & 16060 Airport Road, Caledon, ON
Store #109409

PROJECT NO. 22 3228

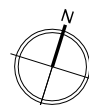
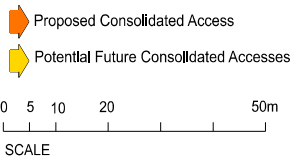
SHEET NO. SP

DESIGN: JMM, DRAWN: JMM, CHECKED BY: RR, DATE: January 2022, SCALE: 1:200

Appendix B – Tertiary Plan



File Number: 9368
 Date: 2022-05-31
 Cad: 9368/concepts/2022/9368 Tertiary Access Plan_2022-05-31.dgn



TERTIARY ACCESS PLAN

16054, 16060, 16068 Airport Road
 Town of Caledon

Town File No. POPA 19-07, RZ 19-10, SPA 19-66

Appendix C – Terms of Reference (Region of Peel)

Terms of Reference

To: Rosalie Shan, Technical Analyst – Traffic Development & Permits, Region of Peel
From: Andy Bilawejian, Transportation Analyst, Nextrans Consulting Engineers
Date: August 4, 2020
Re: 16054-16060 Airport Road, Proposed Drive-Thru Restaurant Development – TOR for Traffic Operations Study

These terms of reference have been prepared to outline (for the Region's review and approval) the intended scope of work for a Traffic Operations Study for a proposed Drive-Thru Tim Hortons Development with a total GFA of 232.26 m². The subject site is located south of Walker Road and west of Airport Road in the Town of Caledon.

Introduction

The report introduction will include:

1. Description of site location (Airport Road, Walker Road to the north and Old Church Road to the south)
2. Description of nature of application
3. Description of proposed development and land use
4. Proposed study area

Existing Traffic Assessment

The existing conditions within the study area will be summarized and documented. This will include, but not limited to:

- A description of key roads and intersections (lanes, speed limits)
- Identifying forms of traffic control, lane configurations, turning restrictions
- Identifying pedestrian and cycling facilities
- Noting the location of adjacent driveways and access points
- Identifying other traffic generators in the vicinity of the site

Turning movement counts will be requested from the City / Region during the weekday AM (7am-10am) and weekday PM (4pm-7pm) peak periods at the following study area intersections:

- Walker Road West / Walker Road East and Airport Road
- Airport Road and Old Church Road

Once traffic volumes have been collected, we will prepare a baseline model of existing traffic operations at the study area intersections using Synchro v.10 analysis for the identified critical time periods (weekday AM and PM peak hours). The existing analysis will include levels of service, volume to capacity ratios, and queuing at the key study intersections.

We understand that existing traffic volumes cannot be obtained due to the COVID-19 Pandemic, as counts do not represent typical conditions. However, counts for both study area intersections have been received from Spectrum Traffic and Peel Region dated October 9, 2019 and May 14, 2019, respectively.

Future Background Traffic Assessment

Future Background consists of background growth and other background development traffic. We will obtain historic AADT records and estimate a background growth rate for the assumed full build-out year for the proposed development along with a 5-year time horizon period thereafter.

We do understand that there is and may be further redevelopment applications, as such traffic generation associated with those developments will be included in our analysis to reflect our horizon year assessment.

Operational deficiencies as a result of future forecasted traffic volumes will be identified and mitigative measures will be proposed and documented in the final report.

Site Traffic Assessment

The weekday AM and PM peak hour traffic to be generated by the proposed development will be estimated based on information published in the *Trip Generation, 10th Edition*, by the Institute of Transportation Engineers (ITE).

The directional trip distribution and assignment for traffic approaching and departing the site will be determined based upon existing traffic patterns and Transportation Tomorrow Survey (TTS) 2016 data.

Future Total Traffic Assessment

Future total traffic consists of future background plus site traffic. Operational deficiencies as a result of site traffic will be identified and mitigative measures will be proposed and documented in the final report. We will develop and recommend appropriate intersection controls and geometric improvements for all key intersections as well as determine the appropriateness of the proposed site access location(s) and the lane requirements at these new locations. Based on the trips generated from background and proposed developments, a sensitivity analysis will be conducted to determine the appropriateness of an external laneway to the rear of the site that runs from Walker Road West to Ivan Avenue.

Additionally, a Functional Plan will be prepared which will determine whether any transit improvements and/or turning lanes will be required as a result of the proposed development.

Parking / On Site Circulation and Site Access Review

- Review the available parking to determine whether the proposed parking supply is sufficient to accommodate the parking demand of the proposed site and meets current by-law requirements.
- We will review and provide comment on the most recent site plan with respect to the functionality of the internal vehicular circulation to facilitate vehicle maneuvering, loading, servicing, parking and pick-up / drop-off activities.
- Using Auto TURN, we will confirm the turning radius requirements and site circulation for passenger and heavy vehicles.
- Determine the appropriateness of access location and ensure adequate connections to main corridors are provided.
- Assign appropriate internal signage to site plan.
- Sight distances in accordance with the TAC Manual to be prepared.

Transit and Transportation Demand Management Plan

A review of the existing and future transit availability in the area and recommendations shall be made to ensure acceptable walking distances are proposed to the subject lands. Transit routes, service frequencies, and stations will be identified in the study area.

Andy Bilawejian

From: Shan, Rosalie <rosalie.shan@peelregion.ca>
Sent: Monday, August 10, 2020 1:30 PM
To: Andy Bilawejian
Subject: RE: 16054 + 16060 Airport Road (SP-19-066C, RZ-19-010C, OPA-19-007C) TMC Request

Hi Andy,

Now I had the chance to review the terms of reference, and would like to offer the following comments, also please find the [link](#) here for the detailed Region of Peel TIS formatting and contact information for background traffic (growth rate, AADT, signal timing, etc.).

Introduction

- Please add one section regarding the Tertiary plan that The Region request to address future internal road connections.

Existing Traffic Assessment - agree

Future Background Traffic Assessment

- Please contact Transportation Planning to verify the growth rate along Regional Road 7 (Airport Road).

Future Total Traffic Assessment

- Functional Design – please note the land dedication requirement is base on Peel Region’s Official Plan, which lists long term planning designation of Airport Road.

On Site Circulation and Site Access Review

- **Please note there are two senarios to be considered -**
 - **Interim condition – no neighbouring property under developmeng. Access can only be achieved from Airport Road. Please note the TIS needs to identify the prefered access typed and location. Left turn warrants is required at the site access.**
 - **Ultimate condition – tertiary plan – when neighbouring properties redevelop. Primary access to the site shall be achieved via internal connection.**
- Please refer to Peel Region [Control Access By-Law](#) and [Road Characterization Study](#) (RCS) for your reference.

Please let me know if you have any questions or need more information on this.

Thank you,

Rosalie Shan

Technical Analyst

Traffic Development & Permits

Region of Peel

10 Peel Centre Drive Suite B, 4th Floor

Brampton, ON L6T 4B9

905 791-7800 Ext. 7999s



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From: Andy Bilawejian <andy@nextrans.ca>
Sent: August 4, 2020 1:42 PM
To: Shan, Rosalie <rosalie.shan@peelregion.ca>
Subject: RE: 16054 + 16060 Airport Road (SP-19-066C, RZ-19-010C, OPA-19-007C) TMC Request

CAUTION: EXTERNAL MAIL. DO NOT CLICK ON LINKS OR OPEN ATTACHMENTS YOU DO NOT TRUST.

Good afternoon Rosalie,

Please see attached Terms of Reference for 16054 Airport Road. Please advise if acceptable or if you have any further comments. If you require any more information, feel free to contact me.

Thanks,

Andy Bilawejian, B.Eng., EIT
Transportation Analyst

o: 905-503-2563 ext. 209
c: 416-358-2348
e: andy@nextrans.ca
w: www.nextrans.ca

NexTrans Consulting Engineers
A Division of NextEng Consulting Group Inc.
520 Industrial Parkway South, Suite 201
Aurora ON L4G 6W8

COVID UPDATE: Please be advised that we continue to service our clients to the fullest extent possible, albeit in a modified office environment, as such a reply may be slightly delayed.
Thank you and keep well!

From: Shan, Rosalie <rosalie.shan@peelregion.ca>
Sent: Tuesday, July 28, 2020 10:30 AM
To: Andy Bilawejian <andy@nextrans.ca>
Cc: Homagain, Abiral <abiral.homagain@peelregion.ca>
Subject: RE: 16054 + 16060 Airport Road (SP-19-066C, RZ-19-010C, OPA-19-007C) TMC Request

Hi Andy,

Please find the latest Turning Movement Count Traffic has on file. It is dated 2019 Oct. Please let me know if you need any more information on this.

Regards,
Rosalie Shan
Technical Analyst

Traffic Development & Permits
Region of Peel
10 Peel Centre Drive Suite B, 4th Floor
Brampton, ON L6T 4B9
905 791-7800 Ext. 7999



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From: Homagain, Abiral <abiral.homagain@peelregion.ca>
Sent: July 22, 2020 12:19 PM
To: Shan, Rosalie <rosalie.shan@peelregion.ca>
Subject: 16054 + 16060 Airport Road (SP-19-066C, RZ-19-010C, OPA-19-007C) TMC Request

Hi Rosaline,

Could you please advise if we have the turning movement counts for Airport Road and Walker Road intersections.

Best,

Ab

From: Andy Bilawejian <andy@nexttrans.ca>
Sent: July 22, 2020 12:15 PM
To: Homagain, Abiral <abiral.homagain@peelregion.ca>
Subject: TMC Request

CAUTION: EXTERNAL MAIL. DO NOT CLICK ON LINKS OR OPEN ATTACHMENTS YOU DO NOT TRUST.

Good afternoon Abiral,

Can you please advise if turning movement counts are available for the Airport Road and Walker Road intersections in the Town of Caledon:

If so, please advise what year the TMC's have been obtained.

Thanks,

Andy Bilawejian, B.Eng., EIT
Transportation Analyst

o: 905-503-2563 ext. 209

c: 416-358-2348

e: andy@nextrans.ca

w: www.nextrans.ca

NexTrans Consulting Engineers
A Division of NextEng Consulting Group Inc.
520 Industrial Parkway South, Suite 201
Aurora ON L4G 6W8

**COVID UPDATE: Please be advised that we continue to service our clients to the fullest extent possible, albeit in a modified office environment, as such a reply may be slightly delayed.
Thank you and keep well!**

Appendix D - Existing Traffic Data

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

Database Date		May 10, 2019			Prepared Date:		May 10, 2019				
Database Rev		iNet			Completed By:		MJY				
Timing Card / Field rev		iNet			Checked By:		RC				
Location							Airpot Rd @ Old Church Rd				
Phase #	Direction	Vehicle Minimum (sec.)	Pedestrian Minimum (sec.)		Amber (sec.)	All Red (sec.)	TIME PERIOD (sec.)				
			WALK	FDWALK			*Peak Split= (Green+Amber+All Red)				
							**Max = Green				
						AM Peak Split	OFF Max	PM Peak Split			
1	NIU	-	-	-	-	-	-	-			
2	Airport Rd - SB	8.0	8.0	17.0	4.0	3.1	42.0	25.0	42.0		
3	NIU	-	-	-	-	-	-	-			
4	Old Church Rd - WB	8.0	8.0	10.0	4.0	2.6	28.0	20.0	28.0		
5	NIU	-	-	-	-	-	-	-			
6	Airport Rd - NB	8.0	8.0	17.0	4.0	3.1	42.0	25.0	42.0		
7	NIU	-	-	-	-	-	-	-			
8	NIU	-	-	-	-	-	-	-			
System Control		Yes		TIME (M-F)		PEAK		CYCLE LENGTH (sec.)		OFFSET (sec.)	
Local Control		No									
Semi-Actuated Mode		Yes									
				06:00 - 09:00		AM		70		19	
				09:00 - 15:00		OFF		-		-	
				15:00 - 18:30		PM		70		45	



Turning Movement Count (18 . AIRPORT RD & WALKER RD) CustID: 00729630 Mioid:

Start Time	Southbound						Westbound						Northbound						Eastbound						Int. Total (15 min)	
	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total		
07:00:00	0	138	9	0	0	147	3	0	0	0	0	3	4	32	0	0	0	36	5	0	11	0	0	16	202	
07:15:00	1	138	8	0	0	147	2	2	0	0	0	4	7	40	5	0	0	52	2	1	8	0	0	11	214	
07:30:00	3	129	7	0	0	139	1	3	2	0	0	6	7	48	1	0	0	56	5	3	14	0	1	22	223	
07:45:00	1	124	7	0	0	132	0	2	4	0	0	6	5	43	1	0	0	49	2	5	17	0	1	24	211	
Hourly	5	529	31	0	0	565	6	7	6	0	0	19	23	163	7	0	0	193	14	9	50	0	2	73	850	
08:00:00	5	109	2	0	0	116	2	0	1	0	0	3	13	27	1	0	0	41	4	5	11	0	0	20	180	
08:15:00	3	101	8	0	0	112	2	1	2	0	0	5	8	40	1	0	0	49	1	1	14	0	0	16	182	
08:30:00	1	59	3	0	0	63	4	0	2	0	0	6	9	51	5	0	0	65	6	0	8	0	0	14	148	
08:45:00	2	109	8	0	0	119	4	0	2	0	0	6	7	24	2	0	0	33	5	3	20	0	0	28	186	
Hourly	11	378	21	0	0	410	12	1	7	0	0	20	37	142	9	0	0	188	16	9	53	0	0	78	696	
BREAK																										
11:00:00	1	62	4	0	0	67	4	2	0	0	1	6	2	62	5	0	0	69	3	2	8	0	0	13	155	
11:15:00	0	54	4	0	0	58	1	4	0	0	0	5	7	53	3	0	0	63	3	0	9	0	3	12	138	
11:30:00	1	68	3	0	0	72	2	0	1	0	0	3	16	61	2	1	0	80	7	1	11	0	0	19	174	
11:45:00	4	52	3	0	0	59	4	1	0	0	0	5	7	44	0	0	0	51	3	5	13	0	0	21	136	
Hourly	6	236	14	0	0	256	11	7	1	0	1	19	32	220	10	1	0	263	16	8	41	0	3	65	603	
12:00:00	1	50	1	0	0	52	3	1	1	0	0	5	9	55	4	0	0	68	3	1	6	0	0	10	135	
12:15:00	1	67	7	0	0	75	1	0	1	0	0	2	11	42	3	0	0	56	3	1	11	0	0	15	148	
12:30:00	4	55	3	0	0	62	1	0	0	0	0	1	5	57	2	0	1	64	5	1	17	0	3	23	150	
12:45:00	2	74	1	0	0	77	2	0	1	0	0	3	9	48	2	0	1	59	6	2	12	0	0	20	159	
Hourly	8	246	12	0	0	266	7	1	3	0	0	11	34	202	11	0	2	247	17	5	46	0	3	68	592	
13:00:00	2	52	3	0	0	57	1	0	0	0	0	1	10	56	1	0	0	67	2	1	10	0	0	13	138	
13:15:00	1	57	2	0	0	60	1	0	1	0	0	2	12	51	3	0	0	66	5	1	9	0	0	15	143	
13:30:00	1	58	5	0	0	64	3	0	0	0	0	3	7	71	1	0	0	79	4	1	10	0	0	15	161	
13:45:00	1	52	1	0	0	54	0	1	0	0	0	1	8	62	3	0	0	73	5	1	8	0	0	14	142	
Hourly	5	219	11	0	0	235	5	1	1	0	0	7	37	240	8	0	0	285	16	4	37	0	0	57	584	
BREAK																										
15:00:00	1	72	2	0	0	75	2	2	2	0	0	6	5	80	2	0	0	87	4	4	8	0	0	16	184	
15:15:00	1	67	3	0	0	71	3	1	2	0	0	6	14	96	5	0	0	115	8	6	12	0	1	26	218	
15:30:00	5	56	3	0	1	64	4	2	1	0	0	7	16	112	4	0	0	132	5	4	11	0	0	20	223	
15:45:00	2	58	4	0	0	64	4	1	1	0	0	6	18	105	3	0	1	126	4	2	6	0	0	12	208	
Hourly	9	253	12	0	1	274	13	6	6	0	0	25	53	393	14	0	1	460	21	16	37	0	1	74	833	



Turning Movement Count
 Location Name: AIRPORT RD & WALKER RD
 Date: Wed, Oct 09, 2019 Deployment Lead: Patrick Filopoulos

16:00:00	1	61	3	0	0	65	3	1	4	0	0	8	18	132	5	0	0	155	4	4	13	0	0	21	249
16:15:00	4	61	4	0	0	69	2	0	1	0	0	3	18	139	3	0	1	160	9	4	8	0	0	21	253
16:30:00	2	41	1	0	1	44	0	1	4	0	0	5	23	118	3	0	0	144	11	4	14	0	0	29	222
16:45:00	3	57	6	0	0	66	1	0	1	0	0	2	16	144	2	0	2	162	6	7	12	0	0	25	255
Hourly	10	220	14	0	1	244	6	2	10	0	0	18	75	533	13	0	3	621	30	19	47	0	0	96	979
17:00:00	5	54	1	0	1	60	3	1	1	0	0	5	24	138	7	0	1	169	6	2	3	0	0	11	245
17:15:00	0	52	4	0	0	56	0	1	4	0	0	5	17	150	4	0	0	171	7	2	4	0	0	13	245
17:30:00	3	49	6	0	0	58	3	2	1	0	0	6	20	121	1	0	0	142	7	3	7	0	0	17	223
17:45:00	1	47	3	0	0	51	1	2	2	0	0	5	13	131	5	0	2	149	9	2	9	0	0	20	225
Hourly	9	202	14	0	1	225	7	6	8	0	0	21	74	540	17	0	3	631	29	9	23	0	0	61	938
Grand Total	63	2283	129	0	3	2475	67	31	42	0	1	140	365	2433	89	1	9	2888	159	79	334	0	9	572	6075
Approach%	2.5%	92.2%	5.2%	0%	-	-	47.9%	22.1%	30%	0%	-	-	12.6%	84.2%	3.1%	0%	-	-	27.8%	13.8%	58.4%	0%	-	-	-
Totals %	1%	37.6%	2.1%	0%	40.7%	1.1%	0.5%	0.7%	0%	2.3%	6%	40%	1.5%	0%	47.5%	2.6%	1.3%	5.5%	0%	9.4%	-	-	-	-	-
Heavy	4	363	5	0	-	4	1	0	0	-	14	304	3	0	-	8	4	21	0	-	-	-	-	-	-
Heavy %	6.3%	15.9%	3.9%	0%	-	6%	3.2%	0%	0%	-	3.8%	12.5%	3.4%	0%	-	5%	5.1%	6.3%	0%	-	-	-	-	-	-
Bicycles	0	0	0	0	-	1	4	0	0	-	0	2	0	0	-	0	3	7	0	-	-	-	-	-	-
Bicycle %	0%	0%	0%	0%	-	1.5%	12.9%	0%	0%	-	0%	0.1%	0%	0%	-	0%	3.8%	2.1%	0%	-	-	-	-	-	-



Peak Hour: 07:00 AM - 08:00 AM Weather: Mist (5.79 °C)

Start Time	Southbound						Westbound						Northbound						Eastbound						Int. Total (15 min)
	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	
07:00:00	0	138	9	0	0	147	3	0	0	0	0	3	4	32	0	0	0	36	5	0	11	0	0	16	202
07:15:00	1	138	8	0	0	147	2	2	0	0	0	4	7	40	5	0	0	52	2	1	8	0	0	11	214
07:30:00	3	129	7	0	0	139	1	3	2	0	0	6	7	48	1	0	0	56	5	3	14	0	1	22	223
07:45:00	1	124	7	0	0	132	0	2	4	0	0	6	5	43	1	0	0	49	2	5	17	0	1	24	211
Grand Total	5	529	31	0	0	565	6	7	6	0	0	19	23	163	7	0	0	193	14	9	50	0	2	73	850
Approach%	0.9%	93.6%	5.5%	0%	-	-	31.6%	36.8%	31.6%	0%	-	-	11.9%	84.5%	3.6%	0%	-	-	19.2%	12.3%	68.5%	0%	-	-	-
Totals %	0.6%	62.2%	3.6%	0%	-	66.5%	0.7%	0.8%	0.7%	0%	-	2.2%	2.7%	19.2%	0.8%	0%	-	22.7%	1.6%	1.1%	5.9%	0%	-	8.6%	-
PHF	0.42	0.96	0.86	0	-	0.96	0.5	0.58	0.38	0	-	0.79	0.82	0.85	0.35	0	-	0.86	0.7	0.45	0.74	0	-	0.76	-
Heavy	1	57	0	0	-	58	0	0	0	0	-	0	3	57	0	0	-	60	2	1	1	0	-	4	-
Heavy %	20%	10.8%	0%	0%	-	10.3%	0%	0%	0%	0%	-	0%	13%	35%	0%	0%	-	31.1%	14.3%	11.1%	2%	0%	-	5.5%	-
Lights	4	472	31	0	-	507	6	7	6	0	-	19	20	106	7	0	-	133	12	8	49	0	-	69	-
Lights %	80%	89.2%	100%	0%	-	89.7%	100%	100%	100%	0%	-	100%	87%	65%	100%	0%	-	68.9%	85.7%	88.9%	98%	0%	-	94.5%	-
Single-Unit Trucks	0	29	0	0	-	29	0	0	0	0	-	0	2	23	0	0	-	25	2	0	0	0	-	2	-
Single-Unit Trucks %	0%	5.5%	0%	0%	-	5.1%	0%	0%	0%	0%	-	0%	8.7%	14.1%	0%	0%	-	13%	14.3%	0%	0%	0%	-	2.7%	-
Buses	1	6	0	0	-	7	0	0	0	0	-	0	1	12	0	0	-	13	0	1	1	0	-	2	-
Buses %	20%	1.1%	0%	0%	-	1.2%	0%	0%	0%	0%	-	0%	4.3%	7.4%	0%	0%	-	6.7%	0%	11.1%	2%	0%	-	2.7%	-
Articulated Trucks	0	22	0	0	-	22	0	0	0	0	-	0	0	22	0	0	-	22	0	0	0	0	-	0	-
Articulated Trucks %	0%	4.2%	0%	0%	-	3.9%	0%	0%	0%	0%	-	0%	0%	13.5%	0%	0%	-	11.4%	0%	0%	0%	0%	-	0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-
Pedestrians%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	100%	-	-
Bicycles on Road	0	0	0	0	0	-	1	1	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-



Peak Hour: 11:00 AM - 12:00 PM Weather: Few Clouds (13.89 °C)

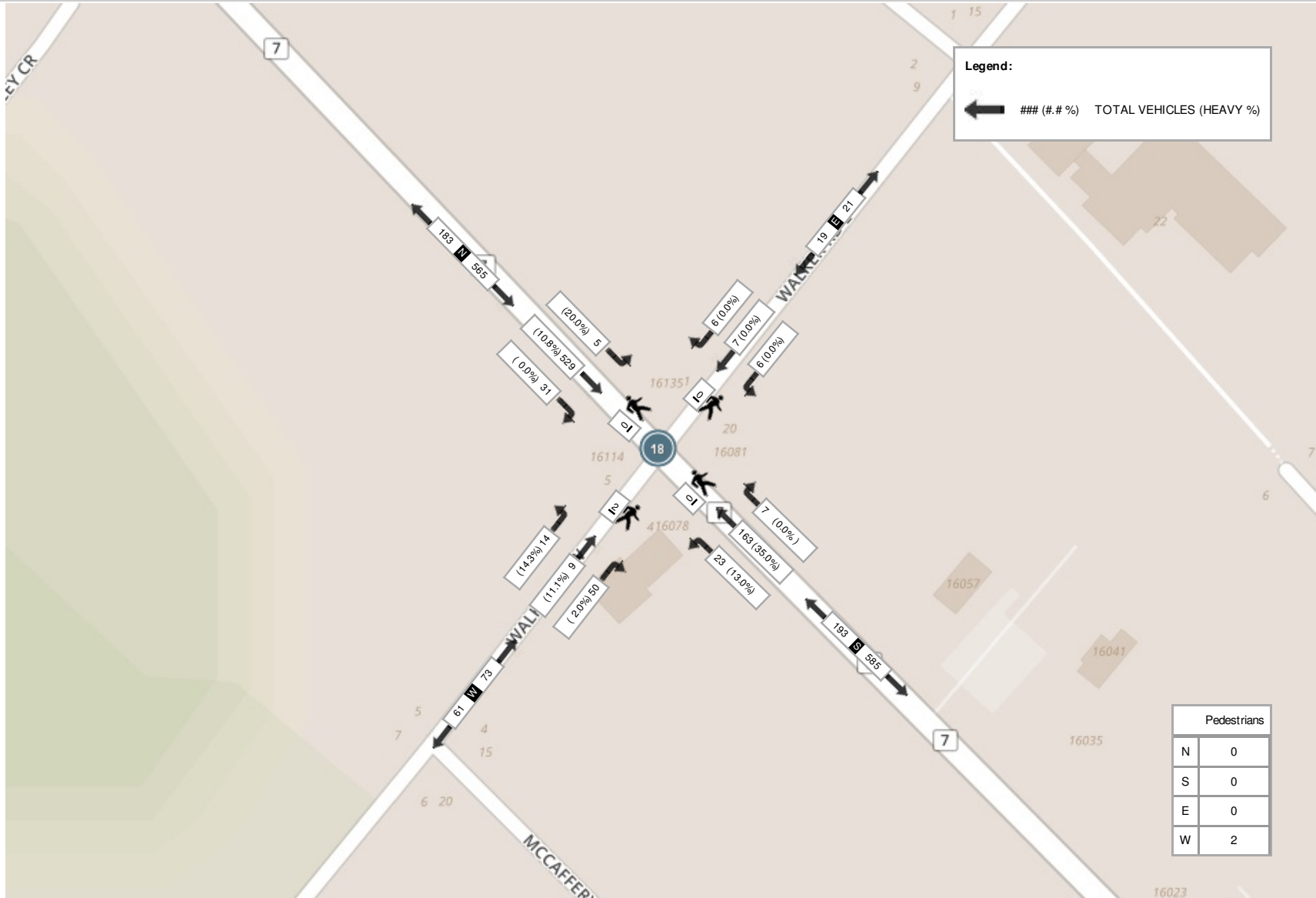
Start Time	Southbound						Westbound						Northbound						Eastbound						Int. Total (15 min)
	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	
11:00:00	1	62	4	0	0	67	4	2	0	0	1	6	2	62	5	0	0	69	3	2	8	0	0	13	155
11:15:00	0	54	4	0	0	58	1	4	0	0	0	5	7	53	3	0	0	63	3	0	9	0	3	12	138
11:30:00	1	68	3	0	0	72	2	0	1	0	0	3	16	61	2	1	0	80	7	1	11	0	0	19	174
11:45:00	4	52	3	0	0	59	4	1	0	0	0	5	7	44	0	0	0	51	3	5	13	0	0	21	136
Grand Total	6	236	14	0	0	256	11	7	1	0	1	19	32	220	10	1	0	263	16	8	41	0	3	65	603
Approach%	2.3%	92.2%	5.5%	0%	-	-	57.9%	36.8%	5.3%	0%	-	-	12.2%	83.7%	3.8%	0.4%	-	-	24.6%	12.3%	63.1%	0%	-	-	-
Totals %	1%	39.1%	2.3%	0%	-	42.5%	1.8%	1.2%	0.2%	0%	-	3.2%	5.3%	36.5%	1.7%	0.2%	-	43.6%	2.7%	1.3%	6.8%	0%	-	10.8%	-
PHF	0.38	0.87	0.88	0	-	0.89	0.69	0.44	0.25	0	-	0.79	0.5	0.89	0.5	0.25	-	0.82	0.57	0.4	0.79	0	-	0.77	-
Heavy	0	48	2	0	-	50	2	0	0	0	-	2	0	39	1	0	-	40	1	2	0	0	-	3	-
Heavy %	0%	20.3%	14.3%	0%	-	19.5%	18.2%	0%	0%	0%	-	10.5%	0%	17.7%	10%	0%	-	15.2%	6.3%	25%	0%	0%	-	4.6%	-
Lights	6	188	12	0	-	206	9	7	1	0	-	17	32	181	9	1	-	223	15	6	41	0	-	62	-
Lights %	100%	79.7%	85.7%	0%	-	80.5%	81.8%	100%	100%	0%	-	89.5%	100%	82.3%	90%	100%	-	84.8%	93.8%	75%	100%	0%	-	95.4%	-
Single-Unit Trucks	0	34	1	0	-	35	2	0	0	0	-	2	0	21	1	0	-	22	1	2	0	0	-	3	-
Single-Unit Trucks %	0%	14.4%	7.1%	0%	-	13.7%	18.2%	0%	0%	0%	-	10.5%	0%	9.5%	10%	0%	-	8.4%	6.3%	25%	0%	0%	-	4.6%	-
Buses	0	0	1	0	-	1	0	0	0	0	-	0	0	3	0	0	-	3	0	0	0	0	-	0	-
Buses %	0%	0%	7.1%	0%	-	0.4%	0%	0%	0%	0%	-	0%	0%	1.4%	0%	0%	-	1.1%	0%	0%	0%	0%	-	0%	-
Articulated Trucks	0	14	0	0	-	14	0	0	0	0	-	0	0	15	0	0	-	15	0	0	0	0	-	0	-
Articulated Trucks %	0%	5.9%	0%	0%	-	5.5%	0%	0%	0%	0%	-	0%	0%	6.8%	0%	0%	-	5.7%	0%	0%	0%	0%	-	0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	3	-	-
Pedestrians%	-	-	-	-	0%	-	-	-	-	-	25%	-	-	-	-	-	0%	-	-	-	-	-	75%	-	-
Bicycles on Road	0	0	0	0	0	-	0	2	0	0	0	-	0	0	0	0	0	-	0	0	4	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-



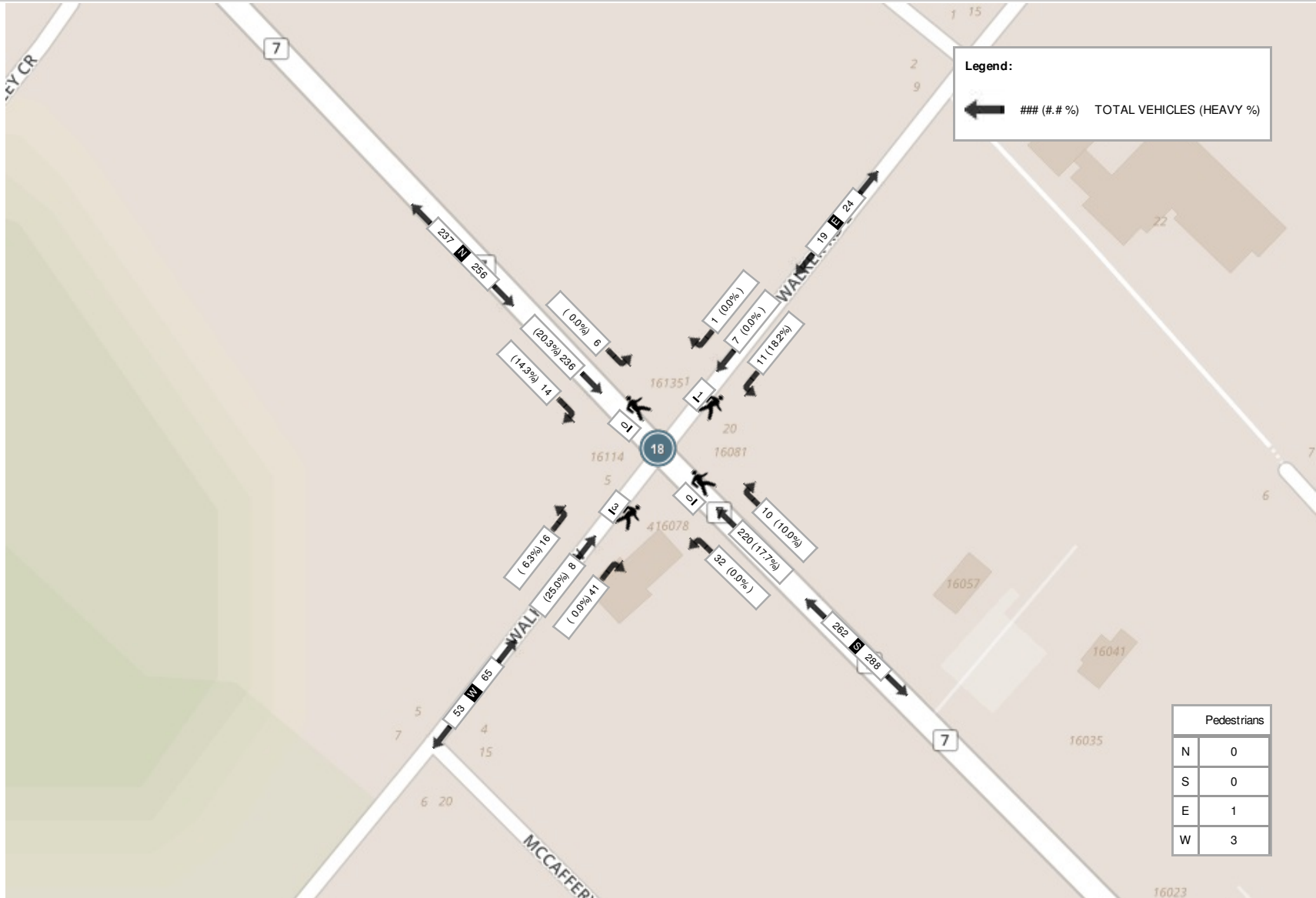
Peak Hour: 04:00 PM - 05:00 PM Weather: Few Clouds (17.14 °C)

Start Time	Southbound						Westbound						Northbound						Eastbound						Int. Total (15 min)
	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	
16:00:00	1	61	3	0	0	65	3	1	4	0	0	8	18	132	5	0	0	155	4	4	13	0	0	21	249
16:15:00	4	61	4	0	0	69	2	0	1	0	0	3	18	139	3	0	1	160	9	4	8	0	0	21	253
16:30:00	2	41	1	0	1	44	0	1	4	0	0	5	23	118	3	0	0	144	11	4	14	0	0	29	222
16:45:00	3	57	6	0	0	66	1	0	1	0	0	2	16	144	2	0	2	162	6	7	12	0	0	25	255
Grand Total	10	220	14	0	1	244	6	2	10	0	0	18	75	533	13	0	3	621	30	19	47	0	0	96	979
Approach%	4.1%	90.2%	5.7%	0%	-	-	33.3%	11.1%	55.6%	0%	-	-	12.1%	85.8%	2.1%	0%	-	-	31.3%	19.8%	49%	0%	-	-	-
Totals %	1%	22.5%	1.4%	0%	24.9%	0.6%	0.2%	1%	0%	1.8%	7.7%	54.4%	1.3%	0%	63.4%	3.1%	1.9%	4.8%	0%	9.8%	-	-	-	-	
PHF	0.63	0.9	0.58	0	0.88	0.5	0.5	0.63	0	0.56	0.82	0.93	0.65	0	0.96	0.68	0.68	0.84	0	0.83	-	-	-	-	
Heavy	0	34	0	0	34	0	1	0	0	1	3	30	1	0	34	1	0	4	0	5	-	-	-	-	
Heavy %	0%	15.5%	0%	0%	13.9%	0%	50%	0%	0%	5.6%	4%	5.6%	7.7%	0%	5.5%	3.3%	0%	8.5%	0%	5.2%	-	-	-	-	
Lights	10	186	14	0	210	6	1	10	0	17	72	503	12	0	587	29	19	43	0	91	-	-	-	-	
Lights %	100%	84.5%	100%	0%	86.1%	100%	50%	100%	0%	94.4%	96%	94.4%	92.3%	0%	94.5%	96.7%	100%	91.5%	0%	94.8%	-	-	-	-	
Single-Unit Trucks	0	15	0	0	15	0	1	0	0	1	2	16	0	0	18	0	0	1	0	1	-	-	-	-	
Single-Unit Trucks %	0%	6.8%	0%	0%	6.1%	0%	50%	0%	0%	5.6%	2.7%	3%	0%	0%	2.9%	0%	0%	2.1%	0%	1%	-	-	-	-	
Buses	0	5	0	0	5	0	0	0	0	0	1	5	1	0	7	1	0	3	0	4	-	-	-	-	
Buses %	0%	2.3%	0%	0%	2%	0%	0%	0%	0%	0%	1.3%	0.9%	7.7%	0%	1.1%	3.3%	0%	6.4%	0%	4.2%	-	-	-	-	
Articulated Trucks	0	14	0	0	14	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	-	-	-	-	
Articulated Trucks %	0%	6.4%	0%	0%	5.7%	0%	0%	0%	0%	0%	0%	1.7%	0%	0%	1.4%	0%	0%	0%	0%	0%	-	-	-	-	
Pedestrians	-	-	-	-	1	-	-	-	-	0	-	-	-	-	3	-	-	-	-	0	-	-	-	-	
Pedestrians%	-	-	-	-	25%	-	-	-	-	0%	-	-	-	-	75%	-	-	-	-	0%	-	-	-	-	
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	-	-	
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	

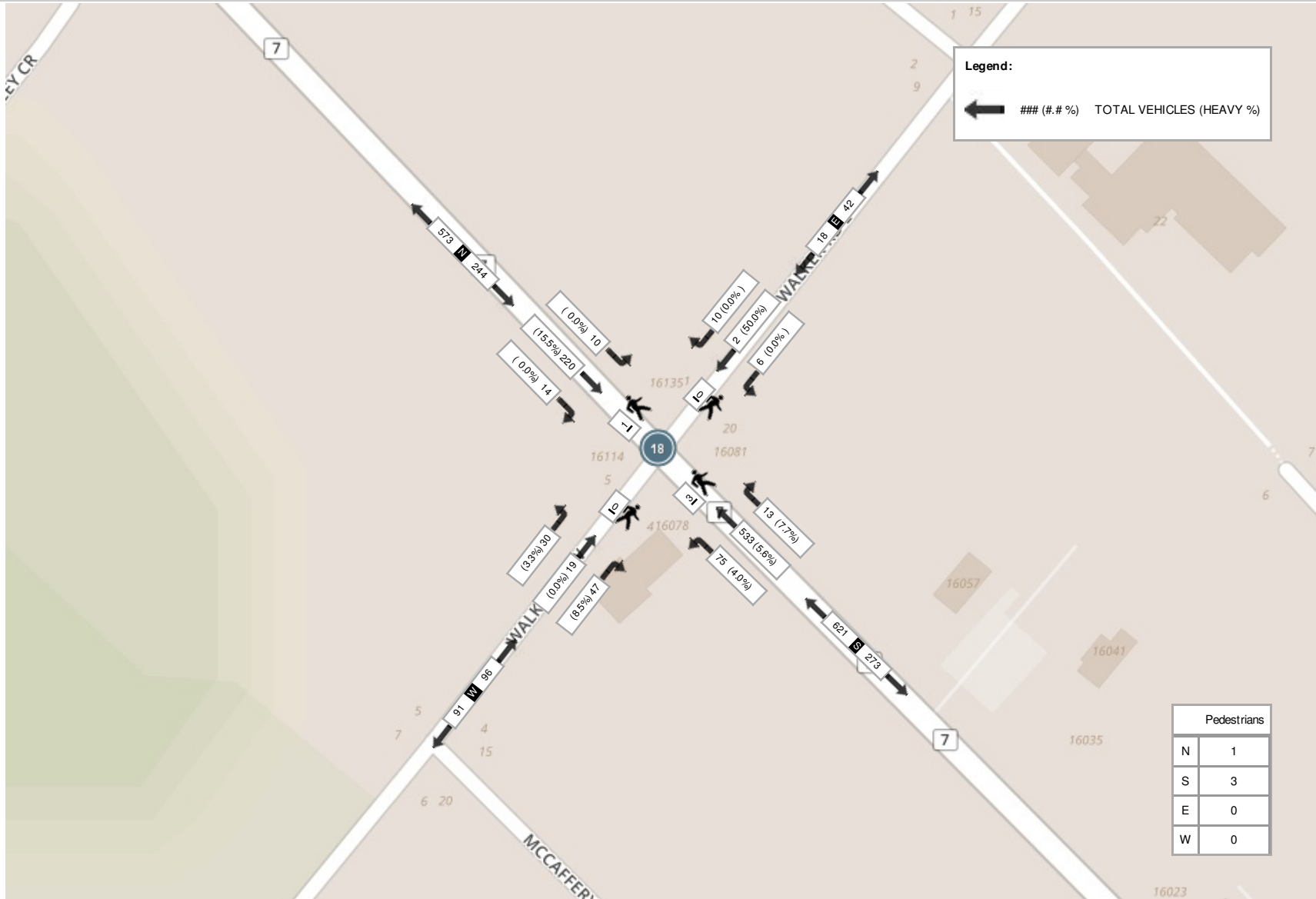
Peak Hour: 07:00 AM - 08:00 AM Weather: Mist (5.79 °C)



Peak Hour: 11:00 AM - 12:00 PM Weather: Few Clouds (13.89 °C)



Peak Hour: 04:00 PM - 05:00 PM Weather: Few Clouds (17.14 °C)





Turning Movement Count (1 . AIRPORT RD & OLD CHURCH RD) CustID: 00729337 MioID: 655474

Start Time	N Approach AIRPORT RD						E Approach OLD CHURCH RD						S Approach AIRPORT RD						W Approach Eastbound Approach						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	0	120	13	0	1	133	5	0	45	0	0	50	12	17	0	0	0	29	0	0	0	0	1	0	212	
07:15:00	0	104	14	0	0	118	9	0	59	0	0	68	21	32	0	0	0	53	0	1	1	0	3	2	241	
07:30:00	0	80	19	0	3	99	15	0	51	0	0	66	31	26	0	0	0	57	0	2	0	0	0	2	224	
07:45:00	1	86	25	0	2	112	21	0	82	0	1	103	50	28	0	0	0	78	0	0	0	0	3	0	293	970
08:00:00	0	92	21	0	1	113	16	0	87	0	0	103	61	27	0	0	1	88	0	3	0	0	1	3	307	1065
08:15:00	1	94	30	0	1	125	20	3	71	0	0	94	63	24	0	0	0	87	0	2	0	0	0	2	308	1132
08:30:00	0	73	35	0	1	108	15	2	53	0	0	70	45	30	0	0	1	75	0	0	0	0	1	0	253	1161
08:45:00	0	90	22	0	0	112	13	0	51	0	0	64	56	34	1	0	0	91	0	0	0	0	0	0	267	1135
09:00:00	1	73	23	0	0	97	9	3	65	0	0	77	53	31	1	0	0	85	0	1	0	0	1	1	260	1088
09:15:00	0	75	16	0	1	91	20	1	51	0	1	72	34	46	0	0	1	80	0	0	0	0	3	0	243	1023
09:30:00	1	67	14	0	0	82	8	0	31	0	3	39	31	45	1	0	1	77	1	0	0	0	1	1	199	969
09:45:00	0	55	13	0	1	68	11	0	35	0	2	46	33	40	0	0	0	73	0	3	1	0	2	4	191	893
BREAK																										
16:00:00	0	50	8	0	1	58	31	5	49	0	0	85	77	98	4	0	8	179	1	1	4	0	16	6	328	
16:15:00	4	57	13	0	3	74	31	0	47	0	1	78	82	85	4	0	1	171	2	2	2	0	15	6	329	
16:30:00	6	46	14	0	0	66	48	8	66	0	1	122	81	106	3	0	3	190	3	3	6	0	19	12	390	
16:45:00	3	52	6	0	0	61	51	6	52	0	2	109	68	118	4	0	2	190	7	4	4	0	12	15	375	1422
17:00:00	2	40	14	0	1	56	28	4	62	0	4	94	65	110	2	0	1	177	1	3	5	0	23	9	336	1430
17:15:00	1	41	9	0	3	51	41	3	50	0	3	94	67	102	4	0	2	173	4	2	4	0	22	10	328	1429
17:30:00	2	32	11	0	0	45	19	5	44	0	4	68	85	95	1	0	0	181	1	2	6	0	19	9	303	1342
17:45:00	3	42	9	0	0	54	16	1	32	0	0	49	70	79	7	0	0	156	2	1	5	0	22	8	267	1234
18:00:00	0	43	13	0	0	56	22	2	39	0	0	63	61	88	2	0	1	151	1	3	5	0	20	9	279	1177
18:15:00	4	38	8	0	0	50	18	3	51	0	0	72	71	72	0	0	0	143	2	1	0	0	14	3	268	1117
18:30:00	3	44	8	0	0	55	13	3	32	0	4	48	51	68	2	0	1	121	1	4	2	0	23	7	231	1045
18:45:00	0	36	9	0	2	45	14	5	35	0	3	54	59	54	2	0	0	115	3	8	1	0	18	12	226	1004
Grand Total	32	1530	367	0	21	1929	494	54	1240	0	29	1788	1327	1455	38	0	23	2820	29	46	46	0	239	121	6658	-
Approach%	1.7%	79.3%	19%	0%	-	-	27.6%	3%	69.4%	0%	-	-	47.1%	51.6%	1.3%	0%	-	-	24%	38%	38%	0%	-	-	-	-
Totals %	0.5%	23%	5.5%	0%	-	29%	7.4%	0.8%	18.6%	0%	-	26.9%	19.9%	21.9%	0.6%	0%	-	42.4%	0.4%	0.7%	0.7%	0%	-	1.8%	-	-
Heavy	1	153	28	0	-	-	39	1	38	0	-	-	40	130	2	0	-	-	0	0	0	0	-	-	-	-
Heavy %	3.1%	10%	7.6%	0%	-	-	7.9%	1.9%	3.1%	0%	-	-	3%	8.9%	5.3%	0%	-	-	0%	0%	0%	0%	-	-	-	-
Bicycles	0	1	0	0	-	-	2	1	0	0	-	-	1	1	0	0	-	-	0	0	0	0	-	-	-	-
Bicycle %	0%	0.1%	0%	0%	-	-	0.4%	1.9%	0%	0%	-	-	0.1%	0.1%	0%	0%	-	-	0%	0%	0%	0%	-	-	-	-



Turning Movement Count
Location Name: AIRPORT RD & OLD CHURCH RD
Date: Tue, May 14, 2019 Deployment Lead: David Chu

NexTrans

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Peak Hour: 07:45 AM - 08:45 AM Weather: Light Intensity Shower Rain (6 °C)

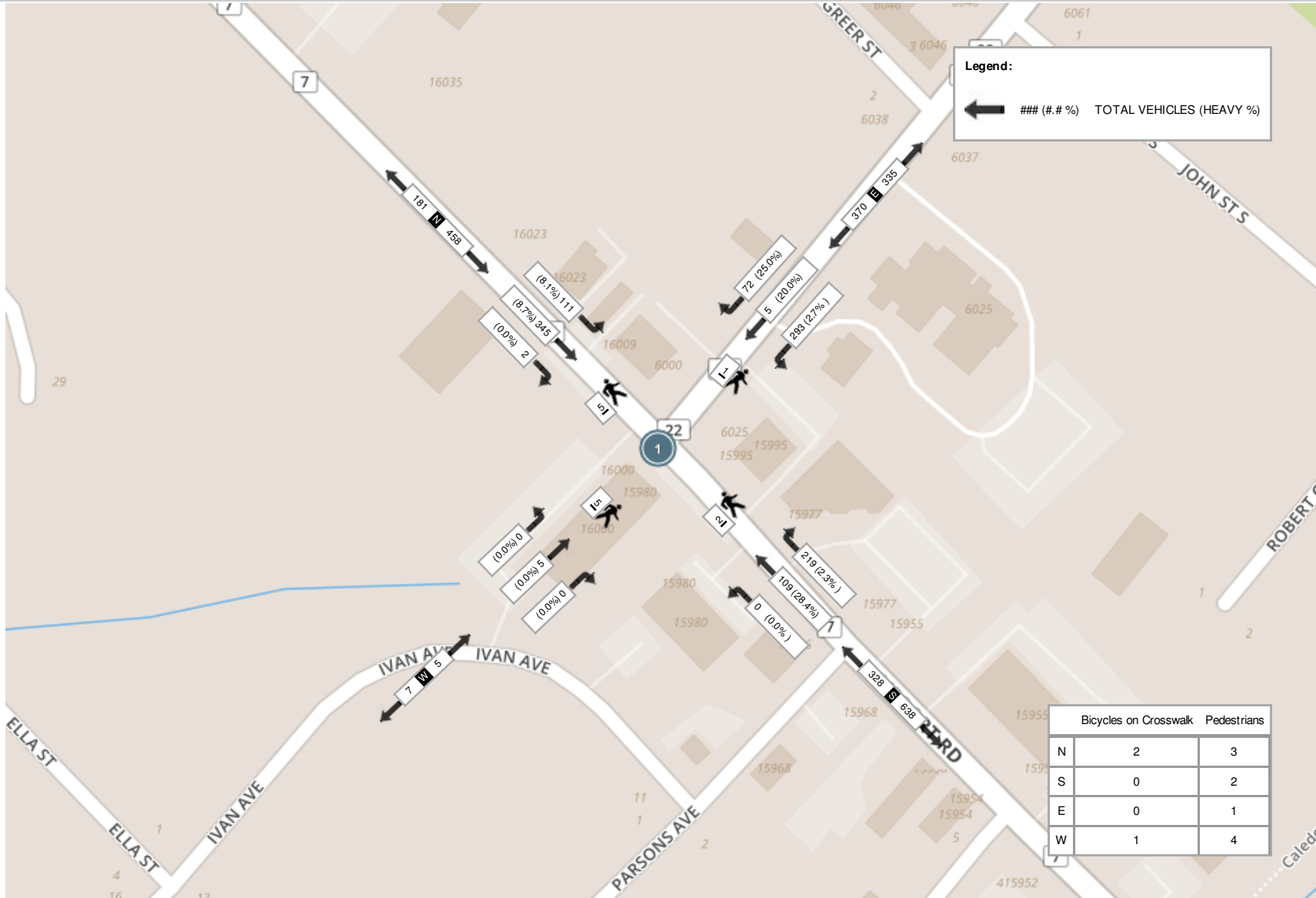
Start Time	N Approach AIRPORT RD						E Approach OLD CHURCH RD						S Approach AIRPORT RD						W Approach Eastbound Approach						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
07:45:00	1	86	25	0	2	112	21	0	82	0	1	103	50	28	0	0	0	78	0	0	0	0	3	0	293
08:00:00	0	92	21	0	1	113	16	0	87	0	0	103	61	27	0	0	1	88	0	3	0	0	1	3	307
08:15:00	1	94	30	0	1	125	20	3	71	0	0	94	63	24	0	0	0	87	0	2	0	0	0	2	308
08:30:00	0	73	35	0	1	108	15	2	53	0	0	70	45	30	0	0	1	75	0	0	0	0	1	0	253
Grand Total	2	345	111	0	5	458	72	5	293	0	1	370	219	109	0	0	2	328	0	5	0	0	5	5	1161
Approach%	0.4%	75.3%	24.2%	0%	-	-	19.5%	1.4%	79.2%	0%	-	-	66.8%	33.2%	0%	0%	-	0%	100%	0%	0%	-	-	-	-
Totals %	0.2%	29.7%	9.6%	0%	39.4%	6.2%	0.4%	25.2%	0%	31.9%	18.9%	9.4%	0%	0%	28.3%	0%	0.4%	0%	0%	0%	0.4%	-	-	-	-
PHF	0.5	0.92	0.79	0	0.92	0.86	0.42	0.84	0	0.9	0.87	0.91	0	0	0.93	0	0.42	0	0	0.42	-	-	-	-	-
Heavy	0	30	9	0	39	18	1	8	0	27	5	31	0	0	36	0	0	0	0	0	0	0	0	0	0
Heavy %	0%	8.7%	8.1%	0%	8.5%	25%	20%	2.7%	0%	7.3%	2.3%	28.4%	0%	0%	11%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Lights	2	315	102	0	419	54	4	285	0	343	214	78	0	0	292	0	5	0	0	5	-	-	-	-	-
Lights %	100%	91.3%	91.9%	0%	91.5%	75%	80%	97.3%	0%	92.7%	97.7%	71.6%	0%	0%	89%	0%	100%	0%	0%	100%	0%	0%	0%	0%	0%
Single-Unit Trucks	0	8	3	0	11	4	1	6	0	11	3	13	0	0	16	0	0	0	0	0	0	0	0	0	0
Single-Unit Trucks %	0%	2.3%	2.7%	0%	2.4%	5.6%	20%	2%	0%	3%	1.4%	11.9%	0%	0%	4.9%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Buses	0	0	6	0	6	14	0	1	0	15	1	5	0	0	6	0	0	0	0	0	0	0	0	0	0
Buses %	0%	0%	5.4%	0%	1.3%	19.4%	0%	0.3%	0%	4.1%	0.5%	4.6%	0%	0%	1.8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Articulated Trucks	0	22	0	0	22	0	0	1	0	1	1	13	0	0	14	0	0	0	0	0	0	0	0	0	0
Articulated Trucks %	0%	6.4%	0%	0%	4.8%	0%	0%	0.3%	0%	0.3%	0.5%	11.9%	0%	0%	4.3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Pedestrians	-	-	-	-	3	-	-	-	-	1	-	-	-	-	2	-	-	-	-	4	-	-	-	-	-
Pedestrians%	-	-	-	-	23.1%	-	-	-	-	7.7%	-	-	-	-	15.4%	-	-	-	-	30.8%	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-	-	-	-
Bicycles on Crosswalk%	-	-	-	-	15.4%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	7.7%	-	-	-	-	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-



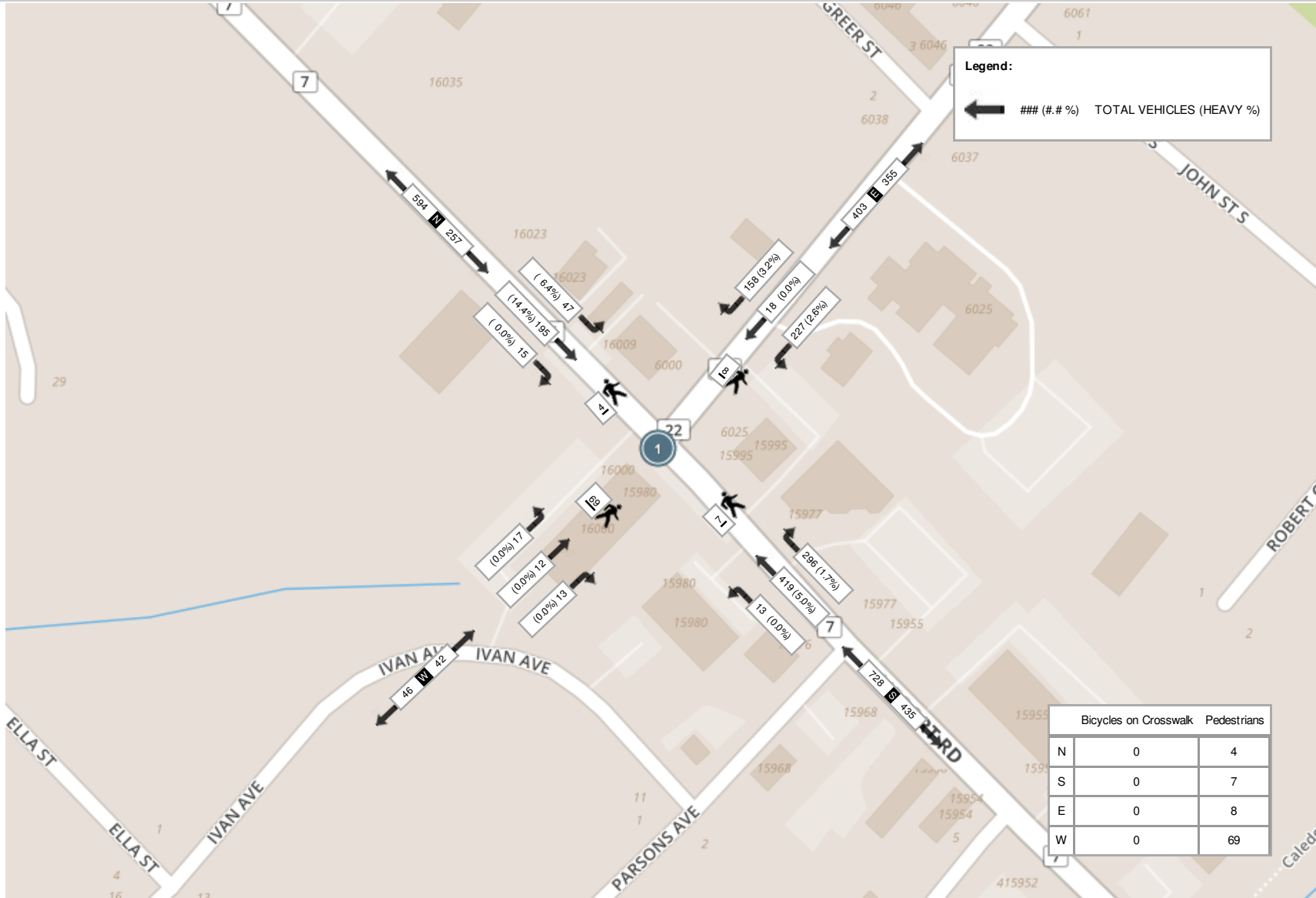
Peak Hour: 04:15 PM - 05:15 PM Weather: Overcast Clouds (13.38 °C)

Start Time	N Approach AIRPORT RD						E Approach OLD CHURCH RD						S Approach AIRPORT RD						W Approach Eastbound Approach						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
16:15:00	4	57	13	0	3	74	31	0	47	0	1	78	82	85	4	0	1	171	2	2	2	0	15	6	329
16:30:00	6	46	14	0	0	66	48	8	66	0	1	122	81	106	3	0	3	190	3	3	6	0	19	12	390
16:45:00	3	52	6	0	0	61	51	6	52	0	2	109	68	118	4	0	2	190	7	4	4	0	12	15	375
17:00:00	2	40	14	0	1	56	28	4	62	0	4	94	65	110	2	0	1	177	1	3	5	0	23	9	336
Grand Total	15	195	47	0	4	257	158	18	227	0	8	403	296	419	13	0	7	728	13	12	17	0	69	42	1430
Approach%	5.8%	75.9%	18.3%	0%	-	-	39.2%	4.5%	56.3%	0%	-	-	40.7%	57.6%	1.8%	0%	-	31%	28.6%	40.5%	0%	-	-	-	-
Totals %	1%	13.6%	3.3%	0%	-	18%	11%	1.3%	15.9%	0%	-	28.2%	20.7%	29.3%	0.9%	0%	-	50.9%	0.9%	0.8%	1.2%	0%	-	2.9%	-
PHF	0.63	0.86	0.84	0	-	0.87	0.77	0.56	0.86	0	-	0.83	0.9	0.89	0.81	0	-	0.96	0.46	0.75	0.71	0	-	0.7	-
Heavy	0	28	3	0	-	31	5	0	6	0	-	11	5	21	0	0	-	26	0	0	0	0	-	0	-
Heavy %	0%	14.4%	6.4%	0%	-	12.1%	3.2%	0%	2.6%	0%	-	2.7%	1.7%	5%	0%	0%	-	3.6%	0%	0%	0%	0%	-	0%	-
Lights	15	167	44	0	-	226	153	18	221	0	-	392	291	398	13	0	-	702	13	12	17	0	-	42	-
Lights %	100%	85.6%	93.6%	0%	-	87.9%	96.8%	100%	97.4%	0%	-	97.3%	98.3%	95%	100%	0%	-	96.4%	100%	100%	100%	0%	-	100%	-
Single-Unit Trucks	0	11	2	0	-	13	4	0	3	0	-	7	3	13	0	0	-	16	0	0	0	0	-	0	-
Single-Unit Trucks %	0%	5.6%	4.3%	0%	-	5.1%	2.5%	0%	1.3%	0%	-	1.7%	1%	3.1%	0%	0%	-	2.2%	0%	0%	0%	0%	-	0%	-
Buses	0	4	1	0	-	5	1	0	2	0	-	3	1	2	0	0	-	3	0	0	0	0	-	0	-
Buses %	0%	2.1%	2.1%	0%	-	1.9%	0.6%	0%	0.9%	0%	-	0.7%	0.3%	0.5%	0%	0%	-	0.4%	0%	0%	0%	0%	-	0%	-
Articulated Trucks	0	13	0	0	-	13	0	0	1	0	-	1	1	6	0	0	-	7	0	0	0	0	-	0	-
Articulated Trucks %	0%	6.7%	0%	0%	-	5.1%	0%	0%	0.4%	0%	-	0.2%	0.3%	1.4%	0%	0%	-	1%	0%	0%	0%	0%	-	0%	-
Pedestrians	-	-	-	-	4	-	-	-	-	-	8	-	-	-	-	-	7	-	-	-	-	-	69	-	-
Pedestrians%	-	-	-	-	4.5%	-	-	-	-	-	9.1%	-	-	-	-	-	8%	-	-	-	-	-	78.4%	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-

Peak Hour: 07:45 AM - 08:45 AM Weather: Light Intensity Shower Rain (6 °C)



Peak Hour: 04:15 PM - 05:15 PM Weather: Overcast Clouds (13.38 °C)



















Appendix E – Existing Traffic Level of Service Calculations

HCM Unsignalized Intersection Capacity Analysis

1: Airport Road & Walker Road

11/05/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	9	50	6	7	6	23	163	7	5	529	31
Future Volume (Veh/h)	14	9	50	6	7	6	23	163	7	5	529	31
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.45	0.74	0.50	0.58	0.38	0.82	0.85	0.35	0.42	0.96	0.86
Hourly flow rate (vph)	20	20	68	12	12	16	28	192	20	12	551	36
Pedestrians		2										
Lane Width (m)		3.7										
Walking Speed (m/s)		1.1										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)								289				
pX, platoon unblocked												
vC, conflicting volume	875	863	571	929	871	202	589			212		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	875	863	571	929	871	202	589			212		
tC, single (s)	7.2	6.6	6.2	7.1	6.5	6.2	4.2			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.3	3.5	4.0	3.3	2.3			2.4		
p0 queue free %	92	93	87	94	96	98	97			99		
cM capacity (veh/h)	236	271	519	199	279	844	933			1258		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	108	40	240	599								
Volume Left	20	12	28	12								
Volume Right	68	16	20	36								
cSH	373	327	933	1258								
Volume to Capacity	0.29	0.12	0.03	0.01								
Queue Length 95th (m)	9.0	3.1	0.7	0.2								
Control Delay (s)	18.5	17.5	1.3	0.3								
Lane LOS	C	C	A	A								
Approach Delay (s)	18.5	17.5	1.3	0.3								
Approach LOS	C	C										
Intersection Summary												
Average Delay			3.2									
Intersection Capacity Utilization			42.3%		ICU Level of Service				A			
Analysis Period (min)			15									

Queues

3: Airport Road & LCBO Site Access/Old Church Road

11/05/2020



Lane Group	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	12	349	96	120	252	530
v/c Ratio	0.02	0.78	0.20	0.18	0.30	0.77
Control Delay	13.2	31.9	5.7	13.1	3.2	26.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.2	31.9	5.7	13.1	3.2	26.1
Queue Length 50th (m)	0.9	35.5	0.9	7.8	0.0	48.7
Queue Length 95th (m)	1.7	55.5	0.4	20.1	10.8	#116.7
Internal Link Dist (m)	8.5		141.6	59.2		183.2
Turn Bay Length (m)						
Base Capacity (vph)	864	627	634	675	843	691
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.56	0.15	0.18	0.30	0.77

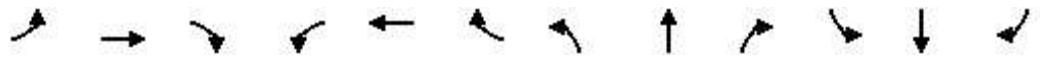
Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

3: Airport Road & LCBO Site Access/Old Church Road

11/05/2020

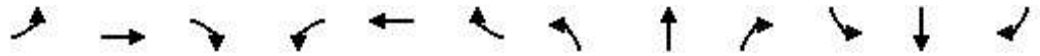


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕		↕	↕			↕	↕		↕		
Traffic Volume (vph)	0	5	0	293	5	72	0	109	219	111	354	2	
Future Volume (vph)	0	5	0	293	5	72	0	109	219	111	354	2	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		7.1		7.1	7.1			7.1	7.1		7.1		
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00		1.00		
Frbp, ped/bikes		1.00		1.00	0.98			1.00	0.98		1.00		
Flpb, ped/bikes		1.00		1.00	1.00			1.00	1.00		1.00		
Frt		1.00		1.00	0.87			1.00	0.85		1.00		
Flt Protected		1.00		0.95	1.00			1.00	1.00		0.99		
Satd. Flow (prot)		1921		1766	1308			1501	1566		1742		
Flt Permitted		1.00		0.75	1.00			1.00	1.00		0.87		
Satd. Flow (perm)		1921		1394	1308			1501	1566		1535		
Peak-hour factor, PHF	0.25	0.42	0.25	0.84	0.42	0.86	0.25	0.91	0.87	0.79	0.92	0.50	
Adj. Flow (vph)	0	12	0	349	12	84	0	120	252	141	385	4	
RTOR Reduction (vph)	0	0	0	0	57	0	0	0	139	0	1	0	
Lane Group Flow (vph)	0	12	0	349	39	0	0	120	113	0	529	0	
Confl. Peds. (#/hr)	5		2	2		5	5		1	1		5	
Heavy Vehicles (%)	0%	0%	0%	3%	20%	25%	0%	28%	2%	8%	9%	0%	
Turn Type		NA		Perm	NA			NA	Perm	Perm	NA		
Protected Phases		4			8			2		6		6	
Permitted Phases	4			8			2		2	6			
Actuated Green, G (s)		20.1		20.1	20.1			28.1	28.1		28.1		
Effective Green, g (s)		20.1		20.1	20.1			28.1	28.1		28.1		
Actuated g/C Ratio		0.32		0.32	0.32			0.45	0.45		0.45		
Clearance Time (s)		7.1		7.1	7.1			7.1	7.1		7.1		
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0		3.0		
Lane Grp Cap (vph)		618		449	421			675	705		691		
v/s Ratio Prot		0.01			0.03			0.08					
v/s Ratio Perm				c0.25					0.07		c0.34		
v/c Ratio		0.02		0.78	0.09			0.18	0.16		0.77		
Uniform Delay, d1		14.4		19.1	14.8			10.2	10.2		14.4		
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00		
Incremental Delay, d2		0.0		8.2	0.1			0.6	0.5		7.9		
Delay (s)		14.4		27.4	14.9			10.8	10.7		22.3		
Level of Service		B		C	B			B	B		C		
Approach Delay (s)		14.4			24.7			10.7			22.3		
Approach LOS		B			C			B			C		
Intersection Summary													
HCM 2000 Control Delay			19.8									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.77										
Actuated Cycle Length (s)			62.4									Sum of lost time (s)	14.2
Intersection Capacity Utilization			66.3%									ICU Level of Service	C
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis

1: Airport Road & Walker Road West/Walker Road East

10/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	30	19	47	6	2	10	75	533	13	10	220	14
Future Volume (Veh/h)	30	19	47	6	2	10	75	533	13	10	220	14
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.68	0.84	0.50	0.50	0.63	0.82	0.93	0.65	0.63	0.90	0.58
Hourly flow rate (vph)	44	28	56	12	4	16	91	573	20	16	244	24
Pedestrians								3			1	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)								289				
pX, platoon unblocked	0.86	0.86		0.86	0.86	0.86				0.86		
vC, conflicting volume	1072	1063	259	1126	1065	584	268			593		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1005	994	259	1067	996	440	268			450		
tC, single (s)	7.1	6.5	6.3	7.1	7.0	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.4	3.5	4.5	3.3	2.2			2.2		
p0 queue free %	74	86	93	91	98	97	93			98		
cM capacity (veh/h)	168	195	761	134	160	536	1284			968		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	128	32	684	284								
Volume Left	44	12	91	16								
Volume Right	56	16	20	24								
cSH	267	221	1284	968								
Volume to Capacity	0.48	0.14	0.07	0.02								
Queue Length 95th (m)	18.4	3.8	1.7	0.4								
Control Delay (s)	30.2	24.0	1.8	0.7								
Lane LOS	D	C	A	A								
Approach Delay (s)	30.2	24.0	1.8	0.7								
Approach LOS	D	C										
Intersection Summary												
Average Delay			5.4									
Intersection Capacity Utilization			63.8%		ICU Level of Service				B			
Analysis Period (min)			15									

Queues

3: Airport Road & LCBO Site Access/Old Church Road

10/05/2020



Lane Group	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	68	264	237	487	329	307
v/c Ratio	0.15	0.69	0.39	0.70	0.37	0.44
Control Delay	10.4	28.3	5.7	22.1	3.1	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.4	28.3	5.7	22.1	3.1	14.8
Queue Length 50th (m)	3.1	25.2	2.5	39.7	0.0	20.6
Queue Length 95th (m)	7.8	42.7	2.4	#103.0	13.6	47.4
Internal Link Dist (m)	8.5		141.6	59.2		183.2
Turn Bay Length (m)						
Base Capacity (vph)	711	616	854	696	899	693
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.43	0.28	0.70	0.37	0.44

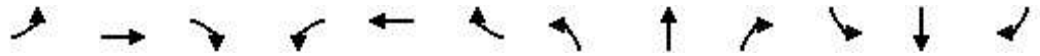
Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

3: Airport Road & LCBO Site Access/Old Church Road

10/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕		↖	↗			↖	↗		↕		
Traffic Volume (vph)	17	12	13	227	18	158	13	419	296	47	195	15	
Future Volume (vph)	17	12	13	227	18	158	13	419	296	47	195	15	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		7.1		7.1	7.1			7.1	7.1		7.1		
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00		1.00		
Frbp, ped/bikes		0.99		1.00	0.98			1.00	0.97		0.99		
Flpb, ped/bikes		1.00		0.99	1.00			1.00	1.00		1.00		
Frt		0.94		1.00	0.87			1.00	0.85		0.99		
Flt Protected		0.98		0.95	1.00			1.00	1.00		0.99		
Satd. Flow (prot)		1757		1753	1592			1506	1548		1722		
Flt Permitted		0.83		0.71	1.00			0.98	1.00		0.85		
Satd. Flow (perm)		1488		1315	1592			1484	1548		1472		
Peak-hour factor, PHF	0.71	0.75	0.46	0.86	0.56	0.77	0.81	0.89	0.90	0.84	0.86	0.63	
Adj. Flow (vph)	24	16	28	264	32	205	16	471	329	56	227	24	
RTOR Reduction (vph)	0	20	0	0	145	0	0	0	174	0	4	0	
Lane Group Flow (vph)	0	48	0	264	92	0	0	487	155	0	303	0	
Confl. Peds. (#/hr)	4		7	7		4	69		8	8		69	
Heavy Vehicles (%)	0%	0%	0%	3%	0%	3%	0%	28%	2%	8%	9%	0%	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA		
Protected Phases		4			8			2			6		
Permitted Phases	4			8			2		2	6			
Actuated Green, G (s)		17.5		17.5	17.5			28.2	28.2		28.2		
Effective Green, g (s)		17.5		17.5	17.5			28.2	28.2		28.2		
Actuated g/C Ratio		0.29		0.29	0.29			0.47	0.47		0.47		
Clearance Time (s)		7.1		7.1	7.1			7.1	7.1		7.1		
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0		3.0		
Lane Grp Cap (vph)		434		384	465			698	728		692		
v/s Ratio Prot					0.06								
v/s Ratio Perm		0.03		c0.20				c0.33	0.10		0.21		
v/c Ratio		0.11		0.69	0.20			0.70	0.21		0.44		
Uniform Delay, d1		15.5		18.8	15.9			12.5	9.3		10.6		
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00		
Incremental Delay, d2		0.1		5.1	0.2			5.7	0.7		2.0		
Delay (s)		15.6		23.8	16.1			18.2	10.0		12.6		
Level of Service		B		C	B			B	A		B		
Approach Delay (s)		15.6			20.2			14.9			12.6		
Approach LOS		B			C			B			B		
Intersection Summary													
HCM 2000 Control Delay			16.1									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.69										
Actuated Cycle Length (s)			59.9									Sum of lost time (s)	14.2
Intersection Capacity Utilization			74.8%									ICU Level of Service	D
Analysis Period (min)			15										

















c Critical Lane Group

Appendix F - Future Background Traffic Level of Service Calculations

HCM Unsignalized Intersection Capacity Analysis

1: Airport Road & Walker Road

11/05/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	9	50	6	7	6	23	180	7	5	585	31
Future Volume (Veh/h)	14	9	50	6	7	6	23	180	7	5	585	31
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.45	0.74	0.50	0.58	0.38	0.82	0.85	0.35	0.42	0.96	0.86
Hourly flow rate (vph)	20	20	68	12	12	16	28	212	20	12	609	36
Pedestrians		2										
Lane Width (m)		3.7										
Walking Speed (m/s)		1.1										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)								289				
pX, platoon unblocked												
vC, conflicting volume	953	941	629	1007	949	222	647			232		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	953	941	629	1007	949	222	647			232		
tC, single (s)	7.2	6.6	6.2	7.1	6.5	6.2	4.2			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.3	3.5	4.0	3.3	2.3			2.4		
p0 queue free %	90	92	86	93	95	98	97			99		
cM capacity (veh/h)	207	243	481	172	251	823	886			1237		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	108	40	260	657								
Volume Left	20	12	28	12								
Volume Right	68	16	20	36								
cSH	338	292	886	1237								
Volume to Capacity	0.32	0.14	0.03	0.01								
Queue Length 95th (m)	10.2	3.6	0.7	0.2								
Control Delay (s)	20.6	19.3	1.3	0.3								
Lane LOS	C	C	A	A								
Approach Delay (s)	20.6	19.3	1.3	0.3								
Approach LOS	C	C										
Intersection Summary												
Average Delay			3.3									
Intersection Capacity Utilization			45.3%		ICU Level of Service				A			
Analysis Period (min)			15									

Queues

3: Airport Road & LCBO Site Access/Old Church Road

11/05/2020



Lane Group	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	12	349	96	133	252	559
v/c Ratio	0.02	0.78	0.20	0.20	0.30	0.81
Control Delay	13.2	31.9	5.7	13.2	3.2	28.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.2	31.9	5.7	13.2	3.2	28.7
Queue Length 50th (m)	0.9	35.5	0.9	8.8	0.0	52.8
Queue Length 95th (m)	1.7	55.5	0.4	22.0	10.8	#125.8
Internal Link Dist (m)	8.5		141.6	59.2		183.2
Turn Bay Length (m)						
Base Capacity (vph)	864	627	634	675	843	693
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.56	0.15	0.20	0.30	0.81

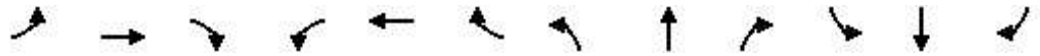
Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

3: Airport Road & LCBO Site Access/Old Church Road

11/05/2020



















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕		↕	↕			↕	↕		↕		
Traffic Volume (vph)	0	5	0	293	5	72	0	121	219	111	381	2	
Future Volume (vph)	0	5	0	293	5	72	0	121	219	111	381	2	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		7.1		7.1	7.1			7.1	7.1		7.1		
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00		1.00		
Frb, ped/bikes		1.00		1.00	0.98			1.00	0.98		1.00		
Flpb, ped/bikes		1.00		1.00	1.00			1.00	1.00		1.00		
Frt		1.00		1.00	0.87			1.00	0.85		1.00		
Flt Protected		1.00		0.95	1.00			1.00	1.00		0.99		
Satd. Flow (prot)		1921		1766	1308			1501	1566		1743		
Flt Permitted		1.00		0.75	1.00			1.00	1.00		0.87		
Satd. Flow (perm)		1921		1394	1308			1501	1566		1538		
Peak-hour factor, PHF	0.25	0.42	0.25	0.84	0.42	0.86	0.25	0.91	0.87	0.79	0.92	0.50	
Adj. Flow (vph)	0	12	0	349	12	84	0	133	252	141	414	4	
RTOR Reduction (vph)	0	0	0	0	57	0	0	0	139	0	1	0	
Lane Group Flow (vph)	0	12	0	349	39	0	0	133	113	0	558	0	
Confl. Peds. (#/hr)	5		2	2		5	5		1	1		5	
Heavy Vehicles (%)	0%	0%	0%	3%	20%	25%	0%	28%	2%	8%	9%	0%	
Turn Type		NA		Perm	NA			NA	Perm	Perm	NA		
Protected Phases		4			8			2		6		6	
Permitted Phases	4			8			2		2	6			
Actuated Green, G (s)		20.1		20.1	20.1			28.1	28.1		28.1		
Effective Green, g (s)		20.1		20.1	20.1			28.1	28.1		28.1		
Actuated g/C Ratio		0.32		0.32	0.32			0.45	0.45		0.45		
Clearance Time (s)		7.1		7.1	7.1			7.1	7.1		7.1		
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0		3.0		
Lane Grp Cap (vph)		618		449	421			675	705		692		
v/s Ratio Prot		0.01			0.03			0.09					
v/s Ratio Perm				c0.25					0.07		c0.36		
v/c Ratio		0.02		0.78	0.09			0.20	0.16		0.81		
Uniform Delay, d1		14.4		19.1	14.8			10.3	10.2		14.8		
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00		
Incremental Delay, d2		0.0		8.2	0.1			0.7	0.5		9.8		
Delay (s)		14.4		27.4	14.9			11.0	10.7		24.6		
Level of Service		B		C	B			B	B		C		
Approach Delay (s)		14.4			24.7			10.8			24.6		
Approach LOS		B			C			B			C		
Intersection Summary													
HCM 2000 Control Delay			20.7									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.79										
Actuated Cycle Length (s)			62.4									Sum of lost time (s)	14.2
Intersection Capacity Utilization			82.0%									ICU Level of Service	D
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis

1: Airport Road & Walker Road West/Walker Road East

11/05/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	19	47	6	2	10	75	589	13	10	243	14
Future Volume (Veh/h)	30	19	47	6	2	10	75	589	13	10	243	14
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.68	0.84	0.50	0.50	0.63	0.82	0.93	0.65	0.63	0.90	0.58
Hourly flow rate (vph)	44	28	56	12	4	16	91	633	20	16	270	24
Pedestrians								3			1	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)								289				
pX, platoon unblocked	0.81	0.81		0.81	0.81	0.81				0.81		
vC, conflicting volume	1158	1149	285	1212	1151	644	294			653		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1079	1068	285	1146	1071	447	294			458		
tC, single (s)	7.1	6.5	6.3	7.1	7.0	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.4	3.5	4.5	3.3	2.2			2.2		
p0 queue free %	69	83	92	89	97	97	93			98		
cM capacity (veh/h)	140	165	735	108	135	500	1256			905		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	128	32	744	310								
Volume Left	44	12	91	16								
Volume Right	56	16	20	24								
cSH	228	186	1256	905								
Volume to Capacity	0.56	0.17	0.07	0.02								
Queue Length 95th (m)	23.3	4.6	1.8	0.4								
Control Delay (s)	39.1	28.4	1.8	0.7								
Lane LOS	E	D	A	A								
Approach Delay (s)	39.1	28.4	1.8	0.7								
Approach LOS	E	D										
Intersection Summary												
Average Delay			6.2									
Intersection Capacity Utilization			68.0%		ICU Level of Service					C		
Analysis Period (min)			15									

Queues

3: Airport Road & LCBO Site Access/Old Church Road

11/05/2020



Lane Group	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	68	264	237	536	329	331
v/c Ratio	0.15	0.69	0.40	0.77	0.37	0.50
Control Delay	10.4	28.3	6.5	25.5	3.1	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.4	28.3	6.5	25.5	3.1	15.8
Queue Length 50th (m)	3.1	25.2	3.9	45.9	0.0	23.1
Queue Length 95th (m)	7.8	42.7	3.8	#118.3	13.6	52.6
Internal Link Dist (m)	8.5		141.6	59.2		183.2
Turn Bay Length (m)						
Base Capacity (vph)	711	616	845	696	899	668
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.43	0.28	0.77	0.37	0.50

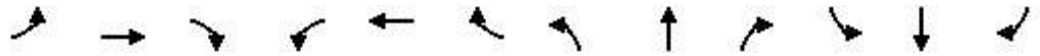
Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

3: Airport Road & LCBO Site Access/Old Church Road

11/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕		↕	↕			↕	↕		↕		
Traffic Volume (vph)	17	12	13	227	18	158	13	463	296	47	216	15	
Future Volume (vph)	17	12	13	227	18	158	13	463	296	47	216	15	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		7.1		7.1	7.1			7.1	7.1		7.1		
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00		1.00		
Frbp, ped/bikes		0.99		1.00	0.98			1.00	0.97		0.99		
Flpb, ped/bikes		1.00		0.99	1.00			1.00	1.00		1.00		
Frt		0.94		1.00	0.87			1.00	0.85		0.99		
Flt Protected		0.98		0.95	1.00			1.00	1.00		0.99		
Satd. Flow (prot)		1757		1753	1592			1505	1548		1725		
Flt Permitted		0.83		0.71	1.00			0.98	1.00		0.82		
Satd. Flow (perm)		1488		1315	1592			1484	1548		1419		
Peak-hour factor, PHF	0.71	0.75	0.46	0.86	0.56	0.77	0.81	0.89	0.90	0.84	0.86	0.63	
Adj. Flow (vph)	24	16	28	264	32	205	16	520	329	56	251	24	
RTOR Reduction (vph)	0	20	0	0	132	0	0	0	174	0	4	0	
Lane Group Flow (vph)	0	48	0	264	105	0	0	536	155	0	327	0	
Confl. Peds. (#/hr)	4		7	7		4	69		8	8		69	
Heavy Vehicles (%)	0%	0%	0%	3%	0%	3%	0%	28%	2%	8%	9%	0%	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA		
Protected Phases		4			8			2			6		
Permitted Phases	4			8			2		2	6			
Actuated Green, G (s)		17.5		17.5	17.5			28.2	28.2		28.2		
Effective Green, g (s)		17.5		17.5	17.5			28.2	28.2		28.2		
Actuated g/C Ratio		0.29		0.29	0.29			0.47	0.47		0.47		
Clearance Time (s)		7.1		7.1	7.1			7.1	7.1		7.1		
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0		3.0		
Lane Grp Cap (vph)		434		384	465			698	728		668		
v/s Ratio Prot					0.07								
v/s Ratio Perm		0.03		c0.20				c0.36	0.10		0.23		
v/c Ratio		0.11		0.69	0.23			0.77	0.21		0.49		
Uniform Delay, d1		15.5		18.8	16.1			13.1	9.3		10.9		
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00		
Incremental Delay, d2		0.1		5.1	0.2			7.9	0.7		2.6		
Delay (s)		15.6		23.8	16.3			21.1	10.0		13.5		
Level of Service		B		C	B			C	A		B		
Approach Delay (s)		15.6			20.3			16.9			13.5		
Approach LOS		B			C			B			B		
Intersection Summary													
HCM 2000 Control Delay			17.1									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.74										
Actuated Cycle Length (s)			59.9									Sum of lost time (s)	14.2
Intersection Capacity Utilization			77.2%									ICU Level of Service	D
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis

5: Airport Road & Site Access

11/05/2020



















Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	638	278	0
Future Volume (Veh/h)	0	0	0	638	278	0
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)	0	0	0	693	302	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)	207					
pX, platoon unblocked	0.78					
vC, conflicting volume	995	302	302			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	852	302	302			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	257	738	1259			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	693	302			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1259	1700			
Volume to Capacity	0.00	0.00	0.18			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	36.9%		ICU Level of Service	A		
Analysis Period (min)	15					

Appendix G - Future Total Traffic Level of Service Calculations

HCM Unsignalized Intersection Capacity Analysis

1: Airport Road & Walker Road

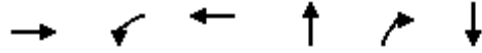
02/24/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	9	51	6	7	6	25	192	7	5	599	31
Future Volume (Veh/h)	14	9	51	6	7	6	25	192	7	5	599	31
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.45	0.74	0.50	0.58	0.38	0.82	0.85	0.35	0.42	0.96	0.86
Hourly flow rate (vph)	20	20	69	12	12	16	30	226	20	12	624	36
Pedestrians		2										
Lane Width (m)		3.7										
Walking Speed (m/s)		1.1										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)								289				
pX, platoon unblocked												
vC, conflicting volume	986	974	644	1041	982	236	662			246		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	986	974	644	1041	982	236	662			246		
tC, single (s)	7.2	6.6	6.2	7.1	6.5	6.2	4.2			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.3	3.5	4.0	3.3	2.3			2.4		
p0 queue free %	90	91	85	93	95	98	97			99		
cM capacity (veh/h)	196	232	472	162	240	808	875			1222		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	109	40	276	672								
Volume Left	20	12	30	12								
Volume Right	69	16	20	36								
cSH	326	278	875	1222								
Volume to Capacity	0.33	0.14	0.03	0.01								
Queue Length 95th (m)	10.9	3.8	0.8	0.2								
Control Delay (s)	21.5	20.1	1.3	0.3								
Lane LOS	C	C	A	A								
Approach Delay (s)	21.5	20.1	1.3	0.3								
Approach LOS	C	C										
Intersection Summary												
Average Delay			3.4									
Intersection Capacity Utilization			46.1%		ICU Level of Service				A			
Analysis Period (min)			15									

Queues

3: Airport Road & LCBO Site Access/Old Church Road

02/24/2022



Lane Group	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	12	341	116	157	252	599
v/c Ratio	0.02	0.77	0.24	0.23	0.30	0.87
Control Delay	13.4	31.3	5.5	13.4	3.2	34.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.4	31.3	5.5	13.4	3.2	34.2
Queue Length 50th (m)	0.9	34.5	0.9	10.4	0.0	58.5
Queue Length 95th (m)	1.7	56.0	0.0	25.7	10.8	#139.6
Internal Link Dist (m)	8.5		141.6	59.2		183.2
Turn Bay Length (m)						
Base Capacity (vph)	868	630	645	678	846	689
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.54	0.18	0.23	0.30	0.87

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

3: Airport Road & LCBO Site Access/Old Church Road

02/24/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕	↕		↕	
Traffic Volume (vph)	0	5	0	293	5	87	0	143	219	120	408	2
Future Volume (vph)	0	5	0	293	5	87	0	143	219	120	408	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.1		7.1	7.1			7.1	7.1		7.1	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Frbp, ped/bikes		1.00		1.00	0.97			1.00	0.98		1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00	1.00		1.00	
Frt		1.00		1.00	0.87			1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00			1.00	1.00		0.99	
Satd. Flow (prot)		1921		1766	1302			1501	1566		1743	
Flt Permitted		1.00		0.75	1.00			1.00	1.00		0.86	
Satd. Flow (perm)		1921		1394	1302			1501	1566		1524	
Peak-hour factor, PHF	0.25	0.42	0.25	0.86	0.42	0.84	0.25	0.91	0.87	0.79	0.92	0.50
Adj. Flow (vph)	0	12	0	341	12	104	0	157	252	152	443	4
RTOR Reduction (vph)	0	0	0	0	71	0	0	0	138	0	1	0
Lane Group Flow (vph)	0	12	0	341	45	0	0	157	114	0	598	0
Confl. Peds. (#/hr)	5		2	2		5	5		1	1		5
Heavy Vehicles (%)	0%	0%	0%	3%	20%	25%	0%	28%	2%	8%	9%	0%
Turn Type		NA		Perm	NA			NA	Perm	Perm	NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		19.8		19.8	19.8			28.2	28.2		28.2	
Effective Green, g (s)		19.8		19.8	19.8			28.2	28.2		28.2	
Actuated g/C Ratio		0.32		0.32	0.32			0.45	0.45		0.45	
Clearance Time (s)		7.1		7.1	7.1			7.1	7.1		7.1	
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		611		443	414			680	709		690	
v/s Ratio Prot		0.01			0.03			0.10				
v/s Ratio Perm				c0.24					0.07		c0.39	
v/c Ratio		0.02		0.77	0.11			0.23	0.16		0.87	
Uniform Delay, d1		14.5		19.1	15.0			10.4	10.0		15.3	
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.0		7.9	0.1			0.8	0.5		13.8	
Delay (s)		14.6		27.0	15.1			11.2	10.5		29.2	
Level of Service		B		C	B			B	B		C	
Approach Delay (s)		14.6			24.0			10.8			29.2	
Approach LOS		B			C			B			C	
Intersection Summary												
HCM 2000 Control Delay			22.3									C
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			62.2								14.2	
Intersection Capacity Utilization			83.9%									E
ICU Level of Service												
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

5: Airport Road & Site Access

02/24/2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	36	37	193	494	14
Future Volume (Veh/h)	14	36	37	193	494	14
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	39	40	210	537	15
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)	207					
pX, platoon unblocked						
vC, conflicting volume	834	544	552			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	834	544	552			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	93	96			
cM capacity (veh/h)	325	539	1018			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	54	250	552			
Volume Left	15	40	0			
Volume Right	39	0	15			
cSH	455	1018	1700			
Volume to Capacity	0.12	0.04	0.32			
Queue Length 95th (m)	3.0	0.9	0.0			
Control Delay (s)	14.0	1.7	0.0			
Lane LOS	B	A				
Approach Delay (s)	14.0	1.7	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			51.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

1: Airport Road & Walker Road West/Walker Road East

02/24/2022

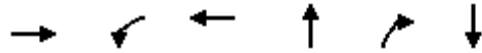


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	30	19	53	7	2	10	79	616	14	10	270	14
Future Volume (Veh/h)	30	19	53	7	2	10	79	616	14	10	270	14
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.68	0.84	0.50	0.50	0.63	0.82	0.93	0.65	0.63	0.90	0.58
Hourly flow rate (vph)	44	28	63	14	4	16	96	662	22	16	300	24
Pedestrians								3			1	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)								289				
pX, platoon unblocked	0.81	0.81		0.81	0.81	0.81				0.81		
vC, conflicting volume	1228	1220	315	1289	1221	674	324			684		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1165	1156	315	1240	1157	484	324			496		
tC, single (s)	7.1	6.5	6.3	7.1	7.0	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.4	3.5	4.5	3.3	2.2			2.2		
p0 queue free %	64	81	91	84	97	97	92			98		
cM capacity (veh/h)	121	146	707	90	118	477	1225			876		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	135	34	780	340								
Volume Left	44	14	96	16								
Volume Right	63	16	22	24								
cSH	209	152	1225	876								
Volume to Capacity	0.65	0.22	0.08	0.02								
Queue Length 95th (m)	29.3	6.2	1.9	0.4								
Control Delay (s)	49.0	35.4	2.0	0.6								
Lane LOS	E	E	A	A								
Approach Delay (s)	49.0	35.4	2.0	0.6								
Approach LOS	E	E										
Intersection Summary												
Average Delay			7.4									
Intersection Capacity Utilization			71.2%		ICU Level of Service					C		
Analysis Period (min)			15									

Queues

3: Airport Road & LCBO Site Access/Old Church Road

02/24/2022



Lane Group	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	68	264	242	547	329	346
v/c Ratio	0.15	0.69	0.41	0.79	0.37	0.53
Control Delay	10.4	28.3	7.1	26.4	3.1	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.4	28.3	7.1	26.4	3.1	16.7
Queue Length 50th (m)	3.1	25.2	4.9	47.4	0.0	24.7
Queue Length 95th (m)	7.8	42.7	4.7	#121.7	13.6	56.4
Internal Link Dist (m)	8.5		141.6	59.2		183.2
Turn Bay Length (m)						
Base Capacity (vph)	710	616	841	695	899	651
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.43	0.29	0.79	0.37	0.53

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

3: Airport Road & LCBO Site Access/Old Church Road

02/24/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕	↕		↕	
Traffic Volume (vph)	17	12	13	227	18	162	13	473	296	49	227	15
Future Volume (vph)	17	12	13	227	18	162	13	473	296	49	227	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.1		7.1	7.1			7.1	7.1		7.1	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Frbp, ped/bikes		0.99		1.00	0.98			1.00	0.97		0.99	
Flpb, ped/bikes		1.00		0.99	1.00			1.00	1.00		1.00	
Frt		0.94		1.00	0.87			1.00	0.85		0.99	
Flt Protected		0.98		0.95	1.00			1.00	1.00		0.99	
Satd. Flow (prot)		1757		1753	1591			1505	1548		1727	
Flt Permitted		0.83		0.71	1.00			0.98	1.00		0.80	
Satd. Flow (perm)		1486		1315	1591			1484	1548		1385	
Peak-hour factor, PHF	0.71	0.75	0.46	0.86	0.56	0.77	0.81	0.89	0.90	0.84	0.86	0.63
Adj. Flow (vph)	24	16	28	264	32	210	16	531	329	58	264	24
RTOR Reduction (vph)	0	20	0	0	127	0	0	0	174	0	3	0
Lane Group Flow (vph)	0	48	0	264	115	0	0	547	155	0	343	0
Confl. Peds. (#/hr)	4		7	7		4	69		8	8		69
Heavy Vehicles (%)	0%	0%	0%	3%	0%	3%	0%	28%	2%	8%	9%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		17.5		17.5	17.5			28.2	28.2		28.2	
Effective Green, g (s)		17.5		17.5	17.5			28.2	28.2		28.2	
Actuated g/C Ratio		0.29		0.29	0.29			0.47	0.47		0.47	
Clearance Time (s)		7.1		7.1	7.1			7.1	7.1		7.1	
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		434		384	464			698	728		652	
v/s Ratio Prot					0.07							
v/s Ratio Perm		0.03		c0.20				c0.37	0.10		0.25	
v/c Ratio		0.11		0.69	0.25			0.78	0.21		0.53	
Uniform Delay, d1		15.5		18.8	16.2			13.3	9.3		11.1	
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.1		5.1	0.3			8.6	0.7		3.0	
Delay (s)		15.6		23.8	16.5			21.9	10.0		14.2	
Level of Service		B		C	B			C	A		B	
Approach Delay (s)		15.6			20.3			17.4			14.2	
Approach LOS		B			C			B			B	
Intersection Summary												
HCM 2000 Control Delay			17.5									B
HCM 2000 Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			59.9								14.2	
Intersection Capacity Utilization			78.4%									D
ICU Level of Service												D
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

5: Airport Road & Site Access

02/24/2022



















Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	32	13	14	638	278	34
Future Volume (Veh/h)	32	13	14	638	278	34
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)	35	14	15	693	302	37
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)	207					
pX, platoon unblocked	0.77					
vC, conflicting volume	1044	320	339			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	906	320	339			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	85	98	99			
cM capacity (veh/h)	233	720	1220			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	49	708	339			
Volume Left	35	15	0			
Volume Right	14	0	37			
cSH	288	1220	1700			
Volume to Capacity	0.17	0.01	0.20			
Queue Length 95th (m)	4.6	0.3	0.0			
Control Delay (s)	20.0	0.3	0.0			
Lane LOS	C	A				
Approach Delay (s)	20.0	0.3	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			54.8%	ICU Level of Service	A	
Analysis Period (min)			15			

Appendix H - Future Total Traffic Level of Service Calculations (Sensitivity Analysis)

HCM Unsignalized Intersection Capacity Analysis

1: Airport Road & Walker Road

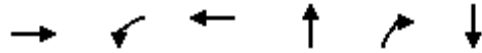
02/24/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	10	50	6	9	6	23	180	7	5	585	45
Future Volume (Veh/h)	27	10	50	6	9	6	23	180	7	5	585	45
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.45	0.74	0.50	0.58	0.38	0.82	0.85	0.35	0.42	0.96	0.86
Hourly flow rate (vph)	39	22	68	12	16	16	28	212	20	12	609	52
Pedestrians		2										
Lane Width (m)		3.7										
Walking Speed (m/s)		1.1										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)								289				
pX, platoon unblocked												
vC, conflicting volume	963	949	637	1016	965	222	663			232		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	963	949	637	1016	965	222	663			232		
tC, single (s)	7.2	6.6	6.2	7.1	6.5	6.2	4.2			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.3	3.5	4.0	3.3	2.3			2.4		
p0 queue free %	81	91	86	93	93	98	97			99		
cM capacity (veh/h)	201	241	476	168	246	823	874			1237		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	129	44	260	673								
Volume Left	39	12	28	12								
Volume Right	68	16	20	52								
cSH	301	282	874	1237								
Volume to Capacity	0.43	0.16	0.03	0.01								
Queue Length 95th (m)	15.6	4.1	0.8	0.2								
Control Delay (s)	25.6	20.1	1.3	0.3								
Lane LOS	D	C	A	A								
Approach Delay (s)	25.6	20.1	1.3	0.3								
Approach LOS	D	C										
Intersection Summary												
Average Delay			4.3									
Intersection Capacity Utilization			48.1%		ICU Level of Service				A			
Analysis Period (min)			15									

Queues

3: Airport Road & LCBO Site Access/Old Church Road

02/24/2022



Lane Group	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	136	349	127	229	252	559
v/c Ratio	0.21	0.82	0.24	0.50	0.31	0.86
Control Delay	6.3	36.1	7.3	19.7	3.3	35.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.3	36.1	7.3	19.7	3.3	35.2
Queue Length 50th (m)	3.1	37.0	3.4	20.1	0.0	61.5
Queue Length 95th (m)	1.5	59.2	1.9	43.1	10.8	#129.0
Internal Link Dist (m)	56.3		141.6	59.2		183.2
Turn Bay Length (m)						
Base Capacity (vph)	798	543	646	457	824	647
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.64	0.20	0.50	0.31	0.86

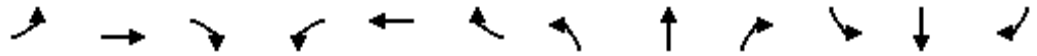
Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

3: Airport Road & LCBO Site Access/Old Church Road

02/24/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕	↕		↕	
Traffic Volume (vph)	0	17	24	293	18	72	24	121	219	111	381	2
Future Volume (vph)	0	17	24	293	18	72	24	121	219	111	381	2
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.1		7.1	7.1			7.1	7.1		7.1	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Frbp, ped/bikes		0.98		1.00	0.98			1.00	0.98		1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00	1.00		1.00	
Frt		0.90		1.00	0.90			1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00			0.98	1.00		0.99	
Satd. Flow (prot)		1709		1767	1377			1616	1566		1743	
Flt Permitted		1.00		0.67	1.00			0.64	1.00		0.84	
Satd. Flow (perm)		1709		1246	1377			1050	1566		1484	
Peak-hour factor, PHF	0.25	0.42	0.25	0.84	0.42	0.86	0.25	0.91	0.87	0.79	0.92	0.50
Adj. Flow (vph)	0	40	96	349	43	84	96	133	252	141	414	4
RTOR Reduction (vph)	0	63	0	0	55	0	0	0	142	0	1	0
Lane Group Flow (vph)	0	73	0	349	72	0	0	229	110	0	558	0
Confl. Peds. (#/hr)	5		2	2		5	5		1	1		5
Heavy Vehicles (%)	0%	0%	0%	3%	20%	25%	0%	28%	2%	8%	9%	0%
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		22.1		22.1	22.1			28.1	28.1		28.1	
Effective Green, g (s)		22.1		22.1	22.1			28.1	28.1		28.1	
Actuated g/C Ratio		0.34		0.34	0.34			0.44	0.44		0.44	
Clearance Time (s)		7.1		7.1	7.1			7.1	7.1		7.1	
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		586		427	472			458	683		647	
v/s Ratio Prot		0.04			0.05							
v/s Ratio Perm				c0.28				0.22	0.07		c0.38	
v/c Ratio		0.12		0.82	0.15			0.50	0.16		0.86	
Uniform Delay, d1		14.5		19.3	14.7			13.1	11.0		16.4	
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.1		11.5	0.2			3.9	0.5		14.2	
Delay (s)		14.6		30.8	14.8			16.9	11.5		30.7	
Level of Service		B		C	B			B	B		C	
Approach Delay (s)		14.6			26.5			14.1			30.7	
Approach LOS		B			C			B			C	
Intersection Summary												
HCM 2000 Control Delay			23.3									C
HCM 2000 Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			64.4								14.2	
Intersection Capacity Utilization			82.0%									D
ICU Level of Service												
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

6: Future Road & Walker Road

02/24/2022



















Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	73	0	16	61	0	14
Future Volume (Veh/h)	73	0	16	61	0	14
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	79	0	17	66	0	15
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			79		179	79
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			79		179	79
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	98
cM capacity (veh/h)			1519		802	981
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	79	83	15			
Volume Left	0	17	0			
Volume Right	0	0	15			
cSH	1700	1519	981			
Volume to Capacity	0.05	0.01	0.02			
Queue Length 95th (m)	0.0	0.3	0.4			
Control Delay (s)	0.0	1.6	8.7			
Lane LOS		A	A			
Approach Delay (s)	0.0	1.6	8.7			
Approach LOS			A			
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			20.8%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

11: Ivan Avenue & LCBO Site Access & Future Road

02/24/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	5	0	0	7	37	0	0	0	36	0	0
Future Volume (Veh/h)	0	5	0	0	7	37	0	0	0	36	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	5	0	0	8	40	0	0	0	39	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)					80							
pX, platoon unblocked												
vC, conflicting volume	48			5			33	53	5	33	33	28
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	48			5			33	53	5	33	33	28
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	96	100	100
cM capacity (veh/h)	1559			1616			974	838	1078	974	860	1047
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	5	48	0	39								
Volume Left	0	0	0	39								
Volume Right	0	40	0	0								
cSH	1559	1616	1700	974								
Volume to Capacity	0.00	0.00	0.00	0.04								
Queue Length 95th (m)	0.0	0.0	0.0	0.9								
Control Delay (s)	0.0	0.0	0.0	8.8								
Lane LOS				A								
Approach Delay (s)	0.0	0.0	0.0	8.8								
Approach LOS				A								
Intersection Summary												
Average Delay				3.8								
Intersection Capacity Utilization			13.3%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

13: Future Road & Site Access

02/24/2022



















Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	36	14	0	37	16	0
Future Volume (Veh/h)	36	14	0	37	16	0
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)	39	15	0	40	17	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	54	20			40	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	54	20			40	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	99			99	
cM capacity (veh/h)	944	1058			1570	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	54	40	17			
Volume Left	39	0	17			
Volume Right	15	40	0			
cSH	973	1700	1570			
Volume to Capacity	0.06	0.02	0.01			
Queue Length 95th (m)	1.3	0.0	0.2			
Control Delay (s)	8.9	0.0	7.3			
Lane LOS	A		A			
Approach Delay (s)	8.9	0.0	7.3			
Approach LOS	A					
Intersection Summary						
Average Delay			5.5			
Intersection Capacity Utilization			17.6%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

1: Airport Road & Walker Road West/Walker Road East

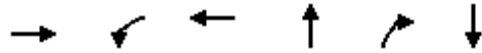
02/24/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	21	47	6	4	10	75	589	13	10	243	31
Future Volume (Veh/h)	46	21	47	6	4	10	75	589	13	10	243	31
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.68	0.84	0.50	0.50	0.63	0.82	0.93	0.65	0.63	0.90	0.58
Hourly flow rate (vph)	68	31	56	12	8	16	91	633	20	16	270	53
Pedestrians								3			1	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)								289				
pX, platoon unblocked	0.77	0.77		0.77	0.77	0.77				0.77		
vC, conflicting volume	1174	1164	300	1228	1180	644	323			653		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1080	1065	300	1149	1087	394	323			406		
tC, single (s)	7.1	6.5	6.3	7.1	7.0	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.4	3.5	4.5	3.3	2.2			2.2		
p0 queue free %	47	80	92	88	94	97	93			98		
cM capacity (veh/h)	129	158	722	100	125	510	1226			901		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	155	36	744	339								
Volume Left	68	12	91	16								
Volume Right	56	16	20	53								
cSH	194	167	1226	901								
Volume to Capacity	0.80	0.22	0.07	0.02								
Queue Length 95th (m)	42.4	6.0	1.8	0.4								
Control Delay (s)	71.8	32.4	1.9	0.6								
Lane LOS	F	D	A	A								
Approach Delay (s)	71.8	32.4	1.9	0.6								
Approach LOS	F	D										
Intersection Summary												
Average Delay			10.9									
Intersection Capacity Utilization			71.4%		ICU Level of Service					C		
Analysis Period (min)			15									

Queues

3: Airport Road & LCBO Site Access/Old Church Road

02/24/2022



Lane Group	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	91	264	248	546	329	331
v/c Ratio	0.19	0.70	0.41	0.80	0.37	0.51
Control Delay	9.8	28.9	6.9	27.2	3.2	16.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.8	28.9	6.9	27.2	3.2	16.2
Queue Length 50th (m)	3.8	25.3	4.8	48.1	0.0	23.5
Queue Length 95th (m)	9.0	43.0	4.4	#122.5	13.6	53.2
Internal Link Dist (m)	50.3		141.6	59.2		183.2
Turn Bay Length (m)						
Base Capacity (vph)	738	601	850	686	897	651
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.44	0.29	0.80	0.37	0.51

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

3: Airport Road & LCBO Site Access/Old Church Road

02/24/2022



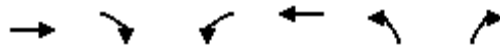
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕	↕		↕	
Traffic Volume (vph)	17	18	20	227	24	158	21	463	296	47	216	15
Future Volume (vph)	17	18	20	227	24	158	21	463	296	47	216	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.1		7.1	7.1			7.1	7.1		7.1	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Frbp, ped/bikes		0.99		1.00	0.98			1.00	0.97		0.99	
Flpb, ped/bikes		1.00		0.99	1.00			1.00	1.00		1.00	
Frt		0.94		1.00	0.88			1.00	0.85		0.99	
Flt Protected		0.99		0.95	1.00			1.00	1.00		0.99	
Satd. Flow (prot)		1747		1754	1606			1508	1548		1725	
Flt Permitted		0.87		0.70	1.00			0.97	1.00		0.80	
Satd. Flow (perm)		1532		1288	1606			1469	1548		1389	
Peak-hour factor, PHF	0.71	0.75	0.46	0.86	0.56	0.77	0.81	0.89	0.90	0.84	0.86	0.63
Adj. Flow (vph)	24	24	43	264	43	205	26	520	329	56	251	24
RTOR Reduction (vph)	0	30	0	0	132	0	0	0	175	0	4	0
Lane Group Flow (vph)	0	61	0	264	116	0	0	546	154	0	327	0
Confl. Peds. (#/hr)	4		7	7		4	69		8	8		69
Heavy Vehicles (%)	0%	0%	0%	3%	0%	3%	0%	28%	2%	8%	9%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		17.8		17.8	17.8			28.2	28.2		28.2	
Effective Green, g (s)		17.8		17.8	17.8			28.2	28.2		28.2	
Actuated g/C Ratio		0.30		0.30	0.30			0.47	0.47		0.47	
Clearance Time (s)		7.1		7.1	7.1			7.1	7.1		7.1	
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		452		380	474			688	725		650	
v/s Ratio Prot					0.07							
v/s Ratio Perm		0.04		c0.20				c0.37	0.10		0.24	
v/c Ratio		0.13		0.69	0.25			0.79	0.21		0.50	
Uniform Delay, d1		15.5		18.8	16.1			13.5	9.4		11.1	
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.1		5.4	0.3			9.2	0.7		2.8	
Delay (s)		15.7		24.2	16.4			22.7	10.1		13.9	
Level of Service		B		C	B			C	B		B	
Approach Delay (s)		15.7			20.4			18.0			13.9	
Approach LOS		B			C			B			B	
Intersection Summary												
HCM 2000 Control Delay			17.8									B
HCM 2000 Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			60.2								14.2	
Intersection Capacity Utilization			77.7%									D
ICU Level of Service												
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

6: Future Road & Walker Road West

02/24/2022



















Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↘	↙
Traffic Volume (veh/h)	96	14	19	91	13	18
Future Volume (Veh/h)	96	14	19	91	13	18
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	104	15	21	99	14	20
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			119		252	112
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			119		252	112
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	98
cM capacity (veh/h)			1469		726	942
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	119	120	34			
Volume Left	0	21	14			
Volume Right	15	0	20			
cSH	1700	1469	839			
Volume to Capacity	0.07	0.01	0.04			
Queue Length 95th (m)	0.0	0.3	1.0			
Control Delay (s)	0.0	1.4	9.5			
Lane LOS		A	A			
Approach Delay (s)	0.0	1.4	9.5			
Approach LOS			A			
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization			22.5%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

11: Ivan Avenue & LCBO Site Access & Future Road

02/24/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	42	0	0	46	14	0	0	0	13	0	0
Future Volume (Veh/h)	0	42	0	0	46	14	0	0	0	13	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	46	0	0	50	15	0	0	0	14	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)					74							
pX, platoon unblocked												
vC, conflicting volume	65			46			104	111	46	104	104	58
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	65			46			104	111	46	104	104	58
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	98	100	100
cM capacity (veh/h)	1537			1562			877	779	1023	877	787	1009
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	46	65	0	14								
Volume Left	0	0	0	14								
Volume Right	0	15	0	0								
cSH	1537	1562	1700	877								
Volume to Capacity	0.00	0.00	0.00	0.02								
Queue Length 95th (m)	0.0	0.0	0.0	0.4								
Control Delay (s)	0.0	0.0	0.0	9.2								
Lane LOS				A								
Approach Delay (s)	0.0	0.0	0.0	9.2								
Approach LOS				A								
Intersection Summary												
Average Delay			1.0									
Intersection Capacity Utilization			13.3%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

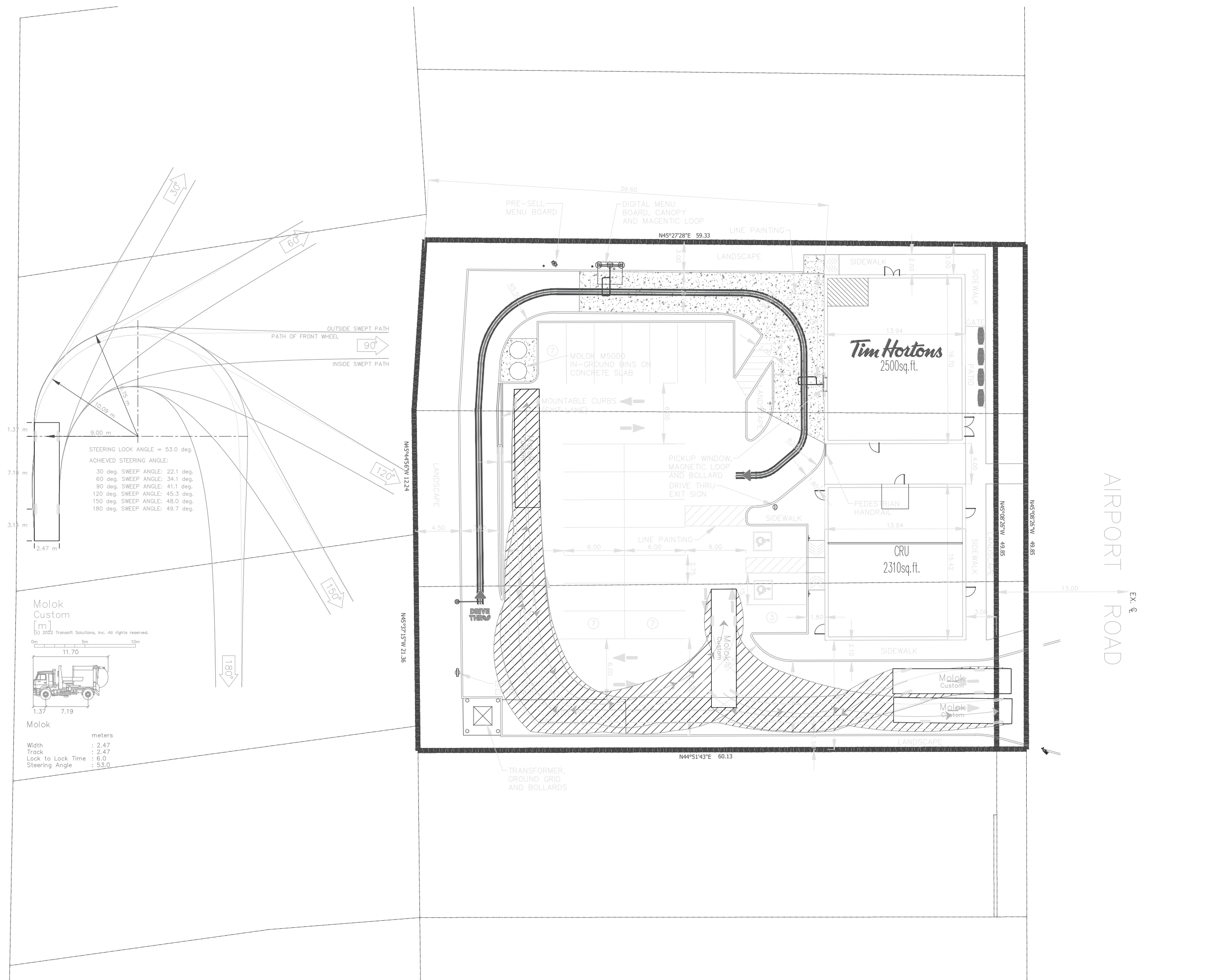
13: Future Road & Site Access

02/24/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	31	0	14	33	0
Future Volume (Veh/h)	13	31	0	14	33	0
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	34	0	15	36	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	80	8			15	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	80	8			15	
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	97			98	
cM capacity (veh/h)	902	1075			1603	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	48	15	36			
Volume Left	14	0	36			
Volume Right	34	15	0			
cSH	1018	1700	1603			
Volume to Capacity	0.05	0.01	0.02			
Queue Length 95th (m)	1.1	0.0	0.5			
Control Delay (s)	8.7	0.0	7.3			
Lane LOS	A		A			
Approach Delay (s)	8.7	0.0	7.3			
Approach LOS	A					
Intersection Summary						
Average Delay			6.9			
Intersection Capacity Utilization		18.5%		ICU Level of Service		A
Analysis Period (min)			15			

Appendix I – AutoTURN Maneuverability



KEY PLAN

BENCHMARK

REVISIONS

NO	REVISION	DATE	BY

STAMP



PROJECT NAME:
 Restaurant & Commercial Development
 16054-16060 Airport Road
 (Town of Caledon)

DRAWING TITLE:
 AutoTURN Analysis
 (Molok Truck)

DESIGN BY: K.A.	DATE: April 13, 2022
CHECKED BY: R.P.	PROJECT NO. NT-19-052
DRAWN BY: K.A.	DRAWING NO. Figure 7-1
SCALE: NTS	

KEY PLAN

BENCHMARK

REVISIONS

NO	REVISION	DATE	BY

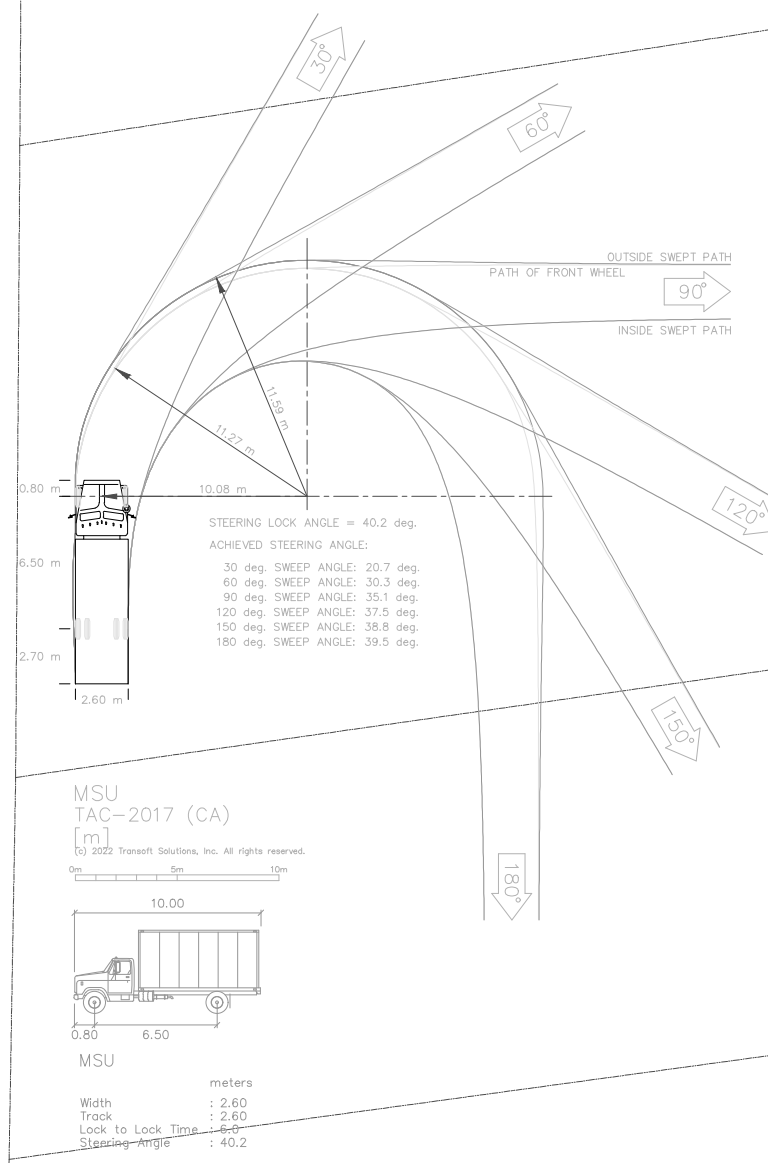
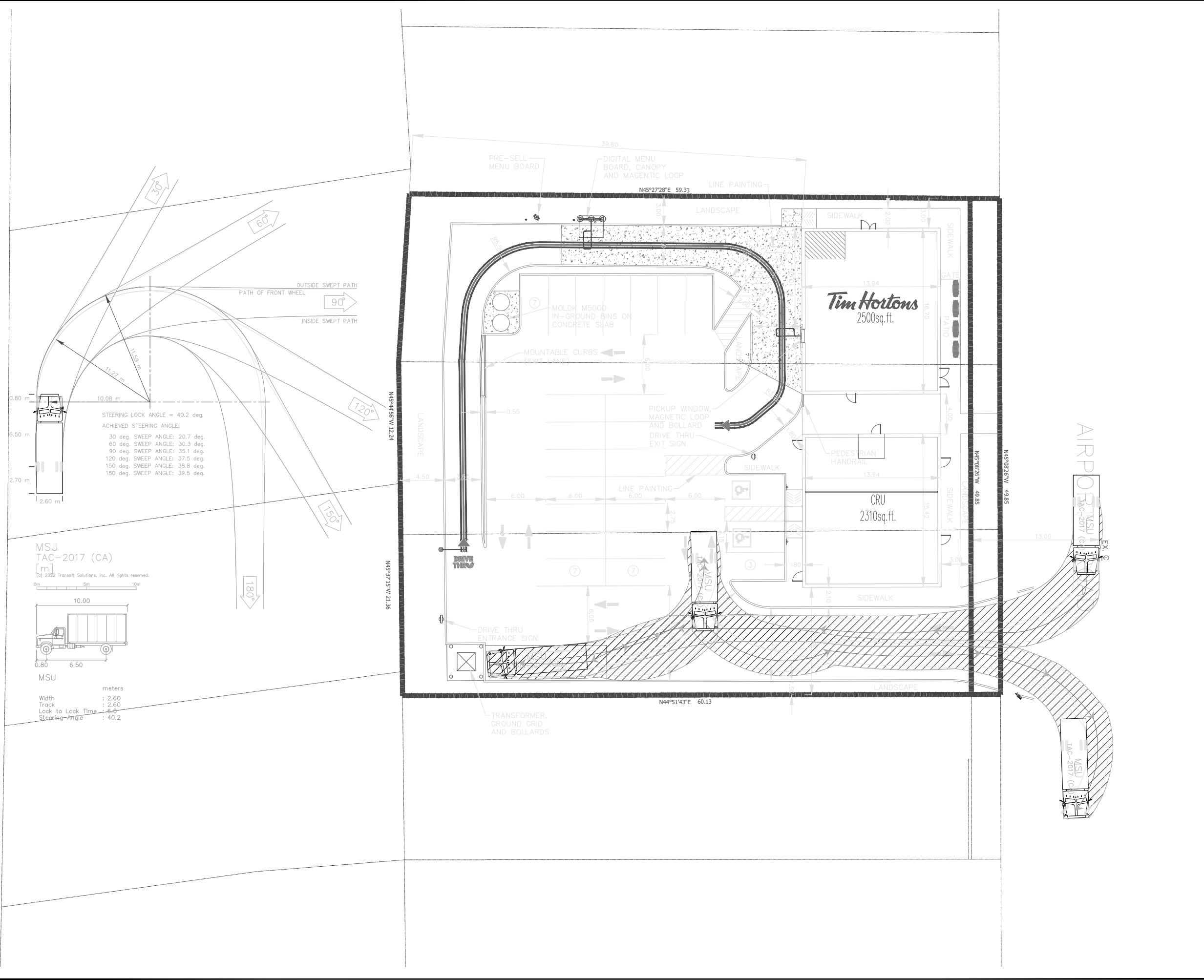
STAMP



PROJECT NAME:
 Restaurant & Commercial Development
 16054-16060 Airport Road
 (Town of Caledon)

DRAWING TITLE:
 AutoTURN Analysis
 (MSU TAC-2017)

DESIGN BY: K.A.	DATE: April 13, 2022
CHECKED BY: R.P.	PROJECT NO. NT-19-052
DRAWN BY: K.A.	DRAWING NO. Figure 7-2
SCALE: NTS	



Appendix J – Correspondence with Peel Region

Marc Dimayuga

From: Shan, Rosalie <rosalie.shan@peelregion.ca>
Sent: November-18-21 4:16 PM
To: Michael Vani
Cc: Hamdani, Hashim; Homagain, Abiral; Richard Pernicky
Subject: Peel Region Traffic Feedback - Airport Road ROW - 16060/16054 Airport Road
Attachments: Airport Rd - Design.dgn

Good afternoon Michael,

This is to update you the information Region collected regarding the questions occurred at the meeting early this week.

First of all, I would like to clarify there's some confusing concepts we went through.

1. Official Plan land dedication – based on the ultimate needs for airport Road, which identifies 31.5 meters right-of-way requirement for the subject site.
However, we just went through the functional design practice and demonstrated 26 meters right-of-way is acceptable. As so, the land dedication requirement will be 26 meters (13 meters measured from the centerline of Airport Road).
2. Peel Region's on going EA design.
Please note the EA is for corridor improvement and not for widening of Airport Road. The EA design is based on the current 20 meters right-of-way.

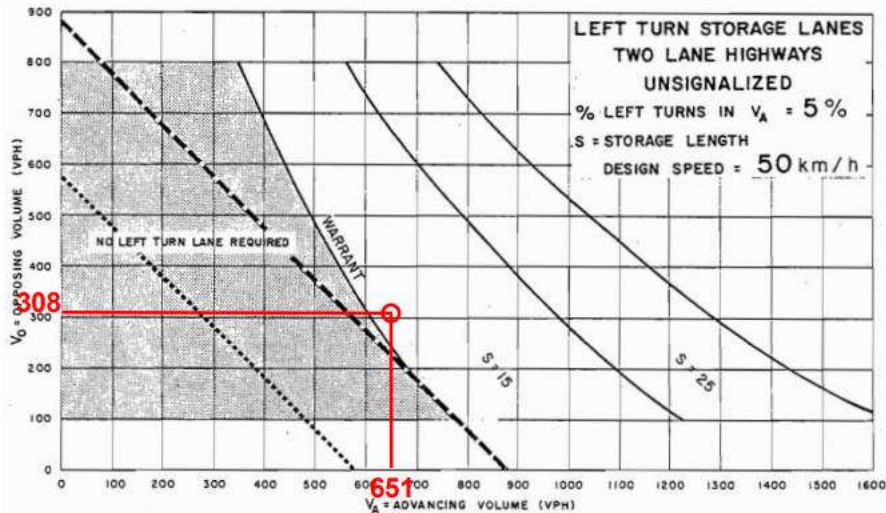
The current conflict we have is the required left-turn lane to the site VS on-street parking spots as per the EA design.

- Left-turn lane

The Region did take reference to the TIS prepared by NexTrans dated 2020 Nov. (analysis below). The study does not recommend a left-turn lane. However, taking consideration of the existing traffic operation and surrounding new subdivision development, the Region will still require a left-turn lane to provide refuge area where vehicles can wait for a safe turning gap and not blocking the through lane.

As shown below in **Figure 5-3**, the projected traffic volumes intersect right of the warrant line area of the nomograph. Since our left turn percentage for the proposed development is 2% (i.e. 13 vehicles turning left into the site) and the nomographs do not represent percentages lower than 5% (i.e. 2.5 times greater than the percentage of the proposed development), it is our opinion a left turn lane is not required for the proposed development.

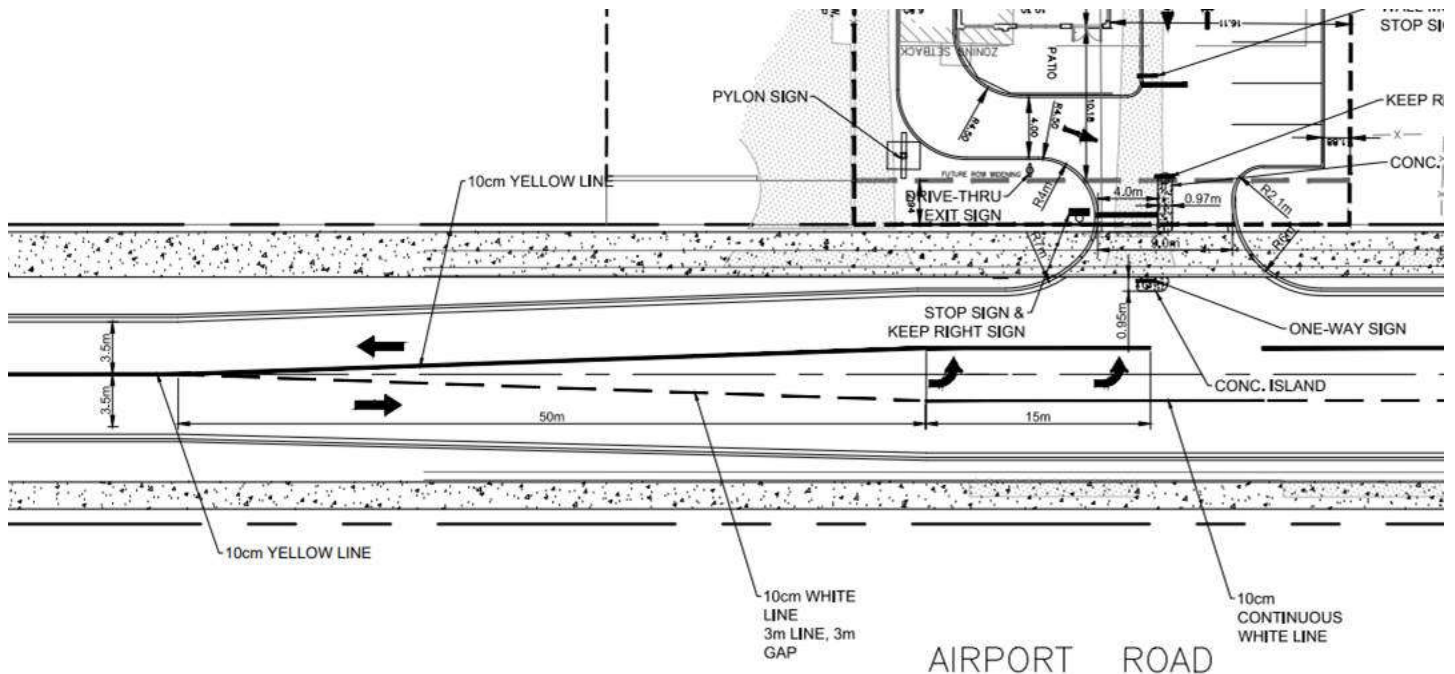
Figure 5-3 - Left Turn Storage Lane Warrants (Nomograph)



- Next step –

A new functional engineering design for the left-in, right-in/right-out access is required to better understand the impact of the on-street parking spots.

The design shall reflect the new right-of-way (13 meters from the centerline) and overlay with current EA design. (attached). Once we have the design, we can take it back to EA group and also Town of Caledon to see if there’s possibility of reducing those on street parking spots.



Please let me know if you have any questions or need more information on this. Thank you.

Regards,

Rosalie Shan, P.Eng., MScE

Technical Analyst

Traffic Development & Permits

Region of Peel

10 Peel Centre Drive Suite B, 4th Floor

Brampton, ON L6T 4B9

905 791-7800 Ext. 7999



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