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Transportation Impact Study

PROPOSED PLACE OF WORSHIP DEVELOPMENT

6939 King Street
TOWN OF CALEDON, ON

November 26, 2020
Project No: NT-20-009

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NextEng Consulting Group Inc.

November 26, 2020

Swaminarayan Mandir Vasna Sanstha Canada
114 Yoryork Drive
North York, ON M9L 1X6

Attention: Swaminarayan Mandir Vasna Sanstha

Re: Transportation Impact Study
Proposed Place of Worship Development
6939 King Street, Caledon ON
Our Project No. NT-20-009

NexTrans Consulting Engineers was retained by Swaminarayan Mandir Vasna Sanstha (the 'Client') to undertake a Transportation Impact Study in support of an Official Plan and Zoning By-law Amendment applications for the above noted property. Site Plan application will be submitted at a future date.

The subject property is located at the southwest corner of King Street and Centreville Creek Road, municipally known as 6939 King Street, in the Town of Caledon, Ontario. The subject lands are currently occupied by an existing detached dwelling unit. The development proposal is to redevelop the existing lands to a place of worship development with a total floor area of 3,141.72 m^2. A total of 346 parking spaces are proposed on-site. Vehicular access to the site is proposed via one (1) full movement driveway and one (1) right-in / right-out driveway located on King Street, and one (1) full movement driveway located on Centreville Creek Road.

This study concludes that the development proposal can adequately be accommodated by the existing transportation network with minimal traffic impact to the adjacent public roadways. The proposed site accesses will operate at excellent levels of service.

We trust 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:	Reviewed by:	Approved by:
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EXECUTIVE SUMMARY

NexTrans Consulting Engineers was retained by Swaminarayan Mandir Vasna Sanstha (the 'Client') to undertake a Transportation Impact Study in support of an Official Plan and Zoning By-law Amendment applications for the above noted property. Site Plan application will be submitted at a future date. The subject property is located at the southwest corner of King Street and Centreville Creek Road, municipally known as 6939 King Street, in the Town of Caledon, Ontario.

Development Proposal

Subject lands are currently occupied by an existing detached dwelling unit. The development proposal is to redevelop the existing lands to a place of worship development with a total floor area of 3,141.72 m^2. A total of 346 parking spaces are proposed on-site. Vehicular access to the site is proposed via one (1) full movement driveway and one (1) right-in / right-out driveway located on King Street, and one (1) full movement driveway located on Centreville Creek Road.

Traffic Analysis

The proposed development is anticipated to generate 300 two-way trips (150 inbound and 150 outbound) during the AM peak hours and 300 two-way trips (150 inbound and 150 outbound) during the PM peak hours.

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 area intersection and proposed vehicular access are expected to operate with excellent levels of service, with no critical movements identified.

Access Study and Parking Study

In accordance with Ontario Traffic Manual (OTM) Book 5, we recommend appropriate signage consisting of a STOP sign (Ra-1) and STOP bar be provided on the King Street and Centreville Creek Road egress driveways and DISABLED PARKING PERMIT Signs (Rb-93), ONE-WAY Sign (Rb-21) and NO LEFT TURN Signs (Rb-12) where required.

Based on the information contained in the Town of Caledon Zoning By-law No. 2006-50, a total of 315 parking spaces will be required. The preliminary site plan provides for a total of 345 parking spaces, which results in a technical surplus of 30 parking spaces.

On-Site Circulation Study

AutoTURN software was used to generate a vehicular turning template to confirm and demonstrate the maneuverability of garbage / emergency and delivery vehicles. TheAutoTURN analysis demonstrates that a 10-metre long Garbage/Emergency Truck and 6.4-m long delivery truck can effectively maneuver through the study area.

Access Review

Based on the Peel Region Standards, we recommend a dedicated right turn lane with a 15-m storage lane and 80-m taper, and a dedicated left turn lane with a 30-m storage lane and 105-m taper for the westerly full movement access via King Street. Similarly, we recommend a dedicated right turn lane with a 15-m storage lane and 80-m taper for the easterly right-in / right-out access via King Street.

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1.0 INTRODUCTION

NexTrans Consulting Engineers was retained by Swaminarayan Mandir Vasna Sanstha (the 'Client') to undertake a Transportation Impact Study in support of an Official Plan and Zoning By-law Amendment applications for the above noted property. Site Plan application will be submitted at a future date. The subject property is located at the southwest corner of King Street and Centreville Creek Road, municipally known as 6939 King Street, in the Town of Caledon, Ontario.

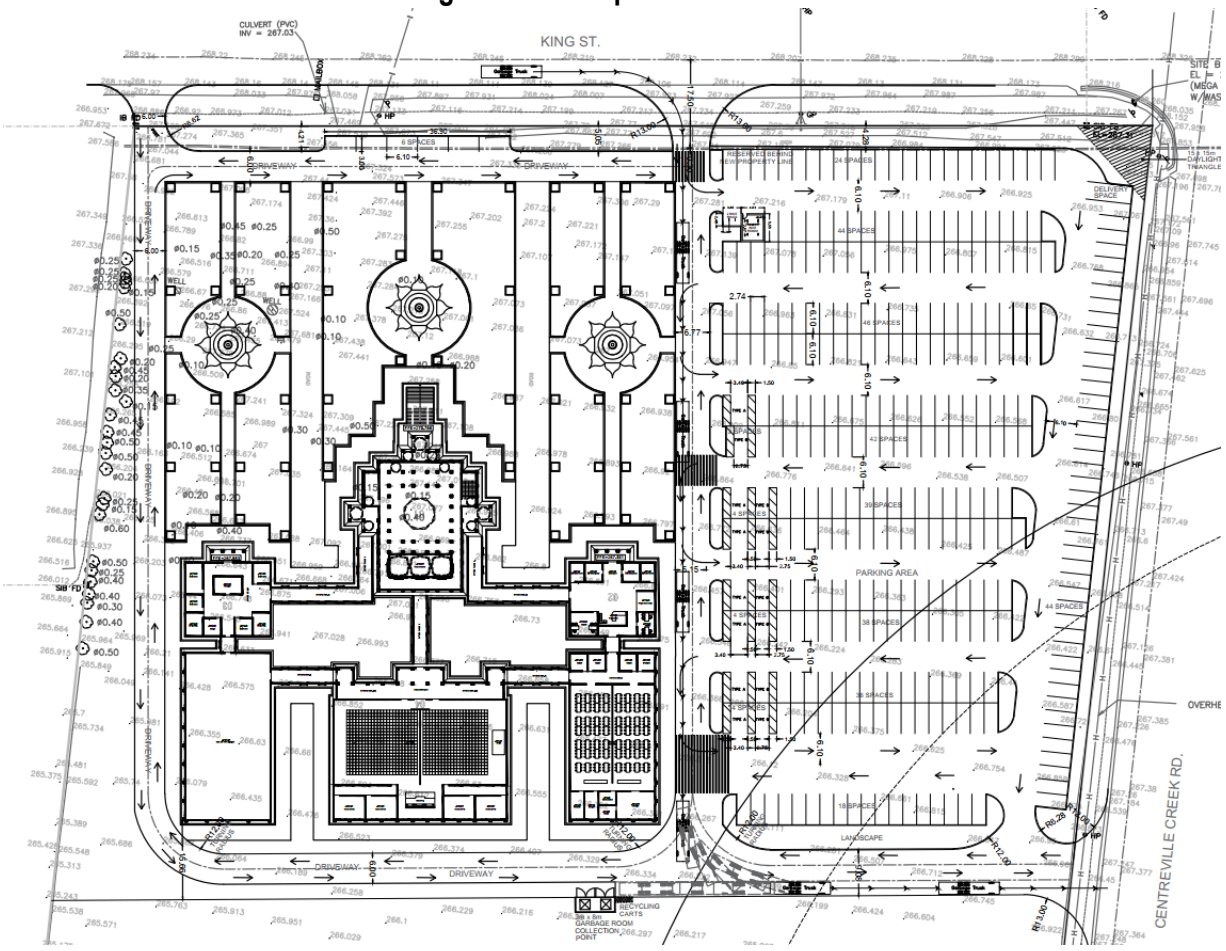
The location of the proposed development is illustrated in **Figure 1-1**.

Figure 1-1 – Site Location

Subject lands are currently occupied by an existing detached dwelling unit. Based on the preliminary site plan, the development proposal is to redevelop the existing lands to a place of worship development with a total floor area of 3,141.72 m^2. A total of 346 parking spaces are proposed on-site. Vehicular access to the site is proposed via one (1) full movement driveway and one (1) right-in / right-out driveway located on King Street, and one (1) full movement driveway located on Centreville Creek Road.

The preliminary site plan is provided in **Figure 1-2**; **Appendix A** also provides a larger scale version of the proposed site plan.

Figure 1-2 – Proposed Site Plan



2.0 EXISTING TRAFFIC CONDITIONS

2.1. Existing Road Network

The subject property is located at the southwest corner of King Street and Centreville Creek Road in the Town of Caledon. The existing road network is described as follows:

King Street: is classified as a Medium Capacity Arterial road (Regional) under the Town of Caledon Official Plan. It has a two (2)-lane cross section with unpaved walkways on both sides of the road, and maintains a posted speed limit of 80 km/h in the vicinity of the subject site.

Centreville Creek Road: is classified as a Collector road (Town) under the Town of Caledon Official Plan. It has a two (2)-lane cross section with unpaved walkways on both sides of the road, and maintains a posted speed limit of 80 km/h south of King Street and 60 km/h north of King Street in the vicinity of the subject site.

2.2. Existing Traffic Volumes

Existing Traffic volumes at the study area intersection of King Street and Centreville Creek Road (Thursday, October 3, 2019) and King Street and Innis Lake Road (Tuesday, May 26, 2020) were obtained from Peel Region 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.

The existing road network and traffic volumes during the weekday AM and PM peak hours are illustrated in **Figure 2-1**. Detailed data sheets are provided in **Appendix B.**

2.3. 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. In accordance to the Region of Peel Synchro Guidelines, dated December 2010, the Peak Hour Factor shall be 1.00 for all movements on all approaches. The detailed results are provided in **Appendix C** and summarized in **Table 2.1**.

Figure 2-1 – Existing Traffic Volumes

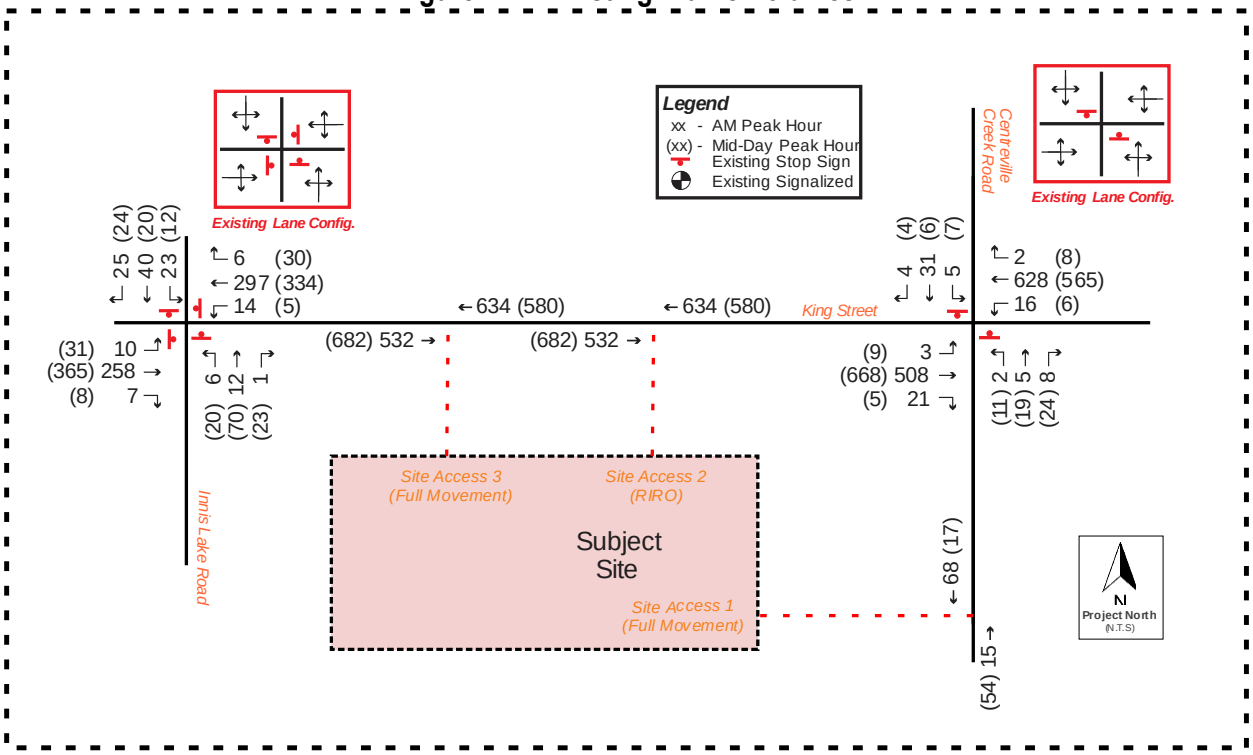


Table 2.1 – Level of Service – Existing Traffic Assessments

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		LOS (v/c)	Delay (s)	Queue (95th m)	LOS (v/c)	Delay (s)	Queue (95th m)
Innis Lake Road and King Street (unsignalized)	NBLTR	A (0.029)	8.6	0.1	B (0.185)	10.2	0.7
	EBLTR	A (0.345)	9.9	1.5	B (0.562)	14.4	3.6
	WBLTR	B (0.394)	10.4	1.9	B (0.532)	14	3.2
	SBLTR	A (0.126)	8.9	0.4	B (0.092)	9.5	0.3
Centreville Creek Road and King Street (unsignalized)	EBLTR	A (<0.01)	0.1	0.1	A (0.01)	0.3	0.2
	WBLTR	A (0.02)	0.4	0.4	A (0.01)	0.2	0.2
	NBLTR	C (0.06)	19.3	1.4	D (0.26)	28.6	7.7
	SBLTR	D (0.21)	29.0	5.9	D (0.10)	29.3	2.6

As summarized in **Table 2.1**, under existing traffic 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

3.1. Background Traffic Growth

Based on communications with Peel Region, a 2% growth rate for years 2021-2031 are estimated based on multiple sources (i.e. Peel Travel Demand forecasting model, ATR and land use / forecasts data. As such, a 2% growth rate has been applied to the through volumes of the study area intersections.

The future (2025) background traffic volumes are provided in **Figure 3-1. Table 3.1** summarizes the level of service at the study area intersections under future background traffic conditions. Detailed output analysis can be found in **Appendix D**.

Figure 3-1 – Future (2025) Background Traffic Volumes

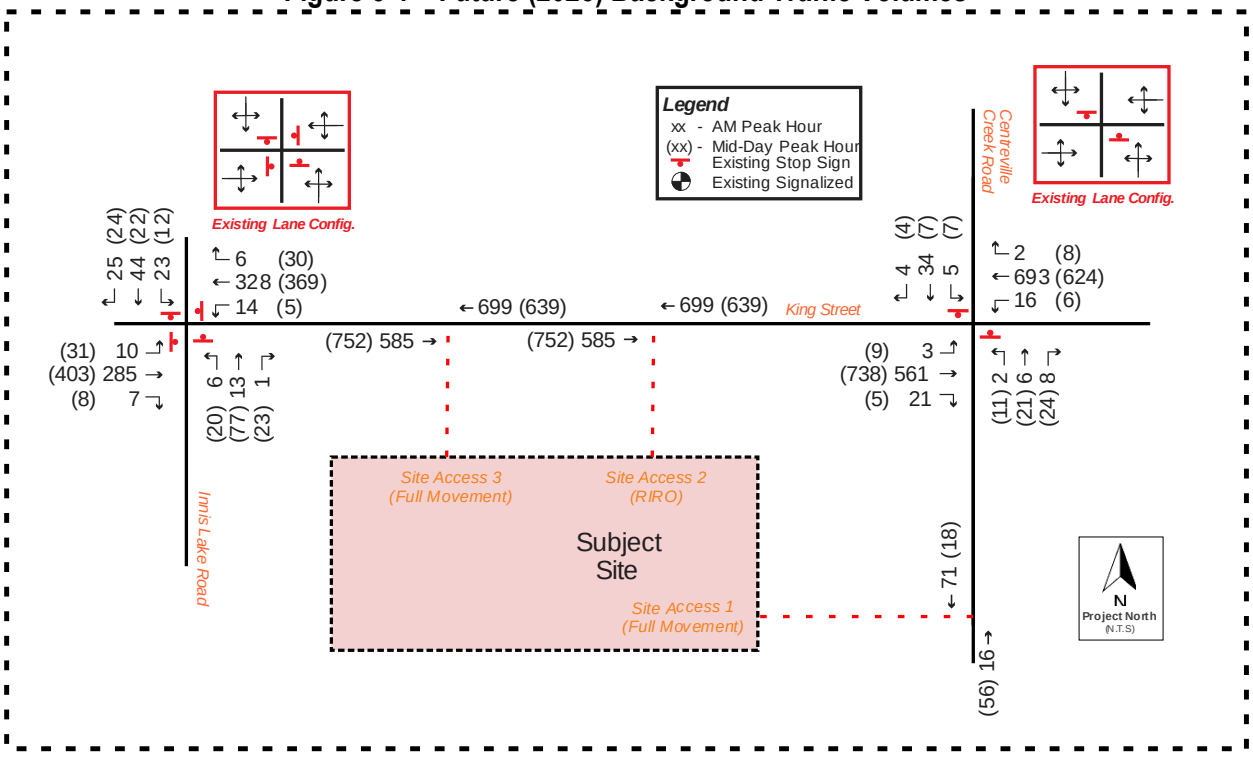


Table 3.1 – Level of Service - Future (2025) Background Traffic Assessments

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		LOS (v/c)	Delay (s)	Queue (95th m)	LOS (v/c)	Delay (s)	Queue (95th m)
Innis Lake Road and King Street (unsignalized)	NBLTR	A (0.031)	8.8	0.1	B (0.204)	10.7	0.8
	EBLTR	B (0.385)	10.4	1.8	C (0.629)	16.6	4.5
	WBLTR	B (0.439)	11.1	2.2	C (0.595)	15.9	4
	SBLTR	A (0.136)	9.1	0.5	A (0.099)	9.9	0.3
Centreville Creek Road and King Street (unsignalized)	EBLTR	A (<0.01)	0.1	0.1	A (0.01)	0.3	0.2
	WBLTR	A (0.02)	0.4	0.4	A (0.01)	0.2	0.2
	NBLTR	C (0.07)	22.5	1.8	E (0.33)	36.2	10.2
	SBLTR	E (0.27)	35.5	7.8	E (0.13)	36.1	3.4

As summarized in **Table 3.1**, under future background traffic conditions, the study area intersection will continue to operate at excellent levels of service during both peak periods with no critical movements identified.

4.0 SITE TRAFFIC

The development proposal is to redevelop the existing lands to a place of worship development with a total floor area of 3,141.72 m^2. Since the *Trip Generation Manual, 10th Edition* published by the Institute of Transportation Engineers (ITE) does not provide information with respect to Temples, and conducting proxy site surveys would not represent typical conditions due to the COVID-19 Pandemic, a first principles' analysis has been conducted based on the information received from the owner.

Based on discussion with the owner, the Temple will remain open all weekdays from 7:00 AM to 8:30 PM, and weekends and holidays from 7:00 AM to 9:30 PM. Weekdays will have approximately 75 – 100 people visiting throughout the day, and weekends and holidays will have approximately 350 – 400 people a day (i.e. maximum of 300 people at any given time). As such, as a conservative approach, the proposed development is anticipated to generate 300 two-way trips (150 inbound and 150 outbound) during the AM peak hours and 300 two-way trips (150 inbound and 150 outbound) during the PM peak hours.

The assumptions for the trip distribution rates are based on the existing turning movement counts. As a result, site trip distribution is summarized for the inbound and outbound site traffic movements during the morning and mid-day peak hours in **Tables 4.1, 4.2** and **4.3** with the trip assignment illustrated in **Figure 4-1**.

Table 4.1 – Site Traffic Trip Distribution (King Street and Site Access)

Direction	Via	AM Peak Period		PM Peak Period	
		Inbound	Outbound	Inbound	Outbound
East	King Street	46%	46%	54%	54%
West	King Street	54%	54%	46%	46%
Total		**100%**	**100%**	**100%**	**100%**

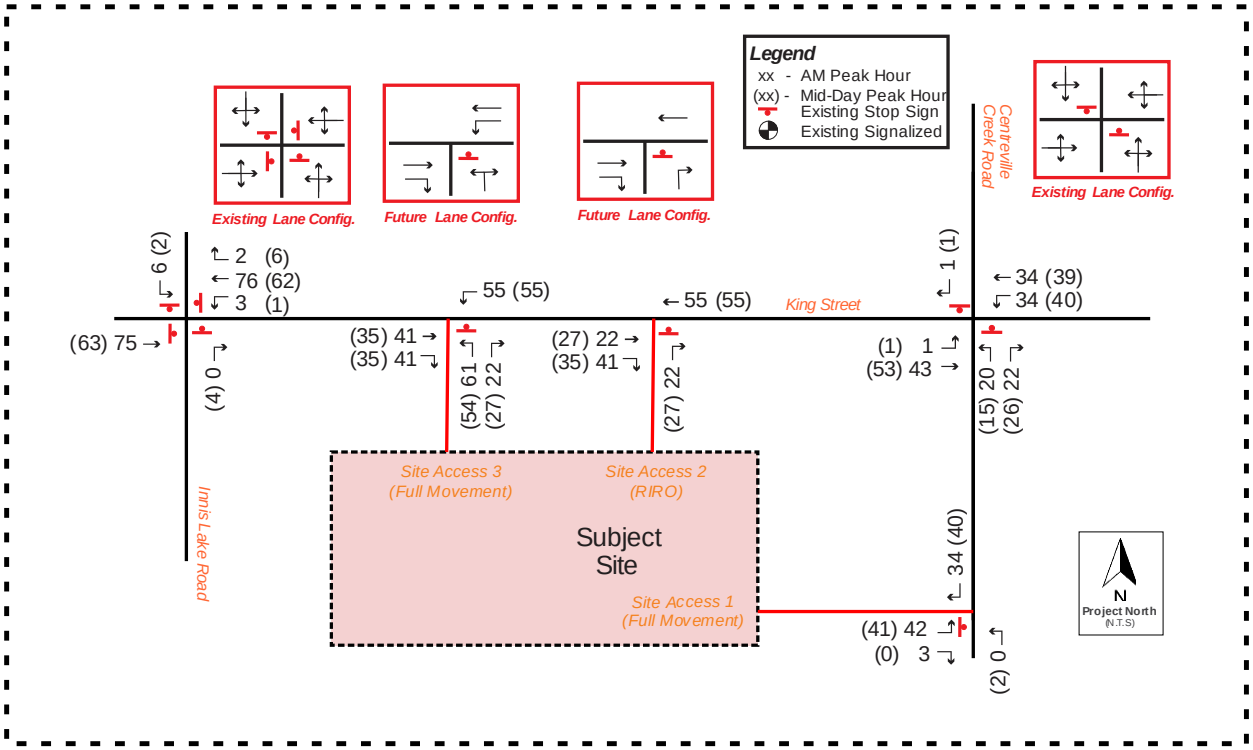
Table 4.2 – Site Traffic Trip Distribution (King Street and Centreville Creek Road)

Direction	Via	AM Peak Period		PM Peak Period	
		Inbound	Outbound	Inbound	Outbound
North	Centreville Creek Road	1%	1%	1%	1%
South	Centreville Creek Road	0%	4%	2%	1%
East	King Street	99%	95%	97%	98%
Total		**100%**	**100%**	**100%**	**100%**

Table 4.3 – Site Traffic Trip Distribution (King Street and Innis Lake Road)

Direction	Via	AM Peak Period		PM Peak Period	
		Inbound	Outbound	Inbound	Outbound
North	Innis Lake Road	8%	2%	3%	8%
South	Innis Lake Road	0%	4%	6%	1%
West	King Street	92%	94%	91%	91%
Total		**100%**	**100%**	**100%**	**100%**

Figure 4-1 – Site Generated Traffic Volumes



5.0 FUTURE TOTAL TRAFFIC CONDITIONS

The forecasted 2025 future total traffic volumes (future background traffic volumes plus site generated traffic volumes) are illustrated in **Figures5-1,** and were analyzed using Synchro 10 software. The detailed calculations are provided in **Appendix E** and summarized in **Table 5.1**.

Figure 5-1 – Future (2025) Total Traffic Volumes

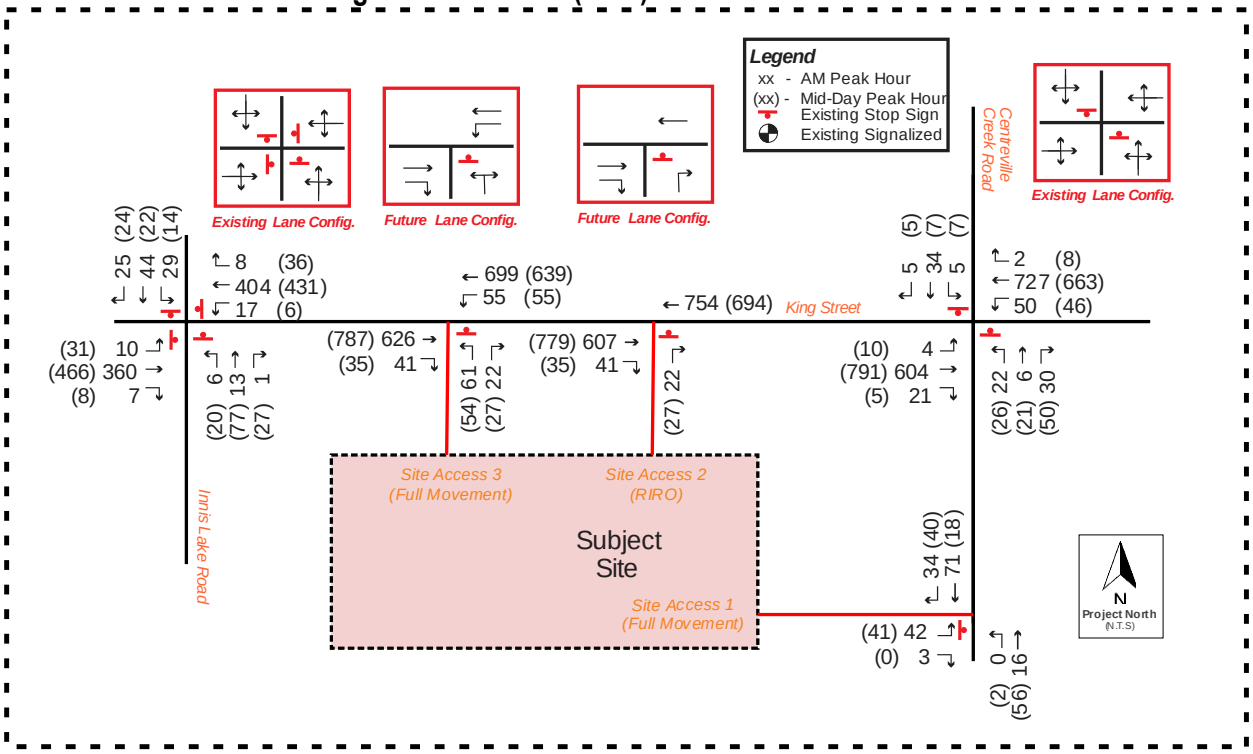


Table 5.1 – Level of Service – Future (2025) Total Traffic Assessments

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		LOS (v/c)	Delay (s)	Queue (95th m)	LOS (v/c)	Delay (s)	Queue (95th m)
Innis Lake Road and King Street (unsignalized)	NBLTR EBLTR WBLTR SBLTR	A (0.034) B (0.495) B (0.559) A (0.155)	9.2 12.3 13.4 9.8	0.1 2.7 3.4 0.5	A (0.078) B (0.55) C (0.689) A (0.119)	9.6 13.9 18.3 9.9	0.3 3.3 5.5 0.4
Centreville Creek Road and King Street (unsignalized)	EBLTR WBLTR **NBLTR** **SBLTR**	A (0.01) A (0.05) E (0.39) E (0.35)	0.1 1.4 44.2 48.1	0.1 1.3 12.8 10.7	A (0.01) A (0.06) **F (0.72)** **F (0.20)**	0.3 1.7 **80.6** **53.2**	0.3 1.5 **31.2** **5.4**
King Street and Site Access 3 (unsignalized)	WBL NBLR	A (0.04) E (0.45)	9.1 39.9	0.9 16.1	A (0.07) E (0.48)	9.8 47.2	1.7 17.3
King Street and Site Access 2 (unsignalized)	NBR	B (0.04)	12.6	1.1	B (0.07)	14.8	1.7
Centreville Creek Road and Site Access 1 (unsignalized)	EBLR	A (0.05) -	9.2 -	1.2 -	A (0.05) A (<0.01)	9.2 0.3	1.1 0.0

As summarized in **Table 5.1**, under future total traffic conditions, the study area intersections will continue to operate at acceptable levels of service during both peak periods with no critical movements, with the exception of the northbound and southbound shared lane at the Centreville Creek Road and King Street intersection experiencing a failing level of service during the PM peak hour. It should be noted that this movement has an acceptable volume to capacity ratio of 0.72 and 0.20 for the northbound and southbound movements, respectively, which indicates ample gap opportunities are made available for motorists.

5.1. FUTURE TOTAL TRAFFIC CONDITIONS (SENSITIVITY ANALYSIS)

Based on the information contained in the Planning Application Requirements Checklist, the Region is not supportive of an access off King Street, since adequate access is available via Centreville Creek Road. As such, a sensitivity analysis was conducted to determine whether the subject site can function with one (1) access via Centreville Creek Road only. The trip assignment for site traffic is illustrated in **Figure 5-2**. The forecasted 2025 future total traffic volumes (future background traffic volumes plus site generated traffic volumes) are illustrated in **Figure 5-3,** and were analyzed using Synchro 10 software. The detailed calculations are provided in **Appendix F** and summarized in **Table 5.2**.

Figure 5-2 – Site Generated Traffic Volumes (Sensitivity Analysis)

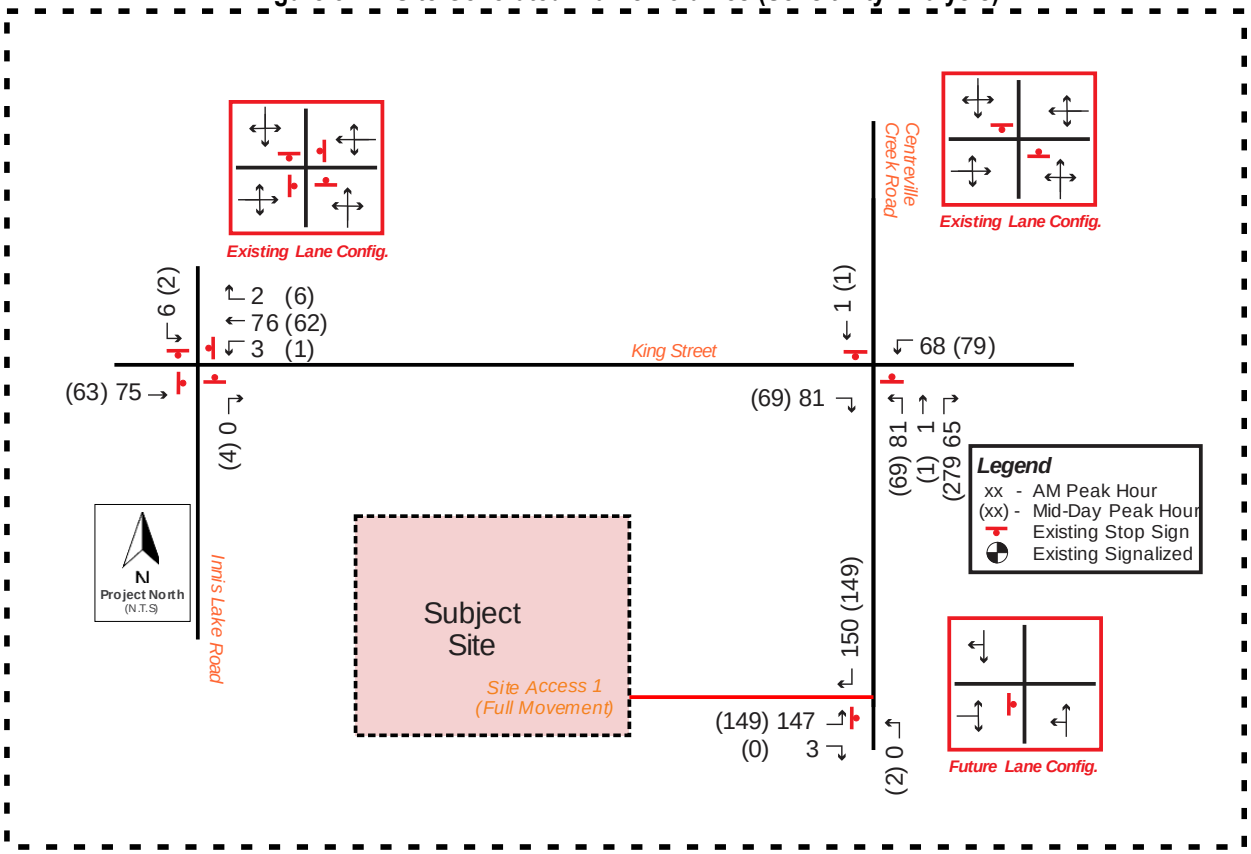


Figure 5-3 – Future (2025) Total Traffic Volumes (Sensitivity Analysis)

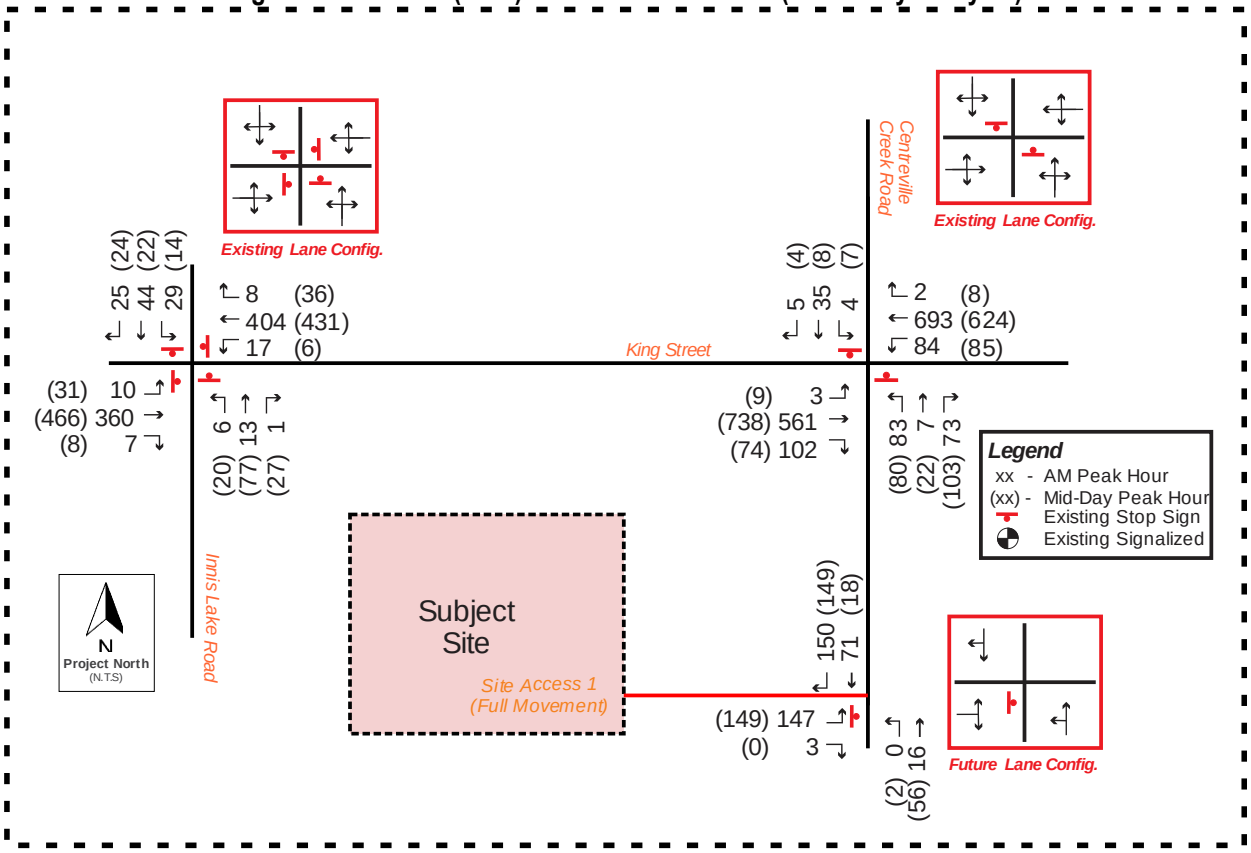


Table 5.2 – Level of Service – Future (2025) Total Traffic Assessments (Sensitivity Analysis)

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		LOS (v/c)	Delay (s)	Queue (95th m)	LOS (v/c)	Delay (s)	Queue (95th m)
Innis Lake Road and King Street (unsignalized)	NBLTR EBLTR WBLTR SBLTR	A (0.034) B (0.495) B (0.559) A (0.155)	9.2 12.3 13.4 9.8	0.1 2.7 3.4 0.5	B (0.244) C (0.74) C (0.72) B (0.11)	11.4 22.3 21.4 10.5	0.8 6.7 6.1 0.4
Centreville Creek Road and King Street (unsignalized)	EBLTR WBLTR **NBLTR** **SBLTR**	A (<0.01) A (0.09) **F (1.41)** **F (0.41)**	0.1 2.3 **298.3** **61.0**	0.1 2.3 **86.3** **13.2**	A (0.01) A (0.12) **F (1.75)** **F (0.27)**	0.3 3.0 **435.6** **75.3**	0.2 3.0 **120.5** **7.4**
Centreville Creek Road and Site Access 1 (unsignalized)	EBLR NBLT	B (0.18) -	10.3 -	5.0 -	B (0.18) A (<0.01)	10.2 0.3	4.9 0.0

As summarized in **Table 5.2**, under future total traffic conditions, the study area intersection will continue to operate at excellent levels of service during both peak periods with no critical movements, with the exception of the southbound shared lane and northbound shared lane at the Centreville Creek Road and King Street intersection experiencing a failing level of service during the AM and PM peak hours. It should be noted that the southbound movement has an acceptable volume to capacity ratio of 0.41 during the AM peak hour (i.e. increase of 0.20 from existing conditions), as well as an acceptable volume to capacity ratio of 0.27 during the PM peak hour (i.e. increase of 0.17 from existing conditions), which indicates ample gap opportunities are made available for motorists; however, the northbound movement has a v/c ratio greater than 1.00 during the AM and PM peak periods. As such, when comparing the two scenarios (i.e. no access via King Street, access solely via Centreville Creek Road vs. providing access via King Street as well as Centreville Creek Road), it is our opinion the second access via King Street is required in order to reduce the congestion on the Centreville Creek Road and King Street intersection.

6.0 PARKING ASSESSMENT

The Town-wide Zoning By-law No. 2006-50, Section 5 – Parking, Loading and Delivery, has been adopted by the Town of Caledon and it was revised on March 14, 2016. Based on the information contained in the Town of Caledon Zoning By-law, the technical parking requirement for the proposed development is detailed in **Table 6.1**:

Table 6.1 – Vehicle Parking Requirements (ZBL 2006-50)

Use	GFA	Rate	Parking Requirement	Parking Provided	Difference
Place of Worship	3,141.72 m^2	1 parking space per 10 m^2	315	345	+30
Total			**315**	**345**	**+30**

Based on the information contained in the Town of Caledon Zoning By-law No. 2006-50, a total of 315 parking spaces will be required. The preliminary site plan provides for a total of 345 parking spaces, which results in a technical surplus of 30 parking spaces.

7.0 SITE PLAN REVIEW

7.1. Site Access

In accordance with Ontario Traffic Manual (OTM) Book 5, we recommend appropriate signage consisting of a STOP sign (Ra-1) and STOP bar be provided on the King Street and Centreville Creek Road egress driveways and DISABLED PARKING PERMIT Signs (Rb-93), ONE-WAY Sign (Rb-21) and NO LEFT TURN Signs (Rb-12) where required, see **Figure 7-1.**

7.2. Site Circulation Analysis

AutoTURN software was used to generate a vehicular turning template to confirm and demonstrate the accessibility of the parking spaces and maneuverability of garbage / emergency vehicles. TheAutoTURN analysis demonstrates that a 10-metre long Garbage/Emergency Truck and a 6.4-m Delivery Truck can effectively maneuver through the study area, and parking spaces. **Figures 7.2** and **7.3** depict the AutoTURN maneuverability of an LSU TAC-2017 delivery truck and HSU TAC-2017 emergency / garbage truck, respectively.

7.3. 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, the development proposal is to redevelop the existing lands to a place of worship development with a total floor area of 3,141.72 m^2. 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 westbound direction of 10% or less along with a 100 km/h design speed was used during the afternoon peak hour at the proposed access to determine the need of a left turn lane.

Percentage of Left Turning Traffic = $\frac{VL*100}{Va}$

= $\frac{55*100}{754}$

= 7%

Left Turning Traffic Volume, V_L = 55 vph

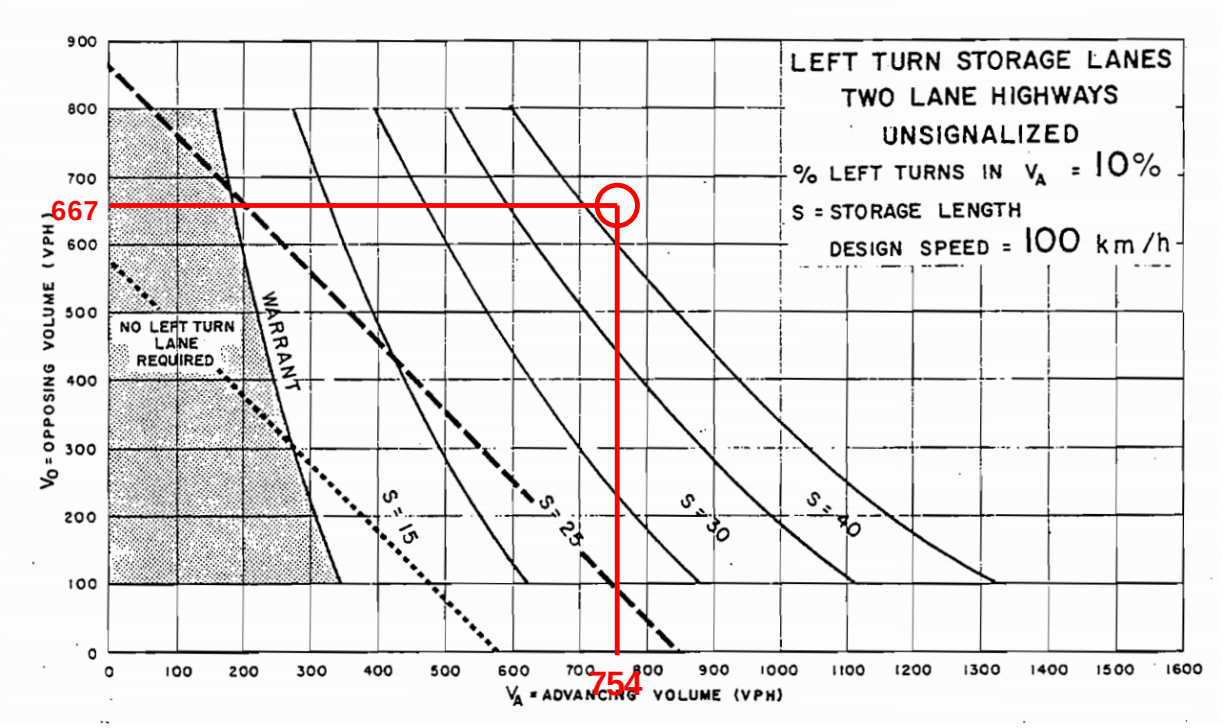
Advancing Traffic Volume,V_A = 754 vph

Opposing Traffic Volume,V_O = 667 vph

Design Speed = 100 km/h

As shown below in **Figure 7-4**, the projected traffic volumes intersect right of the warrant line area of the nomograph. As such, in accordance to the TAC Standards, a dedicated left-turn lane is warranted for the full movement access.

Figure 7-4 - Left Turn Storage Lane Warrants (Nomograph)



7.4. Left Turn Lane Analysis

In accordance to the Region of Peel Typical Design for a Full Moves Access drawing number 5-1-6, provided in **Appendix G,** the taper length is based on the design speed of the roadway using the TAC Manual standards, and the storage length is based on the proposed turning volumes; however, must be a minimum of 30-m.

Based on **Table 5.1**, the eastbound left turn 95th queue results indicate a maximum queue length of 1.7-m during the PM peak period. As such, a minimum of 30-m is required for the storage lane. In accordance to the TAC Manual Table 2.3.8.1, provided in **Appendix H,** for a design speed of 100km/hr, the taper ratio is 30:1 and is based on the width of the lane. As such, with a 3.5-m wide lane, a 105-m taper length is required.

7.5. Right Turn Lane Analysis

In accordance to the Region of Peel Typical Design for a Right In / Out Access with Directional Islands (Roads Without Divided Centre Median Island) drawing number 5-1-4, provided in **Appendix G,** the taper length is based on the design speed of the roadway using the TAC Manual standards, and the storage length is based on the proposed turning volumes; however, must be a minimum of 30-m.

Since there is no opposing traffic for the dedicated eastbound right-turning movement, and the inbound right-turning traffic is minimal, it is our opinion a 15-m storage length is sufficient to accommodate the movements. In accordance to the TAC Manual Table E7-1, provided in **Appendix H,** for a design speed of 100km/hr, a taper length of 80-m is required. Detailed design can be provided in future submission, if required.

8.0 TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) refers to variety of strategies to reduce congestion, minimize the number of single-occupant vehicles, encourage non-auto modes of travel, and reduce vehicle dependency to create a sustainable transportation system. Typically, TDM strategies are for developments where large quantities of people congregate in one origin or destination.

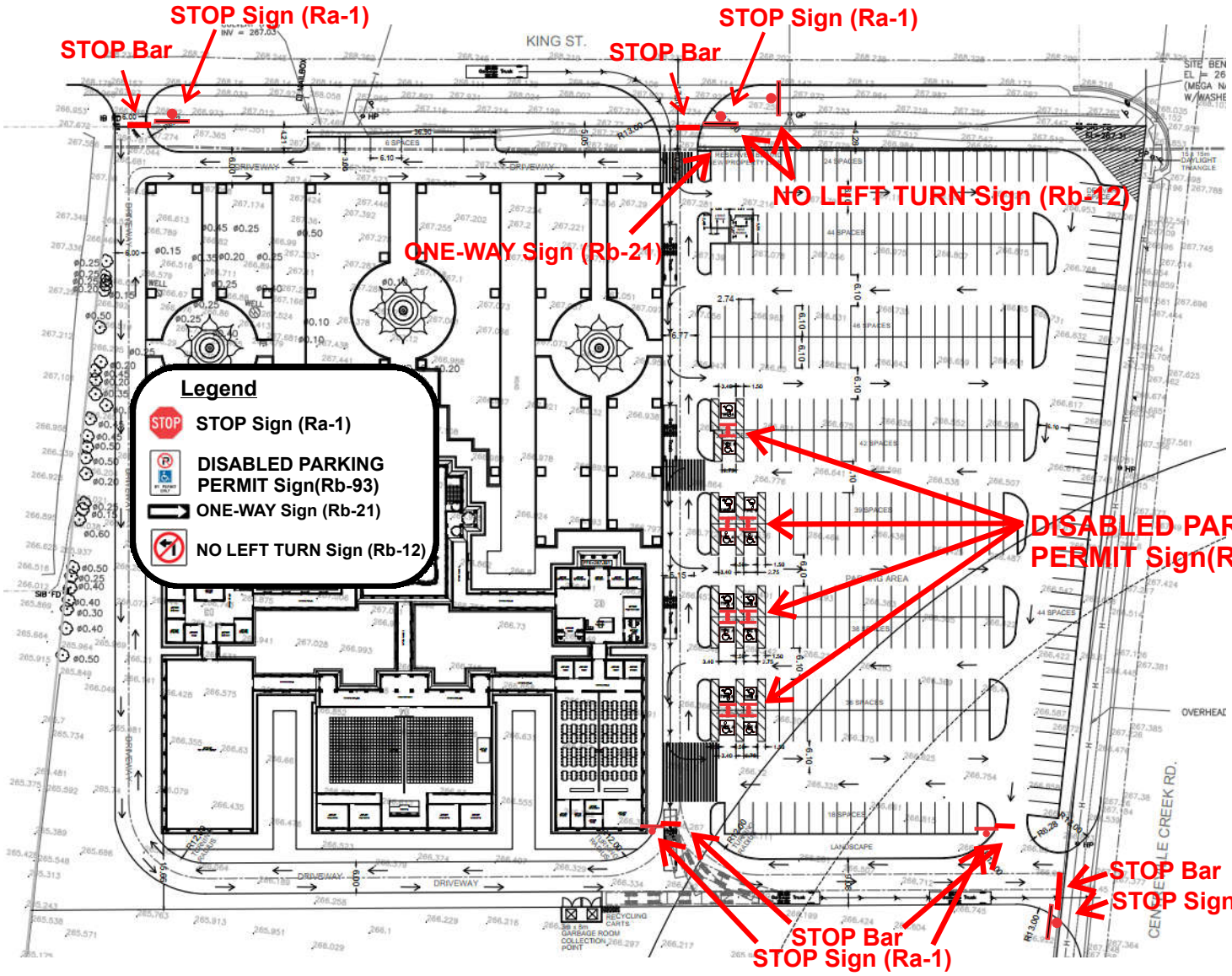
Based on our experience, excessive parking supply imposes environmental costs, contradicts community development objectives for more livable and walkable communities, and tends to increase driving and discourage the use of alternative mode of travel. It is anticipated that the combination of reduced parking supply and an efficient public transit system will encourage the use of alternative modes of travel.

9.0 CONCLUSION

The findings and conclusions of our analysis are as follows:

- The development proposal is to redevelop the existing lands to a place of worship development with a total floor area of 3,141.72 m^2. A total of 346 parking spaces are proposed on-site. Vehicular access to the site is proposed via one (1) full movement driveway and one (1) right-in / right-out driveway located on King Street, and one (1) full movement driveway located on Centreville Creek Road.
- The proposed development is anticipated to generate 300 two-way trips (150 inbound and 150 outbound) during the AM peak hours and 300 two-way trips (150 inbound and 150 outbound) during the PM peak hours.
- 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 intersection and access are expected to continue to operate with excellent levels of service.
- Based on the information contained in the Town of Caledon Zoning By-law No. 2006-50, a total of 315 parking spaces will be required. The preliminary site plan provides for a total of 345 parking spaces, which results in a technical surplus of 30 parking spaces.
- To ensure safe traffic operation in the area, we recommend appropriate signage consisting of a STOP sign (Ra-1) and STOP bar be provided on the King Street and Centreville Creek Road egress driveways and DISABLED PARKING PERMIT Signs (Rb-93), ONE-WAY Sign (Rb-21) and NO LEFT TURN Signs (Rb-12) where required.
- TheAutoTURN analysis demonstrates that an LSU TAC-2017 delivery truck and HSU TAC-2017 emergency / garbage truck can effectively maneuver through the site.
- Based on the Peel Region Standards, we recommend a dedicated right turn lane with a 15-m storage lane and 80-m taper, and a dedicated left turn lane with a 30-m storage lane and 105-m taper for the westerly full movement access via King Street. Similarly, we recommend a dedicated right turn lane with a 15-m storage lane and 80-m taper for the easterly right-in / right-out access via King Street.

Figure 7-1: Signage Plan



HALL FLOOR AREA :1,002.8 SQ.M.(10,755 SQ.FT)
FLOOR AREA :3,141.72 SQ.M. (33,903 SQ.FT)

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

KING ST.

CULVERT (PVC)
INV = 267.03

SITE BENCHMARK
EL = 268.26
(MEGA NAIL
W/WASHER)

SIB FD EL=267.31

IB FD

SIB FD

6 SPACES

DRIVEWAY

RESERVED BEHIND NEW PROPERTY LINE

24 SPACES

15 x 15m DAYLIGHT TRIANGLE

44 SPACES

46 SPACES

42 SPACES

39 SPACES

4 SPACES

PARKING AREA

38 SPACES

36 SPACES

18 SPACES

LANDSCAPE

WELL

ROAD

DRIVEWAY

R12.00 TURNING RADIUS

RECYCLING CARTS

3m x 8m GARBAGE ROOM COLLECTION POINT

OVERHEAD WIRES

CENTREVILLE CREEK RD.

6.40

0.80 3.40

LSU

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.3

OUTSIDE SWEPT PATH
PATH OF FRONT WHEEL
INSIDE SWEPT PATH

0.80 m
3.40 m
2.20 m
5.25 m

STEERING LOCK ANGLE = 40.3 deg.
ACHIEVED STEERING ANGLE:
30 deg. SWEEP ANGLE: 20.7 deg.
60 deg. SWEEP ANGLE: 30.4 deg.
90 deg. SWEEP ANGLE: 35.2 deg.
120 deg. SWEEP ANGLE: 37.7 deg.
2.60 m150 deg. SWEEP ANGLE: 39.0 deg.
180 deg. SWEEP ANGLE: 39.7 deg.

LSU
TAC-2017 (CA)
[m]

KEY PLAN

BENCHMARK

REVISONS

NO	REVISION	DATE	BY

STAMP

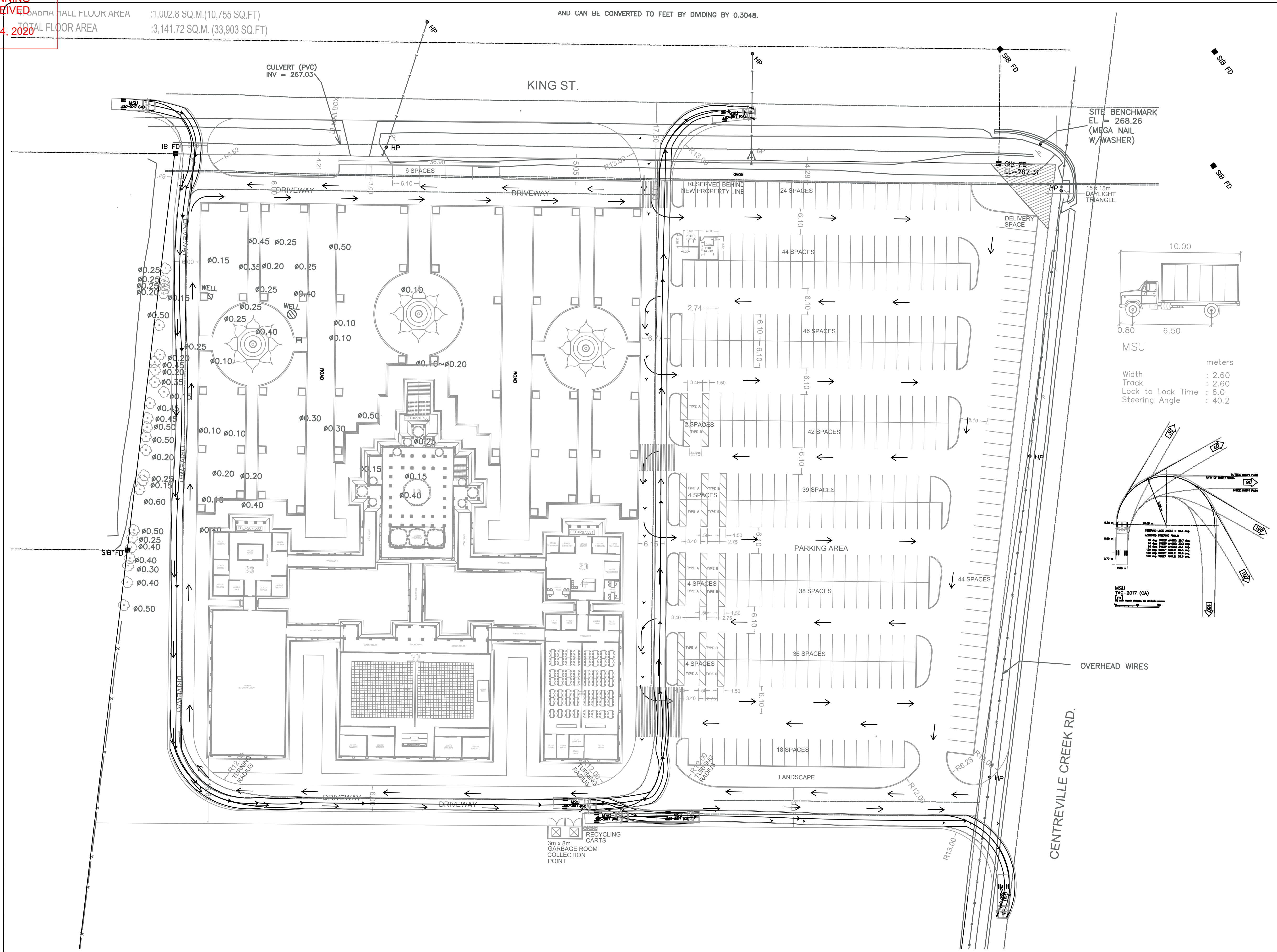
nexTrans
CONSULTING ENGINEERS
520 Industrial Parkway South, Suite 201
Aurora, Ontario L4G 6W8
Tel: 905-503-2563
www.nextrans.ca

PROJECT NAME:
PLACE OF WORSHIP
6939 King Street
(TOWN OF CALEDON)

DRAWING TITLE:
AutoTURN Analysis
(LSU TAC-2107)

DESIGN BY: A.S.	DATE: November 18, 2020
CHECKED BY: R.P.	PROJECT NO: NT-20-009
DRAWN BY: A.S.	
SCALE: NTS	DRAWING NO: Figure 7-2

TOWN OF CALEDON
PLANNING
RECEIVED
Dec 24, 2020



BARHA HALL FLOOR AREA :1,002.8 SQ.M.(10,755 SQ.FT)
TOTAL FLOOR AREA :3,141.72 SQ.M. (33,903 SQ.FT)
AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.
KING ST.
CULVERT (PVC)
INV = 267.03
SITE BENCHMARK
EL = 268.26
(MEGA NAIL
W/ WASHER)
SIB FD
IB FD
HP
6 SPACES
24 SPACES
RESERVED BEHIND
NEW PROPERTY LINE
15 x 15m
DAYLIGHT
TRIANGLE
DELIVERY
SPACE
DRIVEWAY
ROAD
WELL
44 SPACES
46 SPACES
42 SPACES
39 SPACES
38 SPACES
36 SPACES
18 SPACES
2 SPACES
4 SPACES
44 SPACES
PARKING AREA
LANDSCAPE
OVERHEAD WIRES
CENTREVILLE CREEK RD.
R12.00
TURNING
RADIUS
RECYCLING
CARTS
3m x 8m
GARBAGE ROOM
COLLECTION
POINT
10.00
0.80
6.50
MSU
meters
Width : 2.60
Track : 2.60
Lock to Lock Time : 6.0
Steering Angle : 40.2
MSU
TAC-2017 (CA)

KEY PLAN

BENCHMARK

NO	REVISION	DATE	BY

STAMP

nexTrans
CONSULTING ENGINEERS
520 Industrial Parkway South, Suite 201
Aurora, Ontario L4G 6W8
Tel: 905-503-2563
www.nextrans.ca

PROJECT NAME:
PLACE OF WORSHIP
6939 King Street
(TOWN OF CALEDON)

DRAWING TITLE:
AutoTURN Analysis
(MSU TAC-2107)

DESIGN BY: A.S.	DATE: November 18, 2020
CHECKED BY: R.P.	PROJECT NO. NT-20-009
DRAWN BY: A.S.	
SCALE: NTS	DRAWING NO. Figure 7-3

Appendix A - Proposed Site Plan

TOPOGRAPHIC SURVEY

for

6939 KING ST.
CALEDON, ONTARIO

SCALE: 1:500
0 5 10 15 Metres

SITE STATISTICS:

AREA OF LOT	=	*60,590 M²*
TOTAL FOOTPRINT AREA	=	*514.39 M²*
BUILDING FOOTPRINT	=	*17,808 M²*
% COVERAGE	=	*4,372 M²*

PARKING AREA:

REGULAR PARKING	*= 331*
ACCESSIBLE PARKING	*= 14*
DELIVERY PARKING	*= 1*
TOTAL PARKING	*= 346 PARKING SPACES*

PAVED AREA:

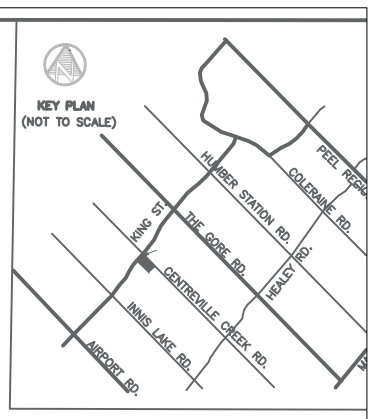
PARKING LOT	*= 5,223.57 M²*
DRIVEWAYS	*= 2,991.13 M²*
WALKWAYS	*= 933 M²*
ROADS	*= 1,032.52 M²*

LANDSCAPE AREA	*= 772.22 M²*
VACANT LAND(north part)	*= 2,242.05 M²*
VACANT LAND(south part)	*= 29,747.56 M²*

BUILDING PLAN

1. MANDIR FLOOR AREA	:476.50 SQ.M (5,136 SQ.FT)
2. ADMIN FLOOR AREA	:831.21 SQ.M (9,006 SQ.FT)
3. SAINT ASHRAM FLOOR AREA	:831.21 SQ.M (9,006 SQ.FT)
4. SABHA HALL FLOOR AREA	:1,002.8 SQ.M.(10,755 SQ.FT)
TOTAL FLOOR AREA	:3,141.72 SQ.M. (33,903 SQ.FT)

KEY PLAN
(NOT TO SCALE)

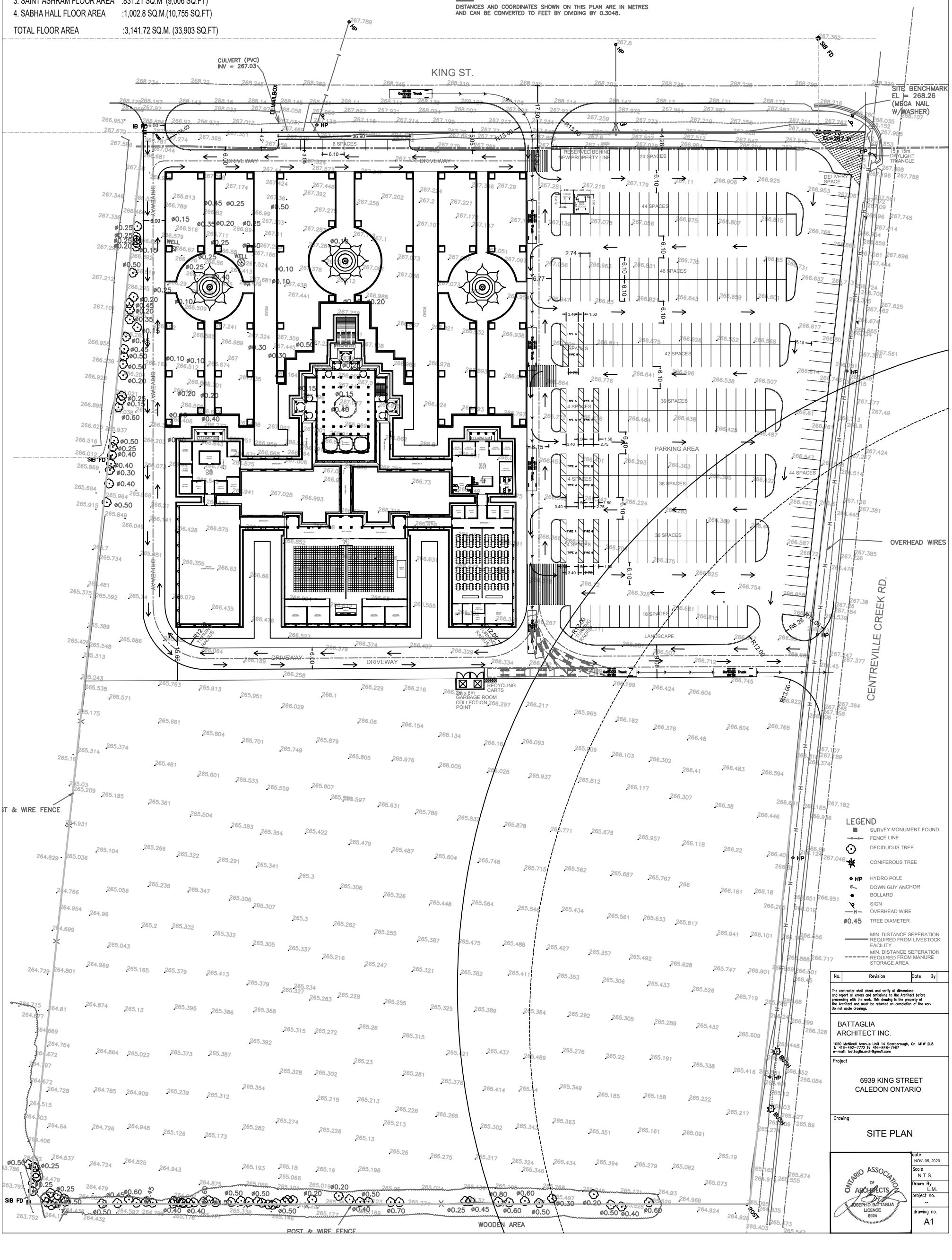


BOUNDARY NOTE
PROPERTY BOUNDARY LINES SHOWN HEREON ARE FOR REFERENCE PURPOSE ONLY, COMPILED FROM EXISTING R-plan 43R-33132.

DATUM
UTM-17 NAD83 2010.0 (ESTABLISHED BY RTK GPS AND VERIFIED WITH TWO COSINE HORIZONTAL CONTROL MONUMENTS : 04219920179 & 04219900040

BENCH MARK
ELEVATIONS SHOWN HERE ARE REFERED TO A COSINE BENCHMARK No. 00819758057 HAVING AN ELEVATION OF 251.929 Metres.

METRIC
DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.



LEGEND

- SURVEY MONUMENT FOUND
- FENCE LINE
- DECIDUOUS TREE
- CONIFEROUS TREE
- HP HYDRO POLE
- DOWN GUY ANCHOR
- BOLLARD
- SIGN
- H OVERHEAD WIRE
- ø0.45 TREE DIAMETER
- MIN. DISTANCE SEPERATION REQUIRED FROM LIVESTOCK FACILITY
- MIN. DISTANCE SEPERATION REQUIRED FROM MANURE STORAGE AREA

No.	Revision	Date	By

BATTAGLIA
ARCHITECT INC.
1050 McNicoll Avenue Unit 14 Scarborough, On. M1W 2L8
T: 416-492-7772 F: 416-848-7967
e-mail: battaglia.arch@gmail.com

Project
6939 KING STREET
CALEDON ONTARIO

Drawing
SITE PLAN

ONTARIO ASSOCIATION OF ARCHITECTS
JOSEPH D. BATTAGLIA
LICENCE
5924

date	NOV. 05, 2020
Scale	N.T.S.
Drawn By	L.M.
project no.	--
drawing no.	A1

Appendix B – Existing Traffic Data

Spectrum

Turning Movement Count
Location Name: KING ST & CENTREVILLE CREEK RD
Date: Thu, Oct 03, 2019 Deployment Lead: Patrick Filopoulos

Peel Region

, ,

Turning Movement Count (98 . KING ST & CENTREVILLE CREEK RD) CustID: 00908064 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	9	0	0	0	9	4	173	1	0	0	178	1	0	2	0	0	3	1	111	6	0	0	118	308
07:15:00	1	9	2	0	0	12	3	154	0	0	0	157	1	0	4	0	0	5	1	104	6	0	0	111	285
07:30:00	0	1	0	0	0	1	9	153	1	0	0	163	0	2	0	0	0	2	0	119	3	0	0	122	288
07:45:00	4	12	2	0	0	18	0	148	0	0	0	148	0	3	2	0	0	5	1	174	6	0	0	181	352
Hourly	5	31	4	0	0	40	16	628	2	0	0	646	2	5	8	0	0	15	3	508	21	0	0	532	1233
08:00:00	0	0	0	0	0	0	7	121	1	0	0	129	1	1	0	0	0	2	1	131	3	0	0	135	266
08:15:00	0	5	1	0	0	6	4	135	0	0	0	139	2	13	4	0	0	19	1	134	7	0	0	142	306
08:30:00	2	2	1	0	0	5	2	116	1	0	0	119	1	4	3	0	0	8	1	107	3	0	0	111	243
08:45:00	3	8	0	0	0	11	8	86	1	0	0	95	1	3	5	0	0	9	1	107	2	0	0	110	225
Hourly	5	15	2	0	0	22	21	458	3	0	0	482	5	21	12	0	0	38	4	479	15	0	0	498	1040
BREAK																									
11:00:00	1	2	2	0	0	5	1	65	0	0	0	66	0	1	0	0	0	1	4	51	2	0	0	57	129
11:15:00	0	2	2	0	0	4	0	63	3	0	0	66	3	3	2	1	0	9	0	67	2	0	0	69	148
11:30:00	0	1	1	0	0	2	2	62	2	1	0	67	0	2	1	0	0	3	0	66	1	0	0	67	139
11:45:00	1	2	0	0	0	3	0	50	0	0	0	50	2	3	1	0	0	6	0	65	1	0	0	66	125
Hourly	2	7	5	0	0	14	3	240	5	1	0	249	5	9	4	1	0	19	4	249	6	0	0	259	541
12:00:00	1	1	1	0	0	3	3	58	0	0	0	61	4	2	1	0	0	7	2	56	2	0	0	60	131
12:15:00	3	2	1	0	0	6	0	55	3	0	0	58	1	1	2	0	0	4	1	67	0	0	0	68	136
12:30:00	0	2	1	0	0	3	0	51	4	0	0	55	2	3	2	0	0	7	0	57	0	0	0	57	122
12:45:00	3	0	0	0	0	3	1	64	1	0	0	66	2	2	2	0	0	6	2	81	3	0	0	86	161
Hourly	7	5	3	0	0	15	4	228	8	0	0	240	9	8	7	0	0	24	5	261	5	0	0	271	550
13:00:00	2	0	1	0	0	3	0	65	0	0	0	65	1	2	1	0	0	4	0	57	0	0	0	57	129
13:15:00	1	2	1	0	0	4	4	38	0	0	0	42	1	6	2	0	0	9	1	47	0	0	0	48	103
13:30:00	1	3	0	0	0	4	3	66	1	0	0	70	2	0	1	0	0	3	1	83	0	0	0	84	161
13:45:00	5	0	1	0	0	6	1	57	0	0	0	58	1	1	0	0	0	2	1	82	2	0	0	85	151
Hourly	9	5	3	0	0	17	8	226	1	0	0	235	5	9	4	0	0	18	3	269	2	0	0	274	544
BREAK																									
15:00:00	2	1	0	0	0	3	2	88	1	0	0	91	1	3	2	0	0	6	4	99	2	0	0	105	205
15:15:00	1	5	1	0	0	7	2	109	4	0	0	115	4	8	5	0	0	17	1	118	0	0	0	119	258
15:30:00	0	0	0	0	0	0	4	144	10	0	0	158	4	6	5	0	0	15	1	106	0	0	0	107	280
15:45:00	1	0	0	0	0	1	7	120	1	0	0	128	2	9	3	0	0	14	4	158	2	0	0	164	307
Hourly	4	6	1	0	0	11	15	461	16	0	0	492	11	26	15	0	0	52	10	481	4	0	0	495	1050

16:00:00	4	2	0	0	0	6	2	125	0	0	0	127	2	6	6	0	0	14	2	180	2	0	0	184	331
16:15:00	1	1	1	0	0	3	2	125	3	0	0	130	2	5	9	0	0	16	4	155	0	0	0	159	308
16:30:00	2	1	1	0	0	4	1	153	3	0	0	157	2	4	4	0	0	10	3	158	0	0	0	161	332
16:45:00	0	2	2	0	0	4	1	162	2	0	0	165	5	4	5	0	0	14	0	175	3	0	0	178	361
Hourly	7	6	4	0	0	17	6	565	8	0	0	579	11	19	24	0	0	54	9	668	5	0	0	682	1332
17:00:00	1	1	2	0	0	4	2	153	4	0	0	159	4	10	6	0	0	20	1	168	1	0	0	170	353
17:15:00	0	0	1	0	0	1	3	139	2	0	0	144	3	5	6	0	0	14	0	132	0	0	0	132	291
17:30:00	0	0	0	0	0	0	5	134	4	0	0	143	3	12	4	0	0	19	3	145	0	0	0	148	310
17:45:00	0	3	0	0	0	3	1	125	6	0	0	132	2	4	4	0	0	10	0	142	1	0	0	143	288
Hourly	1	4	3	0	0	8	11	551	16	0	0	578	12	31	20	0	0	63	4	587	2	0	0	593	1242
Grand Total	40	79	25	0	0	144	84	3357	59	1	0	3501	60	128	94	1	0	283	42	3502	60	0	0	3604	**7532**
Approach%	27.8%	54.9%	17.4%	0%		-	2.4%	95.9%	1.7%	0%		-	21.2%	45.2%	33.2%	0.4%		-	1.2%	97.2%	1.7%	0%		-	**-**
Totals %	0.5%	1%	0.3%	0%		1.9%	1.1%	44.6%	0.8%	0%		46.5%	0.8%	1.7%	1.2%	0%		3.8%	0.6%	46.5%	0.8%	0%		47.8%	**-**
Heavy	2	1	0	0		-	2	224	3	0		-	2	4	8	0		-	4	228	7	0		-	**-**
Heavy %	5%	1.3%	0%	0%		-	2.4%	6.7%	5.1%	0%		-	3.3%	3.1%	8.5%	0%		-	9.5%	6.5%	11.7%	0%		-	**-**
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**

Peak Hour: 07:00 AM - 08:00 AM Weather: Moderate Rain (9.08 °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	9	0	0	0	9	4	173	1	0	0	178	1	0	2	0	0	3	1	111	6	0	0	118	308
07:15:00	1	9	2	0	0	12	3	154	0	0	0	157	1	0	4	0	0	5	1	104	6	0	0	111	285
07:30:00	0	1	0	0	0	1	9	153	1	0	0	163	0	2	0	0	0	2	0	119	3	0	0	122	288
07:45:00	4	12	2	0	0	18	0	148	0	0	0	148	0	3	2	0	0	5	1	174	6	0	0	181	352
Grand Total	5	31	4	0	0	40	16	628	2	0	0	646	2	5	8	0	0	15	3	508	21	0	0	532	**1233**
Approach%	12.5%	77.5%	10%	0%		-	2.5%	97.2%	0.3%	0%		-	13.3%	33.3%	53.3%	0%		-	0.6%	95.5%	3.9%	0%		-	-
Totals %	0.4%	2.5%	0.3%	0%		3.2%	1.3%	50.9%	0.2%	0%		52.4%	0.2%	0.4%	0.6%	0%		1.2%	0.2%	41.2%	1.7%	0%		43.1%	-
PHF	0.31	0.65	0.5	0		0.56	0.44	0.91	0.5	0		0.91	0.5	0.42	0.5	0		0.75	0.75	0.73	0.88	0		0.73	-
Heavy	0	1	0	0		1	1	28	0	0		29	0	0	1	0		1	1	38	1	0		40	-
Heavy %	0%	3.2%	0%	0%		2.5%	6.3%	4.5%	0%	0%		4.5%	0%	0%	12.5%	0%		6.7%	33.3%	7.5%	4.8%	0%		7.5%	-
Lights	5	30	4	0		39	15	600	2	0		617	2	5	7	0		14	2	470	20	0		492	-
Lights %	100%	96.8%	100%	0%		97.5%	93.8%	95.5%	100%	0%		95.5%	100%	100%	87.5%	0%		93.3%	66.7%	92.5%	95.2%	0%		92.5%	-
Single-Unit Trucks	0	1	0	0		1	0	12	0	0		12	0	0	0	0		0	0	15	0	0		15	-
Single-Unit Trucks %	0%	3.2%	0%	0%		2.5%	0%	1.9%	0%	0%		1.9%	0%	0%	0%	0%		0%	0%	3%	0%	0%		2.8%	-
Buses	0	0	0	0		0	1	4	0	0		5	0	0	1	0		1	1	14	1	0		16	-
Buses %	0%	0%	0%	0%		0%	6.3%	0.6%	0%	0%		0.8%	0%	0%	12.5%	0%		6.7%	33.3%	2.8%	4.8%	0%		3%	-
Articulated Trucks	0	0	0	0		0	0	12	0	0		12	0	0	0	0		0	0	9	0	0		9	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	1.9%	0%	0%		1.9%	0%	0%	0%	0%		0%	0%	1.8%	0%	0%		1.7%	-

Spectrum

Turning Movement Count
Location Name: KING ST & CENTREVILLE CREEK RD
Date: Thu, Oct 03, 2019 Deployment Lead: Patrick Filopoulos

Peel Region

, ,

Peak Hour: 12:00 PM - 01:00 PM Weather: Light Rain (9.06 °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	
12:00:00	1	1	1	0	0	3	3	58	0	0	0	61	4	2	1	0	0	7	2	56	2	0	0	60	131
12:15:00	3	2	1	0	0	6	0	55	3	0	0	58	1	1	2	0	0	4	1	67	0	0	0	68	136
12:30:00	0	2	1	0	0	3	0	51	4	0	0	55	2	3	2	0	0	7	0	57	0	0	0	57	122
12:45:00	3	0	0	0	0	3	1	64	1	0	0	66	2	2	2	0	0	6	2	81	3	0	0	86	161
Grand Total	7	5	3	0	0	15	4	228	8	0	0	240	9	8	7	0	0	24	5	261	5	0	0	271	**550**
Approach%	46.7%	33.3%	20%	0%		-	1.7%	95%	3.3%	0%		-	37.5%	33.3%	29.2%	0%		-	1.8%	96.3%	1.8%	0%		-	-
Totals %	1.3%	0.9%	0.5%	0%		2.7%	0.7%	41.5%	1.5%	0%		43.6%	1.6%	1.5%	1.3%	0%		4.4%	0.9%	47.5%	0.9%	0%		49.3%	-
PHF	0.58	0.63	0.75	0		0.63	0.33	0.89	0.5	0		0.91	0.56	0.67	0.88	0		0.86	0.63	0.81	0.42	0		0.79	-
Heavy	0	0	0	0		0	1	24	0	0		25	2	1	0	0		3	1	23	1	0		25	-
Heavy %	0%	0%	0%	0%		0%	25%	10.5%	0%	0%		10.4%	22.2%	12.5%	0%	0%		12.5%	20%	8.8%	20%	0%		9.2%	-
Lights	7	5	3	0		15	3	204	8	0		215	7	7	7	0		21	4	238	4	0		246	-
Lights %	100%	100%	100%	0%		100%	75%	89.5%	100%	0%		89.6%	77.8%	87.5%	100%	0%		87.5%	80%	91.2%	80%	0%		90.8%	-
Single-Unit Trucks	0	0	0	0		0	1	14	0	0		15	2	1	0	0		3	1	19	1	0		21	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	25%	6.1%	0%	0%		6.3%	22.2%	12.5%	0%	0%		12.5%	20%	7.3%	20%	0%		7.7%	-
Buses	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Articulated Trucks	0	0	0	0		0	0	10	0	0		10	0	0	0	0		0	0	4	0	0		4	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	4.4%	0%	0%		4.2%	0%	0%	0%	0%		0%	0%	1.5%	0%	0%		1.5%	-

Spectrum

Turning Movement Count
Location Name: KING ST & CENTREVILLE CREEK RD
Date: Thu, Oct 03, 2019 Deployment Lead: Patrick Filopoulos

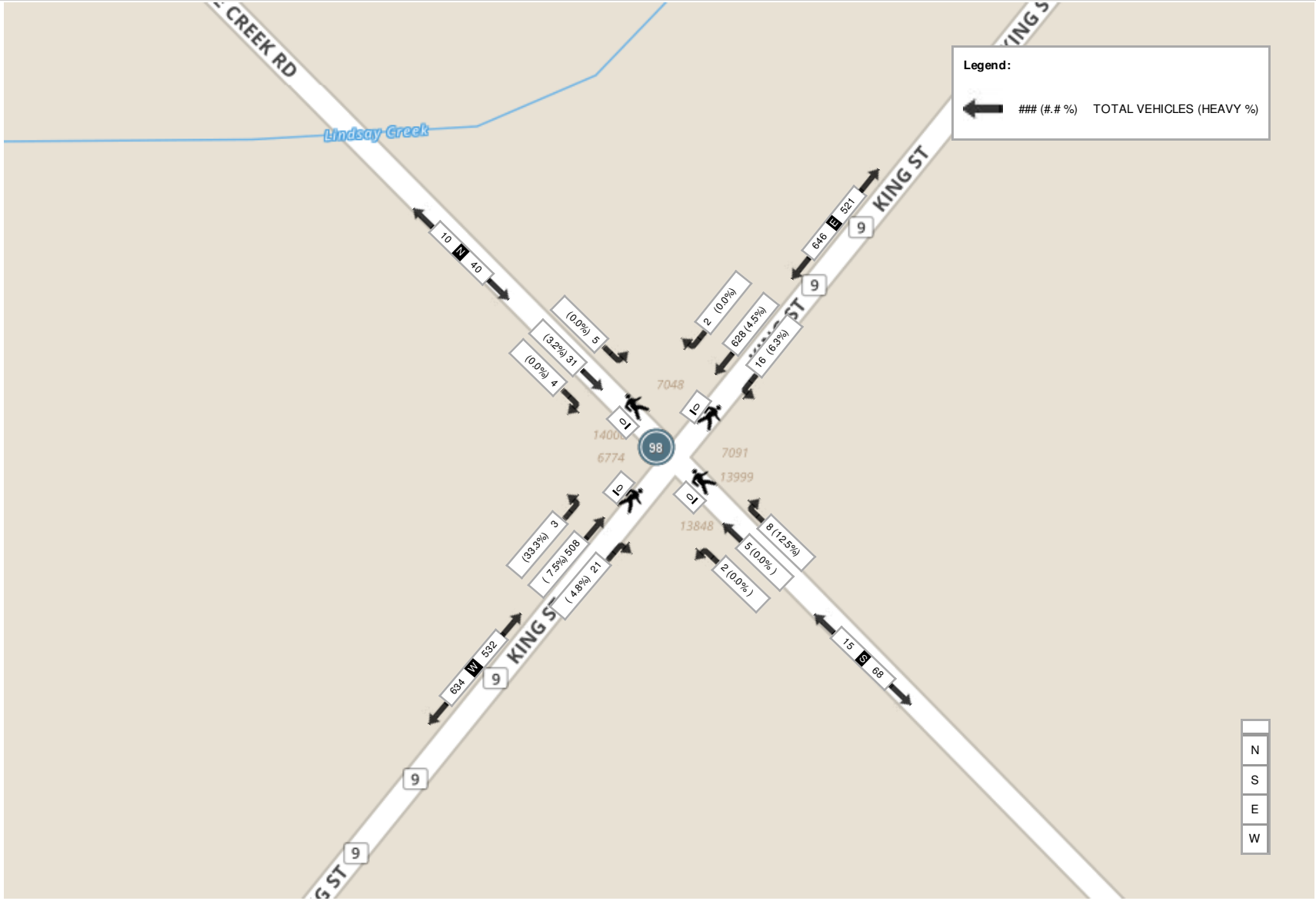
Peel Region

, ,

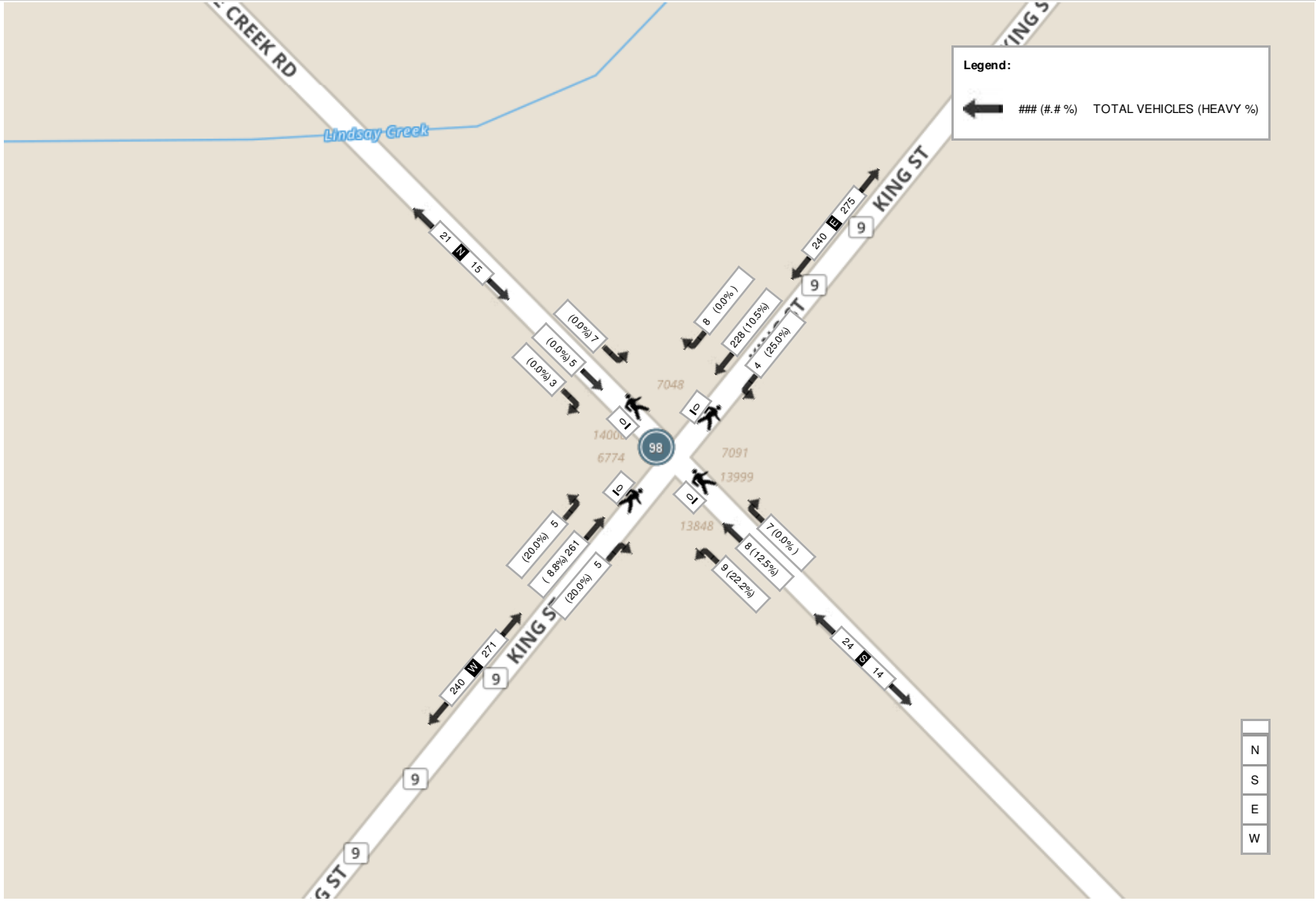
Peak Hour: 04:00 PM - 05:00 PM Weather: Light Rain (10.54 °C)

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	4	2	0	0	0	6	2	125	0	0	0	127	2	6	6	0	0	14	2	180	2	0	0	184	331
16:15:00	1	1	1	0	0	3	2	125	3	0	0	130	2	5	9	0	0	16	4	155	0	0	0	159	308
16:30:00	2	1	1	0	0	4	1	153	3	0	0	157	2	4	4	0	0	10	3	158	0	0	0	161	332
16:45:00	0	2	2	0	0	4	1	162	2	0	0	165	5	4	5	0	0	14	0	175	3	0	0	178	361
Grand Total	7	6	4	0	0	17	6	565	8	0	0	579	11	19	24	0	0	54	9	668	5	0	0	682	**1332**
Approach%	41.2%	35.3%	23.5%	0%		-	1%	97.6%	1.4%	0%		-	20.4%	35.2%	44.4%	0%		-	1.3%	97.9%	0.7%	0%		-	-
Totals %	0.5%	0.5%	0.3%	0%		1.3%	0.5%	42.4%	0.6%	0%		43.5%	0.8%	1.4%	1.8%	0%		4.1%	0.7%	50.2%	0.4%	0%		51.2%	-
PHF	0.44	0.75	0.5	0		0.71	0.75	0.87	0.67	0		0.88	0.55	0.79	0.67	0		0.84	0.56	0.93	0.42	0		0.93	-
Heavy	0	0	0	0		0	0	28	2	0		30	0	3	1	0		4	1	32	1	0		34	-
Heavy %	0%	0%	0%	0%		0%	0%	5%	25%	0%		5.2%	0%	15.8%	4.2%	0%		7.4%	11.1%	4.8%	20%	0%		5%	-
Lights	7	6	4	0		17	6	537	6	0		549	11	16	23	0		50	8	636	4	0		648	-
Lights %	100%	100%	100%	0%		100%	100%	95%	75%	0%		94.8%	100%	84.2%	95.8%	0%		92.6%	88.9%	95.2%	80%	0%		95%	-
Single-Unit Trucks	0	0	0	0		0	0	11	2	0		13	0	3	0	0		3	0	18	0	0		18	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	1.9%	25%	0%		2.2%	0%	15.8%	0%	0%		5.6%	0%	2.7%	0%	0%		2.6%	-
Buses	0	0	0	0		0	0	9	0	0		9	0	0	1	0		1	1	4	0	0		5	-
Buses %	0%	0%	0%	0%		0%	0%	1.6%	0%	0%		1.6%	0%	0%	4.2%	0%		1.9%	11.1%	0.6%	0%	0%		0.7%	-
Articulated Trucks	0	0	0	0		0	0	8	0	0		8	0	0	0	0		0	0	10	1	0		11	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	1.4%	0%	0%		1.4%	0%	0%	0%	0%		0%	0%	1.5%	20%	0%		1.6%	-

Peak Hour: 07:00 AM - 08:00 AM Weather: Moderate Rain (9.08 °C)



Peak Hour: 12:00 PM - 01:00 PM Weather: Light Rain (9.06 °C)



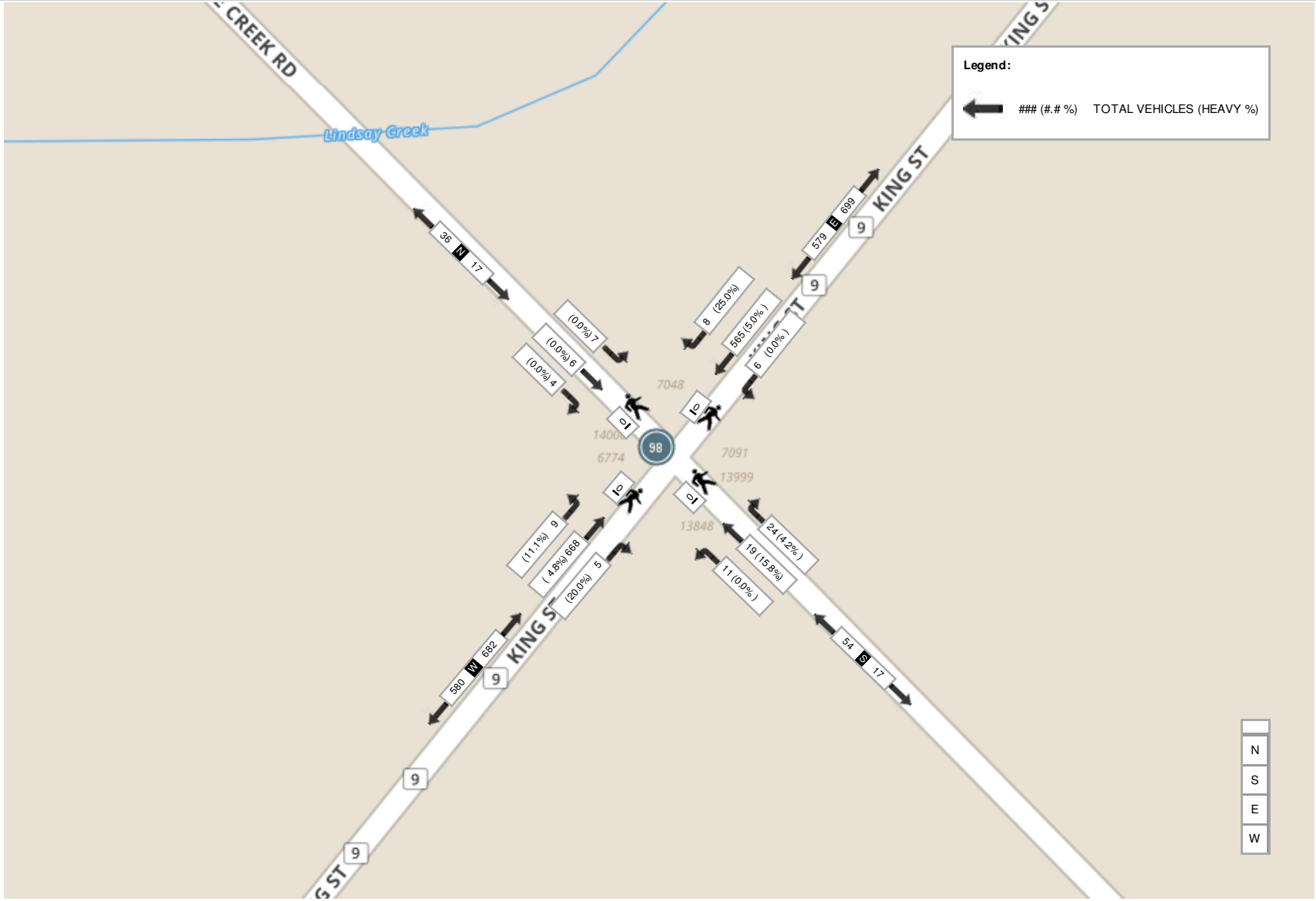
Spectrum

Turning Movement Count
Location Name: KING ST & CENTREVILLE CREEK RD
Date: Thu, Oct 03, 2019 Deployment Lead: Patrick Filopoulos

Peel Region

, ,

Peak Hour: 04:00 PM - 05:00 PM Weather: Light Rain (10.54 °C)



Spectrum

Turning Movement Count
Location Name: KING ST & INNIS LAKE RD
Date: Tue, May 26, 2020 Deployment Lead: Theo Daglis

Peel Region
SUITE B 10 PEEL CENTRE DR
BRAMPTON ONTARIO, L6T 4B9
CANADA

Turning Movement Count (28 . KING ST & INNIS LAKE RD) CustID: 00909444 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	8	10	8	0	0	26	3	83	2	0	0	88	1	3	0	0	0	4	3	64	1	0	0	68	186
07:15:00	5	16	5	0	0	26	4	62	0	0	0	66	0	1	1	0	0	2	2	55	2	0	0	59	153
07:30:00	5	7	8	0	0	20	4	81	3	0	0	88	3	3	0	0	0	6	2	78	4	0	0	84	198
07:45:00	5	7	4	0	0	16	3	71	1	0	0	75	2	5	0	0	0	7	3	61	0	0	0	64	162
Hourly	23	40	25	0	0	88	14	297	6	0	0	317	6	12	1	0	0	19	10	258	7	0	0	275	699
08:00:00	3	13	3	0	0	19	2	48	3	0	0	53	0	2	1	0	0	3	1	64	2	0	0	67	142
08:15:00	4	11	5	0	0	20	1	58	2	0	0	61	2	6	0	0	0	8	5	52	3	0	0	60	149
08:30:00	7	9	8	0	0	24	2	49	1	0	0	52	1	3	1	0	0	5	2	43	2	0	0	47	128
08:45:00	7	11	6	0	0	24	2	61	2	0	0	65	0	1	0	0	0	1	4	61	0	0	0	65	155
Hourly	21	44	22	0	0	87	7	216	8	0	0	231	3	12	2	0	0	17	12	220	7	0	0	239	574
BREAK																									
11:00:00	5	7	5	0	0	17	1	57	3	0	0	61	2	10	2	0	0	14	7	61	2	0	0	70	162
11:15:00	5	13	4	0	0	22	5	49	4	0	0	58	2	2	4	0	0	8	2	61	0	0	0	63	151
11:30:00	2	3	2	0	0	7	2	61	9	0	0	72	0	4	1	0	0	5	3	61	2	0	0	66	150
11:45:00	5	5	5	0	0	15	4	40	4	0	0	48	2	9	2	0	0	13	5	77	2	0	0	84	160
Hourly	17	28	16	0	0	61	12	207	20	0	0	239	6	25	9	0	0	40	17	260	6	0	0	283	623
12:00:00	7	4	4	0	0	15	1	67	4	0	0	72	1	6	3	0	0	10	2	56	2	0	0	60	157
12:15:00	2	8	6	0	0	16	5	56	1	0	0	62	1	8	1	0	0	10	2	46	2	0	0	50	138
12:30:00	5	5	4	0	0	14	1	54	2	0	0	57	2	4	1	0	0	7	3	60	1	0	0	64	142
12:45:00	7	9	4	0	0	20	1	56	3	0	0	60	1	7	2	0	0	10	3	66	0	0	0	69	159
Hourly	21	26	18	0	0	65	8	233	10	0	0	251	5	25	7	0	0	37	10	228	5	0	0	243	596
13:00:00	4	3	5	0	0	12	2	55	3	0	0	60	2	7	1	0	0	10	5	54	3	0	0	62	144
13:15:00	3	3	3	0	0	9	0	50	6	0	0	56	1	5	4	0	0	10	4	59	2	0	0	65	140
13:30:00	5	9	10	0	0	24	2	60	7	0	0	69	1	10	1	0	0	12	5	60	0	0	0	65	170
13:45:00	1	6	5	0	0	12	2	45	6	0	0	53	1	4	2	0	0	7	3	61	1	0	0	65	137
Hourly	13	21	23	0	0	57	6	210	22	0	0	238	5	26	8	0	0	39	17	234	6	0	0	257	591
BREAK																									
15:00:00	4	6	2	0	0	12	0	63	11	0	0	74	2	9	2	0	0	13	6	75	0	0	0	81	180
15:15:00	2	3	2	0	0	7	1	76	4	0	0	81	2	13	1	0	0	16	7	89	0	0	0	96	200
15:30:00	3	4	4	0	0	11	1	76	4	0	0	81	2	17	2	0	0	21	4	90	1	0	0	95	208
15:45:00	1	10	3	0	0	14	3	92	6	0	0	101	2	10	5	0	0	17	16	86	0	0	0	102	234
Hourly	10	23	11	0	0	44	5	307	25	0	0	337	8	49	10	0	0	67	33	340	1	0	0	374	822
16:00:00	3	3	1	0	0	7	0	83	6	0	0	89	5	16	3	0	0	24	14	75	1	0	0	90	210
16:15:00	5	6	7	0	0	18	5	88	10	0	0	103	4	20	4	0	0	28	6	101	3	0	0	110	259
16:30:00	3	6	6	0	0	15	0	77	10	0	0	87	6	16	5	0	0	27	7	104	2	0	0	113	242
16:45:00	1	5	10	0	0	16	0	86	4	0	0	90	5	18	11	0	0	34	4	85	2	0	0	91	231
Hourly	12	20	24	0	0	56	5	334	30	0	0	369	20	70	23	0	0	113	31	365	8	0	0	404	942
17:00:00	3	5	6	0	0	14	2	65	4	0	0	71	6	22	1	0	0	29	11	104	0	0	0	115	229
17:15:00	1	6	4	0	0	11	3	91	8	0	0	102	3	16	6	0	0	25	9	98	2	0	0	109	247
17:30:00	1	2	2	0	0	5	5	70	7	0	0	82	2	18	5	0	0	25	8	104	1	0	0	113	225
17:45:00	5	5	2	0	0	12	4	51	13	0	0	68	0	13	3	0	0	16	6	81	0	0	0	87	183
Hourly	10	18	14	0	0	42	14	277	32	0	0	323	11	69	15	0	0	95	34	387	3	0	0	424	884

Spectrum

Turning Movement Count
Location Name: KING ST & INNIS LAKE RD
Date: Tue, May 26, 2020 Deployment Lead: Theo Daglis

Peel Region
SUITE B 10 PEEL CENTRE DR
BRAMPTON ONTARIO, L6T 4B9
CANADA

Grand Total	127	220	153	0	0	500	71	2081	153	0	0	2305	64	288	75	0	0	427	164	2292	43	0	0	2499	**5731**
Approach%	25.4%	44%	30.6%	0%		-	3.1%	90.3%	6.6%	0%		-	15%	67.4%	17.6%	0%		-	6.6%	91.7%	1.7%	0%		-	-
Totals %	2.2%	3.8%	2.7%	0%		8.7%	1.2%	36.3%	2.7%	0%		40.2%	1.1%	5%	1.3%	0%		7.5%	2.9%	40%	0.8%	0%		43.6%	-
Heavy	2	1	1	0		-	4	270	1	0		-	0	3	2	0		-	4	304	3	0		-	-
Heavy %	1.6%	0.5%	0.7%	0%		-	5.6%	13%	0.7%	0%		-	0%	1%	2.7%	0%		-	2.4%	13.3%	7%	0%		-	-
Bicycles	0	4	0	0		-	0	4	0	0		-	0	2	1	1		-	0	2	1	0		-	-
Bicycle %	0%	1.8%	0%	0%		-	0%	0.2%	0%	0%		-	0%	0.7%	1.3%	0%		-	0%	0.1%	2.3%	0%		-	-

Spectrum

Turning Movement Count
Location Name: KING ST & INNIS LAKE RD
Date: Tue, May 26, 2020 Deployment Lead: Theo Daglis

Peel Region
SUITE B 10 PEEL CENTRE DR
BRAMPTON ONTARIO, L6T 4B9
CANADA

Peak Hour: 07:00 AM - 08:00 AM Weather: Scattered Clouds (17.28 °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	8	10	8	0	0	26	3	83	2	0	0	88	1	3	0	0	0	4	3	64	1	0	0	68	186
07:15:00	5	16	5	0	0	26	4	62	0	0	0	66	0	1	1	0	0	2	2	55	2	0	0	59	153
07:30:00	5	7	8	0	0	20	4	81	3	0	0	88	3	3	0	0	0	6	2	78	4	0	0	84	198
07:45:00	5	7	4	0	0	16	3	71	1	0	0	75	2	5	0	0	0	7	3	61	0	0	0	64	162
Grand Total	23	40	25	0	0	88	14	297	6	0	0	317	6	12	1	0	0	19	10	258	7	0	0	275	**699**
Approach%	26.1%	45.5%	28.4%	0%		-	4.4%	93.7%	1.9%	0%		-	31.6%	63.2%	5.3%	0%		-	3.6%	93.8%	2.5%	0%		-	-
Totals %	3.3%	5.7%	3.6%	0%		12.6%	2%	42.5%	0.9%	0%		45.4%	0.9%	1.7%	0.1%	0%		2.7%	1.4%	36.9%	1%	0%		39.3%	-
PHF	0.72	0.63	0.78	0		0.85	0.88	0.89	0.5	0		0.9	0.5	0.6	0.25	0		0.68	0.83	0.83	0.44	0		0.82	-
Heavy	0	0	0	0		0	0	38	1	0		39	0	0	0	0		0	0	35	0	0		35	-
Heavy %	0%	0%	0%	0%		0%	0%	12.8%	16.7%	0%		12.3%	0%	0%	0%	0%		0%	0%	13.6%	0%	0%		12.7%	-
Lights	23	40	25	0		88	14	259	5	0		278	6	12	1	0		19	10	223	7	0		240	-
Lights %	100%	100%	100%	0%		100%	100%	87.2%	83.3%	0%		87.7%	100%	100%	100%	0%		100%	100%	86.4%	100%	0%		87.3%	-
Single-Unit Trucks	0	0	0	0		0	0	23	1	0		24	0	0	0	0		0	0	24	0	0		24	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	7.7%	16.7%	0%		7.6%	0%	0%	0%	0%		0%	0%	9.3%	0%	0%		8.7%	-
Buses	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Articulated Trucks	0	0	0	0		0	0	15	0	0		15	0	0	0	0		0	0	11	0	0		11	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	5.1%	0%	0%		4.7%	0%	0%	0%	0%		0%	0%	4.3%	0%	0%		4%	-
Bicycles on Road	0	0	0	0	0	-	0	1	0	0	0	-	0	0	1	0	0	-	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	%		-	-	-	-	%		-	-	-	-	%		-	-	-	-	%		-

Spectrum

Turning Movement Count
Location Name: KING ST & INNIS LAKE RD
Date: Tue, May 26, 2020 Deployment Lead: Theo Daglis

Peel Region
SUITE B 10 PEEL CENTRE DR
BRAMPTON ONTARIO, L6T 4B9
CANADA

Peak Hour: 11:00 AM - 12:00 PM Weather: Scattered Clouds (27.35 °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	5	7	5	0	0	17	1	57	3	0	0	61	2	10	2	0	0	14	7	61	2	0	0	70	162
11:15:00	5	13	4	0	0	22	5	49	4	0	0	58	2	2	4	0	0	8	2	61	0	0	0	63	151
11:30:00	2	3	2	0	0	7	2	61	9	0	0	72	0	4	1	0	0	5	3	61	2	0	0	66	150
11:45:00	5	5	5	0	0	15	4	40	4	0	0	48	2	9	2	0	0	13	5	77	2	0	0	84	160
Grand Total	17	28	16	0	0	61	12	207	20	0	0	239	6	25	9	0	0	40	17	260	6	0	0	283	**623**
Approach%	27.9%	45.9%	26.2%	0%		-	5%	86.6%	8.4%	0%		-	15%	62.5%	22.5%	0%		-	6%	91.9%	2.1%	0%		-	-
Totals %	2.7%	4.5%	2.6%	0%		9.8%	1.9%	33.2%	3.2%	0%		38.4%	1%	4%	1.4%	0%		6.4%	2.7%	41.7%	1%	0%		45.4%	-
PHF	0.85	0.54	0.8	0		0.69	0.6	0.85	0.56	0		0.83	0.75	0.63	0.56	0		0.71	0.61	0.84	0.75	0		0.84	-
Heavy	0	0	1	0		1	2	42	0	0		44	0	1	1	0		2	1	53	0	0		54	-
Heavy %	0%	0%	6.3%	0%		1.6%	16.7%	20.3%	0%	0%		18.4%	0%	4%	11.1%	0%		5%	5.9%	20.4%	0%	0%		19.1%	-
Lights	17	28	15	0		60	10	165	20	0		195	6	24	8	0		38	16	207	6	0		229	-
Lights %	100%	100%	93.8%	0%		98.4%	83.3%	79.7%	100%	0%		81.6%	100%	96%	88.9%	0%		95%	94.1%	79.6%	100%	0%		80.9%	-
Single-Unit Trucks	0	0	1	0		1	0	21	0	0		21	0	1	0	0		1	1	33	0	0		34	-
Single-Unit Trucks %	0%	0%	6.3%	0%		1.6%	0%	10.1%	0%	0%		8.8%	0%	4%	0%	0%		2.5%	5.9%	12.7%	0%	0%		12%	-
Buses	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Articulated Trucks	0	0	0	0		0	2	21	0	0		23	0	0	1	0		1	0	20	0	0		20	-
Articulated Trucks %	0%	0%	0%	0%		0%	16.7%	10.1%	0%	0%		9.6%	0%	0%	11.1%	0%		2.5%	0%	7.7%	0%	0%		7.1%	-
Bicycles on Road	0	3	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	%		-	-	-	-	%		-	-	-	-	%		-	-	-	-	%		-

Spectrum

Turning Movement Count
Location Name: KING ST & INNIS LAKE RD
Date: Tue, May 26, 2020 Deployment Lead: Theo Daglis

Peel Region
SUITE B 10 PEEL CENTRE DR
BRAMPTON ONTARIO, L6T 4B9
CANADA

Peak Hour: 04:00 PM - 05:00 PM Weather: Few Clouds (30.73 °C)

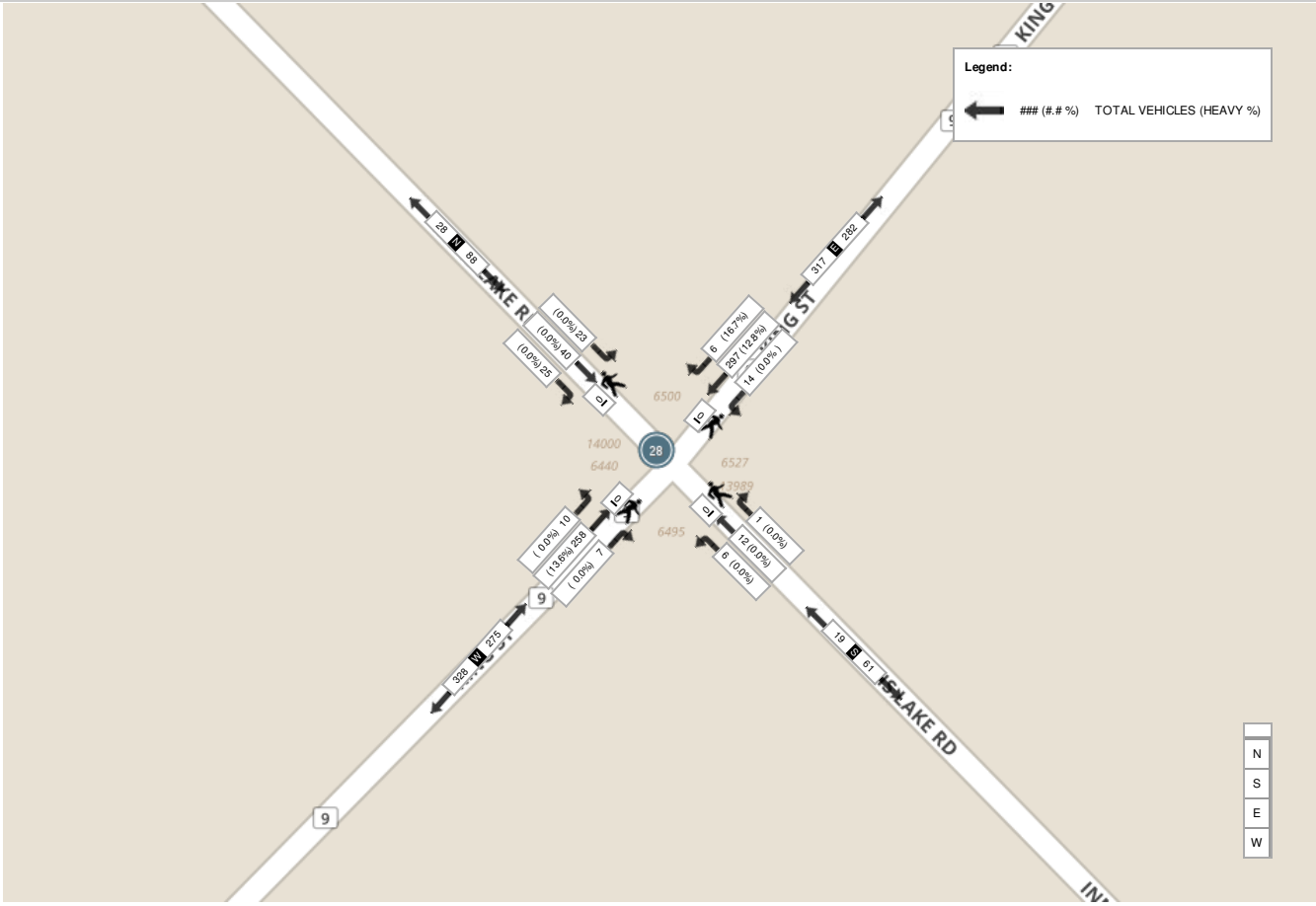
Start Time	Southbound						Westbound						Northbound						Eastbound						Int. Total (15 min)
	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	
16:00:00	3	3	1	0	0	7	0	83	6	0	0	89	5	16	3	0	0	24	14	75	1	0	0	90	210
16:15:00	5	6	7	0	0	18	5	88	10	0	0	103	4	20	4	0	0	28	6	101	3	0	0	110	259
16:30:00	3	6	6	0	0	15	0	77	10	0	0	87	6	16	5	0	0	27	7	104	2	0	0	113	242
16:45:00	1	5	10	0	0	16	0	86	4	0	0	90	5	18	11	0	0	34	4	85	2	0	0	91	231
Grand Total	12	20	24	0	0	56	5	334	30	0	0	369	20	70	23	0	0	113	31	365	8	0	0	404	**942**
Approach%	21.4%	35.7%	42.9%	0%		-	1.4%	90.5%	8.1%	0%		-	17.7%	61.9%	20.4%	0%		-	7.7%	90.3%	2%	0%		-	-
Totals %	1.3%	2.1%	2.5%	0%		5.9%	0.5%	35.5%	3.2%	0%		39.2%	2.1%	7.4%	2.4%	0%		12%	3.3%	38.7%	0.8%	0%		42.9%	-
PHF	0.6	0.83	0.6	0		0.78	0.25	0.95	0.75	0		0.9	0.83	0.88	0.52	0		0.83	0.55	0.88	0.67	0		0.89	-
Heavy	0	0	0	0		0	0	27	0	0		27	0	1	0	0		1	0	29	1	0		30	-
Heavy %	0%	0%	0%	0%		0%	0%	8.1%	0%	0%		7.3%	0%	1.4%	0%	0%		0.9%	0%	7.9%	12.5%	0%		7.4%	-
Lights	12	20	24	0		56	5	307	30	0		342	20	69	23	0		112	31	336	7	0		374	-
Lights %	100%	100%	100%	0%		100%	100%	91.9%	100%	0%		92.7%	100%	98.6%	100%	0%		99.1%	100%	92.1%	87.5%	0%		92.6%	-
Single-Unit Trucks	0	0	0	0		0	0	13	0	0		13	0	0	0	0		0	0	17	1	0		18	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	3.9%	0%	0%		3.5%	0%	0%	0%	0%		0%	0%	4.7%	12.5%	0%		4.5%	-
Buses	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Articulated Trucks	0	0	0	0		0	0	14	0	0		14	0	1	0	0		1	0	12	0	0		12	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	4.2%	0%	0%		3.8%	0%	1.4%	0%	0%		0.9%	0%	3.3%	0%	0%		3%	-
Bicycles on Road	0	0	0	0	0	-	0	1	0	0	0	-	0	0	0	0	0	-	0	2	0	0	0	-	-
Bicycles on Road%	-	-	-	-	%		-	-	-	-	%		-	-	-	-	%		-	-	-	-	%		-

Spectrum

Turning Movement Count
Location Name: KING ST & INNIS LAKE RD
Date: Tue, May 26, 2020 Deployment Lead: Theo Daglis

Peel Region
SUITE B 10 PEEL CENTRE DR
BRAMPTON ONTARIO, L6T 4B9
CANADA

Peak Hour: 07:00 AM - 08:00 AM **Weather: Scattered Clouds (17.28 °C)**

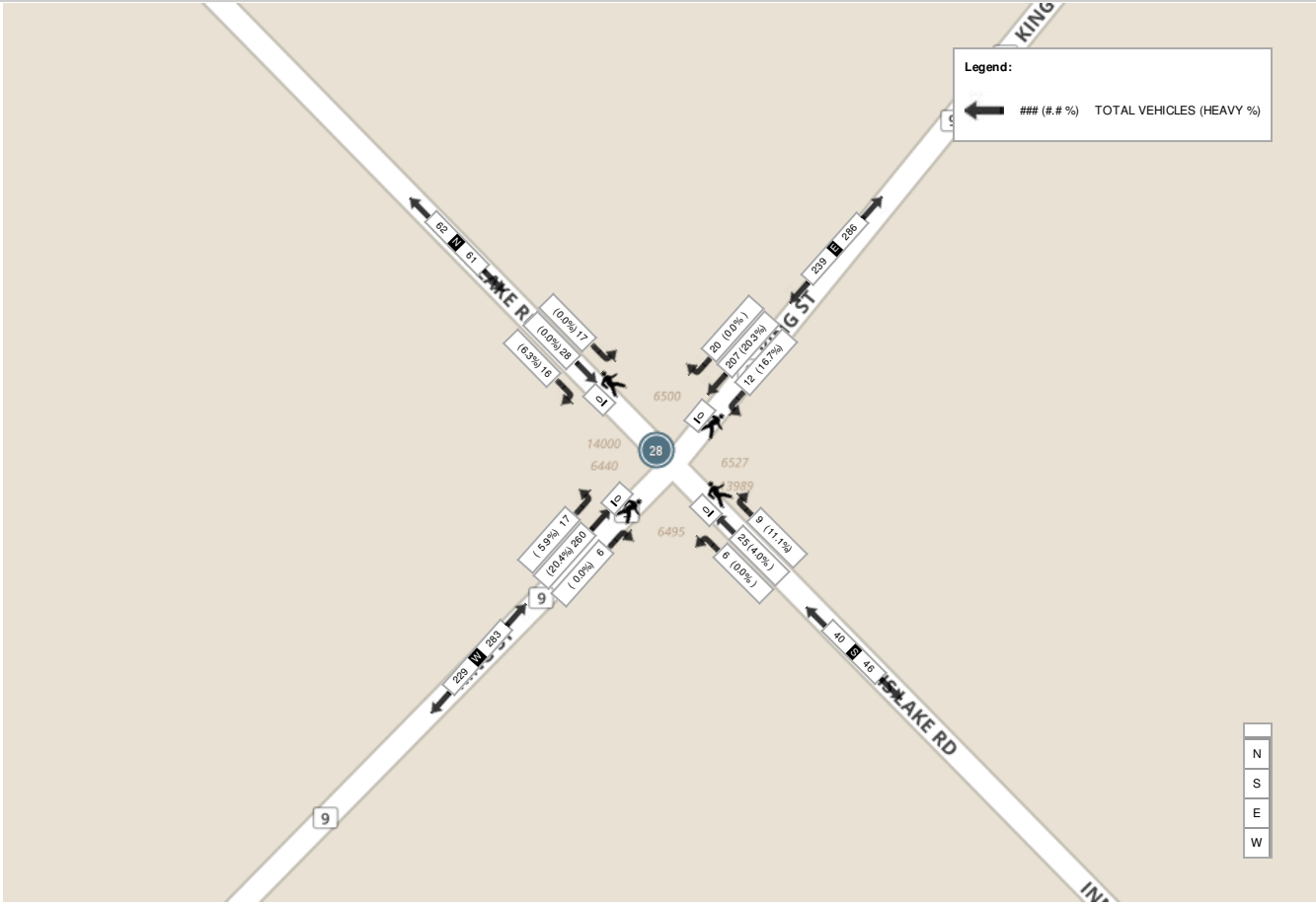


Spectrum

Turning Movement Count
Location Name: KING ST & INNIS LAKE RD
Date: Tue, May 26, 2020 Deployment Lead: Theo Daglis

Peel Region
SUITE B 10 PEEL CENTRE DR
BRAMPTON ONTARIO, L6T 4B9
CANADA

Peak Hour: 11:00 AM - 12:00 PM Weather: Scattered Clouds (27.35 °C)

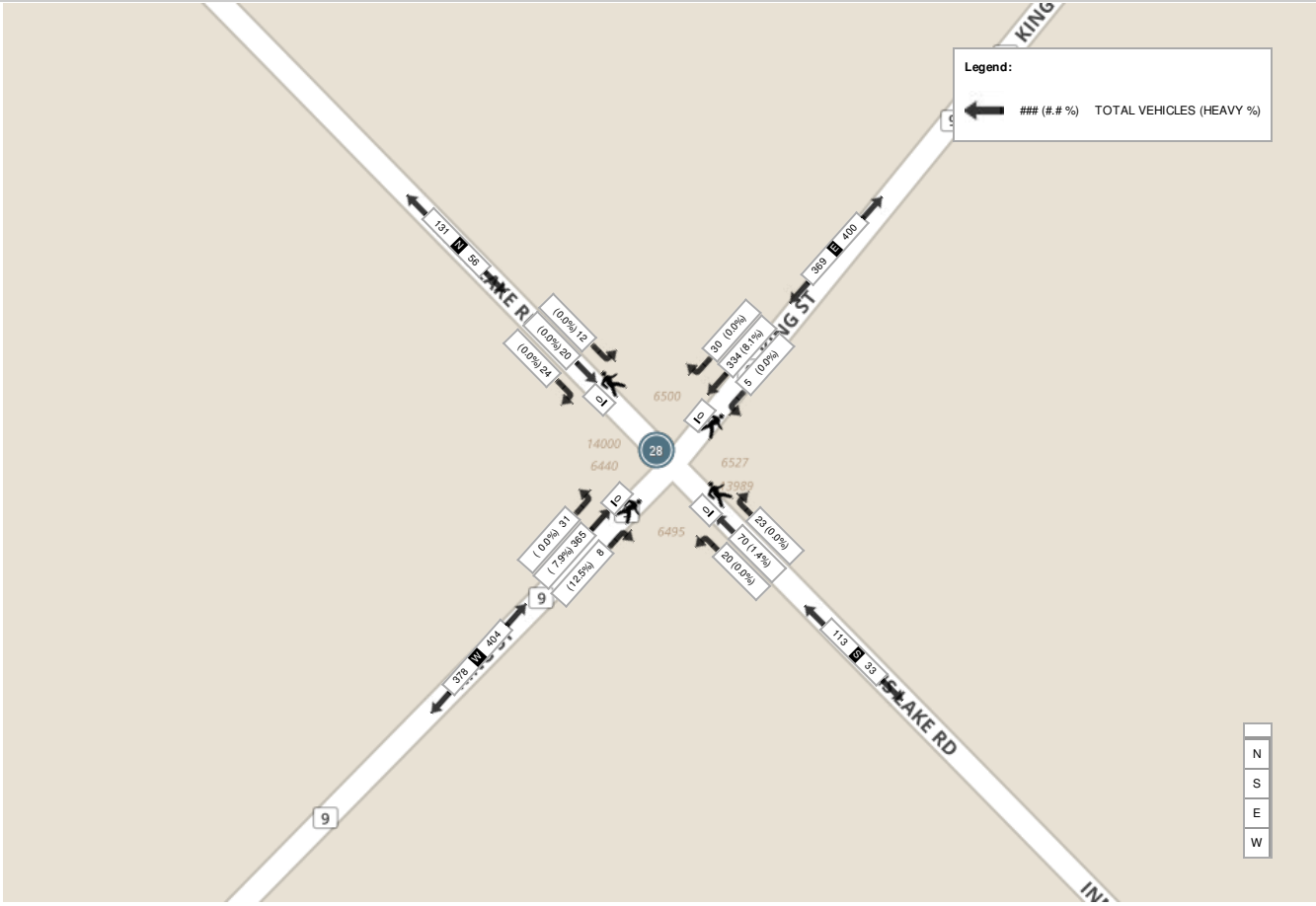


Spectrum

Turning Movement Count
Location Name: KING ST & INNIS LAKE RD
Date: Tue, May 26, 2020 Deployment Lead: Theo Daglis

Peel Region
SUITE B 10 PEEL CENTRE DR
BRAMPTON ONTARIO, L6T 4B9
CANADA

Peak Hour: 04:00 PM - 05:00 PM Weather: Few Clouds (30.73 °C)



Appendix C – Existing Traffic Level of Service Calculations

Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	258	7	14	297	6	6	12	1	23	40	25
Future Vol, veh/h	10	258	7	14	297	6	6	12	1	23	40	25
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	14	0	0	13	17	0	0	0	0	0	0
Mvmt Flow	10	258	7	14	297	6	6	12	1	23	40	25
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.9	10.4	8.6	8.9
HCM LOS	A	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	32%	4%	4%	26%
Vol Thru, %	63%	94%	94%	45%
Vol Right, %	5%	3%	2%	28%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	19	275	317	88
LT Vol	6	10	14	23
Through Vol	12	258	297	40
RT Vol	1	7	6	25
Lane Flow Rate	19	275	317	88
Geometry Grp	1	1	1	1
Degree of Util (X)	0.028	0.344	0.394	0.125
Departure Headway (Hd)	5.381	4.509	4.472	5.115
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	661	798	805	698
Service Time	3.446	2.545	2.505	3.169
HCM Lane V/C Ratio	0.029	0.345	0.394	0.126
HCM Control Delay	8.6	9.9	10.4	8.9
HCM Lane LOS	A	A	B	A
HCM 95th-tile Q	0.1	1.5	1.9	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	508	21	16	628	2	2	5	8	5	31	4
Future Volume (Veh/h)	3	508	21	16	628	2	2	5	8	5	31	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	508	21	16	628	2	2	5	8	5	31	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	630			529			1205	1186	518	1196	1196	629
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	630			529			1205	1186	518	1196	1196	629
tC, single (s)	4.4			4.2			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.5			2.3			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			98			99	97	99	97	83	99
cM capacity (veh/h)	820			1018			138	186	536	156	182	486

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	532	646	15	40
Volume Left	3	16	2	5
Volume Right	21	2	8	4
cSH	820	1018	267	190
Volume to Capacity	0.00	0.02	0.06	0.21
Queue Length 95th (m)	0.1	0.4	1.4	5.9
Control Delay (s)	0.1	0.4	19.3	29.0
Lane LOS	A	A	C	D
Approach Delay (s)	0.1	0.4	19.3	29.0
Approach LOS			C	D

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	13.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	31	365	8	5	334	30	20	70	23	12	20	24
Future Vol, veh/h	31	365	8	5	334	30	20	70	23	12	20	24
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	6	20	0	17	20	0	0	4	11	0	0	6
Mvmt Flow	31	365	8	5	334	30	20	70	23	12	20	24
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.4	14	10.2	9.5
HCM LOS	B	B	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	18%	8%	1%	21%
Vol Thru, %	62%	90%	91%	36%
Vol Right, %	20%	2%	8%	43%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	113	404	369	56
LT Vol	20	31	5	12
Through Vol	70	365	334	20
RT Vol	23	8	30	24
Lane Flow Rate	113	404	369	56
Geometry Grp	1	1	1	1
Degree of Util (X)	0.184	0.566	0.534	0.091
Departure Headway (Hd)	5.86	5.04	5.209	5.873
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	611	719	694	609
Service Time	3.905	3.051	3.221	3.923
HCM Lane V/C Ratio	0.185	0.562	0.532	0.092
HCM Control Delay	10.2	14.4	14	9.5
HCM Lane LOS	B	B	B	A
HCM 95th-tile Q	0.7	3.6	3.2	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	668	5	6	565	8	11	19	24	7	6	4
Future Volume (Veh/h)	9	668	5	6	565	8	11	19	24	7	6	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	9	668	5	6	565	8	11	19	24	7	6	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	573			673			1276	1274	670	1303	1272	569
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	573			673			1276	1274	670	1303	1272	569
tC, single (s)	4.3			4.3			7.3	6.6	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.4			3.7	4.1	3.3	3.5	4.0	3.3
p0 queue free %	99			99			91	88	95	94	96	99
cM capacity (veh/h)	917			819			124	156	460	118	166	525

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	682	579	54	17
Volume Left	9	6	11	7
Volume Right	5	8	24	4
cSH	917	819	206	165
Volume to Capacity	0.01	0.01	0.26	0.10
Queue Length 95th (m)	0.2	0.2	7.7	2.6
Control Delay (s)	0.3	0.2	28.6	29.3
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.2	28.6	29.3
Approach LOS			D	D

Intersection Summary				
Average Delay	1.8			
Intersection Capacity Utilization	51.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Appendix D - Future (2025) Background Traffic Level of Service Calculations

Intersection	
Intersection Delay, s/veh	10.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	285	7	14	328	6	6	13	1	23	44	25
Future Vol, veh/h	10	285	7	14	328	6	6	13	1	23	44	25
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	14	0	0	13	17	0	0	0	0	0	0
Mvmt Flow	10	285	7	14	328	6	6	13	1	23	44	25
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.4	11.1	8.8	9.1
HCM LOS	B	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	30%	3%	4%	25%
Vol Thru, %	65%	94%	94%	48%
Vol Right, %	5%	2%	2%	27%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	20	302	348	92
LT Vol	6	10	14	23
Through Vol	13	285	328	44
RT Vol	1	7	6	25
Lane Flow Rate	20	302	348	92
Geometry Grp	1	1	1	1
Degree of Util (X)	0.031	0.383	0.437	0.134
Departure Headway (Hd)	5.527	4.567	4.525	5.253
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	643	785	793	678
Service Time	3.603	2.61	2.566	3.319
HCM Lane V/C Ratio	0.031	0.385	0.439	0.136
HCM Control Delay	8.8	10.4	11.1	9.1
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0.1	1.8	2.2	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	561	21	16	693	2	2	6	8	5	34	4
Future Volume (Veh/h)	3	561	21	16	693	2	2	6	8	5	34	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	561	21	16	693	2	2	6	8	5	34	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	695			582			1324	1304	572	1314	1314	694
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	695			582			1324	1304	572	1314	1314	694
tC, single (s)	4.4			4.2			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.5			2.3			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			98			98	96	98	96	78	99
cM capacity (veh/h)	773			973			109	158	500	128	154	446

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	585	711	16	43
Volume Left	3	16	2	5
Volume Right	21	2	8	4
cSH	773	973	221	160
Volume to Capacity	0.00	0.02	0.07	0.27
Queue Length 95th (m)	0.1	0.4	1.8	7.8
Control Delay (s)	0.1	0.4	22.5	35.5
Lane LOS	A	A	C	E
Approach Delay (s)	0.1	0.4	22.5	35.5
Approach LOS			C	E

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	15.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	31	403	8	5	369	30	20	77	23	12	22	24
Future Vol, veh/h	31	403	8	5	369	30	20	77	23	12	22	24
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	6	20	0	17	20	0	0	4	11	0	0	6
Mvmt Flow	31	403	8	5	369	30	20	77	23	12	22	24
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	16.6	15.9	10.7	9.9
HCM LOS	C	C	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	17%	7%	1%	21%
Vol Thru, %	64%	91%	91%	38%
Vol Right, %	19%	2%	7%	41%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	120	442	404	58
LT Vol	20	31	5	12
Through Vol	77	403	369	22
RT Vol	23	8	30	24
Lane Flow Rate	120	442	404	58
Geometry Grp	1	1	1	1
Degree of Util (X)	0.203	0.631	0.596	0.099
Departure Headway (Hd)	6.084	5.138	5.315	6.127
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	589	703	679	583
Service Time	4.133	3.171	3.349	4.184
HCM Lane V/C Ratio	0.204	0.629	0.595	0.099
HCM Control Delay	10.7	16.6	15.9	9.9
HCM Lane LOS	B	C	C	A
HCM 95th-tile Q	0.8	4.5	4	0.3

HCM Unsignalized Intersection Capacity Analysis
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	738	5	6	624	8	11	21	24	7	7	4
Future Volume (Veh/h)	9	738	5	6	624	8	11	21	24	7	7	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	9	738	5	6	624	8	11	21	24	7	7	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	632			743			1406	1402	740	1433	1401	628
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	632			743			1406	1402	740	1433	1401	628
tC, single (s)	4.3			4.3			7.3	6.6	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.4			3.7	4.1	3.3	3.5	4.0	3.3
p0 queue free %	99			99			89	84	94	92	95	99
cM capacity (veh/h)	870			769			99	130	420	92	139	487

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	752	638	56	18
Volume Left	9	6	11	7
Volume Right	5	8	24	4
cSH	870	769	170	134
Volume to Capacity	0.01	0.01	0.33	0.13
Queue Length 95th (m)	0.2	0.2	10.2	3.4
Control Delay (s)	0.3	0.2	36.2	36.1
Lane LOS	A	A	E	E
Approach Delay (s)	0.3	0.2	36.2	36.1
Approach LOS			E	E

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix E – Future (2025) Total Traffic Level of Service Calculations

Intersection	
Intersection Delay, s/veh	12.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	360	7	17	404	8	6	13	1	29	44	25
Future Vol, veh/h	10	360	7	17	404	8	6	13	1	29	44	25
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	14	0	0	13	17	0	0	0	0	0	0
Mvmt Flow	10	360	7	17	404	8	6	13	1	29	44	25
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.3	13.4	9.2	9.8
HCM LOS	B	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	30%	3%	4%	30%
Vol Thru, %	65%	95%	94%	45%
Vol Right, %	5%	2%	2%	26%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	20	377	429	98
LT Vol	6	10	17	29
Through Vol	13	360	404	44
RT Vol	1	7	8	25
Lane Flow Rate	20	377	429	98
Geometry Grp	1	1	1	1
Degree of Util (X)	0.034	0.492	0.554	0.156
Departure Headway (Hd)	6.03	4.702	4.65	5.719
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	597	762	768	631
Service Time	4.034	2.773	2.718	3.719
HCM Lane V/C Ratio	0.034	0.495	0.559	0.155
HCM Control Delay	9.2	12.3	13.4	9.8
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0.1	2.7	3.4	0.5

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	604	21	50	727	2	22	6	30	5	34	5
Future Volume (Veh/h)	4	604	21	50	727	2	22	6	30	5	34	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	4	604	21	50	727	2	22	6	30	5	34	5
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	729			625			1472	1452	614	1484	1461	728
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	729			625			1472	1452	614	1484	1461	728
tC, single (s)	4.4			4.2			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.5			2.3			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	99			95			72	95	94	94	72	99
cM capacity (veh/h)	749			937			78	124	472	90	121	427

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	629	779	58	44
Volume Left	4	50	22	5
Volume Right	21	2	30	5
cSH	749	937	148	126
Volume to Capacity	0.01	0.05	0.39	0.35
Queue Length 95th (m)	0.1	1.3	12.8	10.7
Control Delay (s)	0.1	1.4	44.2	48.1
Lane LOS	A	A	E	E
Approach Delay (s)	0.1	1.4	44.2	48.1
Approach LOS			E	E

Intersection Summary				
Average Delay	3.9			
Intersection Capacity Utilization	88.1%	ICU Level of Service	E	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	626	41	35	699	61	22
Future Volume (Veh/h)	626	41	35	699	61	22
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	626	41	35	699	61	22
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			667		1395	626
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			667		1395	626
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		59	95
cM capacity (veh/h)			923		150	484

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	626	41	35	699	83
Volume Left	0	0	35	0	61
Volume Right	0	41	0	0	22
cSH	1700	1700	923	1700	183
Volume to Capacity	0.37	0.02	0.04	0.41	0.45
Queue Length 95th (m)	0.0	0.0	0.9	0.0	16.1
Control Delay (s)	0.0	0.0	9.1	0.0	39.9
Lane LOS			A		E
Approach Delay (s)	0.0		0.4		39.9
Approach LOS					E

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	42	3	0	16	71	34
Future Volume (Veh/h)	42	3	0	16	71	34
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	42	3	0	16	71	34
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	104	88	105			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	104	88	105			
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	100	100			
cM capacity (veh/h)	894	970	1486			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	45	16	105
Volume Left	42	0	0
Volume Right	3	0	34
cSH	899	1486	1700
Volume to Capacity	0.05	0.00	0.06
Queue Length 95th (m)	1.2	0.0	0.0
Control Delay (s)	9.2	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.2	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	15.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	607	41	0	754	0	22
Future Volume (Veh/h)	607	41	0	754	0	22
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	607	41	0	754	0	22
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			648		1361	607
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			648		1361	607
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
cM capacity (veh/h)			938		163	496

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	607	41	754	22
Volume Left	0	0	0	0
Volume Right	0	41	0	22
cSH	1700	1700	1700	496
Volume to Capacity	0.36	0.02	0.44	0.04
Queue Length 95th (m)	0.0	0.0	0.0	1.1
Control Delay (s)	0.0	0.0	0.0	12.6
Lane LOS				B
Approach Delay (s)	0.0		0.0	12.6
Approach LOS				B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	15.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	375	6	24	436	39	6	28	12	23	31	16
Future Vol, veh/h	17	375	6	24	436	39	6	28	12	23	31	16
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	6	20	0	17	20	0	0	4	11	0	0	6
Mvmt Flow	17	375	6	24	436	39	6	28	12	23	31	16
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13.9	18.3	9.6	9.9
HCM LOS	B	C	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	4%	5%	33%
Vol Thru, %	61%	94%	87%	44%
Vol Right, %	26%	2%	8%	23%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	46	398	499	70
LT Vol	6	17	24	23
Through Vol	28	375	436	31
RT Vol	12	6	39	16
Lane Flow Rate	46	398	499	70
Geometry Grp	1	1	1	1
Degree of Util (X)	0.078	0.545	0.686	0.119
Departure Headway (Hd)	6.122	4.926	4.95	6.113
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	588	724	724	589
Service Time	4.127	3.018	3.039	4.117
HCM Lane V/C Ratio	0.078	0.55	0.689	0.119
HCM Control Delay	9.6	13.9	18.3	9.9
HCM Lane LOS	A	B	C	A
HCM 95th-tile Q	0.3	3.3	5.5	0.4

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	791	5	46	663	8	26	21	50	7	7	5
Future Volume (Veh/h)	10	791	5	46	663	8	26	21	50	7	7	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	10	791	5	46	663	8	26	21	50	7	7	5
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	671			796			1581	1576	794	1633	1575	667
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	671			796			1581	1576	794	1633	1575	667
tC, single (s)	4.3			4.3			7.3	6.6	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.4			3.7	4.1	3.3	3.5	4.0	3.3
p0 queue free %	99			94			63	78	87	88	93	99
cM capacity (veh/h)	840			733			70	96	391	56	103	462

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	806	717	97	19
Volume Left	10	46	26	7
Volume Right	5	8	50	5
cSH	840	733	135	93
Volume to Capacity	0.01	0.06	0.72	0.20
Queue Length 95th (m)	0.3	1.5	31.2	5.4
Control Delay (s)	0.3	1.7	80.6	53.2
Lane LOS	A	A	F	F
Approach Delay (s)	0.3	1.7	80.6	53.2
Approach LOS			F	F

Intersection Summary			
Average Delay	6.3		
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	787	35	55	639	49	27
Future Volume (Veh/h)	787	35	55	639	49	27
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	787	35	55	639	49	27
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			822		1536	787
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			822		1536	787
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		59	93
cM capacity (veh/h)			807		119	392

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	787	35	55	639	76
Volume Left	0	0	55	0	49
Volume Right	0	35	0	0	27
cSH	1700	1700	807	1700	158
Volume to Capacity	0.46	0.02	0.07	0.38	0.48
Queue Length 95th (m)	0.0	0.0	1.7	0.0	17.3
Control Delay (s)	0.0	0.0	9.8	0.0	47.2
Lane LOS			A		E
Approach Delay (s)	0.0		0.8		47.2
Approach LOS					E

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	41	0	2	56	18	40
Future Volume (Veh/h)	41	0	2	56	18	40
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	41	0	2	56	18	40
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	98	38	58			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	98	38	58			
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	100	100			
cM capacity (veh/h)	900	1034	1546			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	41	58	58
Volume Left	41	2	0
Volume Right	0	0	40
cSH	900	1546	1700
Volume to Capacity	0.05	0.00	0.03
Queue Length 95th (m)	1.1	0.0	0.0
Control Delay (s)	9.2	0.3	0.0
Lane LOS	A	A	
Approach Delay (s)	9.2	0.3	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	14.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	779	35	0	694	0	27
Future Volume (Veh/h)	779	35	0	694	0	27
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	779	35	0	694	0	27
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			814		1473	779
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			814		1473	779
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	93
cM capacity (veh/h)			813		140	396

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	779	35	694	27
Volume Left	0	0	0	0
Volume Right	0	35	0	27
cSH	1700	1700	1700	396
Volume to Capacity	0.46	0.02	0.41	0.07
Queue Length 95th (m)	0.0	0.0	0.0	1.7
Control Delay (s)	0.0	0.0	0.0	14.8
Lane LOS				B
Approach Delay (s)	0.0		0.0	14.8
Approach LOS				B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix F - Future (2025) Total Traffic Level of Service Calculations (Sensitivity Analysis)

Intersection	
Intersection Delay, s/veh	12.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	360	7	17	404	8	6	13	1	29	44	25
Future Vol, veh/h	10	360	7	17	404	8	6	13	1	29	44	25
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	14	0	0	13	17	0	0	0	0	0	0
Mvmt Flow	10	360	7	17	404	8	6	13	1	29	44	25
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.3	13.4	9.2	9.8
HCM LOS	B	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	30%	3%	4%	30%
Vol Thru, %	65%	95%	94%	45%
Vol Right, %	5%	2%	2%	26%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	20	377	429	98
LT Vol	6	10	17	29
Through Vol	13	360	404	44
RT Vol	1	7	8	25
Lane Flow Rate	20	377	429	98
Geometry Grp	1	1	1	1
Degree of Util (X)	0.034	0.492	0.554	0.156
Departure Headway (Hd)	6.03	4.702	4.65	5.719
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	597	762	768	631
Service Time	4.034	2.773	2.718	3.719
HCM Lane V/C Ratio	0.034	0.495	0.559	0.155
HCM Control Delay	9.2	12.3	13.4	9.8
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0.1	2.7	3.4	0.5

HCM Unsignalized Intersection Capacity Analysis
3: Centreville Creek Road & King Street

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	561	102	84	693	2	83	7	73	5	35	4
Future Volume (Veh/h)	3	561	102	84	693	2	83	7	73	5	35	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	561	102	84	693	2	83	7	73	5	35	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	695			663			1502	1481	612	1556	1531	694
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	695			663			1502	1481	612	1556	1531	694
tC, single (s)	4.4			4.2			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.5			2.3			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			91			0	94	85	93	67	99
cM capacity (veh/h)	773			907			69	114	474	69	105	446

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	666	779	163	44
Volume Left	3	84	83	5
Volume Right	102	2	73	4
cSH	773	907	115	106
Volume to Capacity	0.00	0.09	1.41	0.41
Queue Length 95th (m)	0.1	2.3	86.3	13.2
Control Delay (s)	0.1	2.3	298.3	61.0
Lane LOS	A	A	F	F
Approach Delay (s)	0.1	2.3	298.3	61.0
Approach LOS			F	F

Intersection Summary			
Average Delay	32.2		
Intersection Capacity Utilization	103.2%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	147	3	0	16	71	150
Future Volume (Veh/h)	147	3	0	16	71	150
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	147	3	0	16	71	150
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	162	146	221			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	162	146	221			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	82	100	100			
cM capacity (veh/h)	829	901	1348			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	150	16	221
Volume Left	147	0	0
Volume Right	3	0	150
cSH	830	1348	1700
Volume to Capacity	0.18	0.00	0.13
Queue Length 95th (m)	5.0	0.0	0.0
Control Delay (s)	10.3	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.3	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	27.9%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	20.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	31	466	8	6	431	36	20	77	27	14	22	24
Future Vol, veh/h	31	466	8	6	431	36	20	77	27	14	22	24
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	6	20	0	17	20	0	0	4	11	0	0	6
Mvmt Flow	31	466	8	6	431	36	20	77	27	14	22	24
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	22.3	21.4	11.4	10.5
HCM LOS	C	C	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	16%	6%	1%	23%
Vol Thru, %	62%	92%	91%	37%
Vol Right, %	22%	2%	8%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	124	505	473	60
LT Vol	20	31	6	14
Through Vol	77	466	431	22
RT Vol	27	8	36	24
Lane Flow Rate	124	505	473	60
Geometry Grp	1	1	1	1
Degree of Util (X)	0.222	0.745	0.72	0.109
Departure Headway (Hd)	6.442	5.31	5.478	6.556
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	554	682	657	543
Service Time	4.517	3.358	3.526	4.643
HCM Lane V/C Ratio	0.224	0.74	0.72	0.11
HCM Control Delay	11.4	22.3	21.4	10.5
HCM Lane LOS	B	C	C	B
HCM 95th-tile Q	0.8	6.7	6.1	0.4

HCM Unsignalized Intersection Capacity Analysis
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11/19/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	738	74	85	624	8	80	22	103	7	8	4
Future Volume (Veh/h)	9	738	74	85	624	8	80	22	103	7	8	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	9	738	74	85	624	8	80	22	103	7	8	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	632			812			1599	1595	775	1705	1628	628
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	632			812			1599	1595	775	1705	1628	628
tC, single (s)	4.3			4.3			7.3	6.6	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.4			3.7	4.1	3.3	3.5	4.0	3.3
p0 queue free %	99			88			0	75	74	82	91	99
cM capacity (veh/h)	870			723			64	88	401	40	90	487

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	821	717	205	19
Volume Left	9	85	80	7
Volume Right	74	8	103	4
cSH	870	723	117	69
Volume to Capacity	0.01	0.12	1.75	0.27
Queue Length 95th (m)	0.2	3.0	120.5	7.4
Control Delay (s)	0.3	3.0	435.6	75.3
Lane LOS	A	A	F	F
Approach Delay (s)	0.3	3.0	435.6	75.3
Approach LOS			F	F

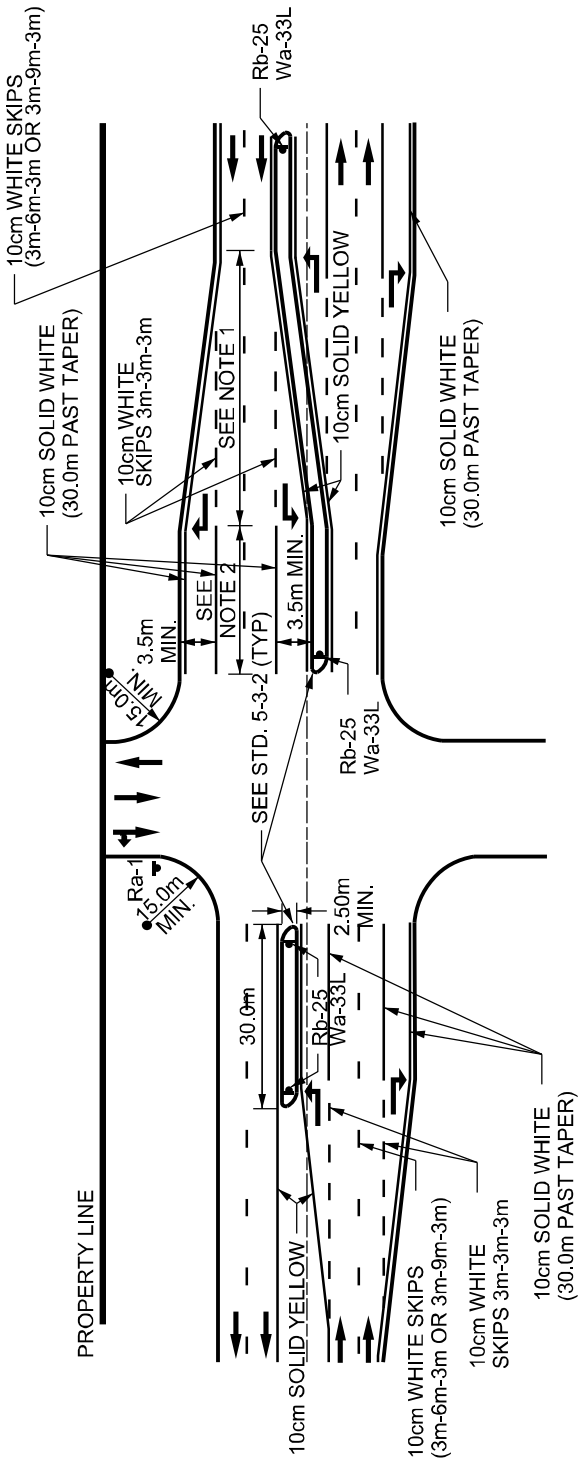
Intersection Summary			
Average Delay	52.9		
Intersection Capacity Utilization	107.7%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	149	0	2	56	18	149
Future Volume (Veh/h)	149	0	2	56	18	149
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	149	0	2	56	18	149
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	152	92	167			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	152	92	167			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	82	100	100			
cM capacity (veh/h)	838	965	1411			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	149	58	167
Volume Left	149	2	0
Volume Right	0	0	149
cSH	838	1411	1700
Volume to Capacity	0.18	0.00	0.10
Queue Length 95th (m)	4.9	0.0	0.0
Control Delay (s)	10.2	0.3	0.0
Lane LOS	B	A	
Approach Delay (s)	10.2	0.3	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	25.1%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix G - Region of Peel Typical Design for a Full Moves Access drawing number 5-1-6 and Region of Peel Typical Design for a Right In / Out Access with Directional Islands (Roads Without Divided Centre Median Island) drawing number 5-1-4



NOTES

1. THE TAPER LENGTH IS BASED ON DESIGN SPEED OF THE ROADWAY UTILIZING THE TAC MANUAL AND THE ONTARIO TRAFFIC MANUAL
2. THE MINIMUM STORAGE IS 30.0 METERS, HOWEVER ACTUAL LENGTH WILL BE DETERMINED BASED ON PROPOSED TURNING VOLUMES
3. ALL PERMANENT LINE PAINTING APPLICATIONS SHALL BE DONE WITH DURABLE, THERMOPLASTIC PAINT
4. PROPOSED DESIGN AND LOCATION OF ALL ISLANDS SHALL BE VERIFIED AND DESIGNED USING PROPER TURNING TEMPLATES

Region of Peel
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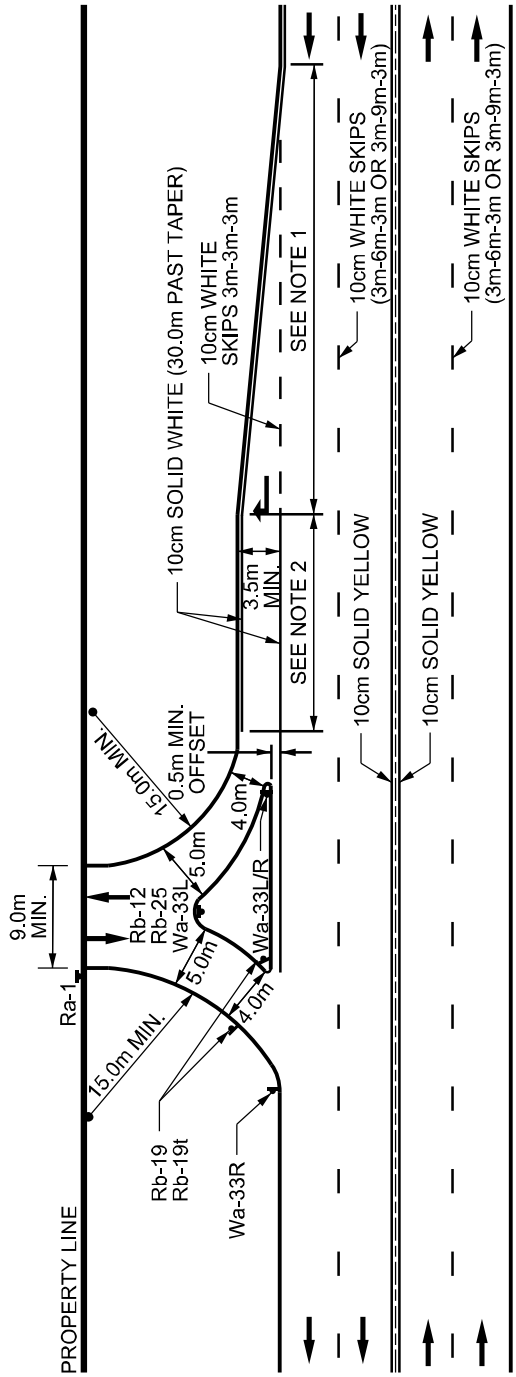
PUBLIC WORKS
STANDARD DRAWING

REV. DATE: JUNE 2016

TYPICAL DESIGN FOR A FULL MOVES ACCESS

APPROVED BY	DRAWN BY
G.K./S.L.	C.B.
STD. DWG. NUMBER	SCALE
5-1-6	N.T.S.



NOTES

1. THE TAPER LENGTH IS BASED ON DESIGN SPEED OF THE ROADWAY UTILIZING THE TAC MANUAL AND THE ONTARIO TRAFFIC MANUAL
2. THE MINIMUM STORAGE IS 30.0 METERS, HOWEVER ACTUAL LENGTH WILL BE DETERMINED BASED ON PROPOSED TURNING VOLUMES
3. THE DIRECTIONAL ISLAND SHALL BE DESIGNED IN ACCORDANCE WITH THE ONTARIO TRAFFIC MANUAL
4. ALL PERMANENT LINE PAINTING APPLICATIONS SHALL BE DONE WITH DURABLE, THERMOPLASTIC PAINT
5. PROPOSED DESIGN AND LOCATION OF ALL ISLANDS SHALL BE VERIFIED AND DESIGNED USING PROPER TURNING TEMPLATES

Region of Peel
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PUBLIC WORKS
STANDARD DRAWING

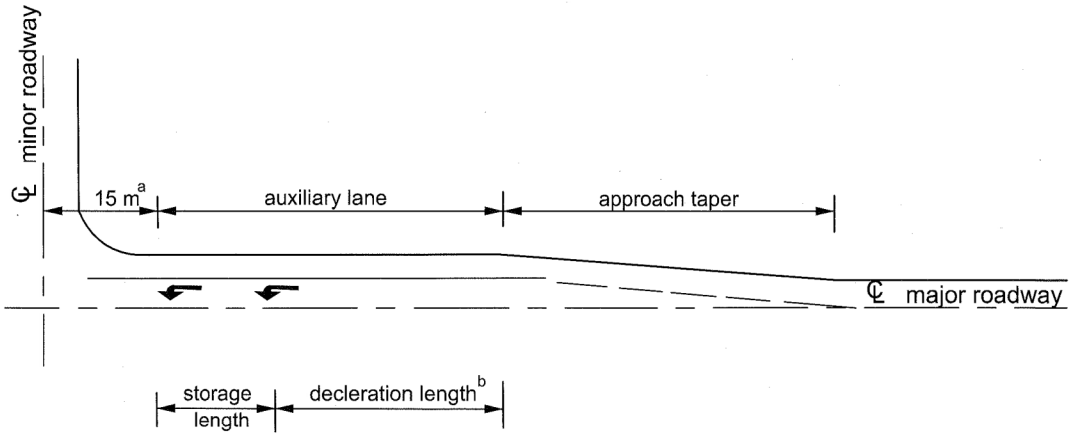
REV. DATE: JUNE 2016

TYPICAL DESIGN FOR A RIGHT IN/OUT ACCESS WITH DIRECTIONAL ISLAND (ROADS WITHOUT DIVIDED CENTRE MEDIAN ISLAND)

APPROVED BY	DRAWN BY
G.K./S.L.	C.B.
STD. DWG. NUMBER	SCALE
5-1-4	N.T.S.

Appendix G - TAC Manual Table 2.3.8.1 and TAC Manual Table E7-1

Figure 2.3.8.1 Left-Turn Lane, Pictorial Description of Terms



Notes : a. 15 m is the assumed distance from minor roadway centreline to auxiliary lane.
b. In a constrained urban environment, deceleration may occur over taper length.
c. Terms also apply to divided roadways.

Table 2.3.8.1 Approach and Departure Taper Ratios and Lengths for Left Turns at Intersections

Design Speed (km/h)	Design Domain for Taper Ratio	Horizontal Curve to Smooth Taper R (m)
50	8:1 – 30:1	500
60	15:1 – 36:1	750
70	15:1 – 42:1	1000
80	15:1 – 48:1	1200
90	27:1 – 54:1	1500
100	30:1 – 60:1	2000
110	33:1 – 66:1	2500
120	36:1 – 72:1	3000

E.7.2 RIGHT TURN TAPER WITH PARALLEL LANE

When the volume of right turning vehicles is such that it creates a hazard and reduces capacity at an intersection, or when the volume approaches the channelization criteria, as outlined in Sub-Chapter E.8, consideration should be given to the provision of a deceleration lane in the form of a taper and parallel lane for the right turning traffic, as shown in Figure E7-3.

The lengths of the taper and the parallel lane for various design speeds are given in Table E7-1. The taper length is derived from design values calculated at a 3 s lane change criterion for the appropriate operating speed.

For grades greater than 2%, the length of deceleration lane should be corrected according to the factors shown in Table E7-2. The correction is applied by multiplying the total deceleration lane by the appropriate factor. The resultant deceleration length will comprise the total deceleration lane. The length of taper remains as shown in Table E7-1.

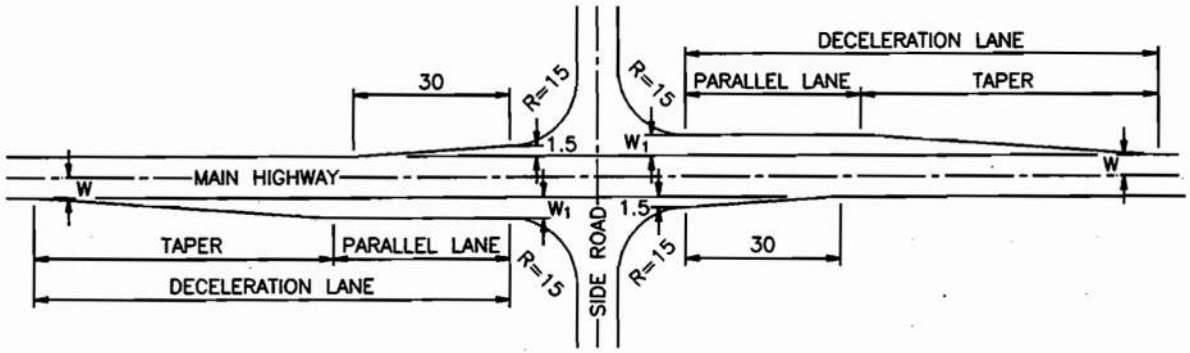


Figure E7–3

Right Turn Taper with Parallel Deceleration Lane Design

Highway Design Speed (km/h)	Length of Taper (m)	Length of Parallel Lane (m)	Total Length of Deceleration Lane (m)
50	40	20	60
60	50	30	80
70	60	45	105
80	70	60	130
90	75	70	145
100	80	85	165
110	85	100	185
120	90	110	200

Table E7-1

Right Turn Taper with Parallel Deceleration Lane Lengths
Flat Grades 2% or Less