



November 27, 2020

JDE Project 1302

City of Barrie

70 Collier Street,
Barrie, ON L4M 4T5

Attn: Justin MacDonald, Senior Transportation Operations Technologist

**RE: Functional Design Review - Traffic Update
932 & 970 Maplevue Drive, City of Barrie**

This letter was prepared by **JD Northcote Engineering Inc.** [JD Engineering] for the account of **970 Maplevue Inc.** [Client].

1.0 BACKGROUND

LEA Consulting Ltd. prepared a functional design review for the proposed 970 Maplevue Drive residential subdivision located in the City of Barrie [City] (dated February 17, 2017) [FDR]. The above noted FDR assessed the traffic-related impact of the proposed development on the adjacent roadway and provided recommendations to accommodate this traffic in a safe and efficient manner. Since the time of the FDR, the Client has purchased adjacent lands (932 Maplevue Drive) and has revised the draft approved plan to include these lands. Nottingham Road has also been restricted to a right-in-right-out [RIRO] access only. This letter is intended as an update to the FDR for the redline revision application for the proposed 932 & 970 Maplevue Drive subdivision.

The proposed draft plan of subdivision for the proposed development is provided in the **Appendix**.

2.0 CHANGE IN UNIT COUNT

The proposed 970 Maplevue Drive subdivision in the FDR includes 796 residential units with the following breakdown:

- 515 single-detached;
- 100 semi-detached;
- 60 townhouse units; and
- 121 mixed-use medium density units.



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The redline proposed draft plan for the proposed 932 & 970 Maplevue Drive subdivision includes 903 residential units with the following breakdown:

- 449 single-detached;
- 369 townhouse units;
- 67 mixed-use medium density units; and
- 8 future lots.

3.0 TRAFFIC REDISTRIBUTION FROM CHANGE IN ACCESS CONFIGURATION

The proposed 970 Maplevue Drive subdivision in the FDR includes two full movement accesses onto Maplevue Drive (Terry Fox Drive and Nottingham Road). Since the completion of FDR, Nottingham Road has been restricted to a RIRO access only.

With Nottingham Road restricted to a RIRO access, all eastbound left turn and southbound left turn movements to/from the subdivision will utilize Terry Fox Drive.

The total (2031) traffic volumes within the study area from the FDR for the AM and PM peak hour with 796 residential units for the proposed development is illustrated in **Figure 1**. The redistributed total (2031) traffic volumes within the study area with Nottingham Road restricted to a RIRO for the AM and PM peak hour is illustrated in **Figure 2**.

Figure 1 – Total (2031) Traffic Volumes (796 Residential Units)

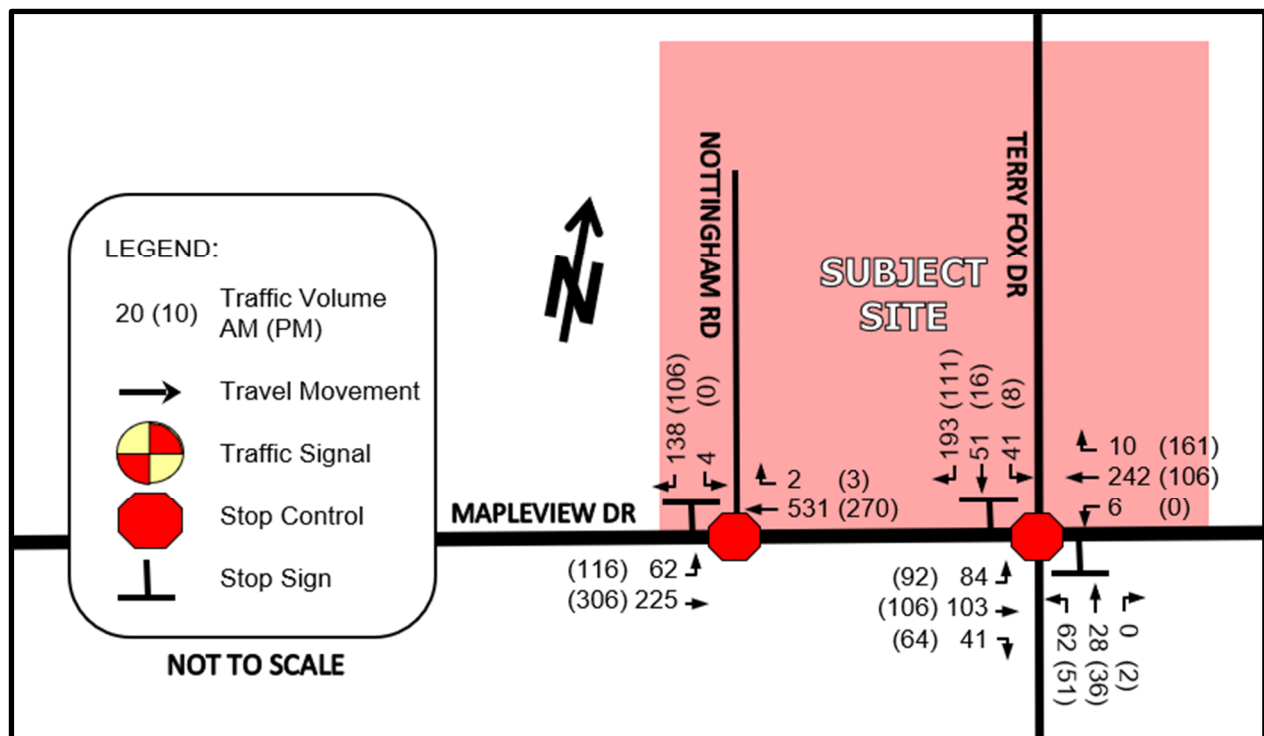
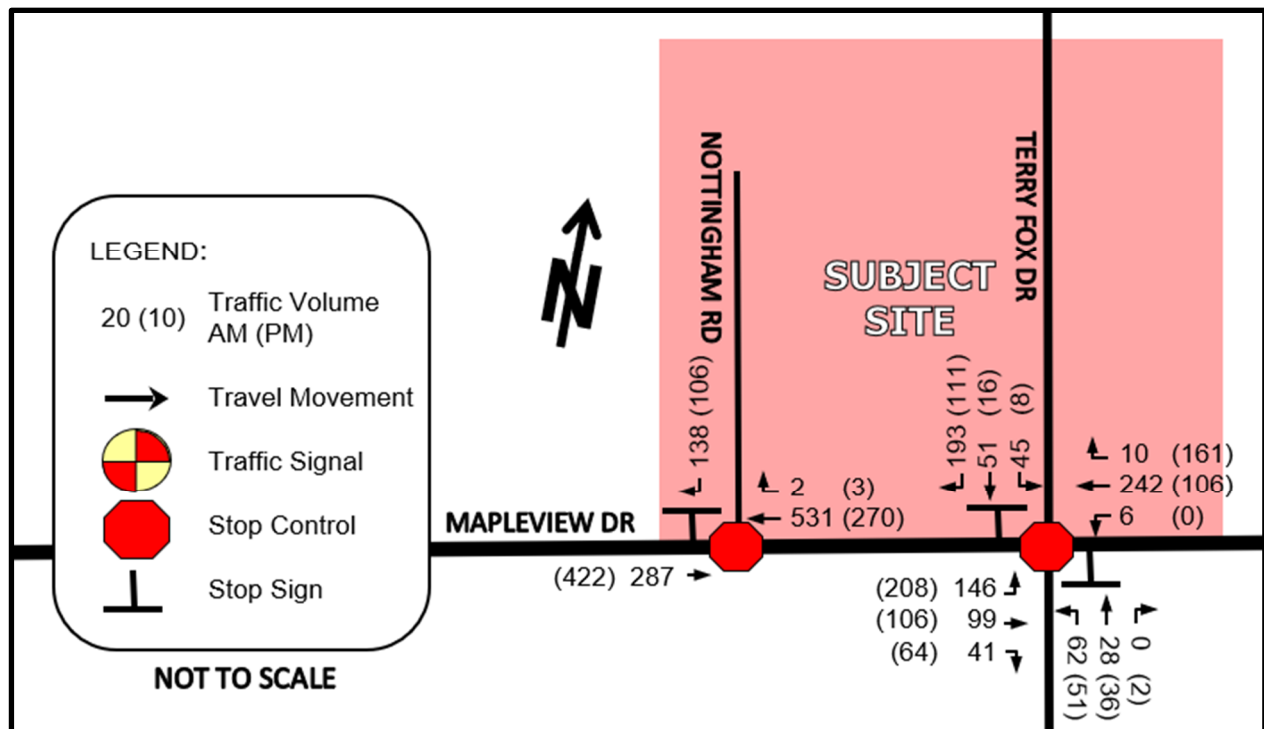


Figure 2 – Redistributed Total (2031) Traffic Volumes (796 Residential Units) – Nottingham RIRO



4.0 TRAFFIC GENERATION FOR PROPOSED DEVELOPMENT ADDITIONAL UNITS

The traffic generation for the additional units of the proposed development has been based on the unit rates provided in the FDR which are based on a proxy site survey of the residential development located along Prince William Way between Mapleview Drive and Big Bay Point Road.

Consistent with the FDR, only residential trips associated with the mixed-use buildings were included in our analysis due to the uncertainty of the type of land use contained within the mixed-use buildings. Furthermore, it is anticipated that the majority of the retail trips to be internal trips, with a minimal impact on the external road network.

The estimated trip generation of the additional units of proposed development is illustrated below in **Table 1**.

Table 1 – Estimated Traffic Generation of Proposed Development Additional Units

Land Use	Size	FRI PM Peak Hour			SAT Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Residential	Unit Rate	0.14	0.34	0.48	0.41	0.25	0.66
	107 units	15	36	51	44	27	71

No transportation modal split has been applied to the above-noted traffic generation calculation.

5.0 TRAFFIC ASSIGNMENT FOR PROPOSED DEVELOPMENT ADDITIONAL UNITS

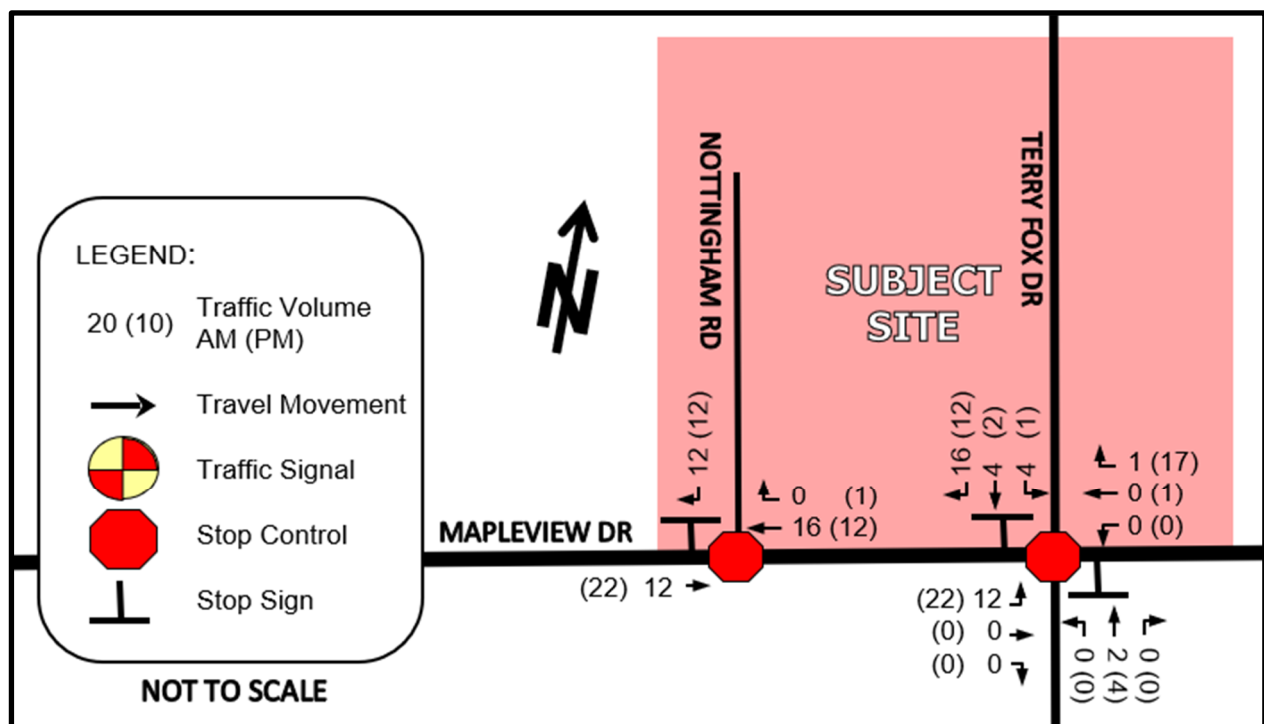
The distribution of traffic for the proposed development additional units is based on the proposed development traffic distribution calculated in the FDR. **Table 2** illustrates the calculation of the distribution of ingress and egress traffic for the proposed development.

Table 2 – Proposed Development Traffic Distribution

Travel Direction (to / from)	AM Peak Hour		PM Peak Hour	
	Ingress	Egress	Ingress	Egress
East via Mapleview Drive	6%	11%	40%	3%
West via Mapleview Drive	79%	77%	51%	90%
South via Terry Fox Drive	15%	12%	9%	7%
TOTAL	100%	100%	100%	100%

Using the traffic distribution pattern noted above, the proposed development additional units traffic assignment was calculated for the AM and PM peak hour and is illustrated in **Figure 3**.

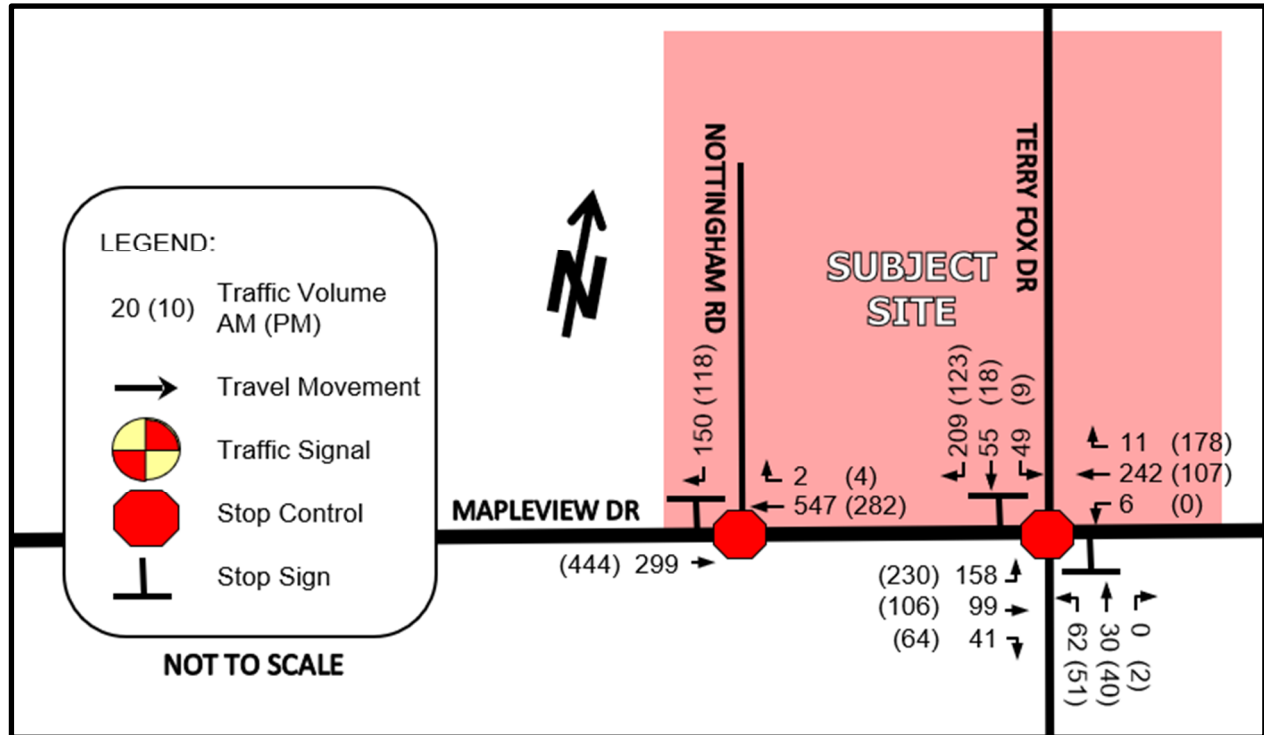
Figure 3 – Proposed Development Additional Units Traffic Assignment



6.0 UPDATED TOTAL (2031) TRAFFIC VOLUMES

For the updated total (2031) horizon year traffic volumes, the proposed development traffic from the additional units was added to the redistributed total (2031) traffic volumes within the study area illustrated in Figure 2, Section 3.0. The resulting updated total (2031) horizon year traffic volumes for the AM and PM peak hour are illustrated in **Figure 4**.

Figure 4 – Updated Total (2031) Traffic Volumes (903 Residential Units)



7.0 TOTAL (2031) INTERSECTION OPERATION

The results of the LOS analysis under the updated total (2031) traffic volumes during the AM and PM peak hour can be found below in **Table 3**. Detailed output of the Synchro analysis can be found in the **Appendix**.

Table 32 – Total (2031) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95 th % Queue (m)		V/C	Delay (s)	LOS	95 th % Queue (m)	
				Model	Storage				Model	Storage
Nottingham Road / Mapleview Drive (unsignalized)	-	2.3	A	-	-	-	1.5	A	-	-
SB	0.32	15.5	C	11	-	0.18	11.0	B	5	-
Terry Fox Drive / Mapleview Drive (unsignalized)	-	9.3	A	-	-	-	6.0	A	-	-
EBL	0.13	8.2	A	4	-	0.20	8.6	A	6	-
NBL	0.41	42.0	E	15	-	0.19	20.2	C	6	-
NBTR	0.08	14.5	B	2	-	0.14	17.7	C	4	-
SBL	0.12	14.6	B	3	-	0.03	16.7	C	1	-
SBTR	0.43	14.6	B	18	-	0.22	11.6	B	7	-

The results of the LOS analysis indicate that all intersections are operating within the typical design limits noted in Section 4.1 of the FDR.

No infrastructure improvements are recommended within the study area.

8.0 SITE ACCESS

Nottingham Road at Mapleview Drive will operate efficiently as a RIRO access, with one-way stop control for the southbound movements. No lane improvements are recommended on Mapleview Drive at Nottingham Road. A single northbound and southbound lane on Nottingham Road at Mapleview Drive will provide the necessary capacity to service the proposed development.

Terry Fox Drive at Mapleview Drive will operate efficiently as a full-movement access, with two-way stop control for the northbound and southbound movements. An eastbound left turn lane with a storage and taper length of 30 metres and 70 metres respectively is recommended on Mapleview Drive at Terry Fox Drive and a southbound left turn lane with a storage and taper length of 20 metres and 60 metres respectively is recommended on Terry Fox Drive at Mapleview Drive. A single northbound, a southbound through-right turn lane and a southbound auxiliary left turn lane on Terry Fox Drive at Mapleview Drive will provide the necessary capacity to service the proposed development.

9.0 CONFORMITY REVIEW

JD Engineering prepared a conformity review for the proposed development dated December 5th, 2019. There is one change to the recommendations from the above noted conformity review as a result of the updated proposed draft plan of subdivision:

Lot 560

A double driveway for Lot 560 extends 0.9 metres into the required two metre clear zone, adjacent to the corner radius of the northwest corner of the Mapleview Drive East / Nottingham Road intersection. A modified driveway width (4.5 metres wide) is recommended for this lot.

There are no further changes to the conformity review noted above.

10.0 SUMMARY

This section summarizes the conclusions and recommendations from this letter.

- 1) The additional traffic generated by the additional proposed units is expected to have a negligible impact on the total (2031) traffic operations in the study area.
- 2) The proposed configuration of the RIRO Nottingham Road and the full movement Terry Fox Drive will provide the necessary capacity to service the proposed development.
- 3) An eastbound left turn lane with a storage and taper length of 30 metres and 70 metres respectively is recommended on Maplevue Drive at Terry Fox Drive
- 4) A southbound left turn lane with a storage and taper length of 20 metres and 60 metres respectively is recommended on Terry Fox Drive at Maplevue Drive.
- 5) A maximum driveway width of 4.5 metres is recommended for Lot 560.
- 6) There are no further changes to the conclusions and the recommendations in the FDR as a result of the redline revision application for the proposed 932 & 970 Maplevue Drive subdivision.

We trust you will find this submission acceptable. Should you have any questions or concerns or require any additional information in this regard, please contact the undersigned.

Yours truly,
JD Northcote Engineering Inc.

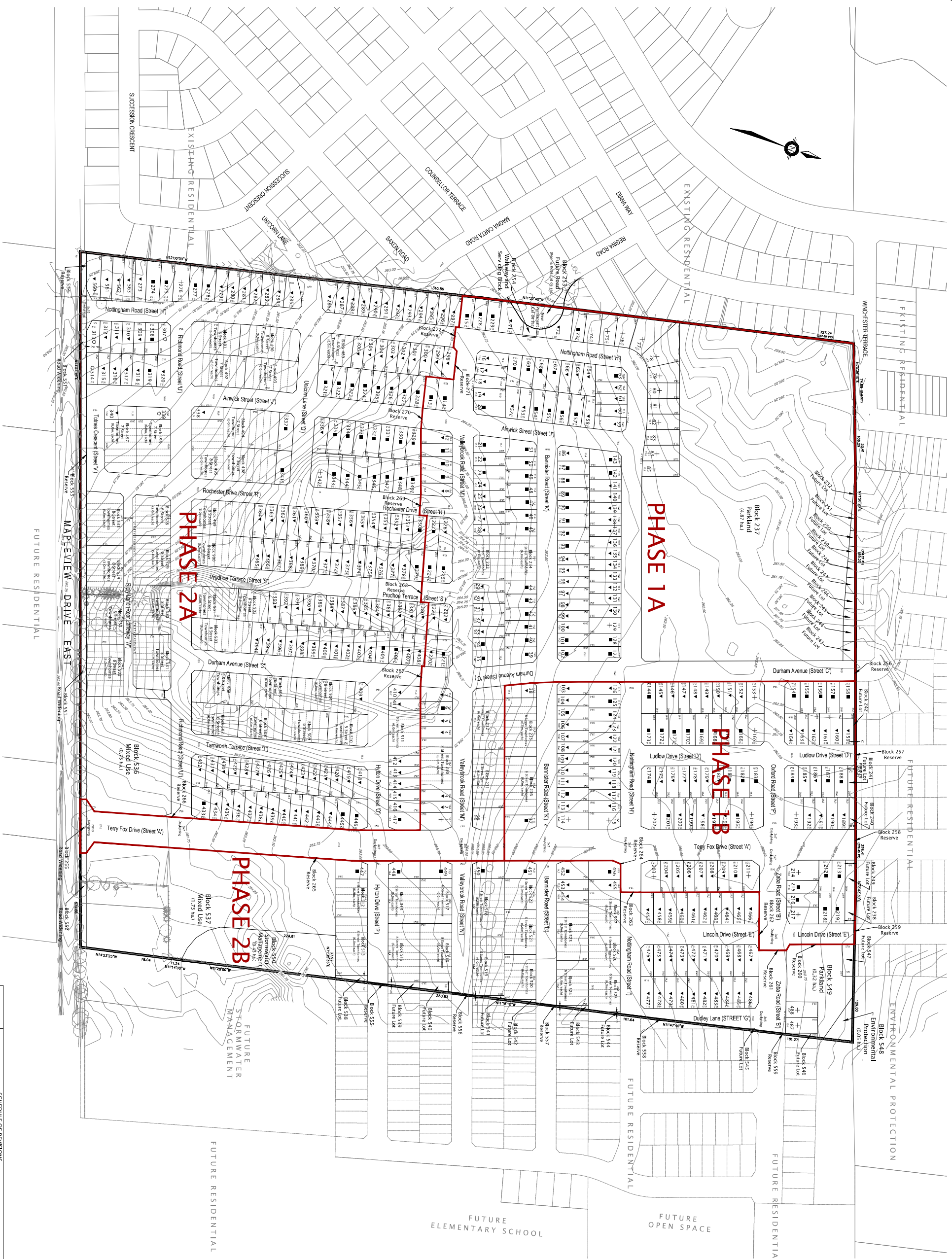


Maitham Dinani, P.Eng.

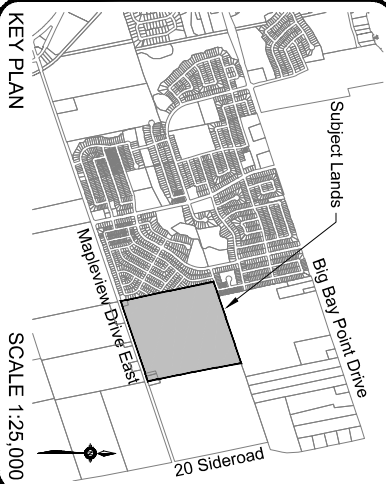
Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. JD Engineering accept no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this project.

Appendix

Site Plan



DATE	DESCRIPTION	DRAWN
19/03/20	LOTTING CHANGES	m.c.c.
19/11/28	LOTTING CHANGES AND PHASE LIMIT REVISION	m.c.c.
19/12/19	REVISE LOCAL TO MAY, COLLECTOR DAYLIGHTING	m.c.c.
20/05/14	REVISE LOCAL TO ARTERIAL DAYLIGHTING	m.c.c.
20/05/22	ADDITION OF 932 MAKE/VERIFY DRIVE EAST, BELT/CLIPPING, UPDATE STATS	m.c.c.



Proposed Draft Plan of Subdivision
Part of Lot 19, Concession 12
City of Barrie 2020

City of Barrie 2020

OWNERS CERTIFICATE
I, THE UNDERSIGNED, BEING THE REGISTERED OWNER OF THE
SUBJECT LANDS, HEREBY AUTHORIZE THE JONES CONSULTING
GROUP LTD., AND 970 MAPLEVIEW INC. TO PREPARE THIS
DRAFT PLAN OF SUBDIVISION AND TO SUBMIT SAME TO
THE CITY OF BARRIE FOR APPROVAL.

OWNER'S CERTIFICATE

DATE	DANN SALVATORE 970 MAPLEVIEW INC.
DATE	SEYMOUR SATOWITZ 970 MAPLEVIEW INC.
SUPERVISOR'S CERTIFICATE I CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.	
DATE	PIER DE ROSA, OLS, OLP J.D. BARNES, LIMITED ONTARIO LAND SURVEYORS

I CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

ONTARIO LAND SURVEYORS

ADDITIONAL INFORMATION REQUIRED UNDER

a) SHOWN ON DRAFT PLAN	h) SHOWN ON DRAFT PLAN
b) SHOWN ON DRAFT PLAN	i) MUNICIPAL PIPED WATER TO BE PROVIDED
c) SHOWN ON KEY PLAN	j) SANDY CLAY LOAM
d) RESIDENTIAL, SWM, EP MIXED USE - OPEN SPACE	k) SHOWN ON DRAFT PLAN
e) SHOWN ON DRAFT PLAN	l) ALL MUNICIPAL SERVICES TO BE PROVIDED
f) SHOWN ON DRAFT PLAN	m) SHOWN ON DRAFT PLAN

STATISTICS

RESIDENTIAL LOT BREAKDOWN

13.7m Singles +
11.6m Singles ■
10.0m Singles ▼

8.6m Singles o

Semi Detached Units

LOI's + 220's - 271's - 460's - 480's

30 units

134 units

261 units

4 units

n/a

449 units

30 units

138 units

276 units

4 units

n/a

445 units

47 units

208 units

244 units

8 units

n/a

507 units

317 units

62 units

67 units

67 units

8 units

184 units

62 units

67 units

67 units

8 units

5,74 units

1,15 ha.

2,48 ha.

8 units

317 units

62 units

67 units

67 units

8 units

Steel Townhomes (5.0m)

IB (LOI's 220's - 250's + 400's - 527's)

62 units

Future Lots and Road

IB (LOI's 220's - 251's + 50's - 547's)

8 units

Open Space & Parkland

IB (LOI's 227's - 540's)

0.05 ha.

Stormwater Management

IB (LOI's 220's - 271's - 460's - 480's)

0.44 ha.

Reserves & Widelings

IB (LOI's 220's - 271's - 460's - 480's)

0.34 ha.

Roads

11.64 ha.

TOTAL

41,71 ha.

903 units

899 units

828 units

IB (LOI's 220's - 250's + 400's - 527's)

IB (LOI's 220's - 251's + 50's - 547's)

IB (LOI's 227's - 540's)

IB (LOI's 220's - 271's - 460's - 480's)

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970 MAPLEVIEW INC.

Proposed Draft Plan of Subdivision

Date issued: MARCH. 20, 2019

Checked By:	RD
Project No.:	LAW-12157
Drawn By:	m.c.f.
Drawing Name:	LAW-12157-IF-DP-3a.dwg

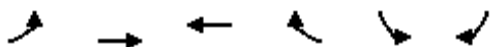


Synchro Analysis Output – Total (2031) Traffic Volumes

970 Maplevue Drive
6: Maplevue Dr & Nottingham Rd

HCM Unsignalized Intersection Capacity Analysis

Total (2031) AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↱			↱
Traffic Volume (veh/h)	0	299	547	2	0	150
Future Volume (Veh/h)	0	299	547	2	0	150
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	325	595	2	0	163
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	597				921	596
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	597				921	596
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	68
cM capacity (veh/h)	980				300	504
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	325	597	163			
Volume Left	0	0	0			
Volume Right	0	2	163			
cSH	1700	1700	504			
Volume to Capacity	0.19	0.35	0.32			
Queue Length 95th (m)	0.0	0.0	11.1			
Control Delay (s)	0.0	0.0	15.5			
Lane LOS			C			
Approach Delay (s)	0.0	0.0	15.5			
Approach LOS			C			
Intersection Summary						
Average Delay		2.3				
Intersection Capacity Utilization		44.9%		ICU Level of Service		A
Analysis Period (min)		15				

970 Maplevue Drive
7: Terry Fox Dr & Maplevue Dr

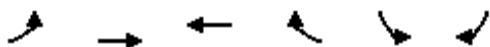
HCM Unsignalized Intersection Capacity Analysis

Total (2031) AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	158	99	41	6	242	11	62	30	0	49	55	209
Future Volume (Veh/h)	158	99	41	6	242	11	62	30	0	49	55	209
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	172	108	45	7	263	12	67	33	0	53	60	227
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	TWLTL			TWLTL								
Median storage veh	2			2								
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	275			153			1008	764	130	752	780	269
vC1, stage 1 conf vol							474	474		283	283	
vC2, stage 2 conf vol							534	289		468	497	
vCu, unblocked vol	275			153			1008	764	130	752	780	269
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	87			100			59	92	100	88	86	71
cM capacity (veh/h)	1288			1428			162	413	919	427	431	770
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	172	153	7	275	67	33	53	287				
Volume Left	172	0	7	0	67	0	53	0				
Volume Right	0	45	0	12	0	0	0	227				
cSH	1288	1700	1428	1700	162	413	427	661				
Volume to Capacity	0.13	0.09	0.00	0.16	0.41	0.08	0.12	0.43				
Queue Length 95th (m)	3.7	0.0	0.1	0.0	14.6	2.1	3.4	17.6				
Control Delay (s)	8.2	0.0	7.5	0.0	42.0	14.5	14.6	14.6				
Lane LOS	A		A		E	B	B	B				
Approach Delay (s)	4.4		0.2		32.9		14.6					
Approach LOS					D		B					
Intersection Summary												
Average Delay	9.3											
Intersection Capacity Utilization	54.7%			ICU Level of Service					A			
Analysis Period (min)	15											

970 Maplevue Drive
6: Maplevue Dr & Nottingham Rd

HCM Unsignalized Intersection Capacity Analysis
Total (2031) PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↱			↗
Traffic Volume (veh/h)	0	444	282	4	0	118
Future Volume (Veh/h)	0	444	282	4	0	118
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	483	307	4	0	128
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	311				792	309
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	311				792	309
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	82
cM capacity (veh/h)	1249				358	731
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	483	311	128			
Volume Left	0	0	0			
Volume Right	0	4	128			
cSH	1700	1700	731			
Volume to Capacity	0.28	0.18	0.18			
Queue Length 95th (m)	0.0	0.0	5.1			
Control Delay (s)	0.0	0.0	11.0			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	11.0			
Approach LOS			B			
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			29.1%	ICU Level of Service		A
Analysis Period (min)			15			

970 Maplevue Drive
7: Terry Fox Dr & Maplevue Dr

HCM Unsignalized Intersection Capacity Analysis

Total (2031) PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	106	64	0	107	178	51	40	2	9	18	123
Future Volume (Veh/h)	230	106	64	0	107	178	51	40	2	9	18	123
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	250	115	70	0	116	193	55	43	2	10	20	134
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	TWLTL			TWLTL								
Median storage veh	2			2								
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	309			185			910	959	150	851	898	212
vC1, stage 1 conf vol							650	650		212	212	
vC2, stage 2 conf vol							260	309		638	685	
vCu, unblocked vol	309			185			910	959	150	851	898	212
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	80			100			81	87	100	97	94	84
cM capacity (veh/h)	1252			1390			292	320	896	317	343	828
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	250	185	0	309	55	45	10	154				
Volume Left	250	0	0	0	55	0	10	0				
Volume Right	0	70	0	193	0	2	0	134				
cSH	1252	1700	1700	1700	292	329	317	699				
Volume to Capacity	0.20	0.11	0.00	0.18	0.19	0.14	0.03	0.22				
Queue Length 95th (m)	6.0	0.0	0.0	0.0	5.5	3.8	0.8	6.7				
Control Delay (s)	8.6	0.0	0.0	0.0	20.2	17.7	16.7	11.6				
Lane LOS	A				C	C	C	B				
Approach Delay (s)	4.9		0.0		19.1		11.9					
Approach LOS					C		B					
Intersection Summary												
Average Delay	6.0											
Intersection Capacity Utilization	54.5%			ICU Level of Service					A			
Analysis Period (min)	15											