April 27th, 2021 **JDE** Project 20155

McKnight Charron Limited Architects
48 Alliance Blvd. Unit 110
Barrie, ON

RE: Traffic Impact Study Addendum
Simcoe County Service Campus - 2 Borland Street, City of Orillia

JD Northcote Engineering Inc. [JD Engineering] is pleased to provide the following addendum letter in support of the proposed development located at 2 Borland Street in the City of Orillia.

1.0 BACKGROUND

JD Engineering prepared a traffic impact study for the proposed Simcoe County Service Campus, located on the east side of West Street North, between Borland Street West and North Street East, in the City of Orillia (dated November 13th, 2020). A subsequent addendum letter (dated February 17th, 2021) was prepared to address the City comments provided in the 1st Submission Comments (D11-359 – January 6th, 2021).

This letter is intended as an addendum to the TIS and previous letter, to address the City comments provided in the 2nd Submission Comments (D11-359 – April 6th, 2021). Excerpts of the 2nd Submission Comments are provided in the **Appendix**.

2.0 COMMENT #13 (A & B)

A) Safety analysis of the Peter Street North Entrance.

- *The location of the entrance is a concern with the limited sightlines due to the topography. Please provide justification for entrance safety based on relevant manuals such as the TAC Guidelines and the Ontario Traffic Manuals.*
- *Include alternatives and options for the entrance for comparison*

B) No analysis of the pedestrian crossing at the Peter Street North entrance was provided for review. The analysis should include a review of the Ontario Traffic Manuals and a recommendation for the level of pedestrian crossover required

- *The analysis should identify any site-specific areas of concerns such as sightlines*
- *The recommendation should include specific requirements for the site such as signage, line painting, additional infrastructure, etc.*

As noted in the TIS, the sight distance north and south on Peter Street North at the proposed East Access (200+ metres and approximately 93 metres, respectively) is greater than the minimum sight distance requirements as per the TAC Guidelines for a design speed of 60 km/h (85 metres). Regardless of the adequate sight distance for motorists, a review of the need for pedestrian signals was undertaken based on the Ontario Traffic Manual Book 12 *Signal Justification* – Justification 6.

JD Engineering
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Using the Total (2032) traffic volumes from the TIS (worst-case scenario), the average annual daily traffic [AADT] on Peter Street has been estimated using the following formula:

- AADT = AM Peak Hour X 10[1]

The 8-hour traffic volumes in the study area were calculated using the following formula:

- 8-hour traffic volumes = AADT/2[2]

A summary of the Total (2032) AADT and 8-hour traffic volumes are provided in **Table 1**.

Table 1 – Peter Street Traffic Volume Summary

Traffic Volumes	Total (2032)
AADT	4,130
8-Hour	**2,065**

Pedestrian crossing volumes are expected to display similar characteristics to the vehicle trips experienced at the East Access. Pedestrian volumes have conservatively estimated to reflect 100% of the vehicle ingress and egress trips. It has been further assumed that approximately 40% of the pedestrian crossings will be children under the age of 12, which are classified as "assisted" pedestrians, having an adjusted value of two times an "unassisted" pedestrian. The "equivalent adult pedestrians" volumes [EAPs] is a summation of the two volumes, equal to the following:

- equivalent adult pedestrians = unassisted pedestrians + 2 x assisted pedestrians

The estimated pedestrian crossing volumes are as follows:

Table 2 – Peter Street Pedestrian Volume Summary

Total (2032) AM Peak Hour	Daily Volume (Peak Hour x 10)	8-hour (Daily ÷ 2)	8-hour EAP Volumes
48	480	240	**336**

Based on the above noted conservative 8-hour traffic and pedestrian volumes, pedestrian traffic signals are not warranted at the proposed East Access under the Total (2032) scenario (results are provided in the **Appendix**).

Although the warrant is not met, a Pedestrian Crossing Level 2 Type C crossing will be provided in acknowledgement of Public concern. The recommended Pedestrian Crossing configuration is provided in the **Appendix**. In context with the the Ontario Traffic Manual Book 15 Pedestrian Crossing Facilities – Table 7: Pedestrian Crossover Selection Matrix, a Level 2 Type C pedestrian facility is considered a conservative provision (Table provided in the **Appendix**).

[1] The AM peak hour was used in the AADT calculation to provide a more conservative estimate for the AADT
[2] This is consistent with the methodology outlined in Section 5.2.2 in Ontario Traffic Manual Book 15.

Further to the implantation of a Pedestrian Crossing facility, the East Access will be limited to a right-in, right-out [RIRO] driveway, which will serve as a favourable configuration in recognition of the excess sightlines to the north on Peter Street. As a result of the [RIRO] configuration, the assignment of site generated traffic will experience a slight change.

A review of the Total (2032) operations was undertaken to evaluate any affects of the traffic adjustment. Figure 1 and Figure 2 in the **Appendix** illustrate the adjusted site traffic assignment and total (2032) traffic volumes, respectively. The results of the LOS analysis under adjusted total (2032) traffic volumes are provided in the **Appendix**. The results indicate that all intersections will continue to operate within typical design limits. No additional improvements are recommended within the study area.

3.0 COMMENT #13 (C & D)

- *The table showing parking requirements and parking provided on the Site Plan is incorrect. The developer must use the City of Orillia parking requirements.*
- *What is the expected breakdown of the proposed development, similar to the breakdown provided in the TIS for parking on comparable units?*

The Site Plan has revised as requested. The latest parking provision summary is provided below in **Table 3**.

Table 3 – Parking Provision Summary

Category	Parking Standard	Size	Required	Provided	Net Parking Supply
Residential Building containing more than 3 Dwelling Units	1.5 spaces per unit	130 units	195 spaces	134 spaces*	-61
Child Care Centre	1.0 space per class (min. of 3)	4 class	4 spaces	4 spaces	-
Business, Professional or Administrative Office	1.0 space per 30m^2 GFA	3,427 m^2	114 spaces	114 spaces	-
All other uses		293 m^2	10 spaces	10 spaces	-
TOTAL PARKING SPACES			**323 spaces**	**262 spaces**	**- 61 spaces**
Barrier-Free Parking	*2 spaces + 2% of Required spaces*		*9 spaces*	*9 spaces*	*0 spaces*
Bicycle Parking	*1 space per 10 residential spaces 1 space per 300 m^2 commercial area*		*32 spaces + 13 spaces = 45 spaces*	*28 indoor + 42 outdoor = 70 spaces*	*+ 25 spaces*

*includes 105 resident parking spaces and 29 residential visitor parking spaces.

The residential units within the proposed development will be primarily affordable housing, consistent with Building Numbers 1, 4 and 5 in Proxy Parking Data (Table 12 of the TIS).

4.0 ADDITIONAL CONCERNS

A) Pedestrians may choose to cross West Street North at an uncontrolled crossing location, other the existing pedestrian signals (West Access), specifically for trips to the existing bus stop.

B) Pedestrian wait times at the existing West Street pedestrian signal are long (i.e. the time between pushing the button and when the traffic signals change is longer than at other locations).

It is recommended that the existing southbound transit stop at the north west corner of the Borland Street / West Street North intersections be moved north, opposite the West Access and existing pedestrian signals.

It is recommended that the pedestrian signal controller is adjusted to ensure that the time between pressing the button (actuation) and the start of the sequence to change the traffic signal from green to red should be no more than two seconds. The amber and all-red time should be maintained per the OTM requirement for a posted speed of 50km/h (4.0 second amber phase and 2.0 second all-red phase). The above-noted signal timing changes will provide an efficient pedestrian crossing and encourage pedestrians to cross at the formal (protected) crosswalk.

We trust you will find this submission acceptable. Should you have and questions or concerns, or require additional information in this regard, please contact our office.

Yours truly,
JD Northcote Engineering Inc.

John Northcote, P.Eng.
President

APPENDIX

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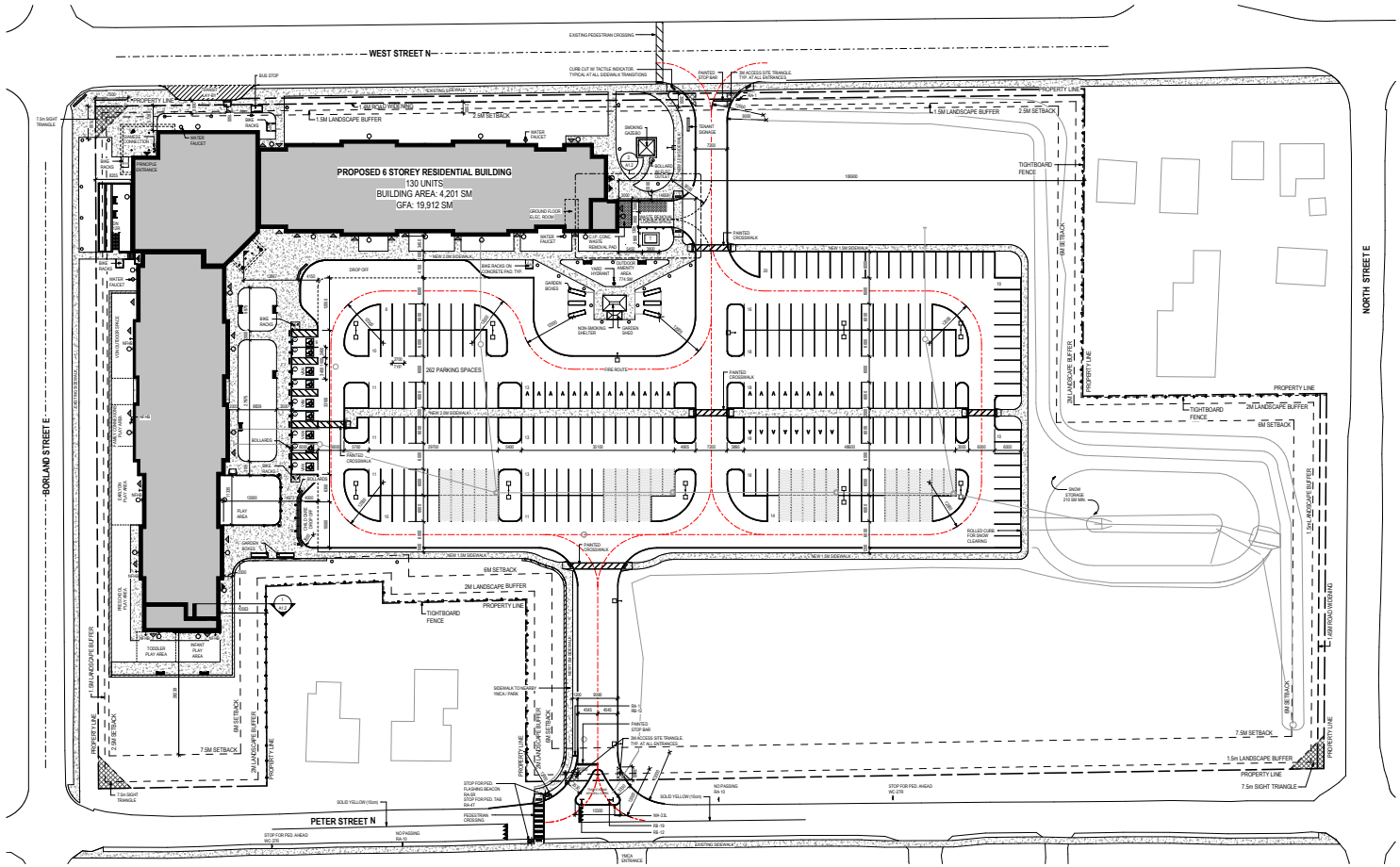
Orillia, ON L3V 7T5

COUNTY OF SIMCOE REGIONAL COMMUNITY HUB (D11-359 – April 6, 2021)

2nd Submission Summary of Comments:

D		• What is the expected breakdown of the proposed development, similar to the breakdown provided in the TIS for parking on comparable units?
Environment and Infrastructure Services Comments		
14		Collection and Distribution - Chris Hoos, Superintendent of Collection and Distribution – jhoos@orillia.ca – 705-325-2293 • Please update Watermains Notes 8.24 to reference MECP Watermain Disinfection Procedure
15		• The future building water service is to be determined when the building is designed, however, the sanitary service is shown. Is it possible to design sanitary to specification without knowing the design of the building? I believe they have added this in to avoid digging up the existing parking lot when the future building is added (water servicing will likely be made on the west side of the property from West Street).
16		Renee Recoskie, Manager of Property and Environmental Sustainability • Verify sampling manhole location as it doesn't appear to be shown.



1 A1.1 SITE PLAN 1 : 500

SITE STATISTICS

REGULATIONS		REQUIRED	PROVIDED
EXISTING ZONING: I1(H2) - INSTITUTIONAL, HOLD 2			R5i - RESIDENTIAL
MINIMUM LOT AREA		1000 SQ.M	37,614 SQ.M
MINIMUM LOT FRONTAGE		20M	227M
MAXIMUM LOT COVERAGE		60%	12% (4,201 SQ.M)
REQUIRED YARDS (INTENSIFICATION ZONE)	FRONT (WEST ST N)	2.5M MIN.	5.7M
	EXTERIOR SIDE (BORLAND ST)	2.5M MIN.	8.3M
	INTERIOR SIDE (NORTH ST E)	6.0M MIN.	106.9M
	REAR (PETER ST N)	7.5M MIN.	35.74M
BUILDING HEIGHT		6.0M MIN. 20.5M MAX.	20.0 M
MIN. LANDSCAPED SPACE		40% OF LOT AREA	54%
PARKING SPACES	RESIDENTIAL AFFORDABLE UNITS - 1.5 SPACE/UNIT (130 UNITS)	195 SPACES	134 SPACES = (1.0 SPACE/ AFFORDABLE UNIT + 0.5 SPACE/ STUDIO UNIT)
	CHILD CARE CENTRE - 1 SPACE/ CLASS	4 SPACES	4 SPACES
	BUSINESS, PROFESSIONAL OR ADMINISTRATIVE OFFICE - 1 SPACE/30.0m2 (3,427m2)	114 SPACES	114 SPACES
	ALL OTHER USES - 1 SPACE/30.0m2 (293m2)	10 SPACES	10 SPACES
	VISITOR - 25% OF RESIDENTIAL PARKING (PART OF 134 RESIDENTIAL SPACES)	29 SPACES	29 SPACES
	TOTAL PARKING SPACES	323 SPACES	262 SPACES
BARRIER-FREE PARKING SPACE REQUIREMENTS OF TOTAL PARKING		4 - TYPE A 5 - TYPE B	4 - TYPE A 5 - TYPE B
BICYCLE PARKING SPACES	1 BIKE / 10 PARKING SPACES 1 BIKE / 300m2 COMMERCIAL	32 - OUTDOOR 13 - INDOOR 45 - TOTAL BIKE SPACES	42 - OUTDOOR 28 - INDOOR 70 - TOTAL BIKE SPACES
TOTAL GFA		N/A	19,912 SQ. M
MIN. SNOW STORAGE AREA (DRIVEWAY & PARKING AREA)		2% MIN.	210 SQ. M

PAVEMENT MARKING LEGEND

IDENTIFICATION	TYPE	COLOUR	WIDTH (cm)
1	SOLID	YELLOW	10
2	SOLID	WHITE	60
OR (	LIMIT OF MARKINGS	-	-

YIELD TO PEDESTRIAN LINE

NOTES:
- DIM A - MAX 600mm / MIN 300mm
- DIM B - MAX 300mm / MIN 150mm
- DIM C - MAX 600mm / MIN 450mm
- TRIANGLE HEIGHT IS EQUAL TO 1.5 TIMES THE BASE DIMENSION
- USE MAX. DIMENSION WITH FOUR TRIANGLES FOR A REGULAR TRIANGLE LANE
- USE MIN. DIMENSION ON NARROWER, LOW SPEED FACILITIES

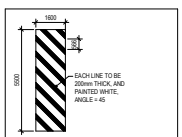
PAVEMENT MARKING DENOTATION:

3.3.3, 3.6.3, 3.9.3: LINE-GAP-LINE SPACING IN METRES

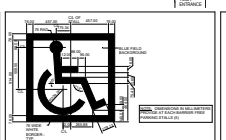
- PERMANENT
- TEMPORARY
- TEMPORARY-REMOVABLE
- DURABLE
- EXISTING MARKING TO BE REMOVED OR (TREATED?)

PAVEMENT MARKING NOTES:

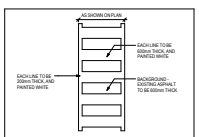
1. ALL PAVEMENT MARKING SHALL CONFORM WITH THE ONTARIO TRAFFIC MANUAL (OTM), BOOK 11
2. PROPOSED MARKINGS TO MATCH EXISTING AT ALL WORK AND/OR ROAD RECONSTRUCTION LIMITS.
3. PAVEMENT MARKINGS FOR PARKING STALLS SHALL BE PAINTED WHITE AND CONFORM TO OPSS 1712.
4. PAINT COLOR SPECIFIED ON DRAWING, PAINT TO BE QUICK DRYING WATER BASED LATEX PAINT (WITHOUT GLASS BEADS)
5. TRAFFIC LINE SYMBOLS, STOP BARS AND PEDESTRIAN CROSSWALKS ARE TO BE DURABLE PAVEMENT MARKINGS OR FIELD REACTED POLYMERIC PAVEMENT MARKINGS IN ACCORDANCE WITH OPSS 710, OPSS 1710 AND OPSS 1714.



BARRIER FREE PARKING AISLE, CROSSWALK (CW) AND NO PARKING AREA (NPA) DETAIL (TYP.) N.T.S.



BARRIER FREE PARKING STALL PAINT MARKING N.T.S.



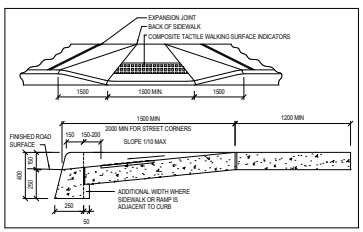
PEDESTRIAN CROSSWALK DETAIL N.T.S.

REFER TO THE ONTARIO TRAFFIC MANUAL FOR ALL SIGNAGE AND PAVEMENT MARKINGS DETAILS UNLESS NOTED OTHERWISE.

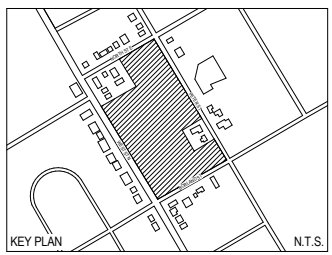
PROPOSED SIGN & DESIGNATION

NOTE:
1. ALL PAVEMENT MARKINGS AND TRAFFIC SIGNS SHALL CONFORM TO THE ONTARIO TRAFFIC MANUAL.
2. PAVEMENT MARKINGS FOR PARKING STALLS SHALL BE PAINTED WHITE AND CONFORM TO OPSS 1712.
3. PAINT COLOR SPECIFIED ON DRAWING, PAINT TO BE QUICK DRYING WATER BASED LATEX PAINT (WITHOUT GLASS BEADS)

2 A1.1 B.F. PARKING, PEDESTRIAN CROSSING & OTM SIGNAGE 1 : 125



3 A1.1 FLUSH CURB DETAIL 1 : 20



SITE PLAN LEGEND

- 286.560 — EXISTING SPOT GRADE
- 286.600 — NEW FINISH GRADE
- BH19 — BORE HOLE (BH) TEST PIT (TP)
- HYD. — YARD HYDRANT
- CB — CATCH BASIN
- PEDESTRIAN ENTRY DOOR LOCATION
- SERVICE/ OVERHEAD DOOR LOCATION
- B.F. PARKING STALL
- B.F. CURB CUT - WITH DETECTABLE GROOVES
- S.C. — SIAMESE CONNECTION
- LIGHT STANDARD
- WALL MOUNTED LIGHT FIXTURE
- CJ — CONTROL JOINT
- ASPHALT TYPE 1
- TACTILE INDICATOR
- FIRE HYDRANT
- HP — HYDRO POLE
- T — TRANSFORMER
- PAINTED STOP BAR
- HB — HOSE BIB
- LIGHT BOLLARD
- SITE FURNITURE

SIGN LEGEND

- BARRIER FREE PARKING - TYPE A (VAN)
- BARRIER FREE PARKING - TYPE B
- VISITOR PARKING W/ PAINTED 'V'
- RA-1 — STOP SIGN

No.	REVISION	DATE
3.	SITE PLAN RESUBMISSION	04/28/2021
2.	SITE PLAN RESUBMISSION	01/29/2021
1.	SITE PLAN APPLICATION	11/13/2020

REVISIONS

ALL DIMENSIONS TO BE CHECKED AND VERIFIED ON SITE. DISCREPANCIES TO BE REPORTED TO THE ARCHITECT. LATEST APPROVED STAMPED DRAWINGS ONLY TO BE USED FOR CONSTRUCTION.

PROJECT NORTH

ONTARIO ASSOCIATION OF ARCHITECTS — MICHAEL W. McKNIGHT LICENCE 3808

MCL ARCHITECTS
MCKNIGHT CHARRON LIMITED
48 ALLIANCE BLVD., UNIT 110
BARRIE, ONTARIO L4M 5K3
WWW.MCLARCHITECTS.CA
T 705 722 6739
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DRAWING TITLE:
SITE PLAN

PROJECT NAME:
COUNTY OF SIMCOE SOCIAL AND COMMUNITY SERVICES AND HOUSING DEVELOPMENT - ORILLIA

250 WEST STREET N, ORILLIA, ON

DATE:	PROJECT #	SHEET #
APRIL 27, 2021		A1.1
DRAWN BY: KB		
SCALE: As indicated		

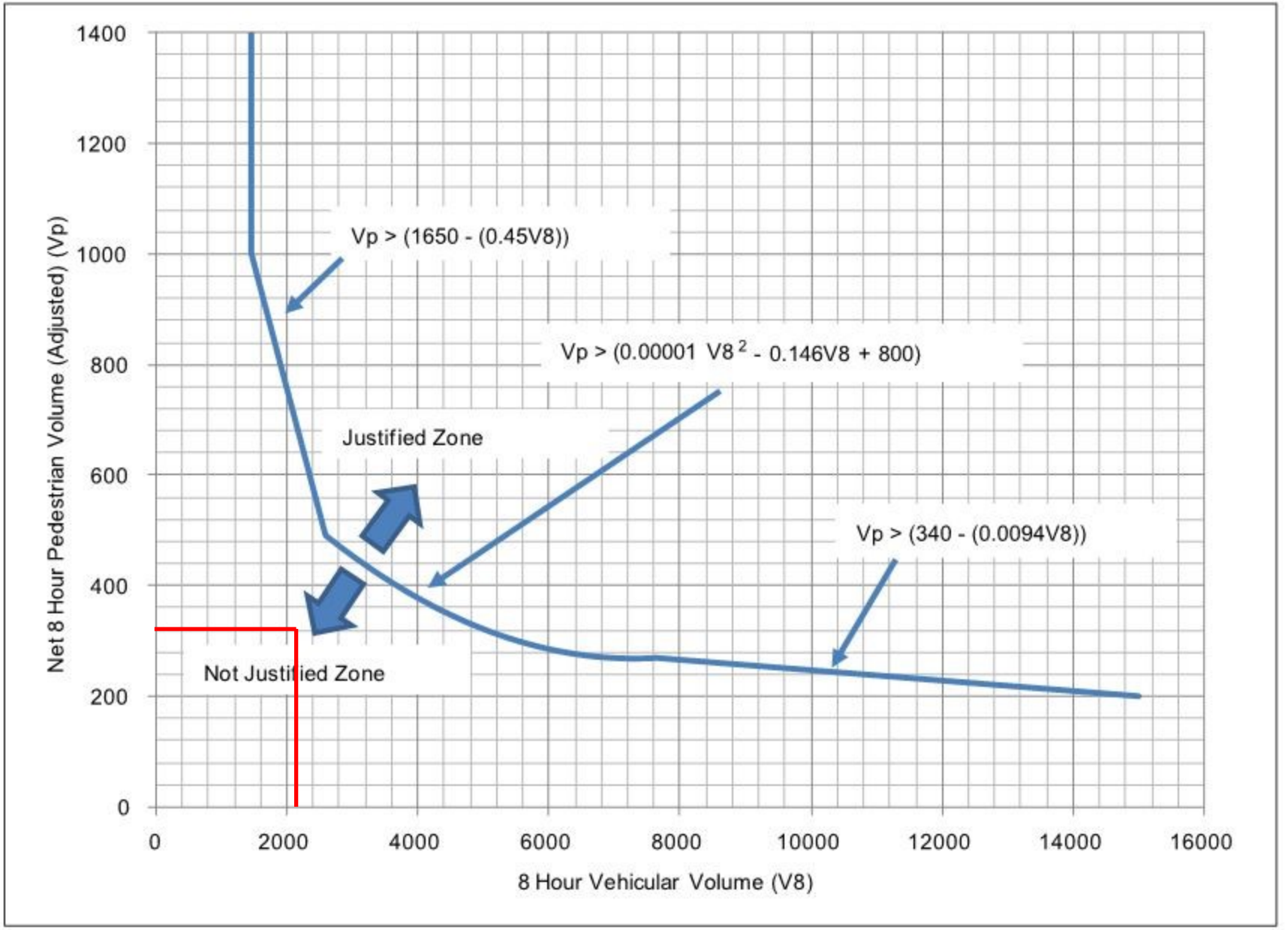


Figure 3: OTM Book 12 Justification 6 - Pedestrian Volume

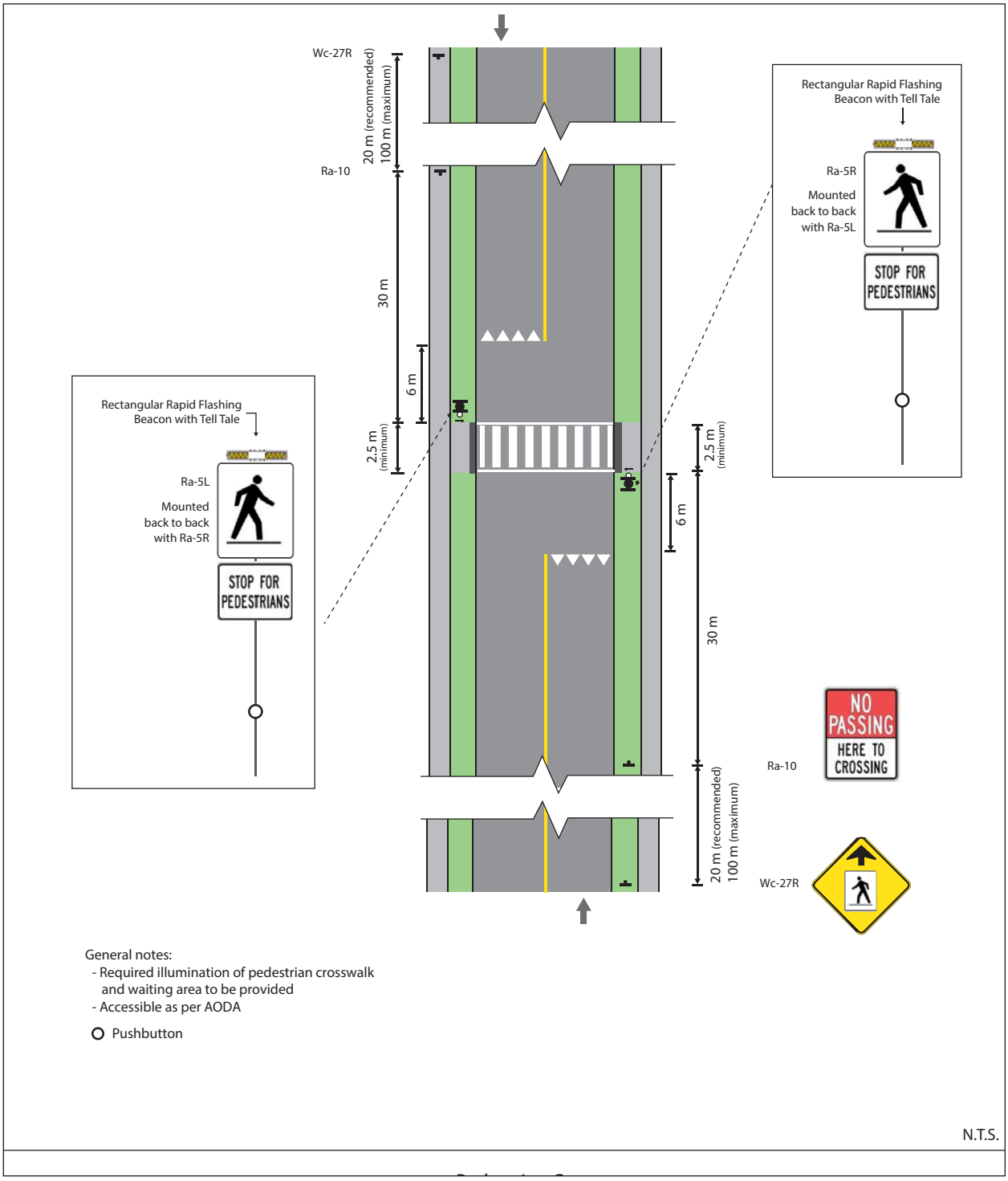


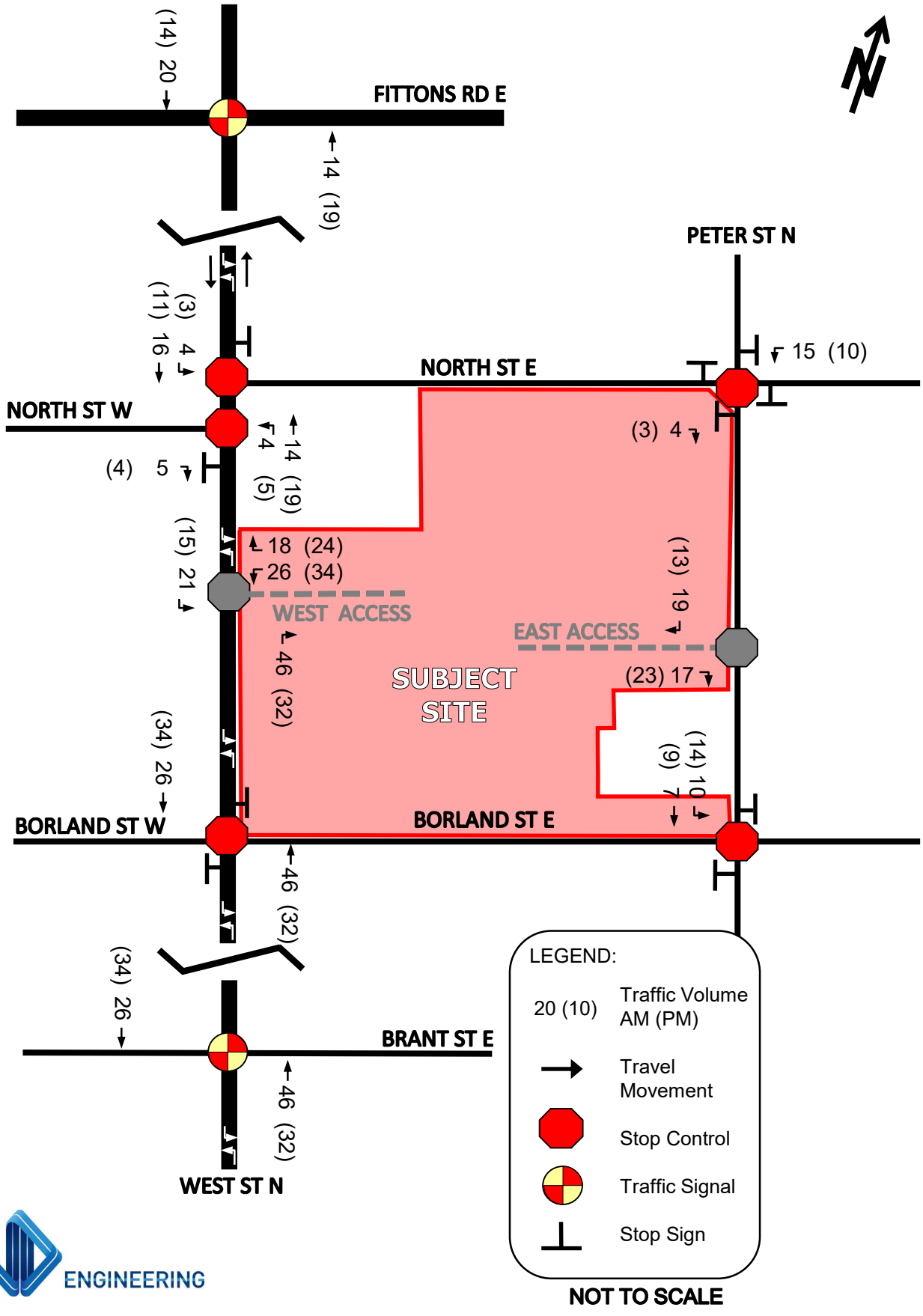
Figure 30: Pedestrian Crossover Level 2 Type C – Mid-block (2-lane, 2-way)

Table 7: Pedestrian Crossover Selection Matrix

Two-way Vehicular Volume			Posted Speed Limit (km/h	Total Number of Lanes for the Roadway Cross Section[1]			
Time Period	Lower Bound	Upper Bound		1 or 2 Lanes	3 lanes	4 lanes w/raised refuge	4 lanes w/o raised refuge
				Recommended			
8 Hour	750	2,250	≤50	Level 2 Type D	Level 2 Type C[3]	Level 2 Type D[2]	Level 2 Type B
4 Hour	395	1,185					
8 Hour	750	2,250	60	Level 2 Type C	Level 2 Type B	Level 2 Type C[2]	Level 2 Type B
4 Hour	395	1,185					
8 Hour	2,250	4,500	≤50	Level 2 Type D	Level 2 Type B	Level 2 Type D[2]	Level 2 Type B
4 Hour	1,185	2,370		Provided			
8 Hour	2,250	4,500	60	Level 2 Type C	Level 2 Type B	Level 2 Type C[2]	Level 2 Type B
4 Hour	1,185	2,370					
8 Hour	4,500	6,000	≤50	Level 2 Type C	Level 2 Type B	Level 2 Type C[2]	Level 2 Type B
4 Hour	2,370	3,155					
8 Hour	4,500	6,000	60	Level 2 Type B	Level 2 Type B	Level 2 Type C[2]	Level 2 Type B
4 Hour	2,370	3,155					
8 Hour	6,000	7,500	≤50	Level 2 Type B	Level 2 Type B	Level 2 Type C[2]	Level 1 Type A
4 Hour	3,155	3,950					
8 Hour	6,000	7,500	60	Level 2 Type B	Level 2 Type B		
4 Hour	3,155	3,950					
8 Hour	7,500	17,500	≤50	Level 2 Type B	Level 2 Type B		
4 Hour	3,950	9,215					
8 Hour	7,500	17,500	60	Level 2 Type B			
4 Hour	3,950	9,215					

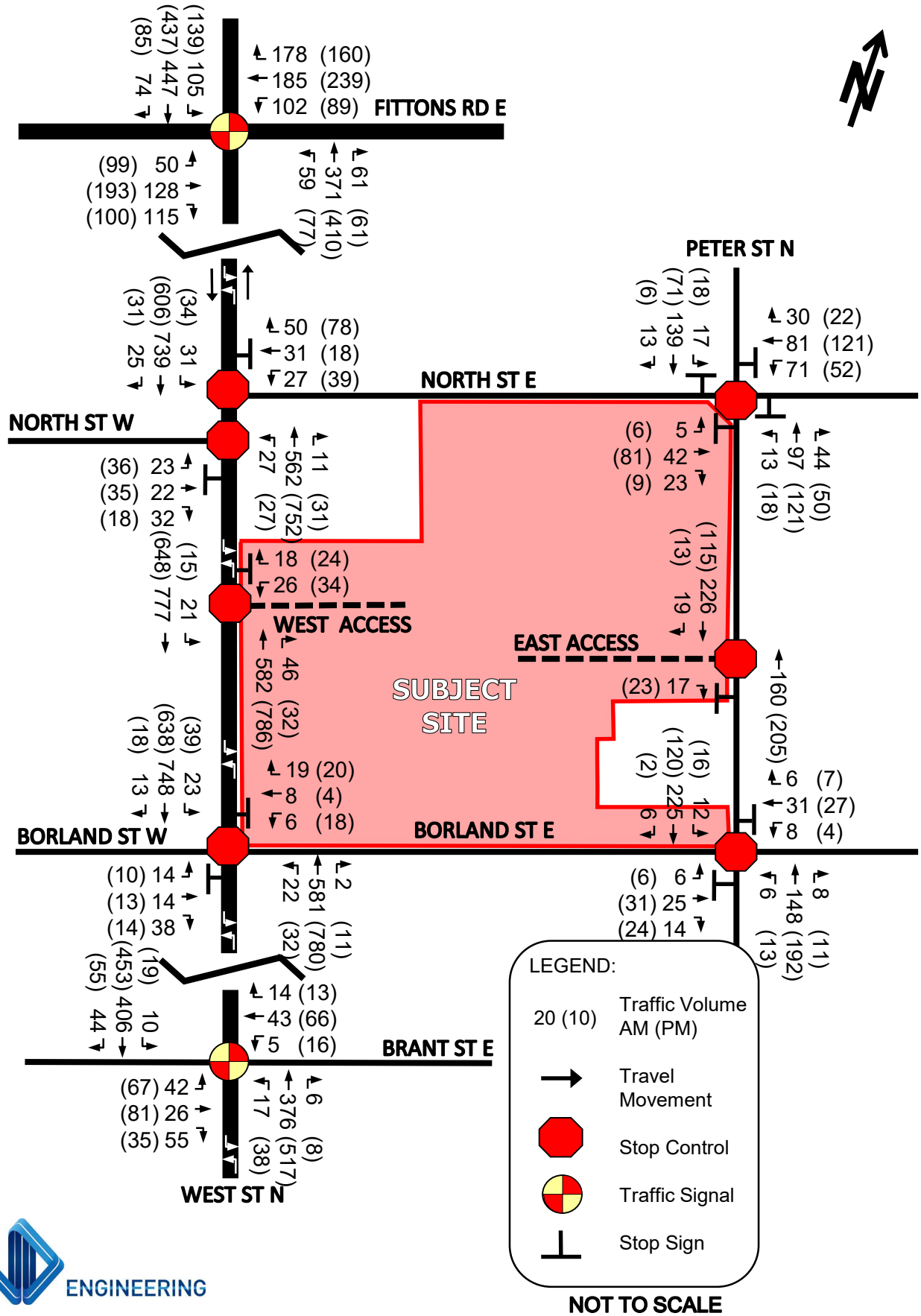
Type A Type B Type C Type D

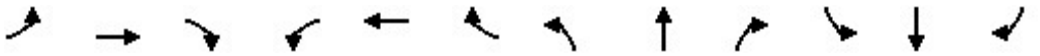
Figure 1: Site Traffic Assignment (RIRO adjustment)



ENGINEERING

Figure 2: Total (2032) Traffic Volumes (RIRO adjustment)

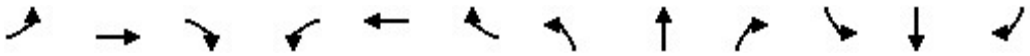




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	14	38	6	8	19	22	581	2	23	748	13
Future Volume (Veh/h)	14	14	38	6	8	19	22	581	2	23	748	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.57	0.57	0.57	0.78	0.78	0.78	0.77	0.77	0.77
Hourly flow rate (vph)	18	18	48	11	14	33	28	745	3	30	971	17
Pedestrians		10			10			5			10	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			0			1	
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1900	1864	994	1906	1870	766	998			758		
vC1, stage 1 conf vol	1050	1050		812	812							
vC2, stage 2 conf vol	851	814		1093	1058							
vCu, unblocked vol	1900	1864	994	1906	1870	766	998			758		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.2		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.3		
p0 queue free %	90	92	84	93	94	92	96			96		
cM capacity (veh/h)	186	225	293	150	216	395	656			814		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	84	58	28	748	30	988
Volume Left	18	11	28	0	30	0
Volume Right	48	33	0	3	0	17
cSH	246	261	656	1700	814	1700
Volume to Capacity	0.34	0.22	0.04	0.44	0.04	0.58
Queue Length 95th (m)	11.0	6.3	1.0	0.0	0.9	0.0
Control Delay (s)	27.0	22.7	10.7	0.0	9.6	0.0
Lane LOS	D	C	B		A	
Approach Delay (s)	27.0	22.7	0.4		0.3	
Approach LOS	D	C				

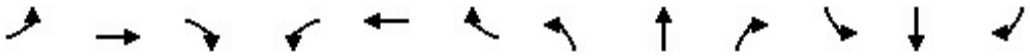
Intersection Summary				
Average Delay	2.2			
Intersection Capacity Utilization	53.7%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	25	14	8	31	6	6	148	8	12	225	6
Future Volume (Veh/h)	6	25	14	8	31	6	6	148	8	12	225	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.59	0.59	0.59	0.67	0.67	0.67	0.81	0.81	0.81	0.65	0.65	0.65
Hourly flow rate (vph)	10	42	24	12	46	9	7	183	10	18	346	9
Pedestrians		5			5			5			5	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	630	604	360	644	603	198	360			198		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	630	604	360	644	603	198	360			198		
tC, single (s)	7.1	6.6	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	89	96	96	89	99	99			99		
cM capacity (veh/h)	344	393	677	331	401	835	1193			1368		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	76	67	200	373
Volume Left	10	12	7	18
Volume Right	24	9	10	9
cSH	444	415	1193	1368
Volume to Capacity	0.17	0.16	0.01	0.01
Queue Length 95th (m)	4.6	4.3	0.1	0.3
Control Delay (s)	14.8	15.4	0.3	0.5
Lane LOS	B	C	A	A
Approach Delay (s)	14.8	15.4	0.3	0.5
Approach LOS	B	C		

Intersection Summary				
Average Delay	3.4			
Intersection Capacity Utilization	28.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	5	42	23	71	81	30	13	97	44	17	139	13
Future Volume (vph)	5	42	23	71	81	30	13	97	44	17	139	13
Peak Hour Factor	0.78	0.78	0.78	0.63	0.63	1.00	0.70	0.70	0.70	0.57	0.57	0.57
Hourly flow rate (vph)	6	54	29	113	129	30	19	139	63	30	244	23

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	89	272	221	297
Volume Left (vph)	6	113	19	30
Volume Right (vph)	29	30	63	23
Hadj (s)	-0.15	0.24	-0.08	0.03
Departure Headway (s)	5.7	5.7	5.4	5.4
Degree Utilization, x	0.14	0.43	0.33	0.44
Capacity (veh/h)	546	585	611	630
Control Delay (s)	9.6	13.0	11.0	12.5
Approach Delay (s)	9.6	13.0	11.0	12.5
Approach LOS	A	B	B	B

Intersection Summary				
Delay	12.0			
Level of Service	B			
Intersection Capacity Utilization	36.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	58	50	585	33	31	764
Future Volume (Veh/h)	58	50	585	33	31	764
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.61	0.61	0.80	0.80	0.87	0.87
Hourly flow rate (vph)	95	82	731	41	36	878
Pedestrians	10		5			5
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.1		1.1			1.1
Percent Blockage	1		0			0
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1716	766			782	
vC1, stage 1 conf vol	762					
vC2, stage 2 conf vol	955					
vCu, unblocked vol	1716	766			782	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	67	79			96	
cM capacity (veh/h)	288	397			828	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	177	772	36	878
Volume Left	95	0	36	0
Volume Right	82	41	0	0
cSH	330	1700	828	1700
Volume to Capacity	0.54	0.45	0.04	0.52
Queue Length 95th (m)	22.8	0.0	1.0	0.0
Control Delay (s)	27.9	0.0	9.5	0.0
Lane LOS	D		A	
Approach Delay (s)	27.9	0.0	0.4	
Approach LOS	D			

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

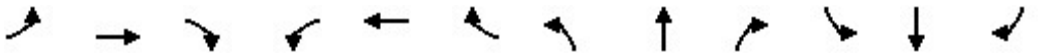
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	45	32	27	573	766	56
Future Volume (Veh/h)	45	32	27	573	766	56
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.48	0.48	0.80	0.80	0.87	0.87
Hourly flow rate (vph)	94	67	34	716	880	64
Pedestrians	5			5	5	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1706	922	949			
vC1, stage 1 conf vol	917					
vC2, stage 2 conf vol	789					
vCu, unblocked vol	1706	922	949			
tC, single (s)	6.4	6.3	4.2			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.4	2.3			
p0 queue free %	68	78	95			
cM capacity (veh/h)	294	311	674			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	161	34	716	944
Volume Left	94	34	0	0
Volume Right	67	0	0	64
cSH	301	674	1700	1700
Volume to Capacity	0.54	0.05	0.42	0.56
Queue Length 95th (m)	22.5	1.2	0.0	0.0
Control Delay (s)	30.0	10.6	0.0	0.0
Lane LOS	D	B		
Approach Delay (s)	30.0	0.5		0.0
Approach LOS	D			

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	26	55	5	43	14	17	376	6	10	406	44
Future Volume (vph)	42	26	55	5	43	14	17	376	6	10	406	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.97		0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.99	1.00		1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85		0.97		1.00	1.00		1.00	0.99	
Flt Protected		0.97	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1803	1555		1802		1786	1879		1786	1851	
Flt Permitted		0.77	1.00		0.96		0.48	1.00		0.48	1.00	
Satd. Flow (perm)		1437	1555		1737		896	1879		912	1851	
Peak-hour factor, PHF	0.78	0.78	0.78	0.76	0.76	0.76	0.82	0.82	0.82	0.94	0.94	0.94
Adj. Flow (vph)	54	33	71	7	57	18	21	459	7	11	432	47
RTOR Reduction (vph)	0	0	63	0	16	0	0	1	0	0	4	0
Lane Group Flow (vph)	0	87	8	0	66	0	21	465	0	11	475	0
Confl. Peds. (#/hr)	13		5	5		13	5		5	5		5
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		8.1	8.1		8.1		48.1	48.1		48.1	48.1	
Effective Green, g (s)		8.1	8.1		8.1		48.1	48.1		48.1	48.1	
Actuated g/C Ratio		0.12	0.12		0.12		0.71	0.71		0.71	0.71	
Clearance Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		170	184		206		631	1325		643	1305	
v/s Ratio Prot								0.25			c0.26	
v/s Ratio Perm		c0.06	0.01		0.04		0.02			0.01		
v/c Ratio		0.51	0.05		0.32		0.03	0.35		0.02	0.36	
Uniform Delay, d1		28.2	26.6		27.5		3.0	3.9		3.0	4.0	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.6	0.1		0.9		0.1	0.7		0.0	0.8	
Delay (s)		30.8	26.7		28.4		3.1	4.7		3.0	4.8	
Level of Service		C	C		C		A	A		A	A	
Approach Delay (s)		29.0			28.4			4.6			4.7	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	68.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	128	115	102	185	178	59	371	61	105	447	74
Future Volume (vph)	50	128	115	102	185	178	59	371	61	105	447	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			6.0			6.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frpb, ped/bikes		0.99			0.99			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.94			0.94			0.98			0.98	
Flt Protected		0.99			0.99			0.99			0.99	
Satd. Flow (prot)		3293			3287			3473			3466	
Flt Permitted		0.64			0.72			0.77			0.73	
Satd. Flow (perm)		2113			2408			2689			2537	
Peak-hour factor, PHF	0.70	0.70	0.70	0.74	0.74	0.74	0.81	0.81	0.81	0.78	0.78	0.78
Adj. Flow (vph)	71	183	164	138	250	241	73	458	75	135	573	95
RTOR Reduction (vph)	0	120	0	0	122	0	0	9	0	0	10	0
Lane Group Flow (vph)	0	298	0	0	507	0	0	597	0	0	793	0
Confl. Peds. (#/hr)	25		25	25		25	35		35	35		35
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		21.3			21.3			46.2			46.2	
Effective Green, g (s)		21.3			21.3			46.2			46.2	
Actuated g/C Ratio		0.27			0.27			0.58			0.58	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		566			645			1562			1474	
v/s Ratio Prot												
v/s Ratio Perm		0.14			c0.21			0.22			c0.31	
v/c Ratio		0.53			0.79			0.38			0.54	
Uniform Delay, d1		24.8			27.0			9.0			10.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.9			6.3			0.7			0.4	
Delay (s)		25.7			33.3			9.7			10.5	
Level of Service		C			C			A			B	
Approach Delay (s)		25.7			33.3			9.7			10.5	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	79.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	117.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	26	18	582	46	21	777
Future Volume (Veh/h)	26	18	582	46	21	777
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	28	20	633	50	23	845
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	1549	658			683	
vC1, stage 1 conf vol	658					
vC2, stage 2 conf vol	891					
vCu, unblocked vol	1549	658			683	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	91	96			97	
cM capacity (veh/h)	324	464			910	

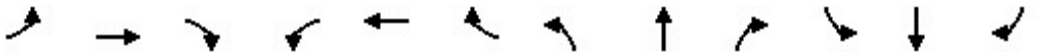
Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	48	683	23	845
Volume Left	28	0	23	0
Volume Right	20	50	0	0
cSH	371	1700	910	1700
Volume to Capacity	0.13	0.40	0.03	0.50
Queue Length 95th (m)	3.4	0.0	0.6	0.0
Control Delay (s)	16.1	0.0	9.1	0.0
Lane LOS	C		A	
Approach Delay (s)	16.1	0.0	0.2	
Approach LOS	C			

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	17	0	160	226	19
Future Volume (Veh/h)	0	17	0	160	226	19
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	18	0	174	246	21
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	430	256	267			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	430	256	267			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	98	100			
cM capacity (veh/h)	582	782	1297			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	18	174	267
Volume Left	0	0	0
Volume Right	18	0	21
cSH	782	1700	1700
Volume to Capacity	0.02	0.10	0.16
Queue Length 95th (m)	0.5	0.0	0.0
Control Delay (s)	9.7	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.7	0.0	0.0
Approach LOS	A		

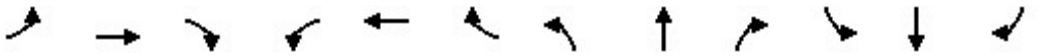
Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	23.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	13	14	18	4	20	32	780	11	39	638	18
Future Volume (Veh/h)	10	13	14	18	4	20	32	780	11	39	638	18
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.78	0.78	0.78	0.90	0.90	0.90	0.92	0.92	0.92
Hourly flow rate (vph)	12	16	17	23	5	26	36	867	12	42	693	20
Pedestrians		10			10			5			10	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			0			1	
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1774	1758	718	1762	1762	893	723			889		
vC1, stage 1 conf vol	797	797		955	955							
vC2, stage 2 conf vol	978	961		807	807							
vCu, unblocked vol	1774	1758	718	1762	1762	893	723			889		
tC, single (s)	7.1	6.5	6.2	7.3	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.3	5.5							
tF (s)	3.5	4.0	3.3	3.7	4.0	3.3	2.2			2.2		
p0 queue free %	94	93	96	88	98	92	96			94		
cM capacity (veh/h)	186	227	423	194	236	334	871			742		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	45	54	36	879	42	713
Volume Left	12	23	36	0	42	0
Volume Right	17	26	0	12	0	20
cSH	257	248	871	1700	742	1700
Volume to Capacity	0.17	0.22	0.04	0.52	0.06	0.42
Queue Length 95th (m)	4.7	6.1	1.0	0.0	1.4	0.0
Control Delay (s)	21.9	23.5	9.3	0.0	10.1	0.0
Lane LOS	C	C	A		B	
Approach Delay (s)	21.9	23.5	0.4		0.6	
Approach LOS	C	C				

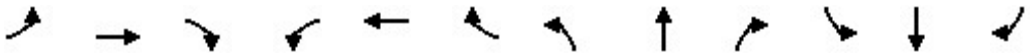
Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	55.4%	ICU Level of Service		B
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	31	24	4	27	7	13	192	11	16	120	2
Future Volume (Veh/h)	6	31	24	4	27	7	13	192	11	16	120	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.88	0.88	0.88	0.77	0.77	0.77	0.70	0.70	0.70
Hourly flow rate (vph)	8	41	32	5	31	8	17	249	14	23	171	3
Pedestrians		5			5			5			5	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	542	526	182	571	520	266	179			268		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	542	526	182	571	520	266	179			268		
tC, single (s)	7.1	6.6	6.2	7.1	6.6	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.3	3.5	4.1	3.3	2.2			2.2		
p0 queue free %	98	91	96	99	93	99	99			98		
cM capacity (veh/h)	405	434	852	370	428	765	1390			1289		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	81	44	280	197
Volume Left	8	5	17	23
Volume Right	32	8	14	3
cSH	534	456	1390	1289
Volume to Capacity	0.15	0.10	0.01	0.02
Queue Length 95th (m)	4.0	2.4	0.3	0.4
Control Delay (s)	13.0	13.7	0.6	1.1
Lane LOS	B	B	A	A
Approach Delay (s)	13.0	13.7	0.6	1.1
Approach LOS	B	B		

Intersection Summary				
Average Delay	3.4			
Intersection Capacity Utilization	26.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	6	81	9	52	121	22	18	121	50	18	71	6
Future Volume (vph)	6	81	9	52	121	22	18	121	50	18	71	6
Peak Hour Factor	0.63	0.63	0.63	0.72	0.72	0.72	0.72	0.72	0.72	0.62	0.62	0.62
Hourly flow rate (vph)	10	129	14	72	168	31	25	168	69	29	115	10

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	153	271	262	154
Volume Left (vph)	10	72	25	29
Volume Right (vph)	14	31	69	10
Hadj (s)	-0.01	0.02	-0.10	0.03
Departure Headway (s)	5.5	5.3	5.2	5.5
Degree Utilization, x	0.23	0.40	0.38	0.24
Capacity (veh/h)	591	629	632	587
Control Delay (s)	10.2	11.8	11.4	10.3
Approach Delay (s)	10.2	11.8	11.4	10.3
Approach LOS	B	B	B	B

Intersection Summary				
Delay	11.1			
Level of Service	B			
Intersection Capacity Utilization	36.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	57	78	788	66	34	637
Future Volume (Veh/h)	57	78	788	66	34	637
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.90	0.90	0.92	0.92
Hourly flow rate (vph)	64	88	876	73	37	692
Pedestrians	10		5			5
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.1		1.1			1.1
Percent Blockage	1		0			0
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1694	928			959	
vC1, stage 1 conf vol	922					
vC2, stage 2 conf vol	771					
vCu, unblocked vol	1694	928			959	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	78	73			95	
cM capacity (veh/h)	294	320			710	

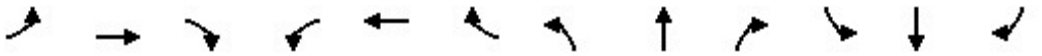
Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	152	949	37	692
Volume Left	64	0	37	0
Volume Right	88	73	0	0
cSH	309	1700	710	1700
Volume to Capacity	0.49	0.56	0.05	0.41
Queue Length 95th (m)	19.5	0.0	1.3	0.0
Control Delay (s)	27.4	0.0	10.3	0.0
Lane LOS	D		B	
Approach Delay (s)	27.4	0.0	0.5	
Approach LOS	D			

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	71	18	27	783	645	49
Future Volume (Veh/h)	71	18	27	783	645	49
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.78	0.78	0.90	0.90	0.92	0.92
Hourly flow rate (vph)	91	23	30	870	701	53
Pedestrians	5			5	5	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1668	738	759			
vC1, stage 1 conf vol	732					
vC2, stage 2 conf vol	935					
vCu, unblocked vol	1668	738	759			
tC, single (s)	6.6	6.2	4.1			
tC, 2 stage (s)	5.6					
tF (s)	3.7	3.3	2.2			
p0 queue free %	66	94	96			
cM capacity (veh/h)	272	414	848			

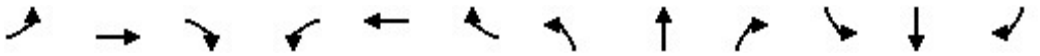
Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	114	30	870	754
Volume Left	91	30	0	0
Volume Right	23	0	0	53
cSH	292	848	1700	1700
Volume to Capacity	0.39	0.04	0.51	0.44
Queue Length 95th (m)	13.5	0.8	0.0	0.0
Control Delay (s)	25.0	9.4	0.0	0.0
Lane LOS	D	A		
Approach Delay (s)	25.0	0.3		0.0
Approach LOS	D			

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	81	35	16	66	13	38	517	8	19	453	55
Future Volume (vph)	67	81	35	16	66	13	38	517	8	19	453	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.97		0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.99	1.00		1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85		0.98		1.00	1.00		1.00	0.98	
Flt Protected		0.98	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1829	1554		1822		1786	1878		1786	1848	
Flt Permitted		0.83	1.00		0.92		0.39	1.00		0.39	1.00	
Satd. Flow (perm)		1562	1554		1686		733	1878		742	1848	
Peak-hour factor, PHF	0.88	0.88	0.88	0.80	0.80	0.80	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	76	92	40	20	82	16	41	562	9	22	515	62
RTOR Reduction (vph)	0	0	33	0	8	0	0	1	0	0	5	0
Lane Group Flow (vph)	0	168	7	0	111	0	41	570	0	22	573	0
Confl. Peds. (#/hr)	10		5	5		10	5		5	5		5
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		12.8	12.8		12.8		45.1	45.1		45.1	45.1	
Effective Green, g (s)		12.8	12.8		12.8		45.1	45.1		45.1	45.1	
Actuated g/C Ratio		0.18	0.18		0.18		0.65	0.65		0.65	0.65	
Clearance Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		286	284		308		472	1211		478	1192	
v/s Ratio Prot								0.30			c0.31	
v/s Ratio Perm		c0.11	0.00		0.07		0.06			0.03		
v/c Ratio		0.59	0.03		0.36		0.09	0.47		0.05	0.48	
Uniform Delay, d1		26.1	23.4		25.0		4.7	6.3		4.5	6.4	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.1	0.0		0.7		0.4	1.3		0.2	1.4	
Delay (s)		29.2	23.5		25.7		5.0	7.6		4.7	7.8	
Level of Service		C	C		C		A	A		A	A	
Approach Delay (s)		28.1			25.7			7.5			7.7	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	69.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	193	100	89	239	160	77	410	61	139	437	85
Future Volume (vph)	99	193	100	89	239	160	77	410	61	139	437	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			6.0			6.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frpb, ped/bikes		0.98			0.98			0.99			0.99	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.96			0.95			0.98			0.98	
Flt Protected		0.99			0.99			0.99			0.99	
Satd. Flow (prot)		3332			3296			3470			3439	
Flt Permitted		0.57			0.71			0.71			0.68	
Satd. Flow (perm)		1921			2372			2468			2363	
Peak-hour factor, PHF	0.82	0.82	0.82	0.68	0.68	0.68	0.90	0.90	0.90	0.76	0.76	0.76
Adj. Flow (vph)	121	235	122	131	351	235	86	456	68	183	575	112
RTOR Reduction (vph)	0	40	0	0	71	0	0	9	0	0	13	0
Lane Group Flow (vph)	0	438	0	0	646	0	0	601	0	0	857	0
Confl. Peds. (#/hr)	50		60	60		50	60		50	50		60
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		26.1			26.1			46.1			46.1	
Effective Green, g (s)		26.1			26.1			46.1			46.1	
Actuated g/C Ratio		0.31			0.31			0.55			0.55	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		595			735			1351			1293	
v/s Ratio Prot												
v/s Ratio Perm		0.23			c0.27			0.24			c0.36	
v/c Ratio		0.74			0.88			0.45			0.66	
Uniform Delay, d1		26.0			27.6			11.4			13.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		4.7			11.6			1.1			1.3	
Delay (s)		30.7			39.1			12.5			14.8	
Level of Service		C			D			B			B	
Approach Delay (s)		30.7			39.1			12.5			14.8	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	84.2	Sum of lost time (s)	14.0
Intersection Capacity Utilization	125.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	34	24	786	32	15	648
Future Volume (Veh/h)	34	24	786	32	15	648
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	37	26	854	35	16	704
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	1608	872			889	
vC1, stage 1 conf vol	872					
vC2, stage 2 conf vol	736					
vCu, unblocked vol	1608	872			889	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	93			98	
cM capacity (veh/h)	319	350			762	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	63	889	16	704
Volume Left	37	0	16	0
Volume Right	26	35	0	0
cSH	331	1700	762	1700
Volume to Capacity	0.19	0.52	0.02	0.41
Queue Length 95th (m)	5.2	0.0	0.5	0.0
Control Delay (s)	18.4	0.0	9.8	0.0
Lane LOS	C		A	
Approach Delay (s)	18.4	0.0	0.2	
Approach LOS	C			

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	53.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	23	0	205	115	13
Future Volume (Veh/h)	0	23	0	205	115	13
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	25	0	223	125	14
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	355	132	139			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	355	132	139			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	100			
cM capacity (veh/h)	643	917	1445			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	25	223	139
Volume Left	0	0	0
Volume Right	25	0	14
cSH	917	1700	1700
Volume to Capacity	0.03	0.13	0.08
Queue Length 95th (m)	0.6	0.0	0.0
Control Delay (s)	9.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	16.8%	ICU Level of Service	A
Analysis Period (min)	15		