October 31st, 2019 **JDE** Project 17124

Aalto Developments Inc.
190 Dunlop Street East
Barrie, ON L4M 1B3

RE: Traffic Impact Study – Revised Addendum
185 Dunlop Street, City of Barrie

This letter was prepared by **JD Northcote Engineering Inc.** [JD Engineering] for the account of the **AALTO Developments Inc.** [The Developer].

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1.0 BACKGROUND

JD Engineering prepared a traffic impact study for the proposed 185 Dunlop Street mixed-use development [Subject Site], located in the City of Barrie [City] (dated December 21, 2017) [TIS]. The above noted TIS 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.

A development proposal is now underway for the property located directly west of the Subject Site [New Adjacent Development]. The New Adjacent Development extends from Dunlop Street East to the lake, between Mulcaster Street and the Subject Site. The New Adjacent Development will include one access onto Mulcaster Street [Mulcaster Access] and one access onto a proposed extension of Poyntz Street, south of Dunlop Street East [Adjacent Development Access], directly across from the proposed access for the Subject Site [West P1 Access]. To accommodate the New Adjacent Development, the proposed extension of Poyntz Street has been redesigned to accommodate traffic from the New Adjacent Development. The City has requested an update letter to the TIS to review the impact of the additional traffic volumes from the New Adjacent Development at the future Poyntz Street / Dunlop Street East intersection.

Furthermore, following the completion of the TIS, the Site Plan for the Subject Site has been revised to include 178 residential units and approximately 1,764 sq.m. commercial space (site plan provided in the **Appendix**). Included in the 1,764 sq.m. of commercial space will be a 5,600 sq.ft. health and fitness club.

This revised addendum also addresses Item #2 from the City Traffic and Parking Services' Comments from July 31, 2019 (Excerpt in **Appendix**).

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2.0 PROPOSED DEVELOPMENT – REVISED TRAFFIC GENERATION

The revised traffic generation for the Subject Site has been based on the Institute of Transportation Engineers [ITE] *Trip Generation Manual* (10th Edition) [ITE Trip Generation Manual]. The following ITE land use has been applied to estimate the revised traffic from the proposed development:

- ITE land use 231 (Mid-Rise Residential with 1st-Floor Commercial)
  - Dense Multi-Use Urban Setting
- ITE land use 492 (Health/Fitness Club)
  - General Urban / Suburban Setting

The estimated trip generation for the proposed development is illustrated below in **Table 1**. The AM and PM peak traffic generation for the proposed development is not anticipated to exactly align with the AM and PM peak hour in the traffic counts; consequently, we have applied the peak hour of adjacent street traffic values provided in the ITE Trip Generation Manual.

Table 1 – Estimated Traffic Generation of Proposed Development

Land Use	Size	AM Peak Hour			PM Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Mid-Rise Residential with 1st-Floor Commercial ITE Land Use: 231	178 units	23	32	55	37	47	84
Health/Fitness Club ITE Land Use: 492	5,600 sq.ft.	4	3	7	11	8	19
TOTAL TRIP GENERATION		**27**	**35**	**62**	**48**	**55**	**103**
Internal Capture		0	0	0	-3	-3	-6
NET TRIP GENERATION		**27**	**35**	**62**	**45**	**52**	**97**

It is noted that ITE land use 231 accounts for commercial space within a mixed-use building; however, we have accounted for additional traffic for the Health and Fitness Club as the commercial space in ITE land use 231 is typically considered to be retail.

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

3.0 PROPOSED DEVELOPMENT – REVISED TRAFFIC ASSIGNMENT

The distribution of residential traffic for the proposed development is assumed to follow the trip distribution calculated for residential traffic as illustrated in Table 10 in Section 4.2 in the TIS.

The distribution of health and fitness club traffic for the proposed development is assumed to follow the existing trip distribution in the study area as illustrated in Table 11 in Section 4.2 in the TIS.

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The distribution of traffic entering at each site access driveway is based on our review of the internal parking and building layout, in conjunction with the external traffic distribution.

Using the traffic distribution patterns noted above, the residential and health and fitness club traffic assignments for the proposed development was calculated for the AM and PM peak hour and is illustrated in **Figures 1** and **2**, respectively.

Figure 1 – Proposed Development – Residential Traffic Assignment

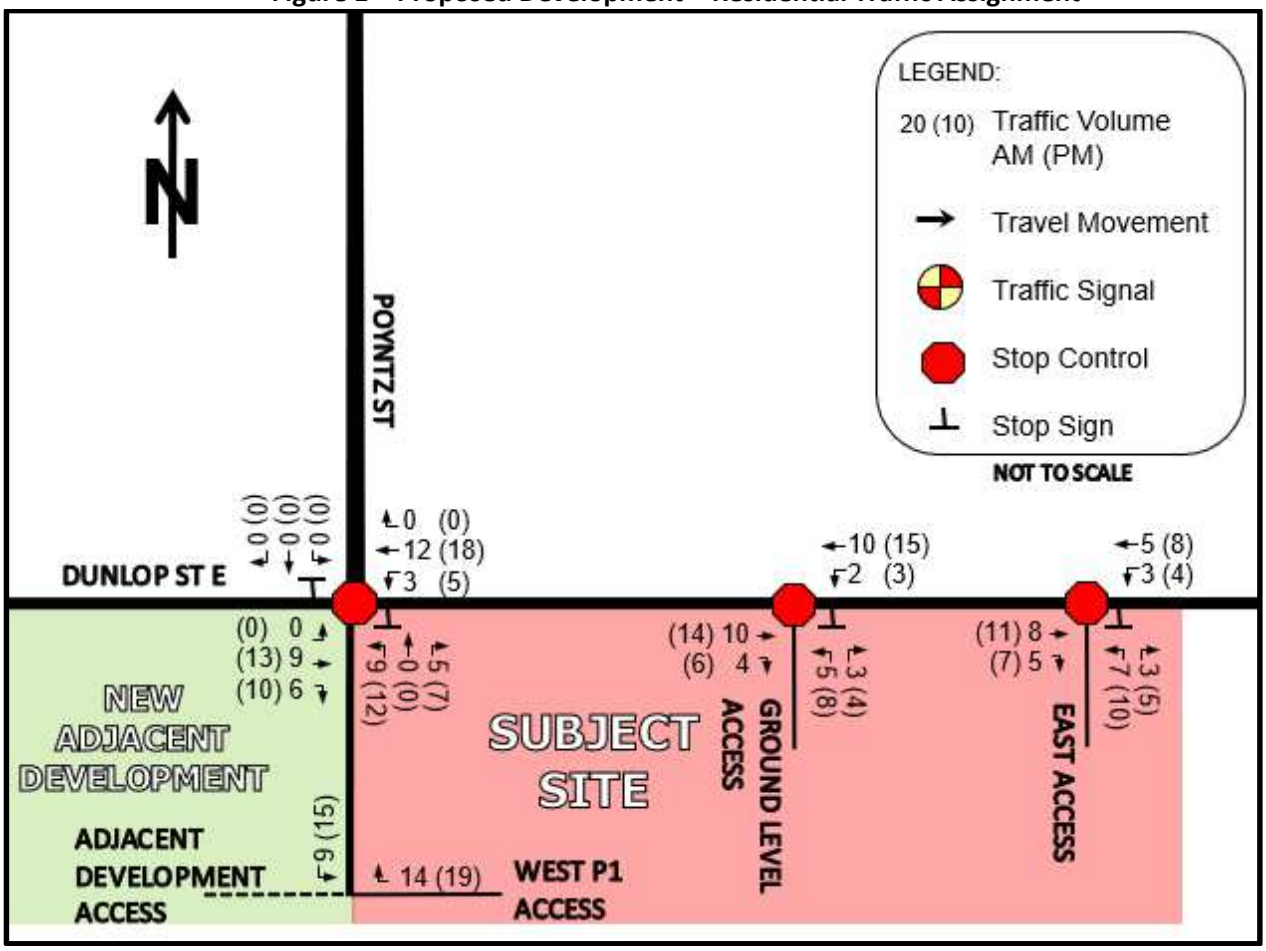
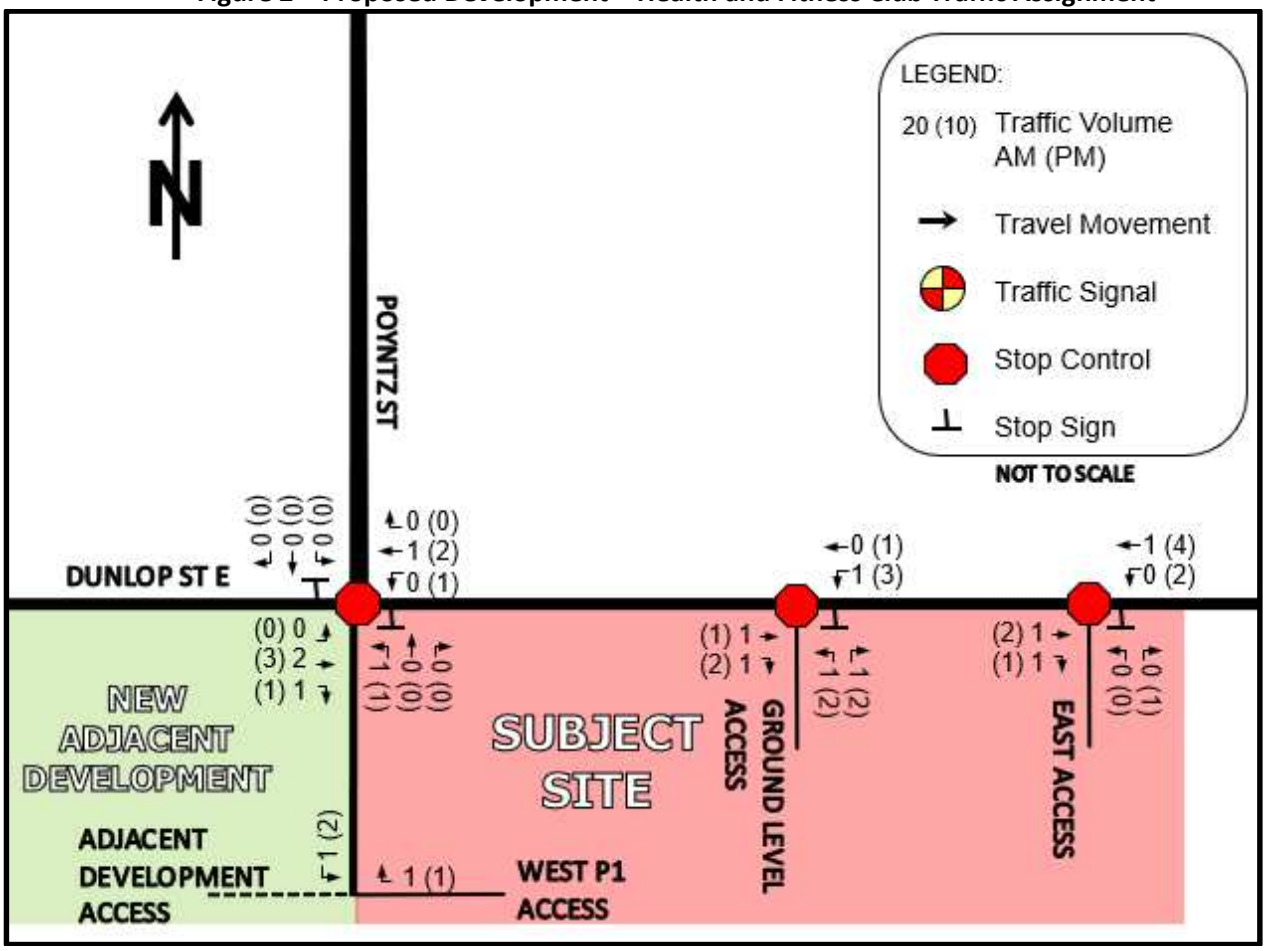


Figure 2 – Proposed Development – Health and Fitness Club Traffic Assignment



4.0 NEW ADJACENT DEVELOPMENT TRAFFIC GENERATION

The New Adjacent Development includes 130 hotel rooms, 136 condominium units and 500 sq.m. of commercial space. It has been assumed that this development will be occupied prior to the 2027 horizon year.

A traffic impact study is not available for the New Adjacent Development. The traffic generation for the New Adjacent Development has been calculated based on the data provided in the ITE Trip Generation Manual. The following ITE land uses have been applied to estimate the traffic from the New Adjacent Development:

- ITE land use 231 (Mid-Rise Residential with 1st-Floor Commercial) –
  - Dense Multi-Use Urban Setting
- ITE land use 310 (Hotel) – General Urban/Suburban Setting

The AM and PM peak hour traffic generation for the New Adjacent Development does not exactly align with the AM and PM peak hour in the traffic counts; consequently, we have applied the peak hour of adjacent street traffic values provided in the ITE Trip Generation Manual.

The estimated trip generation of the New Adjacent Development is illustrated below in **Table 2**.

Table 2 – Estimated Traffic Generation for the New Adjacent Development

Land Use	Size	AM Peak Hour			PM Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Mid-Rise Residential with 1st-Floor Commercial ITE Land Use: 231	136 units	17	25	42	28	36	64
Hotel ITE Land Use: 310	130 units	36	25	61	40	38	78
TOTAL TRIP GENERATION		**53**	**50**	**103**	**68**	**74**	**142**

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

5.0 NEW ADJACENT DEVELOPMENT TRAFFIC ASSIGNMENT

The distribution of residential traffic for the New Adjacent Development is assumed to follow the trip distribution calculated for residential traffic as illustrated in Table 10 in Section 4.2 in the TIS.

The distribution of hotel traffic for the New Adjacent Development is assumed to follow the existing trip distribution in the study area traffic as illustrated in Table 11 in Section 4.2 in the TIS.

The distribution of traffic entering at each access driveway for the New Adjacent Development is based on our review of the internal parking and building layout, in conjunction with the external traffic distribution.

Using the traffic distribution patterns noted above, the residential and hotel traffic assignments for the New Adjacent Development was calculated for the AM and PM peak hour within the study area and is illustrated in **Figures 3** and **4**, respectively. It is noted that some of the New Adjacent Development traffic will not be within the study area due to the use of the Mulcaster Access.

Figure 3 – New Adjacent Development – Residential Traffic Assignment

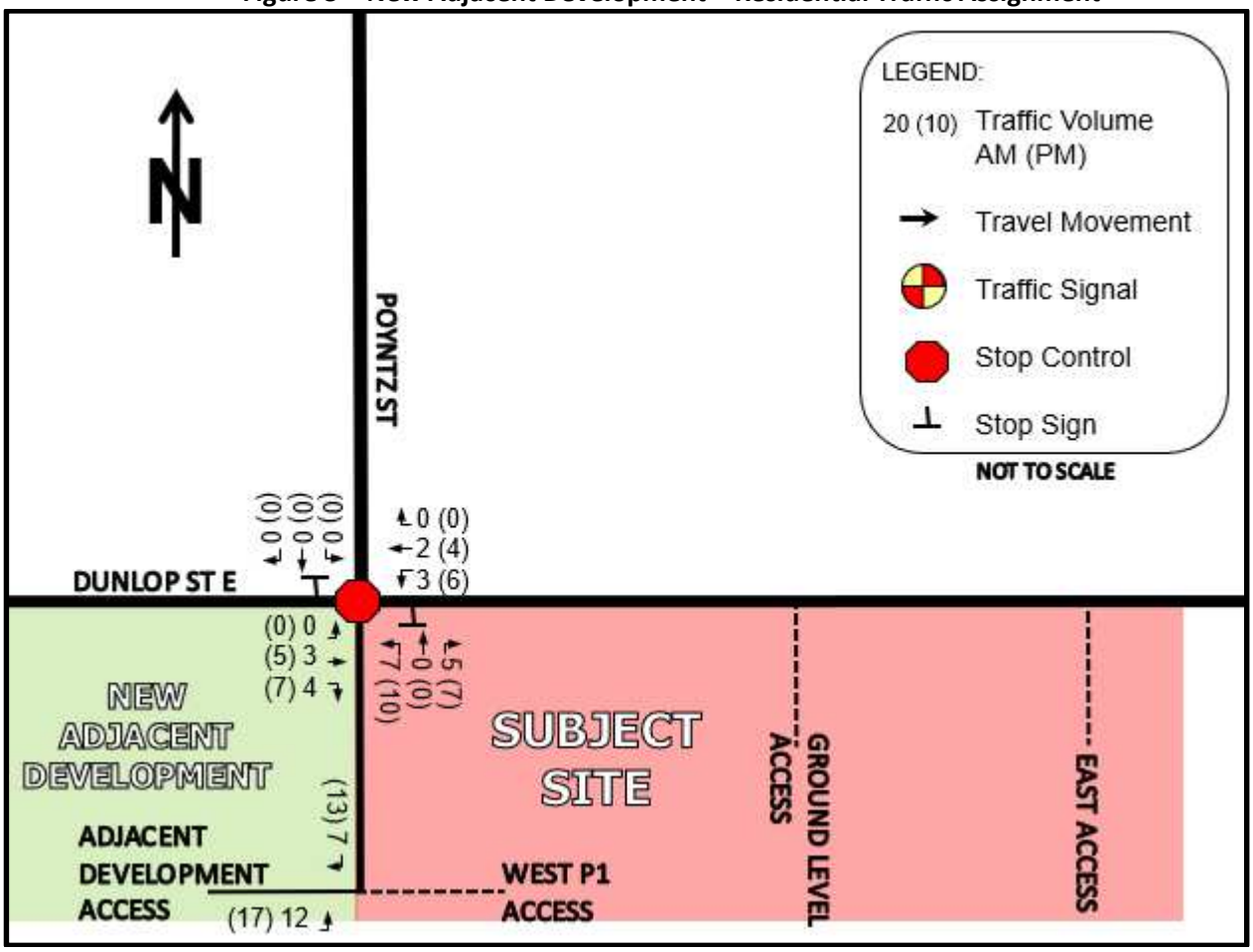
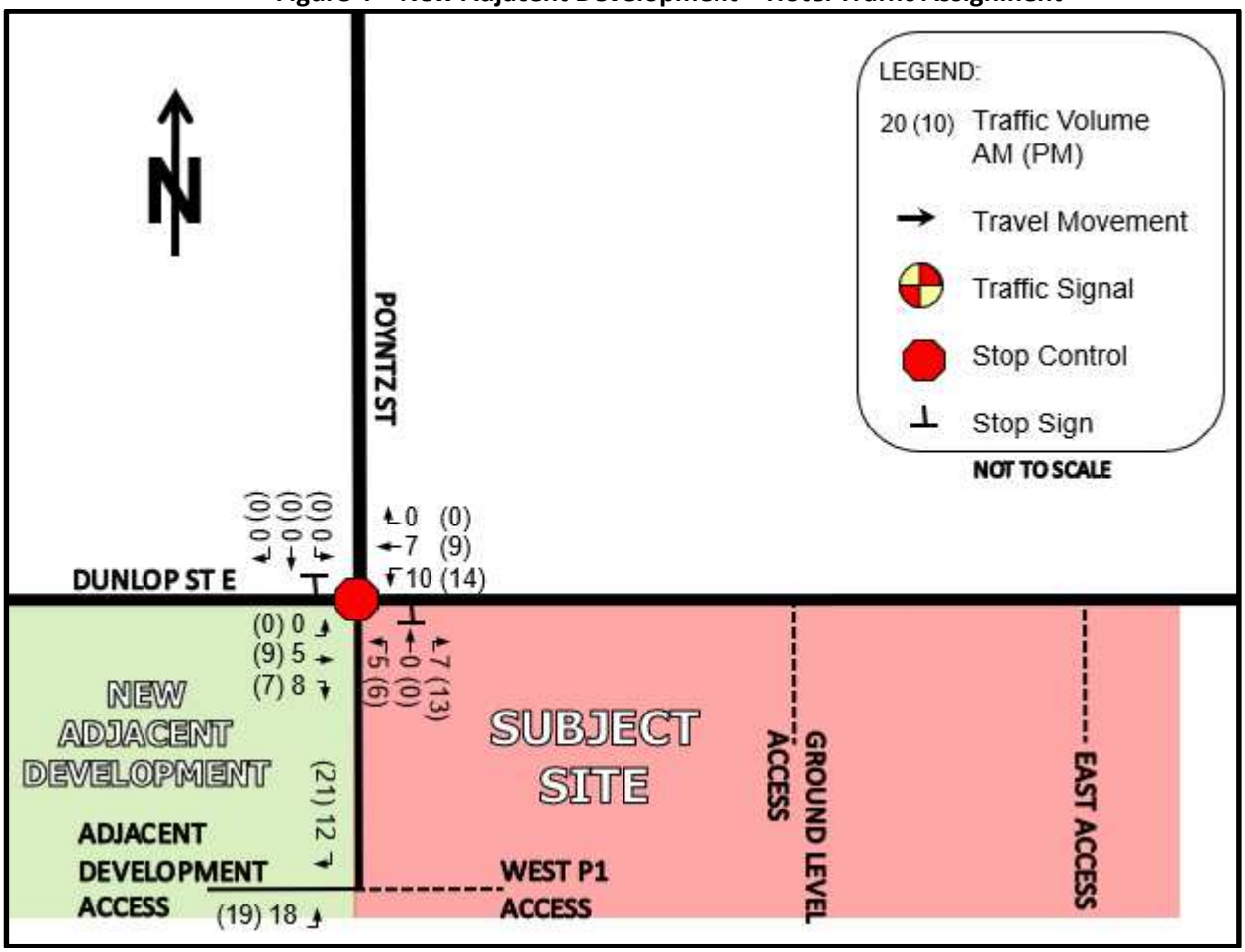


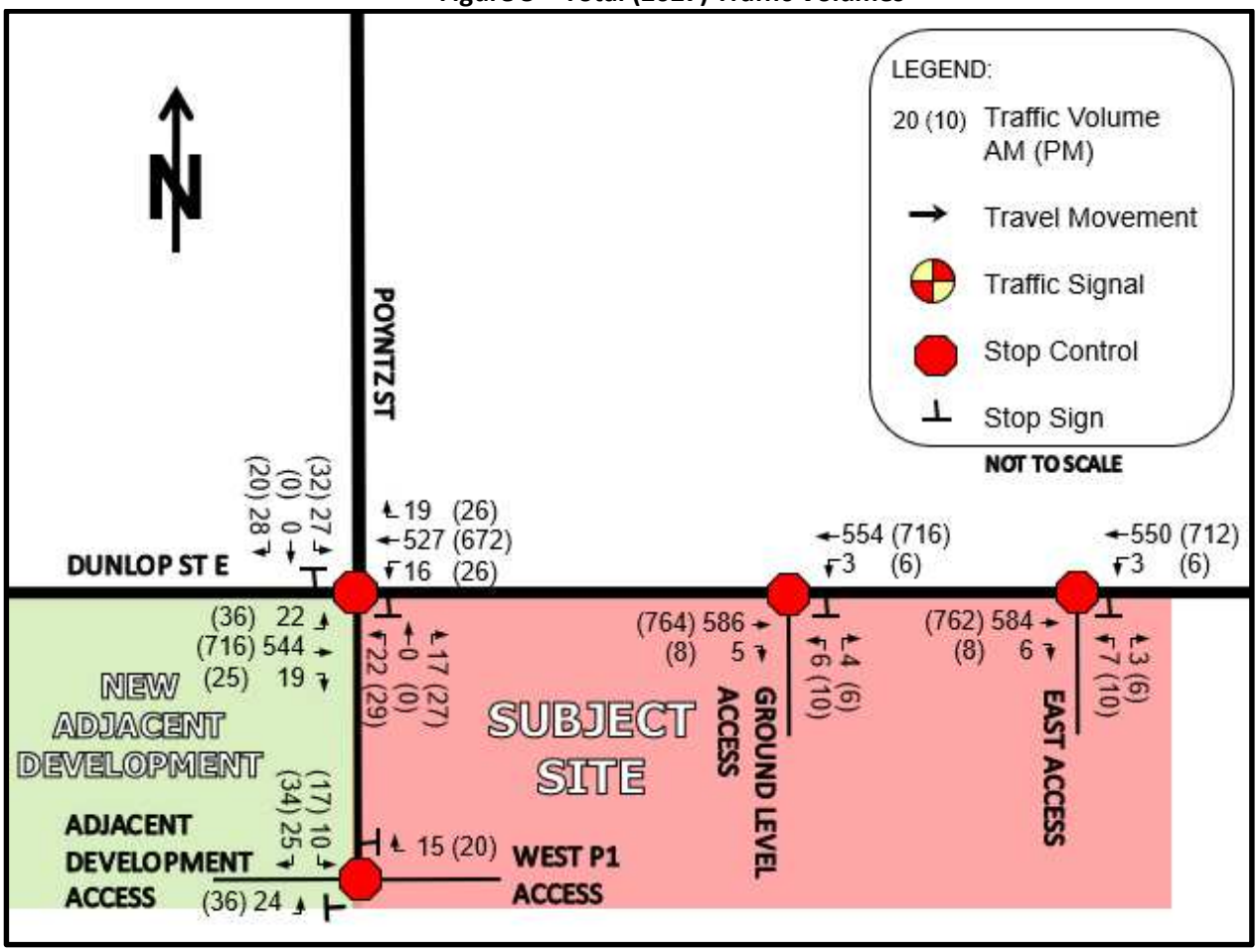
Figure 4 – New Adjacent Development – Hotel Traffic Assignment



6.0 TOTAL HORIZON YEAR TRAFFIC VOLUMES WITH THE PROPOSED DEVELOPMENT

For the revised total (2027) horizon year traffic volumes, the revised proposed development traffic and New Adjacent Development traffic was added to the background (2027) traffic volumes from the TIS. The resulting total (2027) horizon year traffic volumes for the AM and PM peak hour are illustrated in **Figure 5**.

Figure 5 – Total (2027) Traffic Volumes



7.0 TOTAL (2027) INTERSECTION OPERATION

The results of the LOS analysis under total (2027) traffic volumes during the AM and PM peak hour can be found below in **Table 3**. Existing intersection geometry and traffic control have been utilized for this scenario. Detailed output of the Synchro analysis can be found in the **Appendix**.

Table 3 – Total (2027) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour			Weekday PM Peak Hour		
	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
Poyntz Street / Dunlop Street East (unsignalized)	-	2.9	A	-	5.1	C
NB	0.25	32.4	D	0.46	56.3	F
SB	0.31	30.9	D	0.50	67.0	F
Ground Level Access / Dunlop Street East (unsignalized)	-	0.2	A	-	0.4	A
NB	0.05	21.3	C	0.09	28.6	D
East Access / Dunlop Street East (unsignalized)	-	0.2	A	-	0.4	A
NB	0.05	22.4	C	0.09	28.4	D

The results of the LOS analysis indicate that the northbound and southbound movements of the Poyntz Street / Dunlop Street East intersection are operating marginally outside the typical design limits noted in Section 3.1 of the TIS, during the PM peak hour; however, no infrastructure improvements are recommended as the delay is not significantly outside the design limits. Furthermore, the northbound movements are exclusively from the proposed development and the adjacent new development, both of which have alternate accesses, and the southbound movements onto Dunlop Street also have various alternate routes (eg. Mulcaster Street, Owen Street, Simpson Street). It is our expectation that some drivers will utilize the alternate routes available as the delay for the northbound and southbound movements of the Poyntz Street / Dunlop Street East intersection increases.

The results of the LOS analysis indicate that all other intersections are operating within the typical design limits noted in Section 3.1 of the TIS.

A review of the need for additional auxiliary right turn lanes at all unsignalized intersections was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all movements; consequently, additional auxiliary right turn lanes are not recommended.

An analysis was completed for left turn movements at unsignalized intersections within the study area, based on the criteria outlined in Appendix 9A of the MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads [MTO DS]. Based on the low volume of left turn movements from Dunlop Street East at the Ground Level Access and East Access, a left turn lane is not recommended at these locations. Based on the above noted criteria, a left turn lane is warranted for the westbound and eastbound movements at the Poyntz Street / Dunlop Street East intersection (results are provided in the **Appendix**); however, a left turn lane is not recommended as the left turn traffic volume accounts for less than 5% of the advancing traffic volume.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at any of the unsignalized study area intersections (results are provided in the **Appendix**).

No additional improvements are recommended within the study area.

8.0 SITE ACCESS

The Ground Level Access and East Access will operate efficiently as a full-movement access, with one-way stop control for the northbound movements. No lane improvements are recommended on Dunlop Street East at the Ground Level Access and East Access. A single northbound and southbound lane at the Ground Level Access and East Access driveways will provide the necessary capacity to service the proposed development.

The Poyntz Street extension will operate efficiently as a full-movement intersection, with two-way stop control for the northbound and southbound movements. . A single northbound and southbound lane on the Pointz Street extension will provide the necessary capacity to service the proposed developments. No lane improvements are recommended on Dunlop Street East at Poyntz Street.

The West P1 Access driveway and New Development Access driveway will operate efficiently as full-movement access driveways, with one-way stop control for the westbound and eastbound movements, respectively. A single eastbound and westbound lane for the West P1 Access driveway and New Development Access driveway will provide the necessary capacity to service the proposed developments.

9.0 PARKING REVIEW

The revised parking supply for the subject site meets the parking requirements specified in the City Zoning By-law 2009-141. Accessible parking for the subject site is provided according to the City Zoning By-law 2009-141. The proposed parking breakdown is provided in **Table 4**.

Table 4 – Parking Statistics

Category	Zoning By-Law Section	Parking Standard	Parking	
			Required	Provided
Residential	4.6.1	1 space per dwelling unit	178 Spaces	247 spaces
Commercial	4.6.3.1	No parking required within C1 Zone	0 Spaces	
Total			**178 spaces**	**287 spaces**
Barrier Free Parking	4.64	3% of required parking	6 Spaces	6 Spaces

10.0 CONSTRUCTION PARKING / STAGING

The parking of construction vehicles and vehicles owned by staff and subcontractors employed by the Developer will be formally directed (in writing where possible) to avoid parking on municipal streets surrounding the subject site and avoid parking within private parking lots surrounding the subject site, without consent from the owner of the parking lots.

We trust that you find this letter satisfies your requirements.

Yours truly,
JD Northcote Engineering Inc.

John Northcote, P.Eng.
President

Appendix

Revised Site Plan

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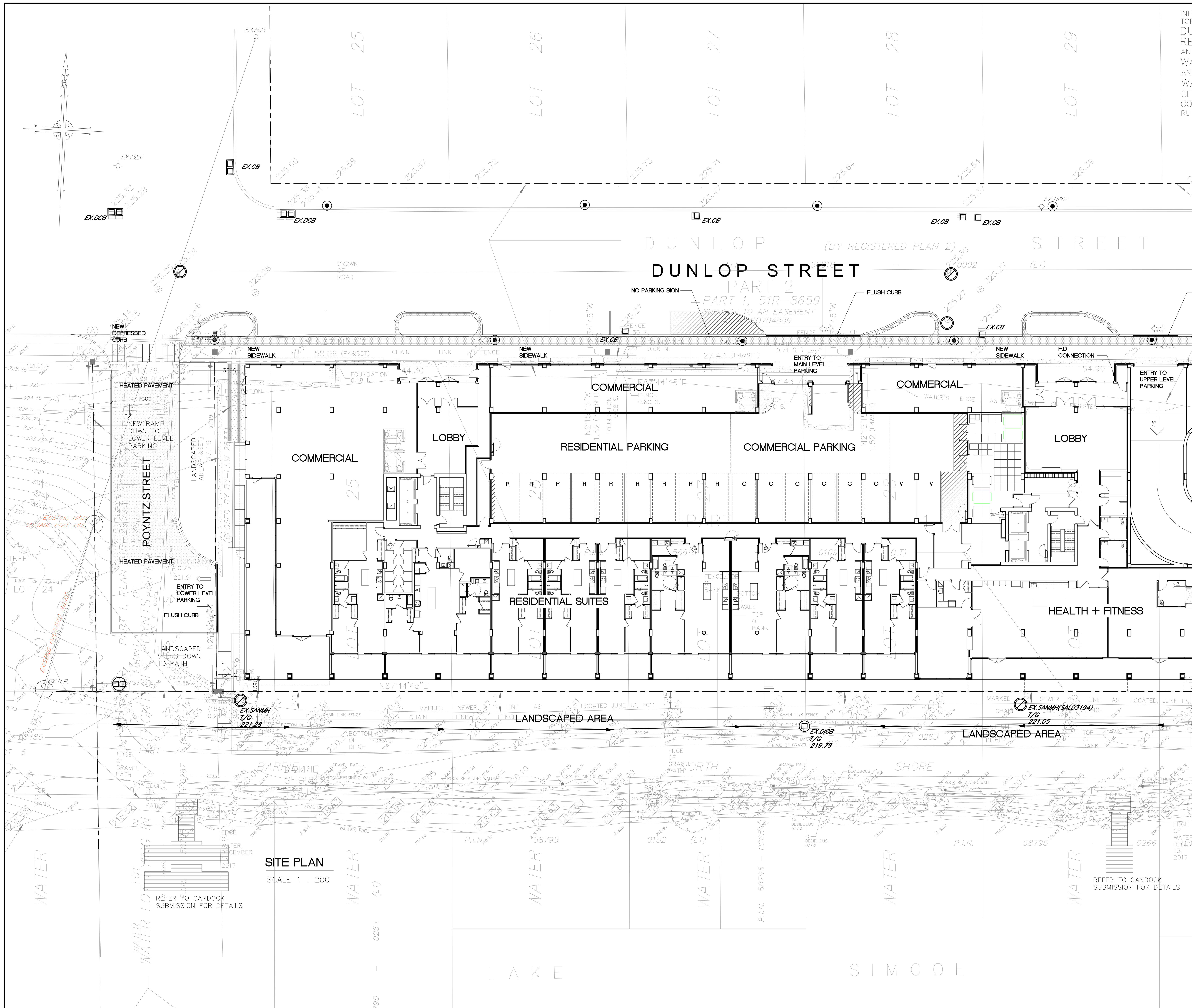

KEY PLAN

LĀKHOUSE - WATERFONT CONDOMINIUM - 185 DUNLOP STREET EAST, BARRIE ONTARIO							
SUITE BREAKDOWN							
SUITE TYPE	1 BEDRM	1 BEDRM (B.F)	2 BEDRM	2 BEDRM (B.F)	3 BEDRM	3 BEDRM (B.F)	TOTAL
FLOOR ONE (1)	5	3	–	1	–	–	9
FLOOR TWO (2)	5	3	1	3	–	1	13
FLOOR THREE (3)	5	3	–	4	–	1	13
FLOOR FOUR (4)	11	1	6	3	1	–	22
FLOOR FIVE (5)	6	5	5	5	1	–	22
FLOOR SIX (6)	6	5	5	5	1	–	22
FLOOR SEVEN (7)	6	5	5	5	1	–	22
FLOOR EIGHT (8)	6	5	5	5	1	–	22
FLOOR NINE (9)	5	3	7	3	1	1	20
FLOOR TEN (10)	–	4	–	4	1	–	9
TOTAL	55	37	34	38	7	3	174
PROVIDED (B.F)	40% OF ONE BEDROOMS		53% OF TWO BEDROOMS		30% OF THREE BEDROOMS		45%
REQUIRED B.F.	14		11		2		15%

LĀKHOUSE - WATERFONT CONDOMINIUM - 185 DUNLOP STREET EAST, BARRIE ONTARIO					
ZONING BY-LAW 2009-141					
ZONING	C1-1		ZONING	C1-1	
	REQUIRED	PROVIDED		REQUIRED	PROVIDED
LOT AREA (MIN.)	–	4705 m^2	LOT COVERAGE (GRND FLR./SITE) (MAX.)	–	(4299.25 m^2) 91.4 %
LOT FRONTAGE (MIN.)	–	140.4 m	COMMERCIAL USE COVERAGE (MIN.)	50 %	(1767.36 m^2) 37.5 %
FRONT YARD (MIN.) NORTH	–	0.0m	GROSS FLOOR AREA (MAX.% OF LOT AREA)	600 %	(22427.27 m^2) 476.7 %
SIDE YARD (MIN.) WEST	–	3.19 m	PARKING - 1 SPACE PER UNIT	174	224 (1.28/UNIT)
SIDE YARD (MIN.) EAST	–	3.10 m	PARKING (B.F.) 3% OF REQUIRED PLUS 1	7 (3-A; 4-B)	7 (4-A;3-B)
REAR YARD (MIN.) SOUTH	–	1.39 m	PARKING (COMMERCIAL)	–	6
SIDE YARD LANDSCAPED BUFFER (MIN.)	3.0 m	3.1 m	PARKING (VISITOR)	–	2
REAR YARD LANDSCAPED BUFFER (MIN.)	3.0 m	1.39 m	PARKING (COMPACT)	–	27
HEIGHT OF PODIUM (ON DUNLOP STREET)	–	10.0 m	LEGAL (NON LEGAL) P1 PARKING	–	131 (3)
HEIGHT FROM AVG. GRADE TO CONDO ROOF	30.0 m	33.24 m	LEGAL (NON LEGAL) MAIN PARKING	–	17 (–)
10m OF HT. IS WITHIN 5m OF THE FRONT LOT LINE AND THE LOT FLANKAGE. 30m OF HT. IS BEYOND 5m OF THE FRONT LOT LINE AND THE LOT FLANKAGE			LEGAL (NON LEGAL) SECOND PARKING	–	37 (12)
			LEGAL (NON LEGAL) THIRD PARKING	–	39 (12)

185-205 DUNLOP STREET EAST

Item	Ontario Building Code Data Matrix Part 3	OBC Reference
1	Project Description ■ New	■ Part 3
2	Major Occupancy(s) A2 - ASSEMBLY C - RESIDENTIAL D - FITNESS CLUB E - COMMERCIAL F3 - INDUSTRIAL (STORAGE GARAGE)	3.1.2.1.(1)
3	Building Area (m2) New 4273.09 Total 4273.09	1.1.3.2
4	Gross Area (m2) New 23900 Total 23900	1.1.3.2
5	Number Of Storeys Above grade 10 Below grade 1	3.2.1.1.(1) + 1.1.3.2
6	Height of Building 33.24 m	
7	Number of Streets/Access Routes 1	3.2.2.10 + 3.2.5.5
8	Building Classification GROUP C, ANY HEIGHT, ANY AREA, SPRINKLERED	3.2.2.42
9	Sprinkler System Proposed ■ entire building ☐ in lieu of roof rating ☐ not required	3.2.2.42
10	Standpipe required ■ Yes ☐ No	3.2.9
11	Fire Alarm required ■ Yes ☐ No	3.2.4
12	Water Service/Supply is Adequate ■ Yes ☐ No	
13	High Building ■ Yes ☐ No	3.2.6
14	Permitted Construction ☐ Combustible ■ Non-combustible Actual Construction ☐ Combustible ■ Non-combustible	3.2.2.42
15	Mezzanine(s) Area m2 N/A	3.2.1.1.(3)-(8)
16	Occupant load based on ☐ m2/person ■ design of building	3.1.17
	1st Floor Occupancy A2 - RESTAURANT Load TBD persons	
	1st Floor Occupancy D - FITNESS CLUB Load 40 persons	3.1.17.1.(2) SIGNS TO BE POSTED
	1st Floor Occupancy E - COMMERCIAL Load 178 persons	OBC TABLE 3.1.17.1.
	1sT Floor Occupancy C - RESIDENTIAL Load 20 persons	OBC 3.1.17.1.(1)(b)
	2nd Floor Occupancy C - RESIDENTIAL Load 40 persons	OBC 3.1.17.1.(1)(b)
	3rd Floor Occupancy C - RESIDENTIAL Load 40 persons	OBC 3.1.17.1.(1)(b)
	4th Floor Occupancy C - RESIDENTIAL Load 68 persons	OBC 3.1.17.1.(1)(b)
	5th Floor Occupancy C - RESIDENTIAL Load 68 persons	OBC 3.1.17.1.(1)(b)
	6th Floor Occupancy C - RESIDENTIAL Load 68 persons	OBC 3.1.17.1.(1)(b)
	7th Floor Occupancy C - RESIDENTIAL Load 68 persons	OBC 3.1.17.1.(1)(b)
	8th Floor Occupancy C - RESIDENTIAL Load 68 persons	OBC 3.1.17.1.(1)(b)
	9th Floor Occupancy C - RESIDENTIAL Load 68 persons	OBC 3.1.17.1.(1)(b)
	10th Floor Occupancy C - RESIDENTIAL Load 30 persons	OBC 3.1.17.1.(1)(b)
	10th Floor/Roof Occupancy A4 - ASSEMBLY Load 2x60 persons	3.1.17.1.(2) SIGNS TO BE POSTED
17	Barrie-free Design ■ Yes ☐ No (Explain)	3.8
18	Hazardous Substances ☐ Yes ■ No	3.3.1.2.(1) + 3.3.1.19(1)
19	Required Fire Resistance Rating (FRR)	3.2.2.43A. 3.1.10.

Item 19	Horizontal Assemblies FRR (Hours)	Listed Design No. or Description (SB-2)
	Floors 2	OBC SB-2.2.2.1
	Roof 2	OBC SB-2.2.2.1
	FRR of Supporting Members (Hours)	Listed Design No. Or Description (SB-2)
	Floors 2	OBC SB-2.1.1
	Roof 2	OBC SB-2.1.1

20 Spatial Separation-Construction Of Exterior Walls — 3.2.3

Wall	Area of EBF (m2)	L.D. (m)	L/H or H/L	Permitted Max. % of Openings	Proposed % of Openings	FRR (Hours)	Listed Design or Description	Comb Const	Comb. Constr. Nonc. Cladding	Non-Comb. Const.
North	N/A									
South	N/A									
East	> 150	3.1		100	N/A	1	OBC SB-2.1.1 cUL V454			YES
West	N/A									

21 Other

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No.	ISSUE/ REVISION	DATE
1	REVISIONS	JUL 12/16
2	ISSUE FOR PRE-CONSULT	NOV 07/16
3	CITY PLANNING REVIEW	JUN 22/17
4	SPC SUBMISSION	OCT 17/17
5	PER POST-SPC MEETING	APR 06/18
6	PER POST-SPC MEETING	MAY 10/18
7	COMM. OF ADJUSTMENT SUBMISSION	JUN 28/18
8	UPDATE FLOOR PLAN	JUN 14/19
9	UPDATE SIDEWALK	AUG 29/19
10	UPDATE BLDG FOOTPRINT	SEP 05/19
11	UPDATE SUITE BREAKDOWN	SEP 12/19
12	UPDATE FLOOR PLAN	OCT 21/19
13	SPC 3RD SUBMISSION	OCT 31/19

STAMP
ONTARIO ASSOCIATION OF ARCHITECTS
IAN S. MALCOLM
LICENCE
2853

DO NOT SCALE DRAWINGS.
THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND

ORIENTATION

CLIENT
AALTO DEVELOPMENT INC.

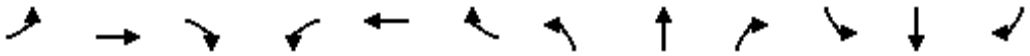
PROJECT
LAKHOUSE
WATERFRONT CONDO
185-205 DUNLOP STREET EAST
BARRIE, ONTARIO

PROJECT INFORMATION
PROJECT No.: 153834
DRAWN BY: JB RCM
CHECKED BY: ISM
DATE: 06.06.2018
SCALE: 1:150

DRAWING
SITE PLAN

DRAWING No.
A100

Synchro Analysis Output – Total (2027) Traffic Volumes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	544	19	16	527	19	22	0	17	27	0	28
Future Volume (Veh/h)	22	544	19	16	527	19	22	0	17	27	0	28
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	25	611	21	18	592	21	25	0	19	30	0	31
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	613			632			1341	1320	622	1329	1320	602
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	613			632			1341	1320	622	1329	1320	602
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			98			79	100	96	76	100	94
cM capacity (veh/h)	966			951			117	150	487	123	150	499

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	657	631	44	61
Volume Left	25	18	25	30
Volume Right	21	21	19	31
cSH	966	951	175	199
Volume to Capacity	0.03	0.02	0.25	0.31
Queue Length 95th (m)	0.6	0.5	7.6	9.9
Control Delay (s)	0.7	0.5	32.4	30.9
Lane LOS	A	A	D	D
Approach Delay (s)	0.7	0.5	32.4	30.9
Approach LOS			D	D

Intersection Summary				
Average Delay	2.9			
Intersection Capacity Utilization	50.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	586	5	3	554	6	4
Future Volume (Veh/h)	586	5	3	554	6	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	658	6	3	622	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			664		1289	661
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			664		1289	661
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		96	99
cM capacity (veh/h)			925		180	462

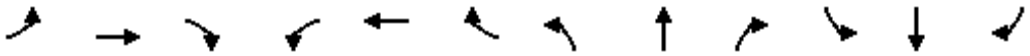
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	664	625	11
Volume Left	0	3	7
Volume Right	6	0	4
cSH	1700	925	231
Volume to Capacity	0.39	0.00	0.05
Queue Length 95th (m)	0.0	0.1	1.2
Control Delay (s)	0.0	0.1	21.3
Lane LOS		A	C
Approach Delay (s)	0.0	0.1	21.3
Approach LOS			C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	584	6	3	550	7	3
Future Volume (Veh/h)	584	6	3	550	7	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	656	7	3	618	8	3
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			663		1284	660
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			663		1284	660
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		96	99
cM capacity (veh/h)			926		181	463

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	663	621	11
Volume Left	0	3	8
Volume Right	7	0	3
cSH	1700	926	218
Volume to Capacity	0.39	0.00	0.05
Queue Length 95th (m)	0.0	0.1	1.3
Control Delay (s)	0.0	0.1	22.4
Lane LOS		A	C
Approach Delay (s)	0.0	0.1	22.4
Approach LOS			C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	41.3%	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 (veh/h)	36	716	25	26	672	26	29	0	27	32	0	20
Future Volume (Veh/h)	36	716	25	26	672	26	29	0	27	32	0	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	37	738	26	27	693	27	30	0	28	33	0	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	720			764			1606	1599	751	1614	1598	706
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	720			764			1606	1599	751	1614	1598	706
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			97			61	100	93	55	100	95
cM capacity (veh/h)	882			849			76	98	411	74	99	436

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	801	747	58	54
Volume Left	37	27	30	33
Volume Right	26	27	28	21
cSH	882	849	125	109
Volume to Capacity	0.04	0.03	0.46	0.50
Queue Length 95th (m)	1.1	0.8	16.6	17.8
Control Delay (s)	1.1	0.8	56.3	67.0
Lane LOS	A	A	F	F
Approach Delay (s)	1.1	0.8	56.3	67.0
Approach LOS			F	F

Intersection Summary				
Average Delay	5.1			
Intersection Capacity Utilization	64.4%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	764	8	6	716	10	6
Future Volume (Veh/h)	764	8	6	716	10	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	788	8	6	738	10	6
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			796		1542	792
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			796		1542	792
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		92	98
cM capacity (veh/h)			826		126	389

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	796	744	16
Volume Left	0	6	10
Volume Right	8	0	6
cSH	1700	826	169
Volume to Capacity	0.47	0.01	0.09
Queue Length 95th (m)	0.0	0.2	2.5
Control Delay (s)	0.0	0.2	28.6
Lane LOS		A	D
Approach Delay (s)	0.0	0.2	28.6
Approach LOS			D

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		

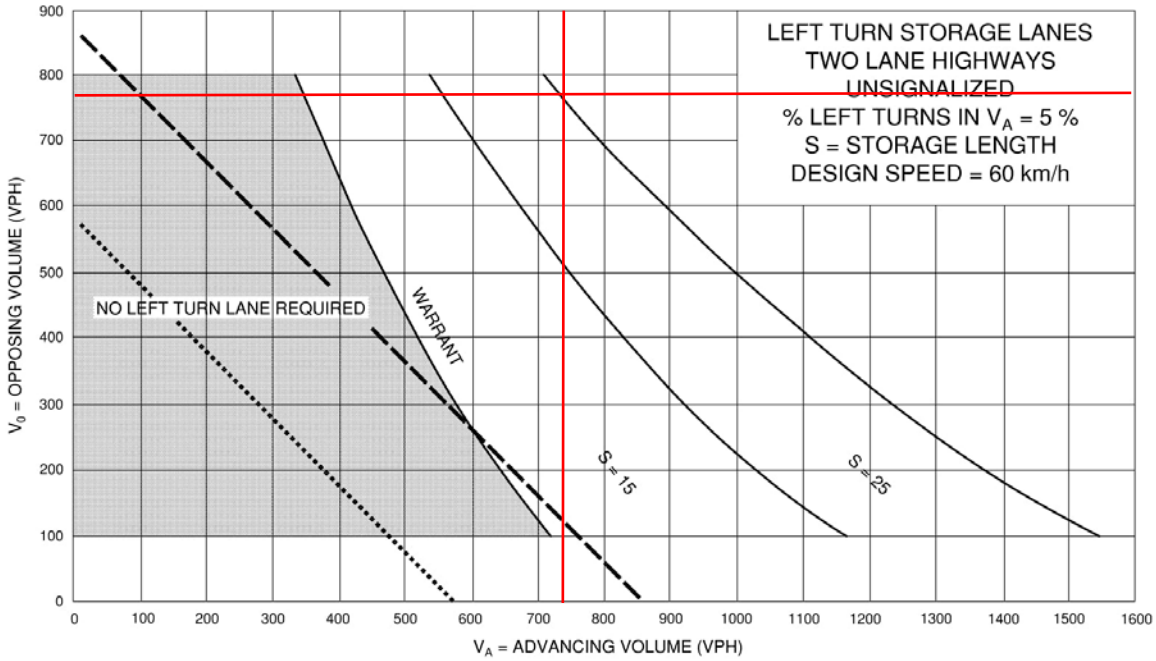
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	762	8	6	712	10	6
Future Volume (Veh/h)	762	8	6	712	10	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	786	8	6	734	10	6
Pedestrians						
Lane Width (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			794		1536	790
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			794		1536	790
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		92	98
cM capacity (veh/h)			827		127	390

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	794	740	16
Volume Left	0	6	10
Volume Right	8	0	6
cSH	1700	827	170
Volume to Capacity	0.47	0.01	0.09
Queue Length 95th (m)	0.0	0.2	2.5
Control Delay (s)	0.0	0.2	28.4
Lane LOS		A	D
Approach Delay (s)	0.0	0.2	28.4
Approach LOS			D

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

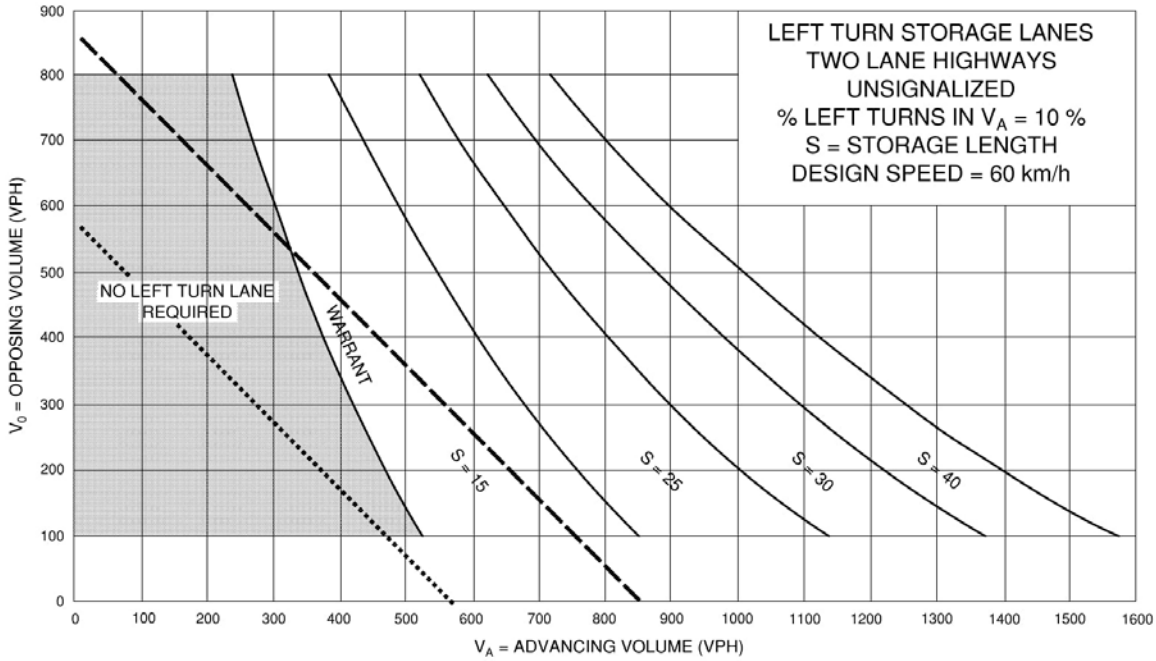
MTO Left Turn Warrant Analysis

Exhibit 9A-6



TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS



OTM Signal Justification Sheets

Justification No. 7 - 2027 Total Traffic (Critical Case)

Dunlop St E / Poyntz St

Justification	Description		Compliance			Signal Warrant	Underground Provisions Warrant
			Sectional		Entire %		
		Rest. Flow	Numerical	%			
1. Minimum Vehicluar Volume	A. Vehicle volume, all aproaches (average hour)	720	712	99%	25%	NO	NO
	B. Vehicle volume, along minor streets (average hour)	170	51	30%		NO	NO
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	720	640	89%	31%	NO	NO
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	75	27	37%		NO	NO

City Transportation and Parking Services Comments (July 2019)

JD Engineering Inc.
Phone: 705.725.4035
Email:Info@JDEngineering.ca

Traffic and Parking Services
Site Plan Application

To:	**F. Palka, C.E.T., Manager of Development Services**
From:	**J. MacDonald C.E.T., Senior Transportation Operations Technologist (Ext. 5178)**
Date:	**July 31, 2019**
Re:	**D11-01-2018 – 185-205 Dunlop Street**

Staff reviewed the proposed site plan D11-01-2018 for 185 to 205 Dunlop Street. Traffic and Parking Services

1. Traffic Services does not have any concerns regarding the Traffic Impact Study addendum.
2. The TIS is to also include a construction staging plan as it relates to parking of trades people, delivery of construction material, impacts to existing on-street parking, maintenance of adjacent property access, pedestrian movements, City infrastructure, etc.
3. The owner/applicant is responsible for the removal and salvage of City infrastructure including but not limited to roadway and parking lot illumination, pay & display machine, parking metres, parking lot signage, etc. The Owner/Applicant shall coordinate the removal with the appropriate City Staff.
4. The owner/applicant is responsible for maintaining the existing roadway lighting levels adjacent to the proposed site. In the event that the existing roadway illumination is to be removed or altered in any way due to construction the owner/applicant is responsible to provide temporary illumination to meet preexisting conditions.
5. That the Owner/Applicant provides a drawing that clearly identify on the site plan all proposed pavement markings and traffic signs. All pavement markings and traffic signs shall conform to the Ontario Traffic Manuals. This is to include all way finding signage for the proposed underground parking structures.
6. Pavement markings for parking stalls shall be painted white and conform to OPSS 1712.
7. Staff do not support the proposed waste receptacles collection being conducted along Dunlop Street. Waste collection must be completed internal to the proposed site. All collection vehicles must enter and exist in a forward motion.
8. Staff have no concerns with the proposed photometric plan and proposed exterior lighting.
9. Label all curb cuts.
10. Hatch out a pedestrian zone outside all pedestrian doorways accessing the parking areas. This is to provide a visual queue for motorists that pedestrians may be present.
11. The proposed sidewalk along the frontage of the building must be maintained through all accesses, including the Poyntz Street right of way.
12. Drawing A201:
    a. Barrier Free Parking Stall 86 has a support pillar directly within the required hatched out zone. Staff recommend the applicant review the feasibility of offsetting this pillar to the edge of the stall.
13. Drawing PM1:

a. The proposed on-street parking stalls located between the two Dunlop Street West accesses must be increased to 13.4m to accommodate two (2) parking stalls, the current proposed configuration does not support two (2) parking stalls;

b. Label the on-street parking stalls located east of the easterly access onto Dunlop Street West.

J. MacDonald.

Justin MacDonald, C.E.T.
Senior Transportation Operations Technologist