PROJECT NO: 780-5251 OCTOBER 11, 2019 SENT VIA: EMAIL: PHIL.IANNACITO@ONTARIO.CA

Ministry of Transportation of Ontario Sir William Hearst Avenue Downsview, Ontario M3M 1J8

ATTENTION: MR. PHIL IANNACITO CORRIDOR MANAGEMENT PLANNER

RE: TRAFFIC BRIEF PROPOSED RESIDENTIAL DEVELOPMENT 5150 NINTH LINE CITY OF MISSISSAUGA, REGIONAL MUNICIPALITY OF PEEL

Dear Mr. Iannacito,

C.F. Crozier & Associates Inc. (Crozier) was retained by Mattamy Homes to prepare a Traffic Impact Study in support of the development application for the proposed residential development located at 5150 Ninth Line in the City of Mississauga, Regional Municipality of Peel.

The subject property is within the Ministry of Transportation of Ontario (MTO)'s permit control area, which includes the area within 395 metres of the centre point of a controlled-access highway or 45 metres from a highway right-of-way. However, the nearest interchanges to 400-series freeways are located over two kilometres away from the subject property. Also, the proposed development is expected to generate less than 100 total two-way trips during the weekday a.m. and p.m. peak periods.

Therefore, we assume that a scoped Traffic Brief will be sufficient for the MTO to support the proposed development.

This Traffic Brief contains analysis of the following components:

- Forecasted site traffic generated by the proposed development;
- Assignment of site generated traffic to the provincial highway system; and
- Site access location, geometrics, and safety.

The scope outlined above has been prepared in accordance with the MTO's "Traffic Impact Study Guidelines" (September 2014), which states that "MTO will consider the submission of a TIS Brief/Letter, stamped and dated by a traffic engineering consultant, in lieu of a TIS, for small scale development where little or no impact to the provincial highway network is anticipated."

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1.0 DEVELOPMENT PROPOSAL

Per the Concept Plan prepared by Korsiak Urban Planning (dated October 8, 2019), the development will consist of a total of 164 residential townhouse dwelling units constructed over two phases. The Concept Plan is attached to this letter.

 Table 1 outlines the proposed development statistics for both phases of the development.

Phase	Unit Type	Total Units	Assumed Build-Out	Proposed Access Connections		
	Dual Frontage Townhouse	15				
	Street Townhouse	63		Public Road connection to Ninth Line (approximately 120 metres north of Candlelight Drive)		
1	Freehold Townhouse	17	2021			
	Back-To-Back Townhouse	24				
	Total	119				
	Street Townhouse	5				
2	Back-To-Back Townhouse	40	2022			
	Total	45				
	Dual Frontage Townhouse	15				
	Street Townhouse	68				
Full Build-Out	Freehold Townhouse	17]			
	Back-To-Back Townhouse	64				
	Total	164				

Table 1: Development Proposal

The proposed public road within the site will also connect to the adjacent 5080 Ninth Line property to the south upon build-out of the adjacent property. However, the adjacent property is expected to be built-out after full build-out of the subject development.

2.0 EXISTING CONDITIONS

2.1 Subject Property

The subject property is located in a residential neighbourhood and is bound by vacant lands to the north, an existing residential dwelling to the south, Ninth Line to the east and Parkland Belt lands and Highway 407 Express Toll Route (ETR) to the west. The subject property is zoned as D "Development" Lands per the City of Mississauga's Zoning By-Law.

The proposed development makes allowance for the future bus-rapid transit (BRT) 407 Transitway planned by the MTO which will span through the subject property running parallel to Highway 407. The 407 Transitway is currently proceeding through the environmental assessment process.

Figure 1 contains the Site Location Plan.

2.2 Boundary Road Network

The municipal arterial boundary road network at the site frontage is described in Table 2.

Fordure	Roadway								
reature	Ninth Line	Eglinton Avenue West	East Lower Base Line						
Direction	Two-way (North-South)	Two-way (East-West)	Two-way (East-West)						
Classification	Arterial	Arterial	Arterial						
Jurisdiction	City of Mississauga	City of Mississauga	City of Mississauga – Highway 407 to Ninth Line Town of Milton – West of Highway 407						
Surrounding Uses	Residential	Residential	Rural						
Cross-Section	Rural-Urban	Urban	Rural						
Speed Limit	70 km/h	60 km/h	60 km/h						
Number of travel lanes	Тwo	Four	Two						
Median type	Two-way left-turn lane	None	None						

Table 2: Boundary Road Network – Arterial Roadways

The provincial boundary road network in the surrounding area is described in Table 3.

	Roadway								
Feature	Highway 403	Highway 407	Highway 401	Queen Elizabeth Way (QEW)					
Direction	Two-way (East-West)	Two-way (North-South) ¹	Two-way (East-West)	Two-way (East-West)					
Classification	Provincial Freeway	Provincial Freeway – Express Toll Route (ETR)	Provincial Freeway	Provincial Freeway					
Jurisdiction	MTO	407 ETR	MTO	MTO					
Span	pan Woodstock to Burling Mississauga Ro		Windsor to Quebec	Fort Erie to Toronto					
Speed Limit	100 km/h	100 km/h 100 km/h		100 km/h					
Number of lanes	Eight (including 2 HOV lanes) – east of Highway 407 and west of QEW in Oakville Four – between Highway 407 and QEW	Six	Six	Six – east of Highway 403 in Oakville					
Nearest Interchange	Winston Churchill Boulevard (east) – 2.3 km away Ford Drive (west) – 7.0 km away	Britannia Road West (east) – 2.6 km away Trafalgar Road (west) – 3.3 km away	Highway 407 (east) & Highway 403 (east) – 8 km away Trafalgar Road (west) – 8.2 km away	Ford Drive (east) – 7.0 km away					
Median type	Jersey Barrier (typical freeway separation)	Jersey Barrier (typical freeway separation)	Jersey Barrier (typical freeway separation)	Jersey Barrier (typical freeway separation)					

Note 1: While Highway 407 primarily spans east-west, the segment parallel to Ninth Line spans north-south.

Figure 2 illustrates the provincial highway network in the surrounding area.

3.0 TRIP GENERATION

Trip generation for the proposed development was forecasted using published data from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition. The ITE Trip Generation Manual is a compendium of industry collected trip generation data across North America for a variety of land uses and is used industry-wide as a source for trip generation forecasts.

Land Use Category (LUC) 220 "Multifamily Housing (Low-Rise)" was applied to the proposed residential townhouse dwelling units for both Phase 1 and 2.

A fitted curve equation is provided for all land use categories outlined above, and the number of data plot points exceeds 20 data points. Therefore, the fitted curve equation was used to forecast trip generation for the proposed development.

Table 4 outlines the trip generation for both Phase 1 and full build-out of the proposed development.

Phase 1 (2021)									
ITE Land Line Category	11 11	Peak Hour	Trips Generated						
The Land Use Calegory	Units		Inbound	Outbound	Total				
LUC 220 "Multifamily Housing	110	A.M.	13	43	56				
(Low-Rise)"	117	P.M.	43	26	69				
	Fu	ull Build-Out (2	2022)						
ITE Land Line Category	1	Trips Generated							
The Land Use Calegory	Units	reak nour	Inbound	Outbound	Total				
LUC 220 "Multifamily Housing	144	A.M.	17	59	76				
(Low-Rise)"	104	P.M.	58	34	92				

Table 4: Trip Generation – Proposed Development

The full build-out of the proposed development is expected to generate a total of 76 and 92 total two-way trips during the weekday a.m. and p.m. peak hours, respectively. Given the sole residential land use, no internal synergy trips or pass-by trips are expected for the proposed development.

4.0 TRIP DISTRIBUTION

The trips generated by the proposed development were distributed to the boundary road network based on 2016 Transportation Tomorrow Survey (TTS) data. TTS is a comprehensive survey of transportation characteristics of households in the Greater Toronto Area (GTA) and surrounding areas.

For the proposed development, TTS results were filtered to auto trips exiting 2006 GTA Zones 3615, 3616, 3809, 3810 and 3811 during the weekday a.m. peak period. These zones consist of the residential zones along the Ninth Line corridor, and thus were considered to be appropriate for trip distribution analysis. The row variable was set to "Planning District of Destination" and the column variable was set to "Use of 407" to quantify the number of trips travelling to each destination that use Highway 407 ETR.

From this query, trip destinations were determined, and percentage of trips assigned to each destination was accounted for. Trips were assumed to travel to and from their destination points based on the most convenient route, taking into account trips using Highway 407 ETR and trips not using Highway 407 ETR.

The resultant trip distribution for site generated traffic utilizing the provincial highway system is outlined in **Table 5**.

Arriving From / Departing To	Percentage
Highway 407 (East)	10%
Highway 403 (East)	25%
Highway 407 (West)	5%
Highway 403 (West)	5%
Highway 401 (West)	5%
Queen Elizabeth Way (East)	10%
Provincial Highways	60%
Municipal & Regional Roadways	40%
Total	100%

Table 5: Trip Distribution – Proposed Development

As outlined above, it is estimated that approximately 60% of the additional traffic generated by the proposed development is expected to utilize the provincial highway system. The proportion of site generated traffic not expected to use the provincial highway system is expected to use the surrounding municipal arterial roads.

The trip distribution analysis is attached to his letter.

5.0 TRIP ASSIGNMENT

The breakdown of trips assigned to the provincial highway system based on the trip distribution outlined above is summarized in **Table 6**.

11 alarma		Devilation	Trips Generated				
Highway	% of trips	Peak Hour	Inbound	Outbound	Total		
Total Trip Generation	10097	A.M.	17	59	76		
(Full Build-Out)	100%	P.M.	58	34	92		
Lichway (07 (East)	1.007	A.M.	2	6	8		
HIGHWAY 407 (EASI)	10%	P.M.	6	3	9		
Lichway (02 (East)	0.597	A.M. 4		15	19		
HIGHWAY 403 (EASI)	23%	P.M.	15	9	24		
Linhurn (107 (Mast)	F 07	A.M.	1	3	4		
Highway 407 (Wesi)	5%	P.M.	3	2	5		
Linhur (02 (Mont)	F 07	A.M.	1	3	4		
Highway 403 (West)	3%	P.M.	3	2	5		
Lighter (101 (Mast)	E 07	A.M.	1	3	4		
Highway 401 (West)	5%	P.M.	3	2	5		
Queen Elizabeth Way	1.007	A.M.	2	6	8		
(East)	10%	P.M.	6	3	9		

As outlined above, the proposed development is expected to add directional trips in the order of 15 vehicles per hour or less to a provincial highway during the weekday a.m. and p.m. peak hours. These trip generation forecasts are considered to be minor and are not typically associated with traffic operational issues.

Therefore, the proposed development is not expected to significantly impact the surrounding provincial highway network and thus can be supported from a traffic operations perspective.

6.0 SITE ACCESS ANALYSIS

6.1 Access Spacing

The development proposes one public roadway access connection on the west side of Ninth Line located approximately 120 metres north of Candlelight Drive. This spacing exceeds the existing spacing between the intersections of Candlelight Drive, Skyview Street and Stardust Drive, while also providing a spacing 250 metres from Erin Centre Boulevard. Additionally, the proposed site access is located far enough from Candlelight Drive that the west leg would not form an offset access alignment and thus reduce the potential for vehicle-vehicle conflicts.

6.2 Sight Distance Analysis

The available sightlines at the proposed Ninth Line connections were measured and compared to the standards set out in the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR, June 2017). Sight distance was measured from the proposed site accesses using the following assumptions:

- A standard driver eye height of 1.08 metres for a passenger car, and
- A 4.4 metre setback from the approximate extension of the outer curb to represent a vehicle waiting to exit the site.

Intersection sight distance is calculated using equation 9.9.1 from the GDGCR as outlined below:

ISD = 0.278 * V major * tg

Where; ISD = Intersection Sight Distance V major = design speed of roadway (km/h) tg = assumed time gap for vehicles to turn from stop onto roadway (s)

The design speed of a roadway in an urban environment is typically 10-20 km/h greater than the posted speed limit. The posted speed limit on Ninth Line is 70 km/h. Therefore, a design speed of 90 km/h was assumed for the sight distance analysis.

 Table 7 outlines the sight distance analysis for the proposed site access.

Feature	Site Access
Access Type	Full-Moves
Intersection Control	Stop (Minor Street)
Posted Speed Limit of Roadway	70 km/h
Assumed Design Speed	90 km/h
Base Time Gap	7.5 s ¹
Additional Time Gap	1.0 (time to cross additional through lane and centre turn lane)
Grade of Roadway	Less than 3%
Horizontal Alignment of Roadway	Straight
Sight Distance Required	215 m ²
Measured Sight Distance	> 400 m (to north and south)
Minimum Sight Distance Satisfied?	Yes

Table 7: Sight Distance Analysis

Note 1: Time gap for left-turning vehicles from a stop onto a two-lane highway with no median and with a grade less than 3%. Value from Table 9.9.3 in the GDGCR.

Note 2: Sight distance values calculated from Intersection Sight Distance equation 9.9.1 in the GDGCR.

As outlined in **Table 7**, minimum sight distance requirements are satisfied at the proposed Ninth Line connections.

Therefore, the proposed development is supportable from a sight distance perspective.

7.0 CONCLUSIONS

The proposed residential development at 5150 Ninth Line is expected to add directional trips in the order of 15 vehicles per hour or less to a provincial highway during the weekday a.m. and p.m. peak hours. This trip assignment is considered to be minor and is not indicative of traffic operational issues.

The analysis contained within this Traffic Brief concludes that the proposed development will not adversely affect capacity or traffic safety on the provincial highway network. Therefore, the proposed development can be supported from a traffic operations and safety perspective.

The analysis was conducted using the Concept Plan prepared by Korsiak Urban Planning (dated October 8, 2019). Any minor changes to the plan will not materially affect the conclusions contained within this traffic brief.

We trust that this Traffic Brief addresses the MTO's traffic concerns. Should you have any questions or require any further information, please do not hesitate to contact the undersigned.

Yours truly,

C.F. CROZIER & ASSOCIATES INC.

Alexander J. W. Fleming, MBA, P.Eng. Associate

C.F. CROZIER & ASSOCIATES INC.

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Fri Mar 29 2019 12:16:44 GMT-0400 (Eastern Daylight Time) - Run Time: 1731ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of destination - pd_dest Column: Use of Hwy 407 - hwy407

Filters: 2006 GTA zone of origin - gta06_orig In 3615, 3616, 3809, 3810, 3811 and Start time of trip - start_time In 600-900 and Primary travel mode of trip - mode_prime In D

Trip 2016 Table:

										EXTERNAL TO MISSISSAUGA	4	INTERNAL TO MISSISSA	.UGA
	Unknown	No	Yes S	Sum	% use of 407	% total of trips		Provincial Route w/407	Provincial Route w/o 407	Route		Route	
PD 1 of Toronto	77	342	0	419	0.0%	1.7%		QEW (east)	QEW (east)	QEW (east)	3.2%	QEW (east)	5.0%
PD 2 of Toronto	18	76	0	94	0.0%	0.4%		QEW (east)	QEW (east)	407 (east)	6.6%	407 (east)	5.0%
PD 3 of Toronto	92	124	17	233	12.1%	1.0%		407 (east)	403 (east)	403 (east)	12.2%	403 (east)	15.0%
PD 4 of Toronto	169	53	11	233	17.2%	1.0%		407 (east)	403 (east)	401 (west)	3.5%	401 (west)	0.0%
PD 5 of Toronto	81	80	18	179	18.4%	0.7%		407 (east)	403 (east)	407 (west)	1.2%	407 (west)	0.0%
PD 6 of Toronto	0	25	0	25	0.0%	0.1%		QEW (east)	QEW (east)	403 (west)	6.8%	403 (west)	0.0%
PD 7 of Toronto	164	82	0	246	0.0%	1.0%		QEW (east)	QEW (east)	Total	33.6%	Municipal Roads	40%
PD 8 of Toronto	222	225	50	497	18.2%	2.0%		407 (east)	403 (east)			Total	65%
PD 9 of Toronto	229	154	88	471	36.4%	1.9%		407 (east)	403 (east)				
PD 10 of Toronto	52	218	0	270	0.0%	1.1%		407 (east)	403 (east)				
PD 11 of Toronto	35	88	0	123	0.0%	0.5%		407 (east)	403 (east)	TOTAL			
PD 12 of Toronto	21	22	0	43	0.0%	0.2%		407 (east)	403 (east)	Route	1	ASSUMED	
PD 13 of Toronto	40	85	0	125	0.0%	0.5%		407 (east)	403 (east)	QEW (east)	8.2%	10%	
PD 16 of Toronto	55	75	0	130	0.0%	0.5%		407 (east)	403 (east)	407 (east)	11.6%	10%	
Clarington	18	0	0	18	0.0%	0.1%		407 (east)	403 (east)	403 (east)	27.2%	25%	
Aurora	14	0	0	14	0.0%	0.1%		407 (east)	403 (east)	401 (west)	3.5%	5%	
Richmond Hill	32	10	0	42	0.0%	0.2%		407 (east)	403 (east)	407 (west)	1.2%	5%	
Markham	76	122	10	208	7.6%	0.9%		407 (east)	403 (east)	403 (west)	6.8%	5%	
Vaughan	146	188	181	515	49.1%	2.1%		407 (east)	403 (east)	Municipal Roads	40%	40%	
Caledon	26	20	0	46	0.0%	0.2%		407 (east)	403 (east)	Total	98.6%	100.0%	
Brampton	425	874	133	1432	13.2%	5.9%		407 (east)	403 (east)				
Mississauga	7942	7710	228	15880	2.9%	65.4%		See internal breakdown					
Halton Hills	56	140	0	196	0.0%	0.8% A	VERAGE	407 (east)	None				
Milton	106	368	0	474	0.0%	2.0%	6.6%	407 (east)	401 (west)				
Oakville	430	770	18	1218	2.3%	5.0%		403 (west)	403 (west)				
Burlington	174	151	10	335	6.2%	1.4%		407 (west)	403 (west)				
Dundas	0	33	0	33	0.0%	0.1%		407 (west)	403 (west)				
Ancaster	53	0	0	53	0.0%	0.2%		407 (west)	403 (west)				
Hamilton	134	156	0	290	0.0%	1.2%		407 (west)	403 (west)				
St. Catharines	15	0	0	15	0.0%	0.1%		407 (west)	403 (west)				
Waterloo	60	12	0	72	0.0%	0.3%		407 (east)	401 (west)				
Cambridge	14	111	0	125	0.0%	0.5%		407 (east)	401 (west)				
City of Guelph	106	68	0	174	0.0%	0.7%		407 (east)	401 (west)				
Haliburton	8	0	0	8	0.0%	0.0%							
Brantford	0	19	0	19	0.0%	0.1% A	VERAGE	407 (west)	403 (west)				
External	29	0	0	29	0.0%	0.1%	1.2%						
Sum	11119	12401	764	24284	5.8%	100.0%							



PROVINCIAL ROAD NETWORK



August 2, 2019