



November 11<sup>th</sup>, 2019

JDE Project 1744

**Tropical Land Developments Ltd.**

c/o David Goodman  
1500-439 University Ave  
Toronto, ON M5G 1Y8

**RE: Traffic Brief  
Mt. Pleasant Road, Town of Caledon**

This letter was prepared by **JD Northcote Engineering Inc.** [JD Engineering] for the account of the **Tropical Land Development Ltd.** [the Developer].

JD Engineering is pleased to submit the following letter as an update to the traffic brief for the proposed development located on the west side of Mount Pleasant Road, south of Highway 9 in the Town of Caledon [Town], Regional Municipality of Peel [Region].

The traffic brief completed by JD Engineering (dated May 2018) [Traffic Brief] included a review of the full build-out of the proposed development and the traffic operations at the Site Access driveway.

This addendum letter will address the comments from the Town's transportation department. We have included a copy of the Township's comments in this submission for your reference. The comments required a review and accordance to the Town standards for road geometry, illumination and sight lines. The following sections will address the Town's comments.

**1.0 ROAD GEOMETRY**

**Table 1** illustrates the geometric dimensions of Street A and the Town's geometric standards as per the Town's Development Standards Manual 2019.

**Table 1 – Town Geometric Standard Comparison**

Dimension	Proposed Geometry	Town Design Standard*
Horizontal Curve (Mounty Pleasant Road)	N/A	90 m
Road Grade (Mounty Pleasant Road)	4.4%	Max = 6.0% Min = 0.75%
Grade at Intersection (at stop)	1.7%	2.0%
Grade at Intersection (at through)	5.0%	3.0%
Right-of-way	22.0 m	18.0 m
Pavement Width	7.9m	7.9 m
Curve Radii	15.4 m	10.0 m**

\* Town standard is based on a local residential roadway classification

\*\* Town standard is based on minimum intersection curve radii from a local residential to local residential.



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The grade at and approaching the intersection along Mount Pleasant Road is greater than the Town's design standard; however, the existing 5.0% slope through the intersection is not anticipated to result in any traffic safety issues for the following reasons:

- Signalization of this intersection is not anticipated to be required at any time;
- Intersection illumination and hidden intersection signage will be provided to southbound drivers of the approaching intersection;
- Vehicle speeds in the area are relatively low (Mount Pleasant Road has a posted speed limit of 50km/h in the area);
- Southbound turning movements into the site will be unrestricted (right turn movements), consequently the impact on advancing traffic will be relatively minor and predictable.

The existing road geometry meets the Town's standards for all other criteria.

## 2.0 INTERSECTION STREETLIGHT REVIEW

There is currently no illumination on Mount Pleasant Road at the proposed location of the intersection with Street A. A review was completed based on the criteria outlined in the Transportation Association of Canada [TAC] *Illumination of Isolated Rural Intersections* [TAC Illumination Guidelines]. The Light Warrant was based on a number of factors including geometric, operational, environmental and collision history. Based on the above noted criteria, streetlights are not warranted at the Mount Pleasant Road / Street A intersection (warrants provided in the **Appendix**). Although streetlights are not warranted at the Mount Pleasant Road / Street A intersection based on the above-noted criteria, intersection illumination is recommended at the Mount Pleasant Road / Street A intersection, based on the southbound sight distance and our review of similar intersections in the area.

Details regarding Light Warrant parameters are outlined below:

**Geometric Factors:** Parameters in the Lighting Warrant were determined based on the Site Plan and topographic details for the intersection.

**Operational Factors:** Parameters were based on available information for traffic and review of the Mount Pleasant Road / Street A intersection. Average Daily Traffic [ADT] of 1336 vehicles on Mount Pleasant Road (from Mulloy Court to Castlederg Side Road) was obtained from the Town's website. Average Annual Daily Traffic [AADT] of 80 vehicles along Street 'A' was determined based on an estimate using the traffic generated by the proposed development and the following formula:

- $AADT = PM \text{ Peak Hour} \times 10^1$

**Environmental Factors:** Parameters were determined based on the site plan for the proposed development. The criteria outlines lighted development located at the four quadrants of an intersection within 150 metres. The proposed development has a single-detached unit at the southwest and

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<sup>1</sup> The PM peak hour was used in the AADT calculation to provide a more conservative estimate for the AADT

northwest corner of the Mount Pleasant Road / Street 'A' intersection. It is assumed that lighting will be provided at all residential lots as per the Town's Development Standards Manual 2019 in Section 4.6.4.

**Collision History:** Parameters were determined based on information available for collision statistics. The Transportation Research Record 562 [TRR 562] provided collision estimates for collisions at rural intersections. It is noted that for nighttime collision rates at rural intersections with and without illumination were 1.13 and 2.45 collisions per million vehicles<sup>2</sup>. Based on this information and the AADT estimates noted along Mount Pleasant Road, it is estimated an average annual night-time collision frequency without illumination would be in the order of 1 collision per year at this location.

### 3.0 SIGHT DISTANCE REVIEW

Section 7.0 in the Traffic Brief noted that sightlines north and south of Street A on Mount Pleasant Road meet the stopping sight distance requirements noted in the TAC *Design Guide for Canadian Roads* (2017) for a design speed of 70km/h (105 meters). The Traffic Brief recommended a hidden intersection sign is provided on Mount Pleasant Road (southbound), 200 metres north of Street A.

The Site Plan includes 15 metre by 15 metre sight triangle at the Street A / Mount Pleasant Road intersection, which is larger than the sight triangle requirements, as identified in the Town's Development Standards Manual 2019 (9 metres by 9 metres) for a local / local road intersection. The Street A / Future Road intersection provides 7.5 metre by 7.5 metre sight triangle, which is less than the Town's minimum requirement for a local / local road intersection (9 metres by 9 metres); however, when accounting for the increased right-of-way [ROW] width and standard asphalt surface for Street A and the Future Road (22 metre wide ROW and 7.9 metre asphalt width rather than the 18 metre minimum ROW Town Standard), the proposed sight triangle provides greater sight distance. In accordance with the Town's Development Standards Manual 2019, the following uses are prohibited within the sight triangle:

- A building structure or use which would obstruct the vision of drivers;
- A fence, tree, hedge, bush or other vegetation to which the top exceeds 1 meter in height above street elevation;
- Any portion of a parking space;
- A berm or other ground surface which exceeds 0.5m in height above street elevation; and
- A sign, to which the body is less than 4 meters above street elevation.

### 4.0 ROAD IMPROVEMENTS

As identified in the Traffic Brief, no infrastructure improvements are recommended on Mount Pleasant Road at Street A, as a result of the proposed development. The Traffic Brief recommended the intersection of Mount Pleasant Road / Street A include eastbound one-way stop control with a single lane for ingress and a single lane for egress traffic movements for the Street A approach.

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<sup>2</sup> Walker, Fred W., and Stephen E. Roberts. "Influence of Lighting on Accident Frequency at Highway Intersections", Transportation Research Record 562, 1976, 75 – 76.

## 5.0 CONCLUSION

1. Streetlighting is recommended at the Mount Pleasant Road / Street A intersection.
2. No other infrastructure improvements are recommended on Mount Pleasant Road at Street A.

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

Yours truly,  
**JD Northcote Engineering Inc.**



John Northcote, P.Eng.  
President



## Appendix

# Illumination of Isolated Rural Intersections

## LIGHTING WARRANT SPREADSHEET

This spreadsheet is to be used in conjunction with *Illumination of Isolated Rural Intersections*, Transportation Association of Canada, February 2001.

Please enter information in the cells with yellow background

### INTERSECTION CHARACTERISTICS

Mount Pleasant Road	Main Road
Street 'A'	Minor Road
Town of Caledon	City/Town

Date	10/17/19
Other	See addendum letter for parameter determination and references.

### GEOMETRIC FACTORS

	Value	Rating	Weight	Comments	Check	Score
Channelization Rating	n	0		Refer to Table 1(A) to determine rating value	OK	
Presence of raised channelization? ( Y / N )	n				OK	
Highest operating speed on raised, channelized approach (km/h)	0		5		OK	
Channelization Factor					OK	0
Approach Sight Distance on most constrained approach (%)	0	4	10	Relative to the recommended minimum sight distance	OK	40
Posted Speed limit (in 10's of km/h)	60				OK	
Radius of Horizontal Curve (m)	600			Enter "T" for tangent (no horizontal curve at the intersection)	OK	
	Posted Speed Category =	0				
	Posted Speed Category =	0				
	Posted Speed Category =	0				
	Posted Speed Category =	D	1			
Horizontal Curvature Factor		1	5		OK	5
Angle of Intersection (10's of Degrees)	100	1	5		OK	5
Downhill Approach Grade (x.x%)	5.0	3	3	Rounded to nearest tenth of a percent	OK	9
Number of Intersection Legs	3	1	3	Number of legs = 3 or more	OK	3
<b>Geometric Factors Subtotal</b>						<b>62</b>

### OPERATIONAL FACTORS

Is the intersection signalized? ( Y / N )	n			Calculate the Signalization Warrant Factor		
AADT on Major Road (2-way)	1336	1	10	Either Use the two AADT inputs <b>OR</b> the Descriptive Signalization	OK	10
AADT on Minor Road (2-way)	80	0	20	Warrant (Unused values should be set to Zero) Refer to Table	OK	0
Signalization Warrant	Descriptive	0	30	1(B) for description and rating values for signalization warrant.	OK	0
						OK
Night-Time Hourly Pedestrian Volume	0	0	10	Refer to Table 1(B), note #2, to account for children and seniors	OK	0
Intersecting Roadway Classification	Descriptive	1	5	Refer to Table 1(B) for ratings.	OK	5
Operating Speed or Posted Speed on Major Road (km/h)	60	1	5	Refer to Table 1(B), note #3	OK	5
Operating Speed on Minor Road (km/h)	50	0	5	Refer to Table 1(B), note #3	OK	0
<b>Operational Factors Subtotal</b>						<b>20</b>

### ENVIRONMENTAL FACTOR

Lighted Developments within 150 m radius of intersection	2	2	5	Maximum of 4 quadrants	OK	10
<b>Environmental Factor Subtotal</b>						<b>10</b>

### COLLISION HISTORY

Average Annual night-time collision frequency due to inadequate lighting (collisions/yr, rounded to nearest whole #)	1.0	1	15	Enter <b>either</b> the annual frequency (See Table 1(C), note #4)	OK	15
<b>OR</b>				<b>OR</b> the number of collisions / MEV		
Collision Rate over last 3 years, due to inadequate lighting (/MEV)	0	0	0	(Unused values should be set to Zero)	OK	0
Is the average ratio of all night to day collisions >= 1.5 (Y/N)	y	4			OK	
<b>Collision History Subtotal</b>						<b>15</b>

Check Intersection Signalization:  
Intersection is not Signalized

LIGHTING IS NOT WARRANTED

### SUMMARY

Geometric Factors Subtotal	62
Operational Factor Subtotal	20
Environmental Factor Subtotal	10
Collision History Subtotal	15

<b>TOTAL POINTS</b>	<b>107</b>
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