



STAFF REPORT ACTION REQUIRED

Traffic Control Signals Study – Birchmount Road and Flora Drive

Date:	February 18, 2010
To:	Scarborough Community Council
From:	Acting Director, Transportation Services, Scarborough District
Wards:	Ward 37– Scarborough Centre
Reference Number:	P:\2010\Cluster B\TRA\Scarborough\sc1024 D09-3173065 Birchmount Flora traffic control signals

SUMMARY

This staff report is about a matter for which the Community Council does not have delegated authority from City Council to make a final decision.

The purpose of this report is to secure authority for the installation of Traffic Control Signals at the intersection of Birchmount Road and Flora Drive.

Traffic studies reveal that pedestrian crossing protection is warranted in the form of traffic control signals.

RECOMMENDATIONS

Transportation Services, Scarborough District, recommends that Scarborough Community Council recommend that City Council:

1. Approve the installation of traffic control signals at the intersection of Birchmount Road and Flora Drive.
2. Pass or amend the appropriate by-law(s) accordingly.

Financial Impact

The financial cost of installing these new traffic control signals would be approximately \$125,000.00. The funding for these signals is available in Transportation Services Division's Capital Works Budget under Project No. CTP710-01.

ISSUE BACKGROUND

Further to a request from the local Councillor, Transportation Services staff reviewed the feasibility of providing pedestrian crossing protection at the intersection of Birchmount Road and Flora Drive.

COMMENTS

The following characteristics describe the intersection of Birchmount Road and Flora Drive:

- This T-type intersection is presently controlled by a stop sign on Flora Drive, the fourth leg is formed by a private driveway on the west side at #1160 Birchmount Road.
- Birchmount Road is a major arterial roadway with a daily traffic volume of approximately 20,071 vehicles per day, (vpd), with a posted speed limit of 60 kilometres per hour (km/h) and an operating speed of approximately 75 km/h.
- Flora Drive has a non posted speed limit of 50 kilometres per hour (km/h).
- Traffic control signals are located approximately 216 metres north at Birchmount Road and Modern Road, and 393 metres south at Birchmount Road and Ranstone Gardens.
- Sidewalks are located on both sides of Birchmount Road and on one side of Flora Drive.
- A private school and cultural resource centre is located on the west side of Birchmount Road at #1160.

Pedestrian Crossing Protection studies involve incremental consideration of the warrants for the following traffic control devices:

- Pedestrian Refuge Island (PRI)
- Pedestrian Crossover (PXO)
- Traffic Control Signals (TCS)

Pedestrian Refuge Island Warrant Study

The first level of pedestrian crossing protection considered is the installation of a Pedestrian Refuge Island.

Pedestrian Crossing Study

Study Date: Thursday, June 11, 2009

Pedestrian Crossing Volume

Pedestrian Characteristics	Eight –Hour Pedestrian Crossing Volume: Birchmount Road at Flora Drive / # 1160 Birchmount Road Driveway		
	North Side	South Side	Total – Both Sides
Assisted Children*	3	6	9
Youths /Adults	45	53	98
Senior Citizens	1	2	3
Total Pedestrian Volume	49	61	110

* Assisted Children are children crossing the road accompanied by a youth, an adult or a senior citizen.

- Of the 110 pedestrians, 95 (86%) were generated by the TTC bus stops located in the vicinity of Birchmount Road and Flora Drive/#1160 Birchmount Road Driveway intersection.
- Of the 18 pedestrians, 14 (78%) were generated by the TTC bus stops located in the vicinity of Birchmount Road and Crouse Road intersection.

Pedestrian Refuge Island (PRI) Warrant Criteria

Pedestrian Refuge Island Warrant: Birchmount Road at Flora Drive / #1160 Birchmount Road Driveway	Requirement	Met/Not Met
Pedestrian Volume	> 100 pedestrians in 8 hours	110 - Met
Road Width	> 16.4 metres	15.3 m – Not Met
Number of Travel Lanes	5 lanes or less	Met

As outlined in the above table, two out of three requirements are met on Birchmount Road at Flora Drive. However, a Pedestrian Refuge Island is not physically feasible at this location since the existing roadway is too narrow and a road widening is not possible.

Pedestrian Crossover Warrant Study

The next level of crossing protection to consider is a Pedestrian Crossover (PXO).

PXO Warrant Criteria

Study Date: Thursday, June 11, 2009

Pedestrian Crossover Warrant	Compliance Level	
	Birchmount Road at Flora Drive / #1160 Birchmount Road Driveway	
Pedestrian Volume	2006 Study	Thursday , June 11, 2009 Study
Pedestrian Volumes	55%	50%
Pedestrian Delays	0%	52%

- For a pedestrian crossover to be numerically justified, both the “Pedestrian Volume” and “Pedestrian Delays” warrants must be 100% satisfied.

As outlined in the above table, the pedestrian volumes and delays do not satisfy the technical requirements to install a pedestrian crossover at the subject intersections at this time on its own. However, a PXO would be warranted under engineering judgement as the next level of pedestrian crossing protection to provide since a PRI is warranted but not feasible.

Environmental Standards for PXO Suitability

Transportation services staff conducted a detailed review of this location and compared the standards at this PXO with the recommended design standards, or “environmental standards, for PXO’s as developed by the Province of Ontario in consultation with Ontario municipalities. These criteria describe a roadway environment suitable for this type of control, and exposure factors which would make a PXO unsuitable or potentially unsafe.

The following table outlines our review of these PXO criteria and whether they are satisfied at this location:

Standards or Criteria to be Met for Physical Suitability of a PXO	Met/ Not Met	Comment
Vehicle operating speed less than 60 km/h	Not Met	85 th percentile is 74 km/h (NB), 85 th percentile is 75 km/h (SB); Average 85 th percentile is 58 km/h. (Posted speed limit is 50 km/h).
Not more than four lanes wide on a two-way street or more than three lanes wide on a one-way street.	Met	4 lanes 15.3 metres road width.
Traffic volume less than 35,000 vehicles per day (total both directions)	Met	20,071 vehicles per day.
No driveways or entrances nearby	Not Met	#1160 Birchmount Road driveway just south of Flora Drive (52 eastbound right-turn vehicles)
No significant volume of turning movements which interfere with PXO.	Not Met	#1160 Birchmount Road driveway just south of Flora Drive (112 turning vehicles)
No visibility problems exist for either pedestrians or motorists.	Met	Visibility is adequate
No loading zones (including TTC) in the immediate vicinity.	Not Met	TTC bus stops are located on both sides of Birchmount Road at Flora Drive in direct proximity
Not less than 215 metres to another PXO or traffic control device.	Met	216 metres north to TCS at Birchmount Road and Modern Road, 393 metres south to TCS at Birchmount Road and Ranstone Gardens

As described above, this potential PXO location would fail to meet four of the above “Environmental Standards” and would not be feasible at this location. Of particular importance is the operating speed in excess of 60 km/h.

Traffic Control Signal Warrant Study

The next level of pedestrian crossing protection to consider would be Traffic Control Signals (TCS).

Transportation Services staff conducted a Traffic Control Signal Warrant Study at the intersection of Birchmount Road and Flora Drive. Using traffic volumes recorded over the peak eight hours of a typical weekday and the following results were obtained:

Traffic Control Signal Warrant	Compliance Level	
	2006	Thursday, June 11, 2009
Minimum Vehicular Volume	11%	18%
Delay To Cross Traffic	31%	33 %
Collision Hazard	0%	0 %

The installation of traffic control signals are technically not justified using the Traffic Signal Warrant calculations. For traffic control signals to be numerically justified, one of the “Minimum Vehicular Volume” or “Delay to Cross Traffic” warrants must be 100% satisfied or any two of the three warrants must be at least 80% satisfied. However, they are justified under engineering judgement as they would provide the only feasible measure of pedestrian crossing protection that is warranted at this location.

Collision History

A review of the Toronto Police Service collision records for the five-year period ending December 31, 2008 is summarised below.

Five-Year Collision Information	Number of Reported Collisions						
	2004	2005	2006	2007	2008	2009	Total
Collisions Potentially Preventable by the Installation of Traffic Control Signals	0	0	1	0	0	0	1
Collisions Involving Pedestrians Crossing Birchmount Road at Flora Drive/ #1160 Birchmount Road Driveway	0	0	0	0	0	0	0

This collision record is not indicative of a safety problem at this location.

However, as pedestrian crossing protection is warranted for a PRI, but both a PRI and PXO are not feasible at this location, Traffic Control Signals should be installed to provide for the warranted pedestrian crossing protection. Traffic Control Signals at this location would also provide improved access to Birchmount Road from the Flora Drive community, which currently has no signalised access points to the surrounding arterial road network, other than via Ranstone Gardens several hundred metres to the south.

The TTC has been consulted and concurs with this recommendation, subject to transit stop adjustments through detailed design.

In summary, traffic control signals are justified as a means to provide the warranted pedestrian crossover protection under engineering judgement and should be installed at this location.

CONTACT

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ATTACHMENTS

1. Location Plan (Proposed Traffic Control Signals – Birchmount Road and Flora Drive)