

Traffic Control Signals Study – Birchmount Road and Foxridge Drive

Date:	October 6, 2011
To:	Scarborough Community Council
From:	Director, Transportation Services, Scarborough District
Wards:	Ward 35 – Scarborough Southwest
Reference Number:	P:\2011\Cluster B\TRA\Scarborough\sc1209 D11-4489356 & D11-4466329 Birchmount Foxridge tcs

SUMMARY

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

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

RECOMMENDATIONS

Transportation Services recommends that:

1. City Council approve the installation of Traffic Control Signals at Birchmount Road and Foxridge Drive.
2. City Council pass or amend the appropriate by-law(s) accordingly.

Financial Impact

The financial cost of installing these new traffic control signals is approximately \$200,000.00. A railway pre-emption may be required by the rail authority at this spur line; however, should the rail authority deem this device not to be needed, the cost of the Traffic Control Signals will be approximately \$100,000. The funding for these signals is currently not available in the Transportation Services Division's Capital Works Budget under Project No. CTP711-01. Installation will occur when funding and scheduling permit, taking competing priorities into consideration.

ISSUE BACKGROUND

Further to a request from Councillor Michelle Berardinetti, Transportation Services staff conducted traffic studies to determine whether traffic control signals should be installed at the subject intersection. Pedestrian Crossing Protection studies have been conducted on Birchmount Road at Foxridge Drive and Traffic Control Signals are justified.

COMMENTS

The following characteristics describe the area around Birchmount Road at Foxridge Drive:

- Birchmount Road is a four-lane minor arterial road with a traffic volume of approximately 12,332 vehicles per day, having an operating speed of 65 km/h.
- Birchmount Road has a posted speed limit of 50 km/h and a road width of approximately 12.9 metres.
- Toronto Transit Commission bus stops for both the northbound and southbound directions are located on Birchmount Road at Foxridge Drive.
- Traffic Control Signals are located approximately 212 metres to the north of Foxridge Drive at Comstock Road and approximately 368 metres to the south of Foxridge Drive at Anaconda Avenue.
- A level railway crossing is located approximately 85 metres north of Foxridge Drive. This level crossing is equipped with flashing wig-wag beacons, but is not fitted with drop-down gate arms. This spur line is infrequently used.
- Sidewalks are located on both sides of Birchmount Road.

Pedestrian Crossing Protection studies involve the incremental consideration of the warrants or technical justification 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 requiring a detailed Pedestrian Crossing Study.

Pedestrian Crossing Volume Study

Study Date: Wednesday, September 21, 2011

Pedestrian Characteristics	Eight –Hour Pedestrian Crossing Volume: Birchmount Road at Foxridge Drive
	Total – Both Sides
Assisted Children*	3
Youths /Adults	120
Senior Citizens	2
Persons with Disabilities	0
Total Pedestrian Volume	125

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

- Of the 125 pedestrians, 100 (80%) were generated by the TTC bus stops located in the vicinity of Birchmount Road at Foxridge Drive.

Pedestrian Refuge Island (PRI) Warrant Criteria

Pedestrian Refuge Island Warrant: Birchmount Road at Foxridge Drive	Requirement	Met/Not Met
Pedestrian Volume	> 100 pedestrians in 8 hours	125 - Met
Road Width	> 16.4 metres	12.9 m – Not Met
Number of Travel Lanes	5 lanes or less	Met

As outlined in the above table, two out of the three requirements are met on Birchmount Road at Foxridge Drive, justifying the installation of this type of Pedestrian Crossing Protection. 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 financially feasible.

Pedestrian Crossover Warrant Study

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

PXO Warrant Criteria

Study Date: Wednesday, September 21, 2011

Pedestrian Crossover Warrant	Compliance Level
	Birchmount Road at Foxridge Drive
Pedestrian Volumes	47 %
Pedestrian Delays	56 %

- 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 this intersection at this time on its own. However, a PXO would be warranted under engineering judgement as the next level of pedestrian crossing protection to be provided as a PRI is warranted but is not feasible to install.

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 at Birchmount Road at Foxridge Drive:

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 70 km/h (NB), 85 th percentile is 59 km/h (SB); Average 85 th percentile is 65 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 12.9 metres road width.
Traffic volume less than 35,000 vehicles per day (total both directions)	Met	12,332 vehicles per day.
No driveways or entrances nearby	Not Met	A railway spur line is located 85 metres north of Foxridge Drive
No significant volume of turning movements which interfere with PXO.	Met	Low Turning Movements Volume
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
Not less than 215 metres to another PXO or traffic control device.	Not Met	212 metres north to TCS at Comstock, 368 metres south to TCS at Anaconda Ave

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.

Since a PXO installation is considered unsuitable or potentially unsafe, the next form of Pedestrian Crossing Protection being a Traffic Control Signal can be considered.

Traffic Control Signal Warrant Study

Transportation Services staff conducted a Traffic Control Signal Warrant Study at the intersection of Birchmount Road and Foxridge Drive on Tuesday, February 22, 2011, 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
Minimum Vehicular Volume	42%
Delay To Cross Traffic	54 %
Collision Hazard	13 %

The installation of traffic control signals are not numerically justified using the Traffic Signal Warrant calculations. For traffic control signals to be numerically justified, one of the "Minimum Vehicular Volume", "Delay to Cross Traffic" or "Collision Hazard" warrants must be 100% satisfied or the first two of the warrants must be at least 80% satisfied.

The Traffic Control Signals are justified under Engineering Judgement in this instance 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 three-year period from January 1, 2008 to December 31, 2010 is summarized below.

Three-Year Collision Information	Number of Reported Collisions			
	2008	2009	2010	Total
Collisions Potentially Preventable by the installation of Traffic Control Signals	1	0	0	1
Collisions Involving Pedestrians Crossing Birchmount Road	0	0	0	0

- The above noted collision record is not indicative of a safety problem at the subject intersection.

In summary, traffic control signals are warranted for the intersection of Birchmount Road and Foxridge Drive under Engineering Judgement.

CONTACT

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SIGNATURE

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ATTACHMENTS

1. Location Plan (Traffic Control Signals Study – Birchmount Road and Foxridge Drive)