



**STAFF REPORT
ACTION REQUIRED**

Traffic Control Signal Study – Birchmount Road and Rolark Drive, Birchmount Road and Florina Boulevard

Date:	April 6, 2010
To:	Scarborough Community Council
From:	Acting Director, Transportation Services, Scarborough District
Wards:	Ward 40– Scarborough Agincourt
Reference Number:	P:\2010\Cluster B\TRA\Scarborough\sc1039 D10-3657107 Birchmount Rolark, Birchmount Florina tcs

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 discuss the feasibility of the installation of traffic control signals at Birchmount Road at Rolark Drive and Birchmount Road at Florina Boulevard.

Traffic studies reveal that Traffic Control Signals are not warranted at either location.

RECOMMENDATIONS

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

1. Not approve the installation of Traffic Control Signals at the intersection of Birchmount Road and Rolark Drive.
2. Not approve the installation of Traffic Control Signals at the intersection of Birchmount Road and Florina Boulevard.
3. Not pass or amend the appropriate by-law(s) accordingly.

Financial Impact

There is no financial impact associated with this report; however, the financial cost of installing these new traffic control signals at Birchmount Road and Rolark Drive would be approximately \$165,000.00 should the installation be approved.

The funding for these signals is not available in Transportation Services Division's Capital Works Budget under Project No. CTP710-01 at this time.

ISSUE BACKGROUND

Further to a request from Scarborough Community, at the January 20, 2010 meeting, Transportation Services staff was directed to report back for the meeting on April 27, 2010, with a more thorough traffic study, including comments on traffic volume and speed and a more appropriate location for traffic control signals. The completely new area wide study included traffic control signals and/or pedestrian crossing protection on Birchmount Road at Rolark Drive and Birchmount Road at Florina Boulevard. The new pedestrian crossing protection studies confirmed the previous studies as the warrants were not met.

Traffic Control Signal (TCS) and Pedestrian Cross-over (PXO) studies have been conducted at these locations on several occasions. The technical justification or warrants have not been met.

The traffic volumes on Birchmount Road north of Ellesmere Road have declined over the last decade with the lowest volumes recorded just recently on February 17, 2010 showing approximately 19,087 vehicles per day (vpd).

A pedestrian fatality occurred at this location on Thursday, November 12, 2009 at 5:59 p.m. at or near the intersection of Birchmount Road and Rolark Drive. A female pedestrian, 49 years of age, tried to cross Birchmount Road, from the east side to the west side, after alighting a TTC bus at Rolark Drive. She was struck by a vehicle travelling northbound in the median lane, just south of Rolark Drive.

COMMENTS

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

- This T-type intersection is presently controlled by stop signs on Rolark Drive.
- Birchmount Road on the south leg is a four lane cross-section while the north leg is five-lane on this major arterial roadway.
- Birchmount Road has a posted speed limit of 60 kilometres per hour (km/h) and a daily traffic volume of approximately 19,087 vehicles per day (vpd). The operating speed on Birchmount Road between Rolark Drive and Florina Boulevard is 64 Km/h for northbound and 69 km/h for southbound traffic.
- Rolark Drive is a two-lane local roadway with an unposted speed limit of 50 km/h. that forms a "T" type intersection on the west side of Birchmount Road.
- Toronto Transit Commission bus stops for both the northbound and southbound directions along Birchmount Road are located in direct proximity to the intersection.
- Traffic control signals are located approximately 780 metres north at Allanford Road / Scarden Avenue, and 470 metres south at Ellesmere Road along Birchmount Road
- Sidewalks are located on both sides of Birchmount Road.

The following characteristics describe the intersection of Birchmount Road and Florina Boulevard:

- This T-type intersection is presently controlled by stop signs on Florina Boulevard. Florina Boulevard is 70 metres south of Rolark Drive.
- Birchmount Road at Florina Boulevard is a four lane cross-section on this major arterial roadway.
- Birchmount Road has a posted speed limit of 60 kilometres per hour (km/h) and a daily traffic volume of approximately 19,087 vehicles per day (vpd). The operating speed on Birchmount Road between Rolark Drive and Florina Boulevard is 64 Km/h for northbound and 69 km/h for southbound traffic.
- Florina Boulevard is a two-lane local roadway with an unposted speed limit of 50 km/h. that forms a “T” type intersection on the east side of Birchmount Road.
- Toronto Transit Commission bus stops for both the northbound and southbound directions along Birchmount Road are located south of Florina Boulevard.
- Traffic control signals are located approximately 850 metres north at Allanford Road / Scarden Avenue, and 379 metres south at Ellesmere Road along Birchmount Road
- Three industrial/commercial driveways are in direct proximity to the intersection of Birchmount Road and Florina Boulevard.
- Sidewalks are located on both sides of Birchmount Road.

Traffic Control Signal Warrant Study and Historical Records

Transportation Services staff conducted a Traffic Control Signal Warrant Study at the intersection of Birchmount Road at Rolark Drive and Birchmount at Florina Boulevard. Using traffic volumes recorded over the peak eight hours of a typical weekday, the following results were obtained, included in these tables is the Historical Warrant calculations:

Traffic Control Signal Warrant Study and Historical Records
 Study Date: Wednesday, February 17, 2010

TCS Warrant Birchmount Rd at Rolark Dr	Compliance Level April 14, 1999	Compliance Level Oct 25, 2001	Compliance Level Oct 20, 2008	Compliance Level Feb 17,2010
Minimum Vehicular Volume	34%	28%	21%	28%
Delay To Cross Traffic	65%	53%	40%	47%
Collision Hazard	13%	0%	0%	7%

Fatal Pedestrian collision in 2009 included in our traffic signal control warrant analysis for February 17, 2010.

Traffic Control Signal Warrant Study and Historical Records
 Study Date: Wednesday, February 17, 2010

TCS Warrant Birchmount Rd at Florina Blvd	Compliance Level Sept 26, 2000	Compliance Level April 5, 2004	Compliance Level February 17, 2010
Minimum Vehicular Volume	14%	33%	32%
Delay To Cross Traffic	19%	39%	23%
Collision Hazard	0%	0%	20%

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. Our review of the Collision Hazard is based on the previous three-year (2007 – 2009) collision history.

As outlined in the above tables, the traffic volumes do not satisfy the requirements to install traffic control signals.

Pedestrian Crossover Warrant Study and Historical Records

In addition a Pedestrian Crossover Warrant Study was also conducted at Birchmount Road at Rolark and Birchmount Road at Florina Boulevard

Study Date: Wednesday, February 17, 2010

PXO Warrant Birchmount Rd at Rolark Dr	Compliance Level April 14, 1999	Compliance Level Oct 25, 2001	Compliance Level Oct 20, 2008	Compliance Level Feb 17, 2010
Warrant 1: Pedestrian Volume	27%	24%	39%	18%
Warrant 2: Pedestrian Delay	35%	10%	38%	25%

Study Date: Wednesday, February 17, 2010

PXO Warrant Birchmount Rd at Florina Blvd	Compliance Level Sept 26, 2000	Compliance Level April 5, 2004	Compliance Level February 17, 2010
Warrant 1: Pedestrian Volume	40%	50%	3%
Warrant 2: Pedestrian Delay	50%	52%	5%

To support the installation of a pedestrian crossover, both warrants must be satisfied to the extent of 100 percent. In order for the pedestrian delay warrant to be met, a minimum of 200 pedestrians must be observed crossing the roadway, of which 130 must be delayed for periods greater than 10

seconds when crossing Birchmount Road. Given these observations, a pedestrian crossover cannot be supported at this time at either location.

Pedestrian Refuge Island

Since a pedestrian crossover is not justified, we considered the installation of a pedestrian refuge island. However, Birchmount Road is not wide enough (15.2 metres) to accommodate this device. The minimum required width is 16.4 metres. A minimum of 100 pedestrians are also required in an eight hour periods, and only 42 and 7 pedestrians were observed crossing Birchmount Road at Rolark Drive and Florina Boulevard respectively.

Technical Requirement for Pedestrian Refuge Island (PRI)

Roadway	Criterion	Requirement	Warrant Satisfied
Birchmount Rd and Rolark Dr	Minimum Road width	On street where PRI are proposed, the minimum roadwidth must exceed 16.4 metres	No
	Pedestrian Volume	The pedestrian volume crossing Birchmount Road, to justify this type of installation required eight-hour volume is 100 pedestrians	No
	Turning Movement	Heavy volume of turning movements, driveways or entrance nearby	No
	Minimum Speed	The 85 th percentile speed must be a minimum of 10 km/h over the warranted speed limit	No
	Accident History	Collisions is greater than 3 per year	No

Automatic 24-Hour Speed Study (Automatic Traffic Recorder, A.T.R.)

Study Dates: Wednesday, February 17, 2010

Speed Limit: 60 Km/h

Roadway Location	Speed Ranges – Km/h				Total Vehicles 24 Hours	85 th Percentile Speed*
	1 - 50	51 - 60	61 -65	> 65		
Northbound	2,375	4,530	1,804	925	9,634 vpd	64 km/h
Southbound	1,801	2,629	2,726	2,297	9,453 vpd	69 km/h

* The 85th percentile speed is the speed at or below which the majority of motorists are travelling. This generally reflects the speed at which most motorists feel comfortable travelling on a given section of roadway, taking into consideration traffic volumes and surrounding conditions. The recorded 85th percentile speeds are within the tolerable speed range (within 10 km/h of the posted speed limit).

Roadway Classification and Historical Counts

Roadway	Classification	Typical Daily Vehicle Volume For Subject Road Classification	Recorded Daily Vehicle Volume For Subject Road
Birchmount Rd and Rolark Dr	Major Arterial	Greater than 20,000 vehicles per day (vpd)	February 17, 2010 19,087 vpd
Birchmount Rd and Rolark Dr	Major Arterial	Greater than 20,000 vehicles per day (vpd)	Oct 20, 2008 (factor from turning movement counts) 22,656 veh (12 Hrs)
Birchmount Rd/ Allanford Rd	Major Arterial	Greater than 20,000 vehicles per day (vpd)	Feb 10, 2005 24,442 vpd
Birchmount Rd/ Allanford Rd	Major Arterial	Greater than 20,000 vehicles per day (vpd)	September 21, 2001 28,680 vpd
Birchmount Rd and Rolark Dr	Major Arterial	Greater than 20,000 vehicles per day (vpd)	Oct 25, 2001 (factor from turning movement counts) 25,080 veh (12 Hrs)

As evidenced in the above table, the subject roadway is functioning well within the vehicle volume range of a major arterial road and decreased from previous years. In order to assess existing traffic conditions, a 24 hour vehicle volume and speed studies were conducted on Birchmount Road, between Rolark Drive and Florina Boulevard. The results of the vehicle speed studies confirmed that vehicle operating speeds at or below which 85% of the traffic on Birchmount Road travels northbound are 64 km/h and southbound are 69 km/h. In reviewing of the traffic data collected as part of this investigation, the existing traffic conditions are considered typical within a 60 km/h speed zone, and compared with previous year 24 hour vehicle volumes show significantly decreased traffic on Birchmount Road.

Pedestrian Traffic

We also conducted Toronto Transit Commission passenger origin and destination (O/D) study to identify existing pedestrian traffic conditions, staff recorded information of TTC passengers boarding and alighting at the Birchmount Road and Rolark Drive bus stop.

The results of the O/D study confirmed that during the a.m. and p.m. peak periods, pedestrian traffic volume ranged from 31 and 50 of the total pedestrian's traffic from northbound and southbound bus stop respectively. No significantly pedestrian volumes were observed from Florina Boulevard to Rolark Drive to use TTC bus route. The results of the O/D study are outlined in the tables below.

Furthermore, business at 1830 Birchmount Road and 1845 Birchmount Road is no longer in services. Conversely, less pedestrians and motorists traffic entering and exiting the community along the Birchmount Road.

Toronto Transit Commission Passenger Origin and Destinations study

Study Roadway: Birchmount Road, between Rolark Drive and Florina Blvd
 Study Date: February 17, 2010
 Bus Route: 17 Birchmount

A.M. Peak Study Period - 7:00 a.m. to 9:00 a.m.

Directions	Passenger Boarding (From) TTC NB Bus Stop				Alighting (To) TTC SB Bus Stop				Total
	1	2	3	4	5	6	7	8	
	Florina Bl. to bus stop	Birchmount Rd. north to bus stop	Birchmount Rd. south to bus stop	Crossing Birchmount Rd. to bus stop	Birchmount Rd. south to bus stop	Birchmount Rd. north to bus stop	Rolark Rd. to bus stop	Crossing Birchmount Rd. to bus stop	
TTC northbound bus stop (Total 11 Buses)	0	0	0	*1	1	0	3	*16	21
TTC southbound bus stop (Total 16 Buses)	2	0	2	*0	4	2	13	*0	23

OFF Peak Study Period - 11:00 a.m. to 1:00 p.m.

Directions	Passenger Boarding (From) TTC NB Bus Stop				Alighting (To) TTC SB Bus Stop				Total
	1	2	3	4	5	6	7	8	
	Florina Bl. to bus stop	Birchmount Rd. north to bus stop	Birchmount Rd. south to bus stop	Crossing Birchmount Rd. to bus stop	Birchmount Rd. south to bus stop	Birchmount Rd. north to bus stop	Rolark Rd. to bus stop	Crossing Birchmount Rd. to bus stop	
TTC northbound bus stop (Total 8 Buses)	0	1	0	*2	0	0	0	*3	6
TTC southbound bus stop (Total 8 Buses)	0	2	1	*0	1	0	1	*1	6

P.M. Peak Study Period - 4:00 p.m. to 7:00 p.m.

Directions	Passenger Boarding (From) TTC NB Bus Stop				Alighting (To) TTC SB Bus Stop				Total
	1	2	3	4	5	6	7	8	
	Florina Bl. to bus stop	Birchmount Rd. north to bus stop	Birchmount Rd. south to bus stop	Crossing Birchmount Rd. to bus stop	Birchmount Rd. south to bus stop	Birchmount Rd. north to bus stop	Rolark Rd. to bus stop	Crossing Birchmount Rd. to bus stop	
TTC northbound bus stop (Total 24 Buses)	0	0	1	*6	2	0	0	*1	10
TTC southbound bus stop (Total 24 Buses)	10	1	10	*1	1	0	3	*1	27

* Pedestrian crossing Birchmount Road

Passenger Riding Count (Provide from Toronto Transit Commission)

Bus Route: 17 Birchmount

Date: September 18, 2009

Birchmount Rd at Rolark Dr	Period 1		Period 2		Period 3		Period 4		Period 5		Total
	00:00-08:59		09:00-14:59		15:00-18:59		19:00-21:59		22:00-23:59		
	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	
Northbound Bus Stop	2	26	0	15	17	6	0	0	1	1	68
Southbound Bus Stop	4	16	5	10	28	10	1	3	0	0	77

Collision History

A review of the Toronto Police Service collision records for the five-year period ending December 31, 2009 is summarised below.

Toronto Police Service Collision Records for Birchmount Road and Rolark Drive

Five-year review period for which we have complete data: January 1, 2005 to December 31, 2009

Three-Year Collision Information	Number of Reported Collisions					
	2005	2006	2007	2008	2009	Total
Collisions Potentially Preventable by the Installation of Traffic Control Signals	0	0	1	0	0	1
Collisions Involving Pedestrians Crossing Birchmount Road	0	0	0	0	*1	1

*A pedestrian fatality occurred on Thursday, November 12, 2009 at 5:59 p.m.

Toronto Police Service Collision Records for Birchmount Road and Florina Boulevard

Five-year review period for which we have complete data: January 1, 2005 to December 31, 2009

Three-Year Collision Information	Number of Reported Collisions					
	2005	2006	2007	2008	2009	Total
Collisions Potentially Preventable by the Installation of Traffic Control Signals	0	2	0	0	2	4
Collisions Involving Pedestrians Crossing Birchmount Road	0	0	1	0	0	1

* Fatal Pedestrian collision in 2009 included in our traffic signal control warrant analysis but the data for this year is incomplete at this time.

A pedestrian fatality occurred at this location on Thursday, November 12, 2009 at 5:59 p.m. A female pedestrian, 49 years of age, tried to cross Birchmount Road, from the east side to the west side, after alighting a TTC bus at Rolark Drive. She was struck by a vehicle travelling northbound in the median lane, just south of Rolark Drive. This collision record is not indicative of a significant safety problem at this intersection.

In summary, this second more extensive study reconfirms the results of the previous seven studies over the last ten years. Traffic control signals are not justified and should not be installed at either of the subject intersections. The TTC has been consulted and concurs with this finding.

It should be noted that notwithstanding the current non-compliance with numerical warrants, and if traffic control signals were approved on Birchmount Road at Rolark Drive, this would be a suitable location in terms of traffic control signal spacing and providing pedestrian access to the TTC stops. In addition if this location is approved for traffic control signals, the existing northbound bus bay requires a minor modification.

The potential installation of traffic control signals on Birchmount Road at Florina Boulevard would create several additional conflict points within the intersection and not comply with standards set out in the Ontario Traffic Manual (O.T.M.) Book 12 relating to driveway access points within traffic control signals.

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ATTACHMENTS

1. Location Plan (Traffic Control Signal Study – Birchmount Road at Rolark Drive, Birchmount Road at Florina Boulevard)