

Pedestrian Crossing Prohibition: Yonge Street and Blythwood Road – Lytton Boulevard

Date:	March 27, 2009
To:	North York Community Council
From:	Director, Transportation Services Division, North York District
Wards:	Ward 25 – Don Valley West Ward 16 – Eglinton - Lawrence
Reference Number:	<i>ny09011</i>

SUMMARY

To obtain approval to prohibit pedestrian crossings on the south side of the intersection at Yonge Street at Lytton Boulevard, as well as to prohibit northbound and southbound right-turns during the red traffic signal indication.

The implementation of the pedestrian crossing prohibition along with northbound and southbound right-turn on red prohibitions will improve both pedestrian and vehicular safety.

RECOMMENDATIONS

Transportation Services Division, North York District recommends that:

1. pedestrian crossings be prohibited on Yonge Street, between the **north** curb line of Lytton Boulevard and a point 30.5 metres south of the south curb line of Lytton Boulevard;
2. northbound right turns on a red signal be prohibited at all times from Yonge Street to Blythwood Road; and
3. southbound right turns on a red signal are prohibited at all times from Yonge Street to Lytton Boulevard.

FINANCIAL IMPACT

All costs associated with these changes on Yonge Street at Blythwood Road and Lytton Boulevard are included within the Transportation Services Division's 2009 Operating Budget estimates.

ISSUE BACKGROUND

The Transportation Services Division, North York District, was requested by local residents, to review both pedestrian and vehicle safety issues on Yonge Street at Blythwood Road and Lytton Boulevard. The safety issues were specifically due to the off-set nature of this signalized intersection.

COMMENTS

Yonge Street is a four lane arterial roadway with a daily two-way traffic flow of approximately 34,000 vehicles and a speed limit of 50 km/h. The intersection of Yonge Street and Blythwood Road/Lytton Boulevard is a far-right off-set intersection with a horizontal offset of approximately 15 metres. An exclusive southbound left-turn lane on Yonge Street at Blythwood Road is provided while northbound left turns at Yonge Street and Lytton Boulevard are prohibited at anytime. The eastbound and westbound approaches to this intersection consist of a single lane configuration. Pedestrian crosswalks across Yonge Street are located at the north limit of Blythwood Avenue and the south limit of Lytton Boulevard.

An off-set intersection is defined as a location where two minor streets intersect a major street at nearly the same location. There are two fundamental types of off-set intersections; the far-right and the near-right (see Attachment 3). A far-right offset intersection is identified by the location of the minor street on the right hand side of the intersection being located on the far side of the intersection. There are several operational conflicts associated with far-right intersections controlled by traffic control signals.

- Motorist's ability to establish the right-of-way within the intersection is impeded due to the left-turn then right-turn manoeuvres required to complete a through movement between the minor street legs. This is illustrated in diagram 4a, for Conflict Points C1 and C2. As a result, traffic turning left onto the arterial road cannot distinguish between opposing through traffic and opposing traffic which is turning left.
- Interlocking left-turn collision patterns occur when two vehicles turn left from the minor streets at the same time. Because of the off-set nature of the intersection, these vehicles must turn towards, and to the right of each other in order to complete their turns. This is illustrated in diagram 4b in Attachment 4, for Conflict Point C3.
- Unnecessary stops may also occur when vehicles turn left from the minor street onto the major street and find themselves facing a red signal indication. This red

indication is for the major through street traffic however some minor street vehicles will stop unnecessarily creating the potential for rear-end type collisions. This is illustrated in diagram 4c in Attachment 4, for Conflict Points C4 and C5.

- The potential for pedestrian related conflicts are heightened. This occurs when vehicles conducting left turns from a minor street have sufficient distance to accelerate to normal operating speed before encountering the pedestrian crosswalk on the outbound leg of the intersection. This is illustrated in diagram 4d in Attachment 4, for Conflict Points C6 and C7. In this situation the left turning vehicle from the minor street would be in conflict with pedestrians as if it had travelled through a red signal indication on the major street. In reality both the left turning vehicle and pedestrian had proceeded on a green/walk signal indication.

Over the past few years, numerous operational reviews have been conducted at the intersection of Yonge Street and Blythwood Road/Lytton Boulevard to improve traffic operations related to the above operational characteristics. Additional warning signs have been installed and traffic signal hardware has been modified, however, pedestrians and motorists continue to experience operational conflicts that are typical of a far-right off-set intersection controlled by traffic signals.

A review of the Toronto Police Service collision records over a five-year period ending December 31, 2008 revealed a total of 86 collisions had occurred at this intersection. Of these collisions, 38 were attributed to left-turning vehicles from the minor streets within the intersection. Two collisions involved pedestrians or cyclists being struck by right-turning vehicles.

In order to improve vehicle and pedestrian safety at this location this division has considered improvements to the traffic control signal phasing and the restriction of east-west pedestrian crossings. Given the persistent safety concerns related to the potential for serious pedestrian and vehicle conflicts caused by right-of-way confusion and the resulting collision history at this intersection, staff recommend the implementation of a three-phase traffic control signal operation. The existing the north/south signal phasing would be retained, but eastbound and westbound signal phases would be separated and would operate independent of each other. The three-phase traffic control signal operation would reduce right-of-way conflicts in the intersection caused by left-turn interlock conditions.

In conjunction with the signal phasing change, to reduce pedestrian conflicts, the south pedestrian crosswalk, south of Lytton Boulevard, would be relocated to a location between Blythwood Road and Lytton Boulevard. The east/west pedestrian crossings would then occur on the north and south side of Blythwood Road during the westbound green phase while east-west pedestrian crossings would be prohibited on the eastbound green phase, which would be for vehicles only from Lytton Boulevard. This pedestrian crossing change will require restriction of east-west pedestrian crossings at the south limit of Lytton Boulevard.

During our investigation, we analysed both the eastbound approach on Lytton Boulevard and the westbound approach on Blythwood Road to determine the appropriate traffic signal phase to serve the east-west pedestrian crossings and location of crosswalks. Our analysis determined that Blythwood Road, has a higher demand for turning vehicles than Lytton Boulevard. Therefore, longer green time for pedestrians would be available for pedestrians if the east-west pedestrian crossings were served in conjunction with the westbound movement. In this regard, the pedestrian crossing locations are proposed to be on the north and south sides of Blythwood Road rather than at the south side of Lytton Boulevard and that the east-west pedestrian crossings will be served at the same time as the westbound green signal phase.

In addition to the above phasing and pedestrian crossing changes, there exists potential for further right-of-way confusion and collisions between northbound and southbound right-turning vehicles on a red signal and vehicles conducting through movements from the minor streets during a green indication. In order to reduce this potential the restriction of northbound and southbound right turns on a red traffic signal is also required. Currently, northbound and southbound vehicles conducting right turns on a red traffic signal must proceed through the entire intersection in order to complete the turning movement.

The implementation of the three-phase signal operation would greatly improve the overall safety of both pedestrian and vehicular operation by way of completely separating eastbound and westbound conflicts at this intersection.

Councillor Cliff Jenkins and Councillor Karen Stintz have been advised and indicated their support for the recommendations of this staff report.

CONTACT

Robert Decleir
Acting Manager, Traffic Operations
Transportation Services Division, North York District
Tel: 416-395-7463
Fax: 416-395-7544
Email: rdecleir@toronto.ca

SIGNATURE

Myles Currie, B.A.
Director

ATTACHMENTS

- Attachment 1: Map – Yonge St at Blythwood Rd-Lytton Blvd; Pedestrian Crossing Prohibitions and north and southbound right turn prohibitions when traffic signal shows red (*ny09011_Att1*)
- Attachment 2: Intersection Plan – Yonge St at Blythwood Rd – Lytton Blvd (*ny09011_Att2*)
- Attachment 3 Far-right and Near-right Offset Intersections (*ny09011_Att3*)
- Attachment 4: Problems Associated with Fully Signalized Far-right Offset Intersections (*ny09011_att4*)