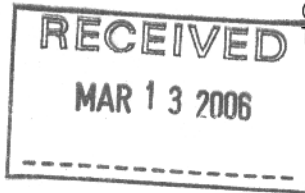




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March 8, 2006

Councillor Michael Walker
City of Toronto, Ward 22 – St. Paul's
100 Queen St. W., Suite B26
Toronto, Ontario
M5H 2N2

Dear Councillor Walker:

Re: Yonge Street and Chaplin Crescent/Davisville Avenue – Request to install a westbound left-turn green arrow feature

In response to a March 1, 2006 e-mail inquiry from Pierre D'Aoust of your office, we have reviewed the request to install a westbound left-turn green arrow feature at the above-noted intersection. The following discussion summarizes the details of our investigation.

The intersection of Yonge Street and Chaplin Crescent/Davisville Avenue is controlled by traffic signals. Yonge Street is a four-lane, north-south major arterial roadway with a daily two-way traffic flow of approximately 35,000 vehicles and a speed limit of 50 km/h. There are north-south left-turn lanes provided at the intersection with Chaplin Crescent/Davisville Avenue. West of Yonge Street, Chaplin Crescent is a four-lane minor arterial roadway with a speed limit of 40 km/h and a daily, two-way traffic flow of approximately 17,500 vehicles. Davisville Avenue intersects the east side of Yonge Street, opposite Chaplin Crescent. Davisville Avenue is a four-lane minor arterial roadway with a speed limit of 40 km/h and a daily, two-way traffic flow of approximately 15,000 vehicles. Eastbound left-turns are prohibited from 7:00 a.m. to 9:00 a.m. and from 4:00 p.m. to 6:00 p.m., Monday to Friday (buses excepted).

The primary criteria used for the installation of a left-turn phase in the City of Toronto is based on provincially established standards, which are as follows:

- Volume of left-turning motorists: There must be at least an average of two left-turns per signal cycle;
- Delay to left-turning motorists: There must be at least ten percent of left-turning motorists delayed for a signal cycle or more; and
- Collisions involving left-turning motorists: There must be a clear pattern of collisions involving left-turning motorists.

Other criteria considered includes the amount of left-turns made during the amber and all-red phase, the amount of transit vehicles turning left and the amount of times the left-turning traffic exceeds the available storage in the left-turn lane. A combination of the above-noted criteria must be met if a left-turn phase is to be considered. Even if

the left-turn phase criteria are met, the phase must be evaluated with respect to the impacts that it will have on other intersection movements. The installation of a westbound left-turn green arrow feature at Yonge Street and Chaplin Crescent/Davisville Avenue would require the re-allocation of time (at least 10 seconds) from the other intersection movements. The east-west green time should not be reduced, as it has previously been identified as the one second above the minimum time for pedestrians to cross Yonge Street.

Historically, during the busiest hours of a typical weekday, there are approximately 40-50 westbound left-turns made at the intersection of Yonge Street and Chaplin Crescent/Davisville Avenue. These hourly volumes equate to approximately one westbound left-turn per signal cycle, which is less than the minimum required to warrant a left-turn green arrow feature. Additionally, because there is no exclusive left-turn lane for westbound motorists, a left-turn green arrow feature could be underutilized, as through vehicles in the median lane queue could block left-turning vehicles.

There is presently a left-turn green arrow feature for northbound motorists at this intersection which is callable by a vehicle detector. For comparison, there are approximately 120-130 northbound left-turns made during the a.m. and off-peak hours and 270 during the p.m. peak hour. Additionally, there is an exclusive lane for northbound left-turning motorists, ensuring the time for the left-turn green arrow feature is fully utilized by left-turning vehicles.

A five-year collision history (March 1, 2000 to February 28, 2005) was investigated at this intersection, specifically looking at westbound left-turn collisions. Of the 109 total collisions that occurred at this intersection in that time period, two involved a westbound left-turning motorist. These two westbound left-turning collisions are summarized as follows:

- a westbound left-turning motorist collided with an eastbound right-turning motorist on the south intersection leg during the weekday afternoon peak period; and
- a westbound motorist attempted to make a left-turn from the curb lane and collided with a second westbound motorist in the median lane during the weekday off-peak period.

In September 2005, a detailed westbound left-turn study was conducted during the morning peak period of a typical weekday at this intersection. The historical westbound left-turn volumes during this time period are less than the warrant requirements for a left-turn green arrow feature. However, due to the construction at the Davisville subway station, TTC buses to/from Davisville Avenue were entering/exiting the station via Yonge Street, rather than via Chaplin Crescent. As a result, westbound TTC buses on Davisville Avenue were making the left-turn movement at Yonge Street, rather than proceeding straight through the intersection.

The study determined that there were approximately 55 westbound left-turns made from the median lane per hour during the study, or approximately 1.4 left-turns per cycle. Additionally, there were also 109 westbound through movements made from the median lane, which equates to 66 percent of all traffic in this lane. The study noted some delays to the westbound left-turn movement, including TTC buses. The criteria (volume of left-turns, delays encountered by left-turns, left-turn collisions, etc.) for the installation of left-turn features was not warranted during the weekday morning peak period. Additionally, during the left-turn study it was observed that there is significant congestion and queuing on Yonge Street and Chaplin Crescent.

Based on our study, we cannot support the installation of a westbound left-turn green arrow feature at the intersection of Yonge Street and Chaplin Crescent/Davisville Avenue based on the following:

- the relatively low volume of westbound left-turns;
- the minor westbound left-turn delays;
- the lack of reserve capacity and any re-allocation of green time would lead to significant increased delays to other movements; and
- the fact that without a dedicated left-turn lane the left-turn feature would be underutilized.

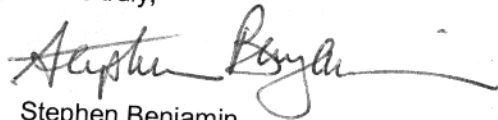
Councillor Walker

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I note for your information, that in June of 2005, we proposed to install east-west left-turn green arrow features at the intersection of Mount Pleasant Road and Davisville Avenue during the weekday peak periods. These features will be installed as soon as our budget and schedule permit and will provide a better opportunity for westbound motorists to access southbound Mount Pleasant Road during the weekday peak periods.

If you have any questions regarding this investigation, please contact Dan Clement, Transportation Technologist, at (416) 338-5454.

Yours truly,



Stephen Benjamin
Manager, Traffic Operations
Toronto and East York District, West Area

DC/dc
06-0358
File W0037