

Traffic Control Signals – Danforth Avenue and Woodycrest Avenue

Date: December 1, 2017
To: Toronto and East York Community Council
From: Acting Director, Transportation Services, Toronto and East York District
Wards: Ward 29, Toronto-Danforth

SUMMARY

As the Toronto Transit Commission (TTC) operates a transit service on Danforth Avenue, City Council approval of this report is required.

Transportation Services is requesting approval to install traffic control signals at the intersection of Danforth Avenue and Woodycrest Avenue. This installation will provide enhanced safety for pedestrians and motorist at the intersection and is technically justified.

RECOMMENDATIONS

The Acting Director, Transportation Services, Toronto and East York District recommends that:

1. City Council authorize the installation of traffic control signals at the intersection of Danforth Avenue and Woodycrest Avenue.

FINANCIAL IMPACT

The estimated cost of installing traffic control signals at the intersection of Danforth Avenue and Woodycrest Avenue is \$200,000.00. This installation would be subject to the availability of funding and competing priorities.

DECISION HISTORY

This report addresses a new initiative.

COMMENTS

Transportation Services, Toronto and East York District, was requested by Councillor Mary Fragedakis to investigate the feasibility of installing pedestrian crossing protection on Danforth Avenue, between Pape Avenue and Jones Avenue, to address safety concerns for pedestrians crossing within this segment of Danforth Avenue. As part of our evaluation, the intersections of Danforth Avenue at Eaton Avenue, as well as Danforth Avenue at Woodycrest Avenue were evaluated.

Existing Conditions

Danforth Avenue is a major arterial roadway that operates two-way traffic on a pavement width of 16.5 metres. It consists of two lanes for each direction and a centre lane dedicated for left turns at intersections. The daily two-way traffic volume is about 27,000 vehicles and there is a posted speed limit of 40 km/h.

Currently, Pay-and-Display on-street parking is in effect within the segment on both sides of Danforth Avenue, with stopping prohibited on the north side between, 7:00 a.m. to 9:00 a.m., Monday to Friday, and on the south side between 4:00 p.m. to 6:00 p.m., Monday to Friday. Heavy vehicles are permitted at all times and TTC service is provided by the adjacent Bloor-Danforth Line and by the '300 Bloor-Danforth' night bus. In the study area on Danforth Avenue, between the traffic control signals at Pape Avenue and Jones Avenue, Danforth Avenue intersects three roadways, these being Eaton Avenue, Woodycrest Avenue and Langford Avenue.

Eaton Avenue intersects the north side of Danforth Avenue, forming a "T"-type intersection about 140 metres east of Pape Avenue. It is a local roadway that operates one-way northbound traffic on a pavement width of 7.3 metres. It consists of a single travel lane and on-street parking lane on the east side, which permits one hour time-limited parking, between the hours of 10:00 a.m. to 6:00 p.m., maximum three hour time-limited parking between the hours of 6:00 p.m. to 12:00 a.m. and dedicated permit parking between the hours of 12:00 a.m. to 10:00 a.m. The daily one-way traffic volume is about 650 vehicles and it has a posted speed limit of 30 km/h. Heavy vehicles are prohibited at all times and TTC does not provide service on Eaton Avenue.

Woodycrest Avenue intersects the north side of Danforth Avenue, forming a "T"-type intersection about 130 metres west of Jones Avenue. It is a local roadway that operates one-way southbound traffic on a pavement width of 7.3 metres. It consists of a single travel lane and alternate side on-street parking lane that switches on the 15th of non-winter months (April to November) and remains on the east side during the winter months (December to March). Maximum one hour time-limited parking is permitted between the hours of 8:00 a.m. to 6:00 p.m., dedicated permit parking is in effect from 12:01 a.m. to 7:00 a.m. and maximum three hour time-limited parking is in effect at all other times. The roadway has a daily one-way traffic volume of about 600 vehicles, and it has a posted speed limit of 30 km/h. Heavy vehicles are prohibited at all times and TTC does not provide service on Woodycrest Avenue.

Langford Avenue was not examined due its close proximity to the signalized intersection of Danforth Avenue and Jones Avenue, which contains a north-south pedestrian crosswalk. The distance from this signalized intersections is only 30 metres.

The predominant pedestrian volume generators are the commercial businesses and the low-rise residential units surrounding the intersection. Further north of the intersection is Gamble Park and William Burgess Elementary School.

Collision Review

Collision statistics provided by the Toronto Police Services for the three-year period ending August 31, 2017, disclosed that 40 collisions occurred on Danforth Avenue, between Pape Avenue and Jones Avenue. Further review of these collisions disclosed that:

- None of the collisions would have potentially been prevented by the installation of a pedestrian crossover, and
- Four collisions would have potentially been prevented by the installation of traffic control signals. Specifically, if a traffic control signal was installed:
 - At the intersection of Danforth Avenue and Woodycrest Avenue two collisions could have been prevented;
 - At the intersection of Danforth Avenue and Eaton Avenue one collision could have been prevented; and
 - At the intersection of Danforth Avenue and Langford Avenue one collision could have been prevented.

Pedestrian Crossover (PXO) Warrant Study

Transportation Services conducted a pedestrian volume and delay study on July 6, 2017 and reviewed the collision records to determine if the installation of a pedestrian crossover is justified on Danforth Avenue, between Pape Avenue and Jones Avenue.

Pedestrian delay and classification studies were undertaken during the busiest eight-hour period of a typical weekday on Danforth Avenue between Eaton Avenue and Woodycrest Avenue. The segment of Danforth Avenue was divided into two zones, split from the centre point of the segment to Eaton Avenue (Zone A) and Woodycrest Avenue (Zone B) respectively. The counts recorded the number of pedestrians crossing Danforth Avenue, as well as the number of these that experienced delays more than ten seconds in crossing. Analysis of "Zone A" and "Zone B" crossing volumes were also analysed individually. For the analysis, 25% of the opposing zone's crossing volumes were added to the zone being analysed as it is assumed that 25% of those pedestrians could use the crossing protection at its theoretical location.

Table 1 - Pedestrian Crossover Warrant Results

Danforth Avenue	Total Pedestrian Volume	Pedestrian Delayed > 10 Seconds	Warrant Compliance		PXO Warrant?
			Pedestrian Volume	Pedestrian Delays	
From Eaton Avenue to Woodycrest Avenue	371	180	Met	Met	Met
At Eaton Avenue	224	110	Not Met	Not Met	Not Met
At Woodycrest Avenue	240	115	Met	Met	Met

A review to assess any deficiencies in the operational and physical suitability of a proposed pedestrian crossover at this location was carried out. By comparing the operational characteristics of the proposed pedestrian crossover to provincially adopted "environmental standards", we determined whether the pedestrian crossover would be operating under acceptable conditions. The standards and the comparative characteristics at this location are described in the attached Appendix "A" and Appendix "B", for both Danforth Avenue at Eaton Avenue, and Danforth Avenue at Woodycrest Avenue respectively.

As noted, Danforth Avenue at Eaton Avenue did not meet the criteria regarding the spacing to the adjacent traffic control signals, and Danforth Avenue at Woodycrest Avenue did not meet the criteria regarding the presence of loading zones (TTC stop) and spacing to the adjacent traffic control signals. In addition, although there are only four travel lanes, with the existing centre painted median/ left turn lane, the road is wide enough to accommodate more than four lanes. Accordingly, a pedestrian crossover would be unsuitable on Danforth Avenue, between Eaton Avenue and Woodycrest Avenue, as it would not meet provincially established "environmental standards".

As such, traffic control signals may be considered at locations where pedestrian crossovers are technically justified, but their installation would be unsuitable or unsafe due to provincially established "environmental standards". In view of the above, staff undertook an assessment of the feasibility of traffic control signals.

Traffic Control Signals

Transportation Services staff also reviewed the intersections of Danforth Avenue at Eaton Avenue and at Woodycrest Avenue for the feasibility of installing traffic control signals.

The counts were undertaken on July 6, 2017 during the busiest eight-hour period of the day. Based on the eight-hour vehicular and pedestrian counts, and the collision history, the technical justification of the installation of traffic control signals at each location are satisfied to the following extent:

Justification / Danforth Ave at:	Eaton Ave	Woodycrest Ave
Justification 1: Minimum Vehicular Volume	Not Met (1%)	Not Met (22%)
Justification 2: Delay to Cross Traffic	Not Met (73%)	Not Met (79%)
Justification 3: Collision History	Not Met (7%)	Not Met (20%)

To meet the technical requirements for the installation of traffic control signals, one of the justifications must be 100 percent satisfied, or any two of the three warrants must be at least 80 percent satisfied. Based on the above results, the installation of traffic control signals is not technically justified on Danforth Avenue, between Eaton Avenue and Woodycrest Avenue. However, as a pedestrian crossover is technically justified and Danforth Avenue is a major arterial roadway with a width of greater than four lanes, traffic control signals are recommended.

Location of Proposed Traffic Control Signals

In light of the above, staff recommends the installation of traffic control signal at Danforth Avenue and Woodycrest Avenue for pedestrian crossing protection. This location is preferred as the pedestrian crossover warrants were fully met at this location. Traffic control signals at Danforth Avenue and Woodycrest Avenue would be able to serve one-way southbound traffic on Woodycrest Avenue. Woodycrest Avenue also provides direct access to Langford Parkette and there is transit stops at the northeast corner of the intersection that attract pedestrians to cross at this location.

Summary

Transportation Services recommends the installation of traffic control signals at the intersection of Danforth Avenue and Woodycrest Avenue to enhance pedestrian safety and facilitate motorists exiting Woodycrest Avenue. Based on the results of the pedestrian studies, a pedestrian crossover is technically justified, however, unsuitable on Danforth Avenue, between Eaton Avenue and Woodycrest Avenue, due to provincially established "environmental standards. The installation of traffic control signals will result in the loss of 13 on-street parking spaces on Danforth Avenue and 3 on-street parking spaces on Woodycrest Avenue.

Councillor Mary Fragedakis has been advised of the recommendations of this report.

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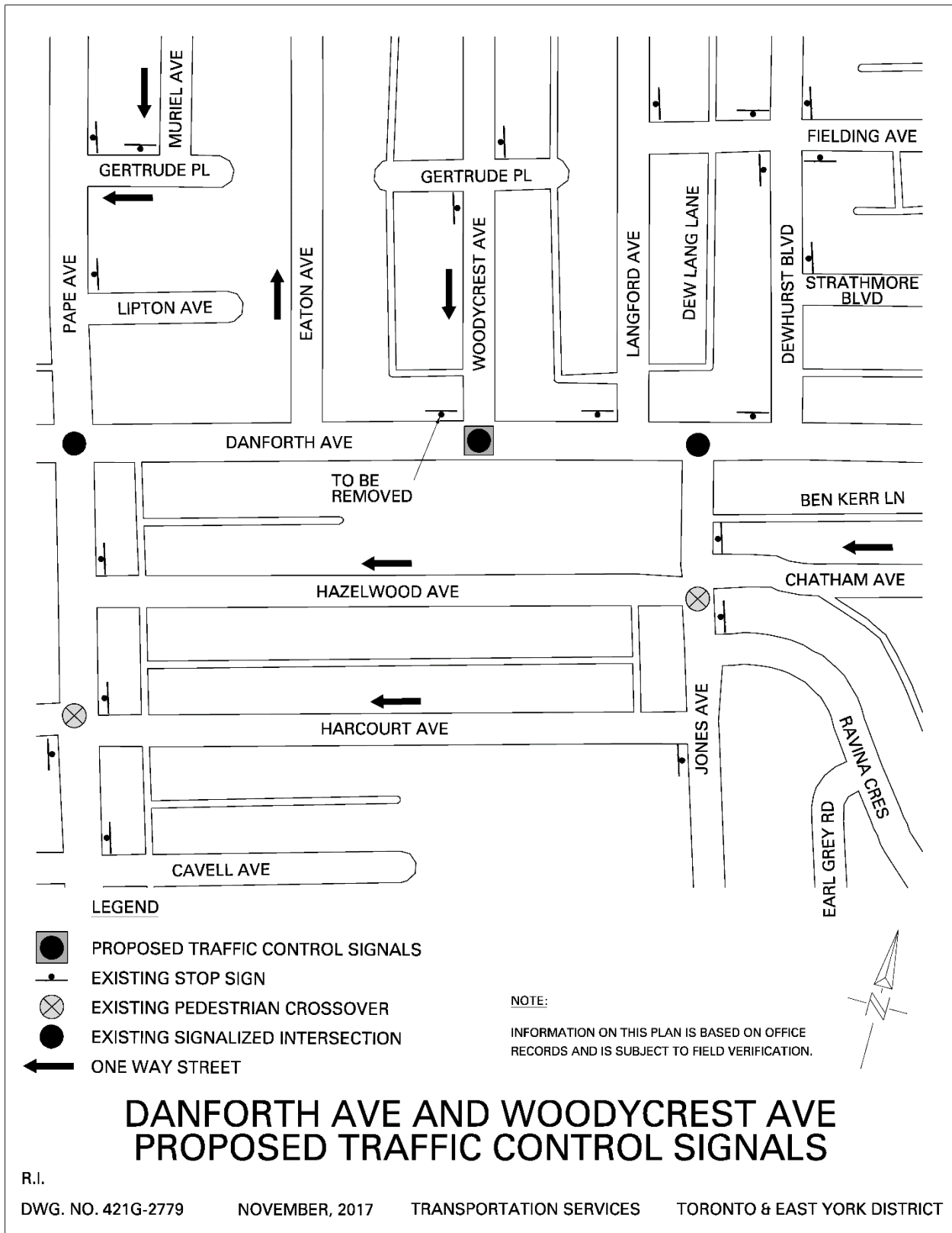
SIGNATURE

Dave Twaddle, C.E.T.
Acting Director, Transportation Services
Toronto and East York District

ATTACHMENTS

1. Drawing No. 421G-2779, dated November 2017
2. Appendix A - Audit of Pedestrian Crossover (Danforth Avenue and Eaton Avenue)
3. Appendix B - Audit of Pedestrian Crossover (Danforth Avenue and Woodycrest Avenue)

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Appendix 'A'

Danforth Avenue and Eaton Avenue

Audit of potential pedestrian crossover

Standard	Comment	Standard Met/ Not Met
Speed – Vehicle operating speed less than 60 km/h	The regulatory speed limit on Danforth Avenue is 40 km/h	Met
Width – Not more than four lanes wide on a two-way street, or more than three lanes wide on a one-way street	Danforth Avenue operates with two lanes of traffic in each direction and a centre painted median/ left turn lanes, resulting in five lanes. The total width of 16.5 metres.	Not Met
Volume – Traffic volume less than 35,000 vehicles per day (total of both directions)	Danforth Avenue carries about 27,000 vehicles/day.	Met
Turns – No significant volume of turning movements which interfere with PXO	Low turning movement counts across the PXO to Eaton Avenue (435 over eight hours). Eaton Avenue has no southbound traffic as it is a one-way northbound roadway.	Met
Visibility – No visibility problems exist for either pedestrians or motorists	No visibility obstruction between pedestrians and motorists.	Met
Loading – No loading zones in the immediate vicinity	There are no loading zones in the immediate vicinity.	Met
Driveways – No driveways or entrances nearby	There are no driveways or entrances within the vicinity.	Met
Spacing – Not less than 200 metres to another pedestrian crossover or traffic control signal (TCS)	Adjacent traffic control signals (with pedestrian crosswalk) at Danforth Avenue and Pape Avenue are about 140 metres west of this intersection.	Not Met

Appendix 'B'

Danforth Avenue and Woodycrest Avenue

Audit of potential pedestrian crossover

Standard	Comment	Standard Met/ Not Met
Speed – Vehicle operating speed less than 60 km/h	The regulatory speed limit on Danforth Avenue is 40 km/h	Met
Width – Not more than four lanes wide on a two-way street, or more than three lanes wide on a one-way street	Danforth Avenue operates with two lanes of traffic in each direction and a centre painted median/ left turn lane, resulting in five lanes. The total width of 16.5 metres.	Not Met
Volume – Traffic volume less than 35,000 vehicles per day (total of both directions)	Danforth Avenue carries about 27,000 vehicles/day.	Met
Turns – No significant volume of turning movements which interfere with PXO	Low turning movement counts across the PXO from Woodycrest Avenue (407 over eight hours). Eaton Avenue has no northbound traffic as it is a one-way southbound roadway.	Met
Visibility – No visibility problems exist for either pedestrians or motorists	No visibility obstruction between pedestrians and motorists.	Met
Loading – No loading zones in the immediate vicinity	There is a TTC stop immediately east of this intersection, on the north side of Danforth Avenue.	Not Met
Driveways – No driveways or entrances nearby	There are no driveways or entrances within the vicinity.	Met
Spacing – Not less than 200 metres to another pedestrian crossover or traffic control signal (TCS)	Adjacent traffic control signals (with pedestrian crosswalk) at Danforth Avenue and Jones Avenue are about 130 metres east of this intersection.	Not Met