


**TO:** Mayor J. Lehman and Members of Council

**FROM:** R. S. Kahle, M. Eng., P. Eng., Director of Engineering

**NOTED:** R. W. McArthur, P. Eng., General Manager of Infrastructure, Development & Culture *RWM*  
C. Ladd, Chief Administrative Officer 

**RE:** Pedestrian Signal Warrant for Toronto Street and Park Street  
File: T07-SI)

**DATE:** November 19, 2012

This memorandum is to provide an update to a question asked at the BIA information session for the reconstruction of Toronto Street on April 5, 2010. The question was, if the City was planning or considering the installation of pedestrian crosswalk(s). It was suggested by some BIA members in attendance that 2 pedestrian crossings be provided on Toronto Street; one at Park Street and one south of Ross Street.

The reconstruction of Toronto Street from Dunlop Street to Ross Street was part of the Toronto Street-Dunlop Street-Mary Street reconstruction project which was undertaken from June 2010 through to October 2011.

Staff conducted a pedestrian study on September 25, 2012 on Toronto Street at Park Street while school was back in session. This was done to best capture the time when the maximum pedestrian volume could be expected.

Staff have investigated the intersection of Toronto Street and Park Street to determine if a pedestrian signal is warranted based on Ontario Traffic Manual (OTM) Book 12 – Traffic Signals. The Ontario Traffic Manual (OTM) sets criteria for pedestrian signal warrants which are composed of two (2) areas of justification that must be satisfied to be warranted:

- i. **Pedestrian Volume Justification** – Addresses the minimum pedestrian volume based on traffic volumes on the crossing roadway and conditions under which pedestrian signalization can be installed. Pedestrian studies are conducted in the highest eight hours of pedestrian traffic. Pedestrian volumes are based on equivalent pedestrian volumes. Equivalent pedestrian volume applies a doubling factor for unassisted children under 12 years old and for seniors (65+ years).
- ii. **Pedestrian Delay Justification** – Addresses pedestrian delay prior to crossing the roadway during the highest eight hours of pedestrian traffic.

Note: Both the pedestrian volume justification and pedestrian delay justification warrants must be satisfied to fulfil the warrant justification for the installation of a pedestrian signal.

The September 25, 2012 pedestrian study was completed for the purpose of a pedestrian signal warrant analysis. The study identified pedestrian volumes of 71 equivalent pedestrians (66 actual pedestrians) with no pedestrians delayed, and a vehicle volume of 4,208 vehicles in an eight-hour survey. The warrant values for Toronto Street and Park Street are as follows:

Pedestrian Volume Justification

Eight-Hour Vehicular Volume	Net Eight-Hour Pedestrian Volume				
	<200	200 – 275	276 – 475	476 – 1000	>1000
< 1440	Not Justified	Not Justified	Not Justified	Not Justified	Not Justified
1440 – 2600	Not Justified	Not Justified	Not Justified	See Equation 1	Justified
2601 – 7000	Not Justified	Not Justified	See Equation 2	Justified	Justified
>7000	Not Justified	See Equation 3	Justified	Justified	Justified

Note: EQUATION 1: Justified if net 8-hour ped vol. > (1650 – (0.45V<sub>8</sub>))  
 EQUATION 2: Justified if net 8-hour ped vol. > (0.00001 V<sub>8</sub><sup>2</sup> - 0.146V<sub>8</sub> + 800)  
 EQUATION 3: Justified if net 8 hour ped vol. > (340 – (0.0094V<sub>8</sub>))  
 % Justification = ((net 8 hour pedestrian volume)/(Equation 1, 2 or 3 as appropriate)) x 100%  
 V<sub>8</sub> = 8 hour vehicle volume

Pedestrian Delay Justification


Net Total Eight-Hour Volume of Total Pedestrians	Net Total Eight-Hour Volume of Delayed Pedestrians		
	<75	75 - 130	>130
< 200	Not Justified	Not Justified	Not Justified
200 - 300	Not Justified	Justified if volume of delayed peds > (240 – (.55 x vol. of total peds))	Justified
>300	Not Justified	Justified	Justified


Note: No pedestrians were delayed greater than 10 seconds.

Based on the results of the investigation a pedestrian signal is not recommended for installation at the intersection of Toronto Street and Park Street as minimum warrants are not satisfied at this time. Using current roadway volumes of 4,208 vehicles per day 363 equivalent pedestrians would be required to warrant a pedestrian signal.

Staff performed an additional pedestrian study for Queens Park and identified the need to install an additional sidewalk connection from Queens Park to the signalized intersection at Toronto Street and Ross Street. This sidewalk connection is currently being constructed as part of the Ross Street construction project.

  
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