



**DEVELOPMENT SERVICES  
MEMORANDUM**

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**TO: MAYOR, A. NUTTALL AND MEMBERS OF COUNCIL**

**FROM: M. KAVECKAS, SENIOR TRANSPORTATION OPERATIONS TECHNOLOGIST,  
EXT. 4876**

**NOTED: M. BANFIELD, RPP, DIRECTOR OF DEVELOPMENT SERVICES**

**B. ARANIYASUNDARAN, P.ENG., PMP, GENERAL MANAGER OF  
INFRASTRUCTURE AND GROWTH MANAGEMENT**

**M. PROWSE, CHIEF ADMINISTRATIVE OFFICER**

**RE: INVESTIGATION – THREE-WAY STOP AT THE INTERSECTION OF CRAWFORD  
STREET AND PATTERSON PLACE – WARD 6**

**DATE: DECEMBER 7, 2022**

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This Memorandum is to provide members of Council with a response to Council Motion 21-G-160 for an Investigation into a three-way stop at the intersection of Crawford Street and Patterson Place. "That staff in the Development Services Department investigate the feasibility of adding a three-way stop at the intersection of Crawford Street and Patterson Place and report back to General Committee".

The existing traffic operations at the intersection of Crawford Street (Local) and Patterson Place (Local) require vehicles travelling west on Patterson Place to stop at Crawford Street. Please refer to Appendix "A" for a map of the study area.

Staff have investigated the intersection of Crawford Street and Patterson Place to determine if an all-way stop is warranted, based on criteria within the Ontario Traffic Manual (OTM) Book 5 – Regulatory Signs.

The OTM warrant is based on volume, collision history, and stopping sight distance at the intersection. There are three classes of warrants identified in the OTM, and each class is based on the classification of roadways: urban arterial roads, collector roads/rural arterial roads, and local roads. Road classification is determined by using the City of Barrie Official Plan, Schedule D – Road Plan.

Based on the roadway classification of Crawford Street and Patterson Place, the All-Way Stop Minimum Volume Warrant – Local Roads warrant is used. Each component of the all-way stop warrant can satisfy the warrant independently.

1. **Minimum Volume Warrant**

- a) The total vehicle volume on all approaches exceeds 200 vehicles per hour for the highest four hours recorded in the 8-hour count;
- b) The combined vehicle and pedestrian volume on the minor street exceeds 75 units per hour for the same highest four hours; and
- c) The volume split does not exceed 75/25 (three-legged intersection). The minor street must not be less than 25% of the total volume entering the intersection.

2. **Collision Warrant** - Reviews high collision frequency. Only right angle and turning movement collisions that are reported to Barrie Police Services are considered. The threshold for a high collision frequency for local roads is three collisions per year over three years (i.e., 9 collisions in 36 months).



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3. **Visibility Warrant** - The distance required for a driver to see ahead to stop if necessary. If all efforts have been exhausted and stopping sight distance cannot be brought up to the guidelines (less than 105m), conversion of the intersection to an all-way stop may be considered.

An 8-hour turning movement count was completed October 13, 2021, for the purpose of completing an all-way stop warrant. The results of the investigation are summarized below:

Description	All-Way Warrant	Recorded Data	Satisfied All-Way Warrant	
			Yes	No
<b>Part 1a – Total Volume</b> Total vehicle volume on all approaches	Greater than 200 vehicles per hour for each of the highest 4 hours of the day.	<b>Highest 4 hours of the day</b> 75 Vehicles (8am-9am) 99 Vehicles (3pm-4pm) 111 Vehicles (4pm-5pm) 89 Vehicles (5pm-6pm)		X
<b>Part 1b – Minor Street Volume</b> Combined vehicle and pedestrian volume on Patterson Place (Minor Street)	75 units per hour wishing to enter the intersection for each of the same 4 hours as the total volume	<b>Highest 4 hours of the day</b> 21 Units (8am-9am) 35 Units (3pm-4pm) 36 Units (4pm-5pm) 27 Units (5pm-6pm)		
<b>Part 1c – Volume Split</b> Volume of Traffic on Patterson Place (Minor Street must not be less than 25% of the total volume entering the intersection)	Volume split does not exceed 75/25 at the intersection (Minor Street must not be less than 25% of the total volume entering the intersection). Measured over the entire 4 hours	Volume % Split of 67/33  36 vehicles on side street, 111 on major street in the peak hour		
<b>Part 2 – Collision</b> Intersection Collision Frequency	3 collisions per year over three years (*example* 9 collisions in 36 months)	0 collisions over a 3-year period		X
<b>Part 3 – Visibility</b> Stopping Sight Distance from Patterson Place	Less than 105m	No restrictions		X

An all-way stop questionnaire was prepared and mailed to 33 property owners on Crawford Street and Patterson Place. See table below for results of the survey.

Crawford Street and Patterson Place All-Way Stop Survey Options	Response Received	Percentage of Responses
<b>Option A</b> - Leave as is (traffic along Patterson Place stops at Crawford Street)	2	20%
<b>Option B</b> – Install an all-way stop at Crawford Street and Patterson Place.	8	80%
<b>TOTAL</b> (Out of 33)	<b>10</b>	<b>30%</b>



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### **All-Way Stop Analysis**

The turning movement count identified that the highest four hours of traffic volume were 8:00 a.m. - 9:00 a.m., 3:00 p.m. - 4:00 p.m., 4:00 p.m. - 5:00 p.m., and 5:00 p.m. - 6:00 p.m. These four hours were used for the all-way stop warrant process. Throughout the highest four hours, traffic volumes never exceeded all three volume thresholds for the warrant. In the busiest peak hour (4:00 a.m. - 5:00 p.m.), there was a total vehicle volume of 111 vehicles, 36 vehicles entering Patterson Place, and a volume percentage split of 67/33. The traffic volume at this intersection does not meet the criteria to satisfy the need for an all-way stop installation, at this time.

Collision history was reviewed and staff found zero (0) reported collisions at the intersection in the past three (3) years. Staff visited the intersection to analyze the operation and review the stopping sight distance. Current operation of the intersection has vehicles travelling westbound on Patterson Place stopping at Crawford Street. When stopped at the stop sign and proceeding to the projected curb of Crawford Street, staff found that there were no sight restrictions, and motorists had clear sight lines to maneuver in the intersection when safe to do so.

Staff have reviewed results and comments from the survey, which was sent to 33 residents located around the intersection. Staff received 10 responses (30% participation). There were eight (8) responses in favour of the installation of an all-way stop and two (2) responses to leave the existing conditions. The responses in favour of the all-way stop had concerns that there should be stop control on Crawford Street to slow traffic down. Staff have taken this into consideration; however, stop signs are used to clearly assign the right-of-way and to not used as traffic calming measures. OTM Book 5 states:

“All-way stop controls must not be used under the following conditions:

- As a speed control device (or a traffic calming tool).”

Staff have been proactive over the years with installing temporary speed cushions on Crawford Street to calm neighbourhood traffic. In 2021 and 2022, a temporary set of speed cushions were installed 30m north of the intersection of Crawford Street and Patterson Place. Staff have found that speed cushions reduce the operating speed of a roadway by approximately 10km/h. Staff will consider the installations of temporary speed cushions on Crawford Street for future seasons.

Based on results from the all-way stop warrant and staff's investigations, the installation of an all-way stop at the intersection of Crawford Street and Patterson Place is not warranted or recommended.

APPENDIX "A"

Crawford Street and Patterson Place All-Way Stop Investigation

