



TO: GENERAL COMMITTEE

SUBJECT: INNISFIL STREET AND MARSHALL STREET ALL-WAY STOP

WARD: 8

PREPARED BY AND KEY CONTACT: M. KAVECKAS, SENIOR TRANSPORTATION OPERATIONS TECHNOLOGIST, EXT. 4876

SUBMITTED BY: M. BANFIELD, RPP, DIRECTOR OF DEVELOPMENT SERVICES

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

CHIEF ADMINISTRATIVE OFFICER APPROVAL: M. PROWSE, CHIEF ADMINISTRATIVE OFFICER

RECOMMENDED MOTION

1. That Traffic By-law 2020-107, Schedule '19', "Providing for the erection of stop signs at the intersections" be amended by adding the following:

Innisfil Street and Marshall Street Northbound, Southbound on Marshall Street and Eastbound, Westbound on Innisfil Street

PURPOSE & BACKGROUND

2. Staff in the Development Services Department received a request to investigate an All-Way Stop at the intersection of Innisfil Street and Marshall Street and report back to General Committee.
3. The existing operations at Innisfil Street (Major Road) and Marshall Street (Minor Road) require vehicles travelling eastbound/westbound on Innisfil Street to stop at Marshall Street. Please refer to Appendix "A" for a map of the study area.
4. Innisfil Street and Marshall Street are both classified as Local Roads. Innisfil Street has a daily traffic volume of approximately 2,000 vehicles per day and 900 vehicles for Marshall Street.

ALL-WAY STOP ANALYSIS

5. Staff investigated the intersection of Innisfil Street and Marshall Street to determine if an All-Way Stop is warranted based on criteria within the Ontario Traffic Manual (OTM) Book 5 – Regulatory Signs.
6. 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. Each class is based on the classification of roadways.
 - 1) Urban Arterial Roads
 - 2) Collector Roads and Rural Arterial Roads
 - 3) Local Roads

Road Classification is determined using the City of Barrie Official Plan, 2023, Map 4b Mobility Network.

7. Based on the classification of Innisfil Street and Marshall Street being local roads, the Local Roads warrant is used. Below are the components to the warrant. Each part can satisfy the warrant independently.
 1. **Minimum Volume Warrant**
 - a) The total vehicle volume on all approaches exceeds 200 vehicles per hour for each of the highest four hours of the day.
 - b) The combined vehicle and pedestrian volume on the minor street exceeds 75 units per hour for the same four hours.
 - c) The volume split does not exceed 70/30. The minor street must not be less than 30% 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).
 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 eight-hour Turning Movement Count was completed on October 26, 2023, for the purpose of completing an All-Way Stop warrant. The results of the warrant analysis are summarized below.

Description	All-Way Warrant	Recorded Data	Satisfied All-Way Warrant	
			Yes	No
Part 1a – Total Volume Total vehicle volume on all approaches	Greater than 200 vehicles per hour for each of the highest 4 hours of the day.	140 Vehicles (8:00am-9:00am) 225 Vehicles (3:00pm-4:00pm) 157 Vehicles (4:00pm-5:00pm) 160 Vehicles (5:00pm-6:00pm)		X
Part 1b – Minor Street Volume Combined vehicle and pedestrian volume on (Minor Street)	75 units per hour wishing to enter the intersection for each of the same 4 hours as the total volume	48 Units (8:00am-9:00am) 83 Units (3:00pm-4:00pm) 57 Units (4:00pm-5:00pm) 48 Units (5:00pm-6:00pm)		
Part 1c – Volume Split Volume of Traffic on (Minor Street) (Minor Street must not be less than 30% of the total volume entering the intersection)	Volume split does not exceed 70%/30% at the intersection (Minor Street must not be less than 30% of the total volume entering the intersection). Measured over the entire 4 hours. Volume on Major Street is vehicles only. Volume on Minor Street is vehicles and pedestrians. 75%/25% for three-legged intersections.	35%/65% Volume Split		
Part 2 – Collision Intersection Collision Frequency	3 collisions per year over three years (*example* 9 collisions in 36 months)	2 reported collisions over a 3-year period		X



Part 3 – Visibility				
Stopping Sight Distance from (Minor Street)	Less than 85m	No restrictions		X

8. Staff have identified through the Turning Movement Count that the highest 4 hours of volume used for the analysis of the All-Way Stop are 8:00am-9:00am, 3:00pm-4:00pm, 4:00pm-5:00pm, and 5:00pm-6:00pm. Only during the peak hour of the day (3:00pm-4:00pm) volume exceeded the warrant threshold. There was a total of 225 vehicles entering the intersection and 83 units from the minor street (Marshall Street). The volume generated does not meet warrant criteria for the installation of an All-Way Stop. However, it should be noted that through the analysis of the Turning Movement Count, the Major Street (Innisfil Street) has 65% of the total volume and the Minor Street (Marshall Street), has 35% of total volume. In a typical intersection scenario, Major Streets have free flow and Minor Streets will have the stop control.
9. Innisfil Street has received the stop control at this intersection due to Marshall Street having a negative grade approaching the intersection. Staff had concerns traffic required to stop on a grade in poor weather conditions. Auxiliary Stop Signs and “Cross Traffic Does Not Stop” Signs have been installed for eastbound and westbound traffic on Innisfil Street.
10. Due to the volume split being 35% Minor Street and 65% Major Street (stop-controlled street), a Stop Sign reversal is warranted at this intersection. This would have the right-of-way reassigned from Marshall Street to Innisfil Street. A Stop Sign reversal requires the intersection to be converted into an All-Way Stop for a minimum of 30 days prior to the reassigning the stop control. This is required so motorists have an adjustment period to the new right-of-way on the streets.
11. Staff are not in support of a Stop Sign reversal at the intersection of Innisfil Street and Marshall Street. However, Staff propose an All-Way Stop is installed at the intersection. The installation would correct the issue of driver confusion as the current stop control has 65% of the total volume stopping on the major street which is not typical at intersections. The All-Way Stop installation would resolve safety concerns with vehicles potentially experiencing issues stopping on Marshall Street in the event of poor weather conditions prior to Road Operations maintenance as stop control for all legs will require vehicles to come to a full stop to analyse traffic before proceeding through the intersection when safe to do so.
12. In the past 3 years, there were 2 reported right-angle collisions that could have been corrected with an All-Way Stop.
13. Staff performed site visits to the intersection and determined there were no sight line restrictions.
14. Road Operations has classified Innisfil Street and Marshall Street as a Secondary Road in their level of service winter maintenance system due to the grade in the road. A Secondary Road is higher priority over other Local Roads in the City. The criteria for winter maintenance conditions on a Secondary Road route is:
 - 5cm: appropriate level of fallen snow for road crews to be deployed.
 - Cleanup to be completed approximately 8 hours after end of snow fall.
 - Maintain road surfaces by keeping them as bare as possible through continual use of all assigned staff, equipment and materials required for the conditions.
15. Due to the volume split of the intersection, the grade of Marshall Street and Road Operations having a higher priority level of service for winter maintenance, Staff are recommending the intersection of Innisfil Street and Marshall Street be converted into an All-Way Stop.

16. A questionnaire was prepared for 48 property owners around Innisfil Street and Marshall Street. This was to provide property owners with the notice of potential changes to the intersection and to receive their feedback.

Innisfil Street and Marshall Street All-Way Stop Survey	Response Received	Percentage of Responses
Option A – An All-Way Stop be implemented.	3	30%
Option B – No change be made (stop remains on Innisfil Street only).	7	70%
TOTAL (Out of 48)	10	19%

17. Results from the questionnaire had 30% of property owners in favour of installing the All-Way Stop and 70% in favour of leaving the existing stop control conditions. Majority of comments noted that there was motorist confusion at the intersection and the reason they did not want to see an All-Way Stop installed at the intersection was due to the grade on Marshall Street. They felt that in poor weather conditions they would not be able to travel southbound on Marshall Street if required to make a full stop at Innisfil Street.
18. Staff have taken these comments into consideration. By installing an All-Way Stop and assigning a clear right-of-way at the intersection, this implementation will eliminate confusion for motorists.
19. With Road Operations classifying Innisfil Street and Marshall Street as Secondary Roads in the winter maintenance system, this will provide a high level of service to ensure both streets are clear in winter conditions to allow motorists to manoeuvre through the intersection safe and efficiently.
20. Based on site investigations, the All-Way Stop analysis, consulting Road Operations, and feedback from property owners through the questionnaire, Staff recommend the following amendments are to be made to the Traffic By-law.

That Traffic By-law 2020-107, Schedule '19', "Providing for the erection of stop signs at the intersections", be amended by adding the following:

Innisfil Street and Marshall Street Northbound, Southbound on Marshall Street and Eastbound, Westbound on Innisfil Street

21. Barrie Police Service, Barrie Fire and Emergency Service and Municipal Law Enforcement staff do not oppose the recommendation.

ENVIRONMENTAL AND CLIMATE CHANGE IMPACT MATTERS

22. There are no environmental and climate change impacts related to the recommendation.

ALTERNATIVES

23. The following alternative is available for consideration by General Committee:

Alternative #1

General Committee could maintain the existing stop control at Innisfil Street and Marshall Street.

This alternative is not recommended as it has been identified by staff that there are operation issues with majority of traffic being required to stop at the intersection. This volume split can cause confusion for motorists and be a potential safety concern for vehicles entering the intersection.

Alternative #2

General Committee could implement a stop control reversal, where vehicles travelling northbound, southbound on Marshall Street would be required to stop, and eastbound, westbound on Innisfil Street would have the free flow movement.

This alternative is not recommended as there would be potential safety concern with vehicles required to stop on Marshall Street while Innisfil Street has free flow movement.

FINANCIAL

24. The costs associated with the installation of Stop Signs are approximately \$1,000.00 and can be accommodated in the 2024 Operating Budget.

LINKAGE TO 2022–2026 STRATEGIC PLAN

25. The recommendation included in this Staff Report supports the following goal identified in the 2022-2026 Strategic Plan:

- Community Safety – Address speeding and aggressive driving to ensure street and pedestrian safety.

26. The recommendation of amending the Traffic By-law to implement an All-Way Stop at the intersection of Innisfil Street and Marshall Street will clearly assign the right-of-way at the intersection improving traffic operations and safety. This prioritizes Council's goal of creating safer streets.

APPENDIX "A"

All-Way Stop Investigation – Innisfil Street and Marshall Street

