



SUBJECT: Downtown Road Safety Review

TO: Planning and Development Committee

FROM: Transportation Services

Report Number: TS-10-19

Wards Affected: 2

File Numbers: 750-01

Date to Committee: December 3, 2019

Date to Council: December 16, 2019

Recommendation:

Approve the recommendations contained in transportation services department report TS-10-19 regarding road safety improvements; and

Direct the Director of Transportation Services to prepare, for Council's approval, a by-law to amend Traffic By-law 86-2007 for the implementation of an all-way stop traffic control at the intersection of Caroline Street and John Street.

Purpose:

This report provides an overview of the safety review conducted within the downtown including a focus on both vehicle and pedestrian traffic. The recommendations outlined in this report support the city's strategic goal to be a Healthy and Greener City and The city's From Vision to Focus plan - Improving Integrated City Mobility.

Background and Discussion:

At the Council meeting of March 25, 2019, the following staff direction (SD-13-19) was approved:

Direct the Director of Transportation Services to report back by Q3 2019 on recommended road safety improvements for intersections along James Street between Brant Street and Martha Street and on Brant Street from Caroline Street to Lakeshore Road.

As part of the Transportation Services department road safety program, staff utilize advanced screening and ranking methods to identify locations throughout the city's road network where collisions are higher than expected. This process involves detailed analysis utilizing collision frequency and type, traffic volumes, road geometry and algorithms to calculate and rank locations based on the potential for safety improvement. This methodology is commonly used by road authorities with advanced road safety programs.

The results of the screening completed in 2017 revealed that the following intersections required further detailed review:

- Brant Street and Lakeshore Road
- John Street and Lakeshore Road
- Caroline Street and John Street
- James Street and Pearl Street
- John Street and James Street

Given these results, a consultant was retained to undertake safety reviews of the identified five intersections. The road safety reviews involved in-depth studies of existing conditions, collision patterns and on-site observations. Potential improvements and countermeasures were identified with a goal to reduce the frequency and severity of collisions.

In addition to the consultant study, staff coordinated a comprehensive review of pedestrian traffic crossing at various locations along Brant Street. The intent was to gather data to determine the need for the installation of pedestrian crossovers to increase safety for pedestrians.

Strategy/process

ROAD SAFETY REVIEWS

The consultant assignment consisted of a review of background information provided by the city and included data related to collision history and traffic volumes. The studies also involved field observations, an assessment of findings and the development of recommendations. A summary of the findings and recommendations for downtown locations is provided below:

Brant Street & Lakeshore Road

The results of the road safety study revealed a number of collisions involving pedestrians occurring at this intersection. A trend of rear end collisions was also identified, primarily on the east and west approaches to the intersection.

Key recommendations:

- Install enhanced pedestrian crosswalk pavement markings on all approaches to the intersection
- Modify the location of the stop bar for the southbound left turn lane to improve the visibility of pedestrians within the crosswalk for vehicles in the southbound right turn lane
- Install “Watch for Pedestrians in Crosswalk” signs
- Increase the size of the traffic signal indications for improved visibility

Lakeshore Road and John Street

The findings for the Lakeshore Road and John Street intersection highlight that traffic conditions during the P.M. peak period on Lakeshore Road could be a contributing factor in the number of collisions at this location.

Key recommendations:

- Install hatched pavement markings within the intersection to discourage queued vehicles in the westbound direction from stopping within the intersection
- Relocate the “Do Not Block Intersection” sign to increase visibility
- Implement advanced traffic management techniques along the Lakeshore Road corridor in an effort to minimize congestion and increase traffic flow.

Caroline Street and John Street

Most collisions reported at this intersection within the analysis period were of the right-angle variety and involved northbound versus westbound vehicles. In addition, field observations revealed numerous conflicts between pedestrians and vehicles, and that many drivers appear to perceive this intersection as an all-way stop controlled intersection rather than two-way stop-controlled intersection. There were a number of occurrences of westbound vehicles aggressively accelerating towards Brant Street to avoid being stopped at the signalized intersection. The number of pedestrians crossing Caroline Street and John Street satisfy the requirement of a controlled pedestrian crossing at the intersection.

Staff considered the option of pedestrian crossover treatment however this form of traffic control will not address the angle collision trend at this intersection and may place additional mental demand on drivers in a relatively short section of road and potentially increase collision frequency, therefore this option was not carried forward.

The distance between the signalized intersection at Caroline Street and Brant Street and Caroline Street and John Street is less than the recommended distance provided in the Ontario Traffic Manual guidelines related to all-way stop control. After careful

consideration however, staff are of the opinion that an all-way stop is the best traffic control alternative to help resolve the current conflicts and collision experience at this location.

Further analysis was performed to identify the impact that an all-way stop traffic control would have on the adjacent signalized intersection of Caroline Street and Brant Street. The results of this analysis did not reveal any significant operational concerns under existing conditions. However, based on future traffic conditions, the all-way stop traffic control could become less suitable in favour of traffic signals. Staff will continue to monitor the intersection after implementation of the all-way stop control.

James Street and John Street

Traffic conflicts between westbound and northbound vehicle movements have resulted in a high number of angle collisions over the last 5 years. Many drivers appear to perceive this intersection as an all-way stop controlled intersection which has historically contributed to collisions as indicated from collision reports. On street parking creates reduced visibility for vehicles exiting John Street. Westbound vehicle queues extending from the intersection of James Street at Brant Street during the P.M peak period, may also be contributing to collisions due to blocked visibility and as vehicles from John Street attempt to enter the queue of traffic on James Street.

Key recommendations:

- Remove the existing overhead red flashing beacon located in the center of the intersection facing northbound and southbound traffic and install supplementary flashing beacons above stop signs to be consistent with other nearby intersections
- In the future, review the feasibility of converting the two-way stop control at James Street and John Street to a signalized intersection through a detailed operational review and queuing analysis along James Street.

Since the completion of the road safety review at this intersection, a Construction Management Plan for the development of 421 Brant Street has been implemented, including the closure of the westbound curb lane, elimination of on street parking and shifting of all travel lanes southerly. This provided the opportunity to make minor changes to the pavement markings to deter westbound vehicles from queuing through the intersection of John Street and James Street. In addition, the temporary elimination of on street parking on the south side of James Street provides an opportunity to assess the impact to collision frequency over the duration of the construction of 421 Brant Street.

James St and Pearl St

A review of the collision history at this intersection reveals that angle collisions are the predominant trend and are associated with “failed to yield right-of-way” driver actions suggesting that the existing stop signs are not being noticed by motorists.

Key recommendations:

- Install supplementary flashing beacons on top of the existing stop signs to raise awareness to the presence of the signs
- Review traffic volumes at the intersection in 2020 and perform an analysis to determine the need for traffic signal installation in the future

BRANT STREET PEDESTRIAN CROSSOVERS

Staff have conducted studies at six commonly used pedestrian crossing locations along Brant Street within the downtown. These locations are marked crossing areas without traffic control to provide pedestrians with the right-of-way. There are “wait for gap” signs in place at these locations to advise pedestrians of the need to wait for safe gaps in traffic prior to crossing. Despite these measures, there continues to be conflict and at times confusion that arise at these locations creating the potential for collisions

The results of the pedestrian studies conducted on Friday August 23, 2019 at the six Brant Street locations are provided in the table below.

Intersection	8-hour Pedestrian Total
Brant Street at Pine Street	169
Brant Street at Elgin Street	716
Brant Street at Ontario Street	168
Brant Street at Maria Street	191
Brant Street at Birch Avenue	90
Brant Street at Blenheim Street	32

Recommendation:

Based on the results of the pedestrian studies, staff recommend the installation of pedestrian crossovers at the following three locations.

- Brant Street at Pine Street
- Brant Street at Elgin Street
- Brant Street at Maria Street

In addition to having the greatest number of pedestrians crossing, these three locations were chosen as candidate pedestrian crossover locations based on the proximity to each other and nearby traffic signals, which also provide protected pedestrian crossing locations.

The addition of these pedestrian crossings will improve walkability within the downtown and supports Focus Area 2 - Improving Integrated City Mobility within the City's from Vision to Focus plan. More importantly, these additional protected crossings send a message to motorists that downtown streets are not the exclusive domain of the automobile but rather an area to be shared equally among all modes of travel.

The timelines for the installation of the pedestrian crossovers is anticipated to be in the spring as the weather is conducive to applying the required pavement markings and signage.

Options considered

Various countermeasure and traffic control types were considered in the development of the recommendations. Those chosen for implementation are considered to be the best at addressing the issues experienced at each of the study locations and take into account the site-specific characteristics.

Financial Matters:

The cost of the pedestrian crossover installations is estimated to be approximately \$60,000. This cost as well as the costs for the other minor improvements will be funded through existing operating and capital funding sources.

Public Engagement Matters:

Since Pedestrian Crossovers are a relatively new traffic control device in Ontario and specifically in Burlington, Transportation and Communications staff has developed a Communications Strategy for these devices. In addition, staff will be working with Halton Regional Police Services to help educate drivers and pedestrians.

Conclusion:

The implementation of the recommended countermeasures identified through the road safety reviews have the potential to reduce collisions and improve safety at the locations reviewed.

The recommended all-way stop at the intersection of Caroline Street and John Street provides right-of-way control and improved safety for pedestrians crossing Caroline Street as well as reduce the collision frequency currently being experienced at this intersection,

The introduction of pedestrian crossover treatments at the three recommended locations will improve pedestrian connections along Brant Street and supports Focus Area 2 - Improving Integrated City Mobility within the city's From Vision to Focus plan.

Respectfully submitted,

Jeff Black
Manager of Traffic Operations and Signals
ext. 7779

Report Approval:

All reports are reviewed and/or approved by Department Director, Director of Finance and Director of Legal. Final approval is by the City Manager.