



City of
Peterborough

To: Members of the General Committee

From: Jasbir Raina, Commissioner of Infrastructure and Planning Services

Meeting Date: April 11, 2023

Subject: Parkhill Road Reconstruction – Rubidge Street to Water Street, Traffic Safety Improvements Report IPSENG23-004

Purpose

A report to approve changes to Parkhill Road, at the Bethune Street and Aylmer Street intersections to improve traffic and pedestrian safety.

Recommendations

That Council approve the recommendations outlined in Report IPSENG23-004, dated April 11, 2023 of the Commissioner of Infrastructure and Planning Services as follows:

- a) That the presentation by Paradigm Transportation Solutions Limited be received;
- b) That the following recommended improvements to Parkhill Road be approved;
 - i. Construction of a raised median island and associated improvements on Parkhill Road at the Aylmer Street intersection as illustrated in Appendix A;
 - ii. Closure of the south leg of the Bethune Street intersection at Parkhill Road and associated modifications to the Bethune Street and Antrim Street intersection; and construction of a partial bus bay on Parkhill Road, as illustrated in Appendix B.
- c) That the 2023 approved capital budget for the Parkhill Road Reconstruction, George Street to Rubidge Street (project reference 5-9.04) be increased by

\$250,000 from \$3,400,000 to \$3,650,000, with the additional funding to be transferred from the Ontario Community Infrastructure Fund (OCIF).

- d) That the recommended interim traffic calming measures as described in this report be implemented on Bethune Street (north of Parkhill Road) after reconstruction of Parkhill Road;
- e) That staff be directed to monitor changes to traffic volumes on Bethune Street, Benson Avenue, and Stewart Street for 1 year following completion of the reconstruction and assess the need to undertake additional traffic calming studies for these roadways in accordance with City's Traffic Calming Policy;
- f) That notice be given to close Bethune Street between Antrim Street and Parkhill Road West as shown on Appendix B in accordance with the City's Notice to Public Policy; and
- g) That the Commissioner of Infrastructure and Planning Services be delegated the authority enact and/or amend a by-law to give effect the following actions:
 - i. Closure of Bethune Street between Antrim Street and Parkhill Road West;
 - ii. Restrict turning movements at the intersection of Parkhill Road West and Aylmer Street; and
 - iii. Remove Stop Sign on Bethune Street at Parkhill Road West.

Budget and Financial Implications

The Parkhill Road Reconstruction Project has an approved capital budget of \$3,400,000 based on the 2023 approved capital budget (project reference 5-9.04).

The additional cost to implement the recommended improvements to Parkhill Road at Aylmer Street and Bethune Street is estimated at \$250,000. After the recommended transfer of \$250,000 the remaining uncommitted balance in the OCIF Reserve will be \$2,380,000.

The cost of the recommended Traffic Calming measures on Bethune Street, north of Parkhill Road, is estimated at \$30,000, funding for which is available in the approved 2022 and previous capital budgets for the Traffic Calming Program (2022 capital budget project reference 5-18.03).

Background

Parkhill Road West, between George Street and Rubidge Street has been identified for reconstruction in 2023. The project includes the installation of new storm sewers, sanitary sewers, water main, curbs, sidewalks and road paving from Aylmer Street North to George Street North. The work from Rubidge Street to Aylmer Street North will include new water main and road paving, and new surface asphalt will be provided from George Street North to Water Street.

In addition to replacing aging underground infrastructure, intersection improvements are planned for the George Street / Parkhill Road intersection and sidewalks within the project limits are being upgraded or replaced where sufficient property exists.

The approved 2022 Transportation Master Plan included a Road Safety Strategy referred to as Safe Moves, which included 5 main themes and 44 recommended actions to enhance road safety in the City. Under the “Safe Intersections” theme, the development of an Intersection Improvement Program was recommended to upgrade intersection designs to promote safety and address key collision patterns.

Since the ideal time to consider intersection up-grades is when the street is being reconstructed, the Traffic and Parking Services Section initiated an operational review of the Aylmer Street and Bethune Street intersections to review the safety performance and assess the need for improvements to address observed collision patterns. Paradigm Transportation Solutions Limited was retained to undertake the operational review including public consultation and the preparation of recommendations to support intersection improvements. The Parkhill Road West Reconstruction, Traffic Operations Review Report prepared by Paradigm is attached in Appendix C.

Existing Conditions and Collision Patterns

The Traffic Operations Review examined traffic volumes and collision patterns in a localized study area, which included the Aylmer Street and Bethune Street intersections with Parkhill Road West. An assessment of the potential change in traffic volumes due to traffic diversion was also considered for the streets surrounding these intersections between Wolsely Street to the north and McDonnel Street to the south.

Both the Aylmer Street and Bethune Street intersections with Parkhill Road are located on a steep grade which reduces visibility for vehicles trying to turn onto or crossing Parkhill Road. Aylmer Street carries approximately 2,450 vehicles per day south of Parkhill Road and just under 1,200 vehicles per day to the north. Bethune Street serves approximately 1,000 vehicles per day south of Parkhill Road and 600 vehicles per day to the north.

The visibility constraint is worse at the Aylmer Street intersection due to its location just over the crest of the hill. From the south approach to the intersection drivers looking to the west can only see vehicles approaching within 60-65 m. From the north approach,

drivers looking to the west can only see vehicles approaching within 50-55 m. The retaining wall on the northwest corner of the Aylmer Street intersection is a major impediment to the available sight distance and drivers will often pull out across the cross walk to be able to see.

Based on Transportation Association of Canada Design Standards drivers entering an arterial road like Parkhill Road should be able to see approaching vehicles for a distance of 100-130 m to ensure they can safely make their turn or crossing movement.

The constrained sight distance at the Aylmer Street intersection has likely contributed to the observed collision pattern at this intersection. Between January 2017 and October 2022 there were 28 collisions at the Aylmer Street intersection, with 23 (82%) of these collisions reported as right angle collisions involving vehicles attempting to cross Aylmer Street from the south approach or trying to turn left onto Parkhill Road West from the south approach. During the same period, there were 12 collisions at the Bethune Street intersection, 8 of which (67%) were reported as right angle collisions caused by vehicles trying to cross Parkhill Road.

Based on the observed collision patterns and sight distance restrictions, improvements to the Aylmer Street intersection are the highest priority and led to the development of the problem statement below to guide the development of improvement alternatives.

Problem Statement

The Aylmer Street intersection has poor visibility, contributing to a higher rate of turning movement and angle collisions. Due to the steep grade, stop signs or traffic control signals are not appropriate for this location.

Alternatives Considered

Six improvement alternatives were developed to address the observed collision patterns at the Parkhill Road / Aylmer Street intersection. Each alternative included some form of access control to restrict key movements at the intersection, and the complexity of the alternatives ranged from implementing turn restrictions for left turns and crossing movements using signs, to physical restrictions using raised islands or full closure of certain movements.

Alternatives were evaluated using a multi-criteria assessment approach as summarized in Figure 1.

Figure 1 – Summary of Aylmer Street Intersection Alternatives

Criteria	Alternative 1 Turn Restrictions	Alternative 2 Median Island	Alternative 3 Right-In / Right-Out	Alternative 4 Closure to South	Alternative 5 Only Inbound North	Alternative 6 Right-In to North
Change to Traffic Patterns						
Design Standards						
Change to Neighbourhood Access						
Cost						
Risk of delay to Parkhill Road Reconstruction						
Ability to reduce collisions						
Effectiveness						
Active Transportation and Accessibility						



Based on the evaluation results, Alternative 2 – Raised Median Island is the best performing alternative. Installing a raised median island on Parkhill Road to restrict through movements and left turns to and from Aylmer Street:

- Eliminates traffic movements with the highest collision risk,
- Does not rely on police enforcement to be effective,
- Maintains access to neighbourhoods,
- Results in only a moderate level of traffic diversion to other streets,
- Has a moderate cost with reduced risk of project delay, and
- Provides a refuge and more direct path for pedestrians choosing to cross Parkhill Road

Mitigating Potential Impacts

While the construction of a raised median island on Parkhill Road to restrict through movements and left turns to and from Aylmer Street will have a number of benefits, the main drawback is the potential diversion of traffic to adjacent streets. Based on forecasts of diversion patterns it is estimated that up to 600-650 vehicles per day could be diverted to Bethune Street and up to 100 vehicles per day could be diverted to Benson Street due to the restricted movements at the Aylmer Street intersection. Based on feedback received as part of the first public open house, impacts associated with the diversion of traffic to other streets was raised as a concern.

Four options to mitigate the impacts due to the change in traffic patterns were assessed including:

- Implementation of Traffic Calming Measures on Bethune Street
- Implement Turn Restrictions at Bethune Street
- Close the South Leg of Bethune Street at Parkhill Road
- Installation of Traffic Signals at Benson Street

Of these, the installation of Traffic Calming Measures on Bethune Street plus the closure of the south leg of Bethune Street at Parkhill Road were recommended for inclusion in the project.

Implementing turn restrictions at Bethune Street may have some limited benefit in reducing the diversion of traffic but would require consistent police enforcement to have a noticeable level of benefit, which is unlikely to happen. The installation of traffic signals at Benson Street was suggested by some residents to improve use of the existing trail crossing on Parkhill Road, but would only have limited benefit in terms of managing the diversion of traffic. Some diverting traffic may shift to Benson instead of Bethune Street, due to the traffic lights, but there is also a significant potential that new traffic may be encouraged to short cut on Benson Street due to easier access to Parkhill Road. The intersection of Benson Street is right at the bottom of the steep hill on Parkhill Road and may result in an increase in rear end collisions due to vehicles trying to stop on the grade. Similarly, vehicles trying to climb the hill in the winter months from the stop position may have difficulty gaining traction on the grade, impacting traffic operations during slippery road conditions. For these reasons, the Bethune Street turn restrictions and the signals at Benson Street were not recommended.

Implementing Traffic Calming measures on Bethune Street, north of Parkhill Road would initially include the installation of two driver feedback signs (that show drivers the speed they are travelling) and using pavement marking treatments to narrow the road width to encourage lower speeds and establish on-street parking zones. Following the

reconstruction of Parkhill Road West, staff would monitor traffic on Bethune Street to determine if additional traffic calming measures may be warranted.

Closure of the south leg of the Bethune Street / Parkhill Road intersection would reduce the amount of traffic diversion to Bethune Street as this would preclude vehicles crossing Parkhill Road in the north-south direction and would prohibit vehicles from making the turn left from Bethune Street to Parkhill Road West. These were the main movements restricted at the Aylmer Street intersection. With the proposed closure of the south leg of the Bethune Street intersection this traffic would be forced to divert to the other north-south arterial roads (Reid Street /Rubidge Street to the west, or George Street / Water Street to the east).

Public Consultation

A public consultation program was undertaken as part of the assessment, which included a hand delivered notice to residents in the study area to inform them about the start of the traffic operations study, the creation of a page on the connectptbo website to provide information about the study and collect feedback from residents, and two public open house events held at City Hall (December 13, 2022 and February 8, 2023).

The first public open house solicited feedback on the problem statement, the initial alternatives for the Aylmer Street intersection, the evaluation criteria to be used in the assessment and any other comments residents wanted to raise. The second open house focussed on the evaluation results for the Aylmer Street alternatives, the recommended measures to mitigate the impacts of traffic diverted to alternate streets, and the final recommended improvement plan.

A separate meeting was also held with Emergency Services (Fire / EMS) staff to review the alternatives and solicit their feedback. Staff agreed that the proposed median island at Aylmer Street would be effective in reducing collisions at this location, and while emergency staff typically do not like raised medians on two lane roads due to impacts during emergency response times, it was recognized that the proposed median island is short and vehicles can get out of the way of an approaching emergency vehicle by turning right onto Aylmer Street. The median island maintains sufficient access to the neighbourhoods north and south of Parkhill Road to minimize any impacts to response times.

Approximately 25 residents submitted comments over the course of the project, with many in favour of the proposed median island at the intersection of Aylmer Street and Parkhill Road. Some of the comments received include:

- Impact of traffic diverting to other streets, such as Stewart Street;
- Concern for vehicles hitting the raised median island;
- Impacts on traffic due to buses stopping on Parkhill Road at Bethune Street;

- Desire for improved pedestrian and cycling infrastructure on Parkhill Road and at intersections;
- Desire to relocate the existing pedestrian signal to the Benson Street intersection; and
- Concern about impact of Bethune Street South closure and traffic diversion to other streets.

Measures to address many of the concerns raised have been incorporated into the final recommendations for the project, where feasible and within the original scope of the investigation and the project. Feedback regarding concerns beyond the scope of the project have been included in the report and will be considered as staff undertake other reviews or projects in the area.

Summary of Study Recommendations

The final study includes the following recommendations:

1. Construct a raised median island on Parkhill Road West at Aylmer Street to restrict left turns from Parkhill Road to Aylmer Street and to restrict north-south through movements crossing Parkhill Road, as illustrated in Appendix A.
2. Implement changes to the traffic by-law to restrict left turns from Parkhill Road to Aylmer Street and to restrict north-south through movements crossing Parkhill Road.
3. Widen Parkhill Road to the south in the area of the median island to provide 3.8 m lane widths and a 2.4 m median island width.
4. Install a median hazard marker with flashing light on Parkhill Road for the eastbound approach to Aylmer Street.
5. Reconstruct the stairs on the sidewalk on Aylmer Street (south of Parkhill Road) to make them barrier free and provide a depression within the median island to allow for barrier free crossing of Parkhill Road.
6. Close the south leg of the Bethune Street / Parkhill Road intersection by constructing a new curb along the south side of Parkhill Road across the intersection, extending the sidewalk across the intersection to intersect with the sidewalk on Antrim Street, and constructing a curb to connect the north curb along Antrim Street to the west curb along Bethune Street to the south, as illustrated in Appendix B.
7. Construct a 2.0 m Shared Use Path to maintain pedestrians and cyclist access from Bethune Street and Antrim Street to Parkhill Road.

8. Implement interim Traffic Calming Measures on Bethune Street, north of Parkhill Road, including pavement marking treatments to reduce the lane width and create parking zones and the installation of two speed radar feedback signs.
9. Monitor traffic volumes on Bethune Street, Benson Avenue and Stewart Street after construction for a one-year period and assess the need to undertake additional Traffic Calming studies for these roadways in accordance with City's Neighbourhood Traffic Calming Policy.
10. Consider relocating the bus stops on Parkhill Road (west of Bethune Street) OR construct a partial bus bay (minor deflection of curblines) on Parkhill Road West, just west of the Bethune Street intersection, wide enough to allow an eastbound vehicle to pass a stopped bus without having to cross the centerline of Parkhill Road.

A detailed review of study recommendation #5 found that it is not feasible to remove the stairs due to existing physical constraints. These constraints include the existing grade/slope of the boulevard and the elevated height of the road. This concern may potentially be addressed in the future when Aylmer Street is reconstructed, and property is acquired to widen the existing right-of-way.

The estimated cost to facilitate the construction of the recommended improvements is \$250,000 for the road improvements, plus an additional \$30,000 to implement the Traffic Calming measures on Bethune Street, north of Parkhill Road.

In order to enact recommendation 6, it is necessary for the City to comply with Section 34 of the Municipal Act which requires the City to post a notice of road closure for a period 14 days prior to passing of a by-law to stop up and close a section of roadway. Upon approval of Recommendation (f) the Commissioner of Infrastructure and Planning Services in consultation with Legal Service will prepare and post the notice of road closure to allow for passing of the road closure by-law.

Staff Direction

Staff Seek Delegated Authority to Enact and/or Amend a By-law

Project ITT-13-25 Parkhill Road West Reconstruction – Rubidge Street to Water Street is scheduled to be tendered for construction before the end of March 2023. The proposed works necessary to implement recommendation b) of this report are subject to the official award of the construction contract and approval of the construction schedule. As such, the timing of the by-law changes to effect the approved changes is unknown at this time. Therefore, staff seeks delegated authority to enact a by-law to complete the required actions to close Bethune Street between Antrim Street and Parkhill Road West, amend By-law 91-71 (Traffic By-Law) to implement turning movement restrictions at the intersection of Parkhill Road West and Aylmer Street and amend By-Law 91-56 (Through Street By-Law) to remove the stop sign on Bethune Street at Parkhill Road as identified in this report.

Summary

As part of the Parkhill Road West Reconstruction Project a Traffic Operations Review was undertaken to examine collision patterns and recommend road improvements to improve safety at the Aylmer Street and Bethune Street intersections.

The recommended improvement plan was developed through an extensive review of alternatives, an assessment of potential impacts, an assessment of measures to mitigate potential impacts and an extensive consultation program with area residents.

Implementation of the recommended improvements will improve traffic and pedestrian safety on Parkhill Road while balancing the impacts to adjacent neighbourhoods and the concerns raised by residents.

Submitted by,

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Attachments:

- Appendix A - Recommended Improvement Plan: Parkhill Road West and Aylmer Street North
- Appendix B - Recommended Improvement Plan: Parkhill Road West and Bethune Street
- Appendix C - Parkhill Road West Reconstruction, Traffic Operations Review Report

Appendix A: Recommended Improvement Plan- Parkhill Road West and Aylmer Street North



