



City of
Peterborough

To: **Members of the General Committee**

From: **Jasbir Raina, Commissioner of Infrastructure and Planning Services**

Meeting Date: **July 4, 2022**

Subject: **Bonaccord Street – Pedestrian Crossover, Report IPSTR22-011**

Purpose

A report to recommend the implementation of a Pedestrian Crossover on Bonaccord Street at the Trans Canada Trail crossing.

Recommendation

That Council approve the recommendation outlined in Report IPSTR22-011 dated July 4, 2022, of the Commissioner of Infrastructure and Planning Services, as follows:

That a Pedestrian Crossover Level 2 Type D crossing be implemented on Bonaccord Street at the Trans Canada Trail crossing.

Budget and Financial Implications

The implementation of a Pedestrian Crossover (PXO) on Bonaccord Street complete with signs and pavement markings will cost approximately \$10,000.00, funds for which are available in the approved 2022 Capital budget for Traffic Improvements (Project Reference 5-18.08).

Background

In September of 2021, staff received two traffic calming requests from residents on Bonaccord Street. These residents expressed concerns with the volume traffic on Bonaccord Street as well as pedestrian safety around Hamilton Park and the Trans Canada Trail crossing located east of the park. In response to these requests, staff conducted an initial assessment of traffic on Bonaccord Street utilizing the Traffic Calming Screening Tool in accordance with the Traffic Calming Policy approved by Council at their meeting May 25, 2021. The Traffic Calming Screening process included 7 days of vehicle volume and vehicle speed data collection and an analysis of cut-through traffic patterns.

The observed vehicle speeds and the cut-through traffic analysis did not meet the initial screening criteria outlined in the Traffic Calming Policy. The 85th percentile vehicle speed was 44 km/h and the cut-through analysis showed only 20% of vehicles representing cut-through traffic. The initial screening requirements suggest traffic calming measures are appropriate where the 85th percentile vehicle speeds are 55 km/h or higher and/or cut through traffic is 30% of total traffic. Bonaccord Street was recommended for education and enforcement measures as per the Traffic Calming Policy.

Based on comments from Bonaccord Street residents, and staff observations during the site visits and initial traffic calming assessment, the Trans Canada Trail crossing was identified as a potential site for an enhanced trail crossing, and subsequently a pedestrian crossing review was initiated.

Pedestrian Crossing Review

Site Details

The study area for the Pedestrian Crossover review was focused at the Trans Canada Trail crossing on Bonaccord Street just east of the bridge crossing Jackson Creek. Bonaccord Street is a two-lane local road with a 50km/h speed limit. It serves a mainly residential neighborhood, Hamilton Park on the north side and Bonnerworth Park on the south, and a daycare centre. There is currently no controlled pedestrian crossing on Bonaccord Street between Monaghan Road and Park Street North. Bonaccord Street has sidewalks on both sides of the road from Park Street North, west to the Trans

Canada Trail crossing where the sidewalk terminates. Total two-way traffic volume on Bonaccord Street is approximately 500 vehicles per average weekday based on the counts taken during the review. The traffic volume counts include construction related traffic associated with ongoing work on the new Peterborough Housing development at 553 Bonaccord Street but does not include traffic from the future residents of this development. A sketch of the subject area is shown in Appendix A.

Collision History

Over the past five years there has been no reported collisions on Bonaccord Street between Monaghan Road and Park Street North.

Site Observations

Staff visited the site on several occasions to evaluate the existing conditions. sightlines for northbound trail users and eastbound drivers are partially obstructed by the bridge railing, guide rail, utility pole and vegetation during the summer months. Sightlines on the remaining approaches are clear and unobstructed.

Pedestrian Study

An 8-hour pedestrian and cyclist count was conducted on Bonaccord Street at the Trans Canada Trail. The results of the study are summarized in Table 1.

Table 1 – Bonaccord Street 8-hour Pedestrian/ Cyclists Crossing Count Results

Location	Crossing South	Crossing North	Total
Trans Canada Trail crossing	125	150	275

Intersection Pedestrian Signal

Intersection Pedestrian Signals (IPS) and Mid-block Pedestrian Signals (MPS) are pedestrian activated traffic signals designated solely to provide a gap in traffic to assist pedestrians in safely crossing a major roadway. The City of Peterborough currently has a total of fifteen IPS/MPS throughout the City.

The key elements for a City of Peterborough Intersection Pedestrian Signal Warrant include:

- Pedestrian Crossing Volume converted to Equivalent Adult Units (EAU's)
- Total Safe Gaps (Crossing Opportunities)

The data was reviewed in accordance with the City of Peterborough Intersection Pedestrian Signal Warrant (Appendix B). The warrant examines the number of pedestrians during the peak pedestrian hour (converted to Equivalent Adult Units or EAU's) compared to the number of safe crossing opportunities during the same

period. The warrant analysis shows that the IPS is not warranted for any of the peak hours as there are sufficient gaps in traffic to accommodate the pedestrian demand. An Intersection Pedestrian Signal would typically cost between \$150,000 and \$200,000 to install.

Pedestrian Crossover

The Highway Traffic Act allows for four variations of Pedestrian Crossovers (PXOs) to be used for low-speed and low-volume roads. This type of crossing treatment is typically used where the requirements for a full pedestrian signal have not been satisfied. Under the Highway Traffic Act, a PXO will provide the right-of-way to pedestrians to cross the road and the legislation requires drivers to stop until all pedestrians have cleared the crosswalk.

The new PXOs are limited to roads with a posted speed limit of 60 km/h or less and must be implemented in conjunction with a defined set of roadside signs and road pavement markings which form a new passive treatment to provide pedestrians the right-of-way when crossing the roadway, as illustrated in Appendix C. There are four different variations of the PXO treatment defined in the OTM Book 15 standards for different roads with different levels of traffic.

The basic installation features signs and enhanced pavement markings, while busier roadways require enhanced crossing treatments with overhead signing, flashing beacons and enhanced markings. The City of Peterborough currently has a total of five Pedestrian Crossovers throughout the City.

Based on guidelines set out in the Ontario Traffic Manual Book 15 – Pedestrian Crossing Treatments, the data collected on Bonaccord Street was applied to the PXO assessment guidelines to determine the suitability for a PXO on Bonaccord Street at the Trans Canada Trail crossing. The results of the assessment are summarized in Table 2.

Table 2 – Pedestrian Crossover Assessment Results for Bonaccord Street

Factor	Criteria	Bonaccord Street	Criteria Satisfied
Traffic Signal	Traffic Signal Not Warranted	Not Warranted	Yes
Pedestrian Volume	8 Hour Pedestrian volume greater than 100 pedestrians	275 Pedestrians	Yes
Vehicle Volume	8 Hour vehicle volume on main street greater than 750 vehicles	297 vehicles	No
Location	Is the location greater than 200 m from another traffic control device?	220 m	Yes
Connectivity	Is the location on pedestrian desire lines?	Trans Canada Trail crossing	Yes
Overall Results	All Criteria Satisfied		No

As summarized in Table 2, most of the Pedestrian Crossover assessment criteria were satisfied, with the vehicle volume being the only criteria not met.

Pedestrian system connectivity is the primary factor for a pedestrian crossing at the Trans Canada Trail location. The distance from the Trans Canada Trail to the closest protected crossing at Monaghan Road is beyond 200 m and is not a reasonable deviation for pedestrians and cyclist using the trail. The Ontario Traffic Manual Book 15, “Pedestrian Crossing Treatments” Pedestrian Crossing Decision Support Tool considers connectivity to be as significant as vehicle volume when it comes to assessing the need for a protected crossing. A pedestrian crossing control can be justified based on system connectivity even when minimum pedestrian and vehicle volume requirements are not met.

In addition to the connectivity factor, the additional signage and enhanced pavement markings that are installed with a PXO would improve the visibility of the trail crossing for motorists and provide a safer pedestrian crossing environment for pedestrians and cyclists. Based on the above assessment, the Trans Canada Trail Crossing at Bonaccord Street is considered a suitable site for a PXO.

Given the lower vehicle volume and short crossing distance on Bonaccord Street, staff recommend the implementation of a Level 2 Type D Pedestrian Crossover complete with signs and pavement markings as shown in Appendix C. The vegetation on the west side of the trail south of Bonaccord Street will also be trimmed to improve sightlines.

Summary

As a follow up to a resident-initiated traffic calming request, a pedestrian study was undertaken on Bonaccord Street at the Trans Canada Trail to determine if a protected pedestrian crossing is needed. The study has shown there is a significant number of pedestrians/cyclists crossing at this location and there is no alternate protected crossing within the area. The implementation of a Pedestrian Crossover on Bonaccord Street at the Trans Canada Trail will increase the visibility of pedestrians at the crossing and provide a protected crossing opportunity for all trail users.

Submitted by,

Jasbir Raina, CEng., M.Tech, MBA, PMP, MIAM
Commissioner, Infrastructure and Planning Services

Contact Names

Kevin Jones

Manager, Transportation Division

Phone: 705-742-7777 Ext. 1895

Toll Free: 1-855-738-3755

email: kjones@peterborough.ca

Peter Malin

Transportation Services Coordinator

Phone: 705-742-7777, Ext. 1846

Toll Free: 1-855-738-3755

email: pmalin@peterborough.ca

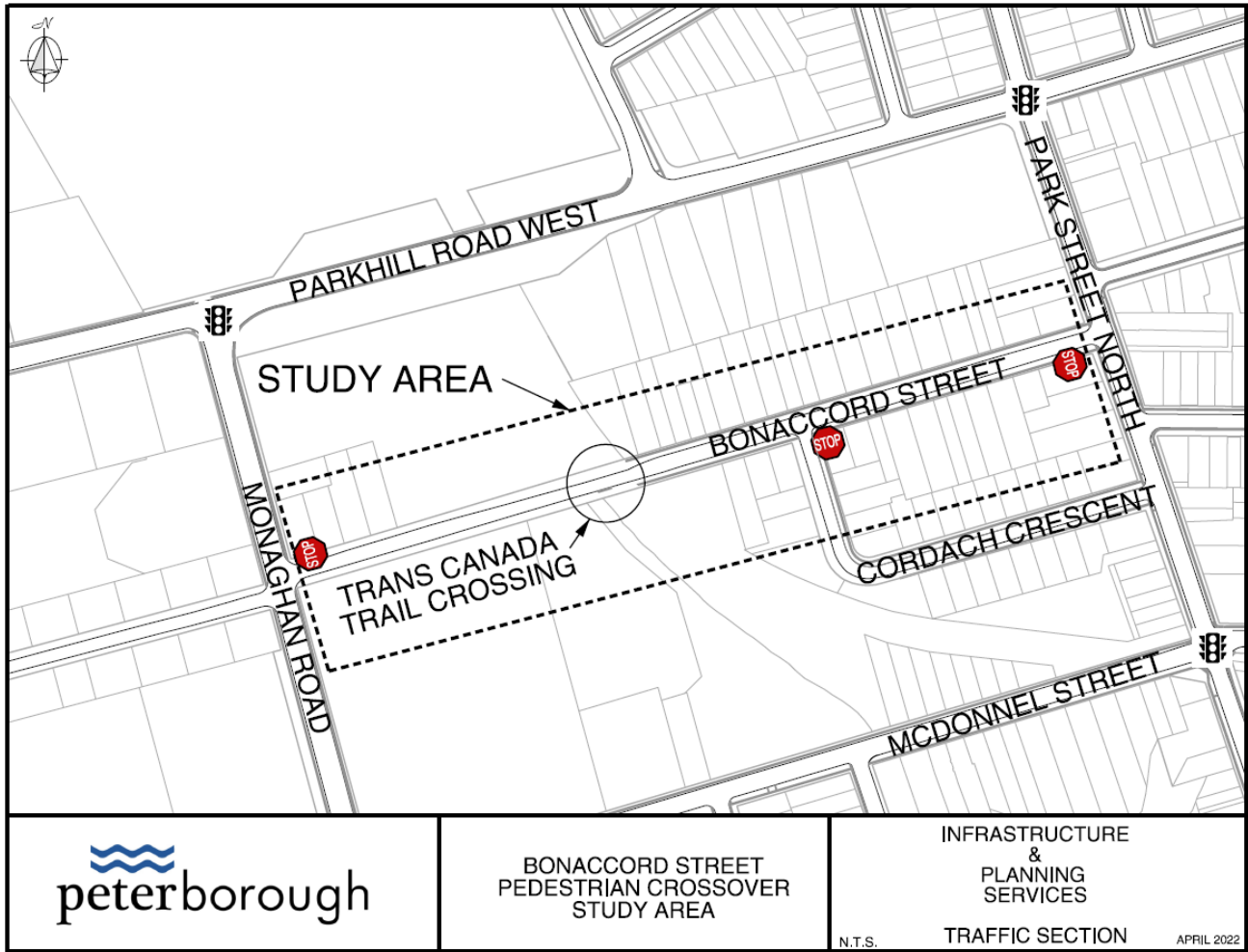
Attachments:

Appendix A– Bonaccord Street Study Area

Appendix B– Intersection Pedestrian Signal Warrant

Appendix C– Pedestrian Crossover Level 2 Type D

Appendix A: Bonaccord Street Study Area



Appendix B: Intersection Pedestrian Signal Warrant Analysis

An 8-hour pedestrian and cyclist count was conducted which determined the peak pedestrian times, 10:00 A.M. – 11:00 A.M. (A.M. Peak), 3:00 P.M. – 4:00 P.M. (Noon Peak) and 6:00 P.M. – 7:00 P.M. (P.M. Peak). The peak hour pedestrian counts on Bonaccord Road crossing at the Trans Canada Trail were converted to Equivalent Adult Units (EAU) which accounts for slower walking speeds and reaction times for vulnerable pedestrians. The adjusted pedestrian crossing demand is shown below:

Pedestrian Type	A.M. Peak	Noon Peak	P.M. Peak
Adults	29 x 1.0 = 29	21 x 1.0 = 21	33 x 1.0 = 33
Children (< 12 years)	6 x 2.0 = 12	0 x 2.0 = 0	0 x 2.0 = 0
Person with a Disability	0 x 2.0 = 0	2 x 2.0 = 4	0 x 2.0 = 0
Senior (> 65 years)	0 x 1.5 = 0	0 x 1.5 = 0	0 x 1.5 = 0
Mounted Cyclist	7 x 1.0 = 7	33 x 1.0 = 33	37 x 1.0 = 37
Total EAU's	48.0	58.0	70.0

A gap study records the number of safe gaps that exist in the traffic flow that would allow the average pedestrian to safely cross the road. The average pedestrian crossing time on Bonaccord Street is 16.31 seconds, based on average walk speed of 1.07 m/sec plus a 4 second reaction time.

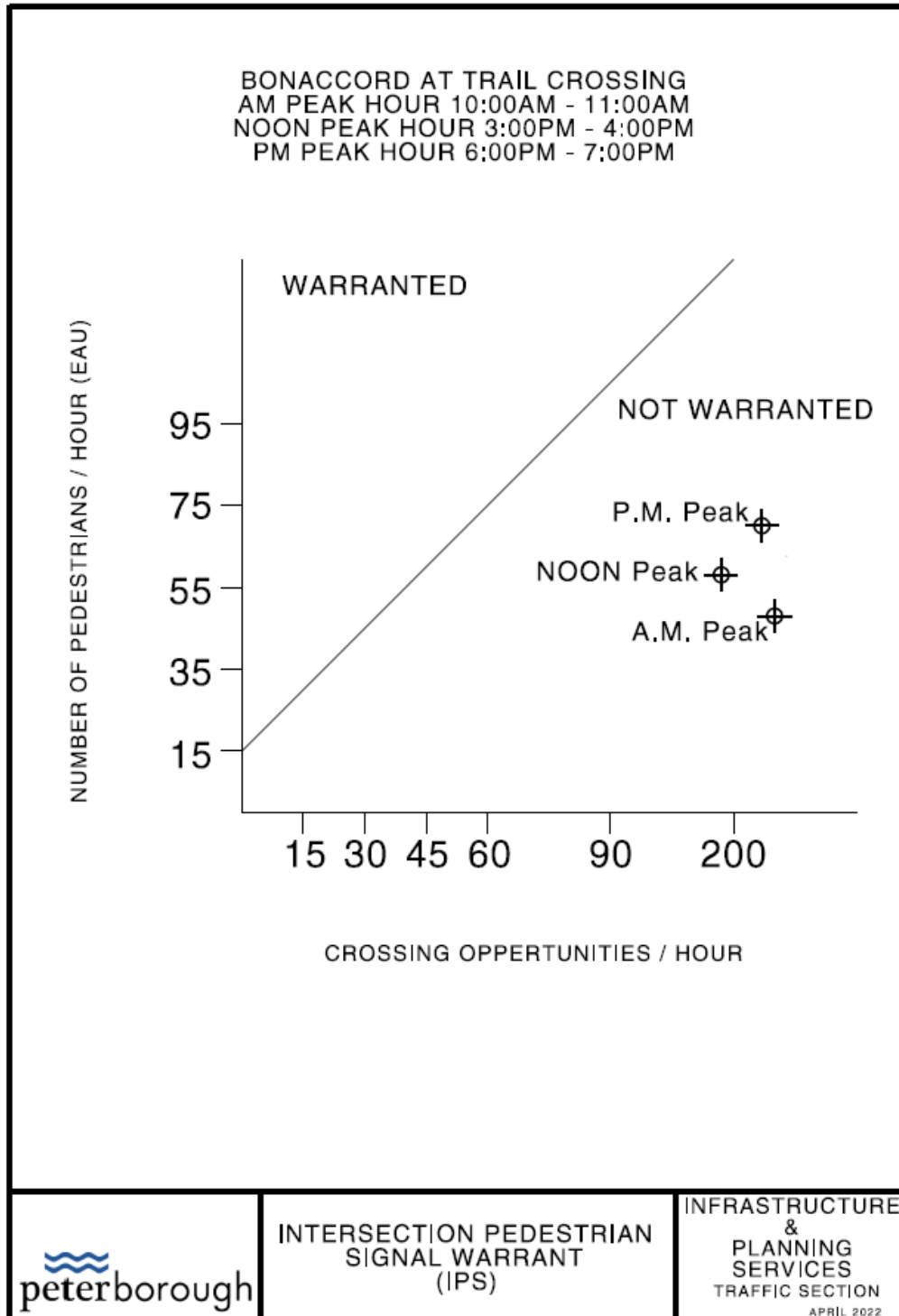
The total number of gaps in traffic during peak crossing times large enough to cross Bonaccord Street safely is recorded below:

A.M. Peak – 202 gaps

Noon Peak – 188 gaps

P.M. Peak – 201 gaps

The data was reviewed in accordance with the City of Peterborough Intersection Pedestrian Signal Warrant (Exhibit 1). The warrant examines the number of pedestrians during the peak pedestrian hour (converted to Equivalent Adult Units or EAU's) compared to the number of safe crossing opportunities during the same period. The warrant analysis shows that the IPS is not warranted for any of the peak hours.

Exhibit 1 to Appendix B – Pedestrian Crossing Warrant

Appendix C: Pedestrian Crossover Level 2 Type D – Mid-Block (2-lane, 2-way)