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Date **June 22, 2022** **Report No. 2022-206**

To Chair and Members
Vision Zero Road Safety Committee

From Inderjit Hans, P. Eng., PMP
General Manager, Public Works Commission

1.0 Type of Report

Consent Item	<input type="checkbox"/>
Item For Consideration	<input checked="" type="checkbox"/>

**2.0 Topic Pedestrian Crossovers (PXO) Policy and 2022 PXO
Locations [Financial Impact – None]**

3.0 Recommendation

- A. THAT report 2022-206 regarding “Pedestrian Crossovers (PXO) Policy and 2022 PXO Locations” BE RECEIVED; and
- B. THAT the necessary by-law to amend By-law 70-2010 to adopt a new Public Works 024 – Pedestrian Crossovers policy attached as Appendix “A” to report 2022-206 BE PRESENTED to City Council for adoption; and
- C. THAT pedestrian crossovers BE APPROVED on Ava Road at Brant Avenue, Brant Avenue at Colborne Street West, Conklin Road at Gillespie Drive, Hansford Drive at Barrett Avenue and Wood Street in front of St. Pius X Catholic Elementary School; and
- D. THAT the necessary by-law for the proposed PXO’s BE PRESENTED to City Council for adoption.

4.0 Executive Summary

This report provides the Vision Zero Road Safety Committee with a new Public Works policy pertaining to Pedestrian Crossovers. The policy outlines warrants and general guidelines for the installation of Pedestrian Crossovers (PXO's) in the municipality.

In addition, This report provides City Council with a recommendation to install five (5) PXO's at the following locations:

- Ava Road at Brant Avenue;
- Brant Avenue at Colborne Street West (channelized right turn);
- Conklin Road at Gillespie Drive;
- Hansford Drive at Barrett Avenue;
- Wood Street in front of St. Pius X Catholic Elementary School.

The costs associated with the implementation of the five (5) PXOs will be covered by existing capital budgets.

5.0 Purpose and Overview

The purpose of this report is to recommend a new Public Works policy that outlines warrants and general guidelines for the installation of PXO's in the municipality. The policy will establish and streamline the process to install new PXO's.

Staff also recommend the installation of five (5) PXOs this year, as outlined in the analysis section of this report.

6.0 Background

The Ministry of Transportation of Ontario introduced new PXO types when they published their Pedestrian Crossing Treatments manual in 2016. PXO's have become an increasingly popular pedestrian crossing treatment where higher forms of traffic control, such as all-way stop control and traffic control signals, are not warranted. Staff began installing PXO's in Brantford in 2021, and continue to review locations for their need.

Staff developed the new policy titled "Public Works-024 – Pedestrian Crossovers" attached as Appendix "A" to this report, to document the warrants and guidelines when recommending new PXO locations.

7.0 Corporate Policy Context

City of Brantford Council Priorities, 2020-2021, #3:

- A safe, efficient transportation system connects the community across neighbourhoods, with neighbouring communities and provincial transportation network.

City of Brantford Vision Zero Road Safety Plan

Public Works-021 Amending On-street Parking Regulations

8.0 Input From Other Sources

The Communications, Community Engagement & Customer Service department will continue to assist with the ongoing Pedestrian Crossover educational campaign.

9.0 Analysis

9.1 Pedestrian Crossovers Policy

Staff developed the PXO policy to provide warrants and general guidelines for the installation of PXO's in the municipality. The process for screening, warranting and installation of a PXO is consistent with the Ontario Traffic Manual (OTM) Book 15 – Pedestrian Crossing Treatments, published by the Ministry of Transportation.

When a location is under review, staff will follow the established warrant and guidelines provided in the PXO policy. If the warrant study reveals that a PXO is justified, the policy delegates authority to the General Manager of Public Works to approve the PXO location and prepare the by-law to City Council. This process is in line with Public Works-021 Amending On-street Parking Regulations policy, approved by Council in November, 2019. The Parking policy delegates authority to staff to address on-street parking amendments when specific conditions are met. This will be a more efficient process, reducing staff time required to prepare reports.

The proposed Pedestrian Crossover policy is attached as Appendix "A" to this report.

9.2 Pedestrian Crossovers

Staff identified the following five (5) locations for PXO installation in Table 1 below:

Table 1 - Proposed PXO Locations

Location	Type	Ward	Justification
Ava Road at Brant Avenue	D	2	Existing PXO installed to accommodate temporary pedestrian walkway on Ava Road Bridge.
Brant Avenue at Colborne Street West	C	2	"Yield to Pedestrians" sign and amber flasher to be replaced with standard PXO signage and pavement markings.
Conklin Road at Gillespie Drive	C	1	Adult school crossing to be upgraded to a PXO to provide traffic control for pedestrians throughout the day.
Wood Street at St. Pius X Catholic Elementary School	D	3	Pedestrian desire line between church parking lot and school
Hansford Drive at Barrett Avenue	D	4	Pedestrian desire line to Johnson Park

The type "C" and "D" PXO are similar in design, however type "C" are recommended at higher volume locations, and are enhanced with rectangular rapid flashing beacons (RRFB). Type "C" and "D" PXOs are illustrated in Figures 1 and 2 respectively. It is recommended that Traffic by-law 37-83 be amended as outlined in Appendix "B" of this report, to provide a PXO at the locations outlined in Table 1 above.

Figure 1 - Type "C" Pedestrian Crossover

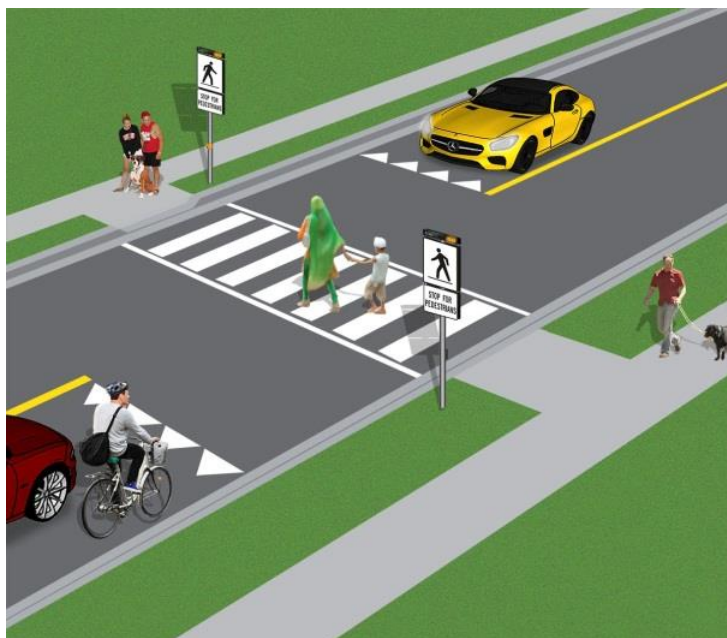
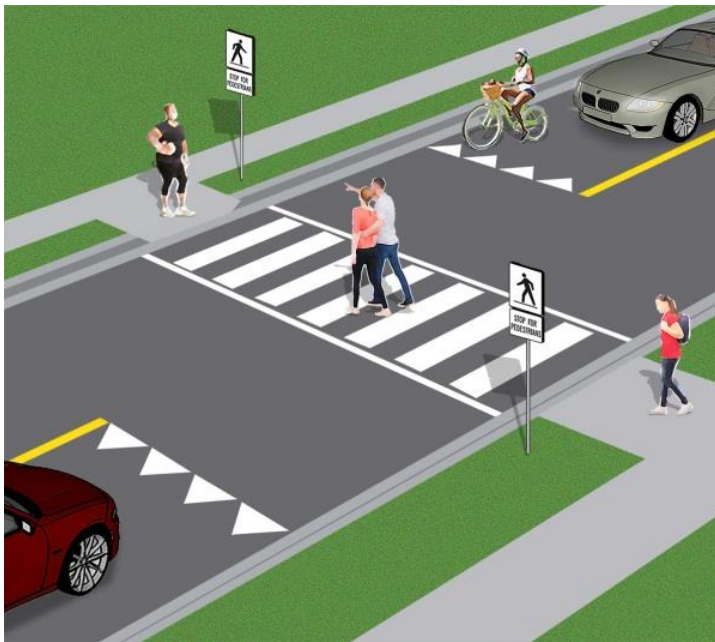


Figure 2 - Type "D" Pedestrian Crossover



10.0 Financial Implications

The five (5) PXO's to be installed in 2022 will be funded from the Active Transportation Capital Budget TS1905, at an estimated total cost of \$55,000. The approximate cost for each PXO type is outlined in Table 2 below:

Table 2 - PXO Installation Costs

PXO Type	Description	Approximate Installation Cost
Type "B"	Signs (overhead and ground mounted), pavement markings, and RRFBs	\$25,000
Type "C"	Signs (ground mounted), pavement markings, and RRFBs	\$20,000
Type "D"	Signed (ground mounted) and pavement markings	\$5,000

11.0 Climate and Environmental Implications

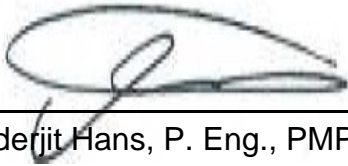
Not applicable.

12.0 Conclusion

The recommended Public Works-024 Pedestrian Crossovers policy outlines warrants and general guidelines for the installation of PXO's in the municipality.

Staff further recommend the installation of five (5) PXO's at the following locations:

- Ava Road at Brant Avenue;
- Brant Avenue at Colborne Street West (channelized right turn);
- Conklin Road at Gillespie Drive;
- Hansford Drive at Barrett Avenue;
- Wood Street in front of St. Pius X Catholic Elementary School.



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Prepared By:
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Attachments:
Appendix "A" – Public Works-024 Pedestrian Crossovers policy
Appendix "B" - 2022 Pedestrian Crossover Locations – Traffic Control

In adopting this report, is a by-law or agreement required? If so, it should be referenced in the recommendation section.

By-law required ☒ yes ☐ no

Agreement(s) or other documents to be signed by Mayor and/or City Clerk ☐ yes ☒ no

Is the necessary by-law or agreement being sent concurrently to Council? ☒ yes ☐ no

Appendix “A”



POLICY MANUAL

POLICY NUMBER: PUBLIC WORKS-024

SUBJECT: PEDESTRIAN CROSSOVERS

**POLICY STATEMENT:
(Purpose/Objective)**

To provide warrants and general guidelines for the installation of Pedestrian Crossovers (PXOs) in the municipality

RELATED POLICY PROCEDURES/GUIDELINES:

O. Reg. 402/15: PEDESTRIAN CROSSOVER SIGNS, under *Highway Traffic Act*,
R.S.O. 1990, c. H.8

Highway Traffic Act Section 140 – Pedestrian Crossover

Ontario Traffic Manual (OTM) Book 15 – Pedestrian Crossing Treatments, published by the Ministry of Transportation of Ontario.

A PXO is a type of crossing where drivers and cyclists are required to stop for pedestrians intending to cross the street. Drivers and cyclists must allow pedestrians to cross the full width of the street before proceeding. PXO's are marked by unique PXO signs and pavement markings..

Screening Process

OTM Book 15 provides a Decision Support Tool, which includes three (3) components:

1. Preliminary Assessment
2. Warrant Process
3. Pedestrian Crossing Type Selection

1. Preliminary Assessment

A preliminary assessment is to be undertaken to confirm that the identified location meets the following criteria:

- Adequate sight distance for both drivers and pedestrians. Drivers must be able to see pedestrians waiting to cross adjacent to the crossing in sufficient time to react and come to a complete stop. Pedestrians must be able to see oncoming traffic in both directions of travel so they do not begin to cross when drivers have insufficient time to stop. To accommodate sight lines, it may be necessary to modify parking control which may include the removal of on-street parking, bus stops, loading zones, foliage, etc.
- Application of PXO's is limited to road segments with a posted speed limit of 60 km/h or less. Careful consideration should be given if the operating speed (85th percentile) is greater than 60 km/h.
- A PXO can be installed on streets with a maximum of 4 lanes with a centre refuge island, creating a two stage crossing. If there is insufficient right-of-way to accommodate refuge island, then staff would consider an alternate form of traffic control.
- A PXO must not be used where the vehicular volume on the street exceeds 35,000 Average Annual Daily Traffic (AADT) volume.
- PXO's should not be installed within 200 metres of other traffic control devices that may assist in providing protected pedestrian crossings, although there are some exceptions (i.e. channelized right turn lane)

2. Warrant Process

Generally, PXOs can be installed when the volume of pedestrians crossing a street and the amount of vehicles crossing that point exceeds the thresholds as provided in the following chart.

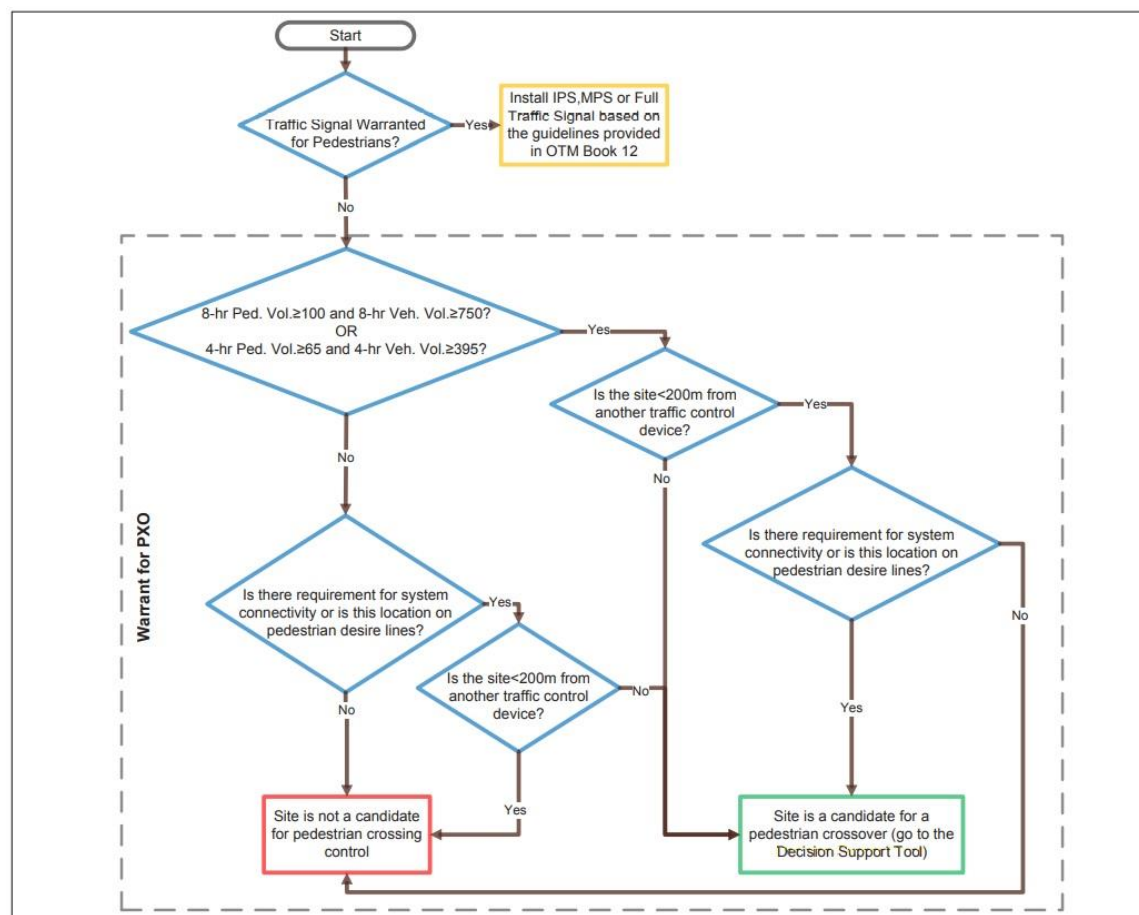
Recommended Minimum Pedestrian and Vehicular Volumes for PXO

Type	4-hour Period	8-hour Period
Pedestrians	≥65 pedestrians	≥100 pedestrians
Vehicles	≥395 vehicles	≥750 vehicles

Vehicular traffic volumes are collected during the 4 or 8 hours with the highest pedestrian volumes.

The following Warrant Flow Chart is used to identify whether a site is a candidate for a pedestrian crossover.

PXO Warrant Flow Chart



In completing this process, assisted pedestrians, which include children under 12,

seniors and those with limited mobility, with or without assistance, will count as two (2) pedestrians.

If a PXO is not warranted because the location does not satisfy the minimum pedestrian and vehicular volumes requirements, a review based on connectivity requirements, such as existing sidewalks or walkways to confirm pedestrian desire lines can be considered. If the location cannot be justified based on connectivity requirements or pedestrian desire lines, then the site is not a candidate for a PXO.

3. Pedestrian Crossing Type Selection

When a PXO is justified, the selection of an appropriate PXO (Type “B”, “C” or “D”) is determined by the Pedestrian Crossover Selection Matrix, based on the following four (4) variables:

- 4 hour or 8 hour two-way vehicular volume of the street at the location of the crosswalk
- Posted speed limit of the street
- Total number of lanes for the entire street cross-section
- Presence of raised pedestrian refuge (i.e., refuge island or median)

Note: The Selection Matrix will be used irrespective of the type of environment, such as one-way/two-way streets, intersections, etc. Also, if the use of a PXO is desired based on pedestrian connectivity (i.e. pedestrian and vehicular volume conditions are not fulfilled), then the matrix can still be used based on speed and road characteristics from the top two rows of the pedestrian crossover selection matrix.

Pedestrian Crossover Selection Matrix

Two-way Vehicular Volume			Speed Limit (km/h)	Total Number of Lanes for the Roadway Cross Section ¹			
Time Period	Lower Bound	Upper Bound		1 or 2 Lanes	3 lanes	4 lanes w/raised refuge	4 lanes w/o raised refuge
8 Hour	750	2,250	≤50	PXO D	PXO C ³	PXO D ²	PXO B
4 Hour	395	1,185					
8 Hour	750	2,250	60	PXO C	PXO B	PXO C ²	PXO B
4 Hour	395	1,185					
8 Hour	2,250	4,500	≤50	PXO D	PXO B	PXO D ²	PXO B
4 Hour	1,185	2,370					
8 Hour	2,250	4,500	60	PXO C	PXO B	PXO C ²	PXO B
4 Hour	1,185	2,370					
8 Hour	4,500	6,000	≤50	PXO C	PXO B	PXO C ²	PXO B
4 Hour	2,370	3,155					
8 Hour	4,500	6,000	60	PXO B	PXO B	PXO C ²	PXO B
4 Hour	2,370	3,155					
8 Hour	6,000	7,500	≤50	PXO B	PXO B	PXO C ²	PXO A
4 Hour	3,155	3,950					
8 Hour	6,000	7,500	60	PXO B	PXO B		
4 Hour	3,155	3,950					
8 Hour	7,500	17,500	≤50	PXO B	PXO B		
4 Hour	3,950	9,215					
8 Hour	7,500	17,500	60	PXO B			
4 Hour	3,950	9,215					

It may become necessary to prioritize PXO installation in a given year. Priority will be ranked as follows:

1. Channelized right turn islands
2. Walking routes to school
3. Community Centers and locations with high seniors activity
4. Trail crossings / trail access points
5. Other pedestrian desire lines

Additional Considerations

The following should also be considered prior to a PXO installation:

- There should not be heavy volumes of vehicular traffic turning across the PXO from a side street.
- There should not be a loading zone or other area that is considered essential for stopping or parking located in the immediate vicinity.
- PXO should not be located where pedestrian volumes are so large that they cause frequent interruption to vehicular traffic.
- PXO should not be located near a commercial driveway.

Delegation of Authority to the General Manager of Public Works

The General Manager of Public Works or their designate is delegated to approve PXO's and present the by-law to amend Traffic by-law 37-83 Schedule "16" pertaining to "Pedestrian Crossovers" to City Council for approval.

Installation Requirements

A. Signage

Required Components:

- "Pedestrian Crossover" signs and "Stop for Pedestrians" tab signs installed on both sides of the road facing both directions, mounted back to back;
- "No Stopping" signs 15 metres upstream of the crosswalk, and 15 metres downstream of the crosswalk;
- "No Passing Here to Crossing" sign 30 metres upstream of the crosswalk;
- "PXO Ahead" warning sign 50 metres upstream of the crosswalk (100 metres maximum).

B. Pavement Markings

Required Components:

- Ladder Crosswalk 2.5 metres in width (minimum)
- "Shark Teeth" Yield to Pedestrians line markings 6 metres from crosswalk
- Passing restrictions on single lane approaches using solid yellow centre line (30 metres minimum)
- Lane change prohibition on multi-lane approaches using solid white lines

C. Other Required Components specific to PXO type

- Type "B" – One (1) overhead mounted "Pedestrian Crossover" sign facing each direction of travel
- Type "B" & "C" PXO - Actuated double-sided amber Rectangle Rapid Flashing Beacon (RRFB) with Tell Tale mounted above each set of "Pedestrian

Crossover” signs and pedestrian pushbuttons

D. Illumination

The design of all PXO must provide adequate lighting to enhance the safety of pedestrians, including the pedestrian crosswalk and waiting areas.

E. Rapid Rectangular Flashing Beacons with Tell Tale

Rapid Rectangular Flashing Beacons (RRFBs) are pedestrian-activated, high-intensity flashing amber beacons that warn drivers of the presence of a pedestrian in the crosswalk. RRFBs consist of two rectangular amber indications with two tell-tale end indicators to let the pedestrian know that the beacons are flashing.

RRFBs are required components for PXO Types “B” and “C”. Wherever required for an applicable PXO, a RRFB must face both directions of travel.

The typical PXO signage and pavement marking requirements can be found in OTM Book 15.

Date of Enactment:	Related By-law Number/Staff Report Number:
Review and Amendment Dates:	Department Responsible for Review: Public Works
Date of Next Review:	Applicable Legislation/Legislative Authority:

Appendix “B”

2022 Pedestrian Crossover Locations – Traffic Control

- a) RECOMMEND that Schedule “16” of Traffic by-law 37-83 which pertains to “Pedestrian Crossovers” BE AMENDED to provide the following:

<u>STREET</u>	<u>LOCATION</u>
Ava Road	At the west side of the intersection with Brant Avenue on the south leg
Brant Avenue	At the north side of the intersection with Colborne Street West on the channelized right turn lane.
Conklin Road	At the north side of the intersection with Gillespie Drive
Hansford Drive	At the west side of the intersection with Barrett Avenue
Wood Street	83 metres east of Waverly Street