



# The Corporation of the Town of Milton

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Report To: Council

From: Jill Hogan, Commissioner, Development Services

Date: July 17, 2023

Report No: DS-034-23

Subject: Pedestrian Crossover (PXO) and School Crossing Guard Update

Recommendation: **THAT six school crossing guard locations be removed as warrants are no longer met;**

**AND THAT a total of four additional PXO Level 2 Type D PXOs be installed at school crossing locations prior to the commencement of school in 2023;**

**AND THAT three existing Level 2 Type D PXOs be upgraded to Level C and two additional Level 2 Type C PXOs be installed in 2024 pending budget approval with a cost of approximately \$17,000.00 per location;**

**AND FURTHER THAT traffic volumes be updated every two years along collector roads where PXOs exist to determine if upgrades are required.**

## EXECUTIVE SUMMARY

Traffic Engineering staff has completed an extensive review of all Level 2 Type D PXOs in the Town of Milton along with a number of school crossing guard locations to determine if upgrades are required at these locations or if crossing guards are no longer warranted.

As a result of this review, it is recommended that five Level 2 Type C PXOs be installed in 2024 pending budget approval and that four Level 2 Type D PXOs be installed as a result of the removal of crossing guards from mid-block/no stop control locations in summer 2023, six crossing guards be removed for the 2023/2024 school year commencing in September 2023 and that one additional crossing guard be removed in September 2024 pending the installation of a Level 2 Type C PXO.

## REPORT

### Background

Further to the Council Motion brought forward for consideration at the February 6, 2023 council meeting regarding “Pedestrian Crossover (PXO) Review” and further to ENG-023-

## Background

19 School Crossing Guards Policy (Appendix I), all required studies have been completed to determine any changes/upgrades to existing locations where PXOs are in place and where crossing guards are presently located. As indicated in the Council memo provided in April 2023 (Appendix II), traffic volumes were updated on all road segments that have low level PXO's installed to determine if they are warranted for upgrades, school crossing locations with PXO's were included in this to determine if they need to be upgraded, and 10 crossing guard locations were reviewed to determine if crossing guards are still warranted as per the Council approved policy.

## Discussion

### PXO Review

There are presently four types of PXOs that can be used in Ontario in accordance with Ontario Traffic Manual Book 15 - Pedestrian Crossing Treatments (see Appendix III).

The types are as follows:

**Level 1 Type A:** The "Type A" PXO is the existing PXO under Book 15 and is not currently used in Milton. This PXO consists of side mounted poles with crossing signs, as well as overhead signs with flashing beacons suspended on wire spanning the two roadside poles. This type of PXO is designed for use on high to medium volume, high speed and single or multi-lane arterials. The "Type A" PXO's have been replaced in many municipalities with Mid-Block Pedestrian Signals or Intersection Pedestrian Signals, including Milton.

**Level 2 Type B:** The "Type B" PXO consists of a roadside mounted sign leading to a crossing in both directions with an overhead sign and a Rectangular Rapid Flashing Beacon (RRFB) on top of the roadside mounted sign.

**Level 2 Type C:** The "Type C" PXO consists of a roadside mounted sign at a crossing for both directions with a RRFB on top of the roadside mounted signs.

**Level 2 Type D:** The "Type D" PXO consists of a roadside mounted sign at the crossing in both directions.

There are presently 44 Pedestrian Crossovers (PXOs) installed in the Town and of those, five are Level 2 Type B, three are Level 2 Type C and 36 are Level 2 Type D. There are also seven additional Level 2 Type D PXO's being installed this year as part of the annual PXO Program and installation is expected to be completed in summer 2023. The locations are as follows:

- Bennett Boulevard and Hepburn Road
- Dixon Drive and Hatton Crossing



**Discussion**

- Knight Trail and Higgins Drive
- McLaughlin Avenue and Serafini Crescent
- Woodward Avenue and Gailbraith Boulevard/Robarts Drive
- Whitlock Avenue and Walnut Landing
- Sauve Street south of Irma Coulson Elementary School at Pathway

Staff have updated volume counts at the 36 Level 2 Type D locations to determine if they warrant being upgraded to a Level 2 Type C PXO (see Appendix IV). Based on updated traffic volumes the following locations warrant/are extremely close to warranting an upgrade:

- Commercial Street at Walkway (South of Parkway Drive)
- Laurier Avenue at Laurier Park (Hayward Crescent east intersection)
- Laurier Avenue at Sam Sherratt Trail (west of Ontario Street)
- Scott Boulevard and Finney Terrace

The request for funding for these upgrades will be included in the 2024 Capital Budget and it is expected the upgrades will take place in summer 2024.

**Crossing Guard Review**

Further to ENG-023-19 School Crossing Guards Policy (Appendix I), staff committed to evaluating 10 existing crossing guard locations that did not meet warrants for a crossing guard in 2019. In order to determine if a crossing guard remains warranted at a location, studies must be completed three times during a school year (Fall, Winter, Spring). Due to Covid-19 occurring and schools being shut down, these studies were not completed until the 2022-2023 School Year.

Studies were completed at mid block locations and all-way stop locations to determine if the warrants were still met. The following chart summarizes the results of these studies:

Location	Type of Crossing	Meets Warrant on one or more occasions	Recommendation	Further Enhancements
Bennett Boulevard and Hutchison Avenue	No Stop Control	No	Remove Crossing Guard in Sept 2023, Students can	Install Level 2 Type D PXO in August 2023



# The Corporation of the Town of Milton

## Discussion

			cross at: Bennett Boulevard and Yates Drive (all-way stop), Bennett Boulevard at Lees Gate or Bennett Boulevard and Armstrong Boulevard with crossing guards	
Bennett Boulevard and Wickson Way	No Stop Control	Yes	Crossing Guard Remains	
Bolingbrook Drive west of Vickerman Way	Mid Block	Yes	Crossing Guard Remains	
<b>Childs Drive and Clements Drive</b>	Mid Block	No	Remove Crossing Guard in Sept 2024 pending budget approval for PXO upgrade	Install Level 2 Type C PXO , (based on traffic volumes this meets the warrants for this level of a PXO compared to the other locations)
Tupper Drive at Bussell Crescent	No Stop Control	Yes	Crossing Guard Remains	
<b>Wilson Drive south of Woodward Avenue</b>	Mid Block	No	Remove Crossing Guard in September 2023, Students can cross at Woodward	Install Level 2 Type D PXO in August 2023



# The Corporation of the Town of Milton

## Discussion

			Avenue and Wilson Drive (all-way stop) with crossing guards	
<b>Woodward Avenue and Joyce Boulevard</b>	Mid Block	No	Remove Crossing Guard in September 2023, Students can cross at Woodward Avenue and Wilson Drive (all-way stop) with crossing guards	Level 2 Type D PXO is existing
Clark Boulevard and Bennett Boulevard	All-Way Stop	Yes	Crossing Guard Remains	
<b>Laurier Avenue and Coxe Boulevard</b>	All- Way Stop	No	Remove Crossing Guard in September 2023	No Enhancements as its an existing all-way stop
<b>Thomas Street and Heslop Road</b>	All-Way Stop	No	Remove Crossing Guard in September 2023	No Enhancements as its an existing all-way stop
<b>Yates Drive and Holly Avenue</b>	All- Way Stop	No	Remove Crossing Guard in September 2023	No Enhancements as its an existing all-way stop

For the Level 2 Type D PXO installations for Bennet Boulevard and Hutchison Avenue, and Wilson South of Woodward, the PXO installations are scheduled for August of 2023, ahead of the school year start in September. Crossing Guards will not be removed until the PXOs are in place.



## Discussion

Two additional locations were reviewed to determine if the School Crossing should be converted into a PXO.

The crossing at Savoline Boulevard and Merkley Gate has been reviewed and does warrant a Level 2 Type D PXO outside of school hours due to the vicinity of Optimist Park. Therefore, it is recommended that the PXO be installed and the crossing guard remain in place as the warrants are still fulfilled for the crossing guard. The PXO will be installed in 2023.

The crossing at Sauve Street and Irma Coulson Public School has been reviewed and does warrant a Level 2 Type D PXO outside of school hours. Therefore, it is recommended that the PXO be installed and the crossing guard remain in place as the warrants are still fulfilled for the crossing guard. It should be noted that this new PXO will be relocated to the south to line up with the pathway as requested by the school. The PXO will be installed in 2023.

Seven locations where there is an existing PXO and a crossing guard in place were reviewed to determine if the PXO warrants an upgrade to Level 2 Type C along with the removal of the crossing guards (See Appendix V). As a result of these studies one location being Scott Boulevard and Finney Terrace warrants an upgrade to a Level 2 Type C PXO and the removal of the crossing guard. Pending 2024 budget approval, the PXO upgrade will be installed in summer 2024. The remaining six locations will continue to operate as Level 2 Type D PXOs with crossing guards remaining in place.

Should the crossing guards not be removed from any locations listed in the chart above, the recommended PXO's will not be installed as the school crossing guards will remain in place.

Changes related to school crossing guards will be communicated to the affected schools over the summer so they can advise parents prior to school commencing. At locations where the crossing guards have been removed and PXO's installed, the school will be sent information on how to properly use the PXO which can be shared with the parents and traffic staff will be out at these locations the first week of school educating the students/parents.



## Financial Impact

The installation of the four Type 2 level D PXOs (two where crossing guards will be removed in 2023, and two where crossing guards will remain) as well as seven new Type 2 Level D PXOs as part of the annual PXO program will be funded through the 2023 Pedestrian Crossover Budget C40011223 with a total anticipated cost of \$27,984.

As part of the 2024 Capital Budget process, staff will be requesting budget to install a total of 5 Level 2 Type C PXOs in 2024. The anticipated budget requirement will be \$86,496, which will be refined through the 2024 budget process.

The anticipated operating savings of removal of six crossing guards in 2023 is \$23,338.

Respectfully submitted,

Jill Hogan  
Commissioner, Development Services

For questions, please contact: Heide Schlegl, C.E.T, MITE, Phone: 905-878-7252  
Dipl.M.M. Manager Traffic x 2506

## Attachments

Appendix I – ENG-023-19 School Crossing Guards Policy Report

Appendix II – PXO Memo to Council

Appendix III – Types of PXO's in Ontario

Appendix IV – PXO Review Results

Appendix V - PXO School Review Results

Approved by CAO  
Andrew M. Siltala  
Chief Administrative Officer

## Recognition of Traditional Lands

The Town of Milton resides on the Treaty Lands and Territory of the Mississaugas of the Credit First Nation. We also recognize the traditional territory of the Huron-Wendat and Haudenosaunee people. The Town of Milton shares this land and the responsibility for the water, food and resources. We stand as allies with the First Nations as stewards of these lands.



# The Corporation of the Town of Milton

Report To:	Council
From:	M. Paul Cripps, P. Eng., Commissioner, Engineering Services
Date:	August 12, 2019
Report No:	ENG-023-19
Subject:	Placement of School Crossing Guards Policy
Recommendation:	<b>THAT Council endorse the Placement School Crossing Guards Policy;</b>

**AND THAT the Commissioner, Engineering Services be given delegated authority to update and implement the Placement of School Crossing Guards Policy, including establishing new crossing guard locations and the removal of crossing guard locations.**

## EXECUTIVE SUMMARY

As a result of continued growth in the Town of Milton and the opening of a number of new elementary schools, the Placement of School Crossing Guards Policy is required to ensure requested locations are reviewed using the same warrant process. The attached policy (see Appendix A) sets out minimum vehicular and pedestrian volumes for all types of adult school crossing guard locations. This policy enables the Town of Milton to have a transparent process that shows consistency of application to all sites.

## REPORT

### Background

School crossing guards are used to assign right-of-way for pedestrians, primarily children, at locations with conflicting vehicular traffic. Currently, the Town of Milton does not have a formal policy for the placement of school crossing guards. In 1986, Council approved a warrant system that was obtained from a neighbouring municipality.

The current Town of Milton warrant works well for midblock locations but it does not work well for intersections that have all-way stops or traffic control signals. The existing warrant is based on a vehicle gap study and it is difficult to count accurate gaps in traffic flow when the stop sign/traffic control signal creates them. The difference between



perceived danger and actual danger is difficult to explain to the public and is therefore considered subjective.

In order to ensure that school crossing guards are placed at appropriate locations in the community a crossing guard policy, which includes a warrant system, is required.

The proposed policy and its warrant system for school crossing guards provides staff with a more sophisticated approach for analyzing these types of school crossings, which makes it easier for the public to understand.

## **Discussion**

The role of a school crossing guard is to stop traffic for school aged children (JK-6) walking to and from school where sufficient naturally occurring gaps do not exist. Presently, there are 42 school crossing guards at 39 locations in the Town of Milton and five standbys.

In 2017, the Ontario Traffic Council (OTC) retained the services of a consulting firm to update the 2004 School Crossing Guard Guide. The Town of Milton, along with representatives from a number of municipalities throughout Ontario, sat on the committee to assist with the update. The updated OTC School Crossing Guard Guide recommends best practices and warrants for municipalities to use when determining location placements for school crossing guards.

The warrant combines engineering principles, observation and judgement as a basis for data collection. The warrant also takes into consideration vehicle and pedestrian volumes during the key times around school entrance and dismissal. The 2017 OTC School Crossing Guard Guide recommends a gap survey for mid block/minor stop controlled locations and an Exposure Index for all-way stops and traffic control signal locations.

As a result of the updated School Crossing Guard Guide developed by the OTC, the attached Placement of School Crossing Guards Policy (Appendix A) has been developed based on best practices across Ontario. The policy will provide a consistent method of evaluating existing and newly requested locations to determine if a school crossing guard is warranted.

Included within the policy are specific minimum values for pedestrians and vehicular traffic volumes for a variety of crossing location types. These values were developed using the OTC Crossing Guard Guide.

The policy also contains information with respect to the process of requesting a school crossing guard, procedure for new school openings and steps for removal of a school crossing guard.

New crossing guard locations will be installed based on warrants being fulfilled, budget, staffing availability and seasonal restrictions.

The warrants contained in the policy have been applied to all existing school crossing guard locations as well as three new locations where requests were received during 2019.

If ENG-23-19 is passed by Council, the following changes will be made to our school crossing guard program:

1. New school crossing guards will be implemented at the following locations for school opening in September 2019:
  - Costigan Road and Miller Way – all-way stop
  - Costigan Road and Denyes Way – all-way stop
2. The existing school crossing guard at the intersection of Laurier Avenue and Commercial Street will be relocated as new traffic control signals have been installed at this location.
3. The existing school crossing guard at the intersection of Ontario Street and Laurier Avenue will be relocated as only four children are crossing at this intersection and there are low conflicting movements.
4. The existing school crossing guard at the intersection of Derry Road and Sauve Street will be relocated south on Sauve Street as there are now sidewalks existing on the east side of the road, and a number of school aged children that either reside in the new condo buildings across from the school or are dropped off by parents are crossing midblock with insufficient gaps in traffic.

The Town is currently in the process of recruiting for crossing guard positions to fill a number of vacancies.

The intersection of Louis St. Laurent Avenue and Farmstead Drive has been reviewed on a number of occasions for the implementation of a school crossing guard. This intersection doesn't warrant a crossing guard, although there are a high number of school aged children crossing (many accompanied by an adult) and a low number of conflicting movements. Due to the high pedestrian volume, Engineering Services will be installing a Leading Pedestrian Interval (LPI) prior to school commencing. The LPI provides an advanced walk signal so that pedestrians begin to cross the road before vehicles get a green and it provides pedestrians an advantage over turning vehicles.



In August 2019, signal monitoring equipment will be installed at this intersection, which will allow traffic engineering staff to monitor the intersection from Town Hall and make adjustments to signal timings if required. Once the LPI has been installed and operational for a few weeks, staff will determine if southbound right turns should be prohibited during the LPI phase from 8:30 am – 9:00 am and from 3:15 pm – 3:45 pm on school days.

In Spring 2019, the following locations were reviewed and fall short of meeting the proposed warrants. In accordance to the policy, locations should be studied on three separate occasions to determine if they continue to meet warrants. Therefore, these locations will be further studied in Fall 2019 and Winter 2020:

**Mid Block Locations**

<b>Location</b>	<b>Exceeds Minimum Safe Gap Requirements</b>	<b>Meets Minimum Pedestrian Requirements (40)</b>	<b>Percentage of Warrant Met</b>
Bennett Boulevard and Hutchison Avenue	Yes	No	33%
Bennett Boulevard and Wickson Way	Yes	Yes	16%
Bolingbrook Drive W/of Vickerman Way	Yes	Yes	16%
Childs Drive and Clements Drive	Yes	No	16%
Coxe Boulevard and Pearen Drive	Yes	Yes	33%
Tupper Drive and Bussell Crescent	Yes	Yes	33%



Wilson Avenue S/of Woodward Avenue	Yes	No	0%
Woodward Avenue and Joyce Boulevard	Yes	No	0%

**All-Way Stop Locations**

<b>Intersection</b>	<b>Total Pedestrians</b> (Minimum 40 Pedestrians)	<b>Total Conflicting Movements</b>	<b>Threshold</b> (Minimum Threshold 8102)
Clark Boulevard and Bennett Boulevard	<b>33</b>	244	8052
Laurier Avenue and Coxe Boulevard	<b>34</b>	366	12,444
Thomas Street and Heslop Road	42	55	<b>2310</b>
Yates Drive and Holly Avenue	<b>39</b>	182	<b>7098</b>

Once all of the above locations have been reviewed, should the warrants still not be fulfilled, these crossing guards will be removed effective June 30, 2020.

**Financial Impact**

There is no financial impact associated with the 2019 crossing guard budget as all warranted locations will be staffed through a combination of relocation of existing crossing guards and recruiting to fill a number of vacant positions. The locations that do not meet the proposed warrants at this time will require further study in Fall 2019 and Winter 2020. Any savings identified as a result of these studies will be reported through the 2020 Quarterly Variance process.



# The Corporation of the Town of Milton

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Respectfully submitted,

M. Paul Cripps, P. Eng.  
Commissioner, Engineering Services

For questions, please contact: Heide Schlegl, Manager, 905-878-7252 x2506/2130  
Traffic or Valerie Lister,  
Coordinator Crossing Guards

<b>Attachments</b>
Appendix A – Placement of School Crossing Guards Policy

CAO Approval  
Andrew M. Siltala  
Acting Chief Administrative Officer

## Purpose & Scope

This policy, in conjunction with the Ontario Traffic Council (OTC) Crossing Guard Guide, will be used to assist staff with the placement of school crossing guards. School crossing guards can be placed on all roadways within the urban boundary of Milton, with a posted speed limit of 60km/h or less as per the Ontario Highway Traffic Act Section 176.

A school crossing guard is a person 18 years of age or older who is directing the movement of persons across a highway by creating necessary gaps in vehicular traffic to provide a safe passage at a designated school crossing location and is employed and trained by the Town of Milton.

School crossing guards will only be provided to assist students when all of the following criteria are met:

- attend schools operating under the Halton District School Board, Halton District Catholic School Board and the French Language School Board;
- live within the school's walking boundaries;
- are in Grades Junior Kindergarten to Six

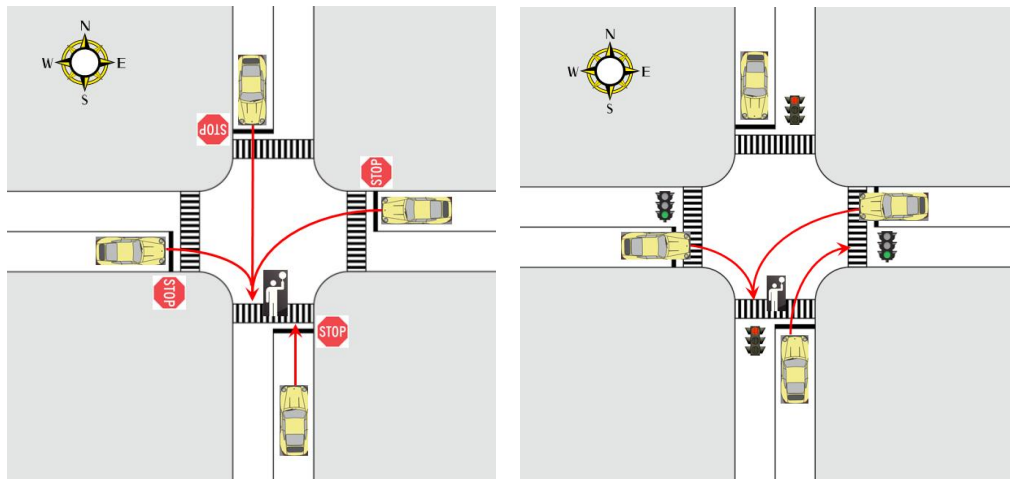
School crossing guards will be placed at warranted locations a minimum of 30 minutes before the morning bell time and 30 minutes after school dismissal. At school crossing locations directly in front of a school, these guards will remain in place an additional 5 minutes should there be late students. The bell times are provided by the appropriate school board.

School crossing guards can be placed at signalized intersections, all-way stops, minor street stop controlled or at mid-block locations where warrants have been fulfilled.

## Definitions

**85<sup>th</sup> Percentile:** Calculated by plotting the product (conflicting vehicles multiplied by pedestrians) for all existing crossing guard locations. Based on the plotted locations, the 85<sup>th</sup> percentile is calculated and this is the exposure threshold value.

**Conflicting Vehicles:** A conflicting vehicular movement is one that interferes with or compromises the safety of the crossing students. The conflicting vehicular movements vary depending on the type of intersection, crossing or control where students are crossing.



All Way Stop and Signalized Examples - Conflicting Movements

**Exposure Index:** The Exposure Index method examines the level of interaction and conflict between vehicular and student pedestrian volumes. The Exposure Index method generates a graph based on historical trends at existing crossing guard locations. The graph is then used as a threshold for future crossing locations where a school crossing guard may be required. (See Appendix I)

**Gap Study:** Measures the elapsed time naturally occurring between vehicles, measured in seconds, as vehicles cross the intended study location. The gaps are recorded in five-minute intervals.

**Safe Gap Time:** A Safe Gap Time is the time required in a break within the traffic that permits students to cross the road safely. (See Appendix II)

**Warrant:** The criteria used to determine if a school crossing guard is warranted.

## **Requests for a School Crossing Guard**

Requests from parents and schools must be submitted in writing addressed to the Engineering Services Department, Traffic Engineering. The request should indicate the applicable school, daily walking route, preferred intersection (including leg of intersection)/location where they are requesting that a school crossing guard be placed. Upon Traffic Engineering staff's review of the student scatter map provided by the appropriate school board, a more suitable location may be considered and studied.

## **Types of Studies Used to Determine Locations for School Crossing Guards**

Appropriate studies to place a school crossing guard will be conducted at requested locations. All applicable studies will be conducted 30 minutes prior to school entrance times and 30 minutes following school dismissal.

If a school crossing guard is being considered, a site study will be conducted on a typical school day, Tuesday to Thursday with fair weather, to determine if the location is appropriate and if it meets the minimums for the applicable warrant.

The site study would include the following:

- The location's proximity to another traffic control device or existing school crossing guard;
- Number of students utilizing the crossing location;
- Existing sidewalks i.e. is construction complete or nearly complete in the area;
- Driver and pedestrian behaviour - is education or police enforcement required;
- Site lines - would the school crossing guard and children be clearly visible by traffic at this location;
- Parked vehicles - staff may be required to review area for parking/stopping prohibitions

In order for a school crossing guard to be warranted, all parts of the applicable warrants must be met. A three-year collision review will also be completed at all studied locations to determine if there is a collision pattern during school entrance and dismissal times.



## **Gap Study - Minor Street Stop-Controlled Intersections/Mid-Block Locations**

A Gap Study measures the elapsed time naturally occurring between vehicles, measured in seconds, as vehicles cross the intended study location. The gaps are recorded in five-minute intervals.

At all locations where a Gap Study is performed, a Site Inspection Report will be completed (See Appendix III). All components of the warrant must be met.

### **Minimum Warrant Requirements – Gap Study**

- Less than four safe gaps present in 50% of the five minute intervals in either the morning or afternoon study period
- Minimum of 40 students during a study period
- Average daily traffic volumes less than 12,000 vehicles/day on leg of intersection where highest number of students cross

## **Exposure Index Study – All-Way Stops**

An Exposure Index Study quantifies the level of interaction and potential conflict between vehicular and child pedestrian movements at a given crossing. For a crosswalk at an all-way stop, the conflicting movements considered as part of the Exposure Index would be those vehicles turning left, right or going straight through that crosswalk. The Exposure Index is determined by multiplying the number of conflicting vehicular movements by the number of school aged pedestrians at a crossing. It provides an empirically based value, which can be used objectively to determine if a school crossing guard is warranted at a location. When completing a count, a vehicle drives through a crossing or it does not. The subjectivity is removed from the review.

A Site Inspection Report will be completed. All components of the warrant must be met.

### **Minimum Warrant Requirements – Exposure Index Study**

- Minimum number of students during the school peak period either am or pm must be 40
- Minimum Exposure Threshold must be 8102
- Average daily traffic volumes less than 12,000 vehicles/day on leg of intersection where highest number of students cross

## Signalized Intersections

Very few municipalities are using the Exposure Index at signalized intersections and many municipalities do not place crossing guards at signalized intersections. The municipalities that do use the Exposure Index all have different thresholds based on their existing locations. The Town of Milton only has crossing guards at three signalized intersections, which is not a large enough sample to create an Exposure Index. Therefore, at this time the Exposure Index will not be used at signalized intersections and the existing procedure will continue, which was outlined in the previous OTC Crossing Guard Guide from 2004.

Logic would dictate that school crossing guards should not be necessary at signalized intersections since traffic control signals are in place and provide for the orderly flow of traffic and pedestrians. Pedestrians have right of way when crossing on a green signal, which should minimize vehicle/pedestrian conflict. The use of a school crossing guard at a signalized intersection could adversely affect traffic flow, causing undue delay for motorists and should therefore be considered only as a last resort if several of the following are observed:

- A large number of conflicting movements through the intersection both right and left on the green signal and right turning traffic on the red signal.
- A large number of students, particularly young students crossing.
- The intersection leads to a main arterial or collector road and therefore there is a significant volume of trucks or other large vehicles using the intersection, potentially affecting visibility for both pedestrians and drivers.
- Poor driver behaviour, not yielding right of way to pedestrians, not coming to a complete stop prior to turning on a red signal, drivers inching forward, thus intimidating pedestrians in or about to cross the roadway and/or drivers weaving through pedestrians as they cross the roadway.
- The students appear timid in crossing the road or do not seem to be properly trained on how to cross the road safely, e.g. forgetting to push the pedestrian button or entering the roadway after the red flashing hand is showing.

When a school is located adjacent to a signalized intersection, additional measures may be taken. These measures will include but are not limited to:

- Implementing Leading Pedestrian Intervals (LPI) - The LPI provides an advanced walk signal so that pedestrians begin to cross the road before vehicles get a green light and it provides pedestrians an advantage over turning vehicles.
- Prohibiting right turns on red during the LPI time
- Extending the pedestrian walk time
- Ensuring pedestrian countdown and information signs are installed at the intersection

- Provide training to students on how to properly use pedestrian signals

Signal monitoring equipment at these intersections will allow traffic engineering staff to monitor the intersections more frequently and make signal timing adjustments if necessary.

### **Pedestrian Crossovers (PXOs)/Roundabouts**

The OTC Guide also includes a section on determining warrants at PXOs and roundabouts. As these two types of traffic control devices are relatively new in Ontario, further research is required in this area to determine the best methodology to be used in determining if a crossing guard is warranted. Within Milton all of the roundabouts will have PXOs installed immediately, which provides a protected crossing for students.

Many municipalities throughout Ontario have indicated that motorists need to be better educated on the driver's responsibilities at these traffic control devices. The Town of Milton continues to work with internal staff and Halton Regional Police Services on educational programs.

### **New School Opening**

School Boards must notify the Engineering Services Department three months in advance of the opening dates of all new schools in Milton. They are to provide the catchment area of the registered children for the subject school and a scatter map showing the potential walking students. A site visit will occur before school opens and potential sites will be evaluated based on estimated student volumes at all significant crossings. School crossing guards will not be placed before school opens, as traffic/pedestrian patterns have not been established. Construction surrounding schools should be nearing completion, which would include sidewalks and curbs. The safety of pedestrians and the school crossing guard must be taken into consideration. Approximately three weeks after the school opens applicable studies would be conducted and guards will be placed as required.

### **Removal of a School Crossing Guard**

The Commissioner, Engineering Services, is authorized to remove school crossing guard locations without further study due to school closure, a school boundary change or if the students are now eligible for bussing. Additionally, locations can be removed following the completion of three gap/exposure studies where all three studies fall short of meeting warrants within a school year. Staff will advise Council as well as affected schools of the locations where school crossing guards are being removed. The affected school(s) will be responsible

for advising parents/caregivers of the removal of the school crossing guard. Removals should be effective after the end of school year.

### **Updating of Policy**

As many municipalities are in the process of updating their crossing guard policies based on the OTC School Crossing Guard Guide- 2017 an update to the guide may be required as it is a living document. The OTC continues to work with local municipalities in updating manuals/guides to ensure they stay current.

The Placement of School Crossing Guards Policy will be updated each term of Council, which will include updating the Exposure Threshold to ensure existing conditions are being captured and reflected. Also Pedestrian Crossovers (PXOs) and roundabouts will be included in the next update.

Appendix I – Exposure Index Graph - All-Way Stop Locations

Appendix II – Safe Gap Time definition from OTC Crossing Guard Guide May 2017

Appendix III – Site Survey Form and Gap Study



### 11.2.1 Phase 1: Safe Gap Time

A Safe Gap Time is the time required in a break within the traffic flow that permits students to cross the road safely. Because this parameter will be used as the benchmark for the mid-block school crossing guard warrant, it is important that the Approval Authority understand the Safe Gap Time calculation methodology. Safe Gap Time can be calculated as:

Safe Gap Time (G) = Perception & Reaction Time (P) + Crossing Time + Group Factor Time

which is the equivalent to:

$$G = P + (W / S) + T (N - 1)$$

The parameters in the Safe Gap Time calculation need to be collected as part of the site inspection process outlined in **Chapter 4**, and are detailed as follows:

**P = Average perception and reaction time of students (measured in seconds)** – This is the time it takes for a student to perceive whether there are any vehicles approaching and to decide whether to cross or wait. If this is not available, assume 4.0 seconds;

**W = width of the roadway (measured in m)** – typically measured as the pavement width of the road. However, to err on the conservative side, the width of the roadway could also be considered the crossing distance from where students typically queue while waiting for a safe gap in the traffic stream to the opposite side of the roadway. This is more conservative because students do not always wait to cross at the edge of pavement or on the curb. This parameter is used to calculate the crossing time;

**S = Average walking speed of students (measured in metres per second)** – This can be calculated by measuring the amount of time it takes for students to cross the roadway. The width of the roadway can then be related to the time required to calculate the walking speed. This parameter is used to calculate the crossing time. If this is not available, assume 1.0 m/s;

**T = Group factor (measured in seconds)** – This factor is used to account for the fact that when more students cross at the same time, it takes longer to cross. This is because a large group of students will have to cross in multiple rows instead one. This parameter is used to calculate the group factor time. If this is not available, assume 2.0 seconds; and

**N = Predominant group size** – Observe the average number of students crossing together in increments of five (for example if 3 students cross together: N = 1, if 8 students cross together: N = 2). This parameter is used to calculate the group factor time.



# Site Inspection Report

<b>Observers</b>	Observed By	_____ and _____		
	Date of Inspection	_____		
	Times:	AM: _____	PM: _____	
	Requested by	_____		
	Weather Conditions	<input type="checkbox"/> Dry <input type="checkbox"/> Sunny <input type="checkbox"/> Rain <input type="checkbox"/> Snow <input type="checkbox"/> Other: _____		
<b>Site</b>	Location	_____ <small>Please include map of intersection showing portion studied</small>		
	Leg	<input type="checkbox"/> North <input type="checkbox"/> East <input type="checkbox"/> South <input type="checkbox"/> West		
	Name of School(s)	_____		
	Type of Crossing/ Intersection	<input type="checkbox"/> 4 Way <input type="checkbox"/> 3 Way <input type="checkbox"/> Mid-block		
	Type of Control	<input type="checkbox"/> No Control <input type="checkbox"/> Traffic signals <input type="checkbox"/> PXO <input type="checkbox"/> Stop Signs (Traffic Stopped on one Street only) <input type="checkbox"/> All Way Stop (Traffic Stopped in all directions)		
<b>Observations</b>	School Signs	<input type="checkbox"/> School Crossing <input type="checkbox"/> School Warning <input type="checkbox"/> None		
	Posted Speed	<input type="checkbox"/> 40 km/hr-when flashing <input type="checkbox"/> 50 km/hr-when flashing <input type="checkbox"/> 40 km/hr no flash <input type="checkbox"/> 50 km/hr no flash <input type="checkbox"/> 60 km/hr no flash		
	Pedestrian Site Distance	<input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good		
	Sight Obstructions	<input type="checkbox"/> Trees <input type="checkbox"/> Hedges <input type="checkbox"/> Fences <input type="checkbox"/> Bus Shelter <input type="checkbox"/> News Paper Boxes <input type="checkbox"/> None <input type="checkbox"/> Other: _____		
	Road Grade	<input type="checkbox"/> Flat <input type="checkbox"/> Incline <input type="checkbox"/> Decline		
	Road Geometrics	<input type="checkbox"/> Straight <input type="checkbox"/> Curved		
	Road Width (m)	Curb to Curb: _____		Curb to Median: _____
	Road Conditions	<input type="checkbox"/> Dry <input type="checkbox"/> Wet <input type="checkbox"/> Ice <input type="checkbox"/> Snow covered		
	Sidewalks	<input type="checkbox"/> North <input type="checkbox"/> East <input type="checkbox"/> South <input type="checkbox"/> West <input type="checkbox"/> Not Present		
	Proximity to School(s)	School: _____		<input type="checkbox"/> In front of <input type="checkbox"/> Within _____ (m)
		School: _____		<input type="checkbox"/> In front of <input type="checkbox"/> Within _____ (m)
	Route Survey	<input type="checkbox"/> Shopping Area <input type="checkbox"/> Construction <input type="checkbox"/> Driveway <input type="checkbox"/> Bus Stop <input type="checkbox"/> Parked Vehicle(s) <input type="checkbox"/> Other: _____		
	Comments	_____		
	_____			
	_____			

## Pre-Calculated Safe Gap Times

Intersection Width		Safe Gap (seconds)
Feet	Metres	
24	7.30	11
25	7.60	11
26	7.90	11
27	8.25	12
28	8.50	12
29	9.00	12
30	9.10	13
31	9.50	13
32	9.75	13
33	10.00	13
34	10.35	14
35	10.67	14
36	11.00	14
37	11.25	15
38	11.60	15
39	11.90	15
40	12.20	15
41	12.50	16
42	12.80	16
43	13.10	16
44	13.40	17
45	13.70	17
46	14.00	17
47	14.30	17
48	14.60	18
49	15.00	18
50	15.25	18

Intersection Width		Safe Gap (seconds)
Feet	Metres	
51	15.50	19
52	15.90	19
53	16.20	19
54	16.50	19
55	16.75	20
56	17.00	20
57	17.40	20
58	17.70	21
59	18.00	21
60	18.30	21
61	18.60	21
62	18.90	22
63	19.20	22
64	19.50	22
65	19.80	23
66	20.10	23
67	20.40	23
68	20.70	23
69	21.00	24
70	21.30	24
71	21.60	24
72	22.00	25
73	22.25	25
74	22.50	25
75	22.90	25
76	23.20	26
77	23.50	26
78	23.80	26
79	24.00	27
80	24.40	27



Appendix III

\* Note: school aged children only, no adults or bussed students. Circle = conflict, / = vehicle, numbers = seconds elapsed

No. of children	#	Time in 5 minute increments	Gap = _____	Seconds Totalled	Total ÷ Gap	Total # Cars
e.g. 1,5,3,1	9	8:05-8:10	Gap = 15 // 23 <del>###</del> <del>###</del> //(19) 23 18 //	83	5.53	20

Notes:

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## TOWN OF MILTON MEMO

**TO:** Mayor and Members of Council

**FROM:** Diana Jiona, Director of Infrastructure

**DATE:** April 5, 2023

**SUBJECT:** Update re: Council Motions  
**PXO Review**  
**Right Turn and Left Turn Lane Review**

This memo provides Council an overview of staff's plan to respond to Council Motions brought forward for consideration at the February 6, 2023 council meeting, regarding "Pedestrian Cross Over (PXO) Review" and "Right Turn, Left Turn Lane Review".

### Pedestrian Cross Over (PXO) Review

The following outlines the steps staff will take to evaluate existing PXO's and bring forward a potential 2024 budget request to upgrade any existing PXO's that warrant an upgrade

- A comprehensive review of our existing Pedestrian Cross Overs has been completed to confirm there are 43 existing PXOs, with 7 of these currently lit with a flashing beacon;
- Of the 36 locations that are currently not lit, staff has determined, using current data available to date, that 2 of these locations meet the warrant for an upgrade (Scott Boulevard at Finney Terrace, and the Commercial Street Walkway) and will be put forward as a 2024 budget request; 3 additional low level PXO's are so far planned for 2023; (Knight Trail and Higgins Drive; Woodward Avenue and Galbraith Boulevard/Robarts Drive; and McLaughlin Avenue and Serafini Crescent);
- Of the remaining 34 locations, up to date traffic count data is available for 14 locations and those locations do not warrant an upgrade at this time;
- This leaves 20 PXO locations where 24-hour traffic count data is outdated and will need to be updated;

- It is currently anticipated that the 24 hour traffic counts for these 20 locations can start in late April (as the equipment cannot be deployed until the weather is conducive/snow is not an issue), and will take approximately 3 weeks to complete the data collection;
- Once the data is collected, staff will analyze and compare the highest 8-hour traffic volumes to the warrant threshold (4500 vehicles), to determine which locations warrant an upgrade;
- Once the analysis is complete, this will inform any related 2024 budget requests for future year PXO upgrades;
- Based on current pricing, it is anticipated that the cost to upgrade a PXO to a fully lit PXO is approximately \$15,000 per location.

**School Crossing Review:**

The following steps will be taken to address the motion to review all existing school crossing locations to determine which can be upgraded to a fully lit PXO and to inform an associated 2024 budget request:

- First, staff will work to complete the data collection for 10 existing crossings - this is essentially completing work that was identified in 2019 (ref report ENG-023-19), but was unable to be completed due to the impacts of the COVID-19 pandemic on school operations; this work is required to determine if the crossing guards are indeed still warranted at these locations. This requires 3 sets of data during the school year (Fall, Winter and Spring) - there have been 2 data collections completed to-date for these locations, with the Spring data anticipated for April this year; once this data is complete, it will be analysed to determine if a crossing guard is still warranted for these locations; these locations are as follows:

<b>Location</b>	<b>All Way Stop</b>	<b>Mid-Block</b>
Bennett Boulevard and Hutchison Avenue		X
Bennett Boulevard and Wickson Way		X
Bolingbrook Drive W/of Vickerman Way		X
Childs Drive and Clements Drive		X
Tupper Drive and Bussell Crescent		X
Wilson Avenue S/of Woodward Avenue		X
Clark Boulevard and Bennett Boulevard	X	
Laurier Avenue and Coxe Boulevard	X	
Thomas Street and Heslop Road	X	

Yates Drive and Holly Avenue	X	
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- Of these 10 locations, 6 are located at “mid block” - so if the crossing guard warrant is not met, these locations will be further analysed to see if the warrant for a PXO (low level or fully lit) is met. The remaining 4 are located at all way stops, and if the crossing guard warrant is no longer met, then a PXO would not be installed.
- It is important to note that PXO’s are intended to provide a protected crossing for pedestrians at mid-block locations, designated school crossings (in the absence of a crossing guard and without other forms of control such as traffic control signals, intersection pedestrian signals, pedestrian crossover, stop or yield signs) and, roundabouts. PXO’s are not intended to be used at traffic control signals, intersection pedestrian signals, stop or yield signs as these are already considered a controlled crossing. The Ontario Traffic Manual (OTM) Book 15 provides guidance for practitioners on this topic, which the Town endeavors to follow.
- To close out and report back on the work and analysis flowing from the 2019 report, it is anticipated that a report to Council will be presented in summer 2023; in terms of prioritizing locations, of those locations that would warrant a PXO, but not a crossing guard, staff will prioritize based on traffic volumes (i.e. the higher volume = higher priority);
- In addition to the 6 mid-block school crossings identified above, there are 2 other existing mid-block school crossings (with crossing guards currently warranted and in place); the details of these are as follows:

Location	Details
Savoline Boulevard and Merkley Gate - located at trail connection to Optimist Park	Traffic counts will be completed and analyzed to determine if a PXO is warranted; note - if a fully lit PXO is warranted, the recommendation would be to replace the crossing guard with a fully lit PXO;
Sauve Street at south end of Irma Coulson Public School;	Crossing location to be shifted to the south to line up with trail into the school property; this location is not considered a suitable candidate for a fully lit PXO, as this is a school crossing only (trail only goes to school, is not part of the larger trail network); however, as requested by Council, the location can be counted and analyzed to see if the warrants for a fully lit PXO are met; however as with the above-noted location, the recommendation would be to replace the crossing guard with a fully lit PXO if that is the case;

- In addition to the locations above there are currently 7 mid-block school crossings that have both a low level PXO and a crossing guard installed, as follows:

Location	Details
Yates Drive and Symons Crossing	As crossing guards AND low level PXOs are installed; these locations will be reviewed as part of the PXO review, to determine if a fully lit PXO is warranted; if a fully lit PXO is warranted, the recommendation would be to remove the school crossing guards from these locations and replace with a fully lit PXO
Woodward Avenue and Joyce Boulevard	
Scott Boulevard and Athlone Drive	
Yates Drive and Lott Crescent	
745 Farmstead Drive (pathway at Anne J McArthur Public School)	
Tupper Drive and Pathway at St Anthony of Padua Elementary School	
Scott Boulevard and Finney Terrace	

- It is important to note that the warrant for a crossing guard is quite different than the warrant for a PXO; the warrant for crossing guards (mid-block) is based on the number of safe gaps available for pedestrians to cross, whereas PXO warrants are based on both pedestrian and vehicular volumes (and are not just limited to school entry and exit times);
- As noted above, PXO's are intended to provide a protected crossing for pedestrians at mid-block locations, designated school crossings (in the absence of a crossing guard and without other forms of control such as traffic control signals, intersection pedestrian signals, pedestrian crossover, stop or yield signs) and, roundabouts. Therefore, locations where school crossing guards are currently in place at all way stops or signalized intersections will not be reviewed for PXO installation/warrant.
- At this point it is anticipated that the cost to install a fully lit PXO at a school crossing where there is not currently a PXO installed is approximately \$20,000 per location; (it should be noted that if a fully lit PXO is warranted, the intent would be that the crossing guard would be removed from this location);

It is currently anticipated that both the PXO review and the School Crossing review can be completed in time to inform a 2024 budget request for any identified updates that would be required based on data collection and subsequent analysis.

**Right and Left Turn Review at Local and Regional Arterial Intersections:**

To complete a comprehensive review of the arterial intersections in Town, the following steps will be taken; ultimately, at this point, it is anticipated that due to the work involved this will likely inform a 2025 budget request, with a number of steps being taken in 2023 and early 2024 to inform any such request.

- Staff has recently engaged WSP as the consulting firm to complete the 2023 update to the Town's Transportation Master Plan (TMP); as part of this TMP scope of work,

there will be an intersection level review of the arterial road network (both Town and Region arterial intersections);

- The intersection review will require input from the Town, and the Region, in terms of afternoon peak period traffic volumes at these intersections; the Town and Region both have Miovision technology installed at the majority of the signalized intersections in the Town of Milton - Miovision captures traffic volume data and this will be provided to WSP for use in their analysis; it is anticipated that by the end of April of this year, every Town of Milton signalized intersection will have Miovision equipment installed;
- In addition to traffic volume data, Town staff will provide signal timing and phasing plans to WSP for all signalized intersections;
- The volume data and signalized intersection plans will be used by WSP to build a Synchro model to analyze the operations of the signalized intersections, and subsequently identify any recommendations for operational and safety improvements, including any identified turning lane requirements. Ultimately, these recommendations would form part of a proposed capital program for staff and subsequent Council consideration, which will be evaluated for risk and feasibility, as well as a cost/benefit analysis (i.e. in some cases, depending on the character of the area, existing land use, active transportation needs; it may not be desirable or feasible to modify the intersection);
- Concurrently, while the TMP work is underway, staff will review existing property available at the arterial intersections, to determine if existing property may be sufficient to accommodate any geometric improvements at the intersections or if additional property is required (or, in some cases, if it is even feasible to acquire property - pending the location of existing buildings/structures in relation to the intersection); property acquisition costs are anticipated to be significant, and may be a deciding factor in which intersections to pursue for retrofit;
- Town staff will also engage with Region of Halton public works staff on this review; the Region of Halton will also form part of the TMP Technical Advisory Committee;
- To note - the Town's Engineering and Parks Standards manual currently identifies property requirements at arterial intersections, in order to accommodate dedicated turn lanes; ultimately, the length of these turn lanes is dictated by the Transportation Impact Study (TIS) work completed in support of any development application (the intent of the standard is to be able to secure property from the applicant of a development application, if that development application is located at an intersection); standard E-14 is attached for reference. The Engineering and Parks Standards Manual is currently undergoing an update, and it is anticipated that the TMP work may also result in updates or additions the Town's standard drawings, in terms of right of way elements;
- Town staff will also review the exiting terms of reference for TIS's (currently available on the Town's website and provided to all development applications as part of the pre-consultation process) to ensure that for new development applications, an appropriate "radius" of impact is being considered, in terms of roadway improvements required by the additional traffic generated by the development subject to the application and TIS;

- Although not isolated to arterial intersections, the TMP work will also update the Active Transportation (AT) Strategy put forth as part of the 2018 TMP, to identify any recommended changes to the Town's current strategy, and also to identify any potential capital projects in terms of the Town's AT network;
- Ultimately, the TMP work is currently scheduled to be finalized in Q1 2024, which will align well with any associated 2025 capital budget requests.

While there will likely be instances where dedicated turn lanes are warranted and can be implemented, it is important to keep in mind that dedicated turn lanes are not always the answer and will not always be feasible. There are challenges in terms of balancing different modes of transportation on our roadways, and this can especially be challenging in retrofit situations (as noted above, in terms of existing land use, location of existing buildings, and the need to accommodate active transportation as well as conventional vehicular transportation).

In addition to vehicular turning lanes, cyclist turning lanes have also been requested to be evaluated. Staff plan to carry out the following steps to address this request:

- Staff has already identified a location at Thompson Road and Louis St. Laurent Avenue that is a candidate for "cross rides" - essentially this is additional pavement marking at the signalized intersection to accommodate a specific area for cyclists to safely navigate the intersection; this location will be painted with cross rides in 2023, as part of the 2023 pavement marking program; an example of what a cross ride generally looks like is attached for reference.
- Staff will review other arterial intersections to determine if the space and current configuration is sufficient to implement cross rides at these locations as well, and if so these locations would be considered as part of the future pavement marking budget request - it is anticipated that this request will form part of the 2024 budget ask at this point;
- Intersections that would warrant further review would be Louis St. Laurent Avenue and Savoline Boulevard (N/S and E/W) Louis St. Laurent Avenue and Bronte Street South (N/S and E/W), Louis St. Laurent Avenue and Leger Way (E/W), Louis St. Laurent Avenue and Farmstead Drive (N/S and E/W), Louis St. Laurent and Ferguson Drive (N/S and E/W), Main St. W. and Scott Boulevard (N/S and E/W) and Main St. W. and Savoline Boulevard (N/S and E/W);
- Staff will complete a municipal scan of the other local municipalities in Halton and surrounding municipalities, as well as current Ontario Traffic Manual (OTM) Guidelines to determine if there are other options to assist cyclists in navigating arterial intersections. It is anticipated that as part of the AT Strategy update work being completed as part of the TMP, this will also be identified/confirmed;
- It should be acknowledged that there has been a recent trend in separating cyclist facilities from the paved portion of the right of way, so this will also be considered in the updated AT Strategy - whether the recommended policy is to continue to accommodate cyclists with on street bike lanes, or if a shift to solely in boulevard AT facilities is recommended; ultimately, this will likely depend on the surrounding land use and road classification;

- Finally, staff has already identified a “bike box” option that will be explored - this was also identified as a potential active transportation initiative as part of the 2018 TMP (Appendix A - Active Transportation Strategy; however due to resource constraints, these have not yet been implemented or explored further). Essentially, this provides a safe space for cyclists to wait while navigating left turns at signalized intersections; staff will review existing Town arterial intersections to determine if there are any existing configurations that could accommodate a bike box, and that are suitably located (i.e. have known cyclist activity), and if so, will plan to request this as a pilot as part of the 2024 budget.
- Due to staffing and resource constrictions, a request for an Active Transportation Coordinator was made to implement the recommendations of the 2018 TMP AT Strategy, but was not supported in previous budget asks; while the above pavement marking considerations (cross rides and potential bike boxes) can likely be addressed to some degree with the existing staff complement, it is anticipated that in order to fully implement recommendations out of the 2023 TMP, that additional staff will be required - if this is determined, this will be considered as part of a 2025 budget request, once the 2023 TMP update and associated AT Strategy update has been completed.

As noted above, the intent of this memo is provide an update in terms of the staff plan to address the Council motions presented for consideration at the February 6, 2023 Council meeting. As staff continue to work through these steps, an additional memo update to Council will be provided, ahead of any 2024 capital budget asks related to these motions.

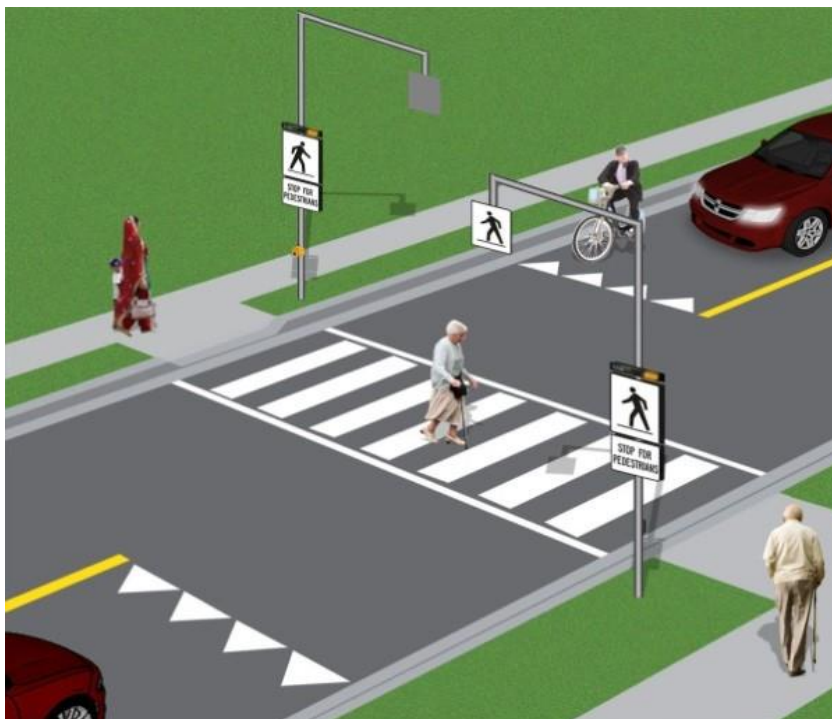
Thank you, and if any questions at this time, please let me know.



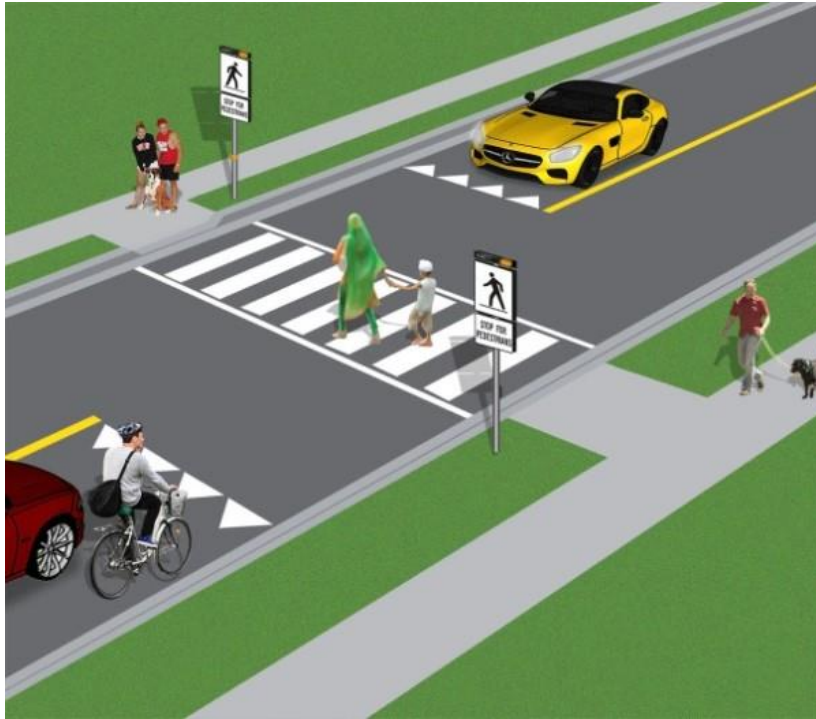
### Level 1 Type A



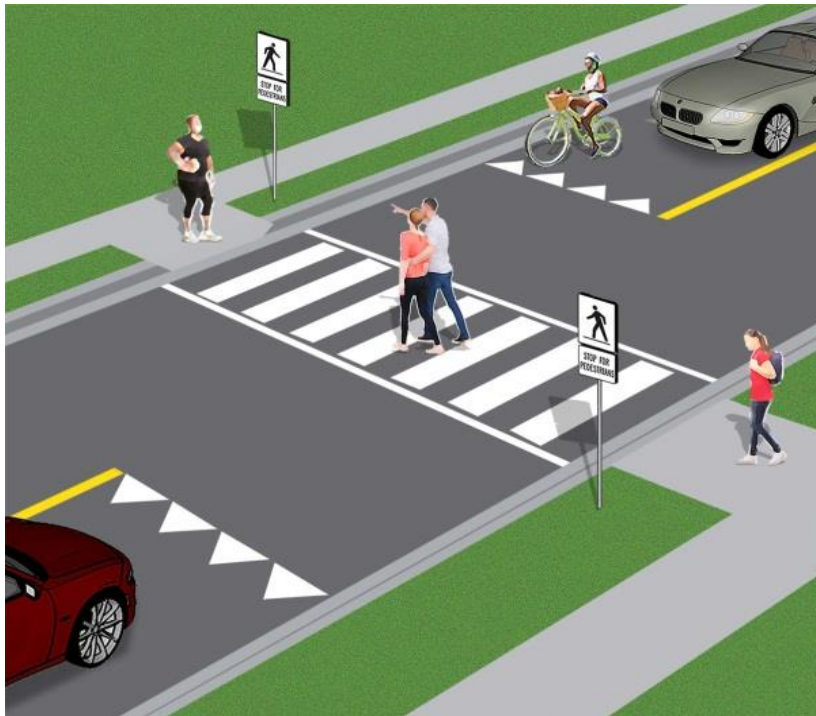
### Level 2 Type B



## Level 2 Type C



## Level 2 Type D



**PXO's Level D to Possible Upgrade and 2023 Installations**

Location Counted	Classification	Updated Volumes	4 Hours	8 Hour	Level Type	Threshold to upgrade
Asleton Boulevard and Union Gas Trail	Collector	2023	324	573	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Bennett Boulevard and Union Gas Trail	Collector	2022	839	1,479	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Bennett Boulevard and Hepburn Road (Install 2023)	Collector	2022	938	1,623	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Chretien Street and Pathway	Local	2022	294	550	Type D	2,370 (4 Hours) 4,500 (8 Hours)
<b>Commercial Street Walkway south of Parkway Drive</b>	<b>Collector</b>	<b>2022</b>	<b>3,024</b>	<b>5,558</b>	<b>Type D</b>	<b>2,370 (4 Hours) 4,500 (8 Hours)</b>
Clark Boulevard and Bristol Trail	Collector	2023	1,502	2,648	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Clark Boulevard and Watson Terrace	Collector	2023	1,456	2,398	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Costigan Road and Pettit Trail	Collector	2023	603	1,020	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Coxe Boulevard and EW Foster Elementary School	Collector	2022	894	1,640	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Denyes Way and Trail Path/McMullen Crescent	Local	2023	648	1,094	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Dixon Drive and Cobban Road	Collector	2023	385	604	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Dixon Drive and Hatton Crossing (Install 2023)	Collector	2023	568	824	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Ellis Crescent and Livingston Road	Local	2023	462	781	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Farmstead Drive and Trail Path (Near 745 Farmstead Drive)	Collector	2022	1,339	3,000	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Ferguson Drive and Hearst Boulevard	Collector	2022	642	1,156	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Knight Trail and Higgins Drive (Install 2023)	Local	2022	196	326	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Ferguson Drive and Union Gas Trail	Collector	2023	882	1,409	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Fourth Line and Hearst Boulevard	Collector	2022	755	1,361	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Charlton Way and Van Allen Gate	Local	2023	133	247	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Hearst Boulevard and Winter Crescent	Local	2023	171	208	Type D	2,370 (4 Hours) 4,500 (8 Hours)
<b>Laurier Avenue and Laurier Park</b>	<b>Collector</b>	<b>2023</b>	<b>2,332</b>	<b>4,127</b>	<b>Type D</b>	<b>2,370 (4 Hours) 4,500 (8 Hours)</b>
<b>Laurier Avenue and Sam Sherratt Trail</b>	<b>Collector</b>	<b>2023</b>	<b>2,875</b>	<b>5,149</b>	<b>Type D</b>	<b>2,370 (4 Hours) 4,500 (8 Hours)</b>
Leger Way and Hinton Terrace	Collector	2022	1,055	1,677	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Leiterman Drive and Dice Way	Collector	2022	780	1,365	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Leiterman Drive and Tock Close	Collector	2022	780	1,365	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Mary Street and 150 Mary Street (Town Hall)	Collector	2022	400	795	Type D	2,370 (4 Hours) 4,500 (8 Hours)
McCuaig Drive and Halm Road	Collector	2023	1,159	2,089	Type D	2,370 (4 Hours) 4,500 (8 Hours)
McLaughlin Avenue and Serafini Crescent (Install 2023)	Collector	2022	699	1,400	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Meighen Way and Mara Circle	Local	2023	431	766	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Pringle Avenue and Trail Pathway	Collector	2022	1,010	1,685	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Philbrook Drive and Cousens Terrace	Collector	2023	657	1,077	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Savoline Boulevard and Union Gas Trail	Collector	2023	1,706	2,982	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Scott Boulevard and Athlone Drive	Collector	2023	1,937	3,594	Type D	2,370 (4 Hours) 4,500 (8 Hours)
<b>Scott Boulevard and Finney Terrace</b>	<b>Collector</b>	<b>2022</b>	<b>2,231</b>	<b>3,884</b>	<b>Type D</b>	<b>2,370 (4 Hours) 4,500 (8 Hours)</b>
Scott Boulevard and Gleave Terrace	Collector	2023	1,567	2,933	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Sinclair Boulevard and Hampshire Way	Collector	2022	528	992	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Tupper Drive and Bussel Crescent	Collector	2022	583	941	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Woodward Avenue and Joyce Boulevard	Collector	2023	1,425	2,539	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Woodward Avenue and Galbraith Boulevard/ Robarts Drive (Install 2023)	Collector	2022	519	747	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Whitlock Avenue and Walnut Landing (Install 2023)	Collector	2023	521	967	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Yates Drive and Symons Crossing	Collector	2023	1,414	2,439	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Yates Drive and Livock Trail	Collector	2022	605	1,169	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Yates Drive and Union Gas Trail	Collector	2023	1,556	2,624	Type D	2,370 (4 Hours) 4,500 (8 Hours)
Locations that won't be upgraded						
Kovichuk Boulevard and Violet Gate	Collector	N/A			Type C	
Bronte Street and Elsie MacGill Secondary School	Arterial	N/A			Type C	
Maple Avenue and Book Drive	Collector	N/A			Type C	
Bronte Street and John Street	Arterial	N/A			Type B	
Main Street East and Prince Street	Arterial	N/A			Type B	
Main Street East and Hugh Lane Walkway	Arterial	N/A			Type B	
Maple Avenue and Woodward Avenue	Collector	N/A			Type B	
Martin Street and Mill Street	Arterial	N/A			Type B	

**\*\*Warranted or close to upgrade\*\***

Location	Warranted for PXO upgrade?	AADT		Threshold to upgrade
		4 Hours	8 Hours	
Savoline Boulevard and Merkley Gate (school crossing location)	Install Level 2 Type D with existing School Crossing Guard (2023)	1,411	2,489	2,370 (4 Hours) 4,500 (8 Hours)
Sauve Street at south end of Irma Coulson (school crossing location)	Install Level 2 Type D with existing School Crossing Guard (2023)	791	1,318	2,370 (4 Hours) 4,500 (8 Hours)
Yates Drive and Symons Crossing	Stay as Level 2 Type D	1,414	2,439	2,370 (4 Hours) 4,500 (8 Hours)
Woodward Avenue and Joyce Boulevard	Stay as Level 2 Type D	1,425	2,539	2,370 (4 Hours) 4,500 (8 Hours)
Scott Boulevard and Athlone Drive	Stay as Level 2 Type D	1,937	3,594	2,370 (4 Hours) 4,500 (8 Hours)
Yates Drive and Lott Crescent	Stay as Level 2 Type D	1,556	2,624	2,370 (4 Hours) 4,500 (8 Hours)
745 Farmstead Drive (pathway at Anne J McArthur Public School)	Stay as Level 2 Type D	1,339	3,000	2,370 (4 Hours) 4,500 (8 Hours)
Tupper Drive and Pathway at St Anthony of Padua Elementary School	Stay as Level 2 Type D	583	941	2,370 (4 Hours) 4,500 (8 Hours)
Scott Boulevard and Finney Terrace	Warranted for Level 2 Type C and removal of School Crossing Guard (2024)	2,231	3,884	2,370 (4 Hours) 4,500 (8 Hours)