

Policy Name:Traffic Calming Policy and ToolboxPolicy Owner:Infrastructure and Engineering Services DepartmentApproved by:CouncilEffective Date:March 27, 2024Date of Last Revision:March 27, 2024Review Date:Every 5 YearsPolicy Status:Revision

### PURPOSE:

To establish a policy to screen, prioritize and implement traffic calming measures to reduce vehicle speeds on roadways within the City of Richmond Hill.

### **POLICY PRINCIPLES:**

This policy contributes to enhancing community well-being by reducing vehicle speeds through traffic calming with a consistent screening process applied throughout the City of Richmond Hill.

### **DEFINITIONS:**

85th Percentile Speed: is the speed which 85 percent of vehicles are travelling at or below.

Average Annual Daily Traffic (AADT): the mean traffic volume across all days for a year for a given location along a roadway.

**Collision:** contact resulting from the motion of a motor vehicle (as defined in the Highway Traffic Act) that produces property damage, injury or death. The term collision indicates that the initial point of contact involves at least one motor vehicle.

**Traffic Shortcutting:** occurs when drivers deviate from arterial roads and use local or collector roads as alternate routes to move between destinations. The driver has no origin or destination within a neighbourhood but uses the route through the neighbourhood to get to their destination.

**Traffic Calming:** traffic calming is defined as the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behaviour, and improve conditions for non-motorized street users.

#### SCOPE:

This policy shall be used by City staff to identify, assess and recommend to Council locations where traffic calming measures are suitable to be implemented within the boundaries of the City.



# POLICY

Staff shall utilize the process outlined in **Figure 1** to conduct annual network screening for traffic calming measures on roadways in the City of Richmond Hill.

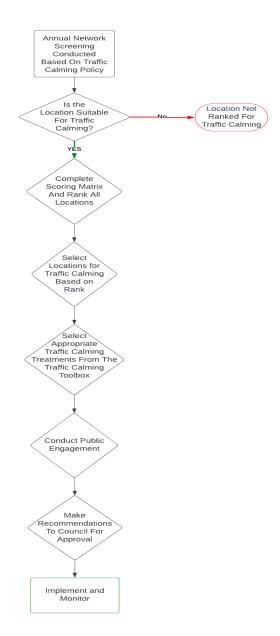


Figure 1 - Traffic Calming Flowchart

Staff shall conduct traffic calming network-screening on an annual basis to identify candidate locations. Staff shall ensure that any requests for traffic calming that are not captured in the annual network-screening are included in the following year. Page 2 of 53



# Locations Not Suitable for Traffic Calming

Following the initial screening, locations that have any of the following characteristics will be removed prior to scoring:

- Roads passing through exclusively rural, commercial and/or industrial areas;
- Roads where the grade exceeds 8%;
- The distance between two traffic control devices is less than 100 metres;
- Distance to geometric features that would force a speed reduction such as 90-
- degree bends in the roadway; and
- The road carries less than 750 vehicles per day (for local roads) or less than 1,500 vehicles (for collector roads).

These characteristics either reduce the effectiveness or are not geometrically suited for traffic calming.

## **Scoring and Prioritization of Candidate Locations**

Following the initial screening, candidate locations will be scored and prioritized based on rank. Staff shall utilize the Risk Factor Scoring Matrix in **Appendix A** to rank and prioritize the traffic calming measures for implementation. The risk factors focus on criteria that contribute to fatal and injury collisions for vulnerable road users.

The scoring matrix consists of the following risk factors for Local Roads:

- AADT;
- Presence of School;
- 85<sup>th</sup> Percentile Speed;
- Presence of Trails; and
- Presence of other pedestrian generators (parks, community centres, long-term care, hospitals, libraries, GO Stations, and places of worship).

The scoring matrix consists of the following risk factors for <u>Collector/Arterial</u> Roads:

- AADT;
- Presence of Schools;
- Number of Lanes;
- 85<sup>th</sup> Percentile Speed; and
- Presence of other pedestrian generators (are parks, community centres, long-term care, hospitals, libraries, GO Stations, and places of worship).

The maximum possible score a road segment can receive is 100, there is no minimum threshold score for traffic calming.

# Traffic Calming Toolbox



Traffic calming treatments shall be selected from the Traffic Calming Toolbox. The toolbox contains the following treatments:

- Lane Narrowing;
- On-Street Parking;
- Bump Outs/Curb Extensions;
- Gateway Features;
- Raised Medians/Landscaped Islands;
- Flexible Bollards;
- Speed Cushions;
- Raised Crosswalk;
- Traffic Circle/Mini Roundabout;
- On-Road 'Sign' Pavement Markings; and
- Speed Display Boards.

More details of the individual measures are found in Appendix B.

# Public Engagement

All property owners on roadways recommended for traffic calming measures will be notified in writing of the proposed traffic calming measures prior to being brought to Council for final approval.

## **Final Approval of Traffic Calming Measures**

After determining if a candidate location is suitable for traffic calming and notifying the public, staff shall prepare a report to Council outlining the location(s) and recommended measures for final approval.

## Implementation

Based on the prioritization scoring, traffic calming measures will be planned for through the annual capital budgeting process and implementation is subject to capital budget funding and resource availability

## Monitoring and Evaluation

Staff shall conduct before and after studies monitoring speed, collisions and AADT to determine the effectiveness of the traffic calming measures.

## **Removal of Traffic Calming Measures**

Traffic calming measures shall be removed at the direction of Council.

## ROLES AND RESPONSIBILITIES:

Members of Council Page 4 of 53



- Shall review and approve the Traffic Calming Policy.
- Shall review and approve the locations of Traffic Calming for implementation recommended by City Staff.
- Shall direct staff to remove traffic calming measures.

Senior Management Team

- Shall review and approve any changes to the Traffic Calming Policy prior to recommendation to Council.
- Shall review and approve prioritization of traffic calming measures through the Annual Capital Planning Process.

Staff

- Shall follow the Traffic Calming Policy.
- Shall ensure priority locations are brought forward to Council, and when approved planned for through the Annual Capital Process.
- Shall monitor and evaluate traffic calming measures.

## **RELATED DOCUMENTS:**

Highway Traffic Act

Appendix A – Traffic Calming Scoring Matrix

Appendix B – Traffic Calming Toolbox



## Appendix A – Traffic Calming Scoring Matrix

For Local roads, the scoring matrix in **Table 1** shall be used.

Table 1 - Local Road Scoring Matrix

Risk Factors	Local Roads			
	Criteria	Score		
AADT	1500+	22		
Presence of School	Yes	17		
85th Percentile Speed	40 km/h+	9		
Near Trails	Yes	15		
Presence of Other Pedestrian Generators	Yes	37		
Highest Score Possible		<u>100</u>		

For Collector and Arterial Roads, the scoring matrix in **Table** 1 - Local Road Scoring Matrix**2** shall be used.

#### Table 2 – Collector/Arterial Road Scoring Matrix

Risk Factors	Collector/Arterial Road			
	Criteria	Score		
AADT	4000- 6000	11		
	6000+	35		
Number of Lanes	3 or more	11		
Presence of School	Yes	14		
85th Percentile Speed	50 km/h+	12		
Presence of Other Pedestrian Generators	Yes	28		
Highest Score Possible		<u>100*</u>		

\* The total does not include the score for AADT of 4000-6000



# Appendix B – Traffic Calming Toolbox

Countermeasure	Туре	Description & Purpose	Advantages	Disadvantages	Applicability	Implementation Considerations
Lane Narrowing	Pavement Marking	Lane narrowing is the process of reducing lane widths using pavement markings (for example, centreline, urban shoulders, bicycle lanes). The intention is for drivers to perceive the roadway to be less comfortable at higher speeds due to the narrowing of the lanes and ultimately reduce operating speeds.	<ul> <li>&gt; Vehicle Speeds: Reduction in 85th percentile speed up to 10 km/h</li> <li>&gt; Conflicts: If lanes are physically narrowed and space is not allocated to other modes, the reduced crossing distance at pedestrian crossings may reduce pedestrian-vehicle conflicts</li> <li>&gt; Other:         <ul> <li>Can be implemented rapidly if using pavement markings and no physical change is required</li> <li>Space can be allocated for urban amenities and activities such as bicycle lanes</li> <li>No effect on emergency vehicles, resident access, snow plowing, street sweeping, and police enforcement</li> </ul> </li> </ul>	<ul> <li>&gt; Active</li> <li>Transportation and</li> <li>Transit: Cyclists can feel squeezed closer to vehicles if no bicycle lanes are provided</li> <li>&gt; Maintenance:         <ul> <li>Pavement</li> <li>markings requires</li> <li>regular maintenance</li> <li>Pavement</li> <li>markings may be</li> <li>less effective in</li> <li>winter months due to snow/ice cover</li> <li>&gt; Other: Reduced</li> <li>separation between oncoming vehicles</li> </ul> </li> </ul>	> Road Classification: Local and collector streets > Traffic Conditions: All traffic volumes > Roadway: Urban cross-section; typically applied on two- and four-lane roadways	<ul> <li>&gt; Physical lane narrowing tends to provide better results than simple pavement markings, which have minimal effect</li> <li>&gt; Low cost when implemented using pavement markings only, however, studies show this is less effective than narrowing roadways using physical measures as speeds did not appear to be affected</li> <li>&gt; Ensure consistency in application to avoid driver confusion</li> <li>&gt; Required Pavement Width: - Urban shoulder (one side): 1.2m to 2.0m - Conventional bike lane (one side): 1.5m to 1.8m - Buffered bike lane (one side): 1.8m to 2.8m</li> <li>Where transit routes operate, remaining lane</li> </ul>

# Richmond Hill

Countermeasure	Туре	Description & Purpose	Advantages	Disadvantages	Applicability	Implementation Considerations
						width should be a minimum of 3.1 m, preferably 3.3 m.
On-street Parking	Pavement Marking	On-street parking is the reduction of the roadway width available for vehicle movement by allowing motor vehicles to park adjacent and parallel to the curb. Angled parking is not appropriate as a traffic calming measure, due to the increased potential for conflicts. The effect of using on-street parking to narrow the effective roadway space is to reduce vehicle speeds and to reduce possible short-cutting or through traffic.	> Conflicts: Parked vehicles provide a buffer between traffic and pedestrians on sidewalks > Environment: Traffic noise may be reduced due to a reduction in traffic volumes or speeds > Other: No effect on resident access and police enforcement	<ul> <li>Active</li> <li>Transportation and</li> <li>Transit:         <ul> <li>On-street parking</li> <li>may reduce mutual</li> <li>visibility for</li> <li>pedestrians crossing</li> <li>the roadway</li> <li>Requires a</li> <li>minimum width to</li> <li>allow for safe</li> <li>passing of cyclists</li> <li>around opened car</li> <li>doors</li> <li>Maintenance:</li> </ul> </li> <li>Parked vehicles may</li> <li>obstruct street</li> <li>sweeping and snow</li> <li>removal operations,</li> <li>unless parking</li> <li>restrictions are</li> <li>applied for these</li> <li>operations</li> </ul> <li>Other:         <ul> <li>Parked vehicles</li> <li>may obstruct</li> <li>driveways, or reduce</li> <li>visibility for motorists</li> <li>entering the</li> <li>roadway from</li> <li>driveways</li> <li>Could increase</li> <li>rear-end or</li> <li>sideswipe collisions</li> </ul> </li>	> Road Classification: Local and collector streets; urban commercial streets > Traffic Conditions: All traffic volumes > Roadway: Urban cross-section – curb and gutter > May be used in combination with speed humps, curb extensions, etc. > Due to varying jurisdictional guidelines and regulations, on- street parking should not be implemented if it results in substandard roadway widths which conflict with lane width, transit or emergency services requirements > Locations to Avoid: Driveways, areas with limited sight distance, bus zones, designated school zones, unfenced playgrounds, and poorly illuminated streets	<ul> <li>&gt; Narrower roadway widths may not be appropriate in municipalities with significant snowfall, or for streets with relatively high two- way traffic volumes (use with caution on roads &gt; 10,000 veh/day)</li> <li>&gt; Required Pavement Width: 2.0m to 2.5m</li> <li>Where transit routes operate, remaining lane width should be a minimum of 3.1 m, preferably 3.3 m.</li> </ul>



Countermeasure	Туре	Description & Purpose	Advantages	Disadvantages	Applicability	Implementation Considerations
Countermeasure Bump outs/Curb Extension	Type         Geometric	Purpose         A curb extension (also known as neckdown, choker, curb bulb, or bulb- out) is a horizontal intrusion of the curb into the roadway resulting in a narrow section of roadway. The curb is extended on one or both sides of the roadway to reduce its width to as a little as 6.0 m for two- lane, two-way traffic. In urban environments, it is possible to implement curb extensions by removing existing parking spaces. The purpose of a curb extension is to reduce vehicle speeds, reduce crossing distance for pedestrians,	Advantages > Vehicle Speeds: Reduction between 2 and 8 km/h > Conflicts: - Reduced pedestrian crossing distance at intersections may reduce pedestrian-vehicle conflicts - Better mutual visibility between pedestrians and motorists if crosswalks are installed between curb extensions > Environment: Landscaped curb extensions, can improve the appearance of a street > Other: - No effect on resident access, snow plowing, street sweeping, and police enforcement - Can provide additional storage for snow, however, height of windrow should not negatively impact pedestrian visibility	<ul> <li>&gt; Active</li> <li>Transportation and</li> <li>Transit:         <ul> <li>Not compatible</li> <li>with bicycle lanes</li> <li>Can be</li> <li>hazardous for</li> <li>drivers and cyclists if</li> <li>not designed and</li> <li>maintained properly</li> <li>Cyclists can feel</li> <li>squeezed closer to</li> <li>vehicles as motorists</li> <li>attempt to overtake</li> <li>them at the</li> <li>narrowing points</li> <li>&gt; Parking: Potential</li> <li>loss of on-street</li> <li>parking</li> <li>&gt; Maintenance:</li> <li>Increased snow</li> <li>removal cost and</li> <li>snow plow damage</li> <li>to grass, trees and</li> <li>curb extensions</li> <li>&gt; Other:                 <ul> <li>Long trucks,</li></ul></li></ul></li></ul>	Applicability  Road Classification: Local and collector streets; urban arterial streets > Traffic Conditions: All traffic volumes > Roadway: Urban cross-section – curb and gutter	
		The purpose of a curb extension is to reduce vehicle speeds, reduce crossing distance for pedestrians, increase visibility of pedestrians, and		to grass, trees and curb extensions > <b>Other:</b> - Long trucks, buses and other large vehicles may need to cross into oncoming travel		parked vehicles are not present - On urban arterial streets, applicability may not be recommended if the arterial street
		prevent parking close to an intersection.		lanes in order to negotiate turns at intersections with curb extensions - Between snow removals in winter environments, the roadway's effective width can be significantly reduced		has a parking lane that can be needed to carry occasional traffic volume increases (e.g., Emergency Detour Route (EDR), evacuation route, ceremonial route, flexibility of flow



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Countermeasure	Туре	Description & Purpose	Advantages	Disadvantages	Applicability	Implementation Considerations
						management during road repair, etc.) > Drainage system adjustments may be required where curb extensions are needed > Should be marked with signs or other objects to be visible to motorists and plow operators > Sight lines should be respected if there is landscaping > Required Pavement Width: 2.0m to 2.5m Where transit routes operate, remaining lane width should be a minimum of 3.1 m, preferably 3.3 m.
Gateway Features	Geometric	Gateways are the combination of traffic calming devices, that help to provide an entry or "gateway" which identifies transitional zones such as between commercial/rural areas and urban/rural residential zones, villages, or hamlets.	<ul> <li>Vehicle Speeds:         <ul> <li>Reduction in 85th percentile speed up to 10 km/h (up to 15 km/h if followed by other devices in an urban area)</li> <li>May increase compliance with speed limit</li> <li>Environment:                 <ul> <li>May improve aesthetics if incorporating colour/texture pavement and landscaping.</li> <li>Other:</li></ul></li></ul></li></ul>	<ul> <li>Maintenance:         <ul> <li>Requires</li> <li>considerable</li> <li>ongoing</li> <li>maintenance if</li> <li>incorporating</li> <li>pavement markings,</li> <li>textured pavements,</li> <li>landscaping or other</li> <li>traffic calming</li> <li>devices</li> <li>Other:                 <ul> <li>Gateways may</li>                     infringe on clear</ul></li></ul></li></ul>	<ul> <li>Road</li> <li>Classification: All roadways</li> <li>Traffic</li> <li>Conditions: All traffic volumes</li> <li>Roadway: Urban and rural crosssection</li> <li>Entrances to residential communities; speed transition zones; approaching intersections / builtup areas</li> </ul>	<ul> <li>&gt; Gateways would best be placed in the speed transition zones where a gradual reduction of speed is desired</li> <li>&gt; Most effective on infrequent users of the corridor</li> <li>&gt; Gateway entrance treatments may include features which present a fixed roadside object hazard, therefore should</li> </ul>



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Countermeasure	Туре	Description & Purpose	Advantages	Disadvantages	Applicability	Implementation Considerations
				for frequent commuters		meet clear-zone, structural, and protection requirements > Gateway needs to be large enough to attract the attention of drivers > For narrow local roads, gateway features in form of pavement marking can be considered > Gateway features is recommended for new subdivisions. Careful consideration for existing roads with narrow pavement width Where transit routes operate, remaining lane width should be a minimum of 3.1 m, preferably 3.3 m.
Raised Medians/Landscaped Island	Geometric	A raised median island is an elevated median constructed on the centerline of a two-way roadway to reduce the overall width of the adjacent travel lanes. The purpose of a raised median island is to reduce vehicle speeds and to reduce pedestrian– vehicle conflicts.	<ul> <li>&gt; Vehicle Speeds: Reduction between 3 and 8 km/h</li> <li>&gt; Conflicts: Can function as a pedestrian refuge resulting in reduced pedestrian-vehicle conflicts</li> <li>&gt; Environment: Aesthetic benefit if well-maintained planting is incorporated</li> <li>&gt; Other: No effect on snow plowing (islands are visible due to signing), street sweeping, or police enforcement</li> </ul>	<ul> <li>Local Access: May restrict access to driveways from one direction only</li> <li>Active Transportation and Transit: Cyclists may feel squeezed where insufficient room has been left between a central median and the adjacent curb (aggravated on roads with high</li> </ul>	<ul> <li>Road</li> <li>Classification:</li> <li>Local and collector streets, urban arterials</li> <li>Traffic</li> <li>Conditions: All traffic volumes</li> <li>Roadway: Urban cross-section – curb and gutter; rural cross-section; most effective on roads with two</li> </ul>	<ul> <li>&gt; Effectiveness can be increased if used in combination with curb extensions before and/or after raised median islands</li> <li>&gt; If required, bicycle lanes can be included to prevent motorists from intruding into the path of cyclists</li> <li>&gt; In retrofit</li> </ul>



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Countermeasure	Туре	Description & Purpose	Advantages	Disadvantages	Applicability	Implementation Considerations
				proportions of heavy vehicles) > <b>Parking:</b> May require additional right-of-way and/or removal of on-street parking > <b>Other:</b> Speeds may increase if mid- block left turn movements are not possible	traffic lanes (one each direction)	situations, there are risks of overhead tree canopy and utility poles coming into contact with larger vehicles due to the median shifting vehicles closer to the curb > Median landscaping should not negatively impact or reduce pedestrian visibility > Required Pavement Width: 1.5m to 4.0m Where transit routes operate, remaining lane width should be a minimum of 3.1 m, preferably 3.3 m.
Flexible Bollards	Signage	The use of vertical treatments such as flexible post- mounted delineators or raised pavement markers to create a centre median. This could be used to give drivers a perception of lane narrowing and create a sense of constriction. Flexible post- mounted delineators are similar in appearance to bollards. They are commonly used in work zones, high-	>Vehicle Speeds: Reduction in 85th percentile speed up to 5 km/h >Conflicts: Separation of traffic has the potential to reduce collisions >Other: Collapsible design is able to withstand impact with a vehicle	<ul> <li>Maintenance:         <ul> <li>May require</li> <li>regular maintenance</li> <li>with collection of</li> <li>debris around posts</li> <li>and repeated</li> <li>impacts from</li> <li>vehicles</li> <li>Permanent</li> <li>installation may</li> <li>cause difficulty of</li> <li>snow removal</li> <li>Other:</li> <li>In rural areas,</li> <li>wider vehicles or</li> <li>farm equipment may</li> <li>have difficulty</li> <li>passing if post-mounted delineators</li> <li>excessively narrow</li> </ul> </li> </ul>	<ul> <li>Road</li> <li>Classification:</li> <li>Local and collector</li> <li>streets</li> <li>Traffic</li> <li>Conditions: All</li> <li>traffic volumes</li> <li>Roadway: Urban</li> <li>or rural cross-</li> <li>section; two-lane</li> <li>roadways in order</li> <li>to achieve lane</li> <li>narrowing</li> <li>Locations to</li> <li>Avoid: Where it</li> <li>may block</li> <li>driveways or cross</li> <li>streets</li> <li>Separation of</li> <li>conflicting</li> </ul>	<ul> <li>Typically are between 45 and 90 cm tall, spaced 30m to 50m apart</li> <li>May also be installed at the start and end of a speed reduction zone (e.g., a School Zone) along with other traffic calming measures (e.g., speed cushions, raised islands, bump outs/curb extensions) to increase the visibility of traffic calming measures and create</li> </ul>



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Countermeasure	Туре	Description & Purpose	Advantages	Disadvantages	Applicability	Implementation Considerations
		occupancy vehicle (HOV) lanes, and on-ramp exits to direct vehicles or prevent particular movements.		the roadway - May cause confusion as measure can be perceived as temporary or as an indication of a construction zone	movements when barriers are too costly or impractical	"gateway-like" features > May also be installed within a speed reduction zone between other traffic calming measures
						Where transit routes operate, remaining lane width should be a minimum of 3.1 m, preferably 3.3 m.
Speed Cushions	Geometric	A raised area on a road, similar to a speed hump, but does not cover the entire width of the road. The width is designed to allow a large vehicle, such as a bus, to "straddle" the cushion, while light vehicles will have at least one side of the vehicle deflected upward. Speed cushions are intended to produce sufficient discomfort to limit passenger vehicle travel speeds yet allow the driver to maintain vehicle such as buses and emergency vehicles to pass without	<ul> <li>&gt;Vehicle Speeds: Reduction in 85th percentile speed up to 8 km/h</li> <li>&gt;Traffic Volumes: Reduction of approximately 30%</li> <li>&gt;Environment: Traffic noise may be reduced due to lower speeds (benefits may be offset by increased noise due to braking and accelerating)</li> <li>&gt;Other:         <ul> <li>No effect on bicycles riding at moderate speeds</li> <li>No effect on resident access, street sweeping (small amount of debris may remain at edges of speed cushion), and police enforcement</li> </ul> </li> </ul>	<ul> <li>&gt; Emergency</li> <li>Response: May</li> <li>slightly affect</li> <li>emergency vehicle</li> <li>response times but</li> <li>not as much as</li> <li>speed humps or</li> <li>speed tables</li> <li>&gt; Active</li> <li>Transportation and</li> <li>Transit: May slightly</li> <li>affect transit routes;</li> <li>a series of vertical</li> <li>deflection measures</li> <li>may increase travel</li> <li>time</li> <li>&gt; Maintenance:</li> <li>Negative effects on</li> <li>snow</li> <li>plow operators must</li> <li>use caution to avoid</li> <li>damaging speed</li> <li>cushion surface</li> <li>&gt; Other:         <ul> <li>More difficult to</li> <li>construct compared</li> <li>to speed humps</li> </ul> </li> </ul>	<ul> <li>&gt; Road</li> <li>Classification:</li> <li>Local and collector streets</li> <li>&gt; Traffic</li> <li>Conditions:</li> <li>Posted speed limit</li> <li>≤ 50 km/h; all</li> <li>traffic volumes</li> <li>&gt; Roadway: Urban</li> <li>cross-section –</li> <li>curb and gutter</li> <li>&gt; Locations to</li> <li>Avoid: <ul> <li>Small turning</li> <li>radius curves and</li> <li>other areas with</li> <li>limited sight</li> <li>distance,</li> <li>intersections, and</li> <li>driveways</li> <li>Traffic signals –</li> <li>locate at least 75</li> <li>m distance from</li> <li>traffic signals so</li> <li>that the speed</li> <li>cushion is not</li> </ul> </li> </ul>	<ul> <li>&gt; Allows greater access for transit and emergency services compared to other traffic calming devices</li> <li>Could be considered as an alternative to speed humps on emergency routes</li> <li>&gt; Speed humps are more effective in reducing speeds</li> <li>&gt; Snow removal personnel may require special training in removing snow from speed cushion areas</li> <li>&gt; A series of speed cushions is more effective than a single installation; spacing can range from 60 m to 250 m depending on the desired 85th</li> </ul>



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				precise hand work - Increased traffic noise levels due to braking and accelerating - Increased gas consumption and emission levels if there are significant variations in speed, especially if there are multiple devices within close proximity on the same street - Pavement markings and signing could detract from the appearance of a street - Traffic may be diverted to parallel streets without traffic calming measures	- Grades over 8%	<ul> <li>Installation of WA-50 Speed Hump sign is considered mandatory</li> <li>Speed cushions are not to be implemented together with raised median island</li> </ul>
Raised Crosswalk	Geometric	A raised crosswalk is a marked pedestrian crosswalk at an intersection or mid- block location constructed at a higher elevation than the adjacent roadway. The purpose of a raised crosswalk is to reduce vehicle speeds, improve pedestrian visibility, and reduce pedestrian–vehicle conflicts.	<ul> <li>Vehicle Speeds: Reduction in 85th percentile speed from 5 km/h to 13 km/h</li> <li>Traffic volumes: Reduction of up to 26%, and increase of up to 7% on neighbouring streets</li> <li>Conflicts:         <ul> <li>53% of drivers yielding to pedestrians compared to 13% before</li> <li>Pedestrian crossing area better defined; vehicles are forced to slow through pedestrian conflict zone</li> <li>Environment: Traffic noise may be reduced due to lower speeds (benefits may be offset by increased noise due to braking and accelerating)</li> </ul> </li> </ul>	<ul> <li>&gt; Emergency</li> <li>Response: Impacts and delays to emergency vehicles;</li> <li>Fire vehicles – 3.8 seconds' delay per raised crosswalk</li> <li>&gt; Active</li> <li>Transportation and Transit:         <ul> <li>May result in a false sense of pedestrian security</li> <li>Visually-impaired pedestrians may have difficulty</li> <li>differentiating between the curb and the travelled portion of the street</li> </ul> </li> </ul>	<ul> <li>&gt; Road</li> <li>Classification:         <ul> <li>Local and</li> <li>collector streets;</li> <li>commercial</li> <li>collector streets</li> <li>&gt; Traffic</li> </ul> </li> <li>Conditions:         <ul> <li>Posted speed limit</li> <li>≤ 50 km/h; all</li> <li>traffic volumes</li> <li>&gt; Roadway: Urban</li> <li>cross-section –</li> <li>curb and gutter</li> <li>&gt; School zones</li> <li>&gt; Locations to</li> <li>Avoid:                 <ul> <li>Designated</li> <li>emergency access</li></ul></li></ul></li></ul>	<ul> <li>Not</li> <li>recommended</li> <li>unless there is an</li> <li>existing marked</li> <li>crosswalk</li> <li>Not</li> <li>recommended in</li> <li>limited right-of-way</li> <li>There must be a</li> <li>sidewalk on at least</li> <li>one side of the</li> <li>road and landing</li> <li>areas on each end</li> <li>of the raised</li> <li>crosswalk</li> <li>May cause</li> <li>discomfort for</li> <li>transit users</li> <li>Consistent</li> <li>configuration</li> </ul>



Countermeasure	Туре	Description & Purpose	Advantages	Disadvantages	Applicability	Implementation Considerations
			<ul> <li>&gt; Other:</li> <li>No effect on bicycles riding at moderate speeds</li> <li>No effect on resident access, street sweeping (small amount of debris may remain at edges of raised crosswalk), and police enforcement</li> <li>Pedestrians using assistive devices are able to cross more easily and with increased comfort due to no accumulation of rain or snow at the bottom of the curb</li> </ul>	(can be mitigated with appropriate design elements for accessibility requirements such as tactile walking surface indicators) - Some cyclists may experience loss of control at speeds over 40 km/h - May slightly affect transit routes; a series of vertical deflection measures may increase travel time > Maintenance: - Snow clearing time may be increased - Raised crosswalks interfere with pavement overlays > Other: - Catch basins may be required to provide drainage depending on location of raised crosswalk and site specific conditions - If catch basins become blocked, ponding may occur on uphill edge of crosswalk - Increased traffic noise levels due to braking and accelerating - Increased gas consumption and	- Small turning radius curves and other areas with limited sight distance, intersections, and driveways - Transit routes where articulated buses are used due to potential decoupling - Bus stops – locate at least 25 m in advance to minimize potential stability problems - Traffic signals – locate at least 75 m distance from traffic signals so that the crosswalk is not within the decision or braking zones - Grades over 8%	throughout a community is desirable to facilitate safe use by those with mental impairment > Snow removal personnel may require special training in raised crosswalk areas > Raised crosswalks with gentle approach and exit gradients, flush leading edges and smooth surfaces pose a less significant hazard to cyclists



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Countermeasure	Туре	Description & Purpose	Advantages	Disadvantages	Applicability	Implementation Considerations
				emission levels if there are significant variations in speed, - Pavement markings and signing could detract from the appearance of a street - Traffic may be diverted to parallel streets without traffic calming measures		
Traffic Circle/Mini         Roundabout	Geometric	A traffic circle/traffic button/mini- roundabout is an island located at the centre of an intersection, which requires vehicles to travel through the intersection in a counter-clockwise direction around the island.Mini- roundabouts are designed in accordance with full- size roundabout design principles presenting splitter islands and deflection of vehicles on all approaches, except that they have a smaller diameter and traversable islands. A traffic circle is typically smaller than a mini- roundabout and does not have splitter islands on the approaches. A	>Vehicle Speeds: Reduction in 85th percentile speed up to 14 km/h>Traffic volumes: Reduction of up to 20%>Conflicts: Collision rate reductions of approximately 30% compared to signalized intersections>Environment: - Traffic noise reduction of 3 dBA due to lower speeds (benefits may be offset by increased noise due to braking and accelerating) - Environmental benefit through reduced delay, fuel consumption, and vehicle emissions - When landscaped, can improve the appearance of a street>Other: No effect on resident access, street sweeping, and police enforcement	> Emergency > Emergency Response: Delay between 1.3 and 10.7 seconds for emergency vehicle response times> Active Transportation and Transit: - May force vehicles into crosswalk area increasing potential for pedestrian- vehicle conflicts> Parking: May require removal of some on-street parking in vicinity of traffic circle> Maintenance: "Minor" effects on winter maintenance by increasing snow plowing time> Other: - Restricted access for trucks and longer school buses - Traffic may be diverted to parallel streets without traffic calming measures	> Road Classification: Local and collector street intersections> Traffic Conditions: - Posted speed limit ≤ 50 km/h - < 1500 vehicles per day; Use with caution for low- volume collectors with 1500 to 5000 vehicles per day> Roadway: Urban cross-section – curb and gutter; rural cross-section; maximum two traffic lanes (one each direction)> Locations to Avoid: - Designated emergency access routes and transit routes - Intersections with high pedestrian volumes - Intersections where collector street traffic	> Preferred with textured crosswalks and most effective when used in series> Sight lines should be respected if there is landscaping> Mini roundabouts are often more suitable for collector roads, and traffic circles are more suitable for local roads



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Countermeasure	Туре	Description & Purpose	Advantages	Disadvantages	Applicability	Implementation Considerations
On-Road 'Sign' Pavement	Pavement Marking	traffic button is similar to a traffic circle, however, the former is typically made of coloured asphalt while the latter is landscaped. The turning radius for left-turning trucks, buses, or emergency vehicles may require a diameter which would be larger than the intersection space commonly available. Yield traffic control is recommended. On-road 'sign'	> Vehicle Speeds: Reduction	> Maintenance:	volumes are significantly higher than the intersecting street > Road	> Refer to
Markings		pavement markings provide information that would typically be shown to drivers through signage but are painted on the roadway to provide a larger image, and one that is directly in the driver's line of sight. Some examples could be speed limit, 'SLOW', 'Stop ahead, etc.	between 6 and 14 km/h > Environment: No increase in noise > Other: - Can be implemented rapidly - No impact to emergency vehicles, snow plowing, street sweeping, and police enforcement - No adverse effect on vehicle operations	- Pavement markings will require regular maintenance - May be less effective in winter months due to snow/ice cover	Classification: Local, collector and arterial streets > Traffic Conditions: All traffic volumes > Roadway: Urban and rural cross- section > Advance of hazards/curves > Entrance treatment to urban and rural communities	provincial legislation and guidelines, if available, to ensure standards for traffic control devices are met > If there is no provincial guidance for placement, speed limit on-road 'sign' pavement markings should be placed in the same location as speed limit signs to reinforce regulatory environment > May be used as part of gateways to alert drivers that they are entering a rural community



Countermeasure	Туре	Description & Purpose	Advantages	Disadvantages	Applicability	Implementation Considerations
Speed Display Boards	Signage	A speed display device is an interactive sign that displays vehicle speeds as oncoming motorists approach. Vehicle speed is captured using radar and can trigger the display board to show when vehicles approach at predetermined unsafe speeds. Can be used upstream of manned speed enforcement.	<ul> <li>&gt; Vehicle Speeds: Reduction in 85th percentile speed between 3 and 14 km/h</li> <li>&gt; Conflicts: Reduction in speed related collisions</li> <li>&gt; Other:         <ul> <li>Portable units can be relocated and deployed immediately at different locations</li> <li>Less expensive than police enforcement when considering long-term use</li> </ul> </li> </ul>	<ul> <li>&gt; Enforcement:         <ul> <li>Drivers may</li> <li>become immune to</li> <li>devices if there is no</li> <li>further perception of</li> <li>enforcement</li> <li>Motorists may</li> <li>speed up to see how</li> <li>fast they can go</li> <li>May be less</li> <li>effective or less</li> <li>accurate on multilane roads, or</li> <li>heavily trafficked</li> <li>roads</li> <li>&gt; Maintenance:</li> <li>Requires regular</li> <li>maintenance and a</li> <li>source of power</li> </ul> </li> </ul>	<ul> <li>Road</li> <li>Classification: All roadways</li> <li>Traffic</li> <li>conditions: All traffic volumes</li> <li>Roadway: Urban and rural cross- section</li> <li>Generally used at the beginning of regulatory school zones, upstream of high speed signalized intersections, and upstream of deficient horizontal curves</li> </ul>	<ul> <li>&gt; Speed display devices can be used as curve advisory systems</li> <li>&gt; Speed displays can be used on a weather-related basis</li> <li>&gt; If used in conjunction with manned enforcement downstream on some occasions, can be very effective and may decrease complaints about manned enforcement as well</li> </ul>





Policy Name:Speed Limit PolicyPolicy Owner:Infrastructure and Engineering Services DepartmentApproved by:CouncilEffective Date:March 27, 2024Date of Last Revision:March 27, 2024Review Date:Every 5 YearsPolicy Status:New

## **PURPOSE:**

To establish a policy to set posted speed limits on roadways within the City of Richmond Hill.

### **POLICY PRINCIPLES:**

This policy relies on the Transportation Association of Canada's (TAC) *Guidelines for Establishing Posted Speeds* and the Highway Traffic Act (HTA) to set consistent speed limits across Richmond Hill.

### **DEFINITIONS**:

85<sup>th</sup> Percentile Speed: it is the speed which 85 percent of vehicles are travelling at or below.

**Built-up Area/Urban Areas**: As defined within section 1(1) of the HTA, where the roadways frontage is 50% occupied by buildings and/or as identified within the City of Richmond Hill Official Plan.

**Rural Roads**: All roadways within the City of Richmond Hill that do not conform to the definition of a built-up area/urban street.

**Neighbourhood Area**: A designated area where by-lawed speed limits can be imposed lower than 50km/h within a bounded area using specialized speed limit signage in accordance with the HTA and Ontario Traffic Manual.

**School Zone:** The section of roadway that is contiguous to a school either public or private typically with a minimum of 200 registered students.

### SCOPE:

This policy shall be used by City staff to identify, assess and recommend speed limit changes to Council for approval where warranted within the boundaries of the City.

### POLICY

This policy sets out criteria for four primary areas:

- Rural Roads
- Built Up/Urban Areas
- School Zones; and
- Neighbourhood Areas

Section 128(1) of the HTA regulates the rate of speed on all roadways within the Province of Ontario. For roadways under the authority of a municipality, the upper threshold is 80km/h. All rural roadways



Policy

will have an unsigned speed limit of 80 km/h. The HTA also sets a default municipal speed limit of 50km/h on roadways within cities, towns or built-up areas. Section 128(2) enables the Council of a municipality to establish a posted speed limit different than prescribed in Section 128(1).

The HTA was amended by the Safer School Zones Act, 2017. The HTA now allows municipalities to designate areas by by-law where speed limits are lower than 50 km/h. Section 5.1.1 (1) of Regulation 615 (Signs) under the HTA permits the installation of speed control signage designating the commencement of an area with a set speed for the area that has been prescribed.

In accordance with the HTA, a municipal by-law is required, in addition to the posting of appropriate speed limit signs before a posted speed limit can be enforced.

Staff shall utilize the process in **Figure 1** when determining a posted speed limit.

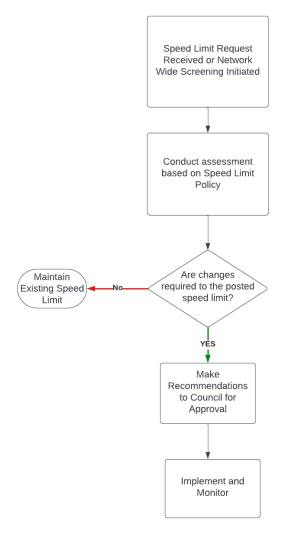


Figure 2 - Speed Limit Review Process



### **Rural Roadways**

- The statutory speed limit of 80 km/h on rural roads as prescribed within the HTA remains unchanged until such time that there has been significant redevelopment of the adjacent land use.
- All rural roads are to be assessed in accordance with the Transportation Association of Canada (TAC) Canadian Guide for Establishing Posted Speed Limits (2009).
- Speed limits on rural roadways are to be undertaken in conjunction with new/future Block Development, or on a case-by-case basis as required.

### Built-up area/Urban Areas

- The statutory speed limit of 50km/h on all urban roads as prescribed by the HTA. The application
  of this policy will provide the ability to assess all urban roads for a reduced posted speed of 40
  km/h.
- Individual requests for lowering a speed limit from 50 km/h to 40 km/h on a built-up/urban road will be assessed using the TAC – Canadian Guide for Establishing Posted Speed Limits (2009).

### School Zones

A 40 km/h maximum speed limit shall be implemented in school zones in accordance with the following:

- Where there is a public/private school, typically with a minimum of 200 students registered, a 40 km/h maximum speed limit zone will be implemented and must extend no less than 150 metres beyond the boundary of school property.
- Where there is a park contiguous to the school boundary limits, the parkland will be considered as part of the 40 km/h maximum speed control zone and shall extend no less than 150 metres beyond the parkland.
- All school zones within the City of Richmond Hill, will be signed in accordance with the HTA and the Ontario Traffic Control Manual.

## Neighbourhood Areas of 40km/h

Staff shall undertake a network review based on the criteria found in **Appendix 1** to determine if the base area posted speed limits in **Table 1** are appropriate for all roadways in a specific neighbourhood area. The criteria for this review include the TAC Recommended Posted Speed Limit and existing 85<sup>th</sup> percentile speed. Collector roadways in a 40 km/h Neighborhood Area will be signed and posted at 50 km/h, unless otherwise determined suitable for a reduction.

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#### Table 3 - Based Area Speed Limits

Base Speed Limit	Characteristics
40 km/h	<ul> <li>Local roads in <i>residential</i> areas</li> <li>Implement 'Area-wide' speed limit signs on entry</li> </ul>
50 km/h	<ul> <li>Local roads in <i>commercial and/or industrial</i> areas</li> <li>Collector roads</li> </ul>

If a neighbourhood area supports a base speed limit of 40 km/h, staff shall recommend the area to Council for approval.

Roads within an approved 40 km/h neighbourhood area shall be all local roads within a residential area that would be posted by means of 'area' speed limit signs. Signs would be posted on all entry roads into the residential area as shown in **Figure 2** (with the 'begins' and 'ends' tab as applicable).



### **Final Approval of Posted Speed Limits**

All posted speed limits in Richmond Hill are to be approved by Council.

### **Continuous Monitoring**

Staff shall continuously monitor 85<sup>th</sup> percentile speeds through the annual data collection program to determine if changes to posted speed limits or traffic calming measures are required.



#### **ROLES AND RESPONSIBILITIES:**

Members of Council

- Shall review and approve the Speed Limit Policy.
- Shall review and approve posted speed limit changes for implementation recommended by City Staff.

Senior Management Team

• Shall review and approve any changes to the Speed Limit Policy prior to recommendation to Council.

### Staff

• Shall follow the Speed Limit Policy, collect the pertinent traffic speed data, and ensure compliance with the Highway Traffic Act and the Transportation Association of Canada's *Guidelines for Establishing Posted Speeds.* 

# Shall ensure priority locations are brought forward in the capital plan on an annual basis. RELATED DOCUMENTS:

- Highway Traffic Act
- TAC Canadian Guidelines for Establishing Posted Speed Limits

### Appendix A – Network Review of Base Area Speed Limits



# Appendix A – Network Review of Base Area Speed Limits

Recommended Base Speed Limit	TAC Recommended Speed Limit	Operating (85 <sup>th</sup> percentile) Speed	Action
40 km/h	40 km/h	≤50km/h	<ul> <li>Implement speed limit at 40 km/h</li> </ul>
40 km/h	40 km/h	>50km/h	<ul> <li>Implement speed limit at 40 km/h</li> <li>Investigate need for physical restrictions to roadway to reinforce posted speed (traffic calming)</li> <li>Investigate need for Automated Speed Enforcement</li> </ul>
40 km/h	50 km/h	≤50km/h	<ul> <li>Implement speed limit at 40 km/h</li> </ul>
40 km/h	50 km/h	>50km/h	<ul> <li>Review collision history and increased presence of vulnerable road users and posted speed on surrounding roads</li> <li>If no reported collisions and/or increased presence of vulnerable road users, maintain posted speed to 50 km/h</li> <li>If reported collisions and/or increased presence of vulnerable road users, implement speed limit at 40 km/h and investigate need for traffic calming measures and/or Automated Speed Enforcement</li> </ul>
50 km/h	40 km/h	≤50km/h	Reduce speed limit to 40 km/h
50 km/h	40 km/h	>50km/h	<ul> <li>Reduce posted speed to 40 km/h</li> <li>Investigate need for further physical restrictions to roadway to reinforce posted speed (traffic calming)</li> <li>Investigate need for Automated Speed Enforcement</li> </ul>
50 km/h	50 km/h	≤60km/h	<ul> <li>Maintain speed limit at 50 km/h</li> </ul>
50 km/h	50 km/h	>60km/h	<ul> <li>Maintain speed limit at 50 km/h</li> <li>Investigate need for further physical restrictions to roadway to reinforce posted speed (traffic calming)</li> <li>Investigate need for Automated Speed Enforcement</li> </ul>





Policy Name:Pedestrian Crossover PolicyPolicy Owner:Infrastructure and Engineering Services DepartmentApproved by:CouncilEffective Date:March 27<sup>th</sup>, 2024Date of Last Revision:March 27<sup>th</sup>, 2024Review Date:Every 5 YearsPolicy Status:Revision

### **PURPOSE:**

To establish a policy to assess and prioritize the implementation of Pedestrian Crossovers within the City of Richmond Hill.

#### **POLICY PRINCIPLES:**

This policy will provide a consistent process of assessing, justifying and implementing Pedestrian Crossovers and selecting the appropriate type, within the City of Richmond Hill in accordance with Ontario Traffic Manual (OTM) Book 15 and the Highway Traffic Act (HTA).

#### **DEFINITIONS:**

85<sup>th</sup> Percentile Speed: it is the speed which 85 percent of vehicles are travelling at or below.

**Collision:** contact resulting from the motion of a motor vehicle (as defined in the Highway Traffic Act) that produces property damage, injury or death. The term collision indicates that the initial point of contact involves at least one motor vehicle.

**Connectivity:** connection between sidewalks and crosswalks, and/or trail networks, following pedestrian desire lines.

**Pedestrian Crossover (PXO):** any portion of a roadway indicated for pedestrian crossing by signs on the highway and lines or other markings on the surface of the roadway as prescribed on the Highway Traffic Act (HTA).

#### SCOPE:

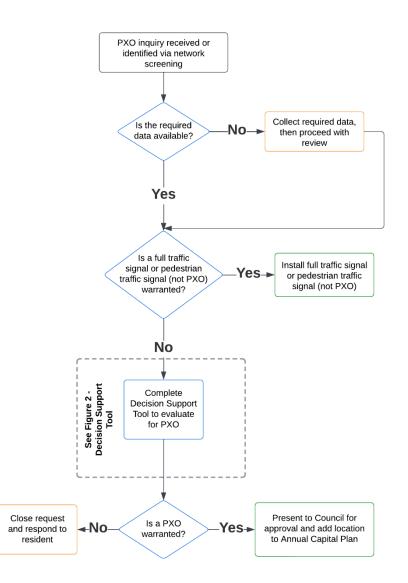
This policy shall be used by City staff to identify, assess and prioritize locations where a Pedestrian Crossover is warranted to be implemented within the boundaries of the City.

#### POLICY

Staff shall utilize the process identified in **Figure 1** when a Pedestrian Crossover (PXO) is requested or potentially identified in network screening.



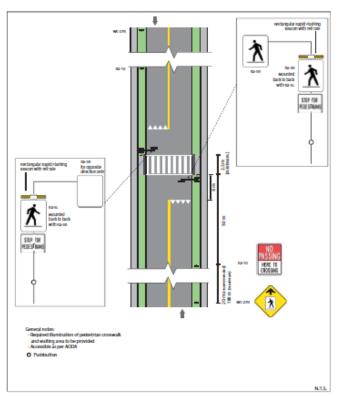
#### Figure 1 – PXO Review Flowchart



### **Design Elements of a PXO**

OTM Book 15 provides the required design elements of a PXO. Figures 2 and 3 provide examples of two types of PXO design found in OTM Book 15. Staff shall utilize the additional designs recommended in OTM Book 15 based on design criteria.





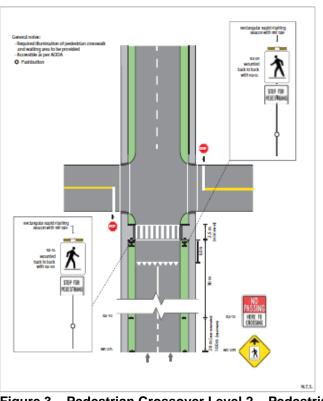


Figure 2 – Pedestrian Crossover Level 2 Type B – Mid-block (2-lane, 2-way)

Figure 3 – Pedestrian Crossover Level 2 – Pedestrian Crossover Level 2 Type C – Intersection (1-Way)

# Warrant for Determining Need for Pedestrian Crossover and Type

Requests to implement a PXO on municipal roads shall be assessed in accordance with the Ontario Traffic Manual Book 15, following the established criteria as follows:

- Verify minimum pedestrian and vehicular volume at location, either the total 8-hour volume or 4hour volume, specifically:
  - ≥100 pedestrians and ≥750 vehicles in an 8-hour period or
  - ≥65 pedestrians and ≥395 vehicles in a 4-hour period
- Verify if the distance of the site to the closest traffic control device is more than 200 m; and
- Verify if there is a requirement for a controlled crossing based on system connectivity or pedestrian desire lines.

Further information on each PXO type can be found in OTM Book 15. The process for evaluating the need for a PXO is graphically represented in **Figure 4**.



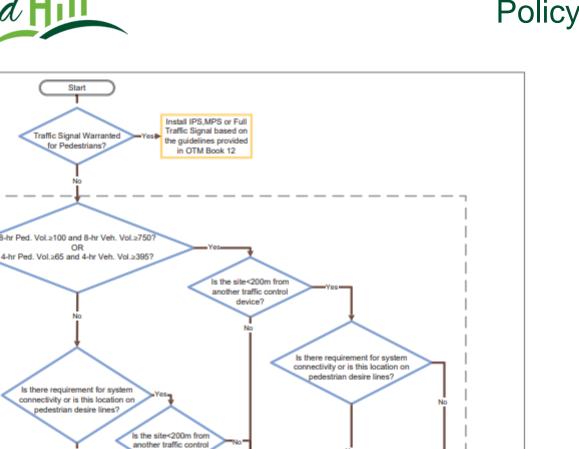


Figure 4 – Decision Support Tool (Source OTM Book 15)

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The type of PXO is determined by the Pedestrian Crossover Selection Matrix found in Appendix A.

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### **Review of Candidate Locations**

Warrant for PXO

City staff shall conduct a City-wide review of candidate locations every 5 years where there are currently no controls (i.e. midblock locations or minor-road stop-controlled intersections). These locations include:

Locations where a pedestrian collision has occurred;

Site is not a candidate

for pedestrian crossing

control

- Crossing guard locations;
- Trail networks where trails cross roads; and
- Locations identified based on public input.

Pertinent traffic data shall be collected upon identification of candidate locations to undertaking warrant analyses following OTM Book 15 methodology.

Staff shall review individual requests annually.

### **Prioritization of Warranted Locations**

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Site is a candidate for a

Decision Support Tool)

destrian crossover (go to the



Locations where a PXO is warranted shall be scored and prioritized for installation by City Staff based on the following key components:

- **Connectivity** (proximity to nursing homes, medical centres, elementary schools, high schools, transit routes, major pedestrian facilities, community facilities, multi-use trail or major trail facility crossings, or other sensitive pedestrian generators and proximity to the nearest controlled location);
- **Demand** (vehicle-pedestrian cross product); and
- **Safety** (pedestrian collision history, road class, 85<sup>th</sup> percentile speed)

Each warranted location shall be scored and ranked against each other as outlined in **Appendix B**, with the locations with the highest score being the highest priority.

As the City collects more data on potential PXO candidates, the weighting for the cross product shall be adjusted to capture the range of values more accurately.

Staff shall conduct analysis for PXOs which could impact the operation of existing intersections before proceeding to implementation.

## **New Locations / Periodic Review**

A full City-wide review and prioritization shall be repeated every 5 years to capture potential changes in traffic patterns and on the road network. For new roads or locations where schools, trails or pedestrian generators are being built, PXOs shall be considered where the OTM Book 15 distance and connectivity requirements are met. At the design stage, City staff shall apply engineering judgment to determine if a PXO should be implemented with the new road construction, or if any design elements (e.g., appropriate sight distance, sufficient space for AODA elements, etc.) should be included in the design in anticipation that volume requirements may be met in the future.

## Implementation

Based on the prioritization scoring, PXOs will be planned for through the annual capital budgeting process and implementation is subject to capital budget funding and resource availability.

### **ROLES AND RESPONSIBILITIES:**

Members of Council

- Shall review and approve the Pedestrian Crossover Policy.
- Shall review and approve the locations of Pedestrian Crossovers for implementation recommended by City Staff.

Senior Management Team

- Shall review and approve any changes to the Pedestrian Crossover Policy prior to recommendation to Council.
- Shall review and approve prioritization of Pedestrian Crossover through the capital planning process.



- Policy
- Shall follow the Pedestrian Crossover Policy, and ensure compliance with the Highway Traffic Act, Ontario Traffic Manual Book 15 and Ontario Regulation 402/15.
- Shall ensure priority locations are brought forward in the capital plan on an annual basis.

### **RELATED DOCUMENTS:**

- Highway Traffic Act
- Ontario Traffic Manual Book 15
- Ontario Regulation 402/15

Appendix A – Pedestrian Crossover Selection Matrix



### Appendix A – Pedestrian Crossover Selection Matrix

Two-wa	Two-way Vehicular Volume		Two-way Vehicular Volume Posted			Total Number of Lanes for the Roadway Cross Section <sup>1</sup>			
Time Period	Lower Bound	Upper Bound	Posted Speed Limit (km/h	1 or 2 Lanes	3 lanes	4 lanes w/raised refuge	4 lanes w/o raised refuge		
8 Hour	750	2,250	-50	Level 2	Level 2	Level 2	Level 2		
4 Hour	395	1,185	≤50	Type D	Type C <sup>3</sup>	Type D <sup>2</sup>	Type B		
8 Hour	750	2,250		Level 2	Level 2	Level 2	Level 2		
4 Hour	395	1,185	60	Type C	Type B	Type C <sup>2</sup>	Type B		
8 Hour	2,250	4,500	<50	Level 2	Level 2	Level 2	Level 2		
4 Hour	1,185	2,370	≤50	Type D	Type B	Type D <sup>2</sup>	Type B		
8 Hour	2,250	4,500		Level 2	Level 2	Level 2	Level 2		
4 Hour	1,185	2,370	60	Туре С	Type B	Type C <sup>2</sup>	Type B		
8 Hour	4,500	6,000	≤50	Level 2	Level 2	Level 2	Level 2		
4 Hour	2,370	3,155	250	Туре С	Type B	Type C <sup>2</sup>	Type B		
8 Hour	4,500	6,000	- 60	Level 2	Level 2	Level 2	Level 2		
4 Hour	2,370	3,155		Туре В	Type B	Type C <sup>2</sup>	Type B		
8 Hour	6,000	7,500	<50	Level 2	Level 2	Level 2	Level 1		
4 Hour	3,155	3,950	50	Type B	Type B	Type C <sup>2</sup>	Type A		
8 Hour	6,000	7,500	- 60	Level 2	Level 2				
4 Hour	3,155	3,950		Туре В	Type B				
8 Hour	7,500	17,500	≤50	Level 2	Level 2		X///////		
4 Hour	3,950	9,215	200	Туре В	Type B				
8 Hour	7,500	17,500	60	Level 2		X///////			
4 Hour	3,950	9,215		Type B		X///////	X///////		

Type A Type B Type C Type D

Approaches to roundabouts should be considered a separate roadways.

The total number of lanes is representative of crossing distance. The width of these lanes is assumed to be between 3.0 m and 3.75 m according to MTO Geometric Design Standards for Ontario Highways (Chapter D.2). A cross sectional feature (e.g. bike lane or on-street parking) may extend the average crossing distance beyond this range of lane widths.

<sup>2</sup>Use of two sets of side mounted signs for each direction (one on the right side and one on the median)

<sup>3</sup> Use Level 2 Type B PXO up to 3 lanes total, cross section one-way.

The hatched cells in this table show that a PXO is not recommended for sites with these traffic and geometric conditions. Generally a traffic signal is warranted for such conditions.



# Appendix B – Pedestrian Crossover Prioritization Scoring Table

Criteria /Justification	Category	Score
Connectivity		
Proximity to nursing homes and medical centres (Senior citizens have an increased risk of serious death and/or death in a collision)	Adjacent to facility (<100m)	15
	101-200m from facility	12
	201-300m from facility	9
	301-400m from facility	6
	>400m from facility or N/A	0
	Adjacent to school (<100m)	15
Proximity to elementary schools (K-8) (Children have more difficulty judging speed, spatial relations and distance compared to adults)	101-200m from facility	12
	201-300m from facility	9
	301-400m from facility	6
	>400m from facility or N/A	0
	Adjacent to school (<100m)	10
Proximity to high schools (High schools are major pedestrian attractors but are scored lower as students in high school have a better understanding relating to safely judging gaps in traffic)	101-200m from facility	8
	201-300m from facility	6
	301-400m from facility	4
	>400m from facility or N/A	0
	On transit route	5
Proximity to transit (route or stop) (Transit stops are natural pedestrian attractors and encourage mid-block crossing behaviour)	Not on transit route but <100m from bus stop	4
	Not on transit route and 101-200m from bus stop	3
	Not on transit route and 201-301m from bus stop	2
	Not on transit route and 301-400m from bus stop	1
	Not on transit route and >400m from bus stop	0
Proximity to major pedestrian facilities (i.e. libraries, community centres, retirement homes, sport facilities, parks, pools, playgrounds) (These types of facilities attract/generate pedestrian trips)	Adjacent to any major pedestrian facility (<100m)	5
	101-200m from any major pedestrian facility	4
	201-300m from any major pedestrian facility	3
	301-400m from any major pedestrian facility	2
	>400m from any major pedestrian facility or N/A	0
Multi-use trail or major trail facility crossing (Users of these facilities are often unwilling to detour to the nearest controlled crossing)	Yes	5
	No	0
Proximity to nearest controlled crossing location (Sites greater than 200m from a controlled crossing are potential candidates provided they meet the pedestrian and vehicle thresholds)	>300m	5
	251-300m	3
	201-250m	2
	<200m	0



Criteria /Justification	Category	Score	
Demand			
Vehicle pedestrian cross product (based on 8 hour counts) (Higher cross product associated with decreased crossing opportunities)	>300,000	40	
	200,000 - 299,999	35	
	100,000 - 199,999	30	
	60,000 - 99,999	25	
	40,000 - 59,999	20	
	30,000 - 39,999	15	
	20,000 - 29,999	10	
	10,000 – 19,999	5	
	0 – 9,999	0	
Safety			
Pedestrian Collision History (Past history of pedestrian collisions suggests unsafe conditions at location)	≥1 collision	5	
Road Class (Higher road classification suggest fewer crossing opportunities)	Collector	3	
	Local	1	
85th percentile speed (Higher operating speeds associated with decreased safety/crossing opportunities)	>50 km/h	5	
	40 km/h – 50 km/h	3	
	<40 km/h	1	



Policy Name:Community Safety Zone PolicyPolicy Owner:Infrastructure and Engineering Services DepartmentApproved by:CouncilEffective Date:March 27<sup>th</sup>, 2024Date of Last Revision:November, 2006Review Date:Every 5 YearsPolicy Status:Revision

#### **PURPOSE:**

To establish a policy to assess and implement Community Safety Zones within the City of Richmond Hill.

### **POLICY PRINCIPLES:**

This policy will provide a consistent process of assessing, justifying and implementing Community Safety Zones within the City of Richmond Hill in accordance with Ontario Traffic Manual (OTM) Book 5 and the Highway Traffic Act (HTA).

#### **DEFINITIONS:**

85<sup>th</sup> Percentile Speed: it is the speed which 85 percent of vehicles are travelling at or below.

Average Annual Daily Traffic (AADT): the mean traffic volume across all days for a year for a given location along a roadway.

**Collision:** contact resulting from the motion of a motor vehicle (as defined in the Highway Traffic Act) that produces property damage, injury or death. The term collision indicates that the initial point of contact involves at least one motor vehicle.

**Community Safety Zone (CSZ):** an area designated through a by-law passed by a municipal council to identify it as a road segment of higher risk or concern.

**Vulnerable Road User (VRU):** road users who are most at risk of being seriously injured or killed when they are involved in a motor-vehicle-related collision. VRU include pedestrians, cyclists, mobility device users and motorcyclists.

#### SCOPE:

This policy shall be used by City staff to identify and assess locations where a Community Safety Zone designation is warranted to be implemented within the boundaries of the City.

### POLICY

Community Safety Zones are to be installed along parts of a roadway where public safety is of special concern to the community. Certain Highway Traffic Act fines are doubled in Community Safety Zones. Staff shall utilize the process identified in **Error! Reference source not found.** when a Community Safety Zone (CSZ) is requested or potentially identified in network screening.



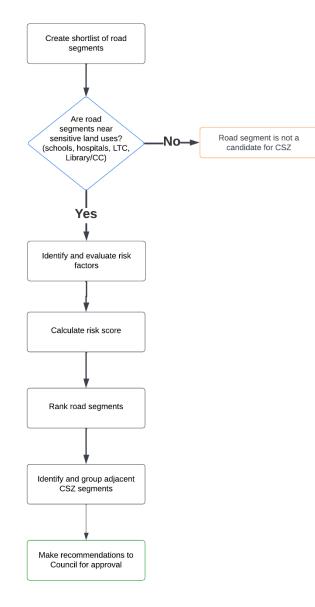


Figure 1 - CSZ Review Flowchart



### **Community Safety Zone Warrant**

The CSZ warrant is comprised of 2 two major components.

### Warrant 1 - Designated Area of Special Concern

Community Safety Zones must only be installed/implemented on City of Richmond Hill rights-of-way at the following locations:

- Schools (elementary or secondary);
- Libraries and Community Centres;
- Senior's centres and residences;
- Hospitals;
- Playgrounds and parks;
- Neighbourhoods with cut-through traffic;
- Roadways with bike facilities (e.g., bike lanes, multi-use paths); and
- Other public locations deemed appropriate by Staff with high a volume of vulnerable road users.

The proposed CSZ must have a minimum length of 0.5km depending on the area of special concern.

### Warrant 2 – Safety Warrant

The Safety Warrant comprises of a list of eight (8) risk factors that shall be key in determining whether a candidate site shall be designated as a CSZ. Risk factors are assessed using a scoring system, classifying them as 'high', 'medium', or 'low' with corresponding scores of 3,2,1. **The minimum score required to meet the threshold is 17.** 

The risk factors are as follows:

- Annual Average Daily Traffic (AADT);
- Number of Lanes;
- Presence of Sidewalks;
- Truck Volume (%);
- Number of Bus Stops per KM;
- Land Use/Density;
- 85<sup>th</sup> Percentile Speed Minus Posted Speed; and
- Total Vulnerable Road User Collisions.

The Safety Warrant matrix is shown in Table 4.

Richmond Hill

#### Table 4 – Safety Warrant Matrix

	Risk Factor Scoring			
Risk Factor	High (Score 3)	Moderate (Score 2)	Low (Score 1)	Score
AADT	>6,000	3,000 to 6,000	<3,000	
Number of Lanes	>4	3 to 4	< 2	
			Both	
Presence of Sidewalks	None	One Side	Sides	
Truck Volume (%)	>5%	3% to 5%	<3%	
Number of Bus Stops Per Km	>4	2 to 4	<2	
Land Use/Density	High	Moderate	Low	
85th %'tile minus posted speed (km/h)	>10	0-10	<0	
Total VRU Collisions	>2	1 to 2	0	
			Total Score	/24

#### **Right-of-way Fronting on Schools Accesses**

All right-of-way fronting on an Elementary or Secondary School access will be automatically designated a CSZ without having to complete the warrant.

#### Community Safety Zone Screening

Staff shall undertake network-wide Community Safety Zone Screening every 5 years.

#### Final Approval and Designation of a Community Safety Zone

After determining if a candidate location is suitable for CSZ implementation using the two warrants, the designation of a CSZ needs to be approved by Council and supported and endorsed by York Regional Police for enforcement.

#### Implementation Guidelines for a Community Safety Zone

All designated CSZs within the City of Richmond Hill shall meet the following requirements:

- I. CSZs should only be implemented for areas designated as special concern for the community;
- II. Each by-law establishing a CSZ must specify that the designation is in effect for 24 hours a day and 7 days a week to assist the police with enforcement;
- III. Adjacent Zones which are warranted shall be combined to create one continuous zone;
- IV. Identification and recommendations for adopting new CSZs within the City require direct input from Municipal Council, York Regional Police, School Boards, local ratepayers associations or community policing committees, the City's staff experience and reports which are supported by appropriate field studies;

Polic



V. CSZs must always be used in conjunction with other traffic safety mitigating measures and police enforcement;

Policy

- VI. The effectiveness of CSZs will require the proper signing of the designated CSZ, public education and active police enforcement; and
- VII. For zones equal to 500 metres in length, three (3) CSZ signs are required per travel direction: a CSZ sign including a "begins" tab, a CSZ sign with an "ends" tab, plus an additional CSZ sign placed within/between the zone's start and endpoints. The spacing of additional CSZ signs for larger zones with a speed limit of 60 km/h or less shall be 300 metres or less.

## **ROLES AND RESPONSIBILITIES:**

Members of Council

- Shall review and approve the Community Safety Zone Policy.
- Shall review and approve the locations of Community Safety Zones for implementation recommended by City Staff.

Senior Management Team

- Shall review and approve any changes to the Community Safety Zone Policy prior to recommendation to Council.
- Shall review and approve prioritization of Community Safety Zones through the capital planning process.

Staff

- Shall follow the Community Safety Zones Policy and ensure compliance with the Highway Traffic Act.
- Shall ensure priority locations are brought forward in the capital plan on an annual basis.

#### **RELATED DOCUMENTS:**

Highway Traffic Act



Policy Name: Policy Owner: Approved by: Effective Date: Date of Last Revision: Review Date: Policy Status: Crossing Guard Policy and Procedure Infrastructure & Engineering Services Council March 27, 2024 March 27, 2024 Every 5 Years Revision

# **PURPOSE:**

To establish a policy to evaluate and assess the implementation, removal or reallocation of Crossing Guards in the proximity of school boundaries within the City of Richmond Hill, in accordance with the Ontario Traffic Council (OTC) School Crossing Guard Guide and the Highway Traffic Act.

# **POLICY PRINCIPLES:**

This policy contributes to enhancing community well-being by encouraging children's active and safe school travel, with a consistent evaluation process applied throughout the City of Richmond Hill.

## **DEFINITIONS:**

**Assisted Pedestrian:** Children under the age of 12, senior citizens, disabled pedestrians and other pedestrians requiring special consideration or assistance are considered "assisted" pedestrians.

**Controlled Crossings:** Traffic signals, Intersection Pedestrian Signals (IPS), Midblock Pedestrian Signals (MPS), Pedestrian Crossover (PXO), Stop sign, Yield sign, School Crossing when a school crossing guard is supervising.

**Exposure Index (EI):** A warrant methodology that 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 SCG locations. The graph is then used as the threshold for future crossing locations where a SCG may be required. The EI methodology is suitable for controlled crossing facilities that have conflicting movements between vehicular and student volumes.

**Gap Study:** An objective process using site observations to establish the safe gap threshold for pedestrians to cross a roadway, and measuring the available gaps along the roadway to determine if there is a sufficient number of safe gaps.

**Intersection Pedestrian Signal (IPS):** Traffic control signals installed at intersections that are dedicated to providing controlled crossing opportunities for pedestrians.

**Leading Pedestrian Interval (LPI):** implemented at signalized intersections. LPI provides pedestrians the opportunity to enter the crosswalk before vehicles have priority to turn left or right.

**Pedestrian Crossover (PXO):** any portion of a roadway indicated for pedestrian crossing by signs on the highway and lines or other markings on the surface of the roadway as prescribed on the Highway Traffic Act (HTA).



**Stopping Sight Distance:** The distance required by a driver of a vehicle, travelling at a given speed, to bring the vehicle to a stop after an object on the roadway becomes visible.

**Traffic Control Device:** Any sign, signal, marking or device placed upon, over or adjacent to a roadway by a public authority or official having jurisdiction, for the purpose of regulating, warning, guiding or informing road users.

**Unassisted Pedestrian:** Adults and adolescents at or above the age of 12 are considered "unassisted" pedestrians.

**Uncontrolled Crossings:** Midblock Crossings (without MPS or PXO), Designated School Crossing (in the absence a school crossing guard and without other forms of control such as TCS, IPS, MPS, PXO, Stop signs or Yield signs), Marked Crossing (at an intersection in the absence of Stop or Yield signs).

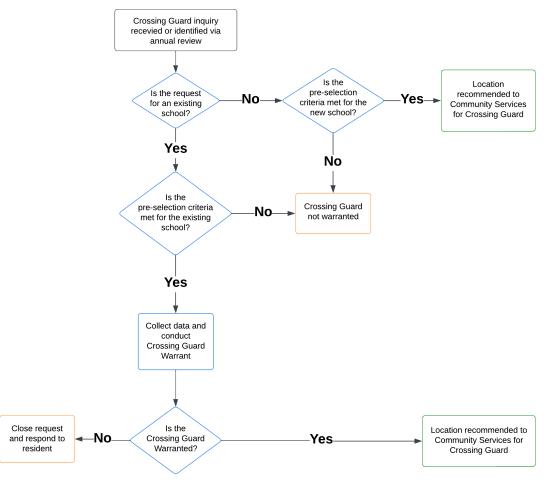
## SCOPE:

This policy will be used by City staff to identify the need of a School Crossing Guard, as well as the most appropriate location.

# POLICY

Staff shall utilize the process identified in **Figure 1** when reviewing a request for a School Crossing Guard at an existing or new school.





Existing locations will be reviewed annually to confirm the need for the continued use of crossing guards.

Figure 1 – School Crossing Guard Review Flowchart

# **Pre-Selection Criteria and Minimum Thresholds**

City staff shall include locations for consideration of crossing guards only where:

- The associated school is intended for students between Junior Kindergarten and Grade 8 (i.e., up to elementary school);
- The requested location is within the walking boundary or within 1.5 km of the school;
- Daily traffic volumes are less than 8,000;
- There is no more than one lane of travel in each direction (on the free flow approach);
- The location is greater than 200 metres from another traffic control device (if free flow);
- There are a minimum of 20 assisted and unassisted elementary school children crossing at the candidate location over the school peak periods; and
- There are adequate sightlines (stopping sight distance according to the 2017 TAC Geometric Design Guide for Canadian Roads).



Policy

Locations with a minimum of 40 assisted and unassisted pedestrians per intersection/midblock automatically qualify for a crossing guard regardless of traffic control type.

#### Warrant

To complete the School Crossing Guard warrant, City staff shall use the 2017 Ontario Traffic Council School Crossing Guard warrant, using either the Exposure Index method (for controlled crossings) or the Gap Study method (for uncontrolled crossings). If using the Exposure Index method the cross product of the peak hour vehicular volume and the peak hour pedestrian volume must exceed the following values (and as shown in **Figure 2**):

- 5,500 at signalized intersections
- 6,700 at all-way stop controlled intersections
- 4,000 at side street stop-controlled intersections

As new data is collected by the City, Staff shall revise these thresholds periodically in accordance with the OTC School Crossing Guard Guide.

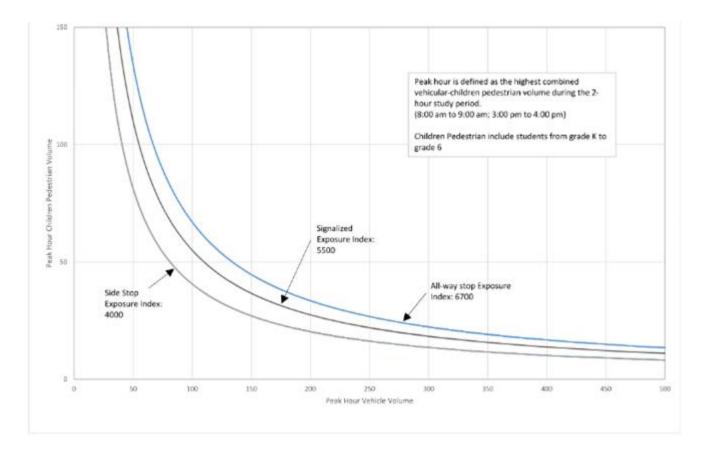


Figure 2 – Exposure Index Curves



Policy

For uncontrolled crossings, the Safe Gap Time methodology shall be used based on average perception and reaction time (P), width of the roadway (W), average walking speed of students (S), a group factor (T) and the predominant group size (N).

School Crossing and Crossing Ahead signs at mid-block locations or at Stop-controlled intersections on the major road (free-flow) approach. At approaches that are stop-controlled and where a crossing guard is assigned, School Crossing and School Crossing Ahead signs shall not be provided. However, the following will be implemented at the intersection:

- High visibility ('ladder') crosswalk markings on all approaches; and
- Oversize STOP signs.

Existing locations shall be reviewed to ensure conformance to this practice.

# **Signal Controlled Crossings**

When considering a school crossing guard at a signal-controlled crossing, in addition to exceeding the applicable exposure index threshold, at least two of the following criteria must be observed:

- The road where the intersection is located leads to a main arterial or collector and there is a substantial volume of trucks and other large vehicles using the intersection, potentially affecting visibility for both pedestrians and drivers;
- Poor driver behaviour, such as not yielding the right of way to pedestrians, not coming to a complete stop prior to turning on a red signal, drivers inching forward thus intimidating pedestrians on or about to cross the roadway;
- The students appear timid in crossing the roadway or do not seem to be properly trained on how to cross the road safely (e.g., forgetting to push the pedestrian pushbutton if one is present, or entering the roadway after the Flashing Don't Walk indication appears).

Where a school is located adjacent to a signalized intersection, the following treatments shall be considered in conjunction with a crossing guard:

- Implementing Leading Pedestrian Intervals;
- Prohibiting right turns on red;
- Extending the pedestrian walk time; and/or
- Ensuring that pedestrian countdown and information signs are installed at the intersection.

Where a crossing guard is being considered at a signalized intersection that is operated by York region, staff shall request that York Region consider the implementation of these measures.

# **Supplementary and Alternative Treatments**

Before considering a crossing guard at a warranted location, City staff shall complete a site assessment to ensure:

- a) That any existing deficiencies (geometry, signage, pavement markings, etc.) are corrected;
- b) Whether alternative treatments, such as permanent traffic controls, visibility improvements, etc. can mitigate the concerns that originated the request for a crossing guard; and



c) The suitability of the location for a crossing guard, reviewing roadway elements such as sightlines and the condition of the pedestrian crossing facilities and related traffic control devices.

Enhanced training shall be provided to crossing guards assigned to locations where there are other types of traffic control (signals, STOP signs, PXOs, roundabouts) and School Crossing and School Crossing Ahead signs are no longer provided. As part of their training, all crossing guards shall be made aware of how to report aggressive driving and/or non-compliance with the crossing guard directions using York Regional Police's Road Watch program.

# New Schools and Annual Reviews

At all new schools, crossing guards shall be implemented for a full school year at locations meeting the City's pre-selection criteria. Following the first full school year the school crossing guard will remain if the location:

- Meets the minimum threshold of 20 assisted and unassisted elementary school children over the school peak periods; and
- Meets the minimum threshold for the Exposure Index (for controlled crossings) or the Safe Gap Time warrants (for uncontrolled crossings); or
- Meets the minimum threshold of 40 assisted and unassisted elementary school children over the school peak periods to automatically qualify.

# **Prioritization of Crossing Guards**

In the event of crossing guard staffing shortages, warranted locations will be prioritized by the following (Priority 1 being the highest and Priority 4 being the lowest):

- Priority 1: Mid-block crossings;
- Priority 2: Minor-road stop control or no stop-sign on the supervised approach;
- Priority 3: All-way Stop Control; and
- Priority 4: Signalized crossing.

#### **Discontinuation of Crossing Guards at Existing Locations**

Staff shall conduct an annual review of existing locations using the warrant outlined in this policy to confirm if the continued use of crossing guards is warranted. Crossing guards will be discontinued at locations not meeting the warrant requirements.

# **ROLES AND RESPONSIBILITIES:**

Members of Council

Shall approve the Crossing Guard Policy

Senior Management Team





• Shall review and approve any changes to the School Crossing Guard Policy prior to recommendation to Council.

Staff

• Shall follow the Crossing Guard Policy and the best practices in the Ontario Traffic Council's School Crossing Guard Guide.

# **RELATED DOCUMENTS:**

- Highway Traffic Act
- Site Inspection Sheet
- Ontario Traffic Council School Crossing Guard Guide

Appendix A – Gap Study Field Sheet

Appendix B – School Crossing Guard Warrant Inspection Form



# Appendix A – Gap Study Field Sheet

School Crossing - Site Inspection Report					
ER	Observed By:				
SERV	Date of Inspection: Time:				
OBSI	Weather Conditions:				
	Location:				
SITE	Name of School(s):				
	Type of Crossing: 4-way intersection 3-way intersection midblock				
	Type of Control:       No control       Traffic Signal       IPS         All-way Stop       Stop Sign       Yield sign				
	Posted Speed Limit:				
	Road Classification: Local Collector Arterial				
	School Zone Sign (Y/N):				
	Northbound approach       Eastbound approach         Southbound approach       Westbound approach				
	School Crossing Ahead Sign (Y/N):				
	Northbound approach Eastbound approach Southbound approach Westbound approach				
	School Crossing Sign (Y/N):				
OBSERVATIONS	Northbound approach   Southbound approach   Westbound approach				
	Sight Obstrucions on: NE corner due to SE corner due to NW corner due to SW corner due to				
	Cross Section: 2-lane 4-lane				
	Roadway geometry (i.e., grades, curves):				
	Crosswalk Length (m): Curb to Curb: Curb to Median:				



	Sidewalks: None South West	
	North East	
SNG	Proximity to School: In front of Within m Other Site Observations:	
OBSERVATIONS	Other Site Observations:	
OBSE		
SKETCH		Å



# Appendix B – School Crossing Guard Warrant Inspection Form

	GAP ANALYSIS FORM (MORNING)			
Location:				
School:	School:			
Date:				
TIME	GAPS OVER 4 SECONDS (s)	<b># OF STUDENTS</b>	COMMENTS	
7:30 - 7:35				
7:35 - 7:40				
7:40 - 7:45				
7:45 - 7:50				
7:50 - 7:55				
7:55 - 8:00				
8:00 - 8:05				
8:05 - 8:10				
8:10 - 8:15				
8:15 - 8:20				
8:20 - 8:25				
8:25 - 8:30				
8:30 - 8:35				
8:35 - 8:40				
8:40 - 8:45				
8:45 - 8:50				
8:50 - 8:55				
8:55 - 9:00				
9:00 - 9:05				

Richmond Hill

GAP ANALYSIS FORM (MIDDAY)			
Location:			
School:			
Date:			
TIME	GAPS OVER 4 SECONDS (s)	<b># OF STUDENTS</b>	COMMENTS
11:10 - 11:15			
11:15 - 11:20			
11:20 - 11:25			
11:25 - 11:30			
11:30 - 11:35			
11:35 - 11:40			
11:40 - 11:45			
11:45 - 11:50			
11:50 - 11:55			
11:55 - 12:00			
12:00 - 12:05			
12:05 - 12:10			
12:10 - 12:15			
12:15 - 12:20			
12:20 - 12:25			
12:25 - 12:30			
12:30 - 12:35			
12:35 - 12:40			
12:40 - 12:45			
12:45 - 12:50			
12:50 - 12:55			
12:55 - 1:00			
1:00 - 1:05			

Richmond Hill

GAP ANALYSIS FORM (AFTERNOON)				
Location:	Location:			
School:				
Date:	Date:			
TIME	GAPS OVER 4 SECONDS (s)	<b># OF STUDENTS</b>	COMMENTS	
2:30 - 2:35				
2:35 - 2:40				
2:40 - 2:45				
2:45 - 2:50				
2:50 - 2:55				
2:55 - 3:00				
3:00 - 3:05				
3:05 - 3:10				
3:10 - 3:15				
3:15 - 3:20				
3:20 - 3:25				
3:25 - 3:30				
3:30 - 3:35				
3:35 - 3:40				
3:40 - 3:45				
3:45 - 3:50				
3:50 - 3:55				
3:55 - 4:00				





Policy Name:All-Way Stop Control PolicyPolicy Owner:Infrastructure and Engineering Services DepartmentApproved by:CouncilEffective Date:March 27<sup>th</sup>, 2024Date of Last Revision:March 27<sup>th</sup>, 2024Review Date:Every 5 YearsPolicy Status:New

#### **PURPOSE:**

To establish a policy to assess and implement All-Way Stop Control within the City of Richmond Hill.

#### **POLICY PRINCIPLES:**

All-way stops are installed as a means of ensuring the safe flow of traffic by controlling vehicle and pedestrian right-of-way at intersections. This policy identifies the criteria used in determining whether all-way stops are warranted. This policy follows the principles in the Ontario Traffic Manual (OTM) Book 5.

#### **DEFINITIONS:**

**All-Way Stop Control:** an intersection where all approaches are controlled with a stop sign and supplemented with an 'All-Way' tab sign.

**Collision:** contact resulting from the motion of a motor vehicle (as defined in the Highway Traffic Act) that produces property damage, injury or death. The term collision indicates that the initial point of contact involves at least one motor vehicle.

**Minor Road Stop Control:** an intersection where the minor approaches are controlled with a stop sign.

**Pedestrian Crossover (PXO):** any portion of a roadway indicated for pedestrian crossing by signs on the highway and lines or other markings on the surface of the roadway as prescribed on the Highway Traffic Act (HTA).

#### SCOPE:

This policy applies to the implementation of All-Way Stop Control on roadways in Richmond Hill.

#### POLICY

Staff shall follow the warrant in Ontario Traffic Manual (OTM) Book 5 when determining if an All-Way Stop Control is required at an intersection. The OTM warrant takes into consideration the following factors:

- Volumes;
- Collisions; and
- Visibility.



If an intersection is warranted for an AWSC, staff shall recommend the intersection to Council for approval and installation.

Policy

# **Increasing Stop Sign Visibility**

If Staff determine stop sign visibility or stop sign compliance is low, Staff shall follow the guidelines in OTM Book 5 when installing the following:

- Stop Ahead Signs;
- Additional Left-hand Side Stop Signs; and
- Oversized stop signs.

Staff shall consider the use of 'Tiger Tail' signs to increase stop sign conspicuity at AWSC in addition to the measures outlined in OTM Book 5.

# Nearly Warranted All-Way Stop Control

At local road intersections within residential neighbourhoods where AWSC is not warranted based on OTM Book 5 criteria, staff may consider installation of an AWSC in the following situations:

- The total vehicle volume on all intersection approaches exceeds 150 vehicles per hour for each of the highest 4 hours of the day; and
- The combined vehicle and pedestrian volume on the minor road exceeds 60 units per hour for each of the same 4 hours as the total volume; and
- A Pedestrian Crossover Level 2 Type D is warranted based on OTM Book 15 criteria, but Allway Stop Control is considered to better match drivers' expectations.

#### OR

- The total vehicle volume on all intersection approaches exceeds 350 vehicles for the highest hour of the day; and
- Intersection capacity analysis for the AM or PM Peak Hours, under existing conditions, indicates a volume-to-capacity ratio exceeding 0.95, Level of Service (LOS) E or worse, or 95th percentile queue in excess of 50 metres for any of the minor road approaches;
  - Alternatively, field observations indicate an average delay in excess of 35 seconds (i.e., LOS E or worse) or 95th percentile queues in excess of 7 vehicles; and
- Intersection capacity analysis for the AM or PM Peak Hours, under AWSC, indicates that major road approaches are not expected to experience volume-to-capacity ratios greater than 0.85, LOS E or worse, or queues that would interfere with adjacent intersections.

# OR

• Anticipated traffic growth in the area is expected to meet OTM Book 5 warranting criteria within the next 3 years.



# Conversion of an All-Way Stop Control to Minor Road Stop Control (MRSC)

The conversion of AWSC to MRSC shall only occur if all the following criteria are met:

- Recent volume data indicates that the location does not meet the OTM Book 5 AWSC Warrant to being warranted for AWSC;
- The highest hourly pedestrian volume is less than 20 pedestrians crossing the major road;
- Intersection sight distances for drivers entering the intersection from the minor road approaches are available, in accordance with TAC Geometric Design Guidelines for Canadian Roads; and
- There is evidence of low compliance with the AWSC on the major road.

## Implementation Considerations

When an existing AWSC is to be removed and a through roadway is created, information regarding the change in right-of-way control must be highlighted using signage (Cross Traffic Does Not Stop) and public notices.

## **ROLES AND RESPONSIBILITIES:**

Members of Council

- Shall review and approve the All-Way Stop Control Policy.
- Shall review and approve the locations of All-Way Stop Control and Minor Road Stop Control for implementation recommended by City Staff.

Senior Management Team

- Shall review and approve any changes to the All-Way Stop Control Policy prior to recommendation to Council.
- Shall review and approve prioritization of All-Way Stop Control through the capital planning process.

Staff

- Shall follow the All-Way Stop Control Policy, and ensure compliance with the Highway Traffic Act, Ontario Traffic Manual Book 5 and Ontario Traffic Manual Book 6.
- Shall ensure priority locations are brought forward in the capital plan on an annual basis.

# **RELATED DOCUMENTS:**

- Highway Traffic Act
- TAC Geometric Guidelines for Canadian Roads
- Ontario Traffic Manual Book 5
- Ontario Traffic Manual Book 6