

Clause embodied in Report No. 12 of the Works Committee, as adopted by the Council of the City of Toronto at its meeting held on July 24, 25 and 26, 2001.

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Pedestrian Crossovers

(City Council on July 24, 25 and 26, 2001, adopted this Clause, without amendment.)

The Works Committee recommends that the Province of Ontario be requested to consider amending Section 140 of the Highway Traffic Act of Ontario to provide the option for the use of red flashing beacons to replace yellow flashing beacons at particular high-traffic pedestrian crossover locations where speed is an issue.

The Works Committee reports, for the information of Council, having requested the Commissioner of Works and Emergency Services to submit a further report to the Committee with a breakdown of the number of pedestrian crossovers that are on the different categories of roadways, and on staff's assessment of replacing pedestrian crossovers with pedestrian activated traffic signals over a staged process, with arterial roads first, including costs for such conversion.

The Works Committee submits the following report (June 19, 2001) from the Commissioner of Works and Emergency Services:

Purpose:

To respond to a request from Works Committee to report on the design of pedestrian crossovers within the City of Toronto.

Financial Implications and Impact Statement:

There are no financial implications associated with the receipt of this report.

Recommendation:

It is recommended that this report be received for information.

Background:

At its meeting of February 7, 2001, the Works Committee, while considering the item "School Crossing Zones", requested the Commissioner of Works and Emergency Services to "examine improving pedestrian crossover signs to determine whether a more effective colour could be introduced, in particular the colour red" (Clause No. (13)(t) of Report No. 2 of The Works Committee).

Comments:

Following is a brief discussion of the purpose, design, criteria for installation, uniformity, and current usefulness of pedestrian crossovers in the City of Toronto.

Responsibilities and Purpose:

The responsibilities of motorists and pedestrians at pedestrian crossovers are defined in Section 140 of the Highway Traffic Act of Ontario. This existing legislation requires that a motorist yield to a pedestrian in a crossover only when the pedestrian is upon the half of the road upon which the vehicle is travelling or when the vehicle is close enough to endanger the pedestrian. Also, a pedestrian is required not to leave the curb or other place of safety at a pedestrian crossover and move into the path of a vehicle that is so close that it is impracticable for the driver of the vehicle to yield the right of way.

With the existing pedestrian crossover operation, there is a dual responsibility for safety that is shared by the pedestrian and motorist. The presence of a pedestrian is what triggers the motorist's requirement to yield, and the pedestrian must ensure that he/she has been seen by the motorist before proceeding across the road. From the inception of the pedestrian crossover in Toronto, it has been felt that this principle should be retained. Also, the original objective of pedestrian crossovers was to provide a reasonable economical, efficient, and safe means of permitting pedestrians to cross streets where gaps in traffic would not otherwise permit crossings without unreasonable delays, and where traffic control signals could not be justified. By requiring vehicles to yield to crossing pedestrians and by minimising the delays to traffic, these objectives are addressed in the current pedestrian legislation.

Flashing Red vs. Flashing Amber:

The design of pedestrian crossovers in Ontario is prescribed in the Highway Traffic Act, Regulation 615, Section 20, and the Manual of Uniform Traffic Control Devices for Ontario, Part A, Division 6. This design consists of overhead illuminated signs with flashing beacons, regulatory signs at and approaching the crossover and pavement markings on the roadway. The flashing amber beacons are to be installed such that two flashing amber beacons face each direction of travel. When activated by a pedestrian pushing the button provided, they flash alternately for a sufficient length of time to permit the pedestrian to cross the road. In Toronto this system is referred to as the "Early Warning System".

The Ministry of Transportation developed the Provincial standards in conjunction with the Ontario Traffic Conference and the municipalities of Ontario. The development of a standard was undertaken to address uniformity in pedestrian crossover operations throughout the Province. The use of flashing beacons, and the most appropriate colour for them, was examined in detail.

It was considered important that the principle of dual responsibility for safety by both the pedestrian and driver be retained with the new standard. Therefore the function of the flashing beacons is to serve as ancillary warning devices. They provide reinforcement of the "look and point" concept for pedestrians to indicate their desire to cross. Also, they provide a warning to

drivers that a pedestrian may be using the crossover, especially in situations when the driver's visibility may be partially obstructed.

The standard colour used to indicate a warning is yellow, or amber. In the Manual of Uniform Traffic Control Devices of Ontario, yellow warning signs are used to convey conditions that are potentially dangerous and require extra caution by drivers. Also, an amber light is used in a traffic signal control system to forewarn drivers of the upcoming stop condition. The red colour is used as a signal to drivers to stop. In many cases, a red flashing beacon is used to supplement a stop sign. If red beacons were used on pedestrian crossovers, all vehicles would be required to stop for the entire duration of the red flashing beacon. As discussed earlier, this would be inconsistent with the basic principles of pedestrian crossovers as an intermediate device to assist pedestrians with minimal delays to traffic.

It was felt that if conditions were such that a pedestrian crossover would not be effective, and more positive control is required, a traffic control signal should be considered. The possibility of creating an additional option was rejected in order to minimise the variety of control devices with which motorists and pedestrians would have to cope in an urban environment.

Warrants and Criteria:

The Manual of Uniform Traffic Control Devices for Ontario, Part A, Division 6, also sets out the warrant and installation criteria for determining if the installation of a pedestrian crossover is an appropriate solution to a particular pedestrian crossing demand.

Appendix 1 contains an excerpt from Section A 6.10 Installation Criteria which describes the conditions which should be considered when determining whether a pedestrian crossover is appropriate for a particular location. In summary, these "environmental" conditions include the operating speed of motorists on the main roadway, the number of lanes to cross, the traffic volumes on the main roadway, visibility for pedestrians and motorists, amount of turning traffic, proximity of loading zones, accommodation for a pedestrian standing area, spacing to adjacent traffic control devices and locations of driveways or entrances.

Appendix 2 contains the graphs used to determine whether the pedestrian crossing conditions warrant the installation of a pedestrian crossover. Essentially, pedestrian crossing activity is recorded over eight hours of a typical day within the area that would be served by a pedestrian crossover. Pedestrians are classified as assisted children, unassisted children, youths and adults, seniors, and the disabled. The pedestrian volumes are adjusted by multiplying the unassisted children, seniors and disabled persons by a factor of two. The delay to each pedestrian while crossing is recorded as less than 10 seconds or greater than 10 seconds. Also, the vehicular volume over 12 hours is recorded. The Volume Warrant is determined by comparing the actual pedestrian volume with the required pedestrian volume as per the Volume Warrant Graph. The Pedestrian Delay Warrant is determined by comparing the actual number of pedestrian delays greater than 10 seconds with the required number of pedestrian delays greater than 10 seconds as per the Pedestrian Delay Warrant Graph. Both the Volume Warrant and Pedestrian Delay Warrant must be at least 100 percent met for the installation of a pedestrian crossover to be justified.

Harmonization:

Since the design and operation of pedestrian crossovers is a Provincial standard, all of the former municipalities used a consistent evaluation procedure. Also, all of the pedestrian crossovers within the City of Toronto conform with a standard design. Within the City of Toronto, there are currently 617 pedestrian crossovers in operation.

Usefulness:

On many major arterial roads within the City of Toronto, pedestrian crossovers are not appropriate because of one or more of the “environmental” conditions referred to in the previous section and detailed in Appendix 1. Most notably, vehicle speeds and volumes are too high, and the roadway is more than four lanes wide. The trend has been to install traffic control signals on major arterial roads rather than pedestrian crossovers.

However, pedestrian crossovers are still a useful traffic control device where conditions are appropriate. On minor arterials, collector roadways and local streets with lower traffic volumes and operating speeds, four lanes wide or less, they are an effective means to assist pedestrians to safely cross the roadway without causing undue impact to traffic movements. Also, the cost of installation and operation of a pedestrian crossover is significantly less than the cost of installing and operating traffic control signals.

In 1991 to 1993, the Municipality of Metropolitan Toronto conducted an ‘audit’ of the operational and physical suitability of the pedestrian crossovers on the major arterial roadways. The purpose of this ‘audit’ was to determine whether the pedestrian crossover was still appropriate or whether conditions had changed to the extent that modifications were required or the pedestrian crossover should be removed or replaced with a more appropriate device. At that time, there were 159 pedestrian crossovers on the Metropolitan Roadways. As a result of this review, 19 pedestrian crossovers were replaced with traffic control signals, 26 were replaced with a Split Operation pedestrian crossover, two were replaced with pedestrian refuge islands, five were removed, 19 had recommendations relating to the crossover operation or surrounding regulations, and 88 had no changes made.

No formal ‘audits’ of physical and operational suitability have been conducted on the pedestrian crossovers on the minor arterials, collectors, and local roadways that are now part of the amalgamated City of Toronto. However, this type of review is regularly conducted whenever there is any concern about the operation or safety of a pedestrian crossover at a particular location.

Conclusions:

When installed under suitable conditions, pedestrian crossovers are an effective means to safely assist pedestrians to cross a roadway without causing undue impacts to traffic movements. The design and installation criteria are a Provincial standard which is set out within the regulations of the Highway Traffic Act and the Manual of Uniform Traffic Control Devices for Ontario.

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List of Attachments:

Appendix 1- Pedestrian Crossover Installation criteria
Appendix 2 – Volume Warrant Graph, Figure 6-3
Appendix 3 – Pedestrian Delay Warrant Graph, Figure 6-4

Attachment 1

Pedestrian Crossover Installation Criteria

“The following conditions should be considered when assessing a location for the installation of a Pedestrian Crossover:

- (1) Careful consideration should be given to the operating speed (85th percentile) which should not exceed 60 km/h. Pedestrian Crossovers are prohibited through legislation on roadways with a posted speed of greater than 60 km/h. Posted speed limits should not be artificially lowered to 60 km/h only to accommodate the installation of Pedestrian Crossovers.
- (2) Pedestrian Crossovers should not be installed on highways with divided roadways.
- (3) Pedestrian Crossovers should not be installed on highways of greater than four lanes with two-way traffic.
- (4) Pedestrian Crossovers should not be installed on highways of greater than three lanes with one-way traffic.
- (5) Pedestrian Crossovers should not be installed on highways which have a traffic volume greater than 35,000 AADT.
- (6) No visibility problems should exist for either the pedestrian or the motorist due to horizontal or vertical roadway alignment, utility poles, sign posts, parked vehicles, offset intersections or roadside distractions.
- (7) There should be no heavy volumes of traffic turning across the Pedestrian Crossover.
- (8) A safe sight distance can be maintained through stopping prohibitions. A Pedestrian Crossover should not be located where such a prohibition encroaches on a loading zone or other area considered essential for stopping or parking.

- (9) A pedestrian standing area shall be provided on the approaches to the crossing. It may be provided by sidewalks. The pedestrian standing area should have adequate street lighting for night-time visibility.
- (10) The Pedestrian Crossover shall be greater than 215 metres from another crossover, traffic signals, flashing amber light or school crossing. It shall not be located at intersections where the approach over which the Pedestrian Crossover is to be installed is controlled by a "Stop" sign, and shall not be located near a driveway or entrance.
- (11) It shall be installed only where pedestrian volumes are not large and constant interruption of vehicular traffic is not likely to occur. Otherwise, another form of traffic control should be considered such as traffic control signals with pedestrian actuation.
- (12) In a municipality where there are no existing Pedestrian Crossovers, it is difficult to achieve the necessary public awareness for safe operation. Therefore, the use of Pedestrian Crossovers should only be initiated with a sufficient number of locations to ensure that the majority of motorists in the area become familiar with Pedestrian Crossover operations."

"Manual of Uniform Traffic Control Devices, Part A Division 6 – Pedestrian Crossovers",
Ministry of Transportation of Ontario, January 1995.

The following persons appeared before the Works Committee in connection with the foregoing matter:

- Ms. Lois James; and
- Ms. Rhona Swarbrick, Chair, Toronto Pedestrian Committee.

(Appendices 2 and 3 to the foregoing report were forwarded to all Members of Council with the agenda for the Works Committee meeting of July 4, 2001, and copies thereof are on file in the office of the City Clerk, City Hall.)