

B5 OTHER TRAFFIC CONTROL SIGNALS

The description of other traffic control signals is organized as follows:

- Section B5.1 General considerations for other traffic signals
- Section B5.2 Traffic control signals at pedestrian crossings
- Section B5.3 Traffic control signals at railway crossings
- Section B5.4 Traffic control signals at fire truck entrances
- Section B5.5 Traffic control signals at opening bridges
- Section B5.6 Lane control signals
- Section B5.7 Flashing beacons

B5.1 GENERAL CONSIDERATIONS FOR OTHER TRAFFIC SIGNALS

This section includes a variety of traffic control devices that are based on the operating characteristics of traffic control signals. These devices include traffic control signals at pedestrian crossings, at railway crossings, at fire truck entrances, and at opening bridges, as well as lane control signals and flashing beacons.

There are traffic control signs that use Flashing Amber Ball signal indications to call attention to these devices. The Prepare to Stop and the Prepare to Stop at Railway Crossing warning devices are described in Subsections A3.6.5 and A3.6.6.

The use of Flashing Amber Beacons with Special Crosswalks is described in Section A6.6.

B5.2 TRAFFIC CONTROL SIGNALS AT PEDESTRIAN CROSSINGS

The pedestrian signal installation comprises standard pedestrian-activated traffic control signals facing drivers on the major road, and stop signs facing minor street drivers. Pedestrians crossing the major road face standard Walking Person, Flashing Hand and Steady Hand indications. Standard pedestrian signal lenses are shown in Figure B3-9B.

This installation may also be provided at mid-block pedestrian crossings.

Details of a typical pedestrian signal installation, at an intersection including pavement markings and signing, are illustrated in Figure A6-2.

Accessible Pedestrian Signals may be used to assist visually-impaired pedestrians as described in Section A6.10.



B5.2.1 Pedestrian Countdown Signals (PCS)

The purpose of Pedestrian Countdown Signals (PCS) is to inform pedestrians of the time remaining to complete the crossing. PCS may be used as an optional device at locations where pedestrian signal heads are installed. For each location or intersection, PCS could be installed at one or more crossings.

B5.2.1.1 Location Conditions

PCS may be considered when the following conditions are met:

- a) The location has a high percentage use by seniors, children, and other mobility challenged pedestrians.

- (i) Areas near hospitals, seniors' housings and complexes.

Based on the length of time required when crossing, mobility challenged individuals such as seniors are the most vulnerable and are most concerned about safety. The presence of PCS may enhance the crossing experience and may increase the sense of security.

- (ii) Areas near schools.

Based on the length of time required when crossing and the ability to judge both speed and distance, children are vulnerable road users. The presence of PCS may enhance the crossing experience and may increase the sense of security. There may be instances where pedestrians near schools and universities increase their speed to attempt to complete the crossing after observing how much time is left in the clearance interval. If this occurs, a public information program in explaining the use of the PCS may be beneficial.

- b) The location has a history of high pedestrian/vehicle conflicts

- (i) Pedestrian/vehicle conflict/collisions.

The presence of the PCS may have a positive effect on the behaviour of pedestrians, by encouraging a quicker pace in response to the display, which may result in a reduced number of conflicts between pedestrians and vehicular traffic. PCS may also deter some pedestrians from beginning their crossing during the latter part of the clearance interval, which can also reduce the number of conflicts. The presence of the PCS will warn the pedestrians of the impending signal change and enables them to make better decisions about when to start crossing.

- c) The location generates high pedestrian and/or vehicular traffic.
 - (i) Proximity to pedestrian traffic generator (within 250 metres).

Locations that attract pedestrian traffic include shopping malls, tourist attractions, recreation facilities, medical facilities, etc. PCS may be of benefit at these locations, where pedestrian activity is high.
 - (ii) Vehicle volume.

The level of pedestrian comfort while crossing is commonly related to the level of vehicle activity at the intersection. Intersections with high vehicle volumes can create a higher level of anxiety for pedestrians. PCS may reduce the anxiety by providing a clear indication of how much time is remaining for the pedestrian to clear the crosswalk.
- ci) Intersection characteristics.
 - (i) Width of crossing (greater than four lanes).

A short Walking Person interval at a wide intersection may intimidate pedestrians for fear of not being able to complete the crossing before cross street traffic begins. With a short Walking Person interval, many pedestrians feel anxious as they may have only partially completed their crossing before the display of the Flashing Hand indication. The additional information may be beneficial in assuring the pedestrians of sufficient crossing times.
 - (ii) Ratio of Walking Person to Flashing Hand Intervals.

The devices are suggested at intersections where the ratio of the minimum Walking Person interval to Flashing Hand interval is 0.4 or less. This ratio assumes that a pedestrian who started crossing at the onset of the Walking Person interval, still has more than 60% of the length of the crosswalk when the clearance phase begins. The Walking Person interval duration used for this part of the evaluation should be the minimum Walking Person interval duration of the daytime period as the Walk interval durations of night-time period could be exceptionally short when there are fewer pedestrians.

B5.2.1.2 Operational Details

The display of the number of remaining seconds in a typical PCS shall begin only at the beginning of the Flashing Hand interval. After the countdown has terminated, the display shall remain dark until the beginning of the next countdown. The PCS shall display the number of seconds remaining until the termination of the Flashing Hand interval. Countdown displays during the Walk interval shall not be used.

Under vehicle actuated control, if the vehicle green is extended longer than the Walking Person and Flashing Hand durations, the countdown display will remain dark with the Steady Hand indication for a certain duration until the onset of the next Flashing Hand indication.

If used with a pedestrian signal head that does not have a concurrent vehicular phase, the PCS should display the number of seconds in the pedestrian clearance period (see Section B4.2.2) minus a duration equivalent to the intergreen period (see Section B4.2.1), such that the countdown's zero point is reached some seconds prior to the Green Ball indication being displayed to conflicting vehicular traffic.

B5.2.1.3 Design Standards

These PCS design standards serve two purposes:

- a) To identify desirable design criteria to be used when installing new traffic control signals; and
- b) To identify target design guidelines to work towards upon retrofit of equipment and reconstruction of traffic control infrastructure.

The key design standards that must be considered are:

- a) A PCS shall consist of portland orange numbers that are at least 135 mm in height (220 mm lens height) on a black opaque background. The countdown numbers should preferably be “double stroke” to improve visibility, and provide a certain amount of “fail-safe”.
- b) Where the pedestrian enters the crosswalk more than 30 metres from the PCS display, the numbers should be at least 175 mm in height (300 mm lens height).
- c) A PCS shall be of the “Separate Countdown Housing” configuration. The “Overlap/Countdown Side by Side” configuration and the “Separate Countdown Housing with no Overlap” configuration may be used under retrofit situation. The PCS shall be located immediately adjacent to the associated Walking Person, Flashing Hand and Steady Hand pedestrian signal head indications. The three configurations are illustrated in Figure B5-1.
- d) The Walking Person, Flashing Hand, and Steady Hand indications shall be the same as that of the conventional pedestrian signal and must comply with Section B1.5.4, Section B3.4, and Figure B3-9B.