

Signals No. 3

CHAPTER 4E. PEDESTRIAN CONTROL FEATURES

[Pages 893-905 in NPA Text Comparison Document]

Approved by NCUTCD Council January 12, 2008

The Signals Technical Committee recommended that, other than tabling a new Guidance paragraph in Section 4E.06 proposed in the NPA (noted below) until the June 2008 meeting, the text in Chapter 4E be adopted as listed in the NPA with the changes shown below. Many of the changes included in the NPA are considered editorial. These are so noted.

The National Committee Council approved the STC recommendation. Due to the number of changes throughout Chapter 4E, the entire text is shown.

Note: Changes to the NPA text are shown in yellow highlight. Text in gray highlight provides reference locations in the NPA text comparison document and comments on the STC recommendations.

Section 4E.01 Pedestrian Signal HeadsSupport:

Chapter 4F contains information regarding the use of pedestrian hybrid signals and Chapter 4N contains information regarding the use of In-Roadway Warning Lights at unsignalized marked crosswalks. [STC approves NPA addition on Page 893 - Lines 10-13 with revision for consistency with the title of Chapter 4N (In-Roadway Lights).]

Section 4E.02 Meaning of Pedestrian Signal Head Indications**Standard:**

Pedestrian signal head indications shall have the following meanings:

- A. A steady WALKING PERSON (symbolizing WALK) signal indication means that a pedestrian facing the signal indication is permitted to start to cross the roadway in the direction of the signal indication, possibly in conflict with turning vehicles. The pedestrian shall yield the right-of-way to vehicles lawfully within the intersection at the time that the WALKING PERSON (symbolizing WALK) signal indication is first shown.
- B. A flashing UPRAISED HAND (symbolizing DONT WALK) signal indication means that a pedestrian shall not start to cross the roadway in the direction of the signal indication, but that any pedestrian who has already started to cross on a steady WALKING PERSON (symbolizing WALK) signal indication shall proceed **out-of to the far side of the traveled way of the street or highway, unless otherwise directed by signs or signals a traffic control device to proceed only to the median of a divided highway or only to some other island or pedestrian refuge area.** [STC approves Page 893 - Lines 25-27 with revision] If a countdown pedestrian signal indication is **also** shown, pedestrians shall be permitted to leave the curb **or shoulder** if they are able to travel to the far side of the traveled way or to a median **of sufficient width for pedestrians to wait** by the time **the countdown pedestrian signal displays zero a conflicting vehicular movement is allowed to proceed.** [STC rejects Page 893 – Lines 27-30 and recommends reverting to previously approved NC text. The pedestrian can see the progression of the countdown display and can reasonably be expected to anticipate when the zero will be displayed. The pedestrian will often not be able to anticipate when a conflicting indication will be displayed. There will likely be cases where the pedestrian will not even be able to easily know, except by the approach of oncoming traffic, that a conflicting indication has been displayed.]

- C. A steady UPRaised HAND (symbolizing DONT WALK) signal indication means that a pedestrian shall not enter the roadway in the direction of the signal indication.
- D. A flashing WALKING PERSON (symbolizing WALK) signal indication has no meaning and shall not be used.

Section 4E.03 Application of Pedestrian Signal Heads

Standard:

Pedestrian signal heads shall be used in conjunction with vehicular traffic control signals under any of the following conditions:

- A. If a traffic control signal is justified by an engineering study and meets either Warrant 4, Pedestrian Volume or Warrant 5, School Crossing (see Chapter 4C);
- B. If an exclusive signal phase is provided or made available for pedestrian movements in one or more directions, with all conflicting vehicular movements being stopped;
- C. At an established school crossing at any signalized location; or
- D. Where engineering judgment determines that multiphase signal indications (as with split-phase timing) would tend to confuse or cause conflicts with pedestrians using a crosswalk guided only by vehicular signal indications.

Guidance:

Pedestrian signal heads should be used under any of the following conditions:

- A. If it is necessary to assist pedestrians in deciding when to begin crossing the roadway in the chosen direction or if engineering judgment determines that pedestrian signal heads are justified to minimize vehicle-pedestrian conflicts;
- B. If pedestrians are permitted to cross a portion of a street, such as to or from a median of sufficient width for pedestrians to wait, during a particular interval but are not permitted to cross the remainder of the street during any part of the same interval; and/or
- C. If no vehicular signal indications are visible to pedestrians, or if the vehicular signal indications that are visible to pedestrians starting a crossing provide insufficient guidance for them to decide when to begin crossing the roadway in the chosen direction, such as on one-way streets, at T-intersections, or at multiphase signal operations.

Standard:

When the pedestrian signal heads associated with a crosswalk are displaying either a steady WALKING PERSON (symbolizing WALK) or a flashing UPRaised HAND (symbolizing DONT WALK) signal indication, a steady or a flashing red signal indication shall be shown to any conflicting vehicular movement that is approaching the intersection or midblock location perpendicular or nearly perpendicular to the crosswalk. [STC approves Page 894 - Lines 8-12 with revision.]

Section 4E.04 Size, Design, and Illumination of Pedestrian Signal Head Indications

Standard:

All new pedestrian signal head indications shall be displayed within a rectangular background and shall consist of symbolized messages (see Figure 4E-1), except that existing pedestrian signal head indications with lettered or outline style symbol messages ~~may~~ shall be permitted to [Editorial - STC approves] be retained for the remainder of their useful service life. The symbol designs that are set forth in the “Standard Highway Signs and Markings” book (see Section 1A.11) [Editorial - STC approves] shall be used. Each pedestrian signal head indication shall be independently ~~illuminated~~ displayed [Editorial - STC approves] and emit a single color.

If a two-section pedestrian signal head is used, the UPRaised HAND (symbolizing DONT WALK) signal section shall be mounted directly above ~~or integral with~~ the WALKING PERSON (symbolizing WALK) signal section. If a one-section pedestrian signal head is used, the symbols shall be either overlaid upon each other or arranged side-by-side with the UPRaised HAND symbol to the left of the WALKING PERSON symbol, and a light source that can display each symbol independently shall be used. [STC approves Page 894 - Lines 21-26]

The WALKING PERSON (symbolizing WALK) signal indication shall be white, conforming to the publication entitled “Pedestrian Traffic Control Signal Indications” (see Section 1A.11), with all except the symbol obscured by an opaque material.

The UPRAISED HAND (symbolizing DONT WALK) signal indication shall be Portland orange, conforming to the publication entitled “Pedestrian Traffic Control Signal Indications” (see Section 1A.11), with all except the symbol obscured by an opaque material.

When not illuminated, the WALKING PERSON (symbolizing WALK) and UPRAISED HAND (symbolizing DONT WALK) symbols shall not be readily visible to pedestrians at the far end of the crosswalk that the pedestrian signal head indications control.

For pedestrian signal head indications, the symbols shall be at least 150 mm (6 in) high.

The light source of a flashing UPRAISED HAND (symbolizing DONT WALK) signal indication shall be flashed continuously at a rate of not less than 50 or more than 60 times per minute. The illuminated displayed. [Editorial - STC approves] period of each flash shall be not less than half and not more than two-thirds of the total flash cycle.

Guidance:

Pedestrian signal head indications should be conspicuous and recognizable to pedestrians at all distances from the beginning of the controlled crosswalk to a point 3 m (10 ft) from the end of the controlled crosswalk during both day and night.

For crosswalks where the pedestrian enters the crosswalk more than 30 m (100 ft) from the pedestrian signal head indications, the symbols should be at least 225 mm (9 in) high.

If the pedestrian signal indication is so bright as to cause excessive glare in nighttime conditions, some form of automatic dimming should be used to reduce the brilliance of the signal indication.

[Table this paragraph until June meeting to permit this text to be coordinated with similar text concerning excessive glare in Chapter 4D.]

Option:

An animated eyes symbol may be added to a pedestrian signal head in order to prompt pedestrians to look for vehicles in the intersection during the time that the WALKING PERSON (symbolizing WALK) signal indication is displayed.

Standard:

If used, the animated eyes symbol shall consist of an outline of a pair of white steadily-illuminated eyes with white eyeballs that scan from side to side at a rate of approximately once per second. The animated eyes symbol shall be at least 300 mm (12 in) wide with each eye having a width of at least 125 mm (5 in) and a height of at least 62 mm (2.5 in). The animated eyes symbol shall be illuminated at the start of the walk interval and shall terminate at the end of the walk interval.

Section 4E.05 Location and Height of Pedestrian Signal Heads

Standard:

Pedestrian signal heads shall be mounted with the bottom of the signal housing including brackets not less than 2.1 m (7 ft) or more than 3 m (10 ft) above sidewalk level, and shall be positioned and adjusted to provide maximum visibility at the beginning of the controlled crosswalk.

If pedestrian signal heads are mounted on the same support as vehicular signal heads, there shall be a physical separation between them.

Section 4E.06 Accessible Pedestrian Signals

Support:

The primary technique that pedestrians who have visual disabilities use to cross streets at signalized locations is to initiate their crossing when they hear the traffic in front of them stop and the traffic alongside them begin to move, which often corresponds to the onset of the green interval. The existing environment is often not sufficient to provide the information that pedestrians who have visual disabilities need to cross a roadway at a signalized location.

Guidance:

If a particular signalized location presents difficulties for pedestrians who have visual disabilities to cross the roadway, an engineering study should be conducted that considers the needs of pedestrians in general, as well as the information needs of pedestrians with visual disabilities. The engineering study should consider the following factors:

- A. Potential demand for accessible pedestrian signals;
- B. A request for accessible pedestrian signals;
- C. Traffic volumes during times when pedestrians might be present, including periods of low traffic volumes or high turn-on-red volumes;
- D. The complexity of traffic signal phasing (such as split phases, protected turn phases, leading pedestrian intervals, and exclusive pedestrian phases); and
- E. The complexity of intersection geometry.

Support:

The factors that make crossing at a signalized location difficult for pedestrians who have visual disabilities include: increasingly quiet cars, right turn on red (which masks the beginning of the through phase), continuous right-turn movements, complex signal operations, traffic circles, and wide streets. Furthermore, low traffic volumes might make it difficult for pedestrians who have visual disabilities to discern signal phase changes.

Local organizations, providing support services to pedestrians who have visual and/or hearing disabilities, can often act as important advisors to the traffic engineer when consideration is being given to the installation of devices to assist such pedestrians. Additionally, orientation and mobility specialists or similar staff also might be able to provide a wide range of advice. The U.S. Access Board (www.access-board.gov) provides various techniques for making pedestrian signal information available to persons with visual disabilities (see Page i for the address for the U.S. Access Board).

Accessible pedestrian signals provide information in nonvisual format (such as audible tones, speech messages, and/or vibrating surfaces).

Information regarding detectors for accessible pedestrian signals is found in Section 4E.09.

Standard:

When used, accessible pedestrian signals shall be used in combination with pedestrian signal timing. The information provided by an accessible pedestrian signal shall clearly indicate which pedestrian crossing is served by each device.

Under stop-and-go operation, accessible pedestrian signals shall not be limited in operation by the time of day or day of week.

Support:

Accessible pedestrian signals that are located as close as possible to pedestrians waiting to cross the street provide the clearest and least ambiguous indication of which pedestrian crossing is served by a device. Technology that provides different sounds for each nonconcurrent signal phase has frequently been found to provide ambiguous information.

Research indicates that a rapid tick tone for each crossing on separated poles located close to each crosswalk provides unambiguous information to pedestrians who are blind or visually impaired. Vibrotactile indications provide information to pedestrians who are blind and deaf and are also used by pedestrians who are blind or who have low vision to confirm the walk signal in noisy situations.

Standard:

Accessible pedestrian signals shall have both audible and vibrotactile walk indications.

Accessible pedestrian signals shall have an audible walk indication during the walk interval only. The audible tone(s) shall be audible from the beginning of the associated crosswalk.

Accessible pedestrian signals shall not provide an audible pedestrian change interval indication.

Where two accessible pedestrian signals are separated by a distance of at least 3 m (10 ft), the audible walk indication shall be a percussive tone. Where two accessible pedestrian signals on one corner are not separated by a distance of at least 3 m (10 ft), the audible walk indication shall be a speech message. Audible tone walk indications shall repeat at 8 to 10 ticks per second. Audible tones used as walk indications shall consist of multiple frequencies with a dominant component at 880 Hz. [STC recommends correcting a conflict in current NC-approved wording that was published on Page 896 – Lines 22-24 as a revision in the NPA.]

Vibrotactile walk indications shall be provided by a tactile arrow on the pushbutton that vibrates during the walk interval (see Section 4E.09).

Guidance:

The sound level of audible pedestrian indications should be adjusted to be low enough to avoid misleading pedestrians who have visual disabilities when the following conditions exist:

- A. Where there is an island that allows unsignalized right turns across a crosswalk between the island and the sidewalk.
- B. Where multileg approaches or complex signal phasing require more than two pedestrian phases, such that it might be unclear which crosswalk is served by each audible tone.
- C. At intersections where a diagonal pedestrian crossing is allowed, or where one street receives a WALKING PERSON (symbolizing WALK) signal indication simultaneously with another street.

Support:

A pushbutton locator tone is a repeating sound that informs approaching pedestrians that a pushbutton to actuate pedestrian timing or receive additional information exists, and that enables pedestrians who have visual disabilities to locate the pushbutton (see Section 4E.09).

Standard:

Tones shall be set to be no more than 5 dBA louder than ambient sound except when a louder signal is provided in response to an extended button press. Automatic volume adjustment in response to ambient traffic sound level shall be provided up to a maximum volume of 100 dBA.

The accessible walk signal shall have the same duration as the pedestrian walk signal except when the pedestrian signal rests in walk.

Guidance:

If the pedestrian signal rests in walk, the accessible walk signal should be limited to the first 7 seconds of the walk interval. The accessible walk signal should be recalled by a button press during the walk interval provided that the crossing time remaining is greater than the pedestrian change interval.

Option:

An alert tone, which is a very brief burst of high-frequency sound at the beginning of the audible walk indication that rapidly decays to the frequency of the walk tone, may be used to alert pedestrians to the beginning of the walk interval. An alert tone may be particularly useful if the walk tone is not easily audible in some traffic conditions.

Support:

Speech messages communicate to pedestrians which street has the walk interval. Speech messages might be either directly audible or transmitted, requiring a personal receiver to hear the message. To be a useful system, the words and their meaning must be correctly understood by all users in the context of the street environment where they are used. Because of this, tones are the preferred means of providing audible walk indications.

If speech messages are used, pedestrians have to know the names of the streets that they are crossing in order for the speech walk messages to be unambiguous. In getting directions to travel to a new location, pedestrians who are blind do not always get the name of each street to be crossed. Therefore, it is desirable to give users of accessible pedestrian signals the name of the street controlled by the pushbutton. This can be done by means of a speech pushbutton information message during the flashing or steady don't walk intervals, or by raised print and Braille labels on the pushbutton housing.

By combining the information from the pushbutton message or Braille label, the tactile arrow aligned in the direction of travel on the relevant crosswalk, and the speech walk message, pedestrians with visual disabilities are able to correctly respond to speech walk messages even if there are two pushbuttons on the same pole.

Standard:

If speech messages are used to communicate the pedestrian interval, they shall provide a clear message that the walk interval is in effect, as well as to which crossing it applies. Speech walk messages shall be used only at intersections where it is technically infeasible to install two accessible pedestrian signals at one corner separated by a distance of at least 3 m (10 ft).

Speech messages that are used at intersections having pedestrian phasing that is concurrent with vehicular phasing shall be patterned after the model: "Broadway. Walk sign is on to cross Broadway."

Speech messages that are used at intersections having exclusive pedestrian phasing shall be patterned after the model: "Walk sign is on for all crossings."

Walk interval messages shall not contain any additional information, except they shall include designations such as “Street” or “Avenue” where this information is necessary to avoid ambiguity at a particular location.

Guidance:

Speech messages should not state or imply a command to the pedestrian, such as “Cross Broadway now.” Speech messages should not tell pedestrians that it is “safe to cross,” because it is always the pedestrian’s responsibility to check actual traffic conditions.

Standard:

A speech message is not required at times when the walk interval is not timing, but, if provided:

A. It shall begin with the term “wait.”

B. It need not be repeated for the entire time that the walk interval is not timing.

Support:

Section 4E.09 contains additional information regarding speech pushbutton information messages when the walk interval is not timing.

Option:

Accessible pedestrian signals that provide speech messages may provide similar messages in languages other than English, if needed, except for the terms “walk sign” and “wait.”

Pedestrians may be provided with additional features such as increased crossing time, audible beaconing, or a pushbutton information message as a result of an extended pushbutton press.

Standard:

If an extended pushbutton press is used to provide any additional feature(s), ~~such as audible beaconing~~, [STC approves Page 898 - Line 13] a pushbutton press of less than one second shall actuate only the pedestrian timing and any associated accessible walk signal, and a pushbutton press of one second or more shall actuate the pedestrian timing, any associated accessible walk signal, and any additional feature(s).

Support:

Audible beaconing is the use of an audible signal in such a way that blind pedestrians can home in on the signal from the target corner as they cross the street.

Not all crosswalks at an intersection need audible beaconing; audible beaconing can actually cause confusion if used at all crosswalks at some intersections. Audible beaconing is not appropriate at locations with channelized turns or split phasing, because of the possibility of confusion.

Guidance:

Audible beaconing should only be considered following an engineering study at:

- A. Crosswalks longer than 21 m (70 ft), unless they are divided by a median that has another accessible pedestrian signal with a locator tone;
- B. Crosswalks that are skewed;
- C. Intersections with irregular geometry, such as multiple legs;
- D. Crosswalks where audible beaconing is requested by an individual with visual disabilities; or
- E. Other locations where a study indicates audible beaconing would be beneficial.

Option:

Audible beaconing may be provided in several ways, any of which are initiated by an extended pushbutton press.

Standard:

If audible beaconing is used, the volume of the locator tone during the pedestrian change interval of the called pedestrian phase shall be increased and operated in one of the following ways:

- A. The louder audible walk indication and louder locator tone comes from the target corner, as pedestrians cross the street,**
- B. The louder locator tone comes from both ends of the crosswalk, or**
- C. The louder locator tone comes from an additional speaker that is aimed at the center of the crosswalk and that is mounted on a pedestrian signal head.**

Section 4E.07 Countdown Pedestrian Signals

Option:

~~A pedestrian interval countdown display may be included in a pedestrian signal head in order to inform pedestrians of the number of seconds remaining in the pedestrian change interval installed in conjunction with pedestrian signals at some or all crosswalks at any traffic control signal. [STC recommends modifying and keeping this NC-approved Option that was deleted on Page 898 – Line 43 in the NPA]~~

Standard:

~~Except at crosswalks that are so short that the duration of the pedestrian change interval is 3 seconds or less, all new pedestrian signal heads shall include a pedestrian change interval countdown display in order to inform pedestrians of the number of seconds remaining in the pedestrian change interval. A pedestrian change interval countdown display shall be added to all existing pedestrian signal heads, except those being used for crosswalks that are so short that the duration of the pedestrian change interval is 3 seconds or less, within the 10-year compliance period specified in the Introduction of this Manual. [STC approves Page 898 - Lines 44-50 with revisions. The STC felt that the 3 second threshold included in the NPA was too short and recommends 7 seconds as an alternative.]~~

~~If used,~~ Countdown pedestrian signals shall consist of Portland orange numbers that are at least 150 mm (6 in) in height on a black opaque background. The countdown pedestrian signal shall be located ~~within the pedestrian signal head~~ immediately adjacent to the associated UPRAISED HAND (symbolizing DONT WALK) pedestrian signal head indication. [STC approves Page 899 - Lines 1-4]

~~If used,~~ [Editorial - STC approves] The display of the number of remaining seconds shall begin only at the beginning of the pedestrian change interval (flashing UPRAISED HAND) [Editorial - STC approves] After the countdown displays zero, the display shall remain dark until the beginning of the next countdown.

~~If used,~~ [Editorial - STC approves] The countdown pedestrian signal shall display the number of seconds remaining until the termination of the pedestrian change interval (flashing UPRAISED HAND) [Editorial - STC approves]. Countdown displays shall not be used during the walk interval or during the yellow change interval of a concurrent vehicular phase.

Guidance:

If used with a pedestrian signal head that does not have a concurrent vehicular phase, the pedestrian change interval (flashing UPRAISED HAND) should be set to be approximately 4 seconds less than the required pedestrian crossing time (see Section 4E.10) and an additional clearance interval (during which a steady UPRAISED HAND is displayed) should be provided prior to the start of the conflicting vehicular phase. ~~In this case, the countdown pedestrian signal should display of the number of remaining seconds should be displayed only during the display of the flashing UPRAISED HAND, should display zero at the time when the flashing UPRAISED HAND changes to a steady UPRAISED HAND, and should be dark during the additional clearance interval prior to the start of a conflicting vehicular phase. [STC recommends deletion of this sentence on Page 899 – Lines 17-20]~~

Standard:

~~If a concurrent vehicular green indication continues to be displayed after the display of the flashing UPRAISED HAND has terminated, such as when an actuated phase has a maximum green interval that is longer than the pedestrian crossing time or when the duration of the green interval for a parallel concurrent vehicular movement has been intentionally set higher than the pedestrian clearance time to provide turning drivers additional green time to make their turns (see Section 4E.10), the countdown pedestrian signal shall be dark during the additional green time. [STC recommends deleting this paragraph on Page 899 – Lines 21-27]~~

Guidance:

For crosswalks where the pedestrian enters the crosswalk more than 30 m (100 ft) from the countdown pedestrian signal display, the numbers should be at least 225 mm (9 in) in height.

Because some technology includes the countdown pedestrian signal logic in a separate timing device that is independent of the timing in the traffic signal controller, care should be exercised by the engineer when timing changes are made to pedestrian change intervals.

If the pedestrian change interval is interrupted or shortened as a part of a transition into a preemption sequence (see Section 4E.10), the countdown pedestrian signal display should be discontinued and go dark immediately upon activation of the preemption transition.

Section 4E.08 Pedestrian Detectors

Option:

Pedestrian detectors may be pushbuttons or passive detection devices.

Support:

The ~~following guidance places provisions in this Section place~~ pedestrian pushbuttons within easy reach of pedestrians who are intending to cross each crosswalk and make it obvious which pushbutton is associated with each crosswalk. ~~This location-~~These provisions also position pushbutton poles ~~optimally in optimal locations~~ for installation of accessible pedestrian signals. ~~Guidance Information~~ regarding reach ranges can be found in the “Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)” (see Section 1A.11). [Editorial - STC approves]

Standard:

If pedestrian pushbuttons are used, they shall be capable of easy activation and conveniently located near each end of the crosswalks. Except as noted in the Guidance below, pedestrian pushbuttons shall be located to meet all of the following criteria (see Figure 4E-2): [Editorial - STC approves]

- A. **Unobstructed and adjacent to a level all-weather surface to provide access from a wheelchair;**
- B. **Where there is an all-weather surface, a wheelchair accessible route from the pushbutton to the ramp;**
- C. **Between the edge of the crosswalk line (extended) farthest from the center of the intersection and the side of a curb ramp (if present), but not greater than 1.5 m (5 ft) from said crosswalk line;**
- D. **Between 0.45 m (1.5 ft) and 1.8 m (6 ft) from the edge of the curb, shoulder, or pavement;**
- E. **With the face of the pushbutton parallel to the crosswalk to be used; and**
- F. **At a maximum mounting height of 1.2 m (4 ft) above the sidewalk.**

Guidance:

Where there are **physical** constraints that make it **infeasible impractical** to place the pedestrian pushbutton adjacent to a level all-weather surface, the surface should be as level as feasible. [STC approves Page 900 - Lines 8-9 with revision]

Where there are **physical** constraints that make it **infeasible impractical** to place the pedestrian pushbutton between 0.45 m (1.5 ft) and 1.8 m (6 ft) from the edge of the curb, shoulder, or pavement, it should not be farther than 3 m (10 ft) from the edge of curb, shoulder, or pavement. [STC approves Page 900 - Lines 10-12 with revision]

A mounting height of approximately 1.1 m (3.5 ft) above the sidewalk should be used for pedestrian pushbuttons.

Except as noted in the Option below, [Editorial - STC approves] where two pedestrian pushbuttons are provided on the same corner of a signalized location, the pushbuttons should be separated by a distance of at least 3 m (10 ft) (see Figure 4E-2).

Option:

Where there are **physical** constraints on a particular corner that make it **infeasible impractical** to ~~meet the Guidance on pedestrian detector provide the 3 m (10 ft) separation in this Section between the two pedestrian pushbuttons, on a corner requiring pedestrian actuation of signals for two crosswalks, a single pole the pushbuttons~~ may be **used placed closer together or on the same pole.** [STC approves Page 900 - Lines 19-21 with revision]

Support:

Figure 4E-3 shows typical pushbutton locations for a variety of situations. [STC approves Page 900 - Line 23]

Standard:

If two accessible pedestrian pushbuttons are placed on the same pole, the accessible pedestrian pushbuttons shall be provided with the features described in Section 4E.09 for this situation.

Signs (see Section 2B.59) shall be mounted adjacent to or integral with pedestrian pushbuttons, explaining their purpose and use.

Option:

At certain locations, a supplemental sign in a more visible location may be used to call attention to the pedestrian pushbutton.

Standard:

The positioning of pedestrian pushbuttons and the legends on the pedestrian pushbutton signs shall clearly indicate which crosswalk signal is actuated by each pedestrian pushbutton.

If the pedestrian clearance time is sufficient only to cross from the curb or shoulder to a median of sufficient width for pedestrians to wait and the signals are pedestrian actuated, an additional pedestrian detector shall be provided in the median.

Guidance:

The use of additional pedestrian detectors on islands or medians where a pedestrian might become stranded should be considered.

If used, special purpose pushbuttons (to be operated only by authorized persons) should include a housing capable of being locked to prevent access by the general public and do not need an instructional sign.

Standard:

If used, a pilot light or other means of indication installed with a pedestrian pushbutton shall not be illuminated until actuation. Once it is actuated, the pilot light shall remain illuminated until the pedestrian's green or WALKING PERSON (symbolizing WALK) signal indication is displayed.

If a pilot light is used at an accessible pedestrian signal location, each actuation shall be accompanied by the speech message "wait."

Option:

At signalized locations with a demonstrated need and subject to equipment capabilities, pedestrians with special needs may be provided with additional crossing time by means of an extended pushbutton press.

Standard:

If additional crossing time is provided by means of an extended pushbutton press will always provide additional crossing time. a ~~FOR MORE CROSSING TIME- HOLD BUTTON DOWN FOR 2 SECONDS~~ PUSH BUTTON FOR 2 SECONDS FOR EXTRA CROSSING TIME (R10-32P) plaque (see Figure 2B-29) shall be mounted adjacent to or integral with the pedestrian pushbutton. [STC approves Page 901 - Lines 3-6 with revisions. The STC felt that the plaque message could be confusing if the additional time was provided in response to an extended pushbutton press during some times of the day but not all times. Therefore, the "always provide additional crossing time" phrase is recommended for addition. After discussion, it is felt that the alternate plaque message is more accurate then the NPA message. Specifically, the button is to be pressed to be activated. "Hold button down" could be interpreted meaning to apply force to the top of the button housing. This would not result in the additional time being provided.]

Section 4E.09 Accessible Pedestrian Signal Detectors

Standard:

An accessible pedestrian signal detector shall be defined as a device designated to assist the pedestrian who has visual or physical disabilities in activating the pedestrian phase.

Option:

Accessible pedestrian signal detectors may be pushbuttons or passive detection devices.

Standard:

At accessible pedestrian signal locations where pedestrian pushbuttons are used, each pushbutton shall activate both the walk interval and the accessible pedestrian signals.

An accessible pedestrian pushbutton shall incorporate a locator tone.

Pushbutton locator tones shall have a duration of 0.15 seconds or less and shall repeat at 1-second intervals.

Pushbutton locator tones shall be intensity responsive to ambient sound, and be audible 1.8 to 3.7 m (6 to 12 ft) from the pushbutton, or to the building line, whichever is less. Pushbutton locator tones shall be no more than 5 dBA louder than ambient sound.

Pushbutton locator tones shall be deactivated when the traffic control signal is operating in a flashing mode.

To enable pedestrians who have visual disabilities to distinguish and locate the appropriate pushbutton at an accessible pedestrian signal location, pushbuttons shall clearly indicate by means of tactile arrows which crosswalk signal is actuated by each pushbutton. Tactile arrows shall be located on the pushbutton, have high visual contrast (light on dark or dark on light), and shall be aligned parallel to the direction of travel on the associated crosswalk. [STC approves Page 901 - Lines 28-34]

Guidance:

Pushbuttons for accessible pedestrian signals [Editorial - STC approves] should be located as close as possible to the crosswalk line furthest from the center of the intersection and as close as possible to the curb ramp.

Except as noted in the Option below. [Editorial - STC approves] where two accessible pedestrian pushbuttons are provided, the pushbuttons should be separated by a distance of at least 3 m (10 ft) such that they clearly indicate which crosswalk has the WALKING PERSON (symbolizing WALK) indication.

Option:

Where there are physical constraints on a particular corner that make it impractical to provide the 3 m (10 ft) of separation between the two accessible pedestrian pushbuttons, the pushbuttons may be placed closer together or on the same pole. [STC approves Page 901 - Lines 49-52 with revision]

Standard:

Where it is impractical to install accessible pedestrian detectors on two separate poles at a corner If two accessible pedestrian pushbuttons are less than 3 m (10 ft) apart or are placed on the same pole, each accessible pedestrian pushbutton shall be provided with the following features: [STC approves Page 902 - Lines 2-3 with revision for consistency with the immediately prior Option that permits placement closer together (than 10 feet apart) or on the same pole.]

- A. A pushbutton locator tone,
- B. A tactile arrow,
- C. A speech walk message for the WALKING PERSON (symbolizing WALK) indication (see Section 4E.06), and
- D. A speech pushbutton information message.

If the pedestrian clearance time is sufficient only to cross from the curb or shoulder to a median of sufficient width for pedestrians to wait and accessible pedestrian detectors are used, an additional accessible pedestrian detector shall be provided in the median.

Option:

At locations with pretimed traffic control signals or nonactuated approaches, pedestrian pushbuttons may be used to activate the accessible pedestrian signals.

Additional features may be provided for pedestrians such as additional crossing time, audible beaconing, or a speech pushbutton information message as a result of an extended pushbutton press.

Standard:

If an extended pushbutton press is used to provide any additional feature(s), a pushbutton press of less than one second shall actuate only the pedestrian timing and any associated accessible walk interval, and a pushbutton press of one second or more shall actuate the pedestrian timing, any associated accessible walk interval, and any additional feature(s).

If additional crossing time is provided by means of an extended pushbutton press will always provide additional crossing time, a FOR-MORE-CROSSING-TIME-HOLD-BUTTON-DOWN-FOR-2-SECONDS PUSH BUTTON FOR 2 SECONDS FOR EXTRA CROSSING TIME (R10-32P) plaque (see Figure 2B-29) shall be mounted adjacent to or integral with the pedestrian pushbutton. [STC approves Page 902 - Lines 25-27 with revisions. The STC felt that the plaque message could be confusing if the additional time was provided in response to an extended pushbutton press during some times of the day but not all times. Therefore, the “always provide additional crossing time” phrase is recommended for addition. After discussion, it is felt that the alternate plaque message is more accurate than the NPA message. Specifically, the button is to be pressed to be activated. “Hold button down” could be interpreted meaning to apply force to the top of the button housing. This would not result in the additional time being provided.]

Option:

The name of the street to be crossed may also be provided in accessible format, such as Braille or raised print.

Support:

[Specifications regarding the use of Braille or raised print for traffic control devices can be found in the “Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities \(ADAAG\)” \(see Section 1A.11\).](#)

Option: [STC approves Page 902 - Lines 31-35]

Tactile maps of crosswalks may be provided.

Speech pushbutton information messages may be made available by actuating the accessible pedestrian signal detector when the walk interval is not timing. These messages may provide intersection identification, as well as information about unusual intersection signalization and geometry, such as notification regarding exclusive pedestrian phasing, leading pedestrian intervals, split phasing, diagonal crosswalks, and medians or islands.

Standard:

If speech pushbutton information messages are made available by actuating the accessible pedestrian signal detector, they shall only be actuated when the walk interval is not timing. They shall begin with the term “Wait,” followed by intersection identification information modeled after: “Wait to cross Broadway at Grand.” If information on intersection signalization or geometry is also given, it shall follow the intersection identification information.

Guidance:

Speech pushbutton information messages should not be used to provide landmark information or to inform pedestrians with visual impairments about detours or temporary traffic control situations.

Support:

Additional information on structure and wording of pushbutton messages is included in ITE’s “Electronic Toolbox for Making Intersections More Accessible for Pedestrians Who Are Blind or Visually Impaired,” which is available at ITE’s website (see Page i).

Section 4E.10 Pedestrian Intervals and Signal Phases

Standard:

At intersections equipped with pedestrian signal heads, the pedestrian signal indications shall be displayed except when the vehicular traffic control signal is being operated in the flashing mode. At those times, the pedestrian signal indications shall not be ~~illuminated~~ displayed. [Editorial - STC approves]

When pedestrian signal heads are used, a WALKING PERSON (symbolizing WALK) signal indication shall be displayed only when pedestrians are permitted to leave the curb or shoulder.

A pedestrian clearance time shall begin immediately following the WALKING PERSON (symbolizing WALK) signal indication. The first portion of the pedestrian clearance time shall consist of a pedestrian change interval during which a flashing UPRAISED HAND (symbolizing DONT WALK) signal indication shall be displayed. The second portion, if used, shall consist of the yellow change interval during which a steady UPRAISED HAND (symbolizing DONT WALK) signal indication shall be displayed. The third portion, if used, shall consist of the red clearance interval (prior to a conflicting green being displayed), during which a steady UPRAISED HAND (symbolizing DONT WALK) signal indication shall be displayed.

~~**If countdown pedestrian signals are used, a steady UPRAISED HAND (symbolizing DONT WALK) signal indication shall be displayed during the yellow change interval and any red clearance interval (prior to a conflicting green being displayed) (see Section 4E.07). [STC approves Page 903 - Lines 21-23]**~~

Option:

The pedestrian clearance time may be:

- A. Entirely contained within the vehicular green interval, such that the yellow change and red clearance intervals provide pedestrians with crossing time in addition to that calculated for the pedestrian clearance time.

~~B. Entirely contained within the vehicular green and yellow change intervals, such that the red clearance interval provides pedestrians with crossing time in addition to that calculated for the pedestrian clearance time; or~~

C. Entirely contained within the vehicular green, yellow change, and red clearance intervals. [STC recommends deleting this Option on Page 903 - Lines 24-32]

Guidance:

Except as noted in the Option immediately below, the pedestrian clearance time should be sufficient to allow a pedestrian crossing in the crosswalk who left the curb or shoulder at the end of the WALKING PERSON (symbolizing WALK) signal indication to travel at a walking speed of 1.1 m (3.5 ft) per second to at least the far side of the traveled way or to a median of sufficient width for pedestrians to wait.

Option:

A walking speed of up to 1.2 m (4 ft) per second may be used to evaluate the sufficiency of the pedestrian clearance time at locations where equipment such as an extended pushbutton press or passive pedestrian detection has been installed to provide slower pedestrians an opportunity to request and receive a longer pedestrian clearance time.

Guidance:

Where pedestrians who walk slower than 1.1 m (3.5 ft) per second, or pedestrians who use wheelchairs, routinely use the crosswalk, a walking speed of less than 1.1 m (3.5 ft) per second should be considered in determining the pedestrian clearance time.

Except as noted in the Option below, the walk interval should be at least 7 seconds in length so that pedestrians will have adequate opportunity to leave the curb or shoulder before the pedestrian clearance time begins.

Option:

If pedestrian volumes and characteristics do not require a 7-second walk interval, walk intervals as short as 4 seconds may be used.

Support:

~~The walk interval itself need not equal or exceed the pedestrian clearance time calculated for the roadway width, because many pedestrians will complete their crossing during the pedestrian clearance time. The walk interval is usually shorter than the pedestrian clearance time calculated for the roadway width, because the walk interval is intended only for pedestrians to start their crossing. The pedestrian clearance time is intended to allow pedestrians who started crossing during the walk interval to complete their crossing. Longer walk intervals are often used when the duration of the vehicular green phase associated with the pedestrian crossing is long enough to allow it.~~ [STC approves Page 904 - Lines 5-11 with revisions]

Guidance:

The total of the walk interval and pedestrian clearance time should be sufficient to allow a pedestrian crossing in the crosswalk who left the pedestrian detector (or, if no pedestrian detector is present, a location 1.8 m (6 ft) from the face of the curb or from the edge of the pavement) at the beginning of the WALKING PERSON (symbolizing WALK) signal indication to travel at a walking speed of 0.9 m (3 ft) per second to the far side of the traveled way being crossed. Any additional time that is required to satisfy the conditions of this paragraph should be added to the walk interval.

Option:

On a street with a median of sufficient width for pedestrians to wait, a pedestrian clearance time that allows the pedestrian to cross only from the curb or shoulder to the median may be provided.

Standard:

Where the pedestrian clearance time is sufficient only for crossing from the curb or shoulder to a median of sufficient width for pedestrians to wait, ~~additional measures should be considered, such as median-mounted pedestrian signals (with pedestrian detectors if actuated operation is used) shall be provided (see Sections 4E.08 and 4E.09) and additional signing such as the R10-3d sign (see Section 2B.59) shall be provided to notify pedestrians to cross only to the median to await the next WALKING PERSON (symbolizing WALK) signal indication.~~

[STC approves Page 904 - Lines 22-28]

Option:

During the transition into preemption, the walk interval and the pedestrian change interval may be shortened or omitted as described in Section 4D.27.

At intersections with high pedestrian volumes and high conflicting turning vehicle volumes, a brief leading pedestrian interval, during which an advance WALKING PERSON (symbolizing WALK) indication is displayed for the crosswalk while red indications continue to be displayed to parallel through and/or turning traffic, may be used to reduce conflicts between pedestrians and turning vehicles. [STC approves Page 904 - Lines 22-28 with revision]

Guidance:

When a leading pedestrian interval is used, the use of an accessible pedestrian signal should be considered. [added by STC]

Support:

Consideration of the use of an accessible pedestrian signal is recommended where a leading pedestrian indication is used because without the accessible features, pedestrians who are visually impaired can be expected to begin crossing at the onset of vehicular movement when drivers are not expecting them to begin crossing. [added by STC]

Guidance:

When a leading pedestrian indication is used, it should be no less than 3 seconds in duration and should be timed to allow pedestrians to cross at least one lane of traffic before turning traffic is released. When a leading pedestrian interval is used, consideration should be given to prohibiting turns across the crosswalk during the leading pedestrian interval. During a leading pedestrian interval, right turns across the crosswalk should be prohibited by the display of:

- A. A steady RED ARROW indication in a separate right turn signal face, a flashing yellow arrow signal face, or a flashing red arrow signal face (see Sections 4D.21 through 4D.24);
- B. Steady CIRCULAR RED indications for the approach, accompanied by the display of a NO TURN ON RED (R10-11) or No Right Turn (R3-1) message on a changeable message or blank out sign; or
- C. Steady green indications for the approach, accompanied by the display of a No Right Turn (R3-1) message on a changeable message or blank out sign. [STC approves Page 904 - Lines 37-45 with revisions]

Option:

If a static NO TURN ON RED (R10-11) sign or No Right Turn (R3-1) sign is in place to prohibit such movements on a full-time or part-time basis (see Section 2B.59), a changeable message or blank out sign may not be needed. [STC recommends deleting this paragraph on Page 904 – Lines 46-49]

Support:

At intersections with pedestrian volumes that are so high that drivers have difficulty finding an opportunity to turn across the crosswalk, the duration of the green interval for a parallel concurrent vehicular movement may be is sometimes intentionally set higher than the pedestrian clearance time to provide turning drivers additional green time to make their turns while the pedestrian signal head is displaying a steady UPRAISED HAND (symbolizing DONT WALK) signal indication after pedestrians have had time to complete their crossings. [STC recommends changing this paragraph on Pages 904 – Line 50 to Page 905 – Line 2 from Option to Support.]