National Committee on
Uniform Traffic Control Devices

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National Committee on Uniform Traffic Control Devices (NCUTCD)
Recommended Changes to Proposed Text for 11th Edition of the MUTCD
Docket Number: FHWA-2020-0001

Federal Register Item Number: 572-581
NPA MUTCD Section Number: Section 8E.01-8E.10
Legend: Base text shown in proposal is the NPA "clean" proposed text.

- NCUTCD recommendation for text to be added in final rule.
- ~~NCUTCD recommendation for text to be deleted in final rule~~.
- NCUTCD recommendation for text to be moved/relocated in final rule.
- NPA text that was not previously approved by NCUTCD but is now approved.
- Explanatory note: [Note that explains purpose of recommended change.]

The following pages present NCUTCD recommendations for changes to the MUTCD NPA proposed text, tables, and figures for Chapter 8A. Below is a short summary of the NCUTCD position for each section of this chapter. A more detailed summary is provided at the beginning of each section.

- Chapter 8E: a few figures have been renumbered to correct an out of order presentation in the NPA.
- NPA #572: Section 8E.01: NCUTCD agrees with NPA content.
- NPA #573: Section 8E.02: Changes recommended based on Council action in spring 2021.
- NPA #574: Section 8E.03: Changes recommended based on Council action in spring 2021.
- NPA #575: Section 8E.04: Changes recommended based on Council action in spring 2021.
- NPA #576: Section 8E.05: NCUTCD agrees with NPA content.
- NPA #577: Section 8E.06: NCUTCD agrees with NPA content.
- NPA #578: Section 8E.07: NCUTCD agrees with NPA content.
- NPA #579: Section 8E.08: Changes recommended based on Council action in spring 2021.
- NPA #580: Section 8E.09: Changes recommended based on Council action in spring 2021.
- NPA #581: Section 8E.10. NCUTCD agrees with NPA content.

Section 8E.01 Comments: NCUTCD agrees with 8E.01 as presented in the NPA.

Section 8E.01 Purpose

Support:

Traffic control for pathway and sidewalk grade crossings includes all signs, signals, markings, other warning devices, and their supports at pathway and sidewalk grade crossings and along pathway and sidewalk approaches to grade crossings. The function of this traffic control is to promote safety and provide effective operation of both rail and pathway or sidewalk traffic at pathway or sidewalk grade crossings.

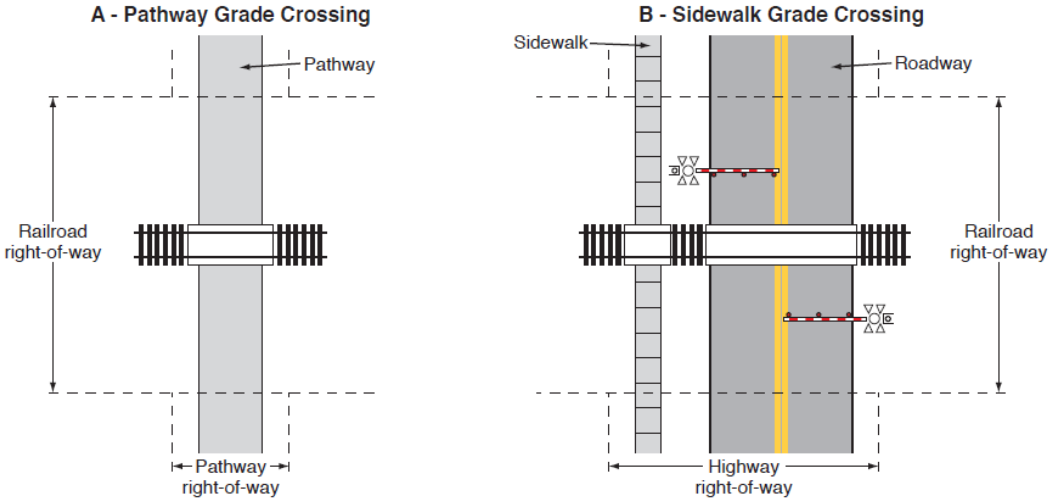
Other physical treatments that are described in this Chapter that are also applicable to pathways and sidewalks at grade crossings, such as detectable warnings, swing gates, and fencing, provide increased safety for pathway and sidewalk users.

Crosswalk markings at intersections where pedestrians cross LRT tracks in mixed-use alignments are covered by the provisions of Chapter 3C rather than by the provisions of this Chapter.

Figure 8E-1 illustrates the difference between a pathway grade crossing and a sidewalk grade crossing. A pathway is frequently placed in its own right-of-way on an alignment that is independent of any roadway. If a pathway is built parallel to a roadway, it is physically separated from the roadway by an open space or barrier such that the traffic control devices for the roadway grade crossing do not exert an influence over or provide adequate warning to pathway users. A sidewalk runs parallel to a roadway within the highway right-of-way and is close enough to the edge of the roadway's traveled way that the traffic control devices for the roadway grade crossing can frequently exert an influence over or provide adequate warning to pathway users. Pathways are typically used by both pedestrians and bicyclists, whereas sidewalks are typically used only by pedestrians.

NCUTCD generally agrees with Figure 8E-1 as presented in the NPA, but recommends adding a note that not all traffic control devices are shown on the figure because grade crossing signs and pavement markings are not shown in the figure and because this is consistent with the note on Figure 8D-2.

Figure 8E-1. Illustration of the Difference between a Pathway Grade Crossing and a Sidewalk Grade Crossing



Note: In an effort to simplify the figure, not all traffic control devices are shown on this figure.

Section 8E.02 Comments: NCUTCD generally agrees with 8E.02 as presented in the NPA, but recommends an editorial change to the Support statement to delete "pedestrian" and replace with "user" because bicycles and people in wheelchairs are referenced in the second Support sentence and therefore the first sentence should also include these users' safety.

Section 8E.02 Use of Standard Devices, Systems, and Practices

Guidance:

The pathway or sidewalk user's ability to detect the presence of approaching rail traffic should be considered in determining the type and placement of traffic control devices at pathway or sidewalk grade crossings.

The traffic control devices, including the appropriate traffic control system to be used, and other physical treatments at a pathway or sidewalk grade crossing should be designed and developed by a Diagnostic Team that includes the agency with jurisdiction over the pathway or sidewalk.

At skewed grade crossings, the adjustment, re-alignment, or relocation of existing sidewalk grade crossings should be considered when determining the placement of traffic control devices for roadway users.

Support:

~~Pedestrian~~ User safety is enhanced when pathways and sidewalks are designed such that they cross the tracks at as close to a right angle as practical. The casters of wheelchairs and the

wheels of bicycles could fall into and might be constrained in the flangeway gap at a skewed crossing. The flangeway gap is typically 2.5 inches at LRT grade crossings and 3 inches at railroad grade crossings. (edit to refer to the safety of all users rather than just pedestrians)

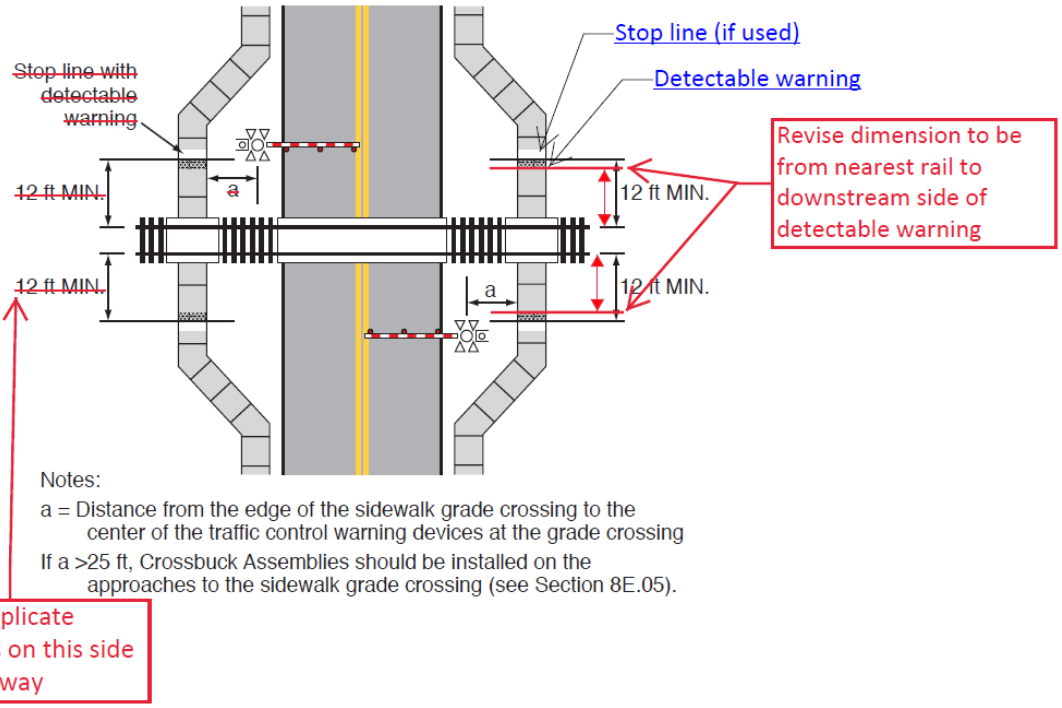
It is desirable that pathways and sidewalks be designed such that they maintain a relatively consistent horizontal alignment and profile from the nearest rail to the detectable warning (if present), from the nearest rail to the stop line (if present), or within 12 feet from the nearest rail, whichever distance is longer, on each approach to the crossing. Providing a pedestrian refuge area in advance of the stop line or the detectable warning surface so that pedestrians have a place to wait while rail traffic approaches and occupies the crossing can be beneficial to pedestrian safety.

When designing new sidewalk grade crossings, placing the sidewalk outside of the area occupied by grade crossing traffic control devices for vehicular traffic is desirable (see Figures 8E-2 and 8E-3). This includes making sure that the counterweights and support arms for the automatic gates for vehicular traffic do not obstruct the sidewalk when the gate is fully lowered.

Additional information regarding the design and alignment of pathways and sidewalks is contained in the "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)" (see Section 1A.05).

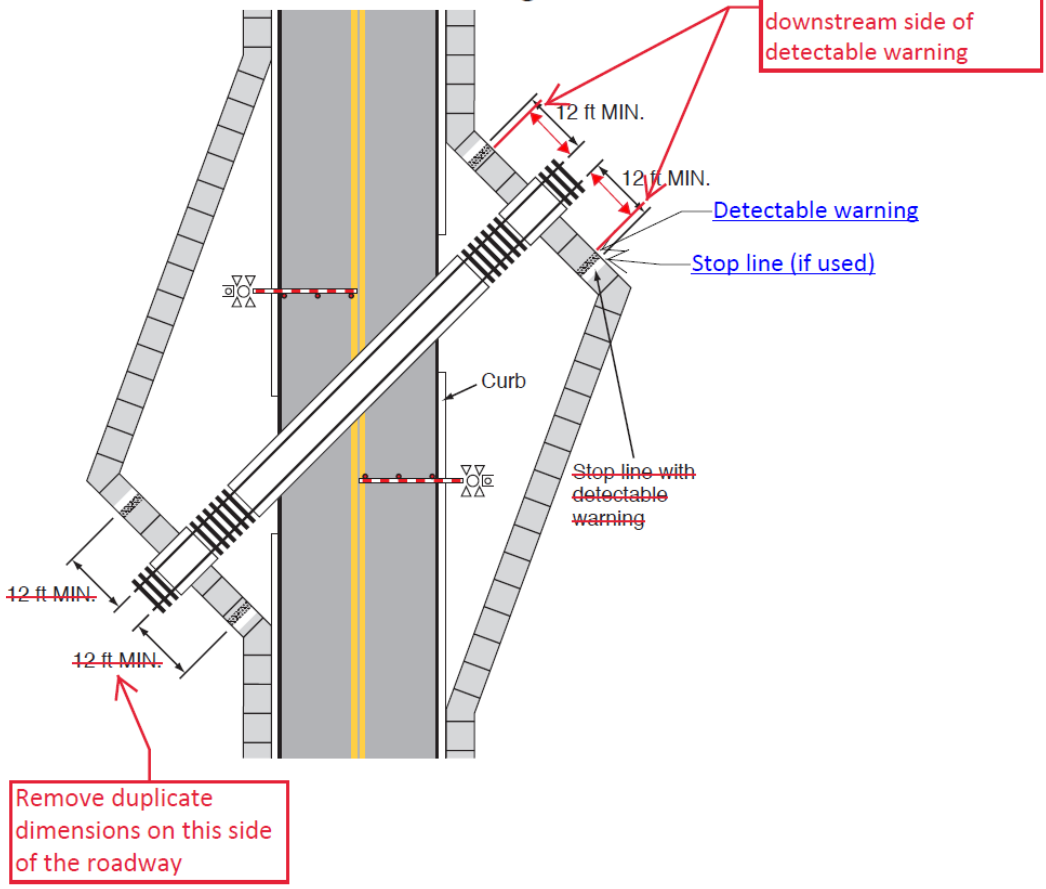
NCUTCD generally agrees with Figure 8E-2 as presented in the NPA, but recommends showing dimensions for distances from the nearest rail for consistency throughout Chapter 8E, remove duplicate dimensions on the figure, and revise the note about detectable warning and stop line because the detectable warning is required whereas the stop line is optional.

Figure 8E-2. Example of Placing Sidewalks on the Outside of the Gates at a Perpendicular Grade Crossing



NCUTCD generally agrees with Figure 8E-3 as presented in the NPA, but recommends showing dimensions for distances from the nearest rail for consistency throughout Chapter 8E, remove duplicate dimensions on the figure, and revise the note about detectable warning and stop line because the detectable warning is required whereas the stop line is optional

Figure 8E-3. Example of Placing Sidewalks on the Outside of the Gates at a Skewed Grade Crossing



Section 8E.03 Comments: NCUTCD recommends revising 8E.03 to add "and sidewalk" to the Standard statement because Paragraph 2 of the Standard also references sidewalks and pathways. NCUTCD also recommends an editorial change to revise the reference to Table 9A-1 instead of Tables 9B-1 and 9C-1 because this is the correct table for shared-use path sign sizes. NCUTCD also recommends adding a Guidance statement in accordance with NCUTCD recommendation 12B-RR-02 because traffic control devices should not protrude into the pathway or sidewalk grade crossing, and replace the Guidance statement regarding 12-foot clearance from traffic control devices to the track to be consistent with the Standard statement in Section 8D.01 and because railroad and transit agencies have varying clearance requirements.

Section 8E.03 Pathway and Sidewalk Grade Crossing Signs and Markings

Standard:

Pathway and sidewalk grade crossing signs shall be standard in shape, legend, and color. (change because Standard should apply to both pathways and sidewalks, consistent with the Standard in Paragraph 2 of this section)

The minimum sizes of sidewalk grade crossing signs that are intended to be viewed only by pedestrians and of pathway grade crossing signs shall be as shown in the shared-use path column in Table~~s 9B-1 and 9C-1~~ 9A-1. (edit to correct reference)

Guidance:

No portion of a traffic control device or its support should protrude into the pathway or sidewalk grade crossing. (add Guidance statement per 12B-RR-02)

~~*Pathway grade crossing traffic control devices should be located such that no portion of the physical features of the device, including the support hardware, is closer than 12 feet from the center of the nearest track.*~~ *Minimum clearance dimensions between pathway grade crossing traffic control devices and the closest track should conform to the requirements provided by the railroad company and/or transit agency.* (change Guidance statement to be consistent with Section 8D.01)

Standard:

The minimum mounting height for post-mounted signs adjacent to pathways and sidewalks shall be 4 feet, measured vertically from the bottom edge of the sign to the elevation of the nearest edge of the pathway or sidewalk surface (see Figure 9A-1).

If overhead traffic control devices are placed above pathways, the clearance from the bottom edge of the device to the pathway surface directly under the sign or device shall be at least 8 feet.

Guidance:

If overhead traffic control devices are placed above pathways that are used by equestrians, the clearance from the bottom edge of the device to the pathway surface directly under the sign or device should be at least 10 feet.

Standard:

If overhead traffic control devices are placed above sidewalks, the clearance from the bottom edge of the device to the sidewalk surface directly under the sign or device shall be at least 7 feet.

Traffic control devices mounted adjacent to pathways at a height of less than 8 feet measured vertically from the bottom edge of the device to the elevation of the nearest edge of the pathway surface shall have a minimum lateral offset of 2 feet from the nearest edge of the device to the nearest edge of the pathway (see Figure 9A-1).

Traffic control devices mounted adjacent to sidewalks at a height of less than 7 feet measured vertically from the bottom edge of the device to the elevation of the nearest edge of the sidewalk surface shall have a minimum lateral offset of 2 feet from the nearest edge of the device to the nearest edge of the sidewalk.

Guidance:

If pathway users include those who travel faster than pedestrians, such as bicyclists or skaters, warning signs should be installed in advance of the pathway grade crossing (see Figure 8E-4).

Option:

The Skewed Crossing (W10-12) sign (see Section 8B.21) may be used at a skewed pathway or sidewalk grade crossing to warn pathway or sidewalk users that the tracks are not perpendicular to the pathway or sidewalk.

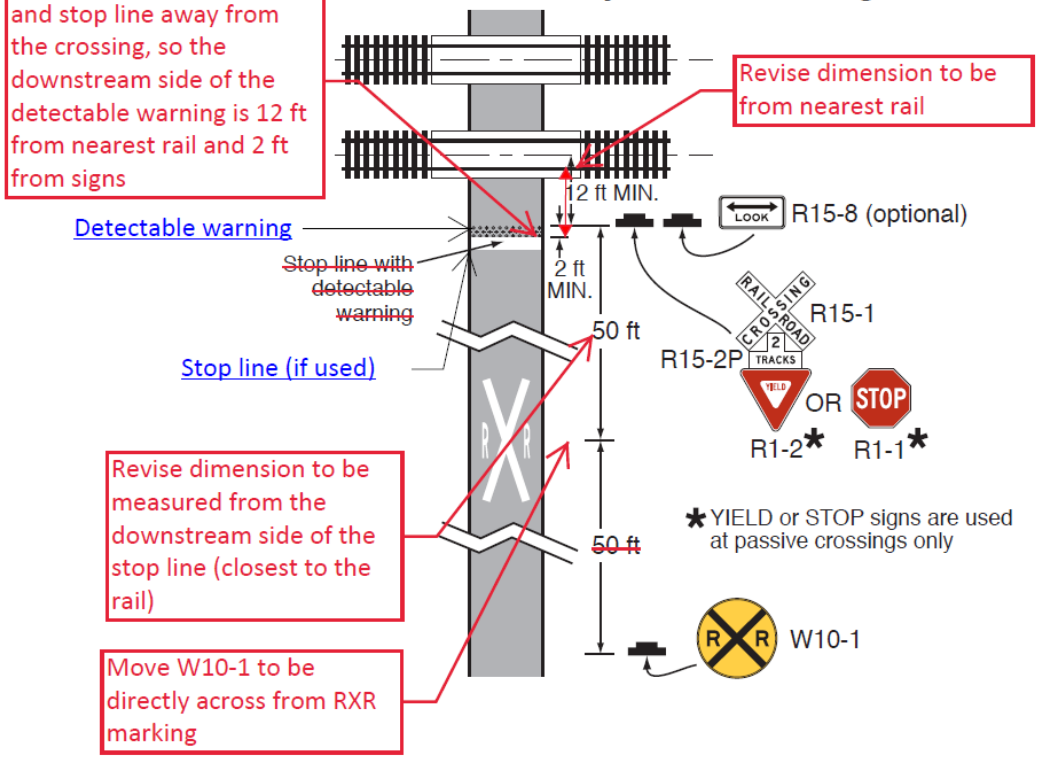
The LOOK (R15-8) sign may be used at a pathway or sidewalk grade crossing to inform pathway or sidewalk users to look in both directions prior to crossing the track(s).

Guidance:

If a LOOK (R15-8) sign is used at a pathway or sidewalk grade crossing, it should be mounted on a separate post that is further from the pathway or sidewalk than the Crossbuck sign or Crossbuck Assembly.

NCUTCD recommends revising Figure 8E-4 to show dimensions for distances from the nearest rail for consistency throughout Chapter 8E, remove duplicate dimensions on the figure, correct the drawing dimension because the nearest rail should be 12 feet from the downstream side of the detectable warning, correct the sign placement because the W10-1 should be across from the RXR pavement marking per Section 8C.02, and revise the note about detectable warning and stop line because the detectable warning is required whereas the stop line is optional.

Figure 8E-4. Example of Signing and Markings at a Pathway Grade Crossing



Section 8E.04 Comments: NCUTCD recommends revising 8E.04 to add text to the Guidance statements to clarify that the stop line should extend across the full width of the sidewalk or pathway, and to clarify the measurement of the stop line from the rail and the placement of the stop line 2 feet from the gate if there is no detectable warning. NCUTCD also recommends changes to the Guidance statements to clarify the 2-feet size of the detectable warning, the 12-foot dimension from the detectable warning perpendicular to the nearest rail, and the 30-foot dimension where detectable warnings should be used to designate the pedestrian refuge between adjacent tracks.

Section 8E.04 Stop Lines, Edge Lines, and Detectable Warnings

Guidance:

If pathway users include those who travel faster than pedestrians, such as bicyclists or skaters, pavement markings should be installed in advance of the pathway grade crossing (see Figure 8E-4).

A stop line should be provided at a pathway grade crossing if the surface where the marking is to be applied is capable of retaining the application of the marking.

Option:

A stop line may be provided at a sidewalk grade crossing if the surface where the marking is to be applied is capable of retaining the application of the marking.

Guidance:

If used at pathway or sidewalk grade crossings, the stop line should be a transverse line that extends across the full width of the pathway or sidewalk at the point where a pathway or sidewalk user is to stop. If no detectable warning is provided, t~~T~~he stop line should be placed at least 2 feet upstream from the automatic gate, counterweight, flashing-light signals, or Crossbuck assembly (if any of these are present), and at least 12 feet perpendicular from the nearest rail. (change to be consistent with the detectable warning standard and to clarify that the dimensions are only applicable if detectable warning is not provided)

Option:

Edge lines (see Section 3B.09) to delineate the designated user route may be used on the approach to and across the tracks at a pathway grade crossing, a sidewalk grade crossing, or a station crossing if the surface where the marking is to be applied is capable of retaining the application of the marking.

Support:

Edge line delineation can be beneficial where the distance across the tracks is long, commonly because of a skewed grade crossing or because of multiple tracks, or where the pathway or sidewalk surface is immediately adjacent to a traveled way.

Information regarding the design and placement of detectable warning surfaces is contained in the "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)" (see Section 1A.05).

Standard:

Detectable warnings (see Chapter 3C) shall be used at pathway grade crossings where pedestrian travel is permitted and at sidewalk grade crossings and shall extend across the full width of the pathway or sidewalk.

Guidance:

The ~~width~~ upstream to downstream dimension of the detectable warning should be at least 2 feet.

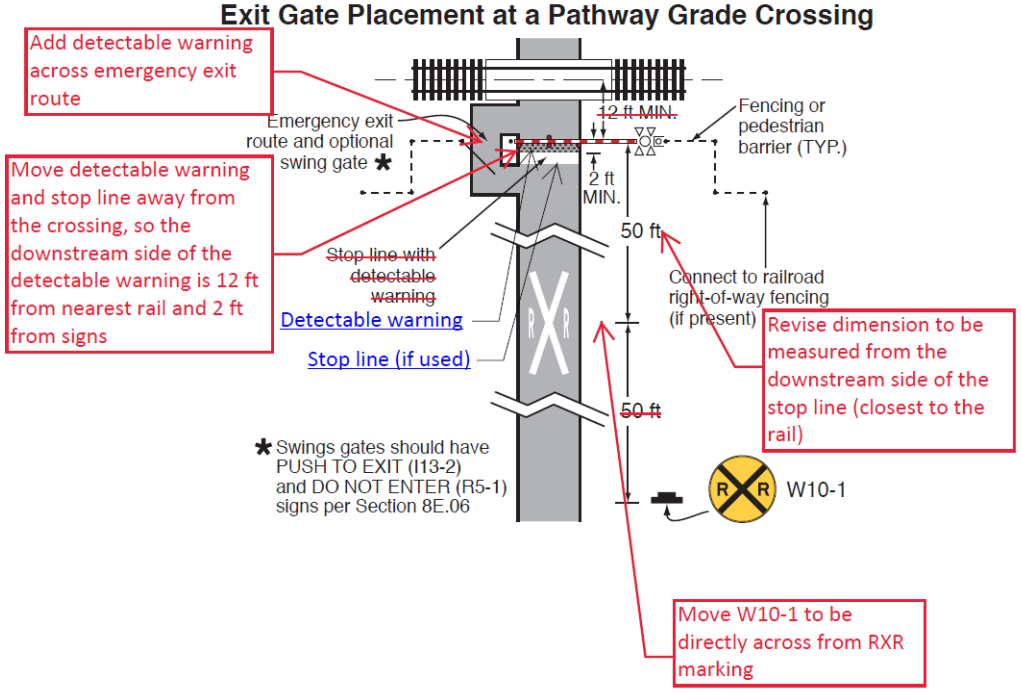
Detectable warnings should be placed immediately downstream from the pathway or sidewalk stop line approaching the grade crossing (if a stop line is present) or should be incorporated into and made a part of the stop line. The downstream edge of the detectable warning adjacent to the grade crossing should be located at least 2 feet upstream from the automatic gate, counterweight, flashing-light signals, or Crossbuck assembly (if any of these are present), and at least ~~no less than~~ 12 feet perpendicular from the ~~center of the nearest track~~ nearest rail (see Figure~~s~~ 8E-4). (change for consistency with Guidance statements in this Section. All dimensions in Chapter 8E changed to refer to the nearest rail)

If the distance between ~~the centers of~~ two adjacent tracks at a sidewalk or pathway grade crossing is ~~more than 38 feet~~30 feet or more measured from the inside rail to the inside rail, additional detectable warnings should be used to designate the limits of the pedestrian refuge area (see Figure 8E-5). (change to dimension from nearest rail consistent with the rest of Chapter 8E)

NCUTCD recommends changing Figure 8E-5 to 8E-7 and relocate the figure to Section 8E.06 because the NPA presents the figures out of order relative to the figure names in the text. NCUTCD recommends showing dimensions for distances from the nearest rail for consistency throughout Chapter 8E, remove duplicate dimensions on the figure, correct the sign placement because the W10-1 should be across from the RXR pavement marking per Section 8C.02, and to add a detectable warning across the emergency exit route because it is required per the Standard statement in Section 8E.04.

8E-7

Figure ~~8E-5~~. Example of Pedestrian Gate and Emergency Exit Gate Placement at a Pathway Grade Crossing



Section 8E.05 Comments: NCUTCD agrees with 8E.05 as presented in the NPA.

Section 8E.05 Passive Traffic Control Devices– Crossbuck Assemblies

Standard:

Where the nearest edge of a passive pathway or sidewalk grade crossing is located more than 25 feet from the center of the nearest traffic control warning device at a grade crossing, a Crossbuck Assembly (see Figure 8E-6) shall be installed on each approach to the pathway or sidewalk grade crossing. The distance shall be measured perpendicular to the traveled way from the center of the support post of a Crossbuck Assembly at a passive grade crossing or from the center of the mast of an active traffic control warning device at an active grade crossing to the nearest edge of the pathway or sidewalk surface where it crosses the track(s) (see Figure 8E-2).

Option:

A Crossbuck Assembly may be installed on the approaches to a pathway or sidewalk grade crossing where the nearest edge of the pathway or sidewalk is located 25 feet or less from the center of the nearest traffic control warning device at a grade crossing.

The Crossbuck Assembly may be omitted at station crossings.

The retroreflective strip on the back of the support may be omitted on the Crossbuck support at a pathway or sidewalk grade crossing.

Standard:

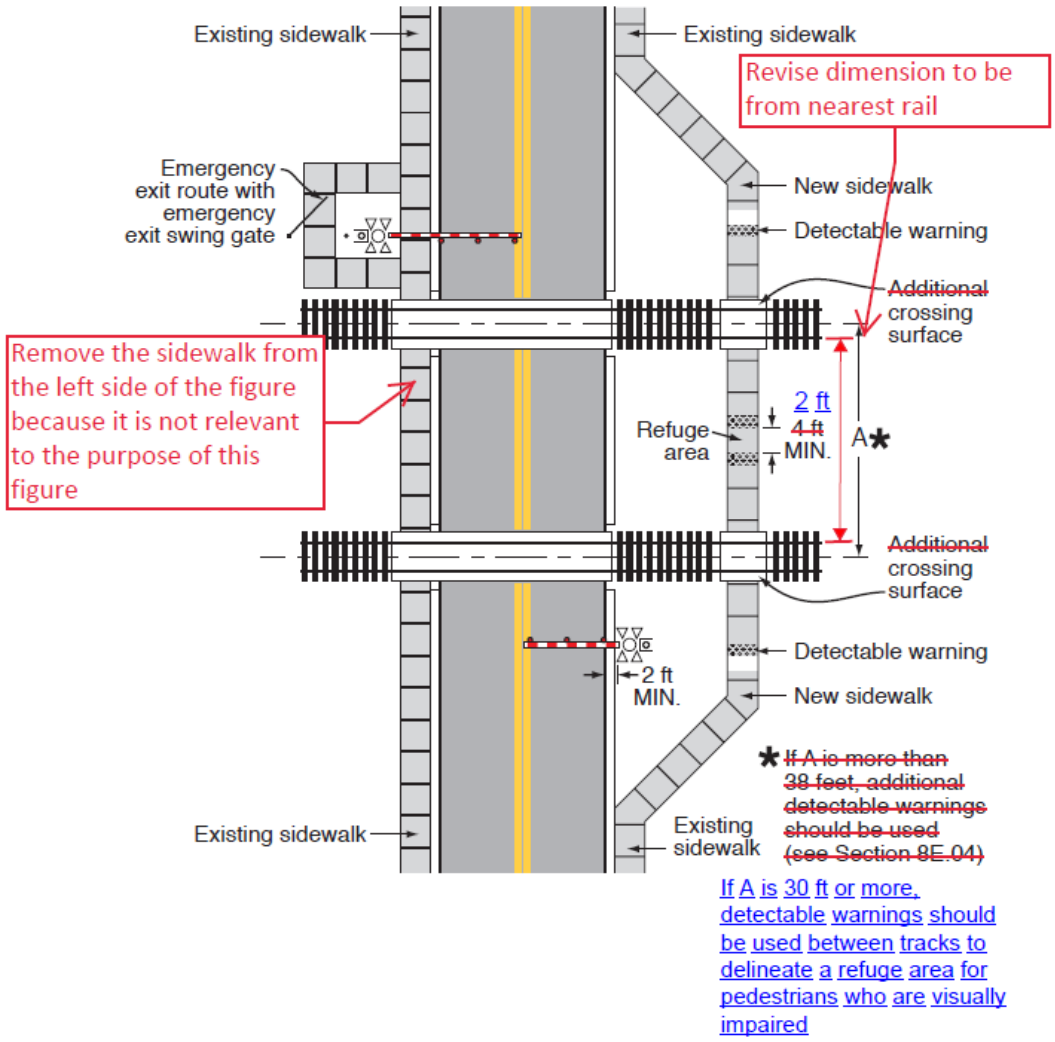
The minimum height, measured vertically from the bottom of the YIELD or STOP sign to the elevation of the near edge of the pathway or sidewalk, of Crossbuck Assemblies installed on pathways or sidewalks shall be 4 feet where the lateral offset to the nearest edge of the sign is at least 2 feet and shall be 7 feet where the lateral offset to the nearest edge of the sign is less than 2 feet (see Figure 8E-6).

The minimum lateral offset, measured horizontally from the nearest edge of the pathway or sidewalk to the nearest edge of the Crossbuck Assembly signs, shall be 0 feet for sidewalks and 2 feet for pathways (see Figure 8E-6).

NCUTCD recommends changing Figure 8E-6 to 8E-5 and relocate the figure to Section 8E.04 because the NPA presents the figures out of order relative to the figure names in the text. NCUTCD recommends showing dimensions for distances from the nearest rail for consistency throughout Chapter 8E, correct the refuge area because it should be 2 feet minimum between detectable warnings per ADAAG, to revise the 38-foot dimension to 30 feet based on the revised dimensions from the nearest rails of adjacent crossings and consistent with the recommended text changes in Section 8E.04, and to remove the sidewalk from the left side of the figure because it is not relevant to the purpose of the figure.

8E-5

Figure ~~8E-6~~. Example of a Refuge Area and Detectable Warnings at a Sidewalk Grade Crossing



Section 8E.06 Comments: NCUTCD agrees with 8E.06 as presented in the NPA.

Section 8E.06 Passive Traffic Control Devices – Swing Gates, Fencing, and Pedestrian Barriers

Guidance:

The pathway or sidewalk user's ability to detect the presence of approaching rail traffic should be considered in determining the type and placement of design features such as swing gates, fencing, and pedestrian barriers.

Support:

Where automatic gates and swing gates are used, it is desirable to design the pathway or sidewalk in a manner that channelizes or directs users to the entrance to and exit from the pathway or sidewalk grade crossing.

Swing gates (see Figures 8E-5, 8E-7, 8E-11, and 8E-12) are designed to open away from the track(s) so that pathway or sidewalk users can quickly push the swing gate open when moving away from the track(s), and to automatically return to the closed position after each use.

It is important to use retroreflective material, appropriate object markers (see Section 9C.09), and/or signs on swing gates, maze fencing, or pedestrian barriers that are placed at pathway or sidewalk grade crossings. Illumination of such areas can also be beneficial.

Option:

When used in conjunction with automatic gates at a pathway or sidewalk grade crossing, swing gates may be equipped with a latching device that permits the swing gate to be opened only from the track side of the swing gate.

Support:

Latching devices that are used on swing gates need to be designed in a manner such that they are operable by all users of the pathway or sidewalk.

Guidance:

A swing gate should be equipped with a PUSH TO EXIT (I13-2) sign on the track side of the swing gate, and a DO NOT ENTER (R5-1) sign on the side of the swing gate facing away from the tracks.

Option:

A push bar, kick plate, or similar device may be used on a swing gate.

Support:

The "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)" (see Section 1A.05) contains information regarding the design of swing gates and related hardware.

Where fencing (see Figures 8E-7, 8E-8, and 8E-11) is installed to direct pathway or sidewalk users to the grade crossing, it is desirable that this fencing be connected to any continuous existing or new fencing or channelization that has been installed parallel to the track(s) to discourage pedestrians from circumventing the grade crossing.

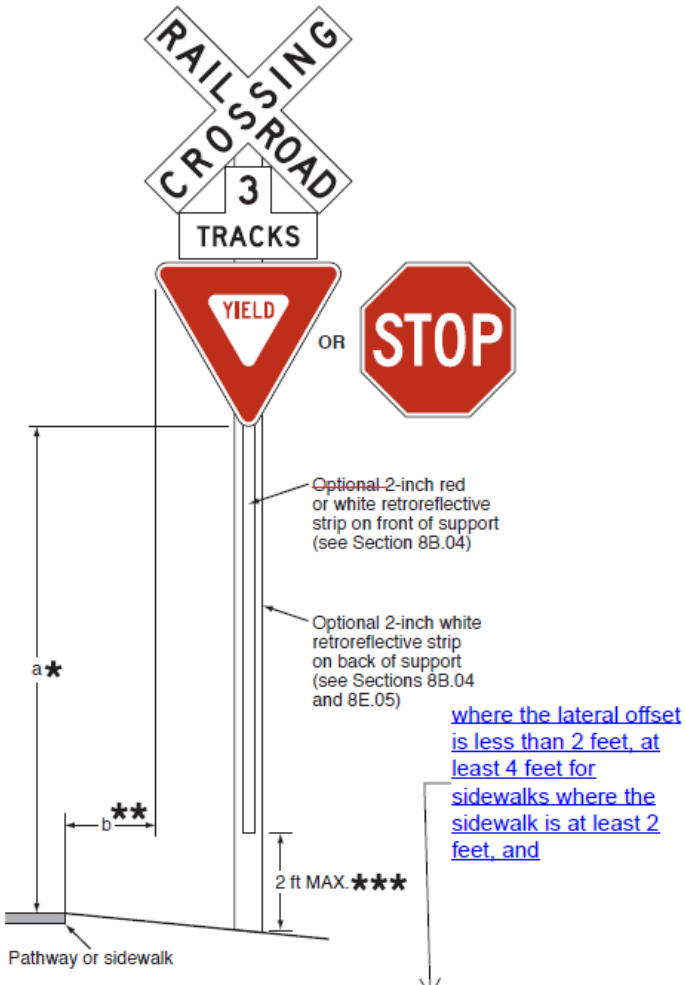
Pedestrian barriers or fencing, sometimes referred to as a "maze fencing," direct pathway or sidewalk users to face approaching rail traffic before entering the trackway (see Figure 8E-8).

Where used, maze fencing or pedestrian barriers need to be designed to permit the passage of wheelchairs and power-assisted mobility devices, and if bicycles are permitted, to permit the passage of dismounted bicyclists with tandem bicycles or bicycles with trailers.

NCUTCD recommends changing Figure 8E-7 to 8E-6 and relocate the figure to Section 8E.05 because the NPA presents the figures out of order relative to the figure names in the text. NCUTCD recommends deleting "optional" on the note about the retroreflective strip because it is required on the front of the support per the Standard in Section 8B.03, and revising the note to reference sign mounting height relative to the lateral offset from the sidewalk to match the text in Section 8E.05.

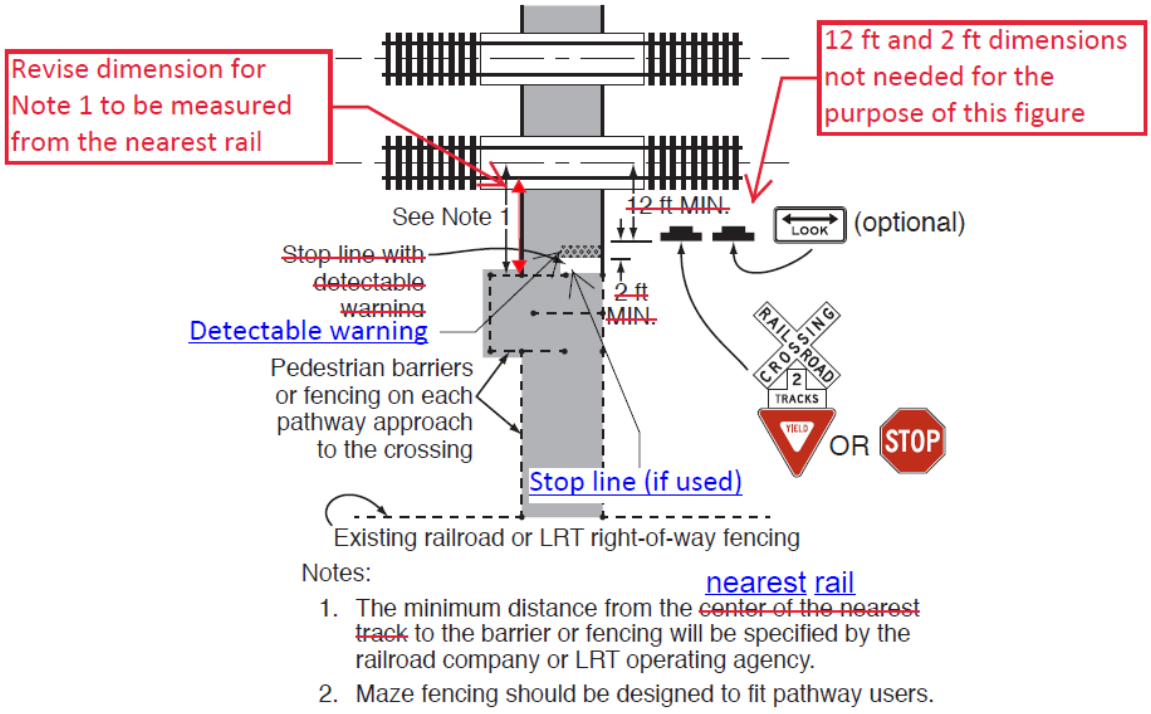
8E-6

Figure ~~8E-7~~. Example of a Crossbuck Assembly at a Pathway or Sidewalk Grade Crossing



NCUTCD recommends revising Figure 8E-8 to delete "Pedestrian-Only" from the figure title because the Support statements in Section 8E.06 refer to maze fencing design for wheelchairs, power-assisted mobility devices, and bicycles, to delete dimensions that are not relevant to the purpose of this figure, to dimension distances from the nearest rail for consistency throughout Chapter 8E, and revise the note about detectable warning and stop line because the detectable warning is required but the stop line is optional.

Figure 8E-8. Example of Barriers at a ~~Pedestrian-Only~~ Pathway Grade Crossing



Section 8E.07 Comments: NCUTCD agrees with 8E.07 as presented in the NPA.

Section 8E.07 Active Traffic Control Systems

Standard:

If used at a pathway or sidewalk grade crossing, an active traffic control system (see Section 8D.01) shall include flashing-light signals on each approach to the crossing and a bell or other audible warning device (see Figure 8E-9).

Except as provided in Paragraph 4, at pathway-LRT and sidewalk-LRT grade crossings where LRT operating speeds on a semi-exclusive alignment exceed 25 mph, active traffic control systems shall be used.

Except as provided in Paragraph 4, at pathway-LRT and sidewalk-LRT grade crossings where LRT operating speeds on a semi-exclusive alignment exceed 40 mph, active traffic control systems, including automatic gates, shall be used.

Option:

Flashing-light signals, bells, and other audible warning devices may be omitted at pathway or sidewalk grade crossings that are located within 25 feet of an active warning device at a grade crossing that is equipped with those devices.

Additional pairs of flashing-light signals, bells, or other audible warning devices may be installed on the active traffic control devices at a grade crossing for pathway or sidewalk users approaching the grade crossing from the back side of those devices.

Guidance:

Where railroad or LRT tracks in a semi-exclusive alignment are immediately adjacent to a roadway and if adequate space exists, a pedestrian refuge area or island should be provided between the tracks and the roadway to permit pedestrians to stand clear of the tracks while waiting to cross the roadway and to stand clear of the roadway while waiting to cross the tracks. If a pedestrian refuge area or island is provided, additional pedestrian features (see Chapter 4I), such as signal heads, signing, and detectors, should be installed in the refuge area or on the island.

Section 8E.08 Comments: NCUTCD generally agrees with 8E.08 as presented in the NPA, but recommends deleting "engineering study" and replacing with "Diagnostic Team" because this is consistent with Section 8A.01.

Section 8E.08 Active Traffic Control Devices – Signals

Support:

Pedestrian signal heads are typically used at highway-highway intersections where pedestrians have an expectation that motorists will sometimes be legally required to yield the right-of-way to them. At grade crossings where rail traffic does not stop, pedestrians will not have the right-of-way yielded to them. Therefore, pedestrian signal heads are not an appropriate traffic control device to use at a pathway or sidewalk grade crossing where rail traffic does not stop. Instead, the universal application of horizontally-aligned, alternately-flashing red lights are the uniform active traffic control device for all grade crossings where rail traffic does not stop including pathway and sidewalk grade crossings.

Standard:

Except as provided in Paragraph 3, pedestrian signal heads as described in Chapter 4I comprised of Upraised Hand and Walking Person symbols shall not be used at a pathway or sidewalk grade crossing.

Option:

Pedestrian signal heads may be used at a pathway or sidewalk grade crossing where the movement of LRT vehicles is controlled by a traffic control signal or by special LRT signals (see Section 8D.16).

Standard:

If used at a pathway or sidewalk grade crossing, alternately flashing red lights shall be aligned horizontally and the light units shall have a diameter of at least 4 inches. For 4-inch diameter light units, the light centers shall be spaced approximately 16 inches apart and, if used, the flashing light unit backgrounds shall be at least 8 inches in diameter.

The red signal indications in the flashing-light signal shall flash alternately with each indication flashing at a rate of not less than 35 or more than 65 times per minute. Each

indication shall be displayed for approximately the same length of time. The total time of display of each pair of indications shall be the entire operating time.

The minimum mounting height of the flashing red lights shall be 4 feet, measured vertically from the bottom edge of the lights to the elevation of the nearest edge of the pathway or sidewalk surface.

Option:

At station, pathway, or sidewalk grade crossings with multiple tracks, traffic control devices may be installed between the tracks in compliance with any railroad clearance requirements.

Standard:

The mounting height for flashing lights that are installed between the tracks at multiple track crossings shall be a minimum of 1 foot, measured vertically from the bottom edge of the lights to the elevation of the nearest edge of the pathway surface.

Guidance:

If a ~~subsequent engineering study~~ Diagnostic Team finds that a flashing-light signal with a Crossbuck sign and an audible device is still not resulting in appropriate pedestrian behavior, consideration should be given to also installing an automatic pedestrian gate (see Section 8E.09). (edit for consistency with Section 8A.01)

Flashing-light signals (see Figure 8E-9) with a Crossbuck (R15-1) sign and an audible device should be installed along semi-exclusive LRT alignments at station, pathway, or sidewalk grade crossings where an engineering study has determined that the sight distance is not sufficient for pathway or sidewalk users to complete their crossing prior to the arrival of LRT traffic at the crossing.

If an engineering study shows that flashing-light signals with a Crossbuck sign and an audible device would not provide sufficient notice of approaching LRT traffic, consideration should be given to also installing an automatic pedestrian gate (see Section 8E.09) with appropriate channelization or fencing.

Section 8E.09 Comments: NCUTCD generally agrees with 8E.09 as presented in the NPA, but recommends deleting the reference to 15 inches for the maximum height of the horizontal hanging bar because research has been done with hanging bars at different heights and the change would allow the Diagnostic Team to determine the appropriate hanging bar height.

Section 8E.09 Active Traffic Control Devices – Automatic Pedestrian Gates

Option:

Automatic pedestrian gates *(see Figures 8E-7, 8E-10, 8E-13, and 8E-14)* may be used at pathway or sidewalk grade crossings.

Standard:

A pathway or sidewalk grade crossing across tracks where trains are permitted to travel at speeds of 80 mph or higher shall be equipped with a system of automatic pedestrian gates and an escape area with swing gates and fencing installed in the vicinity of the crossing to direct users to the pathway or sidewalk grade crossing (see Figure 8E-7) unless an engineering study determines that other safety treatments for the crossing would be more appropriate.

Guidance:

Where automatic pedestrian gates are installed across a pathway or sidewalk at a grade crossing, or where a sidewalk is located between the edge of a roadway and the support for an automatic gate arm that extends across the sidewalk and into the roadway, an emergency escape route (see Figures 8E-5, 8E-7, 8E-11 and 8E-12) should be provided to allow pedestrians to egress away from the track area when the automatic pedestrian gates are activated.

Standard:

Except as provided in Paragraph 6, automatic pedestrian gate arms shall be provided with at least one red light as shown in Figures 8E-10, 8E-12, 8E-13, and 8E-14. This light shall be continuously illuminated whenever the warning system is active.

If any red lights in addition to the continuously-illuminated red light that is required in Paragraph 4 are provided on the automatic pedestrian gate arm, they shall be installed in pairs and shall be flashed alternately in unison with the other flashing-light units at the crossing.

Option:

The red light on an automatic pedestrian gate arm may be omitted if the pathway or sidewalk grade crossing is located within 25 feet of the traveled way at a highway-rail or highway-LRT grade crossing that is equipped with active warning devices (see Figure 8E-13).

Guidance:

If used at a pathway or sidewalk grade crossing, the height of the automatic pedestrian gate arm when in the down position should be a minimum of 3 feet and a maximum of 4 feet above the pathway or sidewalk.

If used at a pathway or sidewalk grade crossing, the gate configuration, which might include a combination of automatic pedestrian gates and swing gates, should provide for full-width coverage of the pathway or sidewalk on each approach to the crossing.

Standard:

Where a sidewalk is located between the edge of a roadway and the support for an automatic gate arm that extends across the sidewalk and into the roadway, the location, placement, and height prescribed for vehicular gates shall be used (see Section 8D.03).

Guidance:

Except as provided in Paragraph 11, if a separate automatic pedestrian gate is used for a sidewalk at a highway-rail or highway-LRT grade crossing, instead of a supplemental or auxiliary gate arm installed as a part of the same mechanism as the vehicular gate, a separate mechanism (see Figure 8E-13) should be provided for the separate automatic pedestrian gate so that if a pedestrian manually raises the pedestrian gate arm, it will have no effect on the vehicular gate.

Option:

A supplemental or auxiliary pedestrian gate arm installed as a part of the same mechanism as the vehicular gate may be used if the operating mechanism is designed to prevent the vehicular gate from being raised as a result of a pedestrian manually raising the pedestrian gate arm.

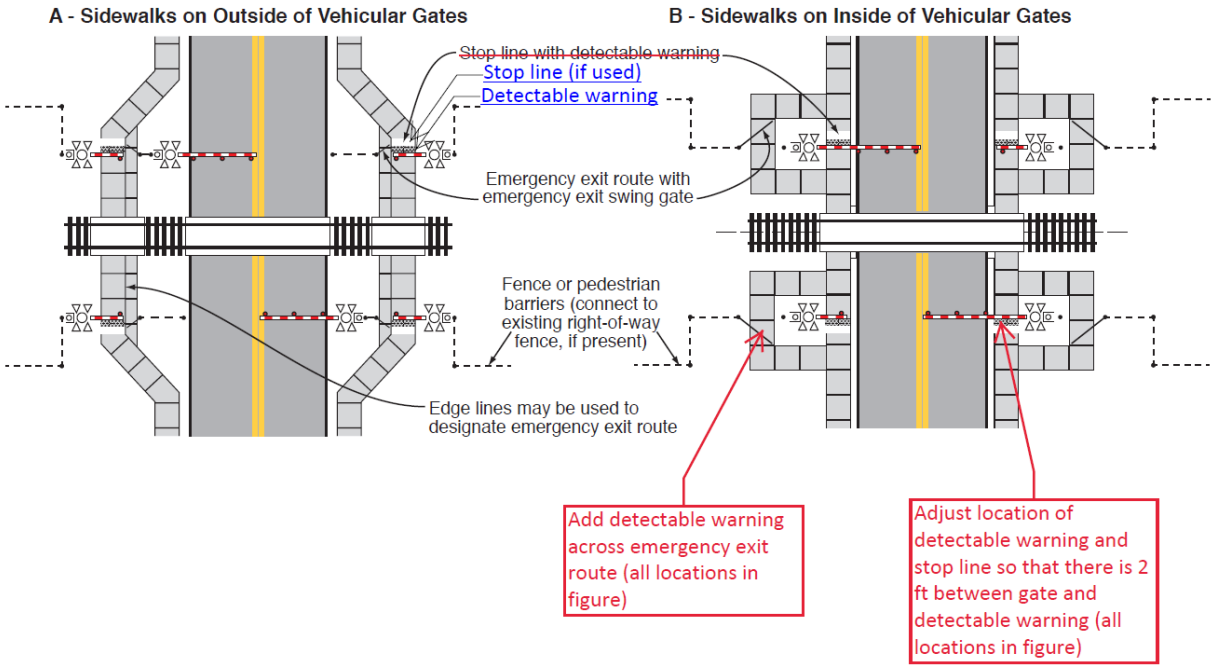
A horizontal hanging bar (see Figure 8E-14) may be attached to an automatic pedestrian gate at a pathway or sidewalk grade crossing to inform pedestrians who have visual disabilities that the automatic pedestrian gate is in the down position and to reduce the likelihood that pedestrians will violate a lowered crossing gate.

Guidance:

If a horizontal hanging bar is attached to an automatic pedestrian gate, the height of the horizontal hanging bar when in the down position should be ~~a maximum of 15 inches above the pathway or sidewalk~~ determined by the Diagnostic Team. (remove reference to 15 inches and allow the Diagnostic Team to determine the appropriate height)

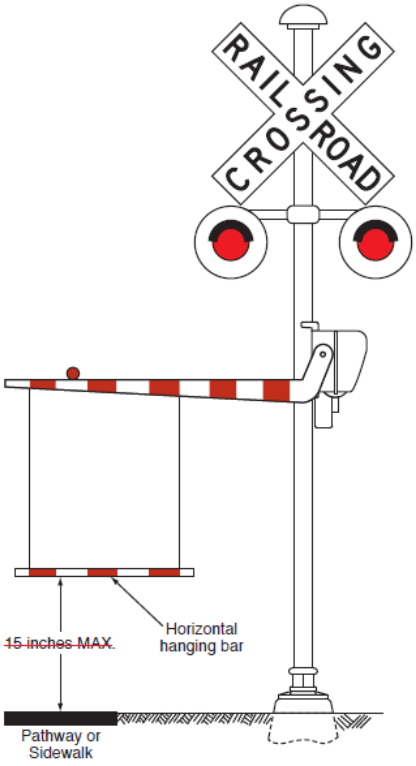
NCUTCD generally agrees with Figure 8E-11 as presented in the NPA, but recommends adjusting the location of the detectable warning and stop line because they are not consistent with the Guidance statements in Section 8E.04, revising the note about detectable warning and stop line because the detectable warning is required but the stop line is optional, and add a detectable warning across the emergency exit routes because they are required per the Standard statement in Section 8E.04.

Figure 8E-11. Example of Placement of Automatic Pedestrian Gates at a Sidewalk Grade Crossing



NCUTCD recommends revising Figure 8E-14 to delete the 15 inch dimension as the maximum height of the horizontal hanging bar because research has been done with hanging bars at different heights and the change would allow the Diagnostic Team to determine the appropriate hanging bar height, consistent with the recommended text changes in Section 8E.09.

Figure 8E-14. Example of an Automatic Pedestrian Gate with a Horizontal Hanging Bar at a Pathway or Sidewalk Grade Crossing



Section 8E.10 Comments: NCUTCD agrees with 8E.10 as presented in the NPA.

Section 8E.10 Active Traffic Control Devices – Multiple-Track Pathway or Sidewalk Grade Crossings

Guidance:

Where railroad or LRT tracks are immediately adjacent to other tracks, the traffic control devices that control pedestrian movements should be designed to avoid having pedestrians wait between sets of tracks.