



National Committee on Uniform Traffic Control Devices

17200 West Bell Road No.1135 * Surprise, Ariz. 85374
Telephone (623) 214-2403 * e-mail: ncutcd@aol.com

TECHNICAL COMMITTEE: Railroad / Light Rail Transit Technical Committee

TOPIC: Proposed Changes and Additions to Pathway Grade Crossings and Related Sections

STATUS/DATE OF ACTION:

TC Drafts:	06/23/2011
RRLRT Approval:	06/21/2012
Transmitted to Sponsors:	09/07/2012
RRLRT editorial revisions & Approval:	01/10/2013
Council Approval:	06/28/2013

ORIGIN OF REQUEST: Railroad and Light Rail Transit Technical Committee

DISCUSSION:

Part 8 of the MUTCD has predominantly supported traffic control devices used at highway-rail grade crossings. Since publication of the ADA and ABA Accessibility Guidelines, increasing national awareness has been generated regarding accessibility for all users of traveled ways. With additional changes proposed in PROWAG, MUTCD is in need of modification to support accessibility at grade crossings. Further, with increasing ridership on light rail, commuter rail and passenger rail facilities, pedestrian interaction with trains has led to an increasing trend in pedestrian/rail incidents.

The RRLRT TC of the NCUTCD has been working to provide recommended changes to MUTCD to support not only accessibility, but increased safety through the use of appropriate traffic control devices at pathway, sidewalk and station crossings. These proposed changes to MUTCD are the work product of the TC.

In January 2011, Sponsor Comments were received on the October 28, 2010 RRLRT ITEM 5 regarding pathway and sidewalk grade crossings. Due to significant changes to the original

RRLRT Item 5, adoption of the 2009 MUTCD and Sponsor Commented received and reviewed by the TC, the RRLRT TC now proposes the following changes and additions to Pathway Grade Crossings (Sections 8C.13 and 8D.01 thru 8D.06). The purpose of the change is to provide information regarding the use of traffic control devices on pathway and sidewalk grade crossings to increase safety, provide for the uniform application of traffic control devices and facilitate accessibility for all pedestrians which are inter-twined with various traffic control devices and design features. The proposed language also details certain elements between highway-rail grade crossings and LRT grade crossings which resulted from the combining of Part 8 and 10.

Proposed changes and additions to Figures are included in a separate document which is provided as a companion to this document for review and comment.

SUMMARY OF PROPOSED CHANGES:

- 1) Add three new definitions to Section 1A.13
- 2) Delete Section 8C.13 and Figure 8C-4 thru 8C-10 and relocate into Section 8D.
- 3) Additions and Deletions to Section 8D text and deletion of Figure 8D-1.
- 4) Addition of 17 new figures to Section 8D (Figures 8D-1 thru 8D-17).
- 5) Addition of one new PUSH TO EXIT (R8-11) sign to Figure 8B-1 and Table 9B-1.
- 6) 1/10/13 editorial revisions based on Sponsor Comments, including dividing Section 8D.05 into smaller sections (Sections 8D.05 - 8D.07) and dividing Section 8D.06 into smaller sections (Sections 8D.08 – 8D.11) to facilitate the ability to read and search specific topics.

NEW DEFINITIONS:

Section 1A.13 Definitions of Headings, Words, and Phrases in this Manual

Diagnostic Team – a group of knowledgeable representatives of the parties of interest in a highway-rail crossing or group of crossings (see 23 CFR Section 109, Part 646.204).

Sidewalk Grade Crossing – the portion of a Grade Crossing where a sidewalk and railroad or light rail transit tracks cross at the same level, within which are included the tracks, sidewalk, and traffic control devices.

Swing Gate – a self-closing fence-type gate designated to swing open away from the track area and return to the closed position upon release.

(Add new PUSH TO EXIT (R8-11) sign to Figure 8B-1 and
Table 9B-1: Sign & Plaque name = PUSH TO EXIT, Sign Designation = R8-11, Section = 8D.03, Size for
Shared-Use Path = 18 x 9, Size for Roadway = --)



R8-11

RELATED CHANGES:

(Section 8C.13 and associated figures were deleted or revised and relocated into Section 8D)

CHAPTER 8D. PATHWAY AND SIDEWALK GRADE CROSSINGS

Section 8D.01 Purpose

Support:

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

06 Many of the treatments outlined in this Chapter that are applicable to pathways and sidewalks at
07 grade crossings including detectable warnings, and swing gates. Physical requirements for pathways
08 and sidewalks are not traffic control devices, but are features that provide increased safety for users of
09 pathways and sidewalks.

10 Markings for crosswalks at intersections where pedestrians cross LRT or railroad tracks in mixed-
11 use alignments are covered by the provisions of Section 3B.18 rather than by the provisions of this
12 Chapter.

13 An example of the placement of signing and markings for pathways and sidewalks are shown in
14 Figure 8D-1.

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

Guidance:

01 *The appropriate traffic control system or design features referenced in this chapter 8D at a pathway
02 or sidewalk grade crossing should be developed by a diagnostic team that also includes the agency with
03 jurisdiction over the pathway or sidewalk.*

Support:

04 Pedestrian safety is enhanced when pathways and sidewalks are designed such that they cross the
05 tracks at as close to a right angle as practical.

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

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

Option:

16 The adjustment, re-alignment, or relocation of existing sidewalk grade crossings may be considered
17 when determining the placement of traffic control devices for roadway users.

Support:

18 The casters of wheelchairs and the wheels of bicycles could fall into and might be constrained in the
19 flangeway gap at a skewed crossing.

20 The flangeway gap is typically 2 ½ inches at LRT grade crossings and 3 inches at railroad grade
21 crossings.

1 *Guidance:*

2 08 *The design and alignment of the pathway or sidewalk should meet the applicable requirements of the*
3 *“Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)” (see*
4 *Section 1A.11), or subsequent standards adopted for application to the public right-of-way.*

6 **Section 8D.03 Pathway and Sidewalk Grade Crossing Signs and Markings**

7 **Standard:**

8 01 **Pathway and sidewalk grade crossing signs shall be standard in shape, legend, and color.**

9 02 **Where used at a pathway grade crossing, the traffic control device or its support shall be at**
10 **least 2 feet laterally from the near edge of the pathway. Where traffic control devices are placed**
11 **over a pathway or sidewalk, the vertical clearance shall be at least 8 feet for pathways and at least 7**
12 **feet for sidewalks (see Figure 9B-1).**

13 *Guidance:*

14 03 *No portion of a traffic control device or its support should protrude into the pathway or*
15 *sidewalk grade crossing.*

16 **Standard:**

17 04 **The minimum mounting height for post-mounted signs adjacent to pathways and sidewalks**
18 **shall be 4 feet, measured vertically from the bottom edge of the sign to the elevation of the near edge**
19 **of the pathway or sidewalk surface (see Figure 9B-1).**

20 05 **The minimum sizes of signs used at a pathway or sidewalk grade crossing shall be as shown in**
21 **the shared-use path column in Table 9B-1.**

22 *Guidance:*

23 06 *Where equestrians use the pathway, the vertical clearance should be at least 10 feet.*

24 07 *If pathway users include those who travel faster than pedestrians, such as bicyclists or skaters,*
25 *warning signs and pavement markings in advance of the pathway grade crossing (see Figure 8D-4*
26 *and 8D-5) should be installed.*

27 08 *The PUSH TO EXIT (R8-11) sign (see Figure 8B-1 and Table 9B-1) should be used on swing gates at*
28 *pathway grade crossings or sidewalk grade crossings to direct users away from the tracks (see Section*
29 *8D.05).*

30 **Option:**

31 09 **The Skewed Crossing Sign (W10-12) may be used to provide advance warning at a skewed sidewalk**
32 **or pathway grade crossing to warn users that the tracks are greater than a 10 degree skew (see Section**
33 **8B.25).**

34 *Guidance:*

35 10 *If used at a pathway or sidewalk grade crossing, a LOOK(R15-8) sign should be placed at least 12*
36 *feet from the center line of the track and should be mounted on a separate support post to the outside of the*
37 *Crossbuck Assembly (see Figure 8D-4).*

38 **Section 8D.04 Stop Lines, Edge Lines, and Detectable Warnings**

39 *Guidance:*

40 01 *A stop line should be provided at a pathway grade crossing if the surface where the marking is to be*
41 *applied is capable of retaining the application of the marking.*

42 **Option:**

02 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:

03 If used at pathway or sidewalk grade crossings, the stop line should be a transverse line at the point where a pathway or sidewalk user is to stop. The stop line should be placed at least 2 feet farther from the nearest rail than the gate, counterweight flashing-light signal or crossbuck assembly (if any of these are present) is placed, and at least 12 feet from the nearest rail.

Standard:

04 **Detectable warnings (see Section 3B.18) shall be used at pathway grade crossing where pedestrian travel is permitted and at sidewalk grade crossings and shall extend across the full width of the pathway or sidewalk.**

Guidance:

05 Detectable warnings should be placed immediately in advance of the pathway or sidewalk stop line (if present) or incorporated into and made a part of the stop line.
06 The near edge of the detectable warnings should be located no less than 12 feet from the nearest rail and be at least 2 feet in depth (see Figures 8D-4 and 8D-5).
07 Where the distance between the center line of two tracks exceeds 38 feet, additional detectable warnings, designating the limits of a pedestrian refuge area, should be used at sidewalk or pathway grade crossings (see Figure 8D-9).

Support:

08 The “Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)” (see Section 1A.11) contains guidelines for the design and placement of detectable warning surfaces (see Section 3B.18).

Option:

09 Edge lines (see Section 3B.06) to delineate the designated user route may be used on 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 (see Figure 8D-8).

Support:

10 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.

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

Standard:

01 **Where the edge of the pathway or sidewalk grade crossings are located greater than 25 feet from the center of the traffic control warning device at a grade crossing, a Crossbuck Assembly shall be installed on each approach. The distance shall be measured perpendicular to the traveled way from the center line of the support post of a Crossbuck Assembly or the mast of an active traffic control warning device at the grade crossing to the edge of the pathway or sidewalk surface on the track (see Section 8D.04 and Figures 8D-2 and 8D-3).**

Support:

02 An example of a Crossbuck Assembly for a pathway or sidewalk grade crossing is shown on

1 Figure 8D-6.

2
3 Option:

4 03 The Crossbuck Assembly may be omitted at station crossings.

5 04 A Crossbuck Assembly may be installed on the approaches to pathway or sidewalk grade crossings..

6 05 A retroreflective strip may be omitted on the Crossbuck support at a pathway or sidewalk
7 grade crossing (see Figure 8D-6 and Section 8B.04).

8 06 Additional Crossbuck signs (R15-1) may be installed on the active traffic control devices at a grade
9 crossing for sidewalk or pathway users approaching the sidewalk or pathway grade crossing from the back
10 side of those devices.

11 12 **Section 8D.06 Swing Gates**

13 *Guidance:*

14 01 The pathway or sidewalk user's ability to detect the presence of approaching rail traffic should be
15 considered in determining the type and placement of traffic control devices.

16
17 Support:

18 02 The pathway or sidewalk user's ability to detect the presence of approaching rail traffic needs to be
19 considered when designing features such as fencing, barriers, or swing gates.

20 03 Swing gates are designed to open away from the track(s) so that pathway or sidewalk users can
21 quickly push the gate open when moving away from the track(s), and to automatically return to the closed
22 position after each use. Latching devices that are used on swing gates need to be designed in a manner such
23 that they are operable by all users of the pathway or sidewalk. Examples of swing gates are shown in
24 Figures 8D-5, 8D-8, 8D-9, 8D-10, and 8D-14.

25 04 It is important to use retroreflectorized material, appropriate object markers, or signs (see Section
26 9B.26) on swing gates, maze fencing, or pedestrian barriers that are placed in the traveled way of a pathway
27 grade crossing. Illumination of such areas can also be beneficial.

28 05 Where automatic gates and swing gates are used, it is desirable that the pathway or sidewalk be
29 designed in a manner that channelizes or directs users to the entrance to and the exit from the pathway or
30 sidewalk grade crossing.

31
32 Option:

33 06 When used in conjunction with automatic gates at a pathway or sidewalk grade crossing, swing gates
34 may be equipped with a latching device that permits the gate to be opened only from the track side of the
35 gate.

36 07 A push bar, kick plate, or similar device may be used on a swing gate.

37
38 *Guidance:*

39 08 *The swing gate should be equipped with a PUSH TO EXIT (new R8-11) sign on the track side of the*
40 *gate, and a DO NOT ENTER (R5-1) sign on the side of the gate facing away from the tracks (see Tables*
41 *8B-1 and 9B-1).*

42
43 Support:

44 09 "The Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities
45 (ADAAG)" (see Section 1A.11) can serve as a guide for the design of swing gates and hardware.

46 47 **Section 8D.07 Fencing and Barriers**

48 Support:

49 01 Examples of fencing installation are shown on Figures 8D-5, 8D-7, 8D-8, and 8D-10.

50 02 Examples of pedestrian barriers at a pathway grade crossing are shown on Figure 8D-7.

03 Where fencing is installed to direct path or sidewalk users to the pathway or sidewalk 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.

04 Pedestrian barriers or fencing, sometimes referred to as a “maze fencing,” direct users to face approaching rail traffic before entering a pathway grade crossing, station crossing or sidewalk grade crossing (see Figure 8D-7).

05 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.

Section 8D.08 Active Traffic Control Systems

Standard:

01 **If used at a pathway grade crossing, an active traffic control system shall include flashing-light signals on each approach to the crossing and a bell or other audible warning device (see Figure 8D-11).**

Option:

02 Flashing-light signals, bell or audible warning device 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.

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

Support:

04 Examples of active control systems and markings used at pathway and sidewalk grade crossings are shown on Figures 8D-8 through 8D-17.

Section 8D.09 Active Traffic Control Devices – Signals

Standard:

01 **Pedestrian signals as described in Chapter 4E utilizing Upraised Hand and Walking Person symbols shall not be used at a pathway or sidewalk grade crossing except as provided in the following option.**

Option:

02 A pedestrian signal may be used at a pathway or sidewalk grade crossing where the movement of LRT vehicles are controlled by a traffic control signal.

Support:

03 Pedestrian signals are typically used at highway-highway intersections where the pedestrian has some expectation of right-of-way. At grade crossings where train movements do not stop, pedestrians do not have right-of-way. Therefore, pedestrian signals are not used at a pathway or sidewalk grade crossing where movements of trains do not stop. Instead, the universal application of horizontally aligned, alternately flashing red lights are the uniform active traffic control device for all grade crossings including pathway and sidewalk crossings.

Standard:

04 **If used at a pathway or a 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**

1 light units, the light centers shall be spaced approximately 16 inches apart and if used, the flashing
2 light unit backgrounds shall be a minimum of 8 inches in diameter.

3 05 Each red signal unit in the flashing-light signal shall flash alternately. The number of flashes
4 per minute for each lamp shall be 35 minimum and 65 maximum. Each lamp shall be illuminated
5 approximately the same length of time. Total time of illumination of each pair of lamps shall be the
6 entire operating time.

7 06 The minimum mounting height of the flashing red lights shall be 4 feet, measured vertically
8 from the bottom edge of the lights to the elevation of the near edge of the pathway surface.

9
10 Option:

11 07 At station, pathway or sidewalk crossings with multiple tracks, traffic control devices may be
12 installed between the tracks in compliance with railroad clearance requirements in Section 8C.

13
14 **Standard:**

15 08 **The mounting height for flashing lights that are installed between the tracks at multiple track
16 station crossings shall be a minimum of 1 foot, measured vertically from the bottom edge of the lights
17 to the elevation of the near edge of the pathway surface.**

18
19 *Guidance:*

20 09 *Flashing-light signals (see Figure 8D-11) with a Crossbuck (R15-1) sign and an audible device
21 should be installed on LRT lines at station crossings, pathway crossings, or sidewalk grade crossings and
22 where an engineering study has determined that the sight distance is not sufficient for pathway or sidewalk
23 users to complete their crossing prior to the arrival of the LRT.*

24 10 *If an engineering study finds that flashing-light signals with a Crossbuck sign and an audible device
25 would not provide sufficient notice of approaching LRT traffic, the LOOK (R15-8) sign and/or pedestrian
26 gates should be considered (see Figures 8D-8, 8D-10, 8D-12 through 8D-15).*

27 28 **Section 8D.10 Active Traffic Control Devices – Automatic Gates**

29 Option:

30 01 Automatic gates may be used at pathway or sidewalk grade crossings.

31
32 **Standard:**

33 02 **If the maximum operating train speed is greater than 79 mph, pathway or sidewalk grade
34 crossings shall be equipped with a system of pedestrian gates, an escape area with swing gates and
35 fencing installed in the vicinity of the crossing to direct users to the pathway grade crossing or
36 sidewalk grade crossing unless an engineering study determines other safety treatments for the
37 crossings (see Figures 8D-5 and 8D-10).**

38
39 *Guidance:*

40 03 *When an automatic gate is used at a sidewalk grade crossing, a separate mechanism should be
41 provided for the sidewalk gate, instead of a supplemental or auxiliary gate arm installed as a part of the
42 same mechanism.*

43
44 Option:

45 04 A supplemental or auxiliary automatic gate arm may be used for a sidewalk grade crossing if the
46 operating mechanism is designed to prevent a pedestrian from raising the roadway gate if the pedestrian
47 gate is raised.

48
49 **Standard:**

50 05 **If used at a pathway or sidewalk grade crossing, automatic gate arms shall be provided with a**

1 **minimum of one light as shown in Figure 8D-12, 8D-13, and 8D-15. This light shall be continuously**
2 **illuminated whenever the warning system is active.**

3 06 **If used, additional lights on the automatic gate arm shall be installed in pairs and flashed**
4 **alternately in unison with other flashing light units.**

5
6 Option:

7 07 The light on the automatic gate arms may be omitted at a pathway or sidewalk grade crossing that is
8 located within 25 feet of the traveled way at a grade crossing that is equipped with active warning devices.

9
10 *Guidance:*

11 08 *If used at a pathway grade crossing or sidewalk grade crossing, the height of the automatic*
12 *pedestrian gate arm or pedestrian gate when in the down position should be a minimum of 3 feet and a*
13 *maximum of 4 feet above the pathway or sidewalk.*

14
15 Option:

16 09 If used at a pathway grade crossing or a sidewalk grade crossing, the automatic pedestrian gates may
17 be equipped with a horizontal hanging bar attached to the gate for users with visual disabilities (see Figure
18 8D-13).

19
20 *Guidance:*

21 10 *If used at a pathway or sidewalk grade crossing, the gate configuration, which might include a*
22 *combination of automatic pedestrian gates and swing gates, should provide for full width coverage of the*
23 *pathway or sidewalk on each approach to the crossing.*

24 11 *Where automatic pedestrian gates are installed across pathway or sidewalk grade crossings, an*
25 *emergency escape route should be available to provide egress away from the track area when the gates are*
26 *activated.*

27 28 **Section 8D.11 Active Traffic Control Devices – Multiple Track Crossings**

29 Support:

30 01 Multiple tracks at or in the vicinity of the crossing can be occupied by a train or locomotive so as to
31 obscure the movement of an LRT train approaching the crossing, reducing the sight distance.

32
33 *Guidance:*

34 02 *Where LRT tracks are immediately adjacent to other tracks, pedestrian movements should be*
35 *designed to avoid having pedestrians wait between sets of tracks.*

36 03 *Where LRT tracks are immediately adjacent to a road in a semi-exclusive alignment, a pedestrian*
37 *refuge area or island between the tracks and the road should be provided to permit pedestrians to stand*
38 *clear of the tracks while waiting to cross the roadway. If there is insufficient area for a pedestrian refuge*
39 *area or island between the tracks and the road, additional pedestrian signal heads, signing, and detectors*
40 *(see Section 4E.08) or flashing light signals should be installed based on engineering judgment.*