National Committee on
Uniform Traffic Control Devices

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Item No.: 25A-BIK-03
Technical Correction

NCUTCD RECOMENDATION FOR CHANGES TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

COMMITTEE / TASK FORCE:	Bicycle Technical Committee
ITEM NUMBER:	25A-BIK-03
TOPIC:	Chapter 9E Technical Corrections
ORIGIN OF REQUEST:	Bicycle Technical Committee
AFFECTED SECTIONS OF MUTCD:	9E.02, 9E.03, 9E.05, 9E.07, 9E.08, 9E.17 Figures 9E-2, 9E-3, 9E-4, 9E-5, 9E-6, 9E-7, 9E-9, 9E-12, 9E-14, 9E-15

DEVELOPMENT HISTORY:

Approved by Bicycle TC:	01/09/2025, 06/24/2026
Approved by NCUTCD Council:	06/25/2026

This is a recommended change to the MUTCD that has been approved by the NCUTCD Council. This proposal does not represent a revision of the MUTCD and does not constitute official MUTCD standards, guidance, or options. It will be submitted to FHWA for consideration for inclusion in a future MUTCD revision. The MUTCD can be revised only through the federal rulemaking process.

SUMMARY:
Included are technical corrections in Chapter 9E - Markings for text and figure corrections and to remove North arrows from the figures.

DISCUSSION:
The 11th Edition of the MUTCD introduces North arrows to Part 9 Figures; however, the arrows do not have relevance to the figures and are new content after the NPA. Note: NCUTCD has recommended the removal of north arrows in several figures as part of previously-approved proposals. Additional technical corrections and corrections to known errors identified by FHWA are also included in this proposal.

RECOMMENDED MUTCD CHANGES:
The following present the proposed changes to the current MUTCD within the context of the current MUTCD language. Proposed additions to the MUTCD are shown in blue underline and proposed deletions from the MUTCD are shown in ~~red strikethrough~~. Changes previously approved by NCUTCD Council (but not yet adopted by FHWA) are shown in green double underline for additions and ~~green double strikethrough~~ for deletions. In some cases,

background comments may be provided with the MUTCD text. These comments are indicated by [bracketed white text in shaded green].

PART 9. TRAFFIC CONTROL FOR BICYCLE FACILITIES

CHAPTER 9E. MARKINGS

Section 9E.02 Bicycle Lanes at Intersection Approaches

Standard:

01 **Except as provided in Paragraph 2 of this Section, a through bicycle lane shall not be positioned to the right of a right turn only lane or to the left of a left turn only lane.**

Option:

02 A through bicycle lane may be positioned to the right of a right turn only lane or to the left of a left turn only lane provided that the bicycle lane is controlled by a traffic signal that displays bicycle signal indications (see Chapter 4H).

Support:

03 Unless the approach is controlled by a bicycle symbol signal indication, a bicyclist continuing straight through an intersection from the right of a right turn only lane or from the left of a left turn only lane would be inconsistent with normal traffic behavior and would violate the expectations of right-turning or left-turning motorists.

Guidance:

04 *Unless a bicycle lane that is controlled by a bicycle symbol signal indication remains to the right (left) of a mandatory right-turn (left-turn) lane, where a ~~When the~~ right (left) through lane is dropped to become a mandatory right-turn (left-turn) lane, bicycle lane markings to the right (left) of that lane should stop at least 100 feet before the beginning of the right-turn (left-turn) lane. Through bicycle lane markings should resume to the left (right) of the mandatory right-turn (left-turn) lane.*

05 *Except as provided in Paragraph 2 of this Section, an optional through-right (through-left) turn lane next to a mandatory right-turn (left-turn) lane should not be used where there is a through bicycle lane.*

Standard:

06 **A bicycle lane located on an intersection approach between general-purpose lanes for motor vehicle movements shall be marked with at least one bicycle symbol or word marking and at least one arrow pavement marking as provided in Paragraph 4 of Section 9E.01.**

07 **A bicycle lane shall not be marked within a general-purpose lane, either with dotted or any other line markings.**

Option:

08 Where there is insufficient width in the roadway to include both a bicycle lane and a general-purpose turn lane, bicycle travel may be accommodated within the turn lane or general-purpose lane using shared-lane markings.

Standard:

09 **Where a general-purpose turn lane is controlled by a traffic control signal, through bicycle movements shall not be accommodated in the turn lane unless the turning movement is always permitted to proceed simultaneously with the adjacent through movement.**

Support:

10 Examples of bicycle lane markings on approaches to intersections are shown in Figures 9E-3, 9E-4, and 9E-9.

Guidance:

11 *The longitudinal line defining a bicycle lane should be dotted on approaches to intersections where turning vehicles are permitted to cross the path of through-moving bicycles (see Figure 9E-2 ~~9D-7~~).*

Figure 9E-2. Example of Pavement Markings for Bicycle Lanes on a Two-Way Street

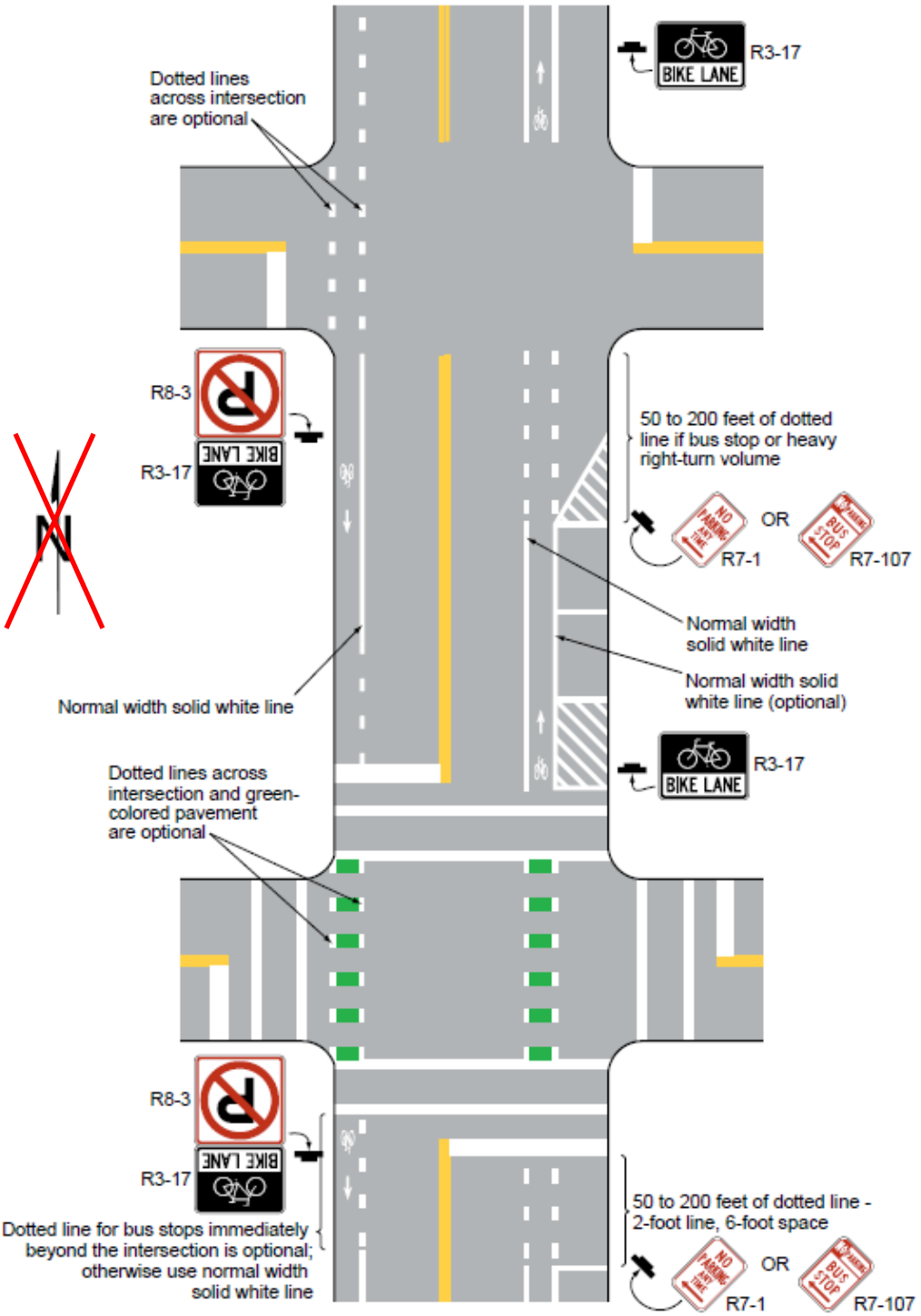


Figure 9E-3. Examples of Bicycle Lane Markings on an Approach to an Intersection
(Sheet 1 of 3)

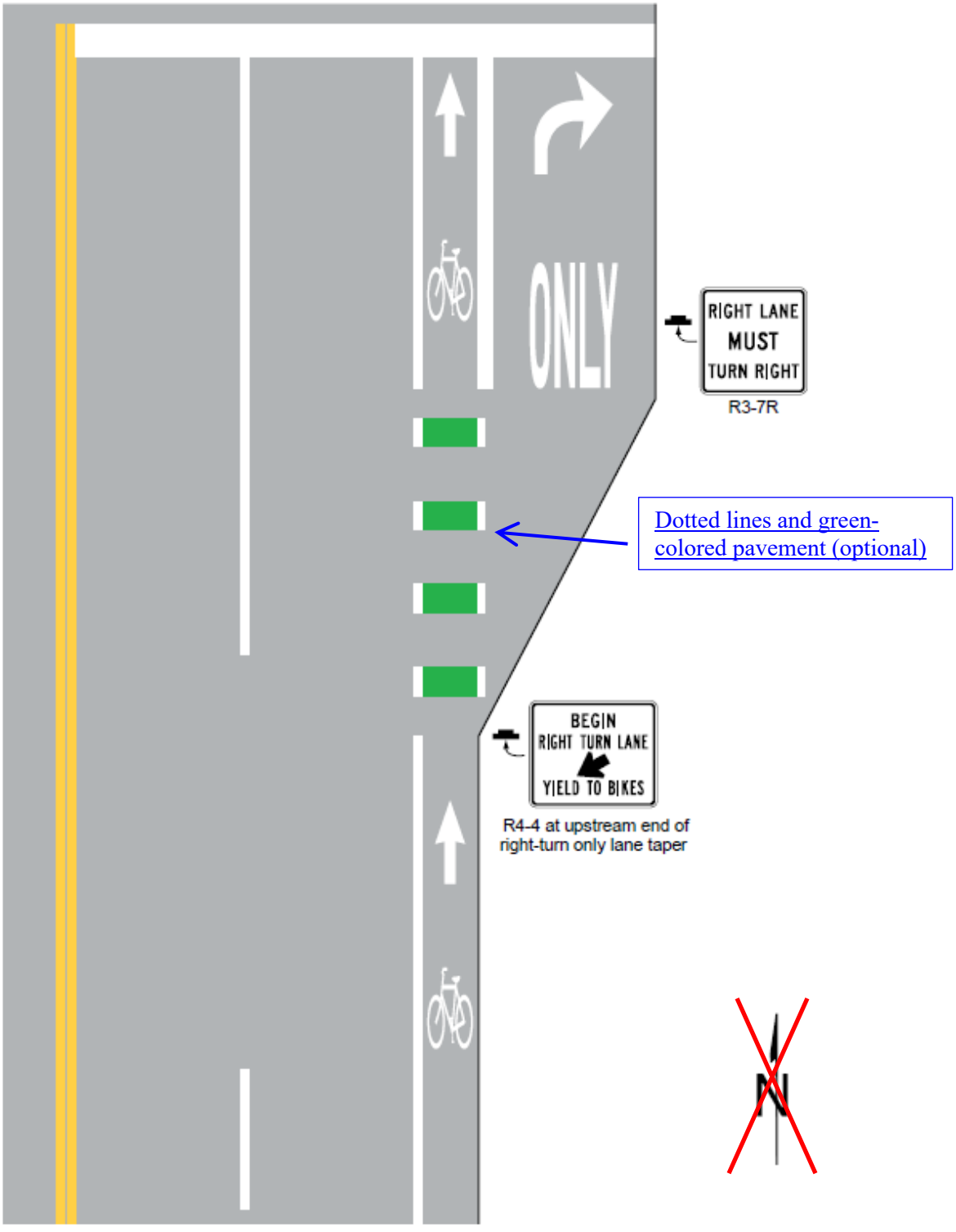


Figure 9E-3. Examples of Bicycle Lane Markings on an Approach to an Intersection
(Sheet 2 of 3)

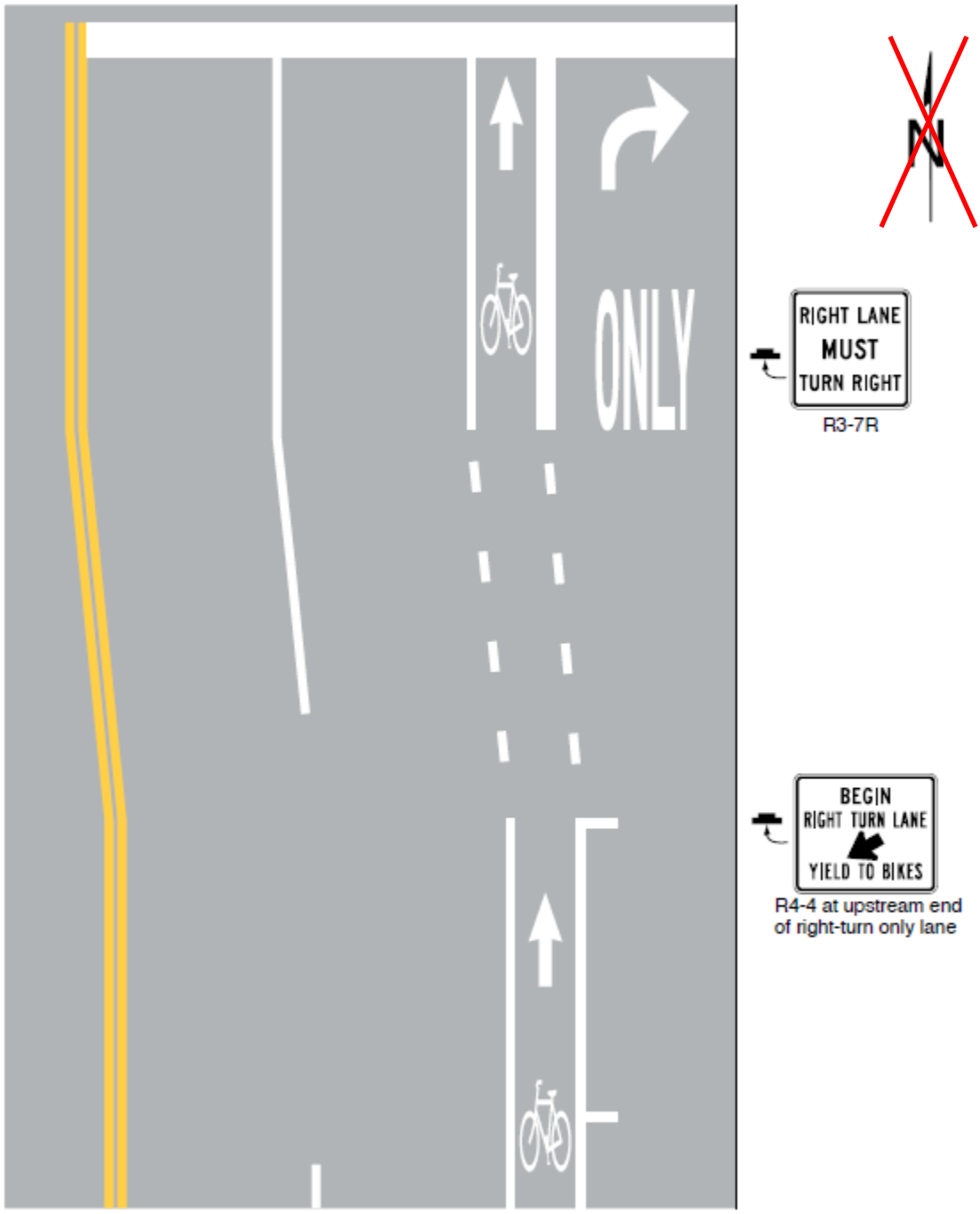


Figure 9E-3. Examples of Bicycle Lane Markings on an Approach to an Intersection
(Sheet 3 of 3)

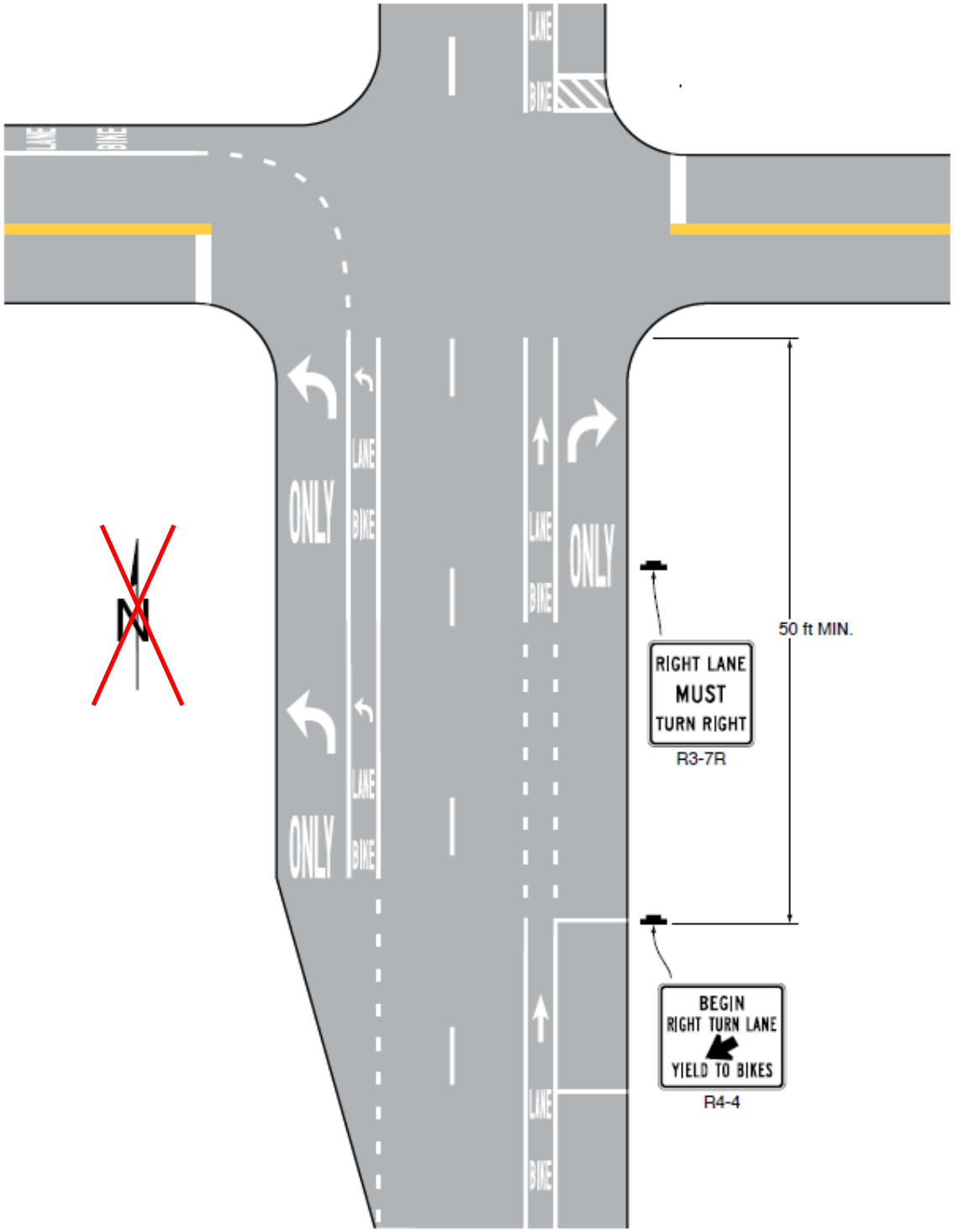
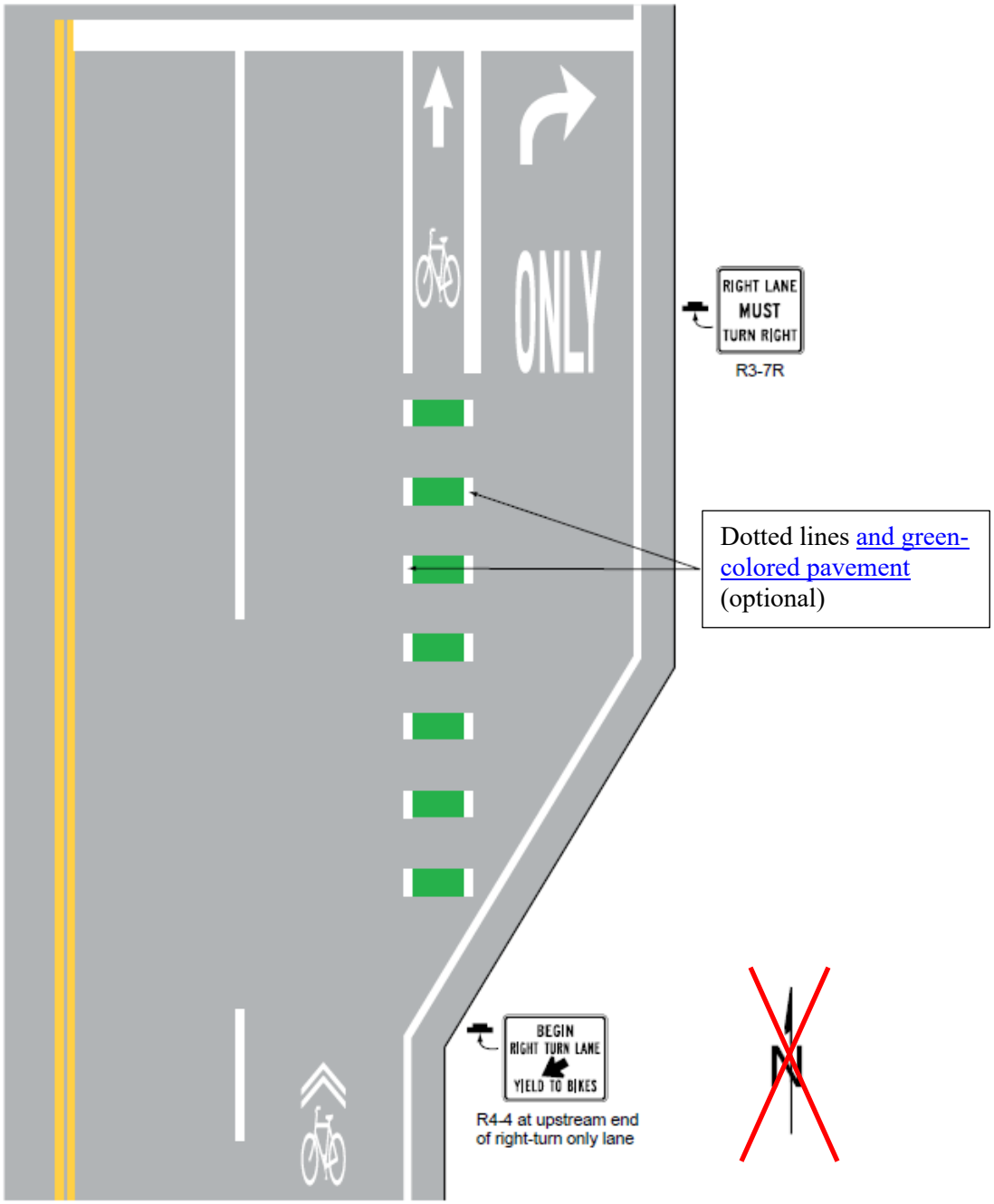


Figure 9E-4. Example of Bicycle Lane Markings on an Approach to an Intersection that Transitions from a Shared Lane



Support:

12 Buffer-separated and separated bicycle lanes require additional considerations at intersections, including sight distances for bicycles and other road users, user expectations, and intersection geometry.

Option:

13 A buffer-separated or separated bicycle lane may be shifted closer to, or farther away from the adjacent general-purpose lane depending upon site-specific conditions (see Drawings D and E in Figure 9E-7).

Support:

14 A buffer-separated or separated bicycle lane shifted away from the adjacent general-purpose lane at an intersection can create space for a motor vehicle to queue between the general-purpose lane and the extension of the bicycle lane. This design can also improve the safety and comfort of bicyclists by reducing the speed of turning motor vehicles, improving sightlines, and creating additional buffer space prior to the conflict point with turning motor vehicles.

15 The purpose of shifting a buffer-separated or separated bicycle lane away from the adjacent general-purpose lane is to allow the driver of a turning vehicle to undertake the tasks of turning and scanning for bicycle cross traffic in isolation versus simultaneously. Sufficient sight distance for both drivers and bicyclists is important in this design (see Drawing E in Figure 9E-7).

16 The purpose of shifting a buffer-separated or separated bicycle lane toward the adjacent general-purpose lane is to improve the visibility of bicyclists to the adjacent traffic and avoid conflicts between turning motor vehicles and bicyclists (see Drawing D in Figure 9E-7).

17 Staggering stop lines (see Section 3B.19) so that general-purpose lanes stop further in advance from the intersection than the bicycle lane can improve the visibility of bicyclists for drivers of turning vehicles (see Drawing D in Figure 9E-7).

Option:

18 Where a general-purpose mandatory turn lane is provided at an intersection and the approach also includes a separated or buffer-separated bicycle lane, a mixing zone may be established to allow general-purpose turning traffic to share the roadway space with bicyclists (see Figure 9E-5).

Standard:

19 **Mixing zones shall be used only where the bicycle lane is one-way in the same direction of travel as the adjacent general-purpose lane.**

20 **Mixing zones with a yielding area shall have yield markings indicating where general-purpose traffic entering the shared space shall yield to bicyclists.**

21 **Where a mixing zone continues to the intersection itself sharing space between bicyclists and general-purpose turning traffic, shared-lane markings and turn arrows shall be provided in the lane.**

Support:

22 Mixing zones require bicycles and general traffic to share space, interrupting a buffer-separated or separated bicycle lane where bicycle traffic is otherwise separated from general traffic. The preference is to provide a dedicated bicycle facility for the intersection approach; if that is not possible, the mixing zone needs to indicate that bicyclists and motorists are entering a shared condition.

Guidance:

23 *Where a mixing zone provides for the re-establishment of a bicycle lane after bicycles and general-purpose lanes cross paths, a buffered or physically-separated space should be provided between the bicycle lane and the adjacent general-purpose lane (see Drawing C in Figure 9E-5).*

Section 9E.03 Extensions of Bicycle Lanes through Intersections

Support:

01 Extensions of bicycle lanes through intersections can help identify the paths of bicyclists and guide them on movements that could be difficult to discern. Extensions of bicycle lanes through intersections also assist other road users of the intersection to identify where bicyclists are expected to operate and to recognize potentially unexpected conflict points.

02 The design, placement, and maintenance of bicycle lane extensions through intersections are important considerations, especially when contiguous to a crosswalk, to avoid potential confusion to pedestrians with vision disabilities.

03 The width and color of lane extension markings are discussed in Section 3B.11.

Option:

04 The bicycle symbol, the arrow marking, pavement word markings, or a combination thereof may be used in bicycle lane extensions through intersections.

05 Green-colored pavement may be used in a bicycle lane extension in accordance with the provisions of Section 3H.06.

Standard:

06 **Shared-lane markings or chevron markings shall not be used in bicycle lanes or bicycle lane extensions (see Section 9E.09).**

07 **If used, extensions ~~Extensions~~ of bicycle lanes through intersections shall use dotted line patterns.**

Support:

08 Separated and buffer-separated bicycle lanes may have alignments that are not as obvious within an intersection as a standard bicycle lane, therefore additional conspicuity is important where these types of bicycle lanes cross intersections.

Guidance:

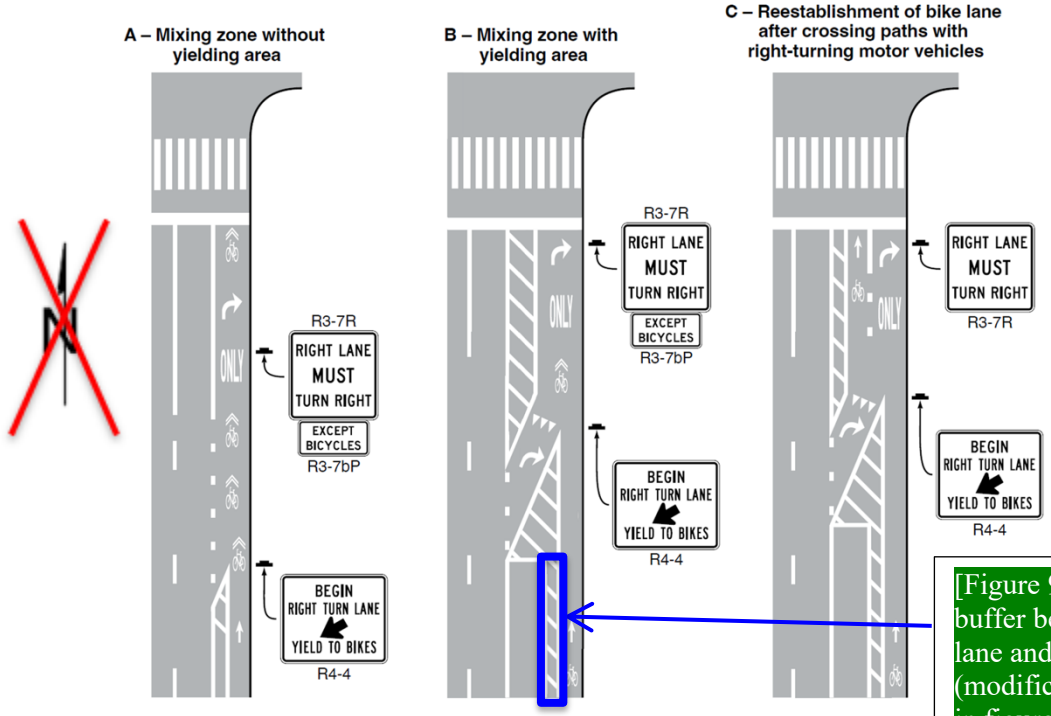
09 *Lane extension markings should be used to extend a buffer-separated or separated bicycle lane through intersections and driveways.*

10 *The extension of a bicycle lane through an intersection should use two lines defining both lateral limits of the bicycle lane.*

Standard:

11 **Where the path of the bicycle lane through the intersection is contiguous to a crosswalk, two longitudinal dotted lines shall be provided to establish the lateral limits of the bicycle lane extension. The transverse line establishing one side of the crosswalk, or the limit of a high-visibility crosswalk pattern (see Section 3C.05) that does not employ a transverse line, shall not be used to demarcate one side of the bicycle lane extension.**

Figure 9E-5 Examples of Pavement Markings for Mixing Zones



[Figure 9E-5B - add buffer between parking lane and bicycle lane (modification is shown in figure)

Section 9E.05 Bicycle Lanes at Circular Intersections

Standard:

01 **Bicycle lanes shall not be provided in the circulatory roadway of an unsignalized circular intersection that includes conflicts at entry or exit points (see Chapter 3D) except as provided in Paragraph 4 of this Section.**

Guidance:

02 *Bicycle lane markings should stop at least 100 feet before the crosswalk, or if no crosswalk is provided, at least 100 feet before the yield line, or if no yield line is provided, then at least 100 feet before the edge of the circulatory roadway.*

03 *If used, bicycle crossings should be a minimum of 20 feet from the edge of the circulatory roadway.*

Option:

04 Separated bicycle lanes may be used in circular intersections.

Support:

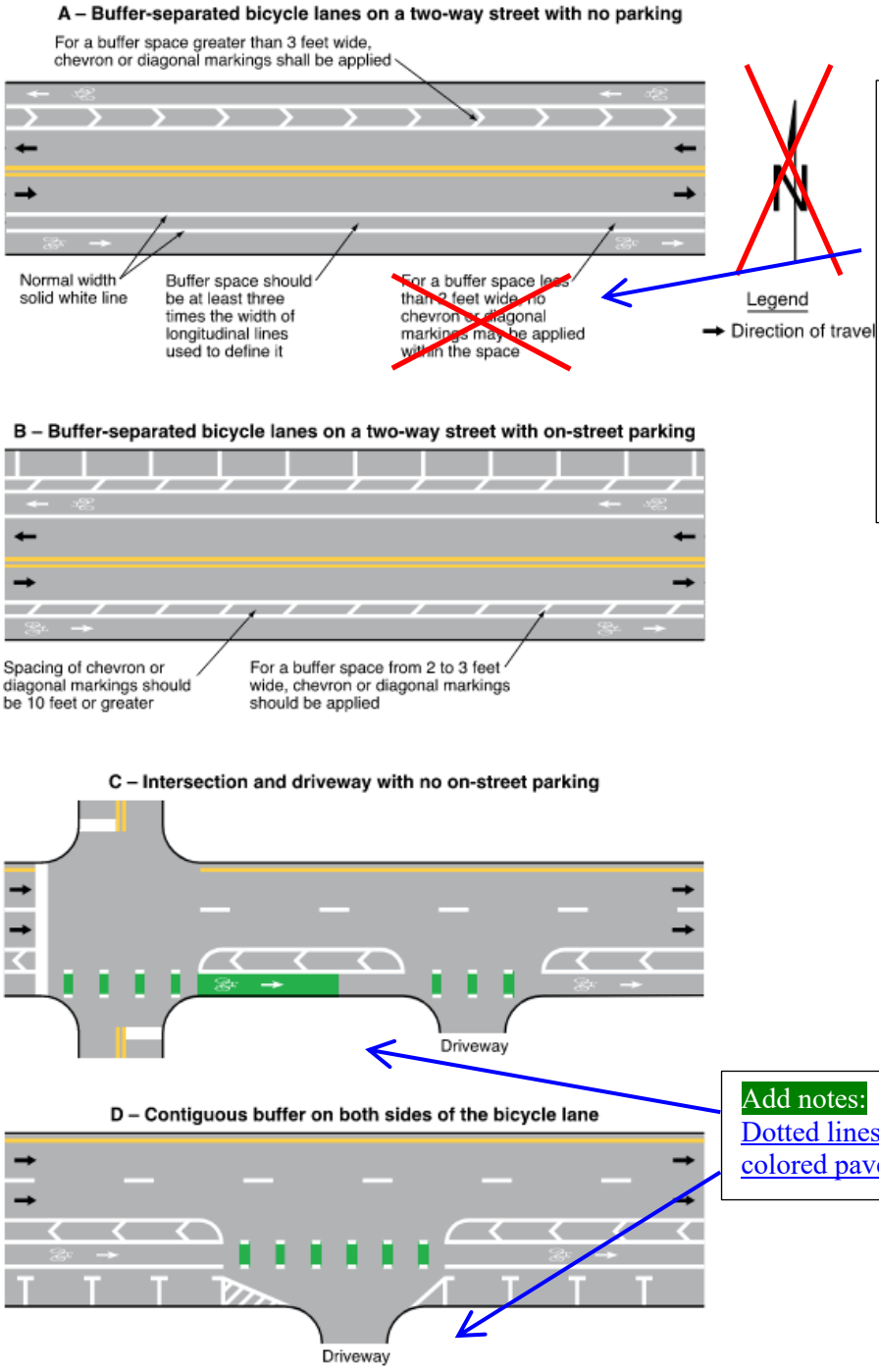
05 Separated bicycle lanes allow bicycles to navigate a circular intersection and its crossing points without merging into traffic and without dismounting and using a crosswalk at the intersection crossing point. This is beneficial at multi-lane and higher-speed circular intersections.

06 Section 9E.10 contains information on using shared-lane markings to facilitate the bicycle movement through a circular intersection.

07 The "Guide for the Development of Bicycle Facilities," 2012 Fourth Edition, American Association of State Highway and Transportation Officials, contains information on designing for bicycles on the sidewalk in lieu of, or in addition to, using shared-lane markings in the circulatory roadway of the intersection.

08 The "Improving Intersections for Pedestrians and Bicyclists Informational Guide" (FHWA-SA-22-017), FHWA, contains information on incorporating separated bicycle lanes and other bicycle facilities into circular intersections.

Figure 9E-6 Examples of Markings for Buffered-Separated Bicycle Lanes



Revise note to be consistent with Section 9E.06 paragraph 10:
For a buffer space less than 2 feet wide, ~~no chevron or~~ diagonal markings or no markings may be applied within the space

Add notes:
Dotted lines and green-colored pavement (optional)

Section 9E.07 Separated Bicycle Lanes

Support:

01 Separated bicycle lanes provide a physical separation between a general-purpose lane and a bicycle lane through the use of vertical objects or vertical separation between the general-purpose lane and bicycle lane. Providing a physical separation between a bicycle lane and a general-purpose lane can reduce vehicle encroachment into the bicycle lane beyond a marked buffer alone and can in some cases prevent that encroachment altogether.

02 Physical separation between general-purpose lanes and bicycle lanes introduces additional design considerations over buffer-separated bicycle lanes, including the awareness of a potentially unexpected conflict point for turning motor vehicles and the provision of adequate sight distance for all users at intersections and driveway crossings.

Option:

03 Vertical elements used to provide physical separation between general-purpose lanes and bicycle lanes may include, but are not limited to, tubular markers, raised islands, or parked vehicles.

Support:

04 Where on-street parking is provided adjacent to the buffer area of a separated bicycle lane, pedestrians will need to access those vehicles.

Guidance:

05 *BIKE LANE (R3-17) signs (see Figure 9B-1) should be used to distinguish a separated bicycle lane from a general-purpose lane.*

06 *Where an on-street parking lane serves as the separation between a general-purpose lane and a separated bicycle lane, a buffer space should be provided between the parking lane and the bicycle lane to allow for opening doors of parked vehicles.*

Option:

07 Separated bicycle lanes may be designed for one-way or two-way bicycle travel.

Support:

08 Providing one-way separated bicycle lanes in the same direction as and on the right-hand side of the general-purpose lane, whether on a one-way or two-way roadway, accommodates the expectations of road users and might result in fewer conflict points at intersections or driveway crossings.

Option:

09 Separated bicycle lanes may be provided on one or both sides of a roadway or in a center median.

Support:

10 The presence of two-way separated bicycle lanes on one side of a roadway or in a center median can introduce additional challenges and conflict points, which can warrant additional design considerations when selecting the design for a separated bicycle lane. These considerations include design requirements for pedestrians who would interact with the separated bicycle lane.

Standard:

11 **The edge line and lane line colors used for separated bicycle lanes shall conform to the requirements in Chapter 3A (see Figure 9E-7).**

12 **Directional arrows shall be used in conjunction with the bicycle lane symbol or word marking in separated bicycle lanes, placed downstream from the symbol or word marking.**

13 **Turns on red shall be prohibited across separated bicycle lanes while bicyclists are allowed to proceed through the intersection.**

Support:

14 Additional information on signals for bicycle facilities is found in Chapter 4H.

Standard:

15 **The edges of the buffer space for a separated bicycle lane shall be marked with solid longitudinal lines , except as provided in Paragraph 15a.**

Option:

15a Where a raised island is used as the vertical element, the longitudinal marking on the bicycle lane side of the island may be omitted.

Standard:

16 **A marked buffer space that is 2 feet or wider for a separated bicycle lane, including those buffer spaces where tubular markers are provided, shall use chevron or diagonal markings ~~within~~ in the buffer space, unless physical separation is provided that occupies the majority of the buffer space, such as raised islands or other physical dividers, or such as where an on-street parking lane occupies the majority of the buffer space.**

Guidance:

17 *Where used in the buffer area of a separated bicycle lane, the spacing of chevrons or diagonal markings should be 10 feet or greater.*

18 *Crosswalks that cross a separated bicycle lane should be marked consistent with the style of crosswalk marking provided across the adjacent general-purpose lane.*

Support:

19 Where on-street parking is provided as the physical separation adjacent to the buffer area of a separated bicycle lane, the chevron or diagonal marking provisions in Section 9E.06 apply to the area outside of the marked parking area within the buffer (see Figure 9E-7).

20 Intersection treatments for separated bicycle lanes can vary depending on the geometric and operational conditions at the intersection (see Section 9E.02).

Figure 9E-7. Examples of Lane Markings for Separated Bicycle Lanes
(Sheet 1 of 2)

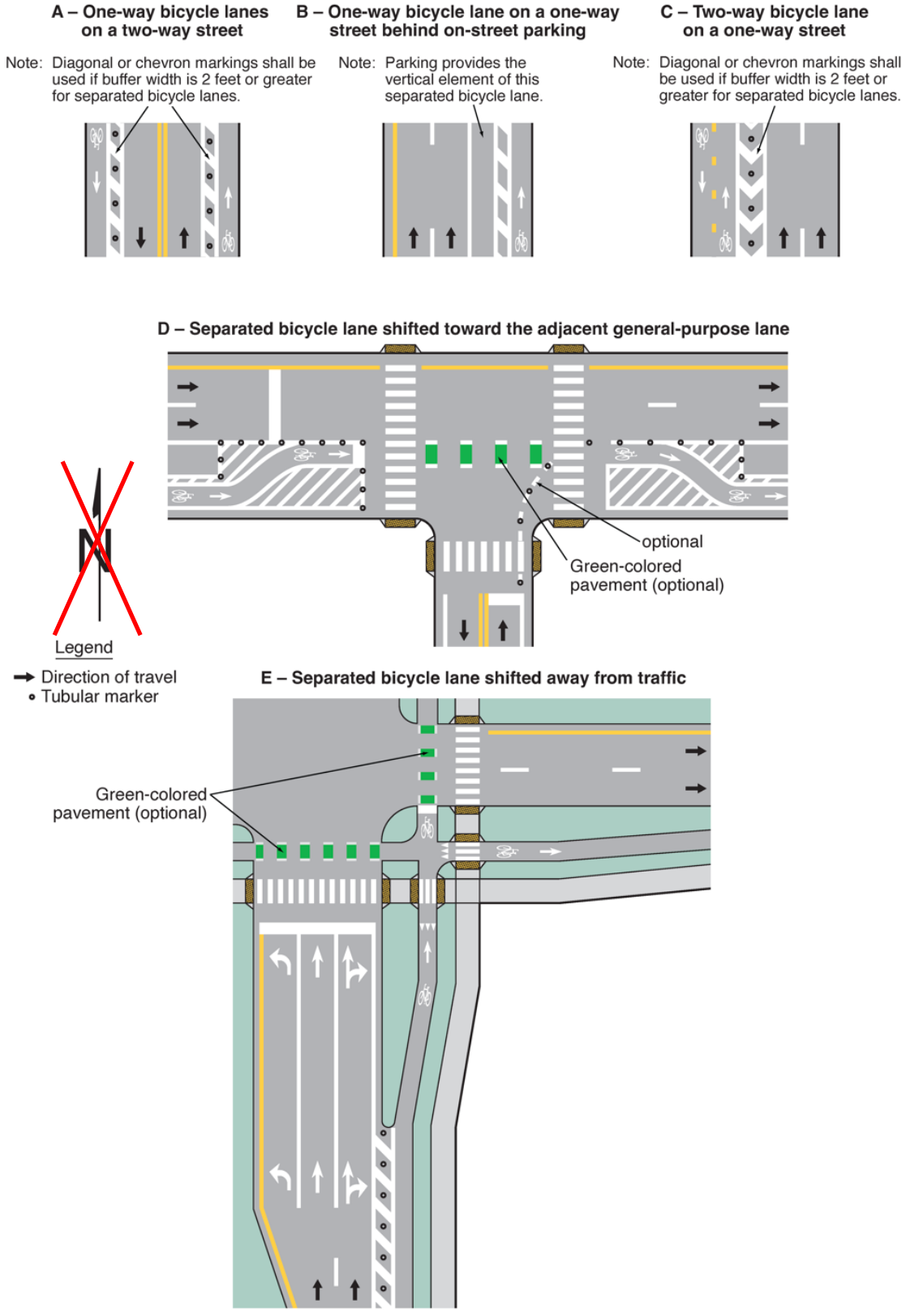
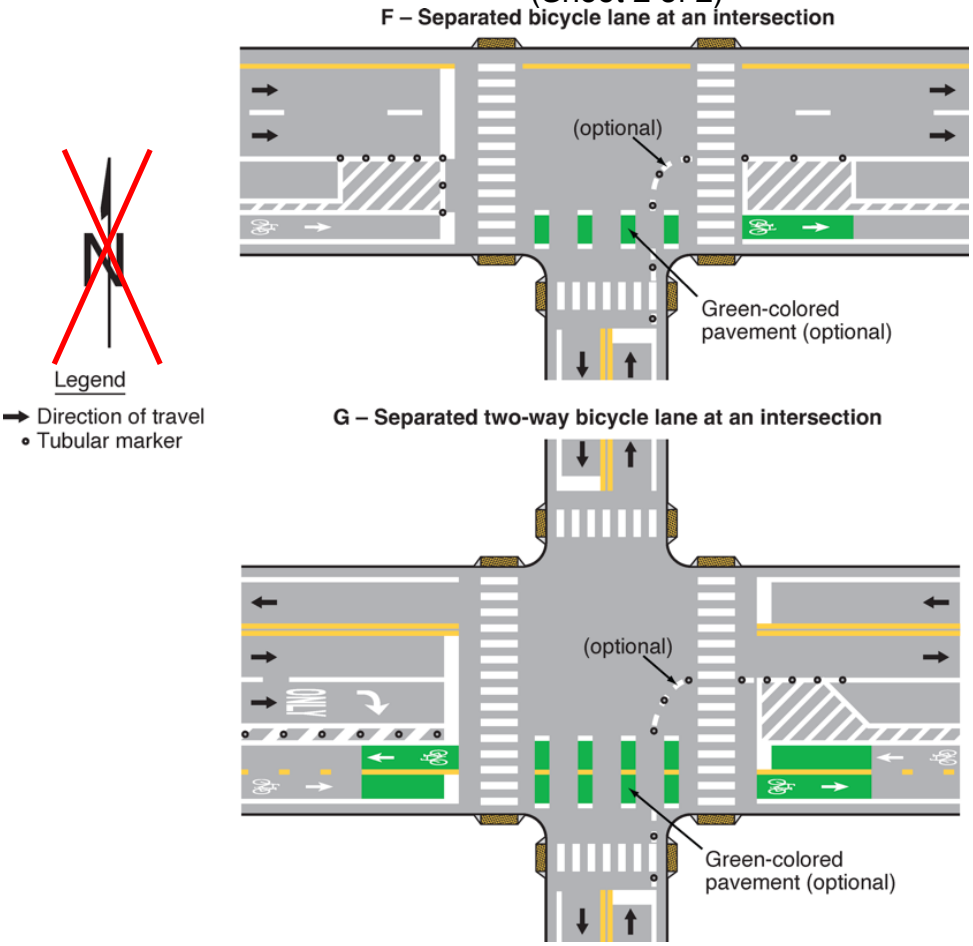


Figure 9E-7. Examples of Lane Markings for Separated Bicycle Lanes
(Sheet 2 of 2)



Section 9E.08 Counter-Flow Bicycle Lanes

Support:

01 Counter-flow bicycle lanes are one-directional and provide a lawful path of travel for bicycles in the opposite direction from general traffic on a roadway that allows general traffic to travel in only one direction.

02 Counter-flow bicycle lanes establish two-way traffic on a roadway. Section 9B.21 contains information on the Left Turn Yield to Bicycles (R10-12b) sign used with traffic signals and counter-flow bicycle lanes.

Guidance:

03 *Where used, a counter-flow bicycle lane should be marked such that bicycles in the counter-flow lane travel on their right-hand side of the road in accordance with normal rules of the road, with opposing traffic on the left.*

Standard:

04 **Counter-flow bicycle lanes located at the edge of the roadway shall use double yellow center line pavement markings (see Section 3B.01), a painted ~~median island,~~ or ~~a~~ raised median island (see Chapter 3J), or some form of physical separation where the speed limit is 30 mph or less.**

05 **For speed limits 35 mph or greater, a buffer per Section 3B.25, a painted or raised median island, or some form of physical separation shall be used to separate a counter-flow bicycle lane from the adjacent travel lane.**

Guidance:

06 *Lane extension markings should be used where counter-flow bicycle movements cross intersections.*

07 *Counter-flow bicycle lanes should not be used between a general-purpose lane and an on-street parallel parking lane for motor vehicles.*

Support:

08 Counter-flow bicycle lanes located between a general-purpose lane and an on-street parallel parking lane for motor vehicles can limit visibility of bicycles for vehicles exiting the parking lane, potentially impacting the safety of bicyclists. Locating counter-flow bicycle lanes at the edge of the roadway can reduce conflicts for bicycles.

Standard:

09 **Where signs are provided to regulate turns from streets or driveways that intersect with a roadway that has a counter-flow bicycle lane, ONE WAY signs (see Section 2B.49) shall not be used. Movement Prohibition signs (see Section 2B.26) with supplemental EXCEPT BICYCLES (R3-7bP) regulatory plaque(s) shall be used (see Figure 9E-8).**

10 **If a DO NOT ENTER (R5-1) sign(s) is used at egress points for motor vehicle traffic, the EXCEPT BICYCLES (R3-7bP) regulatory plaque(s) shall be placed under the DO NOT ENTER sign (see Figure 9E-8) where a counter-flow bicycle lane is used.**

11 **Where intersection traffic controls are provided (such as STOP or YIELD signs or traffic signals), appropriate devices shall be provided and oriented toward bicyclists in the counter-flow lane.**

12 **At signalized locations, appropriate bicycle signalization (see Chapter 9F) shall be provided and oriented toward bicyclists in the counter-flow lane, including a method for counter-flow bicycles to actuate the green phase for the counter-flow movement.**

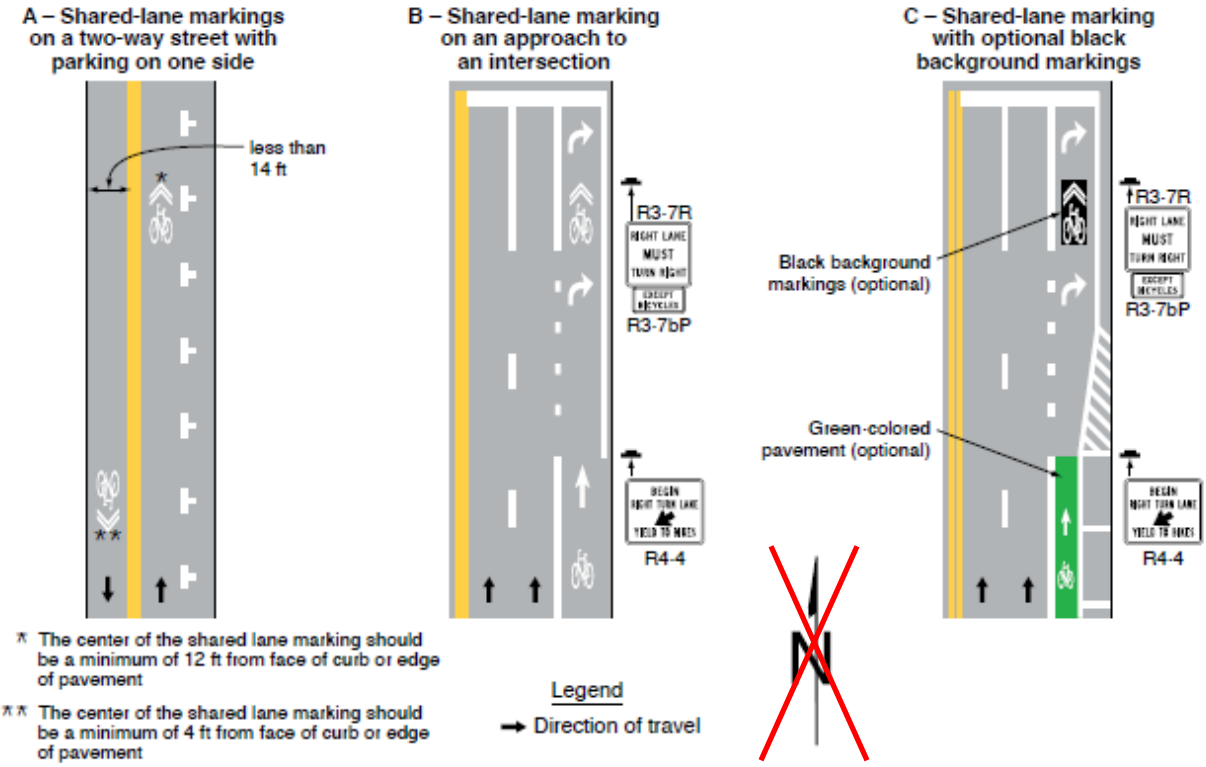
Support:

13 Higher levels of traffic control or additional signalization, signing, and/or pavement marking treatments can be helpful for intersecting traffic where the counter-flow bicycle movement is unexpected.

Guidance:

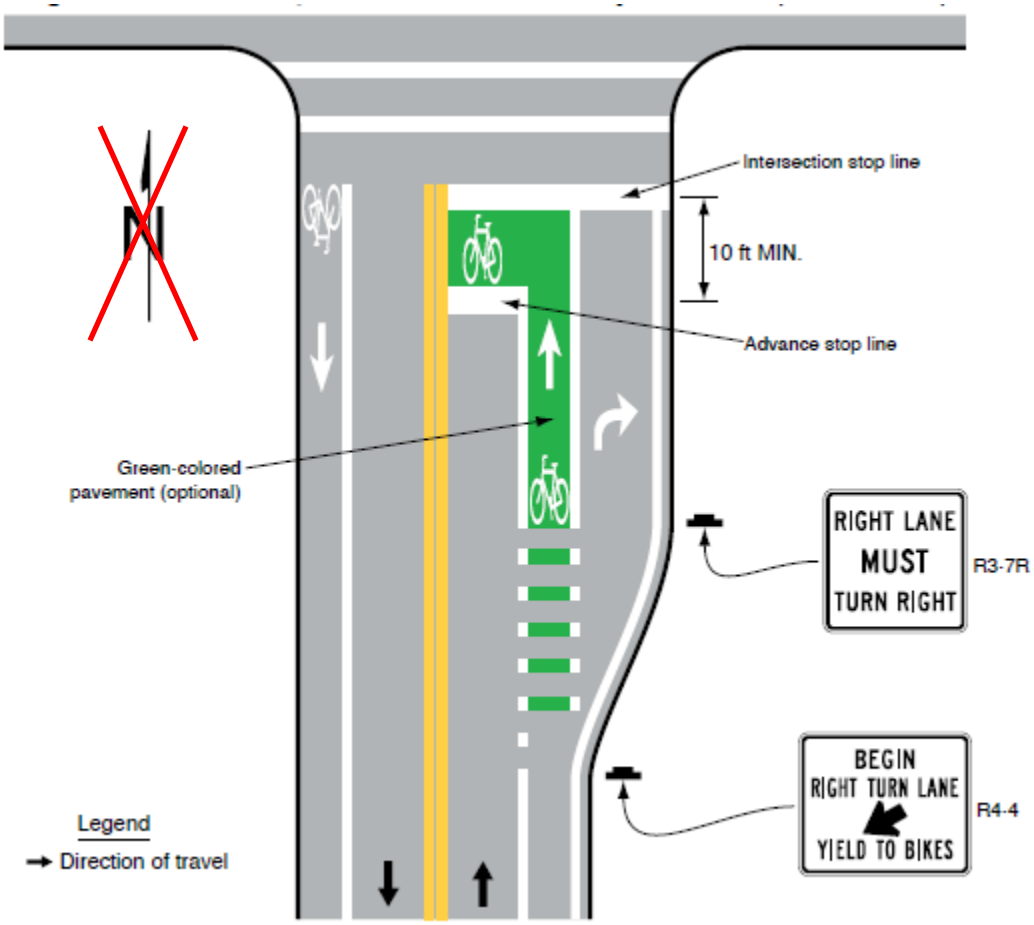
14 *A Bicycle Cross Traffic warning plaque (see Section 9C.06) should be used below a STOP sign on the crossroad at intersections where a counter-flow bicycle lane is provided on the primary street.*

Figure 9E-9. Examples of Shared-Lane Marking Applications



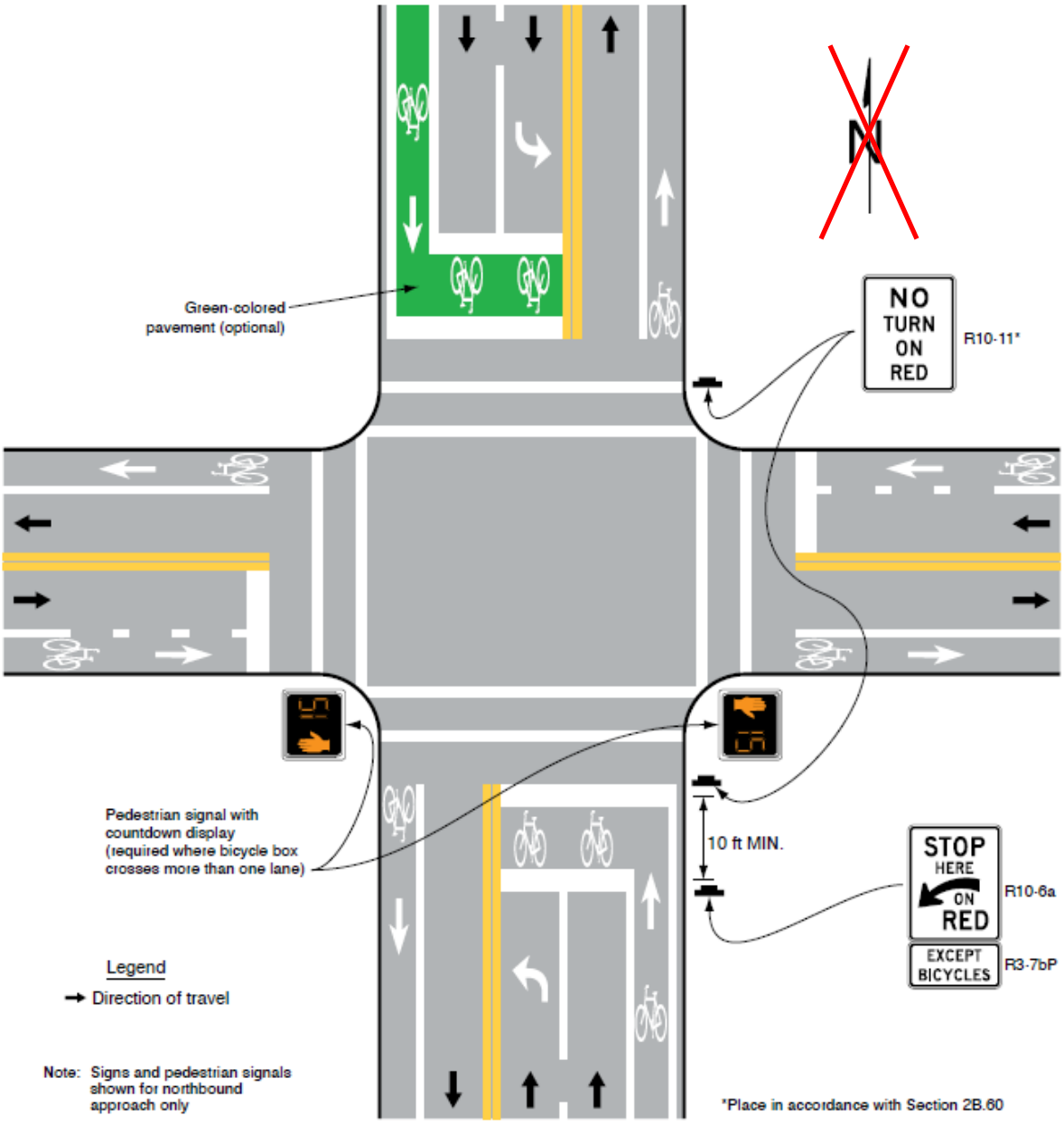
Note: For shared-lane marking design details, see the Pavement Markings chapter of the Standard Highway Signs publication

Figure 9E-12. Examples of Intersection Bicycle Boxes
(Sheet 1 of 2)



A – Bicycle box across one lane

Figure 9E-12. Examples of Intersection Bicycle Boxes
(Sheet 2 of 2)



B – Bicycle box across multiple lanes

Figure 9E-14. Example of Pavement Markings for a Shared-Use Path with Mode Separation

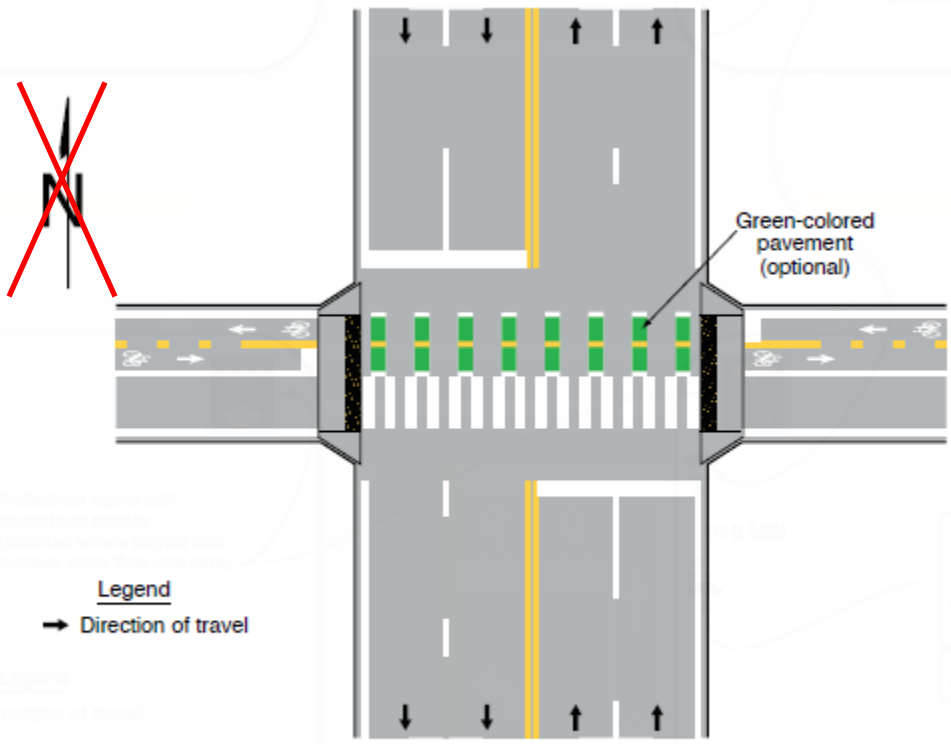
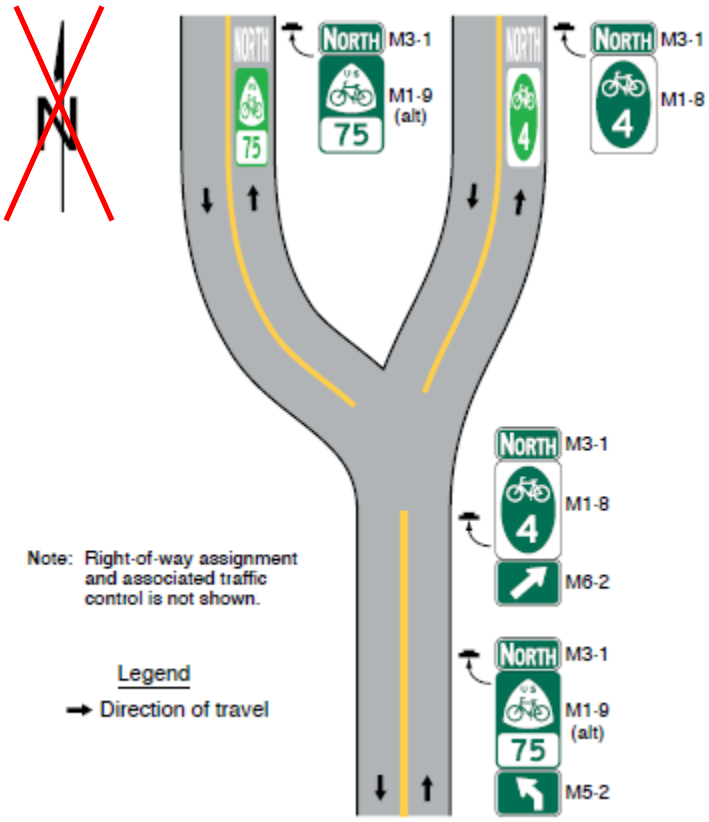


Figure 9E-15. Example of Placement of Route Markers for Shared-Use Paths



[Note that while this graphic does show bicycle route sign assemblies with north corresponding to up, the north arrow is still not necessary and does not help with comprehension. Because signed routes use a general direction, this graphic could still be correct even if the north arrow pointed to the left or right (or some other direction). While this graphic references bicycle routes, the same situation can be the case for any numbered route. Consider Wytheville, Virginia, where I-77 north runs concurrently with I-81 southbound (and vice-versa) and where the physical roadway is running east-west). If the graphic would still work even when the north arrow is rotated, then the north arrow is not necessary.]

Section 9E.17 Raised Devices

Support:

01 Chapter 3I contains information on using channelizing devices to emphasize pavement marking patterns associated with certain bicycle facilities. A common application is the use of flexible raised devices to create separated bicycle lanes (see Section 9E.07).

02 Using inflexible raised devices immediately adjacent to the travel path of a bicyclist without a buffer creates a collision potential for bicyclists.

Option:

03 In accordance with Chapter 3I, channelizing devices may be used to emphasize a pavement marking pattern that establishes a bicycle lane or other bicycle facility provided that the installation of channelizing devices does not prevent motor vehicles from turning when the turn requires the motor vehicle to merge with the bicycle lane or facility as required by law or ordinance.

Guidance:

04 *If used, channelizing devices for bicycle facilities should be tubular markers (see Section 3I.02).*

05 *The selection of a raised device for use with bicycle facilities should consider the collision potential of both the post and the base since the base might still be present in the event the post is struck and missing.*

Support:

06 Measures to reduce the likelihood of a road user striking a channelizing device include marking a buffer space, improving lighting, improving retroreflectivity, or the periodic addition of taller vertical elements within runs of shorter elements.

Standard:

07 **Channelizing devices that are used to emphasize the pavement marking patterns of bicycle facilities shall not incorporate the color green into either the device or its retroreflective element to supplement the presence of green-colored pavement.**

Guidance:

08 *If used in separated bicycle lanes, channelizing devices should be placed in the buffer space and at least 1 foot from the longitudinal bicycle lane pavement marking.*