



National Committee on Uniform Traffic Control Devices

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

NCUTCD PROPOSAL 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

DEVELOPMENT HISTORY:

Approved by Bicycle TC: 01/09/2025
Approved by NCUTCD Council:

This is a proposed change to the MUTCD that has been developed by a technical committee, joint committee, or joint task force of the NCUTCD. The NCUTCD is distributing this to its sponsoring organizations for review and comment. Sponsor comments will be considered in revising the proposal prior to NCUTCD Council consideration. This proposal does not represent a revision of the MUTCD and does not constitute official MUTCD standards, guidance, options, or support. If approved by the NCUTCD Council, the recommended changes 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 Part 9 TRAFFIC CONTROL FOR BICYCLE FACILITIES CHAPTER 9E MARKINGS for text and Figure corrections and to remove North arrows from the Figures.

DISCUSSION:

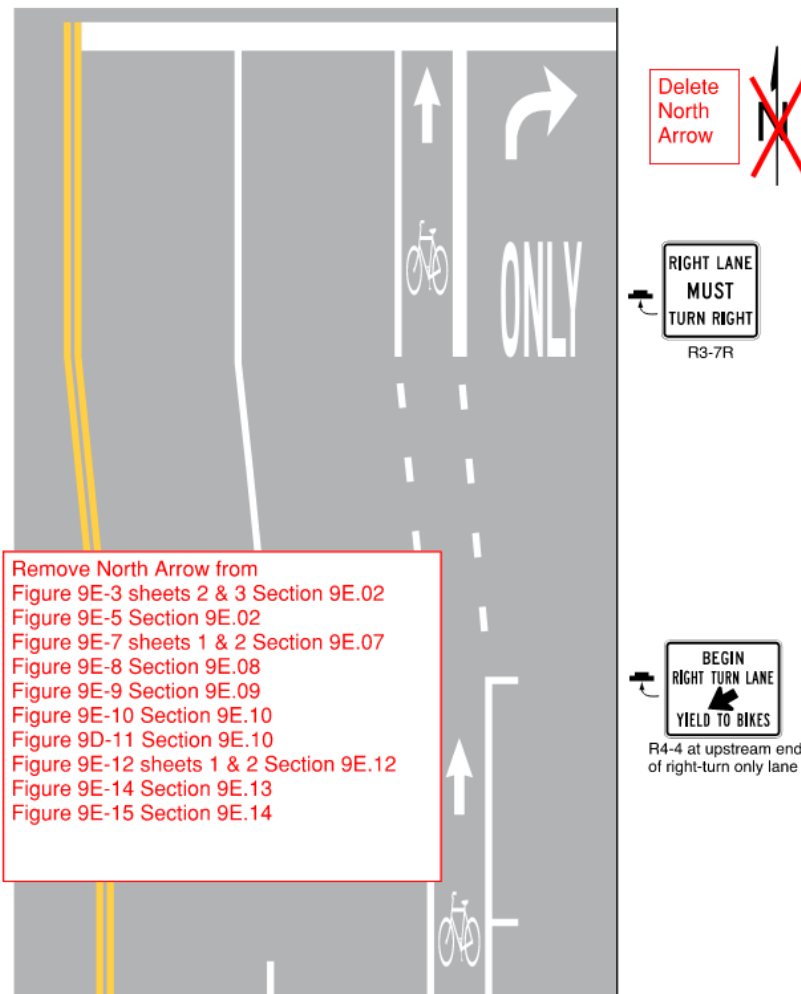
The 2023 MUTCD introduces North arrows to Part 9 Figures, however, the arrows do not have relevance to the figures and are new content after the NPA.

31 **RECOMMENDED MUTCD CHANGES:**
 32 The following present the proposed changes to the current MUTCD within the context of the
 33 current MUTCD language. Proposed additions to the MUTCD are shown in blue underline and
 34 proposed deletions from the MUTCD are shown in ~~red strikethrough~~. Changes previously
 35 approved by NCUTCD Council (but not yet adopted by FHWA) are shown in green double
 36 underline for additions and ~~green double strikethrough~~ for deletions. In some cases,
 37 background comments may be provided with the MUTCD text. These comments are indicated
 38 by bracketed white text in shaded green. Deletions made by a technical committee or task
 39 force after initial distribution to sponsoring organizations are shown in ~~highlighted red~~
 40 ~~strikethrough and Helvetica text~~. Additions made by a technical committee or task force after
 41 initial distribution to sponsoring organizations are shown in underline blue and Helvetica text.

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 43 **PART 9. TRAFFIC CONTROL FOR BICYCLE FACILITIES**

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 45 **CHAPTER 9E. MARKINGS**

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



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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 controlled by a bicycle 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 controlled by a bicycle signal indication, when a ~~When the~~ right (left) through lane is dropped to become a mandatory right-turn (left-turn) lane, bicycle lane markings 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](#) **[Known error correction issued by FHWA]** 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.**

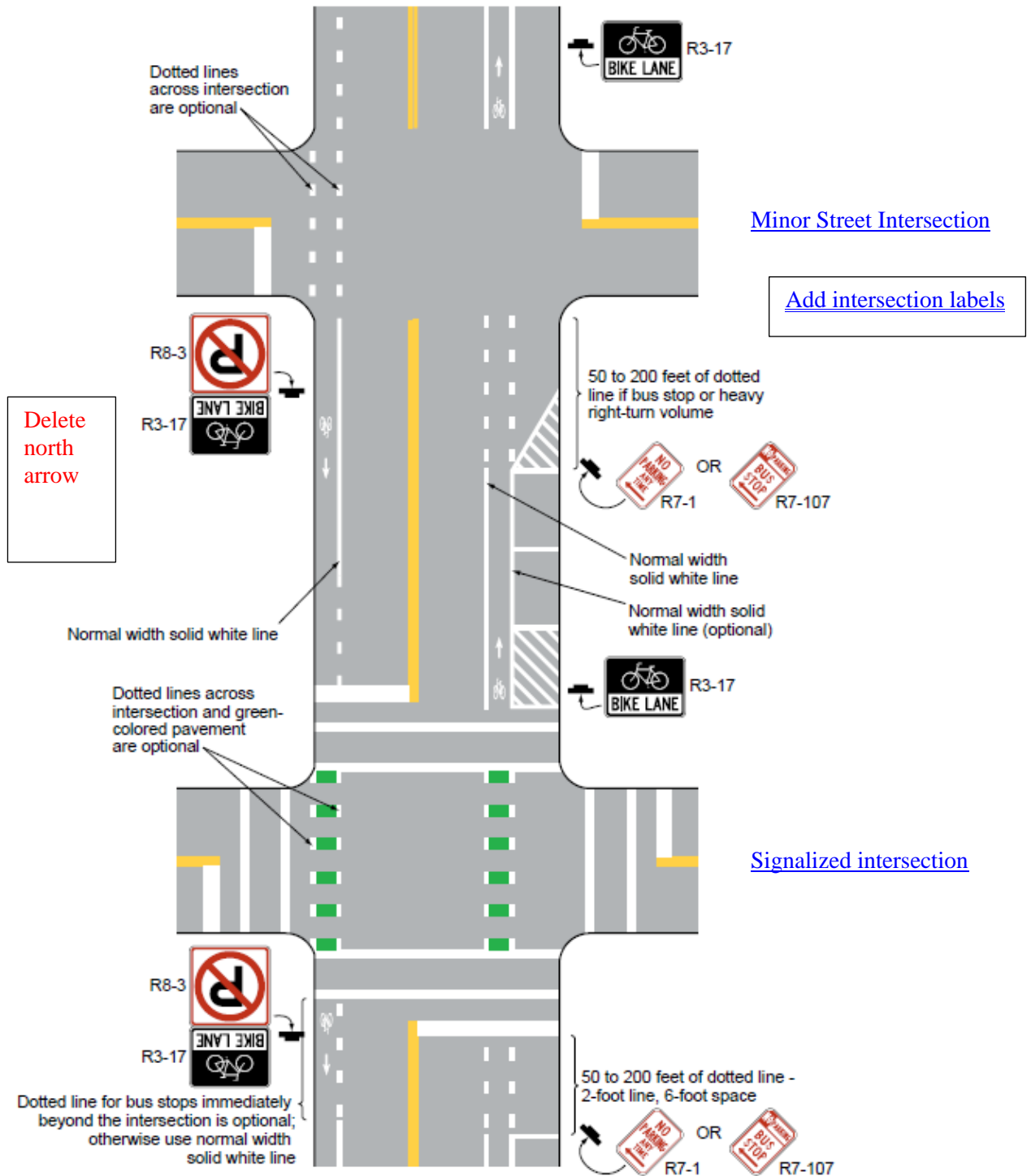
Support:

10 Examples of bicycle lane markings on approaches to intersections are shown in Figures 9E-3; [and](#) 9E-4; ~~and 9E-9~~.

Guidance:

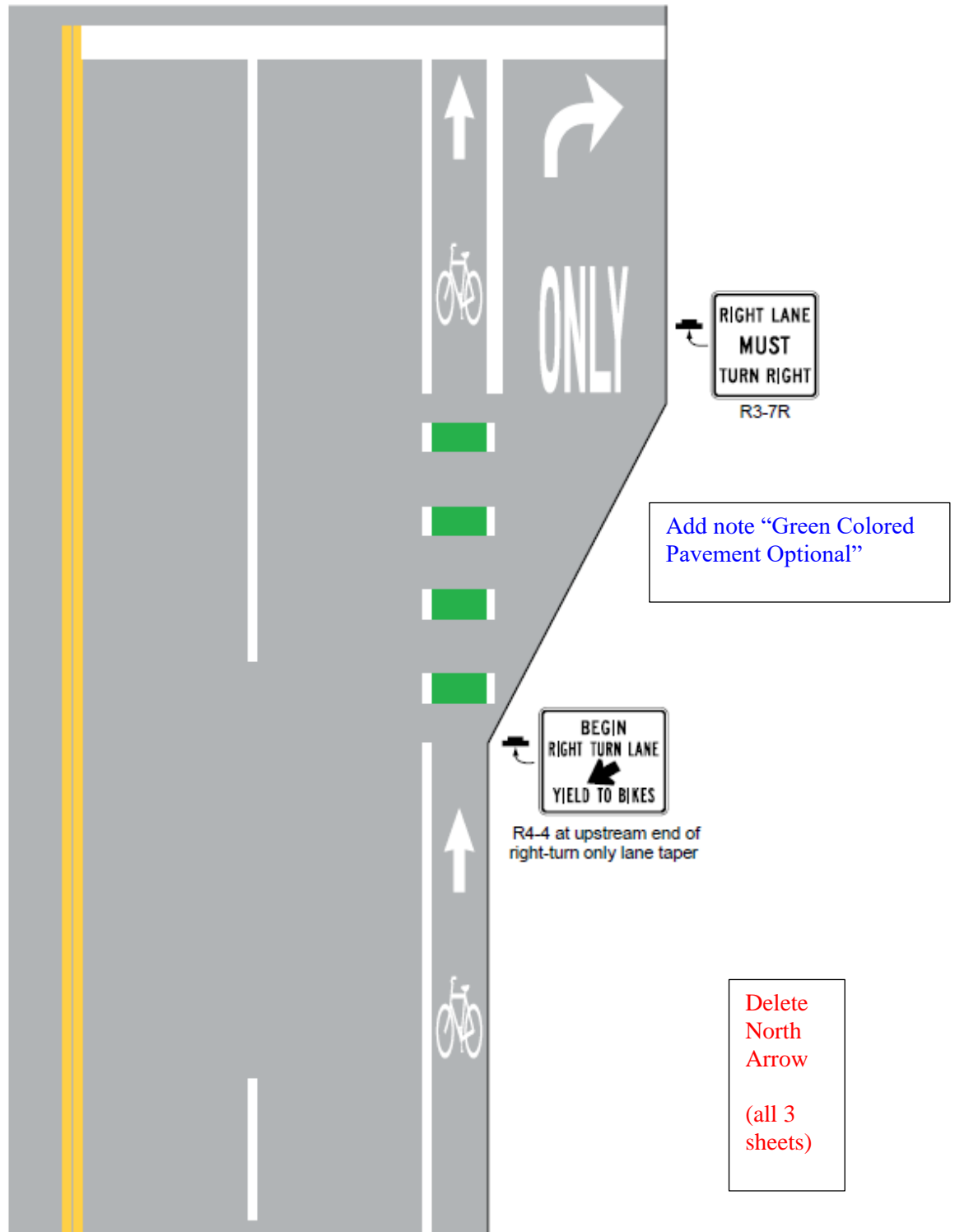
11 *The longitudinal line defining a bicycle lane should be dotted on approaches to intersections where turning vehicles are permitted to cross the path of through-moving bicycles (see Figure [9E-2](#) ~~9D-7~~).*

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



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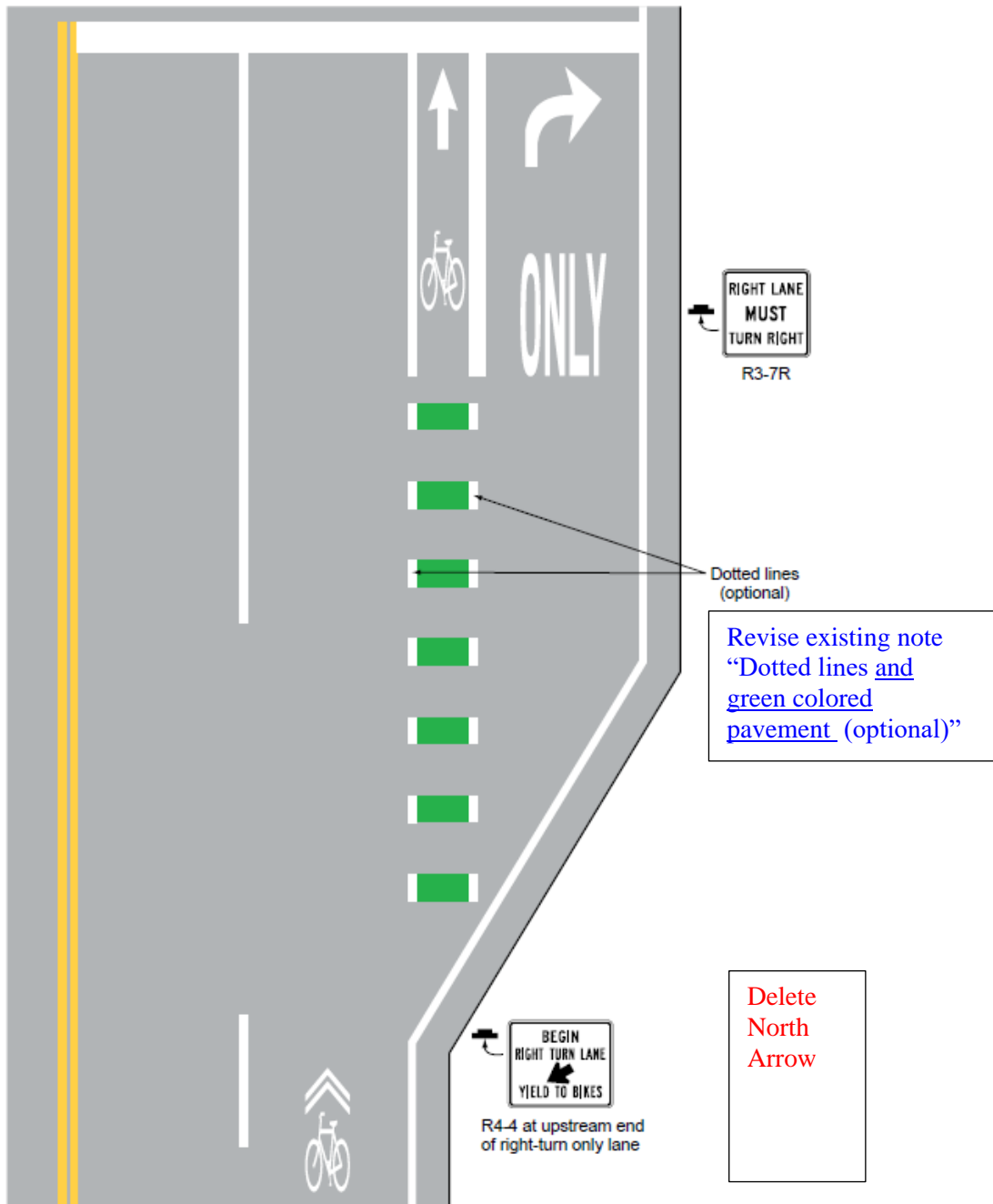
Figure 9E-3. Examples of Bicycle Lane Markings on an Approach to an Intersection
(Sheet 1 of 3)



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



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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:

115 13 A buffer-separated or separated bicycle lane may be shifted closer to, or farther away from the
116 adjacent general-purpose lane depending upon site-specific conditions (see Drawings D and E in Figure
117 9E-7).

118 Support:

119 14 A buffer-separated or separated bicycle lane shifted away from the adjacent general-purpose lane at
120 an intersection can create space for a motor vehicle to queue between the general-purpose lane and the
121 extension of the bicycle lane. This design can also improve the safety and comfort of bicyclists by
122 reducing the speed of turning motor vehicles, improving sightlines, and creating additional buffer space
123 prior to the conflict point with turning motor vehicles.

124 15 The purpose of shifting a buffer-separated or separated bicycle lane away from the adjacent general-
125 purpose lane is to allow the driver of a turning vehicle to undertake the tasks of turning and scanning for
126 bicycle cross traffic in isolation versus simultaneously. Sufficient sight distance for both drivers and
127 bicyclists is important in this design (see Drawing E in Figure 9E-7).

128 16 The purpose of shifting a buffer-separated or separated bicycle lane toward the adjacent general-
129 purpose lane is to improve the visibility of bicyclists to the adjacent traffic and avoid conflicts between
130 turning motor vehicles and bicyclists (see Drawing D in Figure 9E-7).

131 17 Staggering stop lines (see Section 3B.19) so that general-purpose lanes stop further in advance from
132 the intersection than the bicycle lane can improve the visibility of bicyclists for drivers of turning vehicles
133 (see Drawing D in Figure 9E-7).

134 Option:

135 18 Where a general-purpose mandatory turn lane is provided at an intersection and the approach also
136 includes a separated or buffer-separated bicycle lane, a mixing zone may be established to allow general-
137 purpose turning traffic to share the roadway space with bicyclists (see Figure 9E-5).

138 **Standard:**

139 19 **Mixing zones shall be used only where the bicycle lane is one-way in the same direction of
140 travel as the adjacent general-purpose lane.**

141 20 **Mixing zones with a yielding area shall have yield markings indicating where general-purpose
142 traffic entering the shared space shall yield to bicyclists.**

143 21 **Where a mixing zone continues to the intersection itself sharing space between bicyclists and
144 general-purpose turning traffic, shared-lane markings and turn arrows shall be provided in the
145 lane.**

146 Support:

147 22 Mixing zones require bicycles and general traffic to share space, interrupting a buffer-separated or
148 separated bicycle lane where bicycle traffic is otherwise separated from general traffic. The preference is
149 to provide a dedicated bicycle facility for the intersection approach. [Change comma to period] If that is
150 not possible, the mixing zone needs to indicate that bicyclists and motorists are entering a shared
151 condition.

152 *Guidance:*

153 23 *Where a mixing zone provides for the re-establishment of a bicycle lane after bicycles and general-
154 purpose lanes cross paths, a buffered or physically-separated space should be provided between the
155 bicycle lane and the adjacent general-purpose lane (see Drawing C in Figure 9E-5).*

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157 **Section 9E.03 Extensions of Bicycle Lanes through Intersections**

158 Support:

159 01 Extensions of bicycle lanes through intersections can help identify the paths of bicyclists and guide
160 them on movements that could be difficult to discern. Extensions of bicycle lanes through intersections
161 also assist other road users of the intersection to identify where bicyclists are expected to operate and to
162 recognize potentially unexpected conflict points.

163 02 The design, placement, and maintenance of bicycle lane extensions through intersections are
164 important considerations, especially when contiguous to a crosswalk, to avoid potential confusion to
165 pedestrians with vision disabilities.

166 03 The width and color of lane extension markings are discussed in Section 3B.11.

167 Option:

168 04 The bicycle symbol, the arrow marking, pavement word markings, or a combination thereof may be
169 used in bicycle lane extensions through intersections.

170 05 Green-colored pavement may be used in a bicycle lane extension in accordance with the provisions
171 of Section 3H.06.

172 **Standard:**

173 06 **Shared-lane markings or chevron markings shall not be used in bicycle lanes or bicycle lane
174 extensions (see Section 9E.09).**

175 07 **If used, extensions Extensions of bicycle lanes through intersections shall use dotted line
176 patterns.**

177 Support:

178 08 Separated and buffer-separated bicycle lanes may have alignments that are not as obvious within an
179 intersection as a standard bicycle lane, therefore additional conspicuity is important where these types of
180 bicycle lanes cross intersections.

181 *Guidance:*

182 09 *Lane extension markings should be used to extend a buffer-separated or separated bicycle lane
183 through intersections and driveways.*

184 10 *The extension of a bicycle lane through an intersection should use two lines defining both lateral
185 limits of the bicycle lane.*

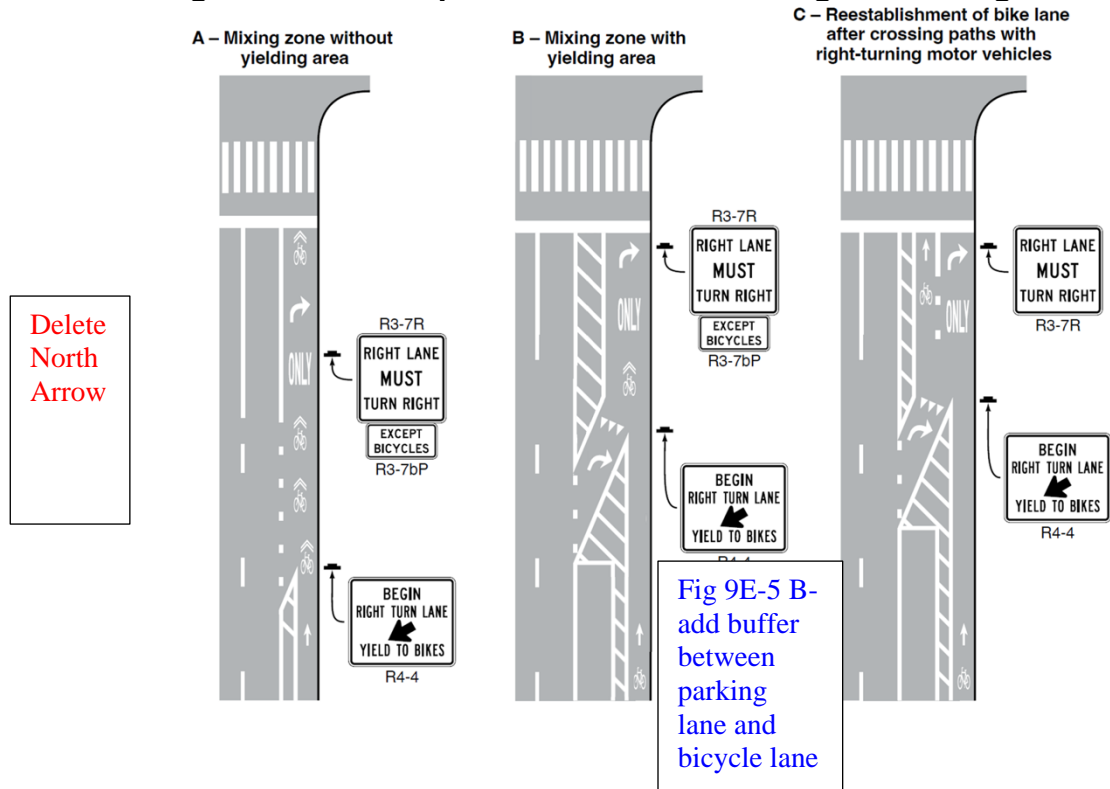
186 **Standard:**

187 11 **Where the path of the bicycle lane through the intersection is contiguous to a crosswalk, two
188 longitudinal dotted lines shall be provided to establish the lateral limits of the bicycle lane
189 extension. The transverse line establishing one side of the crosswalk, or the limit of a high-visibility
190 crosswalk pattern (see Section 3C.05) that does not employ a transverse line, shall not be used to
191 demarcate one side of the bicycle lane extension.**

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



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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 ~~circular~~-circulatory roadway. [Known error correction issued by FHWA]

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.

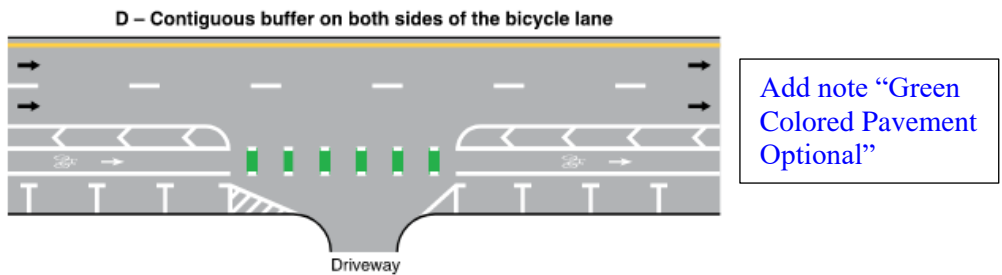
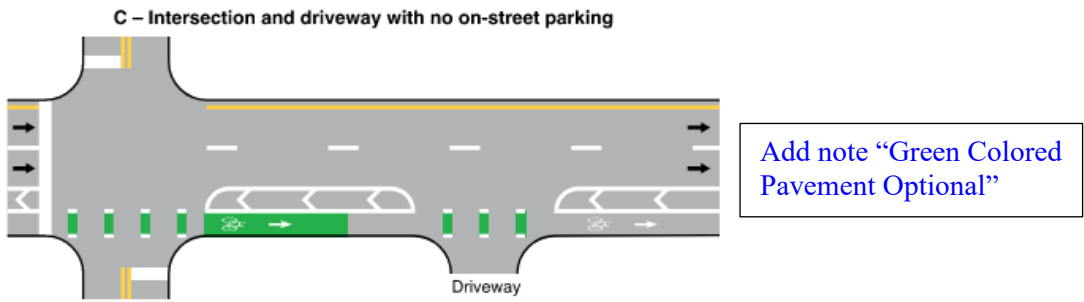
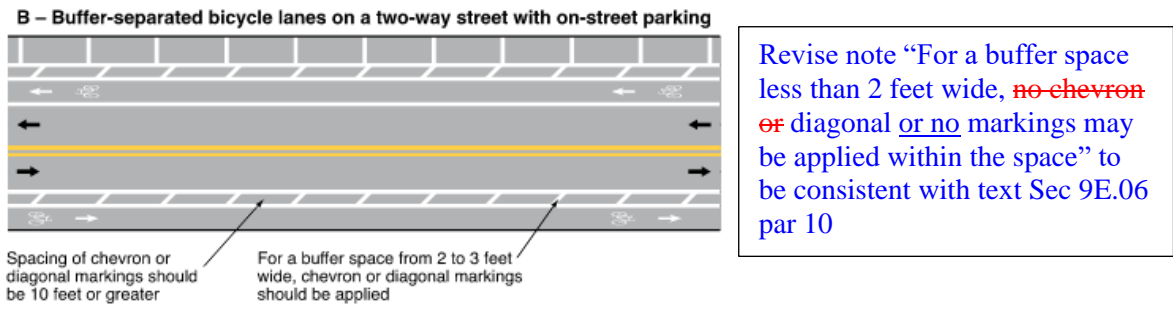
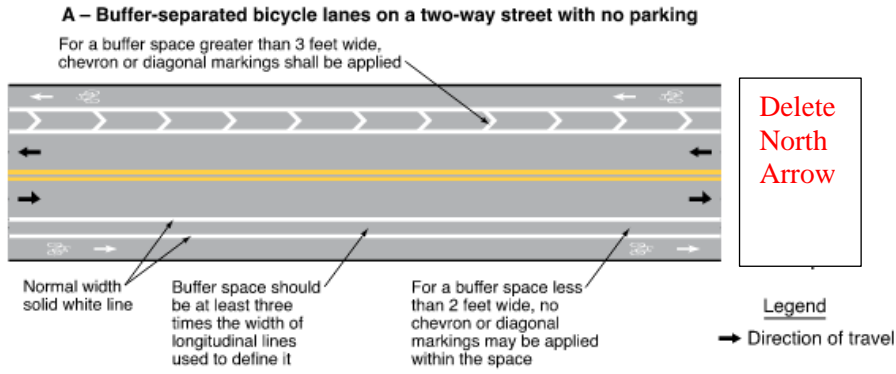
08 The FHWA’s informational guide “Improving Intersections for Pedestrians and Bicyclists Informational Guide(FHWA-SA-22-017), FHWA” (May 10, 2024) [Known error correction issued by

223 FHWA contains information on incorporating separated bicycle lanes and other bicycle facilities into
224 circular intersections.

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



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230 **Section 9E.07 Separated Bicycle Lanes**

231 Support:

232 01 Separated bicycle lanes provide a physical separation between a general-purpose lane and a bicycle
233 lane through the use of vertical objects or vertical separation between the general-purpose lane and
234 bicycle lane. Providing a physical separation between a bicycle lane and a general-purpose lane can
235 reduce vehicle encroachment into the bicycle lane beyond a marked buffer alone and can in some cases
236 prevent that encroachment altogether.

237 02 Physical separation between general-purpose lanes and bicycle lanes introduces additional design
238 considerations over buffer-separated bicycle lanes, including the awareness of a potentially unexpected
239 conflict point for turning motor vehicles and the provision of adequate sight distance for all users at
240 intersections and driveway crossings.

241 Option:

242 03 Vertical elements used to provide physical separation between general-purpose lanes and bicycle
243 lanes may include, but are not limited to, tubular markers, raised islands, or parked vehicles.

244 Support:

245 04 Where on-street parking is provided adjacent to the buffer area of a separated bicycle lane,
246 pedestrians will need to access those vehicles.

247 *Guidance:*

248 05 *BIKE LANE (R3-17) signs (see Figure 9B-1) should be used to distinguish a separated bicycle lane*
249 *from a general-purpose lane.*

250 06 *Where an on-street parking lane serves as the separation between a general-purpose lane and a*
251 *separated bicycle lane, a buffer space should be provided between the parking lane and the bicycle lane*
252 *to allow for opening doors of parked vehicles.*

253 Support:

254 07 Separated bicycle lanes may be designed for one-way or two-way bicycle travel. Providing one-way
255 separated bicycle lanes in the same direction as and on the right-hand side of the general-purpose lane,
256 whether on a one-way or two-way roadway, accommodates the expectations of road users and might
257 result in fewer conflict points at intersections or driveway crossings.

258 Option:

259 08 Separated bicycle lanes may be provided on one or both sides of a roadway or in a center median.

260 Support:

261 09 The presence of two-way separated bicycle lanes on one side of a roadway or in a center median can
262 introduce additional challenges and conflict points, which can warrant additional design considerations
263 when selecting the design for a separated bicycle lane. These considerations include design requirements
264 for pedestrians who would interact with the separated bicycle lane.

265 **Standard:**

266 10 **The edge line and lane line colors used for separated bicycle lanes shall conform to the**
267 **requirements in Chapter 3A (see Figure 9E-7).**

268 11 **Directional arrows shall be used in conjunction with the bicycle lane symbol or word marking**
269 **in separated bicycle lanes, placed downstream from the symbol or word marking.**

270 12 **Turns on red shall be prohibited across separated bicycle lanes while bicyclists are allowed to**
271 **proceed through the intersection.**

272 Support:

273 13 Additional information on signals for bicycle facilities is found in Chapter 4H.

274 **Standard:**

275 14 **The edges of the [Known error correction issued by FHWA] buffer space for a separated**
276 **bicycle lane shall be marked with solid longitudinal lines, except as noted in Paragraph 14a.**

277 Option:

278 14a Where a raised island is used as vertical separation, the longitudinal marking on the bicycle lane side
279 of the island may be omitted.

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281 **Standard:**
282 ¹⁵ A marked buffer space that is 2 feet or wider for a separated bicycle lane, including those
283 buffer spaces where tubular markers are provided, shall use chevron or diagonal markings **within**
284 **in** the buffer space, unless physical separation is provided that occupies the majority of the buffer
285 space, such as raised islands or other physical dividers, or such as where an on-street parking lane
286 occupies the majority of the buffer space.

287 *Guidance:*

288 ¹⁶ *Where used in the buffer area of a separated bicycle lane, the spacing of chevrons or diagonal*
289 *markings should be 10 feet or greater.*

290 ¹⁷ *Crosswalks that cross a separated bicycle lane should be marked consistent with the style of*
291 *crosswalk marking provided across the adjacent general-purpose lane.*

292 *Support:*

293 ¹⁸ Where on-street parking is provided as the physical separation adjacent to the buffer area of a
294 separated bicycle lane, the chevron or diagonal marking provisions in Section 9E.06 apply to the area
295 outside of the marked parking area within the buffer (see Figure 9E-7).

296 ¹⁹ Intersection treatments for separated bicycle lanes can vary depending on the geometric and
297 operational conditions at the intersection (see Section 9E.02).

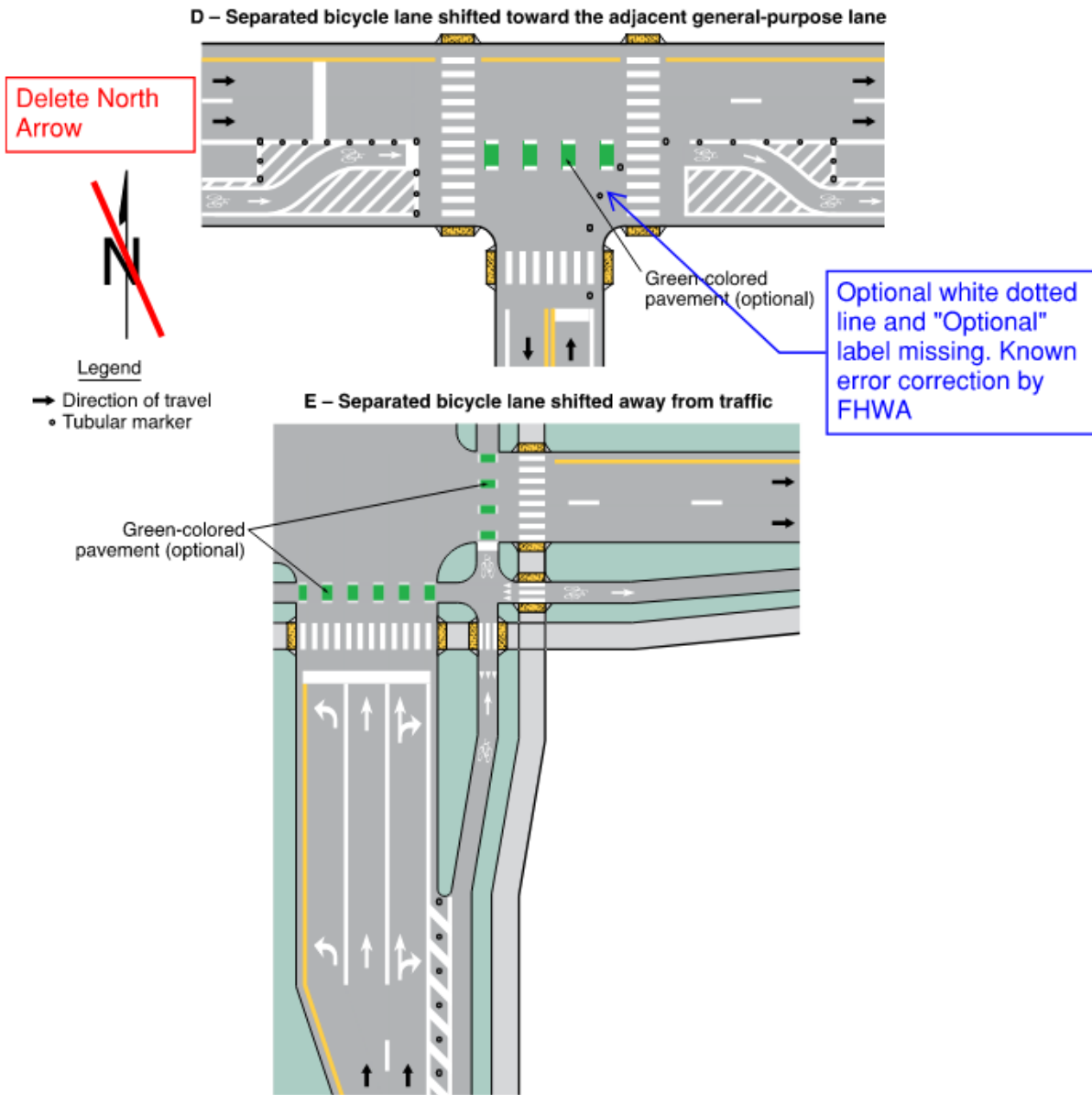
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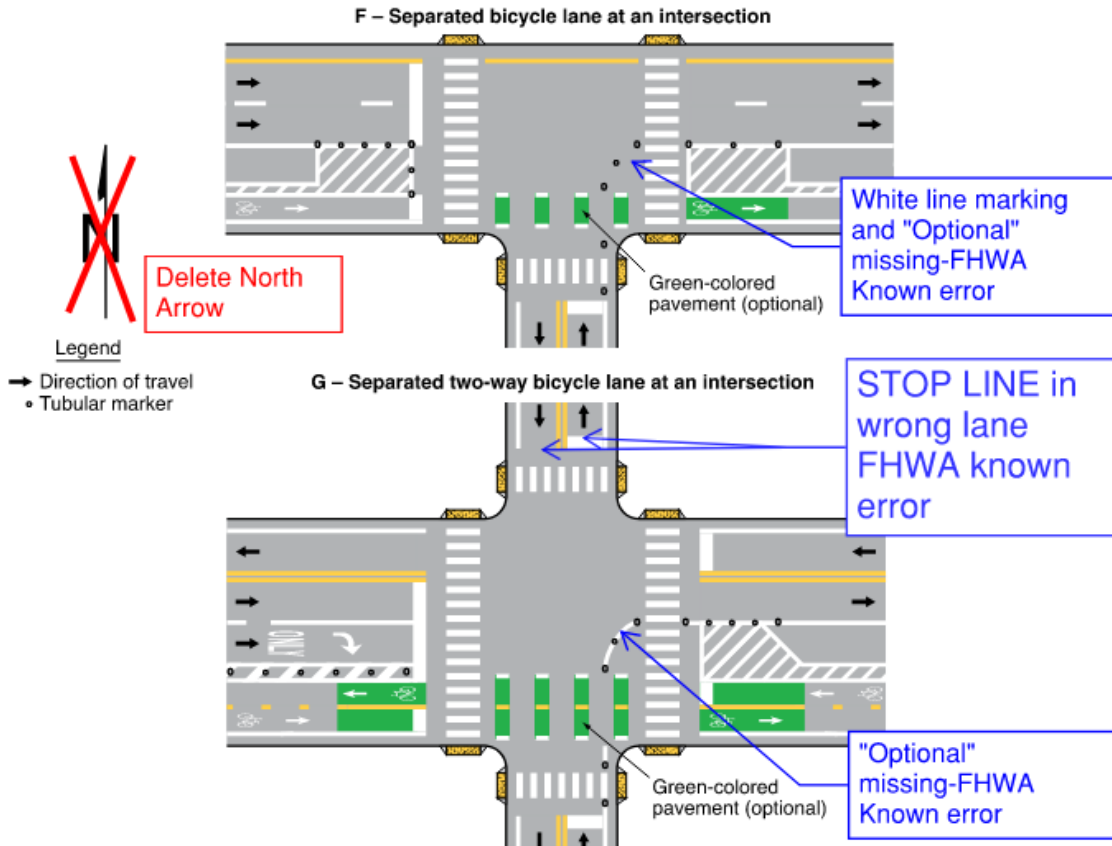
Figure 9D-7. Examples of Lane Markings for Separated Bicycle Lanes
(Sheet 1 of 2)



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



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Section 9E.08 Counter-Flow Bicycle Lanes

Support:

313 01 Counter-flow bicycle lanes are one-directional and provide a lawful path of travel for bicycles in the
314 opposite direction from general traffic on a roadway that allows general traffic to travel in only one
315 direction.

316 02 Counter-flow bicycle lanes establish two-way traffic on a roadway. Section 9B.21 contains
317 information on the Left Turn Yield to Bicycles (R10-12b) sign used with traffic signals and counter-flow
318 bicycle lanes.

319 *Guidance:*

320 03 *Where used, a counter-flow bicycle lane should be marked such that bicycles in the counter-flow*
321 *lane travel on their right-hand side of the road in accordance with normal rules of the road, with*
322 *opposing traffic on the left.*

323 **Standard:**

324 04 **Counter-flow bicycle lanes located at the edge of the roadway shall use double yellow center**
325 **line pavement markings (see Section 3B.01), a painted median island, or a raised median island (see**
326 **Chapter 3J), or some form of physical separation where the speed limit is 30 mph or less.**

327 05 **For speed limits 35 mph or greater, a buffer per Section 3B.25, a painted or raised median**
328 **island, or some form of physical separation shall be used to separate a counter-flow bicycle lane**
329 **from the adjacent travel lane.**

330 *Guidance:*

331 06 *Lane extension markings should be used where counter-flow bicycle movements cross intersections.*

332 07 *Counter-flow bicycle lanes should not be used between a general-purpose lane and an on-street*
333 *parallel parking lane for motor vehicles.*

334 Support:

335 08 Counter-flow bicycle lanes located between a general-purpose lane and an on-street parallel parking
336 lane for motor vehicles can limit visibility of bicycles for vehicles exiting the parking lane, potentially
337 impacting the safety of bicyclists. Locating counter-flow bicycle lanes at the edge of the roadway can
338 reduce conflicts for bicycles.

339 **Standard:**

340 09 **Where signs are provided to regulate turns from streets or driveways that intersect with a**
341 **roadway that has a counter-flow bicycle lane, ONE WAY signs (see Section 2B.49) shall not be**
342 **used. Movement Prohibition signs (see Section 2B.26) with supplemental EXCEPT BICYCLES**
343 **(R3-7bP) regulatory plaque(s) shall be used (see Figure 9E-8).**

344 10 **If a DO NOT ENTER (R5-1) sign(s) is used at egress points for motor vehicle traffic, the**
345 **EXCEPT BICYCLES (R3-7bP) regulatory plaque(s) shall be placed under the DO NOT ENTER**
346 **sign (see Figure 9E-8) where a counter-flow bicycle lane is used.**

347 11 **Where intersection traffic controls are provided (such as STOP or YIELD signs or traffic**
348 **signals), appropriate devices shall be provided and oriented toward bicyclists in the counter-flow**
349 **lane.**

350 12 **At signalized locations, appropriate bicycle signalization (see Chapter 9F) shall be provided**
351 **and oriented toward bicyclists in the counter-flow lane, including a method for counter-flow**
352 **bicycles to actuate the green phase for the counter-flow movement.**

353 Support:

354 13 Higher levels of traffic control or additional signalization, signing, and/or pavement marking
355 treatments can be helpful for intersecting traffic where the counter-flow bicycle movement is unexpected.

356 *Guidance:*

357 14 *A Bicycle Cross Traffic warning plaque (see Section 9C.06) should be used below a STOP sign on*
358 *the crossroad at intersections where a counter-flow bicycle lane is provided on the primary street.*

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360 **Section 9E.17 Raised Devices**

361 Support:

362 01 Chapter 3I contains information on using channelizing devices to emphasize pavement marking
363 patterns associated with certain bicycle facilities. A common application is the use of flexible raised
364 devices to create separated bicycle lanes (see Section 9E.07).

365 02 Using inflexible raised devices immediately adjacent to the travel path of a bicyclist without a buffer
366 creates a collision potential for bicyclists.

367 Option:

368 03 In accordance with Chapter 3I, channelizing devices may be used to emphasize a pavement marking
369 pattern that establishes a bicycle lane or other bicycle facility provided that the installation of
370 channelizing devices does not prevent motor vehicles from turning when the turn requires the motor
371 vehicle to merge with the bicycle lane or facility as required by law or ordinance.

372 *Guidance:*

373 04 *If used, channelizing devices for bicycle facilities should be tubular markers (see Section 3I.02).*

374 05 *The selection of a raised device for use with bicycle facilities should consider the collision potential*
375 *of both the post and the base since the base might still be present in the event the post is struck and*
376 *missing.*

377 Support:

378 06 Measures to reduce the likelihood of a road user striking a channelizing device include marking a
379 buffer space, improving lighting, improving retroreflectivity, or the periodic addition of taller vertical
380 elements within runs of shorter elements.

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383 **Standard:**
384 07 **Channelizing devices that are used to emphasize the pavement marking patterns of bicycle**
385 **facilities shall not incorporate the color green into either the device or its retroreflective element to**
386 **supplement the presence of green-colored pavement.**

387 *Guidance:*

388 08 *If used in ~~buffer~~-separated bicycle lanes, channelizing devices should be placed in the buffer space*
389 *and at least 1 foot from the longitudinal bicycle lane pavement marking.*

390 **Adding raised devices to a buffer-separated bicycle lane automatically makes it a separated bike lane**
391 **based on the definitions of buffer-separated bicycle lane and separated bicycle lane in Part 1. FHWA**
392 **known error correction by FHWA.]**