



National Committee on Uniform Traffic Control Devices

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Item No.: 15B-RW-01

NCUTCD Proposal for Changes to the Manual on Uniform Traffic Control Devices

TECHNICAL COMMITTEE: Regulatory & Warning Signs, GM & I, Markings
ITEM NUMBER: 15B-RW-01
TOPIC: Climbing and Passing Lanes
ORIGIN OF REQUEST: RWSTC Task force: Tom Heydel (RWSTC chair), Tom Honich (GMI), Lee Roadifer (RWSTC), Jeffrey Wolfe (RWSTC), Richard Meredith (RWSTC), Scott Kuznicki (RWSTC), Harry Campbell (Markings), James Kratz (Markings)
AFFECTED SECTIONS OF MUTCD: Sections 2A.16a, 2B.30, 2B.31, 2C.42, 2D.51, 3B.04, 3B.09

DEVELOPMENT HISTORY:

- Approved by Technical Committee: Prior to sponsors: RWSTC approved 6-17-15. GMI Chair said they did not have time to review and indicated to proceed to sponsors and will review following sponsor comments 6-18-15. Markings approved 6-18-15
- Approved by NCUTCD Council: Approved by NCUTCD Council: 00/00/0000

This is a proposal for recommended changes to the MUTCD that has been developed by a technical committee of the NCUTCD. The NCUTCD is distributing it 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, or options. 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:

The MUTCD contains references to truck climbing and passing lane signing in various sections of the manual as noted in affected portions of the MUTCD above. This sometimes leads to confusion in terms of how to apply these signs correctly, where to place the signs and how the signs are used for various posted speeds. In 2002 a proposal was sent to sponsors but did not make it beyond the sponsor comment stage. Also, Texas Transportation Institute did some research in 2002 related to this topic. Accordingly, a joint task force is needed to provide for a consistent application. A detail depicting the use of signing and marking for climbing and passing lanes is needed to illustrate how and when signs and markings are used.

32 Research: Texas Transportation Institute 2001, Design Guidelines for Passing lanes

33

34 **DISCUSSION:**

35 The research focused on three critical elements of the design of passing lanes: passing lane
36 length and spacing, lane and shoulder width requirements, and signing and marking strategies.
37 Researchers reviewed the literature and conducted site visits and field studies in Kansas,
38 Minnesota, and Texas. In addition, a computer-based survey was conducted to examine driver
39 understanding and acceptance of signs, markings, and highway design characteristics of passing
40 lanes.

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42 Given this background, this became the starting point for developing a proposal to provide cross
43 references between the guide, regulatory, warning and marking sections of the MUTCD. By
44 providing a detail in Part 2A with references to other sections of the MUTCD it provides a
45 consistency with the way other details are handled such as Figure 2A-4 which has all the
46 elements of regulatory, warning, guide signs plus markings.

47 The detail, along with modifications to existing text will provide the practioner needed guidance
48 on the use of these signs.

49

50 **RECOMMENDED MUTCD CHANGES**

51 The following present the proposed changes to the current MUTCD within the context of the
52 current MUTCD language. Proposed additions to the MUTCD are shown in blue underline and
53 proposed deletions from the MUTCD are shown in ~~red strikethrough~~. Changes previously
54 approved by NCUTCD Council (but not yet adopted by FHWA) are shown in green double
55 underline for additions and ~~green double strikethrough~~ for deletions. In some cases, background
56 comments may be provided with the MUTCD text. These comments are indicated by
57 highlighted light blue in brackets.

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PART 2. SIGNS

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CHAPTER 2A. GENERAL

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Section 2A.16a Passing, Climbing and Truck Lane Signs

63 Support:

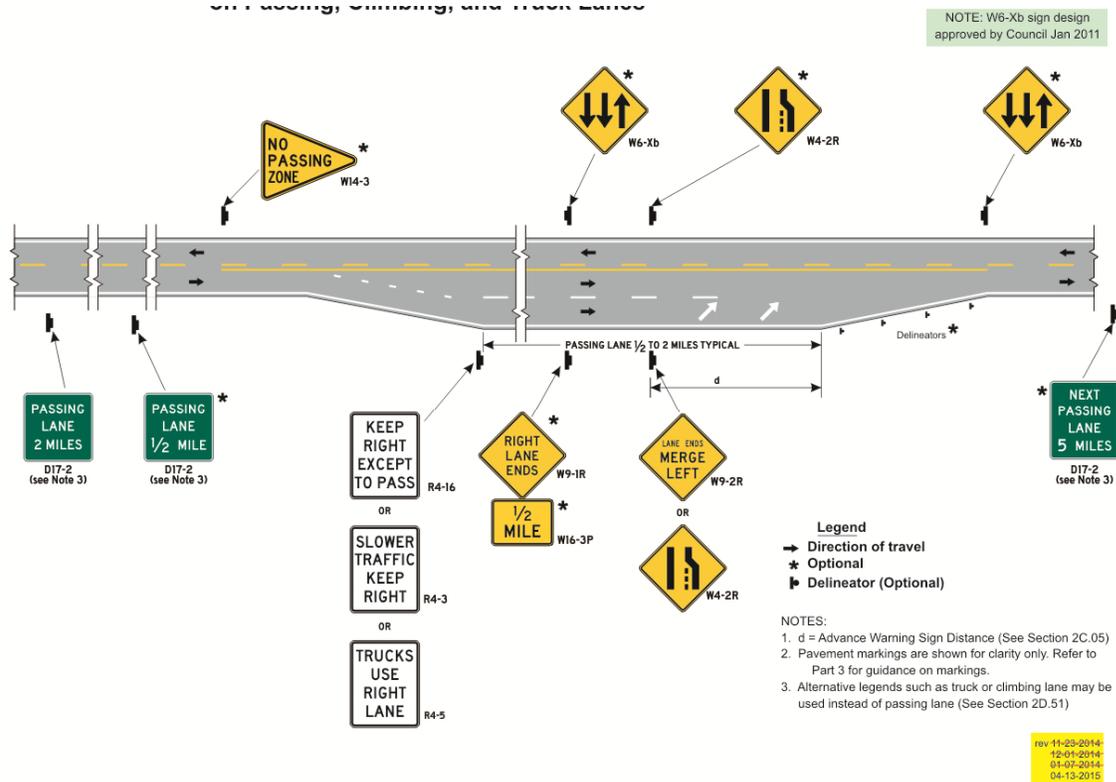
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65 01 Passing, Climbing and/or Truck lanes can be provide road users an opportunity to pass
66 slower vehicles without crossing the centerline. Where passing lanes are provided, operations
67 and safety can be improved by giving road users advance information about the location of
68 passing lanes (see Section 2D.51).

69

70 02 Sections 2B.30, 2B.31, 2C.42, 2C.42a, 2D.51 3B.04 and 3B.09 contain information on
71 regulatory, warning, and guide signs typically used for passing, climbing and truck lanes. Figure
72 2A-5 provides an example of the relative locations of the regulatory, warning and guide signs for
73 passing, climbing and truck lanes. For further details on pavement markings see Chapter 3B.

73



74
75 [Figure 2A-5 – Relative Location of Regulatory, Warning, and Guide Signs on Passing,](#)
76 [Climbing, and Truck Lanes](#)

77
78 **PART 2. SIGNS**

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80 **CHAPTER 2B. REGULATORY SIGNS, BARRICADES, AND GATES**

81
82 **Section 2B.30 KEEP RIGHT EXCEPT TO PASS Sign (R4-16) and SLOWER TRAFFIC**
83 **KEEP RIGHT Sign (R4-3)**

84 Option:

85 01 The KEEP RIGHT EXCEPT TO PASS (R4-16) sign (see Figure 2B-10) may be used on
86 multi-lane roadways to direct drivers to stay in the right-hand lane except when they are passing
87 another vehicle.

88 *Guidance:*

89 02 *If used, the KEEP RIGHT EXCEPT TO PASS sign should be installed just beyond the*
90 *beginning of a multi-lane roadway and at selected locations along multi-lane roadways for*
91 *additional emphasis.*

92 Option:

93 03 The SLOWER TRAFFIC KEEP RIGHT (R4-3) sign (see Figure 2B-10) may be used on
94 multi-lane roadways to reduce unnecessary lane changing.

95 *Guidance:*

96 04 *If used, the SLOWER TRAFFIC KEEP RIGHT sign should be installed just beyond the*
97 *beginning of a multi-lane pavement, and at selected locations where there is a tendency on the*
98 *part of some road users to drive in the left-hand lane (or lanes) below the normal speed of*

99 traffic. This sign should not be used on the approach to an interchange or through an
100 interchange area.

101 05 KEEP RIGHT EXCEPT TO PASS or SLOWER TRAFFIC KEEP RIGHT sign should be
102 installed at the beginning of a passing, climbing or truck lane as shown in Figure 2A-5.

103 Option:

104 06 Both signs may be used on multi-lane roadways to improve capacity and reduce lane
105 changing.

106 Support:

107 07 Section 2A.16a contains provisions regarding the regulatory, warning and guide signs used
108 for passing, climbing and truck lanes, and Figure 2A-5 illustrates an example of the relative
109 locations of the signs and pavement markings used for passing, climbing and truck lanes."

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111 **Section 2B.31 TRUCKS USE RIGHT LANE Sign (R4-5)**

112 *Guidance:*

113 ~~01 If an extra lane has been provided for trucks and other slow-moving traffic, a SLOWER~~
114 ~~TRAFFIC KEEP RIGHT (R4-3) sign (see Figure 2B-10), TRUCKS USE RIGHT LANE (R4-5)~~
115 ~~sign (see Figure 2B-10), or other appropriate sign should be installed at the beginning of the~~
116 ~~lane.~~

117 *Option:*

118 ~~02 The SLOWER TRAFFIC KEEP RIGHT sign may be used as a supplement or as an~~
119 ~~alternative to the TRUCKS USE RIGHT LANE sign. Both signs may be used on multi-lane~~
120 ~~roadways to improve capacity and reduce lane changing.~~

121 01 If an extra lane has been provided for trucks and other slow moving traffic, the TRUCKS
122 USE RIGHT LANE (R4-5) sign (see Figure 2B-10) may be used as an alternative or supplement
123 to the KEEP RIGHT EXCEPT TO PASS (R4-16) or SLOWER TRAFFIC KEEP RIGHT (R4-3)
124 sign installed at the beginning of a passing, climbing or truck lane as shown in Figure 2A-5.

125 Both signs may be used on multi-lane roadways to improve capacity and reduce lane changing.

126 ~~03~~ 02 The TRUCKS USE RIGHT LANE (R4-5) sign may be used on multi-lane roadways to
127 reduce unnecessary lane changing.

128 *Guidance:*

129 ~~04~~ 03 If an extra lane has been provided for trucks and other slow-moving traffic, a Lane Ends
130 sign (see Section 2C.42) should be installed in advance of the point where the extra lane ends.
131 Appropriate pavement markings should be installed at both the upstream and downstream ends
132 of the extra lane (see Section 3B.09 and Figure 3B-13).

133 *Support:*

134 ~~05~~ 04 Section 2D.51 contains information regarding advance information signs for extra lanes
135 that have been provided for trucks and other slow-moving traffic.

136 05 Section 2A.16a contains provisions regarding the regulatory, warning and guide signs used
137 for passing, climbing and truck lanes, and Figure 2A-5 illustrates an example of the relative
138 locations of the signs and pavement markings used for passing, climbing and truck lanes."

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PART 2. SIGNS

CHAPTER 2C. WARNING SIGNS AND OBJECT MARKERS

Section 2C.42 Lane Ends Signs (W4-2, W9-1, W9-2)

Guidance:

01 The LANE ENDS MERGE LEFT (RIGHT) (W9-2) sign or the Lane Ends (W4-2) sign should be used to warn of the reduction in the number of traffic lanes in the direction of travel on a multi-lane highway (see Figure 2C-8).

Option:

02 The RIGHT (LEFT) LANE ENDS (W9-1) sign (see Figure 2C-8) may be used in advance of the Lane Ends (W4-2) sign or the LANE ENDS MERGE LEFT (RIGHT) (W9-2) sign as additional warning or to emphasize that the traffic lane is ending and that a merging maneuver will be required.

Guidance:

03 If used, the RIGHT (LEFT) LANE ENDS (W9-1) sign should be installed in advance of the Lane Ends (W4-2) sign and adjacent to the Lane-Reduction Arrow pavement markings.

Option:

04 On one-way streets or on divided highways where the width of the median will permit, two Lane Ends signs may be placed facing approaching traffic, one on the right-hand side and the other on the left-hand side or median.

Support:

05 Section 3B.09 contains information regarding the use of pavement markings in conjunction with a lane reduction.

Guidance:

06 Where an extra lane has been provided for slower moving traffic (see Section 2B.31), a Lane Ends word sign or a Lane Ends (W4-2) symbol sign should be installed in advance of the downstream end of the extra lane.

07 Lane Ends signs should not be installed in advance of the downstream end of an acceleration lane.

Support:

08 Section 2A.16a contains provisions regarding the regulatory, warning and guide signs used for passing, climbing and truck lanes, and Figure 2A-5 illustrates an example of the relative locations of the signs and pavement markings used for passing, climbing and truck lanes."

Standard:

08-09 In dropped lane situations, regulatory signs (see Section 2B.20) shall be used to inform road users that a through lane is becoming a mandatory turn lane. The W4-2, W9-1, and W9-2 signs shall not be used in dropped lane situations.

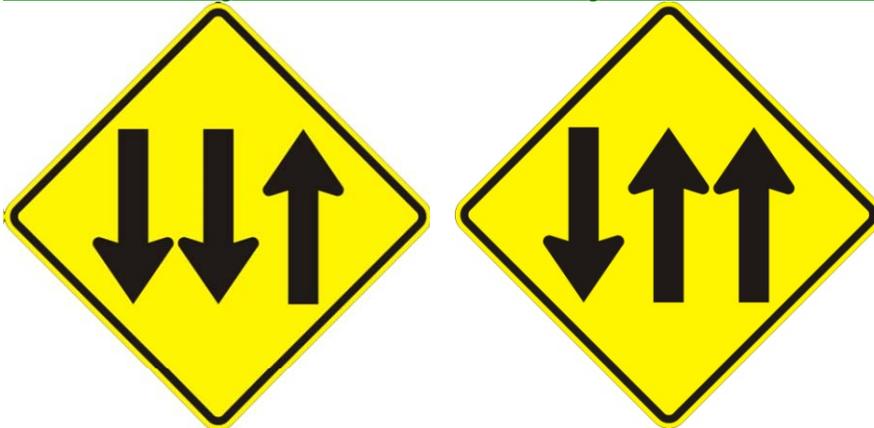
The following section was previously approved by Council in January 2011:

Section 2C.42a Two-way Traffic on a Three Lane Roadway (W6-4) sign

Option:

01 The Two-way Traffic on a Three Lane Roadway (W6-4a and W6-4b) signs may be installed along three lane roadways with two lanes in one direction and one in the opposing direction.

191 **Standard:**
192 02 The W6-4 sign shall match the lane configuration of the roadway.



193
194 **W6-4a and W6-4b**

195
196 **Support:**
197 3 Section 2A.16a contains provisions regarding the regulatory, warning and guide signs used
198 for passing, climbing and truck lanes, and Figure 2A-5 illustrates an example of the relative
199 locations of the signs and pavement markings used for passing, climbing and truck lanes."

PART 2. SIGNS

CHAPTER 2D. GUIDE SIGNS—CONVENTIONAL ROADS

205 **Section 2D.51 Passing, Climbing and Truck, ~~Passing, or Climbing~~ Lane Signs (D17-1 and**
206 **D17-2)**

207 *Guidance:*

208 ~~01— If an extra lane has been provided for trucks and other slow-moving traffic, a NEXT TRUCK~~
209 ~~LANE XX MILES (D17-1) sign and/or a TRUCK LANE XX MILES (D17-2) sign (see Figure 2D-~~
210 ~~21) should may be installed in advance of the lane.~~

211 01 If a passing, climbing or truck lane has been provided to facilitate the passing of trucks and
212 other slower-moving traffic, a PASSING, CLIMBING or TRUCK LANE XX MILES (D17-2) sign
213 (see Figure 2D-21) should be installed in advance of the lane. If a series of passing lanes are
214 provided at regular intervals along a highway, a NEXT PASSING, CLIMBING or TRUCK LANE
215 XX MILES (D17-1) sign (see Figure 2D-21) should be installed after each passing lane whenever
216 another passing lane is provided farther along the highway.

218 **Figure 2D-21 Crossover, Passing, Climbing, Truck Lane, and Slow Vehicle Signs**



219 **ADD THIS SIGN TO Figure 2D-21 D17-8**

220
221 Option:
222 02 Alternative legends such as **TRUCK PASSING** LANE or CLIMBING LANE may be used
223 instead of ~~TRUCK-PASSING~~ LANE [\(D17-8\)](#).

224 03 Section 2B.31 contains information regarding regulatory signs for these types of lanes.
225 Support:

226 04 [Section 2A.16a contains provisions regarding the regulatory, warning and guide signs used
227 for passing, climbing and truck lanes, and Figure 2A-5 illustrates an example of the relative
228 locations of the signs and pavement markings used for passing, climbing and truck lanes."](#)

229 230 PART 3. MARKINGS

231 232 CHAPTER 3B. PAVEMENT AND CURB MARKINGS

233 234 Section 3B.04 White Lane Line Pavement Markings and Warrants

235 Standard:

236 01 **When used, lane line pavement markings delineating the separation of traffic lanes
237 that have the same direction of travel shall be white.**

238 02 **Lane line markings shall be used on all freeways and Interstate highways.**

239 Guidance:

240 03 *Lane line markings should be used on all roadways that are intended to operate with two or
241 more adjacent traffic lanes in the same direction of travel, except as otherwise required for
242 reversible lanes. Lane line markings should also be used at congested locations where the
243 roadway will accommodate more traffic lanes with lane line markings than without the
244 markings.*

245 Support:

246 04 Examples of lane line markings are shown in Figures 3B-2, 3B-3, and 3B-7 through 3B-13.

247 Standard:

248 05 **Except as provided in Paragraph 6, where crossing the lane line markings with care is
249 permitted, the lane line markings shall consist of a normal broken white line.**

250 06 **A dotted white line marking shall be used as the lane line to separate a through lane
251 that continues beyond the interchange or intersection from an adjacent lane for any of the
252 following conditions:**

253 **A. A deceleration or acceleration lane,**

254 **B. A through lane that becomes a mandatory exit or turn lane,**

255 **C. An auxiliary lane 2 miles or less in length between an entrance ramp and an exit
256 ramp, or**

257 **D. An auxiliary lane 1 mile or less in length between two adjacent intersections.**

258 07 **For exit ramps with a parallel deceleration lane, a normal width dotted white lane line
259 shall be installed from the upstream end of the full-width deceleration lane to the
260 theoretical gore or to the upstream end of a solid white lane line, if used, that extends
261 upstream from the theoretical gore as shown in Drawings A and C of Figure 3B-8.**

262 Option:

263 08 For exit ramps with a parallel deceleration lane, a normal width dotted white line extension
264 may be installed in the taper area upstream from the full-width deceleration lane as shown in
265 Drawings A and C of Figure 3B-8.

266 09 For an exit ramp with a tapered deceleration lane, a normal width dotted white line
267 extension may be installed from the theoretical gore through the taper area such that it meets the
268 edge line at the upstream end of the taper as shown in Drawing B of [Figure 3B-8](#).

269 [09a For passing, climbing or truck lanes, a normal width dotted white line extension may be](#)
270 [installed as shown in Figure 2A-5 to guide slower-moving traffic to the appropriate lane.](#)

271 **Standard:**

272 10 **For entrance ramps with a parallel acceleration lane, a normal width dotted white lane**
273 **line shall be installed from the theoretical gore or from the downstream end of a solid white**
274 **lane line, if used, that extends downstream from the theoretical gore, to a point at least one-**
275 **half the distance from the theoretical gore to the downstream end of the acceleration taper,**
276 **as shown in Drawing A of Figure 3B-9.**

277 **Option:**

278 11 For entrance ramps with a parallel acceleration lane, a normal width dotted white line
279 extension may be installed from the downstream end of the dotted white lane line to the
280 downstream end of the acceleration taper, as shown in Drawing A of Figure 3B-9.

281 12 For entrance ramps with a tapered acceleration lane, a normal width dotted white line
282 extension may be installed from the downstream end of the channelizing line adjacent to the
283 through lane to the downstream end of the acceleration taper, as shown in Drawings B and C of
284 Figure 3B-9.

285 **Standard:**

286 13 **A wide dotted white lane line shall be used:**

- 287 **A. As a lane drop marking in advance of lane drops at exit ramps to distinguish a lane**
288 **drop from a normal exit ramp (see Drawings A, B, and C of Figure 3B-10),**
- 289 **B. In advance of freeway route splits with dedicated lanes (see Drawing D of Figure**
290 **3B-10),**
- 291 **C. To separate a through lane that continues beyond an interchange from an adjacent**
292 **auxiliary lane between an entrance ramp and an exit ramp (see Drawing E of**
293 **Figure 3B-10),**
- 294 **D. As a lane drop marking in advance of lane drops at intersections to distinguish a**
295 **lane drop from an intersection through lane (see Drawing A of Figure 3B-11), and**
- 296 **E. To separate a through lane that continues beyond an intersection from an adjacent**
297 **auxiliary lane between two intersections (see Drawing B of Figure 3B-11).**

298 *Guidance:*

299 14 *Lane drop markings used in advance of lane drops at freeway and expressway exit ramps*
300 *should begin at least 1/2 mile in advance of the theoretical gore.*

301 15 *On the approach to a multi-lane exit ramp having an optional exit lane that also carries*
302 *through traffic, lane line markings should be used as illustrated in Drawing B of Figure 3B-10.*
303 *In this case, if the right-most exit lane is an added lane such as a parallel deceleration lane, the*
304 *lane drop marking should begin at the upstream end of the full-width deceleration lane, as*
305 *shown in Drawing C of Figure 3B-8.*

306 16 *Lane drop markings used in advance of lane drops at intersections should begin a distance*
307 *in advance of the intersection that is determined by engineering judgment as suitable to enable*
308 *drivers who do not desire to make the mandatory turn to move out of the lane being dropped*
309 *prior to reaching the queue of vehicles that are waiting to make the turn. The lane drop marking*
310 *should begin no closer to the intersection than the most upstream regulatory or warning sign*
311 *associated with the lane drop.*

312 17 *The dotted white lane lines that are used for lane drop markings and that are used as a lane*
313 *line separating through lanes from auxiliary lanes should consist of line segments that are 3 feet*
314 *in length separated by 9-foot gaps.*

315 Support:

316 18 Section 3B.20 contains information regarding other markings that are associated with lane
317 drops, such as lane-use arrow markings and ONLY word markings.

318 19 Section 3B.09 contains information about the lane line markings that are to be used for
319 transition areas where the number of through lanes is reduced.

320 **Standard:**

321 20 **Where crossing the lane line markings is discouraged, the lane line markings shall**
322 **consist of a normal or wide solid white line.**

323 Option:

324 21 Where it is intended to discourage lane changing on the approach to an exit ramp, a wide
325 solid white lane line may extend upstream from the theoretical gore or, for multi-lane exits, as
326 shown in Drawing B of Figure 3B-10, for a distance that is determined by engineering judgment.

327 22 Where lane changes might cause conflicts, a wide or normal solid white lane line may
328 extend upstream from an intersection.

329 23 In the case of a lane drop at an exit ramp or intersection, such a solid white line may replace
330 a portion, but not all of the length of the wide dotted white lane line.

331 Support:

332 24 Section 3B.09 contains information about the lane line markings that are to be used for
333 transition areas where the number of through lanes is reduced.

334 *Guidance:*

335 25 *On approaches to intersections, a solid white lane line marking should be used to separate a*
336 *through lane from an added mandatory turn lane.*

337 Option:

338 26 On approaches to intersections, solid white lane line markings may be used to separate
339 adjacent through lanes or adjacent mandatory turn lanes from each other.

340 27 Where the median width allows the left-turn lanes to be separated from the through lanes to
341 give drivers on opposing approaches a less obstructed view of opposing through traffic, white
342 pavement markings may be used to form channelizing islands as shown in Figure 2B-17.

343 28 Solid white lane line markings may be used to separate through traffic lanes from auxiliary
344 lanes, such as an added uphill truck lane or a preferential lane (see Section 3D.02).

345 29 Wide solid lane line markings may be used for greater emphasis.

346 **Standard:**

347 30 **Where crossing the lane line markings is prohibited, the lane line markings shall**
348 **consist of a solid double white line (see Figure 3B-12).**

349

350 **Section 3B.09 Lane-Reduction Transition Markings**

351 Support:

352 01 Lane-reduction transition markings are used where the number of through lanes is reduced
353 because of narrowing of the roadway or because of a section of on-street parking in what would
354 otherwise be a through lane. Lane-reduction transition markings are not used for lane drops.

355 **Standard:**

356 02 **Except as provided in Paragraph 3, where pavement markings are used, lane-**
357 **reduction transition markings shall be used to guide traffic through transition areas where**

358 **the number of through lanes is reduced, as shown in Figure 3B-14. On two-way roadways,**
359 **no-passing zone markings shall be used to prohibit passing in the direction of the**
360 **convergence, and shall continue through the transition area.**

361 Option:

362 03 On low-speed urban roadways where curbs clearly define the roadway edge in the lane-
363 reduction transition, or where a through lane becomes a parking lane, the edge line and/or
364 delineators shown in Figure 3B-14 may be omitted as determined by engineering judgment.

365 *Guidance:*

366 04 *For roadways having a posted or statutory speed limit of 45 mph or greater, the transition*
367 *taper length for a lane-reduction transition should be computed by the formula $L = WS$. For*
368 *roadways where the posted or statutory speed limit is less than 45 mph, the formula $L = WS^2/60$*
369 *should be used to compute the taper length.*

370 Support:

371 05 Under both formulas, L equals the taper length in feet, W equals the width of the offset
372 distance in feet, and S equals the 85th-percentile speed or the posted or statutory speed limit,
373 whichever is higher.

374 *Guidance:*

375 06 *Where observed speeds exceed posted or statutory speed limits, longer tapers should be*
376 *used.*

377 Option:

378 07 On new construction, where no posted or statutory speed limit has been established, the
379 design speed may be used in the transition taper length formula.

380 *Guidance:*

381 08 *Lane line markings should be discontinued one-quarter of the distance between the Lane*
382 *Ends sign (see Section 2C.42) and the point where the transition taper begins.*

383 09 *Except as provided in Paragraph 3 for low-speed urban roadways, the edge line markings*
384 *shown in Figure 3B-14 should be installed from the location of the Lane Ends warning sign to*
385 *beyond the beginning of the narrower roadway.*

386 Support:

387 10 Pavement markings at lane-reduction transitions supplement the standard signs. See Section
388 3B.20 for provisions regarding use of lane-reduction arrows.

389 Support:

390 [11 Section 2A.16a contains provisions regarding the regulatory, warning and guide signs used](#)
391 [for passing, climbing and truck lanes, and Figure 2A-5 illustrates an example of the relative](#)
392 [locations of the signs and pavement markings used for passing, climbing and truck lanes."](#)

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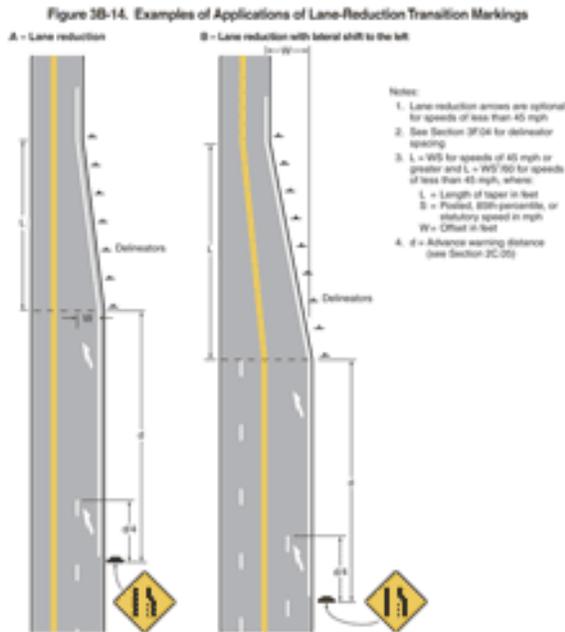
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404 **Figure 3B-14 Examples of Applications of Lane-Reduction Transition Markings**



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PART 3. MARKINGS

CHAPTER 3F. DELINEATORS

Section 3F.04 Delineator Placement and Spacing

Guidance:

01 *Delineators should be mounted on suitable supports at a mounting height, measured vertically from the bottom of the lowest retroreflective device to the elevation of the near edge of the roadway, of approximately 4 feet.*

Option:

02 *When mounted on the face of or on top of guardrails or other longitudinal barriers, delineators may be mounted at a lower elevation than the normal delineator height recommended in Paragraph 1.*

Guidance:

03 *Delineators should be placed 2 to 8 feet outside the outer edge of the shoulder, or if appropriate, in line with the roadside barrier that is 8 feet or less outside the outer edge of the shoulder.*

04 *Delineators should be placed at a constant distance from the edge of the roadway, except that where an obstruction intrudes into the space between the pavement edge and the extension of the line of the delineators, the delineators should be transitioned to be in line with or inside the innermost edge of the obstruction. If the obstruction is a guardrail or other longitudinal barrier, the delineators should be transitioned to be just behind, directly above (in line with), or on the innermost edge of the guardrail or longitudinal barrier.*

05 *Delineators should be spaced 200 to 530 feet apart on mainline tangent sections. Delineators should be spaced 100 feet apart on ramp tangent sections.*

431

432 [05a If used along a lane-reduction transition of a passing, climbing or truck lane taper,](#)
433 [delineators should be spaced a maximum of 100 feet apart.](#)

434 Support:

435 06 Examples of delineator installations are shown in Figure 3F-1.

436 Option:

437 07 When uniform spacing is interrupted by such features as driveways and intersections,
438 delineators which would ordinarily be located within the features may be relocated in either
439 direction for a distance not exceeding one quarter of the uniform spacing. Delineators still falling
440 within such features may be eliminated.

441 08 Delineators may be transitioned in advance of a lane transition or obstruction as a guide for
442 oncoming traffic.

443 *Guidance:*

444 09 *The spacing of delineators should be adjusted on approaches to and throughout horizontal*
445 *curves so that several delineators are always simultaneously visible to the road user. The*
446 *approximate spacing shown in Table 3F-1 should be used.*
447

**Table 3F-1. Approximate Spacing for Delineators on
Horizontal Curves**

Radius (R) of Curve	Approximate Spacing (S) on Curve
50 feet	20 feet
115 feet	25 feet
180 feet	35 feet
250 feet	40 feet
300 feet	50 feet
400 feet	55 feet
500 feet	65 feet
600 feet	70 feet
700 feet	75 feet
800 feet	80 feet
900 feet	85 feet
1,000 feet	90 feet

448 Notes:

- 449 1. Spacing for specific radii may be interpolated from table.
- 450 2. The minimum spacing should be 20 feet.
- 451 3. The spacing on curves should not exceed 300 feet.
- 452 4. In advance of or beyond a curve, and proceeding away from the end of the curve, the
453 spacing of the first delineator is 2S, the second 3S, and the third 6S, but not to exceed 300
454 feet.
- 455 5. S refers to the delineator spacing for specific radii computed from the formula $S=3\sqrt{R-50}$.
- 456 6. The distances for S shown in the table above were rounded to the nearest 5 feet.

457 Option:

458 10 When needed for special conditions, delineators of the appropriate color may be mounted in
459 a closely-spaced manner on the face of or on top of guardrails or other longitudinal barriers to
460 form a continuous or nearly continuous "ribbon" of delineation.