

Part 9 TRAFFIC CONTROL FOR BICYCLE FACILITIES

June 15, 2011

- Paragraphs are numbered
- *Guidance is italicized*
- No more metric
- Definitions relocated to Part 1

Standard:

- 01 **The BIKE LANE (R3-17) sign and the R3-17aP and R3-17bP signs are used only in conjunction with marked bicycle lanes as described in the Manual.**

Guidance:

- 02 *If used, Bike Lane signs and plaques should be used in conjunction with the R3-17aP and R3-17bP signs at the downstream end of the bicycle lane, and at periodic intervals based on engineering judgment based on prevailing speed of bicycle traffic, adjacent intersections, and other considerations.*

Option:

- 01 Where motor vehicles entering an exclusive right-turn lane from the left, the **BEGIN RIGHT TURN LANE YIELD TO BIKES (R4-10)** sign is used to alert the motorist and the bicyclist of this weaving maneuver (see

- **Standards remain bold**
- Options and support remain unformatted

Standard:

01 When used in this Manual, the text headings of Standard, Guidance, Option, and Support shall be defined as follows:

- A. **Standard**—a statement of required, mandatory, or specifically prohibitive practice regarding a traffic control device. All Standard statements are labeled, and the text appears in bold type. The verb “shall” is typically used. The verbs “should” and “may” are not used in Standard statements. Standard statements are sometimes modified by Options. Standard statements shall not be modified or compromised based on engineering judgment or engineering study.
- B. **Guidance**—a statement of recommended, but not mandatory, practice in typical situations, with deviations allowed if engineering judgment or engineering study indicates the deviation to be appropriate. All Guidance statements are labeled, and the text appears in unbold type. The verb “should” is typically used. The verbs “shall” and “may” are not used in Guidance statements. Guidance statements are sometimes modified by Options.
- C. **Option**—a statement of practice that is a permissive condition and carries no requirement or recommendation. Option statements sometime contain allowable modifications to a Standard or Guidance statement. All Option statements are labeled, and the text appears in unbold type. The verb “may” is typically used. The verbs “shall” and “should” are not used in Option statements.
- D. **Support**—an informational statement that does not convey any degree of mandate, recommendation, authorization, prohibition, or enforceable condition. Support statements are labeled, and the text appears in unbold type. The verbs “shall,” “should,” and “may” are not used in Support statements.

- **Standards are requirements that SHALL be followed unless there is an Option**
- *Guidance is recommended and SHOULD be followed*
- Options MAY be followed and are sometimes modifications to Standards and Guidance

PART 9 - TRAFFIC CONTROL FOR BICYCLE FACILITIES

- **9A: General**
- **9B: Signs**
- **9C: Markings**
- **9D: Signals**

Standard:

Bicycle Lane—a portion of a roadway that has been designated for preferential or exclusive use by bicyclists by pavement markings and, if used, signs.

Revised Definition of Bike Lane

- Old: required signs and markings
- New: requires markings; signs optional



R3-17

Guidance: **DRAFT**

02 (DE Revision) Fluorescent yellow should be used for all bicycle-related warning signs.

Delaware Revision:

- *Old DE MUTCD Option:* Fluorescent Yellow-Green (FYG) may be applied in cases where there is a need to draw additional attention, based on engineering judgment
- *New DE MUTCD Guidance:*
 - FY should be used for bike warning signs
 - (From Part 7): FYG should be used in school zones and other areas where pedestrians are a “significant operational issue” such as beach areas.





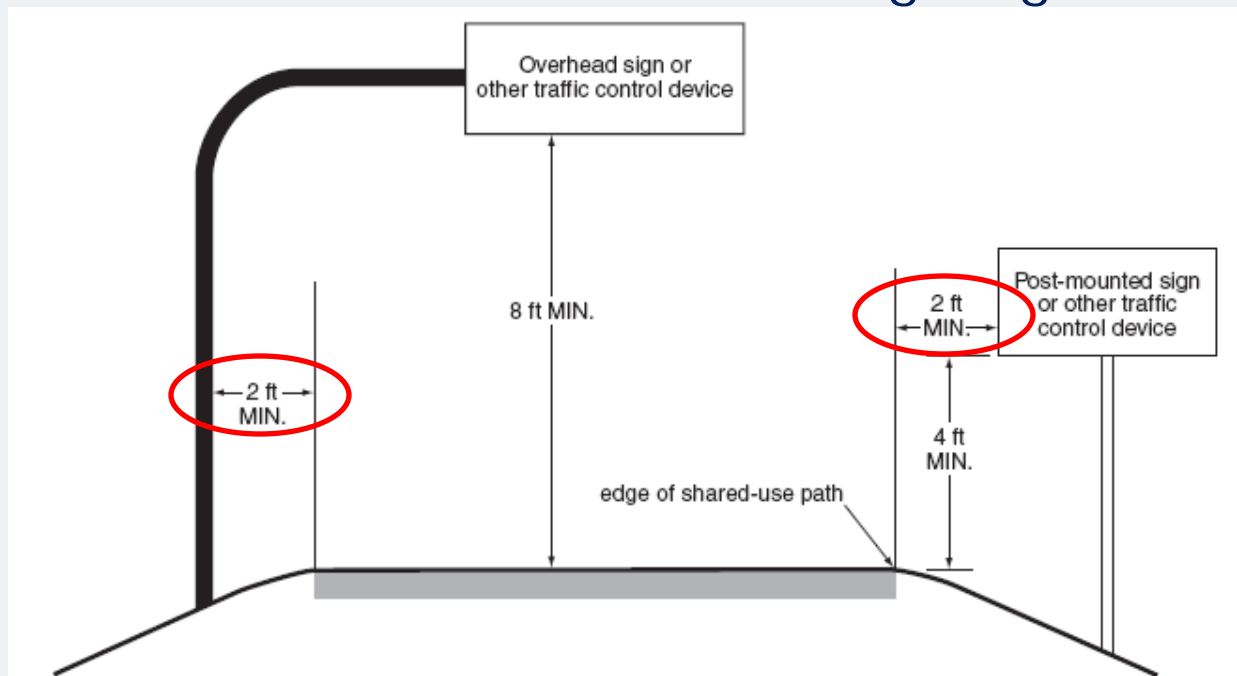
Standard:

04 Where used on a shared-use path, no portion of a sign or its support shall be placed less than 2 feet laterally from the near edge of the path, or less than 8 feet vertically over the entire width of the shared-use path (see Figure 9B-1).

05 Mounting height for post-mounted signs on shared-use paths shall be a minimum of 4 feet, measured vertically from the bottom of the sign to the elevation of the near edge of the path surface (see Figure 9B-1).

Revised standard

- **Minimum lateral offset requirement = 2 feet**
 - Had been 3 feet
 - Maximum lateral offset and mounting height removed



Option: **DRAFT**

03A (DE Revision) In situations where a shared-use path intersects with a roadway in a manner that a STOP (R1-1) or YIELD (R1-2) sign for bicyclists may be seen or confused by motorists, a STOP (SR1-16-DE) or YIELD (SR1-17-DE) sign for bicyclists may be used.



R1-1



R1-2



SR1-16-DE

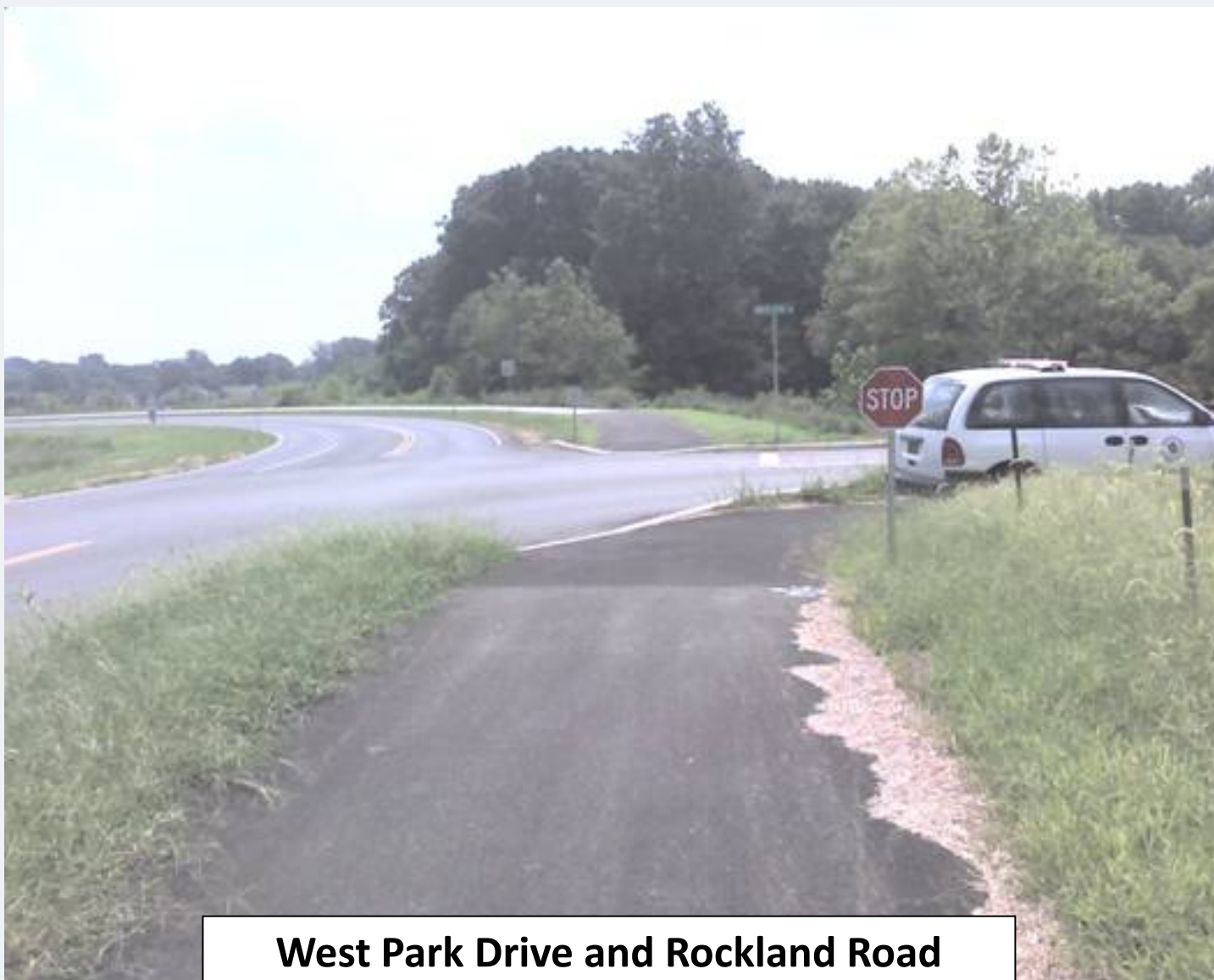


SR1-17-DE

Delaware Revision:

- When a STOP or YIELD sign for bicyclists may be seen or confused by motorists, a SR1-16-DE (STOP) or SR1-17-DE (YIELD) sign for bicyclists may be used

Section 9B.03 – STOP and YIELD Signs



West Park Drive and Rockland Road

Section 9B.03 – STOP and YIELD Signs



1st improvement attempt:
Sign rotated and shielded

West Park Drive and Rockland Road

Section 9B.03 – STOP and YIELD Signs



2nd improvement attempt:
STOP sign replaced with SR-1-17-DE Bicycle YIELD sign

West Park Drive and Rockland Road

Section 9B.04 - Bicycle Lane Signs and Plaques

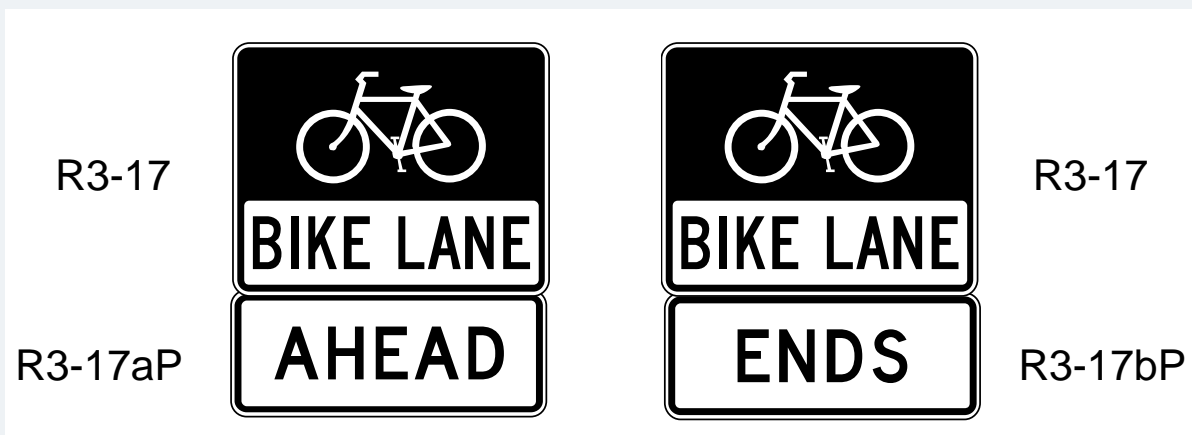
Standard:

01 The BIKE LANE (R3-17) sign and the R3-17aP and R3-17bP plaques (see Figure 9B-2) shall be used only in conjunction with marked bicycle lanes as described in Section 9C.04.

Revised standard

- **Bicycle lane regulatory signs are no longer required**

- Had been required at periodic intervals
- If used, the R3-17 may still be supplemented with the AHEAD or ENDS plaque



Section 9B.04 - Bicycle Lane Signs and Plaques

Guidance: **DRAFT**

03 (DE Revision) Spacing of BIKE LANE (R3-17) signs is subject to engineering judgment and site specific constraints; however, as a general guide, in urban areas, and in rural areas with minimal access, spacing should be determined using the formula $L = 2WS$, where L is the spacing between signs, W is the width of the roadway, and S is the 85th-percentile speed.

Delaware Revision:

- In urban areas BIKE LANE sign placement should be based on:

$$L = 2WS$$

L = spacing between signs

W = width of road

S = 85th-percentile speed

- Also subject to engineering judgment and site specific constraints



R3-17

Section 9B.04 - Bicycle Lane Signs and Plaques

EXISTING



College Ave at Cleveland Ave, Newark

Section 9B.04 - Bicycle Lane Signs and Plaques

NEW



College Ave at Cleveland Ave, Newark

YIELD TO BIKES Signs

Option: **DRAFT**

03 (DE Revision) Where motor vehicles traveling in a shared through/right-turn lane or in a through lane leading to a channelized right-turn lane without storage must cross bicycle traffic in an adjacent bicycle lane to turn right at an intersection, the RIGHT TURNS MUST YIELD TO BIKES (R4-4-DE) sign (see Figure 9B-2) may be used to inform both the motorist and the bicyclist of this turning maneuver.

Guidance:

04 (DE Revision) Refer to Figures 9C-1B, 9C-1D, 9C-5 for examples of placement of the R4-4-DE sign in situations where motor vehicles in a shared through/right-turn lane must cross bicycle traffic in an adjacent bicycle lane to turn right.

Delaware Revision:

- Where vehicles must cross bicycle traffic to enter a right turn lane, the RIGHT TURNS MUST YIELD TO BIKES sign may be used
- Several figures (shown later) are provided to show typical placement



R4-4



R4-4-DE

Option: **DRAFT**

01 (DE Revision) The Bicycles May Use Full Lane (R4-11) sign (see Figure 9B-2) may be used in Delaware on designated bicycle routes where no bicycle lanes or adjacent shoulders usable by bicyclists are present and where travel lanes are too narrow for bicyclists and motor vehicles to operate side by side.

02 The Bicycles May Use Full Lane sign may be used in locations where it is important to inform road users that bicyclists might occupy the travel lane.

03 Section 9C.07 describes a Shared Lane Marking that may be used in addition to or instead of the Bicycles May Use Full Lane sign to inform road users that bicyclists might occupy the travel lane.

Support:

04 The Uniform Vehicle Code (UVC) defines a “substandard width lane” as a “lane that is too narrow for a bicycle and a vehicle to travel safely side by side within the same lane.”

New Section

- Bicycles May Use Full Lane (R4-11) sign may be used where no bicycle lane exists or adjacent shoulder and travel lane is too narrow

Delaware Revision:

- In Delaware, the sign may be used on designated bike routes



R4-11

Option: **DRAFT**

05 (DE Revision) Use of the Bicycles May Use Full Lane (R4-11) sign may be used based on engineering judgment.

Support:

06 (DE Revision) In Delaware, a lane with a width of 14 feet or less, without shoulder, is considered too narrow for a bicycle and a vehicle to travel side by side within the same lane.

Delaware Revision:

- Use of MAY USE FULL LANE sign based on engineering judgment; typically for designated bike routes with “narrow lanes”
- Delaware defines a narrow lane as 14 ft or less, with no shoulder
 - Such lanes are too narrow for a bicycle and vehicle to travel side-by-side



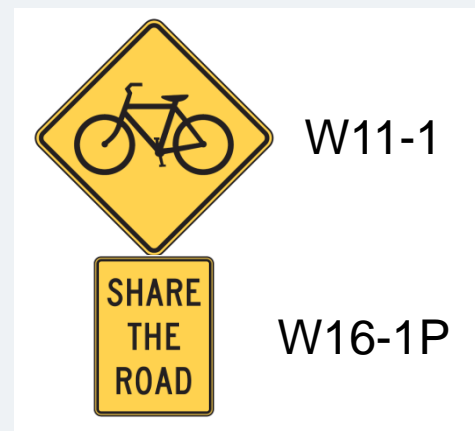
R4-11

The option also remains to use a Bicycle Warning (W11-1) sign along with a SHARE THE ROAD (W16-1P) plaque (see Section 9B.19)

- Selection of signs based on engineering judgment
- Potential applications:



- Designated Bike Route
- Narrow single lane of travel without shoulder



- Approaches to designated Bike Routes
- Single lane or multiple lanes of travel without shoulder or with a shoulder < 4 feet wide

End of Bicycle Lane Example



LEFT TURN (Use R4-11)

Narrow Lane:
14-foot or less,
with no shoulder



THROUGH (Use W16-1P)

Narrow Shoulder:
< 4-foot



Cleveland Ave, Newark



Guidance: **DRAFT**

03 *The RIDE WITH TRAFFIC plaque should be used only in conjunction with the Bicycle WRONG WAY sign, and should be mounted directly below the Bicycle WRONG WAY sign.*

04 *(DE Revision) The RIDE WITH TRAFFIC plaque should only be used at locations with a documented concern or based on engineering judgment considering site specific issues.*

- The RIDE WITH TRAFFIC plaque should only be used with the Bicycle Wrong Way sign

Delaware Revision

- *The RIDE WITH TRAFFIC plaque should only be used in locations with documented problems or based on engineering judgment*



R5-1b



R9-3cP

Section 9B.09 - Selective Exclusion Signs

Standard:

02 **If used, Selective Exclusion signs shall clearly indicate the type of traffic that is excluded.**

Support:

03 Typical exclusion messages include:

- A. No Bicycles (R5-6),
- B. No Pedestrians (R9-3),
- C. No Skaters (R9-13), and
- D. No Equestrians (R9-14).

Standard: DRAFT

05 (DE Revision) Pursuant to Delaware Code Title 17, Chapter 1, §179, a **NO NON-MOTORIZED TRAFFIC (R5-7)** sign shall be placed at the entry point of all controlled-access highways where the use of non-motorized vehicles is prohibited.

Revised section

- New signs for No Skaters (R9-13) and No Equestrians (R9-14)

Delaware Revision:

- **A NO NON-MOTORIZED TRAFFIC (R5-7) sign shall be placed at the entry point of all controlled access highways where non-motorized vehicles are prohibited**



R9-13



R9-14



R5-7

Section 9B.09 - Bicycle Regulatory Signs

Option:

02 Where it is not intended for bicyclists to be controlled by pedestrian signal indications, the R10-4, R10-24, or R10-26 sign (see Figure 9B-2 and Section 2B.52) may be used.

Guidance:

03 *If used, the R9-5, R10-4, R10-24, or R10-26 signs should be installed near the edge of the sidewalk in the vicinity of where bicyclists will be crossing the street.*

Option:

04 If bicyclists are crossing a roadway where In-Roadway Warning Lights (see Section 4N.02) or other warning lights or beacons have been provided, the R10-25 sign (see Figure 9B-2) may be used.

Revised section

- New signs for bicycle crossings not controlled by pedestrian indications



R10-4



R10-24

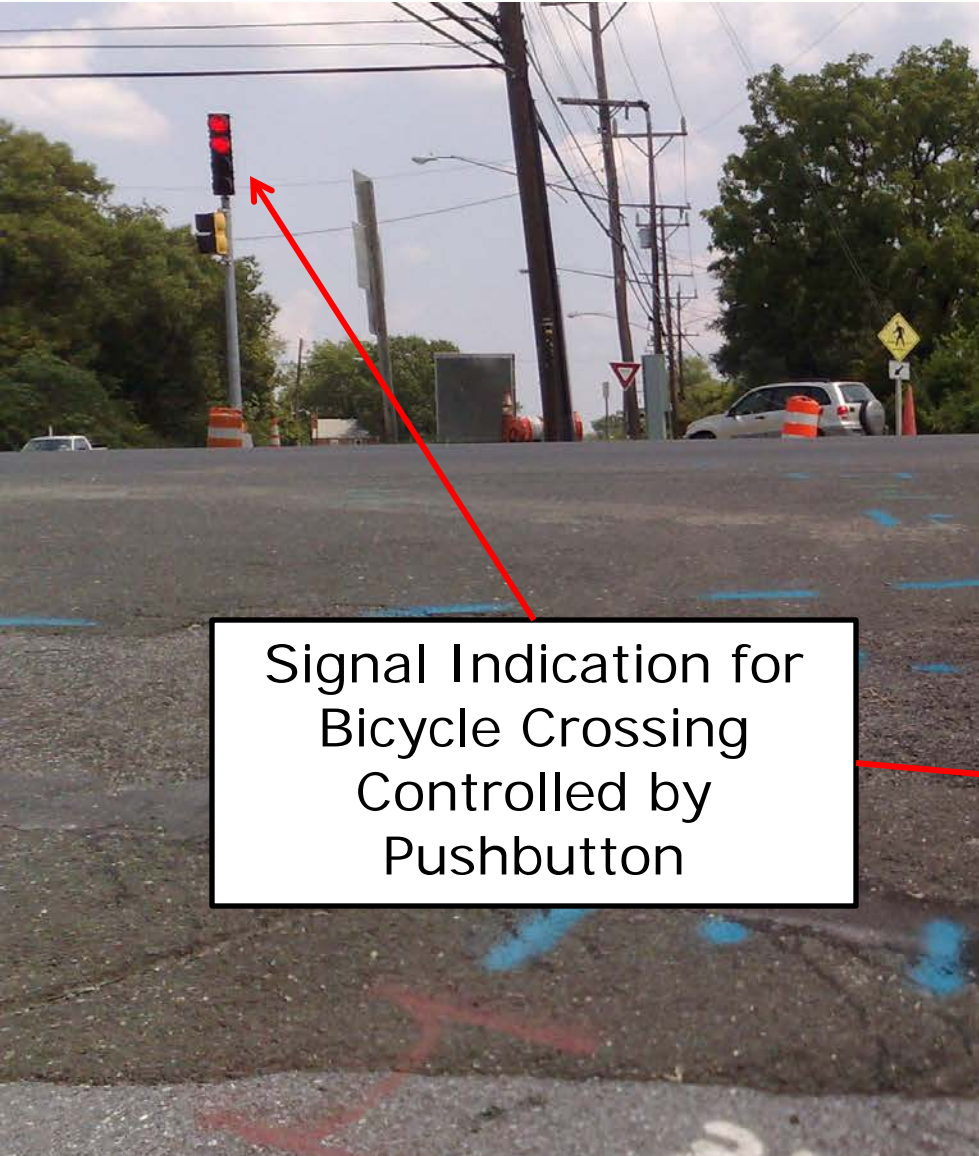


R10-25



R10-26

Section 9B.09 - Bicycle Regulatory Signs



Signal Indication for
Bicycle Crossing
Controlled by
Pushbutton



US 1, College Park, MD

Option: **DRAFT**

03 (DE Revision) A supplemental plaque may be used to clarify the specific type of surface condition or emphasize the need for caution, such as the CYCLES USE CAUTION (W10-12P-DE) plaque (See Section 8B.25).

Delaware Revision

- The CYCLES USE CAUTION (W10-12p-DE) sign specifically listed as an option for use in locations where cyclists should pay extra attention to specific conditions
- Typical usage will be in conjunction with other surface warning signs: BUMP (W8-1), DIP (W8-2), PAVEMENT ENDS (W8-3), Skewed Grade Crossing (W10-12), etc.



W10-12p-DE



W8-1



W8-2



W8-3



W10-12

Option:

- 02 The combined Bicycle/Pedestrian (W11-15) sign (see Figure 9B-3) may be used where both bicyclists and pedestrians might be crossing the roadway, such as at an intersection with a shared-use path. A TRAIL X-ING (W11-15P) supplemental plaque (see Figure 9B-3) may be mounted below the W11-15 sign.

Revised section

- New combined Bicycle/Pedestrian (W11-15) sign and TRAIL X-ING (W11-15P) plaque for shared-use paths
- Other warning plaques may also be used:



W16-2aP



W16-7P



W16-9P



W11-15



W11-15P

OLD



NEW



Issac Branch Trail at President Dr, Dover

Section 9B.19 - Other Bicycle Warning Signs

Option: **DRAFT**

01 Other bicycle warning signs (see Figure 9B-3) such as PATH NARROWS (W5-4a) and Hill (W7-5) may be installed on shared-use paths to warn bicyclists of conditions not readily apparent.

02 (DE Revision) In situations where there is a need to warn motorists to watch for bicyclists traveling along the highway, including junctions with designated bicycle routes, and on roadways with no shoulder or a shoulder with a width of less than 4 feet, the SHARE THE ROAD (W16-1P) plaque (see Figure 9B-3) may be used in conjunction with the W11-1 sign.

Revised section

- PATH NARROWS (W5-4a) sign replaces BIKEWAY NARROWS sign
 - Sign may only be used on shared-use paths



Delaware Revision

- The SHARE THE ROAD (W16-1P) plaque may be used
 - on roads with no shoulder or a shoulder < 4'
 - At junctions with designated bike routes



Section 9B.20 - Bicycle Guide Signs

Option:

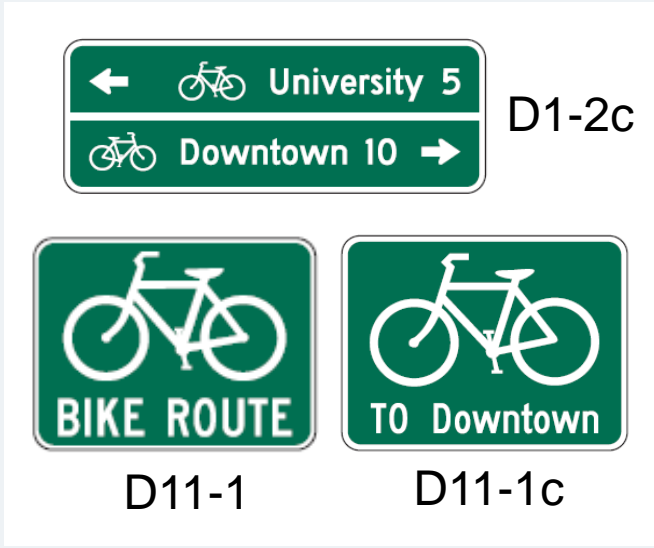
- 01 Bike Route Guide (D11-1) signs (see Figure 9B-4) may be provided along designated bicycle routes to inform bicyclists of bicycle route direction changes and to confirm route direction, distance, and destination.
- 02 If used, Bike Route Guide signs may be repeated at regular intervals so that bicyclists entering from side streets will have an opportunity to know that they are on a bicycle route. Similar guide signing may be used for shared roadways with intermediate signs placed for bicyclist guidance.
- 03 Alternative Bike Route Guide (D11-1c) signs may be used to provide information on route direction, destination, and/or route name in place of the “BIKE ROUTE” wording on the D11-1 sign (see Figures 9B-4 and 9B-6).
- 04 Destination (D1-1, D1-1a) signs, Street Name (D3) signs, or Bicycle Destination (D1-1b, D1-1c, D1-2b, D1-2c, D1-3b, D1-3c) signs (see Figure 9B-4) may be installed to provide direction, destination, and distance information as needed for bicycle travel. If several destinations are to be shown at a single location, they may be placed on a single sign with an arrow (and the distance, if desired) for each name. If more than one destination lies in the same direction, a single arrow may be used for the destinations.

Guidance:

- 05 *Adequate separation should be made between any destination or group of destinations in one direction and those in other directions by suitable design of the arrow, spacing of lines of legend, heavy lines entirely across the sign, or separate signs.*

Revised section

- Several new Bike Route Guide signs added
 - New Bike Destination and Distance Signs (D1 series)
 - Alternative Guide Sign (D11-1c) may be used instead of D11-1.



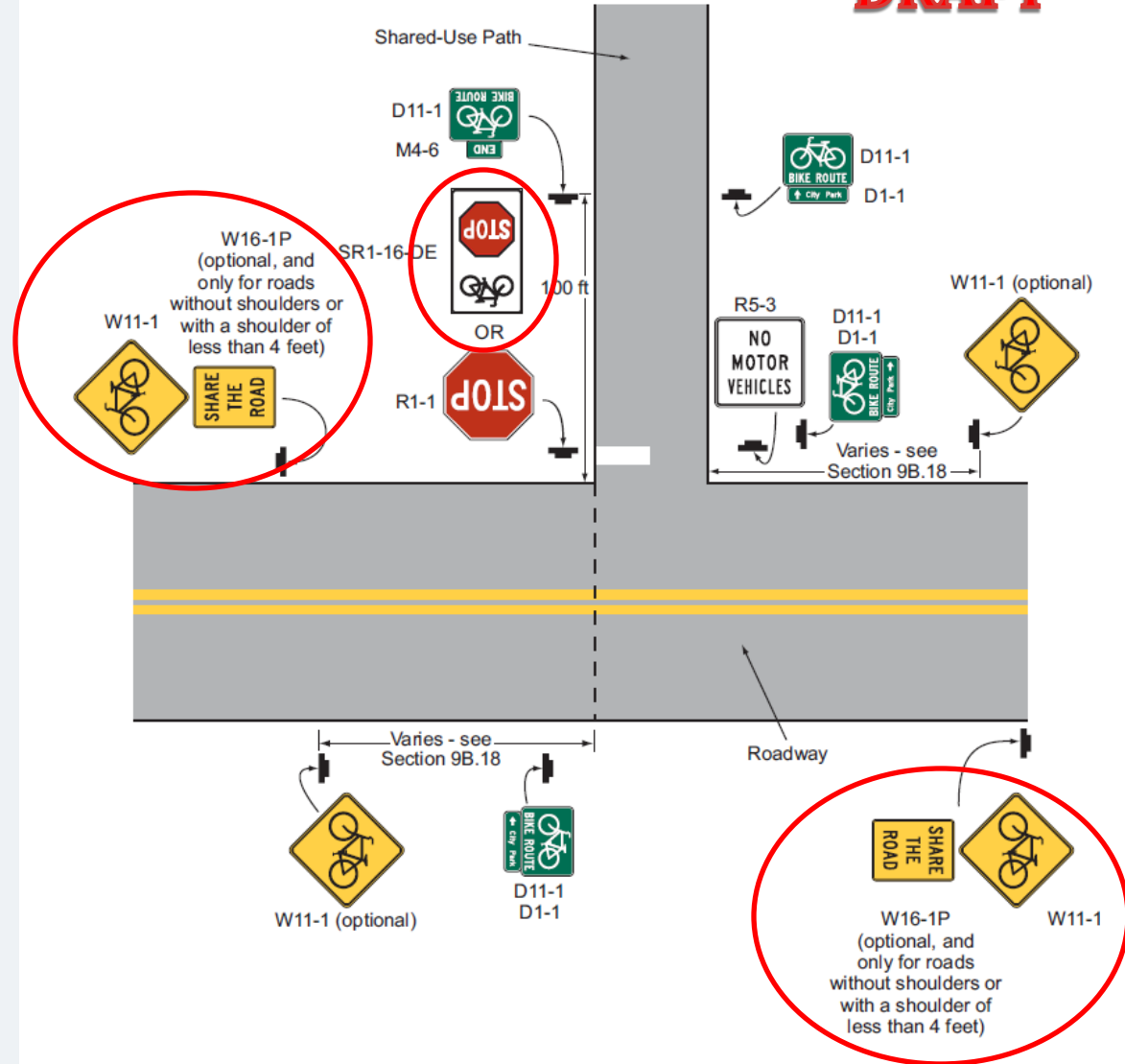
Section 9B.20 - Bicycle Guide Signs

Delaware Revisions

- Fig 9B-5 modified to show:
 - the SHARE THE ROAD (W16-1P) plaque and the W11-1 sign
 - The optional use of the SR1-16-DE Bike STOP sign

Figure 9B-5. Example of Signing for the Beginning and End of a Designated Bicycle Route
(Delaware Revision)

DRAFT

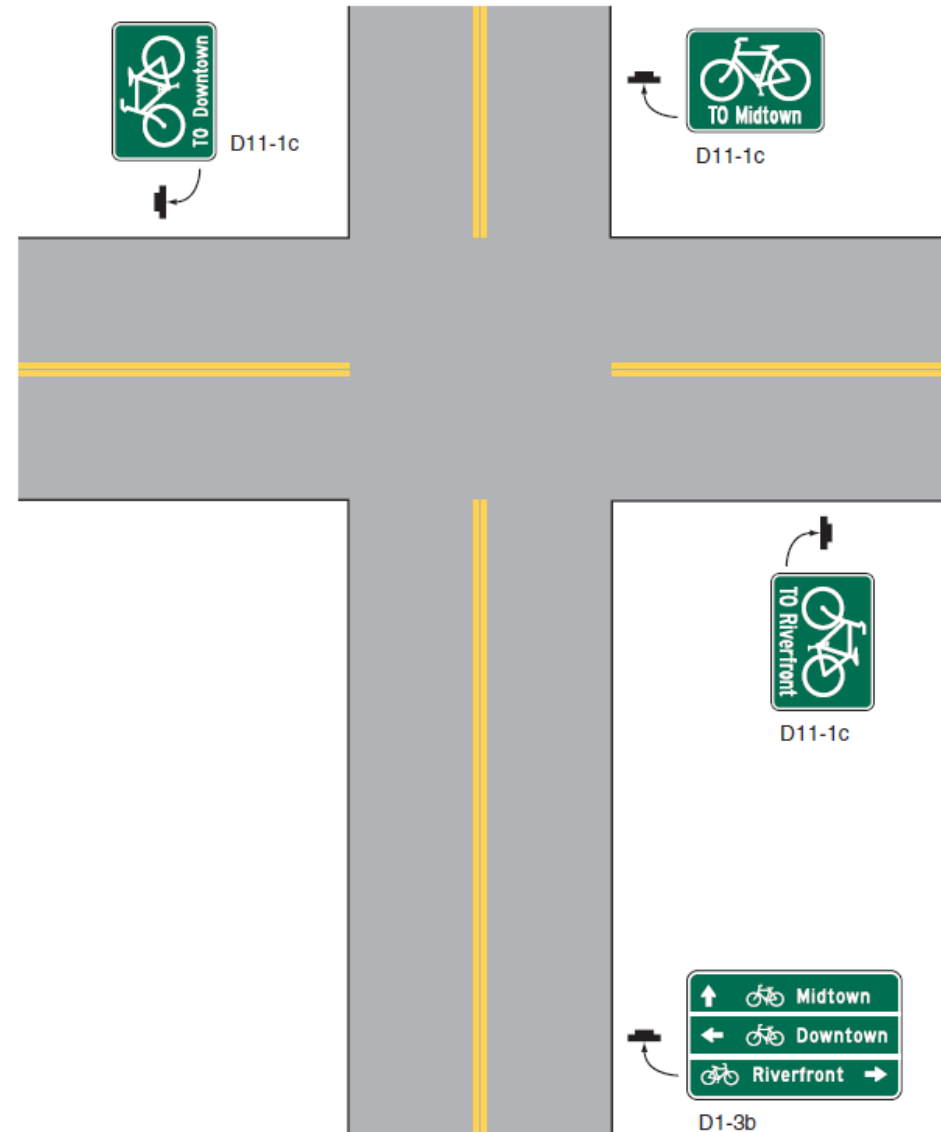


Section 9B.20 - Bicycle Guide Signs

Revised Figure

- Showing appropriate use of Bicycle Guide Signing based on updated FHWA MUTCD

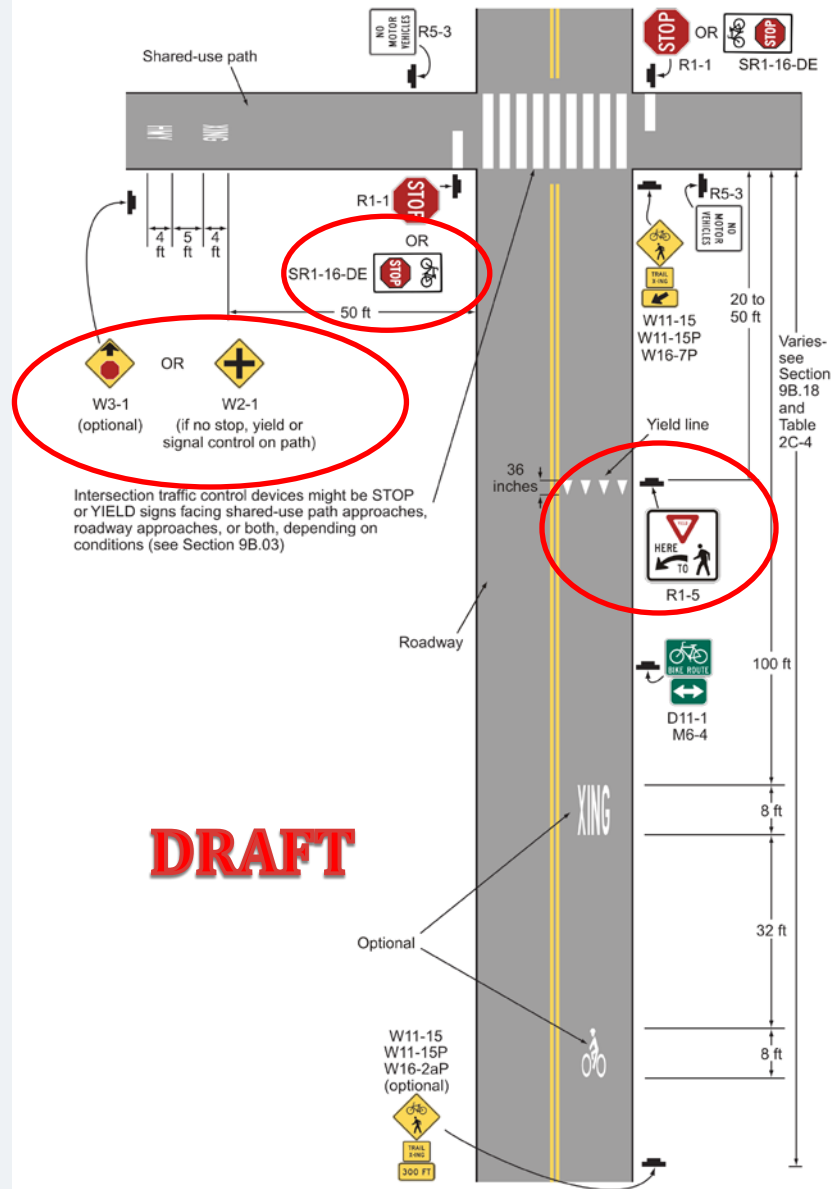
Figure 9B-6. Example of Bicycle Guide Signing



Delaware Revisions

- Fig 9B-7 modified to show:
 - “Piano key” crosswalk
 - Double yellow centerline approaching path crossing
 - Yield line and R1-5 sign
 - The optional use of the SR1-16-DE Bike STOP sign
 - The optional use of advance warning signs on path
(note that Yield ahead is not shown)

Figure 9B-7. Examples of Signing and Markings for a Shared-Use Path Crossing (Delaware Revision)



Section 9B.21 - Bicycle Route Signs

Standard:

02 The Bicycle Route (M1-8) sign shall contain a route designation and shall have a green background with a retroreflectorized white legend and border. The Bicycle Route (M1-8a) sign shall contain the same information as the M1-8 sign and in addition shall include a pictograph or words that are associated with the route or with the agency that has jurisdiction over the route.

Revised standard

- **Bicycle Route (M1-8a) sign shall contain route designation and pictograph or words associated with the route or agency with jurisdiction**



M1-8

M1-8a

- In the old DE MUTCD, M1-8-DE and M1-8a-DE signs (with arrows) were permitted
- Under new DE MUTCD they will not be.



- Use M6 series plaques instead (see next slide)

Section 9B.22 - Bicycle Route Sign Auxiliary Plaques

Guidance:

- 02 *If used, Junction (M2-1), Cardinal Direction (M3 series), and Alternative Route (M4 series) auxiliary plaques (see Figure 9B-4) should be mounted above the appropriate Bike Route Guide signs, Bicycle Route signs, or U.S. Bicycle Route signs.*
- 03 *If used, Advance Turn Arrow (M5 series) and Directional Arrow (M6 series) auxiliary plaques (see Figure 9B-4) should be mounted below the appropriate Bike Route Guide sign, Bicycle Route sign, or U.S. Bicycle Route sign.*
- 05 *Route sign auxiliary plaques carrying word legends that are used on bicycle routes should have a minimum size of 12 x 6 inches. Route sign auxiliary plaques carrying arrow symbols that are used on bicycle routes should have a minimum size of 12 x 9 inches.*

Option:

- 06 *With route signs of larger sizes, auxiliary plaques may be suitably enlarged, but not such that they exceed the width of the route sign.*
- 07 *A route sign and any auxiliary plaques used with it may be combined on a single sign.*
- 08 *Destination (D1-1b and D1-1c) signs (see Figure 9B-4) may be mounted below Bike Route Guide signs, Bicycle Route signs, or U.S. Bicycle Route signs to furnish additional information, such as directional changes in the route, or intermittent distance and destination information.*

Revised section

- Clarified use and sizes of auxiliary plaques and introduced new plaques
 - *Junction (M2-1)*
 - *Cardinal Direction (M3 series)*
 - *Alternative Route (M4 series)*
 - *Advance Turn Arrow (M5 series)*
 - *Directional Arrow (M6 series)*



M2-1



M3-1



M4-7a



M5-2

Sections 9B.21 and 9B.22

CORRECT



Middleton Dr, Wilmington

INCORRECT



SR 15 at SR 8, Dover

CORRECT



Moose Lodge Rd, Kent County

Support:

- 01 There are two types of reference location signs:
 - A. Reference Location (D10-1, 2, and 3) signs show an integer distance point along a shared-use path; and
 - B. Intermediate Reference Location (D10-1a, 2a, and 3a) signs also show a decimal between integer distance points along a shared-use path.

Standard:

- 04 **If Intermediate Reference Location (D10-1a to D10-3a) signs are used to augment the reference location sign system, the reference location sign at the integer mile point shall display a decimal point and a zero numeral.**
- 05 **If placed on shared-use paths, reference location signs shall contain 4.5-inch white numerals on a green background that is at least 6 inches wide with a white border. The signs shall contain the word MILE in 2.25-inch white letters.**
- 06 **Reference location signs shall have a minimum mounting height of 2 feet, measured vertically from the bottom of the sign to the elevation of the near edge of the shared-use path, and shall not be governed by the mounting height requirements prescribed in Section 9B.01.**

New section

- Reference Location signs for use on shared paths only
- May use signs with (D10-2) or without (D-10-2a) a decimal integer
- **Shall contain 4.5 inch white numerals on a min. 6 inch green background with white border**
- **Shall have min. mounting height of 2 feet**



D10-2



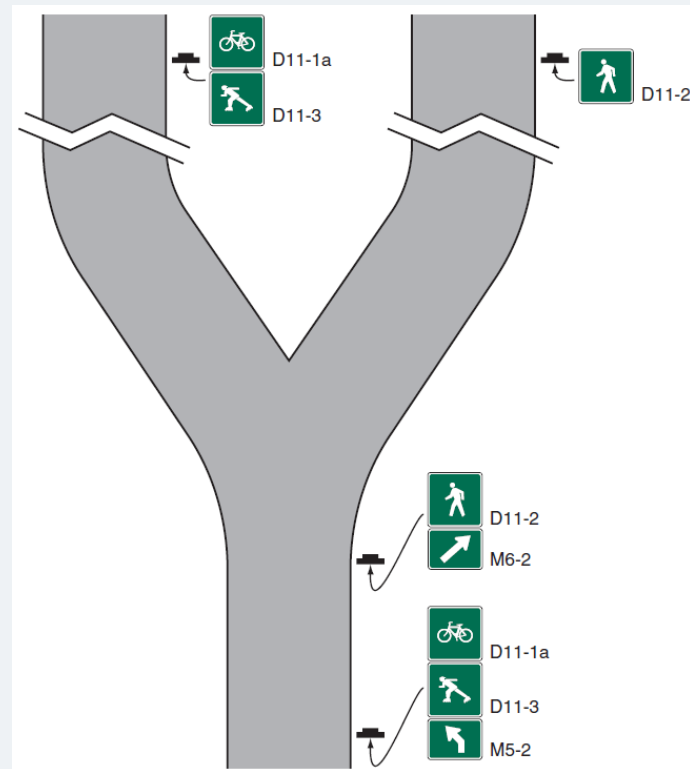
D10-2a

Option:

- 01 Where separate pathways are provided for different types of users, Mode-Specific Guide (D11-1a, D11-2, D11-3, D11-4) signs (see Figure 9B-4) may be used to guide different types of users to the traveled way that is intended for their respective modes.
- 02 Mode-Specific Guide signs may be installed at the entrance to shared-use paths where the signed mode(s) are permitted or encouraged, and periodically along these facilities as needed.
- 03 The Bicycles Permitted (D11-1a) sign, when combined with the BIKE ROUTE supplemental plaque (D11-1bP), may be substituted for the D11-1 Bicycle Route Guide sign on paths and shared roadways.
- 04 When some, but not all, non-motorized user types are encouraged or permitted on a shared-use path, Mode-Specific Guide signs may be placed in combination with each other, and in combination with signs (see Section 9B.09) that prohibit travel by particular modes.

New section

- New Mode-Specific Guide signs to indicate permitted user types on shared-use paths
- Previously only had restricted use signs



Section 9B.26 - Object Markers

Option: **DRAFT**

01 (DE Revision) Fixed objects adjacent to shared-use paths may be marked with Type 1, Type 2, or Type 3 object markers (see Figure 9B-3) such as those described in Section 2C.63. If the object marker is not intended to also be seen by motorists, a smaller version of the Type 3 object marker may be used (see Table 9B-1). A Type 3 object marker not intended to be seen by motorists may also be narrower than the minimum width specified in Table 9B-1, to eliminate any potential overhang.

Standard:

- 02 Obstructions in the traveled way of a shared-use path shall be marked with retroreflectorized material or appropriate object markers.
- 03 All object markers shall be retroreflective.
- 04 On Type 3 object markers, the alternating black and retroreflective yellow stripes shall be sloped down at an angle of 45 degrees toward the side on which traffic is to pass the obstruction.

Section moved from old Section 9C.03

- Type 3 object markers for shared-use paths may be smaller than object markers for roadways

Delaware Revision:

- A Type 3 object marker may be narrower than the min. dimensions in Table 9B-1 (6 inches by 18 inches)
- However, the surface area of the narrow sign must still be at least 108 square inches



OM3-R

Section 9B.26 - Object Markers

INCORRECT



Issac Branch Trail at President Dr, Dover

Section 9B.26 - Object Markers

CORRECT



Issac Branch Trail at President Dr, Dover

CHAPTER 9C - MARKINGS



Section 9C.04 - Markings for Bicycle Lanes

Standard:

- 02 **Longitudinal pavement markings shall be used to define bicycle lanes.**

New standard

- **Bicycle lanes shall be defined by longitudinal pavement markings**
 - The definition of a bicycle lane has been changed: Signs may be used to supplement the markings, but are not required



SR 15 at SR 8, Dover

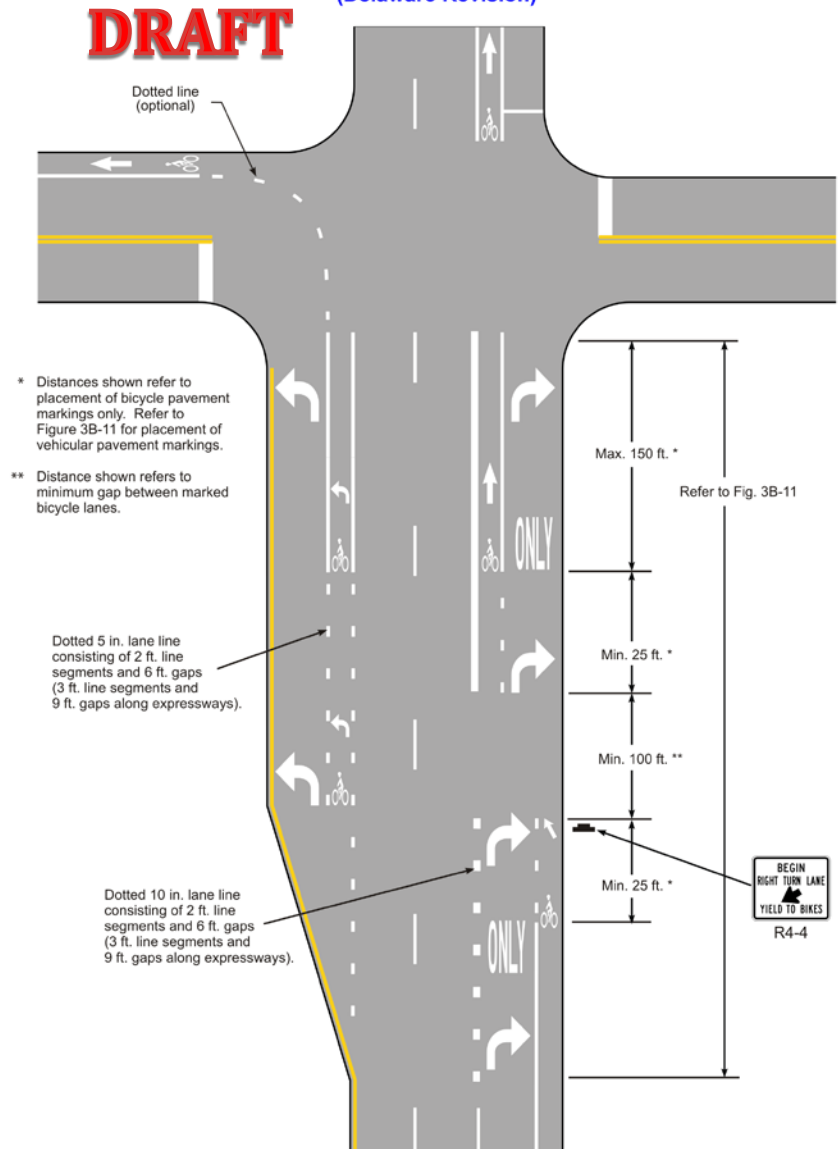
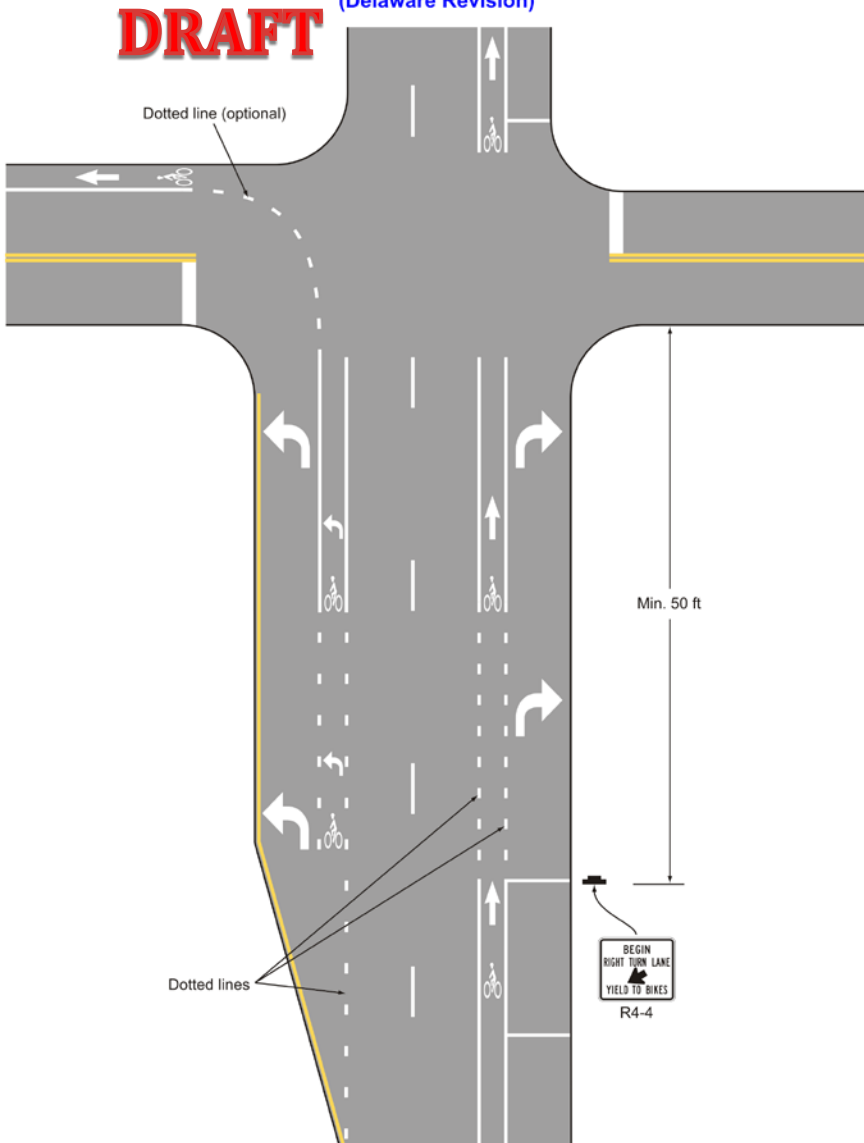
Delaware Revisions

- Several new and revised Figures for the DE MUTCD
 - 9C-1: Left-Turn Area, Heavy Turn Volumes, Parking, One-Way Traffic, or Divided Highway
 - 9C-1A: Right-Turn Area or Lane Drop
 - 9C-1B: At Intersection Departures with and without Acceleration Lanes
 - 9C-1C: At High-Speed Entrance Ramp Crossings
 - 9C-1D: At Minor Subdivision Entrance
 - 9C-1E: At Bypass Lane
 - 9C-1F: At Right In/Out Entrance
 - 9C-4: At a Right Turn Only Lane
 - 9C-4A: At a Right Turn Only Lane with Shoulder
 - 9C-5: At Transition of Parking Lane to Right Turn Lane
 - 9C-6A: At a Bus Pull-off Area and at Full-Width Shoulder
 - 9C-6B: At a Roundabout

Section 9C.04 - Markings for Bicycle Lanes

Figure 9C-1. Example of Intersection Pavement Markings—Designated Bicycle Lane with Left-Turn Area, Heavy Turn Volumes, Parking, One-Way Traffic, or Divided Highway
(Delaware Revision)

Figure 9C-1A. Example of Intersection Pavement Markings - Designated Bicycle Lane with Right-Turn Area, Lane Drop
(Delaware Revision)



Section 9C.04 - Markings for Bicycle Lanes

Figure 9C-1B.

Example of Intersection Pavement Markings - Designated Bicycle Lane at Intersection Departures with and without Acceleration Lanes (Delaware Revision)

DRAFT

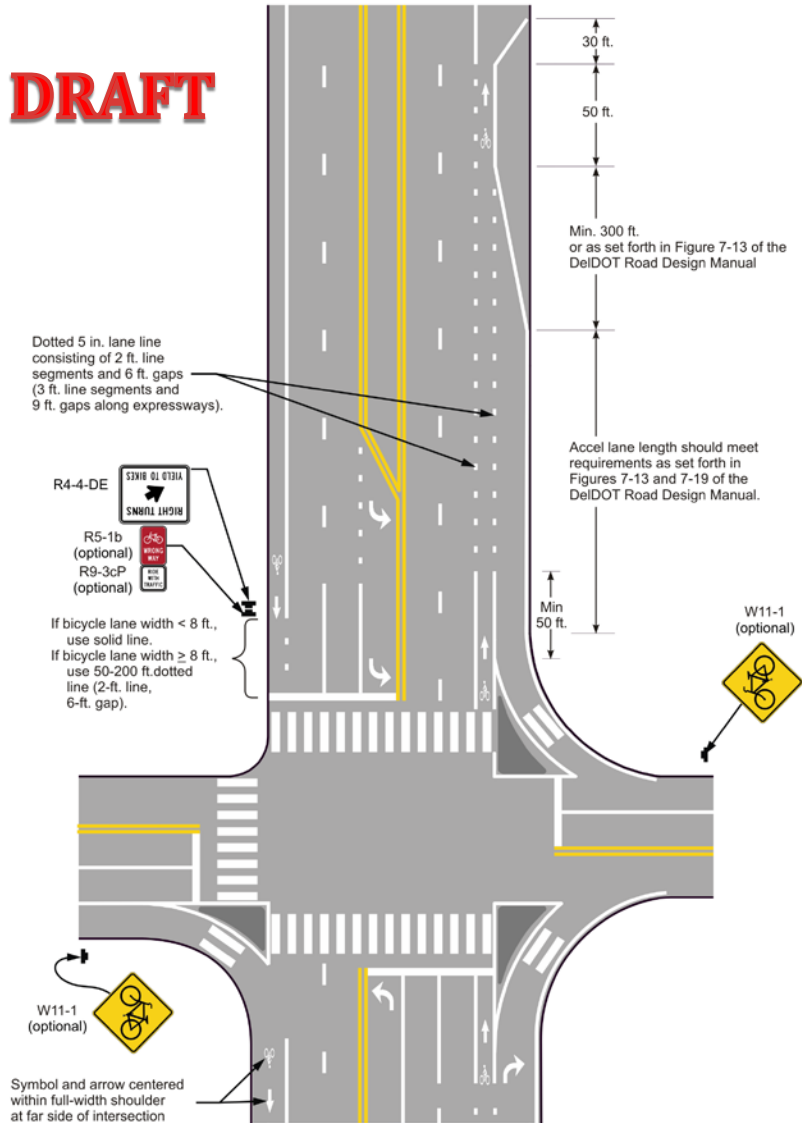
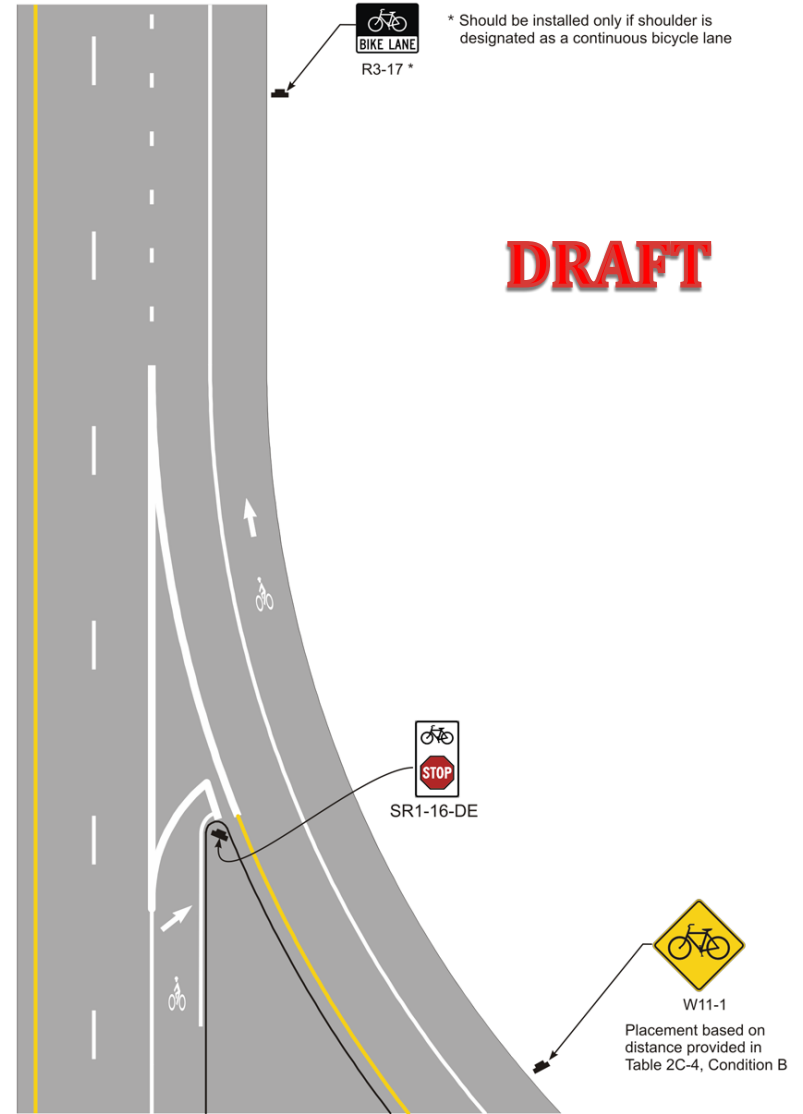


Figure 9C-1C.

Example of Designated Bicycle Lane Crossing at High Speed Entrance Ramp (Delaware Revision)

DRAFT



Section 9C.04 - Markings for Bicycle Lanes

Figure 9C-1D.
Example of Intersection Pavement Markings -
Designated Bicycle Lane at Minor Subdivision Entrance
 (Delaware Revision)

DRAFT

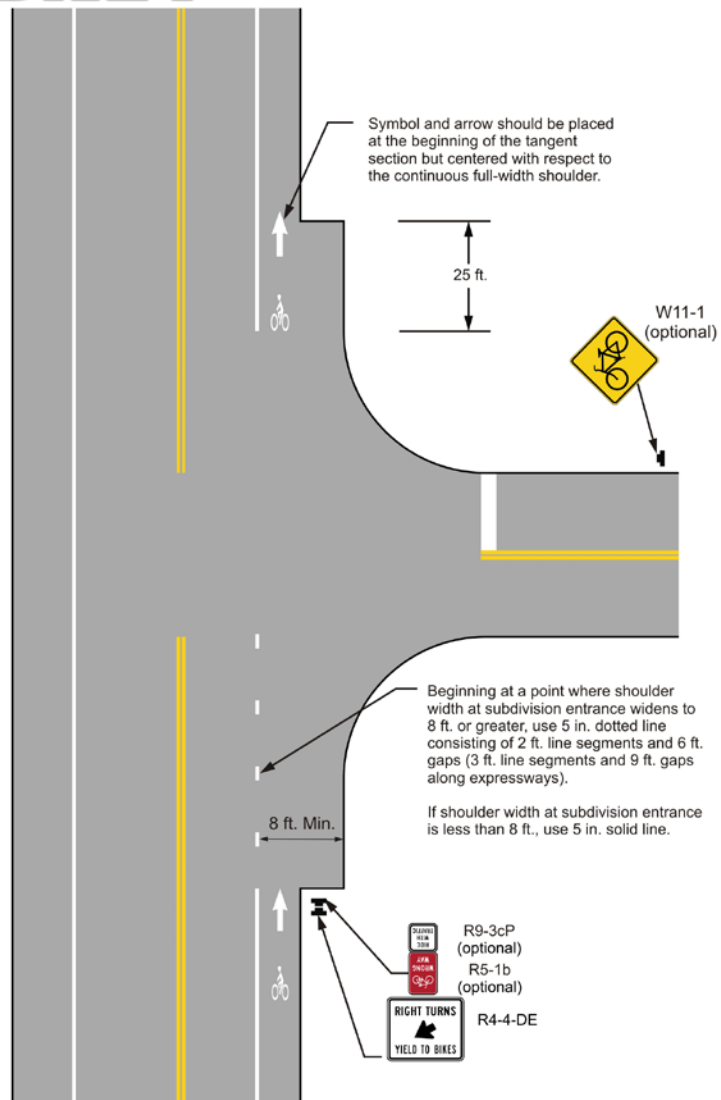
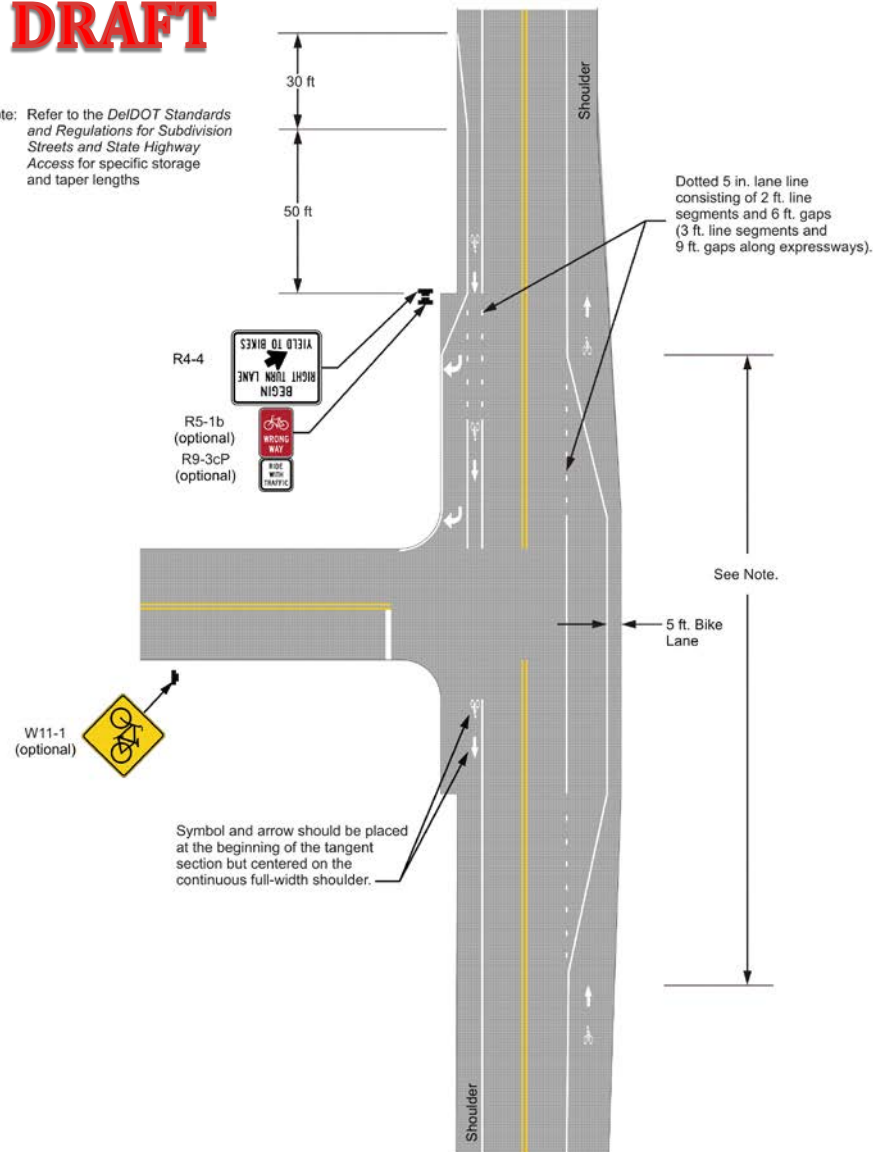


Figure 9C-1E. Example of Bicycle Lane Treatment at a Bypass Lane
 (Delaware Revision)

DRAFT

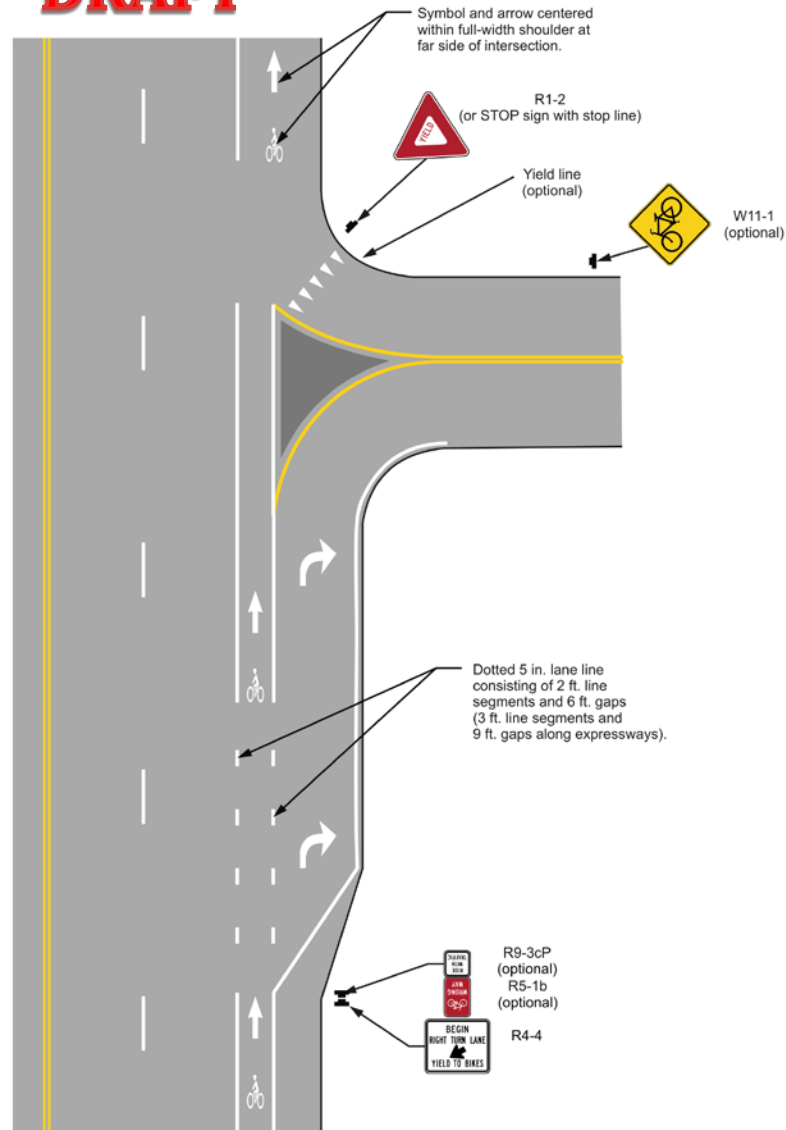
Note: Refer to the *DelDOT Standards and Regulations for Subdivision Streets and State Highway Access* for specific storage and taper lengths



Section 9C.04 - Markings for Bicycle Lanes

Figure 9C-1F.
Example of Bicycle Lane Treatment at Right In/Out Entrance
 (Delaware Revision)

DRAFT



Section 9C.04 - Markings for Bicycle Lanes

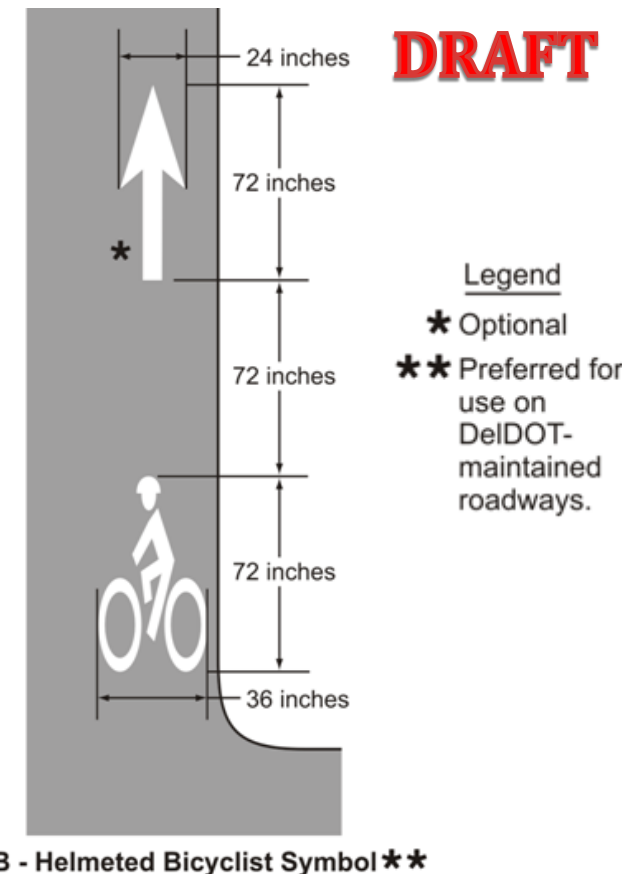
Guidance: **DRAFT**

03 If used, bicycle lane word, symbol, and/or arrow markings (see Figure 9C-3) should be placed at the beginning of a bicycle lane and at periodic intervals along the bicycle lane based on engineering judgment.

03A (DE Revision) In Delaware, on state-maintained roads, the preferred symbol is a helmeted bicyclist as depicted in Figure 9C-3.

Delaware Revision:

- Preferred symbol for bicycle lanes on state-maintained roads is a helmeted bicyclist
- See figure 9C-3



Section 9C.04 - Markings for Bicycle Lanes

Figure 9C-4.
Example of Bicycle Lane Treatment at a Right-Turn Only Lane
 (Delaware Revision)

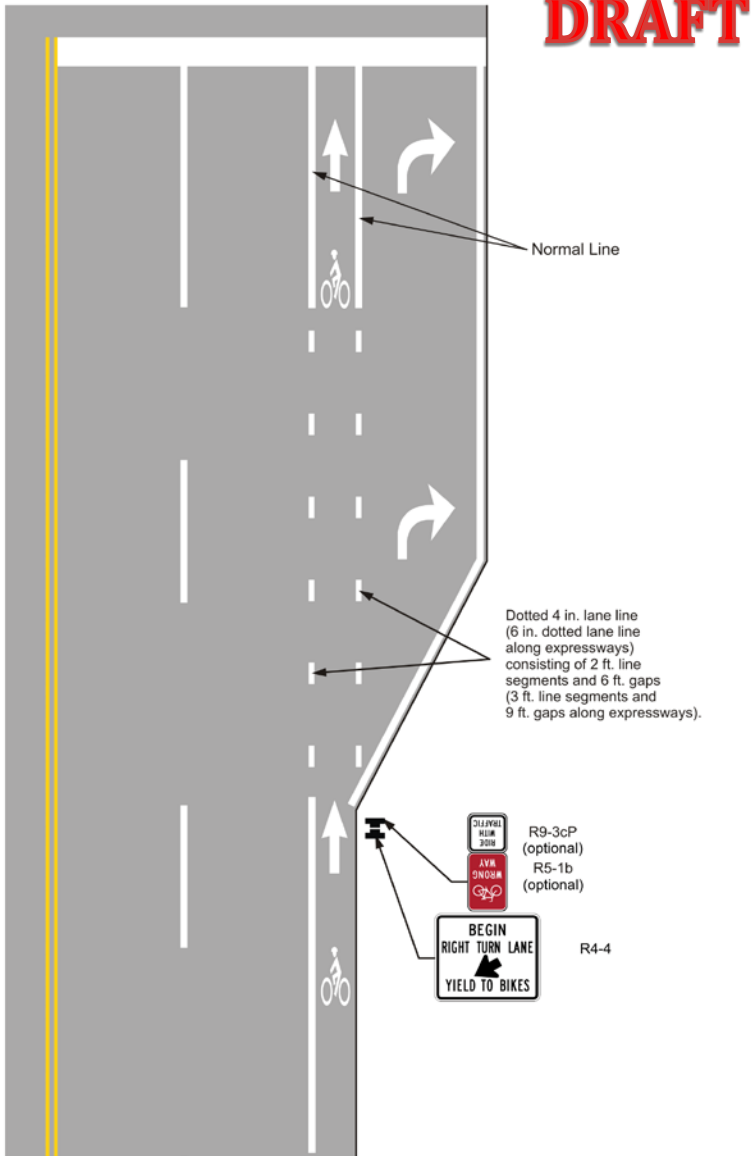
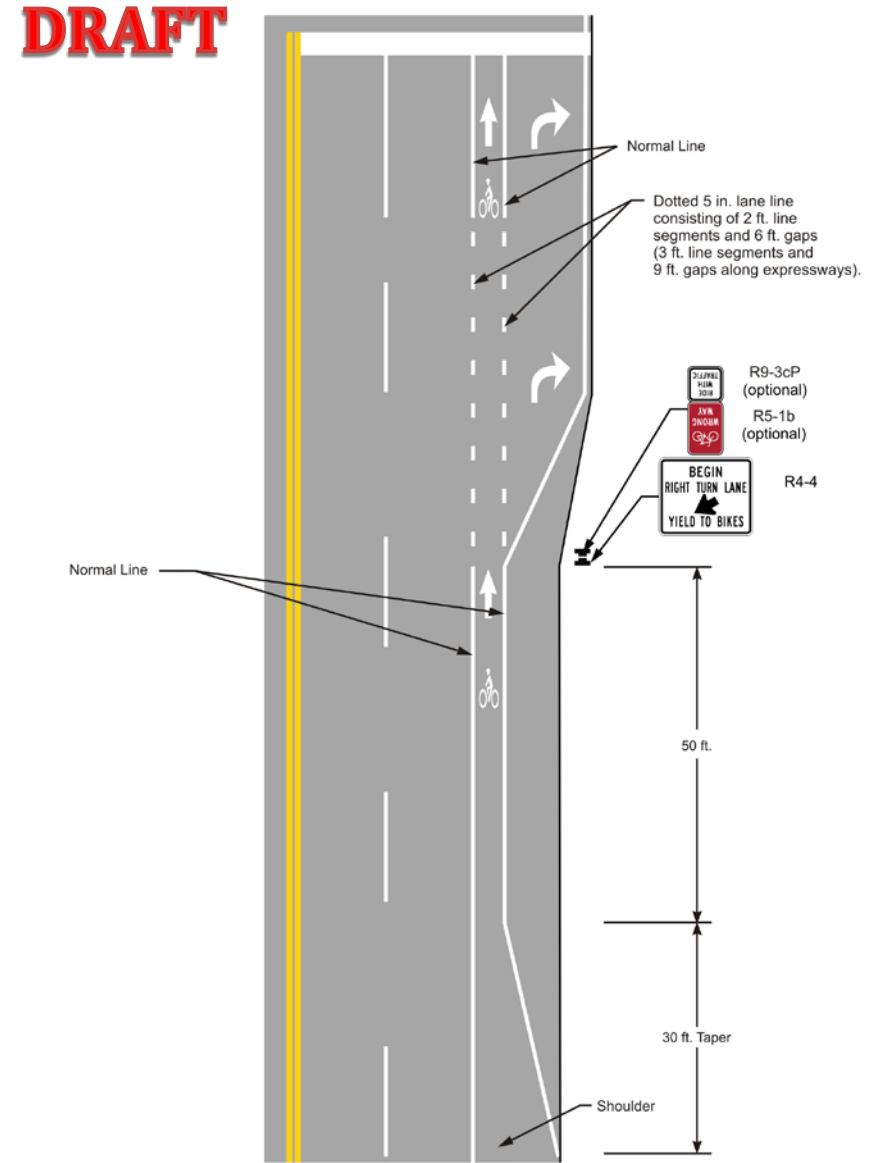


Figure 9C-4A.
Example of Bicycle Lane Treatment at a Right-Turn Only Lane with Shoulder
 (Delaware Revision)



Section 9C.04 - Markings for Bicycle Lanes

Examples of Right Turn Only Lane with Shoulder

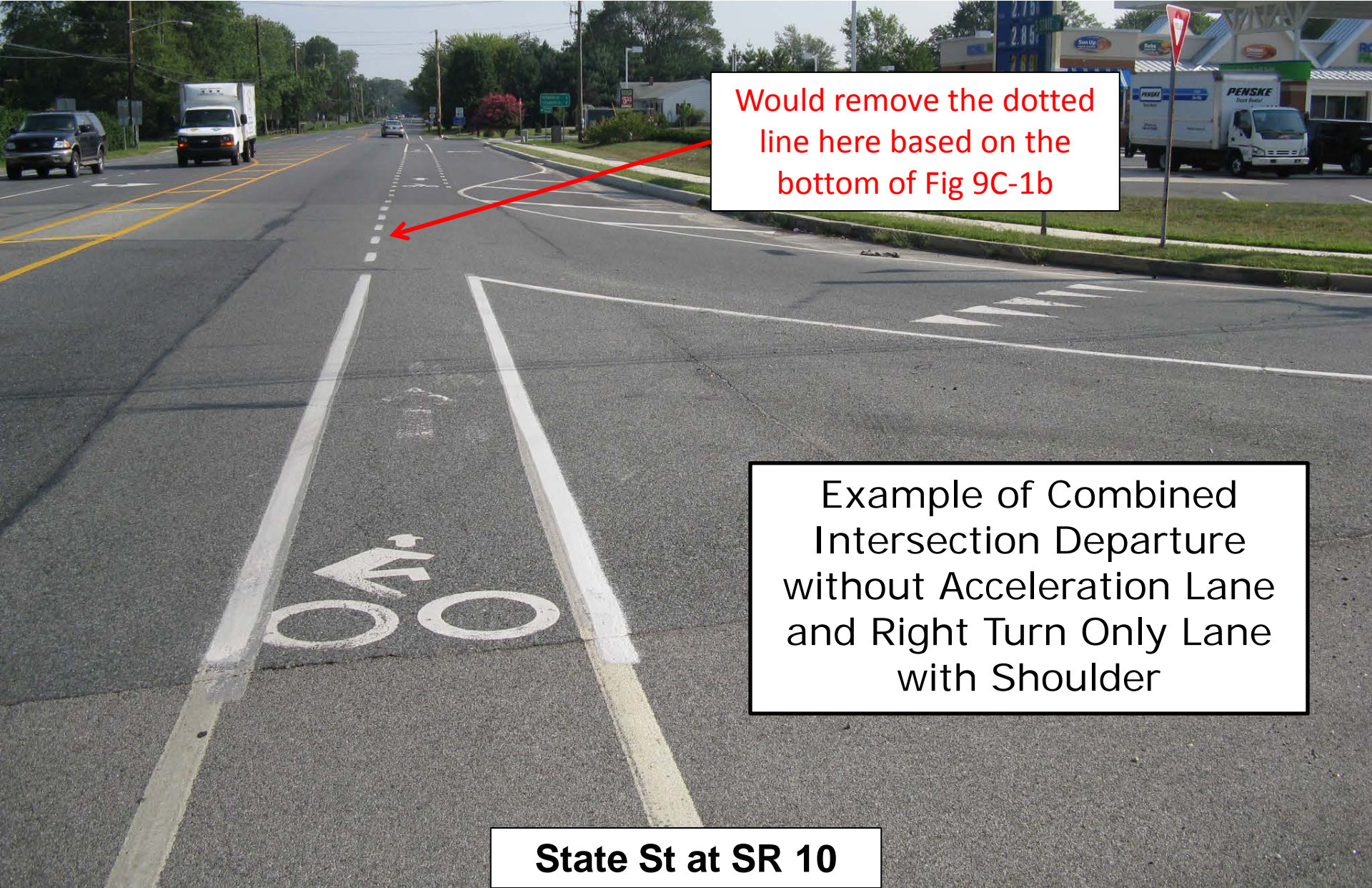


State St at SR 10



SR 896

Section 9C.04 - Markings for Bicycle Lanes



Would remove the dotted line here based on the bottom of Fig 9C-1b

Example of Combined Intersection Departure without Acceleration Lane and Right Turn Only Lane with Shoulder

State St at SR 10

Section 9C.04 - Markings for Bicycle Lanes

Figure 9C-5. Example of Bicycle Lane Treatment at Parking Lane into a Right-Turn Only Lane (Delaware Revision)

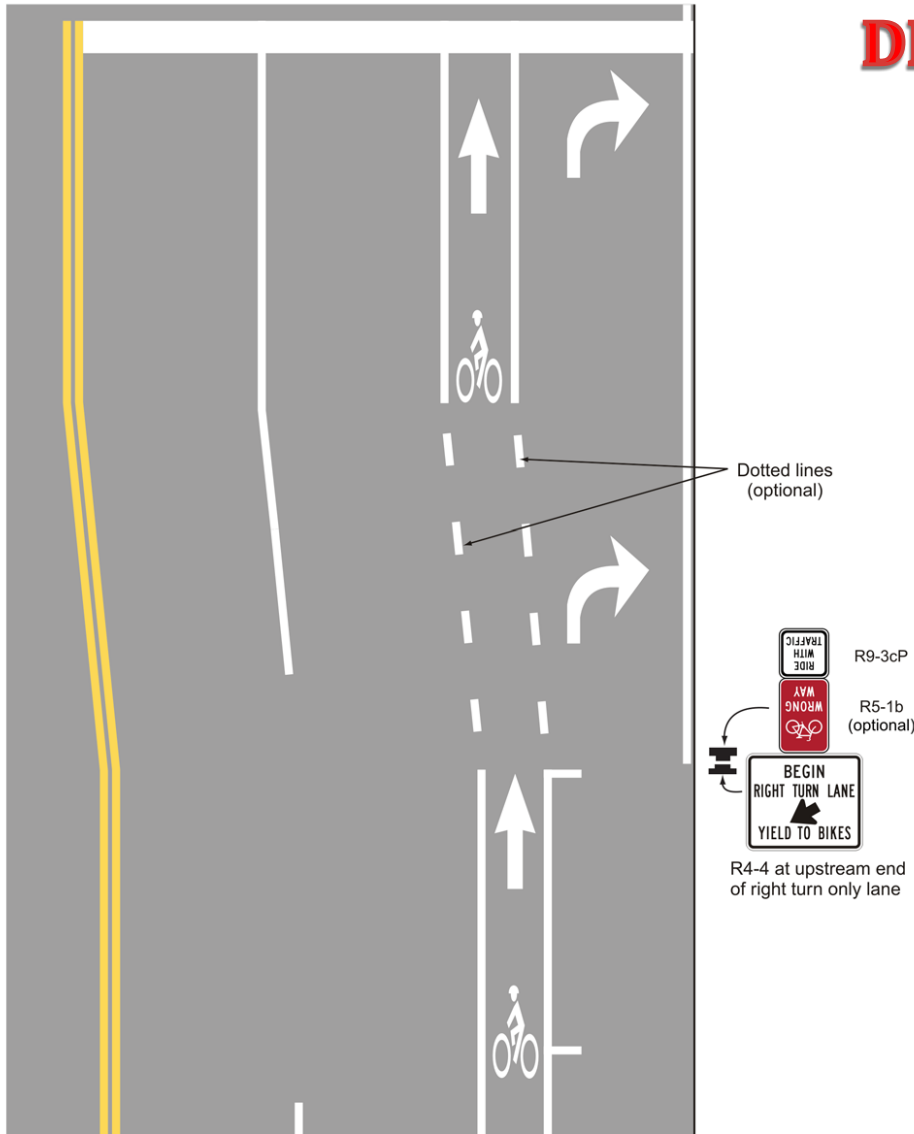
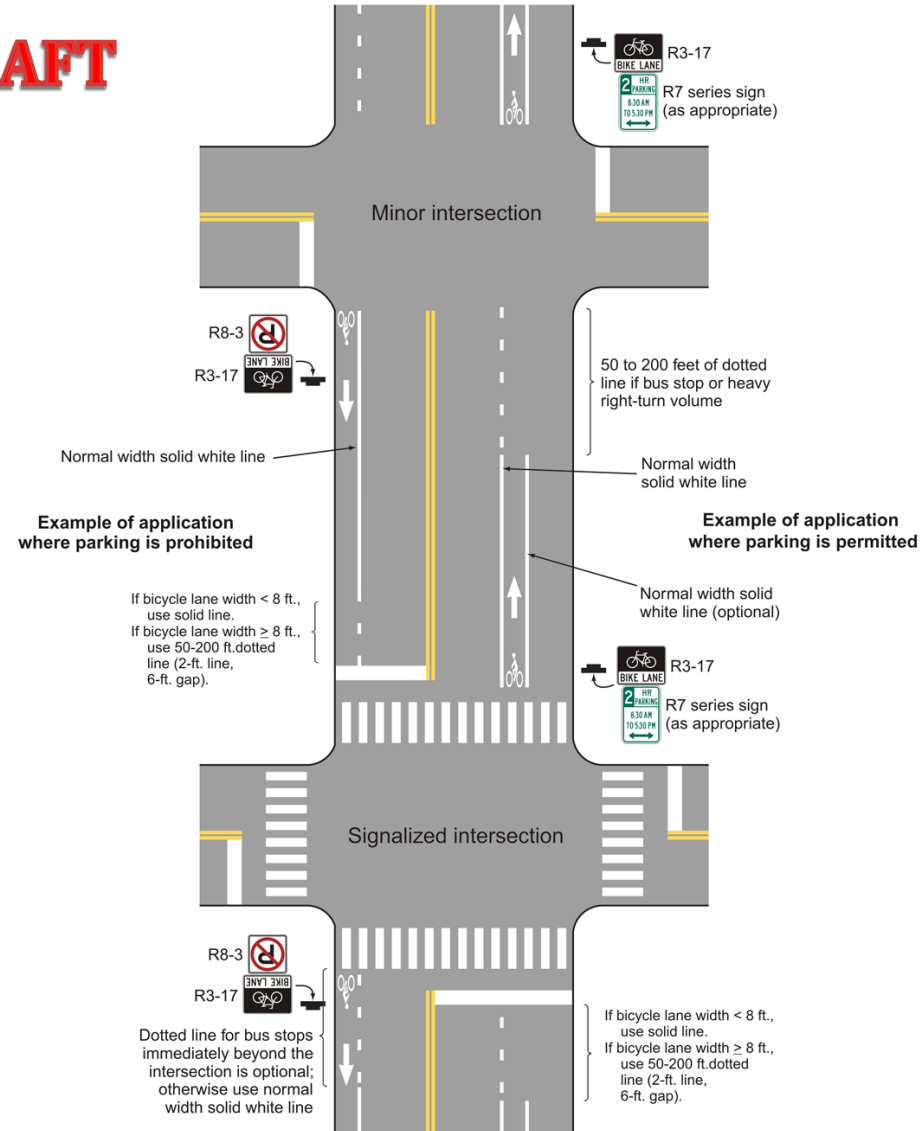


Figure 9C-6. Example of Pavement Markings for Bicycle Lanes on a Two-Way Street (Delaware Revision)



Section 9C.04 - Markings for Bicycle Lanes

Figure 9C-6A.
Example of Pavement Markings for
Bicycle Lanes with Bus Pull-off Area and Full-Width Shoulder
(Delaware Revision)

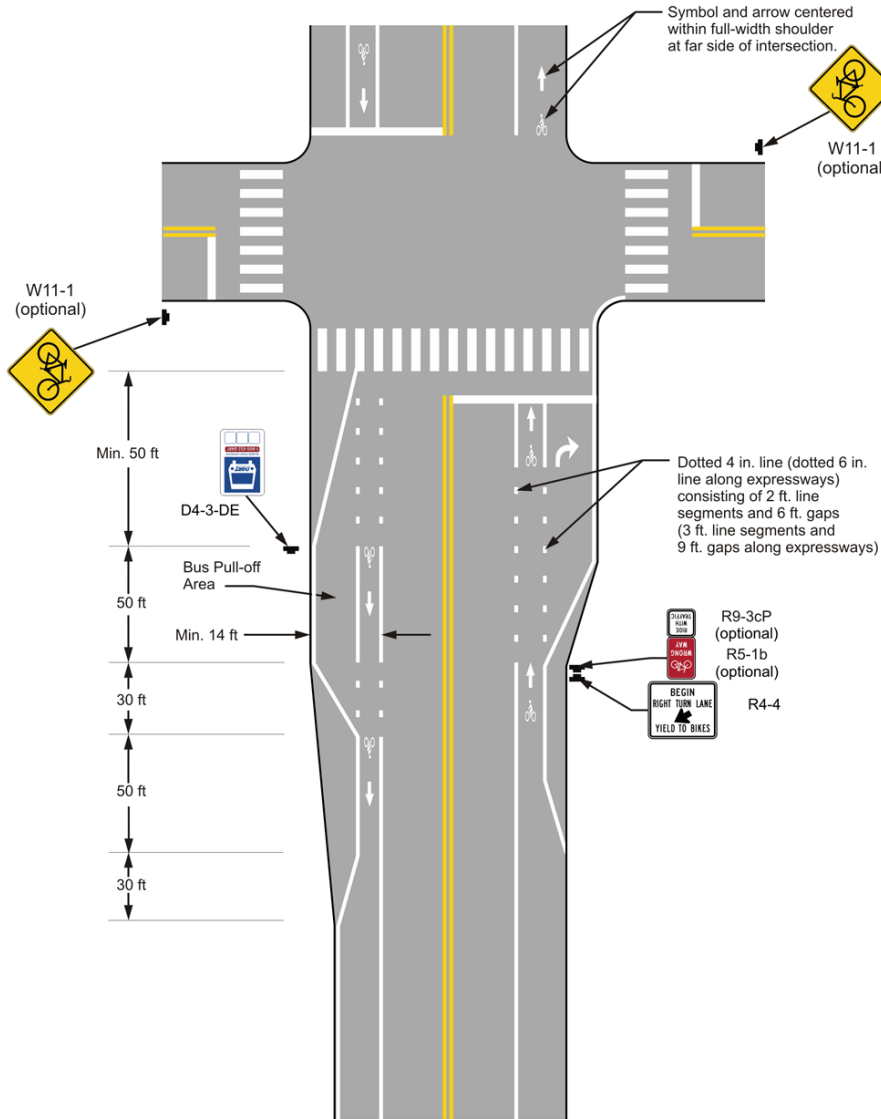
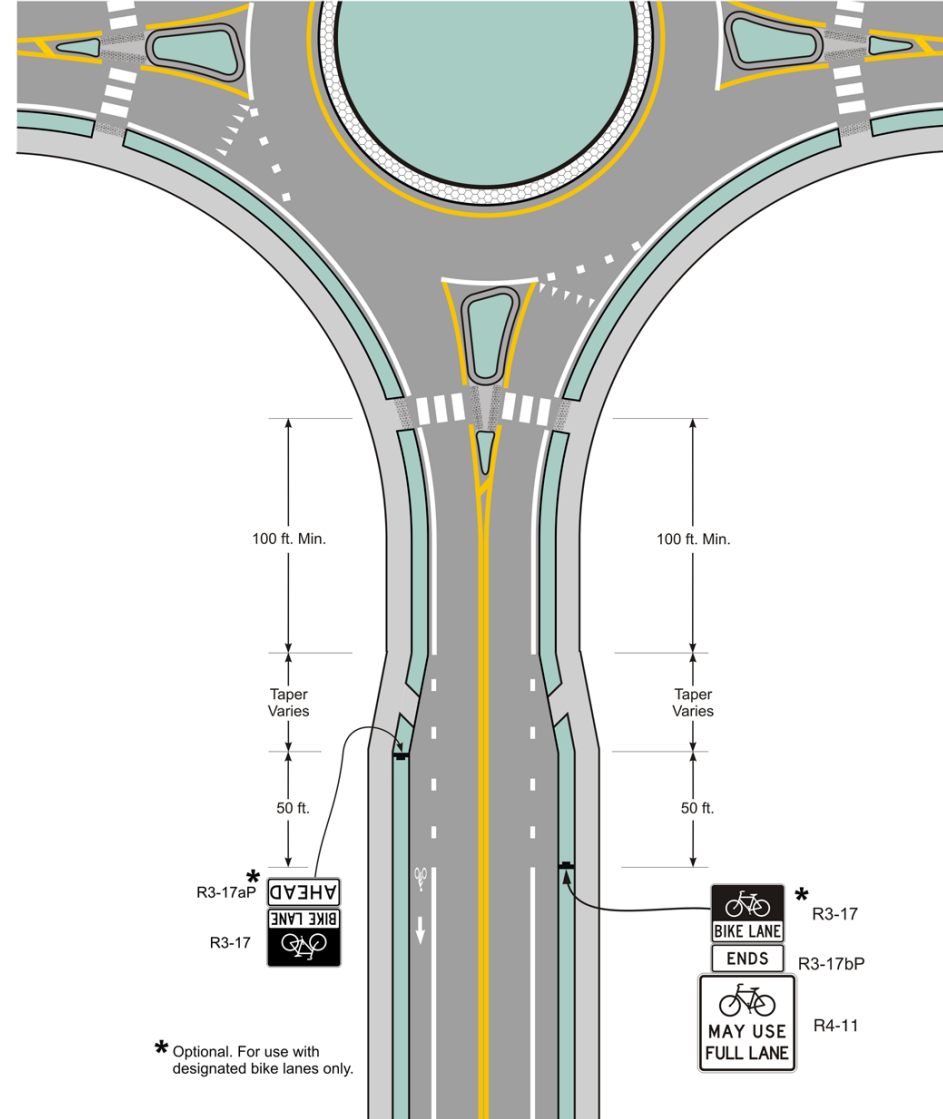


Figure 9C-6B.
Example of Pavement Markings
for Bicycle Lane Treatment at a Roundabout
(Delaware Revision)

DRAFT



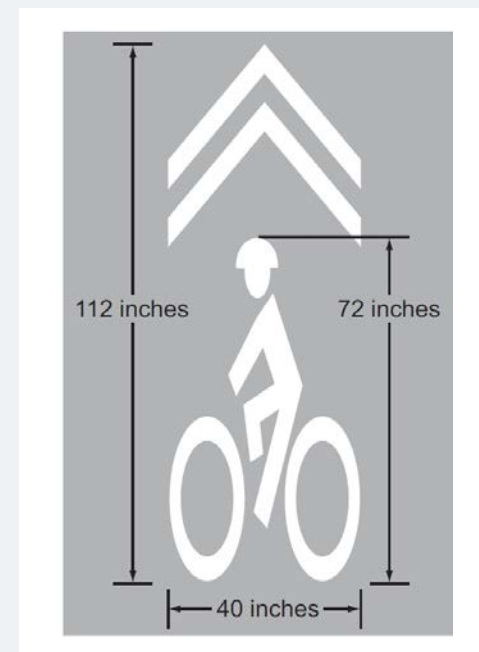
Section 9C.07 - Shared Lane Marking

Option:

- 01 The Shared Lane Marking shown in Figure 9C-9 may be used to:
- Assist bicyclists with lateral positioning in a shared lane with on-street parallel parking in order to reduce the chance of a bicyclist's impacting the open door of a parked vehicle,
 - Assist bicyclists with lateral positioning in lanes that are too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane,
 - Alert road users of the lateral location bicyclists are likely to occupy within the traveled way,
 - Encourage safe passing of bicyclists by motorists, and
 - Reduce the incidence of wrong-way bicycling.

New Section

- Shared Lane Markings ("Sharrow") assists bicyclists and motorists in determining the appropriate lateral position in shared or narrow lanes



Section 9C.07 - Shared Lane Marking

Guidance:

02 *The Shared Lane Marking should not be placed on roadways that have a speed limit above 35 mph.*

02A (DE Revision) *The Shared Lane Marking should only be placed on roadways with on street parking.*

Support:

02B (DE Revision) Studies related to the Shared Lane Marking have primarily shown benefits in the reduction of “dooring” related crashes in urban areas where on-street parking is present and lateral positioning of bicycles is a concern. There have been no significant studies to date showing benefits from the placement of the Shared Lane Marking on rural or other types of roadways where parking does not exist and therefore driver comprehension of these markings on these roadways is a concern.

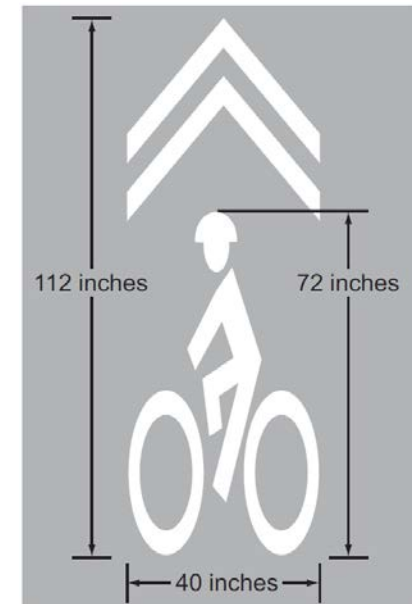
Standard:

03 **Shared Lane Markings shall not be used on shoulders or in designated bicycle lanes.**

- *Shared Lane Markings should not be used on roads with a speed limit above 35 mph*
- **Shared Lane Markings shall not be used on designated bicycle lanes or shoulders**

Delaware Revision:

- *Shared Lane Markings should only be used on roads with on-street parking*



Section 9C.07 - Shared Lane Marking

Guidance:

04 *If used in a shared lane with on-street parallel parking, Shared Lane Markings should be placed so that the centers of the markings are at least 11 feet from the face of the curb, or from the edge of the pavement where there is no curb.*

- The Shared Lane Marking should be placed so that the center of the marking is at least 11 feet from the face of curb or from edge of pavement*



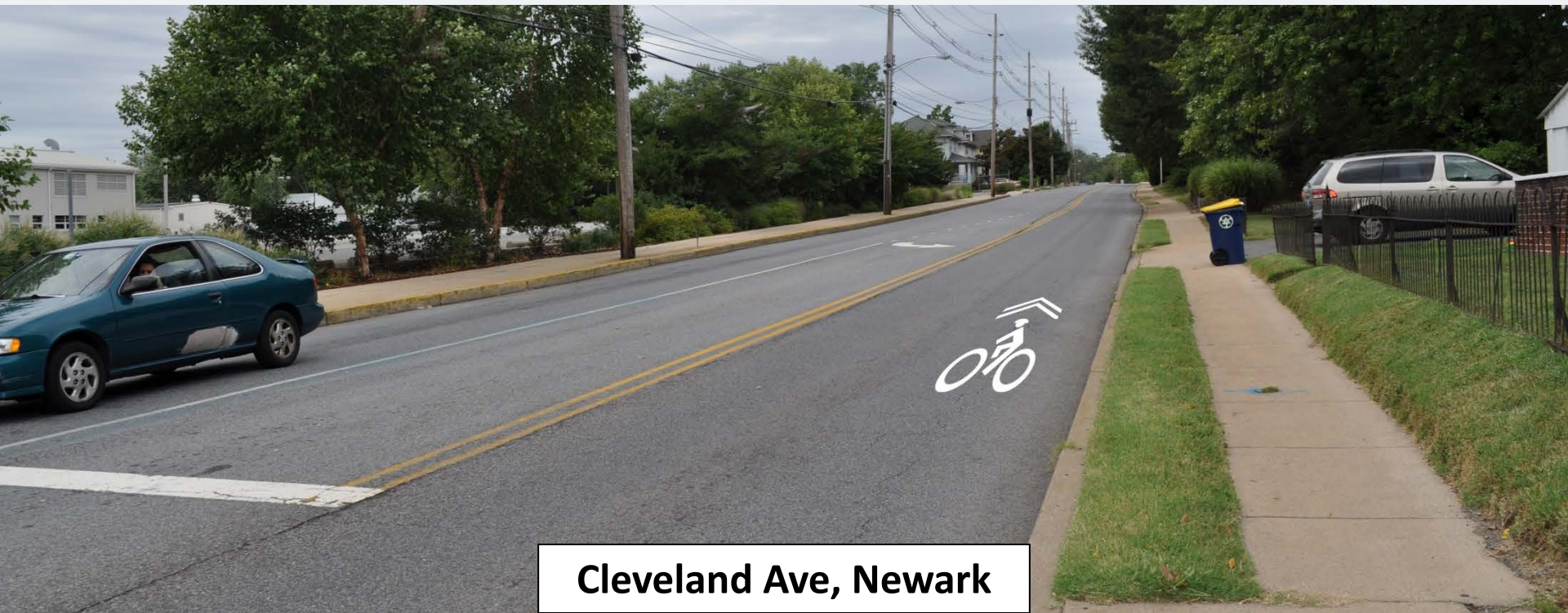
Main St, Newark

Section 9C.07 - Shared Lane Marking

Guidance:

05 If used on a street without on-street parking that has an outside travel lane that is less than 14 feet wide, the centers of the Shared Lane Markings should be at least 4 feet from the face of the curb, or from the edge of the pavement where there is no curb.

- While unusual, if ever used on a road without on-street parking and a narrow (< 14') lane, a Shared Lane Marking should be placed so that the center of the marking is ≥ 4 feet from face of curb or edge of pavement



Cleveland Ave, Newark

Section 9C.07 - Shared Lane Marking

Guidance: **DRAFT**

05A (DE Revision) *If used, the Shared Lane Marking should be placed in locations that direct the bicyclist away from the door zone of parked vehicles and to keep the shared lane marking outside of the vehicular wheel path.*

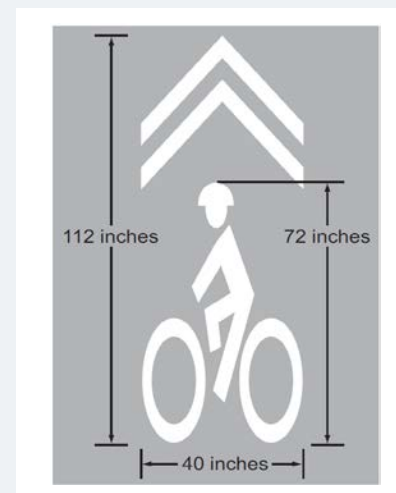
06 *If used, the Shared Lane Marking should be placed immediately after an intersection and spaced at intervals not greater than 250 feet thereafter.*

Option:

07 Section 9B.06 describes a Bicycles May Use Full Lane sign that may be used in addition to or instead of the Shared Lane Marking to inform road users that bicyclists might occupy the travel lane.

Delaware Revision:

- *Shared Lane Markings should be placed away from the door zone of parked vehicles and outside of vehicle wheel paths*
- *If used, Shared Lane Markings should be placed immediately after an intersection and at intervals of 250 feet max.*
- Bicycles May Use Full Lane (R4-11) sign may be used to supplement (or as an alternative to) Shared Lane Markings



CHAPTER 9D - SIGNALS



(Nice idea, but violates Section 4D.06)

CHAPTER 9D - SIGNALS

- *Chapter 9D is very short – basically referring you back to Part 4*
- *Questions pertaining to signal indications for bikes can be directed to Steve Treut (a.k.a. “Socrates”) in the Traffic Section*

