Disclaimer: This document shows only the changes in the 2009 MUTCD, Revision 1,2, and 3, made for the 11th Edition of the MUTCD; it not an official representation of the 11th Edition and may contain unintended errors or omissions. It was prepared to assist practitioners with identifying text changes only. Figures and tables are not included. This document does not explicitly identify where text was moved or reorganization for the 11th edition, such text will resemble other deletions and additions. The official version of the MUTCD is located on the FHWA MUTCD website (https://mutcd.fhwa.dot.gov/index.htm).

Description: This document shows the changes from 2009 MUTCD text, including Revision 1, 2, and 3, made for the 11th Edition of the MUTCD. Some parts of 11th Edition include reorganization of 2009 MUTCD material. Users of this document should refer to the Federal Register and the supplemental table of changes posted in the Federal Register docket for the MUTCD 11th Edition Final Rule to obtain information on reorganized and relocated text from the 2009 MUTCD for the 11th Edition, as well as other changes.

The Final Rule for the MUTCD 11th Edition provides general information about significant change to the MUTCD. A supplementary table of changes is included in the Final Rule docket to provide information on changes not explicitly detailed in the Final Rule by means of a comparison between the Federal Register description of changes listed in the Notice of Proposed Amendments (NPA) for the 11th Edition issued on December 14, 2020, and the disposition of comments received in response to that Notice. Practitioners will find the supplemental table of changes helpful in determining how proposed text in the NPA was either incorporated or changed to establish the MUTCD 11th Edition.

In this comparison document, new text or newly relocated text for the 11th Edition is shown in blue underline and 2009 MUTCD text that has been removed or moved to another Section of the MUTCD is shown in ~~red strikethrough~~.

Additionally, Part 5 is omitted from this comparison document as this Part is completely new material in the 11th Edition. Relevant provisions from the previous version of Part 5, Low Volume Roads, have been moved to other Parts of the 11th Edition and shown in blue underline, as appropriate, or removed completely as appropriate. See supplemental tables of changes for more information on text changes.

Finally, this document is only provided by FHWA to help practitioners quickly identify changes incorporated into the 11th Edition of the MUTCD. Though every effort has been made to ensure the accuracy of this document, there may be unintentional differences between the text shown in this document and the text of the official version of the 11th Edition MUTCD. The official version is located at: https://mutcd.fhwa.dot.gov/.

CHAPTER 9A. GENERAL

Section 9A.01 ~~Requirements for Bicyclist Traffic Control Devices~~ General

Support:

~~General information and definitions concerning traffic control devices are found in Part 1.~~ Part 9 covers signs~~,~~ and pavement markings~~, and highway traffic signals~~ specifically related to bicycle operation on ~~both~~ roadways, separated bikeways, and shared-use paths. In jurisdictions where small, low-speed, human or electric-powered transportation devices (often referred to as a micromobility devices) are allowed to use bicycle facilities, they can be regulated by signs, pavement markings, and other traffic control devices related to bicycle operations. Part 4 contains information on highway traffic signals and bicycle signal faces. Part 6 contains information on work zones for bicycle facilities and the mitigation of impacts to bicycle travel through work zones.

Definitions and acronyms pertaining to Part 9 are provided in Sections ~~1A.13~~ 1C.02 and ~~1A.14~~ 1C.03.

~~Section 9A.02 Scope~~

~~*Guidance:*~~

~~*Parts 1, 2, 3, and 4 should be reviewed for general provisions, signs, pavement markings, and signals.*~~

When operating on a roadway, bicycles are typically defined as vehicles, or the operator of a bicycle is given the same rights and duties as an operator of a motor vehicle. Bicyclists are also vulnerable road users who have little to no protection from crash forces.

Designing bicycle facilities and the traffic control devices on those facilities in a manner that encourages predictable behavior and compliance with traffic laws from all roadway users can improve safety and increase public acceptance of bicyclists from other road users. The misuse of traffic control devices for improperly designed bicycle facilities or non-uniform applications can produce ineffective or counterproductive results. Section 1D.01 provides more information on the importance of uniformity of traffic control devices.

~~**Standard:**~~

~~**The absence of a marked bicycle lane or any of the other traffic control devices discussed in this Chapter on a particular roadway shall not be construed to mean that bicyclists are not permitted to travel on that roadway.**~~

The "Bikeway Selection Guide" (FHWA-SA-18-077), FHWA, provides information on the designs and configuration of bicycle facilities.

Support:

The operation of bicycles is generally allowed on rights-of-way open to motor vehicles, even if the bicycle-specific traffic control devices outlined in Part 9 are not present.

~~Section 9A.03 Definitions Relating to Bicycles~~

~~Section 9A.04 Maintenance~~

Guidance:

All signs, signals, and markings, including those on bicycle facilities, should be properly maintained to command respect from ~~both the motorist and the bicyclist~~ all road users. When installing signs and markings on bicycle facilities, an agency should be designated to maintain these devices.

~~Section 9A.05 Relation to Other Documents~~

~~Support:~~

~~"The Uniform Vehicle Code and Model Traffic Ordinance" published by the National Committee on Uniform Traffic Laws and Ordinances (see Section 1A.11) has provisions for bicycles and is the basis for the traffic control devices included in this Manual.~~

~~Informational documents used during the development of the signing and marking recommendations in Part 9 include the following:~~

~~A. "Guide for Development of Bicycle Facilities," which is available from the American Association of State Highway and Transportation Officials (see Page i for the address); and~~

~~B. State and local government design guides.~~

~~Other publications that relate to the application of traffic control devices in general are listed in Section 1A.11.~~

~~Section 9A.06 Placement Authority~~

~~Support:~~

~~Section 1A.08 contains information regarding placement authority for traffic control devices.~~

~~Section 9A.07 Meaning of Standard, Guidance, Option, and Support~~

~~Support:~~

~~Paragraph 1 of Section 1A.13 contains information regarding the meaning of the headings Standard, Guidance, Option, and Support, and the use of the words "shall," "should," and "may."~~

~~Section 9A.08 Colors~~

~~Support:~~

~~Section 1A.12 contains information regarding the color codes.~~

Section 9A.02 Standardization of Application for Signing

Support:

The installation of non-standard signing on bikeways or modifying standard signing in a manner inconsistent with Chapter 2A of this Manual to draw special attention, educate users or the community, or brand a bicycle facility can contribute to problems with public acceptance and enforcement.

Standard:

Bicycle signs shall ~~be~~ comply with the provisions of this Manual for standard ~~in~~ shape, legend, and color.

All signs installed on bikeways shall be ~~retroreflectorized~~ retroreflective ~~for use on bikeways~~, including those on shared-use paths~~,~~ and bicycle lane facilities.

Where signs serve both bicyclists and other road users, vertical mounting height and lateral placement shall be as provided in Part 2.

~~**Standard:**~~ *Guidance:*

Where used on a shared-use path, no portion of a sign or its support ~~shall~~ should 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~~ 9A-1).

Mounting height for post-mounted signs on shared-use paths ~~shall~~ should 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~~ 9A-1).

~~*Guidance:*~~

Signs for the exclusive use of bicyclists should be located so that other road users are not confused by them.

The clearance for overhead signs on shared-use paths should be adjusted when appropriate to accommodate path users requiring more clearance, such as equestrians, or typical maintenance or emergency vehicles.

Standard:

If the sign or plaque applies to motorists and bicyclists, then the size shall be as shown for conventional roads in Tables 2B-1, 2C-~~2~~1, ~~or~~ 2D-1, and 8B-1, as applicable.

The minimum sign and plaque sizes for signs specific to bicycle-only facilities and shared-use paths shall be those shown in Table ~~9B-1~~9A-1~~,~~ ~~and~~ These sizes shall be used only for signs and plaques installed specifically for ~~bicycle traffic~~ bicyclist applications. ~~The minimum sign and plaque sizes for bicycle facilities shall not be used for signs or plaques that are placed in a location that would have any application to other vehicles.~~

Option:

Larger sizes of signs and plaques may be used on bicycle facilities when appropriate (see Section ~~2A.11~~ 2A.07).

Any diamond-shaped warning sign that is placed such that it is only applicable only to bicyclists or pedestrians on shared-use paths or separated bicycle lanes may be 18" x 18".

Guidance:

Except for size, the design of signs and plaques for bicycle facilities should be identical to that provided in this Manual for signs and plaques for streets and highways.

Support:

Uniformity in design of bicycle signs and plaques includes shape, color, symbols, arrows, wording, lettering, and illumination or retroreflectivity ~~retroreflectorization~~.

Section 9A.03 Standardization of Application for Markings

Support:

Markings indicate the separation of the lanes for road users, assist the bicyclist by indicating assigned travel paths, indicate correct position for traffic control signal actuation, and provide advance information for turning and crossing maneuvers.

~~*Guidance:*~~

~~*Bikeway design guides (see Section 9A.05) should be used when designing markings for bicycle facilities.*~~

~~**Standard:**~~

~~**Markings used on bikeways shall be retroreflectorized.**~~

Guidance:

Pavement marking word messages, symbols, and/or arrows should be used in bikeways where appropriate.

Consideration should be given to selecting pavement marking materials that will minimize loss of traction for bicycles under wet conditions.

Standard:

Pavement markings on bicycle facilities that must be visible at night or in low-light conditions shall be retroreflective unless the markings are adequately visible under provided lighting

The colors, width of lines, patterns of lines, symbols, and arrows used for marking bicycle facilities shall be as defined in ~~Sections 3A.05, 3A.06, and 3B.20~~Part 3.

Support:

Section 3H.06 contains information on green-colored pavement for use with certain traffic control devices for bicycles and bicycle facilities.

Section 9E.17 contains information on the use of channelizing devices to emphasize the pavement markings for bicycle facilities.

~~Figures 9B-7 and 9C-1 through 9C-9 show examples of the application of lines, word messages, symbols, and arrows on designated bikeways.~~

~~Option:~~

~~A dotted line may be used to define a specific path for a bicyclist crossing an intersection (see Figure 9C-1) as described in Sections 3A.06 and 3B.08.~~

Guidance:

Raised pavement markers should not be used on bicycle lanes or shared-use paths.

If used around bicycle facilities, raised pavement markers should not be placed immediately adjacent to the travel path of bicyclists in a bicycle lane or on a shared-use path.

Support:

Using raised pavement markers ~~devices~~ creates a collision potential for bicyclists by placing fixed objects immediately adjacent to the travel path of the bicyclist. Raised pavement markers can cause a bicyclist to lose balance and fall, and might not be visible to a bicyclist who is following another bicyclist. ~~In addition, raised devices can prevent vehicles turning right from merging with the bicycle lane, which is the preferred method for making the right turn. Raised devices used to define a bicycle lane can also cause problems in cleaning and maintaining the bicycle lane.~~

CHAPTER 9B. REGULATORY SIGNS

~~Section 9B.01 Application and Placement of Signs~~

~~Section 9B.02 Design of Bicycle Signs~~

Section ~~9B.03~~ 9B.01 STOP and YIELD Signs (R1-1~~,~~ and R1-2)

Standard:

STOP (R1-1) signs (see Figure ~~9B-2~~9B-1) shall be installed on ~~shared-use paths~~bicycle facilities at points where bicyclists are required to stop.

YIELD (R1-2) signs (see Figure ~~9B-2~~9B-1) shall be installed on ~~shared-use paths~~ bicycle facilities at points where bicyclists have an adequate view of conflicting traffic as they approach the sign, and where bicyclists are required to yield the right-of-way to that conflicting traffic.

A STOP sign or a YIELD sign shall not be installed in conjunction with a bicycle signal face (see Chapter 4H).

Option:

Larger ~~A 30 x 30 inch STOP sign or a 36 x 36 x 36 inch YIELD~~ signs may be used on shared-use paths and separated bikeways for added emphasis.

Guidance:

Where conditions require shared-use path users or bicyclists on separated bikeways, but not roadway users, to stop or yield, the STOP or YIELD sign should be placed or shielded so that it is not readily visible to roadway users.

When the placement of STOP or YIELD signs is being considered, the priority at a shared-use path/roadway intersection should be assigned with consideration of the following:

A. Relative speeds of shared-use path and roadway users,

B. Relative volumes of shared-use path and roadway traffic, and

C. Relative importance of shared-use path and roadway.

Speed should not be the sole factor used to determine priority, as it is sometimes appropriate to give priority to a high-volume shared-use path ~~crossing~~ that crosses a low-volume street, or to a regional shared-use path ~~crossing~~ that crosses a minor collector street.

When priority is assigned~~,~~ (see Sections 2B.06 and 2B.08), the least restrictive control that is appropriate should be placed on the lower priority approaches. STOP signs should not be used where YIELD signs would ~~be acceptable~~ provide adequate control.

Section 9B.02 EXCEPT BICYCLES Regulatory Plaque (R3-7bP)

Support:

There are circumstances where it might be appropriate to except bicyclists from regulatory restrictions applied to other traffic.

Guidance:

Where an engineering study or engineering judgment demonstrates that it is appropriate to exempt bicyclists from the provisions of a regulatory sign, the EXCEPT BICYCLES (R3-7bP) regulatory plaque (see Figure 9B-1) should be used.

Support:

Figure 9B-2 shows examples of how the EXCEPT BICYCLES regulatory plaque can be applied.

Section 9C.05 contains information regarding the EXCEPT BICYCLES (W16-20P) warning plaque when applicable to a warning sign.

Standard:

The EXCEPT BICYCLES regulatory plaque shall not be used to exempt bicyclists from the legal requirement of a STOP or YIELD sign, Yield Here to Pedestrians Signs, Stop Here for Pedestrians Signs, or a traffic signal indication.

Where a regulatory sign, such as the No Left Turn (R3-2) sign (see Section 2B.26), is installed on the same post or mounting as a STOP sign or YIELD sign, the EXCEPT BICYCLES regulatory plaque shall not be installed in conjunction with the regulatory sign on that post or mounting that includes the STOP sign or YIELD sign.

The EXCEPT BICYCLES regulatory plaque shall be placed below the regulatory sign that it supplements.

Section 9B.03 Advance Intersection Lane Control Signs (R3-8 Series) for Bicycle Lanes

Option:

Advance Intersection Lane Control (R3-8 series) signs (see Section 2B.30) may display the arrangement of a conventional or buffer-separated bicycle lane in relation to other lanes in the same direction that are present on a roadway approach to an intersection.

Support:

The number and combination of permissible movements by both the motor vehicle and the bicycle on the same approach to an intersection might be practically limited by the amount of information that can be legibly displayed on signs or in signing sequences and still be readily comprehended by road users. The excessive display of all movements by more than one mode can result in unwieldy signs that are difficult to locate and install.

Guidance:

On an approach to an intersection with complex geometry that can include multiple through lanes and multiple turn lanes and also includes a bicycle lane, consideration should be given to displaying all allowable movements on separate signs, such as using Mandatory Movement Lane Control (R3-5) signs (see Section 2B.28) for the through lanes and Mandatory Movement Lane Control (R3-7) signs (see Section 2B.28) for the turn lanes, and guide signs for bicycle routes (see Section 9D.02 through 9D.07) and Bicycle Route Sign auxiliary plaques (see Section 9D.08) for the bicycle movement.

Standard:

The portion of the sign face for the bicycle lane shall be limited to the relationship of the bicycle lane to the other lanes on the roadway approach to the intersection. The portion of the sign face for the bicycle lane shall not be modified to display specific, supplementary information about the bicycle lane such as bicycle lane extensions, contiguous buffer spaces, or other ancillary bicycle operations such as two-stage turn boxes or bicycle boxes.

Counter-flow bicycle lanes shall not be displayed on Advance Intersection Lane Control signs.

The shared-lane marking symbol shall not be displayed on Advance Intersection Lane Control signs.

Shared-use paths shall not be displayed on Advance Intersection Lane Control signs.

Advance Intersection Lane Control signs that display the bicycle lane shall use a contrasting white legend on a black background for the bicycle lane (see Figure 2B-4). The portion of the display for the bicycle lane shall not use the color green on the sign face in an attempt to be consistent with the green-colored pavement that might be present on the intersection approach.

Section 9B.04 ~~Bike~~ Bicycle Lane Signs and Plaques (R3-17, R3-5hP, R3-17aP, R3-17bP)

Standard:

The BIKE LANE (R3-17) sign and the BIKE LANE (R3-5hP), AHEAD (R3-17aP) and ENDS (R3-17dP) plaques (see Figure ~~9B-2~~9B-1) shall be ~~used~~ located only in conjunction with marked bicycle lanes as described in Sections ~~9C.04~~ 9E.01, 9E.06, and 9E.07.

Guidance:

~~If used, Bike~~ Additional Bicycle Lane signs and plaques should be used ~~in advance of~~ at the ~~upstream end~~ beginning of the bicycle lane~~, at~~ and in advance of the downstream end of the bicycle lane., ~~and at periodic intervals along the bicycle lane as determined by engineering judgment based on prevailing speed of bicycle and other traffic, block length, distances from adjacent intersections, and other considerations.~~

Option:

Bicycle Lane signs and plaques may be used at periodic intervals along the bicycle lane as determined by engineering judgment based on the operating speed of bicycle and other traffic, block length, distances from adjacent intersections, and other considerations.

Support:

Section 2B.33 contains information for the application of BEGIN and END plaques.

Section 9B.03 contains information on displaying the bicycle lane on Advance Intersection Lane Control signs.

Option:

Where two or more movements from a bicycle lane are allowed, or where the emphasis of allowed bicycle movements is needed, an Optional Movement Lane Control sign (see Section 2B.29) sign may be supplemented with a BIKE LANE (R3-5hP) plaque above the Optional Movement Lane Control sign.

Where bicycle lanes are located between travel lanes on intersection approaches or where only a single bicycle movement is allowed from a certain bicycle lane, a Mandatory Movement Lane Control sign (see Section 2B.28) may be supplemented with a BIKE LANE plaque to require a bicyclist in a particular bicycle lane at an intersection to stay in the same lane and proceed straight through the intersection, or to indicate a required turn from a particular bicycle lane.

Section 9B.05 BEGIN RIGHT TURN LANE YIELD TO BIKES Sign (R4-4)

Option:

Where motor vehicles entering ~~an exclusive~~ a mandatory right-turn lane must weave across ~~bicycle traffic~~ bicyclists in bicycle lanes, the BEGIN RIGHT TURN LANE YIELD TO BIKES (R4-4) sign (see Figure ~~9B-2~~9B-1) may be used to inform both the motorist and the bicyclist of this weaving maneuver (see Figures ~~9C-1, 9C-4, and 9C-5~~ 9E-3 and 9E-4).

Guidance:

The R4-4 sign should not be used when bicyclists need to move left because of a right-turn lane drop situation.

~~Section 9B.06 Bicycles May Use Full Lane Sign~~

Section ~~9B.07~~ 9B.06 Bicycle WRONG WAY Sign and RIDE WITH TRAFFIC Plaque (R5-1b~~,~~ and R9-3cP)

Option:

The Bicycle WRONG WAY (R5-1b) sign and RIDE WITH TRAFFIC (R9-3cP) plaque (see Figure ~~9B-2~~9B-1) may be placed facing wrong-way ~~bicycle traffic~~ bicyclists, such as on the left-hand side of a roadway.

This sign and plaque may be mounted back-to-back with other signs to minimize visibility to other traffic.

Guidance:

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.

Section ~~9B.08~~ 9B.07 NO MOTOR VEHICLES Sign (R5-3)

Option:

The NO MOTOR VEHICLES (R5-3) sign (see Figure ~~9B-2~~9B-1) may be installed at the entrance to a shared-use path.

Section ~~9B.09~~ 9B.08 Selective Exclusion Signs

Option:

Selective Exclusion signs (see Figure ~~9B-2~~9B-1) may be installed at the entrance to a roadway or facility to notify road or facility users that designated types of traffic are excluded from using the roadway or facility.

~~**Standard:**~~

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

Support:

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);

E. No Snowmobiles (R5-15); and

F. No All-Terrain Vehicles (R9-16).

Option:

Where bicyclists, pedestrians, and motor-driven cycles are all prohibited, ~~it may be more desirable to use~~ the R5-10a word message sign ~~that is described in~~ (see Section ~~2B.39~~ 2B.45) may be used.

Section ~~9B.10~~ 9B.09 No Parking Bike Lane Signs (R7-9~~,~~ and R7-9a)

Standard:

If the installation of signs is necessary to restrict parking, standing, or stopping in a bicycle lane, appropriate signs as described in Sections ~~2B.46~~ 2B.53 through ~~2B.48~~ 2B.55, or the No Parking Bike Lane (R7-9 or R7-9a) signs (see Figure ~~9B-2~~9B-1) shall be installed.

Section 9B.10 Back-In Parking Sign (R7-10)

Option:

The Back-In Parking (R7-10) sign (see Section 2B.52 and Figure 9B-1) may be used where back-in parking is required by motor vehicles in the presence of a bicycle lane or movement.

Support:

Angled back-in curb parking is commonly applied on streets where a bicycle lane is present so that the scanning behavior of a motorist associated with the back-in angle parking task, both entering and exiting the parking space, would place a bicyclist in a bicycle lane in a more direct view of the motor vehicle operator.

Figure 9B-3 shows an example of the use of back-in parking signs in conjunction with bicycle lanes.

Section 9B.11 ~~Bicycle Regulatory Signs~~ Bicycles Use Ped Signal Sign (R9-5~~, R9-6, R10-4, R10-24, R10-25, and R10-26~~)

Option:

The Bicycles Use Ped Signal (R9-5) sign ~~(see Figure 9B-2)~~ may be used where the crossing of a street by bicyclists is controlled by pedestrian signal indications.

~~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:*~~

~~*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:~~

~~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.~~

~~The R9-6 sign (see Figure 9B-2) may be used where a bicyclist is required to cross or share a facility used by pedestrians and is required to yield to the pedestrians.~~

In order to remind drivers who are making turns to yield to or stop for pedestrians or bicyclists, a Turning Vehicles Yield to Pedestrians (R10-15) sign, Turning Vehicles Stop for Pedestrians (R10-15a) sign (see Section 2B.59), or Left Turn Yield to Bicycles (R10-12b) sign (see Section 9B.21) may be used.

Guidance:

If used, the R9-5 sign should be installed in the vicinity of where bicyclists will be crossing the street.

Section 9B.12 Bicycles Yield to Peds Sign (R9-6)

Option:

The Bicycles Yield to Peds (R9-6) sign (see Figure ~~9B-2~~9B-1) may be used at locations where a bicyclist is required to cross or share a facility used by pedestrians and is required to yield to the pedestrians.

Standard:

Where the Bicycles Yield to Peds sign is supported by a yield line pavement marking (see Section 3B.19) to establish the yielding point, the sign and the pavement marking shall be installed adjacent to each other.

The Bicycles Yield to Peds sign shall not be used in bicycle corridors to establish a programmatic regulation where no yielding point exists.

The Bicycles Yield to Peds sign shall not be used in conjunction with a STOP or YIELD sign, Yield Here to Pedestrians Sign, or a Stop Here for Pedestrians Sign.

Section ~~9B.12~~ 9B.13 Shared-Use Path Restriction Sign (R9-7)

Option:

The Shared-Use Path Restriction (R9-7) sign (see Figure ~~9B-2~~9B-1) may be installed to supplement a solid white pavement marking line (see Section ~~9C.03~~ 9E.13) on facilities that are to be shared by pedestrians and bicyclists in order to provide a separate designated pavement area for each mode of travel. The symbols may be ~~switched~~transposed as appropriate.

Guidance:

If two-way operation is ~~permitted~~ allowed on the facility for pedestrians and/or bicyclists, the designated pavement area that is provided for each two-way mode of travel should be wide enough to accommodate both directions of travel for that mode.

Section ~~9B.06~~ 9B.14 Bicycles ~~May~~Allowed Use of Full Lane Sign (~~R4-11~~R9-20)

Support:

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."

Option:

The Bicycles ~~May~~ Allowed Use of Full Lane (~~R4-11~~R9-20) sign (see Figure ~~9B-2~~9B-1) may be used on roadways where no bicycle lanes or adjacent shoulders usable by ~~bicyclist~~bicycles are present and where travel lanes are too narrow for ~~bicyclists~~ bicycles and motor vehicles to operate side by side.

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

Section ~~9C.07~~ 9E.09 describes a ~~S~~shared-~~L~~lane ~~M~~marking that may be used in addition to or instead of the Bicycles ~~May~~ Allowed Use of Full Lane sign to inform road users that bicyclists might occupy the travel lane.

Section 9B.15 Bicycle Passing Clearance Sign (R4-19)

Option:

The Bicycle Passing Clearance (R4-19) sign (see Figure 9B-1) may be used in jurisdictions that have defined in law or ordinance a specific clearance to be provided by motor vehicles when they pass bicycles.

The specific clearance displayed on the Bicycle Passing Clearance (R4-19) sign may be adjusted to reflect the applicable law or ordinance.

Standard:

The Bicycle Passing Clearance (R4-19) sign shall not be used in jurisdictions that do not have a specific passing clearance to be provided by motor vehicles passing bicycles, as defined in law or ordinance.

Guidance:

The Bicycle Passing Clearance (R4-19) sign should not be used on roadways with bicycle lanes or with shoulders usable for bicycle travel.

Section 9B.16 Bicycles Use Shoulder Only Sign (R9-21)

Option:

The Bicycles Use Shoulder Only (R9-21) sign (see Figure 9B-1) may be used to designate locations on a freeway or expressway where bicycles are allowed, but must remain on an available and usable shoulder.

Guidance:

The Bicycles Use Shoulder Only sign should be limited to use on freeways and expressways.

The Bicycles Use Shoulder Only sign should be placed adjacent to the entrance ramp or entrance to the freeway at or near the location where the full-width shoulder resumes beyond the entrance ramp taper.

Section 9B.17 Signing for Bicycles on Freeways and Expressways

Standard:

The Bicycles Must Exit (R9-22) sign (see Figure 9B-1) shall be used in advance of a location where a freeway or expressway becomes prohibited to bicycle travel, and shall be placed in advance of the intersection or ramp prior to the prohibited segment of roadway (see Figure 9B-4).

Option:

The Bicycles Must Exit sign may be used below a post-mounted Exit Direction sign.

Standard:

If the Bicycles Must Exit sign is used, a No Bicycles (R5-6) sign (see Figure 9B-1) shall be placed downstream from the intersection or exit ramp departure point where the prohibited segment of freeway or expressway begins. The No Bicycles sign shall not be placed below the Exit Gore sign.

Option:

The ON FREEWAY (R5-10dP) plaque (see Figure 9B-1) may be used with an appropriate Selective Exclusion sign to indicate a prohibition along ramps leading to an adjacent or parallel freeway.

Support:

Section 2B.45 contains information on regulatory signing for prohibiting bicycles from using particular roadways or facilities.

Section 9B.18 Two-Stage Bicycle Turn Box Regulatory Signing (R9-23 Series)

Support:

Where two-stage bicycle turn boxes are provided in an intersection, the design of an approach to that intersection will determine whether the use of a two-stage bicycle turn box is required by bicycles to facilitate a turn.

Situations in which a two-stage bicycle turn box might be necessary to facilitate turns include, but are not limited to, those in which:

A. A separated bicycle facility is provided where upstream access to a lane used to facilitate turns by motor vehicle traffic is physically inaccessible to bicycles;
B. Left turns are prohibited from the left-most lane, or right turns are prohibited from the right-most lane, at an intersection; or
C. Locations where physical or operational conditions make it impracticable or unsafe for a bicyclist to merge and make the appropriate turn as would any other vehicle.

Standard:

Where bicycles are required to use a two-stage bicycle turn box (see Figure 9B-5), the Two-Stage Bicycle Turn Box regulatory sign series (see Figure 9B-5) shall be used.

Where bicycles are required to use a two-stage bicycle turn box, the Bicycle All Turns from Bike Lane (R9-23) or Bicycle Left Turn from Bike Lane (R9-23a) advance regulatory sign shall be mounted in advance of the intersection, and at least one Bicycle Turn Must Use Turn Box (R9-23b or R9-23c) sign shall be used at the intersection.

Where used, the Bicycle Turn Must Use Turn Box (R9-23b) sign shall be mounted at the near side of the intersection.

Where used, the Bicycle Turn Must Use Turn Box location (R9-23c) sign shall be mounted at the far side of the intersection.

Option:

Where a two-stage bicycle turn box is present, but use by bicyclist for turns is not required,, a Two-Stage Bicycle Turn Box guide (D11-20 Series) sign (see Section 9D.13) may be used to provide directional information.

If used, an appropriately sized Street Name (D3-1) sign (see Section 2D.45) may be installed below the All Turns from Bike Lane sign or Left Turn from Bike Lane sign to identify the crossroad where the turn box will be available.

Support:

Section 9E.11 contains information regarding pavement markings and turning restrictions for two-stage turn boxes.

Section 9B.19 Bicycle Jughandle Signs (R9-24, R9-25, R9-26, and R9-27 Series)

Support:

Bicycle jughandle turns allow bicycles to use the traffic control provided for the crossroad for facilitating a left turn, right turn, or U-turn.

Option:

The R9-23 sign (see Figure 9B-1) may be used in advance of where bicyclists are required to use the bicycle jughandle turn in order to facilitate all turns.

The R9-24 series sign (see Figure 9B-1) may be used where bicyclists are required to use the bicycle jughandle turn in order to facilitate all turns.

The R9-25 series sign (see Figure 9B-1) may be used where bicyclists are required to use a bicycle jughandle turn to facilitate U-turns and left turns and where right-turning bicyclists are exempted or the right turn is not available or possible (see Figure 9B-6).

The R9-26 series sign (see Figure 9B-1) may be used where bicyclists are required to use a jughandle to facilitate U-turns and where left-turning and right-turning bicyclists are exempted or the left turn or right turn is not available or possible.

The R9-27 series sign (see Figure 9B-1) may be used where bicyclists are required to use a jughandle to facilitate left turns and where U-turning and right-turning bicyclists are exempted or the U-turn or right turn is not available or possible.

A Bicycle Jughandle sign may be used to indicate a jughandle turn initially made by a left turn for a bicycle lane on the left-hand side of a one-way street or for a counter-flow bicycle lane. The legend RIGHT may be substituted for the legend LEFT on Bicycle Jughandle signs to represent bicycle facilities on the left-hand side of the roadway where facilitating a right turn would be applicable.

Guidance:

Applications of Bicycle Jughandle signs should be limited to brief independent alignments either through physical separation or islands formed by pavement markings. Bicycle Jughandle signs should not be used for a turning movement facilitated by a two-stage turn box (see Section 9B.18).

Support:

Bicycle Jughandle signs are designed to be mounted below guide signs.

Section 9D.01 contains information regarding the use of Bicycle Destination signs that can be used for jughandles.

Section 9B.20 Bicycle Actuation Signs (R10-4, R10-22, R10-24, R10-25, and R10-26)

Option:

Where ~~it is not intended for bicyclist~~bicycles ~~to be~~ are not controlled by pedestrian signal indications, the R10-4, R10-24, or R10-26 sign (see ~~Figure 9B-2 and~~ Section ~~2B.52~~ 2B.58) may be used.

Guidance:

If used, the ~~R9-5,~~ R10-4, R10-24, or R10-26 signs (see Figure 9B-1) should be installed ~~near the edge of the sidewalk~~ in the vicinity of where ~~bicyclist~~bicycles will be crossing the street.

Option:

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

The Bicycle Detector (R10-22) sign (see Figure 9B-1) may be installed at signalized intersections where pavement markings are used to indicate the location where a bicycle is to be positioned to actuate the signal (see Section 9E.15).

Guidance:

If the Bicycle Detector sign is installed, it should be placed at the roadside adjacent to the marking to emphasize the location of the marking.

Section 9B.21 Left Turn Yield to Bicycles Sign (R10-12b)

Option:

The Left Turn Yield to Bicycles (R10-12b) sign (see Figure 9B-1) may be used to emphasize the requirement for motorists to yield to bicyclists in situations where the motorist is turning across a bicycle

movement that may be unexpected in direction, location, or some other quality that would be inconsistent with the typical bicycle lane.

Support:

Section 2B.59 contains provisions on the placement and use of regulatory Traffic Signal signs.

Section 9B.22 Bicycle Signal Signs (R10-40, R10-40a, R10-41, R10-41a, R10-41b and R10-41c)

Support:

The purposes of the Bicycle Signal signs (see Figure 9B-1) are to inform road users that the signal indications in the bicycle signal face are intended only for bicyclists, and to inform bicyclists which specific bicycle movements are controlled by the bicycle signal face.

Section 4H.03 contains information on signs that are used in conjunction with bicycle signal faces.

Standard:

The Bicycle Signal – Mandatory Movement (R10-40 or R10-40a) sign or the Bicycle Signal – Optional Movement (R10-41. R10-41a, R10-41b, or R10-41c) sign shall require bicycles to turn, shall permit turns where such turns would otherwise not be allowed, shall require a bicycle to stay in the same lane and proceed straight through an intersection, or shall indicate allowed movements when a GREEN BICYCLE signal indication is displayed on a bicycle signal face.

Section ~~8B.17~~ 9B.23 LOOK Sign (R15-8)

Option:

At railroad or LRT grade crossings with shared-use paths or separated bikeways, the LOOK (R15-8) sign (see Figure ~~8B-1~~9B-1) may be mounted ~~as a supplemental plaque~~ on the Crossbuck support below the Crossbuck (R15-1) sign or any other signs, or on a separate post in the immediate vicinity of the grade crossing on the railroad or LRT right-of-way.

Guidance:

A LOOK sign should not be mounted ~~as a supplemental plaque~~ on a Crossbuck Assembly that has a YIELD or STOP sign mounted on the same support as the Crossbuck.

Section ~~9B.14~~ 9B.24 Other Regulatory Signs

Option:

Other regulatory signs described in Chapters 2B and 8B may be installed on bicycle facilities as appropriate.

CHAPTER 9C. WARNING SIGNS AND OBJECT MARKERS

Section ~~9B.15~~ 9C.01 Turn or Curve Warning Signs (W1 Series)

Guidance:

To warn bicyclists of unexpected changes in shared-use path direction, appropriate ~~turn~~ Turn, Curve, or ~~curve~~ Large Arrow (W1-1 through W1-7) signs (see Figure ~~9B-3~~ 9C-1) should be used.

The W1-1 through W1-5 signs should be installed at least 50 feet in advance of the beginning of the change of alignment.

Section ~~9B.16~~ 9C.02 Intersection Warning Signs (W2 Series)

Option:

Intersection Warning (W2-1 through W2-5) signs (see Figure ~~9B-3~~9C-1) may be used on a roadway, street, or shared-use path in advance of an intersection to indicate the presence of an intersection and the possibility of turning or entering traffic.

Guidance:

When engineering judgment determines that the visibility of the intersection is limited on the shared-use path approach, Intersection Warning signs should be used.

Intersection Warning signs should not be used where the shared-use path approach to the intersection is controlled by a STOP sign, a YIELD sign, or a traffic control signal.

Section ~~9B.17~~ 9C.03 Bicycle Surface Condition Warning Sign (W8-10)

Option:

The Bicycle Surface Condition Warning (W8-10) sign (see Figure ~~9B-3~~9C-1) may be installed where roadway or shared-use path conditions could cause a bicyclist to lose control of the bicycle.

Signs warning of other conditions that might be of concern to bicyclists, including BUMP (W8-1), DIP (W8-2), PAVEMENT ENDS (W8-3), and any other word message that describes conditions that are of concern to bicyclists, may also be used (see Figure 9C-1).

A supplemental plaque may be used to clarify the specific type of surface condition.

Section ~~9B.18~~ 9C.04 Bicycle Warning and ~~Combined Bicycle/Pedestrian~~ Trail Crossing Signs (W11-1 and W11-15)

Support:

The Bicycle Warning (W11-1) sign (see Figure ~~9B-3~~9C-1) alerts the road user to unexpected entries into the roadway by bicyclists, and other crossing activities that might cause conflicts. These conflicts might be relatively confined, or might occur randomly over a segment of roadway.

Section 9C.06 contains information for Bicycle Cross Traffic Warning plaques that can be used below STOP signs on crossroad or driveways that intersect with bicycle facilities.

Option:

The ~~combined Bicycle/Pedestrian~~ Trail Crossing (W11-15) sign (see Figure ~~9B-3~~9C-1) 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.

~~A supplemental plaque with the legend AHEAD or XX FEET may be used with the Bicycle Warning or combined Bicycle/Pedestrian sign.~~

Guidance:

If used in advance of a trail crossing, a W11-15 or W11-15a sign should be supplemented with an AHEAD (W16-9P) or XX FEET (W16-2P or W16-2aP) plaque to inform road users that they are approaching a point where crossing activity might occur.

If used in advance of a specific crossing point, the Bicycle Warning or ~~combined Bicycle/Pedestrian~~ Trail Crossing sign should be placed at a distance in advance of the crossing location that ~~conforms~~ complies with ~~the guidance given in~~ Table 2C-3~~4~~.

Standard:

Bicycle Warning and ~~combined Bicycle/Pedestrian~~ Trail Crossing signs, when used at the location of the crossing, shall be supplemented with a diagonal downward pointing arrow (W16-7P) plaque ~~(see Figure 9B-3)~~ to show the location of the crossing.

Option:

A fluorescent yellow-green background color with a black legend and border may be used for Bicycle Warning and ~~combined Bicycle/Pedestrian~~ Trail Crossing signs and supplemental plaques.

Guidance:

When the fluorescent yellow-green background color is used, a systematic approach featuring one background color within a zone or area should be used. The mixing of standard yellow and fluorescent yellow-green backgrounds within a zone or area should be avoided.

Section 9C.05 EXCEPT BICYCLES Warning Plaque (W16-20P)

Option:

Where it might be advantageous to notify bicyclists that the conditions or hazards depicted by a warning sign are not applicable to bicycles, the EXCEPT BICYCLES (W16-20P) warning plaque (see Figure 9C-1) may be used.

Support:

Examples of warning signs where an EXCEPT BICYCLES warning plaque can be mounted include DEAD END (W14-1) and NO OUTLET (W14-2) signs (see Section 2C.24).

Sections 2C.57 and 2C.58 contain information on the design of supplemental warning plaques.

Section 9C.06 Bicycle Cross Traffic Warning Plaques (W16-21P)

Standard:

When used, the Two-Way Bicycle Cross Traffic (W16-21P) warning plaque (see Figure 9C-1) shall be installed below a STOP or YIELD sign.

Option:

The Two-Way Bicycle Cross Traffic warning plaque may be used below STOP or YIELD signs on crossroads and driveways to alert road users of an unexpected bicycle movement.

Support

The Two-Way Bicycle Cross Traffic warning plaque can help minimize overuse or misapplication of other warning signs such as the Bicycle Warning (W11-1) sign.

Guidance:

The Two-Way Bicycle Cross Traffic warning plaque should be used in combination with a STOP or YIELD sign when a counter-flow or two-way bicycle facility has an approach that is counter to the customary scanning behavior of a motorist at that location.

Section 9C.07 Bicycle Lane Ends Warning Sign (W9-5) and Bicycles Merging Sign (W9-5a)

Support:

Where a warning sign is appropriate, the Bicycle Lane Ends (W9-5) warning sign (see Figure 9C-1) is intended to alert road users that a bicycle lane is ending and that bicycles will share or occupy the travel lane after merging.

Option:

The Bicycle Lane Ends warning sign may be used in advance of the end of a bicycle lane to warn that a bicycle lane will be ending.

The Bicycles Merging (W9-5a) sign (see Figure 9C-1) may be used where a bicycle merging maneuver might occur. The Bicycles Merging sign may be used in addition to the Bicycle Lane Ends (W9-5) warning sign.

Guidance:

To avoid excessive use of signs, the Bicycle Lane Ends warning sign should not be used where a bicycle lane is dropped on the approach to an intersection and resumes immediately after the intersection.

Option:

A Bicycles Allowed Use of Full Lane (R9-20) sign (see Section 9B.14) and/or shared-lane markings (see Section 9E.09) may be installed downstream of the merge area.

A W16-2aP supplemental warning plaque may be used to inform road users of the distance to the end of the bicycle lane and/or to the bicycle merge.

Section ~~9B.19~~ 9C.08 Other Bicycle Warning Signs

Option:

Other bicycle warning signs (see Figure ~~9B-3~~9C-1) 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.

In situations where there is a need to warn ~~motorists~~ road users to watch for ~~bicyclist~~bicycles traveling along the highway, the Bicycle Warning (W11-1) sign may be used with the IN ROAD (W16-1P) plaque or the IN STREET (W16-1aP) plaque (see Figure 9C-1). ~~the SHARE THE ROAD (W16-1P) plaque (see Figure 9B-3) may be used in conjunction with the W11-1 sign.~~

Guidance:

If used, other advance bicycle warning signs should be installed at least 50 feet in advance of the beginning of the condition.

Where temporary traffic control zones are present on bikeways, appropriate signs from Part 6 should be used.

Option:

Other warning signs described in Chapters 2C and 8C may be installed on bicycle facilities as appropriate.

Section ~~9B.26~~ 9C.09 Object Markers

Standard:

Obstructions in ~~the traveled way of~~ a shared-use path shall be marked with ~~retroreflectorized~~ retroreflective material or appropriate object markers as described in Section 2C.70.

Option:

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 also intended to ~~also~~ be seen by motorists, a smaller version of the Type 3 object marker may be used (see Table ~~9B-1~~ 9A-1).

~~**Standard:**~~

~~**All object markers shall be retroreflective.**~~

~~**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.**~~

CHAPTER 9D. GUIDE AND SERVICE SIGNS

Section ~~9B.20~~ 9D.01 Bicycle ~~Guide~~ Destination Signs (D1-1b, D1-1c, D1-2b, D1-2c, D1-3b, D1-3c, D2-1a, D2-2a, D2-3a ~~D11-1, D11-1c~~)

Support:

The purpose of Bicycle Destination (D1-1b, D1-1c, D1-2b, D1-2c, D1-3B, and D1-3c) signs (see Figure 9D-1) and Bicycle Distance (D2-1a, D2-2a, and D2-3a) signs (see Figure 9D-1) is to provide guidance to bicyclists traveling along a bikeway network directing them to typical bicycle destinations or points of interest. The smaller size of Bicycle Destination and Distance signs can deemphasize the messages to motorists, especially when the direction(s) or destination(s) displayed provides access to routes or pathways where the use of motor vehicles is prohibited or discouraged. Examples include, but are not limited to:

A. Bicycles can go in a direction counter to conventional traffic,
B. Access to a separated bikeway or shared-use path from a street,
C. Access to a bicycle route,
D. Bicycles are directed to another roadway or bikeway that facilitates a parallel or alternative route to the same destination, or
E. Access to a sidewalk that provides connectivity between bicycle facilities.

Section 2D.36 contains information on Destination signs used for when the destinations listed would apply to both motorists and bicyclists.

Section 2D.43 contains information on Distance signs used for when the destinations listed would apply to both motorists and bicyclists.

~~*Guidance*~~ **Standard:**

Because of their smaller size, Bicycle Destination and Distance signs ~~should~~ shall not be used as a substitute for vehicular destination signs when the message is also intended to be ~~seen by~~ applicable to motorists.

Option:

~~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.~~

~~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.~~

~~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).~~

~~Destination (D1-1, D1-1a) signs, Street Name (D3-1) signs, or~~ Bicycle Destination and Distance (D1-1b, D1-1c, D1-2b, D1-2c, D1-3b, D1-3c, D2-1a, D2-2a, and D2-3a) 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.

Destination (D1-1 and D1-1a) signs (see Section 2D.36) and Street Name (D3-1) signs (see Section 2D.45) may be installed instead of or in addition to Bicycle Destination signs as needed if the Destination or Street Name sign applies to motorist and bicyclists.

Distance (D2-1 through D2-3) signs (see Section 2D.43) may be installed instead of, or in addition to, Bicycle Distance (D2-1a through D2-3a) signs, as needed, if the destination and distance information applies to motorists and bicyclists.

Guidance:

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.

Where a Bicycle Destination sign with distance information is located less than ½ mile from the destination, the distance displayed should be to the nearest ¼ mile. Where the distance to be displayed on a Bicycle Destination sign is less than ¼ mile, the distance should be displayed in feet, rather than miles, to the nearest 50 feet.

Option:

Distances may be displayed in fractions of a mile to the nearest 1/10 mile to communicate distance information on Bicycle Destination signs where the distance to a destination is desired to be more precise than ¼-mile increments. Support:

Section 2A.08 contains provisions on the display of fractions on guide signs.

Standard:

An arrow pointing to the right, if used, shall be at the extreme right-hand side of the sign. An arrow pointing left or up, if used, shall be at the extreme left-hand side of the sign. The distance numerals, if used, shall be placed to the right of the destination names.

~~**On Bicycle Destination signs, a**~~ **Except as provided in Paragraph 14 of this Section, a bicycle symbol shall be placed next to each destination or group of destinations.** ~~**If an arrow is at the extreme left, the bicycle symbol shall be placed to the right of the respective arrow.**~~

Option:

An oversized bicycle symbol may be displayed as the top line of a Bicycle Destination sign instead of individual bicycle symbols for each of the destination/distance lines.

Standard:

If an arrow is at the extreme left, the bicycle symbol shall be placed to the right of the respective arrow.

Guidance:

Where the arrow is at the extreme right, ~~The~~ the bicycle symbol should be to the left of the destination legend.

Unless a sloping arrow will convey a clearer indication of the direction to be followed, the directional arrows should be either horizontal or vertical.

If several individual name signs are assembled into a group, all of the signs in the assembly should have the same horizontal width.

~~Support:~~

~~Figure 9B-5 shows an example of the signing for the beginning and end of a designated bicycle route on a shared-use path. Figure 9B-6 shows an example of signing for an on-roadway bicycle route. Figure 9B-7 shows examples of signing and markings for a shared-use path crossing.~~

Travel times should not be used on Bicycle Destination signs.

Support:

Travel times can vary greatly for bicyclists based on a variety of factors including individual speed, bicycle type, and type of facility.

Section 9D.02 Bike Route Guide Signs (D11-1 and D11-1c)

Support:

The Bike Route Guide (D11-1 or D11-1c) sign (see Figure 9D-1) is used where no unique designation of routes is desired. Sections 9D.04 through 9D.07 contain information for Bicycle Route signs where the bicycle route is designated by number, name, or both.

Option:

Bike Route Guide ~~(D11-1)~~ signs ~~(see Figure 9B-4)~~ may be provided along designated unnumbered, unnamed bicycle routes to inform bicyclists of bicycle route direction changes and to confirm route direction~~, distance,~~ and destination.

If used, Bike Route Guide signs may be repeated at regular intervals so that ~~bicyclist~~bicycles 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~~bicycle guidance.

The Alternative Bike Route Guide (D11-1c) sign~~s~~ may be used to display a word legend that provides information on route direction, destination, and/or route name in place of the "BIKE ROUTE" ~~wording~~ word legend on the D11-1 sign (see Figure~~s 9B-4~~ 9D-1).

Other plaques such as BEGIN (M4-14P) and END (M4-6P) may be used with Bike Route Guide signs.

Guidance:

Travel times should not be used on Bike Route Guide signs.

Support:

Travel times can vary greatly for bicyclists based on a variety of factors including individual speed, bicycle type, and type of facility.

~~Figure 9B-5 shows an example of the signing for the beginning and end of a designated bicycle route on a shared-use path. Figure 9B-6 shows an example of signing for an on-roadway bicycle route. Figure 9B-7 shows examples of signing and markings for a shared-use path crossing.~~ Figure 9D-2 shows examples of guide sign applications for bicycle travel.

Section 9D.03 BIKE ROUTE Plaque (D11-1bP)

Option:

The BIKE ROUTE (D11-1bP) plaque (see Figure 9D-1) may be installed to supplement:

A. The Alternative Bike Route Guide (D11-1c) sign (see Section 9D.02);
B. The Bicycle Directional (D11-11) sign (see Section 9D.11) for use on a shared-use Path; or
C. A Street Name (D3-1) sign (see Section 2D.45).

When installed above or below a Street Name sign, the D11-1bP supplemental plaque may include a bicycle symbol to the left of the BIKE ROUTE legend.

Standard:

The bicycle symbol shall not be used on a Street Name sign.

Where a BIKE ROUTE plaque is used in conjunction with a Street Name sign to identify a street that is part of an overall bicycle network, one of the following signs shall also be used systematically to establish the designated bicycle route on the street identified by the BIKE ROUTE plaque:

A. Bike Route Guide signs (see Section 9D.02),
B. Alternative Bike Route Guide (D11-1c) sign (see Section 9D.02),
C. State or Local Bicycle Route (M1-8 and M1-8a) signs (see Section 9D.05),
D. Non-Numbered Bicycle Route (M1-8b and M1-8c) signs (see Section 9D.06), or
E. United States Bicycle Route (M1-9) sign (see Section 9D.07).

BIKE ROUTE plaques shall not incorporate replicas of the United States Bicycle Route, State or Local Bicycle Route, or Non-Numbered Bicycle Route sign to replace or supplement the bicycle symbol.

Option:

The BIKE ROUTE plaque and the Street Name sign may be different widths.

Support:

Figure 9D-3 shows an example of bicycle guide signing using the BIKE ROUTE plaque.

Section 9D.04 Numbered Bikeway Systems

Support:

The purpose of numbering and signing bikeways and bicycle routes is to identify routes and facilitate travel.

The United States Bicycle Routes are numbered by the American Association of State Highway Transportation Officials (AASHTO) upon recommendations of State highway organizations. County and local bikeways and bicycle routes are numbered by the appropriate authorities.

Bicycle route sign systems can be used to distinguish junctions, turns, the beginning of routes, and route termination points. Extensive use of reassurance markers is typically not needed.

An agency or jurisdiction can use several methods for bicycle route guidance including maps, information guides, or signing.

Guidance:

Establishing bicycle route systems described in Paragraph 2 of this Section and any other bicycle route system should be followed with effective communication between affected jurisdictions. County and local jurisdictions that are establishing numbered routes should coordinate with the respective State transportation agency. Care should be taken to avoid the use of numbers or other designations that have been assigned to U.S. Bicycle Routes or other routes in the same geographical region or State. Overlapping numbered routes should be kept to a minimum.

Bicycle routes, which might be a combination of various types of bikeways, should establish a continuous routing.

Standard:

Multiple numbered bicycle route systems shall be given preference in this order: United States, State, and county or local. The preference shall be given by installing the highest priority legend on the top or the left of the sign assembly with other numbered overlapping bicycle routes.

Where applicable, multiple bicycle route systems with concurrency shall be signed in accordance with Figure 9D-4.

Guidance:

Numbered bicycle routes should be identified by route signs (see Sections 9D.05 through 9D.07) and auxiliary plaques (see Section 9D.08).

If used, ~~the~~ Bicycle Route ~~or U.S. Bicycle Route~~ signs should be placed at ~~intervals frequent enough~~ locations to keep bicyclists informed of changes in route direction ~~and to remind motorists of the presence of bicyclists~~.

Option:

Bicycle Route ~~or U.S. Bicycle Route~~ signs may be installed on shared roadways, ~~or on~~ shared-use paths, or separated bikeways, to provide navigational guidance for bicyclists.

~~The Bicycle Route Guide (D11-1) sign (see Figure 9B-4 9D-1) may be installed where no unique designation of routes is desired.~~

Section ~~9B.21~~ 9D.05 ~~State or Local~~Numbered Bicycle Route Signs (M1-8~~,~~ and M1-8a~~, M1-9~~)

Option:

To establish a unique identification (route designation) for a State or local bicycle route, the Bicycle Route (M1-8~~,~~ and M1-8a) sign (see Figure ~~9B-4~~9D-1) may be used.

Standard:

The Numbered Bicycle Route (M1-8) sign shall ~~contain~~ display 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.~~

The Numbered Bicycle Route (M1-8a) signs shall ~~contain~~ display the same information as the M1-8 sign and in addition shall ~~include~~display a pictograph or words on the upper portion of the sign that are associated with the route or with the agency that has jurisdiction over the route.

If a Numbered Bicycle Route (M1-8 or M1-8a) sign is used on a roadway, it shall include a bicycle symbol.

Guidance:

If a pictograph is used on the M1-8a sign the maximum dimension (height or width) of the pictograph should not exceed 2 times the height of the route numeral, and should be contained within a green border. The minimum width of the graphic on the M1-8a should be ⅔ of the sign width, and the maximum width should be 9/10 of the sign width.

If a bicycle symbol is used on the M1-8a sign, it should have a minimum height of ¼ of the M1-8a sign panel height.

~~*Guidance:*~~

~~*Bicycle routes, which might be a combination of various types of bikeways, should establish a continuous routing.*~~

~~*Where a designated bicycle route extends through two or more States, a coordinated submittal by the affected States for an assignment of a U.S. Bicycle Route number designation should be sent to the American Association of State Highway and Transportation Officials (see Page i for the address).*~~

~~**Standard:**~~

~~**The U.S. Bicycle Route (M1-9) sign (see Figure 9B-4) shall contain the route designation as assigned by AASHTO and shall have a black legend and border with a retroreflectorized white background.**~~

~~*Guidance:*~~

~~*If used, the Bicycle Route or U.S. Bicycle Route signs should be placed at intervals frequent enough to keep bicyclists informed of changes in route direction and to remind motorists of the presence of bicyclists.*~~

~~Option:~~

~~Bicycle Route or U.S. Bicycle Route signs may be installed on shared roadways or on shared-use paths to provide guidance for bicyclists.~~

~~The Bicycle Route Guide (D11-1) sign (see Figure 9B-4) may be installed where no unique designation of routes is desired.~~

Section 9D.06 Non-Numbered Bicycle Route Sign (M1-8b and M1-8c)

Standard:

Except as provided in Paragraph 2 of this Section, Non-Numbered Bicycle Route (M1-8b or M1-8c) signs (see Figure 9D-1) used on roadways shall have a green background with a white border and shall include words identifying the bicycle route or a legend consisting of words identifying the bicycle route and a pictograph or bicycle symbol.

Option:

Words identifying the bicycle route may be omitted on Non-Numbered Bicycle Route (M1-8b and M1-8c) signs where a pictograph includes the likeness of a bicycle that clearly identifies the route as a bicycle route.

Support:

Bicycle routes are sometimes designated specifically by name or established using a distinctive route identity, but are not numbered or are intentionally excluded from an overall numbered bicycle route system.

Section 9D.02 contains information for Bicycle Route signs where no unique designation route is beneficial or desired.

Option:

Where a bicycle route is named instead of numbered, the Non-Numbered Bicycle Route sign may be used.

A green background or white border may be omitted on Non-Numbered Bicycle Route (M1-8b or M1-8c) signs used on shared-use paths.

Support:

Certain uninterrupted, long-distance interstate bicycle routes can largely be on shared-use paths, or other off-roadway facilities. In order to achieve continuity, these bicycle systems might have to share alignments with urban streets, rural highways, or water crossings.

Long-distance interstate bicycle routes can be administered by independent organizations serving other non-transportation objectives.

Guidance:

In order to provide signing on a facility managed by a transportation agency, a statewide policy for encouraging independent organizations to adopt the Non-Numbered Bicycle Route sign should be established.

Section 9D.07 U.S. Bicycle Route Sign (M1-9)

Guidance:

Where a designated bicycle route extends through two or more States, a coordinated submittal by the affected States for an assignment of a U.S. Bicycle Route number designation should be sent to the American Association of State Highway and Transportation Officials (see Page i for the address).

Standard:

The U.S. Bicycle Route (M1-9) sign (see Figure ~~9B-4~~9D-1) shall ~~contain~~ have a green legend and border with a white background and shall display the route designation as assigned by AASHTO ~~and shall have a black legend and border with a retroreflectorized white background~~.

Section ~~9B.22~~9D.08 Bicycle Route Sign and Auxiliary Plaques

Support:

Section 2D.12 contains additional provisions for the design of route sign auxiliary plaques. Sections 2D.29 through 2D.34 contain additional provisions for the general application of route signs.

Guidance:

If a designated or numbered bicycle route is concurrent with a numbered highway, the route sign and auxiliary plaques for the bikeway should be installed as independent assemblies and should not be

installed with other Route signs or confirmation assemblies for the numbered or named highway on the same assembly.

Standard:

Route signs for bikeways shall not be installed on guide signs or overhead.

Option:

Route assemblies for a designated or numbered bicycle route may be installed at locations or distances other than those prescribed in Sections 2D.29 through 2D.34 if engineering judgment indicates that the operation or speed of the bicycle justifies alternate locations or distances.

Auxiliary ~~plaques~~ signs (See Figure 9D-1) may be used in conjunction with ~~Bike Route Guide signs,~~ Bicycle Route ~~signs, or U.S. Bicycle Route~~ signs as needed.

Guidance:

If used, Junction (M2-1P), 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.

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~~ signs.

Except for the M4-8P plaque, all route sign auxiliary plaques should match the color combination of the route sign that they supplement.

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.

Standard:

If both the Junction (M2-1P), Cardinal Direction (M3 series), or Alternative Route (M4 series) auxiliary plaque and the Advance Turn Arrow (M5 series) or Directional Arrow (M6 series) auxiliary plaques are used on the same sign assembly as a Bicycle Route sign, the Junction, Cardinal Direction, or Alternative Route auxiliary plaque shall be installed above the Bicycle Route sign, and the Advance Turn Arrow or Directional Arrow auxiliary plaque shall be installed below the Bicycle Route sign.

~~*Except for the M4-8 plaque, all route sign auxiliary plaques should match the color combination of the route sign that they supplement.*~~

~~*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:

With route signs of larger sizes, auxiliary plaques may be suitably enlarged, but not such that they exceed the width of the route sign.

A route sign and any auxiliary plaques used with it may be combined on a single sign as a guide sign.

~~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.~~

Support:

Figure 9D-3 shows typical placements of bicycle route signs.

Standard:

If used, a Bicycle Route sign assembly shall consist of a route sign and auxiliary plaques that identify the route and indicate the direction.

Guidance:

If the bicycle route is signed, Bicycle Route sign assemblies should be installed on all approaches where that route intersects with other numbered bicycle routes.

Standard:

Within groups of assemblies, information for bicycle routes intersecting from the left shall be mounted at the left in horizontal arrangements and at the top or center of vertical arrangements. Similarly, information for bicycle routes intersecting from the right shall be at the right or bottom, and for straight-through bicycle routes at the center in horizontal arrangements or top in vertical arrangements.

A Junction assembly shall consist of a Junction auxiliary plaque and a Bicycle Route sign. The Bicycle Route sign shall display the number of the intersected or joined bicycle route.

Option:

The Junction assembly may be installed in advance of intersections where a numbered bicycle route is intersected or joined by another numbered bicycle route.

Standard:

An Advance Bicycle Route Turn assembly shall consist of a Bicycle Route sign, an Advance Turn Arrow or word message auxiliary plaque, and a Cardinal Direction auxiliary plaque, if needed. If used, it shall be installed in advance of an intersection where a turn must be made to remain on the indicated route.

Option:

The Advance Bicycle Route Turn assembly may be used in advance of intersecting routes. On the approach to an intersection with a numbered bicycle route, the Advance Bicycle Route Turn assembly may be used to pre-position turning bicyclists in the correct lane position from which to make their turn.

Standard:

A Directional assembly shall consist of a Cardinal Direction auxiliary plaque, if needed, a route sign, and a Directional Arrow auxiliary plaque.

Guidance:

The various uses of Directional assemblies should be as follows:

A. Turning movements should be marked by a Directional assembly with a route sign displaying the number of the turning route and a single-headed arrow pointing in the direction of the turn.

B. The beginning of a route should be marked by a Directional assembly with a route sign displaying the number of that route and a single-headed arrow pointing in the direction of the route.

C. An intersected route on a crossroad where the route is designated on both legs should be designated by:

1. Two Directional assemblies, each with a route sign displaying the number of the intersected route, a Cardinal Direction auxiliary plaque, and a single-headed arrow pointing in the direction of movement on that route; or

2. A Directional assembly with a route sign displaying the number of the intersected route and a double-headed arrow, pointing at appropriate angles to the left, right, or ahead.

D. An intersected route on a side road or on a crossroad where the route is designated only on one of the legs should be designated by a Directional assembly with a route sign displaying the number of the intersected route, a Cardinal Direction auxiliary plaque, and a single-headed arrow pointing in the direction of movement on that route.

Option:

Straight-through movements may be indicated by a Directional assembly with a route sign displaying the number of the continuing route and a M6-3P Directional Arrow – Through auxiliary plaque.

Guidance:

A Directional assembly should not be used for a straight-through movement in the absence of other assemblies indicating right or left turns, as the Confirming assembly sign beyond the intersection normally provides adequate guidance.

Directional assemblies should be located on the near-right corner of the intersection. Where unusual conditions exist, the location of a Directional assembly should be determined by engineering judgment.

Support:

It is more important that guide signs be readable, and that the information and direction displayed thereon be readily understood, at the appropriate time and place than to be located with absolute uniformity.

Guidance:

If used, Confirming or Reassurance assemblies should consist of a Cardinal Direction auxiliary plaque and a route sign. Where the Confirming or Reassurance assembly is for an alternative route, the appropriate auxiliary plaque for an alternative route should also be included in the assembly.

If used, a Confirming assembly should be installed just beyond intersections of numbered routes.

If used, Reassurance assemblies should be installed between intersections in urban areas as needed, and beyond the built-up area of any incorporated city or town.

If used, Bicycle Route signs for either confirming or reassurance purposes should be spaced at such intervals as necessary to keep bicyclists informed of their routes.

Section ~~9B.23~~ 9D.09 Bicycle Parking Area, Sharing Station, and Lockers Guide Signs (D4-3, D4-4, D4-4a)

Support:

Bicycle parking areas include bicycle racks or stands, parking stations or structures, sharing systems, or lockers. These facilities can be either regulated or unregulated.

Option:

The Bicycle Parking Area (D4-3) guide sign (see Figure ~~9B-4~~9D-1) may be installed where it is desirable to show the direction to a designated bicycle parking area. The arrow may be reversed as appropriate.

~~**Standard:**~~

~~**The legend and border of the Bicycle Parking Area sign shall be green on a retroreflectorized white background.**~~

The Bicycle-Sharing Station (D4-4) guide sign (see Figure 9D-1) may be installed to provide directional information to a designated bicycle-sharing system. The arrow may be reversed as appropriate.

The Bicycle-Sharing Station guide sign may be modified with two lines to accommodate installation in constrained areas.

The Bicycle Lockers (D4-4a) guide sign (see Figure 9D-1) may be installed where it is desirable to show the direction to designated bicycle lockers. The arrow may be reversed as appropriate.

Guidance:

If used, the Bicycle-Sharing Station guide sign should be used in conjunction with a regulated bicycle-sharing system such as one that requires the user to pre-register or provide a deposit in order to use a bicycle.

Where it is determined that unregulated bicycle-sharing parking facilities necessitate a bicycle parking sign, the Bicycle Parking Area guide sign should be used.

Standard:

In accordance with Section 1D.07, Bicycle Parking Area, Sharing Station, and Lockers guide signs shall not include promotional advertising, business logos or other identification that would convey the involvement of a public-private partnership for operating the bicycle parking facility or sharing system.

Section ~~9B.24~~ 9D.10 Reference Location Signs (D10-1 through D10-3) and Intermediate Reference Location Signs (D10-1a through D10-3a)

Support:

There are two types of reference location signs:

A. Reference Location (D10-1, D10-2, and D10-3) signs (see Figure 9D-1) show an integer distance point along a shared-use path; and

B. Intermediate Reference Location (D10-1a, D10-2a, and D10-3a) signs (see Figure 9D-1) show the same information as Reference Locations signs, but they also show a tenth-of-a-mile decimal so that they can be installed between integer distance points along a shared-use path.

Option:

Reference Location (D10-1 ~~to~~through D10-3) signs ~~(see Figure 9B-4)~~ may be installed along any section of a shared-use path to assist users in estimating their progress, to provide a means for identifying the location of emergency incidents and crashes, and to aid in maintenance and servicing.

To augment the reference location sign system, Intermediate Reference Location (D10-1a to D10-3a) signs ~~(see Figure 9B-4),~~ which show the tenth of a mile with a decimal point, may be installed at one tenth of a mile intervals, or at some other regular spacing.

~~**Standard:**~~*Guidance:*

If Intermediate Reference Location (D10-1a to D10-3a) signs are used to augment the reference location sign system, the ~~reference location~~ Reference Location sign at the integer mile point ~~shall~~ should display a decimal point and a zero numeral.

~~**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.**~~

~~*Guidance:*~~

Reference location signs for shared-use paths ~~shall~~ should 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 should not be governed by the mounting height requirements prescribed in Section 9B.01~~, and should not be governed by the mounting height requirements prescribed in Section 9A.02.

Option:

Reference location signs may be installed on one side of the shared-use path only and may be installed back-to-back.

If a reference location sign cannot be installed in the correct location, it may be moved in either direction as much as 50 feet.

Guidance:

If a reference location sign cannot be placed within 50 feet of the correct location, it should be omitted.

Zero distance should begin at the south and west terminus points of shared-use paths.

Support:

Section ~~2H.05~~ 2H.11 contains additional information regarding reference location signs.

Section ~~9B.25~~ 9D.11 Mode-Specific Directional Guide Signs for Shared-Use Paths (D11-1a, D11-2, D11-3, D11-4)

Option:

Where separate pathways are provided for different types of users, ~~Mode-Specific~~ mode-specific Directional Guide (D11-~~1a~~11, D11-~~2~~12, D11-~~3~~13, D11-~~4~~14) signs (see Figure ~~9B-4~~9D-1) may be used to guide different types of users to the ~~traveled way~~ pathway that is intended for their respective modes.

Mode-~~Specific~~ specific Directional 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.

The Bicycle~~s Permitted~~ Directional (D11-~~1a~~11) sign, when combined with the BIKE ROUTE (D11-1bP) supplemental plaque ~~(D11-1bP)~~, may be substituted for the D11-1 ~~Bicycle~~ Bike Route Guide sign on shared-use paths ~~and shared roadways~~.

When some, but not all, non-motorized user types are encouraged or permitted on a shared-use path, ~~Mode-Specific~~ mode-specific Directional Guide signs may be placed in combination with each other, and in combination with signs (see Section ~~9B.09~~ 9B.08) that prohibit travel by particular modes.

Support:

Figure ~~9B-8~~ 9D-5 shows an example of signing where separate pathways are provided for different non-motorized user types.

Section 9D.12 Destination Guide Signs for Shared-Use Paths (D11-10a, D11-10b, D11-10c, D11-10d, D11-10e, and D11-10f)

Support:

This Section contains information on the application of Destination Guide signs for shared-use paths.

Standard:

Where bicycle traffic is allowed on the shared-use path, Destination Guide signs for shared-use paths and any identification markers shall be retroreflective.

Guidance:

Destination Guide signs for shared-use paths should be installed on independent assemblies and should not be combined with regulatory and warning signs.

Option:

Destination Guide signs for shared-use paths may use symbols detailed in the "Standard Highway Signs" publication (see Section 1A.05) in addition to the bicycle symbol to display other modes permitted to use the shared-use path.

Standard:

If used, symbols on Destination Guide signs for shared-use paths shall be limited to those where the symbol displayed is an allowable mode on the path or pathway alignment, and where the symbol is supported by other regulatory signs to convey the operation. Symbols unrelated to the allowable modes that would otherwise display directional navigation to a facility, activity, or point of interest shall not be used.

Support:

Chapter 2M contains information for symbol signs used for facilities, activities, and points of interest.

Guidance:

Destination Guide signs for shared-use paths, exclusive of any identification marker used, should be rectangular in shape. Simplicity and uniformity in design, position, and application as described in Section 2A.04 are important and should be incorporated into the sign design.

Destination Guide signs for shared-use paths should be limited to three destinations per sign (see Section 2D.06).

Abbreviations (see Section 1D.08) should be kept to a minimum, and should include only those that are commonly recognized and understood.

Support:

Figure 9D-6 shows an example of a signing system of Destination Guide signs used on shared-use paths.

Standard:

The arrow location and priority order of destinations shall follow the provisions described in Sections 2D.08 and 2D.36. Arrows shall be of the designs provided in Section 2D.08.

The lettering for destinations on Destination Guide signs for shared-use paths shall be a combination of lower-case letters with initial upper-case letters (see Section 2D.04). All other word messages on Destination Guide signs for shared-use paths shall be in all upper-case letters.

Except as provided in Paragraph 15 of this Section, the lettering style used for destination and directional legends on Destination Guide signs for shared-use paths shall comply with the provisions of Section 2D.04.

Option:

The distance to the place named may be displayed on the Destination Guide sign. If several destinations are to be displayed at a single point, the several names 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 such a group of destinations.

A lettering style other than the Standard Alphabets provided in the "Standard Highway Signs " publication (see Section 1A.05) may be used on Destination Guide signs for shared-use paths if an engineering study determines that the legibility and recognition values for the chosen lettering style at minimum letter heights meet or exceed the values for the Standard Alphabets for the same legend height and stroke width.

Standard:

Where a shared-use path is within the highway right-of-way or crosses a street or highway, an alternative lettering style shall not be used.

Option:

Pictographs (see definition in Section 1C.02) may be used on Destination Guide signs for shared-use paths.

Standard:

If a pictograph is used, its height shall not exceed 2 times the height of the upper-case letters of the principal legend on the sign.

Business logos, commercial graphics, or other forms of advertising (see Section 1D.07) shall not be used on Destination Guide signs for shared-use paths or sign assemblies.

Option:

An identification marker may be used in an assembly for Destination Guide signs applied to shared-use paths, or may be incorporated into the overall design of Destination Guide sign, as a means of visually identifying the sign as part of an overall system of signs.

Standard:

The size of an identification marker shall be smaller than the Destination Guide sign. Identification markers shall not be designed to have an appearance that could be mistaken by road users as being a traffic control device.

Guidance:

The area of the identification marker should not exceed ⅓ of the area of the Destination Guide sign with which it is mounted in the same sign assembly.

Standard:

Except as provided in Paragraph 26 of this Section, Destination Guide signs for shared-use paths shall have a white legend and border on a green or brown background and shall be consistent with the basic design principles for guide signs.

Color coding or pictographs shall not be used to distinguish between different types of destinations. If used, color coding shall be accomplished by the use of different colored square or rectangular panels on the face of the sign, each positioned to the left of the named geographic area to which the color-coding panel applies. The height of the colored square or rectangular panels shall not exceed 2 times the height of the upper-case letters of the principal legend on the sign.

Option:

The different colored square or rectangular panels may include either a black or a white (whichever provides the better contrast with the color of the panel) letter, numeral, or other appropriate designation to identify the destination.

Except where a shared-use path is within the highway right-of-way or crosses a street or highway, Destination Guide signs for shared-use paths may use background colors other than green or brown in order to provide a color identification for systematic destinations within the overall guide signing system.

Standard:

The standard colors of red, orange, yellow, purple, or the fluorescent versions thereof, fluorescent yellow-green, and fluorescent pink shall not be used as background colors for Destination Guide signs for shared-use paths, in order to minimize possible confusion with critical, higher-priority regulatory and warning sign color meanings readily understood by path users.

Option:

Destination Guide signs for shared-use paths may display telephone numbers, Internet addresses, and e-mail addresses, including domain names and uniform resource locators (URLs).

Standard:

If used, the use of telephone numbers, Internet addresses, and e-mail addresses shall be limited to direct contact information of the jurisdiction with authority of the shared-use path, or contact information for emergency service response, or both. Contact information for advertising purposes shall not be used.

Section 9D.13 Two-Stage Bicycle Turn Box Guide Signs (D11-20 Series)

Support:

Two-stage bicycle turn boxes provide a way for a bicyclist to make a turn in a manner such that a merge across the general-purpose lanes is not required.

Section 9B.18 provides information about situations when the use of a two-stage bicycle turn box is required and also contains information about the Two-Stage Bicycle Turn Box (R9-23 series) regulatory signs.

Section 9E.11 contains information regarding pavement markings for two-stage bicycle turn boxes.

Option:

Where a two-stage bicycle turn box is provided, the Two-Stage Bicycle Turn Box guide sign series (see Figure 9D-1) may be used.

Standard:

Where used, the Two-Stage Bicycle Turn Box Advance (D11-20) guide sign shall be mounted in advance of the intersection where the turn box is located.

Where used, the Two-Stage Bicycle Turn Box (D11-20a) guide sign shall be mounted on the far side of the intersection.

Option:

Where the Two-Stage Bicycle Turn Box Advance (D11-20) guide sign is used, an additional Two-Stage Bicycle Turn Box Advance guide sign may be mounted on the near side of the intersection where the turn box is located.

If used, an appropriately-sized Street Name (D3-1) sign (see Section 2D.45) may be installed below the Two-Stage Bicycle Turn Box Advance guide sign to identify the crossroad where the turn box will be available.

Figure 9D-7 shows an example of Two-Stage Bicycle Turn Box guide signs at a location where the use of the turn box is optional.

Section 9D.14 General Service Signing for Bikeways

Option:

General Service signs (see Chapter 2I) may be used on bikeways.

Standard:

The sizes of General Service signs intended for viewing by both bicyclists and other road users shall comply with the sizes in Table 2I-1.

Option:

General Service signs intended for the exclusive use of bicyclists may be of reduced size.

CHAPTER ~~9C.~~9E. MARKINGS

~~**Section 9C.01 Functions of Markings**~~

~~**Section 9C.02 General Principles**~~

~~**Section 9C.03 Marking Patterns and Colors on Shared-Use Paths**~~

Section ~~9C.04~~9E.01 ~~Markings For~~ Bicycle Lanes

Support:

Pavement markings designate that portion of the roadway for preferential use by bicyclists. Markings inform all road users of the restricted nature of the bicycle lane.

Standard:

~~**Except as provided in Paragraph 3, l**~~**Longitudinal pavement markings~~,~~ and bicycle lane symbol or word markings (see Figure 9E-1)~~, and the arrow marking (see Figure 9E-1)~~ shall be used to define bicycle lanes.**

~~**Standard:**~~

~~**If the bicycle lane symbol marking is used in conjunction with word or arrow messages, it shall precede them.**~~

Guidance:

~~If used,~~ The first symbol or ~~bicycle lane pavement~~ word ~~, symbol, and/or arrow~~ marking in a bicycle lane ~~s (see Figure 9C-3)~~ should be placed at the beginning of ~~a~~ the bicycle lane and ~~any~~ downstream symbol or word markings should be placed after major intersections. Additional symbol or word markings should be placed at periodic intervals along the bicycle lane based on engineering judgment.

Option:

An arrow marking (see Figure 9E-1) may be used in conjunction with the bicycle lane symbol or word marking, placed downstream from the symbol or word marking.

~~If the word, symbol, and/or arrow pavement markings shown in Figure 9C-3~~ Where the bicycle lane symbols or word markings are used ~~located~~, ~~Bike~~ Bicycle Lane signs (see Section 9B.04) may also be used, but ~~to avoid overuse of the signs~~ not necessarily adjacent to every set of pavement markings in order to avoid overuse of the signs.

Support:

Section 3H.06 contains information on green colored pavement for use in bicycle lanes.

Standard:

The bicycle symbol or BIKE LANE pavement word marking and the pavement marking arrow shall not be used in a shoulder.

A portion of the roadway shall not be established as both a shoulder and a bicycle lane.

Support:

Where a shoulder is provided or is of sufficient width to meet the expectation of a highway user in that it can function as a space for emergency, enforcement or maintenance activities, avoidance or recovery maneuvers, Section 9B.16 contains information regarding the Bicycles Use Shoulder Only sign that can be used to denote locations on a freeway or expressway where bicycles are permitted on an available and usable shoulder.

~~**Standard:**~~

~~**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.**~~

~~Support:~~

~~A bicyclist continuing straight through an intersection from the right of a right-turn lane or from the left of a left-turn lane would be inconsistent with normal traffic behavior and would violate the expectations of right- or left-turning motorists.~~

~~*Guidance:*~~

~~*When the right through lane is dropped to become a right turn only lane, the bicycle lane markings should stop at least 100 feet before the beginning of the right-turn lane. Through bicycle lane markings should resume to the left of the right turn only lane.*~~

~~*An optional through-right turn lane next to a right turn only lane should not be used where there is a through bicycle lane. If a capacity analysis indicates the need for an optional through-right turn lane, the bicycle lane should be discontinued at the intersection approach.*~~

~~*Posts or raised pavement markers should not be used to separate bicycle lanes from adjacent travel lanes.*~~

~~Support:~~

~~Using raised devices creates a collision potential for bicyclists by placing fixed objects immediately adjacent to the travel path of the bicyclist. In addition, raised devices can prevent vehicles turning right from merging with the bicycle lane, which is the preferred method for making the right turn. Raised devices used to define a bicycle lane can also cause problems in cleaning and maintaining the bicycle lane.~~

Support:

~~Examples of bicycle lane markings at right-turn lanes are shown in Figures 9C-1, 9C-4, and 9C-5.~~
Examples of pavement markings for bicycle lanes on a two-way street are shown in Figure ~~9C-6~~ 9E-2.
~~Pavement word message, symbol, and arrow markings for bicycle lanes are shown in Figure 9C-3.~~

Section 9E.02 Bicycle Lanes at Intersection Approaches

Standard:

Except as provided in Paragraph 2 of this Section, ~~A~~ 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:

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:

Unless controlled by a bicycle signal indication, a~~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:

When the right (left) through lane is dropped to become a mandatory right-turn (left-turn) only lane, the 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) ~~only~~ lane.

Except as provided in Paragraph 2 of this Section, ~~A~~an optional through-right (~~or~~ through-left) turn lane next to a mandatory right~~-(or left-)~~ turn (left-turn) only lane should not be used where there is a through bicycle lane. ~~If a capacity analysis indicates the need for an optional through-right turn lane, the bicycle lane should be discontinued at the intersection approach.~~

Standard:

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 and at least one arrow pavement marking as provided in Paragraph 4 of Section 9E.01.

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

Option:

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:

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:

Examples of bicycle lane markings ~~at right-turn lanes~~ on approaches to intersections are shown in Figures ~~9C-1, 9C-4, and 9C-5~~ 9E-3, 9E-4, and 9E-9.

Guidance:

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 9D-7).

Support:

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:

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

Support:

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

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

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

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

Option:

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

Standard:

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

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

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

Support:

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

Guidance:

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

Section 9E.03 Extensions of Bicycle Lanes through Intersections

Support:

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

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

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

Option:

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

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

Standard:

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

Extensions of bicycle lanes through intersections shall use dotted line patterns.

Support:

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

Guidance:

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

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

Standard:

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

Section 9E.04 Bicycle Lanes at Driveways

Support:

The definition of an "Intersection" in Section 1C.02 contains information to determine if a driveway can be considered an intersection.

Option:

Bicycle lanes may be continued through a driveway using solid or dotted longitudinal lines.

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

Green-colored pavement (see Section 3H.06) may be used as a background to enhance the conspicuity of the bicycle symbol at driveways.

Section 9E.05 Bicycle Lanes at Circular Intersections

Standard:

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

Guidance:

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.

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

Option:

Separated bicycle lanes may be used in circular intersections.

Support:

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.

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

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.

The FHWA's informational guide "Improving Intersections for Pedestrians and Bicyclists" contains information on incorporating separated bicycle lanes and other bicycle facilities into circular intersections.

Section 9E.06 Buffer-Separated Bicycle Lanes

Support:

Buffer-separated bicycle lanes provide additional lateral separation between a bicycle lane and a general-purpose lane by a pattern of pavement markings without the presence of vertical elements.

Providing a buffer space between a bicycle lane and a general-purpose lane creates more separation between motor vehicles and bicycles, can reduce vehicle encroachment into the bicycle lane, and can increase the comfort of bicyclists.

Providing a buffer space between a bicycle lane and a parking lane can reduce crashes involving bicycles and the opening of vehicle doors from the parking lane.

Standard:

If used, and except as provided in Paragraph 5 of this Section, a buffer space shall be marked with a solid white line along both edges of the buffer space where crossing is discouraged.

Guidance:

Engineering judgment should be used to establish intermittent breaks or interruptions in the buffer space, such as for driveways, transit stops, or on-street parallel parking lanes, in order to convey access points or an otherwise general legal movement to cross the buffer space (see Figure 9E-6).

Option:

Buffer spaces may be established without specific longitudinal lines if contiguous facilities have longitudinal lines or other pavement markings themselves that, when installed, automatically demarcate the buffer space (see Drawing D in Figure 9E-6).

Standard:

Except as provided in Paragraph 7 of this Section, a through buffer-separated bicycle lane shall not be positioned to the right of a mandatory right-turn lane or to the left of a mandatory left-turn lane.

Option:

A buffer-separated bicycle lane may be placed to the right of a mandatory right-turn lane (or to the left of a mandatory left-turn lane) only if a bicycle signal face (see Section 4H.01) is used and the signal phasing and signing eliminates any potential conflicts between the bicycle movement and the turn movement.

Guidance:

The width of the buffer space should be at least 3 times the width of the normal or wide longitudinal line used to mark the buffer space.

Where a buffer space is 2 to 3 feet wide, chevron or diagonal markings (see Section 3B.25) should be applied within the buffer space.

Option:

Where a buffer space is less than 2 feet wide, diagonal markings or no markings at all in the buffer space may be applied within the buffer space.

Standard:

If used, diagonal markings shall slant away from traffic in the adjacent travel lane for motor-vehicle traffic.

Guidance:

Where used, the spacing of chevrons or diagonal markings should be 10 feet or greater.

Support:

Chevron and diagonal markings convey that the buffer space is not an additional bicycle lane or other travel lane open to traffic.

Standard:

Where a buffer space is more than 3 feet wide, chevron or diagonal markings shall be applied within the buffer space.

Guidance:

Lane extension markings should be used to extend a buffer-separated bicycle lane across intersections and driveways.

Section 9E.07 Separated Bicycle Lanes

Support:

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

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

Option:

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

Support:

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

Guidance:

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

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

Support:

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

Option:

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

Support:

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

Standard:

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

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

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

Support:

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

Standard:

The buffer space for separated bicycle lane shall be marked with solid longitudinal lines.

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

Guidance:

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

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

Support:

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

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

Section 9E.08 Counter-Flow Bicycle Lanes

Support:

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

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

Guidance:

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

Standard:

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

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

Guidance:

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

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

Support:

Counter-flow bicycle lanes located between a general-purpose lane and an on-street parallel parking lane for motor vehicles can limit visibility of bicycles for vehicles exiting the parking lane, potentially

impacting the safety of bicyclists. Locating counter-flow bicycle lanes at the edge of the roadway can reduce conflicts for bicycles.

Standard:

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

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

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

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

Support:

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

Guidance:

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

Section ~~9C.07~~9E.09 Shared-Lane Marking

Support:

The "Standard Highway Signs" publication (see Section 1A.05) contains details on the shared-lane marking symbol.

Option:

The ~~S~~shared~~-L~~lane ~~M~~marking shown in Figure ~~9C-9~~9E-9 may be used to:

A. 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,
B. 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,
C. Alert road users of the lateral location ~~bicyclist~~bicycles are likely to occupy within the traveled way,
D. Encourage safe passing of ~~bicyclist~~bicycles by ~~motorist~~motor vehicles, ~~and~~
E. Reduce the incidence of wrong-way bicycling in the roadway~~.~~, and
F. Assist bicyclists with lateral positioning in mixing zones.

Guidance:

The ~~S~~shared~~-L~~lane ~~M~~marking should not be placed on roadways that have a speed limit ~~above 35 mph.~~ of 40 mph or greater.

Standard:

Shared~~-L~~lane ~~M~~markings shall not be used in: ~~on shoulders or in designated bicycle lanes.~~

A. Shoulders;
B. Bicycle lanes or in designated extensions of bicycle lanes through intersections or driveways,

C. A travel lane in which light-rail transit vehicles also travel;
D. The transition area where a motor vehicle entering a mandatory turn lane must weave across bicyclists in bicycle lanes;
E. Two-stage turn boxes;
F. Bicycle boxes;
G. Shared-use paths or shared-use path crossings; or
H. Physically-separated bikeways, either in the roadway or on an independent right-of-way.

Green-colored pavement shall not be applied as a background to shared-lane markings (see Section 3H.06).

Option:

Black background markings (see Section 3A.03) may be used in combination with shared-lane markings to enhance contrast.

Guidance:

If used in a shared lane with on-street parallel parking, ~~S~~shared ~~L~~lane ~~M~~markings should be placed so that the centers of the markings are ~~at least 11~~a minimum of 12 feet from the face of the curb, or from the edge of the pavement where there is no curb.

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~~ shared-lane markings should be placed so that the centers of the markings are a minimum of 4 feet from the face of the curb, or from the edge of the pavement where there is no curb.

~~If used, the shared-lane marking should be placed immediately after an intersection and spaced at intervals not greater than 250 feet thereafter.~~

At non-intersection locations, the shared-lane marking should be spaced at intervals of not less than 50 feet or greater than 250 feet.

The first shared-lane marking downstream from an intersection should be placed no more than 50 feet from the intersection.

Option:

Section ~~9B.06~~ 9B.14 describes a Bicycles ~~May~~ Allowed Use of Full Lane sign that may be used in addition to or instead of the ~~S~~shared ~~L~~lane ~~M~~marking to inform road users that bicyclists might occupy the travel lane.

Guidance:

If the Bicycles Allowed Use of Full Lane (R9-20) sign is used as an addition to shared-lane marking, the shared-lane marking should be placed so that the center of the marking is in the approximate center of the travel lane.

Option:

The shared-lane marking may be used (see Figure 9E-9) where the width of the roadway is insufficient to continue a bicycle lane or separated bikeway on the approach to the intersection, or it is advantageous to terminate the bicycle lane or separated bikeway in order to provide for a shared lane.

The shared-lane marking may be used on an approach to an intersection (see Figure 9E-5) in a mandatory turn lane to indicate a shared space for bicycles and motorists where there is insufficient width in the roadway for both the bicycle lane and turn lane.

Section 9E.10 Shared-Lane Markings for Circular Intersections

Option:

Shared-lane markings may be used in the circulatory roadway of circular intersections.

Guidance:

If used, shared-lane markings should be placed in the center of the lane when used inside of circulatory roadways.

Support:

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

Section 9E.11 Two-Stage Bicycle Turn Boxes

Support:

Two-stage bicycle turn boxes allow bicyclists the opportunity to make turns at an intersection or crossing point instead of requiring them to merge into traffic upstream or to dismount and use a crosswalk at the intersection or crossing point.

Section 9B.18 contains information on regulatory signing that shall be used in conjunction with a two-stage bicycle turn box pavement marking where bicyclists are required to use the turn box.

Section 9D.13 contains information on guide signing that can be used in conjunction with a two-stage bicycle turn box pavement marking where bicyclists are not required to use the turn box.

Standard:

If used, two-stage bicycle turn boxes shall be located:

A. In an area between the closest through bicycle or motor vehicle movement and the parallel crosswalk (see Drawing A in Figure 9E-10),

B. In an area between the through bicycle movement and the parallel pedestrian crossing movement if no crosswalk is established (see Drawing B in Figure 9E-10),

C. On the innermost side of the bicycle facility provided that the two-stage turn box is located in a portion of the intersection where parallel or motor vehicle traffic does not travel, such as projections of islands or parking lanes (see Drawing C in Figure 9E-10), or

D. In an area between the through bicycle movement and a pedestrian facility for T-intersections (see Drawing D in Figure 9E-10).

A two-stage bicycle turn box shall consist of at least one bicycle symbol pavement marking and at least one pavement marking arrow.

A turn arrow in the appropriate direction shall be used if a two-stage turn box is used with a one-way bicycle lane, and a through arrow in the appropriate direction shall be used if a two-stage turn box is used with a two-way bikeway (see Figure 9E-11).

A two-stage bicycle turn box shall be bounded on all sides by a solid white line.

For two-stage bicycle turn boxes that facilitate turns from a one-way bikeway, the bicycle symbol shall precede the pavement marking turn arrow in the direction of bicycle travel (see Figure 9E-10).

Passive detection of bicycles in the two-stage bicycle turn box shall be provided if the signal phase that permits bicycles to enter the intersection during the second stage of their turn is actuated.

Guidance:

Engineering judgment should be used to develop the size of the two-stage bicycle turn box. Factors considered should include intersection geometry and keeping queued bicycles away from moving traffic, as well as peak hour bicycle volumes to avoid overflow of the two-stage turn box that subjects any bicyclist to conflicting movements.

Option:

The two-stage turn box may use green-colored pavement.

Standard:

If used, green-colored pavement shall encompass all of the two-stage turn box.

Where the path of vehicles lawfully turning on red would pass through a two-stage bicycle turn box, a full-time no-turn-on-red prohibition (see Section 2B.60) shall be provided for the crossroad approach.

Section 9E.12 Bicycle Box

Option:

A bicycle box (see Figure 9E-12) may be used to increase the visibility of stopped bicycles on the approach to a signalized intersection during the portion of the signal cycle when a red signal indication is being displayed to motor vehicles in the approach lane(s) that is behind the box.

Guidance:

Providing a bicycle box on a signalized intersection approach where a discernible number of conflicts between vehicles turning across through bicycles in a bicycle lane has been demonstrated during the green interval of a signal should be evaluated based on engineering judgment or study.

Other treatments should be considered for conflicts between turning vehicles and through bicycles such as using leading or exclusive signal phases, or separating turning traffic from through traffic through mandatory turn lanes.

A bicycle lane should be used on the approach to a bicycle box.

A bicycle box should not be contiguous with a crosswalk. A stop line on the downstream end of the bicycle box should be used to mark the location where bicycles are required to stop.

Standard:

If used, the distance from the upstream edge of the bicycle box that is nearest to the stop line for motor vehicles to the downstream edge of the bicycle box that is nearest the crosswalk or intersection shall be at least 10 feet. At least one bicycle symbol marking (see Figure 9E-12) shall be used in the bicycle box.

Where an existing stop line for motor vehicles is relocated upstream to install a new bicycle box, the yellow change and red clearance intervals (see Section 4F.17) shall be recalculated and if necessary, reprogrammed to accommodate the length of the bicycle box.

Countdown pedestrian signals (see Section 4I.04) for the crosswalk or pedestrian crossing movement that crosses the approach shall accompany bicycle boxes that extend across more than one approach lane for motor vehicles. Countdown pedestrian signals used with bicycle boxes shall display the pedestrian change interval countdown without the need for actuation.

Turns on red shall be prohibited from the lane where a bicycle box is placed.

Support:

Countdown pedestrian signals can inform bicyclists whether there is adequate time remaining to an adjacent lane before the onset of the green signal phase for that approach.

Guidance:

Countdown pedestrian signals for the crosswalk or pedestrian crossing movement that crosses the approach should accompany single-lane bicycle boxes where it is demonstrated that bicycles arrive at the intersection at or near the end of the red signal indication being displayed to traffic in the approach lane(s) that is behind the box.

Option:

Green-colored pavement may be used in a bicycle box.

Standard:

If used, green-colored pavement shall be used in the full limits of the bicycle box.

Support:

Section 9B.02 contains information on the EXCEPT BICYCLES (R3-7bP) regulatory plaque that can be used below the STOP HERE ON RED (R10-6 or R10-6a) sign (see Section 2B.59) to exempt bicyclists from the requirement of the advance stop line.

Section ~~9C.03~~ 9E.13 ~~Marking Patterns and Colors on~~ Shared-Use Paths

Option:

Where shared-use paths are of sufficient width to designate two minimum width lanes, a solid yellow center line may be used to separate the two directions of travel where passing or traveling to the left of the line is not permitted.~~, and a~~ A broken yellow center line may be used where passing is permitted (see Figure ~~9C-2~~ 9E-13).

Guidance:

*Broken lines used on shared-use paths should have ~~the usual 1-to-3 segment-to-gap ratio. A~~a nominal 3-foot segment with a 9-foot gap.~~ should be used.~~

~~*If conditions make it desirable to separate two directions of travel on shared-use paths at particular locations, a solid yellow line should be used to indicate no passing and no traveling to the left of the line.*~~

~~*Markings as shown in Figure 9C-8 should be used at the location of obstructions in the center of the path, including vertical elements intended to physically prevent unauthorized motor vehicles from entering the path.*~~

Option:

A solid white line may be used on shared-use paths to separate different types of users in the same direction. The R9-7 sign (see Section ~~9B.12~~ 9B.13) may be used to supplement the solid white line.

Smaller size pavement word markings and symbols may be used on shared-use paths. Where arrows are needed on shared-use paths, half-size layouts of the arrows may be used (see Section 3B.20).

Standard:

Where a shared-use path crosses a roadway, crosswalk markings shall be used (see Chapter 3C).

Option:

Where pedestrian and bicycle movements on a shared-use path are separated on the approach to a roadway crossing, parallel bicycle and pedestrian crossing markings may be used as shown in Figure 9E-14.

Guidance:

If parallel bicycle and pedestrian crossing markings are used where a shared-use path crosses a roadway, crossing areas for bicycles should use green-colored pavement if the shared-use path crossing has a high volume of either mode.

Section 9E.14 Bicycle Route Pavement Markings

Option:

Bicycle route pavement markings simulating guide signs for bicycle routes (see Section 9D.02 through 9D.07) and route auxiliary plaques (see Section 9D.08) may be used to supplement guide signing to help bicyclists in navigation (see Figure 9E-15).

Standard:

Bicycle route pavement markings shall be limited to shared-use paths, separated bicycle lanes, or buffer-separated bicycle lanes. Bicycle route pavement markings shall not be used in standard bicycle lanes or in shared lanes.

Guidance:

A systematic methodology of locating guide signs for bicycle routes adjacent to the bicycle route pavement marking should be used that includes locations where either the sign or the pavement marking can exist alone to avoid overuse of the guide sign or the pavement marking.

The route marker pavement marking should be elongated.

The location, size, and materials of the route marker pavement marking should be designed in a manner that will minimize the loss of traction for bicyclists under wet conditions.

Section ~~9C.05~~ 9E.15 Bicycle Detector Symbol

Option:

~~A~~ The bicycle detector symbol (see Figure ~~9C-7~~9E-16) may be placed on the pavement indicating the optimum position for a ~~bicyclist~~bicycle to actuate the signal.

Appropriately-sized WAIT HERE FOR GREEN word markings may be placed on the pavement immediately below the bicycle detector symbol.

~~An~~ A R10-22 sign (see Section ~~9B.13~~ 9B.20~~and Figure 9B-2~~) may be installed to supplement the bicycle detector symbol pavement marking.

Support:

The "Standard Highway Signs" publication (see Section 1A.05) contains details on the bicycle detector symbol.

Section 3H.06 contains information on incorporating green-colored pavement as a background enhancement to the bicycle detector symbol.

Section ~~9C.06~~ 9E.16 Pavement Markings for Obstructions

Guidance:

Markings as shown in Figure ~~9C-8~~ 9E-17 should be used at the location of obstructions in the center of ~~the~~ a shared-use path or a physically-separated bikeway, including vertical elements intended to physically prevent unauthorized motor vehicles from entering the path.

~~In~~ For roadway situations where it is ~~not practical~~ impracticable to eliminate a drain grate or other roadway obstruction that is inappropriate for bicycle travel, white markings applied as shown in Figure ~~9C-8~~ 9E-17 should be used to guide bicyclists around the condition.

Section 9E.17 Raised Devices

Support:

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

Using inflexible raised devices immediately adjacent to the travel path of a bicyclist without a buffer creates a collision potential for bicyclists. ~~by placing fixed objects immediately adjacent to the travel path of the bicyclist. In addition, raised devices can prevent vehicles turning right from merging with the bicycle lane, which is the preferred method for making the right turn. Raised devices used to define a bicycle lane can also cause problems in cleaning and maintaining the bicycle lane~~.

Option:

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

Guidance:

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

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

Support:

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

Standard:

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

Guidance:

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

CHAPTER ~~9D.~~9F. SIGNALS

Section ~~9D.01~~9F.01 Application

Support:

Part 4 contains information regarding signal warrants and other requirements relating to signal installations.

Option:

For purposes of signal warrant evaluation, ~~bicyclist~~bicycles may be counted as either vehicles or pedestrians.

Section 9F.02 Bicycle Signal Faces

Support:

Chapter 4H contains information on the design and application of bicycle signal faces.

Section 9B.22 contains information for the Bicycle Signal sign that is required to be installed with a bicycle signal face.

Section ~~9D.02~~9F.03 Signal Operations for Bicycles

Standard:

At installations where visibility-limited signal faces are used, signal faces shall be adjusted so bicyclists for whom the indications are intended can see the signal indications. If the visibility-limited signal faces cannot be aimed to serve the bicyclist, then separate signal faces shall be provided for the bicyclist.

On bikeways, signal timing and actuation shall be reviewed and adjusted to consider the needs of bicyclists.