



THE CITY OF **COLUMBUS**

MICHAEL B. COLEMAN, MAYOR

DEPARTMENT OF PUBLIC SERVICE

BIKE LANE DESIGN GUIDELINES

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Introduction

The following guidelines take material from various published documents such as the “Guide for the Development of Bicycle Facilities” -2012 – Fourth Edition and the Urban Bikeway Design Guide, published by the National Association of City Transportation Officials.

Bike Lanes

There are many details that are part of the design of high quality bike lanes. They can be placed adjacent to the curb or next to on-street parking. Features such as buffers can be placed to provide additional offset space from moving traffic or parked cars along a street.

These elements raise many design questions and a design guide is needed to simplify decision making for planners and engineers who develop roadway plans.

Section 2 Conflict Areas

There are a number of conditions when motor vehicles and bicycles must cross paths or share the same roadway space. Important considerations are which roadway user has the right-of-way. The following illustrations show examples of the treatments recommended for use in the City of Columbus

Drop Lanes

When a through travel lane ends as a right or left turn only lane, motor vehicles are given the right-of-way. The illustrations shown in figure 1 and figure 2 are consistent with information presented on page 4-25 of the 2012 AASHTO Bike Guide. The bike lane adjacent to the curb should be dropped and should be introduced on the left side of the right-turn lane.

The minimal longitudinal distance between the gap should be 30 ft. minimum but is typically around 50 or 60 ft.

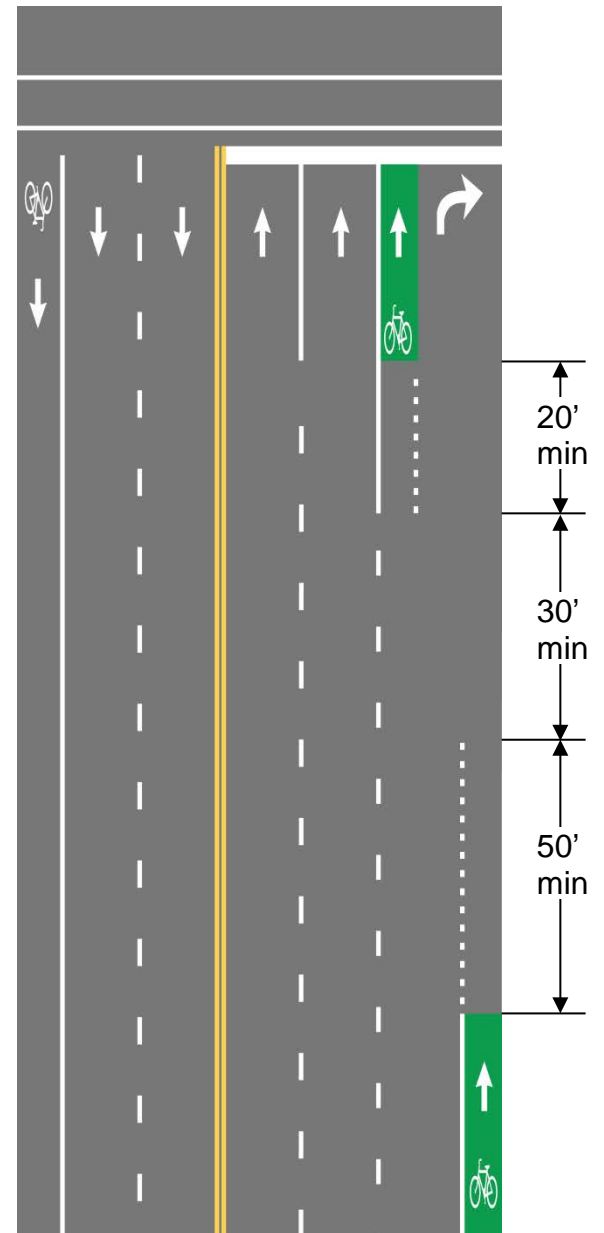


Figure 1

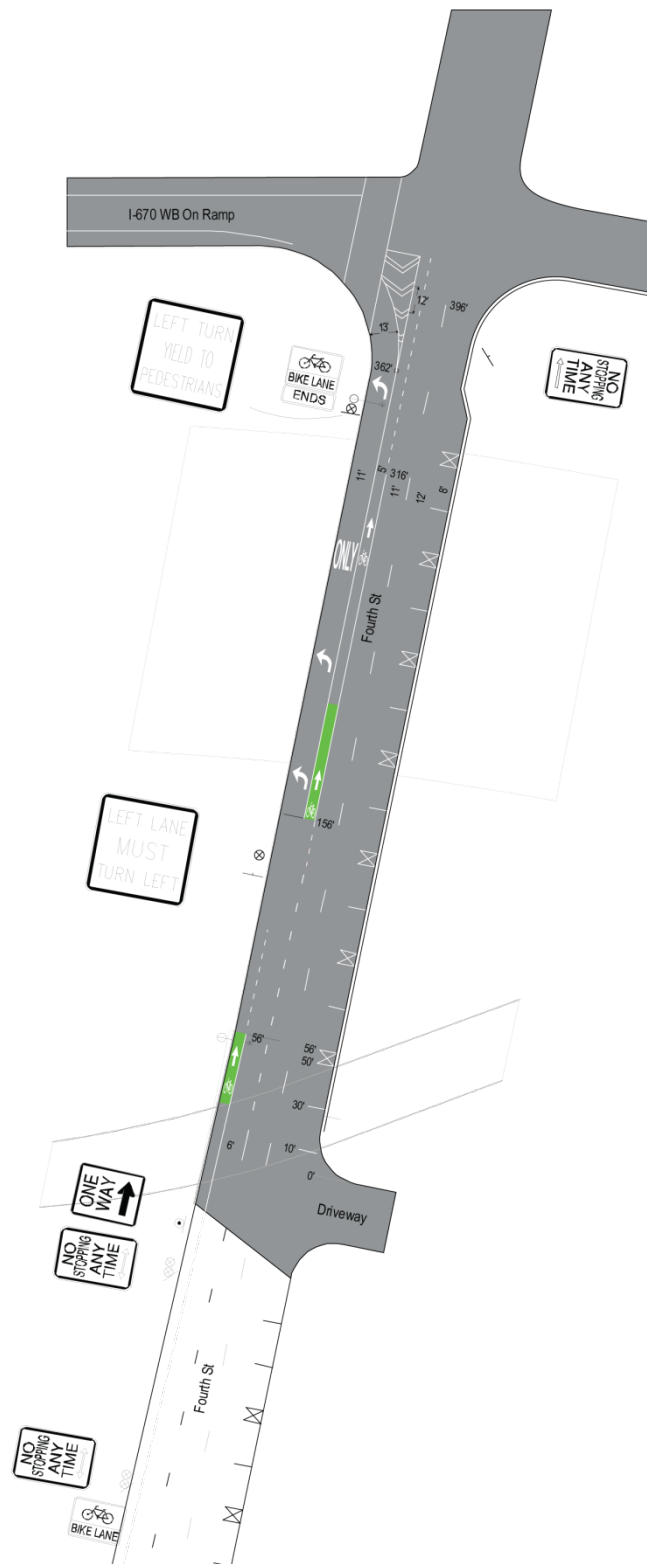


Figure 2

Right turn add lane

The placement of a bike lane is on the left side of an exclusive right-turn lane.

Merging movements occur away from the intersection, and are often easier to manage for bicyclists and other road users than a turning conflict.

The figure at right (figure 3) shows an example where the approaching bike lane is against the curb. The diagram below (figure 4) is an example of an add lane at the end of curb side parking. Green color should be placed on both sides of the merge area as indicated.

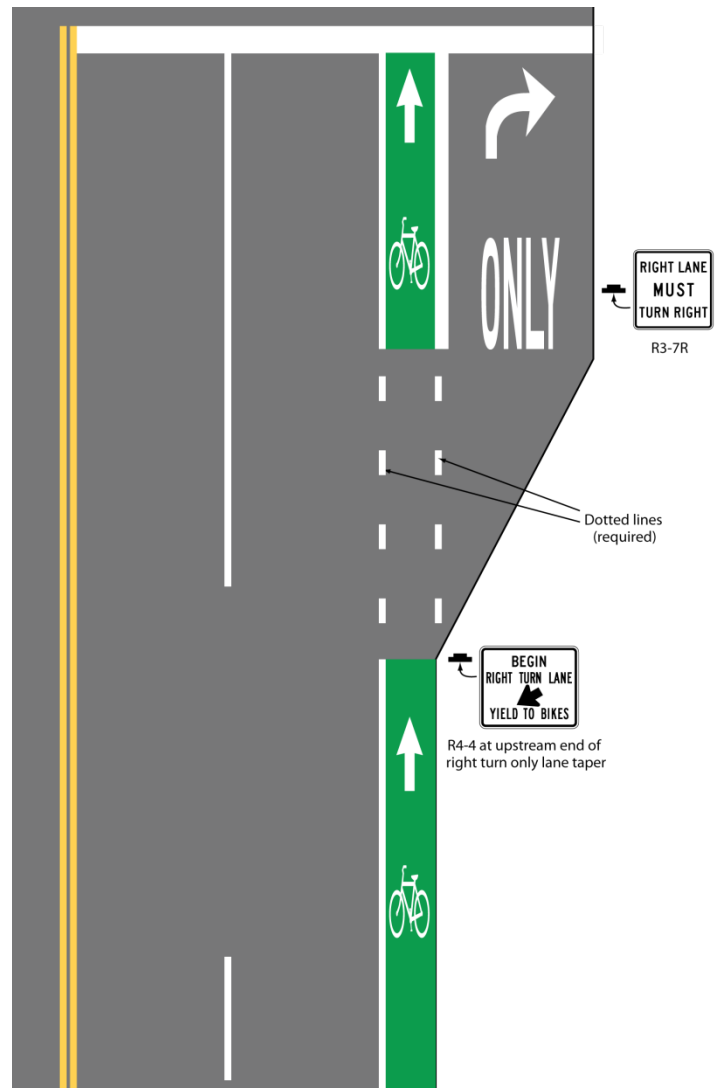


Figure 3

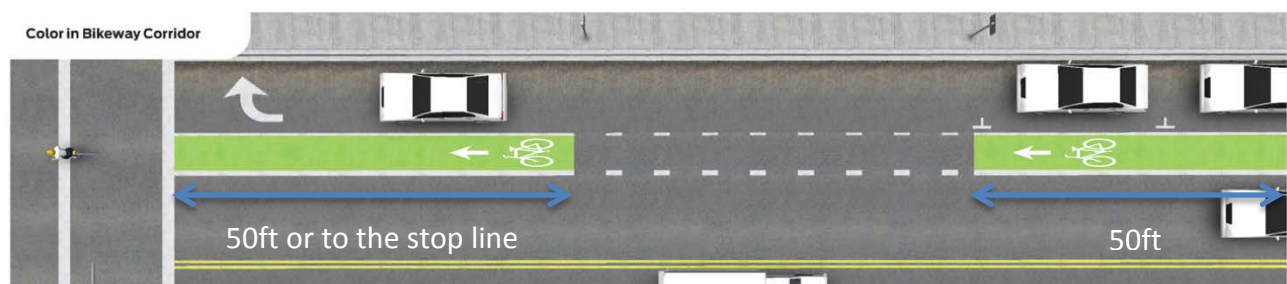


Figure 4 (Right Turn Add With Parking)

Mixing Zones

Consider when there is not sufficient width of roadway to extend the bike lane to the stop bar. Sharrow should be placed in line with the turn arrow pavement marking to indicate that bicycles may proceed straight through the intersection. Note that this treatment does not apply to a drop-lane scenario.

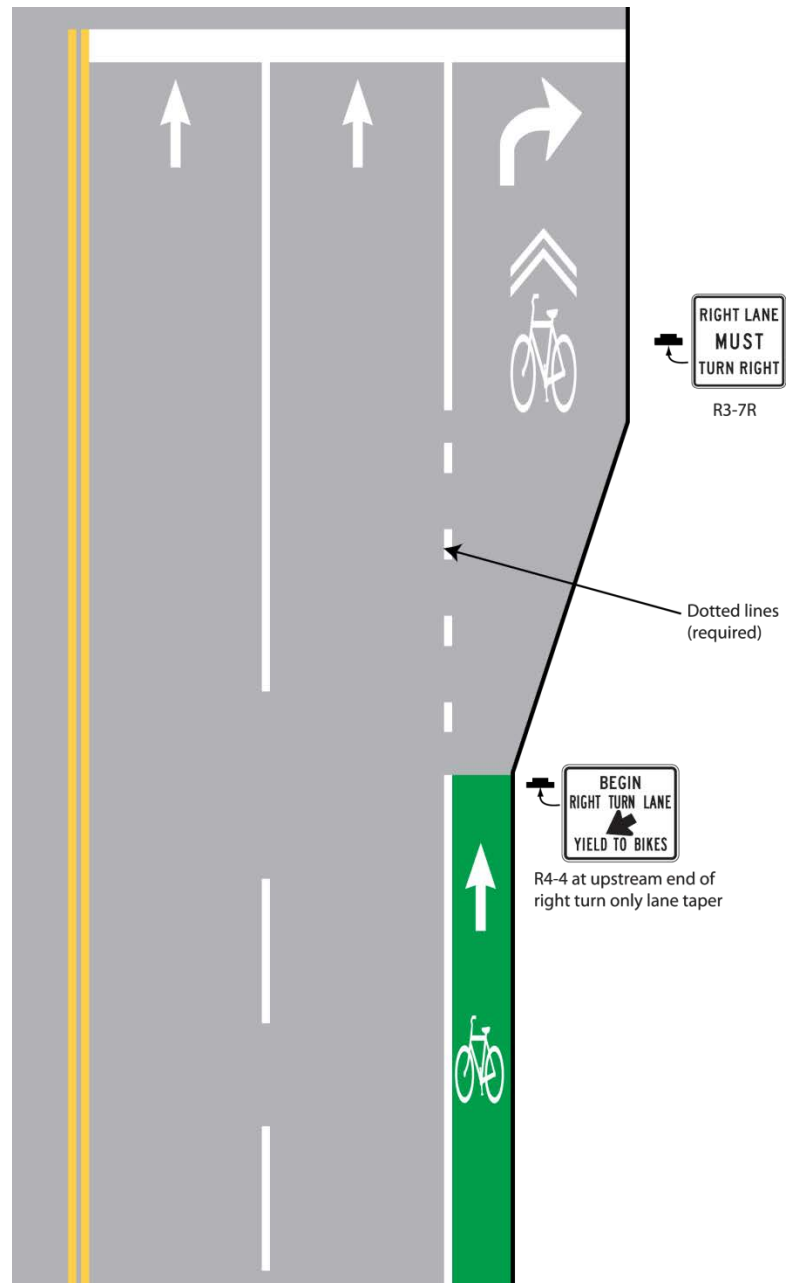


Figure 5

Entrance/Exit Ramps

Green pavement shall be placed both prior and after the ramp (50 feet both sides)

Provide dashed white line in the actual conflict area.

For low volume ramp entrances/exits, only the dashed lines are required, and no green is needed.

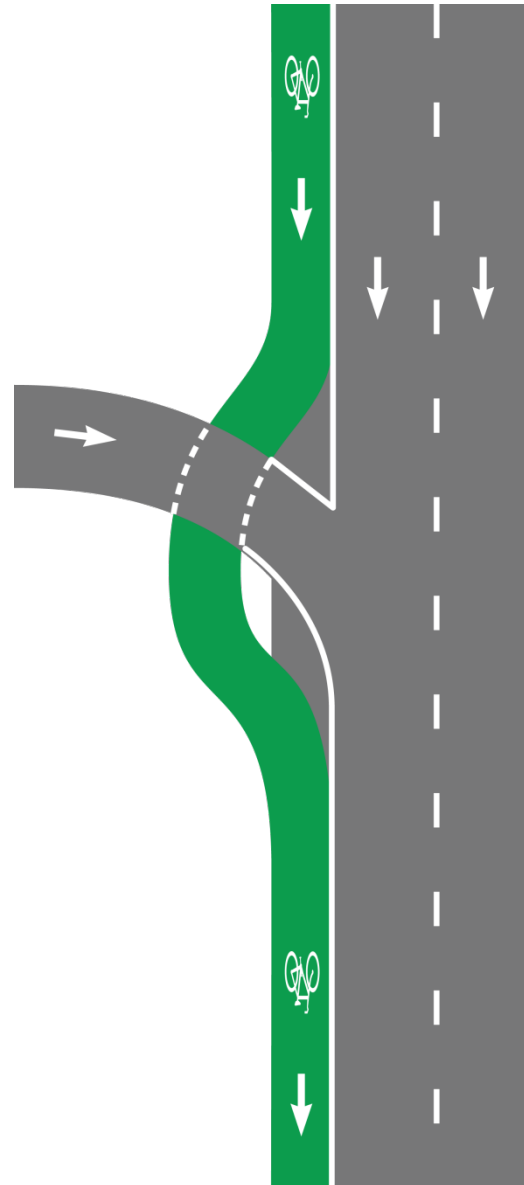


Figure 6

Intersection Areas

Major intersections

When a bike lane crosses an intersection where the cross street has multiple lanes it is necessary to provide markings to guide bicyclists across the intersection and remind motorists that bicycles can be expected.

These treatments can be used at both signalized intersections and unsignalized intersections with multiple through lanes on the side streets (Flashing signal intersections are not included)

Provide dash lines thru the intersection (from crosswalk line to crosswalk line.)



Figure 7

Standard



Figure 8

Option with
City approval

Minor intersections

Break the bike lane markings.

Alleys

Break the bike lane markings.

Approaches to turns

Double Left or Left/thru left lane and Double Right or Right/thru right lane in a drop scenario

Install sharrows in the inside turn lane to allow for a thru movement, and terminate bike lane in advance of channelizing line.

Left or Right turn (depending on which side of the street the bike lane is on) across multiple thru lanes.

Use queue box (if applicable – see section 5 Two-Stage Queue boxes below)

Section 3

Buffer Treatments

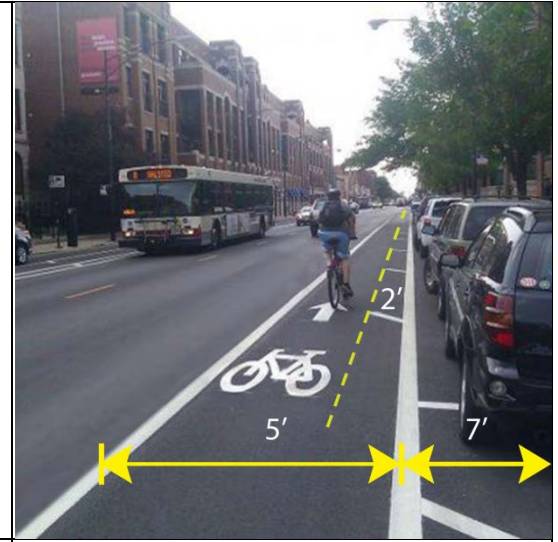
A buffer can be provided with a traditional bike lane to separate bicycle traffic from adjacent motor vehicle traffic or adjacent parking. This treatment encourages bicyclists to ride away from the door zone when the buffer is placed between the bike lane and parked cars.

Options depending on available roadway width (12-13 ft.)

Total available space: 12 ft
 Parking lane width: 7ft
 Bicycle lane width: 5ft including 2 ft ticks on parking side.

Features:

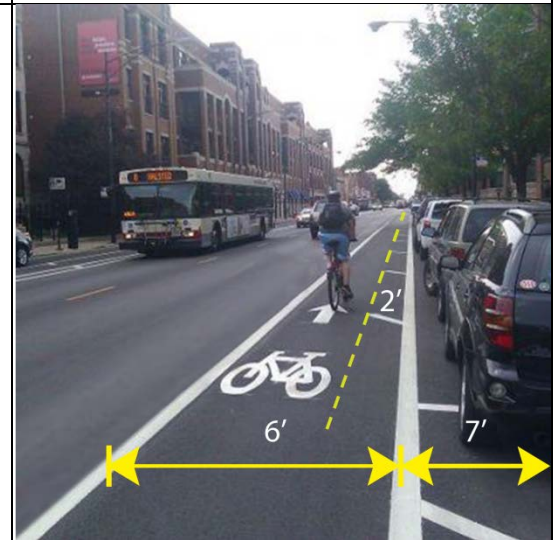
- Edge line between motor vehicle travel lane and bicycle lane
- Tick marks function as door-zone buffer
- Narrow parking lane




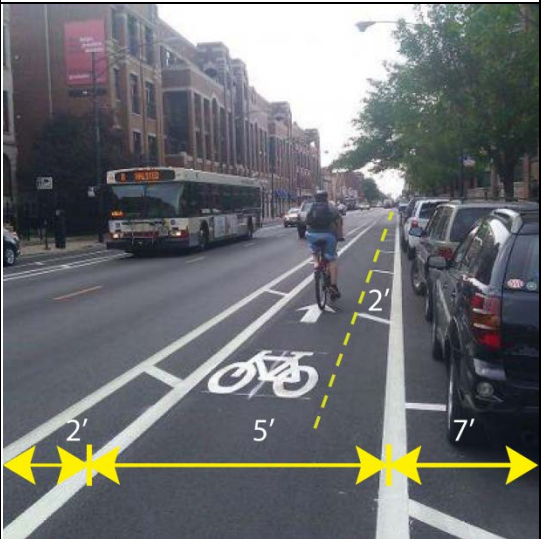
Total available space: 13 ft
 Parking lane width: 7ft
 Bicycle lane width: 6ft including 2 ft ticks on parking side.

Features:

- Edge line between motor vehicle travel lane and bicycle lane
- Tick marks function as door-zone buffer
- Narrow parking lane



Options depending on available roadway width (14 ft.)

<p>Total available space: 14 ft Parking lane width: 7 ft Bicycle lane width: 7 ft including 2 ft ticks on parking side</p> <p>Features:</p> <ul style="list-style-type: none"> • Edge line between motor vehicle travel lane and bicycle lane • Tick marks function as door-zone buffer • Narrow parking lane 	 <p>A photograph of a city street with a brick building on the left and parked cars on the right. A white bus is in the travel lane to the left of a bicycle lane. The bicycle lane is marked with a white line, a white arrow, and a white bicycle symbol. A yellow double-headed arrow indicates a 7-foot width from the travel lane edge to the parking lane edge. A dashed yellow line with a 2-foot tick mark is shown on the parking side. Another yellow double-headed arrow indicates a 7-foot width for the parking lane.</p>
<p>Total available space: 14 ft Parking lane width: 7 ft Bicycle lane width: 5 ft including 2 ft ticks on parking side Buffer width: 2 ft on travel lane side</p> <p>Features:</p> <ul style="list-style-type: none"> • Edge line between motor vehicle travel lane and bicycle lane • Tick marks function as door-zone buffer • Narrow parking lane • Buffer next to motor vehicle traffic at speeds greater than 35mph. 	 <p>A photograph of the same city street as above. The bicycle lane is narrower, marked with a white line, a white arrow, and a white bicycle symbol. A yellow double-headed arrow indicates a 2-foot buffer from the travel lane edge to the bicycle lane edge. Another yellow double-headed arrow indicates a 5-foot width for the bicycle lane including 2-foot ticks on the parking side. A third yellow double-headed arrow indicates a 7-foot width for the parking lane.</p>

Section 4

Miscellaneous

Pavement Markings – parking next to bike lanes

- Edge lines only parallel to the bike lane
- Place end caps at the beginning of park lanes delineated with multiple 5-inch transverse lines (minimum of 3). (Apply to discourage use of a parking lane as a travel lane)

Signage

1. Signage
 - a. Install signage as appropriate.

Section 5

Two-Stage Queue boxes

Two-stage turn queue boxes offer bicyclists a safe way make left turns at multi-lane signalized intersections from a right side bike lane, or right turns from a left side bike lane. Two-stage turn queue boxes may also be used at unsignalized intersections to simplify turns from a bicycle lane, onto a bicycle boulevard. Queue boxes can be placed in multiple locations, depending on intersection configuration. This treatment can be used experimentally only with FHWA approval.

At signalized intersections where traffic is permitted to turn

- Should not be used at locations where there is a high volume of right turn on red movement.
- Must have existing room to install queue box without moving existing crosswalk, unless project is replacing curb ramps and crosswalk can be moved.
- Size of queuing boxes
 - Minimum size is 6 feet deep and a lane width wide (Recommended depth is 10 feet where possible).
- Shifting bike lanes to opposite side of the roadway
- Use queue boxes to assist the bicyclist in this movement.



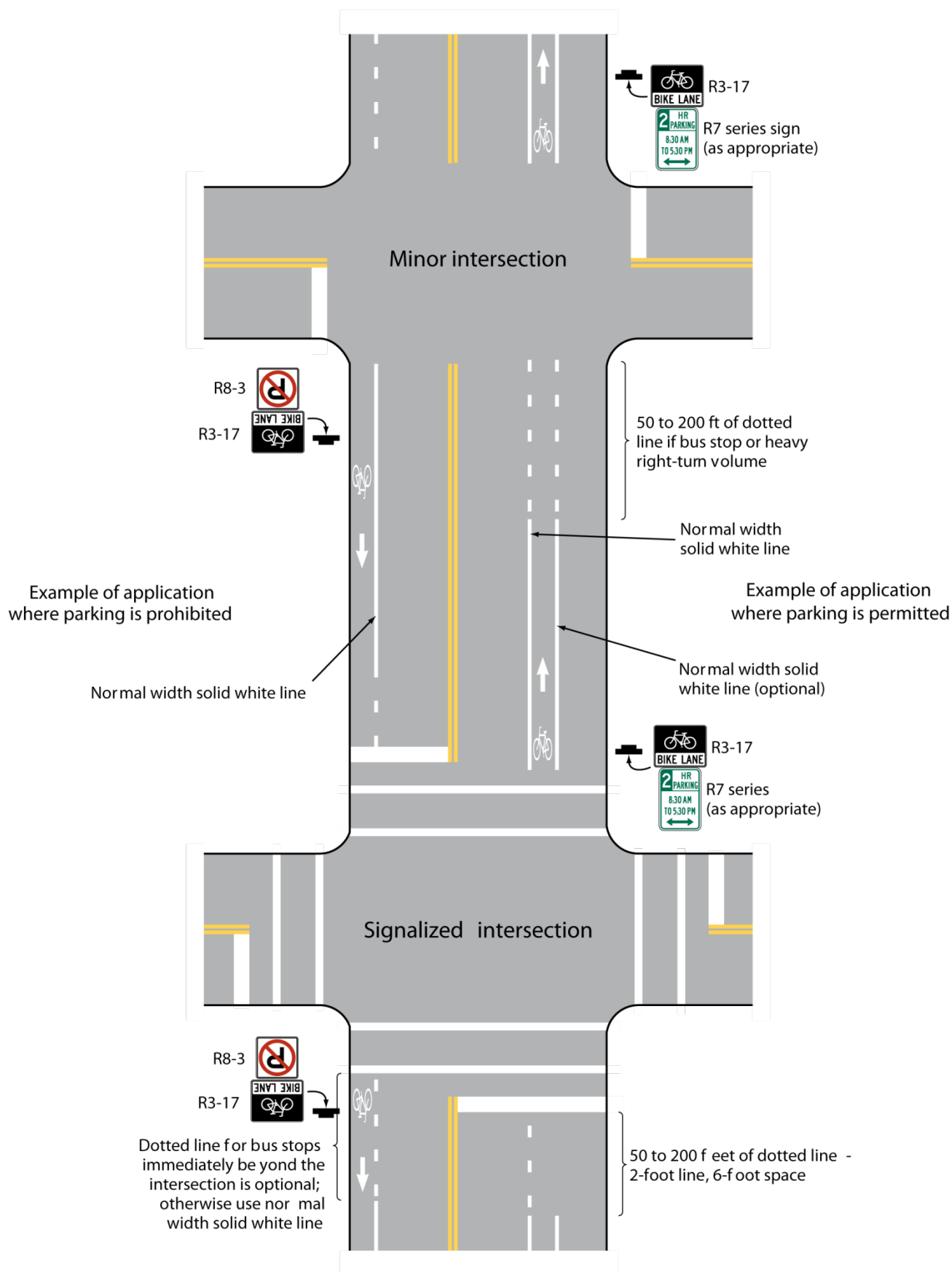
Figure 9

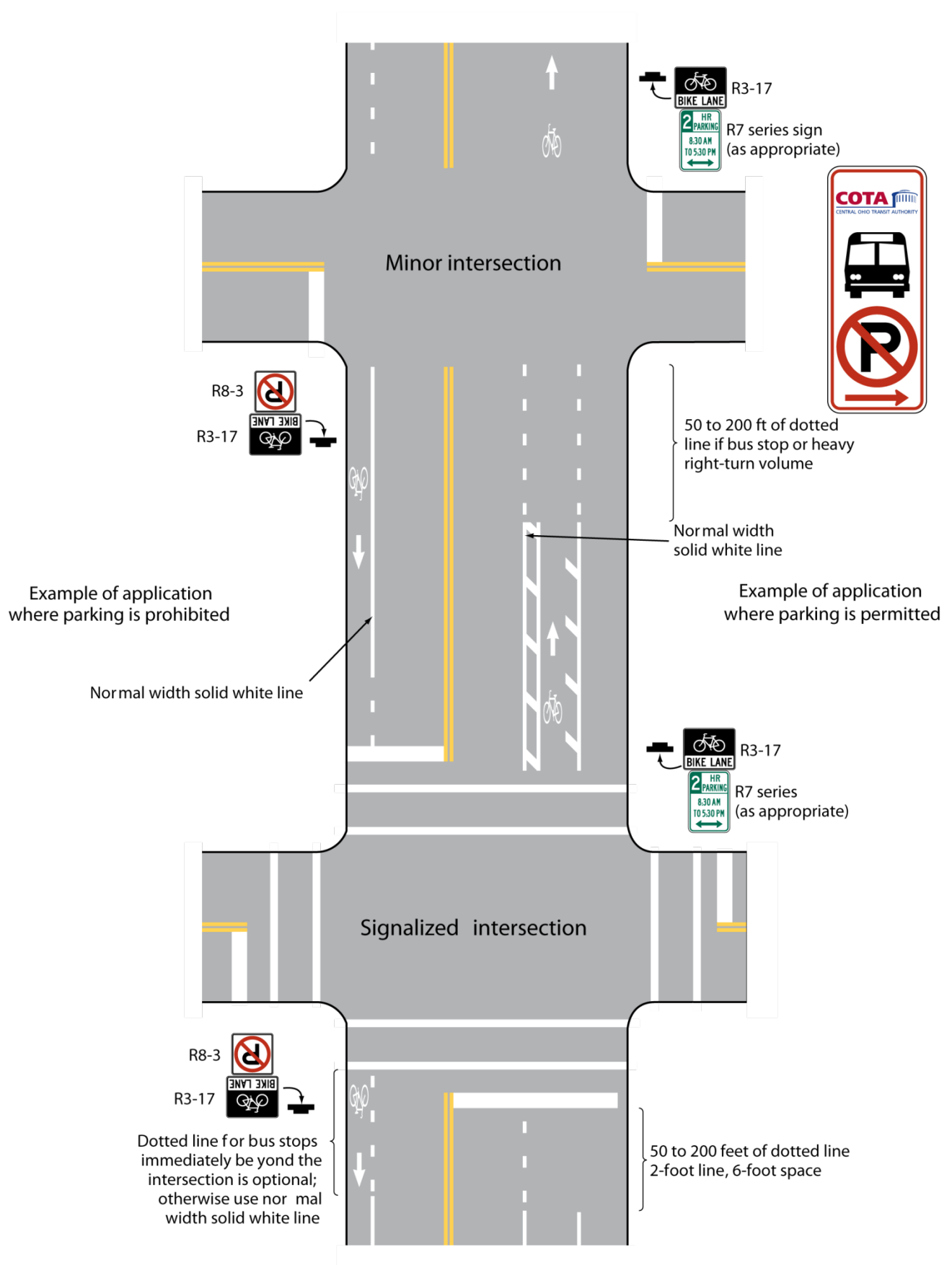
Section 6 COTA

This section illustrates various ways to mark bike lanes adjacent to a COTA bus stop.

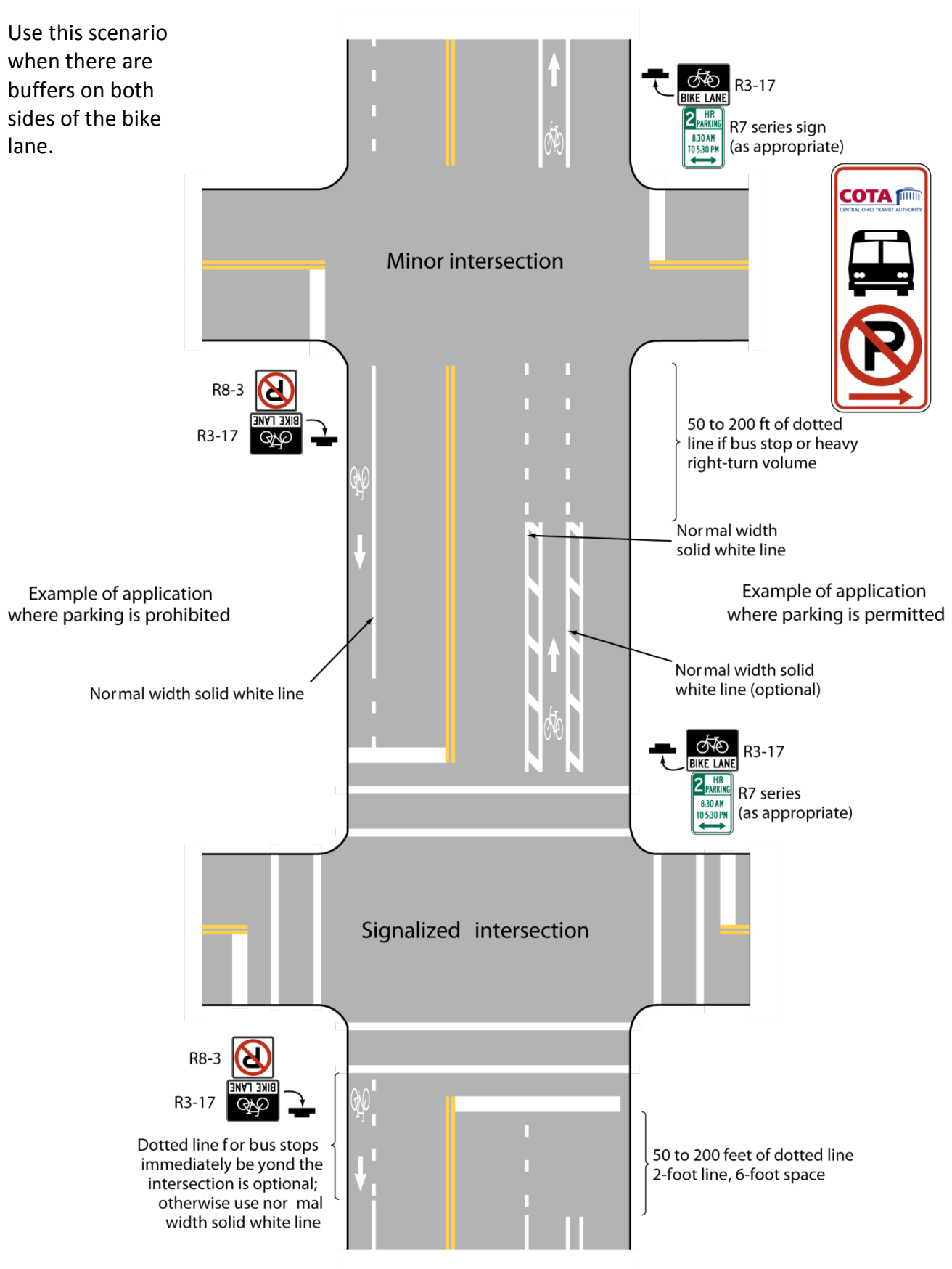
Bike lanes and COTA bus stops

- Install white dashed lines at bus stop locations
- Place a bike lane symbol in the bus stop location.





Use this scenario when there are buffers on both sides of the bike lane.



Section 7

Green Pavement

Green pavement may be used within a bicycle lane or within an extension of a bicycle lane to make the lane more visible to motorist as well as the bicyclist.

Green Pavement may be used in the following situations

Queue boxes

As described in section 5 above, green pavement should be used within a queue box to denote that it is a special location for bicyclists to wait on the street.

Ramp Areas / Merge Areas

Green pavement may be used in areas where higher speed traffic such as from a freeway or other high speed roadway crosses a bicycle lane.

Intersections

Under certain conditions it may be desirable to carry bike lane markings across an intersection as described in section 2. While providing a dashed lines to carry a bike lane across in intersection, use of green pavement requires an additional approval (see figure 8).