2018-01933 RESOLUTION
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TYPE OF DOCUMENT:

RESOLUTION NO. 2018-01

ADOPT THE ENGINEERING DIVISION'S POLICY AND PRACTICE GUIDELINE FOR ESTABLISHING BICYCLE ROUTES.

DOCUMENT APPROVAL:

Approved by Yuma County Board of Supervisors:
January 17, 2018, Item No. C11.

YUMA COUNTY BOARD OF SUPERVISORS

RESOLUTION NO. 2018-01

ADOPT THE ENGINEERING DIVISION'S POLICY AND PRACTICE GUIDELINE FOR ESTABLISHING BICYCLE ROUTES

WHEREAS: It is desired in the interest of public health, safety and welfare, that criterion is established and adopted for the implementation of establishing bicycle routes; and

WHEREAS: The laws of the State of Arizona authorize the Board of Supervisors of Yuma County to control and manage said public roads, streets and alleys within Yuma County; and

WHEREAS: In recognition of increased bicycle activities on the streets, Yuma County has developed a Policy and Practice Guideline to establish the appropriate policy for designating bicycle routes to promote the safety of the bicyclist and the traveling public.

NOW, THEREFORE, BE IT RESOLVED, by the Board of Supervisors that the "Yuma County Department of Development Services Policy and Practice Guideline for Establishing Bicycle routes in Yuma County", on file with the Clerk of the Board of Supervisors and made part hereof as though recited in their entirety, is hereby adopted.

FURTHER, BE IT RESOLVED, the County Engineer is hereby authorized and directed to amend the said Guideline from time to time as need may arise so that said Guideline will comply with current standardized and recognized practices for signing bicycle routes in the field.

Adopted this 17th day of January, 2018.

MARCO "TONY" REYES, Chairman

ATTEST:

SUSAN K. THORPE
County Administrator/Clerk of Board

APPROVED AS TO FORM AND DETERMINED TO BE WITHIN THE SCOPE OF PERFORMANCE OF DUTY OF THE YUMA COUNTY BOARD OF SUPERVISORS:

JON R. SMITH, County Attorney

By: EDWARD P. FEHELEY
Deputy County Attorney

YUMA COUNTY
DEPARTMENT OF DEVELOPMENT SERVICES

ENGINEEERING DIVISION
POLICY & PRACTICE GUIDELINE (PPG)

Procedure Number: 2018-01

Effective Date: January 23, 2018

Approved: _____
Roger Patterson, P. E., County Engineer

Adopted: Yuma County Board of Supervisors, Resolution No. 2018-01

SUBJECT: **Establishing Bicycle Routes in Yuma County**

SECTION: **Bicycles**

PARAGRAPH:
1. Purpose
2. Background
3. Definitions and Abbreviations
4. Policy Description
5. References
6. Attachments

1. PURPOSE

This Policy and Practice Guideline (PPG) provides the policy for designating bicycle routes in unincorporated Yuma County (the reference to Yuma County or to the County will mean in unincorporated Yuma County). It provides guidance to the staff of the Engineering Division of the Department of Development Services to determine which County roads may be designated as official on-road bicycle routes and the practices for signing the routes in the field.

2. BACKGROUND

Bicycle facilities can include bike routes on roads without marked bike lanes on the road pavement, marked bicycle lanes on the pavement, and bicycle and/or joint use paths that are located off the roadway. This policy document addresses bicycle routes that include bicycle facilities that are located on the roadway pavement, both with and without marked bicycle lanes.

3. DEFINTIONS and ABBREVIATIONS

a) Bicycle: "Bicycle" means a device, including a racing wheelchair, that is propelled by human power and on which a person may ride and that has either:

(a) Two tandem wheels, either of which is more than sixteen inches in diameter.
(b) Three wheels in contact with the ground, any of which is more than sixteen inches in diameter.

{Per Arizona Revised Statute (ARS) 28-101, paragraph 7.}

b) Street or Highway: "Street" or "highway" means the entire width between the boundary lines of every way if a part of the way is open to the use of the public for purposes of vehicular travel.
{Per ARS 28-101, paragraph 57}

c) Roadway: "Roadway" means that portion of a highway that is improved, designed or ordinarily used for vehicular travel, exclusive of the berm or shoulder. If a highway includes two or more separate roadways, roadway refers to any such roadway separately but not to all such roadways collectively.
{Per ARS 28-601, paragraph 22}

d) Bicycles Facilities: A general term denoting improvements and provisions that accommodate or encourage bicycling, including parking and storage facilities, and shared roadways not specifically defined for bicycle use.
{Per Manual on Uniform Traffic Control Devices (MUTCD), 2009 Edition, page 11}

e) Bicycle Lane: (AASHTO) a portion of a roadway which has been designated by striping, signing, and pavement markings for the preferential or exclusive use of bicyclists.
{Per ADOT Bicycle Policy MGT 02-1}

f) Bikeway: (AASHTO and MUTCD) a generic term for any road, street, path, or way which in some manner is specifically designated for bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.
{Per ADOT Bicycle Policy MGT 02-1}

g) Designated Bike Route: (MUTCD) a system of bikeways designated by the jurisdiction having authority with appropriate directional and informational route markers, with or without specific bicycle route numbers. Bicycle routes, which might be a combination of various types of bikeways, should establish a continuous routing.
{Per ADOT Bicycle Policy MGT 02-1}

h) Shared Roadway: (AASHTO) a roadway which is open to both bicycle and motor vehicle travel. This may be an existing roadway, street with wide curb lanes, or road with paved shoulders.
{Per ADOT Bicycle Policy MGT 02-1}

i) Shared-Use Path: (AASHTO) a bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent right-or-way. Shared use paths may be used by pedestrians, skaters, wheelchair users, joggers and other non-motorized users.
{Per ADOT Bicycle Policy MGT 02-1}

j) Vehicle: "Vehicle" means a device in, on or by which a person or property is or may be transported or drawn on a public highway, excluding devices moved by human power or used exclusively on stationary rails or tracks.
{Per ARS 28-101, paragraph 67}

k) ARS: Arizona Revised Statutes.

l) AASHTO: American Association of State Highway and Transportation Officials.

m) ITE: Institute of Transportation Engineers.

n) NACTO: National Association of City Transportation Officials.

o) MUTCD: Manual on Uniform Traffic Control Devices, 2009 Edition.

p) FHWA: Federal Highway Administration.

q) ADOT: Arizona Department of Transportation.

r) NCDOT: North Carolina Department of Transportation.

s) PCDOT: Pima County Department of Transportation.

t) MCDOT: Maricopa County Department of Transportation.

v) COP: City of Portland.

w) YMPO: Yuma Metropolitan Planning Organization.

x) mph: miles per hour.

4. POLICY DESCRIPTION

The two main purposes of bike routes are to provide established and recognized bicycle travel routes to and from desired destinations (such as employment centers, schools, shopping areas, etc.), and to provide bicycle routes for recreational use on short and on long bicycle trips. This policy will apply to both types of bicycle uses.

General bikeway planning considerations from a bicyclist perspective:

- A mode of travel that is an alternative to motorized vehicle use
- Scenic routes
- Desired destinations
- Direct routes
- Bikeway connectivity to other bikeways
- Safety

While all of these considerations are useful in selecting bike routes, the safety consideration is the most important one. Bicyclists are vulnerable to the larger and faster traveling cars and trucks on the roadway, especially on higher speed roads such as in Yuma County where the typical arterial speed limit along 2-lane rural roads is 50 mph. Wider vehicles such as farm equipment, tractor-trailer, and delivery vehicles increase conflicts with bicycles. Complicating this safety issue is the widely varying degree of ability of bicycle riders.

Some riders are adult "expert" riders, others are adult casual riders, and some are inexperienced riders such as young children. Since it is assumed that bike routes will be used by all of these types of riders, then safety considerations need to consider possible safety impacts on all of these riders. Designating a road as a bike route is telling bicycle users that the road is conducive to and presumably reasonably safe for bicycle use. Therefore, Yuma County will only designate those roads that meet these general conditions above, and those roadway and traffic factors listed on the next page.

Crash Modifications Factors are available from the Crash Modification Clearinghouse.org that is managed by the FHWA that show the safety impact of various roadway and traffic factors on various types of roadway crashes. A review of the crash modification database in September 2016 showed very little information available about remedial measures that can reduce bicycle related crashes on rural 2-lane roadways. The information provided focuses on measures taken on urban roads rather than on rural roads. However, for the purposes of this policy, it will be assumed that a high speed rural arterial 2-lane roadway without paved shoulders for bicycle use will expose bicyclists much more to the risk of cars and trucks overtaking and crashing into bicyclists.

Research of the literature and of other agencies' practices does not provide specific numerical criteria for establishing various types of bike routes in a community – most agencies use general factors to determine if a roadway is suitable to sign as a bike route (using BIKE ROUTE or BIKE LANE signs). As an exception, the Wisconsin DOT does have a very specific sets of criteria for rural roadways. However, for 2-lane rural roads with roadway widths of 23-24 feet, it

does not recommend bike routes on roads with 23 to 24 foot pavement with ADT's greater than 1860 vehicles per day (" . . . is not desirable for cycling."). A use of this ADT level would eliminate most of the arterials in unincorporated Yuma County from consideration as a bike route. Therefore, the general considerations to be used in this policy will be those that follow below.

General roadway and traffic factors:

a) Posted speed limit (and any available speed studies).
b) Roadway width, number of lanes, lane widths, and paved shoulders.
c) Existence of paved shoulders (and widths).
d) Average Daily Traffic volumes.
e) Large truck (or farm equipment) usage.
f) Crash history of roadway segment (s) and intersection (s).
g) Pavement condition.
h) Occurrence of flowing or ponding water (and silt accumulation).
i) Existence of vertical curves (affecting sight distance).
j) Existence of horizontal curves (affecting sight distance).
k) Presence of utility covers, drainage grates.
l) Presence of roadside barriers (guardrails, culvert headwalls, bridge abutments, rumble strips, etc.).
m) Presence of railroad crossings (especially if angled to roadway).
n) Stop control and traffic signals along route.
o) Frequency of intersections and driveways.
p) Proximity to an alternate bike route.
q) Actual or projected bicycle use.

For each on-road bikeway segment candidate, Yuma County staff, with input from bicycle representatives, will perform an on-site inspection of the potential route to note and evaluate the planning considerations on the previous page, and the roadway/traffic factors listed above. Bike routes will be selected on those roads with overall favorable conditions. Bike lane candidates will be reviewed and recommendations taken to the Board for consideration.

Location and Classification of Bike Routes

"Bike Routes" (for the purpose of this policy) will consist of two types of on-road bicycle facilities to be signed with the MUTCD white on green BIKE ROUTE signs. These routes may or may not have paved shoulders for bicycle usage. "Bike Lanes" are those bicycle facilities where a sufficiently wide paved shoulder (minimum of 4 feet on existing roads, or 6 feet for new/repaved roads) available may be signed and marked as a BIKE LANE, as well as being signed with BIKE ROUTE signs.

Bike routes may be permitted on 2-lane roads, with paved shoulders, with posted speed limits of up to and including 50 mph. Bike routes generally will not be signed on 2-lane high-speed roads (posted speed limits above 35 mph) that do not have paved shoulders, depending on the level of large truck and agricultural vehicle traffic. This policy is consistent with the current practices of

the Pima County and the Maricopa County Transportation Departments (PCDOT and MCDOT) as of 2016.

Bike routes may be permitted on 2-lane roads, without paved shoulders, with posted speed limits up to and including 35 mph.

Bike routes may be permitted on multi-lane roads, with paved shoulders, with posted speed limits up to and including 50 mph.

Bike routes may be permitted on multi-lane roads, without paved shoulders, with posted speed limits up to and including 40 mph.

Bike lanes are limited to those 2-lane and multi-lane roads with paved shoulders of a minimum of 4 feet in width (6 feet preferred) as described above. They will be signed with BIKE ROUTE and BIKE LANE signs and include bicycle pavement markings per the MUTCD. Bike Lanes should be designated by a BOS resolution to allow law enforcement of their use only by bicyclists.

Yuma County will not designate paved sidewalks as bikeways.

Coordination with Other Agencies

Yuma County's bike routes will be more effectively used by bicyclists if the bike routes are coordinated with those of other agencies and their policies. ADOT has a bicycle policy (see **Attachment 1**) with which this Yuma County policy should be consistent.

The Yuma County bicycle route policy should be compatible with and complement current or future bikeway systems established by the City of Yuma, San Luis, Somerton and the Yuma Metropolitan Planning Organization (YMPO).

Including Paved Shoulders with Roadway Improvement Projects

As funding is available, the County may include paving shoulders in repaving projects on those rural arterial roads on proposed bike routes. The goal will be to widen the roadway to provide a minimum of four-foot paved shoulders delineated with a solid white edge line. The paved shoulder may or may not be designated an official bike route.

Bike Route Signing Practices

Bike routes, as defined in this policy, will signed with white on green BIKE ROUTE signs (MUTCD code D11-1) – see **Attachment 2 (a)**. The signs may be supplemented with a name plate to identify a particular bike route name. See an example on **Attachment 2 (b)**. The signs will typically be placed at ½ mile intervals between major intersecting arterials. The signs will be installed approximately 400 to 500 feet beyond a major arterial intersection, then placed typically at ½ mile intervals, with the last sign on that segment placed approximately 100 to 200 feet in advance of the intersecting arterial. Right or left arrows will be placed with the advance

sign at intersections where the route turns either right or left respectively. See **Attachment 3** for typical signing of bike route segments.

Bike lanes on bike routes will be signed with alternating BIKE LANE AND BIKE ROUTE SIGNS. Bicycle pavement marking symbols will be added to the paved shoulder at the location of the BIKE LANE signs (see **Attachment 4 (a)** for the BIKE LANE sign, R3-17, and **Attachment 4 (b)** for pavement marking symbol options). See **Attachment 5** for typical signing of bike lanes on a designated bike route.

Non-Bike Route Signing Practices

Non-bike route roadways without paved shoulders with posted speed limits greater than 35 mph on 2-lane roads and greater than 40 mph on multi-lane roads that are frequently used by bicyclists may be posted with 36-inch black on yellow BICYCLE (symbol) warning signs (W11-1), including a matching ON ROADWAY supplemental plate – see **Attachments 6.** The signs will typically be placed 500 to 600 feet beyond a major arterial intersection, and at ½-mile intervals – based on engineering judgment. See **Attachment 7** for typical locations of this signing combination.

In general, non-bike route roadways (2-lane and multi-lane) that include paved shoulders will not be signed with the W11-1 warning signs. However, the W11-1 warning sign may be installed on any non-bike route roadway if special traffic and/or geometric conditions exist, based on engineering judgment.

5. REFERENCES

a. Urban Bikeway Design Guide, 2nd Edition, 2014, National Association of City Transportation Officials.

b. Guide for the Development of Bicycle Facilities, 4th Edition, 2012, American Association of State and Transportation Officials.

c. Manual on Uniform Traffic Control Devices, 2009 Edition, Federal Highway Administration.

d. Achieving Multimodal Networks Applying Multimodal Design Flexibility & Reducing Conflicts, August 2016, Federal Highway Administration.

e. Implementation Resources, Adventure Cycling Association, website, August 2016.

f. Selecting Roadway Design Treatments to Accommodate Bicycles, Report FHWA-RD-92-073, Federal Highway Administration, November 1994.

g. Arizona Revised Statutes, Title 28, Sections 101 and 601.

h. MGT 02-1 Bicycle Policy, Arizona Department of Transportation, Intermodal

Transportation Division, February 2010.

i. "Oregon will phase out 'Share the Road' signs," by Jonathan Maus, BikePortland.org, February 2016.

j. Bicycle Facilities Planning & Design Manual, Chapter 6 Bicycle Routes, North Carolina Department of Transportation, January 1994.

k. "Bicycles May Use Full Lane" Signage Communicates U.S. Roadway Rules and Increases Perception of Safety, George Hess, M. Nils Peterson, PLOS One, Aug. 28, 2015.

l. Wisconsin Rural Bicycle Planning Guide, Wisconsin Department of Transportation. April 2006.

6. ATTACHMENTS

Attachment 1: ADOT Bicycle Policy.

Attachment 2 (a): BIKE ROUTE sign, D11-1.

Attachment 2 (b): Bike Route Supplemental Name Plate Example.

Attachment 3: Bike Route Segment Signing.

Attachment 4 (a): BIKE LANE Sign.

Attachment 4 (b): Bicycle Lane Pavement Marking Options.

Attachment 5: Bike Lane Segment Signing.

Attachment 6 : BICYCLE (symbol) Warning Sign (W11-1) with Supplemental ON ROADWAY Sign.

Attachment 7: BICYCLE Warning Sign Locations.

Attachment 1

Intermodal Transportation Division Policy

February 27, 2007
Effective Date

MGT 02-1 (3-1-02)
Supersedes

February 27, 2010
Review Date

Sam Elters
Sam Elters
State Engineer

MGT 02-1 BICYCLE POLICY

PURPOSE
To establish uniform guidelines for accommodating bicycle travel on the State Highway System.

AUTHORITY
Arizona Revised Statute 28-812 Traffic laws apply to persons riding bicycles grants bicycle riders all the rights and subjects them to all the duties applicable to the driver of a vehicle except where special regulations apply.

Arizona Revised Statute 28-641 Traffic Control Device Manual and Specifications requires ADOT to adopt a manual for a uniform system of traffic control devices that correlates with the most recent edition of the national manual on uniform traffic control devices for streets and highways.

Arizona Revised Statute 28-733 Restrictions on use of Controlled Access Highway authorizes ADOT to prohibit the use of any part of a controlled access highway by bicyclists. Requires ADOT to regulate prohibitions on controlled access highways through official signs. (Note: See reference 3.a. below)

REFERENCES
1. AASHTO Guide for the Development of Bicycle Facilities.
2. Manual on Uniform Traffic Control Devices, Part 9 – "Traffic Controls for Bicycle Facilities"
3. ADOT Traffic Engineering Policies, Guidelines and Procedures
   a. PGP # 1030 "Controlled Access Highways as Bikeways"
   b. PGP # 480 "Continuous Longitudinal Rumble Strips"
   c. PGP # 1031 "Signing and Marking of Shared-Use Paths"

DEFINITIONS

Shared Roadway	(AASHTO) a roadway which is open to both bicycle and motor vehicle travel. This may be an existing roadway, street with wide curb lanes, or road with paved shoulders.
Bicycle Lane	(AASHTO) a portion of a roadway which has been designated by striping, signing, and pavement markings for the preferential or exclusive use of bicyclists.
Shared Use Path	(AASHTO) a bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way. Shared use paths may be used by pedestrians, skaters, wheelchair users, joggers and other non-motorized users.

Bikeway	(AASHTO and MUTCD) a generic term for any road, street, path, or way which in some manner is specifically designated for bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.
Designated Bicycle Route	(MUTCD) a system of bikeways designated by the jurisdiction having authority with appropriate directional and informational route markers, with or without specific bicycle route numbers. Bicycle routes, which might be a combination of various types of bikeways, should establish a continuous routing.

POLICY

1. It is ADOT's goal to develop a transportation infrastructure that provides safe and convenient bicycle access. ADOT further advocates that bicyclists have the right to operate in a legal manner on all roadways open to public travel, with the exception of fully controlled-access highways. Bicyclists may use fully controlled-access highways in Arizona except where specifically excluded by regulation and where posted signs give notice of a prohibition. In support of, and in accord with the foregoing, it is ADOT's policy to:

   a. Include provisions for bicycle travel in all new major construction and major reconstruction projects on the state highway system. New bridge and roadway widening projects are normally considered as being within the scope of major construction or major reconstruction. Pavement preservation, minor and spot improvement projects are not included; existing widths for bicycles will be maintained. The scoping documents for new construction and reconstruction will define the parameters for inclusion of bicycle travel.

   b. Utilize the AASHTO Guide for the Development of Bicycle Facilities as the design guide for roadway features to accommodate bicycles.

   c. Utilize the Manual on Uniform Traffic Control Devices, Part 9 as adopted in accordance with ARS 28-641 for design of traffic controls for bicycle facilities.

   d. Provide shared roadway cross-section templates as a minimum condition with new major construction and major reconstruction projects, regardless of the presence of a shared use path.

   e. Consider, as a part of major new construction and major reconstruction in urban areas, wide curb lanes up to 15' in width (exclusive of gutter pan) and placement of a stripe at the vehicle lane edge where appropriate. This decision will be made on a project basis weighing such factors as location, vehicular traffic, grades, anticipated bicycle usage, and right of way availability.

   f. Consider bicycle lanes for inclusion with major new construction or major reconstruction when: 1) incremental costs for construction and maintenance are funded by a local agency AND 2) the bicycle lane is included as a part of a bicycle facilities plan adopted by a local agency.

g. As a part of major new construction and major reconstruction, ADOT will fund and construct at-grade or grade separated (including bridges) street or roadway crossings of state highway system roadways to meet cross section templates accommodating bicyclists that have been adopted as standard by the local agency. The limits of construction are determined on a project-by-project basis, are normally within the ADOT right of way, and may include appropriate transitions to existing roadways outside of ADOT right of way.

h. Accommodate shared use paths within the ADOT right of way when the facilities are: 1) designed and located in accordance with accepted criteria for a proper and safe facility AND 2) funded and properly maintained by the local agency.

i. Utilize the ADOT Traffic Engineering PGP # 1030 to designate route sections where bicycle traffic is prohibited on fully access-controlled State Highways.

j. Utilize the ADOT Traffic Engineering PGP # 480 for placement of longitudinal rumble strips on State Highways.

k. Use pavement surfacing materials that provide reasonably smooth surfaces on travel lanes and shoulders in conjunction with paving projects.

l. Evaluate and consider the impacts of bicyclists when restriping roadways in conjunction with new construction, reconstruction, pavement preservation and minor spot improvement projects.

m. Utilize Intergovernmental Agreements to define funding and maintenance responsibilities with local governments for bicycle facilities within State highway right-of-way.

2. It is ADOT's Policy not to:

   a. Reduce existing travel lane widths to accommodate bicycle traffic unless supported by a traffic study. Concurrence by the State Traffic Engineer and the Assistant Engineer, Roadway Engineering Group are required.

   b. Sign or designate bikeways on any roadways on the State Highway System or roads on State-owned right of way without concurrence of the District Engineer and State Bicycle Coordinator.

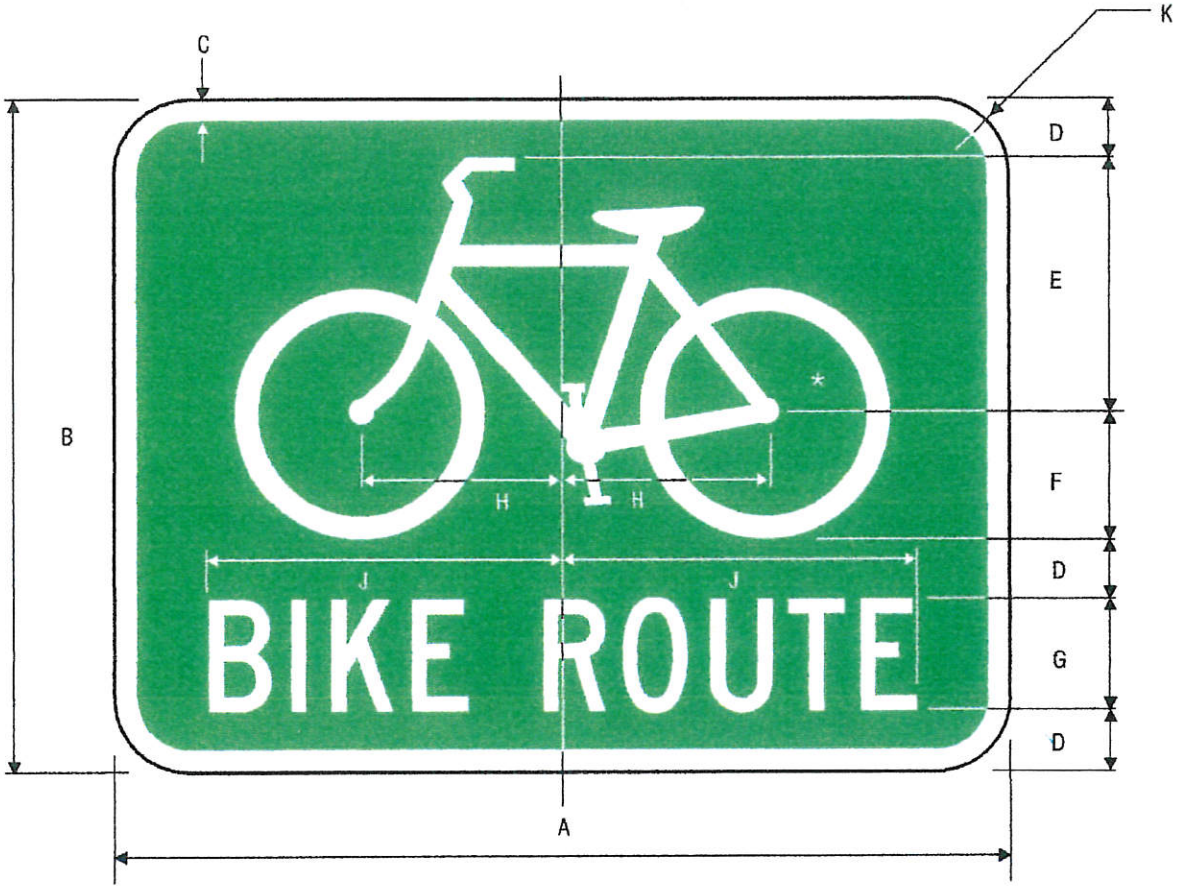
   c. Sign or designate sidewalks as bicycle routes or bikeways.

   d. Use transportation enhancement funds for maintenance of bicycle facilities.

   e. Mark or sign sidewalks or shared-use paths on State right of way parallel and adjacent to roadways for the preferential or exclusive use of bicyclists per ADOT Traffic Engineering PGP # 1031.

3. It is ADOT's policy to require written approval from the State Traffic Engineer and the Assistant State Engineer, Roadway Engineering Group in consultation with the State Bicycle Coordinator for any variations or exceptions to this policy.

Attachment 2(a)



D11-1

BICYCLE ROUTE

*See page 6-7 for symbol design.

A	B	C	D	E	F	G	H	J	K
24	18	.5	1.5	7	3.5	3 C	5.5	9.5	1.5
30	24	.625	1.875	8.75	4.375	4 C	6.875	12.5	1.5

COLORS: LEGEND WHITE (RETROREFLECTIVE)
SYMBOL WHITE (RETROREFLECTIVE)
BACKGROUND GREEN (RETROREFLECTIVE)

Attachment 2(b)

Figure 9B-6. Example of Bicycle Guide Signing

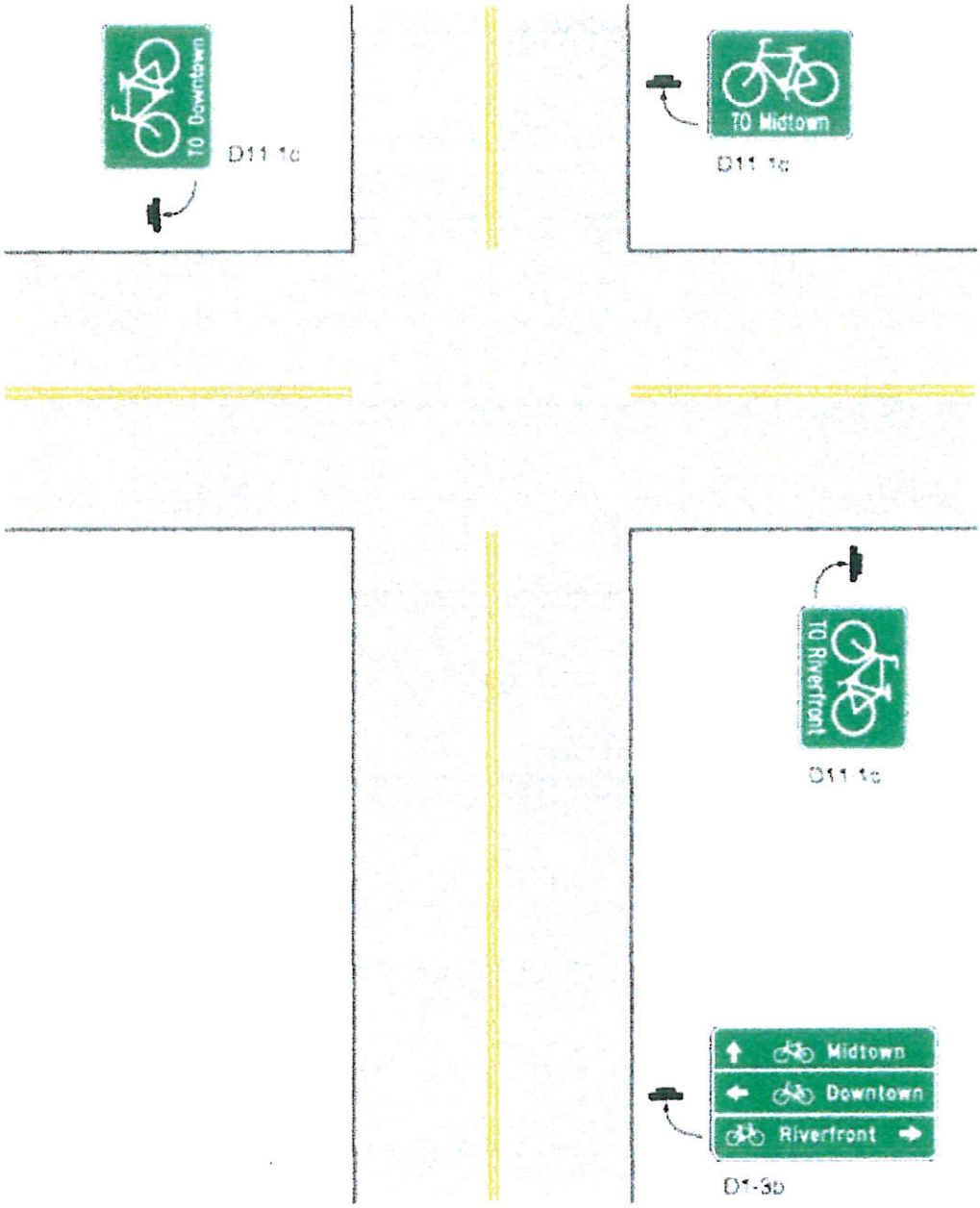


Figure 9B-6. Example of Bicycle Guide Signing

This figure illustrates an example of signing for a roadway bicycle route.

The figure shows a crossroads intersection composed of two roadways, one horizontal and one vertical. Each roadway is composed of two lanes separated by a solid double yellow line.

On the bottom half of the vertical roadway in advance of the intersection, a green D1-3b sign with three horizontal sections is shown to the right of the roadway. The top section shows a vertical arrow pointing up, a bicycle symbol, and the word "Midtown." The middle section shows a horizontal arrow pointing to the left, a bicycle symbol, and the word "Downtown." The bottom section shows a bicycle symbol, the word "Riverfront," and a horizontal arrow pointing to the right.

On the horizontal roadway to the left of the intersection, a green D11-1c sign is shown to the right of the roadway with a bicycle symbol and the words "To Downtown." On the horizontal roadway to the right of the intersection, another green D11-1c sign is shown to the right of the roadway with a bicycle symbol and the words "To Riverfront."

On the top half of the vertical roadway beyond the intersection, another green D11-1c sign is shown to the right of the roadway with a bicycle symbol and the words "To Midtown."

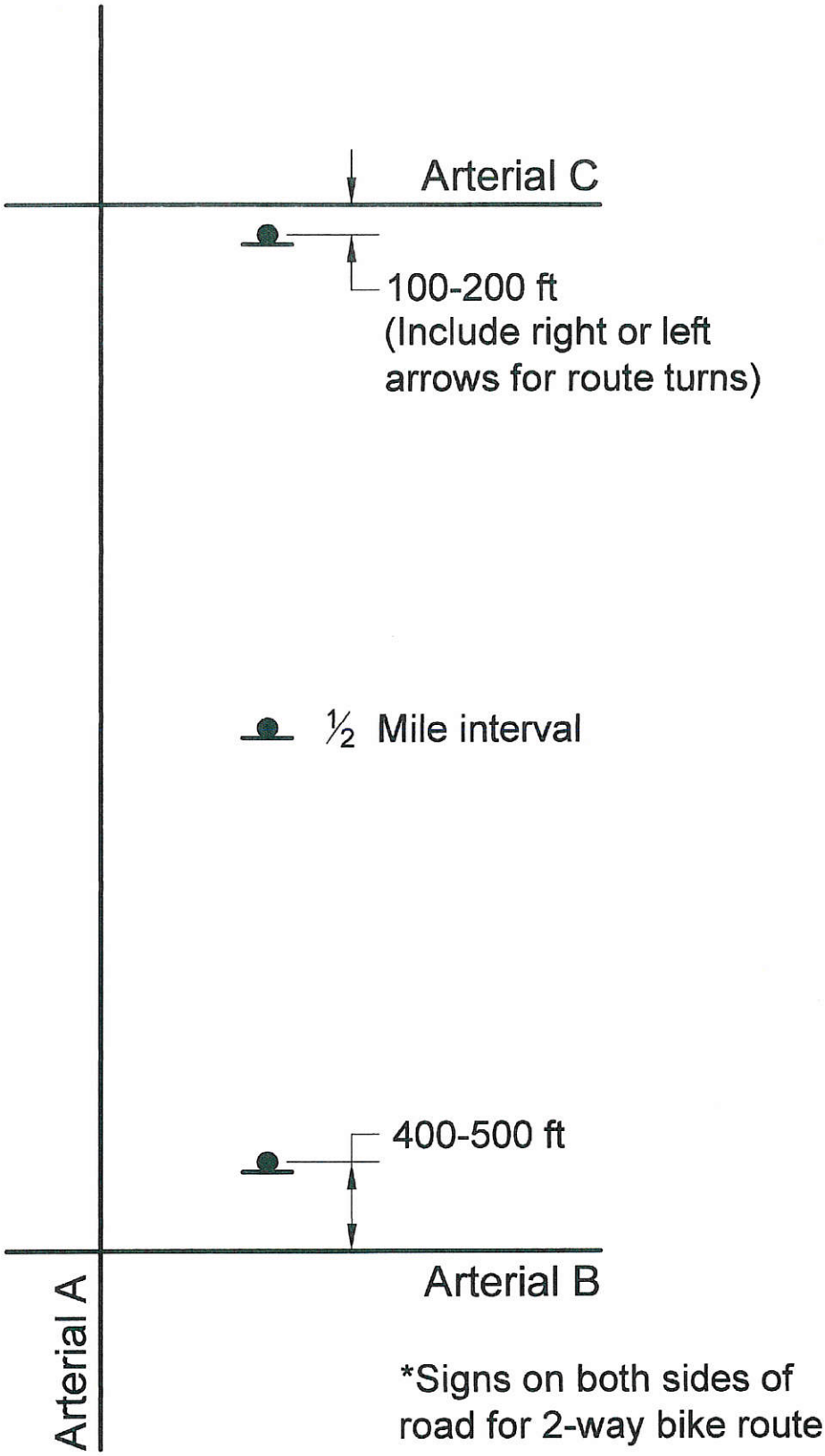
Back to Chapter 9B

FHWA

ATTACHMENT 3

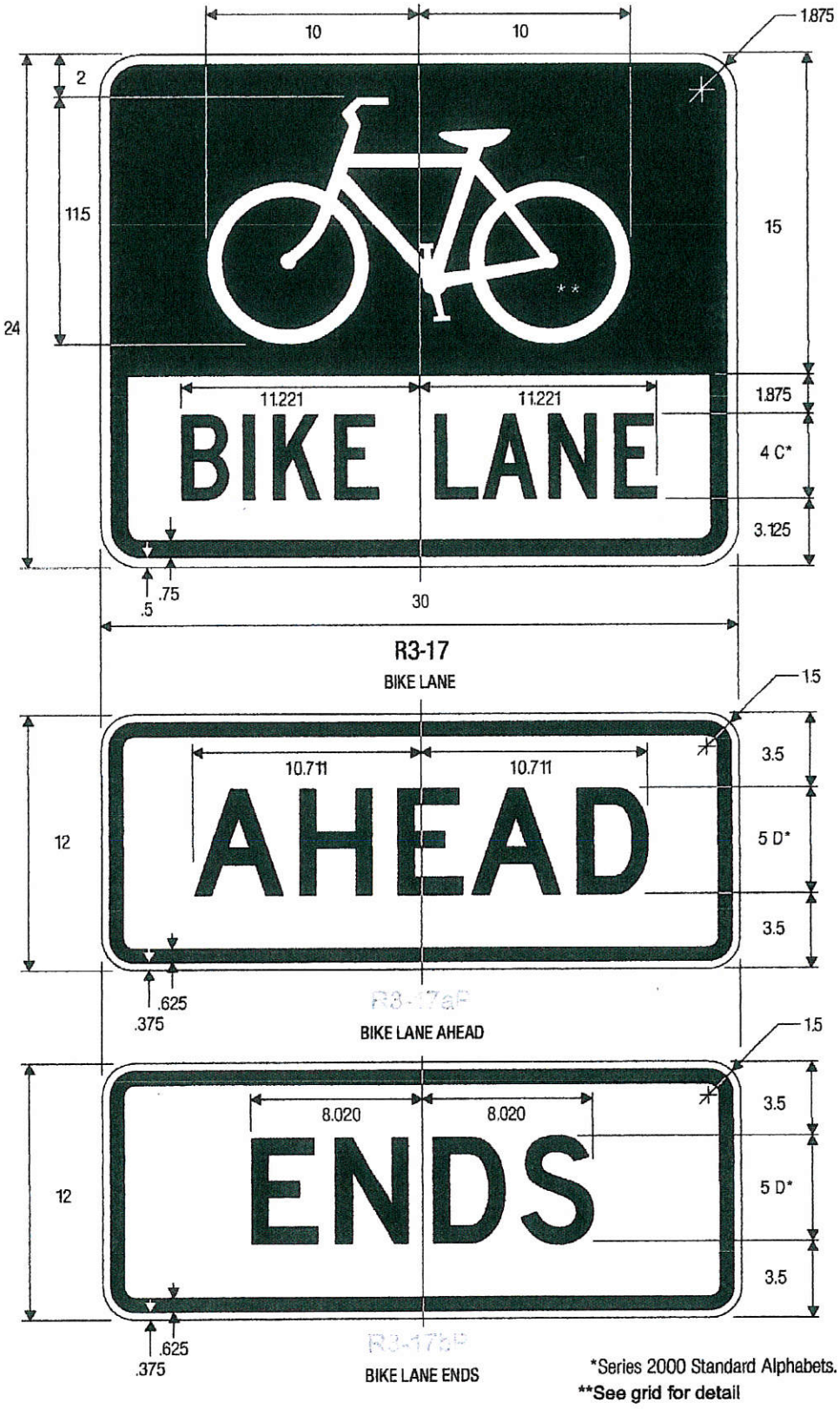
BIKE ROUTE SEGMENT SIGNING

D11-1 SIGNS*



*Signs on both sides of road for 2-way bike route

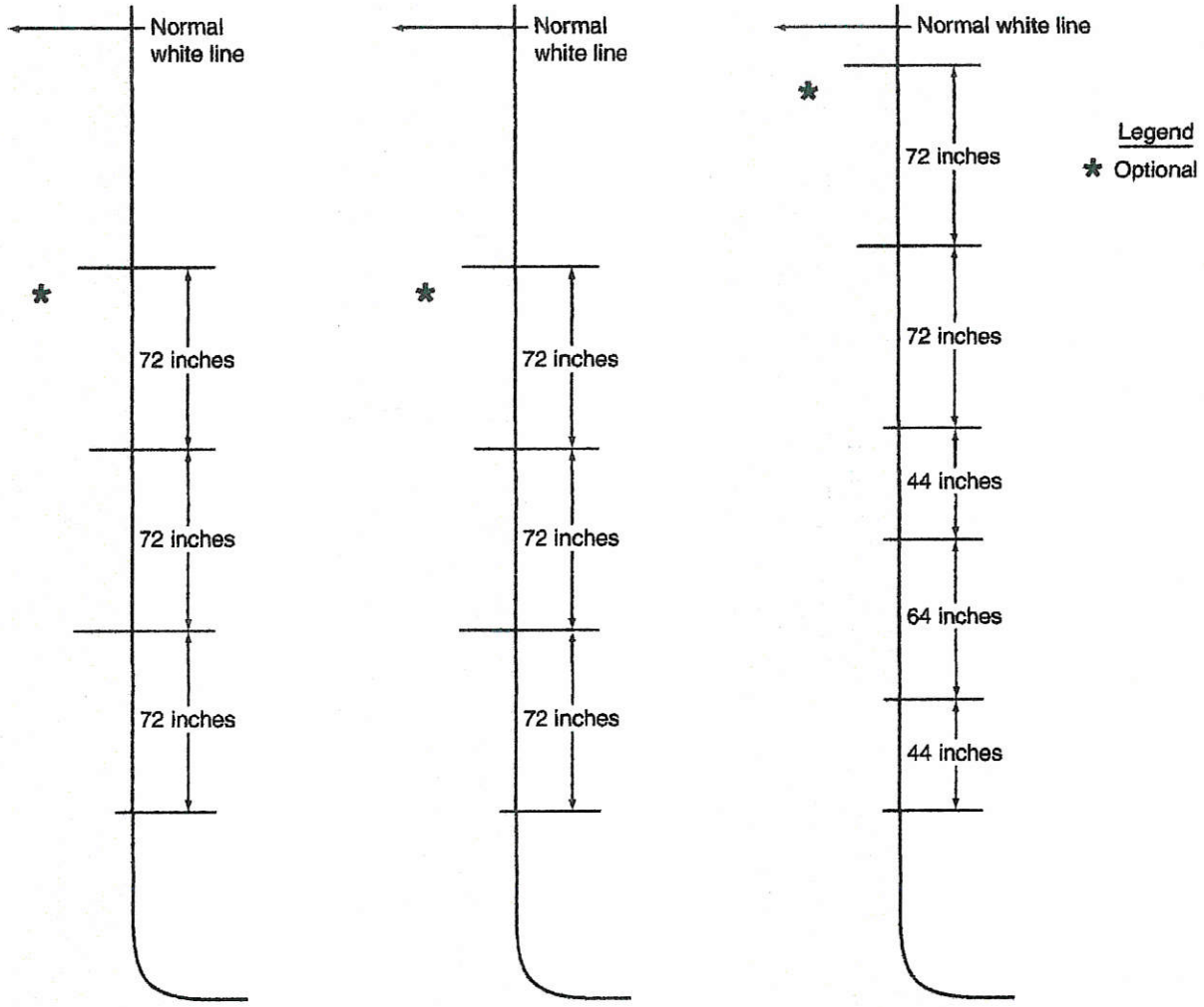
Attachment 4(a)



*Series 2000 Standard Alphabets.
**See grid for detail

COLORS: LEGEND – BLACK
BACKGROUND – WHITE (RETROREFLECTIVE)

Figure 9C-3. Word, Symbol, and Arrow Pavement Markings for Bicycle Lanes



A - Bike Symbol **B - Helmeted Bicyclist Symbol** **C - Word Legends**

** Preferred Symbol

09 *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.*

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

Support:

11 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.

Standard:

12 **Bicycle lanes shall not be provided on the circular roadway of a roundabout.**

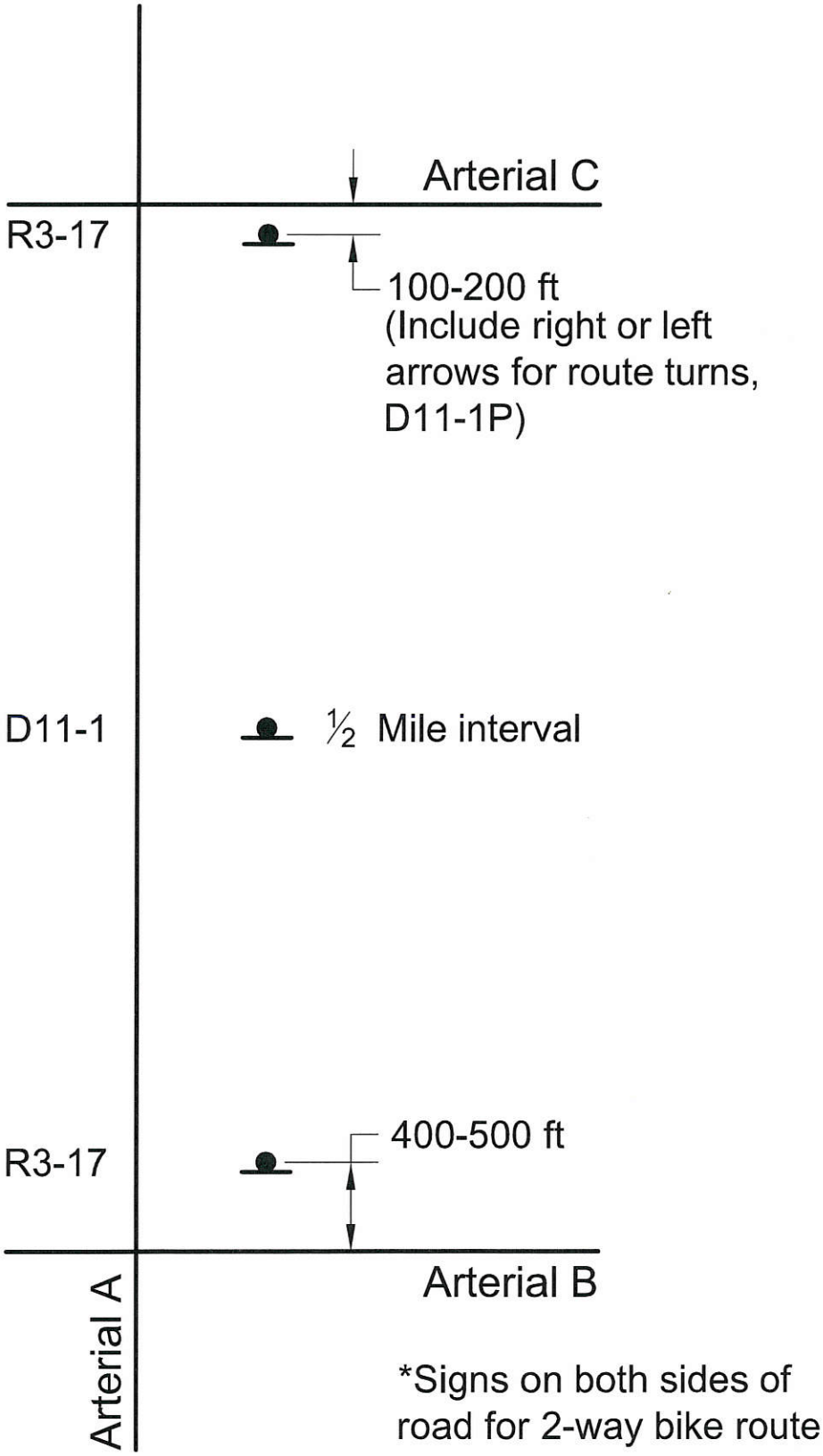
Guidance:

13 *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.*

ATTACHMENT 5

BIKE LANE SEGMENT SIGNING

D11-1 AND R3-17 SIGNS*



*Signs on both sides of road for 2-way bike route

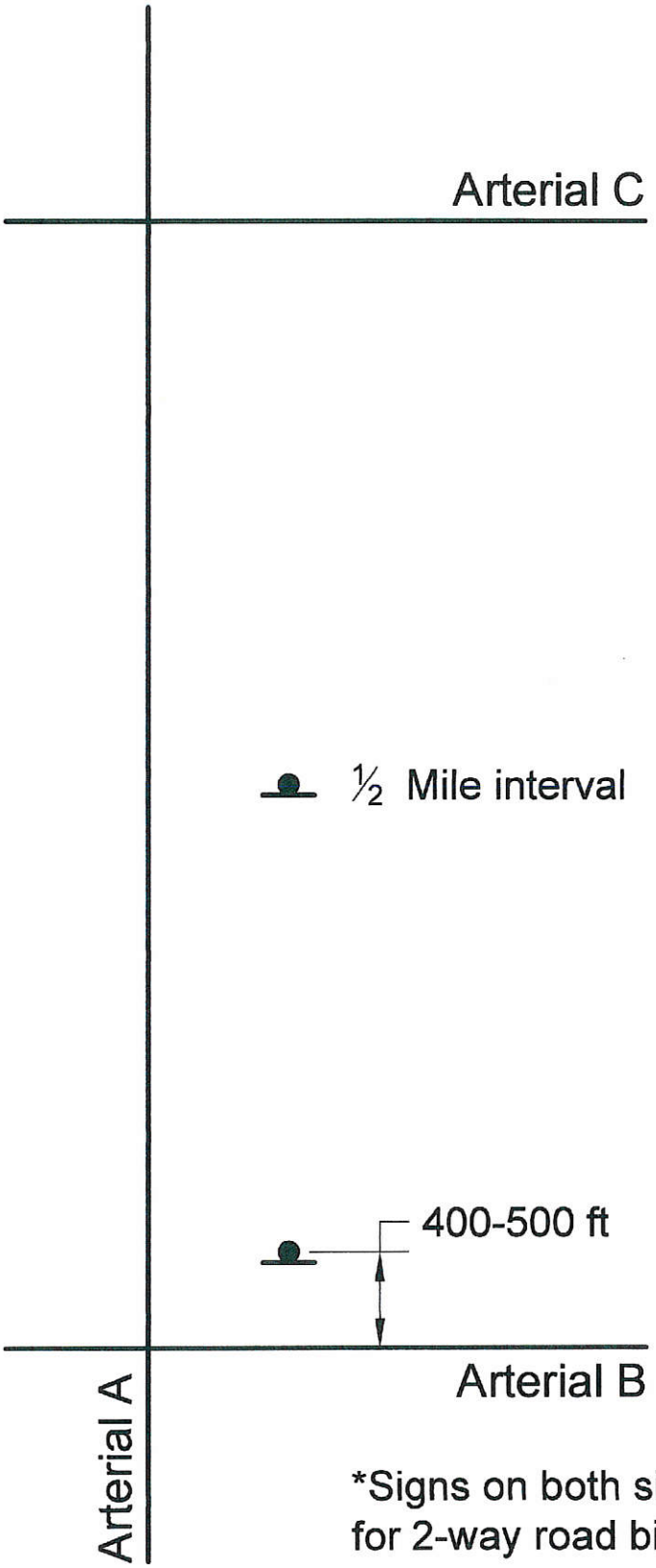
Attachment 6

BICYCLE (symbol) Warning Sign (W11-1, 24") with Supplemental ON ROADWAY Sign

ATTACHMENT 7

NON-BIKE ROUTE SEGMENT SIGNING

W11-1 SIGNS*



*Signs on both sides of road
for 2-way road bicycle usage