

Lehigh Valley Trails Inventory – 2013

Lehigh and Northampton Counties



Lehigh Valley Planning Commission
May 2013

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This project was completed in partnership with the Lehigh Valley Greenways Conservation Landscape Initiative. Funding was provided in part by a grant from the Pennsylvania Department of Conservation and Natural Resources Bureau of Recreation and Conservation, Environmental Stewardship Fund, administered by Delaware & Lehigh National Heritage Corridor, Inc.



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April 2013

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INTRODUCTION

In 2009, the Lehigh Valley Planning Commission (LVPC) completed a comprehensive update to the trails inventory for Lehigh and Northampton counties. The update compiled data from municipal plans and studies across the two counties and produced the *Lehigh Valley Trails Inventory—2009*. The goal was to assist local officials in planning for future trails in the Lehigh Valley. The 2013 update, in addition to incorporating updated trail information, includes two new components: identifying priority trail gaps and providing guidelines to designing safe road crossings for trails. These two new components are part of a statewide effort by the Department of Conservation and Natural Resources (DCNR) to help organizations and municipalities to implement trail initiatives.

Trail, bikeway, rail trail, path, walkway, or bike path. Whatever label is used, trails are an integral part of outdoor recreation facilities offered across Pennsylvania and the nation. Public opinion survey respondents often select walking paths and trails as a highly valued recreational facility. According to the resident survey conducted for Pennsylvania's *2009-2013 Statewide Comprehensive Outdoor Recreation Plan* (Department of Conservation and Natural Resources, 2009), walking has the highest participation rate (84%) for outdoor recreation activities. The Lehigh Valley is no exception to this trend. The types of trails in the Lehigh Valley range from rugged hiking trails to neighborhood paved pathways to water trails, offering a wide range of opportunities for both novice and experienced users. Trails contribute to the quality of life in Lehigh and Northampton counties by providing a variety of recreational opportunities for residents and visitors, non-motorized transportation alternatives, and economic benefits through expenditures by trail users.

Trails are often associated with greenways, which are corridors of open space ranging from narrow strips in urban settings to wide forested ridges. In the *Lehigh Valley Greenways Plan* (Lehigh Valley Planning Commission, 2007), trails are recognized as a type of cultural/recreational greenway, connecting residential and commercial areas with natural, recreational, cultural, and historical amenities. The Lehigh Valley Greenways (LVG), which is one of seven Conservation Landscape Initiatives in Pennsylvania, is a collaborative state and local partnership that also recognizes the importance of greenways and trails. Part of the LVG's vision is to connect natu-



Bake Oven Knob, Kittatinny Ridge

ral and cultural resources and to link urban areas to outdoor experiences through greenways and trails.

The importance of trails as part of park and recreation systems is evident at the state and local level. Goal 3 of Pennsylvania's outdoor recreation plan referenced above is to "develop a statewide land and water trail network to facilitate recreation, transportation, and healthy lifestyles." At the local level, trails are at various stages of development: proposed routing included in municipal plans, discussions with trail corridor landowners, design and engineering, under construction, and open for use.



*D & L Trail
Delaware & Lehigh NHC*

The objectives of this project were to:

1. update LVPC's existing trail data
2. update the Lehigh Valley Trails map and associated table
3. identify priority trail gaps
4. provide information on safe road crossings
5. upload the updated trails data and trail gap information to the DCNR database

PROCESS

Objective 1: Updating Trail Data

The first step in the project was to update the trails and trail features GIS data. The same attributes were used from the 2009 update, which were based on the DCNR trails data dictionary. A complete list of the data recorded for the trails and the associated trail features and a description of each is provided in Table 1. Updated trail data was compiled from a variety of sources—municipal plans and studies, phone calls and meetings with managing entities and conservation partners, internet searches, aerial photography, and field work. Most of the updates for this project were changes in the Status of trails previously identified in the inventory. Other changes included new or more detailed trail information from municipal plans released since the 2009 update, such as the *Lower Macungie Township Greenway Plan* and the City of Allentown's *Connecting Our Community* plan.

TABLE 1
Trail Data Summary

FILE	DATA	DESCRIPTION
Trail	Length	Length of the trail in miles within that Status category
	Trail Code	Code to link to associated record in trail features GIS file
	Map ID	ID used on Lehigh Valley Trails map provided with this report
	Name	Name of trail, existing name or one generated by LVPC
	From	Beginning point of trail
	To	End point of trail
	Status	Open—trail is being used by the general public Under Construction—trail segment is under construction Proposed—land for future trail is acquired by or under agreement with the managing entity Conceptual—land for future trail is not yet acquired by or under agreement with the managing entity
	Description	Short description of the trail
	Uses	An individual field for each of the following (Yes or No value): Hiking, Biking, Equestrian, Cross-country skiing, Interpretive Education, ATV, Snowmobile, Dirt Bike, Four-wheel drive, Boating
	Road or Trail	Whether the trail segment is on a trail or along a road
	Rail Trail	Whether the trail is on a former rail line (rails-to-trails)
	Surfaces	Surface materials found on the trail, may be more than one material—Asphalt, Limestone, Natural (unimproved), Sidewalk, or Other
	ADA* accessibility	Whether the trail is ADA accessible
	Management	Managing entity, primary agency/ organization responsible for maintaining the trail—Name, address, website, phone
	Record information	Date record was updated, data collection and digitizing input method—GPS, Aerials, DOQQs, DRGs, Best Guess
	Location	Municipality and county where the trail is located
Trail Feature	Trail Code	Code to link to associated record in trail GIS file
	Type	Type of feature—Parking, Restroom, River Access Point, Bridge, Dam
	Location	Street and/or park, municipality, and county where feature is located

*ADA—Americans with Disabilities Act

The following criteria were used during the update to limit the scope of the project to a manageable size and for future use and maintenance of the data:

- The detailed data listed in Table 1 was only recorded for trail sections that have a Status value of Open. As other segments of trails are opened for use, the attribute information will be updated as needed. For trail segments not yet open for use, the information recorded was Length, Name, Status, Map ID, Municipality, and County.
- Municipal trails that are designated as part of the D & L Trail were not recorded separately unless the municipal trail network had additional segments other than the D&L Trail alignment.
- Majority of the data is for stand-alone trails, not trails within parks, except if the park trail network provides a connection in the trail network or is regionally used.
- Existing trail names were used when available; if none was available, a name was assigned to the trail by LVPC staff based on location or from/to points.
- Regional- or municipal-based trail networks were merged into one record by Status.
- Sidewalks designated as trails were included as indicated by plans or municipal representatives.
- Trail records were split at the Lehigh County and Northampton County boundary but not at municipal boundaries.

Although the LVPC will update this trail data on a regular basis, the status of these trails is constantly changing. Detailed and up-to-date information is available from the managing entities. Contact information is included in Table 3, Lehigh Valley Open Trails — 2013, page 13. The trails and trail features data is available on LVPC's GIS data disc.

Objective 2: Updating the Lehigh Valley Trails Map and Table

The next step was to incorporate the updated data into the Lehigh Valley Trails map (Map 1, page 11) and the Lehigh Valley Open Trails—2013 table (Table 3, page 13). Map 1 provides a general overview of the location of existing and proposed trails in the two counties. Trail features are also displayed but are limited to Parking, River Access, and Dams; Bridges and Restrooms are not displayed due to the scale of the map.

Table 3, Lehigh Valley Open Trails—2013, provides the detailed information recorded according to the data dictionary listed in Table 1. As stated in the first criteria mentioned in the Objective 1 section, all these attributes are populated only after the trail or trail

segment is open for use. Minimal information is recorded for non-open trails. The Map ID for each trail corresponds to the Map ID on Map 1. As this trail map and table are primarily for planning purposes, more detailed information (e.g. a trail guide) for individual trails may be available from the trail management entity listed in Table 3.

Objective 3: Identifying Trail Gaps

The third objective of the project was to identify trail gaps. Closing trail gaps will provide increased continuous trail facilities available for Lehigh Valley residents and visitors. In consultation with the Lehigh Valley Greenways Conservation Landscape Initiative and the D & L Trail Alliance, Lehigh Valley Council, 10 trail gaps were identified (Map 2, page 15). These gaps occur either within one Open trail or between two individual Open trails. Reasons for the gaps vary and include stream crossings, permitting, and land ownership concerns. Individual trail gap maps with detailed information (Description, Location, Length, Status, and Contact Information) are provided starting on page 17.

Objective 4: Safe Road Crossings

Crossing roadways along a trail corridor is an important component of the trail development process. Trail road crossing requirements vary depending on whether the road is local- or state-owned. Trail crossings of state highways require an agreement and plan approval with the Commonwealth; trail crossing requirements of local roads will vary depending on the municipality.

To assist municipalities and other trail building organizations within the Lehigh Valley with designing safe road crossings, the following information is included in the Appendix for reference purposes.

1. Guidelines sheet provided by the Pennsylvania Department of Transportation (PennDOT).
2. A spreadsheet provided by PennDOT, District 5, entitled Existing and Planned At-Grade Trail Crossings of State Highways, which is primarily focused on bicycle crossings.
3. Examples of trail crossing plans (Saucon Rail Trail, Trexler Nature Preserve, and Union Canal Trail [Berks County]) and trail crossing signage.
4. Section 9, Traffic Control for Bicycle Facilities, from the Manual on Uniform Traffic Control Devices, 2009 Edition, published by the U.S. Department of Transportation, Federal Highway Administration. This manual is used by PennDOT as their standard.

5. An excerpt from the Guide for the Development of Bicycle Facilities 2012, Fourth Edition, published by the American Association of State Highway and Transportation Officials (AASHTO). The full document is available for purchase on AASHTO's website.

For more information about trail crossings of state roads, contact the local PennDOT District Office and speak with the Bicycle/Pedestrian Coordinator. For more information about trail crossings of local roads, contact the appropriate municipality. However, the PennDOT District Office Bicycle/Pedestrian Coordinator may be able to assist with general advice.

Objective 5: Upload Updated Data into DCNR Database

The final step was to upload the updated trails, trail features, and trail gap data to the DCNR database. Updated trails and trail features will then be incorporated into the www.explorepatrails.com website. The trail gap data was input electronically through the DCNR Pennsylvania Outdoor Recreation Plan website by completing a survey form for each gap.

TRAIL HIGHLIGHTS

The LVPC trails inventory confirms what was previously mentioned in the Introduction—trails are an integral part of outdoor recreation facilities offered in the Lehigh Valley. The inventory now documents 59 trails or trail networks, totaling approximately 653 miles in the two counties. This number of trails does not represent 59 individual, stand-alone trails. Many of these trails connect to create, or are part of, a longer trail or a trail network. Also, as stated in the criteria listed in the Process section, regional and municipal trail networks (especially those at the Conceptual stage) were merged into one record. The following table provides a breakdown of the number of trails by Status with the associated mileage. Please note that many of the trails have segments in more than one Status category because the trails are at different stages of development. Therefore, the total number of trails in the four Status categories for the Lehigh Valley is greater than the 59 trails mentioned above.

As seen in Table 2, the Lehigh Valley has 333 miles of Open trails, which vary greatly in length. For instance, the Appalachian Trail (A.T.) is the longest Open trail running through the Lehigh Valley, weaving for 54 miles between Lehigh and Northampton counties and Schuylkill, Carbon and Monroe counties. The next longest Open trails are the two water trails—Lehigh River Water Trail, 36 miles, and Delaware River Water Trail,

TABLE 2
Number and Miles of Trails by Status

	Trail Status			
	Open Number (Miles)	Under Construction Number (Miles)	Proposed Number (Miles)	Conceptual Number (Miles)
Lehigh Valley	42 (333)	5 (5)	27 (34)	32 (282)
Lehigh County	22 (136)	3 (4)	13 (24)	12 (119)
Northampton County	26 (212)	3 (1)	14 (10)	22 (162)

*Notes: 1) Lehigh Valley Open Number and Miles do not equal the total for Lehigh County and Northampton County, because six trails are located in both counties but are only counted once for Lehigh Valley and a 15-mile section of the Lehigh River Water Trail acts as the boundary between Lehigh and Northampton counties. 2) To avoid double-counting trail mileage, trails or trail segments that are co-aligned with another trail were only counted once.

35 miles. The longest single trail, regardless of Status, is the D&L Trail, which runs for 62 miles in the Lehigh Valley with approximately 48 miles Open for use. In addition to being the longest trails in the two counties, all four of the above trails also continue outside of the Lehigh Valley. The shortest Open trail is the Tatamy Rail Trail (approximately 0.5 mile) with future plans for extending the trail to the north.

Where are all these trails located and what are they like? They can be found in a variety of environments, ranging from wilderness to subdivisions to urban centers to farmland. They run beside streams and canals, through former rail corridors, within industrial parks, on municipal sidewalks, and even next to stormwater management facilities. They are on land and water. They are for walking, hiking, biking, jogging, mountain-biking, horseback riding, cross-country skiing, boating, historical site appreciation, nature study, education, and wildlife-watching. All these different trail types offer Lehigh Valley residents and visitors a wide variety of trail experiences.



*Palmer Township Bike Path
Delaware & Lehigh NHC*



*Jacobsburg Environmental Education Center
Delaware & Lehigh NHC*

For a more natural, wilderness type of experience, the internationally known Appalachian Trail (A.T.) is located on the Kittatinny Ridge (Blue Mountain) at the northern edge of the two counties. The A.T. is used by both day-hikers and thru-hikers (long-distance travelers) and can be quite

rugged in places. Other trails in the two counties that offer a more natural environment include the Jacobsburg Environmental Education Center (a state park), PPL Martins Creek Environmental Preserve, Trexler Nature Preserve, and South Mountain Preserve.

At the other end of the spectrum are trails found within urban settings, such as the Karl Stirner Arts Trail, South Bethlehem Greenway Trail or the Macungie Trail Network. Space within cities and boroughs may be limited for trail development, so trails in existing parks, stream buffer areas, or abandoned rail corridors often serve as places to develop a trail network. In some cases, sidewalks are also incorporated into the trail network.



Macungie Trail Network



*Ironton Rail Trail
T. L. Gettings*

Another type of trail found in the two counties is rail trails, which are multi-use paths created from former railroad corridors. Here in the Lehigh Valley, 27 of the 59 trails have all or part of their alignment along these abandoned railroad lines. Open rail trails include the D&L Trail, Slate Heritage Trail, Ironton Rail Trail, Palmer-Bethlehem Township Bikeway, Palmer Township Bike Path, Nor-Bath Trail, Plainfield Township Recreation

Trail and the Upper Mt. Bethel Trail. Trails that run along active rail lines are known as rails-with-trails. The Monocacy Way is an Open trail that runs along Monocacy Creek and has some segments that run along an active rail line.

A trail that offers historical, cultural, and natural experiences is the D&L Trail. This trail is located within the Delaware and Lehigh National Heritage Corridor, which is also a Pennsylvania State Heritage Park. The entire corridor stretches 165 miles from Wilkes-Barre to Bristol, following the Lehigh and Susquehanna Railroad, the Lehigh Navigation System, and



D & L Trail

the Delaware Canal, which brought coal from the northern regions to markets in the south.

As mentioned earlier in the criteria in the Process section, trails within parks were included if they provided a connection for a longer trail or trail network or are regionally used. The Status of these trails range from being entirely Open (Hackett's Park Trail) to the majority of the trail still being in the Conceptual or Proposed stage (Jordan Creek Greenway Trail). The parks themselves offer a wide range of activities from passive, such as walking and picnicking, to active, such as baseball and swimming.



*Little Lehigh Parkway
T. L. Gettings*



Lehigh Canal, Easton

T. L. Gettings

The Lehigh Valley is fortunate to have segments of two water trails—Lehigh River Water Trail and the Delaware River Water Trail managed by the Wildlands Conservancy and the Delaware River Greenway Partnership, respectively. Sojourns on both of these water trails are offered annually providing participants a unique perspective of the two counties.

Another type of trail that has emerged in recent years is trails through subdivisions. As residential land is developed, a municipality may require or request the builder to include a trail and, in some cases, connect to adjacent local or regional trails. These trails allow safe travel especially if sidewalks are not provided.

RECOMMENDATIONS

This project updated the trails inventory for Lehigh and Northampton counties, some of which are included on Map 26, Park and Recreation Plan, in the *Comprehensive Plan The Lehigh Valley...2030* (Comp Plan). The goals and policies of the Transportation section of the Comp Plan support the acquisition and/or development of trails, paths, and sidewalks. Specific recommendations include the following:

- Rail rights-of-way proposed for abandonment should be acquired if analysis shows that they are desirable for recreation, road right-of-way, utility right-of-way or other uses.
- Promote transportation infrastructure improvements such as shoulder improvements, sidewalks, and crosswalks to resolve bicycle and pedestrian safety issues. The appropriateness of bicycle facilities should be considered as part of all road projects.
- Support the development of regulations in local municipalities that mandate construction of sidewalks and pathways to serve pedestrian and other non-motorized traffic.
- Support the construction of rails-to-trails projects for use in both recreation and transportation.
- Promote the construction of missing links in the bicycle and pedestrian networks (see Map 2).
- Support future development patterns conducive to non-motorized travel.
- Provide safe, convenient bicycle parking and storage facilities in urban areas.
- PennDOT should adopt bicycle/pedestrian design and performance standards; consideration of pedestrians and bicyclists should be given when designing and locating traffic control devices, signs, and crosswalks.
- Use an official map, as authorized by Article IV of the Pennsylvania Municipalities Planning Code, to proactively plan for future trails and bicycle and/or pedestrian pathways.

Further trail-related recommended actions are also found in the *Lehigh Valley Greenways Plan* (Lehigh Valley Planning Commission, 2007). Many of the trails presented in this inventory are consistent with the policies and recommended actions from these two plans.

As mentioned in the Trail Highlights section, there are several types of trails available in the Lehigh Valley for residents and visitors to enjoy. Although 333 miles of Open trails are documented in this inventory, there are 321 miles of trails that are at the planning, design, or construction stage. Hopefully this compilation of the current trail efforts occurring throughout the Lehigh Valley will provide municipalities, counties, and conservation partners a tool in advancing the development of the Lehigh Valley trail network.

MAP 1

LEHIGH VALLEY TRAILS

LEHIGH AND NORTHAMPTON COUNTIES

Trail Status

- Open*
- Multiple Open Trails Within Park
- Open Water Trail
- Under Construction*
- Proposed* (land for trail is acquired by or under agreement with the managing entity)
- Conceptual* (land for trail is not yet acquired or under agreement with the managing entity)

*Note: Thick line symbol--regional trail or trail network;
thin line symbol--local trail or trail network.

Trail Feature

- Parking
- River Access
- Dam

- Covered Bridge - National Register of Historic Places
- Park, Open Space, or Outdoor Recreation (> 5 acres, public access)
- State Game Land
- Major Road
- Municipal Boundary
- County Boundary
- Stream

This project was completed in partnership with the Lehigh Valley Greenways Conservation Landscape Initiative. Funding was provided in part by a grant from the Pennsylvania Department of Conservation and Natural Resources, Bureau of Recreation and Conservation, Environmental Stewardship Fund, administered by Delaware & Lehigh National Heritage Corridor, Inc.



Last Updated: May 2013
Source: Trail data--Various municipal and multi-municipal plans, municipal and partner input, 2013;
Other data--Lehigh County, Tax Assessment Office, 2011; Northampton County, Dept. of Fiscal Affairs, GIS Division, 2011; U.S. Geological Survey, 2005; Pennsylvania Historical Museum Commission, Bureau of Historic Preservation, 2012; Lehigh Valley Planning Commission, 2013



LEHIGH VALLEY PLANNING COMMISSION
961 Marcon Boulevard, Suite 310
Allentown, PA 18109-9368
(610) 264-4544

MAP ID	NAME (map location information, as needed)
1	Alburtis Trail Network
2	Allen Township Trail
3	Appalachian Trail (Northern Lehigh & Northampton Counties)
4	Auburn Cross Trails to Lehigh Landing
5	Bethlehem Township Trail Network
6	Bushkill / Plainfield State Game Lands Trail
7	Bushkill Township PPL Trail
8	Cedar Creek Trail (City of Allentown)
9	Delaware & Lehigh Trail
10	Delaware River Water Trail
11	East Allen Township Trail
12	Easton Pedestrian Connections
13	Forks Township Trail Network
14	Hackett's Park Trail
15	Hanover Township Trail Network
16	Ironton Rail Trail (Coplay Borough, Whitehall & North Whitehall Townships)
17	Jacobsville Environmental Education Center Trails
18	Jordan Creek Greenway Trail (City of Allentown to Leaser Lake)
19	Jordan Park to Fountain Park Trail (City of Allentown)
20	Karl Stirner Arts Trail (City of Easton)
21	Lehigh Gap Nature Center Trails (Washington Township, Lehigh County)
22	Lehigh River Rail-to-Trail
23	Lehigh River Water Trail
24	Lehigh Township Rail Trail
25	Little Lehigh Creek Rail-to-Trail (City of Allentown)
26	Little Lehigh Parkway Path (City of Allentown)
27	Lower Macungie Trail Network
28	Lower Mount Bethel Trail
29	Macungie Trail Network
30	Martins-Jacoby Watershed Trail Network (Northeastern Northampton County)
31	MLK Parkway Trail (City of Allentown)
32	Monocacy Way (City of Bethlehem)
33	Nor-Bath Trail
34	Northern Lehigh Rail Trail
35	Palmer-Bethlehem Township Bikeway
36	Palmer Township Bike Path
37	Palmer Township Trail Network
38	Pennsylvania Highlands Trail Network (Southern Lehigh & Northampton Counties)
39	Plainfield Township Recreation Trail
40	Portland to Delaware Water Gap Multi-Use Trail
41	PPL Martins Creek Environmental Preserve Trails (Lower Mt. Bethel Township)
42	Saucon Rail Trail
43	Saucon Region Trail Network
44	Slate Heritage Trail (Slatington Borough and Washington Township)
45	South Bethlehem Greenway Trail
46	South Mountain Gateway Trail (Emmaus Borough)
47	South Mountain Preserve Trails (Salisbury Township)
48	Southwestern Lehigh County Trail Network
49	Stockertown Rail Trail
50	Stockertown to Jacobsville Environmental Education Center Trail
51	Tatamy Rail Trail
52	Trexler Nature Preserve Trails (North Whitehall & Lowhill Townships)
53	Trout Creek Parkway to South Mountain Park (City of Allentown)
54	Trout Creek Parkway Trail (City of Allentown)
55	Upper Mount Bethel Trail
56	Whitehall Township Trail Network
57	Wilson / West Easton / Easton Bikeway
58	Wilson Borough Bike Path
59	Wind Gap / Pen Argyl Area Trail Network

Notes: 1) See Table 3 for detailed information for the Open trails.
2) Trail municipal location is given in the above list when appropriate for ease in locating the trail on the map.

TABLE 3
Lehigh Valley Open Trails--2013
Lehigh and Northampton Counties

continued on reverse side																		
MAP ID	NAME	FROM	TO	DESCRIPTION	HIKING	BIKING	EQUESTRIAN	CROSS-COUNTRY SKIING	INTERPRETIVE EDUCATION	ATV	SNOWMOBILE	DIRT BIKE	FOUR-WHEEL DRIVE	BOATING	ROAD OR TRAIL	RAIL TRAIL	SURFACES	ADA ACCESSIBILITY
1	Alburtis Trail Network	n/a	n/a	1.3 miles of disconnected trails across borough and within Lock Ridge Park and Furnace Museum, part of larger proposed borough trail network	Y	P	N	N	N	N	N	N	N	N	T	P	A,L,S	U
3	Appalachian Trail	Western Lynn Township	Delaware Water Gap National Recreation Area	54-mile trail that is part of a public footpath that follows 2,100 miles of Appalachian Mountain ridgelines between Maine and Georgia.	Y	N	N	N	Y	N	N	N	N	N	T	N	N	N
5	Bethlehem Township Trail Network	n/a	n/a	3.8 miles of disconnected trails and sidewalks across township, part of a much larger proposed township trail network	Y	P	N	Y	N	N	N	N	N	N	T	N	A,S	U
7	Bushkill Township PPL Trail	Belfast Rd	E Morristown Rd (Rt. 512)	2-mile wooded trail connecting to Jacobsburg Environmental Education Center on the south end	Y	Y	N	Y	N	N	N	N	N	N	T	N	L	Y
8	Cedar Creek Trail	n/a	n/a	4 miles of trails along Cedar Creek with portions in Cedar Creek Parkway and Trexler Park; trail connections proposed	Y	Y	N	Y	Y	N	N	N	N	N	T	N	A,L	P
9	Delaware & Lehigh Trail	Lehigh Gap	Northampton - Bucks County line	48-mile Lehigh Valley portion of trail within the 165-mile Delaware and Lehigh National Heritage Corridor that runs from Wilkes-Barre to Bristol, primarily a canal towpath and rail-to-trail	Y	Y	N	Y	Y	N	N	N	N	N	T	P	A,L,N	P
10	Delaware River Water Trail	Delaware Water Gap	Northampton - Bucks County line	35-mile section of a larger water trail that runs from Hancock, NY to Trenton, NJ; designated a National Wild and Scenic River.	N	N	N	N	N	N	N	N	N	Y	T	N	W	N
12	Easton Pedestrian Connections	n/a	n/a	1.8-mile sidewalk connections from the Karl Stirner Arts Trail to different parts of the city and to the Delaware & Lehigh Trail	Y	N	N	N	N	N	N	N	N	N	T	N	S	P
13	Forks Township Trail Network	n/a	n/a	11.5-mile trail network, mostly asphalt paths through subdivisions; natural surface trail located Winchester Rd to Frutchey Hill Rd	Y	Y	N	Y	N	N	N	N	N	N	T	P	A,S,N	N
14	Hackett's Park Trail	n/a	n/a	1-mile trail through park	Y	Y	N	N	N	N	N	N	N	N	T	N	A	Y
15	Hanover Township Trail Network	n/a	n/a	9-mile trail network consisting of sidewalks and industrial park pathways, also includes park paths	Y	Y	N	Y	N	N	N	N	N	N	B	N	A,S	Y
16	Ironton Rail Trail	Portland St	Lehigh River; then north, then west forming a loop	7.6 miles (5.2 mile loop, 2.4 mile spur) following Coplay Creek to Lehigh River	Y	Y	N	Y	Y	N	N	N	N	N	T	Y	A,L	P
17	Jacobsburg Environmental Education Center Trails	n/a	n/a	17-mile trail network within an 1,130-acre state park	Y	Y	Y	Y	Y	N	N	N	N	N	T	N	N	N
18	Jordan Creek Greenway Trail	n/a	n/a	2.4 miles of trail segments within three separate parks along the much larger proposed Jordan Creek Greenway Trail.	Y	Y	N	Y	Y	N	N	N	N	N	T	N	L,N,S	P
19	Jordan Park to Fountain Park Trail	Jordan Park	Fountain Park	3.4 mile (2 one-way street counterparts) sidewalk connection between two parks and the Jordan Creek Greenway Trail and the MLK Parkway Trail	Y	N	N	N	N	N	N	N	N	N	T	N	S	U
20	Karl Stirner Arts Trail	Riverside / Scott Parks	13th Street	2.6 miles along Bushkill Creek connecting the old Simon Silk Mill to downtown Easton at Riverside and Scott Parks	Y	Y	N	N	N	N	N	N	N	N	B	P	A,L,S,O	Y
21	Lehigh Gap Nature Center Trails	n/a	n/a	0.7-mile trail which is part of a larger trail network located in Carbon County and provides a connection between the Appalachian Trail and the Delaware & Lehigh Trail	Y	N	N	N	Y	N	N	N	N	N	T	P	N	N
23	Lehigh River Water Trail	Lehigh Gap	Easton	36 miles of Southern Section of a larger water trail that is 72-miles long starting in White Haven and ending in Easton	N	N	N	N	N	N	N	N	N	Y	T	N	W	N
26	Little Lehigh Parkway Path	n/a	n/a	7.4 mile path within Little Lehigh Parkway	Y	Y	Y	Y	Y	N	N	N	N	N	T	N	L,N	P
27	Lower Macungie Trail Network	n/a	n/a	7.2 miles of disconnected primary and secondary trails across township, part of a much larger proposed township trail network	Y	P	N	P	N	N	N	N	N	N	T	N	A,L,S	P
28	Lower Mount Bethel Trail	De Pues Ferry Rd (PPL Martins Creek Env. Preserve)	Del Haven Road (The Bryan Kiefer Memorial Park)	2.8 miles through electric generating station properties and neighboring farmland	Y	Y	N	N	N	N	N	N	N	N	T	N	L	N
29	Macungie Trail Network	n/a	n/a	5.6-mile trail network through borough on sidewalks and park trails	Y	Y	N	N	N	N	N	N	N	N	T	N	A,L,N,S	P
31	MLK Parkway Trail	Fountain Park, S 4th St	Ward Street	1.5 mile trail, majority within park, along Martin Luther King Jr Dr	Y	Y	N	N	N	N	N	N	N	N	T	N	A,S,N	N
32	Monocacy Way	Sand Island	Illick's Mill Park	2.6-mile trail along Monocacy Creek, passing through Colonial Industrial Quarter, Burnside Plantation, and ending at Illick's Mill, a National Register of Historic Places structure	Y	Y	N	N	Y	N	N	N	N	N	T	N	A,N,S,O	N
33	Nor-Bath Trail	Jacksonville Park	Clear Springs Dr	5-mile walking and bicycling path along Nor-Bath Railroad corridor that was incorporated by the Atlas Portland Cement Company in 1902. The railroad transported raw material to the cement plant and cement to metropolitan markets.	Y	Y	N	Y	Y	N	N	N	N	N	T	Y	A,L	P
35	Palmer-Bethlehem Township Bikeway	25th St.	Lehigh Drive	9.9 miles; dedicated in 1981; recognized as a National Recreation Trail in 1983; majority of the trail is a rail trail with 1.5 miles on a dedicated road lane.	Y	Y	N	Y	N	N	N	N	N	N	B	P	A	P
36	Palmer Township Bike Path	Bushkill St	Northwood Avenue	3-mile trail following west side of Bushkill Creek	Y	Y	N	Y	N	N	N	N	N	N	T	Y	A	Y
37	Palmer Township Trail Network	n/a	n/a	1.4 miles, two trails--0.7 mi along Crest Blvd and 0.7 mi along Schoeneck Creek	Y	Y	N	N	N	N	N	N	N	N	T	N	A,S	P
38	Pennsylvania Highlands Trail Network	Williams Township - Bucks County line	Upper Saucon - Bucks County line	25 miles of a larger conceptual plan to extend the Highlands Trail in New Jersey through the Pennsylvania Highlands from the Delaware River to the Maryland border. Co-aligns with the Saucon Rail Trail and portions of the South Bethlehem Greenway Trail and the Delaware and Lehigh Trail.	Y	Y	N	Y	Y	N	N	N	N	N	T	P	A,L,N,O	P
39	Plainfield Township Recreation Trail	Sullivan Trail	Rt 512 and Buss St	7-mile trail, breath-taking view of Little Bushkill Creek	Y	Y	Y	Y	N	N	N	N	N	N	T	Y	A,L	P
41	PPL Martins Creek Environmental Preserve Trails	n/a	n/a	4.3-mile trail network located on banks of Delaware River on PPL electric generating facility property	Y	N	N	N	Y	N	N	N	N	N	T	N	N	N
42	Saucon Rail Trail	Upper Saucon Township Park	Hellertown Borough - City of Bethlehem boundary	5-mile rail-trail that runs through three municipalities; two more miles planned and which will include a fourth municipality	Y	Y	N	Y	N	N	N	N	N	N	T	Y	A,L,O	Y
44	Slate Heritage Trail	E Church & Railroad Sts	Slatedale Playground	3-mile trail along Trout Creek using old Lehigh Valley Railroad beds, pedestrian covered bridge completed in 2004	Y	Y	Y	Y	Y	N	N	N	N	N	T	Y	A,L	P
45	South Bethlehem Greenway Trail	S New St	E 6th St	1.6-mile trail completed of planned 3-mile urban greenway trail	Y	Y	N	Y	N	N	N	N	N	N	T	Y	A,L,O	P
46	South Mountain Gateway Trail	Klines Ln, Emmaus	South Mountain Preserve	0.7-mile trail connecting Emmaus Borough to South Mountain Preserve	Y	Y	N	Y	N	N	N	N	N	N	T	N	L,O	P
47	South Mountain Preserve Trails	n/a	n/a	5-mile trail network within the 325-acre South Mountain Preserve, which is within the 460-acre Robert Rodale Reserve	Y	Y	N	N	Y	N	N	N	N	N	T	N	N	N
51	Tatamy Rail Trail	Bushkill Street	Main Street	0.5 mile trail along Bushkill Creek	Y	Y	N	N	N	N	N	N	N	N	T	Y	L	Y
52	Trexler Nature Preserve Trails	n/a	n/a	17-mile trail network within 1,385-acre county nature preserve	Y	Y	Y	N	Y	N	N	N	N	N	T	N	L,N	P
53	Trout Creek Parkway to South Mountain Park Trail	Mohawk St	W Erie St	1 mile sidewalk trail of a proposed longer trail connecting the Trout Creek Parkway to South Mountain Park	Y	N	N	N	N	N	N	N	N	N	T	N	S	U
54	Trout Creek Parkway Trail	n/a	n/a	1-mile trail within Trout Creek Parkway; more trails proposed within this Parkway	Y	Y	N	N	N	N	N	N	N	N	T	N	L	U
55	Upper Mount Bethel Trail	Totts Gap Road	East Shore Drive	0.8-mile unimproved rail trail	Y	Y	N	Y	N	N	N	N	N	N	T	Y	N	N
58	Wilson Borough Bike Path	25th St	Lower Hackett's Park	0.8-mile rail trail connection to the Palmer-Bethlehem Township Bikeway and to Hackett's Park	Y	Y	N	N	N	N	N	N	N	N	T	Y	A	Y

KEY: USES (Hiking, Biking, Equestrian, etc.): Y--Yes; N--No; P--on certain segments
ROAD OR TRAIL: T--Trail segment is located on a trail; B--Trail segment is located partially on a trail and on a road
RAIL TRAIL: Y--Yes; N--No; P--Partial
SURFACES: A--Asphalt; L--Limestone; N--Natural; S--Sidewalk; W--Water; O--Other
ADA ACCESS: Y--Yes; N--No; P--Partial; U--Unknown
METHOD: 1--GPS; 2--Digitized from PA MAP aerials; 3--Digitized from DRGs; 4--Digitized from DOQQs; 5--Best Guess.

Note: Trail length was calculated in the GIS and may differ from lengths reported elsewhere.
ADA--Americans with Disabilities Act

TABLE 3
Lehigh Valley Open Trails--2013
Lehigh and Northampton Counties

MAP ID	NAME	MGT	MGT-- ADDRESS	MGT-- CITY	MGT-- STATE	MGT-- ZIP CODE	MGT-- WEBPAGE	MGT-- PHONE	UPDATED	METHOD	COMMENTS	MUNICIPALITY	COUNTY
1	Alburtis Trail Network	Alburtis Borough	260 Franklin St, P.O. Box 435	Alburtis	PA	18011	www.alburtis.org	610-966-4777	15/Apr/2013	4		Alburtis	Lehigh
3	Appalachian Trail	Appalachian Trails Conservancy	799 Washington St, P.O. Box 807	Harpers Ferry	WV	25425	www.appalachiantrail.org	304-535-6331	15/Dec/2009	1	Data source--DCNR 2003, downloaded from PASDA website.	Multiple	Lehigh & Northampton
5	Bethlehem Township Trail Network	Bethlehem Township	4225 Easton Ave	Bethlehem	PA	18020	www.bethlehemtpa.com	610-814-6400	15/Apr/2013	4		Bethlehem Twp.	Northampton
7	Bushkill Township PPL Trail	Bushkill Township	1114 Bushkill Center Rd	Nazareth	PA	18064	www.bushkilltownship.com	610-759-1250	15/Apr/2013	4		Bushkill	Northampton
8	Cedar Creek Trail	City of Allentown	3000 Parkway Blvd.	Allentown	PA	18101	www.allentownpa.gov	610-437-7757	15/Apr/2013	4		Allentown	Lehigh
9	Delaware & Lehigh Trail	Multiple municipalities, Lehigh County, and the PA Department of Conservation and Natural Resources							15/Apr/2013	4	Trail info--Delaware & Lehigh National Heritage Corridor: phone: 610-923-3548; website: www.delawareandlehigh.org/index.php/trail/	Multiple	Lehigh & Northampton
10	Delaware River Water Trail	Delaware River Greenway Partnership	P.O. Box 54	Erwinna	PA	18920	www.delrivgreenway.org	609-239-0444	29/Mar/2010	4		Multiple	Northampton
12	Easton Pedestrian Connections	City of Easton	One South 3rd Street	Easton	PA	18042	www.easton-pa.gov	610-250-6600	15/Apr/2013	4		Easton	Northampton
13	Forks Township Trail Network	Forks Township	1606 Sullivan Trail	Easton	PA	18040	www.forkstownship.org	610-252-0785	15/Apr/2013	4		Forks	Northampton
14	Hackett's Park Trail	City of Easton	One South 3rd Street	Easton	PA	18042	www.easton-pa.com	610-250-6711	15/Dec/2009	4		Easton	Northampton
15	Hanover Township Trail Network	Hanover Township	3630 Jacksonville Rd	Bethlehem	PA	18017	hanovertwp-nc.org	610-866-1140	15/Apr/2013	4	Trail segments within industrial park are maintained by the condominium association.	Hanover	Northampton
16	Ironton Rail Trail	Ironton Rail Trail Oversight Commission	3219 MacArthur Road	Whitehall	PA	18052	www.irontonrailtrail.org	610-437-5524	15/Dec/2009	4	Oversight Commission is composed of representatives from the 3 municipalities where the trail is located.	Multiple	Lehigh
17	Jacobsburg Environmental Education Center Trails	PA Dept. of Conservation and Natural Resources	835 Jacobsburg Road	Wind Gap	PA	18091	www.dcnr.state.pa.us	610-746-2801	15/Dec/2009	4	ADA--If you need an accommodation to participate in park activities due to a disability, please contact the park.	Bushkill	Northampton
18	Jordan Creek Greenway Trail	Multiple municipalities and county							31/Jan/2012	4	Current open trail segments within the parks are managed by City of Allentown, South Whitehall Township, and Lehigh County.	Multiple	Lehigh
19	Jordan Park to Fountain Park	City of Allentown	3000 Parkway Blvd.	Allentown	PA	18101	www.allentownpa.gov	610-437-7757	15/Apr/2013	4		Allentown	Lehigh
20	Karl Stirmer Arts Trail	City of Easton	One South 3rd Street	Easton	PA	18042	www.easton-pa.gov	610-250-6600	15/Apr/2013	4		Easton	Northampton
21	Lehigh Gap Nature Center Trails	Lehigh Gap Nature Center	Paint Mill Road	Slatington	PA	18080	lgnc.org	610-760-8889	15/Apr/2013	4		Washington	Lehigh
23	Lehigh River Water Trail	Wildlands Conservancy	3701 Orchid Place	Emmaus	PA	18049	www.wildlandspa.org	610-965-4397	15/Dec/2009	4		Multiple	Lehigh
26	Little Lehigh Parkway Path	City of Allentown	3000 Parkway Blvd.	Allentown	PA	18101	www.allentownpa.gov	610-437-7757	15/Apr/2013	4		Allentown	Lehigh
27	Lower Macungie Trail Network	Lower Macungie Township	3400 Brookside Road	Macungie	PA	18062	www.lowermac.com	610-966-4343	15/Apr/2013	4		Lower Macungie	Lehigh
28	Lower Mount Bethel Trail	Lower Mount Bethel Township	2004 Hutchison Avenue	Martins Creek	PA	18063	www.lowermtbethel.org	610-252-5074	15/Apr/2013	4		Lower Mt. Bethel	Northampton
29	Macungie Trail Network	Borough of Macungie	21 Locust Street	Macungie	PA	18062	www.macungie.pa.us	610-966-2503	15/Apr/2013	4		Multiple	Lehigh
31	MLK Parkway Trail	City of Allentown	3000 Parkway Blvd.	Allentown	PA	18101	www.allentownpa.gov	610-437-7757	15/Apr/2013	4		Allentown	Lehigh
32	Monocacy Way	City of Bethlehem	10 E. Church St.	Bethlehem	PA	18018	www.bethlehem-pa.gov	610-865-7081	15/Apr/2013	4		Bethlehem City	Northampton
33	Nor-Bath Trail	Northampton County	Greystone Building	Nazareth	PA	18064	www.northamptoncounty.org	610-746-1975	15/Dec/2009	4		Multiple	Northampton
35	Palmer-Bethlehem Township Bikeway	See Comments for Mgt. name, address, and phone number					www.palmertwp.com, www.bethlehemtpa.com		15/Dec/2009	4	Palmer Township, 3 Weller Place, PO Box 3039, Palmer, PA 18043, 610-253-7191; Bethlehem Township, 4225 Easton Ave, Bethlehem, PA 18020, 610-814-6400	Multiple	Northampton
36	Palmer Township Bike Path	Palmer Township	3 Weller Place	Palmer	PA	18043	www.palmertwp.com	610-253-7191	15/Apr/2013	4		Palmer	Northampton
37	Palmer Township Trail Network	Palmer Township	3 Weller Place	Palmer	PA	18043	www.palmertwp.com	610-253-7191	15/Apr/2013	4		Palmer	Northampton
38	Pennsylvania Highlands Trail Network	Appalachian Mountain Club	520 Long St	Bethlehem	PA	18018	www.outdoors.org/pa_highlands	610-868-6906	15/Apr/2013	4	Trail follows alignment of other Open trails: Delaware & Lehigh Trail, South Bethlehem Greenway Trail, and the Saucon Rail Trail	Multiple	Lehigh & Northampton
39	Plainfield Township Recreation Trail	Plainfield Township	6292 Sullivan Trail	Nazareth	PA	18064	twp.plainfield.pa.us	610-759-6944	15/Dec/2009	4		Plainfield	Northampton
41	PPL Martins Creek Environmental Preserve Trails	PPL Martins Creek, LLC	6605 Foul Rift Road	Bangor	PA	18013	www.pplweb.com	800-354-8383	15/Apr/2013	4		Lower Mt. Bethel	Northampton
42	Saucon Rail Trail	See Comments for Mgt. name, address, and phone number					www.lowersaucontownship.org, hellertownborough.org, www.uppersaucon.org		31/Jan/2012	4	Lower Saucon Township, 3700 Old Philadelphia Pike, Bethlehem, PA 18015, 610-865-3291; Hellertown Borough, 685 Main St, Hellertown, PA 18055, 610-838-7041; Upper Saucon Township, 5500 Camp Meeting Rd, Center Valley, PA 18034; 610-282-1171	Multiple	Lehigh & Northampton Counties
44	Slate Heritage Trail	See Comments for Mgt name, address, and phone number					slatington.org, washingtonlehigh.org		15/Dec/2009	4	Slatington Borough, 125 S Walnut St, Slatington, PA 18080; Washington Township, 7951 Center St, Emerald, PA 18080; More trail info: www.northernlehighhistoricalsociety.com	Multiple	Lehigh
45	South Bethlehem Greenway Trail	City of Bethlehem	10 E Church St	Bethlehem	PA	18015	www.bethlehem-pa.gov	610-865-7081	15/Apr/2013	4		Bethlehem City	Northampton
46	South Mountain Gateway Trail	Borough of Emmaus	28 S 4th St	Emmaus	PA	18049	www.borough.emmaus.pa.us	610-965-9292	31/Jan/2012	4		Emmaus	Lehigh
47	South Mountain Preserve Trails	Wildlands Conservancy	3701 Orchid Place	Emmaus	PA	18049	www.wildlandspa.org	610-965-4397	15/Dec/2009	1		Multiple	Lehigh
51	Tatamy Rail Trail	Tatamy Borough	423 Broad Street	Tatamy	PA	18085	www.tatamypa.com	610-252-7123	15/Dec/2009	4		Tatamy	Northampton
52	Trexler Nature Preserve Trails	Lehigh County	17 South 7th Street	Allentown	PA	18101	www.lehighcounty.org	610-782-3000	15/Apr/2013	1		Multiple	Lehigh
53	Trout Creek Parkway to South Mountain Park	City of Allentown	3000 Parkway Blvd.	Allentown	PA	18101	www.allentownpa.gov	610-437-7757	15/Apr/2013	4		Allentown	Lehigh
54	Trout Creek Parkway Trail	City of Allentown	3000 Parkway Blvd.	Allentown	PA	18101	www.allentownpa.gov	610-437-7757	15/Apr/2013	4		Allentown	Lehigh
55	Upper Mount Bethel Trail	Upper Mount Bethel Township	387 Ye Olde Highway	Mt. Bethel	PA	18343	www.uppermtbethel.org	570-897-6127	15/Dec/2009	4		Upper Mt. Bethel	Northampton
58	Wilson Borough Bike Path	Wilson Borough	2040 Hay Terrace	Wilson	PA	18042	www.wilsonborough.org	610-258-6142	15/Apr/2013	4		Wilson	Northampton

KEY: USES (Hiking, Biking, Equestrian, etc.): Y--Yes; N--No; P--on certain segments
ROAD OR TRAIL: T--Trail segment is located on a trail; B--Trail segment is located partially on a trail and on a road
RAIL TRAIL: Y--Yes; N--No; P--Partial
SURFACES: A--Asphalt; L--Limestone; N--Natural; S--Sidewalk; W--Water; O--Other
ADA ACCESS: Y--Yes; N--No; P--Partial; U--Unknown
METHOD: 1--GPS; 2--Digitized from PA MAP aerials; 3--Digitized from DRGs; 4--Digitized from DOQQs; 5--Best Guess.

Note: Trail length was calculated in the GIS and may differ from lengths reported elsewhere.
ADA--Americans with Disabilities Act

MAP 2

LEHIGH VALLEY TRAIL GAPS - KEY MAP

LEHIGH AND NORTHAMPTON COUNTIES

Trail Gaps*

- 1 - Cedar Creek Parkway Trail to Little Lehigh Parkway Path
- 2 - Jordan Creek Greenway Trail
- 3 - D & L Trail to Ironton Rail Trail
- 4 - Nor-Bath Trail to D & L Trail
- 5 - D & L Trail - 3 Environmental Obstructions
- 6 - D & L Trail - Dauphin and Bradford Streets Share-the-Road
- 7 - South Bethlehem Greenway Trail to Saucon Rail Trail
- 8 - Karl Stirner Arts Trail to Palmer Township Bike Path
- 9 - Tatamy Rail Trail to Jacobsburg Environmental Education Center
- 10 - Bushkill Township PPL Trail to Appalachian Trail

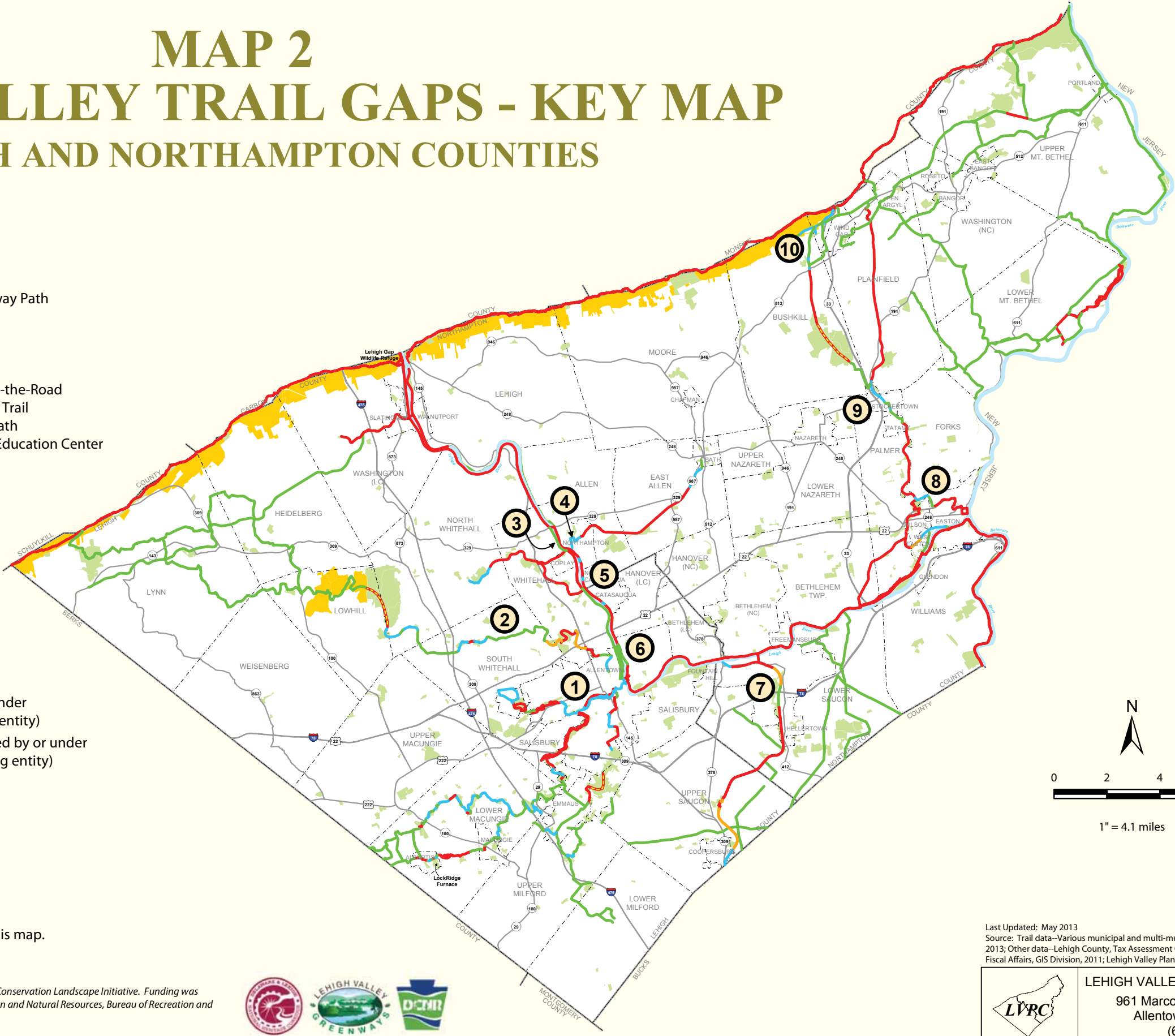
*See individual trail gap maps for more detail.

Trail Status**

- Open
- Multiple Open Trails Within Park
- Open Water Trail
- Under Construction
- Proposed (land for trail is acquired by or under agreement with the managing entity)
- Conceptual (land for trail is not yet acquired by or under agreement with the managing entity)
- Park, Open Space, or Outdoor Recreation (> 5 acres, public access)
- State Game Land
- Major Road
- Municipal Boundary
- County Boundary

**Trails categorized as Local are not displayed on this map.

This project was completed in partnership with the Lehigh Valley Greenways Conservation Landscape Initiative. Funding was provided in part by a grant from the Pennsylvania Department of Conservation and Natural Resources, Bureau of Recreation and Conservation, Environmental Stewardship Fund, administered by Delaware & Lehigh National Heritage Corridor, Inc.



Last Updated: May 2013
Source: Trail data—Various municipal and multi-municipal plans, municipal and partner input, 2013; Other data—Lehigh County, Tax Assessment Office, 2011; Northampton County, Dept. of Fiscal Affairs, GIS Division, 2011; Lehigh Valley Planning Commission, 2013



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Trail Gap #1: Cedar Creek Trail to Little Lehigh Parkway Path

Description

A continuation of the Cedar Creek Trail from Cedar Creek Parkway at Hamilton St (Rt. 222) through Joe Dadonna Park to the Little Lehigh Parkway Path.

Location

City of Allentown and Salisbury Township, Lehigh County
Start: Hamilton St & S 21st St; LAT 40.5944, LONG -75.5007
End: Lehigh Parkway North just south of Martin Luther King Jr Dr; LAT 40.5884, LONG -75.4878

Length

1.2 miles

Status

Funding for design and construction from DCNR and Lehigh County Green Future Fund is in place to proceed with this project. An RFP needs to be issued for the project.

Trail Contact

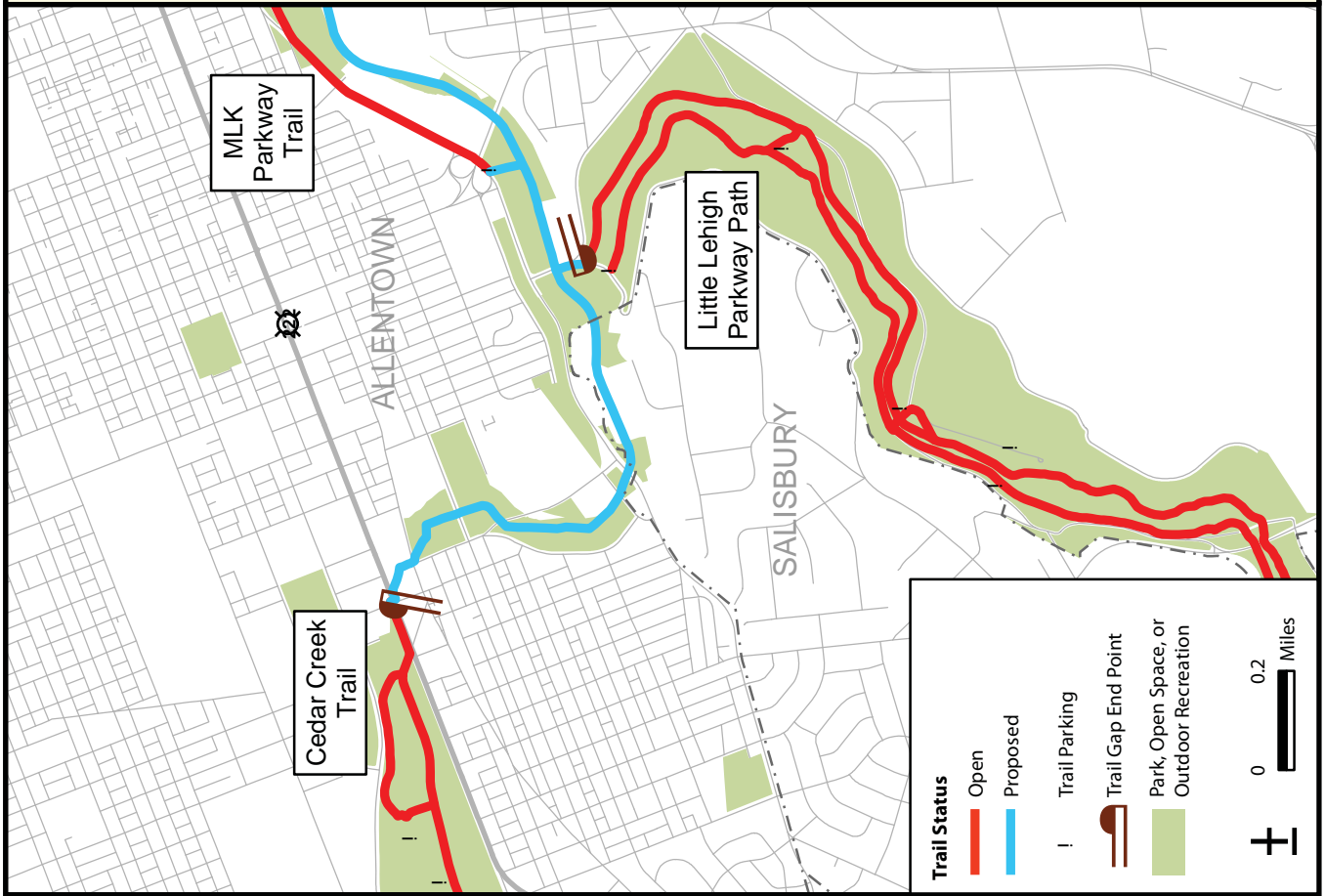
John Mikowychok, CPRP
Director, Department of Parks and Recreation
City of Allentown
610-437-7757
John.Mikowychok@allentownpa.gov

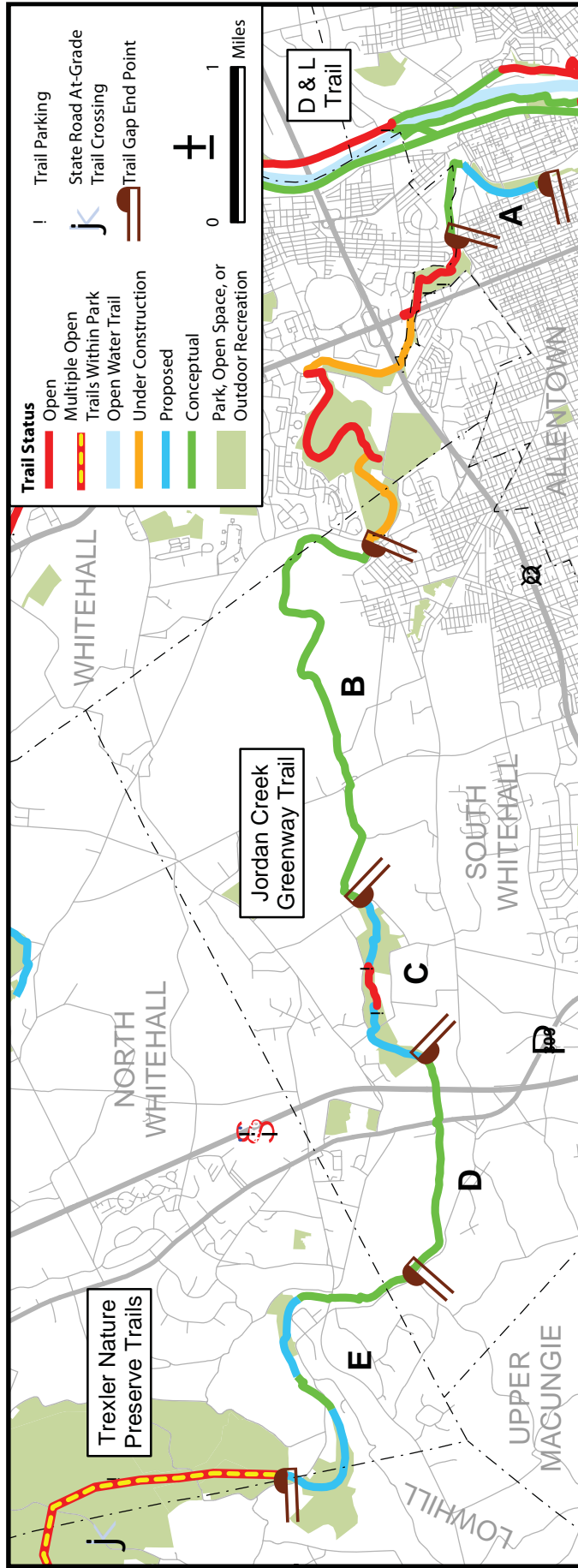
Date: April 2013

Source: Trail data--Various municipal and multi-municipal plans, municipal and partner input, 2013; Other data--Lehigh County, Tax Assessment Office, 2011; Lehigh Valley Planning Commission, 2013



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Trail Gap #2:

Jordan Creek Greenway Trail

Description

The Jordan Creek Greenway & Trail is designed to develop a continuous greenway corridor to connect existing protected open spaces while providing recreational and environmental benefits to the community.

Location (Gaps A - E)

City of Allentown, Whitehall, South Whitehall, North Whitehall, and Lowhill Townships, Lehigh County
 Start: Gordon & N Jute Streets, Allentown;
 LAT 40.6097; LONG -75.4657

End: Trexler Nature Preserve; LAT 40.6378; LONG -75.6240

Length (Gaps A - E)

22.4 miles

Status

- A - City of Allentown, Gordon St to Jordan Park--received grant to design and begin construction; on-hold till new Parks Director hired.
- B - Jordan Creek Parkway to Covered Bridge Park--private land; discussions have taken place; no design or construction planned at this time.
- C - Covered Bridge Park--grant secured for engineering and design; RFP for professional design to be let in near future.
- D - Covered Bridge Park to Jordan & Haasadahl Rds area--design nearly complete; grant for construction funding being submitted spring 2013.
- E - Jordan & Haasadahl Rds area to Trexler Nature Preserve--ongoing discussions; no construction or design planned.

Trail Contact

Kevin Fister
 Wildlands Conservancy
 610-965-4397
 kfister@wildlandspa.org

Date: April 2013

Source: Trail data--Various municipal and multi-municipal plans, municipal and partner input, 2013; Other data--Lehigh County, Tax Assessment Office, 2011; Pennsylvania Department of Transportation, 2013; Lehigh Valley Planning Commission, 2013



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Trail Gap #3: D & L Trail to Ironton Rail Trail

Description

Connecting the D&L Trail to the Ironton Rail Trail would advance the effort of having the D&L Trail open on both sides of the Lehigh River.

Location

Whitehall Township and Coplay Borough, Lehigh County
Start: Rt. 329; LAT 40.6900; LONG -75.5057
End: Ironton Rail Trail; LAT 40.6771, LONG -75.4939

Length

1.1 miles

Status

Lehigh County is taking the lead on this section having ongoing dialogue with Norfolk Southern to obtain a license for use of their property for this section of trail.

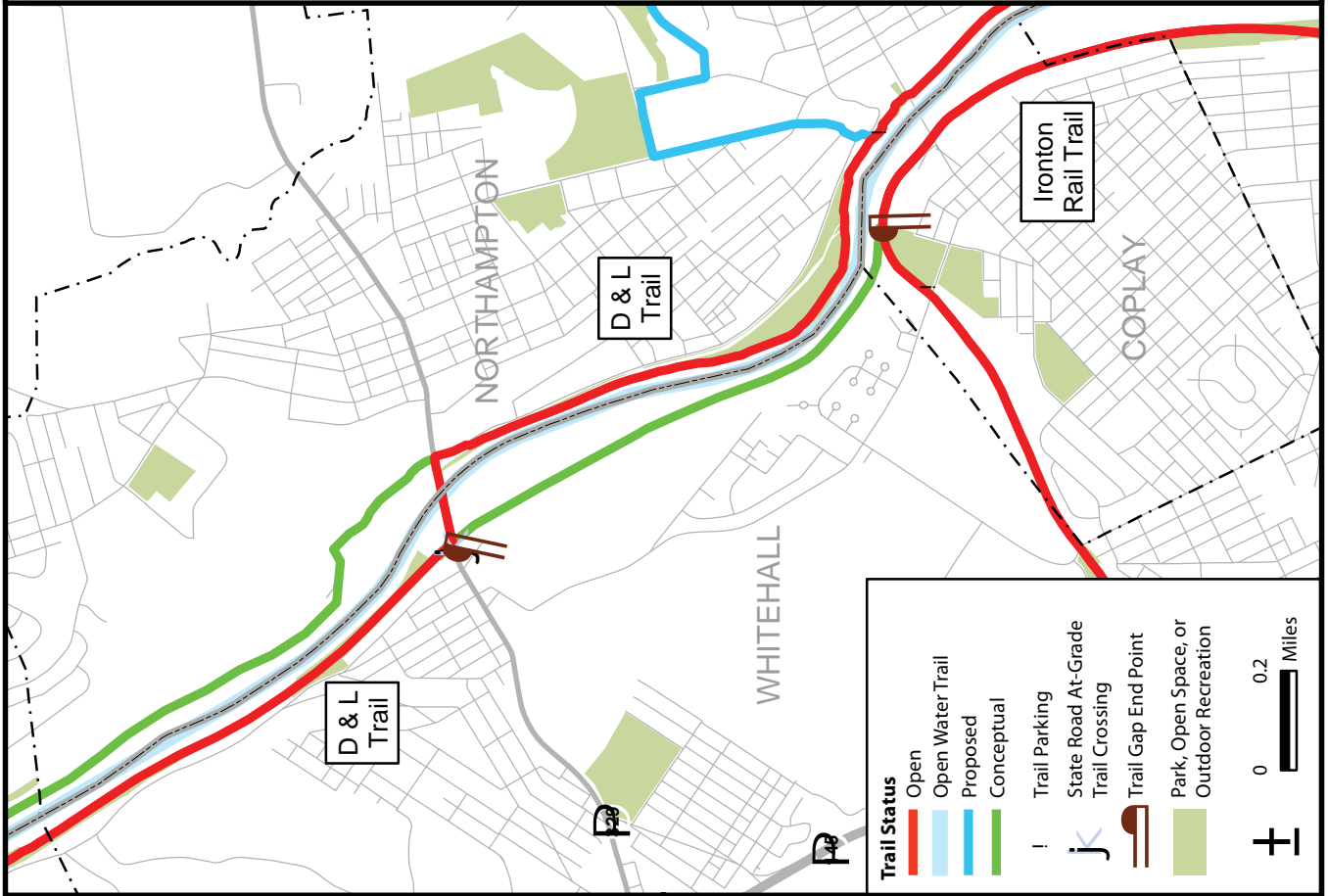
Trail Contact

Scott Everett, Trail Manager
D & L National Heritage Corridor
scott@delawareandlehigh.org
610-923-3548

Date: April 2013
Source: Trail data—Various municipal and multi-municipal plans, municipal and partner input, 2013; Other data—Lehigh County, Tax Assessment Office, 2011; Northampton County, Dept. of Fiscal Affairs, GIS Division, 2011; Lehigh Valley Planning Commission, 2013



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Trail Gap #4: Nor-Bath Trail to D & L Trail

Description

A continuation of the 5-mile Nor-Bath Trail to connect to the D & L Trail.

Location

Northampton Borough, Northampton County
 Start: Clear Spring Rd; LAT 40.6848, LONG -75.4832
 End: Southern end of Canal Street Park off Canal St;
 LAT 40.6773, LONG -75.4906

Length

1.2 miles depending on final route

Status

Final route needs to be determined due to land ownership concerns. DCNR funding for design was approved, but the Borough has decided not to pursue construction at this time.

Trail Contact

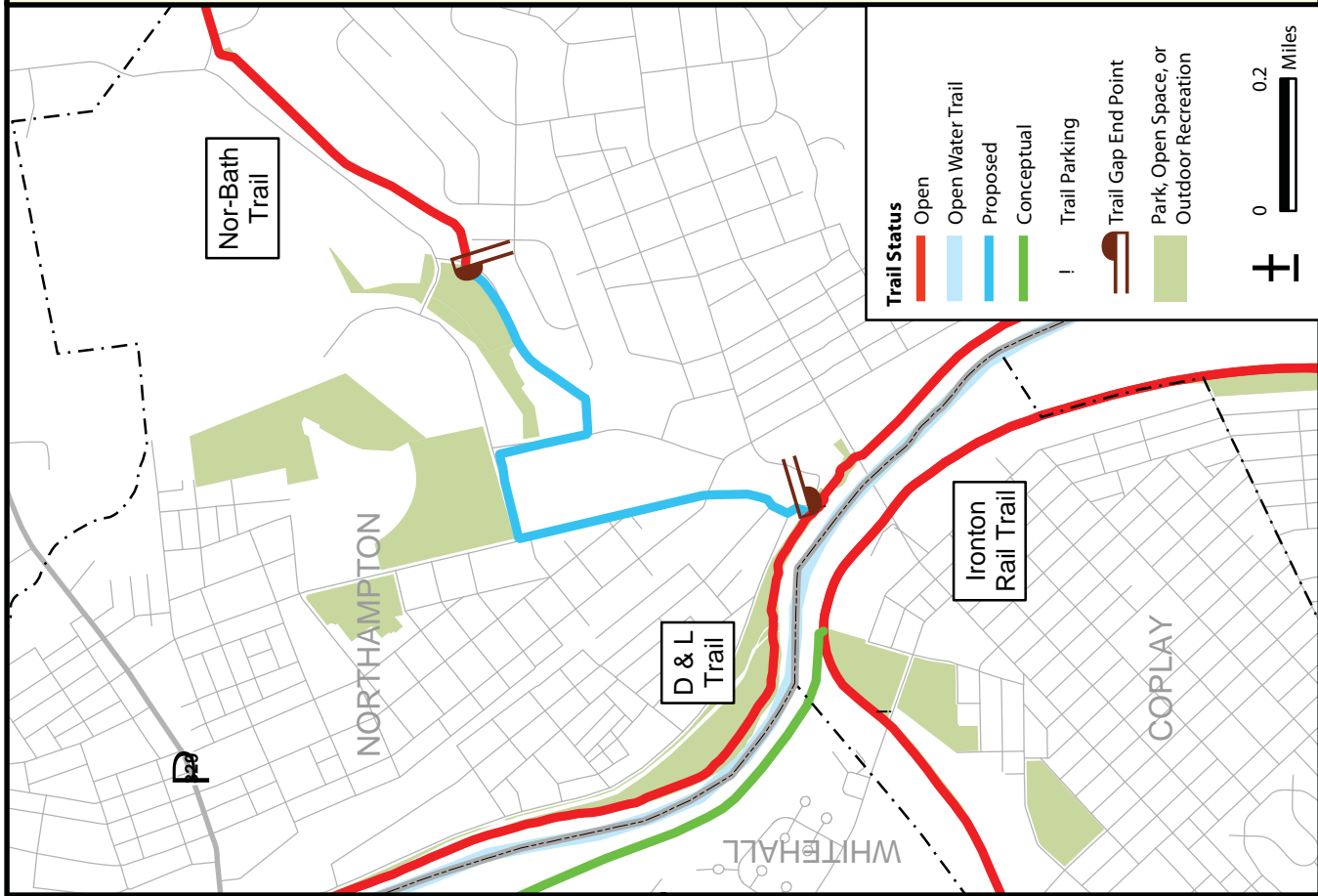
Gene Zarayko
 Borough Manager
 610-262-2576
www.northamptonboro.com

Date: April 2013

Source: Trail data--Various municipal and multi-municipal plans, municipal and partner input, 2013; Other data--Lehigh County, Tax Assessment Office, 2011; Northampton County, Dept. of Fiscal Affairs, GIS Division, 2011; Lehigh Valley Planning Commission, 2013



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Trail Gap #5: D & L Trail - 3 Environmental Obstructions

Description

- A - Stream (Dry Run) confluence with Lehigh River
- B - Broken stormwater pipe causing erosion which created a ravine
- C - Stream (Catasauqua Creek) confluence with canal

Location

Note: LAT/LONG is center point because of short gap length.

- A--Northampton Borough, Northampton County
Start/End: West of W 4th St; LAT 40.6718; LONG -75.4846
- B--North Catasauqua Borough, Northampton County
Start/End: Just north of Cypress St; LAT 40.6615; LONG -75.4828
- C--Catasaqua Borough, Lehigh County
Start/End: Just south of Race St; LAT 40.6479; LONG -75.4683

Length

Each obstruction is approximately 100 ft.

Status

- A - Applying for a 2013 gaming fund grant through Northampton Borough.
- B - Applying for a 2013 gaming fund grant through North Catasauqua.
- C - Partial private funding in place if proposed swivel bridge is approved by environmental agencies.

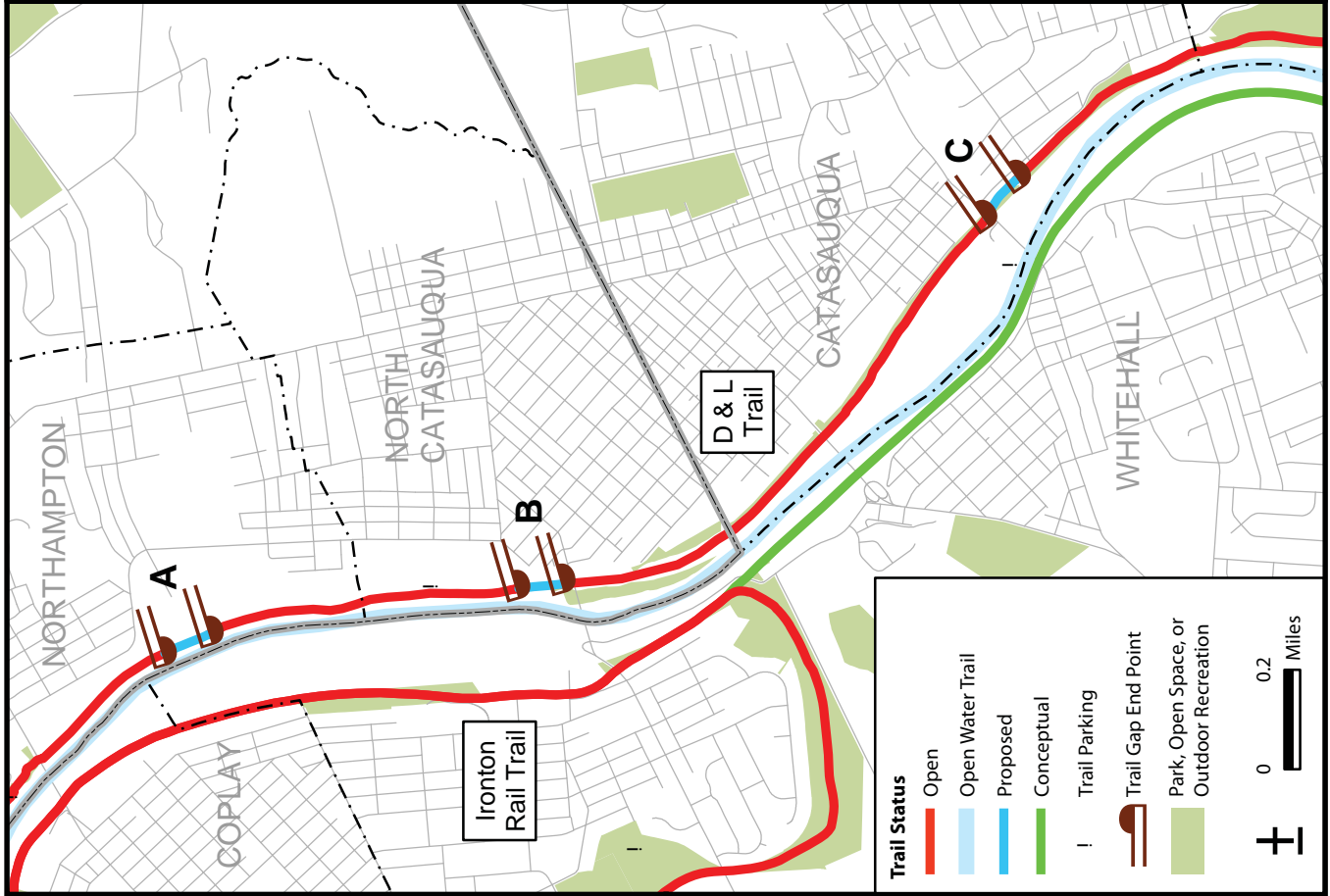
Trail Contact

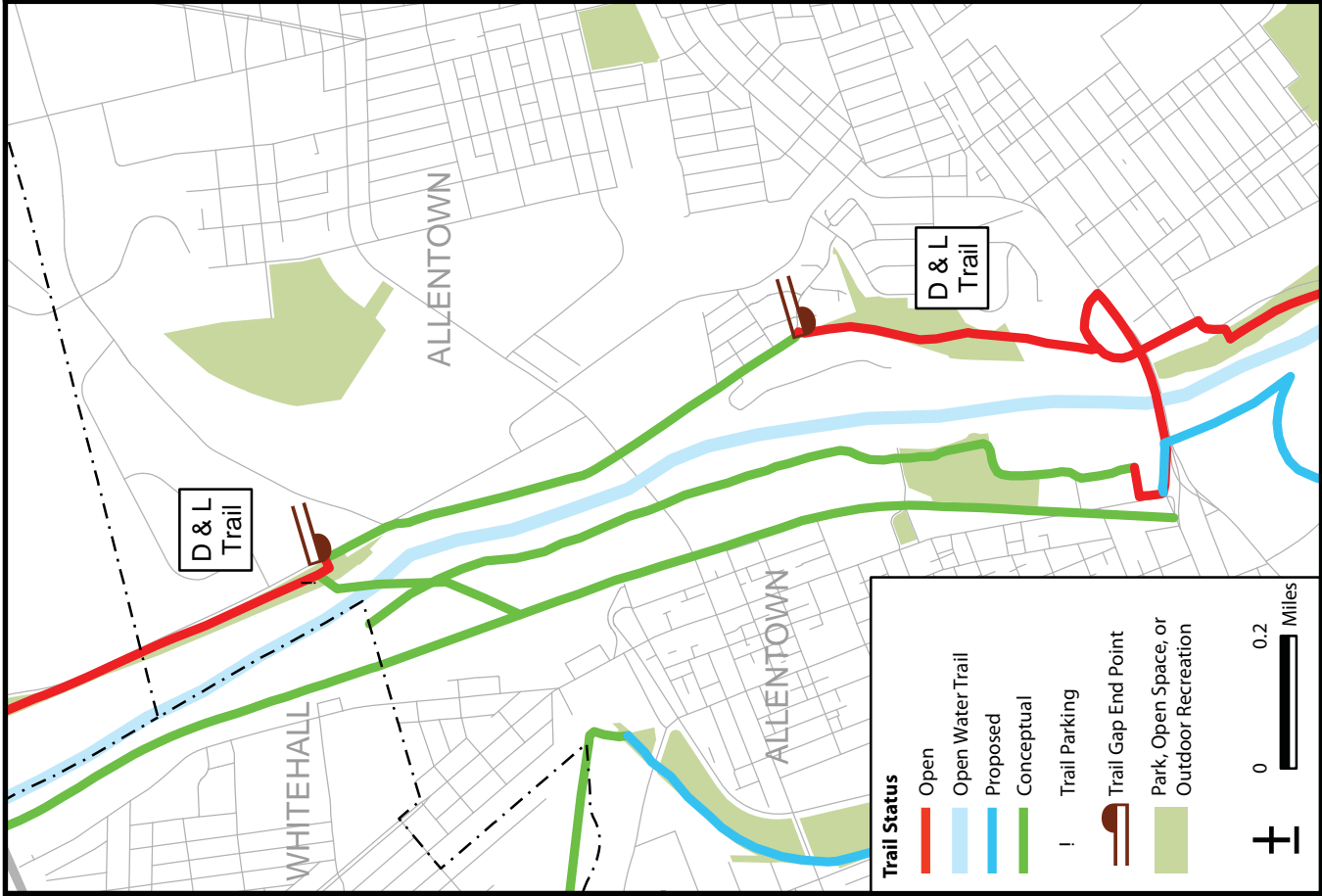
Scott Everett, Trail Manager
D & L National Heritage Corridor
scott@delaawareandlehigh.org
610-923-3548

Date: April, 2013
Source: Trail data--Various municipal and multi-municipal plans, municipal and partner input, 2013; Other data--Lehigh County, Tax Assessment Office, 2011; Northampton County, Dept. of Fiscal Affairs, GIS Division, 2011; Lehigh Valley Planning Commission, 2013



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(610) 264-4544





Trail Gap #6: D & L Trail - Dauphin and Bradford Streets Share the Road

Description

Share-the-road segment on Dauphin and N Bradford Streets from Kimmet's Lock Boat Launch to the north end of the Overlook Park housing development.

Location

City of Allentown, Lehigh County
Start: Dauphin Street at entrance to Kimmet's Lock boat launch parking lot; LAT 40.6248; LONG -75.4583
End: Bradford Street just south of E Libert St; LAT 40.6143, LONG -75.4522

Length

0.8 mile

Status

Funding in place for both the Dauphin Street and Bradford Street segments. Construction funding dependent on other trail construction projects. Segments are currently being designed; construction to begin after completion of American Parkway bridge road project.

Trail Contact

Scott Everett, Trail Manager
D & L National Heritage Corridor
scott@delawareandlehigh.org
610-923-3548

Date: April 2013

Source: Trail data—Various municipal and multi-municipal plans, municipal and partner input, 2013; Other data—Lehigh County, Tax Assessment Office, 2011; Lehigh Valley Planning Commission, 2013



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Trail Gap #7: South Bethlehem Greenway Trail to Saucon Rail Trail

Description

The continuation of the South Bethlehem Greenway Trail to meet up with the northern end of the Saucon Rail Trail.

Location

City of Bethlehem, Northampton County
Start: South of Auburn St; LAT 40.601, LONG -75.3428
End: Hellertown Borough line; LAT 40.5884, LONG -75.3444

Length

0.9 mile

Status

Discussions have been held with the owner, Norfolk Southern, to come to an agreement on the use of the corridor for a trail.

Trail Contact

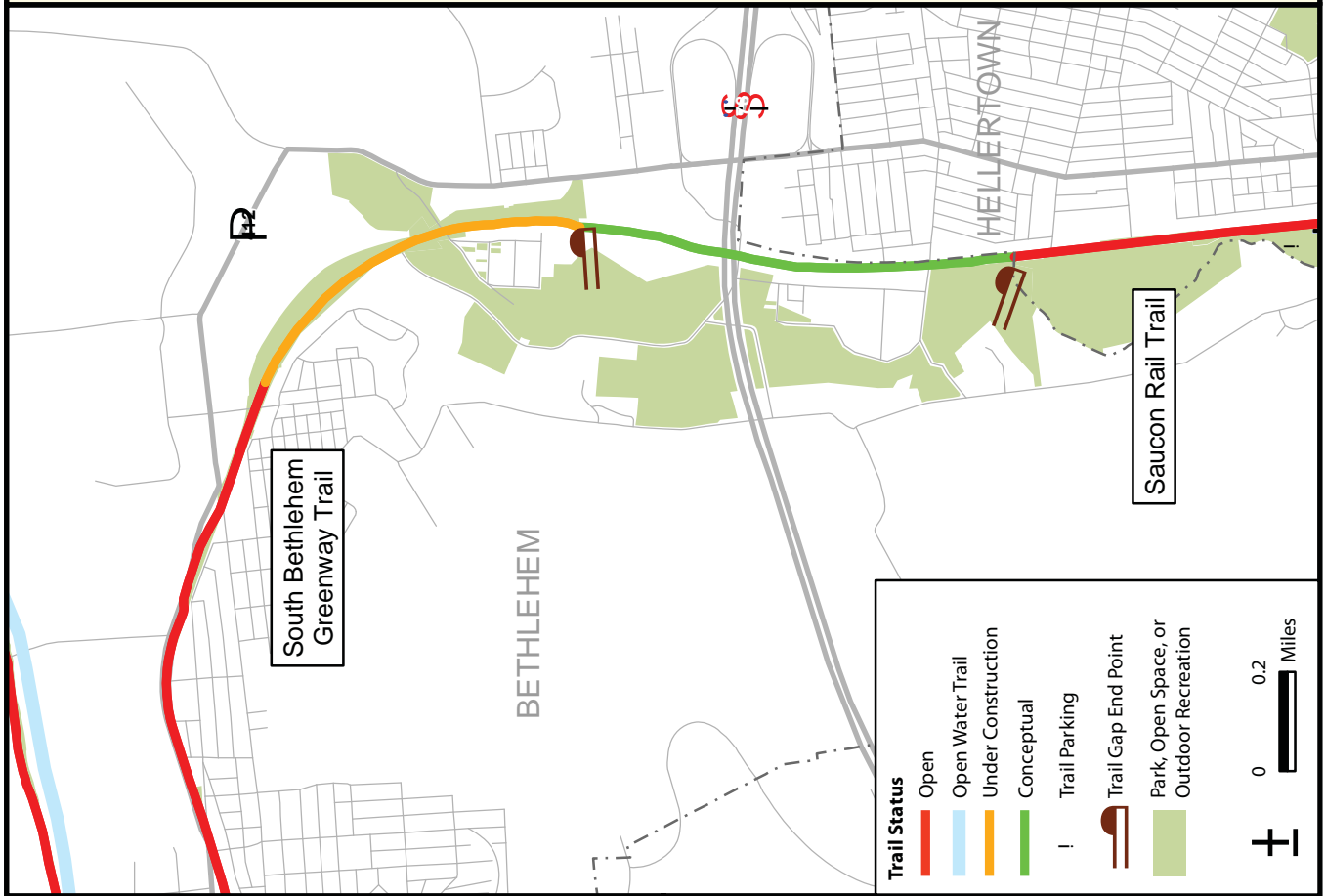
Darlene Heller, Director of Planning
City of Bethlehem
dheller@bethlehem-pa.gov
610-865-7088

Date: April 2013

Source: Trail data-Various municipal and multi-municipal plans, municipal and partner input, 2013; Other data--Northampton County, Dept. of Fiscal Affairs, GIS Division, 2011; Lehigh Valley Planning Commission, 2013



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(610) 264-4544



Trail Gap #8: Karl Stirner Arts Trail to Palmer Township Bike Path

Description

Within the Two Rivers Area Trail System, a trail connecting the existing portion of the Karl Stirner Arts Trail to the southern end of the Palmer Township Bike Path. The Hackett's Park Trail would also connect with this trail segment.

Location

City of Easton, Wilson Borough, and Palmer Township, Northampton County

Start: 13th Street, Easton, LAT 40.6961, LONG -75.2283

End: Edgewood Ave, Palmer Township LAT 40.7008, LONG -75.2424

Length

1.1 miles

Status

Easton--An extension is planned for the Karl Stirner Arts Trail to meet up with the regional trail network in Wilson Borough and Palmer Townships under the Sustainable Communities grant for the 13th Street Corridor.

Wilson--Very short section (50 ft.); no work being done at this time.

Palmer--Developer's planned secondary emergency access to apartment complex would serve as trail segment. Timeframe for development of this section is not known at this time.

Trail Contact

Easton--Becky Bradley, AICP, Director of Planning & Codes
bbradley@easton-pa.gov
610-250-6651

Wilson--Karen Lohrman, Manager/Secretary
boroughsecretary@wilsonborough.org
610-258-6142

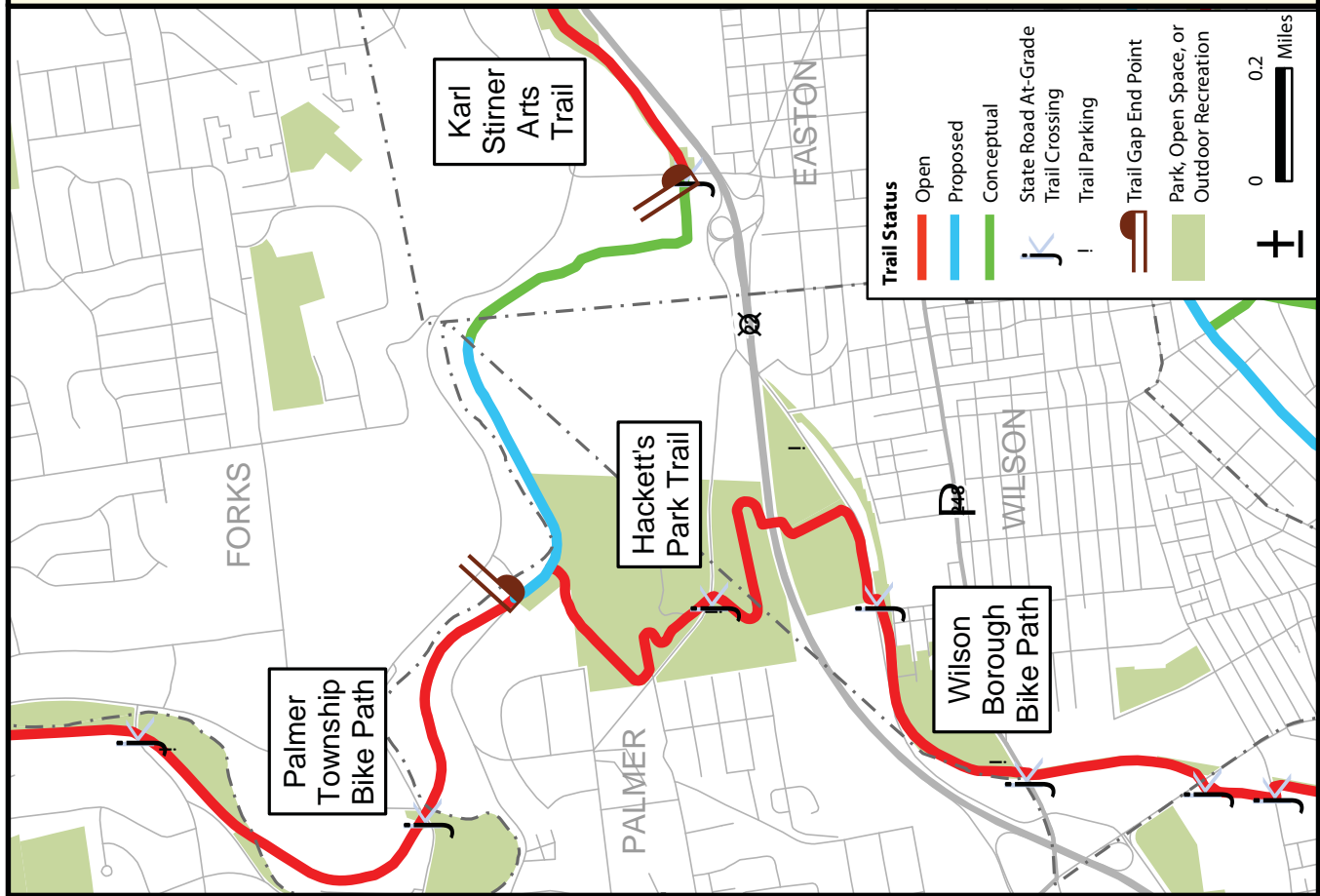
Palmer--Tom Adams, Director, Public Services
tadams@palmertwp.com
610-253-7191

Date: April 2013

Source: Trail data--Various municipal and multi-municipal plans, municipal and partner input, 2013; Other data--Pennsylvania Department of Transportation, 2013; Northampton County, Dept. of Fiscal Affairs, GIS Division, 2011; Lehigh Valley Planning Commission, 2013



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Trail Gap #9: Tatamy Rail Trail to Jacobsburg Environmental Education Center (JEEC)

Description

Within the Two Rivers Area Trail System, a trail connecting the existing portion of the Tatamy Rail Trail north through Stockertown Borough on the Stockertown Rail Trail (in construction phase) and Plainfield and Bushkill Townships to JEEC where there is a multi-trail network.

Location

Tatamy and Stockertown Boroughs, Plainfield and Bushkill Townships, Northampton County

Start: Main Street, Tatamy; LAT 40.7423; LONG -75.2502

End: Henry Road, Bushkill Twp; LAT 40.7758; LONG -75.2864

Length

3.7 miles

Status

- Different types of land ownership concerns in all the municipalities.
- A land swap currently in process and sinkhole activity in vicinity of proposed trail route in Tatamy.
- One or more stream crossings depending on route at the Tatamy/Stockertown line and in Bushkill.
- A state road crossing in Stockertown is currently under review by the Pennsylvania Department of Transportation and in construction phase on another part of their rail trail.

Trail Contact

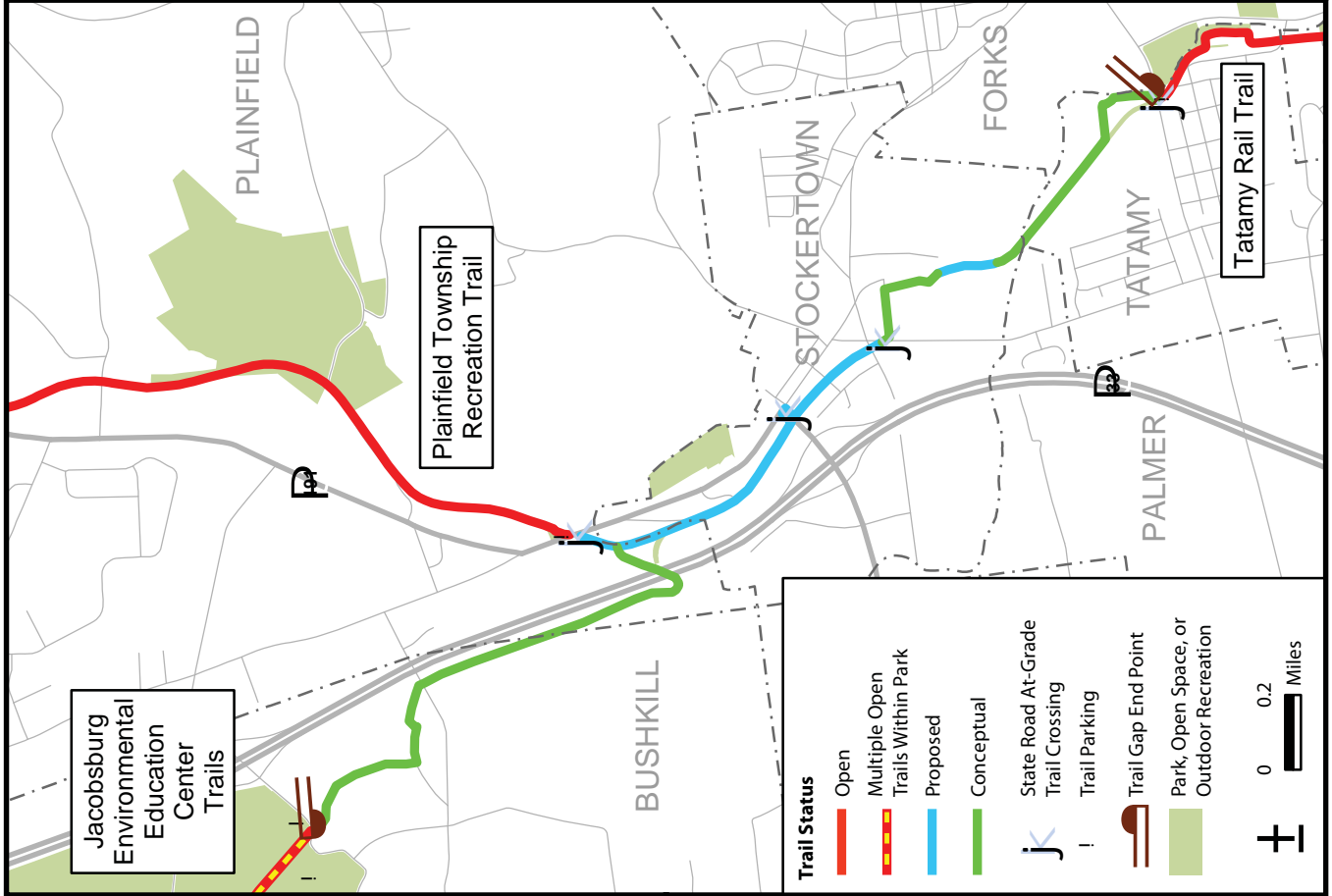
Sherry Acevedo
D & L National Heritage Corridor
sherry@delawareandlehigh.org
610-923-3548

Date: April 2013

Source: Trail data--Various municipal and multi-municipal plans, municipal and partner input, 2013; Other data--Pennsylvania Department of Transportation, 2013; Northampton County, Dept. of Fiscal Affairs, GIS Division, 2011; Lehigh Valley Planning Commission, 2013



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Allentown, PA 18109-9368
(610) 264-4544



Trail Gap #10: Bushkill Township PPL Trail to Appalachian Trail

Description

Within the Two Rivers Area Trail System, a continuation of the Bushkill Township PPL Trail north to Plainfield Township and then to the Appalachian Trail. The trail currently runs north from Jacobsburg Environmental Education Center to Rt. 512.

Location

Bushkill and Plainfield Townships, Northampton County
Start: Rt. 512, 0.9 mile west of Rt. 33; LAT 40.8276 LONG -75.3151
End: Appalachian Trail on Kittatinny Ridge, exact location not known at this time

Length

Approximately 2.6 depending on route

Status

Heritage Conservancy has funding to conduct landowner outreach in Bushkill Township along the corridor north of Rt. 512 to determine the location of the route. Land for part of this trail was transferred to Plainfield Township when the Chairon property open space acquisition was transferred to the PA Game Commission. Further work on the Plainfield Township section of the trail will happen at some point in the future. Will need to seek approval from the National Park Service for a connection to the Appalachian Trail.

Trail Contact

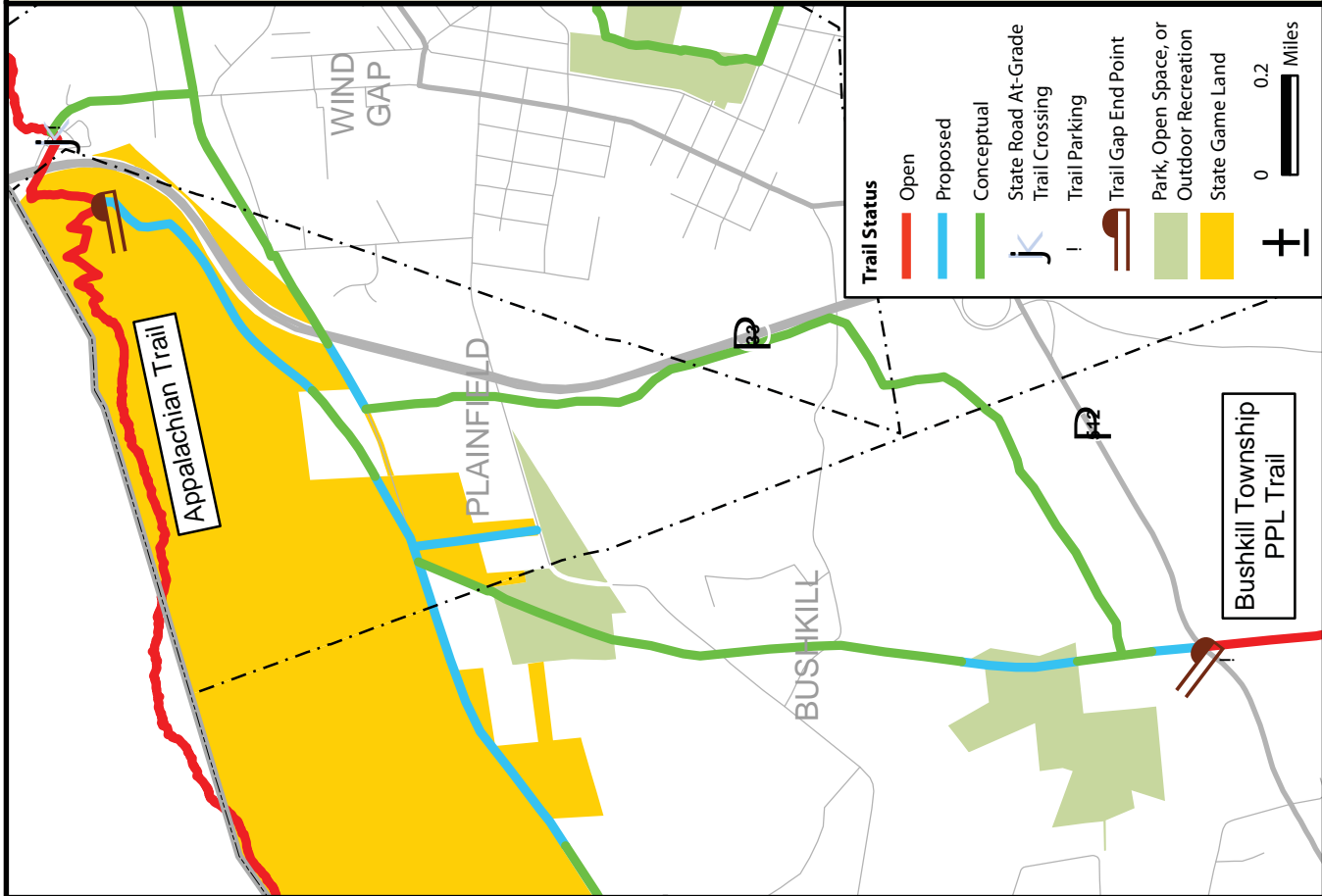
Brian Harris, Township Manager
Bushkill Township
www.bushkilltownship.com
610-759-1250

Date: April 2013

Source: Trail data--Various municipal and multi-municipal plans, municipal and partner input, 2013; Other data--Pennsylvania Department of Transportation, 2013; Northampton County, Dept. of Fiscal Affairs, GIS Division, 2011; Lehigh Valley Planning Commission, 2013



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(610) 264-4544



Appendix

Guidelines

Before undertaking any trail/crossing plans or construction, local governments and organizations must contact the [PennDOT Bicycle & Pedestrian Coordinator](#) under Public Forums on the [Bicycle/Pedestrian Web Page](#) or through the appropriate district office.

In the event that a local government or organization plans to have one or more trails that will cross state highways, a Shared Use Path Crossing Agreement with PennDOT is needed. This agreement will cover all crossings under the jurisdiction of the government agency or organization.

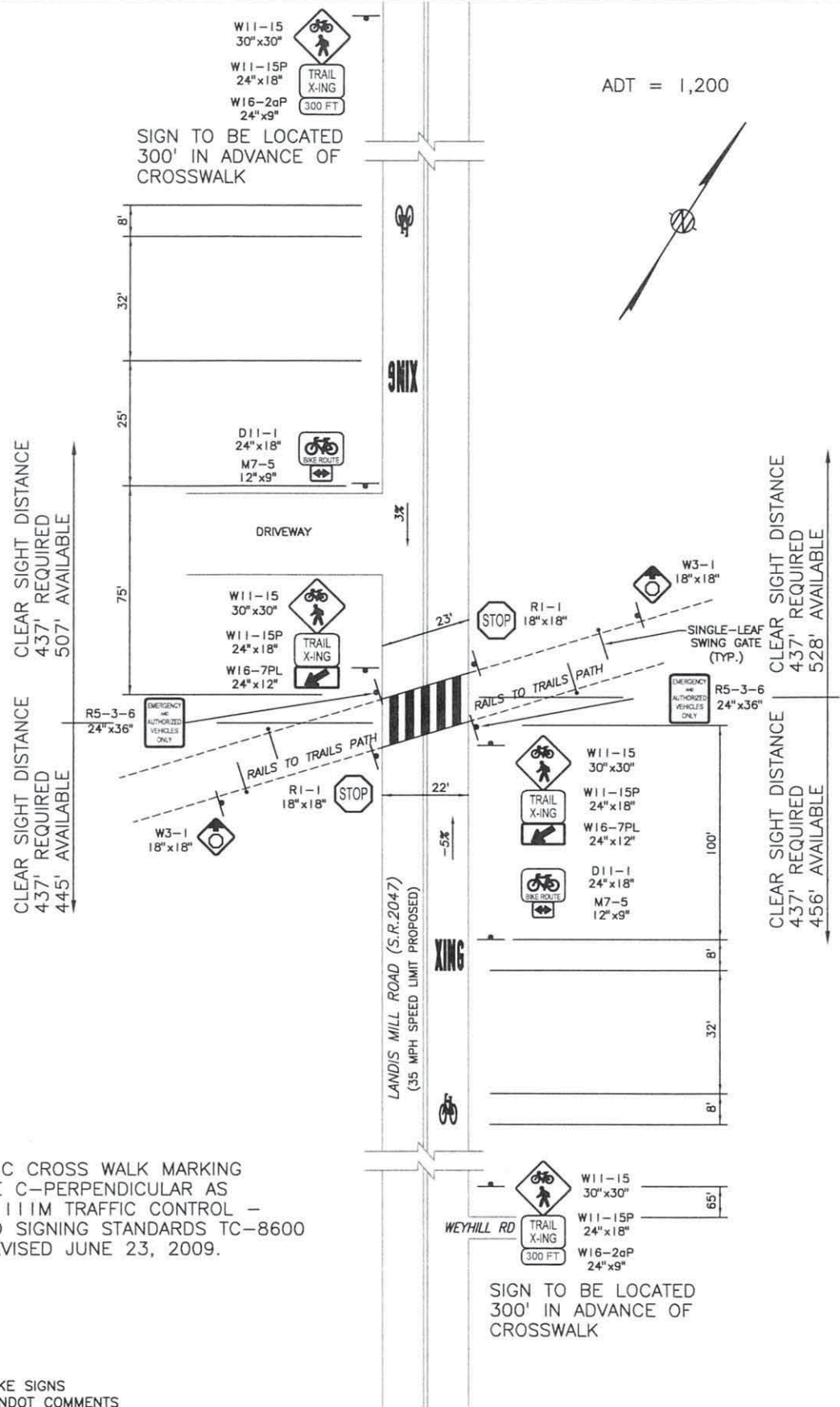
If a local government or organization plans to have one or more pedestrian-only footpaths that will cross state highways, they will need a Footpath Crossing Agreement with PennDOT, which will cover all crossings under the jurisdiction of the government agency or organization.

When a trail or footpath needs to cross above or below a state highway, a special "Trail Structure Agreement" will be needed. If a local government or organization desires to place a trail or footpath within state highway right of way, a specialized "Trail Maintenance Agreement" will be needed. For more information on specialized agreements, contact the PennDOT [Bicycle & Pedestrian Coordinator](#) in your district.

Existing and Planned At-Grade Trail Crossings of State Highways (includes Trail heads and short parallel segments)							Crossing Plans		Speed Limit
County	SR	Segment	Offset	Road Name	Trail Name	Trail Crossing Owner			
Lehigh	329	130	0654	Main Street	D&L Trail	N/A (maybe Whitehall Township)	No	No	25
Lehigh	1023	40	2113	Church Street	Ironton Rail Trail	Whitehall Township	Yes	Yes	25
Lehigh	1017	130	0654	Mauch Chunk Rd	Ironton Rail Trail	North Whitehall Township	Yes	Yes	35
Lehigh	2010	10	1749	Fish Hatchery Rd	No name (Little Lehigh Park)	Allentown City	Yes	Yes	35
Lehigh	4016	10	0445	Main Street	D&L Trail	Slatington Borough	No	No	25
Lehigh	4007	70	2313	Game Preserve Rd	Trexler Nature Preserve Trail	Lehigh County	Yes	Yes	35
Lehigh	4007	100	2394	Game Preserve Rd	Trexler Nature Preserve Trail	Lehigh County	Yes	Yes	35
Lehigh	4018	60	0343	Main Street	Slate Heritage Trail	Unknown (Washington Township ?)	No	No	35
Lehigh	2034	40	0045	Spring Valley Rd	Saucon Rail Trail	Upper Saucon Township	Yes	Yes	35
Lehigh	2047	20	0381	Landis Mill Rd	Saucon Rail Trail	Upper Saucon Township	Yes	Yes	35
Lehigh	2030	10	0805	Station Ave	Saucon Rail Trail	Upper Saucon Township	Yes	Yes	25
Lehigh	2028	20	0987	East Passer Rd	Saucon Rail Trail	Upper Saucon Township	Yes	Yes	35
Lehigh	2026	30	0966	E Station Ave	Saucon Rail Trail	Coopersburg Borough	No	No	25
Northampton	3004	80	0570	W. Water St	Saucon Rail Trail	Hellertown Borough	Yes	Yes	30
Northampton	3017	120	1007	Weaversville Rd	Nor-Bath Trail	Northampton County	Yes	Yes	35
Northampton	987	60	1228	Airport Rd	Nor-Bath Trail	Northampton County	Yes	Yes	45
Northampton	2019	20	723	N 13th Street	Karl Stirner Arts Trail	City of Easton	No	No	35
Northampton	191	170	3312	Industrial Blvd	Stockertown Rail Trail	Stockertown Borough	Yes	Yes	45
Northampton	191	190	1935	Main Street	Plainfield Township Trail	Plainfield Township			40
Northampton	512	280	1913	E. Moorestown Road	PPL Trail	Bushkill Township			45
Northampton	1002	70	2640	Main Street	Tatamy Rail Trail	Tatamy Borough			35
Northampton	1016	50	1040	Delabole Rd	Plainfield Township Trail	Plainfield Township	No	No	40
Northampton	2013	10	1853	Stones Crossing Rd	Palmer-Bethlehem Township Bikeway	Palmer Township	Yes	Yes	35
Northampton	2017	30	2386	Hackett Ave	Hackett's Park Trail	Palmer Township	No	No	40
Northampton	2024	30	0260	Wood Ave	No name / end Wilson Borough Bike Path	Palmer Township	No	No	35
Northampton	248	510	0427	Northampton St	Wilson Borough Bike Path	Wilson Borough	No	No	35
Northampton	2012	180	3115	S 25th St	End Wilson Borough Bike Path / no name	Wilson Borough / Palmer Township	No	No	Unk
Northampton	2020	160	1560	William Penn Hwy	No name paved trail	Palmer Township	No	No	35
Northampton	2018	110	1208	Freemansburg Ave	No name paved trail	Palmer Township	No	No	40
Northampton	2012	170	2577	S 25th St	No name paved trail (end)	Palmer Township/West Easton Borough	No	No	25
Northampton	2034	10	0954	Bushkill Park Dr	Palmer Township Bike Path	Palmer Township	Yes	Yes	35
Northampton	2032	40	1550	Northwood Ave	Palmer Township Bike Path	Palmer Township	Yes	Yes	
Northampton	2021	50	1070	Richmond Road	Forks Township (local community)	Forks Township ?????			35
Northampton	2021	50	3562	Richmond Road	Forks Township (local community)	Forks Township ?????			35
Northampton	2036	20	2653	Zucksville Rd	Forks Township Trail (local community)	Forks Township	Yes	Yes	35
Northampton	4022	10	0066	Main Street	Lehigh Canal Heritage Trail	Walnutport Borough	No	No	25
Northampton	1012	20	1786	Belfast Rd	Sabers Run Connector Trail	DCNR Jacobsburg Environmental Education Center			
Northampton	1001	50	2043	Jacobsburg Rd	Sabers Run Connector Trail	DCNR Jacobsburg Environmental Education Center			
Northampton	1003	10	1663	State Park Rd	Sabers Run Connector Trail	DCNR Jacobsburg Environmental Education Center			
Northampton	1010	30	2319	Belfast Rd	Jacobsburg Trail	DCNR Jacobsburg Environmental Education Center			
Northampton	191	490	2300	SR 191	Appalachian Trail	Appalachian Trail Conservancy			
Northampton	1007	20	1760	Broadway St	Appalachian Trail	Appalachian Trail Conservancy			
Northampton	4001	130	3331	Blue Mountain Dr.	Appalachian Trail	Appalachian Trail Conservancy			
Northampton	248	20/21	0100	Lehigh Dr	Appalachian Trail	Appalachian Trail Conservancy			
Lehigh	309	610	2842	SR 309	Appalachian Trail	Appalachian Trail Conservancy			

Source: Pennsylvania Department of Transportation, District 5, March 2013

Drawing name: S:\Upper Saucon Township\US1008 - Rail



CROSSWALK NOTE:

THE WHITE THERMOPLASTIC CROSS WALK MARKING SHALL BE PENNDOT TYPE C—PERPENDICULAR AS SHOWN ON PUBLICATION 111M TRAFFIC CONTROL — PAVEMENT MARKINGS AND SIGNING STANDARDS TC-8600 SHEET 6 OF 11 LAST REVISED JUNE 23, 2009.

REVISED MARCH 8, 2011 ADDED NEW BIKE SIGNS
REVISED SEPTEMBER 13, 2010 PER PENNDOT COMMENTS

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CHKD. BY: BEH
FIELD BOOK:

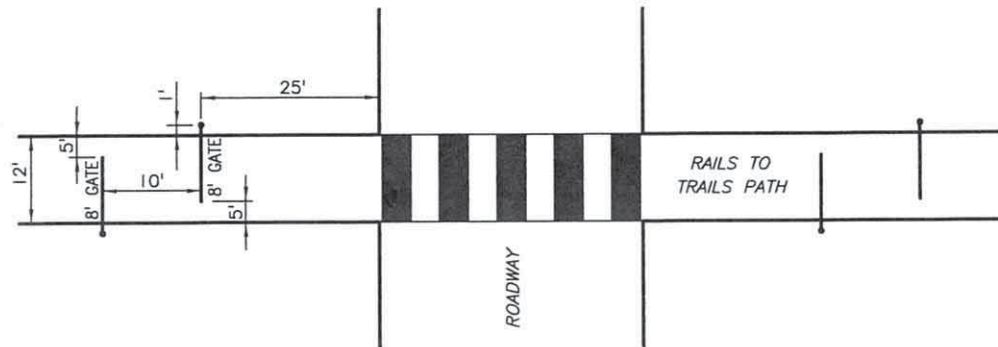
SCALE:
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DATE:
AUGUST 2010
PROJ. NO.:
US1008

UPPER SAUCON TOWNSHIP
RAIL TO TRAIL CONVERSION
UPPER SAUCON TOWNSHIP, LEHIGH COUNTY, PENNSYLVANIA
THE PIDCOCK COMPANY
CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING
2451 PARKWOOD DRIVE ALLENTOWN, PENNSYLVANIA 18103

S.R.2047 (LANDIS MILL ROAD)

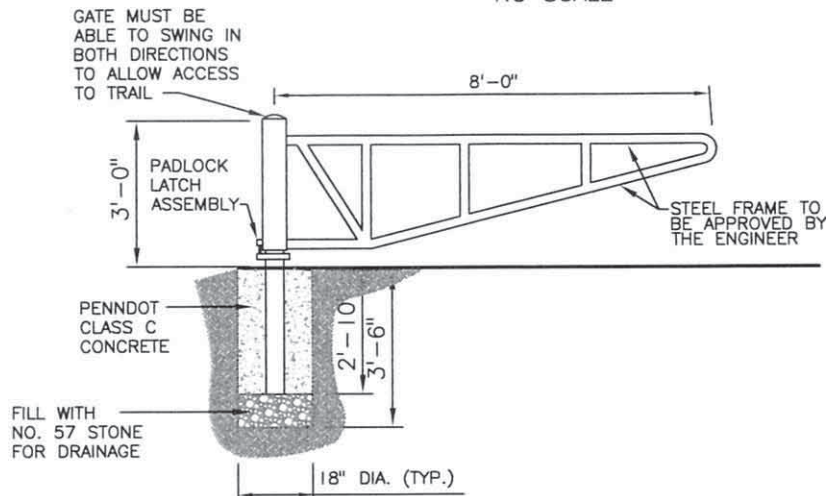
SK
3

Drawing name: S:\Upper Saucon Township\US1008 - Rails to Trails\Plans\Sketches\Sk-03A Landis Mill Road.dwg Last Modified: Mar 18, 2011 - 3:10pm
"NOT PUBLISHED; ALL RIGHTS RESERVED BY THE PIDCOCK COMPANY."



SWING GATE LOCATION PLAN

NO SCALE



SINGLE-LEAF SWING GATE

NO SCALE

CROSSING NOTE

MR. THOMAS BEIL, MANAGER OF UPPER SAUCON TOWNSHIP, HAS READ, UNDERSTANDS, AND WILL COMPLY WITH THE PROVISIONS AND LIMITATIONS OF THE SHARED USE PATH CROSSING AGREEMENT BETWEEN PENNDOT AND UPPER SAUCON TOWNSHIP DATED SEPTEMBER 7, 2010.

SHARED USE PATH NAME	- SAUCON RAIL TRAIL
FEDERAL ID NO.	- 23-6000547
PENNDOT AGREEMENT NO.	- 057222
CONTACT PERSON	- MR. THOMAS F. BEIL MANAGER UPPER SAUCON TOWNSHIP 5500 CAMP MEETING ROAD CENTER VALLEY, PA 18034-9444
STATE ROUTE CROSSED	- S.R.2047 (LANDIS MILL ROAD)
SEGMENT / OFFSET	- 0020/0381
STOPPING SIGHT DISTANCE	- 239' REQUIRED (SOUTHBOUND) 310+' AVAILABLE (SOUTHBOUND) 269' REQUIRED (NORTHBOUND) 350+' AVAILABLE (NORTHBOUND)

REVISED SEPTEMBER 13, 2010 PER PENNDOT COMMENTS

DRWN. BY:
JLS
CHKD. BY:
BEH
FIELD BOOK:

SCALE:
NO SCALE
DATE:
AUGUST 2010
PROJ. NO.:
US1008

UPPER SAUCON TOWNSHIP RAIL TO TRAIL CONVERSION

UPPER SAUCON TOWNSHIP, LEHIGH COUNTY, PENNSYLVANIA

THE PIDCOCK COMPANY

CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING
2451 PARKWOOD DRIVE ALLENTOWN, PENNSYLVANIA 18103

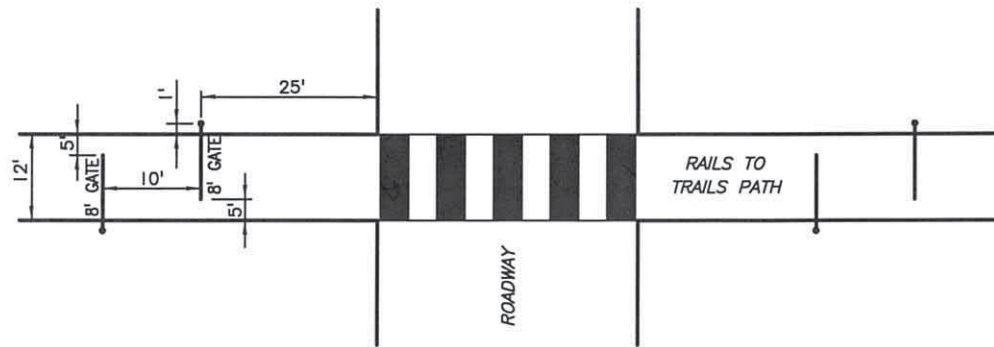
S.R.2047 (LANDIS MILL ROAD)

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3A

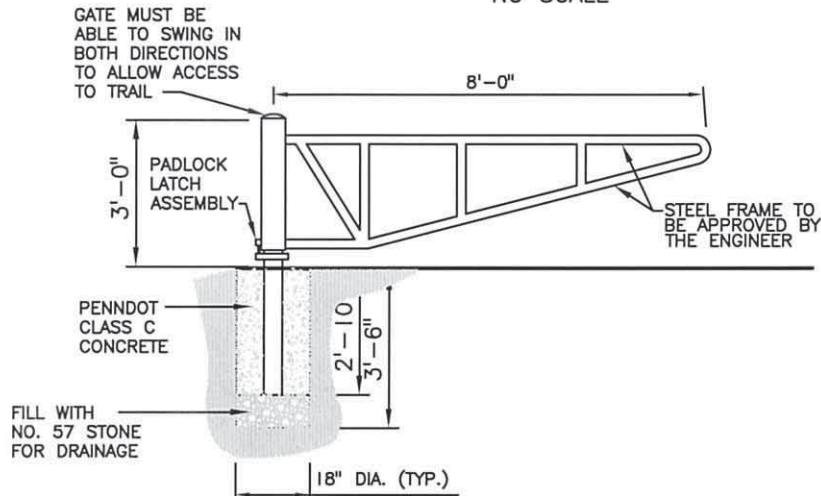
NOT PUBLISHED; ALL RIGHTS RESERVED BY THE PIDCOCK COMPANY."

SK
4

Drawing name: S:\Upper Saucon Township\US1008 - Rails to Trails\Plans\Sketches\Sk-04A Spring Valley Road.dwg Last Modified: Sep 13, 2010 - 3:56pm
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SWING GATE LOCATION PLAN
NO SCALE

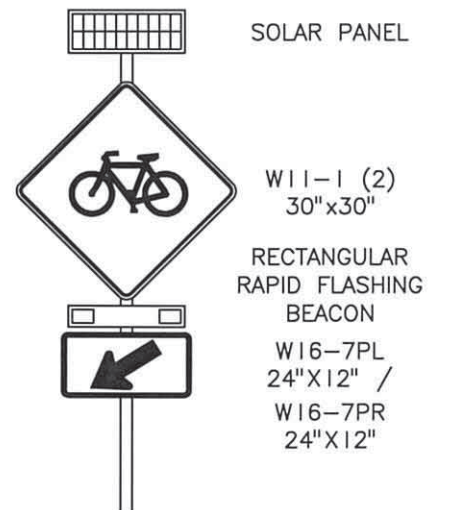


SINGLE-LEAF SWING GATE
NO SCALE

CROSSING NOTE

MR. THOMAS BEIL, MANAGER OF UPPER SAUCON TOWNSHIP, HAS READ, UNDERSTANDS, AND WILL COMPLY WITH THE PROVISIONS AND LIMITATIONS OF THE SHARED USE PATH CROSSING AGREEMENT BETWEEN PENNDOT AND UPPER SAUCON TOWNSHIP DATED SEPTEMBER 7, 2010.

SHARED USE PATH NAME	- SAUCON RAIL TRAIL
FEDERAL ID NO.	- 23-6000547
PENNDOT AGREEMENT NO.	- 057222
CONTACT PERSON	- MR. THOMAS F. BEIL MANAGER UPPER SAUCON TOWNSHIP 5500 CAMP MEETING ROAD CENTER VALLEY, PA 18034-9444
STATE ROUTE CROSSED	- S.R.2034 (SPRING VALLEY ROAD)
SEGMENT / OFFSET	- 0040/0045
STOPPING SIGHT DISTANCE	- 245' REQUIRED (EASTBOUND) 320' AVAILABLE (EASTBOUND) 265' REQUIRED (WESTBOUND) 165' AVAILABLE (WESTBOUND)



RECTANGULAR RAPID FLASHING BEACON SIGN
NO SCALE

REVISED SEPTEMBER 13, 2010 PER PENNDOT COMMENTS

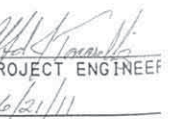
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CHKD. BY:
BEH
FIELD BOOK:

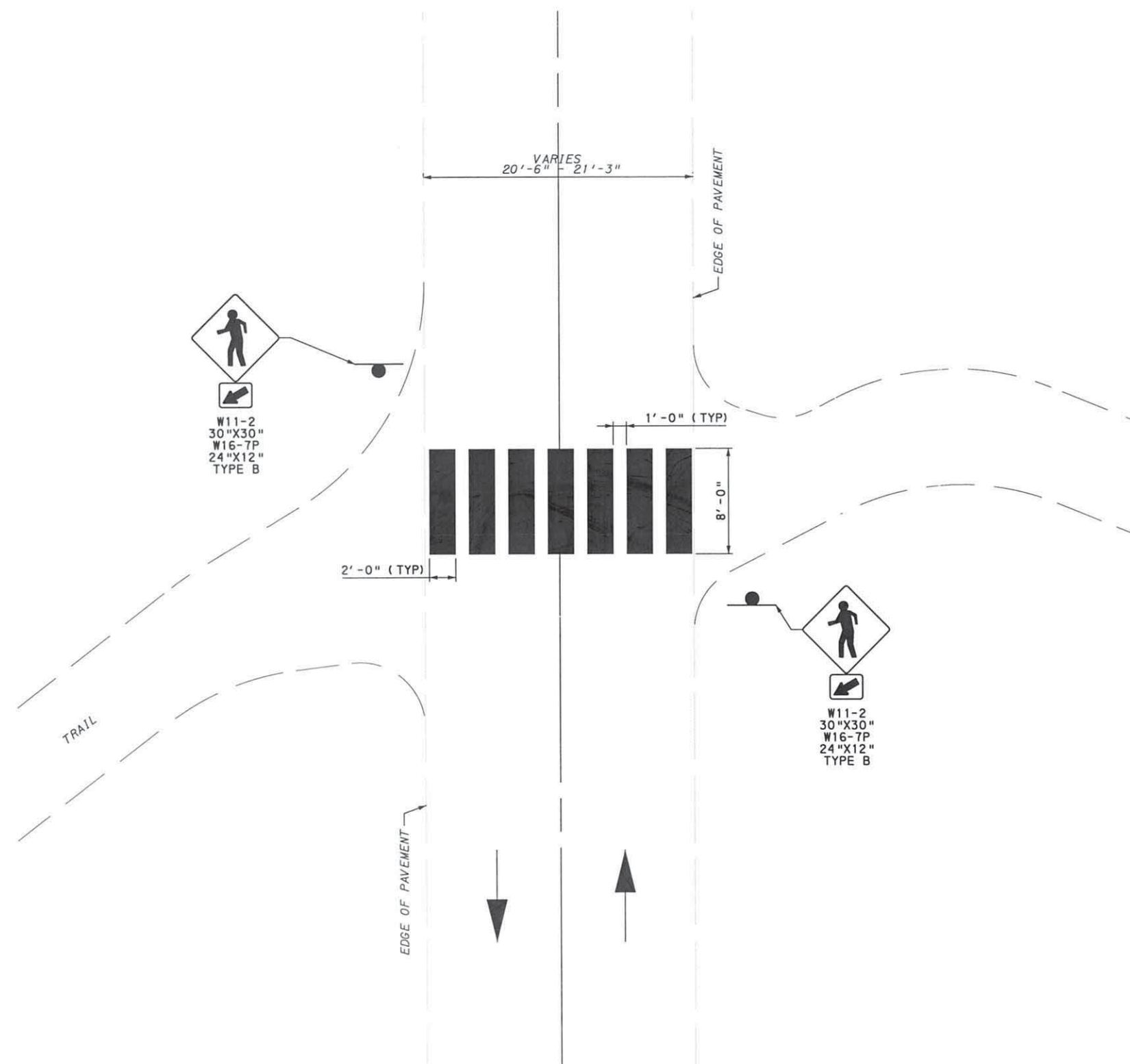
SCALE:
NO SCALE
DATE:
AUGUST 2010
PROJ. NO.:
US1008

UPPER SAUCON TOWNSHIP
RAIL TO TRAIL CONVERSION
UPPER SAUCON TOWNSHIP, LEHIGH COUNTY, PENNSYLVANIA
THE PIDCOCK COMPANY
CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING
2451 PARKWOOD DRIVE ALLENTOWN, PENNSYLVANIA 18103
S.R.2034 (SPRING VALLEY ROAD)

SK
4A

A-9





NOTES

1. FOR ADDITIONAL DETAILS, SEE PENNDOT PUBLICATION 111M (TRAFFIC CONTROL - PAVEMENT MARKINGS AND SIGNING STANDARDS, TC 8600 AND TC-8700).
2. CROSSWALK TO BE TYPE C - PERPENDICULAR STANDARD CROSSWALK MARKINGS.
3. INSTALL ALL SIGNS WITH A FLUORESCENT YELLOW GREEN RETROREFLECTORIZED BACKGROUND WITH BLACK NON-REFLECTORIZED LEGEND AND BORDER.
4. ALL CROSSWALK PAVEMENT MARKINGS TO BE EPOXY.
5. CROSSWALKS ARE TO BE PERPENDICULAR TO THE EXISTING EDGES OF SHOULDER.

0 5 10 FEET

TREXLER NATURE PRESERVE
 SHARED USE PATH CROSSING PLAN
 TYPICAL PAVEMENT
 MARKING APPLICATION
 NORTH WHITEHALL TOWNSHIP, LEHIGH COUNTY

benesch
 engineers · scientists · planners

Alfred Benesch & Company
 840 Hamilton Street, Suite 400
 Allentown, Pennsylvania 18101
 610-439-7066

Date
 10/27/10

Dwn
 VWG

Scale
 1" = 10'

Cpk
 [Signature]

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Dwg No
 1 OF 1
 A-11

General Notes

- 1. This is a modification to an existing trail crossing that is maintained by the Berks County Department of Parks and Recreation as of the effective date of the shared use path crossing agreement No. 057282
- 2. For additional details, see PENNDOT publication 111M (traffic control pavement markings and signing standards, TC-8600).
- 3. Install all signs with a fluorescent yellow green retro reflectorized background with a black non-reflectorized legend and border.
- 4. Crosswalk to be Type C—perpendicular standard painted crosswalk markings.

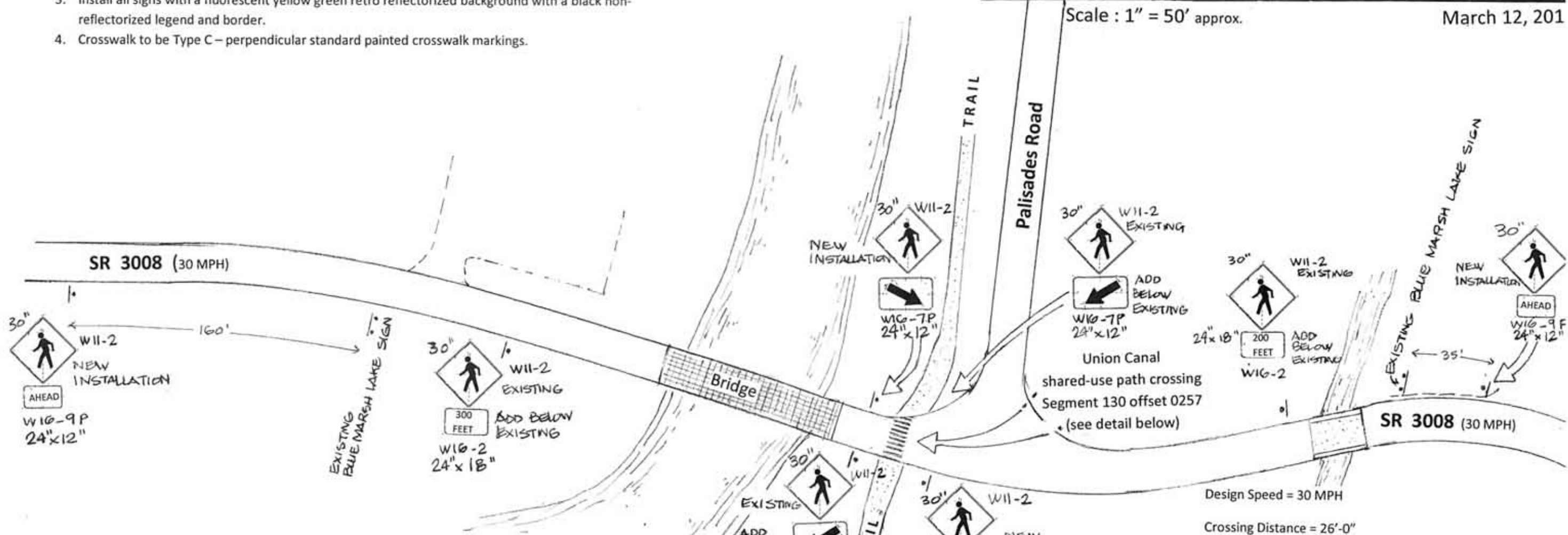
UNION CANAL TRAIL CROSSING PLAN

Reber's Bridge Road (State Route 3008)

Design speed 30 MPH ADT = 3,683
Posted speed 30 MPH

Scale : 1" = 50' approx.

March 12, 201



Shared Use Path Crossing Notes

Union Canal Trail

Berks County Department of Parks and Recreation
2083 Tulpehocken Road
Wyomissing, PA 19610

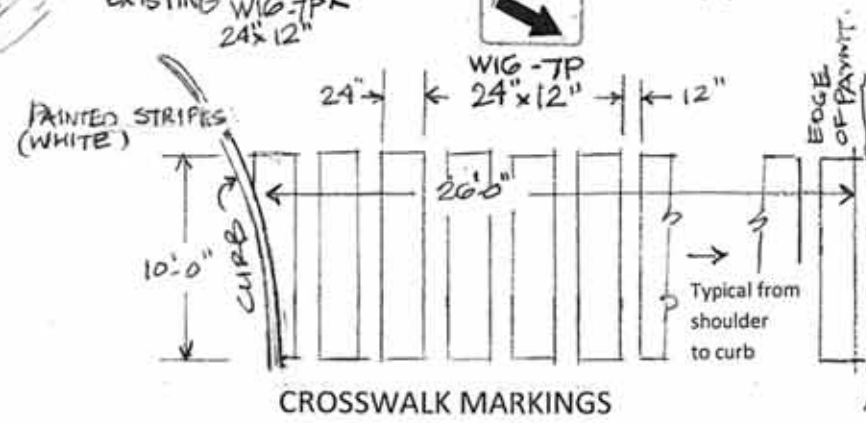
SR 3008 Reber's Bridge Road
Segment 130 offset 0257

The Executive Director of the Berks County Department of Parks and Recreation has read, understands and will ensure that the Berks County Department of Parks and Recreation will comply with the provisions and limitations of the shared use path crossing agreement between PENNDOT and the Berks County Department of Parks and Recreation dated January 14, 2012.

Design Speed = 30 MPH

Crossing Distance = 26'-0"

SHARED USE PATH AGREEMENT # 057282



Criteria	Actual	Require
Crossing Sight Distance		
North Bound	420 feet	416 fee
South Bound	425 feet	416 fee
Stopping Sight Distance		
North Bound	420 feet	200 feet
South Bound	425 feet	200 feet

Approved signs for use at Trail Crossings from Pub 236

At Trail Crossing



W16-7P
Required if W11-15
used at crossing



Left side use

Advance of Trail Crossing



W16-103P
Rounded to closest
100 FT (100-500 ft)
also 1000 FT

OR



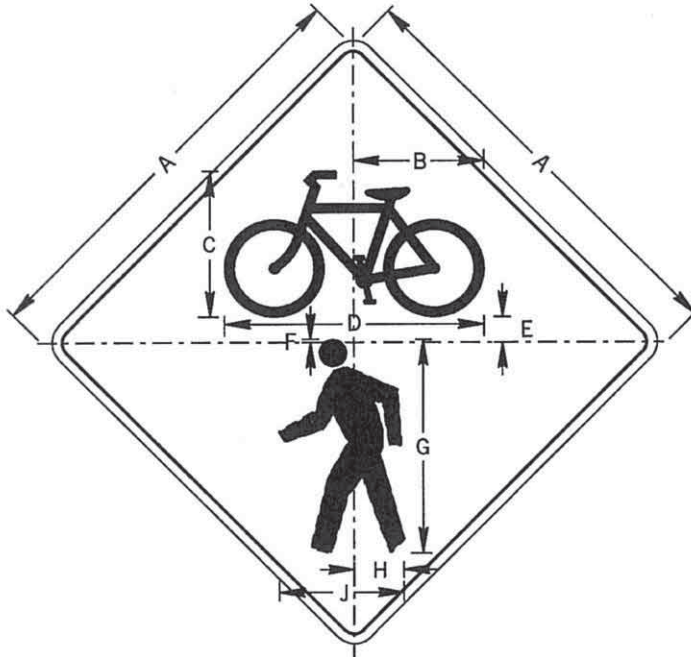
W16-9P

Sign color can be black on yellow, or
black on fluorescent yellow-green

W11-15

COMBINED BICYCLE /PEDESTRIAN SIGN

The Combined Bicycle/Pedestrian (W11-15) sign 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 may be mounted below the W11-15 sign. If used in advance of a pedestrian and bicycle crossing, a W11-15 sign should be supplemented with an Ahead Plaque (W16-9P) or the Distance Ahead Plaque (W16-103P) to inform road users that they are approaching a point where crossing activity might occur. If a post-mounted W11-15 sign is placed at the location of the crossing point a Diagonal Downward Pointing Arrow Plaque (W16-7P) shall be mounted below the sign. If the W11-15 sign is mounted overhead, the W16-7P supplemental plaque shall not be used.



DIMENSIONS - IN												
SIGN SIZE A x A	B	C	D	E	F	G	H	J	MAR- GIN	BOR- DER	BLANK STD.	
18" x 18"	5.5	6.4	11	1	0.1	9	2.3	4.8	0.4	0.6	B3-18	
24" x 24"	7.4	8.6	14.8	1.4	0.1	12	3	6.4	0.4	0.6	B3-24	
30" x 30"	9.3	10.8	18.5	1.8	0.3	15	3.8	8	0.5	0.8	B3-30	
36" x 36"	11.1	12.9	22.3	2.1	0.4	18	4.5	9.6	0.6	0.8	B3-36	
48" x 48"	14.8	17.1	29.5	2.8	0.4	24	6	12.8	0.8	1.2	B3-48	

COLOR:

SYMBOL AND BORDER:
BLACK (NON-REFLECTORIZED)

BACKGROUND:
YELLOW OR FLUORESCENT
YELLOW-GREEN (REFLECTORIZED)

APPROVED FOR THE SECRETARY OF TRANSPORTATION

By : Sen C. Rowe Date : 02-29-12
Chief, Traffic Engineering and Permits Section
Bureau of Maintenance and Operations

W1_1L.DGN

W11-15P

TRAIL X-ING PLAQUE

A Trail X-Ing Plaque (W11-15P) may be mounted below a Combined Bicycle/Pedestrian (W11-15) sign as an educational plaque.



DIMENSIONS - IN								
SIGN SIZE A x B	C	D	E	F	G	MAR- GIN	BOR- DER	BLANK STD.
18" x 12"	2.5	2.5D	2	4.4	4.5	0.4	0.4	B5-1218
24" x 18"	3.5	4D	3	7.1	7.1	0.4	0.6	B5-2418
30" x 24"	5	5D	4	8.9	8.8	0.4	0.6	B5-3024
36" x 30"	6.5	6D	5	10.7	10.6	0.5	0.75	B5-3630

COLOR:

LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)

BACKGROUND:
YELLOW OR FLUORESCENT
YELLOW-GREEN (REFLECTORIZED)

APPROVED FOR THE SECRETARY OF TRANSPORTATION

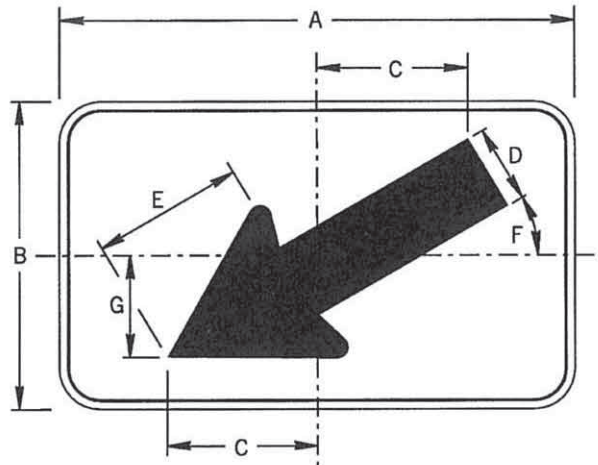
By : Sen C. Rowe Date : 02-29-12
Chief, Traffic Engineering and Permits Section
Bureau of Maintenance and Operations

W16-7P

DIAGONAL DOWNWARD POINTING ARROW PLAQUE

The Diagonal Downward Pointing Arrow Plaque (W16-7P) may be used below the Pedestrian Sign (W11-2), the School Sign (S1-1) and other crossing signs when the crossing sign is installed at the crossing location.

The W16-7P sign may be used below any standard warning or regulatory sign. when used with a warning sign, the W16-7P sign shall have the same legend, border and background color as the warning sign with which it is displayed. When used with a regulatory sign, the W16-7P sign shall have a black legend and border on a white background.



DIMENSIONS - IN								
SIGN SIZE A x B	C	D	E	F	G	MAR- GIN	BOR- DER	BLANK STD.
24" x 12"	5.8	3	5.9	30°	3.9	0.4	0.6	B5-2412
30" x 18"	8.7	4.5	8.8	30°	5.9	0.6	0.8	B5-3018

COLOR:

ARROW AND BORDER:
BLACK (NON-REFLECTORIZED)

BACKGROUND:
YELLOW OR FLUORESCENT
YELLOW GREEN (REFLECTORIZED)
OR WHITE (REFLECTORIZED)

APPROVED FOR THE SECRETARY OF TRANSPORTATION

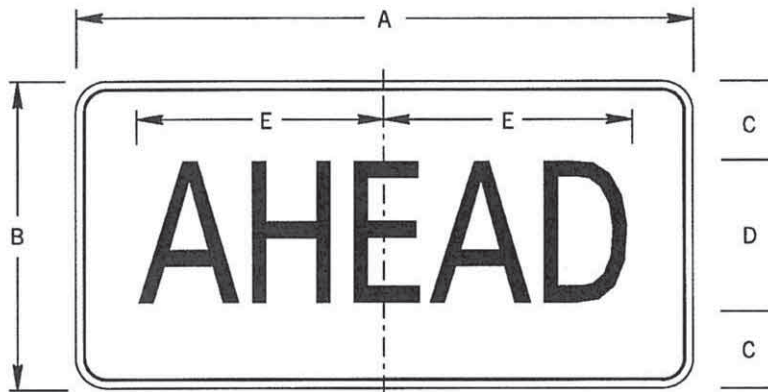
By : John C. Rowe Date : 02-29-12
Chief, Traffic Engineering and Permits Section
Bureau of Maintenance and Operations

W16_7P.DGN

W16-9P

AHEAD PLAQUE

The Ahead Plaque (W16-9P) may be used to supplement any standard warning sign or regulatory sign. When used with a warning sign, the W16-9P sign shall have the same legend, border and background color as the warning sign with which it is displayed. When used with a regulatory sign, the W16-9P sign shall have a black legend and border on a yellow background.



DIMENSIONS - IN						
SIGN SIZE A x B	C	D	E	MAR- GIN	BOR- DER	BLANK STD.
24" x 12"	4	4D	8.7	0.4	0.6	B5-2412
36" x 24"	8.5	7D	15.3	0.6	1	B5-3624
48" x 30"	10.5	9D	19.7	0.8	1.2	B5-4830

COLOR:

LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)

BACKGROUND:
YELLOW OR FLUORESCENT
YELLOW GREEN (REFLECTORIZED)

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By : Sen C Rowe Date : 02-29-12
Chief, Traffic Engineering and Permits Section
Bureau of Maintenance and Operations

W16-103P

DISTANCE AHEAD PLAQUE

The Distance Ahead Plaque (W16-103P) may be used below any standard warning sign or regulatory sign to indicate the distance to the condition cited by the warning sign or regulatory sign. Normally distances used should be in an increment of 500'. When used with a warning sign, the W16-103P sign shall have the same background color as the warning sign with which it is displayed. When used with a regulatory sign, the W16-103P sign shall have a yellow background.

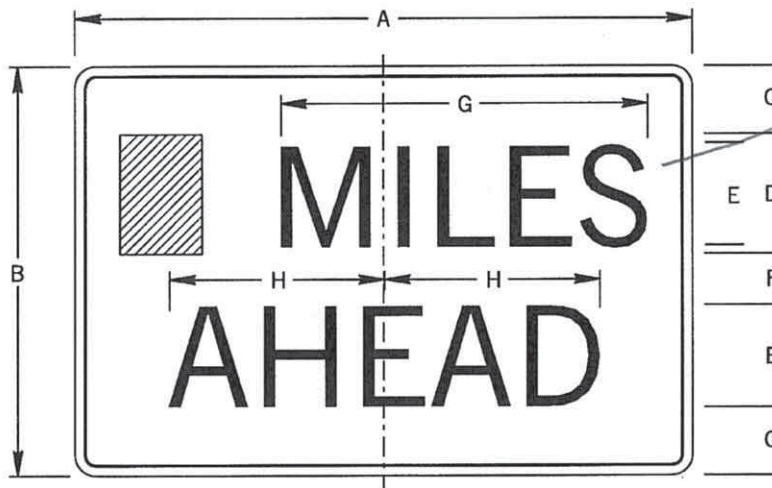
The 36" x 24" size should be used with 48" x 48" and larger warning signs and regulatory signs wider than 36".

The W16-103P sign may be used below the Weight Limit Sign (R12-1) when the sign is used as an advance warning of a weight limitation. As an advance warning of a bridge limitation, it shall be used in conjunction with the Bridge Sign (R12-1-2). When the distance to the restriction is 1 mile or less, the distance shall be rounded to 1 MILE, 3/4 MILE or 1/2 MILE, except as follows:

- When the distance to the restriction is less than 1/2 MILE, the distance shall be rounded to the nearest multiple of 500 FT.
- When the distance to the restriction is less than 500 FT, the distance shall be rounded to the closest 100 FT.

When the distance to the restriction is greater than 1 MILE, the distance may be rounded to the nearest whole integer or nearest 1/4 MILE.

When used, the W16-103P sign shall be placed at the intersection nearest each end of the restricted bridge or section of highway which would allow drivers an opportunity to avoid the restriction.



IN PLACE
of "MILES"
use "FT"
i.e.
500 FT
AHEAD

DIMENSIONS - IN										
SIGN SIZE A x B	C	D	E	F	G	H	MAR- GIN	BOR- DER	BLANK STD.	
24" x 18"	3	5*	4D	3	14.7	8.7	0.4	0.6	B5-2418	
36" x 24"	4	7*	6D	3	22.1	13	0.6	0.8	B5-3624	

* CHOOSE STANDARD ALPHABETS SERIES FOR BEST FIT

COLOR:

LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)

BACKGROUND:
YELLOW OR FLUORESCENT
YELLOW-GREEN (REFLECTORIZED)

APPROVED FOR THE SECRETARY OF TRANSPORTATION

By : Sen C Rowe Date : 02-29-12
Chief, Traffic Engineering and Permits Section
Bureau of Maintenance and Operations

Manual on Uniform Traffic Control Devices

for Streets and Highways

2009 Edition

Including Revision 1 dated May 2012
and Revision 2 dated May 2012





PART 9

TRAFFIC CONTROL FOR BICYCLE FACILITIES

CHAPTER 9A. GENERAL

Section 9A.01 Requirements for Bicyclist Traffic Control Devices

Support:

- 01 General information and definitions concerning traffic control devices are found in Part 1.

Section 9A.02 Scope

Support:

- 01 Part 9 covers signs, pavement markings, and highway traffic signals specifically related to bicycle operation on both roadways and shared-use paths.

Guidance:

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

Standard:

- 03 **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.**

Section 9A.03 Definitions Relating to Bicycles

Support:

- 01 Definitions and acronyms pertaining to Part 9 are provided in Sections 1A.13 and 1A.14.

Section 9A.04 Maintenance

Guidance:

- 01 *All signs, signals, and markings, including those on bicycle facilities, should be properly maintained to command respect from both the motorist and the bicyclist. 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:

- 01 “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.
- 02 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.
- 03 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:

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

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

Support:

- 01 The introduction to this Manual 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:

- 01 Section 1A.12 contains information regarding the color codes.

CHAPTER 9B. SIGNS

Section 9B.01 Application and Placement of Signs

Standard:

- 01 **Bicycle signs shall be standard in shape, legend, and color.**
- 02 **All signs shall be retroreflectorized for use on bikeways, including shared-use paths and bicycle lane facilities.**
- 03 **Where signs serve both bicyclists and other road users, vertical mounting height and lateral placement shall be as provided in Part 2.**
- 04 **Where used on a shared-use path, no portion of a sign or its support shall be placed less than 2 feet laterally from the near edge of the path, or less than 8 feet vertically over the entire width of the shared-use path (see Figure 9B-1).**
- 05 **Mounting height for post-mounted signs on shared-use paths shall be a minimum of 4 feet, measured vertically from the bottom of the sign to the elevation of the near edge of the path surface (see Figure 9B-1).**
- Guidance:*

- 06 *Signs for the exclusive use of bicyclists should be located so that other road users are not confused by them.*
- 07 *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.*

Section 9B.02 Design of Bicycle Signs

Standard:

- 01 **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, or 2D-1.**
- 02 **The minimum sign and plaque sizes for shared-use paths shall be those shown in Table 9B-1, and shall be used only for signs and plaques installed specifically for bicycle traffic 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:

- 03 Larger size signs and plaques may be used on bicycle facilities when appropriate (see Section 2A.11).

Figure 9B-1. Sign Placement on Shared-Use Paths

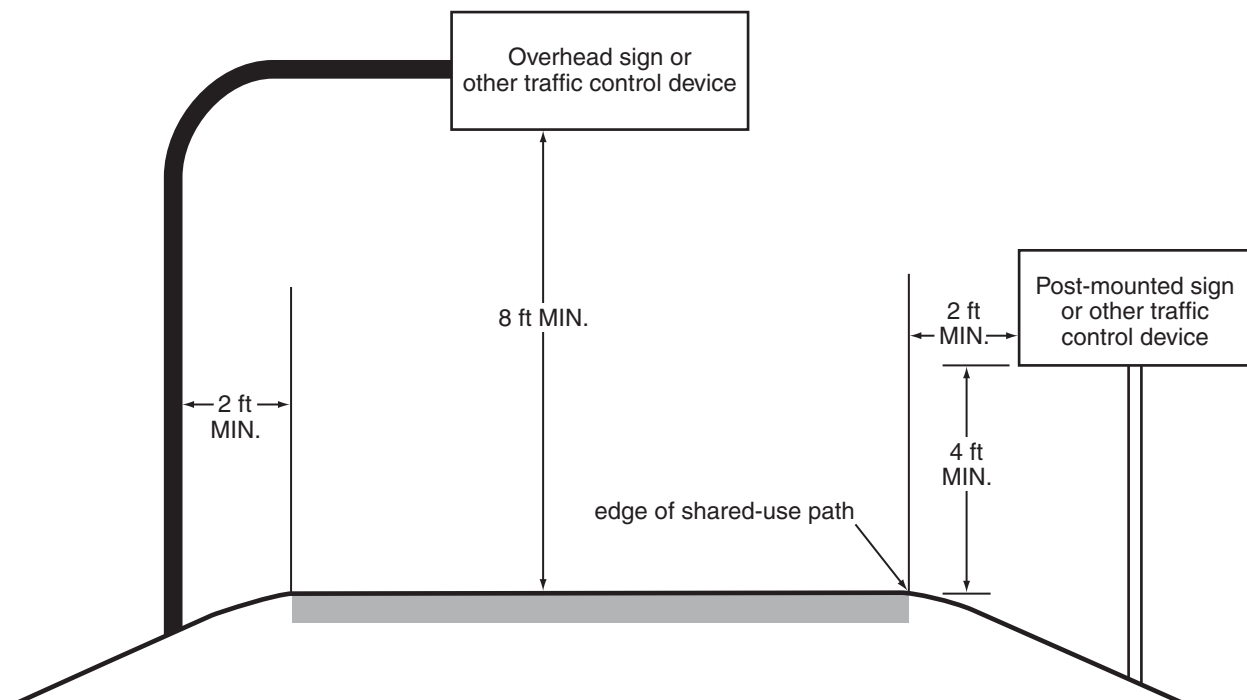


Table 9B-1. Bicycle Facility Sign and Plaque Minimum Sizes (Sheet 1 of 2)

Sign or Plaque	Sign Designation	Section	Shared-Use Path	Roadway
Stop	R1-1	2B.05, 9B.03	18 x 18	30 x 30
Yield	R1-2	2B.08, 9B.03	18 x 18 x 18	30 x 30 x 30
Bike Lane	R3-17	9B.04	—	24 x 18
Bike Lane (plaques)	R3-17aP, R3-17bP	9B.04	—	24 x 8
Movement Restriction	R4-1,2,3,7,16	2B.28,29,30,32; 9B.14	12 x 18	18 x 24
Begin Right Turn Lane Yield to Bikes	R4-4	9B.05	—	36 x 30
Bicycles May Use Full Lane	R4-11	9B.06	—	30 x 30
Bicycle Wrong Way	R5-1b	9B.07	12 x 18	12 x 18
No Motor Vehicles	R5-3	9B.08	24 x 24	24 x 24
No Bicycles	R5-6	9B.09	18 x 18	24 x 24
No Parking Bike Lane	R7-9,9a	9B.10	—	12 x 18
No Pedestrians	R9-3	9B.09	18 x 18	18 x 18
Ride With Traffic (plaque)	R9-3cP	9B.07	12 x 12	12 x 12
Bicycle Regulatory	R9-5,6	9B.11	12 x 18	12 x 18
Shared-Use Path Restriction	R9-7	9B.12	12 x 18	—
No Skaters	R9-13	9B.09	18 x 18	18 x 18
No Equestrians	R9-14	9B.09	18 x 18	18 x 18
Push Button for Green Light	R10-4	9B.11	9 x 12	9 x 12
To Request Green Wait on Symbol	R10-22	9B.13	12 x 18	12 x 18
Bike Push Button for Green Light	R10-24	9B.11	9 x 15	9 x 15
Push Button to Turn On Warning Lights	R10-25	9B.11	9 x 12	9 x 12
Bike Push Button for Green Light (arrow)	R10-26	9B.11	9 x 15	9 x 15
Grade Crossing (Crossbuck)	R15-1	8B.03, 9B.14	24 x 4.5	48 x 9
Number of Tracks (plaque)	R15-2P	8B.03, 9B.14	13.5 x 9	27 x 18
Look	R15-8	8B.17, 9B.14	18 x 9	36 x 18
Turn and Curve Warning	W1-1,2,3,4,5	2C.04, 9B.15	18 x 18	24 x 24
Arrow Warning	W1-6,7	2C.12, 2C.47, 9B.15	24 x 12	36 x 18
Intersection Warning	W2-1,2,3,4,5	2C.46, 9B.16	18 x 18	24 x 24
Stop, Yield, Signal Ahead	W3-1,2,3	2C.36, 9B.19	18 x 18	30 x 30
Narrow Bridge	W5-2	2C.20, 9B.19	18 x 18	30 x 30
Path Narrows	W5-4a	9B.19	18 x 18	—
Hill	W7-5	9B.19	18 x 18	30 x 30
Bump or Dip	W8-1,2	2C.28, 9B.17	18 x 18	24 x 24
Pavement Ends	W8-3	2C.30, 9B.17	18 x 18	30 x 30
Bicycle Surface Condition	W8-10	9B.17	18 x 18	30 x 30
Slippery When Wet (plaque)	W8-10P	9B.17	12 x 9	12 x 9
Grade Crossing Advance Warning	W10-1	8B.06, 9B.19	24 Dia.	36 Dia.
No Train Horn (plaque)	W10-9P	8B.21, 9B.19	18 x 12	30 x 24
Skewed Crossing	W10-12	8B.25, 9B.19	18 x 18	36 x 36
Bicycle Warning	W11-1	9B.18	18 x 18	24 x 24
Pedestrian Crossing	W11-2	2C.50, 9B.19	18 x 18	24 x 24
Combination Bike and Ped Crossing	W11-15	9B.18	18 x 18	30 x 30
Trail Crossing (plaque)	W11-15P	9B.18	18 x 12	24 x 18
Low Clearance	W12-2	2C.27, 9B.19	18 x 18	30 x 30
Playground	W15-1	2C.51, 9B.19	18 x 18	24 x 24
Share the Road (plaque)	W16-1P	2C.60, 9B.19	—	18 x 24

Table 9B-1. Bicycle Facility Sign and Plaque Minimum Sizes (Sheet 2 of 2)

Sign or Plaque	Sign Designation	Section	Shared-Use Path	Roadway
XX Feet (plaque)	W16-2P	2C.55, 9B.18	18 x 12	24 x 18
XX Ft (plaque)	W16-2aP	2C.55, 9B.18	18 x 9	24 x 12
Diagonal Arrow (plaque)	W16-7P	9B.18	—	24 x 12
Ahead (plaque)	W16-9P	9B.18	—	24 x 12
Destination (1 line)	D1-1, D1-1a	2D.37, 9B.20	varies x 6	varies x 18
Bicycle Destination (1 line)	D1-1b, D1-1c	9B.20	varies x 6	varies x 6
Destination (2 lines)	D1-2, D1-2a	2D.37, 9B.20	varies x 12	varies x 30
Bicycle Destination (2 lines)	D1-2b, D1-2c	9B.20	varies x 12	varies x 12
Destination (3 lines)	D1-3, D1-3a	2D.37, 9B.20	varies x 18	varies x 42
Bicycle Destination (3 lines)	D1-3b, D1-3c	9B.20	varies x 18	varies x 18
Street Name	D3-1	2D.43, 9B.20	varies x 6	varies x 8
Bicycle Parking Area	D4-3	9B.23	12 x 18	12 x 18
Reference Location (1-digit)	D10-1	2H.02, 9B.24	6 x 12	10 x 18
Intermediate Reference Location (1-digit)	D10-1a	2H.02, 9B.24	6 x 18	10 x 27
Reference Location (2-digit)	D10-2	2H.02, 9B.24	6 x 18	10 x 27
Intermediate Reference Location (2-digit)	D10-2a	2H.02, 9B.24	6 x 24	10 x 36
Reference Location (3-digit)	D10-3	2H.02, 9B.24	6 x 24	10 x 36
Intermediate Reference Location (3-digit)	D10-3a	2H.02, 9B.24	6 x 30	10 x 48
Bike Route	D11-1, D11-1c	9B.20	24 x 18	24 x 18
Bicycles Permitted	D11-1a	9B.25	18 x 18	—
Bike Route (plaque)	D11-1bP	9B.25	18 x 6	—
Pedestrians Permitted	D11-2	9B.25	18 x 18	—
Skaters Permitted	D11-3	9B.25	18 x 18	—
Equestrians Permitted	D11-4	9B.25	18 x 18	—
Bicycle Route	M1-8, M1-8a	9B.21	12 x 18	18 x 24
U.S. Bicycle Route	M1-9	9B.21	12 x 18	18 x 24
Bicycle Route Auxiliary Signs	M2-1; M3-1,2,3,4; M4-1,1a,2,3,5,6,7,7a,8,14	9B.22	12 x 6	12 x 6
Bicycle Route Arrow Signs	M5-1,2; M6-1,2,3,4,5,6,7	9B.22	12 x 9	12 x 9
Type 3 Object Markers	OM3-L,C,R	2C.63, 9B.26	6 x 18	12 x 36

- Notes: 1. Larger signs may be used when appropriate
 2. Dimensions are shown in inches and are shown as width x height

Guidance:

- 04 *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:

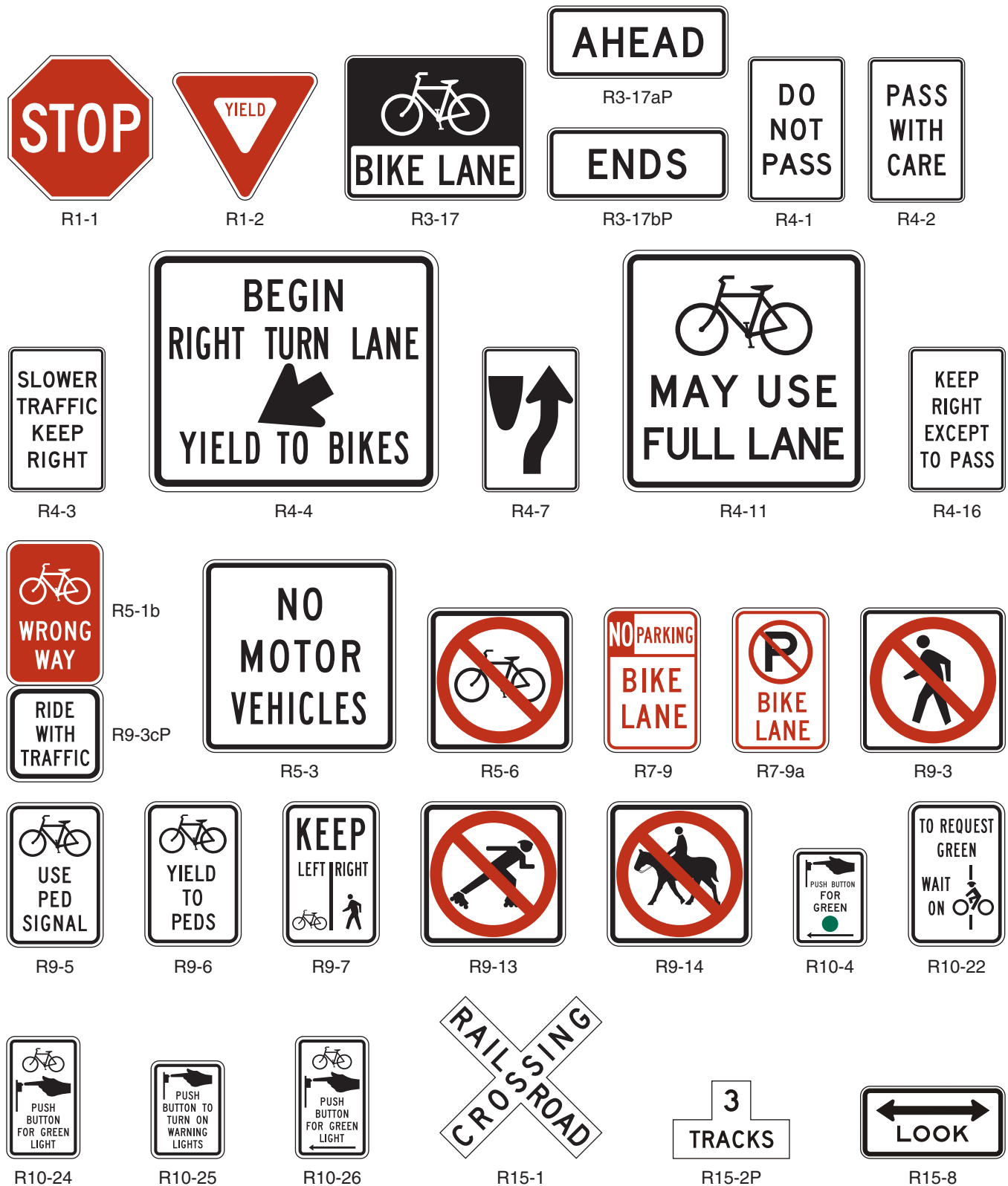
- 05 Uniformity in design of bicycle signs and plaques includes shape, color, symbols, arrows, wording, lettering, and illumination or retroreflectorization.

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

Standard:

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

Figure 9B-2. Regulatory Signs and Plaques for Bicycle Facilities



Option:

- 03 A 30 x 30-inch STOP sign or a 36 x 36 x 36-inch YIELD sign may be used on shared-use paths for added emphasis.

Guidance:

- 04 *Where conditions require path users, 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 road users.*
- 05 *When placement of STOP or YIELD signs is considered, 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.*
- 06 *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 a low-volume street, or to a regional shared-use path crossing a minor collector street.*
- 07 *When priority is assigned, 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.*

Section 9B.04 Bike Lane Signs and Plaques (R3-17, R3-17aP, R3-17bP)**Standard:**

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

Guidance:

- 02 *If used, Bike Lane signs and plaques should be used in advance of the upstream end of the bicycle lane, at 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.*

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

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

Guidance:

- 02 *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 (R4-11)**Option:**

- 01 The Bicycles May Use Full Lane (R4-11) sign (see Figure 9B-2) may be used on roadways where no bicycle lanes or adjacent shoulders usable by bicyclists are present and where travel lanes are too narrow for bicyclists and motor vehicles to operate side by side.
- 02 The Bicycles May Use Full Lane sign may be used in locations where it is important to inform road users that bicyclists might occupy the travel lane.
- 03 Section 9C.07 describes a Shared Lane Marking that may be used in addition to or instead of the Bicycles May Use Full Lane sign to inform road users that bicyclists might occupy the travel lane.

Support:

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

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

- 01 The Bicycle WRONG WAY (R5-1b) sign and RIDE WITH TRAFFIC (R9-3cP) plaque (see Figure 9B-2) may be placed facing wrong-way bicycle traffic, such as on the left side of a roadway.
- 02 This sign and plaque may be mounted back-to-back with other signs to minimize visibility to other traffic.

Guidance:

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

Section 9B.08 NO MOTOR VEHICLES Sign (R5-3)*Option:*

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

Section 9B.09 Selective Exclusion Signs*Option:*

- 01 Selective Exclusion signs (see Figure 9B-2) 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:

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

Support:

- 03 Typical exclusion messages include:

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

Option:

- 04 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 Section 2B.39.

Section 9B.10 No Parking Bike Lane Signs (R7-9, R7-9a)**Standard:**

- 01 **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 through 2B.48, or the No Parking Bike Lane (R7-9 or R7-9a) signs (see Figure 9B-2) shall be installed.**

Section 9B.11 Bicycle Regulatory Signs (R9-5, R9-6, R10-4, R10-24, R10-25, and R10-26)*Option:*

- 01 The R9-5 sign (see Figure 9B-2) may be used where the crossing of a street by bicyclists is controlled by pedestrian signal indications.
- 02 Where it is not intended for bicyclists to be controlled by pedestrian signal indications, the R10-4, R10-24, or R10-26 sign (see Figure 9B-2 and Section 2B.52) may be used.

Guidance:

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

Option:

- 04 If bicyclists are crossing a roadway where In-Roadway Warning Lights (see Section 4N.02) or other warning lights or beacons have been provided, the R10-25 sign (see Figure 9B-2) may be used.
- 05 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.

Section 9B.12 Shared-Use Path Restriction Sign (R9-7)*Option:*

- 01 The Shared-Use Path Restriction (R9-7) sign (see Figure 9B-2) may be installed to supplement a solid white pavement marking line (see Section 9C.03) 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 as appropriate.

Guidance:

- 02 *If two-way operation is permitted 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.13 Bicycle Signal Actuation Sign (R10-22)

Option:

- 01 The Bicycle Signal Actuation (R10-22) sign (see Figure 9B-2) may be installed at signalized intersections where markings are used to indicate the location where a bicyclist is to be positioned to actuate the signal (see Section 9C.05).

Guidance:

- 02 *If the Bicycle Signal Actuation sign is installed, it should be placed at the roadside adjacent to the marking to emphasize the connection between the marking and the sign.*

Section 9B.14 Other Regulatory Signs

Option:

- 01 Other regulatory signs described in Chapter 2B may be installed on bicycle facilities as appropriate.

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

Guidance:

- 01 *To warn bicyclists of unexpected changes in shared-use path direction, appropriate turn or curve (W1-1 through W1-7) signs (see Figure 9B-3) should be used.*
- 02 *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 Intersection Warning Signs (W2 Series)

Option:

- 01 Intersection Warning (W2-1 through W2-5) signs (see Figure 9B-3) 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:

- 02 *When engineering judgment determines that the visibility of the intersection is limited on the shared-use path approach, Intersection Warning signs should be used.*
- 03 *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 Bicycle Surface Condition Warning Sign (W8-10)

Option:

- 01 The Bicycle Surface Condition Warning (W8-10) sign (see Figure 9B-3) may be installed where roadway or shared-use path conditions could cause a bicyclist to lose control of the bicycle.
- 02 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.
- 03 A supplemental plaque may be used to clarify the specific type of surface condition.

Section 9B.18 Bicycle Warning and Combined Bicycle/Pedestrian Signs (W11-1 and W11-15)

Support:

- 01 The Bicycle Warning (W11-1) sign (see Figure 9B-3) 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.

Option:

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

Guidance:

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

Figure 9B-3. Warning Signs and Plaques and Object Markers for Bicycle Facilities



* A fluorescent yellow-green background color may be used for this sign or plaque. The background color of the plaque should match the color of the warning sign that it supplements.

Standard:

- 05 **Bicycle Warning and combined Bicycle/Pedestrian 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:

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

Guidance:

- 07 *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 9B.19 Other Bicycle Warning Signs**Option:**

- 01 Other bicycle warning signs (see Figure 9B-3) such as PATH NARROWS (W5-4a) and Hill (W7-5) may be installed on shared-use paths to warn bicyclists of conditions not readily apparent.
- 02 In situations where there is a need to warn motorists to watch for bicyclists traveling along the highway, the SHARE THE ROAD (W16-1P) plaque (see Figure 9B-3) may be used in conjunction with the W11-1 sign.

Guidance:

- 03 *If used, other advance bicycle warning signs should be installed at least 50 feet in advance of the beginning of the condition.*
- 04 *Where temporary traffic control zones are present on bikeways, appropriate signs from Part 6 should be used.*

Option:

- 05 Other warning signs described in Chapter 2C may be installed on bicycle facilities as appropriate.

Section 9B.20 Bicycle Guide Signs (D1-1b, D1-1c, D1-2b, D1-2c, D1-3b, D1-3c, D11-1, D11-1c)**Option:**

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

Guidance:

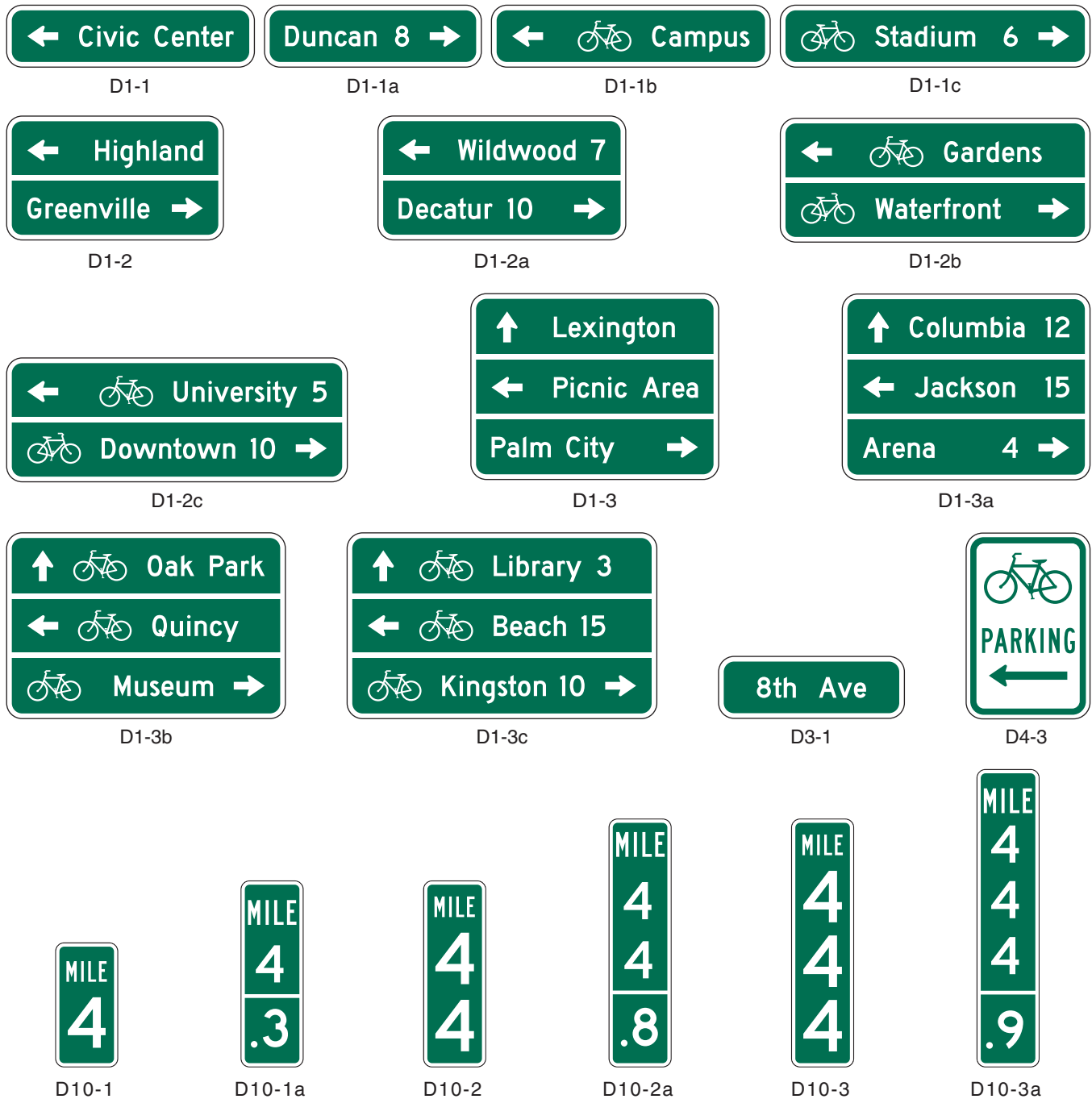
- 05 *Adequate separation should be made between any destination or group of destinations in one direction and those in other directions by suitable design of the arrow, spacing of lines of legend, heavy lines entirely across the sign, or separate signs.*

Standard:

- 06 **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.**
- 07 **On Bicycle Destination signs, 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.**

Guidance:

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

Figure 9B-4. Guide Signs and Plaques for Bicycle Facilities (Sheet 1 of 2)

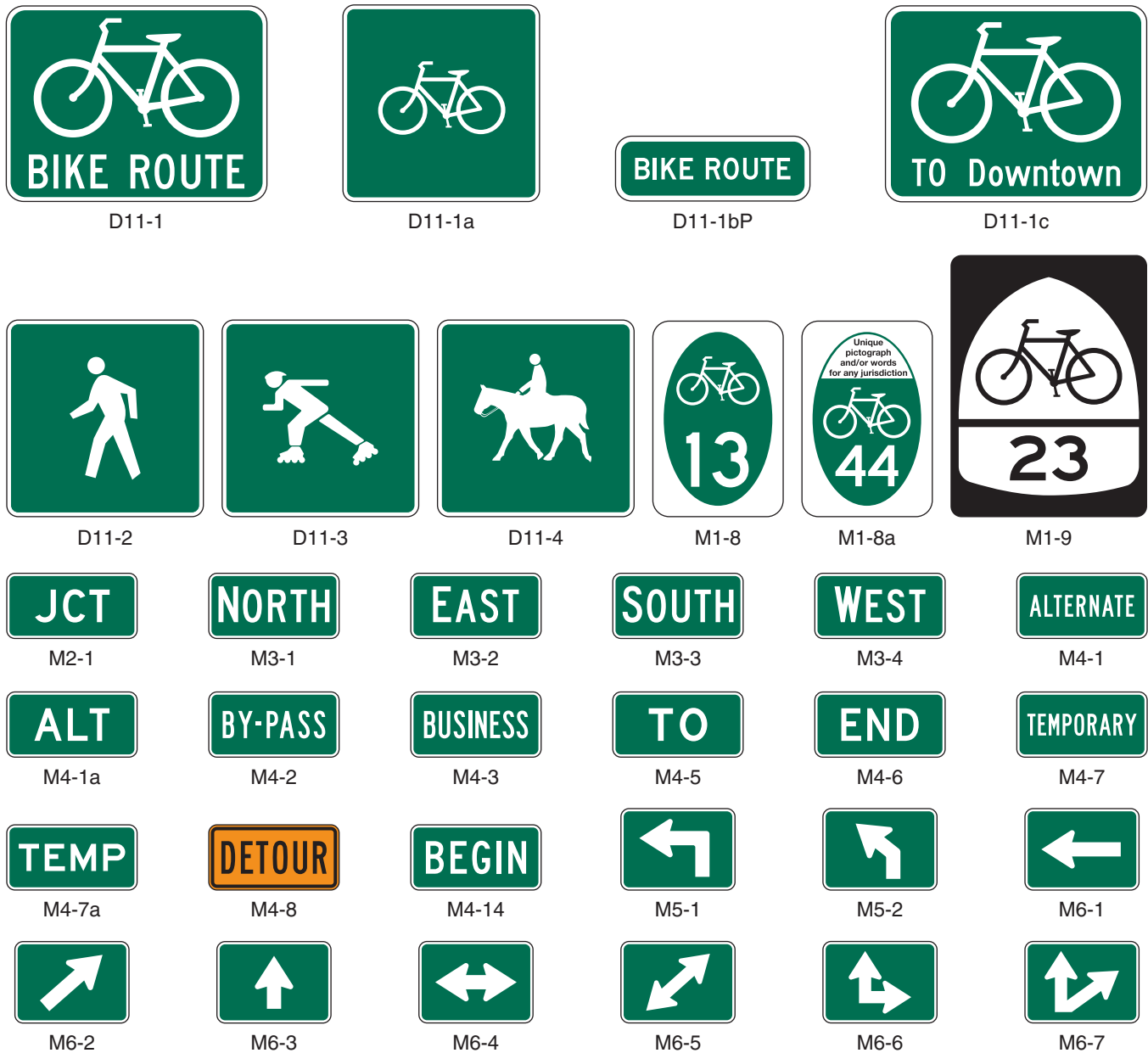
09 The bicycle symbol should be to the left of the destination legend.

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

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

Support:

12 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 9B-4. Guide Signs and Plaques for Bicycle Facilities (Sheet 2 of 2)**Section 9B.21 Bicycle Route Signs (M1-8, M1-8a, M1-9)**

Option:

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

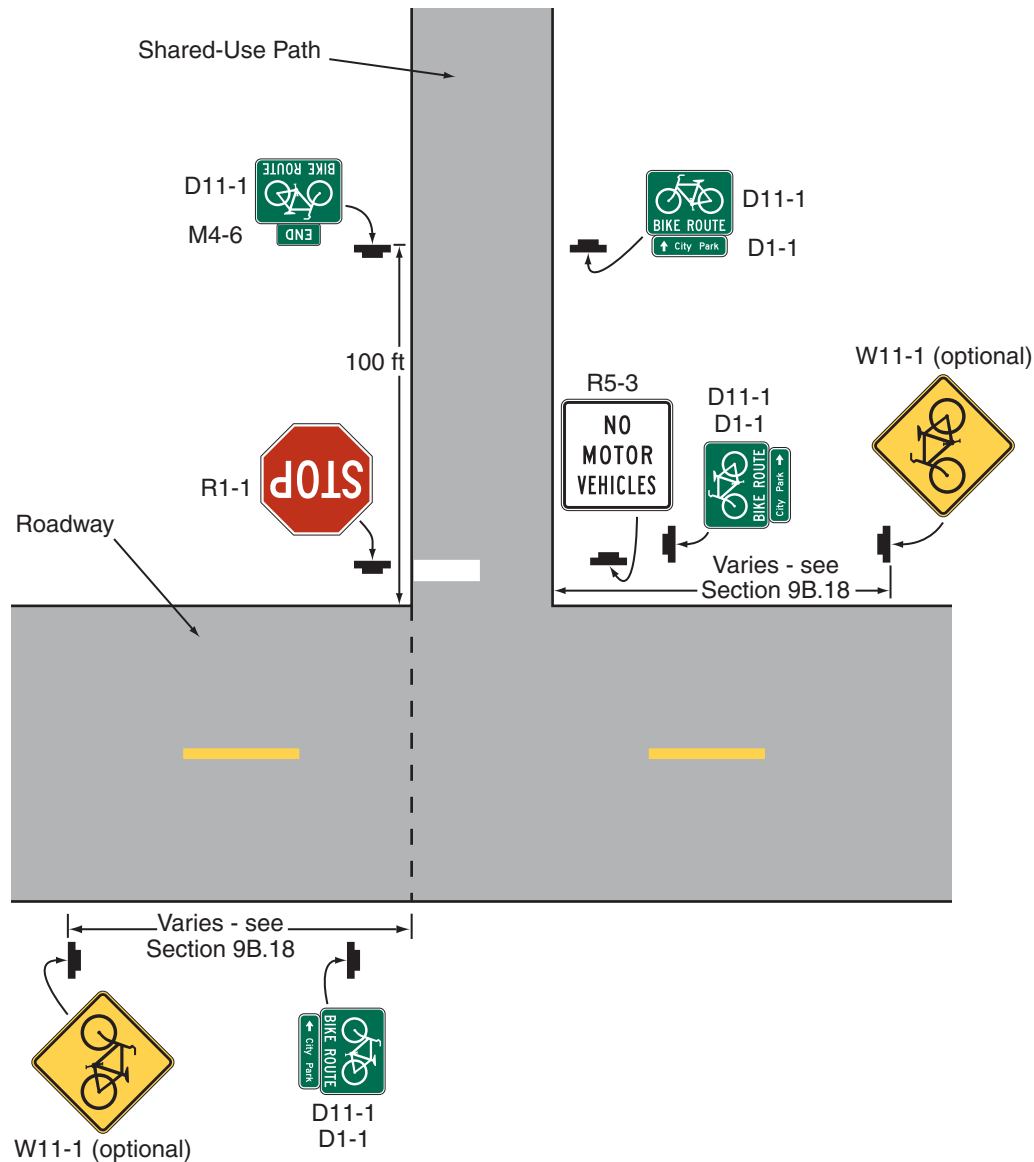
Standard:

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

Guidance:

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

Figure 9B-5. Example of Signing for the Beginning and End of a Designated Bicycle Route on a Shared-Use Path



04 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:

05 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.

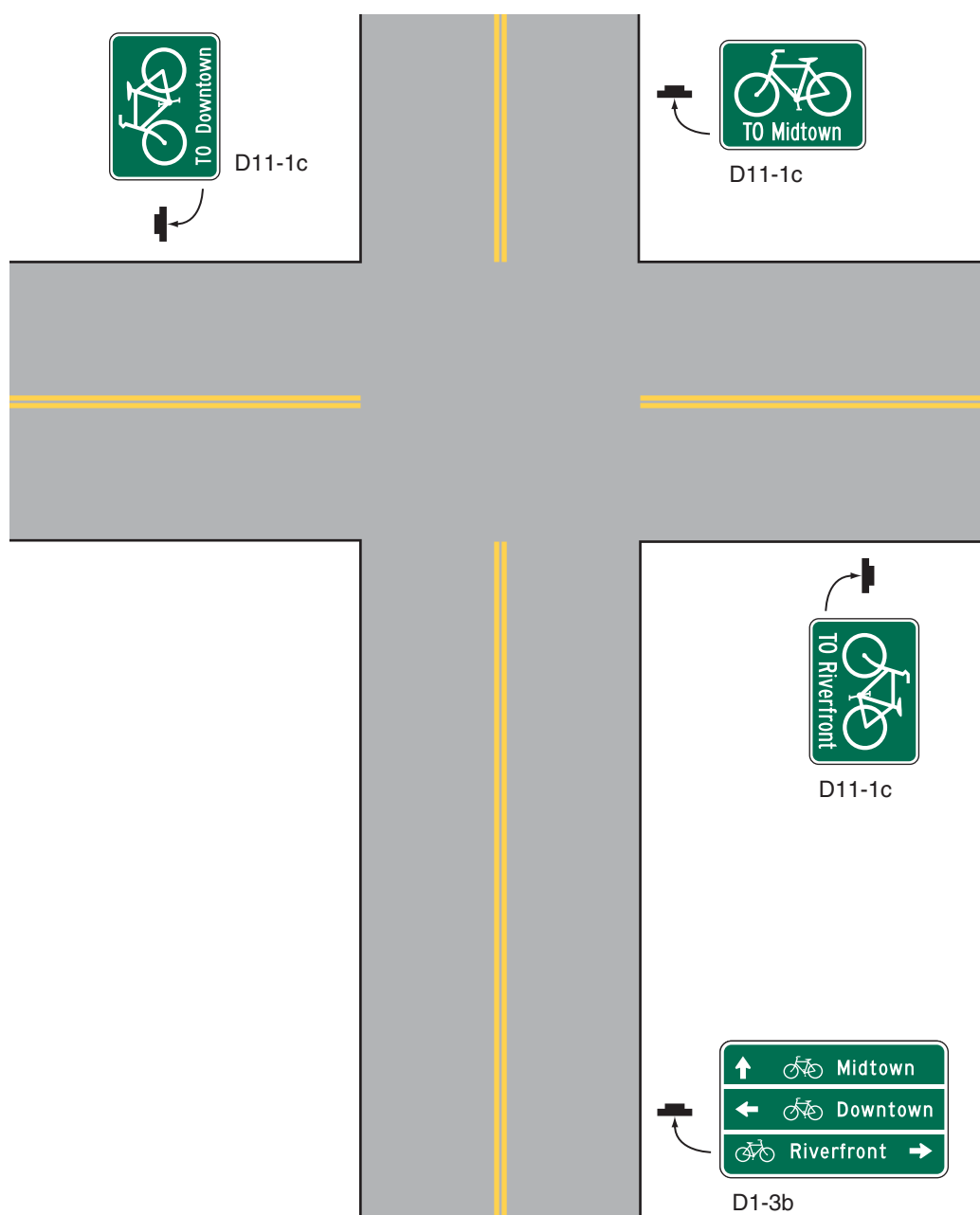
Guidance:

06 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:

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

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

Figure 9B-6. Example of Bicycle Guide Signing

Section 9B.22 Bicycle Route Sign Auxiliary Plaques

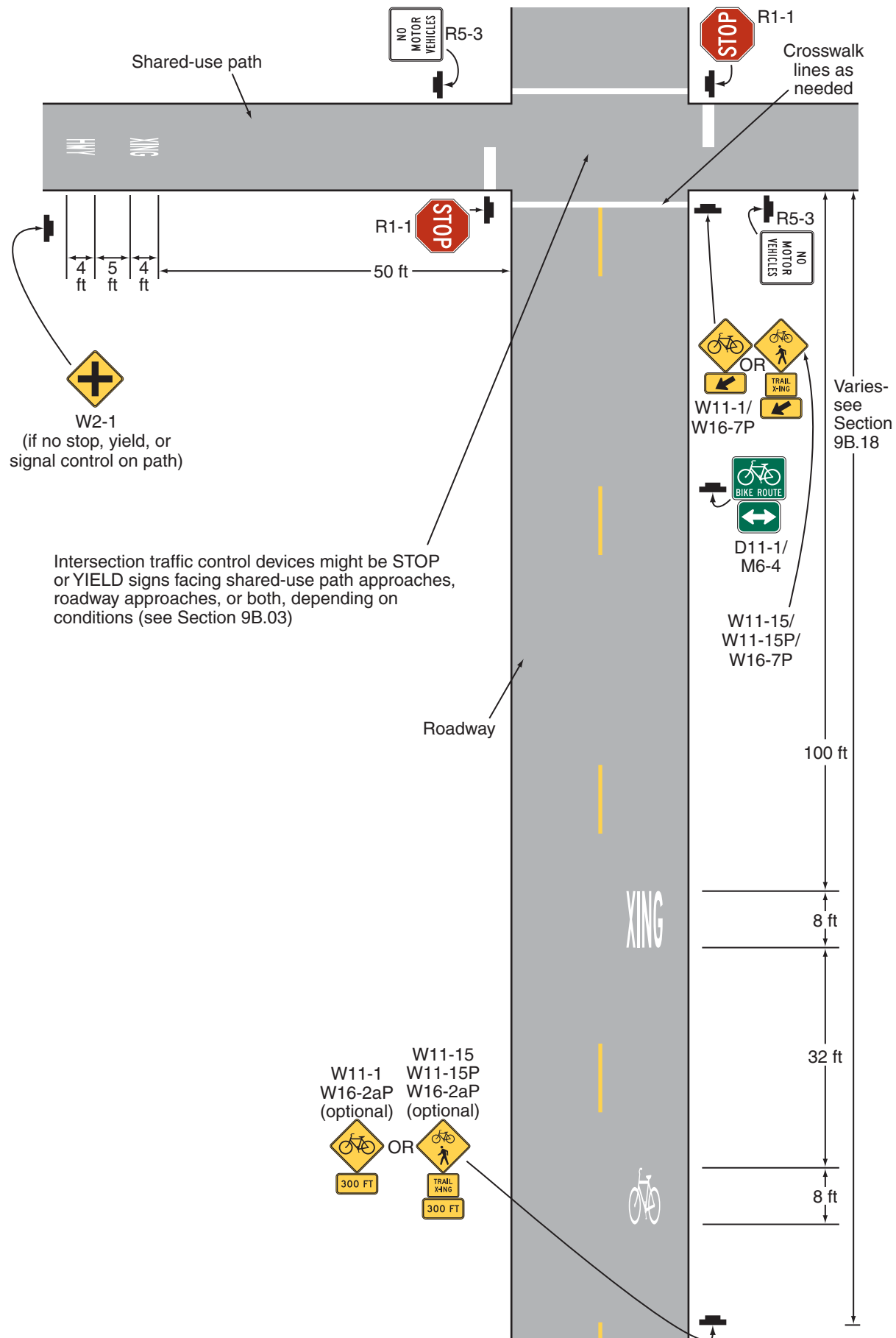
Option:

- 01 Auxiliary plaques may be used in conjunction with Bike Route Guide signs, Bicycle Route signs, or U.S. Bicycle Route signs as needed.

Guidance:

- 02 If used, Junction (M2-1), Cardinal Direction (M3 series), and Alternative Route (M4 series) auxiliary plaques (see Figure 9B-4) should be mounted above the appropriate Bike Route Guide signs, Bicycle Route signs, or U.S. Bicycle Route signs.
- 03 If used, Advance Turn Arrow (M5 series) and Directional Arrow (M6 series) auxiliary plaques (see Figure 9B-4) should be mounted below the appropriate Bike Route Guide sign, Bicycle Route sign, or U.S. Bicycle Route sign.
- 04 Except for the M4-8 plaque, all route sign auxiliary plaques should match the color combination of the route sign that they supplement.

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



- 05 *Route sign auxiliary plaques carrying word legends that are used on bicycle routes should have a minimum size of 12 x 6 inches. Route sign auxiliary plaques carrying arrow symbols that are used on bicycle routes should have a minimum size of 12 x 9 inches.*

Option:

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

Section 9B.23 Bicycle Parking Area Sign (D4-3)

Option:

- 01 *The Bicycle Parking Area (D4-3) sign (see Figure 9B-4) 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:

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

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

Support:

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

Option:

- 02 Reference Location (D10-1 to 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.
- 03 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:

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

Option:

- 07 Reference location signs may be installed on one side of the shared-use path only and may be installed back-to-back.
- 08 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:

- 09 *If a reference location sign cannot be placed within 50 feet of the correct location, it should be omitted.*
- 10 *Zero distance should begin at the south and west terminus points of shared-use paths.*

Support:

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

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

Option:

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

Support:

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

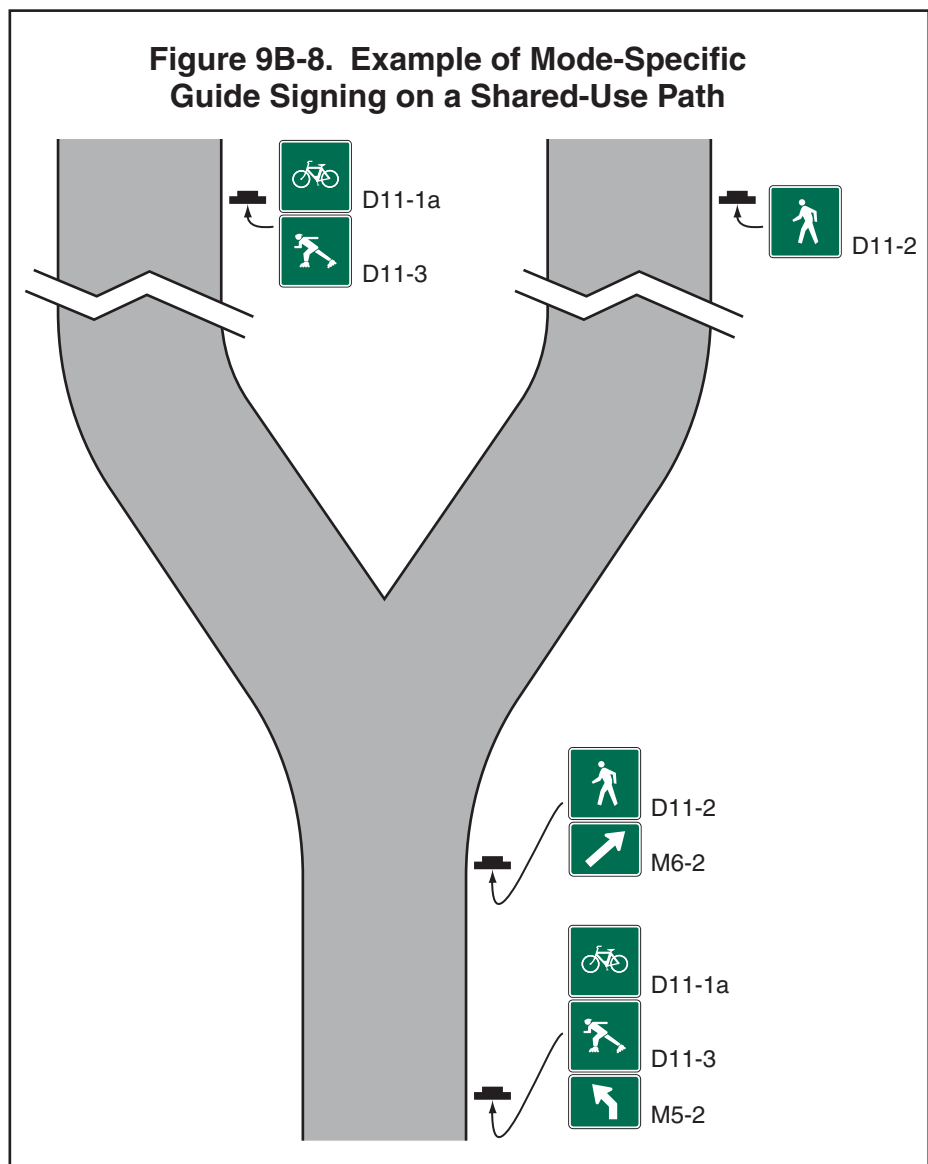
Section 9B.26 Object Markers

Option:

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

Standard:

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



CHAPTER 9C. MARKINGS

Section 9C.01 Functions of Markings

Support:

- 01 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.

Section 9C.02 General Principles

Guidance:

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

Standard:

- 02 **Markings used on bikeways shall be retroreflectorized.**

Guidance:

- 03 *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:

- 04 **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.**

Support:

- 05 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:

- 06 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.

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

Option:

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

Guidance:

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

- 03 *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.*

- 04 *Markings as shown in Figure 9C-2 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:

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

- 06 Smaller size letters 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).

Section 9C.04 Markings For Bicycle Lanes

Support:

- 01 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:

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

Guidance:

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

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

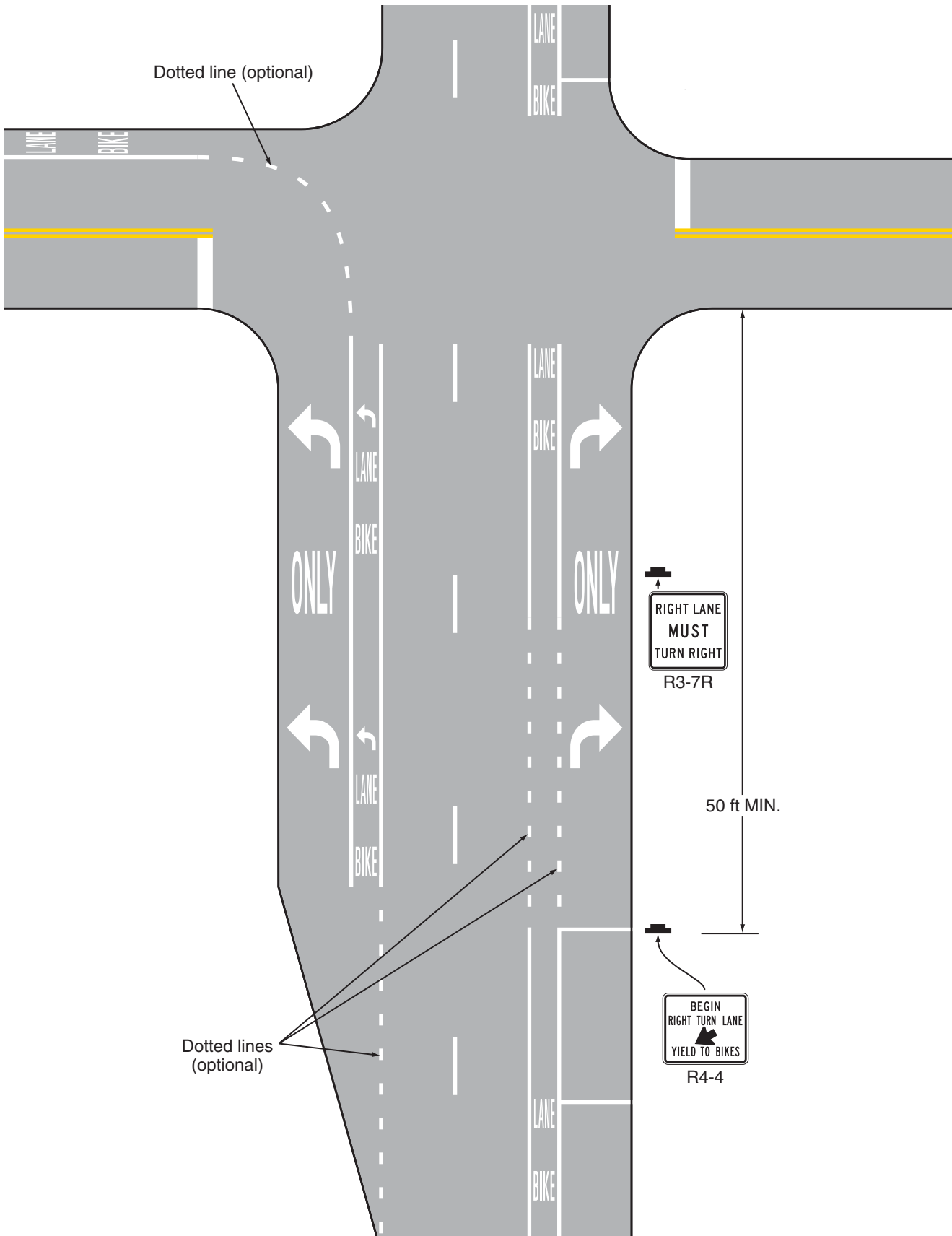
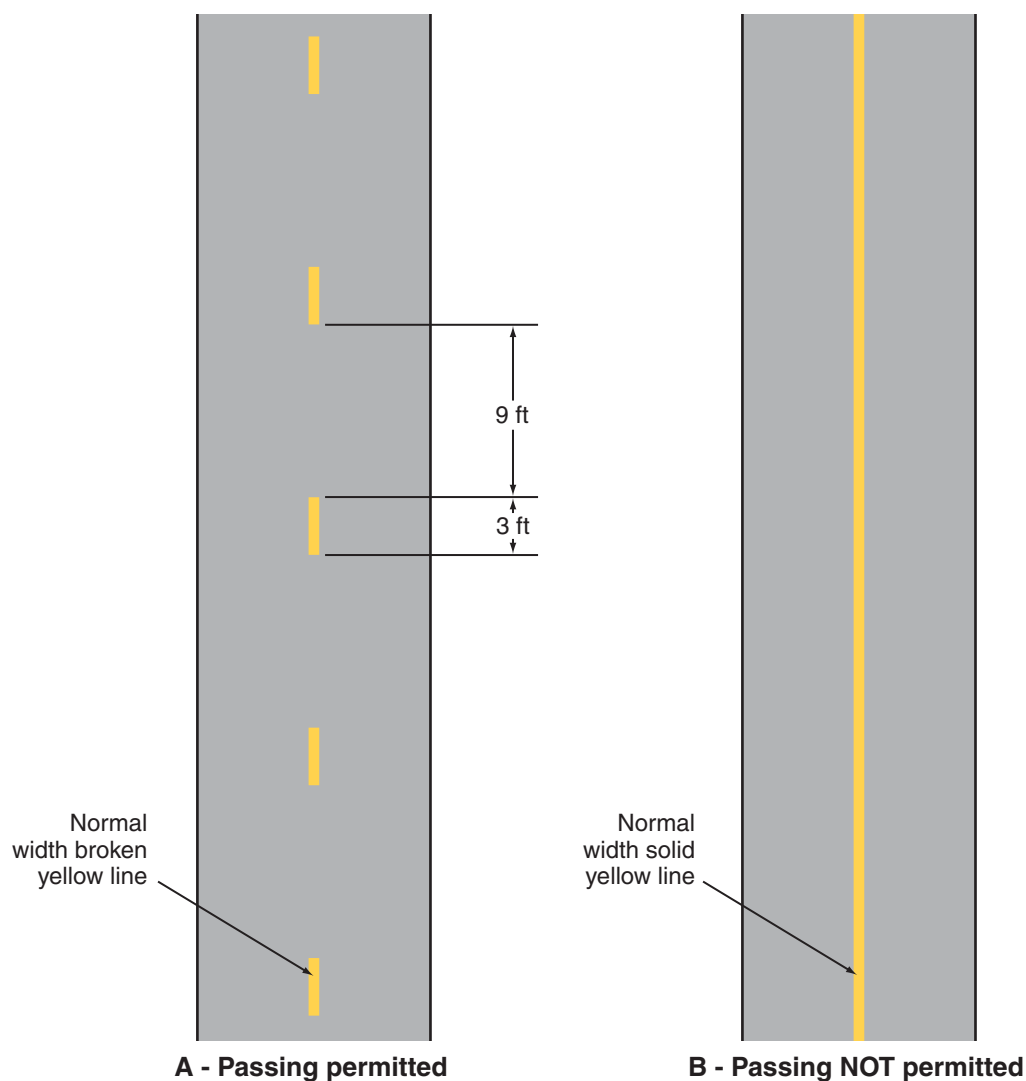


Figure 9C-2. Examples of Center Line Markings for Shared-Use Paths**Standard:**

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

Option:

- 05 If the word, symbol, and/or arrow pavement markings shown in Figure 9C-3 are used, Bike 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.

Standard:

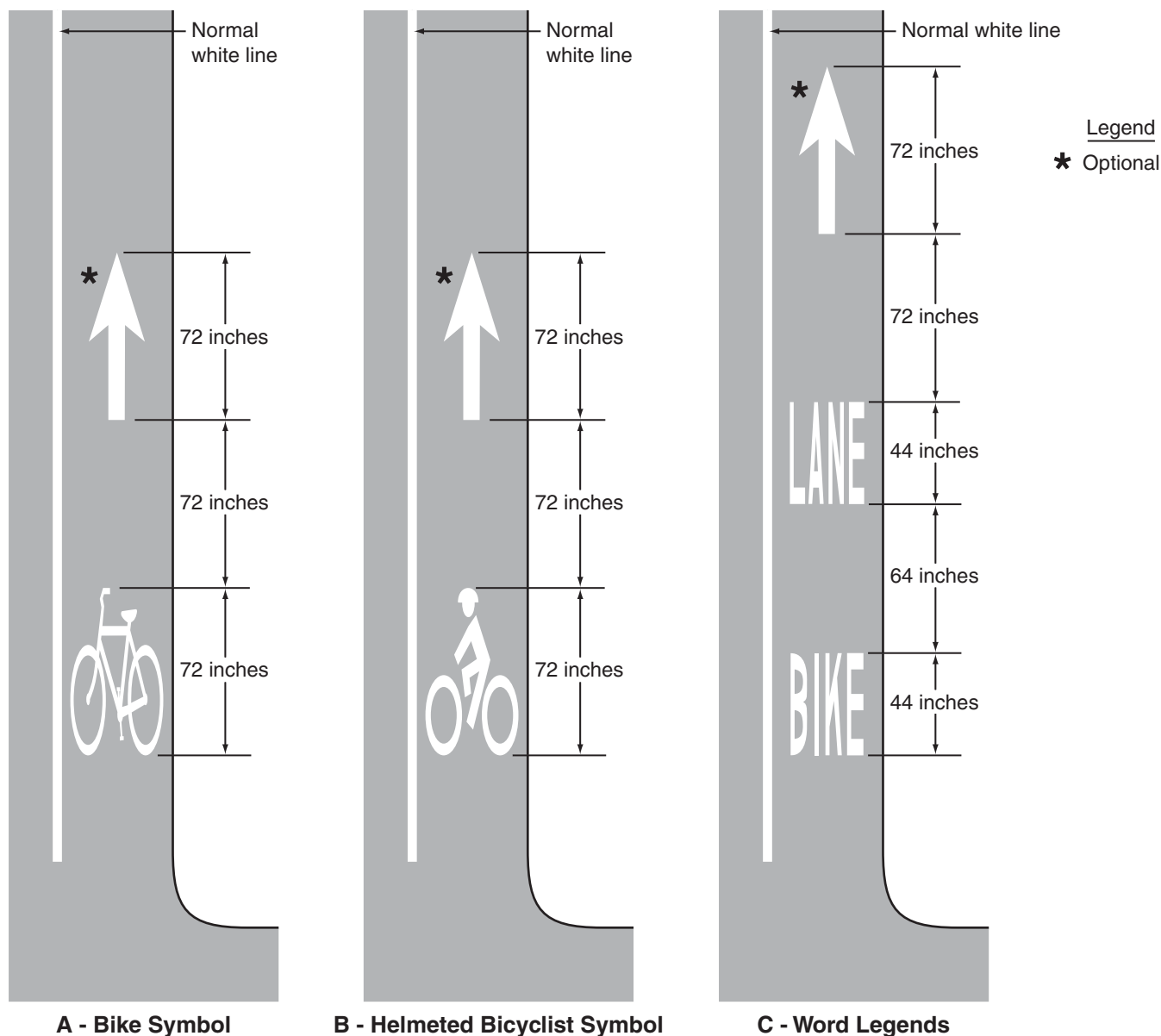
- 06 **A through bicycle lane shall not be positioned to the right of a right turn only lane or to the left of a left turn only lane.**

Support:

- 07 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:

- 08 *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.*

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

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.*

Support:

- 14 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. Pavement word message, symbol, and arrow markings for bicycle lanes are shown in Figure 9C-3.

Section 9C.05 Bicycle Detector Symbol

Option:

- 01 A symbol (see Figure 9C-7) may be placed on the pavement indicating the optimum position for a bicyclist to actuate the signal.
- 02 An R10-22 sign (see Section 9B.13 and Figure 9B-2) may be installed to supplement the pavement marking.

Section 9C.06 Pavement Markings for Obstructions*Guidance:*

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

Section 9C.07 Shared Lane Marking

Option:

- 01 The Shared Lane Marking shown in Figure 9C-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 bicyclists are likely to occupy within the traveled way,
 - D. Encourage safe passing of bicyclists by motorists, and
 - E. Reduce the incidence of wrong-way bicycling.

Guidance:

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

Standard:

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

Guidance:

- 04 *If used in a shared lane with on-street parallel parking, Shared Lane Markings should be placed so that the centers of the markings are at least 11 feet from the face of the curb, or from the edge of the pavement where there is no curb.*
- 05 *If used on a street without on-street parking that has an outside travel lane that is less than 14 feet wide, the centers of the Shared Lane Markings should be at least 4 feet from the face of the curb, or from the edge of the pavement where there is no curb.*
- 06 *If used, the Shared Lane Marking should be placed immediately after an intersection and spaced at intervals not greater than 250 feet thereafter.*

Option:

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

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

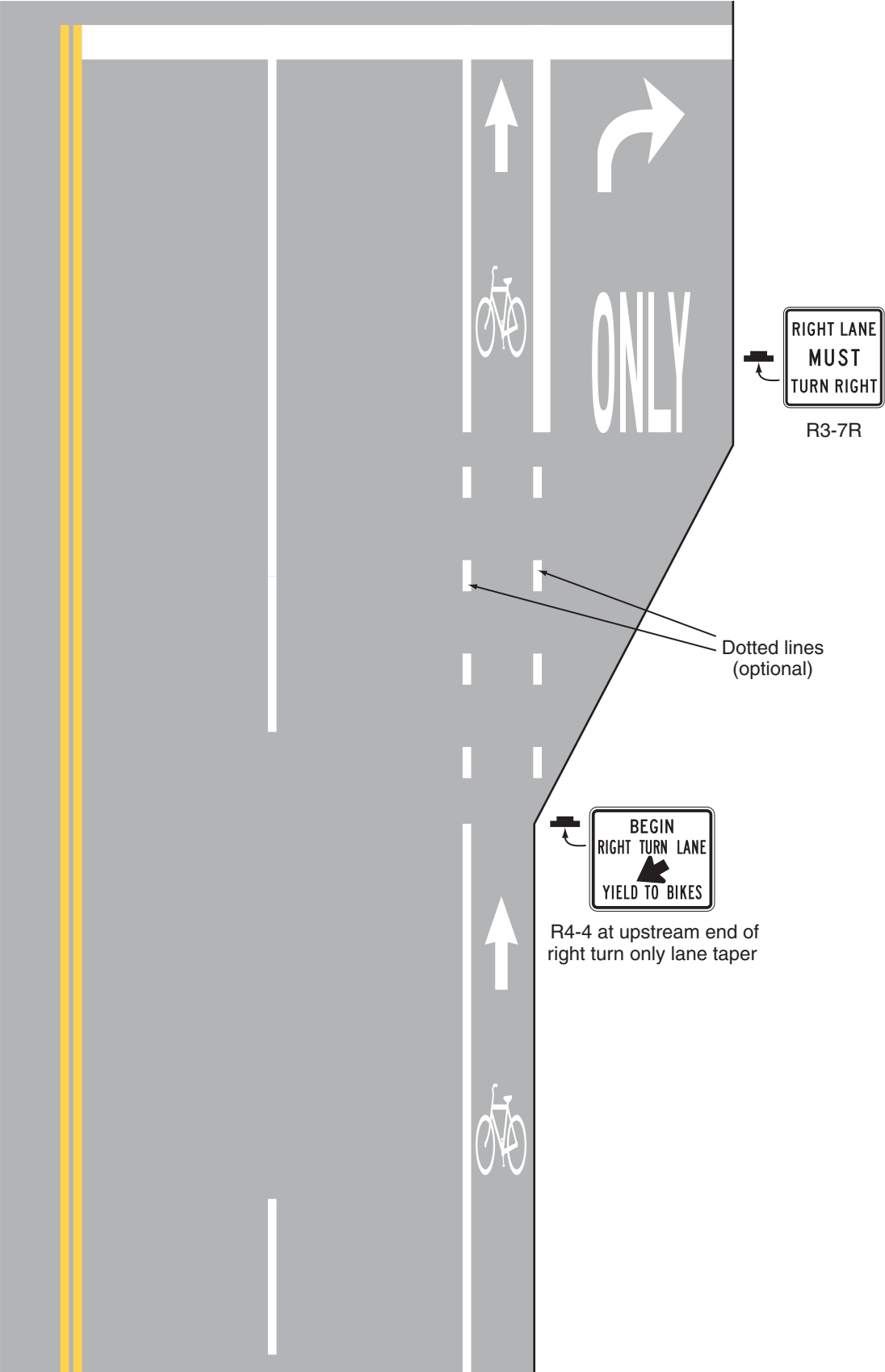


Figure 9C-5. Example of Bicycle Lane Treatment at Parking Lane into a Right Turn Only Lane

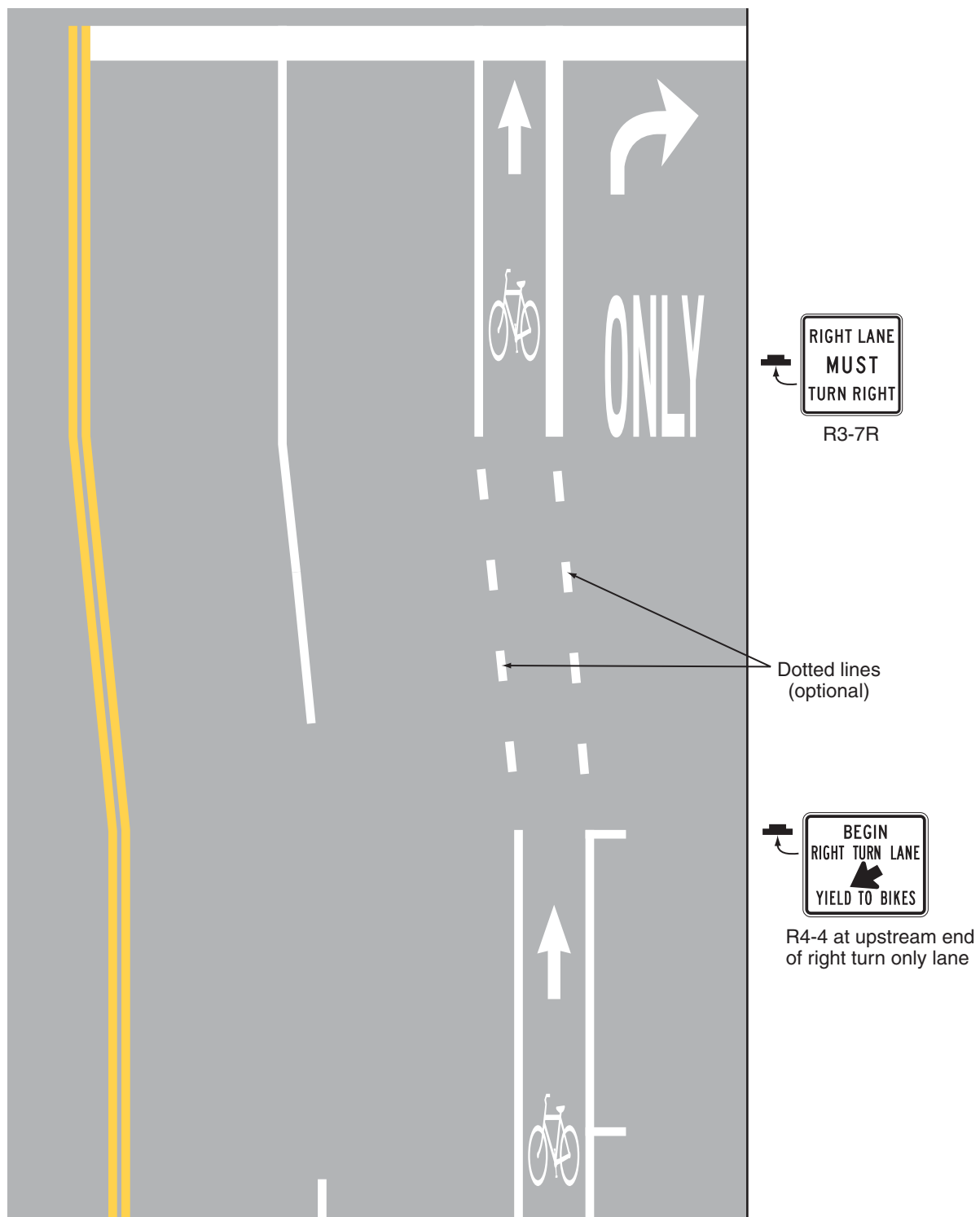


Figure 9C-6. Example of Pavement Markings for Bicycle Lanes on a Two-Way Street

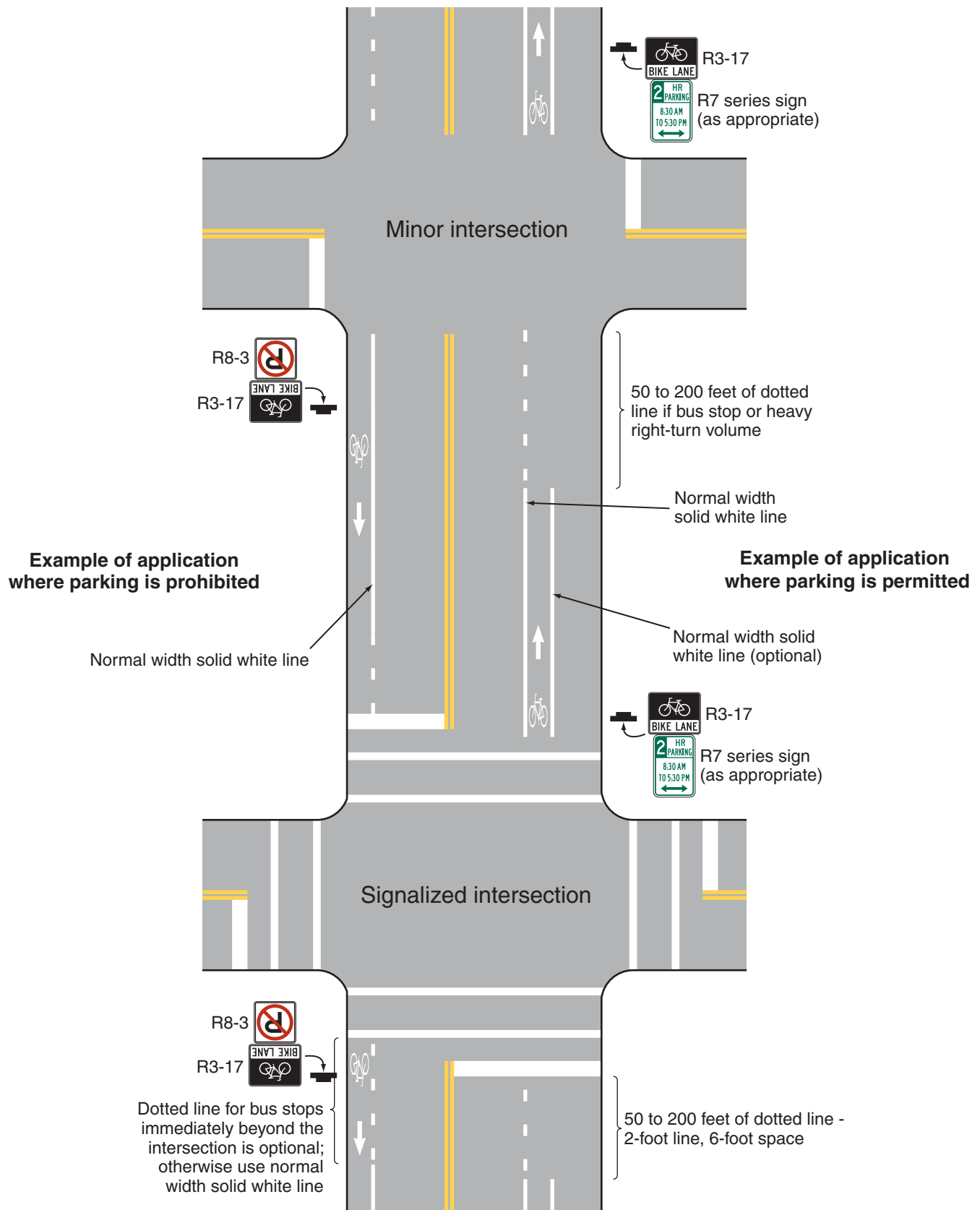


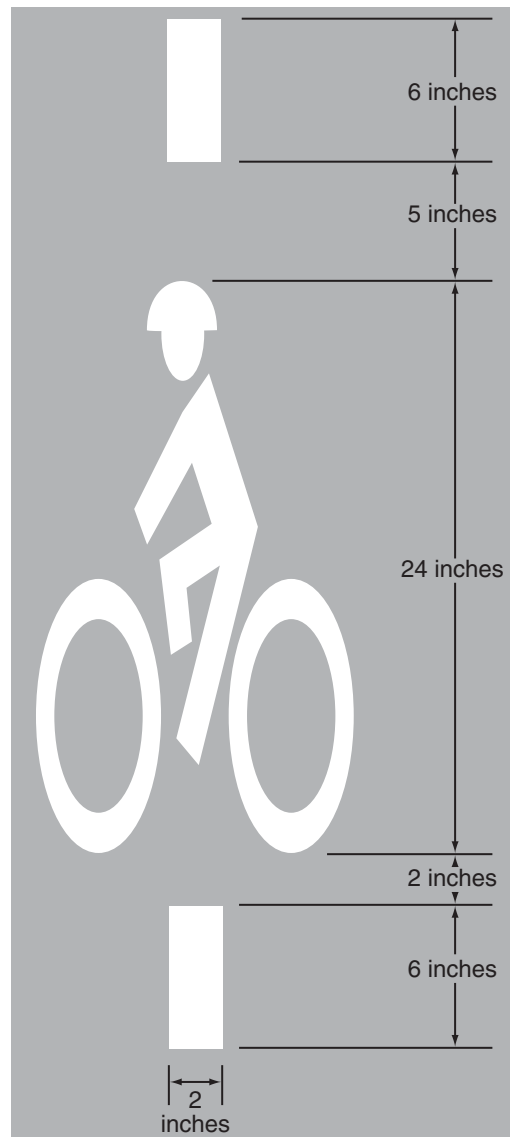
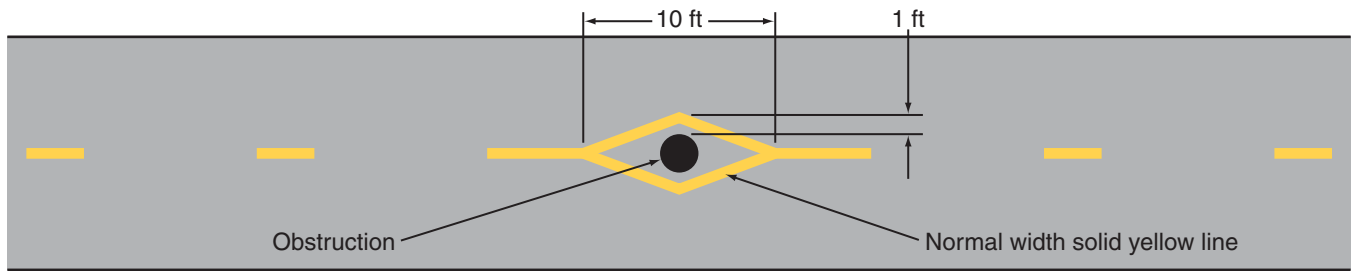
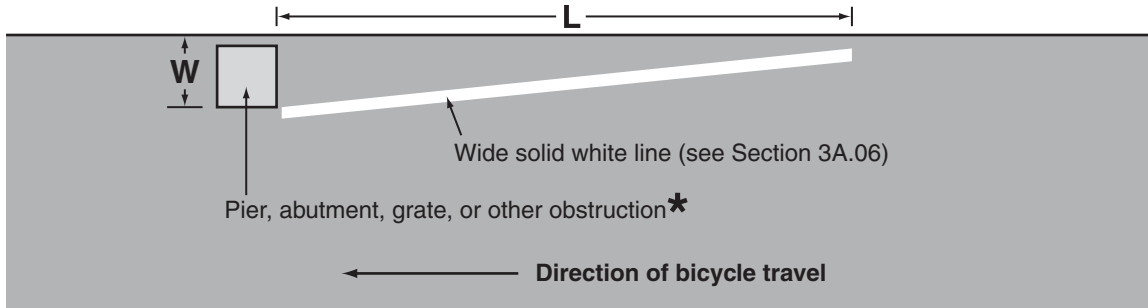
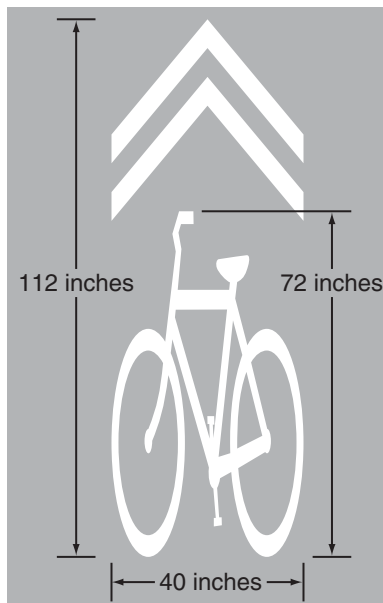
Figure 9C-7. Bicycle Detector Pavement Marking

Figure 9C-8. Examples of Obstruction Pavement Markings**A - Obstruction within the path****B - Obstruction at edge of path or roadway**

$L = WS$, where W is the offset in feet and S is bicycle approach speed in mph

* Provide an additional foot of offset for a raised obstruction and use the formula
 $L = (W+1) S$ for the taper length

Figure 9C-9. Shared Lane Marking

CHAPTER 9D. SIGNALS

Section 9D.01 Application

Support:

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

Option:

02 For purposes of signal warrant evaluation, bicyclists may be counted as either vehicles or pedestrians.

Section 9D.02 Signal Operations for Bicycles

Standard:

01 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.

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

Guide for the Development of Bicycle Facilities

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1

Introduction

1.1 DESIGN IMPERATIVE

Bicycle travel has played a historic role in transportation. Even before the invention of the automobile, the League of American Wheelmen promoted improved traveled ways.

Bicycling is recognized by transportation officials throughout the United States as an important transportation mode. A policy statement, released in early 2010 by the U.S. Department of Transportation, emphasizes the needs and requirements to integrate bicycling (and walking) into transportation systems (4). Over a quarter of the population in the United States, over the age of 16 rides bicycles (3). Nationwide, people are recognizing the convenience, energy efficiency, cost effectiveness, health benefits, economic development, and environmental advantages of bicycling.

Local, state, and federal agencies are responding to the increased use of bicycles by implementing a wide variety of bicycle-related projects and programs. This interest in bicycle transportation calls for an understanding of bicycles, bicyclists, and bicycle facilities. This guide addresses these issues and clarifies the elements needed to make bicycling a more safe, comfortable, and convenient mode of transportation.

All roads, streets, and highways, except those where bicyclists are legally prohibited, should be designed and constructed under the assumption that they will be used by bicyclists. Therefore, bicyclists' needs should be addressed in all phases of transportation planning, design, construction, maintenance, and operations (1). All modes of transportation, including bicycles, should be jointly integrated into plans and projects at an early stage so that they function together effectively.

1.2 PURPOSE

Bicyclists should be expected on roadways, except where prohibited, and on shared use paths. Safe, convenient, well-designed, well-maintained facilities, with low-crash frequencies and severities, are important to accommodate and encourage bicycling.

Photo courtesy of Alaska DOT.

This guide provides information on how to accommodate bicycle travel and operations in most riding environments. It is intended to present sound guidelines that result in facilities that meet the needs of bicyclists and other highway users. Sufficient flexibility is permitted to encourage designs that are sensitive to local context and incorporate the needs of bicyclists, pedestrians, and motorists. However, in some sections of this guide, suggested minimum dimensions are provided. These are recommended only where further deviation from desirable values could increase crash frequency or severity.

This guide has been updated from the previous guide published in 1999. The fact that new guidance is presented herein does not imply that existing bicycle facilities are inadequate or unsafe, nor does it mandate the initiation of improvement projects. The intent of this document is to provide guidance to designers and planners by referencing a recommended range of design values and describing alternative design approaches. Good design practice involves engineering cost-effective solutions that balance safety and mobility for all transportation modes, along with preservation of scenic, aesthetic, historic, cultural, and environmental resources. This guide is therefore not intended to be a detailed design or traffic engineering manual that could supersede the need for application of sound principles by the knowledgeable design or traffic engineering professional.

1.3 SCOPE

This guide provides information on the physical infrastructure needed to support bicycling. Facilities are only one of several elements essential to a community's overall bicycle program. Bicycle safety education and training, encouraging bicycle use, and enforcing the rules of the road as they pertain to bicyclists and motorists should be combined with engineering measures to form a comprehensive approach to bicycle use. Information on other elements of an overall bicycle program can be obtained from state or local bicycle coordinators and other publications.

The provisions for bicycle travel are consistent with, and similar to, normal highway engineering practices. Signs, signals, and pavement markings for bicycle facilities are presented in the *Manual on Uniform Traffic Control Devices* (MUTCD) (2), which should be used in conjunction with this guide. If there is a discrepancy between the content of this guide and the current edition of the MUTCD, then the MUTCD supersedes this guide for that case. For construction of bicycle facilities, applicable state and local construction specifications should be used.

1.4 DEFINITIONS

Bicycle—A pedal-powered vehicle upon which the human operator sits. The term “bicycle” for this publication includes three- and four-wheeled human-powered vehicles, but not tricycles for children. In some states, a bicycle is considered a vehicle, while in other states it is not.

Bicycle Boulevard—A street segment, or series of contiguous street segments, that has been modified to accommodate through bicycle traffic and minimize through motor traffic.

Bicycles Facilities—A general term denoting improvements and provisions to accommodate or encourage bicycling, including parking and storage facilities, and shared roadways not specifically defined for bicycle use.

Bicycle Lane or Bike Lane—A portion of roadway that has been designated for preferential or exclusive use by bicyclists by pavement markings and, if used, signs. It is intended for one-way travel, usually in the same direction as the adjacent traffic lane, unless designed as a contra-flow lane.

Bicycle Level of Service (BLOS)—A model used to estimate bicyclists' average perception of the quality of service of a section of roadway between two intersections.

Bicycle Locker or Bike Locker—A secure, lockable container used for individual bicycle storage.

Bicycle Network—A system of bikeways designated by the jurisdiction having authority. This system may include bike lanes, bicycle routes, shared use paths, and other identifiable bicycle facilities.

Bicycle Rack or Bike Rack—A stationary fixture to which a bicycle can be securely attached.

Bicycle Route or Bike Route—A roadway or bikeway designated by the jurisdiction having authority, either with a unique route designation or with Bike Route signs, along which bicycle guide signs may provide directional and distance information. Signs that provide directional, distance, and destination information for bicyclists do not necessarily establish a bicycle route.

Bicycle Wheel Channel—A channel installed along the side of a stairway to facilitate walking a bicycle up or down the stairs.

Bikeway—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.

Highway—A general term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.

Independent Right-of-Way—A general term denoting right-of-way outside the boundaries of a conventional highway.

Rail-Trail—A shared use path, either paved or unpaved, built within the right-of-way of a former railroad.

Rail-with-Trail—A shared use path, either paved or unpaved, built within the right-of-way of an active railroad.

Right-of-Way—A general term denoting land, property or interest therein, usually in a strip, acquired for or devoted to transportation purposes.

Right of Way (Assignment)—The right of one driver or pedestrian to proceed in a lawful manner in preference to another driver or pedestrian.

Roadway—The portion of the highway, including shoulders, intended for vehicular use.

Recumbent Bicycle—A bicycle with pedals at roughly the same level as the seat where the operator is seated in a reclined position with their back supported.

Roundabout—A type of circular intersection that provides yield control to all entering vehicles and features channelized approaches and geometry to encourage reduced travel speeds through the circular roadway.

Rumble Strips—A textured or grooved pavement treatment designed to create noise and vibration to alert motorists of a need to change their path or speed. Longitudinal rumble strips are sometimes used on or along shoulders or center lines of highways to alert motorists who stray from the appropriate traveled way. Transverse rumble strips are placed on the roadway surface in the travel lane, perpendicular to the direction of travel.

Shared Lane—A lane of a traveled way that is open to both bicycle and motor vehicle travel.

Shared-Lane Marking—A pavement marking symbol that indicates an appropriate bicycle positioning in a shared lane.

Shared Roadway—A roadway that is open to both bicycle and motor vehicle travel.

Shared Use Path—A bikeway physically separated from motor vehicle 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 also be used by pedestrians, skaters, wheelchair users, joggers, and other non-motorized users. Most shared use paths are designed for two-way travel.

Shoulder—The portion of the roadway contiguous with the traveled way that accommodates stopped vehicles, emergency use, and lateral support of subbase, base, and surface courses. Shoulders, where paved, are often used by bicyclists.

Sidewalk—That portion of a street or highway right-of-way, beyond the curb or edge of roadway pavement, which is intended for use by pedestrians.

Sidepath—A shared use path located immediately adjacent and parallel to a roadway.

Traveled Way—The portion of the roadway intended for the movement of vehicles, exclusive of shoulders and any bike lane immediately inside of the shoulder.

Unpaved Path—Path not surfaced with a hard, durable surface such as asphalt or Portland cement concrete.

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