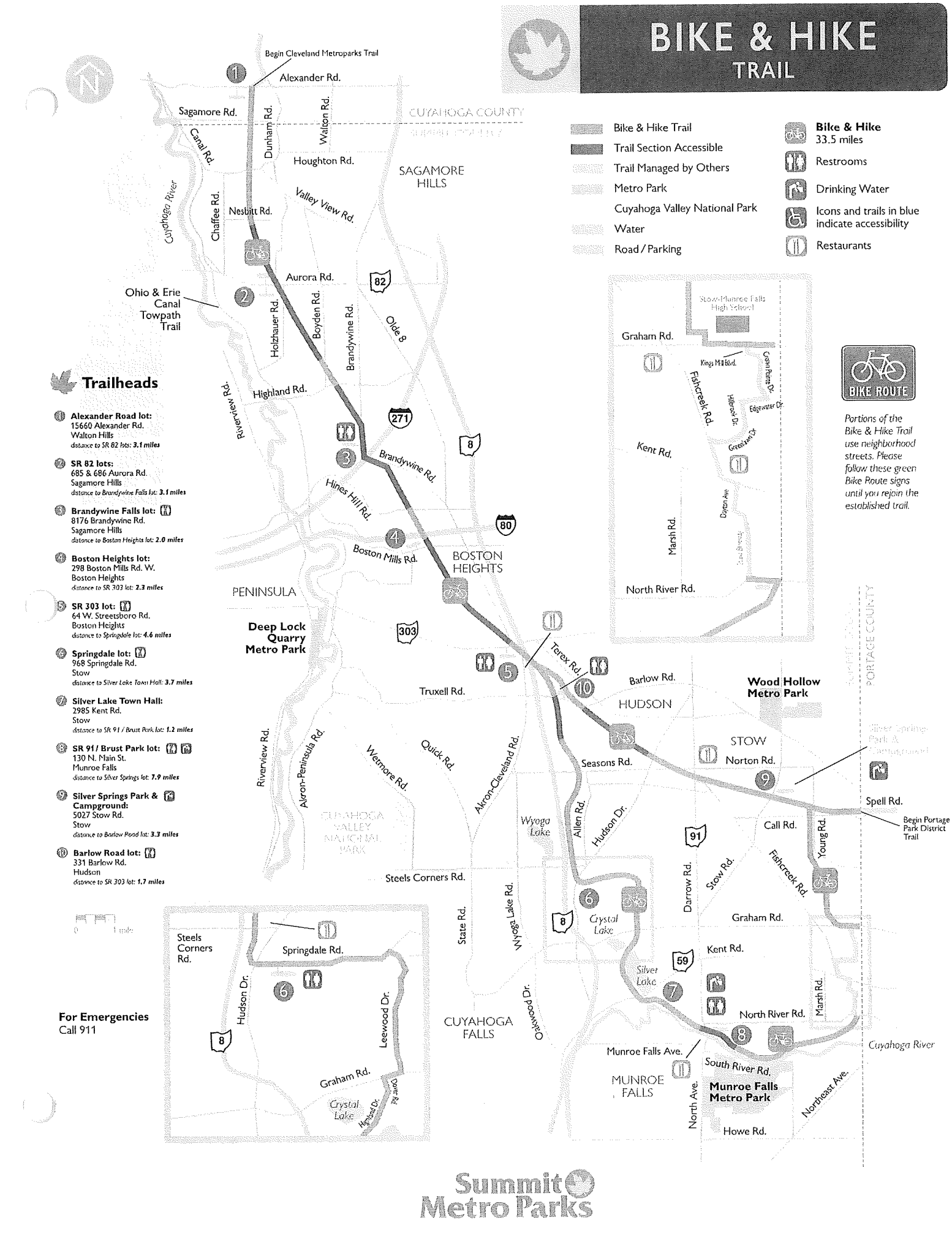
BIKE & HIKE TRAIL



Bike & Hike Trail
Trail Section Accessible
Trail Managed by Others
Metro Park
Cuyahoga Valley National Park
Water
Road / Parking

Bike & Hike
33.5 miles
Restrooms
Drinking Water
Icons and trails in blue indicate accessibility
Restaurants

BIKE ROUTE

Portions of the Bike & Hike Trail use neighborhood streets. Please follow these green Bike Route signs until you rejoin the established trail.

Trailheads

1. **Alexander Road lot:**
   15660 Alexander Rd.
   Walton Hills
   distance to SR 82 lot: ***3.1 miles***
2. **SR 82 lots:**
   685 & 686 Aurora Rd.
   Sagamore Hills
   distance to Brandywine Falls lot: ***3.1 miles***
3. **Brandywine Falls lot:**
   8176 Brandywine Rd.
   Sagamore Hills
   distance to Boston Heights lot: ***2.0 miles***
4. **Boston Heights lot:**
   298 Boston Mills Rd. W.
   Boston Heights
   distance to SR 303 lot: ***2.3 miles***
5. **SR 303 lot:**
   64 W. Streetsboro Rd.
   Boston Heights
   distance to Springdale lot: ***4.6 miles***
6. **Springdale lot:**
   968 Springdale Rd.
   Stow
   distance to Silver Lake Town Hall: ***3.7 miles***
7. **Silver Lake Town Hall:**
   2985 Kent Rd.
   Stow
   distance to SR 91 / Brust Park lot: ***1.2 miles***
8. **SR 91 / Brust Park lot:**
   130 N. Main St.
   Munroe Falls
   distance to Silver Springs lot: ***7.9 miles***
9. **Silver Springs Park & Campground:**
   5027 Stow Rd.
   Stow
   distance to Barlow Road lot: ***3.3 miles***
10. **Barlow Road lot:**
    331 Barlow Rd.
    Hudson
    distance to SR 303 lot: ***1.7 miles***

For Emergencies
Call 911

Summit Metro Parks

THE 5 E'S FOR A BICYCLE FRIENDLY AMERICA

Engineering: Creating safe and convenient places to ride and park

Education: Giving people of all ages and abilities the skills and confidence to ride

Encouragement: Creating a strong bike culture that welcomes and celebrates bicycling

Enforcement: Ensuring safe roads for all users

Evaluation & Planning: Planning for bicycling as a safe and viable transportation option

Introduction: Why is bicycling good for the economy?

Each year several new studies come out that help make the case that investments in safe and attractive bicycling pay economic dividends. We've added dozens of sources (and about 10 pages) to this report since it was originally released in 2009.

The research can get technical, but the principles are simple:

- People who ride bikes buy bikes. This puts people to work in bicycle shops and apparel stores.
- People who ride bikes buy other things, too. Bike-accessible business districts benefit by catering to these customers.
- People on bikes are also more likely to make repeat trips to their local stores.
- People who ride bikes on vacation buy food, have travel costs, and pay for lodging. Bicycling tourists bring millions of dollars to cities and towns across the country that wouldn't otherwise end up there.

All that spending means jobs -- and tax revenue -- for communities. But people who ride bikes also *save* money.

- With the money saved from lower travel costs, people who ride bikes have more of their money to spend on local businesses.
- People who ride bikes can save their companies money on health insurance costs.
- Developers, cities, and individuals can save money on parking costs by providing space-efficient, low-cost bike parking instead of expensive car parking.

The best way to attract people who ride bikes and accrue all of these benefits is by building infrastructure that makes it more attractive for people to ride. Building that infrastructure creates jobs, and it does so extremely cost-effectively. In fact, there's no better job-creating bang for your transportation buck.

- Road projects are materials-intensive. Much of a road project budget goes to materials. By contrast, bicycling and walking projects are labor-intensive. Bicycling and walking project create more jobs per dollar than road projects.
- A built-up city can add capacity for new bicyclists much less expensively than new capacity for drivers.

LESSON 19

BicycleLanes

19.1 Purpose

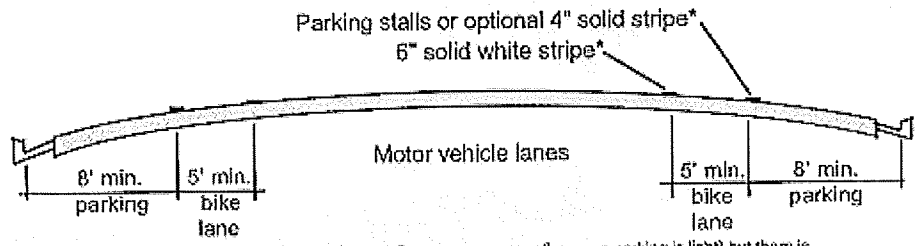
The AASHTO *Guide for the Development of Bicycle Facilities* defines a bike lane as "a portion of a roadway which has been designated by striping, signing, and pavement markings for the preferential or exclusive use of bicyclists." As levels of bicycling have increased in the United States, there has been a growing amount of support for bike lanes on urban and suburban roadways. Bike lanes are a preferred facility type in European countries, and in North America, nearly every major city has made an effort in recent years to install bicycle lanes, either as "pilot projects" (to test their success) or, in many cases, on larger networks of interconnecting roadways. Several small towns have led the way in establishing networks of bicycle lanes, particularly college towns where there are high levels of student bicycle commuters (e.g., University of California at Davis and University of Texas at Austin).

As a relatively new feature in the roadway cross-section, bike lane design has been the topic of much study in recent years. Bike lane design can be quite challenging in situations where the existing urban traffic patterns are complex and cross-sections are already constrained by heavy traffic volumes. Designers throughout the country develop new and better solutions each year. This section includes excerpts from several sources, including Oregon's *1995 Bicycle and Pedestrian Plan* and Philadelphia's *Bicycle Network Plan.*

Note: The Europeans have pioneered innovative bike lane design solutions. Lesson 22 includes a description of European approaches that have been successful.

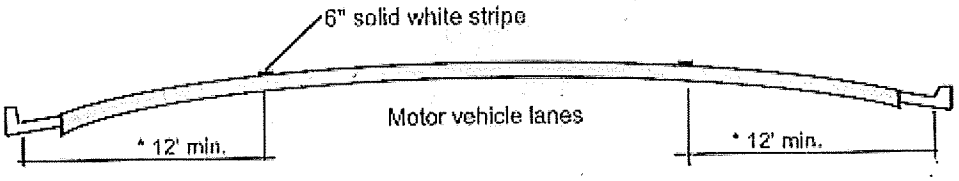
As with the other bicycle facility design issues covered in this manual, bike lane design is covered in

(1) Striped parking



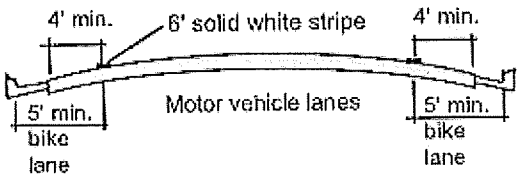
* The optional solid stripe may be advisable where stalls are unnecessary (because parking is light) but there is concern that motorists may misconstrue the bike lane to be a traffic lane.

(2) Parking permitted without parking stripe or stall

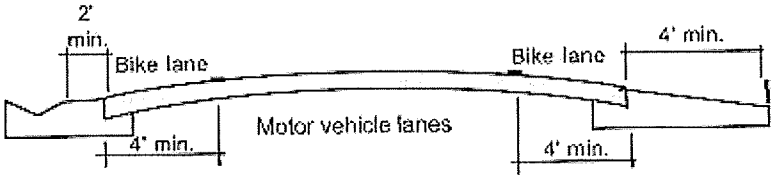


* 13' is recommended where there is substantial parking or turnover of parked cars is high (e.g., commercial areas).

(3) Parking prohibited



(4) Cross section on roads with no curb and gutter (source: NCDOT)



Bicycle lanes provided under different types of conditions. **Source: AASHTO Guide for the Development of Bicycle Facilities, 1991.**

Contra-flow bike lanes can provide direct access to high-use destinations.

- The contra-flow bike lane must be placed on the right side of the street (to motorists' left) and must be separated from oncoming traffic by a double yellow line. This indicates that the bicyclists are riding on the street legally, in a dedicated travel lane.

- Any intersecting alleys, major driveways, and streets must have signs indicating to motorists that they should expect two-way bicycle traffic.

- Existing traffic signals should be fitted with special signals for bicyclists; this can be achieved with either loop detectors or push buttons (these should be easily reached by bicyclists without having to dismount).

Note: Under no circumstances should a contra-flow bike lane be installed on a two-way street, even where the travel lanes are separated by a raised median.

19.7 Bike Lane Pavement Markings

The *Manual on Uniform Traffic Control Devices* (MUTCD) section 9C addresses standard bike lane markings. The stripe between the bicycle lane and the adjacent motor vehicle lane should be a 100-millimeter (4 inch) wide white line (minimum width). Six- to eight-inch-wide lines provide an even clearer division of space, and are highly recommended.

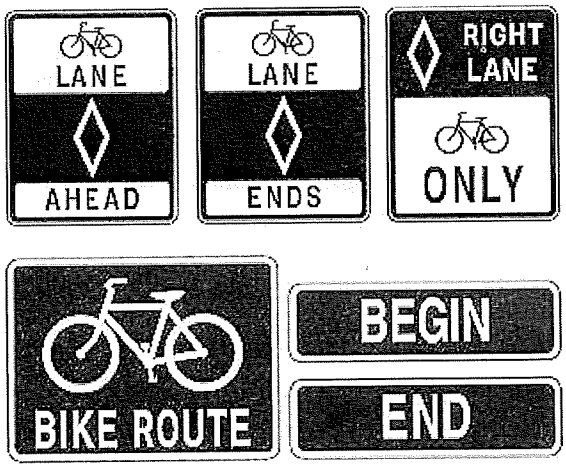
Where parking is allowed next to a bike lane, the parking area should be defined by parking space markings or a solid 100 millimeter (4 inch) wide stripe.

Care should be taken to use pavement striping that is durable, yet skid-resistant. Reflectors and raised markings in bike lanes can deflect a bicycle wheel, causing a bicyclist to lose control. If reflective pavement markers are needed for motorists, they should be installed on the motorist's side of the stripe, and have a beveled front edge.

While the 1988 edition of the MUTCD recommends the use of the diamond-shaped preferential lane symbol in conjunction with bike lane signs, this symbol is often confusing for both the bicyclist and motorist. For this reason, subsequent editions of the MUTCD will probably eliminate the use of the diamond in bike lanes. The new standard pavement markings for bicycle lanes are the bicycle symbol (or the words BIKE LANE) and a directional arrow.

19.8 Bike Lane Signing

The *Manual on Uniform Traffic Control Devices* (MUTCD) section 9B addresses standard bike lane signing. According to section 9B-8, the R3-16 sign should be used in advance of the beginning of a

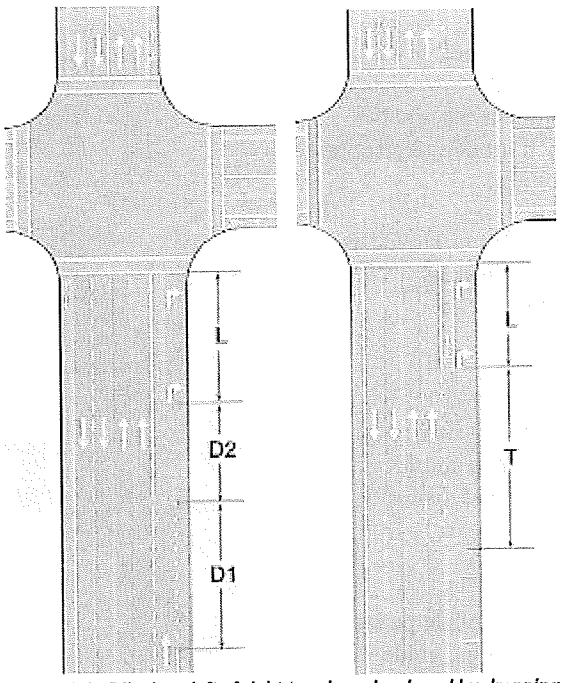


Bike lane signs should be replaced with bike lane stencils, with optional NO PARKING signs where needed.

Not all intersections can be widened to provide a right-turn lane. A bike lane to the left of right-turning cars should still be provided. One common configuration occurs where a right-turn lane is developed by dropping parking (see figure at right).

Another configuration occurs where a lane is dropped and turns into a right-turn lane.

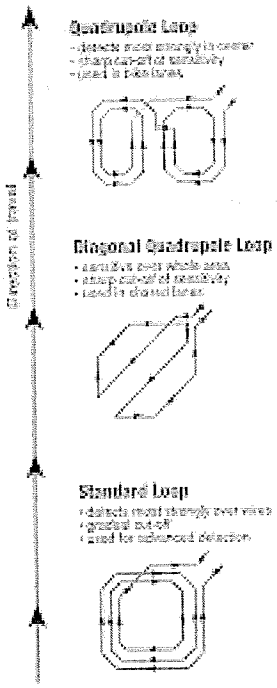
Note: This is a difficult movement for bicyclists as they must merge left and find a gap in the traffic stream:



Above left: Bike lane left of right-turn lane developed by dropping a travel lane. Above right; Bike lane left of right-turn lane developed by dropping parking.

Exception #1: Heavy Right Turns
If the major traffic movement at an intersection is to the right, and the straight through move leads to a minor side street, then the bike lane may be placed on the right and wrapped around the curve, assuming that the majority of cyclists will desire to turn right too. This often occurs where a highway is routed over local streets and the route is indirect.

Exception #2: Tee Intersections
At a Tee intersection, where the traffic split is approximately 50 percent turning right and 50 percent turning left, the bike lane should be dropped prior to the lane split to allow cyclists to position themselves in the correct lane. Where traffic volumes are very high, a left- and right-turning bike lane should be considered.



Different loop configurations: The quadrupole loop is recommended for bike lanes.

Offset Intersections
Care should be taken to ensure that motorists are not inadvertently encouraged to ride in the bike lane because of offset travel lanes. At intersections with offset lanes, dashed offset lane markings should continue through the intersection to direct traffic flow (MUTCD Section 3B-7).

Traffic Signal Actuation
It is highly recommended that new on-road bicycle facilities include traffic signals that detect bicycles for all actuated signal systems. *The Traffic Detector Handbook* (FHWA-IP-90-002) recommends several bicycle-sensitive loop configurations (loops are wires installed beneath the pavement surface that detect the presence of vehicles) that effectively detect bicycles. The quadrupole loop is the preferred solution for bike lanes, and the diagonal quadrupole loop is preferred for use in shared lanes.

One solution for existing intersection signals that do not respond to bicycles is to install a special pavement marking over the exact spot that a bicycle must stand in order to "trip" the signal.

Expressway Interchanges
Expressway interchanges often present barriers to bicycle circulation. Designs that encourage free-flowing motor vehicle traffic movements are the most difficult for pedestrians and bicyclists to negotiate.

- Motor vehicles are often accelerating to merge into traffic.
- The speed differential between cyclists and motorists is high.

The following design guides bicyclists in a manner that provides:

- A short distance across the ramp at close to a right angle.
- Improved sight distances in an area where traffic speeds are slower than farther downstream.
- A crossing in an area where drivers' attention is not entirely focused on merging with traffic.

Exit Ramps
Exit ramps present difficulties for bicyclists because:

- Motor vehicles exit at fairly high speeds.
- The acute angle creates visibility problems.
- Exiting drivers often do not use their right-turn signal, confusing pedestrians and bicyclists seeking a gap in the traffic.

The exit ramp design on the previous page guides bicyclists in a manner that provides:

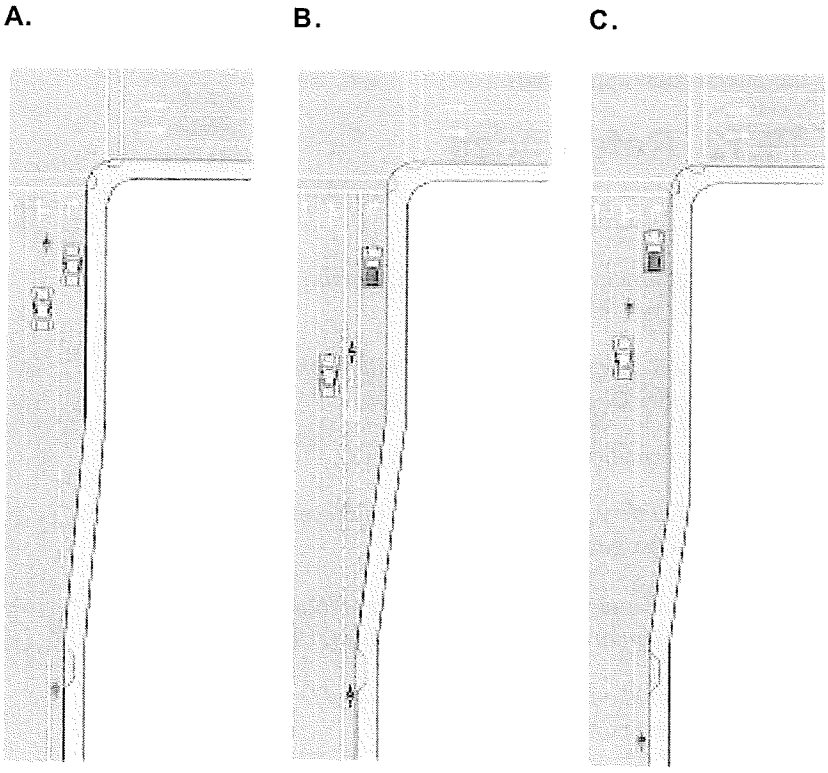
- A short distance across the ramp, at close to a right angle.
- Improved sight distances in an area where traffic speeds are slower than farther upstream.
- A crossing in an area where the driver's attention is not distracted by other motor vehicles.

Dual Right-Turn Lanes
This situation is particularly difficult for bicyclists. Warrants for dual turn lanes should be used to ensure that they are provided only if absolutely necessary.

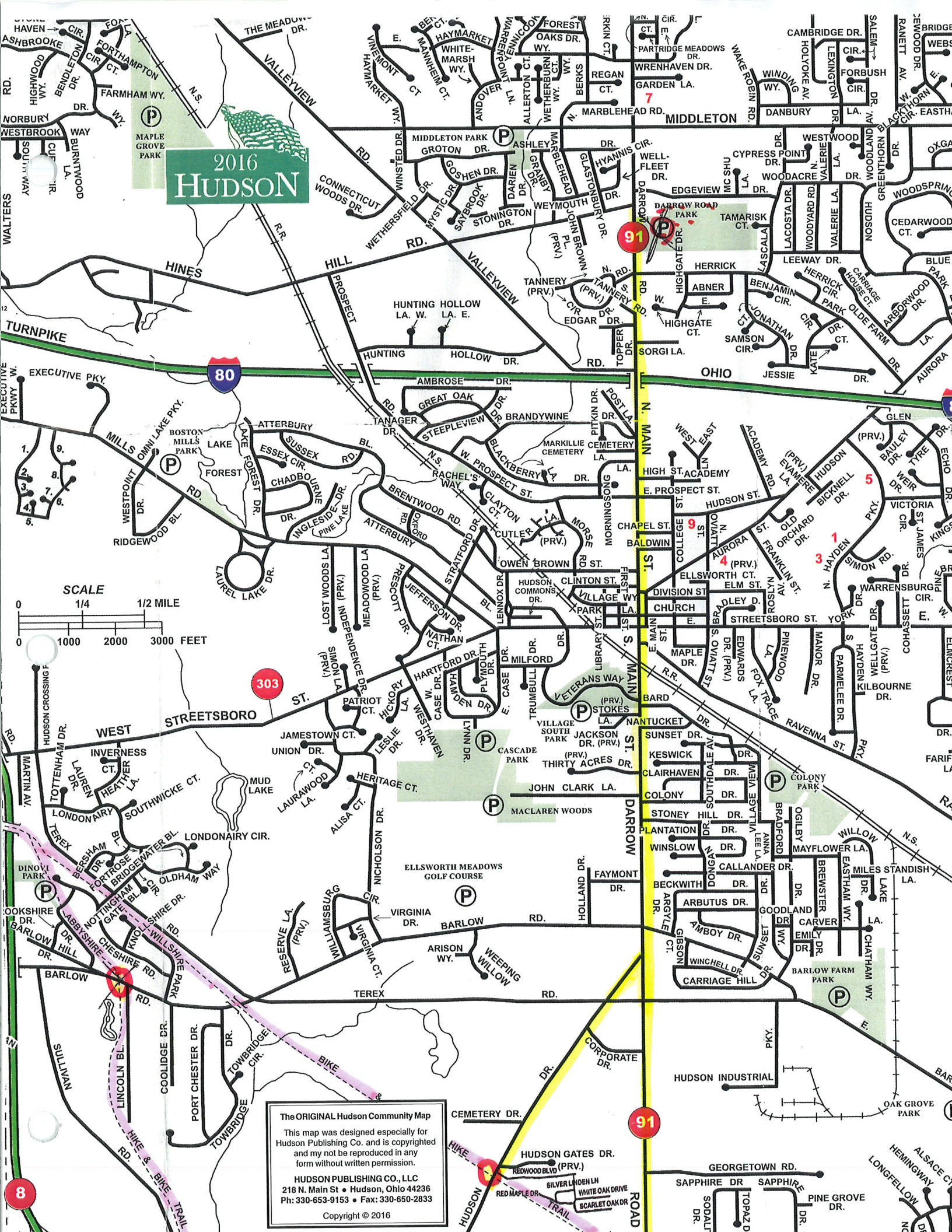
The design for single right-turn lanes allows bicyclists and motorists to cross paths in a predictable manner, but the addition of a lane from which cars may also turn adds complexity: Some drivers make a last minute decision to turn right from the center lane without signaling, catching bicyclists and pedestrians unaware.

Bicyclists and motorists should be guided to areas where movements are more predictable, so bicyclists and motorists can handle one conflict at a time, in a predictable manner. A curb cut provides bicyclists with access to the sidewalk, for those who prefer to proceed as pedestrians.

- Design A (see Figure 19-13) encourages cyclists to share the optional through-right-turn lane with motorists.
- Design B guides cyclists up to the intersection in a dedicated bike lane.
- Design C allows cyclists to choose a path themselves (this design is the AASHTO recommendation–simply dropping the bike lane prior to the intersection).



Bike lane through dual right-turn lanes.



The ORIGINAL Hudson Community Map

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