JUNE 2016



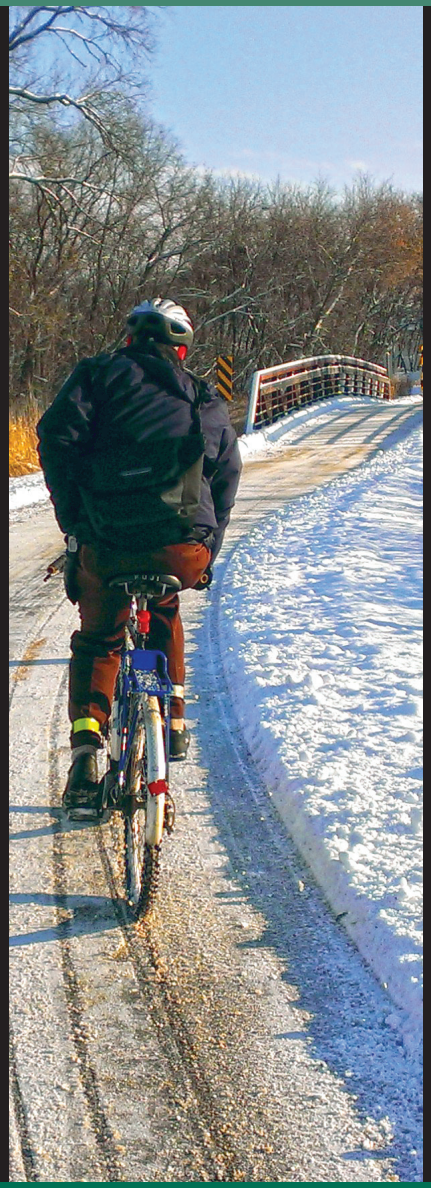

Photo by Adam Coppola


Dane County Bicycle Wayfinding Manual

A Guide to Planning, Designing, and Installing Bicycle Wayfinding Signs

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Acknowledgements

The Dane County Bicycle Wayfinding Manual was developed by Toole Design Group for Dane County and the Madison Area Transportation Planning Board.

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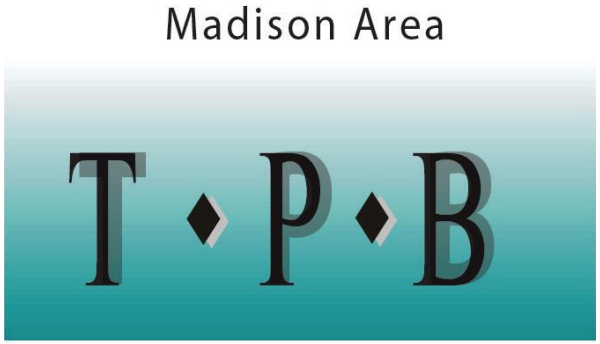

Transportation Planning Board
A Metropolitan Planning Organization

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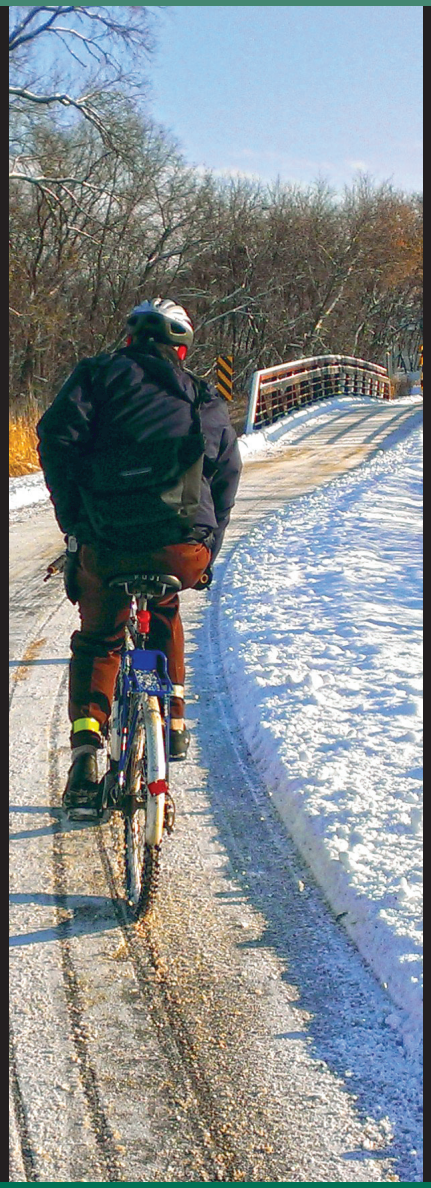

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Introduction

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Introduction

This manual provides a step-by-step process for planning for and installing wayfinding signs on bikeways in Dane County. It was developed with the expectation that the agencies and organizations who will undertake wayfinding signing plans will not have a background in traffic engineering or sign design.

The Dane County Bicycle Wayfinding Manual was developed between October 2015 and May 2016 through a planning process involving staff from Dane County Parks department, the Madison Transportation Planning Board, and representatives from a variety of cities throughout Dane County.

Planners should plan bicycle wayfinding systems for casual bicycle riders and people unfamiliar with the area.

Keeping the user in mind

Planners should imagine a casual bicycle rider using the facilities and associated wayfinding during the design and planning of the wayfinding systems. An experienced bicycle commuter or recreational rider knows their favorite routes well, and does not need a signed bicycle route system for that trip. However, a person who has just moved into a new neighborhood or who is exploring a path for the first time will appreciate the guidance provided by a well signed route.

Why provide wayfinding signs?

When considering the type of information and destinations that should appear on wayfinding signs, it is helpful to keep in mind the reasons for providing a comprehensive wayfinding sign system:

- Provide a higher level of comfort for people choosing to travel by bike:
  - for those who are new to bicycling for transportation purposes,
  - for those who are new in a community, and
  - for those who are unfamiliar with a neighborhood where they want to travel.
- Provide guidance along routes which are not intuitive or are different from those followed by motorists.
- Provide navigational assistance to popular destinations for bicyclists and trail users.
- Support bicycle encouragement efforts by:
  - showing how easy (or quick) it is to get to destinations by bicycle, and
  - creating a visual image of the bicycle in the roadway environment, and in turn, marketing bicycle transportation.
- Support bicycle safety by:
  - helping bicyclists find routes that are appropriate for their skill level,
  - increasing the overall numbers of people bicycling, which has been shown to increase safety, and
  - providing a widespread indicator for motorists that bicyclists should be expected on streets, especially those that are popular bike routes.

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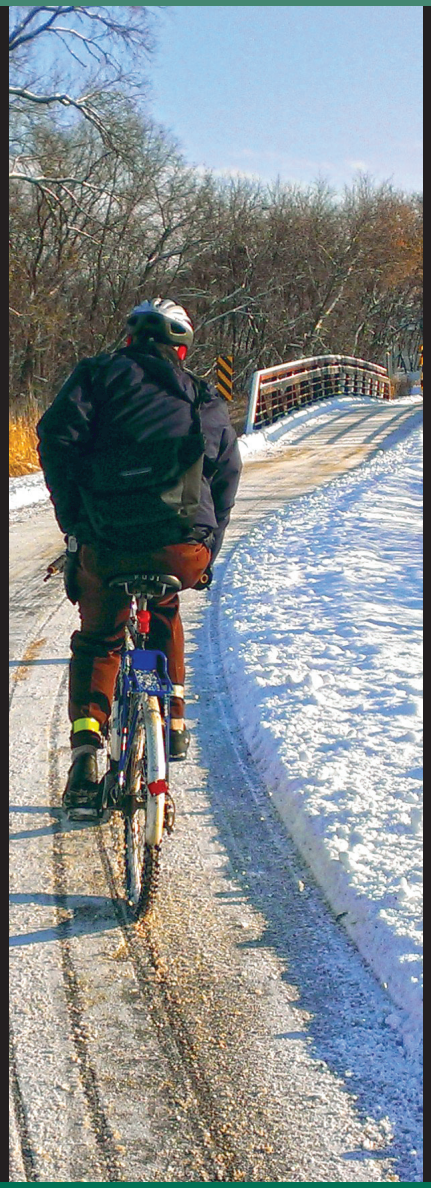

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STEP 1

Define the Project Scope

1.1 Refer to County-wide planning documents to determine whether wayfinding is a priority for the facility

1. The Dane County Parks and Open Space Plan includes a Regional Trail Map. To see the map, go to the "Planning and Development" page on Dane County Parks Department's website and look for the most recent Park and Open Space Plan: https://parks-lwrd.countyofdane.com.
2. The Metropolitan Planning Organization's (MPO) Bicycle Transportation Plan includes a map of the functional classification of bikeways into "Primary," "Secondary," and "other" bicycle facilities. The functional classification map can be seen at www.madisonareampo.org/planning/BikePlan.cfm.

The map kiosk at the Dunn's Marsh Bicycle Roundabout.

Priority bikeways for wayfinding signs

- If the facility is part of the Regional Trail Map in the Dane County Parks and Open Space Plan, or if it is classified as a "Primary Bikeway" in the MPO's Bicycle Transportation Plan, it should be prioritized for wayfinding. These bikeways typically have high bicycle volumes or are comfortable, direct routes for the majority of bicyclists and link neighborhoods and destinations. As these facilities are developed and built, wayfinding should be included as part of the construction budget.
- Any route that is designated as a United States or Wisconsin Bicycle Route should have wayfinding signs. The State of Wisconsin Department of Transportation (WisDOT) and Department of Natural Resources (DNR) are currently planning U.S. and Wisconsin Bicycle Routes for long-distance touring and recreational riding in Wisconsin. Several draft U.S. and Wisconsin Bike Routes are proposed to pass through Dane County. Once these routes have been identified and adopted by the State agencies, they should be signed with both local wayfinding signs consistent with the recommendations in this manual and the appropriate U.S. Bicycle Route or Wisconsin Bicycle Route sign. WisDOT or DNR will likely be responsible for determining the placement of the U.S. and Wisconsin Bicycle Route signs (see box).

U.S. BICYCLE ROUTES should be marked with the Alternate M1-9 sign (depicted above) which is described in detail in a 2012 memo by the Federal Highway Administration. State or regional bicycle routes should use the M1-8 or M1-8a sign. When there is enough vertical clearance on a post (refer to the guidance in Step 6), the M1-series signs may be mounted below the wayfinding assembly. If there is not enough vertical clearance on a post, the M1-series signs can be placed on a separate post along the bikeway.

Other bikeways

The Bicycle Transportation Plan also identifies secondary bikeways, which fill in the gaps between primary bikeways and regional trails and provide neighborhood access. The number of users is likely to be fewer on these routes than on primary routes, and providing wayfinding is not as important, except where the routes feed into the primary bikeways or regional trails. Local agencies may have their own priorities, and may wish to add wayfinding signs along these secondary bikeways to help steer bicyclists to an important point of interest or small town center.

1.2 Determine the type of signs the project will include

Determine the scope of the signs that will be installed for the project. Are you signing a bikeway that already has map kiosks, mileage markers, and warning signs, and you only want to add wayfinding signs? Or is it a newly-built trail, and you need to add all new signs? You will need to consider whether your project will include the following signs:

- Wayfinding signs (to guide users along a route, and to direct them to destinations and services along the bikeway)
- Etiquette signs
- Regulatory and warning signs (see note below)
- Mileage Markers
- Kiosk Maps or Sign Maps
- Pavement markings

If your project will include regulatory signs (such as stop or yield signs), path warning signs (such as yellow diamond warning signs), or signs to be placed along streets to warn drivers of upcoming bikeway crossings, the Manual on Uniform Traffic Devices (MUTCD) provides specific guidance related to those types of signs. An engineer or planner who is familiar with both the MUTCD and Wisconsin State Statutes that govern traffic control for vehicles, bicyclists, and pedestrians should decide the type of regulatory and warning signs to be used and their placement. The MUTCD can be found at: http://mutcd.fhwa.dot.gov/.

1.3 Inventory existing signs

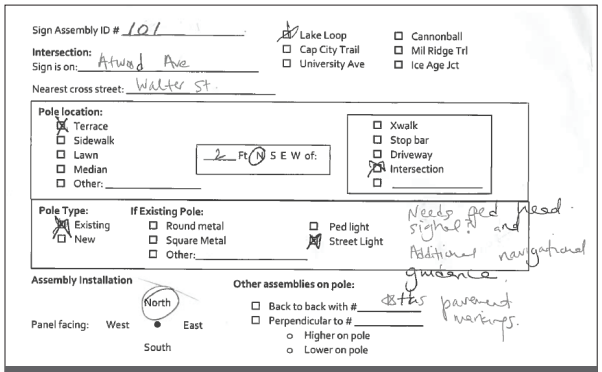
Many bikeways already have some kind of wayfinding signs, such as street name signs where a shared use path crosses a street, or a large kiosk with the name of the shared use path on it. As part of the planning process, someone will need to inventory the existing signs on the bikeway and on approaches to the bikeway before you can prepare a plan for new or additional signs. If your agency staff cannot do the inventory work, consider asking a volunteer or hiring an intern. For on-street routes or places where paths cross streets, you can often rely on street-level photos available on online map services to determine whether there are existing signs on or intersecting the bikeway. Check the date that the image was captured, because road construction, traffic crashes, and road maintenance can result in signs being removed or moved.

Including the Sign Assembly ID number in each field work photo can help you keep track of the sign assemblies in your inventory.

Field work

Most wayfinding projects require some sort of field work to verify the online inventory. For the field work, several tools can be useful:

- A small video camera that tracks GPS location as well as recording video can be mounted to a bicycle and can be used to record video along the bikeway. After recording a video, the sign inventory can be entered into a spreadsheet or mapping software while replaying the video and checking the GPS locations.
- A digital camera enabled with GPS location can also be used. For each existing and proposed sign assembly, one person can write a unique identification number on a small whiteboard and hold it up while the other person takes a picture of the assembly location with the camera. Keep track of other details about each sign assembly on a field work form that references the ID number for the assembly (see accompanying photo and field work form).


Sign Assembly ID # 101
Intersection: Sign is on: Atwood Ave
Nearest cross street: Walter St
Lake Loop, Cap City Trail, University Ave, Cannonball, Mil Ridge Trl, Ice Age Jct
Pole location: Terrace, Sidewalk, Lawn, Median, Other:
Ft N S E W of:
Xwalk, Stop bar, Driveway, Intersection
Pole Type: Existing, New
If Existing Pole: Round metal, Square Metal, Other:
Ped light, Street Light
Needs ped signal and additional navigational guidance.
Assembly Installation
Panel facing: North, West, East, South
Other assemblies on pole: Back to back with #, Perpendicular to #, Higher on pole, Lower on pole
bikes
pavement markings

A field work form that references the Sign Assembly ID number in the field work photo can be used to enter additional information.

1.4 Consider maps and online tools

In addition to signs, paper and online maps can be helpful for those trying to find their way around by bicycle. Many jurisdictions print maps that bicyclists can pick up at bike shops and government offices. These maps are designed to help bicyclists find the most comfortable route for their trip, whether for transportation or recreation. The Dane County Bicycle Map is an example of such an existing map. Jurisdictions within Dane County may wish to have copies of this map available for users in their jurisdiction. This map also offers a variety of online interfaces, one of which is easily used by users with a smartphone. Online maps or apps potentially have unlimited distribution while paper maps are limited by the quantity printed. Jurisdictions within Dane County may also wish to produce paper or online maps or apps focused on their jurisdiction.

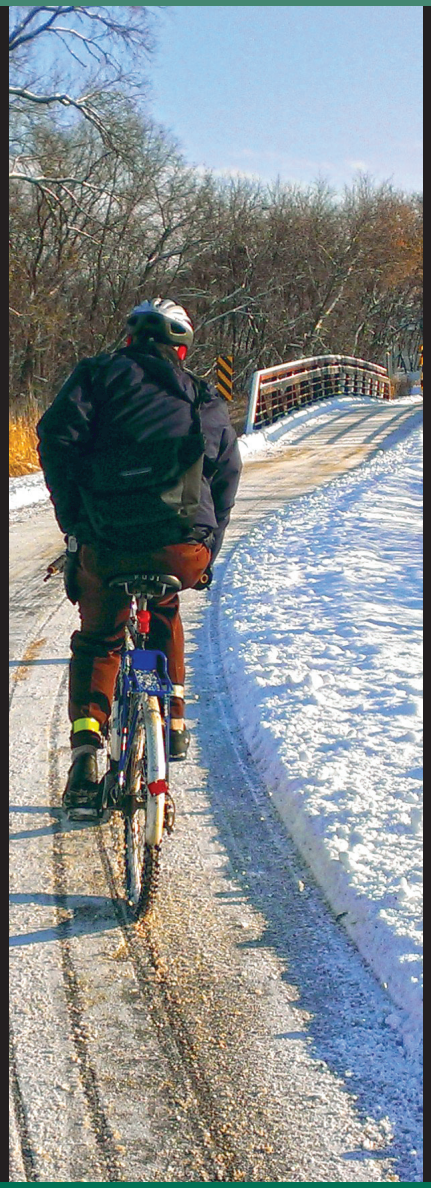


Photo by Adam Coppola

STEP 2

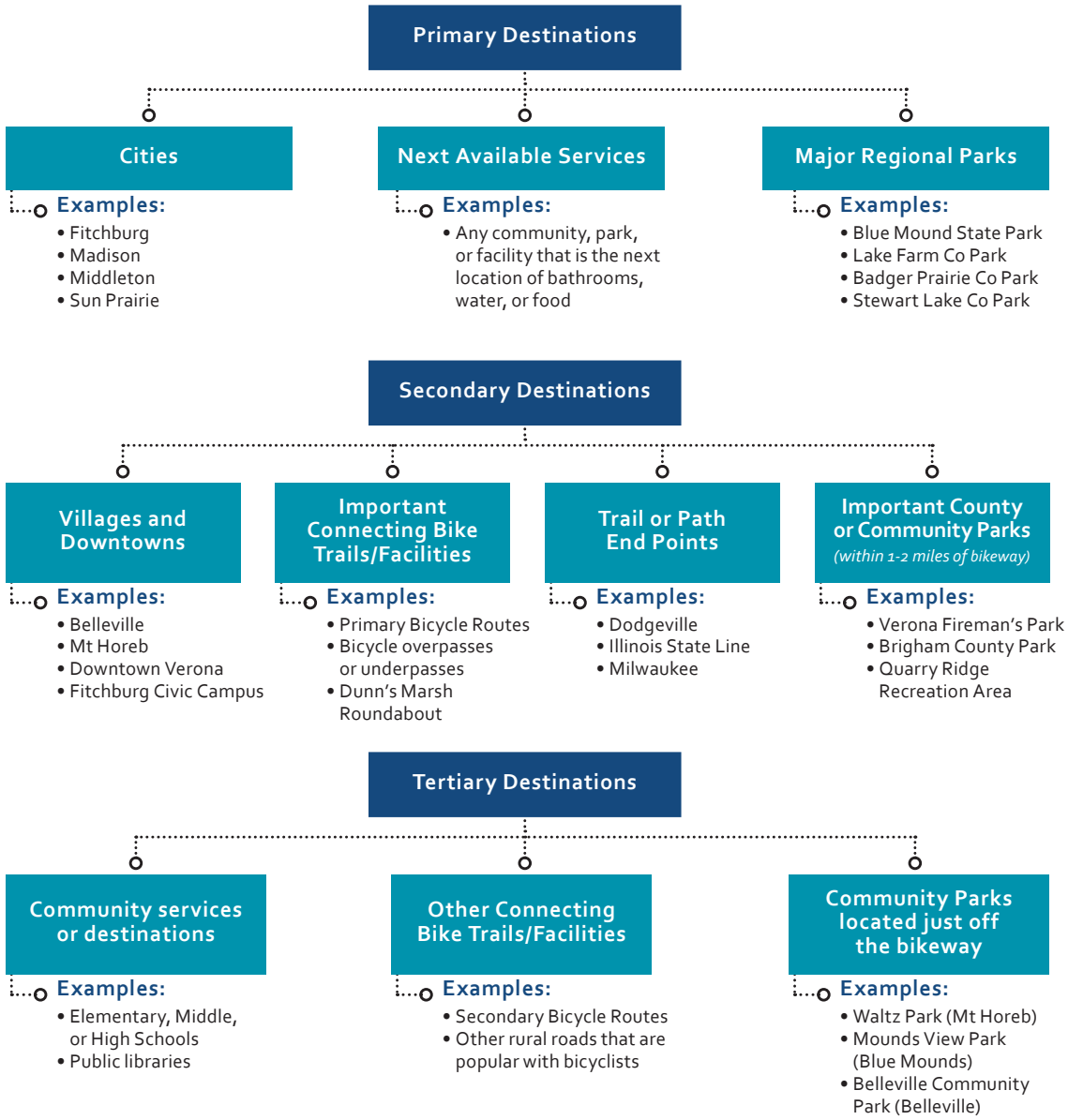
Develop a Destination Hierarchy

2.1 Develop a list of potential destinations

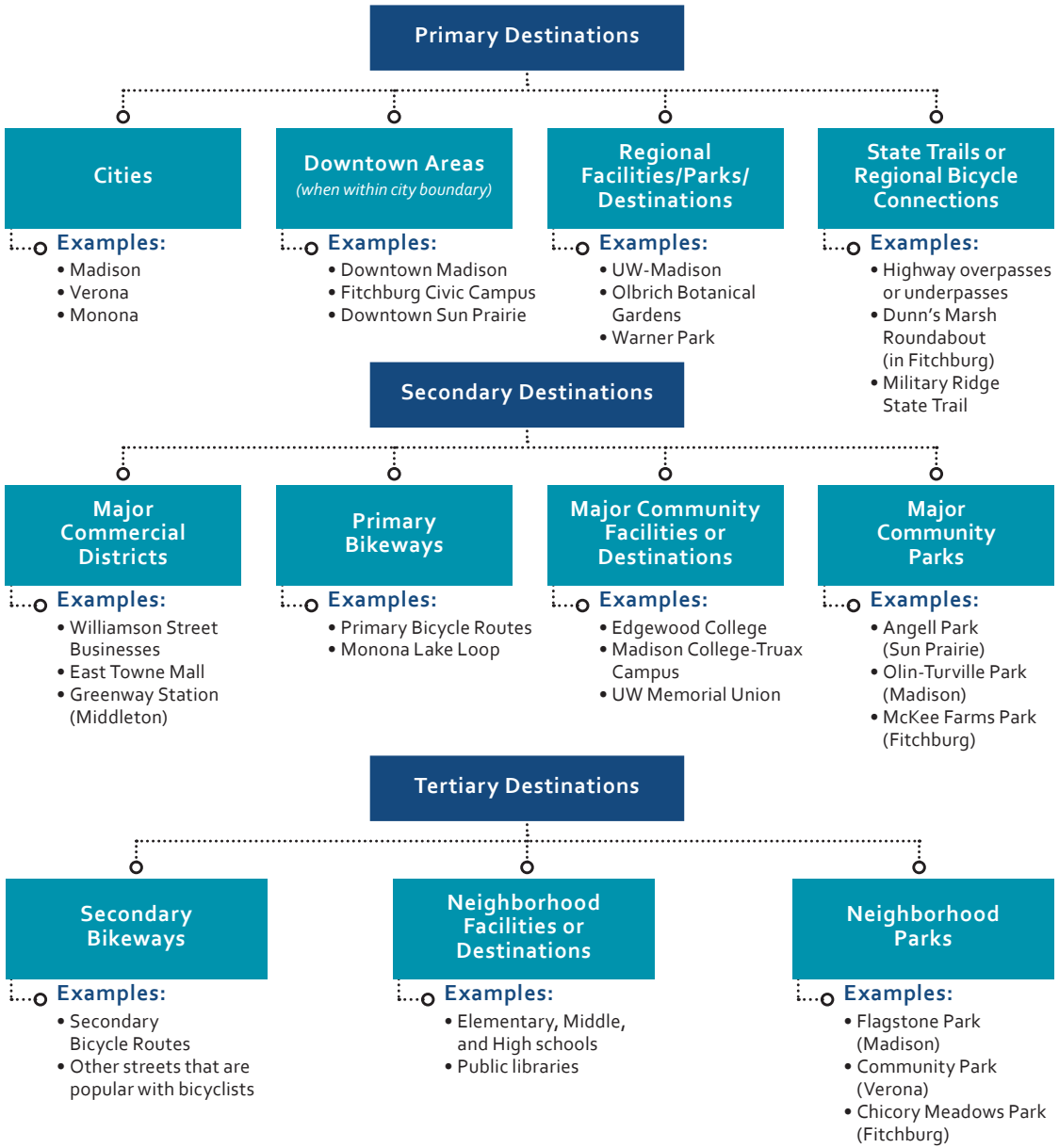
Planners should use local knowledge and review existing maps and GIS data to develop an initial list of destinations served by the bikeway. When selecting destinations, the following should be considered:

- Consider parks, municipalities, central business districts, shopping areas, major sports venues, major bikeways, well-known landmarks, and schools along or near the route.
- Individual businesses should usually not be listed as destinations because they can move or go out of business, and governments do not want to appear to be favoring specific businesses. If there is a need to sign to an important destination that happens to be a single business, it should be referred to generically, such as "Grocery Store" or "Monroe St businesses." Another approach is to use symbols for food or services instead of words.
- Consult user groups, such as "Friends" organizations or contact local bicycle advisory groups, bicycle advocacy organizations, or bicycling clubs.

Destination Hierarchy for Rural Dane County Wayfinding Signs



Destination Hierarchy for Urban/Suburban Dane County Wayfinding Signs



2.2 Organize the destinations into a hierarchy

Destinations can be assigned to one of three groups, Primary, Secondary, and Tertiary, based upon their usefulness as navigational references for bicyclists and their likelihood of being destinations for bicycling trips. The hierarchy will determine how far from the destination references to it will appear on wayfinding sign panels, and is meant to help planners decide which destinations are included on wayfinding signs.

The general hierarchy of what to include in Primary, Secondary, and Tertiary destinations will vary depending on whether the bikeway is in the urban and suburban parts of the Madison area, or in rural Dane County. In urban areas, destinations are close together and only the most regionally-significant destinations should be noted as Primary destinations. However, in rural Dane County, destinations are sparsely spaced. Small villages and local parks should be included on wayfinding signs to help as navigational aids and informational aids for bicyclists to know where they can access services such as water and bathrooms. Two sample hierarchy of destinations for urban/suburban and rural Dane County areas are shown.

To establish a hierarchy, the following factors should be considered:

- How well-known is the destination and how useful is it as a navigational reference? The most well-known destinations and most useful navigational references should be in the Primary destination group.
- How many people are likely to visit the destination annually? Is the destination commonly accessed by bicyclists and pedestrians? Does the route provide good access to the destination? The venues with the most visitors, especially ones who arrive by bicycle, should be in the Primary or Secondary destination group.
- If the destination is a bikeway or a bike trail, how well-known is it? How many people use it? Is it part of a statewide or national bikeway network?
- Neighborhood destinations, such as elementary schools, libraries, and local parks, will usually be in the tertiary destination group.

2.3 Set standards for measuring distance

Distance

In many cases, planners will have more possible destinations that could be included in a wayfinding assembly than space available for them. The destination hierarchy should guide planners when deciding at what distance destinations should be included on wayfinding signs. Suggested distance guidelines for the urban/suburban and rural destination hierarchy are displayed Table 2-1. In practice, the distance at which each destination appears on wayfinding signs will require the judgement of the person or committee who is planning the wayfinding along the bikeway.

Measure-to points

If the destination is a municipality, a large park or destination with a large area, planners will have to establish a measure-to point.

- For large parks or facilities measure distance to the main entrance.
- The distance to Cities and Villages should be measured to the City's center point, as is the practice in highway wayfinding; Google Maps' bicycle navigation feature also measures distance to the City's center point.
- The exception to this rule is the City of Madison. Outside of Madison, distance should be measured to the City boundary, and should be labeled "Madison City Limit." Sometimes trails and paths weave in and out of the Madison city boundaries, in which case the "Madison City Limit" sign is not helpful to users, and other, more useful destinations should be included on the wayfinding sign. The reference to Madison should change to "Dwtn Madison" before entering the city limits for the last time. Inside Madison, distance should be measured to "Dwtn Madison", the area bounded by Park Street, Proudfit Street, and Blair Street.

Table 2-1. Distance Standards

Context	Primary Destinations	Secondary Destinations	Tertiary Destinations
Urban/Suburban Bikeway	Up to 5 miles	Up to 2 miles	Up to 1 mile
Rural Bikeway	No distance limit	Up to 5 miles, with the exception of trail or path end points, which have no distance limit	Up to 1 mile

2.4. Finalize the list of destinations

Destination Names

To make signs clear and legible, destination names should be kept short. For example, use "Zoo" instead of "Henry Vilas Zoo." You can consult maps, online map services, and local users to finalize how places are referenced on the signs.

If the route to a destination would not be perceived as comfortable by the casual bicycle rider, the destinations should not be listed on wayfinding signs. If the route is perceived as comfortable, but a bicyclist would have to navigate several turns to arrive at the destination, several options can be considered:

- Remove the destination from the list of destinations.
- Expand the sign project to include the necessary signs, or contact the jurisdiction with authority over the street to determine if they would be willing to add and maintain wayfinding signs.
- On shared use paths, a kiosk map or a simple sign map can be placed near the junction, in a spot where users can pull off the path easily to study the map. Kiosk maps or simple sign maps should also be placed at the destination to help bicyclists find their way back to the bikeway.

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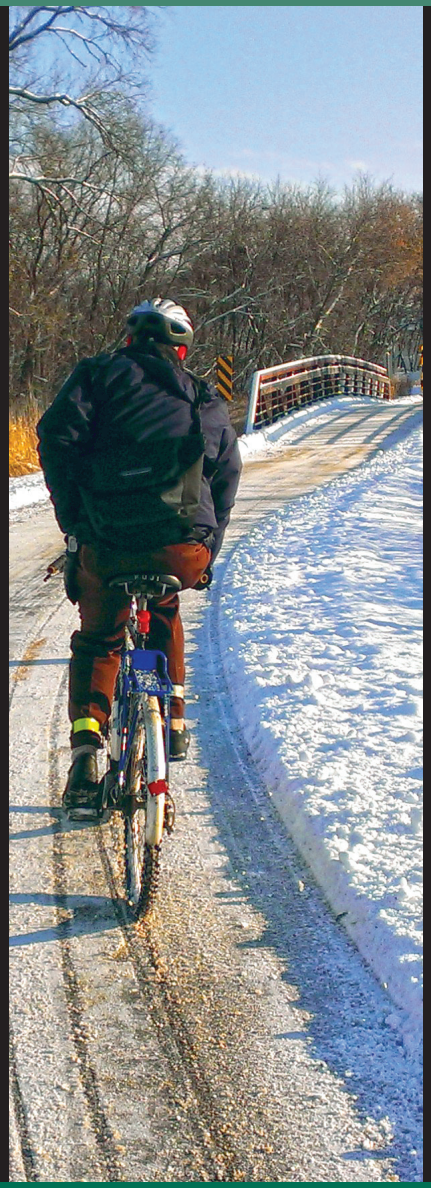


Photo by Adam Coppola

STEP 3

Decide Sign Locations and Sign Legends

Using the standards developed in Steps 1 and 2, you can begin locating sign assemblies along the corridor and specifying the sign legends, or the text, for each sign.

The wayfinding sign system to be used in Dane County uses four types of sign assemblies: decision assemblies, confirmation assemblies, double-sided street name assemblies, turn assemblies, and path access and path exit assemblies. These will be described in detail below.

General guidance for all assembly types

- No more than four sign panels should be included on any single sign pole, due to the need to maintain head clearance for pedestrians.
- Prioritize sign destinations according to the hierarchy of destinations.
- For assemblies mounted on the same post but perpendicular to each other, group the panels that face the same direction together.

General guidance for all wayfinding sign placement

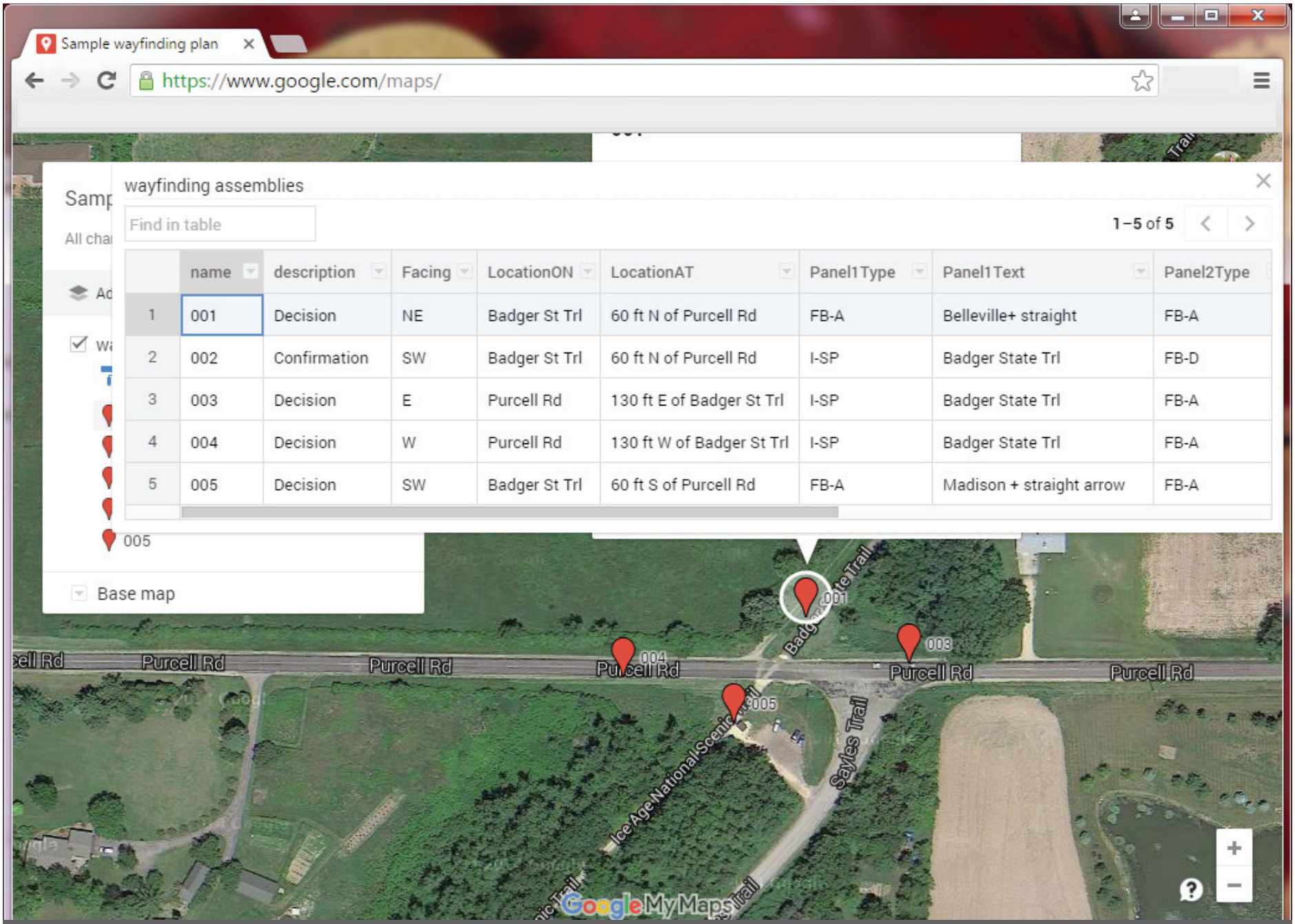
- Typically, bicycle guide signs are placed on the right side of the street. On shared use paths, they may be placed on the left side of the path due to space or other constraints.
- Ensure that the arrows on an assembly do not point to a minor side street, alley, or driveway that could be mistaken for the intended turn.
- Where bicyclists are guided to or are likely to use a crosswalk as part of the route, locate guide signs in close proximity to walk/wait pedestrian signal heads.
- Where some bicyclists may choose to use a sidewalk and others may choose to use the street, signs should be located to serve both locations wherever possible.
- Care should be taken to place signs in locations where they will not be blocked from view by tree limbs, vegetation, other signs, parked vehicles (especially large vehicles and trucks), and buses at bus stops.
- On urban streets that already have many signs, consider ways to reduce sign clutter. There may already be street signs for motorists that bicyclists will likely see. Try to utilize the posts of existing parking restriction signs when placing an assembly, both to reduce sign clutter and save costs. On these streets, limit new signposts and assemblies to only the most critical locations.

Working with other jurisdictions on sign placement

Many sign plans will require coordination with other jurisdictions. On-street municipal bike routes may cross or use a County highway or may cross into neighboring jurisdictions, and many of the State and County paths cross Town, Village, or City streets. If those cross streets are likely to be used by bicyclists, they should have wayfinding signs placed on them on the approach to the bikeway to alert both drivers and bicyclists of the bikeway. Each jurisdiction needs to be involved in the decision to place signs on their street—if a sign is damaged or vandalized, they are responsible for replacing the sign. For that reason, it is important to work with other jurisdictions as soon as you have a good idea of the desired sign types and placement of signs on the other jurisdiction's street. Contact and coordinate with the traffic engineering and/or planning staff of the neighboring jurisdiction to get the necessary approvals. It may be necessary to negotiate a Memorandum of Understanding with respect to replacing and maintaining the signs.

Free mapping software

- For agencies that do not have access to mapping software, Google's "My Maps" tool is a free web-based mapping software that can be used to develop a wayfinding plan. Users can place markers for the wayfinding signs, and add fields to a data table that can include the types of sign panels and the sign content for each map. See the sample Google My Maps wayfinding plan on the next page.



Screenshot of the Google My Maps web-based mapping tool.

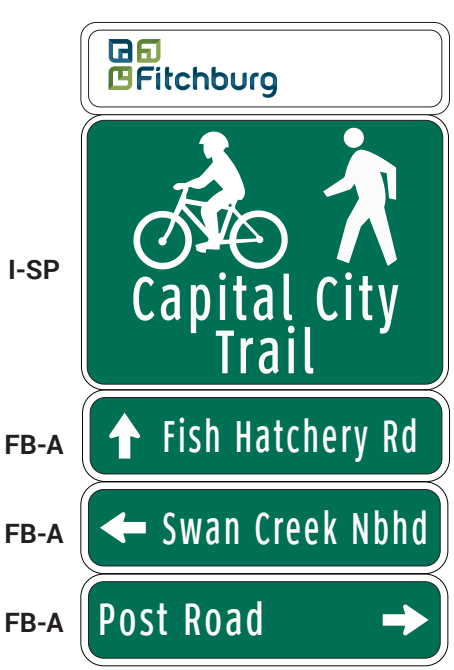
STEP 3

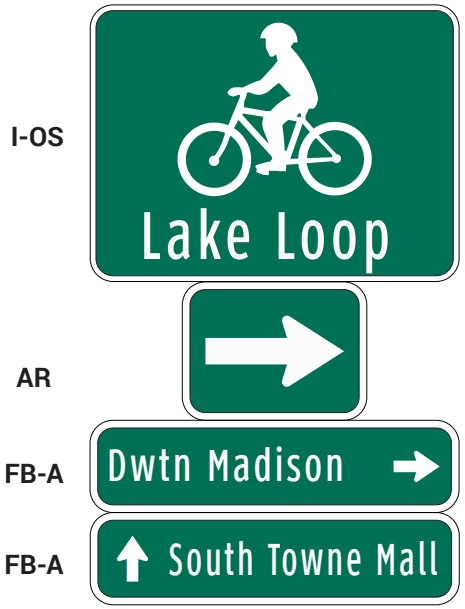
3.1 Decision Assemblies

Purpose	Decision sign assemblies are installed in advance of a point where a bicyclist needs to make a decision about their direction.
When Used	• On primary bikeways in advance of intersections to show bicyclists how to get to destinations that are easily reached from the bikeway. • On secondary bikeways and cross streets that have the potential to generate a significant number of route users: on the approach to a primary bikeway or regional trail, to inform bicyclists and motorists of the presence of the primary bikeway or regional trail, its name (if named), and the destinations that can be reached on it. The Strava Global Heatmap (http://labs.strava.com/heatmap) can be used as a reference to determine which cross streets are most used by bicyclists. • On rural segments of unpaved paths and in natural settings decision assemblies are only needed at trail heads, where parks are adjacent to paths, and at intersections with primary bikeways or regional trails.
Features	Decision assemblies usually include an identification panel (I-SP, I-OS, or I-UN) and fingerboard panels (FB-A) that indicate direction, not distance.

Table 3-1: Decision Assembly guidelines

Assembly Guidelines		
In most cases, an identification panel should be placed at the top of the assembly to identify the name of the bikeway or to alert users to the presence of a bike route on a corridor. For off-street paths, the I-SP panel should be used to show that pedestrians are users of the bikeway as well. Unnamed on-street bikeways or bike routes can be identified with the I-UN panel.	Typical decision assembly for a named shared use path.	When the main bikeway turns, the usual arrow order changes.
Order the destination panels (FB-A) from top to bottom as follows: • Straight destinations • Left-turn destinations • Right-turn destinations Within each directional group, order panels by nearest to farthest destination. *Exception:* At a named bikeway intersection where the main bikeway turns, the FB-A panel indicating the direction of the named bikeway should be at the top of the assembly, regardless of whether it is left or right, followed by the destinations in that same direction of travel, then following the order described above.		
At a location where a challenging turn has to be made, minimize the number of destination fingerboards placed at decision points, using the destination hierarchy to select which ones will get included. Secondary destinations can be included on an additional decision assembly prior to the turn, or confirmation assembly after the turn.		



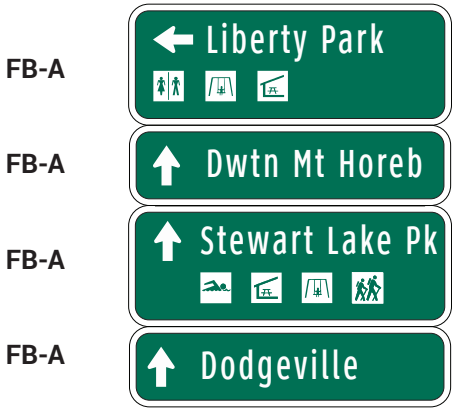


In some places a route identification panel (I-SP, I-OS, I-UN) is not needed:

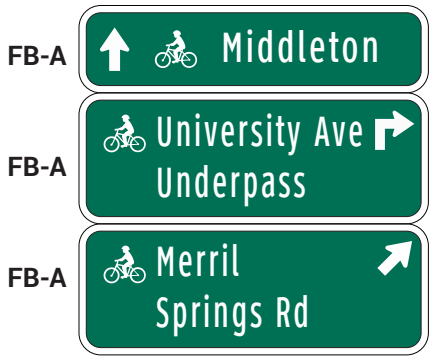
- On shared use paths, it is reasonable to assume that the path users know the name of the path.
- On a street that is not an official bike route, the bike route identification panel should not be used. If the assembly will be visible to drivers, the destinations should include a bicycle to the left of the legend.

If additional instructions would be helpful during a difficult turn or for guidance to a destination off the bikeway, a Navigation Aid Fingerboard (F-NA) can be combined with the corresponding destination panel (FB-A).

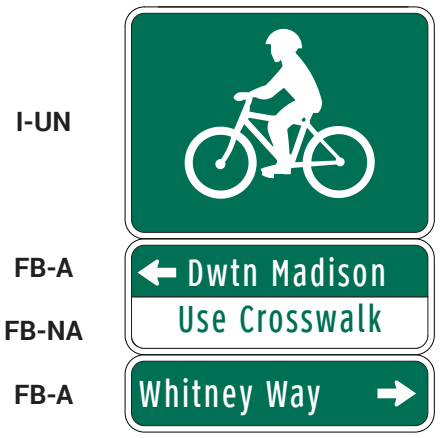
Decision assembly on a shared use path at a location where the identification panel (I-SP) is not needed



Decision assembly on a street where that is not an official bike route, where the assembly will be visible to drivers



Decision assembly with Navigation Aid Fingerboard (F-NA)



Placement Guidelines

Decision assemblies should be located 25-50 feet in advance of the junction. In rural areas and on sloped streets in the downhill direction, signs should be about 50-100 feet in advance of the junction due to bicyclists' higher travel speeds. On shared use paths, when a minor spur intersects the main path, the three decision assemblies can be mounted to the same post at the intersection, in a spot where the assemblies will be visible from all directions.

When destinations require a left turn that requires bicyclists to move across traffic lanes, a decision sign should be placed the following distances in advance of the turn:

- One lane merge: 100-200 feet
- Two lane merge: 200-300 feet

When a street widens to include a right turn lane in advance of an intersection, requiring bicyclists to make a decision about what lane they should use to reach their destination, decision signs should be placed near the start of the right turn lane.

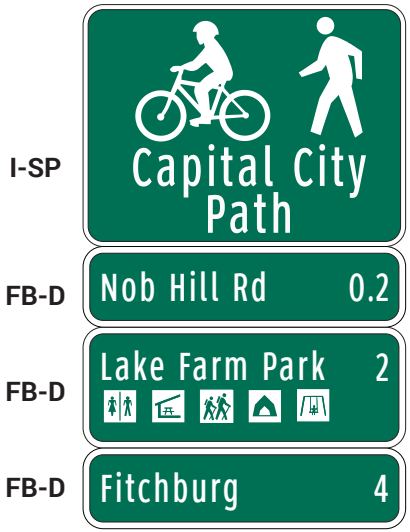
When a decision sign is placed more than 100 feet in advance of a turn, a "second chance" decision sign should be placed on the far side of the intersection so it can be seen from the waiting area for the left turn.

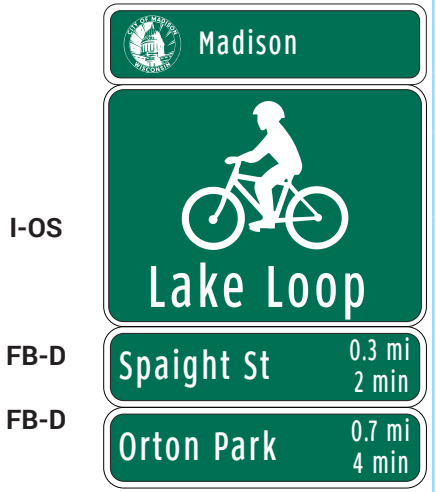
3.2 Confirmation Assemblies

Purpose	Confirmation sign assemblies assure that a bicyclist is on a designated bikeway and provide the distances (and optionally, time) to destinations that can be reached from the bikeway.
When Used	• Confirmation sign assemblies are used on primary bikeways or regional trails in two situations: at the far side of intersections with primary and secondary bikeways; and at the far sides of intersections with spur trails or streets that may not be designated as a primary bikeway but are likely to be used by bicyclists. • Confirmation assemblies are optional on secondary bikeways at the far side of intersections with primary bikeways or regional trails, although they can be used to help provide navigational assistance to a popular destination. • In rural areas, confirmation assemblies should be used at the edge of developed areas, in order to alert path users to the distance to the next developed area or services.
Features	Confirmation assemblies use an identification panel (I-SP, I-OS, or I-UN) and fingerboard panels (FB-D) that indicate distance (and optionally, time), *not* direction.

Table 3-2: Confirmation Assembly guidelines

Assembly Guidelines	Typical confirmation assembly for a shared use path	Confirmation assembly showing both distance and time.
The closest destination shall be listed on top and the furthest destination shall be listed on the bottom.		
If two or three destinations are close together, select a single location ("Downtown") that serves all destinations.		
Placement Guidelines		
Confirmation assemblies should be located at the beginning of each primary bikeway (or regional bike trail).		
A confirmation assembly will be located on the primary bikeway (or regional bike trail) following decision signs or turn signs on the far-side of intersections with primary or secondary bikeways, 50-200 feet beyond the intersection.		
In urban neighborhoods with short blocks and greater density of activity, confirmation sign assemblies need not be located after every intersection with a bikeway. They should be located at least 0.25 miles, or 4 blocks, apart. When making a decision about where to place confirmation sign assemblies in areas where there are multiple bikeway crossings, the Strava Global Heatmap (http://labs.strava.com/heatmap) can be used as a reference.		
On shared use paths, confirmation assemblies can often be placed back-to-back with decision assemblies.		





3.3 Turn Assemblies

Purpose	Turn sign assemblies indicate when an on-street route turns onto another street or turns from a path to a street.
When Used	• In advance of a turn in the route. • Not used at the junction of intersecting bikeways or when a decision sign assembly would be used to indicate destinations off the bikeway.

Table 3-3: Turn Assembly guidelines

Assembly Guidelines			
The arrow (AR) plaque or Navigation Aid Fingerboard (FB-NA) should be mounted below the appropriate route identification sign (I-SP, I-OS, OR I-UN).	Turn Assembly with arrow (AR) plaque	Turn Assembly with navigation assistance (FB-NA) panel	Turn Assembly with arrow (AR) and navigation assistance (FB-NA) panel
If navigational assistance is needed, for example the bikeway turns onto a sidewalk or requires using a crosswalk, a Navigation Aid Fingerboard (F-NA) should be used in place of an arrow plaque (AR). The F-NA can display both the appropriate arrow and the navigation message (for example, "Use sidewalk").	I-UN AR	I-OS FB-NA Lake Loop Use Sidewalk	I-OS FB-NA AR Lake Loop Use Sidewalk

Placement Guidelines
Turn sign assemblies should be located about 25 feet in advance of the turn.
For bikeway turns that require bicyclists to move across traffic lanes, a turn sign assembly should be placed the following distances in advance of the turn: • One lane merge: 100 feet • Two lane merge: 200 feet
When a street widens to include a right turn lane in advance of an intersection, requiring bicyclists to make a decision about what lane they should use to reach their destination, turn signs should be placed near the start of the right turn lane.
When a turn sign is placed more than 75 feet in advance of a turn, a "second chance" turn sign should be placed on the far side of the intersection so it can be seen from the waiting area for the left turn.

3.4 Double-Sided Street Name Assemblies

Purpose	Double-sided Street Name assemblies inform path and street users of the name of the path or the street they are crossing at an intersection.
When Used	Street Name signs are to be used on all at-grade intersections of paths and streets, regardless of other wayfinding signs that might be present.
Features	The Double-sided Street Name assembly uses two or more Street Name sign panels mounted with their faces parallel to the street or path they name.

Table 3-4: Double-sided Street Name assembly guidelines

Assembly Guidelines

Double-sided Street Name assemblies may be placed above a regulatory STOP or YIELD sign.

Street Name and Path Name sign panels should be mounted with their faces parallel to the street or path they name.

All sign panels facing the same direction should be grouped together, to avoid multiple perpendicular signs blocking each other when viewed at an angle. If two street or path names are used on the sign, the street names should be displayed in the following order:

- The name of the street or path to the left should be displayed above the name of the street to the right
- For two closely-spaced intersections, the name of the first street or path encountered should be displayed above the name of the second street or path encountered.

Typical double-sided street name assembly with Stop Sign

Double-sided street name assembly with multiple path names

Placement Guidelines

Double-sided Street Name assemblies should be used at every intersection where a path meets or crosses a street.

Posts for Double-sided Street Name assemblies should be located within 10 feet in of the intersection with the street.

On wide or busy streets, Street Name signs should be placed on both sides of the street. In residential areas or rural roads, at least one Street Name sign should be mounted at each intersection.

3.5 Path Access & Path Exit Assemblies

Purpose	Path Access and Path Exit assemblies guide users on and off the bikeways when there are spur paths that connect to bridges or side streets.
When Used	Path Access and Path Exit assemblies are located at the intersection of the path spur with the side street, when there is not a direct visual connection from the on-street route to the path itself.
Features	The Path Access assembly uses a modified route identification sign (I-PA) and an arrow plaque. The Path Exit assembly uses a standard Street Name sign and Fingerboard Arrow (FB-A) signs, including navigational assistance signs (FB-NA) when necessary.

Table 3-5: Path Access and Exit assembly guidelines

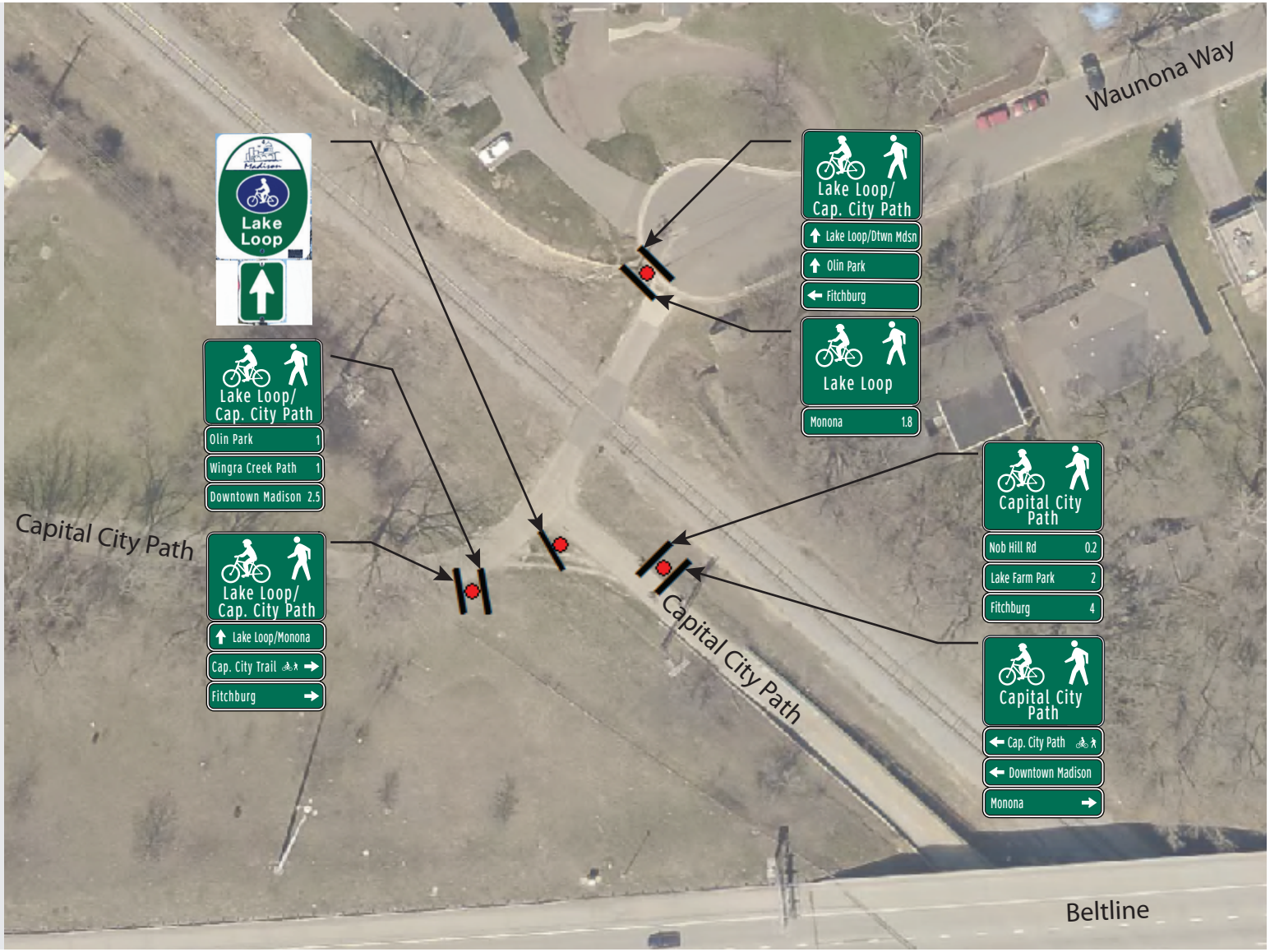
Assembly Guidelines	Path Exit Assembly	Path Access Assembly with FB-A panel	Path Access Assembly with AR plaque
For Path Access assemblies, the "To trail" identification sign (I-PA) should be supplemented with either an arrow (AR) plaque or Fingerboard Arrow (FB-A) with the directional arrow and a distance			
Select an arrow that best represents the direction of travel. Since distances will likely be short, use distance information that is easily understood by users, such as "500 feet" (instead of .1 miles), or "1 block".			
For Path Exit Assemblies, standard Street Name signs can be placed at the top of the same posts to indicate the name of the intersecting street at the path spur. The remaining fingerboard signs (FB-A) should be mounted in the same manner as a decision sign assembly, including Navigational Assistance (FB-NA) signs when they would be helpful to guide a bicyclist to a destination that requires an additional turn.			

Placement Guidelines
Path Access assemblies should be used at the intersection of a street with a spur path where there is not a direct visual connection to the path.
Path Exit assemblies should be located within 15 feet in of the intersection with the street. On low-speed residential streets, they can placed on the same post as a Path Access assembly or a Street Name Assembly.
Depending on the way the spur path intersects with the side street, the Path Access assembly may be mounted perpendicular to the side street (so it is visible to passing bicyclists) or parallel to the side street (so it faces bicyclists who are riding towards the spur).

3.6 Wayfinding Sign Placement Examples

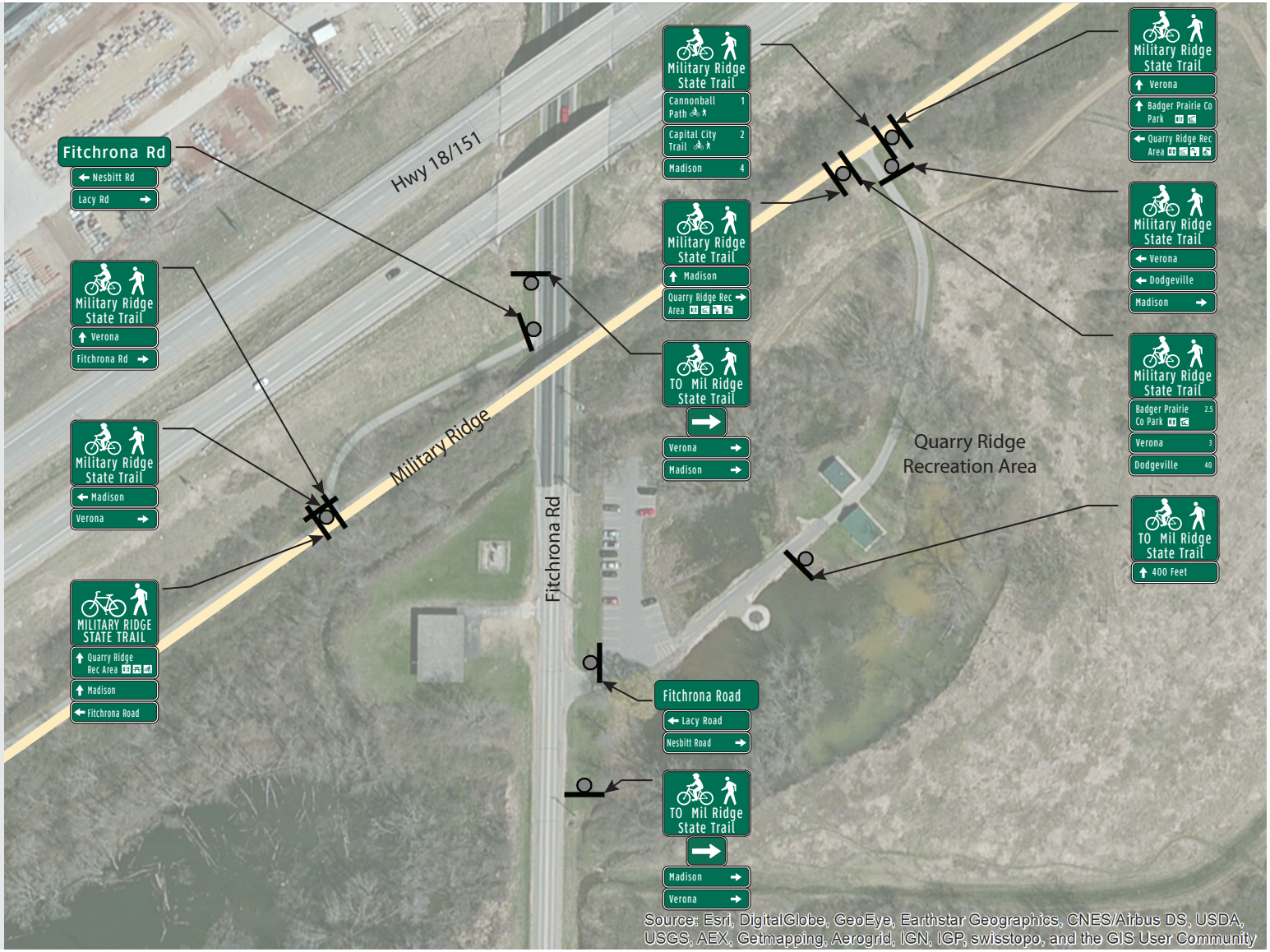
Example: Sign placement at the intersection of the Capital City Path, the Lake Loop, and Waunona Way

This example of wayfinding sign placement shows where signs should be placed at the intersection of two major bike routes. Each decision assembly on the approaches to the intersection can only include three destinations, even though many more destinations can be reached. Since it is two major bikeways, confirmation signs showing the distance to the destinations are placed on all legs at a short distance from the intersection (25-50 feet). Confirmation signs usually can include more destinations than decision signs. When they are placed within sight of the junction, they can provide additional information to bikeway users still unsure of the route they should use.



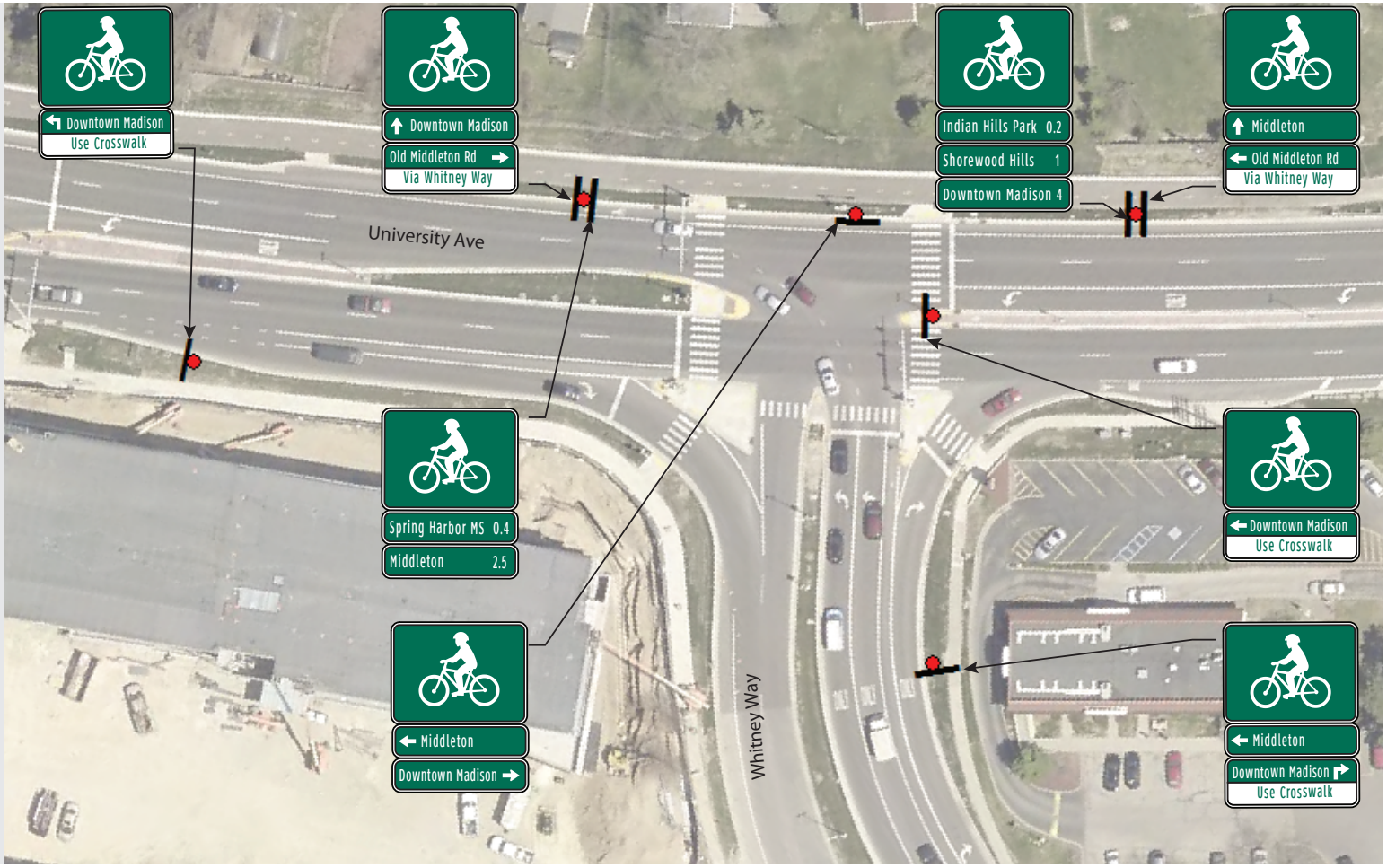
Example: Sign placement where the Military Ridge State Trail passes Quarry Ridge Recreation Area and crosses Fitchrona Rd.

This example of wayfinding sign placement shows how to place signs at two different path spurs. The path spur to Quarry Ridge Recreation area is the principal path spur that most bicyclists will use, so it deserves confirmation assemblies in each direction from where spur meets the main path. The path spur on the west side of Fitchrona Road is a minor spur. Where the spur meets the main path, it only needs a decision assembly in each direction. With respect to the Path Access (PA) assemblies, they should be placed where they are visible from both directions of travel, especially on Fitchrona Road, which is a well-used bike route. As with turn or decision assemblies, the PA assemblies that require a left turn across the street to access the path should be placed at least 100 feet in advance of the turn.



Example: Sign placement at University Avenue and Whitney Way

The example of wayfinding sign placement at University Avenue and Whitney Way provides and example of a complicated on-street intersection. The decision signs on northbound Whitney Way and eastbound University Avenue must be provided well in advance of the intersection so that the bicyclists can decide at an appropriate time whether to stay in the bike lane or to move right or left into automobile travel lanes. Confirmation signs showing the distance to destinations are only provided on the primary bikeway (the side path); they can be mounted back-to-back with the decision signs.



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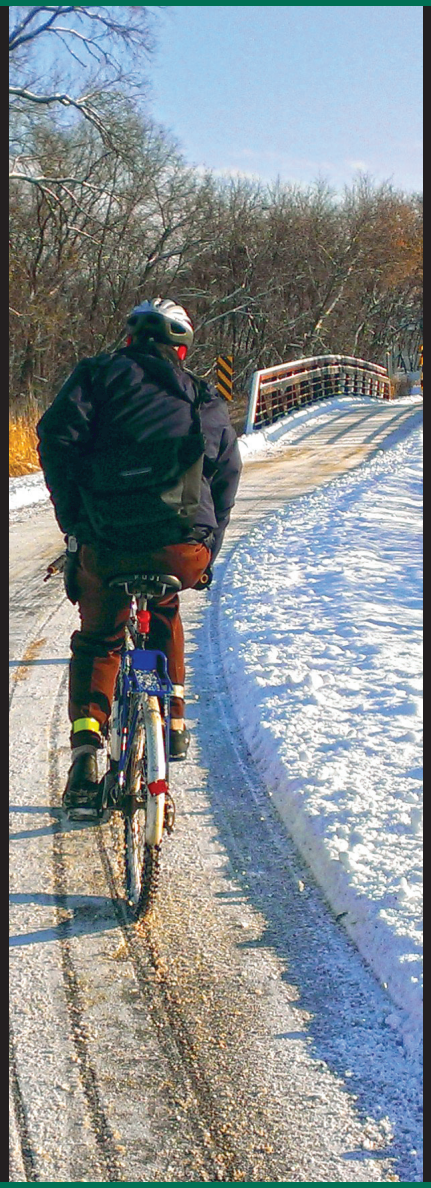


Photo by Adam Coppola

STEP 4

Sign Panel Layout

National standards for sign design and layout

National guidance on bicycle wayfinding signs is found in the Manual on Uniform Traffic Control Devices (MUTCD) and the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities. The MUTCD sign guidance informed the development of this Manual. The design is slightly modified from the MUTCD specifications to better help users identify named bike facilities and distinguish between shared use paths (used by both pedestrians and bicyclists) and on-street bike routes (used by bicyclists only). Differences from the MUTCD sign layout specifications are shown in table 4-1.

Advantages to using the MUTCD-style wayfinding sign layout

- MUTCD signs have been studied and found to be effective for both street and shared use path environments.
- Signs from the street environment promote safe operation on shared use paths because most bicyclists are familiar with street signs.
- It is important to have consistency in colors and wayfinding sign protocol across the entire bicycle network.
- People with poor eyesight—as well as those with normal eyesight—find it easier to look for a specific color and layout of wayfinding signs.
- MUTCD-style signs are less expensive to fabricate and more durable than wayfinding signs that are chosen for their aesthetic appeal.

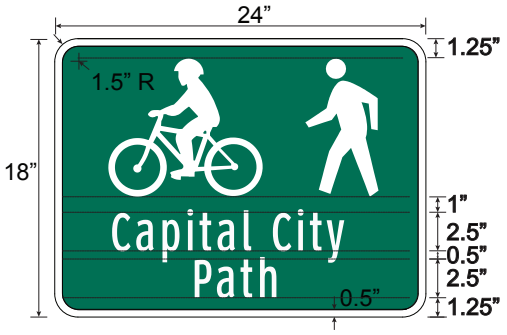
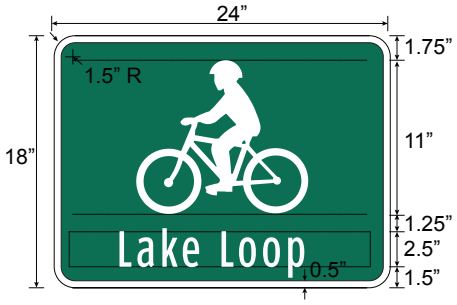
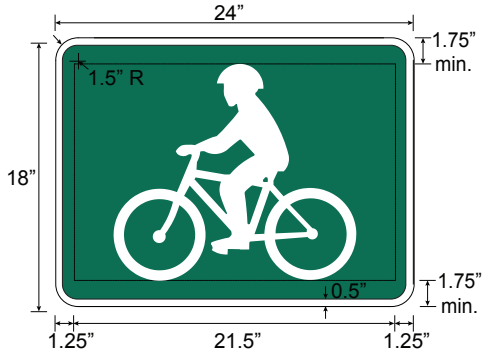
Table 4-1: Recommended Changes from MUTCD D11 sign design guidance

Difference from MUTCD Sign Layout Specification	Rationale
Reduced horizontal buffer between edge of green and sign content from 1.5" to 0.75".	Greater ability to accommodate longer destination names.
Reduced the horizontal distance between elements on fingerboard signs from 2" to 1" (for example, between arrows and destination text).	Greater ability to accommodate longer destination names.
May incorporate logos of jurisdictions.	Gives bikeway users awareness of jurisdiction responsible for maintaining bikeway; provides local flavor and branding opportunities.
Replacement of bicycle symbol with a helmeted bicyclist symbol. On shared use paths, display both helmeted bicyclist symbol and pedestrian symbol.	The helmeted bicyclist symbol humanizes bicyclists by showing them as people, not just bicycles. Including the pedestrian symbol emphasizes that shared use paths are also pedestrian routes.
On D11-1 plaque, remove BIKE ROUTE text for unnamed bike routes. For named bike routes, use upper-and lower case.	Better legibility and reduced redundancy.
Maintains 24" wide fingerboard signs (D1-1b signs).	Aesthetic; also, consistent width allows for easy addition of destinations as bikeway network is built out.
Greater variety of arrows used on fingerboard signs.	Permits the use of arrows that best represent the direction of travel.

4.1 Route identification sign layout

Purpose	Announces that a street or shared use path is part of a named bikeway or part of a larger bicycle route network.
Size	18" tall x 24" wide
Font	Highway Gothic font with at least 2" capital letter height; 2.5" height is preferred. Use upper-and lower case for text.
Notes	For long route names the size of the font may be reduced to 2" height, in order to fit the name on the sign.

Table 4-2: Route Identification sign types and characteristics

Sign Type	Route Identification Shared Use Path (I-SP)	Route Identification On-street Route (I-OS)	Route identification Unnamed Route (I-UN)
Description	Shows route name and bicycle/pedestrian modes	Shows route name and bicycle mode	Shows bicycle mode without route name
Features	• Name of path • Ped/bike symbols	• Name of on-street facility or route • Bicycle symbol	• Bicycle symbol
Sample			

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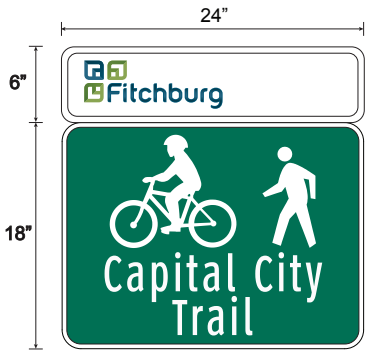
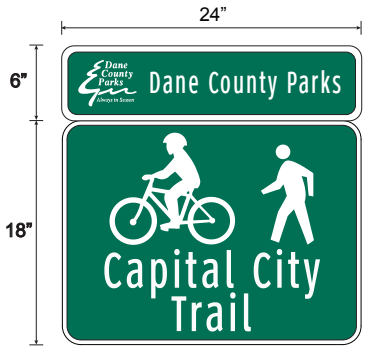
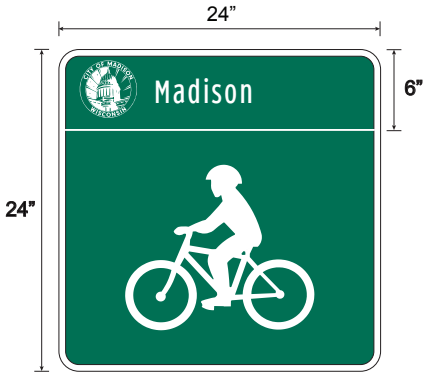
4.2 Jurisdiction branding on route identification signs

Purpose	If desired, agencies or jurisdictions may add a "brand" header to the identification signs. An agency may wish to add branding when a bikeway crosses from one jurisdiction to another, or along the full length of a corridor.
Size	Brand header can be printed on a separate 6" tall x 24" wide fingerboard above the Route Identification panel, or can be incorporated into the Route Identification panel as part of a square 24" x 24" sign.
Font/Color	Background color may be green or white. Font and logos can be white, MUTCD green, or full-color to match the jurisdiction branding.
Notes	Sometimes, municipalities make agreements to maintain segments of a path or trail that are not technically within their boundaries. The jurisdiction that maintains the path segment can put its branding on I-SP signs, even when the segment is not technically within the border. Path users wishing to report a maintenance concern will see the signs and call the correct agency; path users reporting an emergency will call 911 and the County dispatcher will determine the correct agency.

Table 4-3: Jurisdiction branding on Route Identification sign types and characteristics

Sign Type	Route Identification (I-SP) with Full-Color Separate Brand Panel	Route Identification (I-SP) with Green and White Separate Brand Panel	Route identification (I-UN) on Combined Panel
Description	Full color jurisdiction logo on a separate panel	Two-color jurisdiction logo and name on a separate panel	Two-color jurisdiction logo and name on a combined panel
Features	• Jurisdiction name or logo panel. The example below is a separate 6" high fingerboard. • Separate fingerboard may be in full color on a white background as shown below.	• Jurisdiction name or logo panel. The example below is a separate 6" high fingerboard. • Separate fingerboard may be white text on a green background, as shown below	• Jurisdiction name or logo panel. The example below is part of a 24" square sign. • Full color logos are not recommended if the logo will share the same sign panel as the route identification.
Sample			

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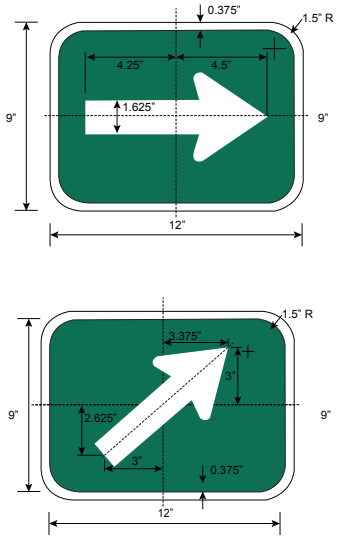
4.3 Path access signs and arrow plaques

Table 4-4: Path Access and Arrow Plaque sign characteristics

Sign Type	Arrow Plaque (AR)	Path Access Identification (I-PA)
Purpose	Arrow plaques are used to supplement the route identification signs (I-SP, I-OS, I-UN, and I-PA) when there is a turn in the route.	Path Access Identification signs are a slight modification of the route identification sign, to be used at path spurs when the main path is not visible from the street.
Size	9" tall x 12" wide	18" tall x 24" wide
Font	N/A	Highway Gothic font with at least 2" capital letter height; 2.5" height is preferred
Notes	N/A	"TO" is upper case, path name is upper-and-lower case
Description	Shows directional arrows and no text	Shows bicycle/pedestrian mode symbols, "TO" in capital letters, and the name of the path
Features	• Use on Turn assemblies and Path Access assemblies • Any of the standard MUTCD directional arrow plates may be used • No changes have been made from the MUTCD standard	• Use at spur paths • Similar to I-SP but utilizes "TO" text
Sample		

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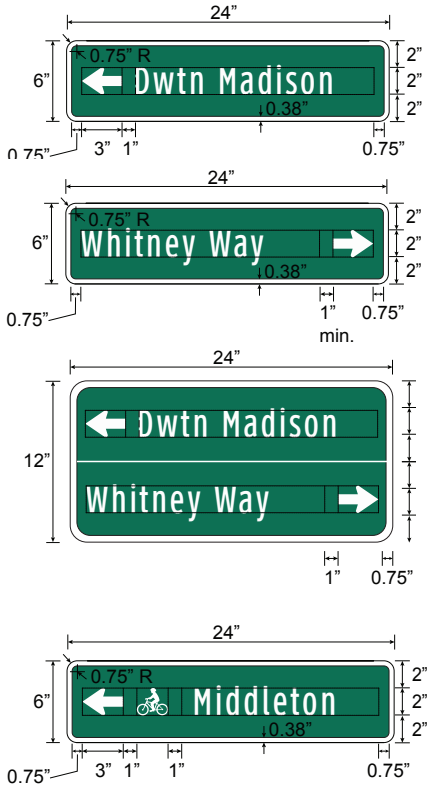
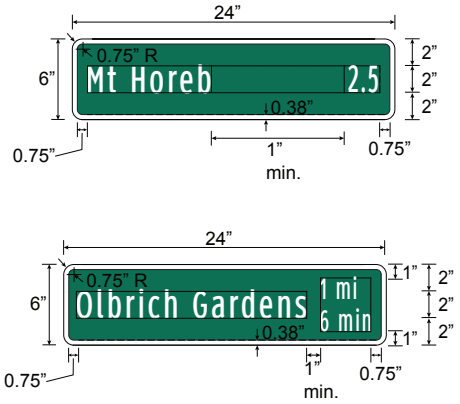
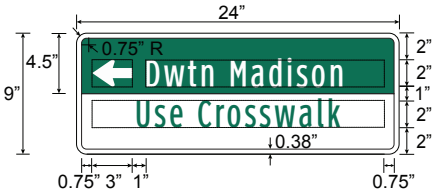
4.4 Fingerboard sign layout

Purpose	Displays the names of destinations and other named bikeways that can be reached from the current bikeway, along with either direction or distance to the destinations.
Size	6" tall x 24" wide; signs displaying destinations with lengthy names may be taller than 6"
Font	Highway Gothic font with at least 2" capital letter height; capitalize the first letter of each word, all other letters should be lowercase

Notes	• Standard horizontal spacing between the main elements of a fingerboard (arrows, text, symbols, and distance) is one inch (1"); the recommended minimum spacing is ¾".
	• For long names that do not fit on one line, these approaches are used in the following order of preference:
	1. For destinations slightly longer than one line, compress the font horizontally to no less than 90% of standard size. Do not compress the font vertically.
	2. Use intuitive abbreviations in the destination name. See a list of standard abbreviations in Table 11.
	3. Use a two-line entry for the destination name.
	• When a multi-word destination is broken into two lines, balance the words between the two lines for readability. For example, for "Cave of the Mounds," the break may occur naturally at "Cave of the/Mounds", but the top and bottom of the text would appear unbalanced, so the text break should be "Cave of/the Mounds".
	• Symbols for bicycle/pedestrian modes should always be placed to the left of the legend text, regardless of the arrow placement.
	• Symbols for services/amenities should be placed to the right of the legend text and to the left of the distance or arrow. For signs displaying many service/amenity logos, an additional line may be required.
	• Fingerboards may be combined into a single sign panel for printing. When combined onto a single sign, use a minimum 1" vertical space between different destinations.
	• To the casual bicyclist who will depend on wayfinding signs, the approximate time to reach a destination is likely a more useful measurement than distance. Including travel time also serves bicycle encouragement efforts by discreetly pointing out how quick it is to travel by bicycle. However, including travel time on signs can result in smaller font sizes that render the other information less visible. This manual presents the FB-D signs both with and without time; individual jurisdictions in Dane County can decide if they will include time on the FB-D signs or not.
	  • Distance should always be included, whether or not time is included on signs.
	  • Time estimates are less useful for distances over 5 miles (30 minutes). If times over 30 minutes are included, they should be rounded to the nearest 5 minutes (e.g. 45 min). This manual does not recommend including time estimates in rural areas where destinations are far apart.

Table 4-5: Fingerboard sign types and characteristics

Sign Type	Fingerboard Arrow (FB-A)	Fingerboard-Distance (FB-D)	Fingerboard-Navigation Aid (FB-NA)
Description	Shows destination name and directional arrow	Shows destination name and distance (and optionally, time)	Combines the FB-A or FB-D sign with supplementary information to help bicyclists use preferred route (e.g. crosswalk, sidewalk)
Features	• Use on decision assemblies • Includes arrows, but not distance or time • Place left and through arrows on the far left of the sign; place right arrows on the far right	• Use on confirmation assemblies • Includes distance but not arrows • Distances under 5 miles should be rounded to the nearest tenth of a mile; 5-10 miles, to the nearest half-mile, and over 10 miles, to the nearest mile • May include time to destination based on an average cycling speed of 10 mph	• Use on decision and turn assemblies • Green text on white background • Arrows may be provided if needed • Center text, except when accompanied with an arrow, in which case it should be justified to the opposite side of the arrow
Samples			

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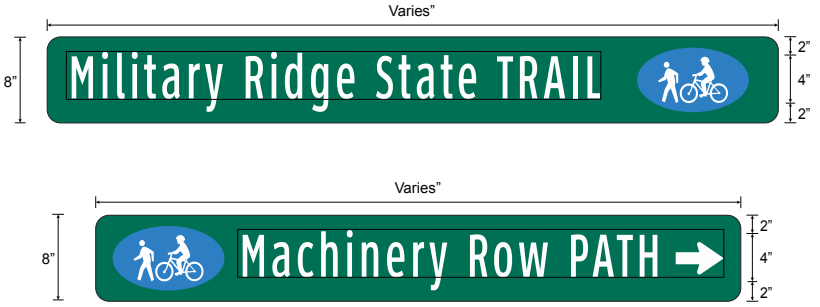
4.5 Double-sided street name and path name sign layout

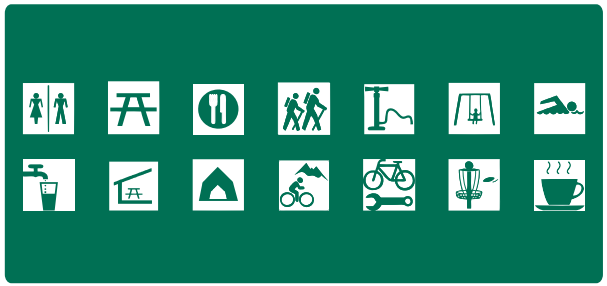
Table 4-6: Double-sided Street Name sign characteristics

Sign Type	Double-sided Street Name	Double-sided Path Name
Purpose	Street Name signs are to be used on all at-grade intersections of paths and streets, regardless of other wayfinding signs that might be present.	Path Name signs are a slight modification of the Street Name sign, so that roadway users are able to distinguish it as a shared-use path for pedestrians and bicyclists.
Size	8" tall; width varies depending on the length of the street or path name	8" tall; width varies depending on the length of the street or path name
Font	• Highway Gothic font with at least 4" capital letter height and lower-case letters at least 3" in height • Supplementary lettering to indicate the type of street (such as Street, Avenue, or Road, may be in smaller lettering	• Highway Gothic font with at least 4" capital letter height and lower-case letters at least 3" in height • The word Path or Trail should be in all capital letters
Notes	• The white border may be omitted from Street Name and Path Name signs • The Street and Path Name sign panel sign layout should match the look of other Street Name signs in a jurisdiction. If a jurisdiction uses one of the MUTCD-allowed alternative background colors for Street Name signs (blue, brown, or white) for all streets under its jurisdiction, that color should be applied in a consistent manner to the Street and Path Name signs. If a jurisdiction uses a border on its Street Name signs, then the Path Name Signs should also include a border.	
Description	Displays street name on both sides of panel	• Shows bicycle/pedestrian mode symbols in blue circle to the right of the panel • If a right arrow is used, the blue bicycle/pedestrian mode circle should be located on the left of the panel
Sample		

STEP 4

4.6 Conventions: Logos, icons, and color

Table 4-7: Etiquette sign types and characteristics

	Logos	Icons	Color
Description	Jurisdictional logos on Identification signs and directional fingerboards can help users identify their location more quickly.	Park amenity icons on Fingerboard Arrow (FB-A) and Fingerboard Distance (FB-D) signs can help users know what services they can access at parks. This is especially useful in rural parts of the county where services may be far apart.	Standardized colors and fonts comply with MUTCD guidance and aid in the legibility of signs. Sign color is to match MUTCD specifications.
Features	• Jurisdictions have the choice between showing logos in full color or in MUTCD green and white. • If the green and white version is selected, two-color versions of each logo are required for sign production. Black and white logos can easily be converted to green and white for placement on signs.	• Only show park amenities that are relevant to bicyclists. The amenities below were selected from all of the Dane County Parks amenity logos and additional logos were added from other sources.	• Color: MUTCD green to meet the specifications put forth in Docket Number FHWA-99-6190, RIN 2125-AE67, July 31, 2002. • Sign panels should be retroreflective per the MUTCD.
Sample			Color Sample: 

Conventions: Capitalization, punctuation, and abbreviation

Purpose	Consistent use of capitalization, punctuation, and abbreviations is essential for providing legible and accessible signs.
Notes	• Use upper-and-lower case for all signs; the first letter of each word should be capitalized and all others should be lowercase. • Do not use periods for abbreviations (e.g. "Atwood Ave") unless necessary to distinguish an abbreviation from another word. For example, the word Capital may be abbreviated as "Cap." in order to distinguish it from the word "cap". • Standard abbreviations for street types should always be used, such as Street (St) or Avenue (Ave). Refer to Table 4-8 for common abbreviations. When in doubt, look up official USPS Abbreviations online: http://www.gis.co.clay.mn.us/usps.htm.

Table 4-8: Common Abbreviations in Dane County

Common Term	Abbreviation
And	&
Avenue	Ave
Block	Blk
Boulevard	Blvd
Capital	Cap.
Campground	Cmpgd
Center	Ctr
Community	Comm
County	Co
Creek	Crk
Downtown	Dwtn
Drive	Dr
East	E
Elementary School	Elem
Feet	Ft
High School	High

Common Term	Abbreviation
Highway	Hwy
Junction	Jct
Lake	Lk
Lane	Ln
Lower	Lwr
Middle School	Middle
Mile(s)	Mi
Mount	Mt
Neighborhood	Nbhd
North	N
Park	Pk
Path	Path
Pedestrian	Ped
Recreational	Rec
River	Riv
Road	Rd

Common Term	Abbreviation
South	S
Southwest	SW
State	State
Station	Stn
Street	St
Terrace	Ter
Trail	Trl
Upper	Upr
University of Wisconsin-Madison	UW Madison
West	W
Wisconsin	WI

Naming conventions for well-known bikeways, routes, and bicycle facilities

Purpose	Dane County has a number of well-known bikeways, routes, and bicycle facilities. The bikeways and routes should be identified with I-SP or I-OS panels that display the route name instead of the standard "Bike Route" sign (I-UN). Jurisdictions may choose to use I-SP or I-OS signs for non-signature trails or routes; however, they should consider that installation and maintenance costs may be higher when customized identification signs are used on shorter routes.
Notes	Table 4-9 lists the bikeways, routes and facilities that should be identified by name, how they should be abbreviated, and the start and end of the named segments. The Cities of Madison and Fitchburg use the word "path" to denote that a facility is maintained by the City and does not require a trail pass, and the word "trail" to denote that the facility *does* require a State or County trail pass.

Table 4-9: Naming Conventions for Well-Known Bikeways, Routes, and Bicycle Facilities in Dane County

Bikeway/Facility Name	Type of Bikeway/ Facility (I-SP or I-OS)	Start	End
Dunn's Marsh Roundabout	Bicycle Roundabout	NA	NA
Lake Loop	On-Street (I-OS)	NA	NA
Kendall Ave Bike Blvd	On-Street (I-OS)	Franklin Ave	Lathrop St
W Main St Bike Blvd	On-Street (I-OS)	Proudfit St	S Hamilton St
E Mifflin St Bike Blvd	On-Street (I-OS)	N Hamilton St	N Thornton Ave
E Wilson St Bike Blvd	On-Street (I-OS)	S Dickinson St	Capital City Path, near Central Park
Badger State Trl	Shared Use Path (I-SP)	Dunn's Marsh Roundabout, Fitchburg	Illinois State Line
Capital City Path	Shared Use Path (I-SP)	Cottage Grove Rd, Madison	Nob Hill Rd, Madison
Capital City Trl	Shared Use Path (I-SP)	Nob Hill Rd, Madison	Williamsburg Way, Fitchburg
Glacial Drumlin State Trl	Shared Use Path (I-SP)	S Main St, Cottage Grove	Waukesha, WI
Military Ridge Path	Shared Use Path (I-SP)	Dunn's Marsh Roundabout, Fitchburg	Cottonwood Blvd, Fitchburg
Mil Ridge State Trl	Shared Use Path (I-SP)	Cottonwood Blvd, Fitchburg	Highway 23, Dodgeville
Cannonball Path	Shared Use Path (I-SP)	Fish Hatchery Rd, Madison	Dunn's Marsh Roundabout, Fitchburg
Lakeshore Path	Shared Use Path (I-SP)	University Bay Dr and Oxford Rd	Limnology Building, UW Madison
Ice Age Jct Path	Shared Use Path (I-SP)	Military Ridge Trail, Verona	Flagstone Dr, Madison
Conservancy Loop Trl	Shared Use Path (I-SP)	Century Ave, Middleton	Orchid Heights Park and Pheasant Branch Rd, Middleton
Pheasant Branch Trl	Shared Use Path (I-SP)	Century Ave, Middleton	Quisling Park and Capitol View Rd, Middleton
South Fork Trl	Shared Use Path (I-SP)	USH 12 Path and Pheasant Branch Trail junction	Middleton Bike Park, Pleasant View Rd
US Hwy 12 Path	Shared Use Path (I-SP)	Pheasant Branch Trail, Middleton	Raul's Rd, Town of Springfield
SW Path	Shared Use Path (I-SP)	North Shore Dr, Madison	Dunn's Marsh Roundabout, Fitchburg
Starkweather Crk Path	Shared Use Path (I-SP)	Dixon St, Madison	Aberg Ave/Anderson St, Madison
Upr Yahara Riv Trl	Shared Use Path (I-SP)	Windsor Rd, Windsor	Main St, Village of DeForest/River Rd, Village of Deforest
Wingra Crk Path	Shared Use Path (I-SP)	Vilas Park Dr and Orchard St, Madison	Olin Turville Ct, Madison

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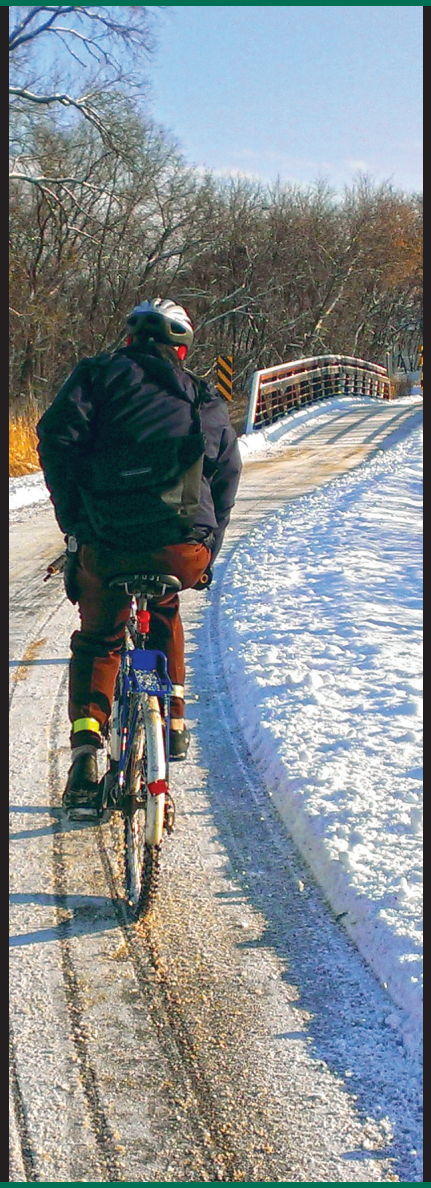


Photo by Adam Coppola

STEP 5

Decide Where Other Sign Types Are Needed

As you work on your wayfinding signing plan in steps 3 and 4, you will likely discover that you will need to add other sign types along the bikeway. This section describes other sign types to consider during the wayfinding plan including:

- Path Warning Signs (W)
- Mileage Markers (MM)
- Etiquette Signs (E)
- Kiosk Maps
- Simple Sign Maps (SM)
- Pavement Markings (PM)
- Fee Area Plaque
- Jurisdiction Boundary and Bicycle Friendly Community Signs

5.1 Path Warning Signs

Purpose	Warning signs may be installed where shared use path conditions could cause a bicyclist to lose control of the bicycle. Typical conditions include: sharp curves, blind curves, steep grades, path or street intersections with poor visibility, areas that flood during storm events, and areas with rough pavement.
When Used	The following questions can help determine whether a Path Warning sign is necessary: • Is the condition atypical of general conditions along the path? • Does the condition arise abruptly or is it likely to be unexpected by the path user? • Would the condition be difficult for the path user to see in sufficient time to exercise caution? Consider lighting levels in evening or early morning hours and during different seasons of the year. • Is the condition specifically related to certain weather conditions? • Has the agency been informed of crashes as the location that resulted in part because of the condition? • Is the condition one that cannot be remedied by physical improvement to the path or other action due to park management and or other environmental constraints?
Notes	An engineer who is familiar with the MUTCD and Wisconsin State Law should be consulted to provide exact placement of regulatory and warning signs.

Table 5-1: Path Warning Sign guidelines

Design Guidelines

Path Warning Signs (W) should always be diamond-shaped, 18"x18" in size, and use a yellow background (unless it is an on-street sign warning drivers of path crossings, in which case a fluorescent yellow-green background color may be used). They can be taken from the "W" series in the MUTCD Part 9.

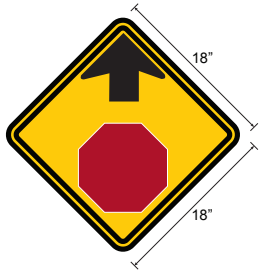
Assembly Guidelines

Supplementary word signs on a warning assembly should use rectangular panels, per the MUTCD and state laws. All text legends should be in all caps, as illustrated.

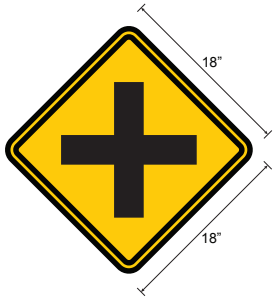
Placement Guidelines

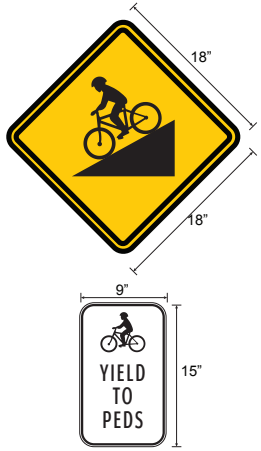
Path warning signs should be placed at least 50 feet in advance of the beginning of condition.

Sample



Sample





STEP 5

5.2 Mileage Marker Signs

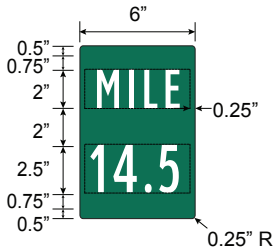
Purpose	Mileage markers (MMs) help path users estimate their progress, provide a way to identify the location of emergency incidents and crashes, and aid in bikeway maintenance and servicing.
When Used	On shared use paths
Notes	• When designing the mileage system for a path, mileage should count up in one direction and down in the other. This means that at each mileage marker the displayed mileage will be the same from both directions of travel. • Zero distance should usually begin at the south and west terminus points of shared use paths, unless there are plans to expand the path in the south or west direction. In that case, begin zero distance at the terminus point that is fixed. • When a path name changes (such as when the Badger State Trail changes to the Southwest Path), it is a logical place to consider re-setting the mileage system at zero, if it makes sense to do so. To clarify the change in mileage system, you could locate a small path name plaque above the MM panels in the area where the paths overlap. • The most important part of the mileage system is that it has a logical zero distance terminus on one end and that maintenance crews and first responder agencies know what the mileage system is.

Table 5-2: Mileage Marker Sign guidelines

Design Guidelines

- MM panels are 6" wide and 9" tall.
- White text on a standard green panel; unlike other signs in this manual, MM signs do not have a white border.
- The "MILE" text should be 2" in height. The mileage increment should be at least 2.5" in height.

Sample



Assembly Guidelines

- Mount 3 feet higher than the elevation of the shared use path, with a minimum height of 2 feet.
- Mount perpendicular to the path so they face the passing path users directly.
- May be installed on one side of the shared use path only and may be installed back-to-back.

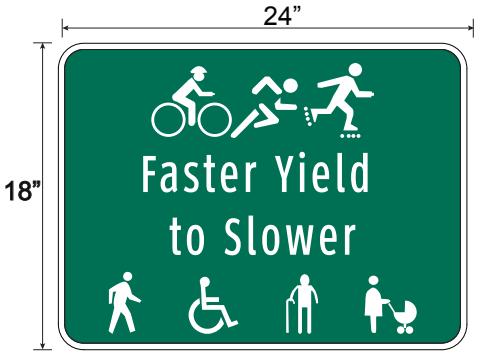
Placement Guidelines

- MM signs may not be needed on shared use paths in densely-developed areas where the streets crossing the path are spaced less than 500 feet apart.
- Outside of areas with frequent street crossings, MM signs may be spaced at tenth-mile- to half-mile increments. Consult the path maintenance crew supervisor and the Dane County Public Safety Communications office to determine how far to space the mileage marker signs.
- Place MM signs on their own posts. If a MM sign cannot be installed in the correct location, it may be moved in either direction as much as 50 feet.

5.3 Etiquette Signs

Purpose	Etiquette signs are placed periodically along shared use paths to inform users of how to politely use the path.
Size	18" tall by 24" wide
Font	Highway Gothic
Notes	Use on standalone sign posts, or combine with other signs.

Table 5-3: Etiquette sign types and characteristics

Sign Type	Walk, Run, and Ride on the Right	Give Warning Before Passing	Fast Users Yield to Slow Users
Description	Inform all path users to keep right	Inform path users to give audible warnings before passing other users	Inform path users that faster users must give way to slower path users
Sample			

5.4 Kiosk Maps

Purpose	• Provide bikeway and path users a map of a path system, network of bike routes or of the surrounding area in which the bikeway is located, to enable users to reach locations that are not adjacent to the bikeway. • Can also provide relevant rules and regulations, general safety tips, contact information for emergencies or facility management, and jurisdictional identification and branding. If a second panel is located with the map, nearby tourist destinations can be promoted.
When Used	• At trailheads or other major system gateways along regionally significant bikeways • Where regionally significant bikeways intersect • At waysides along a path, or at a major park or public feature on the path, where it will serve larger numbers of prospective bikeway users • When there are important destinations that are nearby, but not directly on, the bikeway

Required Information	The map is the featured item on the kiosk panel. Supplemental information should be kept to a minimum:
	• The name of the bikeway should be on the kiosk so the user knows which facility they are on
	• A legend, north arrow and scale bar
	• A prominent marker showing a “you are here” symbol
	• Rules and guidelines for using the facility:
	  • Trail Pass registration information
	  • Local bicycle and pedestrian laws (i.e. sidewalk riding guidelines, pet regulations)
	• Who to call for an emergency; and who to call to report maintenance need

Optional Information	• In areas where you may expect many non-English speakers to use the path, consider adding text in Spanish or another language • Etiquette information may also be provided, such as “Keep right except to pass” and “Give warning when passing” • Length of trail or path • If a jurisdiction wants to provide a way for users to access additional information via smartphones, a shortened link (for example “bikedane.gov” is preferable to a QR code. The link or code should accompanied by clear text explaining what the users will see, such as, “Get bicycling directions from this spot!” If linking to a web page, the jurisdiction will need to keep the web page up-to-date.
Orientation	• It is preferable to orient most maps with north at the top; however, wayside maps often work better when oriented to match the direction of the wayside so that it faces the way the user is facing. • A map should be oriented north when it shows a large area (entire park or an area that includes features that cannot be seen from the location of the wayside); it is on a sheltered kiosk; or it is on an upright panel oriented within 90 degrees of north. • A map can be oriented in the direction of the view when it shows a small area with features that can be easily seen from the panel, or it is oriented south.

Table 5-4: Kiosk Map guidelines

Design Guidelines

The National Park Service's Wayside Map Standards can be used as a reference for kiosk map design. The panel and map at the right were developed using the typography and color palette specified in that document.

Panel size: 3-5 feet wide by 3-4 feet tall

Map scale:

- The area portrayed on the map should be as small a section as possible. The larger the map area, the more difficult it is for the user to understand.
- If the map does not show the whole route network, you can provide an inset of the larger regional network.

The Madison MPO can help with the graphic design of a kiosk map or sign map. For assistance, contact Renee Callaway at the Madison Area Transportation Planning Board, 266-9114, recallaway@cityofmadison.com.

Assembly Guidelines

Map information should be mounted so that it is 2-6 feet off the ground, so it can be read by someone who is sitting in a wheelchair. The legend and small text should be located close to eye level of someone who would be sitting in a wheelchair; usually this means placing it at the bottom of the map.

Placement Guidelines

Refer to the "orientation" discussion on the previous page.

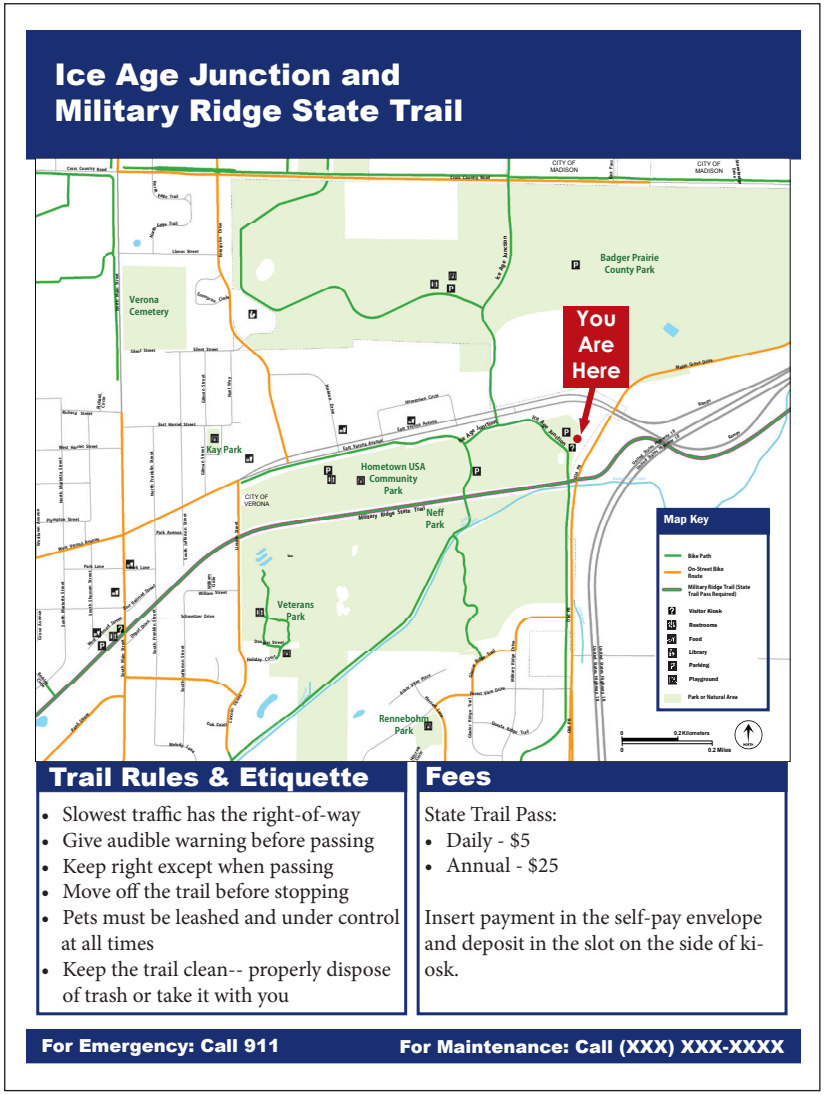
Kiosk maps should be located off the path so that bicyclists or pedestrians stopping to read them will not block the path or sidewalk. They should be easily seen from the bikeway. If possible, place the kiosk facing north.

Materials Specifications

Use galvanized steel, stainless steel, or aluminum posts to resist corrosion and reduce the need for maintenance.

Print kiosk maps with pressure-sensitive vinyl on aluminum sheeting, with an anti-graffiti and UV protection layer. Maps typically last 2-5 years.

Kiosk map template based on the National Park Service's Wayside Map Standards. The example below would be 3 feet wide by 4 fteet tall.



STEP 5

5.5 Simple Sign Maps

Purpose	Simple sign maps provide an inexpensive option to provide a simple map to an important destination off of the bikeway.
When Used	• On the bikeway at a junction when there are important destinations that are nearby, but not directly adjacent to the bikeway • When there are only two or three turns to be made • Another Simple Sign map should be placed at the destination, to help bikeway users find their way back to the bikeway
Size	18" tall by 24" wide
Font	Highway Gothic with at least 0.5 inch capital letter height, upper and lower case
Notes	• Use on standalone sign posts or combine with other signs • Locate in a spot where users can pull off the path easily to study the map

Table 5-5: Sign Map Guidelines

Design Guidelines

Map scale and orientation:

- Use "heads up" orientation, so that the map is oriented in the direction that the path user is facing, with a large north arrow.
- The map does not have to be to scale.

Use the same green background and 0.5" white border as the other wayfinding signs in this manual.

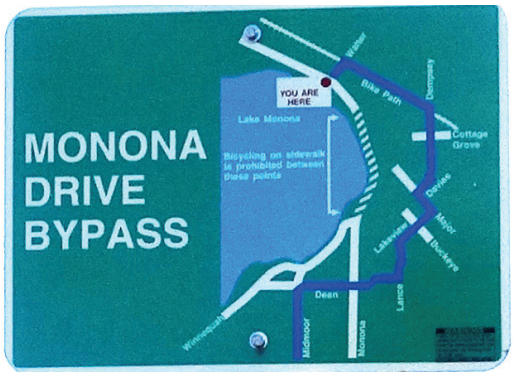
Route can be shown in another color, such as blue.

Assembly Guidelines

Ensure maps are not mounted too high above eye-level of the average adult path user; place legends or other key information near eye-level.

Sample

Madison's map of the Monona Drive Bypass of the Lake Loop shows many turns, but it is supplemented by additional wayfinding signs.



Sample

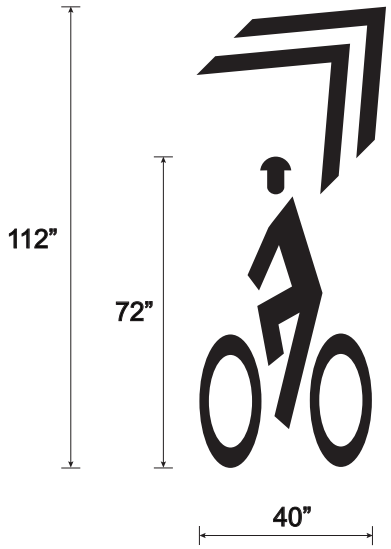
This example from Winston-Salem shows "heads up" orientation.

STEP 5

5.6 Pavement Markings

Purpose	Pavement markings may be used in addition to directional signs to help bicyclists navigate difficult turns or where the direction of the bike route is not immediately obvious. They are likely unnecessary for rural routes.

Table 5-6: Pavement Marking guidelines

Design Guidelines	Dimensions of sharrows used by City of Madison on shared streets	Existing Lake Loop sign
Sharrows: Use MUTCD dimensions, but angle the chevrons in the direction of the turn. A locally approved sharrow design may also be utilized. Angled chevrons do not comply with MUTCD and FHWA guidance, but are in use in a number of jurisdictions across the country. For named on-street routes such as the Lake Loop, the size of the stencil text should be a minimum of 3 feet in height. **Assembly Guidelines** For named routes, use the bicycle symbol and angled chevron, and add the route name underneath so it is the first thing seen by the bicyclist. **Placement Guidelines** Place the shared lane markings and angled chevrons in the location and position that best represents the location and positioning that the bicycle should be in to make the turn. This may mean placing the stencils immediately at the turn, instead of in advance of the turn. For complicated turns, the wayfinding sign panels should be used in advance of the intersection to alert bicyclists of an upcoming turn in the route.		

STEP 5

5.7 Fee Area Plaque

Table 5-7: Fee Area Plaque sign characteristics

Sign Type	Fee Area Plaque and No Trail Pass Required Plaque	Fee Area Plaque with Instructions
Purpose	These plaques are placed under the path identification panel (I-SP) to clarify whether users are required to purchase a trail pass to use that section of path.	An extension of the panel below the "Entering Fee Area" legend can be used to instruct users where to buy the trail pass.
Size	6" tall x 24" wide	18" tall x 24" wide
Font	Highway Gothic font with at least 2" capital letter height; capitalize the first letter of each word, all other letters should be lowercase	Highway Gothic font with at least 2" capital letter height; capitalize the first letter of each word, all other letters should be lowercase
Notes	• "Entering Fee Area" can be used at entrances to state or county shared use paths that require trail passes • "No Trail Pass Required" can be used on free shared-use paths that are continuations of the state or county paths, or in locations where users might be confused about whether they need a trail pass to use the facility. • Display with I-SP sign; can be used on confirmation assemblies. • In areas where you may expect many non-English speakers to use the path, consider adding text in Spanish or another language.	• Instruction text may be customized for each location • Use at locations where it may not be obvious to users where they should buy a trail pass. • Display with I-SP sign; can be used on confirmation assemblies. • In areas where you may expect many non-English speakers to use the path, consider adding text in Spanish or another language.
Description	Shows "Entering Fee Area" text or "No Trail Pass Required"	Shows "Entering Fee Area" legend and a navigational assistance (FB-NA) panel with instructions for where to buy the trail pass
Sample	 	

5.8 Jurisdiction Boundary Signs (and Bicycle Friendly Community Signs)

Purpose	Jurisdictions may choose to install boundary signs where a trail or path crosses into the jurisdiction's border. If designated as a Bicycle Friendly Community, jurisdictions also have the option to include a Bicycle Friendly Community Plaque.
Size	Jurisdiction Boundary Signs: 18" tall x 24" wide; Bicycle Friendly Community plaques are 18" tall x 18" wide
Font/Color	Highway Gothic for the Jurisdiction boundary sign
Notes	• If using the Bicycle Friendly Community plaque, obtain the graphics from the League of American Bicyclists and follow their "Branding Guidelines & Servicemark Policy." • Sometimes trails and paths weave in and out of municipal boundaries, in which case the jurisdiction boundary sign may be confusing to users. If this is the case, consider avoiding the use of the boundary sign, or installing it only at the point at which the path enters the jurisdiction for the last time.

Table 5-8: Jurisdiction boundary signs

Sign Type	**Jurisdictional Boundary (I-2) with Optional BFC Plaque**
Description	Jurisdictional Boundary sign
Features	• Follows MUTCD convention for jurisdictional signs on highways, but sized down for trails and paths. • Use of Bicycle Friendly Community Plaque is optional for communities that have received "Bicycle Friendly Community" designation from the League of American Bicyclists.
Sample	

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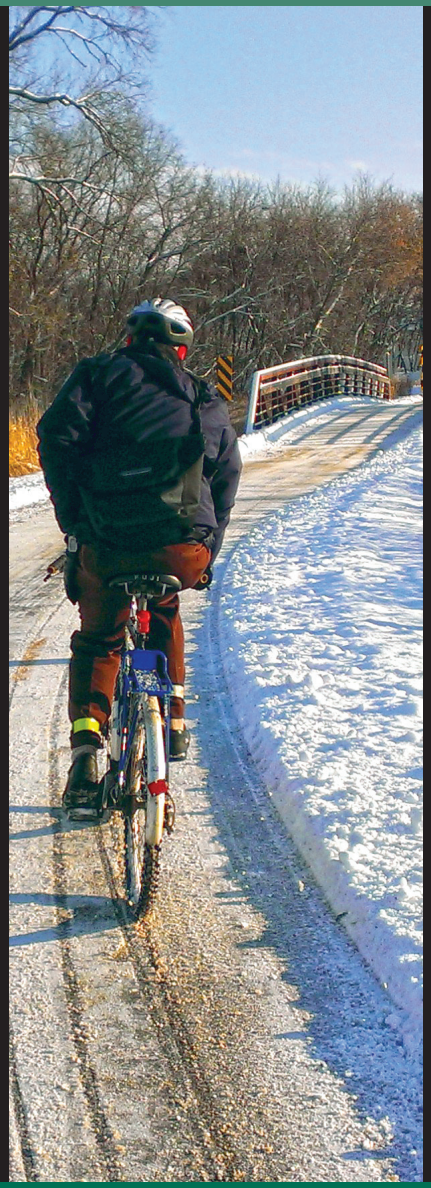


Photo by Adam Coppola

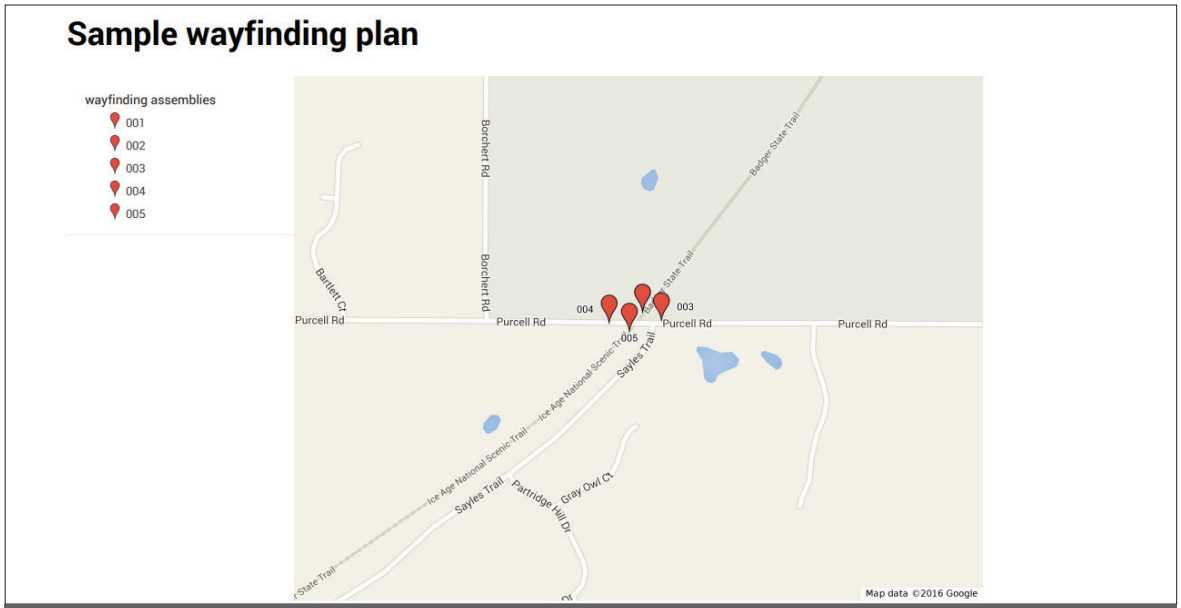
STEP 6

Sign Fabrication and Installation

6.1 Compile a sign installation plan

Once you have completed Steps 1-5, you can compile the information into a Sign Installation Plan to be shared with the contractor or work crews who will be fabricating and/or installing the signs. A sign installation package should include the following components:

- Plan maps.
  - Scale might range from 1" = 80' to 1"=40' (1:960 to 1:480) depending on paper size. Include a scale in the map if possible.
  - Paper sizes can be 8.5" x 11", 11 x 17", or 24" x 36".
  - Plan maps should use a standard sign symbol so that the orientation of the sign can be discerned and called out by the Assembly ID numbers.
  - Plan maps could also include an image for every sign assembly.
  - If using the Google "My Maps" tool, sections of the bikeway can be printed to include.
- Sign Assembly and Installation Details for each sign assembly, including:
  - Panel sizes and Identification codes—such as MUTCD ID numbers and the I-SP, I-UN, FB-A codes used in this manual—for each sign panel in the assembly.
  - Panel facing direction.
  - Location on street or path ("ON Cannonball Path AT Post Rd").
  - Post location and post type.



If using the Google "My Maps" Tool, sections of the bikeway can be printed to include in the sign installation plan.

  - Mounting arrangements, adjustments to existing signs on posts.
  - Special instructions.
  - If using the Google "My Maps" tool, the table can be exported to a KML file, which can then be imported into an Excel spreadsheet.
- Panel Fabrication Specifications and Details
  - Provides typical and variations for each sign panel size; layout of text and symbols; spacing, letter sizes, symbol sizes, symbol types, symbol enlargement or reduction allowances; colors, fonts, and borders (see Step 4 and 5).
  - Provides details for custom symbols, if needed.
  - Includes Sign Fabrication Standards (see below).
  - These may be more or less detailed depending on who does the fabrication (e.g. agency sign shop or outside contractors).
- A Sign Schedule
  - This is a table of all the sign panels and is used primarily for calculating quantities and computing cost estimates.
  - Includes Assembly ID numbers, Identification codes (MUTCD and guide codes), panel sizes and types, and post types.
  - May also include sign removal locations and instructions.

STEP 6

6.2 Local sign vendors

The following Wisconsin companies can make the wayfinding signs recommended by this manual:

TAPCO Traffic & Parking Control, Inc.
5100 W Brown Deer Rd
Brown Deer, WI 53223
1-8010-236-0112
www.tapconet.com

Badger State Industries
3099 E Washington Ave
Madison, WI 53704
608-240-5200
Buybsi.com/signage.html

Decker Supply Co.
1115 O'Neill Avenue
Madison, WI 53704
800-274-5495
www.deckersupply.com

The City of Madison can also fabricate signs for municipalities in Dane County. The City will not make signs for private entities or state agencies. In order to work with the City of Madison's sign shop, contact Phil Nehmer, Traffic Operations Supervisor, City of Madison, 608-267-1960, pnehmer@cityofmadison.com

6.3 Sign fabrication standards

Signs shall be installed in accordance with each governing jurisdiction's standards and specification. For jurisdictions that don't have their own standard sign fabrication specifications, the Wisconsin Department of Transportation's (WisDOT) Standard Specifications for Signs may be used. The standard specifications may be found at http://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/rdwy/stndspec.aspx, under Part 6 – Incidental Construction, Section 637 Signing.

Anti-Graffiti Coating. It can cost over $20 to have a sign replaced after it has been damaged by graffiti. Graffiti overlays are available as film or liquid laminates. When these are overlaid on a sign, harsh solvents can be used to remove the graffiti without damaging the underlying sign. Some sign vendors may already include "Anti-Graffiti Overlay" as part of the cost of their standard sign fabrication. If they do not, it may be worth it to purchase it for an extra $1-2 per sign. Ask the vendors about this when you are in the process of soliciting bids.

6.4 Post Installation

Signs and sign posts shall be installed according to the governing jurisdiction's standards and specifications. For jurisdictions that don't have their own standards, the following may be used.

Post style

Sign posts should allow signs to be mounted on all four sides. The following post styles are acceptable:

- 2" square perforated galvanized post;
- 2 3/8" round galvanized post; or
- 4" square wood post
  (for parks and natural settings).

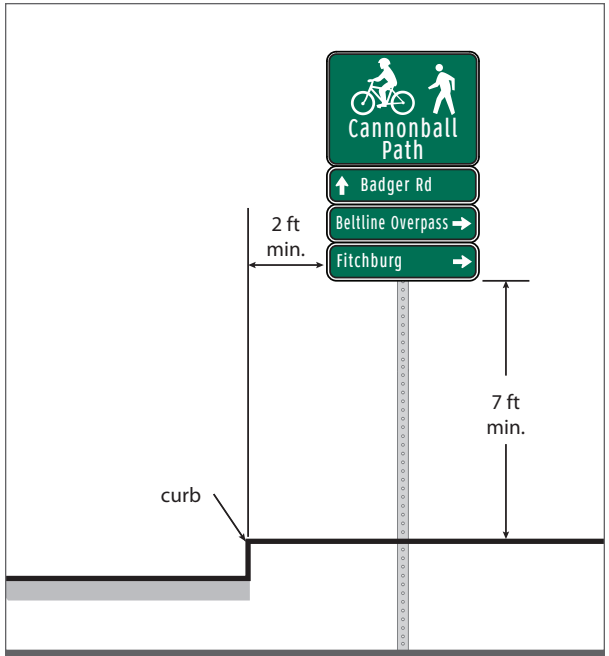
The length of the post and the depth of the embedment will depend upon the overall weight of the signs and the soil/pavement conditions.

Roadway Installation

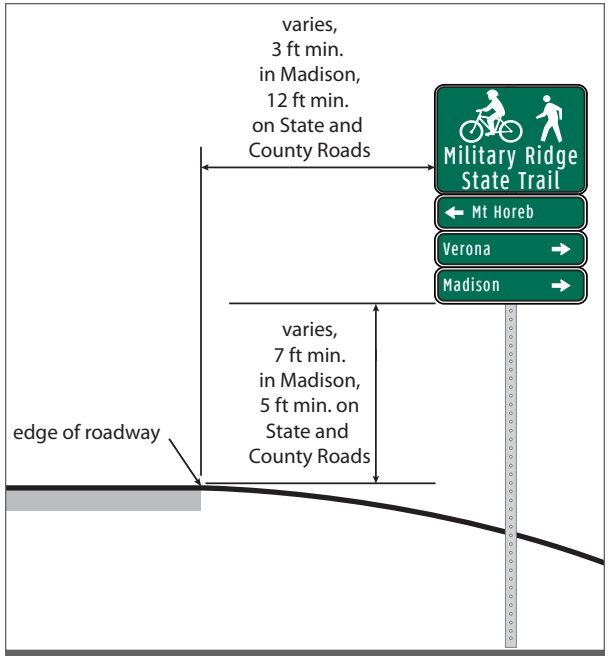
Posts of 12 feet in length can usually accommodate an identification panel with two fingerboard panels.

Wayfinding assemblies should be installed on separate posts from existing signs, except where they do not conflict with the existing sign.

- Wayfinding assemblies may be placed above parking restriction signs.
- Wayfinding assemblies may be placed below Bike Lane signs.
- The post may need to be replaced with a longer post to maintain the 7 feet minimum vertical clearance.



Sign Post Installation on Urban Streets



Sign Post Installation on Rural Roadways

Clearance for Urban Streets

Vertical Clearance

- Minimum of 7 feet from the ground to the bottom edge of the sign.

Lateral Clearance

- Minimum of 2 feet from face of the curb to the side edge of the sign (post should be installed at least 3 feet from the face of the curb).
- In dense commercial areas where existing posts are close to the curb: 1 foot from face of curb to edge of sign (post should be in-stalled at least 2 feet from face of curb).
- Signs should not intrude into a sidewalk.

Clearance for Rural Roadways

Vertical Clearance

- Municipal Streets: Refer to local jurisdiction standards.
- State and County Roads: Minimum of 5 feet from the pavement to the bottom edge of the sign.

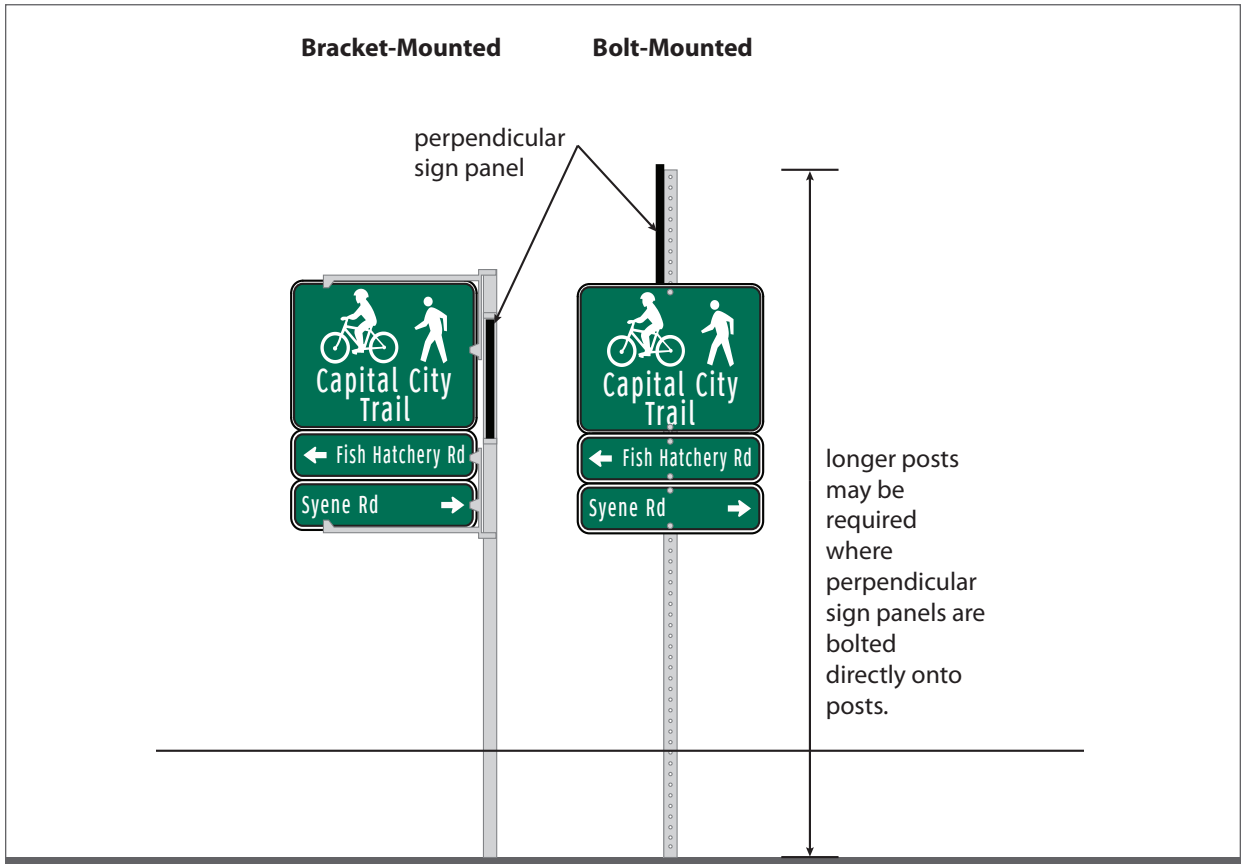
Lateral Clearance

- Municipal Streets: Refer to local jurisdiction standards.
- State and County Roads: minimum of 12 feet from the edge of the travel lane to the edge of the sign.

Shared Use Path Installation

Posts of 10 feet in length can usually accommodate an identification panel with two fingerboard panels. This height will allow for the installation of supplementary signs while maintaining a minimum 4 foot height as measured from the height of the shared use path to the bottom edge of the bottom sign.

It is common on shared use paths for two sign assemblies to be mounted on the same sign post. If signs are mounted perpendicularly using standard bolts, longer posts may be required. Alternatively, jurisdictions may consider the use of wing brackets to allow two or more signs to be mounted perpendicularly at the same height.



Sign Post Mounting Options with Perpendicular Sign Panels

Sign Post Installation on Shared Use Paths

Clearance for Shared Use Paths

Vertical Clearance

- Minimum of 4 feet from the height of the shared use path to the bottom edge of the sign.
- For signs placed overhead of shared use paths, a minimum of 8 feet vertically over entire width of shared use path.
- Mile Markers along shared use paths should be installed so the bottom of the sign is 3 feet from the height of the shared use path.

Lateral Clearance

- Preferred: 3 feet from the edge of the path to the side edge of the sign (post should be installed at least 4 feet from the edge of the path).
- Minimum: 2 feet from the pavement to the side edge of the sign (post should be installed at least 3 feet from the edge of the path).

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Work Zone and Detour Sign Standards

National guidance on temporary traffic control is found in the Manual on Uniform Traffic Control Devices (MUTCD) and in the "Operating Bikeways in Work Zones" section of the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities. The signs recommended below include modifications from the MUTCD sign design to better help bicyclists and pedestrians when they encounter construction on bicycle facilities, paths, or trails. Where signs differ from the MUTCD, the differences are displayed in the Tables below.

7.1 Construction warning signs

Purpose	Alerts bicyclists and pedestrians to potential construction-related hazards along the route
Size	30" by 30" diamonds on streets 18" by 18" diamonds on paths and trails
Font	Highway Gothic font with at least 2" capital letter height; 2.5" height is preferred

Sign	MUTCD Approved Sign	Suggested Modified Version	Notes
W9-2			**Color:** Black on Orange **Size:** 30" x 30" (on street) **Mounting** • May be pole mounted • May be mounted on Type II barricades with flashers for nighttime use **Notes** • Accompany with R4-11
W9-3			**Color:** Black on Orange **Size:** 30" x 30" (on street) **Mounting** • May be pole mounted • May be mounted on Type II barricades with flashers for nighttime use **Notes** • Accompany with R4-11

Sign	MUTCD Approved Sign	Suggested Modified Version	Notes
W8-15 **W8-15P**			**Color:** Black on Orange **Size:** Main Sign: 30" x 30" (on street) Main Sign: 18" x 18" (on paths and trails) Sub-plaque: 9" x 12" (on street) Sub-plaque: 5" x 7" (on paths and trails) **Mounting** • May be pole mounted • May be mounted on Type II barricades with flashers for nighttime use
		No modification necessary	**Color:** Black on Orange **Size:** 30" x 30" (on street) 18" x 18" (on paths and trails) **Mounting** • May be pole mounted • May be mounted on Type II barricades with flashers for nighttime use
W21-7		No modification necessary	**Color:** Black on Orange **Size:** 30" x 30" (on street) 18" x 18" (on paths and trails) **Mounting** • May be pole mounted • May be mounted on Type II barricades with flashers for nighttime use

7.2 Detour signs

Detour signs for bicyclists and pedestrians are useful in two situations: 1) for when temporary street closures result in a preferred route for bicyclists that is different from the detour provided for motor vehicles and 2) when a bicycle path or trail is temporarily closed. The system uses a modification of standard MUTCD detour signs to more closely follow the wayfinding principles in this manual.

All signs are MUTCD orange with a black legend and border. The directional arrows are removed from the M4-9a and M4-9c Detour signs and instead supplementary plaques are used to provide additional information, such as the name of the route being detoured, the direction of the detour route, or the beginning or end points of the detour.

Purpose	Alerts bicyclists and pedestrians to detour routes due the closure of a bicycle facility, path, or trail
Size	Various
Font	Highway Gothic font with at least 2" capital letter height; 2.5" height is preferred

Sign	MUTCD Approved Sign	Suggested Modified Versions	
M4-9a		 Use of separate arrow plaques to indicate the direction of the detour.   Option to use a forward arrow as a confirmation sign. 	Option to add "AHEAD" subplate to give advance warning of a closure and "BEGIN" and "END" subplates to note the beginning and ends of detours.    Route Identifier: Option to add a sign panel above the detour sign with the name of the route being detoured (text shown is example).  Instruction Panel: Option to add text explaining the detour route (text shown is example). Best used in situations where turns are counterintuitive, such as detours that require out-of-direction travel. 

Notes

Color: Black on Orange

Main Panel Size: 24" x 18" (on street)
24" x 18" (off street)

Arrow Subplaque Size: 12" X 9"

Route Identifier, BEGIN, END, AHEAD and Instruction Plaque Size: 24" X 6" (one-line)
24" X 10" (two-line)

Mounting

- May be pole mounted
- May be mounted on Type II barricades with flashers for nighttime use

Notes

- For use when there are path or trail closures.
- Position using the same principals that govern general wayfinding. Place advance warning signs, decision signs, and confirmation signs as needed in advance of and along the detour route.
- Confirmation signs recommended only for detours of more than one block or after a confusing turn

Sign	MUTCD Approved Sign	Suggested Modified Versions
M4-9c		

Use of separate arrow plaques to indicate the direction of the detour.

Option to use a forward arrow as a confirmation sign or in situations where the motor vehicle turns and the preferred route for bicyclists is straight.

Option to add "AHEAD" subplate to give advance warning of a closure and "BEGIN" and "END" subplates to note the beginning and ends of detours.

Route Identifier: Option to add a sign panel above the detour sign with the name of the route being detoured (text shown is example).

Instruction Panel: Option to add text explaining the detour route (text shown is example). Best used in situations where turns are counterintuitive, such as detours that require out-of-direction travel.

Notes

Color: Black on Orange

Main Panel Size: 24" x 18" (on street)
24" x 18" (off street)

Arrow Subplaque Size: 12" X 9"

Route Identifier, BEGIN, END, AHEAD and Instruction Plaque Size: 24" X 6" (one-line)
24" X 10" (two-line)

Mounting

- May be pole mounted
- May be mounted on Type II barricades with flashers for nighttime use

Notes

- For use when there are on-street bicycle facility closures when the preferred detour route for bicyclies is not the same as the detour route for motor vehicles.
- Position using the same principals that govern general wayfinding. Place advance warning signs, decision signs, and confirmation signs as needed in advance of and along the detour route.
- Confirmation signs recommended only for detours of more than one block or after a confusing turn.

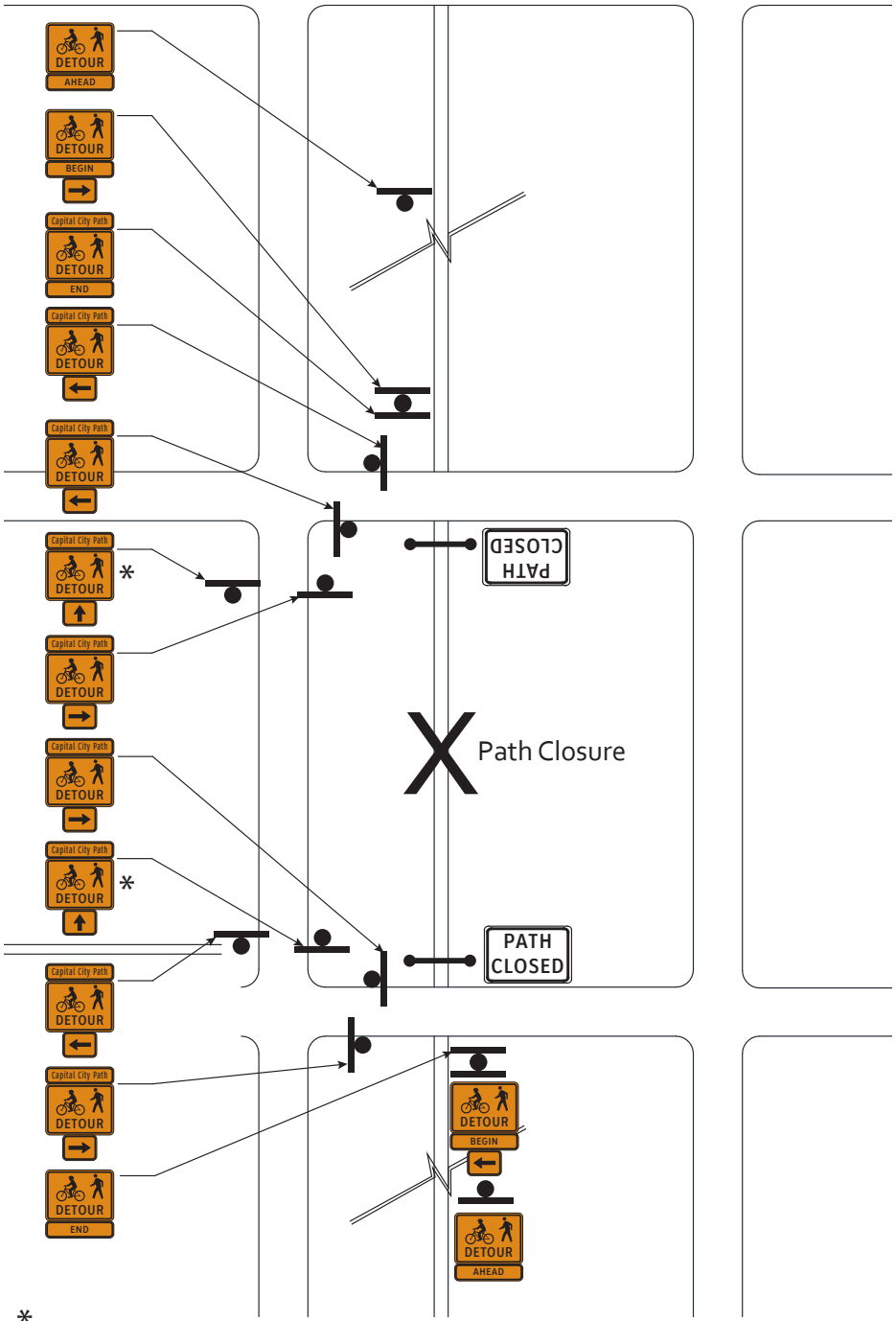
7.3 Regulatory signs

Sign	MUTCD Approved Sign	Suggested Modified Version	Notes
R4-11		No modification necessary	**Color:** Black on White **Size:** 30" x 30" (on street) **Mounting** • May be pole mounted • May be mounted on Type II barricades with flashers for nighttime use **Notes** • Madison currently uses a black on orange version of this sign in construction zones, however the MUTCD states that temporary traffic control regulatory signs shall comply with the Standards for regulatory signs in Part 2 of that document.
R11-2		 	**Color:** Black on White **Size:** 24"x 12" (off street) or 30" x 18" **Mounting** • May be pole mounted • May be mounted on Type II barricades with flashers for nighttime use

7.4 Detour Sign Placement Example

Example: Detour Sign Placement due to a Trail or Path Closure

This example of wayfinding sign placement shows where signs should be placed when a path or trail is closed.



* Confirmation Signs Recommended Only on Multi-Block Detours of after Confusing Turns

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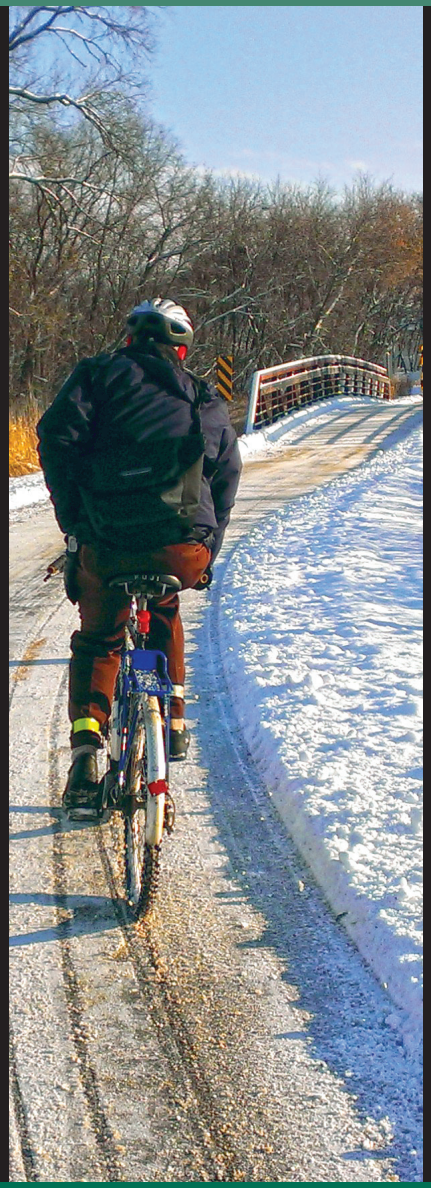

Photo by Adam Coppola