

# Appendix F: Wayfinding Protocol and Best Practices

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## Table of Contents

Introduction .....	259
Current Practice .....	259
Policy and Regulatory Framework .....	260
Best Practices .....	262
Chicago, IL .....	262
Seattle, WA .....	262
Sign Type Recommendations.....	263
Named Route Signs (M1-8 series).....	263
Decision Signs (D1-1c series).....	265
Directional Spot Signs (D1-1b series).....	266
Route Designation, Turn and Confirmation Signs (D11-1c series).....	267
Sign Assemblies.....	267
Recommended Sign Placement in Right-of-Way:.....	268
Supplemental Signs.....	268
General Sign Components .....	268
Roadway and Shared-use Trail Placement Guidelines.....	269
Signing of the Bicycle Network .....	270

This appendix provides guidance for establishing a comprehensive bicycle wayfinding system for on-street routes and trails. The guidance includes current practices from federal manuals, best practices from two model cities and additional information not found in federal manuals on how to design, plan and implement a wayfinding system for bicycles within Bellingham.

## Introduction

Wayfinding signs provide basic information about distances, directions and destinations, helping bicyclists plan and navigate their travel routes. Bicycle signage can help promote the use of established bike routes and can encourage bicycling on designated corridors. The presence of wayfinding and other types of signage sends a visual cue to all road users that bicyclists may be present, potentially increasing driver awareness of bicyclists. Signage is an important part of creating a transportation system that supports bicycle use.

This document provides recommendations for sign design and placement based on national guidelines in the current Manual on Uniform Traffic Control Devices (MUTCD) and on best practices from other U.S. cities.

## Current Practice

The City of Bellingham Parks and Recreation Department currently places trail markers and directional signs on bollards along the Greenway Trail system. The signs provide guidance to trail users on the direction and distance to important destinations and helps trail users stay on the intended trail. The size and location of the signs indicates that they were primarily designed for use by pedestrians and slower bike movement.



The Parks and Recreation Department has developed design standards for the Greenway Trail wayfinding signs and their content. The following guidelines are from the [Design Standards for Park and Trail Development](#) November 2011:



*Existing Greenway system signs*

### *Directional Signs –General*

1. Directional signs shall be placed on bollards at intersections with main city streets, trail intersections, or other locations where trail clarification is needed.
2. Directional signs will list the name of the Greenway Trail system; followed by, when appropriate, a name associated with the location of the sign (e.g. Prospect Street, Joe's Garden, Birchwood Park, etc.); followed by, when appropriate, the name and mileage to destination points; followed by directional arrows. Some bollards may have more than one directional sign listing additional information.
3. Greenway Trail system names shall be consistent through the length of the trail and its connectors and be based on common name usage. Examples of system names are: Whatcom Creek Greenway, Railroad Trail, Bay-to-Baker Trail, Interurban Greenway, Coast Millennium Trail, etc.
4. At termination points in areas of future development, temporary signs shall be placed stating: "Trail Ends. For future development information, contact Bellingham Parks and Recreation at (list phone number here) or at (list website here)".
5. Directional signs shall be made of non-rusting metal and fasteners, and be consistent in style.
6. Sign colors shall be green for background and white for lettering.

### *Greenway Trail Signs*

1. Greenway Trail signs shall be placed on bollards at intersections with main city streets, major trail intersections and trailheads.
2. Signs will state the following information: [Greenways logo], “Bellingham Parks and Recreation”, and link to the City website.
3. Signs shall be provided by the Parks Department.

### *Directional Signs – Specifications*

1. Signs shall be street sign material, aluminum blank, rounded corners. Reference Section 9-28.8 of the WSDOT Standard Specifications for sign thickness. Note: The rounded corner will vary depending on the manufacturer. Sign images or templates may need to be adjusted accordingly.
2. Each sign shall have (4) 3/16" holes on each blank, one in each corner, 1/4" distance from each corner.
3. Dimensions:
  - 5.625" x 4" Directional Signs (words)
  - 4" x 2" arrows (one-way, two-way)
  - 4" x 4" arrow (up and to left or right)
4. Lettering: Three lines maximum.
5. Color: Background is Standard Dark Green. Letter or arrows shall be white. 1/8" Borders shall be white. Reflective material can be used but is not required.
6. Hardware: #6 x3/4" Stainless Steel, #1 square head (tamper proof), pan head screws. Use #1 square drive (available at Hardware Sales and other locations)

The recommendations in this appendix take into consideration the existing Greenway Trail Sign design standards and outlines implementation of a separate bicycle wayfinding system. The bicycle wayfinding system is intended to supplement and integrate with the Parks Greenway Trail sign system. The bicycle wayfinding system can help guide bicyclists along on-street linkages between trail segments, identify trail entrances, and determine which segments of the Greenway Trail system are accessible by bicycle. The bicycle wayfinding system discussed here should use the same destination and directional information as the Greenway Trail signs.



*Existing Greenway system signs*

## **Policy and Regulatory Framework**

The following federal manuals provide guidance on specific aspects of bicycle wayfinding but do not provide information on how to implement a wayfinding system within a municipality. The following section outlines the guidance available in each manual.

### *Manual on Uniform Traffic Control Devices (MUTCD) Guidelines*

The Manual on Uniform Traffic Control Devices (MUTCD 2009 edition) includes standards for:

- Sign design for directional bicycle signs.
- Sign installation such as minimum height of signs above ground and horizontal placement from edge of the roadway or trail.
- Symbols and appropriate abbreviations for destination names.

The MUTCD introduces sign types and provides additional right-of-way placement guidelines for directional signs.

### *The AASHTO Guide for the Planning, Design and Operation of Bicycle Facilities*

The American Association of State Highway and Transportation Officials (AASHTO) Guide provides supplemental information to the MUTCD. The guide explains the use and benefits of different sign types for bicycle wayfinding. It also provides guidance on where to use signs: on what types of routes and how to place signs at intersections.

### **Additional Wayfinding Design Guidance**

The National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide provides guidance based on current best practices in large cities. It covers types of signs and destinations, pavement markings, typical applications, and design guidance.

## Best Practices

### Chicago, IL

The City of Chicago has implemented an extensive directional sign system for bicycles using destination-based signage for the on-street bicycle network. The D11-1c and D1-1c series signs were developed by the City of Chicago in an effort to consolidate and reduce the amount of signage required by the 2003 MUTCD for bicycle wayfinding. Both sign types were later incorporated into the 2009 edition of the MUTCD. The D11-1c provides specific destination information, such as “To Evanston” in lieu of the general “BIKE ROUTE” text of the MUTCD’s D11-1 sign. This is helpful in distinguishing different routes in a dense bicycle route network. The D11-1c is used by the City of Chicago both on the near and far side of some intersections, to help bicyclists decide what route to take and then to confirm the route after a choice has been made.

Similarly, the D1-1c consolidates direction, destination and distance information onto one smaller sign. Several D1-1c signs can be installed together at the approach to a decision point to provide information on multiple routes.



*Above left: The D11-1 Bike Route sign. Above right: The D1-1c sign consolidates direction, destination and distance information onto one sign.*

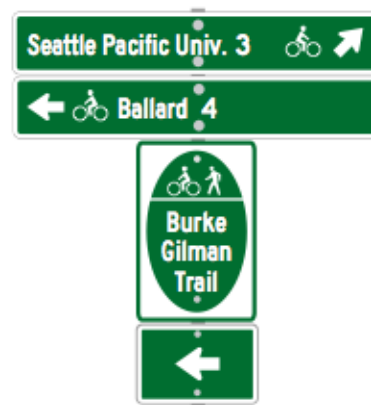


*D1-1c series signs preceding an intersecting signed bike route in Chicago, IL.*

### Seattle, WA

The City of Seattle also has a directional sign system for bicycles. Modeled after the Chicago system, the Seattle system also uses the D11-1c and D1-1c series of signs. Because Seattle has an extensive off-street trail system, additional signs were required to distinguish named routes. For this reason, the M1-8 series (in the image to the right this is the “Burke Gilman Trail” sign) of signs are used in Seattle along named routes, often installed with supplementary signs from the M2, M3, M4, M5 and M6 series which are cardinal direction signs, arrow signs and supplemental guidance signs. M1 signs are also installed at decision points on trails with D1-1c or D11-1c signs (see figure).

In order to include the colloquial route name on the M1-8a sign, adjustments were made to the standard sign. The route number was replaced with route name within the main body of the sign. The space at the top of the sign was used for a logo. In the example a pedestrian and bicycle logo are used but this could be



*Decision and named route signs from Seattle. On trails, both sign types are used to mark the route and provide direction to destinations on and off the trail.*

any logo including trail branding. This complete sign system helps bicyclists get to destinations throughout the city and provides guidance to and along named bicycle routes including trails.

## Sign Type Recommendations

Bicycle route signs are signs that guide bicyclists along preferred, designated routes to destinations throughout the city and region. Bicycle routes may consist of on-street facilities and off-street trails.

The bicycle route sign system is designed for bicyclists who are familiar with the city's landmarks and districts, but unfamiliar with the preferred route to their intended destination(s). To assist the bicyclist, the system should provide three general kinds of guidance:

1. **Named Route Signs (M1):** along designated named routes
2. **Decision and Spot Decision Signs (D1):** at decision points where two or more routes intersect or where guidance is required
3. **Route Designation or Confirmation Signs (D11):** to confirm a route choice and provide guidance at a turn in a route

The Bellingham Bicycle Network may consist of two general categories of signed routes:

1. Named Routes:
  - a. On-street routes that connect between trails (Example: on-street trail extensions or routes that combine trail segments with on-street segments, such as Boulevard Trail Connector)
  - b. Cross town routes (Example: Illinois Street Bicycle Boulevard)
  - c. Trails (Example: Railroad Trail, Connelly Creek Trail)
2. Unnamed Network Routes:
  - a. Routes between destinations such as transit, schools, business districts, major employment centers, or major trail access points

The two route types will work in unison to provide bicyclists with a navigable system along designated bicycle routes.

### Named Route Signs (M1-8 series)

M1-8 or M1-8a signs can be installed along named on-road routes and trails to assist users in wayfinding along named routes or to confirm that the user is on the desired route. The M1-8 series signs are small in size and are a cost effective way to mark bicycle routes. Use M1-8 or M1-8a with supplementary signs such as directional arrows (M5 and M6 series) and the words "North", "South", "East", "West", "To", "End", "Begin", etc. (M3, M4 series). If a route already has a colloquial name, the sign should use the name rather than a route number, to avoid confusion. Route names are encouraged because they can often provide additional contextual information such as



2009 MUTCD Figure  
9B-4

destination information, i.e. Illinois Street Bike Route will likely follow Illinois Street. Route numbers do not provide this context and require a bicyclist to use a map to understand where the route goes. In areas where signed bike routes are dense, the use of route numbers can be confusing if a bicyclist has to ride on several numbered routes to get to a particular destination. Numbered routes can work well; however, for cross jurisdiction travel, on routes that do not already have a colloquial name or on routes with many turns where a colloquial name does not exist.

**Sign Specs:** Size: 12" x 18", white on green and retro-reflective. The letters on signs should be 2" to 1.5" high for best visibility.

#### **Sign Placement in the Right-of-Way:**

On-trail M1-8 or M1-8a signs may be used:

1. At trail entrances and exits.
2. 30'-50' after every controlled intersection or street crossing.
3. Every ¼ mile to mile where there is a gap in signage. Spacing will depend on the density of the street network.
4. At transitional locations (such as trail-to-road transitions) or in cases where bicyclists will be transitioning to sidewalks.



On-street M1-8 or M1-8a signs may be placed:

1. 30+ feet before a turn with an M5 or M6 arrow (follow decision sign guidelines for placement at the approach to an intersection).
2. 30-60 feet after a turn to confirm the route.
3. At decision points where needed.
4. Within proximity to a named route (within a few blocks), similar to a spot sign.

*A modified M1-8a sign at the entrance to a multi-use trail in Seattle, WA.*

Named route signs can be used in conjunction with a supplementary sign such as an arrow and "To". When farther than a few blocks off the designated route, decision signs can be used to direct users to named route.

**Sign placement on post:** M1-8 or M1-8a signs can be mounted on the same post, below regulatory, warning or destination signs.



1. M1-8 or M1-8a signs may be placed back-to-back with one another or with regulatory or warning signs.
2. When multiple M1-8 or M1-8a signs are placed on the same post, they can be stacked depending on height and visibility. The current route sign should be at the top.

## Decision Signs (D1-1c series)

Decision signs mark decision points where two or more bicycle routes intersect. Decision signs are installed on the approach to an intersection or before a trail head. On Greenways these signs should contain the same information as the Greenway directional signs. Signs include direction, destination and distance (in tenths of miles) information.



*An example D1-1c sign, from the 2009 MUTCD*

**Sign Placement in the Right-of-Way:** Place 30+ feet on the approach to a decision point or intersection of another signed bicycle route. To allow for comfortable left turns, place the decision sign at the appropriate distance from the intersection based on the number of lanes that a bicyclist must merge across:

- No merge: 30 feet
- One lane merge: 100 feet
- Two lane merge: 200 feet

Provide enough distance between the sign and the intersection to allow for comfortable merging across travel lanes.

**Sign Specs:** 36" x 6", white on green and retro-reflective.

**Sign placement on post:** Directional sign organization at a given decision point will be based on the following guidelines:

1. Install D1-1c signs on the approach to intersections where signed routes intersect and where routes lead directly to the intended destination. The bicycle route system can connect business districts, schools, parks, neighborhoods and other important locations that are *directly* on designated routes.



*D1-1c sign assembly on a trail, Seattle WA*



2. The number of destinations provided on a given post is not to exceed three. This allows for proper vertical clearance to be maintained. Three signs per post is also about the maximum amount of information that can be read by a passing bicyclist.
3. The number of signs on a given post that point in the same direction is not to exceed two. This guideline is based on the fact that D1-1 signs will be installed at intersecting bike routes, and there should be at least one sign indicating destinations in each direction.
4. The sign with the nearest destination should go at the top of the assembly with the most distant destination at the bottom. If destinations are equal in distance, the sign with an up arrow should be placed on top. This arrangement allows for new destinations to be added to the bottom as routes pass the destinations at the top of the sign.
5. When directional signs are used with named route signs, both may be placed on the same sign post, with the named route sign (e.g., M1-8a and supplementary signs) below the D1-1c sign(s). Placing multiple sign types on one post will reduce the number of posts used as well as provide all necessary information for bicyclists in one location.

**Sign Content:** Destination and directional information will be unique on most signs. Determining destinations is important to the function of the network. Distance information will be determined by the spacing of decision points and destination locations.

1. Identify and Rank Destinations:
  - Develop a list of all destinations and rank them in a hierarchy. For example:
    - **Primary:** Trails, business districts, neighborhoods, regional parks
    - **Secondary:** Institutions, transit stations, other municipalities
    - **Tertiary:** Other public institutions/facilities, airport, designated bicycle streets
  - The ranking will help determine the sign content at a given decision point within the network.
2. Provide distance measurements in tenth of a mile increment such as 4.3 and 1.2. This allows for detailed destination information in denser urban areas. If mileage on a sign is a whole number, do not include the tenth mile placeholder. For example use “4” rather than “4.0.”
3. If a bike route terminates at a location where there is no destination use the name of the terminal perpendicular street or bike route as the destination.

### Directional Spot Signs (D1-1b series)

Spot signs are similar to directional signs but provide direction and destination information only. Use D1-1b signs when a destination is off the signed route or when getting to the route requires additional wayfinding. Spot signs may include the words “To” and “Via” where



*Example D1-1b sign, from the 2009 MUTCD Figure 9B-4*

necessary and may vary in width to accommodate limited space in the right of way. Spot signs do not need to be followed by a confirmation sign.

Spot signs may be used to provide:

1. Guidance to signed bicycle routes from adjacent roadways, side paths etc., or access to important facilities such as a trail.
2. Guidance from signed bicycle routes when important destinations are a short distance off the signed route. In such cases, a directional sign may indicate the best access point from the signed route to the destination. Use additional spot signs to guide bicyclists to that destination.



*Spot sign along bicycle route in Seattle.*

## Route Designation, Turn and Confirmation Signs (D11-1c series)

These signs confirm that a bicyclist is on the correct route. The sign is used in two ways:

1. Route Confirmation Sign: Signs are placed on the far side of an intersection and at intervals along the route to confirm that the bicyclist is still on the correct route.

2. Turn Sign: At turns in a route with an arrow (M5 or M6 series sign).

In this case D11-1c and an arrow sign are placed on the approach to an intersection.

Confirmation signs will include destination information, generally with the word “To.” When a confirmation sign is used on a named route, an M1-8 or M1-8a sign may be placed below the confirmation sign.



*Example of D11-1c, from the 2009 MUTCD Figure 9B-4*

**Sign Specs:** 24” x 18”, white on green and retro-reflective.

## Sign Assemblies

Named route signs and directional signs can be placed together on the same posts. This can occur under the following conditions:

- Along a named route where there is a decision point.
- At a decision point along a route that is leading to a named route. In these instances it might be an on-street route that is close to or intersecting a named route (see photo example).



## Recommended Sign Placement in Right-of-Way:

### Turn Signs:

Follow placement guidelines for decision signs.

### Confirmation Signs:

1. 30-60 feet on the far side of the intersection after decision points, preferably within sight of the decision sign.
2. 30-60 feet after stop controlled or signalized intersections.
3. Every ¼ mile to mile of unsigned segment along designated on-street bicycle routes, depending on the density of the street grid (places with longer blocks and fewer streets need fewer signs).

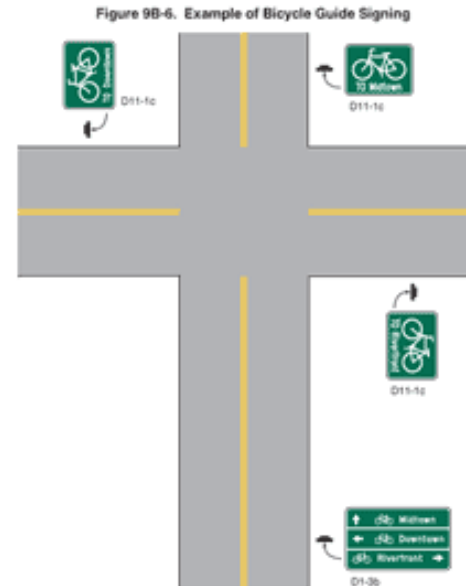


Figure 9B-6 from the 2009 MUTCD provides general lateral placement of D1-1 and D11-1 signs at an intersection.

### Sign content:

If there are two destinations in one direction, a confirmation sign may include two lines of text. This may require reduction of the bicycle symbol.

## Supplemental Signs

Supplemental signs provide additional information to D11-1 or M1 series signs. Cardinal direction signs (M3 series) and alternate route signs (M4 series) are placed above the M1 series. Arrow signs in the M5 and M6 series are placed below D11-1 and M1 signs to provide directional information.



Supplemental signs, from the 2009 MUTCD  
Figure 9B-4

## General Sign Components

The following guidelines outline general rules for the sign contents:

1. For all signs, use upper and lower case letters.
2. Use Clearview Series C font. This font is approved for use by the Federal Highway Administration. It strikes a balance between visibility and maximum characters per sign.
3. Use two-inch high capital letters. This size is visible from approximately 80 feet away.

4. For destination names that are too long to fit on one line, use intuitive abbreviations.
5. Do not use periods in the abbreviations of destination names.
6. Avoid the use of diagonal arrows when possible.
7. Use graffiti film on bicycle route signs that are lower to the ground, particularly on trails. This will increase the longevity of the signs.

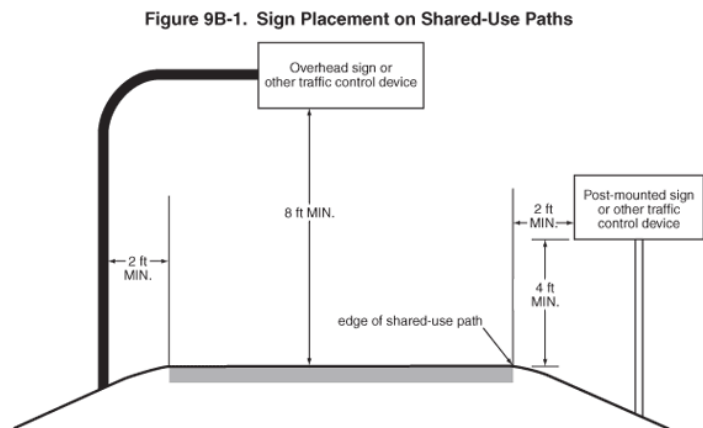
## Roadway and Shared-use Trail Placement Guidelines

Guidance on signage placement is important to providing a legible sign system. Predictable and uniform placement of directional signs at traffic controlled intersections and at intervals helps to provide proper guidance particularly if a turn in a route is to occur.

### Trails

Horizontal, lateral and vertical installation of bicycle signs differs for shared-use trails and roadways. For trails, follow the MUTCD guidelines for lateral and vertical signs placed along shared-use trails:

1. 8 foot minimum vertical clearance
2. 2 foot clearance from edge of trail to edge of sign
3. 4 foot minimum distance between ground and bottom edge of sign



### Roadways

For bicyclists, a good baseline distance required to read a sign and determine an action is 30 feet from the intersection. Additional engineering judgment is required when placing directional signs to allow for visibility of the sign with parking, vegetation and other possible obstructions.

*Sign placement for trails, from the 2009 MUTCD Figure 9B-1*

Sign mounting height is also outlined in the MUTCD ([Section 2A.18](#)); however, due to speed and sight line differences between bicyclists and motor vehicles, minimum post heights are recommended for bicycle signs.

Mounting height guidance:

1. Sidewalk Clearance: 7 feet of clearance from the bottom of the sign to the ground should be allowed. If there are multiple signs per post, and the lowest sign is lower than 7 feet, the lowest sign cannot stick-out more than 4 inches into the sidewalk. If bicycles use the sidewalk the clearance height should be 8 feet.

2. If there is no sidewalk and few obstructions such as parked cars, optimum vertical height for bicycle signs is 7 feet from the bottom of the sign.

## Signing of the Bicycle Network

The Bellingham Bicycle Master Plan outlines a bicycle network that consists of 169 miles of existing and proposed routes on roadways and trails. Wayfinding is an important component of the recommended bicycle network. Wayfinding signs may be used alone, for example on signed routes, or in combination with other treatments such as pavement markings (e.g. bike lanes and shared lane markings).

The implementation of the signage improvements in this Plan could begin sooner or occur independently from the physical network recommendations. For example, on some lower speed/lower volume roadways, the installation of wayfinding signage may precede the striping of bike lanes, and could serve as an interim step toward improving conditions.

The following criteria can be used to determine when and if it is appropriate to designate a signed route without providing a bike lane or shared lane markings:

- If there are alternate, parallel routes within close proximity (less than a half mile) and featuring bicycle facilities.
- On streets with lower traffic volumes.
- On spur routes (routes that span a relatively short distance and terminate at a specific destination or loop back into the main route).