

Wichita Bicycle Wayfinding System Plan Technical Report #1

Best Practices

June 1, 2015

Prepared by:

Alta Planning + Design
16141 Swingley Ridge Road, Suite 300
St. Louis, MO 63017
www.altaplanning.com



Contents

- INTRODUCTION..... 3
- Core Wayfinding Principles..... 3
 - 1 : Connect Places 4
 - 2 : Promote Active Travel 4
 - 3 : Maintain Motion..... 4
 - 4 : Be Predictable 5
 - 5 : Keep Information Simple..... 5
- Technical Guidance 6
 - AASHTO Guide for the Development of Bicycle Facilities..... 6
 - Accessibility Standards 7
 - Shared Use Paths 8
 - Manual on Uniform Traffic Control Devices (MUTCD) 9
 - Bicycle Sign Standards 9
 - Fundamental Navigational Elements..... 10
 - Community Wayfinding 13
 - Flexibility in Standards..... 15
 - Supplemental Information – Distance and Time 18
- Enhanced Wayfinding Tools..... 18
 - Pavement Markings 18
 - On-Street Markings 18
 - Off-Street Markings 19
 - Mile Markers..... 20
 - Street Name Sign Blades 20
 - Map Kiosks..... 22
- Destination Selection and Prioritization 24
- Resources 24

INTRODUCTION

This report summarizes best practices and general signage guidelines associated with a community bicycling wayfinding system plan, building on the recommendations from the 2013 Wichita Bicycle Master Plan. The recommendations below take into consideration findings from applicable research, existing precedents, and policy pertaining to wayfinding signage. These best practices will be a guide for the placement and design of a wayfinding system and should be incorporated into the overall Wichita Bicycle Wayfinding System Plan document.

The following best practices are described with respect to wayfinding principles, sign family elements, placement recommendations, and destination prioritization. This review will explain what is involved in effective wayfinding using well-researched and proven practices.

Wayfinding Principles

The legibility of a place describes how easy it is to understand. Places are more legible when they are arranged so that people can intuitively determine the location of destinations, identify routes, and recognize areas of different character. Wayfinding helps to make places more legible by better enabling individuals to:

- easily and successfully finding their way to their destination,
- understand where they are with respect to other key locations,
- orient themselves in an appropriate direction with little misunderstanding or stress; and
- discover new places and services.

In order to help ensure that wayfinding systems are the most effective, the following guiding principles have been developed for bicycle wayfinding plans. The principles are based on best practices from around the North America.



1 : Connect Places

Effective wayfinding information should assist both locals and visitors to travel between destinations as well as discover new destinations and services accessible by bicycle. The wayfinding should help improve local economic wellbeing by encouraging locals to utilize services within their own neighborhood or city. Wayfinding should enhance connections within the city and neighboring communities. Destinations within the city should be identified as well as priority destinations throughout the region. The wayfinding navigation should be seamless on a regional level.

Wayfinding should also enhance connections and expand the bicycle network.

In addition, wayfinding elements should help create a deeper connection to place and cultivate a sense of pride in one's community by reflecting community values and identity.

2 : Promote Active Travel

Wayfinding should encourage more bicycling by creating a clear and attractive system that is easy to navigate. Whether advertising directly to people traveling by bicycle or indirectly to passing vehicles, the system should encourage use by being both attractive and effortless to use and understand. The presence of wayfinding signs should validate cycling as a transportation option as well as reduce fear amongst those potentially interested in cycling.

Wayfinding should also expand the awareness and use of bicycle facilities. Under-utilized bicycle facilities are strong candidates for wayfinding improvements. The awareness and use of the existing bicycle network may efficiently and economically be expanded by installing wayfinding tools along facilities which are already in place. Miles of bicycle facilities and streets requiring little physical change to serve as safe and functional bikeways should be signed to raise the awareness of these route options. Wayfinding may also precede other infrastructure improvements in places.

3 : Maintain Motion

Wayfinding information should be presented in a way that is easy to understand. Cycling requires physical effort. Frequent stopping and starting to check directions may lead to frustration. Wayfinding information that can be quickly comprehended contributes to bicycling enjoyment. Consistent, clear, and visible wayfinding elements allow bicyclists to navigate while maintaining movement.

4 : Be Predictable

Wayfinding should be predictable and consistent. When information is predictable, it can be quickly understood and recognized. Predictability should relate all aspects of wayfinding placement and design (i.e. sign materials, dimensions, colors, forms, and placement). It also means that new situations are quickly understood. Once users trust that they will encounter consistent and predictable information, their level of comfort is raised and new journeys become easier to attempt and complete, thereby promoting an experience that is welcoming and friendly. Similarly, maps should employ consistent symbology, fonts, colors, and style. The system should work within local, state, and federal guidelines for a variety of reasons - including the ability to be funded through state and federal sources.

5 : Keep Information Simple

Information should be presented in as clear and logical form as possible. Wayfinding signage should be both universal and usable for the widest possible demographic and with special consideration for those without high educational attainment, English language proficiency, or spatial reasoning skills. It is important to provide information in manageable amounts. Too much information can be difficult to understand; too little and decision-making becomes impossible. Information should be provided in advance of where major changes in direction are required, repeated as necessary, and confirmed when the maneuver is complete.

These wayfinding principles combine to create a wayfinding system plan that is both legible and easy to navigate. These principles should be applied in the Wichita Bicycle Wayfinding System Plan to guide design, placement, and destination logic. By following a clear set of principles an organized approach to wayfinding design will be achieved.



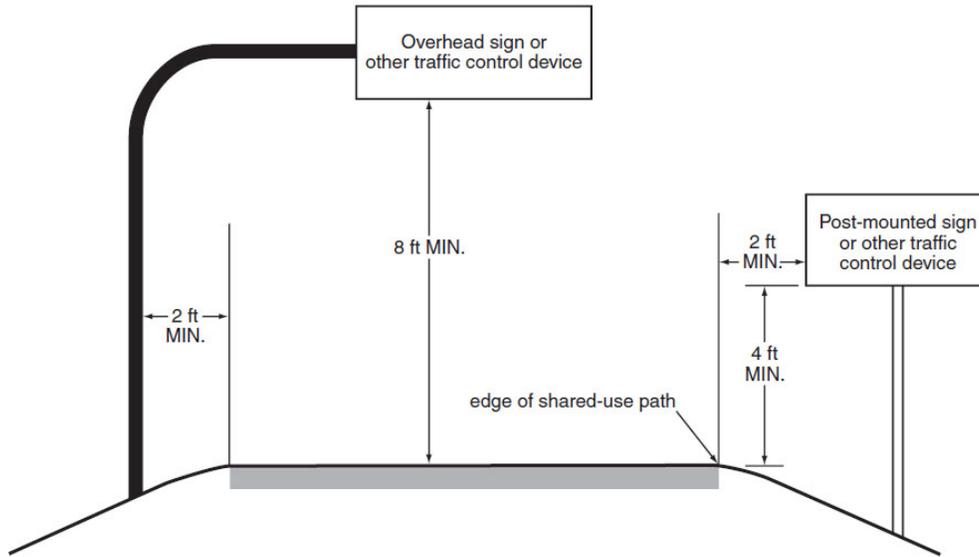
Technical Guidance

A variety of standards and guidelines influence both the sign designs and placement of wayfinding elements in Wichita. This section will address national standards for wayfinding signage.

AASHTO Guide for the Development of Bicycle Facilities

The Guide for the Development of Bicycle Facilities by the American Association of State Highway Transportation Officials, or AASHTO, provides information on the physical infrastructure needed to support bicycling facilities. The AASHTO guide largely defers to Part 9 of the Manual on Uniform Traffic Control Devices, or MUTCD (discussed in the following section) for basic guidelines related to the design of wayfinding systems for bicycles. Additional information provided by AASHTO regarding wayfinding is as follows:

- Many communities find that a wayfinding system for bicycles is a component of a bicycle network that enhances other encouragement efforts, because it provides a visible invitation to new bicyclists, while also encouraging current bicyclists to explore new destinations.
- Bicycle wayfinding signs should supplement other infrastructure improvements so that conditions are favorable for bicycling, as signs alone do not improve safety or rider comfort.
- Guide signs may be used to designate continuous routes that may be composed of a variety of facility types and settings.
- Wayfinding guidance may be used to provide connectivity between two or more major bicycle facilities, such as a street with bike lanes and a shared use path.
- Wayfinding may be used to provide guidance and continuity in a gap between existing sections of a bikeway, such as a bike lane or shared use path.
- Road/path name signs should be placed at all path-roadway crossings to help users track their locations.
- Reference location signs (mile markers) assist path users in estimating their progress, provide a means for identifying the location of emergency incidents, and are beneficial during maintenance activities.
- On a shared use path, obstacles, including signs, shall be placed no closer than 24 inches from the near edge of the travel way and no more than 6 feet away. For pole mounted signs, the lowest edge of the sign shall be 4 – 5 feet above the existing ground plane.



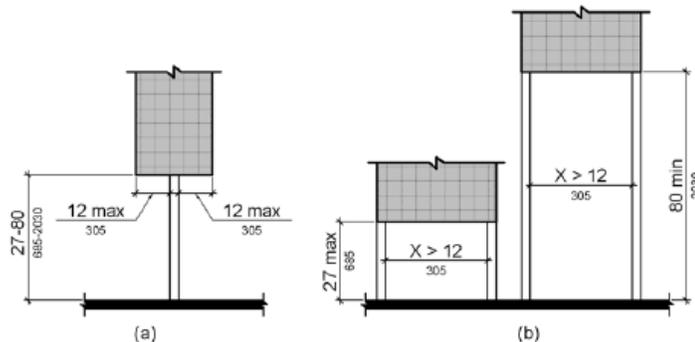
MINIMUM SIGN CLEARANCES ON SHARED-USE PATHS

Accessibility Standards

As wayfinding systems often related to accessible routes or pedestrian circulation, it is important to consider technical guidance from the ADA so that signs and other elements do not impede travel or create unsafe situations for pedestrians and/or those with disabilities. The Architectural and Transportation Barriers Compliance Board provides guidance for accessible design for the built environment. Standards which should be considered when designing and placing wayfinding signs includes the following:

Vertical Clearance

Vertical clearance shall be 80 inches high minimum, or 27 inches maximum when signs protrude more than 12 inches from the sign post or support structure.



Post-Mounted Objects

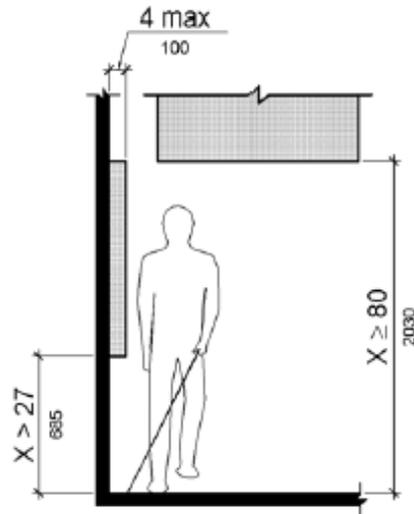
Where a sign or other obstruction is mounted between posts or pylons and the clear distance between the posts or pylons is greater than 12 inches, the lowest edge of such sign or obstruction shall be 27 inches maximum or 80 inches minimum above the finish floor or ground.

Protruding Objects

Objects with leading edges more than 27 inches and not more than 80 inches above the finish floor or ground shall protrude 4 inches maximum horizontally into the circulation path.

Required Clear Width

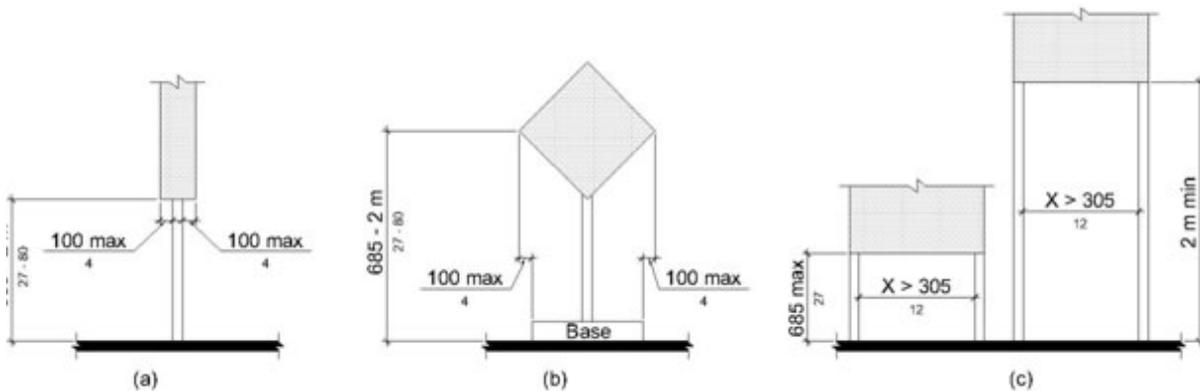
Protruding objects shall not reduce the clear width required for accessible routes. Generally this requirement is met by maintaining four feet minimum clear width for maneuvering. This requirement applies to both sidewalks and pedestrian circulation paths.



LIMITS OF PROTRUDING OBJECTS

Shared Use Paths

Accessibility standards for shared use paths are currently being developed. Proposed standards address post mounted objects as follows. Where objects are mounted on free-standing posts or pylons and the objects are 27 inches minimum and 80 inches maximum above the finish surface, the objects shall overhang pedestrian circulation paths 4 inches maximum measured horizontally from the post or pylon base. The base dimension shall be a minimum of 2.5 inches thick. Where objects are mounted between posts or pylons and the clear distance between the posts or pylons is greater than one foot, the lowest edge of the object shall be 27 inches maximum or 80 inches minimum above the finish surface.



CURRENT PROPOSED STANDARDS FOR POST MOUNTED OBJECTS ALONG SHARED USE PATHS.

Manual on Uniform Traffic Control Devices (MUTCD)

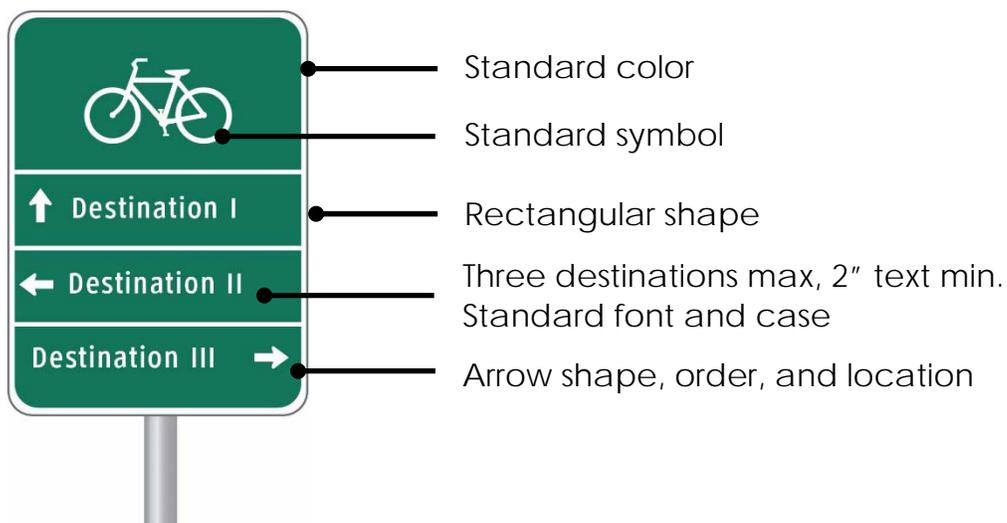
Bicycle Sign Standards

The Manual on Uniform Traffic Control Devices, or MUTCD, is a document issued by the the Federal Highway Administration of United States Department of Transportation. The MUTCD specifies the standard for all traffic control devices installed on any street, highway, bikeway, or private road open to public travel. The MUTCD was established in order to achieve uniformity and consistency in traffic control devices (wayfinding signage is considered a traffic control device) so that information would be readily recognized and understood by travelers. Both on-street and off-street bicycle facilities are required to follow the standards within the MUTCD.



Per the MUTCD, devices should be designed so that:

- Size, shape, color, composition, lighting or retro-reflection, and contrast are combined to draw attention to the devices; simplicity of message combine to produce a clear meaning.
- Legibility and size combine with placement to permit adequate time for response.
- Uniformity, size, legibility, and reasonableness of the message combine to command respect.



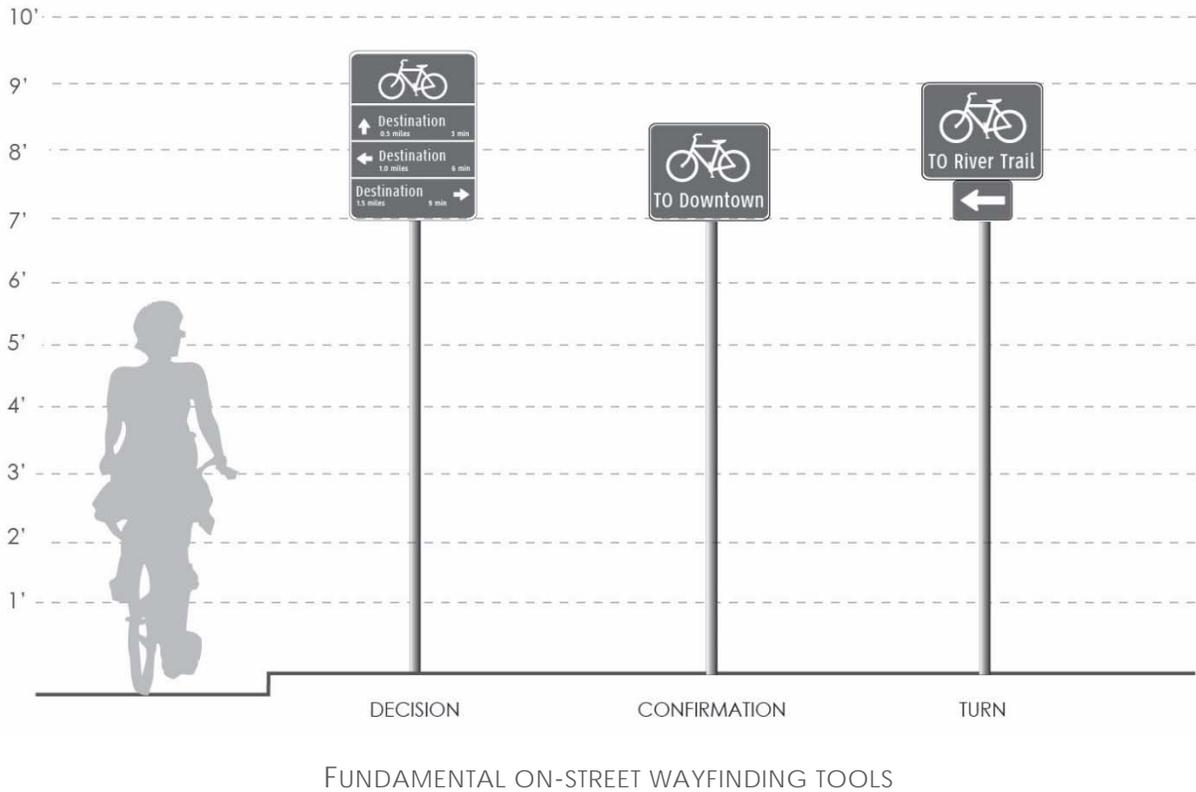
STANDARD MUTCD COMPLIANT DIRECTIONAL OR DECISION SIGN

The MUTCD also recommends the arrangement and amount of text, or legend, on each section of each sign:

- Guide signs should be limited to no more than three lines of destinations, which include place names, route numbers, street names, and cardinal directions.
- A straight ahead location should always be placed in the top slot followed by the destination to the left and then the right. If two destinations occur in the same direction, the closer destination should be listed first followed by the farther destination.
- Arrows shall be depicted as shown above for glance recognition, meaning straight and left arrows are to be located to the left of the destination name, while an arrow indicating a destination to the right shall be placed to the right of the destination name. The approved arrow style must be used.
- 19 characters (including spaces) in titlecase should be considered a maximum length for a single destination title. 10-14 characters (including spaces) in titlecase should be considered an ideal maximum length for a single destination title.
- In situations where two destinations of equal significance and distance may be properly designated and the two destinations cannot appear on the same sign, the two names may be alternated on successive signs.
- Approved fonts include the Federal Series (series B, C, or D), also known as Highway Gothic. Clearview is also currently approved for use, however the FHWA is considering rescinding the use of Clearview.
- A contrast level of 70% needs to be achieved between foreground (text and graphics) and background.

Fundamental Navigational Elements

The fundamental family of signs which provide cyclists with navigational information consists of decision, confirmation, and turn signs. The function, content, and placement of each are described below.



Decision Sign

Function and content: Decision signs clarify route options when more than one potential route is available. System brand mark, space for up to three destinations, distance in miles and time (based on 10 mph or 6 minute per mile travel speed). Decision signs may include specific route or path name.

Per the FHWA’s Standard Highway Sign Manual, the standard size for a three line destination sign is 18 inches high by 30 inches wide, however many municipalities use a vertical format sign being 24 inches wide by 30 or 36 inches tall. This is accomplished by omitting the bicycle symbol from each separate line and instead having a single bike symbol at the top of the sign. Generally providing six inches of vertical space per destination line allows for the 2 inch minimum text height. Sign width is not standardized by the MUTCD. These dimensions apply to both on and off-street bicycle facilities.

Placement: Decision signs should be placed prior to decision making points or intersections with routes having bicycle facilities. Sufficient distance prior to the intersection should be provided to allow for safe recognition and response to information provided. Care should be taken so that the turn or options the sign refers to

are obvious. Decision signs should not be placed near side or access paths that could be confused with the primary route.

Confirmation Sign

Function and Content: Placed after a turn movement or intersection to reassure cyclists that they are on the correct route. System brand mark and route or pathway name may be included. A minimum size of 24" wide by 18" high should be used for bike route signs whether on-street or off-street.



CONFIRMATION SIGNS MAY BE AS SIMPLE AS A STANDARD "BIKE ROUTE" SIGN OR THEY MAY INCLUDE INFORMATION REASSURING THAT WHICH DESTINATIONS ARE AHEAD

Placement: Signs should be placed 50 – 100 feet after turns. Confirmation signs need not occur after every intersection. They should be prioritized at locations where a designated route is not linear as well as after complex intersections. Complex intersections include those having more than four approaches, non-right angle turns, roundabouts, or in-direct routing.

Turn Sign

Function and Content: Used to clarify a specific route at changes in direction when only one route option is available. System brand mark, route or pathway name, directional arrow. Standard D1-1 series signs may be used to indicate turns. Similar to decision signs a minimum height of 6" should be used and width may vary according to destination length.

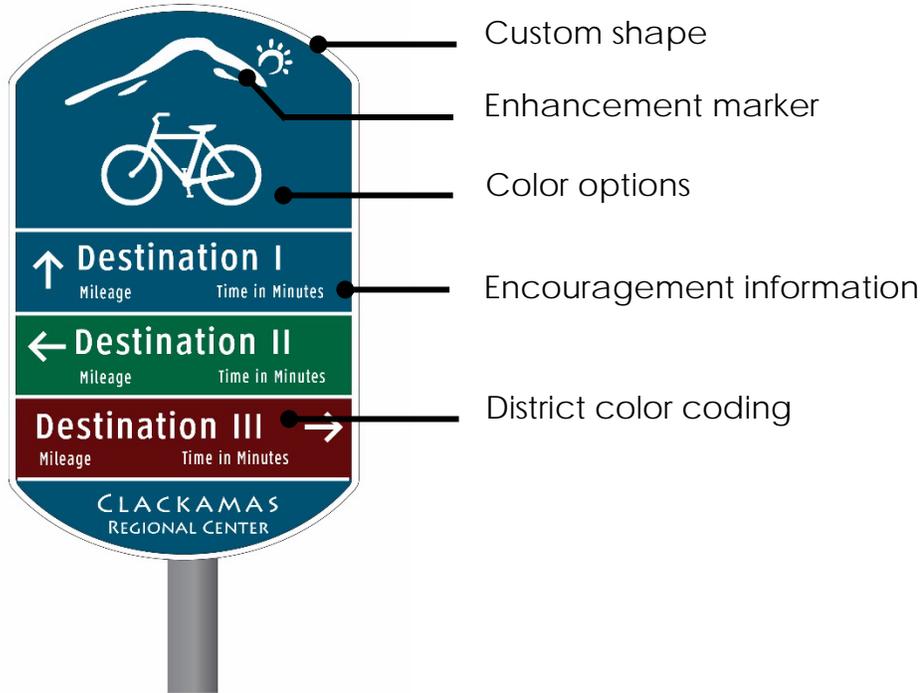
Standard turn arrow signs (M5 and M6 series) may also be used in conjunction with bike route signs to clarify turn movements.

Placement: Placed at turns prior to the turning action to provide cyclists advance notice of a change in direction. Also may be used in conjunction with a decision sign at complex intersections warranting additional information.



DIRECTIONAL ARROWS MAY BE ADDED TO A BIKE ROUTE SIGN TO CLARIFY THE NEED FOR A TURN MOVEMENT, CHICAGO, IL

identification enhancement marker for destinations within an overall wayfinding guide sign plan for an area.



FLEXIBLE DIRECTIONAL OR DECISION SIGN INCORPORATING COMMUNITY WAYFINDING STANDARDS.

The design of the directional arrows shown above provides clarity, but is not approved for use by the FHWA. The standard arrow has been deemed by engineering study to have superior legibility. Enhancement markers may occupy up to 20% of the sign face on the top or side of the sign.

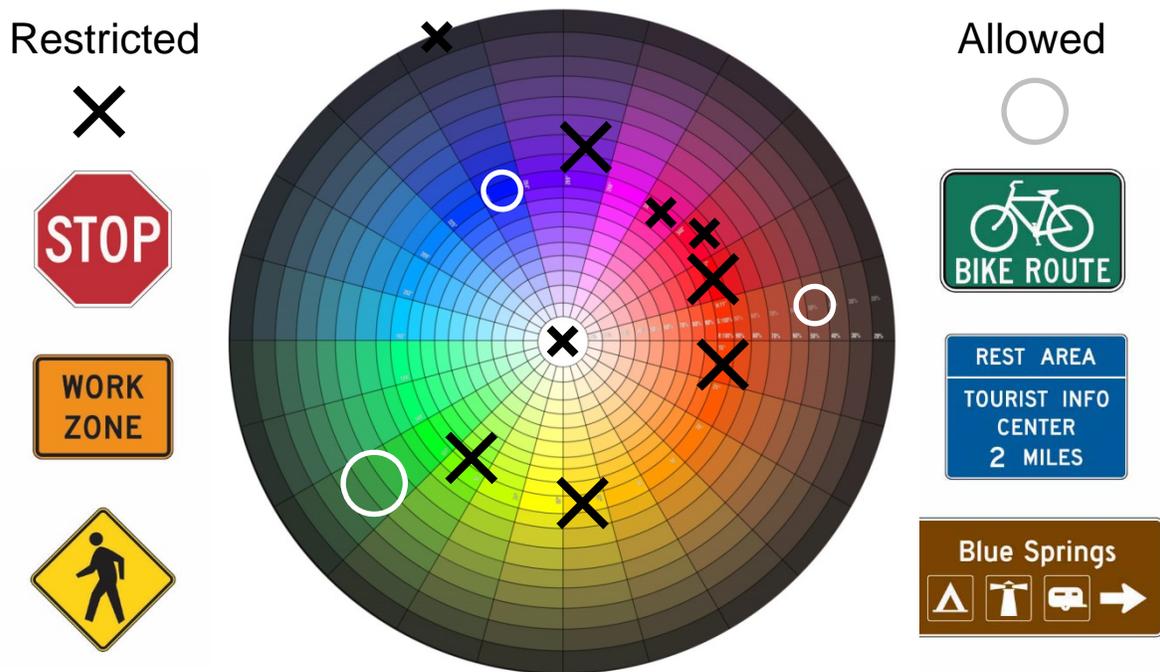
Colors

Per the community wayfinding standards, color coding may be used on wayfinding guide signs to help users distinguish between multiple potentially confusing traffic generator destinations located in different neighborhoods or subareas within a community or area. Community wayfinding guide signs may use background colors other than green in order to provide a color identification for the wayfinding destinations by geographical area within the overall wayfinding guide signing system.

The MUTCD prohibits the use of some colors for wayfinding signs, these colors are known as "assigned colors". The "assigned colors" consist of the standard colors of red,

orange, yellow, purple, or the fluorescent versions thereof, fluorescent yellow-green, and fluorescent pink. They cannot be used as background colors for community wayfinding guide signs, in order to minimize possible confusion with critical, higher-priority regulatory and warning sign color meanings readily understood by road users.

The color wheel diagram below depicts colors which are already assigned specific meanings and thus shall not be used on community wayfinding signs. Green is the standard color for guide signs. Blue and brown are also used for traveler information including destination and street name signs. The remaining colors are eligible for use on community wayfinding signs as long as they are sufficiently different from the "assigned colors".



EACH OF THE COLORS DEPICTED WITH AN "X" ARE NOT ALLOWED FOR USE ON COMMUNITY WAYFINDING SIGNS. GREEN, BLUE, AND BROWN ARE APPROVED FOR USE ON TRAVELER INFORMATION SIGNS AND HAVE BEEN ACCEPTED BY SOME DOTs FOR WAYFINDING SIGNS. THE REMAINING COLORS NOT HAVING RESTRICTED USES ARE APPROPRIATE FOR WAYFINDING SIGNS PER THE COMMUNITY WAYFINDING STANDARDS.

Flexibility in Standards

Both the FHWA and USDOT have made statements in recent years encouraging a flexible approach in support of facilities for biking and walking:

"...DOT encourages transportation agencies to go beyond the minimum requirements, and proactively provide convenient, safe, and context-sensitive facilities that foster increased use by bicyclists and pedestrians of all ages and abilities, and utilize universal design characteristics..." (2010)

Federal Highway Administration's (FHWA) support for taking a flexible approach to bicycle and pedestrian facility design. (2013)

While the MUTCD provides standards and guidelines for the design, size, and content of wayfinding signs, many jurisdictions have implemented unique signs to enhance visibility while reinforcing local identity. The MUTCD Spectrum figure below shows a range of wayfinding elements that have been implemented by municipalities around the nation. The range extends from rigid MUTCD on the left to the more flexible options on the right. Signs which adhere to the MUTCD basic minimum standards are readily understood by a wide audience, are economical, and simple to fabricate and maintain. They also are clearly eligible to be implemented utilizing federal transportation funding resources. Signs that follow the community wayfinding standards may be more costly to design, fabricate, and maintain, however they have the added benefits of reflecting local character and identity. If a precedent has not already been set, the Kansas Department of Transportation should be consulted to verify that community wayfinding standards may be applied to bikeways while retaining eligibility for federal transportation funds.

MUTCD Spectrum

Rigid



- MUTCD compliant signs
- Information is clear and consistent.
- Regional context or local identity not present.
- Variation in sign sizes and shapes.
- Encouragement information not present.



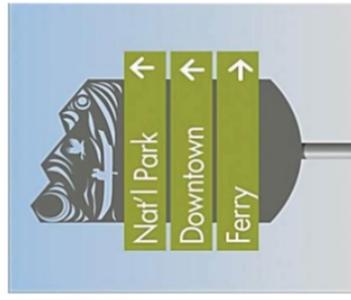
- D1 series signs consolidated into a single sign reduces the number of signs required, overall sign clutter, and sign dimensional variation.
- MUTCD does not provide for travel times however numerous cities and states (Portland OR, Eugene OR, Nampa ID, Columbus, OH and Jackson WY) incorporate this additional information.



- Community signs may be augmented by unique system or municipality identifiers or enhancement markers as per Section 2D.50.
- MUTCD allows for custom color variations for community wayfinding signs.



- Directional sign with clear directional information and arrows, high contrasting text, custom sign post, and decorative elements.



- Custom framing and support structures. Unique sign shapes. High contrast graphic content, non-standard colors and layout.

Flexible



Supplemental Information – Distance and Time

The addition of measuring distance in terms of miles and minutes has been employed by a number of cities in the United States. Adding distance in familiar units has been found to be an effective encouragement tool to bicycling. While asking someone to ride their bike two miles may sound daunting, the thought of riding for twelve minutes is typically approachable. A no sweat pace of 10 miles per hour or 6 minutes per mile is the typical pace used on wayfinding signs. This is lower than typical bicycle design speed in order to best reflect and encourage the riding speed of the casual rider.

Enhanced Wayfinding Tools

Pavement Markings

Directional pavement markings indicate confirmation of bicyclist presence on a designated route and where bicyclists should turn. Especially in urban settings, pavement markings can often be more visible and can help supplement or reinforce signage.

On-Street Markings

The following images show different types of pavement markings that have been used for wayfinding purposes. While the shared line marking is currently the only FHWA approved pavement marking shown, cities have experimented with the other options.



Standard



Flexible

Mile Markers

Mile markers aid pathway users with measuring distance travelled. They further provide pathway managers and emergency response personnel points of reference to identify field issues such as maintenance needs or locations of emergency events. System brand mark, path name, and distance information in miles may be included as well as jurisdiction identification.

Mile markers should be placed every $\frac{1}{4}$ to $\frac{1}{2}$ mile along a pathway network. Point zero should begin at the southern and westernmost terminus points of a pathway. Mile numbering should be reset at zero as a pathway crosses a jurisdictional boundary.

Although it is ideal to place mile markers on the right hand side of the path facing bicycle traffic, they may also be installed on one side of a pathway, on a single post back-to-back.



Street Name Sign Blades

MUTCD standard street name sign blades have been enhanced by a wide number of municipalities around the nation to provide additional recognition of bikeways. Enhancements have been achieved either in the form of supplemental signs and sign toppers added to existing signs or via graphic embellishments integrated into new sign blades.

Good wayfinding practice also includes the use of street name sign blades on off-street pathways in reference to the roadway network. Numerous cities follow the practice of indicating cross streets at bridges, underpasses, and at-grade roadway crossings to inform pathway users of their location.



NEIGHBORHOOD GREENWAY SIGN TOPPER IN PORTLAND, OR (PHOTO: JONATHAN MAUS/BIKEPORTLAND.ORG)

Green, blue, and brown are all accepted colors for street name sign blades according to the MUTCD, as long as colors are used consistently across the City.



SIGN TOPPER-SHAPED ONE-PIECE SIGN ON KENDALL AVENUE BIKE BOULEVARD IN MADISON, WI



YUCCA STREET SIGN TOPPER IN LOS ANGELES, CA. BOTH THE SIGN TOPPER (FOREGROUND) AND THE WIDER, TWO-COLOR BLADE VERSION (BACKGROUND) CAN BE SEEN.

Map Kiosks

Kiosks with area and/or citywide orientation maps, can provide helpful navigational information, especially where bicyclists may be stopping long enough to digest more information (i.e. transit stations or stops, busy intersections, trail heads). The use of icons and high contrasting colors is a good practice which makes maps comprehensible to a wide audience.

Adding circles that indicate walk and bike times provides encouragement to explore urban areas. Additionally, orienting signs with respect to the audience's view (or, a heads up orientation) is considered by wayfinding practitioners to be more intuitive than maps where north is at the top. High contrast graphics and the use of color coded areas or districts help make maps comprehensible to a wide audience.



ORIENTATION MAP WITH COLOR CODED DISTRICTS (LEFT) AND MAP INTEGRATED INTO A COVERED BICYCLE PARKING FACILITY, PORTLAND, OR



Kiosks with maps are also a useful resource for trail users. Again the use of high contrast, simple graphics and icons enhances legibility for a broad spectrum of users. Kiosks should contain information on trail or path rules and regulations including allowed uses. Emergency contact information is also typically present. Interpretive or educational information may also be integrated. Per the ADA standards, trailhead facilities built with federal funds shall include the following information:

1. Length of the trail or trail segment;
2. Surface type;
3. Typical and minimum tread width;
4. Typical and maximum running slope; and
5. Typical and maximum cross slope.

Destination Selection and Prioritization

Standards do not exist for selecting and prioritizing wayfinding information on signs. Given that only three slots of information or destinations may be used on bicycle oriented sign, a rationale for choosing which destinations will be signed needs to be developed. Example cities and regions have utilized the following approach.

Priority/Place	<i>Metro Phoenix, AZ</i>	<i>Oakland, CA</i>	<i>Metro Vancouver, BC</i>
Primary	Cities, large communities - 3 miles	Cities, large communities - 5 miles	Cities, large communities - 3 km
Secondary	Districts - 2 miles	Districts - 2 miles	Districts - 2 km
Tertiary	Regional landmarks - 1 mile	Regional landmarks - 1 mile	Regional landmarks - 1 km
Quaternary	Local destinations - 1 mile		Local destinations - 1 km

Resources

Accessibility Standards. US Access Board, 2012. <http://www.accessboard.gov/guidelines-and-standards>

"Design Guidelines for Bicycle Wayfinding." City of Oakland, CA, 2009.

"Manual on Uniform Traffic Control Devices." *Manual on Uniform Traffic Control Devices*. Department of Transportation, 2009. <http://mutcd.fhwa.dot.gov/index.htm>

"Guide for the Development of Bicycle Facilities, Fourth Edition." American Association of State Highway Transportation Officials, 2012.

"Standard Highway Signs," Federal Highway Administration, 2012.

"Wayfinding Signs for Shared-Use Paths." National Committee on Uniform Traffic Control Devices, Spring 2014. <http://www.ncutcdbtc.org/sponsors.html>