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MEMORANDUM

To: Tessa Greigor, City of Fort Collins
From: Josh Mehlem, Alta Planning + Design
Date: April 28, 2015
Project: Fort Collins Wayfinding System Plan
Subject: Wayfinding Best Practices Memo

This memo summarizes best practices and general signage guidelines associated with a community bicycling wayfinding system plan, building on the recommendations from the 2014 Fort Collins 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 will be incorporated into the overall Fort Collins 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 aims to explain what is involved in effective wayfinding using well-researched and proven practices.

Core Wayfinding Principles

The legibility of a place describes how easy it is to understand. Places that are arranged intuitively so that we can see obvious destinations from a distance, determine pathways, and recognize areas of different character are more legible. Logical wayfinding in the case of Fort Collins means an individual is capable of easily and successfully finding their way to their destination, able to understand where they are with respect to other key locations, and that they can orient themselves in an appropriate direction with little effort or stress.

In addition, an effective wayfinding system presents opportunities to discover new places and services and includes a consistent approach to placement and design working within local, state, and federal guidelines. The choices of sign materials, dimensions, colors, and forms should be cohesive to enhance legibility and community identity. Similarly, maps should employ consistent symbology, fonts, colors, and style.

In order to achieve a more navigable bicycle network, five core principles define the navigational goals of the Fort Collins Wayfinding System Plan. These principles are based on best practices for creating a clear wayfinding experience.

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. It has the capacity to improve local economic wellbeing by encouraging locals to utilize services within their own neighborhood or city. By being a reflection of local community values, wayfinding elements can also cultivate a sense of pride in one's community resulting in a deeper connection to place.

2 : Promote Active Travel

Wayfinding is a natural extension of existing efforts to 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.

3 : Maintain Motion

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

When information is predictable, it can be quickly understood and recognized. Predictability should relate all aspects of wayfinding information, from the placement of a sign, to the design and its contents. 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.

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 core principles combine to create a wayfinding system plan that is both legible and easy to navigate. These principles will be applied in the Fort Collins 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 Fort Collins. This section will address national standards for wayfinding signage.

Bicycle Signs

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, which is 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 2' from the near edge of the travel way and no more than 6' away. For pole mounted signs, the lowest edge of the sign shall be 4 – 5' above the existing ground plane.

Manual on Uniform Traffic Control Devices (MUTCD)

Bicycle Sign Standards

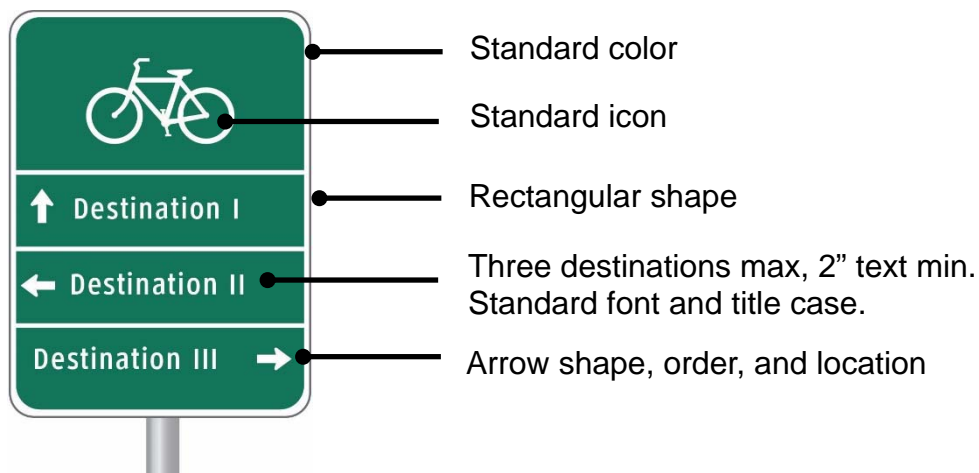
The Manual on Uniform Traffic Control Devices, or MUTCD, is the national standard for all traffic control devices installed on any street, highway, bikeway, or private road open to public travel. The MUTCD was established in order to achieve uniformity and consistency in traffic control devices (wayfinding 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:

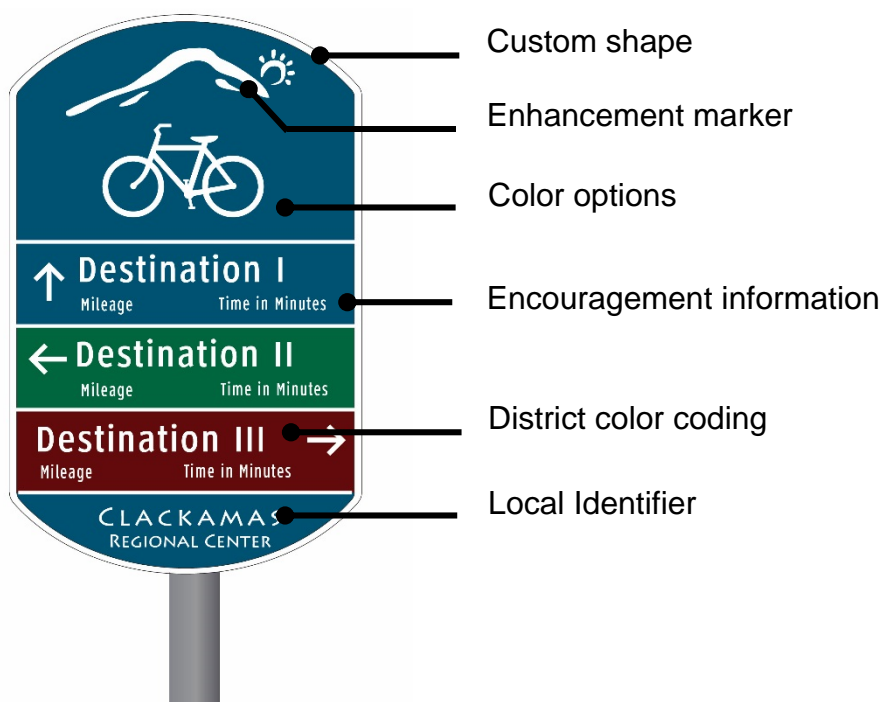
- Guide signs should be limited to no more than three lines of destinations, which include place names, route numbers, street names, and cardinal directions.
- A straight ahead location should always be placed in the top slot followed by the destination to the left and then the right. If two destinations occur in the same direction, the closer destination should be listed first followed by the farther destination.
- 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.
- 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.
- 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.

Bicycle wayfinding signs on any bicycle facility should be placed so as to not distract vehicular traffic. In general, orientation toward the physically-separated bicycle facility and away from the street accomplishes this. If the facility is two-way, signs displaying wayfinding guidance for and facing both directions of traffic should be provided.

On curved alignments, the angle of placement should be determined by the direction of approaching traffic rather than by the roadway edge at the point where the sign is located.

Wayfinding signs, which allow for an expression of community identity and pride, reflect local values and character, and may provide more information than signs which strictly follow the basic guidance of the MUTCD. Section 2D.50 of the MUTCD describes community wayfinding signs as follows:

1. Community wayfinding guide signs are part of a coordinated and continuous system of signs that direct tourists and other road users to key civic, cultural, visitor, and recreational attractions and other destinations within a city or a local urbanized or downtown area.
2. Community wayfinding guide signs are a type of destination guide sign for conventional roads with a common color and/or identification enhancement marker for destinations within an overall wayfinding guide sign plan for an area.



FLEXIBLE DIRECTIONAL OR DECISION SIGN AS PER THE COMMUNITY WAYFINDING STANDARDS. THE DIRECTIONAL ARROWS ABOVE, WHICH ARE PREFERRED BY WAYFINDING PROFESSIONALS, ARE NOT CURRENTLY COMPLIANT. ADDITIONALLY, ENHANCEMENT MARKERS ARE ONLY SUPPOSED TO BE ON THE TOP OF THE SIGN).

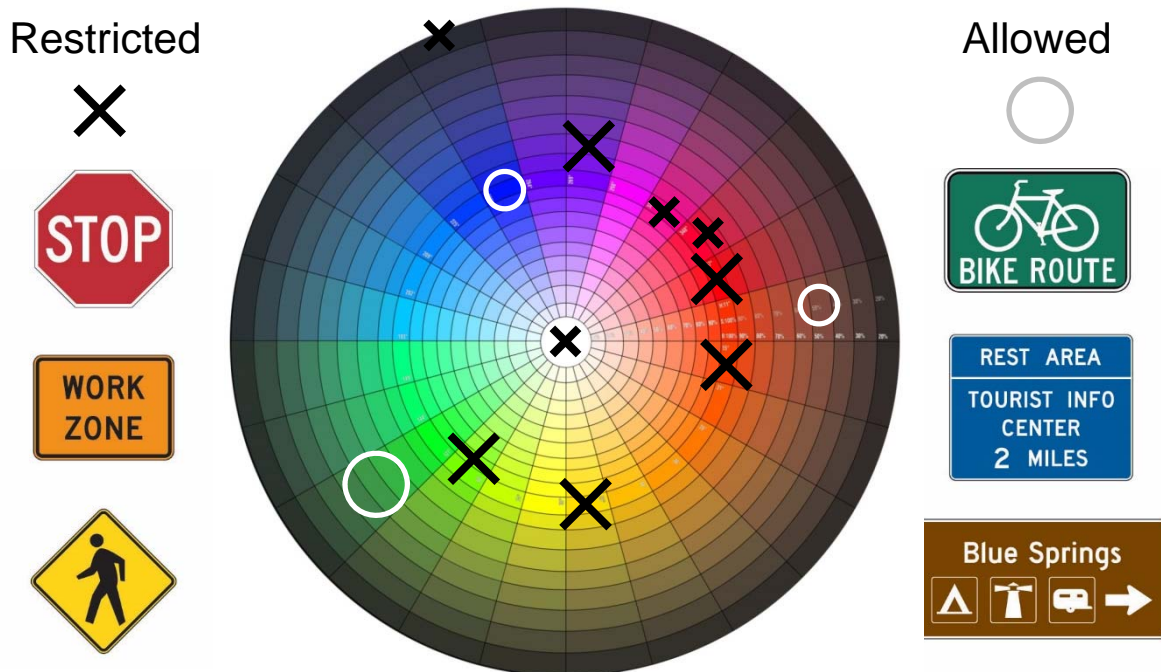
Colors

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 standard colors of red, orange, yellow, purple, or the fluorescent versions thereof, fluorescent yellow-green, and fluorescent pink shall not 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 ACCEPTABLE ON WAYFINDING SIGNS, AS ARE OTHER NON-RESTRICTED COLORS.

Flexibility in Standards

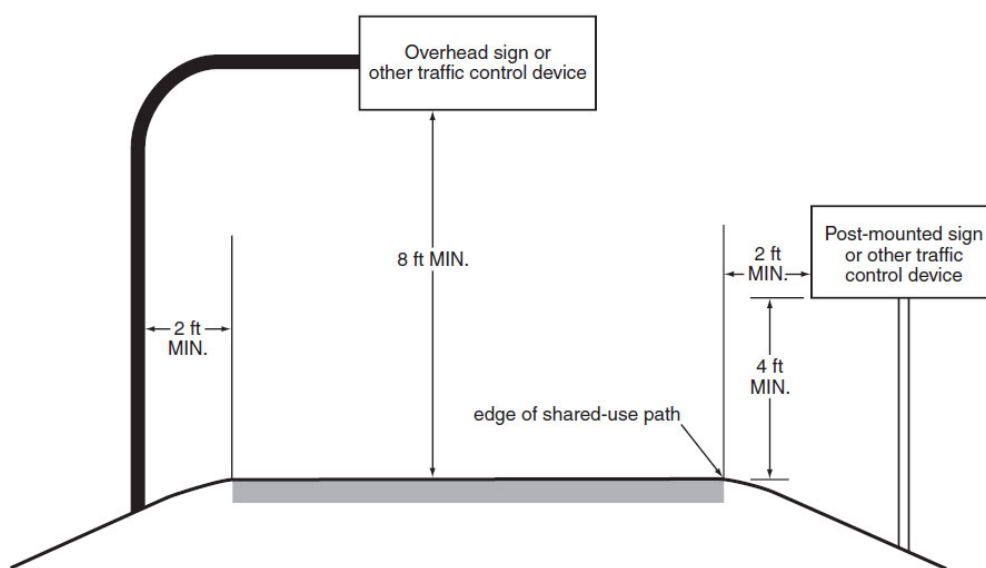
Both the FHWA and USDOT have made statements in recent years encouraging a flexible approach in support of facilities for biking and walking:

"...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 Colorado Department of Transportation should be consulted to verify that community wayfinding standards may be applied to bikeways while retaining eligibility for federal transportation funds.



Minimum Sign Clearances on Shared-Use Paths MUTCD 9B-1

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.

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.



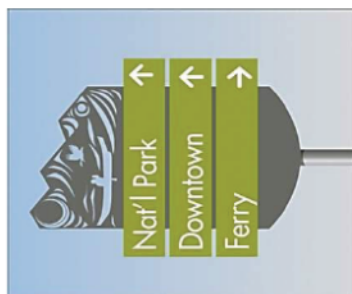
- D1 series signs consolidated into a single sign reduces the number of signs required, overall sign clutter, and sign dimensional variation.
- MUTCD does not provide for travel times however numerous cities and states (Portland OR, Eugene OR, Nampa ID, Columbus, OH and Jackson WY) incorporate this additional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



National Committee on Uniform Traffic Control Devices (NCUTCD)

The NCUTCD is an organization whose purpose is to assist in the development of standards, guides and warrants for traffic control devices and practices used to regulate, warn and guide traffic on streets and highways. The NCUTCD has recently recommended changes to the MUTCD that would formalize the customization of wayfinding signs for shared use paths. Standards would closely follow guidance provided for community guide signs which allow custom colors and identifying brand marks.

Americans with Disabilities Act (ADA) Guidance

When wayfinding systems have maps and kiosks in addition to directional wayfinding elements, it is important to consider technical guidance from the ADA so that signs and other elements do not impede pedestrian 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. Guidance 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.

Protruding Objects

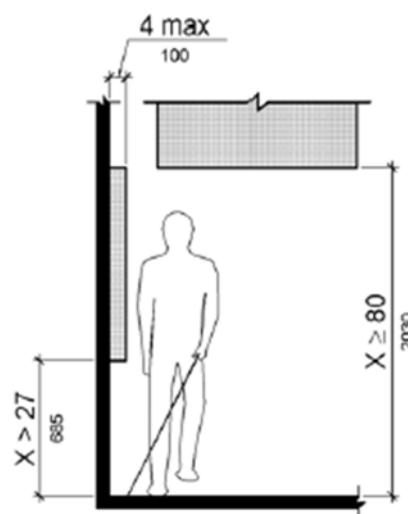
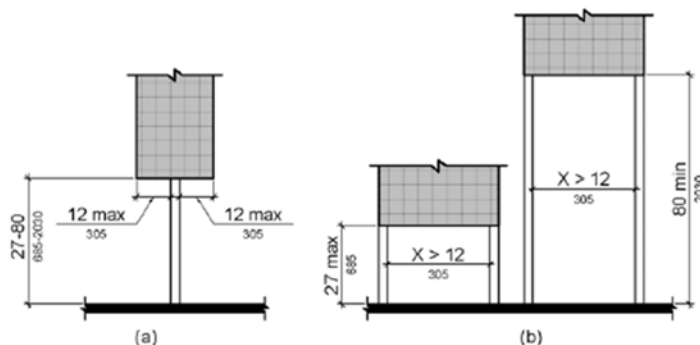
Objects with leading edges more than 27 inches and not more than 80 inches above the finish floor or ground shall protrude 4 inches maximum horizontally into the circulation path.

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.

Required Clear Width

Protruding objects shall not reduce the clear width required for accessible routes.



Limits of Protruding Objects

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

In Berkeley, CA and Minneapolis, MN, some bicycle boulevards have large “Bicycle Boulevard” stencils that take up nearly the entire width of one travel lane.

The images below shows different types of pavement markings that have been used for wayfinding purposes.

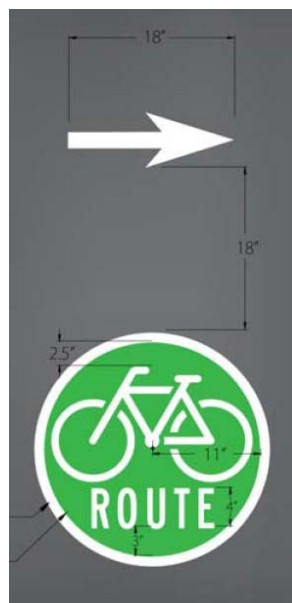
While the shared line marking is currently the only FHWA approved pavement marking shown, cities have experimented with the other options.

Portland, OR, has turned that chevrons on the top of the MUTCD-standard shared lane marking (sharrow) to indicate the direction of intended travel (second photo from left in the four-photo matrix). Notably, this practice is not FHWA approved or eligible for federal funding. Local transportation engineers are confident that the benefits of the turned chevrons outweigh the risks. Portland installs standards shared lane markings with federal funds, and then makes modifications later with local monies to add the directional wayfinding component.

St. Louis, MO, is currently conducting an FHWA approved experiment regarding the use of small wayfinding medallions on both on- and off-street bikeways (third image from left). Note: The City is also no longer using the arrow with the Bike St. Louis logo and text.



BERKELEY'S LARGE BICYCLE
BOULEVARD WAYFINDING
PAVEMENT MARKINGS



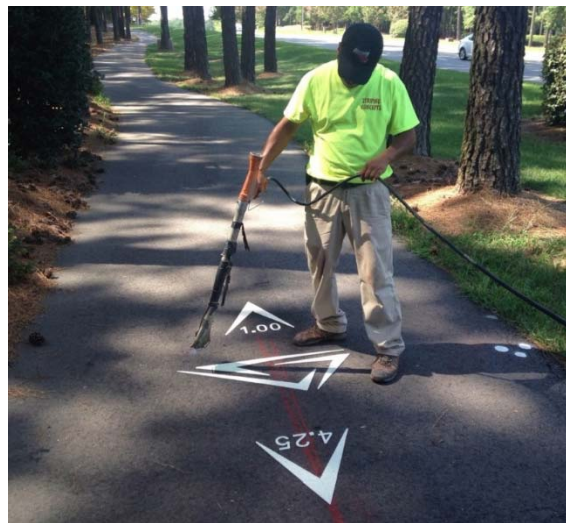
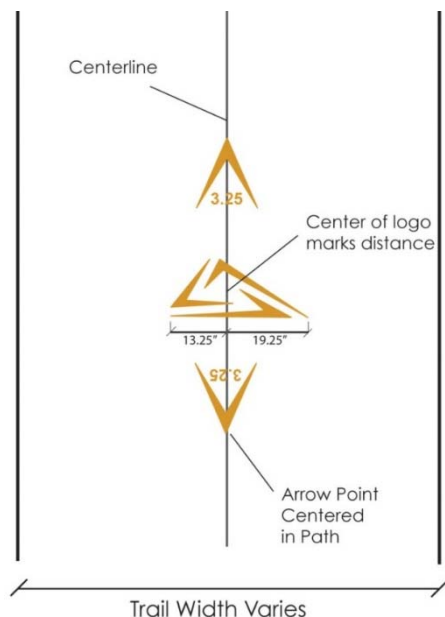
Standard



Flexible

Off-Street Markings

Some pavement markings, including off-street shared use path markings can give an identity to the route and include directional and trip information, including distances or times. While such markings are not included as traffic control devices within the MUTCD, numerous agencies around the nation follow such practices.



RESEARCH TRIANGLE PARK, NORTH CAROLINA

Sign Enhancements

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.

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.



*SE Clinton St Sign Topper in Portland, OR
(Photo: Jonathan Maus/BikePortland.Org)*



Sign Topper-shaped one-piece sign on Kendall Avenue Bike Boulevard in Madison, WI



Yucca St 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.

The MUTCD includes a series of symbols which are approved for use on wayfinding signs. Adding circles that indicate walk and bike times provides encouragement to explore. 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.

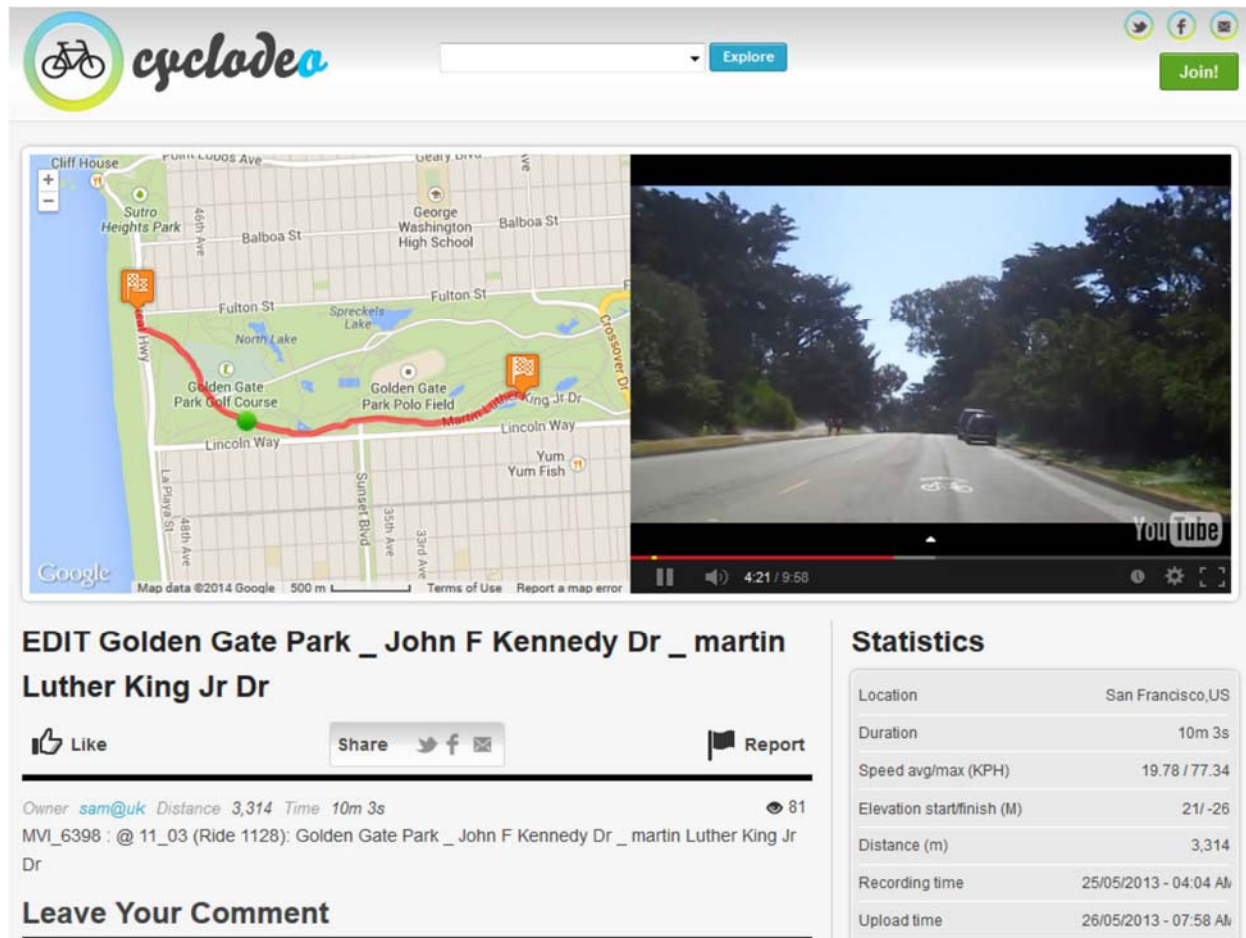


Portland, OR kiosk (left) and map as part of a bicycle parking structure

Technology

Cyclodeo

Cyclodeo, a Dutch startup company, has created an on-line collection of geo-tagged bike route videos. The video clips cover several bikeable cities including Amsterdam, Copenhagen, London, New York, NY, and San Francisco, CA. The clips are linked to online maps which allow internet users to select a route and watch an associated ride. The virtual bike rides allow potential riders to preview a route they may be interested in riding. Statistics on distance, ride time, elevation, and travel time are included for reference.



The screenshot displays the Cyclodeo website interface. At the top, there is a logo with a bicycle icon and the word "cyclodeo". To the right of the logo is a search bar and an "Explore" button. Further right are social media icons for Twitter, Facebook, and YouTube, along with a green "Join!" button.

The main content area is split into two parts. On the left is a Google Map of San Francisco, specifically Golden Gate Park, with a red line indicating a bike route. The map includes labels for various streets and landmarks like "Cliff House", "Sutro Heights Park", "Golden Gate Park Golf Course", and "Golden Gate Park Polo Field". On the right is a video player showing a first-person perspective of a bike ride along a tree-lined path. The video player has a progress bar and a "YouTube" logo.

Below the map and video, the title of the route is displayed: "EDIT Golden Gate Park _ John F Kennedy Dr _ martin Luther King Jr Dr". Underneath the title are buttons for "Like", "Share" (with social media icons), and "Report".

Below the buttons, the owner information is shown: "Owner sam@uk Distance 3,314 Time 10m 3s". Below this is the route description: "MVI_6398 : @ 11_03 (Ride 1128): Golden Gate Park _ John F Kennedy Dr _ martin Luther King Jr Dr".

At the bottom left, there is a section titled "Leave Your Comment".

On the right side, there is a "Statistics" section with a table of route details:

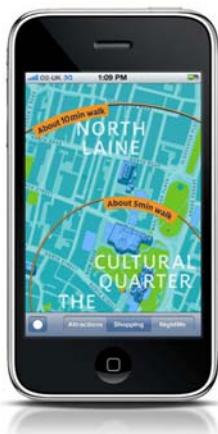
Statistics	
Location	San Francisco, US
Duration	10m 3s
Speed avg/max (KPH)	19.78 / 77.34
Elevation start/finish (M)	21 / -26
Distance (m)	3,314
Recording time	25/05/2013 - 04:04 AM
Upload time	26/05/2013 - 07:58 AM

Image: Cyclodeo.com

Brighton and Hove, England

The Brighton and Hove wayfinding scheme includes signage, printed maps, downloadable maps, and a smart phone app. The wayfinding components are designed to work together, using a consistent brand, visual language, and mapping aesthetic across all media.

The free app includes walking circles—loops that show how long it takes to walk to various points of interest from the user's current location.



Images: Applied Information Group

The colorful map included in the app displays 3D icons of major landmarks. There are options to display attractions, shopping, and nightlife destinations.

Bicycle Signage Case Studies

Intertwine Regional Trails (Portland, OR)

The Portland, OR Metro Area's Intertwine Regional Trail Signage Guidelines can serve as a resource to guide Fort Collins in planning, designing, and fabricating wayfinding signage along regional paths and trails. The Metro Regional Government and its partners developed the manual in response to requests from the public for better uniformity and consistency of signage along regional trails.

Family of Elements

Off-Street Trail Signs

Located along off-street regional shared use paths or trails to provide directional information, including trailhead, trail access, and other directional signage.

Trailhead:

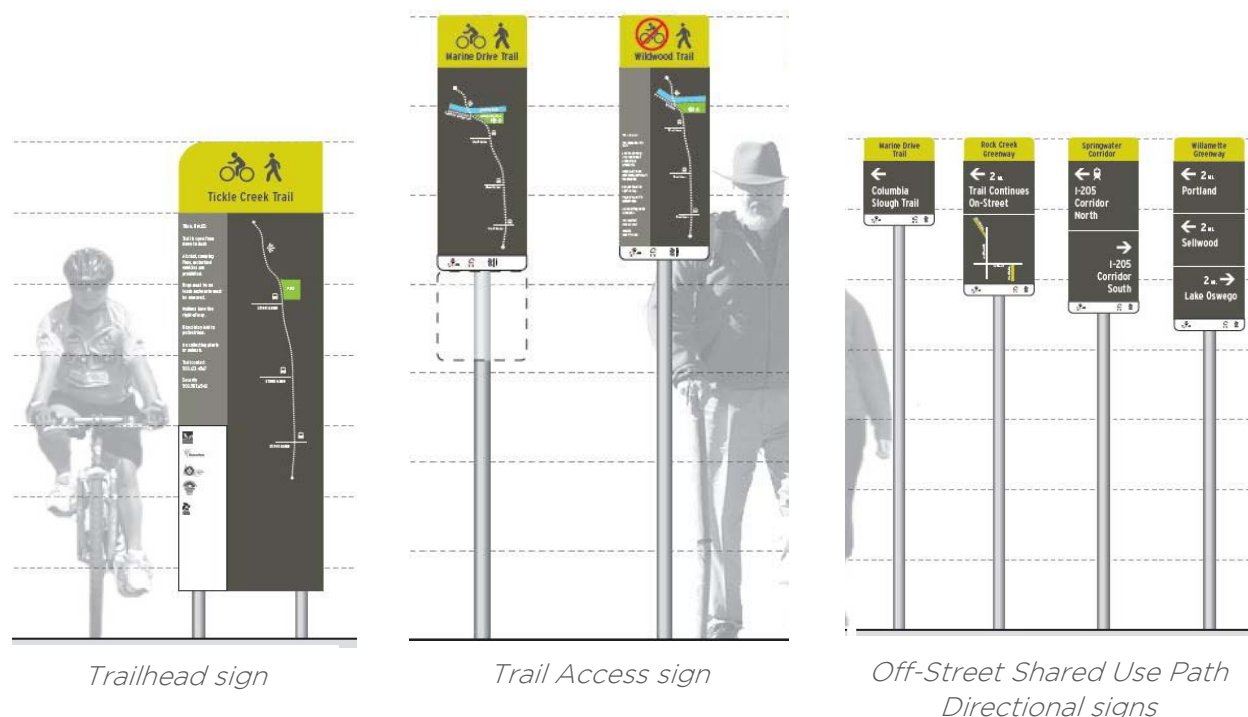
Located at major path and trail access points, this sign type includes a map of the entire path or trail as well as nearby amenities.

Trail Access

Trail Access signs are located at access points where the trail typically meets the street right-of-way. This sign type identifies the path/trail and mode of travel and may include a facility map, directions or other information.

Off-Street Shared Use Path Directional

This sign type is located along off-street regional shared use paths to provide directional information.



On-Street Bicycle Directional

Located in the street right-of-way to connect bicyclists between the off-street and on-street facilities.

All Signs

Mile Marker

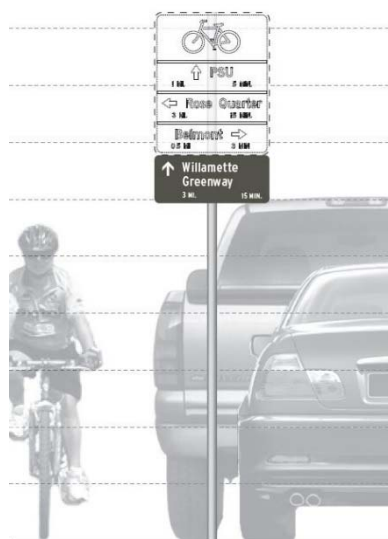
Mile marker signs aid users with measuring distance traveled. They also provide active transportation facility network managers and emergency response personnel points of reference to identify field issues such as maintenance needs or locations of emergency events. System brand mark, distance in whole number miles or decimal miles. Path or route name and jurisdiction may be included. They should be placed every $\frac{1}{4}$ to $\frac{1}{2}$ mile along the network. Point zero should begin at the southern and westernmost terminus points of a route of path. On shared use paths, mile markers may be installed on one side of the pathway, back-to-back.

Intertwine Logo Components

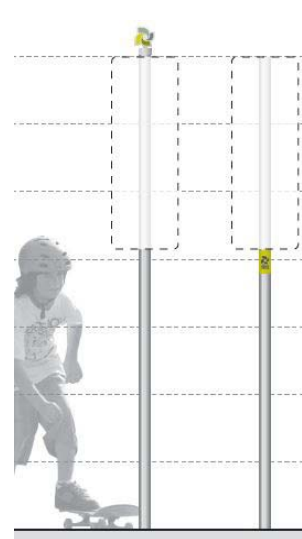
The Intertwine logo is used in combination with other off-street regional path and on-street connection signs and may be added to existing signs as vinyl adhesive or a sign topper to help uniform the system.



Mile Marker sign



On-Street Bicycle Directional sign



Intertwine Logo signs

Best Practices

- High contrast graphics
- Three destinations maximum per sign



Directional/decision sign (left) and Trail Access sign (right). Images: Intertwine Alliance

Jackson Hole, Wyoming

The Jackson Hole, WY bicycle network seeks to appeal to a broad spectrum of riders with safe, inviting, and convenient routes. Signs adhere closely to MUTCD guidance while integrating a custom logo reflecting the area's signature Teton Mountain skyline.

Best Practices

- Custom enhancement marker
- Distances given in physical length and time



Grand Loop Bike Route wayfinding signage in Jackson Hole, WY

Berkeley, California

The City of Berkeley opted to use non-standard purple signs for its bicycle wayfinding network. Signs are painted on both sides with directional information on one side and a reassuring logo on the reverse directed and bicycle traffic coming from the opposite direction as a semi-confirmation sign, indicating that they are still on a bicycle boulevard.

Best Practices

- Unique identifying color
- High visual contrast
- Custom enhancement marker



Channing Avenue Bicycle Boulevard in Berkeley, CA

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