

BICYCLE WAYFINDING GUIDELINES

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1. INTRODUCTION

The purpose of these Guidelines is to establish a comprehensive, consistent, and recognizable wayfinding system for all bicycle facilities in Denver. For the purposes of these Guidelines, a bicycle facility includes a bike lane, buffered bike lane, protected bike lane, neighborhood bikeway, trail, and shared use sidewalk, as identified in Denver Moves: Bikes. The Guidelines will assist City departments, contractors, and other organizations in the design and implementation of standard bicycle wayfinding signage throughout the city. These Guidelines include three key sections:

- Section 2: Sign Types and Placement
- Section 3: Sign Programming
- Section 4: Wayfinding Practices which links the former sections together

Wayfinding is the organized movement of people through an unfamiliar environment. It involves providing layers of information via signage to help people find their way through new places. Wayfinding provides those navigating Denver on bicycles with continuous information, enabling people to find their way without having to stop. This makes wayfinding a critical element of Denver's bikeway network.

The following are guiding principles for the Denver Department of Transportation & Infrastructure (DOTI) bicycle wayfinding system.

- **Comfortable:** As Denver builds out its bike network, wayfinding will encourage use of dedicated bikeways. The wayfinding system should ease navigation and promote use of dedicated bikeways.
- Intuitive: The wayfinding system should be intuitive. Users should easily be able to read a sign, understand its contents, and respond to it by navigating to their chosen destination.
- **Useful:** The wayfinding system should direct people to destinations they want to go.
- **Complete:** The wayfinding system should provide a complete route for each destination.
- **Consistent:** Signs should be consistent in color, shape, size, and location, so the information is predictable and reliable for people bicycling. Sign locations shall not conflict with regulatory signs.
- Legible: Sign text and fonts should be legible from a distance so that people

bicycling can read signs while in motion.

- Clear: Icons and graphics used should not distract users or be confusing to pedestrians or drivers. Information should be simple and easy to understand and should be presented in manageable amounts not to overwhelm or confuse people navigating the bikeway network.
- Mode-Appropriate: Because bicycle signs are smaller, they should not be used as a substitute for vehicular signs.

The scopes for all new bikeway projects should include design and implementation of bicycle wayfinding, per these Guidelines. DOTI should install these signs when the signing and striping for a new bikeway is installed, or when a bikeway is upgraded.

2. SIGN TYPES AND PLACEMENT

A bicycle wayfinding system relies on sign families to guide bicyclists to their destinations along designated bicycle facilities, including bikeways, regional trails, and neighborhood bikeways. The bicycle wayfinding signs for Denver are informed by the Manual of Uniform Traffic Control Devices (MUTCD) (Section 9B.20). The DOTI bicycle wayfinding system includes three types of wayfinding signs: Decision, Confirmation and Turn signs. In addition to wayfinding signs, DOTI also places Neighborhood Bikeway Branding signs to indicate when people are approaching a Neighborhood Bikeway. These are located where a road without an existing bikeway approaches a neighborhood bikeway. Details for each sign type and placement are provided in this section. Standard detail drawings are provided in Appendix B.

It is important to place signs in a predictable manner and at regular intervals to provide proper guidance. Signs should be placed strategically to maximize efficiency and reduce sign clutter. Additionally, signs exclusively used by bicyclists should be placed so as not to confuse other roadway users.

From 2020 onward, all new bikeway projects will include bicycle wayfinding, as described in these Guidelines. Wayfinding signs that are installed outside of new bikeway projects should be approved by DOTI staff to avoid redundancy and inconsistent messaging.

👻 Important Guidelines & Tips

For the purposes of these Guidelines, the **Major Bikeway** is the route where wayfinding is being added, and **Minor Bikeways** are routes (such as existing bikeways, proposed bikeways, D-Routes, and trails) that intersect the Major Bikeway being signed. Where a Major Bikeway and Minor Bikeway meet is called a **Bikeway Intersection**. Bikeway Intersections are to receive new signage on all approaches, on both the Major and Minor Bikeways.

There are two primary steps to creating bicycle wayfinding. The first is **Sign Placement** (see Section 2). This refers to the selection of the correct sign type to be placed along a bikeway corridor. The second step is **Sign Programming** (see Section 3). This refers to populating the selected sign type with the correct information.

Destination Database

The Planning Division maintains an online<u>Bicycle</u> <u>Wayfinding Destination Database</u>. This database includes all existing and proposed bikeways, D-Routes, tiered destinations, and is used to **Program Signs**.

Sign Typology

There are four main bikeway types in Denver that each require a different wayfinding sign template. Use the blue Neighborhood Bikeway signs along Neighborhood Bikeways. For conventional, buffered, protected, and sidewalk-level bike lanes, the green Denver Bikeway signs should be used. Use green Regional Trail Signs along regional trails and green Denver Trail Signs along local and collector trails. DOTI does not install wayfinding signs along the length of shared roadways as these are not considered officially "improved" high-comfort bikeways. See Appendix B for more details on wayfinding signs.

For trail signs, a map of trail designations can be found on the Denver Parks and Recreation (DPR) webpage.



Minor Bikeways intersecting a Major Bikeway.



Neighborhood Bikeway Sign Family



Decision Sign





Turn Sign

Denver Bikeway Sign Family





Confirmation Sign



Turn Sign

Denver Trails Sign Family

Regional Trails



Decision Sign



Confirmation Sign

Denver Trails



Decision Sign



Confirmation Sign



2.1 Decision Signs

Decision Signs mark the intersection of two or more bikeways and are placed at bikeway intersections. These signs assist bicyclists in making decisions when bikeways intersect, or multiple destinations are close by. Decision Signs provide direction and distance for up to three key destinations.

This section focuses on the design and placement of Decision Signs. The programming of destinations on Decision Signs is included in Section 3.

Placement criteria for Decision Signs include:

- Signs should be located at least 30 feet prior to a decision point, preferably on a property line. This is an adequate distance for a bicyclist to see a sign and respond to it.
- For left turns, decision Signs should be placed within the below listed distances before the intersection. These are based on the number of lanes the bicyclist must merge across in order to make a legal left turn.
 - Zero lane merges: 30'. If bikes remain at the curb side on the intersection approach, the "zero lane merge" setback is to be used.
 - One lane merge: 100'
 - Two lane merges: 200'
- Decision Signs are to be placed at all key intersections along a bike route to indicate nearby destinations. Intersections include:
 - Intersecting existing bikeway (e.g., bike lane, protected bike lane, neighborhood bikeway, trail).
 - Intersecting D-Routes. The designer 0 should use judgment to add Decision Signs at intersections with existing D-routes, such as roadway suitability for bicycling today, and if the intersecting route will be improved in the near future. For example, if the intersecting roadway will not be improved in the foreseeable future, but still sees moderate volumes of bicyclists and connects to a major destination, the Modified D-Route Bikeway Signage should be used only on the intersecting street.

- Decision Signs should be added to the Major Bikeway as well as the Minor Bikeway. Most intersections will have four Decision Signs, one on each approach. Decision Signs have a maximum of three destinations. See section 3 for guidance on prioritizing destinations for inclusion on signs.
- Signs should have a 2-foot minimum lateral offset of from edge of path or curb to edge of sign to prevent being struck by motor vehicles.
- Wayfinding should not be included on the same post as Warning signs.

2.1.1 Decision Sign Types

Denver has four Decision Signs, depending on the bikeway type. All are 24" x 30".





Regional Trail Decision Sign



Denver Bikeway Decision Sign



Denver Trail Decision Sign



2.2 Confirmation Signs

Confirmation signs communicate to bicyclists that they are traveling on a specific bike route at intersections, and periodically confirm that they are still on the same route on longer corridors. Confirmation signs are an integral component of any bikeway or trail that crosses roads, changes direction, and has intermediate access points.

Characteristics of Confirmation Signs include:

- Confirmation signs are usually paired with Decision Signs. Every Bikeway intersection should have one Decision Sign and one Confirmation Sign on each approach. For example, on a four-leg intersection, there will be four Decision Signs, and four following Confirmation Signs – See Section 2.4.
- They are placed after access points along a trail or after intersections with another bikeway.
- Do not indicate a change in direction.
 The word TO and an arrow should never be used on the same sign
- Include one "pull-through" destination. This is intended to lead bicyclists along the route to a destination that orients people to a general direction (e.g. to "Downtown" or to "Capitol Hill Neighborhood").
- Multiple Confirmation Signs should not be placed on the same sign assembly, and confirmation signs should only include one destination.

Placement criteria for Confirmation Signs include:

- After Decision Signs and Turn Signs. Confirmation signs should be placed approximately 50 feet after an intersection, preferably on a property line.
- Confirmation signs should be placed approximately every 1 mile (approx. 5 minutes of riding), unless another type of bicycle-specific sign (such as a Turn, Decision, or other bicycle regulatory sign) or pavement marking is present within the 1-mile interval.
- Signs should have a 2-foot minimum lateral offset of from edge of path or curb to edge of sign to prevent being struck by motor vehicles.
- Wayfinding should not be included on

the same post as Warning signs.

2.2.1 Confirmation Sign Types

Denver has four Confirmation Signs. All are 24" x 24".





Neighborhood Bikeway Confirmation Sign

Denver Bikeway Confirmation Sign



Regional Trail Confirmation Sign



Denver Trail Confirmation Sign



2.3 Turn Signs

Turn signs indicate where a bikeway turns from one street onto another street and only one route option is available. Turn signs are located at key points of navigation for bikeway users, directing cyclists where to turn to remain on the designated route.

Characteristics of Turn Signs include:

- Provide clear direction for cyclists to turn when a bikeway transitions from one roadway onto another.
- Include one "pull-through" destination. This is intended to lead bicyclists along the route to a destination that orients people to a general direction (i.e., to "Downtown" or to "Capitol Hill Neighborhood").

Placement criteria for Turn Signs include:

- The Turn Sign should be located on the block immediately preceding the turn and at least 30 feet in advance of the turn (e.g., near-side of the intersection), preferably on a property line. For left turns, Turn Signs should be placed within the below specified distances before the intersection. These are based on the number of lanes the bicyclist must merge across in order to make a legal left turn. The following distances should be used to allow adequate notification of left turns:
 - Zero lane merges: 30'. If bikes remain at the curb side on the intersection approach, the "zero lane merge" setback is to be used.
 - One lane merge: 100'
 - Two lane merges: 200'
- Signs should have a 2-foot minimum lateral offset of from edge of path or curb to edge of sign to prevent being struck by motor vehicles.
- Turn signs are located where bicyclists have only one choice to stay on a bike route, typically where bikeways make a jog. If a bicyclist has more than one route option, a decision sign should be used instead of a turn sign. Only one "pull through" destination is to be used on turn signs.
- Wayfinding should not be included on the same post as Warning signs.

Design Criteria for Denver Bikeway Turn Signs:

- The arrow is to be placed on the same line as the destination.
- For left turns, the arrow is to be placed to the left of the destination name. The destination name is to be right justified.
- For right turns, the arrow is to be placed to the right of the destination name. The destination name is to be left justified.

2.3.1 Turn Sign Types

Denver has two Turn Signs, depending on the bikeway type. Both are 24" x 24".

Turn signs are not used on trails. The circumstance of a trail turning are isolated and unique in the trails system. If this situation is encountered during design of a bikeway, consult with the DPR Trails Planner for specific guidance on incorporating bikeway decision signage.



Denver Bikeway Turn Sign



Neighborhood Bikeway Turn Sign



2.4 Typical Bicycle Wayfinding Placement

The graphic below depicts a typical bicycle wayfinding placement plan and details where signs should be placed along the major bikeway, as well as at intersections with minor bikeways and trails.









2.4.1 Ending Denver Bikeway Signage

The end of a bikeway should typically have a Confirmation Sign noting the pull-through destination on the far side of the intersection at the terminus of the project extent. However, the designer should use their judgement as to which sign type is to be placed at the end of the bikeway.

If a D-Route continues straight from the end of the improved bikeway extent, then the designer may end the bikeway with a Modified Denver Bikeway Confirmation Sign. This will help to provide continuity if the bicyclist continues straight along the D-Route.

If the project terminus intersects with an existing bikeway, there should be a decision sign indicating such, as well as receiving confirmation signs on the intersecting bikeway.

Along any bikeway, the signs for that bikeway should reflect the type of facility that exists along the street it is on. This method is to be used even if the bicyclist will be turning onto another bikeway type. For instance, if the corridor is a neighborhood bikeway that ends, and turns onto a bike lane corridor, the first and final sign on the neighborhood bikeway is always to be a neighborhood bikeway sign, and the signs along the bike lane corridor shall be green Denver bikeway signs. This placement practice will keep signing consistent across the network.

Where the bikeway ends and a low-stress local street (not an official bikeway) exists, it may be best to sign to the low-stress local street. If there is not a low-stress option, use professional judgement to determine the best course of action. Consider the vehicular speeds and volumes of the roadway, future bicycle network recommendations, and whether this street connects to other bike facilities.

2.5 D-Route Signage

D-Routes are Denver's legacy wayfinding system, signed at different periods over the last 30 years. The long-term goal is to remove and replace all D-Route signage with Denver Bikeway Signage. However, because D-Routes are miles long, it will take many years to remove and replace all D-Route signage. The following Guidelines employ different strategic processes to transition away from D-Route signage depending on the location within Denver.

For upgrades on D-Routes within Downtown



DENVERMOVES Bicycles Denver, including the Five Points, Union Station, the CBD, Auraria, Civic Center and Lincoln Park neighborhoods:

- D-Route signage should be removed and replaced with appropriate Denver Bike Wayfinding signage, per placement guidelines in this document.
- This means replacing all signs along the project corridor with signs that **do not** include the D route indicators in the top right corner, because these formal bikeways will no longer be considered D-Routes.

For projects that intersect existing D-Routes outside of Downtown Denver, existing D-Route signage) is to be removed and replaced with modified D-Route signage, according to one of two processes:

- If the Minor Bikeway D-Route has an existing bikeway with no planned upgrades, the existing signage at the intersection is to be removed and replaced with the appropriate Denver Bikeway Signage, with the D-Route number in the upper right corner. Signs with D-Route numbers should only be placed along the Minor Bikeway D-Route. This will maintain continuity of route sections until entire corridors can be re-signed. Never place D-Route numbers along the corridor you are improving!
- If the Minor Bikeway D-Route is a proposed bikeway in Denver Moves: Bikes, consult with the DOTI PM to decide whether or not to install the appropriate Denver Bikeway Sign on the Minor Bikeway per Denver Moves: Bikes designation, even though the proposed bikeway does not yet exist. Factors to consider for this decision: present functionality of the existing Minor Bikeway and time until the bikeway will be improved. These signs should include the D-Route number in the upper right where they face the Minor Bikeway.

If the D-route extends further than the extent of the improved bikeway, the designer can choose to conclude the bikeway with a Modified Denver Bikeway Confirmation Sign. This sign will ensure continuity for cyclists who continue straight along the D-Route.



D-Route Signage is to be removed and not referenced on the new wayfinding signs in the neighborhoods highlighted in red, including Five Points, Union Station, the CBD, Auraria, Civic Center and Lincoln Park. In these neighborhoods, no reference should be made to D-Routes on new Denver Bikeway Signage.

2.5.1 Modified Sign Types for D-Routes

Denver has six modified sign types for Decision, Confirmation, and Turn signs. Modified Decision signs are 24" x 30". Modified Confirmation and Turn signs are 24" x 24".





Modified DenverModified NeighborhoodBikeway Decision SignBikeway Decision Sign





Modified Denver Bikeway Confirmation Sign

Modified Neighborhood Bikeway Confirmation Sign



Modified Neighborhood Bikeway Turn Sign



Modified Denver Bikeway Turn Sign



2.6 Trails

Denver has numerous regional trails that pass through its boundaries, such as the Cherry Creek, South Platte River, and High Line Canal Trails. These trails are highly used commuting and recreational routes that will also benefit from clear and accurate wayfinding. The wayfinding sign design described in this guide should be used on all trails except the South Platte, Sand Creek, and Highline Canal trail systems. These three trails each have their own custom sign designs that should be used instead of the green Denver Trail signs. Appendix C contains guidance for on-trail wayfinding.

Trails typically lie outside of the maintenance responsibility of Denver Department of Transportation & Infrastructure, and are instead overseen by Parks & Recreation, or in some cases, other municipalities. Programming and installation of wayfinding signs along these routes are to be coordinated with DPR. Signs placed on DPR facilities will be maintained by DPR. DOTI may install wayfinding signs on DPR property, with DPR approval. DPR is to provide sign locations to DOTI and draft plans are to be reviewed and approved by the DPR Urban Trails Planner, prior to finalizing the plans.

Special considerations should be made for placing wayfinding signs along trails, such as:

- Decision and Confirmation signs should be placed such that trail users can make a decision prior to any trail intersections or access points. Use the practices included in these Guidelines along trails.
- Parks signage should be located 3' off edge of trail and should be out of the maximum tree protection zone, as determined by City forestry staff.
- Signs should be placed on both sides of sign clutter.
- Sign clutter should be minimized by limiting sign placement on to major trail intersections or access points.
- If existing trail branding or wayfinding signs exist along the trail, new signs should be coordinated, or old signs replaced to create consistent messaging and avoid confusion for trail users.

2.7 Multi-Jurisdictional Roadways

Some of Denver's existing and proposed bikeways border other municipalities. Where this occurs, it may be useful to work with the other municipality to determine signage for the bikeway. The DOTI Project Manager should use judgement to determine if enough of the bikeway overlaps with another municipality to warrant use of modified signs.

Where this situation occurs, the "Denver Bikeway" header text should be changed to reflect both jurisdictions. For example, on a street bordering Englewood, the sign would read "Denver/Englewood Bikeway" with a slash between the two jurisdiction names. These signs should be placed on both sides of the roadway for the entire length of the project that is within multi-jurisdictional boundaries.



Denver/Englewood Bikeway Decision Sign



2.8 Neighborhood Bikeway Branding Sign

The design of Neighborhood Bikeways should integrate Denver's Neighborhood Bikeway Branding Signs. The branding signs indicate to motorists on the side-streets that they are approaching a Neighborhood Bikeway. Parameters for placement are as follows:

- One dual-sided assembly should be placed at every intersection along the Neighborhood Bikeway, except those with existing bikeways. Intersections with two intersecting bikeways use wayfinding signage as described in this Guide, so the Branding Signs are not necessary in these locations.
- Only one dual-sided assembly should be placed per intersection, with the signs facing traffic traveling across, not along, the Neighborhood Bikeway.
- Branding Signs should be placed as close to the intersection as possible, preferably on existing utility poles. If no utility poles are present, they should be placed on a new signpost.

Branding Signs should **not** be placed on street sign assemblies or signal poles



Neighborhood Bikeway Branding Sign



3. SIGN PROGRAMMING

3.1 Criteria for Inclusion

The City of Denver's wayfinding system includes a variety of destinations. Because there are a multitude of destinations and text space is limited on each sign, prioritizing destinations is particularly important. The following criteria have been established to determine which destinations qualify for inclusion in the wayfinding system.

3.2 Destination Hierarchy

A hierarchy of destinations has been established to determine what destinations to include on wayfinding signage when there are several destinations nearby. It also allows information to be displayed through a series of decision points as a bicyclist ride through the city.

DOTI Planning Division maintains a database of destinations, grouped into the tiers described in this section. This database can be found at this <u>website</u> and any questions can be directed to the Bicycle and Pedestrian Planning Team.

3.2.1 Level 1 Destinations: Neighborhoods and Districts (Sign up to 5 miles away):

Destinations in this category are of primary importance, representing **pull-through destinations**, which guide bicyclists to general parts of the city with which they are familiar and serve to orient bicyclists along major routes. These destinations are signed up to 5 miles away and include:

- Downtown
- Districts and Neighborhoods
- Adjacent Municipalities

A Level 1 destination is almost always included on a sign (See "Pull Through" Destination Concept at right).

3.2.2 Level 2 Destinations: Landmarks or Major Attractors (Sign up to 2 miles away)

Destinations include (each is defined in the Wayfinding database):

- Major institutions such as universities or college campuses (2+ years accredited, not for profit, or publicly owned institutions)
- Regional trails (These signs provide wayfinding to trailheads and trail access points that are accessible by bicycle). However, never sign to other on-street bikeways. For example, "17th Ave Bikeway" is **not** an acceptable destination.
- Regional parks that draw people from multiple adjacent neighborhoods
- Transit stations and transit hubs
- Arenas, stadiums, or other major institutions of visitor interest such as museums or the zoo (greater than 50,000 visitors per year)
- Nationally recognized destinations
- Governmental, historical, or other institutions that are culturally significant landmarks
- Medical campuses (open 24hrs)
- Major commercial areas/shopping centers, including major commercial corridors, such as E Colfax Ave

"Pull Through" Destination Concept:

Pull through destinations are a critical element of Denver's bike wayfinding. These destination types "pull" bicyclists along a route, toward major parts of the city with which they are familiar. These destinations should be listed on Decision Signs and be the one destination listed on the receiving Confirmation Signs, as well as Turn Signs. The pull through destination remains on the sign until it is reached, and then is replaced by the next pull through destination for the route.



Denver is a growing city, and new destinations will likely be created as it continues to develop. New destinations must meet 2 out of the 4 following attributes to be considered a Level 2 Destination.

- Regionally recognized destination
- Greater than 50,000 visitors per year
- Open at least 40 hours per week
- Open at least 9 months of the year

Destinations in this category are of major importance and help draw bicyclists across neighborhoods. Examples of destinations that fall into this category are transit stations, regional parks, private and public university campuses, and other destinations that have a major draw. Destinations in this category are to be signed up to 2 miles away.

3.2.3 Level 3 Destinations: Local Destinations (Sign up to 1 mile away):

Destinations in this category represent local destinations that are important to neighborhood residents, visitors, and employees. Destinations in this category are signed up to 1 mile away and include:

- Local/neighborhood parks
- Local trails (signing to established trailheads and access points only)
- Neighborhood shopping corridors or areas
- Civic and community centers, recreation centers, and libraries
- Historic districts
- Hospitals

Adding New Destinations to the DOTI Database

New destinations must meet the requirements outlined above in order to be added to the DOTI wayfinding database and should be categorized into the appropriate group—Level 1, Level 2, or Level 3.

Refer to Appendix B for sign programming tips.

3.3 Sign Layout

Standard detail drawings for each sign type can be found in Appendix B. General guidelines for sign layout include the following:

- Up to three destinations may be listed on a Decision Sign.
- Destinations shall use mixed case letters (e.g. upper case and lower case).
- Destinations shall be set in 1.75-inch height Highway Gothic "C" font for Decision Signs and 2-inch height Highway Gothic "D" on Turn and Confirmation Signs.
- The first line of the header text ("DENVER", "NEIGHBORHOOD", and "TRAIL NAME") should be Highway Gothic E Font with 2-inch height. The second line of the header text ("Bikeway", "Trail", and "Regional Trail") should be Highway Gothic D font with 2-inch height.



Word Message	Abbreviation	Word Message	Abbreviation
Alternate	Alt	Mount	Mt
Avenue	Ave	Mountain	Mtn
Bicycle	Bike	North	N
Boulevard	Blvd	South	S
Bridge	Br	East	E
Center	Ctr	West	W
Circle	Cir	Park	Pk
Court	Ct	Parkway	Pkwy
Crossing	X-ing	Place	PI
Drive	Dr	Road	Rd
National	Natl	Rocky	Rky
Hospital	Hosp	Neighborhood	Nbhd
International	Intl	Street	St
Junction	Jct	Terrace	Ter
Lake	Lk	Trail	Tr
Library	Lib	Open Space	OS
Mile(s)	Mi	High School	HS
Miles Per Hour	Mph	Pedestrian	Ped
Recreation	Rec	Gulch	Glch

For additional naming conventions common in Denver, please refer to the online <u>Bicycle</u> <u>Wayfinding Destination Database</u>.



3.3.1 Character Limits

Use the following chart to determine font, character limit, and how to format signs that exceed character limits for Turn, Confirmation, and Decision signs:

Sign Type	Standard Font	Max Characters w Standard Font	lf exceeds max characters
Turn or Confirmation	HWY D	14	Use HWY C (max of 17 characters)
Decision	HWY C	15	Wrap to two lines (max of 15 characters per line) and limit sign to two destinations

Additional guidelines:

- Maximum character limits **include** spaces and symbols. They do **not** include the mileage text or the arrow.
- When shortening destination names, only use approved MUTCD standard abbreviations (referenced on the previous page).
- Otherwise, shorten destination names by removing unnecessary words. For example, the Denver Museum of Science and Natural History should be shortened to Science Museum rather than Den Mus Ci & Nat Hist.

3.3.2 Arrow and Text Justification

All left and straight arrows should be placed on the extreme left with left aligned text and a 1.5" gap between the text and sign edge. All right arrows should be placed on the extreme right with a 1.5" gap between edge of text and sign edge. Destination names should be left aligned.

3.3.3 Calculating Distance to Destinations

Mileage to destinations is to be added to Decision Signs, as described in section 2.1. Mileage is to be calculated using the following methods:

 Using a georeferenced program, such as ArcGIS or Google Maps, use the measure function to measure from the sign location to the perimeter of the destination. Measure using the route the bicyclist would take to access the destination (using the bikeway network), not "as the crow flies."

- Polygon type destinations (campuses, neighborhoods, and parks) are to be measured from the approximate sign location to the perimeter of the destination (not its center).
- Point type destinations, such as the Pepsi Center, are to be measured to the center of the destination.
- Round distances to the nearest 10th (i.e. 2.45 is to be rounded to 2.5).
- For distances less than 1-mile, a "0" is to proceed the decimal point (i.e. 0.2, 0.4, 0.9 etc.)

3.3.3 Destination Order

Once destinations on a sign have been selected, the next step is to order them on the sign. The following principles should be applied:

- The first principle to prioritize is the direction of the destinations. Always list destinations straight ahead first, followed by those to the left and finally those to the right. Adhere to this principle regardless of destination tier or proximity.
- "Pull Through" destinations should typically be listed first.
- The second principle to prioritize is distance to the destination. If there are two destinations in the same direction, the closer destination should be listed first.
- Include "Pull Through" destinations consistently on signs along a route so bicyclists understand how far they must travel to reach them.



Guidance on Destination Selection:

Typically, each Decision Sign will include one Level 1 Destination. Avoid listing multiple Level 1 "Pull Through" destinations in the same direction. This avoids listing only neighborhoods and provides the ability to sign to more local destinations.

The designer should use their judgement to select the best suite of destinations at an intersection and should consider pull-through and level 1 destinations along intersecting bikeways. One approach is, at every intersection, to sign to a Level 1 destination in each direction, straight, left and right. Sometimes this is most appropriate, but other times, based on context, it may be appropriate to sign to multiple destinations in one direction, as opposed to one destination in each direction.

Generally, a Level 1 destination should take precedence over Level 2 and 3 destinations. However, there are exceptions to this rule and the designer should consider this when programming signs. For instance, on a route that travels through multiple neighborhoods and crosses a major commercial corridor, such as E Colfax Ave, the designer may choose to replace the neighborhood as the pull through destination with E Colfax. Familiarity with the corridor is necessary, but the designer has flexibility to make this decision.

Another example is a route that travels to a regional trail. The designer may choose to replace a neighborhood with a regional trail as the pull through destination.

There may be an instance where a route travels along the border of two neighborhoods. When determining the next pull through destination, the designer will choose to sign to the next neighborhood that the route travels into.

Lastly, there may be instances where a bikeway travels through a small corner of a neighborhood, rather than its center. If this is the case, the designer may choose to sign to another, more logical, pull through destination.

Destination Levels & Signage Distances

A hierarchy of destinations is necessary to prioritize **which destinations to sign to**





3.4 Clearances

Mounting heights vary based on the type of bicycle facility.

• The minimum height for signs is 7 feet from the ground to the bottom of the sign panel. Signs should have a 2-foot minimum lateral offset from the edge of the curb to edge of sign. Specific attention should be given to the other street elements which may obstruct the sign or restrict the distance from which it may be read, such as other signs, trees or tree branches, and light poles.

For other details regarding sign installation, see DOTI's <u>Traffic Signal, Sign, and</u> <u>Pavement Marking Standards 16.2.5 – 16.2.6.</u>



Roadside Sign Height

Roadside Sign Installation



4. WAYFINDING STRATEGY

To be consistent across different areas of the city, a systematic approach is necessary. There are several steps in the planning process that ensure a cohesive and consistent wayfinding system. These include:

- 1. Identify the bicycle route to be signed and bikeway intersections
- 2. Develop a preliminary sign placement plan
- 3. Develop a sign schedule
- 4. Develop Wayfinding Signage Plan

These steps are described in detail in this section.

4.1 Identify the Bicycle Route to be Signed and Bikeway Intersections

The bicycle route to be signed is the route that the designer is installing or upgrading a bikeway along.

Using the <u>City's Online Destination Database</u>, identify all existing and proposed bikeways, as well as D-Routes, that the facility intersects with. Per these Guidelines, signs should be located along the corridor where the Major Bikeway intersects Minor Bikeways (See Important Guideline Tips). In addition, work with the DOTI PM to determine if additional intersection signage should be placed at locations where the bikeway you're signing intersects with proposed bikeways and D-Routes. It is advised to provide DOTI a map of the proposed sign locations along the corridor prior to advancing to the next step.

4.2 Develop Preliminary Placement Plan

Using a mapping program, such as Google Maps, ArcGIS, or AutoCAD and an aerial, prepare a preliminary sign placement plan. This plan needs to identify the sign type (Decision, Confirmation and Turn) for all bicycle wayfinding signs to be added along the corridor. At this stage, the location of the sign does not need to be precise. <u>Here is an example</u> of a preliminary placement plan.

4.3 Develop 60% Wayfinding Sign Plan

Developing the wayfinding sign plan at or before 60% design expedites review for the DOTI PM and reduces rework, prior to advancing the final sign plan. The sign plan should include the following key best practices and details:

- Sign installation number
- Sign type (Decision, Confirmation or Turn)
- Sign style and D-Route information (Denver Bikeway, Neighborhood Bikeway, Denver Trail, or D-Route)
- Directional arrows
- Mileage to destination
- Character limits listed in 3.3.1 and Appendix B. Reference this guide and the Destination Database Web Map for typical abbreviations, and work with your DOTI PM to confirm unique abbreviations.

For guidance on programming signage, reference Chapter 3. Remember, there is a tendency to sign to more localized destinations when working on a singular bikeway corridor. It is imperative that the designer adheres to the principles outlined in these Guidelines, so that wayfinding is useful for the entire network. Bicyclists typically travel 3-5 miles, and longer trips necessitate focusing on pull-through destinations.

4.4 Field Visit and Revisions

Once the 60% design plans and preliminary sign schedule are complete, conduct a field visit of the corridor. Using the 60% plans, identify any existing utility or light pole where wayfinding signs could be added. This helps to reduce sign clutter and installation costs. For utility poles, note the utility pole number in the field, so that it can be referenced in the final plan. Be cognizant of placing wayfinding signs under dense foliage or near other obstructions. This is more critical when conducting site visits in winter, when leaves are not prevalent but could block signs in the warmer months.

The designer must take special care when placing new sign posts in residential areas. To avoid obstructing sight lines, always 1) first attempt to locate new signs on existing poles. If existing poles are not available, 2) locate signs along property lines/fences lines to avoid placing new posts in residents' front yards.

Designers can deviate from suggested sign placement distances if it helps prevent placing signs in residential front yards.

After the field visit, revise the 60% design plan to reflect field observations and revise the distances on the sign plan, if needed.



Reference Section 3.3.3 for the process to calculate distances to destinations.

4.5 Develop Final Wayfinding Signage Plan

After 60% design comments have been received and incorporated, the final plan set should be completed. Final signage plans typically include the following. Confirm these contents with your DOTI PM prior to initiating work:

- Title Sheet displaying extent of route to be signed
- Signage Layout Sheets, including:
 - o Bike route alignment
 - Intersecting bike routes (existing and proposed) as well as D-Routes
 - Signs to be added including details depicting signs to be installed. Destination signs should list all destinations including mileage, confirmation signs should list the "pull through destination," and Turn Signs should include the turn arrow with text justified in the correct location.
 - Notes on whether new signposts are required to install signs or if existing posts can be used. Utility pole numbers and other unique identifiers should be used to call out existing poles.
 - Signs to be removed, including an image depicting the existing sign assembly to be removed.
 - portions of existing signs that are to remain and portions that should be removed and replaced.
 - Note: During installation, the signs will be placed +/- 5' of final sign location indicated in the plan set, providing flexibility to installation crews to use best judgment to install.
- Quantities sheet with sign detail sheet
- Detail sheets for complex intersections

 Include entire intersection details on a single sheet. Cutting them off across two sheets complicates review and installation.

Plans are typically developed at a scale of 1" = 40'. Work with your DOTI PM to confirm the correct scale prior to commencing work.

For an example of a final deliverable, please reference Appendix A.

Direct any questions on these deliverables first to your DOTI PM and second to <u>bikes@denvergov.org</u>.



Appendix A: Wayfinding Example Plans





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	\square		City & County	FAX: (720) 913-4544		DESIGNER: E
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Appendix B: Wayfinding Sign Details





NOTES:

- 1. STREET NAME TEXT SHALL BE 2.75" HIGHWAY GOTHIC "D" FONT.
- 2. STREET NAME SUBJECT TO CHANGE DEPENDING ON LOCATION.
- 3. "NEIGHBORHOOD BIKEWAY" TEXT SHALL BE 2.75" HIGHWAY GOTCHIC "C" FONT.
- 4. BLUE SIGN BACKGROUND SHALL BE RGB COLOR CODE (0, 0, 255).



NOTES:

- 1. "NEIGHBORHOOD" TEXT SHALL BE 2.0" HIGHWAY GOTHIC "E" FONT.
- 2. "BIKEWAY" TEXT SHALL BE 2.0" HIGHWAY GOTHIC "D" FONT.
- 3. DESTINATION NAME TO BE PRINTED IN BOTTOM SECTION OF SIGN.
- 4. DESTINATION NAME TO BE SPELLED IN SENTENCE CASE, WITH THE FIRST LETTER OF EACH WORD CAPITALIZED.
- 5. DESTINATION NAME TEXT SHALL BE 2.0" HIGHWAY GOTHIC "D" FONT.
- 6. FOR DESTINATION NAMES LONGER THAN 14 CHARACTERS, USE HIGHWAY GOTHIC "C" FONT. 17 CHARACTERS MAXIMUM.
- DESTINATION NAME ALWAYS TO BE PRECEDED BY WORD "TO" IN ALL-CAPS.
- 8. ALWAYS CENTER "TO DESTINATION NAME".
- 9. MAINTAIN 1.5" GAP BETWEEN SIGN EDGE AND TEXT.
- 10. D-ROUTE NUMBERS SHALL BE INCLUDED IN THE UPPER RIGHT CORNER ON AN AS-NEEDED BASIS ONLY. SEE SECTION 2.5 OF THE WAYFINDING GUIDELINES REGARDING D-ROUTES.
- 11. BLUE SIGN BACKGROUND SHALL BE RGB COLOR CODE (0, 0, 255).



NOTES:

- 1. "NEIGHBORHOOD" TEXT SHALL BE 2.0" HIGHWAY GOTHIC "E" FONT.
- 2. "BIKEWAY" TEXT SHALL BE 2.0" HIGHWAY GOTHIC "D" FONT.
- 3. DESTINATION NAME TO BE PRINTED IN BOTTOM SECTION OF SIGN.
- 4. DESTINATION NAME TO BE SPELLED IN SENTENCE CASE, WITH THE FIRST LETTER OF EACH WORD CAPITALIZED.
- 5. DESTINATION NAME TEXT SHALL BE 2.0" HIGHWAY GOTHIC "D" FONT.
- 6. FOR DESTINATION NAMES LONGER THAN 14 CHARACTERS, USE HIGHWAY GOTHIC "C" FONT. 17 CHARACTERS MAXIMUM.
- 7. ALWAYS CENTER DESTINATION NAME AND ARROW ON SIGN, WITH 1.5" GAP BETWEEN ARROW AND NAME.
- 8. MAINTAIN 1.5" GAP BETWEEN SIGN EDGE AND TEXT, AND BETWEEN SIGN EDGE AND ARROW.
- 9. D-ROUTE NUMBERS SHALL BE INCLUDED IN THE UPPER RIGHT CORNER ON AN AS-NEEDED BASIS ONLY. SEE SECTION 2.5 OF THE WAYFINDING GUIDELINES REGARDING D-ROUTES.
- 10. BLUE SIGN BACKGROUND SHALL BE RGB COLOR CODE (0, 0, 255).

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	\square		City & County	FAX: (720) 913-4544		DESIGNER: A.
	\square		of Denver		VOID:	DETAILER:



BICYCLE DENVER BIKEWAY CONFIRMATION SIGN DETAIL 1.5"R (TMP.) DENVER Bikeway TO Downtown

NOTES:

1. "DENVER" TEXT SHALL BE 2.0" HIGHWAY GOTHIC "E" FONT.

-24'

- 2. "BIKEWAY" TEXT SHALL BE 2.0" HIGHWAY GOTHIC "D" FONT.
- 3. DESTINATION NAME TO BE PRINTED IN BOTTOM SECTION OF SIGN.
- 4. DESTINATION NAME TO BE SPELLED IN SENTENCE CASE, WITH THE FIRST LETTER OF EACH WORD CAPITALIZED.
- 5. DESTINATION NAME TEXT SHALL BE 2.0" HIGHWAY GOTHIC "D" FONT.
- 6. FOR DESTINATION NAMES LONGER THAN 14 CHARACTERS, USE HIGHWAY GOTHIC "C" FONT. 17 CHARACTERS MAXIMUM.
- DESTINATION NAME ALWAYS TO BE PRECEDED BY WORD "TO" IN ALL-CAPS.
- 8. ALWAYS CENTER "TO DESTINATION NAME".
- 9. MAINTAIN 1.5" GAP BETWEEN SIGN EDGE AND TEXT.
- 10. D-ROUTE NUMBERS SHALL BE INCLUDED IN THE UPPER RIGHT CORNER ON AN AS-NEEDED BASIS ONLY. SEE SECTION 2.5 OF THE WAYFINDING GUIDELINES REGARDING D-ROUTES.
- 11. GREEN SIGN BACKGROUND SHALL BE RGB COLOR CODE (0, 153, 0).

DENVER Bikeway Downtown

BICYCLE DENVER BIKEWAY

TURN SIGN DETAIL

D#

24'

2" X 2.9" SYMBOL

NOTES:

1.5"R

(TYP.)

1. "DENVER" TEXT SHALL BE 2.0" HIGHWAY GOTHIC "E" FONT.

-24"-

- 2. "BIKEWAY" TEXT SHALL BE 2.0" HIGHWAY GOTHIC "D" FONT.
- 3. DESTINATION NAME TO BE PRINTED IN BOTTOM SECTION OF SIGN.
- 4. DESTINATION NAME TO BE SPELLED IN SENTENCE CASE, WITH THE FIRST LETTER OF EACH WORD CAPITALIZED.
- 5. DESTINATION NAME TEXT SHALL BE 2.0" HIGHWAY GOTHIC "D" FONT.
- 6. FOR DESTINATION NAMES LONGER THAN 14 CHARACTERS, USE HIGHWAY GOTHIC "C" FONT. 17 CHARACTERS MAXIMUM.
- 7. ALWAYS CENTER DESTINATION NAME AND ARROW ON SIGN, WITH 1.5" GAP BETWEEN ARROW AND NAME.
- 8. MAINTAIN 1.5" GAP BETWEEN SIGN EDGE AND TEXT, AND BETWEEN SIGN EDGE AND ARROW.
- 9. D-ROUTE NUMBERS SHALL BE INCLUDED IN THE UPPER RIGHT CORNER ON AN AS-NEEDED BASIS ONLY. SEE SECTION 2.5 OF THE WAYFINDING GUIDELINES REGARDING D-ROUTES.
- 10. GREEN SIGN BACKGROUND SHALL BE RGB COLOR CODE (0, 153, 0).

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	\square		City & County	FAX: (720) 913-4544		DESIGNER: A.
	\square		of Denver		VOID:	DETAILER:





NOTES:

- 1. "TRAIL NAME" TEXT SHALL BE 2.0" HIGHWAY GOTHIC "E" FONT.
- 2. "TRAIL" TEXT SHALL BE 2.0" HIGHWAY GOTHIC "D" FONT.
- 3. DESTINATION NAME TO BE PRINTED IN BOTTOM SECTION OF SIGN.
- 4. DESTINATION NAME TO BE SPELLED IN SENTENCE CASE, WITH THE FIRST LETTER OF EACH WORD CAPITALIZED.
- 5. DESTINATION NAME TEXT SHALL BE 2.0" HIGHWAY GOTHIC "D" FONT.
- 6. FOR DESTINATION NAMES LONGER THAN 14 CHARACTERS, USE HIGHWAY GOTHIC "C" FONT. 17 CHARACTERS MAXIMUM.
- 7. DESTINATION NAME ALWAYS TO BE PRECEDED BY WORD "TO" IN ALL-CAPS.
- 8. ALWAYS CENTER "TO DESTINATION NAME".
- 11. MAINTAIN 1.5" GAP BETWEEN SIGN EDGE AND TEXT.
- 12. GREEN SIGN BACKGROUND SHALL BE RGB COLOR CODE (0, 153, 0).



NOTES:

- 1. "TRAIL NAME" TEXT SHALL BE 2.0" HIGHWAY GOTHIC "E" FONT.
- 2. "TRAIL" TEXT SHALL BE 2.0" HIGHWAY GOTHIC "D" FONT.
- 3. DESTINATION NAMES TO BE PRINTED IN BOTTOM SECTION OF SIGN.
- 4. DESTINATION NAME TO BE SPELLED IN SENTENCE CASE, WITH THE FIRST LETTER OF EACH WORD CAPITALIZED.
- 5. DESTINATION NAME TEXT SHALL BE 1.75" HIGHWAY GOTHIC "C" FONT.
- 6. FOR DESTINATION NAMES GREATER THAN 15 CHARACTERS, MODIFY NAME WITH MUTCD STANDARD ABBREVIATIONS, OR WRAP TEXT ONTO TWO LINES WITH NORMAL TEXT DISTRIBUTION. A MAXIMUM OF TWO DESTINATIONS SHALL BE ADDED IN SUCH CASES.
- 7. LEFT TURN ARROW, LEFT JUSTIFY ARROW AND TEXT.
- 8. RIGHT TURN ARROW, RIGHT JUSTIFY ARROW AND TEXT. RIGHT TURN ARROW TO BE LOCATED TO THE RIGHT OF MILEAGE.
- 9. MAINTAIN 1.5" GAP BETWEEN SIGN EDGE AND TEXT, AND BETWEEN SIGN EDGE AND ARROW.
- 10. GREEN SIGN BACKGROUND SHALL BE RGB COLOR CODE (0, 153, 0).



NOTES:

- 1. "TRAIL NAME" TEXT SHALL BE 2.0" HIGHWAY GOTHIC "E" FONT.
- 2. "REGIONAL TRAIL" TEXT SHALL BE 2.0" HIGHWAY GOTHIC "D" FONT.
- 3. DESTINATION NAME TO BE PRINTED IN BOTTOM SECTION OF SIGN.
- 4. DESTINATION NAME TO BE SPELLED IN SENTENCE CASE, WITH THE FIRST LETTER OF EACH WORD CAPITALIZED.
- 5. DESTINATION NAME TEXT SHALL BE 2.0" HIGHWAY GOTHIC "D" FONT.
- 6. FOR DESTINATION NAMES LONGER THAN 14 CHARACTERS, USE HIGHWAY GOTHIC "C" FONT. 17 CHARACTERS MAXIMUM.
- 7. DESTINATION NAME ALWAYS TO BE PRECEDED BY WORD "TO" IN ALL-CAPS.
- 8. ALWAYS CENTER "TO DESTINATION NAME".
- 9. MAINTAIN 1.5" GAP BETWEEN SIGN EDGE AND TEXT.
- 10. GREEN SIGN BACKGROUND SHALL BE RGB COLOR CODE (0, 153, 0).

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Appendix C: Denver Parks & Recreation Trail Wayfinding Standards





The following pages contain specifications for all Denver Parks and Recreation owned and maintained trails, except for the High Line Canal Trail and Sand Creek Greenway. These two trails have custom signage that can be discussed during project development. Please contact the Denver Parks and Recreation Trails Program Manager if you are working along these trails.

Trail Sign Specifications:

OPTION A

- 1/8" aluminum
- 1st surface 3M 5100 engineering grade reflective white vinyl
- 1st surface translucent green digital print per color schedule
- Signs perpendicular to trail are double sided
- Single sided signs have back and edges painted Non-reflective satin green per color schedule



Highway gothic font *Text to be condensed to fit or abreviated





Color schedule:



Underpass Sign Specifications:

- 1/8" aluminum
- 1st surface 3M 5100 engineering grade reflective white vinyl
- 1st surface translucent green digital print per color schedule
- Signs perpendicular to trail are double sided
 Single sided signs have back and edges painted Non-reflective satin green per color schedule
- Highway gothic font



Medallion Specifications:

- 1/8" aluminum 2 sided sign facing trail
- screen printed non-reflective
- white lettering and logo
- Ist surface paint per color schedule
 Edges painted per color schedule
- Caps powder coated black
 Univers 57 bold font



*Proposed Pole Cap

-3" dia steel post and cap w/ mounting bracket, powdercoated black



Mount Bracket - 2 1/8" Wide x 4 1/4" Tall bracket takes up 25% of the circumference of the post





