Fort Collins

Bicycle Wayfinding Network Master Plan

December 2015

Fort Collins BIKEWAYS

Fort Collins

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1. Introduction

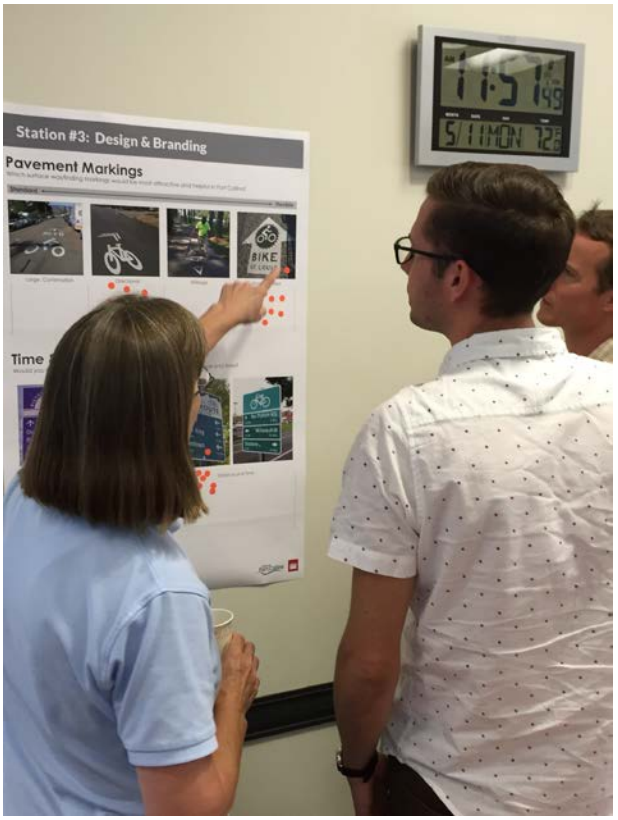
The Fort Collins bicycle wayfinding system is developed to enhance transportation and recreational travel. As a comprehensive system of bikeways and trails expand, residents and visitors will be able to access longer recreation routes, schools, commercial centers, and green spaces more easily by bicycle. Wayfinding signage is an amenity to a bikeway network that makes it more usable and legible to a wider variety of users. This Plan provides a summary of sign design and acts as a guide for sign placement.

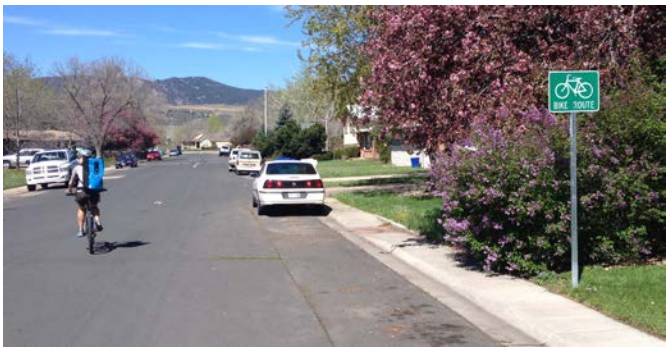
1.1. Planning Process

The Fort Collins Bicycle Wayfinding Plan has been prepared using a planning process that has included extensive input from City staff and key stakeholder groups, including the Bicycle Advisory Committee, Transportation Board, and the Parks and Recreation Board. The process has included five phases. They are:

- Initial Outreach. In this phase, Alta Planning + Design and City of Fort Collins staff conducted the first stakeholder meeting to provide participants with an overview of best practices and establish a baseline understanding of effective wayfinding design. Twenty members of the stakeholder committee attended the meeting. Participants identified routes they currently ride, navigational challenges, destinations and vision and goals for the wayfinding system.
- Site Assessment. In this phase, existing conditions were analyzed through an assessment of available datasets, related planning initiatives and field work.
- Landmark Identification/General Wayfinding Approach. A preliminary database of destinations and wayfinding routes were developed and prioritized. This phase also included the development of wayfinding sign placement guidelines and a family of customized Fort Collins Bikeways signs.
- Sign Location, Destination and Phased Implementation Plan. In this phase, priority routes were programmed and included sign locations, message programming, sign typology and a phasing plan.

- Wayfinding Signage Plan and Cost Estimates. In this phase, a plan was developed describing the wayfinding system plan (destination priorities, priority routes and sign placement). A capital budget was also assembled for project implementation.





1.2. Need

Signage can serve both wayfinding and safety purposes, including:

- Helping to familiarize users with the bikeway system;
- Helping users identify the best routes to significant destinations;
- Helping to address misperceptions about time and distance ; and
- Helping to overcome a “barrier to entry” for people who do not bicycle often, but who want to get started (interested but concerned).

Placing signs throughout the city indicating to bicyclists their direction of travel, the location of destinations, and the riding time/distance to those destinations will make the bicycle system more accessible to all users. Wayfinding signs also provide visual cues to motorists that they are driving along a bicycle route and should use caution. Signs are typically placed at key locations leading to and along bicycle routes, including the intersection of multiple

routes. Choosing the right number of signs is important, since having too many can needlessly clutter the right-of-way.

1.3. Vision

The City of Fort Collins recognizes the importance of establishing a wayfinding network to enhance the growing network of bike routes and trails. The following vision statement was developed with the City and stakeholders to guide the development of Fort Collin's bicycle wayfinding system.

To create a uniquely branded, consistent and integrated bicycle wayfinding system that reliably and intuitively guides bicyclists of all abilities to key destinations throughout Fort Collins along a connected network of bicycle facilities.

1.4. Goals

Five goals were established in the initial stages of the planning process to achieve the vision for Fort Collins' wayfinding network. The goals highlight the importance of developing a network that is consistent, unique to Fort Collins and enhances the network of bike routes and trails.

- Goal #1: Create a custom designed set of wayfinding signs that reflect the spirit of Fort Collins.
- Goal #2: Program system of routes that builds on the Low Stress Bicycle Route network identified in the 2014 Bicycle Master Plan and seamlessly connects to the multi-use trail network.
- Goal #3: Sign local and regional bicycle routes consistently within the City of Fort Collins.
- Goal #4: Integrate the wayfinding system with existing park and trail system.
- Goal #5: Design the bicycle wayfinding system so that it is comprehendible to a broad user group.

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2. Existing Sign Analysis

2.1. Introduction

A field assessment was conducted to understand Fort Collin's existing wayfinding network. It was observed that various Fort Collins City Departments have independently installed numerous wayfinding signs and routes. The result is an assortment of MUTCD compliant, semi-custom and custom wayfinding signs that do not provide a consistent experience for bicyclists and other user groups. In some instances, signs of different designs direct bicyclists to the same destination or route. To ensure that information is readily recognized and understood by bicyclists, it is important that the wayfinding system be predictable and consistent in design, content and placement.

Within Fort Collins, many neighborhood connections to trails are not signed, making it difficult for users unfamiliar with these neighborhoods to find their way. Trail systems largely do not provide bicyclists direction to adjacent on-street facilities, key destinations, districts and landmarks. This results in a network that presents challenges to residents and visitors to reach their destinations and discover new places to visit and enjoy along their journey.

The following photos illustrate some of Fort Collins' existing wayfinding elements.

Semi-custom and MUTCD compliant signs direct trail users to or along the Mason Trail

Bicycle routes inconsistently signed across Fort Collins – Example A

Bicycle routes inconsistently signed across Fort Collins – Example B

Bicycle routes inconsistently signed across Fort Collins – Example C

Destination signs do not have a common style or placement

Trailhead signs are prominent and easy to read. Trail mile markers are useful and visible to trail users traveling at bicycle speed.

Trail confirmation signs are small, hard to read at bicycle speeds and text is often obstructed by mounting hardware.

Power Trail sign is not consistent with other existing trail signage

Trail signs are either brown, green or blue in color

Presently, existing bicycle facilities and pavement markings seldom associate with bicycle wayfinding signs or elements. With such a large network of marked on-street bicycle facilities crisscrossing the City, there is currently a missed opportunity to connect people to the many places found within City boundaries and beyond.

The following photos illustrate some of Fort Collins' existing bicycle pavement markings.

Worn pavement marking in need of maintenance

Missing pavement markings or incorrect sign

A new buffered bicycle lane on Stuart Street provides an enhanced facility and traffic calming for a local street

Application of a sharrow marking on Laurel Street

3. Wayfinding Elements

The following wayfinding principles, build upon the 2014 Fort Collins Bicycle Master Plan recommendations, local and national precedents and policy pertaining to wayfinding signage. These best practices guide the placement and design of the Fort Collins Bicycle Wayfinding System.

3.1. Wayfinding Principles

The legibility of a place describes how easy it is to understand. Places that are arranged intuitively so that users can see obvious destinations from a distance, determine pathways, and recognize areas of different character are easier to navigate. Logical wayfinding in Fort Collins will enable bicyclists to easily and successfully navigate to their destination, understand where they are with respect to other key locations, and orient themselves with little effort or stress.

An effective wayfinding system includes a consistent approach to sign placement and design, while working within local, state, and federal guidelines. The choices of sign materials, dimensions, colors, and forms should be recognizable to enhance legibility and community identity.

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 and walking 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

Bicycling requires physical effort. Frequent stopping and starting to check directions disrupts the user experience. 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 are 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.

3.2. Wayfinding Elements

Based on field reconnaissance, best practices review and discussions with stakeholder committee members regarding wayfinding needs in Fort Collins, the following sign typologies are recommended for the bicycle network. Unless noted otherwise, all wayfinding elements are oriented and scaled for the bicycle user.

3.2.1. Fundamental Wayfinding 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.

Fundamental on-street wayfinding tools

Decision Sign

Function and content: Decision signs clarify route options at junctions where more than one potential route exists. Decision signs include system branding elements, space for up to three destinations, distances to destinations in miles and/or time (based on 10 mph or 6 minute per mile travel speed) and may include the route or path name.

Per the FHWA's Standard Highway Sign Manual, the standard three line decision sign for both on- and off-street bicycle facilities is formatted horizontally at 18 inches high by 30 inches wide.[1] Many municipalities have three line decision signs that are formatted vertically at 24 inches wide by 30 or 36 inches tall by omitting the bicycle symbol from each separate line and including a single bike symbol at the top of the sign. Regardless of orientation, six inches of vertical space per destination line is generally provided to allow for the two inch minimum text height.

Confirmation Sign

Function and Content: Confirmation signs are placed after a turn movement or intersection to reassure cyclists that they are on the correct route. Signs include a system brand mark and may include the route or path name. For both on- and off-street bike routes, the minimum size of 24" wide by 18" high should be used.

Confirmation signs may be as simple as a standard "bike route" sign or may include information reassuring which destinations are ahead

Turn Sign

Function and Content: Turn signs are used when only one route option exists to indicate a change in route direction. Signs include a system brand mark, route or pathway name and directional arrow. In addition, turn signs can include destination information.

Standard D1-1 series (MUTCD) and other signs may be used to indicate turns. Standard turn arrow signs (M5 and M6 series) may also be used in conjunction with bike route signs to clarify turn movements. Similar to decision signs, a minimum height of 6" should be used and width may vary according to destination length.

Directional arrows may be added to a bike route sign to clarify the need for a turn movement, Chicago, IL

[1] Sign width is flexible within the MUTCD to offer flexibility.

3.3. Bicycle Wayfinding Element Placement

Elements of the wayfinding family should be located in a consistent and logical manner across Fort Collins. Signs may be mounted to existing or new wayfinding sign posts. The following typical placement scenarios were identified by project stakeholders as navigational issues that most need clarification in relation to the bicycle network.

- On-street route intersections
- Gaps in path network
- Path-path intersections
- Path-roadway intersections
- Off-street and on-street transitions
- Pathway access points (neighborhood connections)
- Typical setback and frequency
- Spot improvements
- Signing bicyclists off arterial streets to Low-stress streets or signed routes (Example: Direct bicyclists off Riverside Avenue and onto a signed route like Pitkin Street)

3.3.1. Fundamental Wayfinding Element Placement

On-street wayfinding element placement recommendations are provided below. However, engineering judgement and a review of the existing site conditions should also be used on a case-by-case basis to determine the specific placement of each sign.

Decision Signs

The distance of a decision sign from a turn or transition is determined by design speed, site lines and slope. Decision signs should be placed along the right-of-way in places where the cyclist can see an upcoming sign from an appropriate distance given the design speed and physical context.

On busy streets with center turn lanes or left turn pockets, signs should be placed further from the intersection to decrease the possibility of conflicting bicyclist/motorist movements while preparing for a left turn. The location of the sign should exceed the stopping distance needed by the fastest expected travel speed, but should not be placed so far in advance that the relevance of the sign is lost or forgotten.

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

Confirmation Signs

Confirmation signs provide reassurance of direction after decision points and along long routes with no intervening destinations or decision points. They also indicated to bicyclists that they are on a designated bikeway.

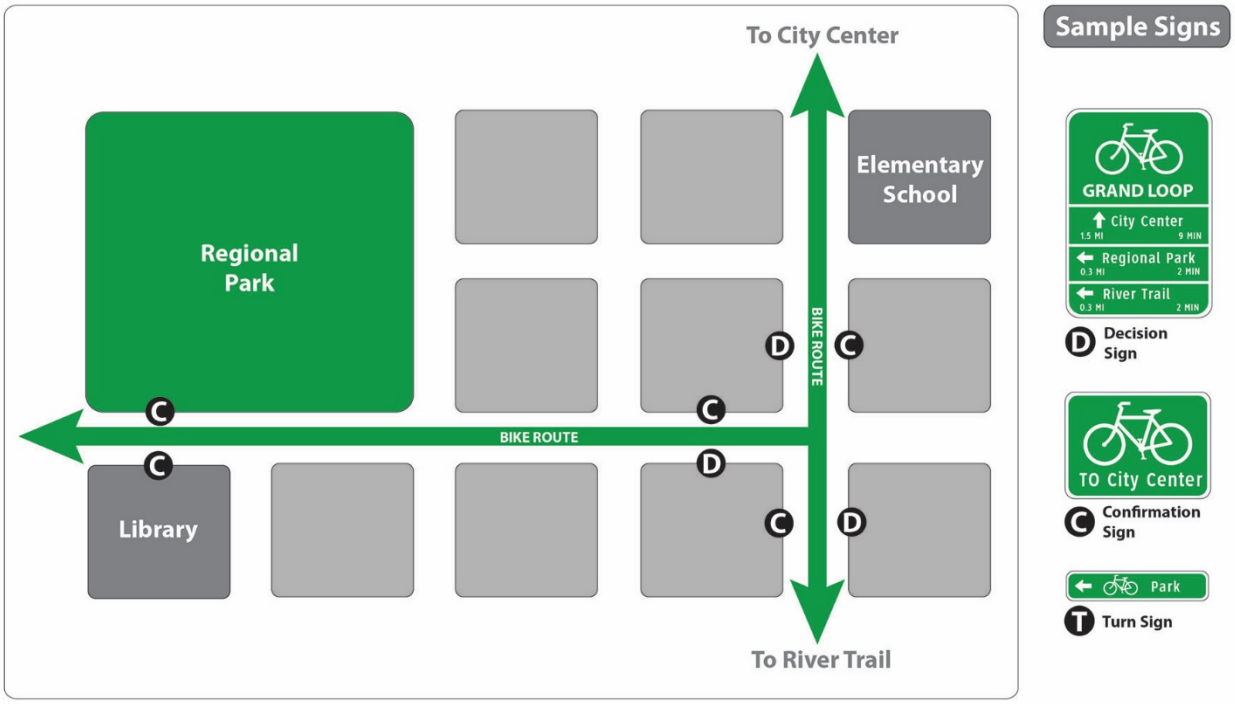
Placement: Signs should be placed 50 – 100 feet after turns. Confirmation signs need not occur after every intersection. They should be prioritized at locations where a designated route is not linear as well as after complex intersections. Complex intersections include those having more than four approaches, non-right angle turns, roundabouts, or in-direct routing. Along routes in developed areas with few decision points, confirmation signs should be placed every two or three blocks for reassurance. Where less reassurance is needed (for example, less developed areas, low volume streets or separated pathways) confirmation signs should be placed roughly every 0.5 miles. Pavement markings can also function as confirmation that a bicyclist is on a specific route.

Turn Signs

Turn signs should be placed at points prior to the turning action to provide bicyclists advance notice of a change in direction. Signs may also be used in conjunction with a decision sign at complex intersections warranting additional information.

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

Note: in the diagrams below, generic wayfinding elements are used as placeholders until final designs are approved.



Typical placement scenario showing a decision sign being located prior to an intersection of two bicycle facilities. A confirmation sign is provided after the turn movement as well as periodically along the route for reassurance.

3.3.2. Trail/Supplemental Wayfinding Element Placement

Mile Markers

Placement: Mile markers should be placed every ¼ to ½ mile along the pathway network. Mile markers may be installed on one side of a pathway, with back-to-back signs for bi-directional legibility.

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. Distances along on-street routes should be included within mile measurements.

Trailhead Signs

Placement: Signs should be located at trailheads or regional pathway access points. Care should be taken to maintain site triangles so as to not obstruct site lines between roadways and entries at trailhead locations.

Decision/Directional Sign

Placement: Signs should be placed prior to decision-making points or intersections along trails. 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. Decisions signs should not be placed near side or access paths that could be confused with the primary route.

Information Kiosk

Placement: Kiosks should be located at major pathway system access points and set back from the edge of the path travelway to provide areas to dwell and consider the information. Per accessibility guidelines, kiosks should be placed at a distance greater than three feet from the pathway edge to provide clear circulation areas and avoid the creation of a potential physical obstacle from the bicycle travelway.

3.3.3. Systemwide Wayfinding Placement

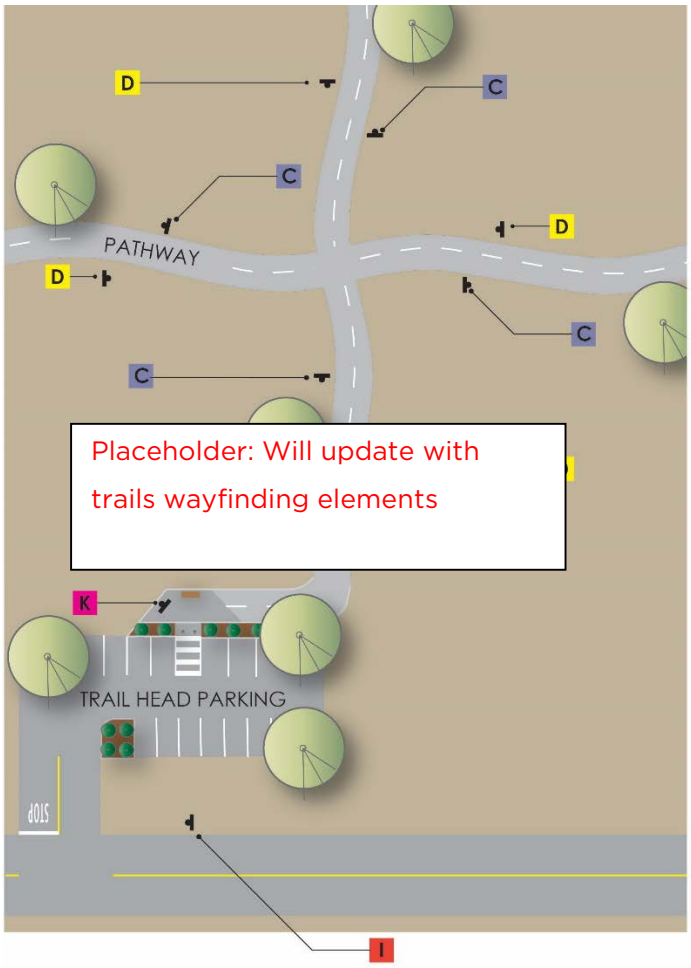
Pathway Access Points

Major pathway access points or trailheads should be identified via a primary identity signs (Existing Fort Collins Sign). Primary identity signs should be oriented towards approaching vehicles. Care should be taken to not obstruct site lines between the roadway and entry points or driveways. Pathway system access points not providing vehicle parking should utilize the secondary bicycle sign. As an option, kiosk signs with orientation maps may be placed at developed trailheads or access points.

Path-Path Intersection

When pathways intersect each other, multiple destinations are likely. Thus, decision/directional signs should be placed prior to the intersection. As an option, confirmation signs may be placed after intersections to reinforce that the user did indeed make the correct movement.

Figure 3.1

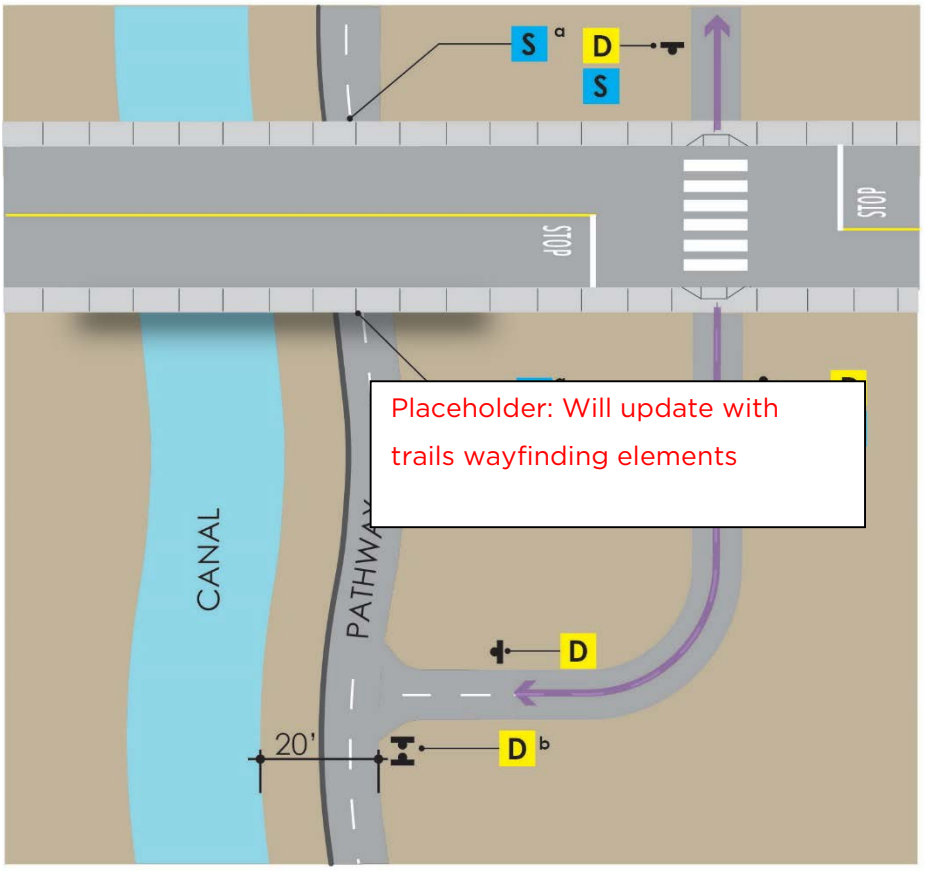


Pathway Bifurcations

Connections and access points between the off-street and on-street network may result in path bifurcations. At such junctions, it is important to inform cyclists of where the alternative route option goes. This may be done via decision/directional signs located at junctions.

Grade separated roadway crossings would benefit from applying street name sign blades to crossing improvements such as bridge infrastructure.

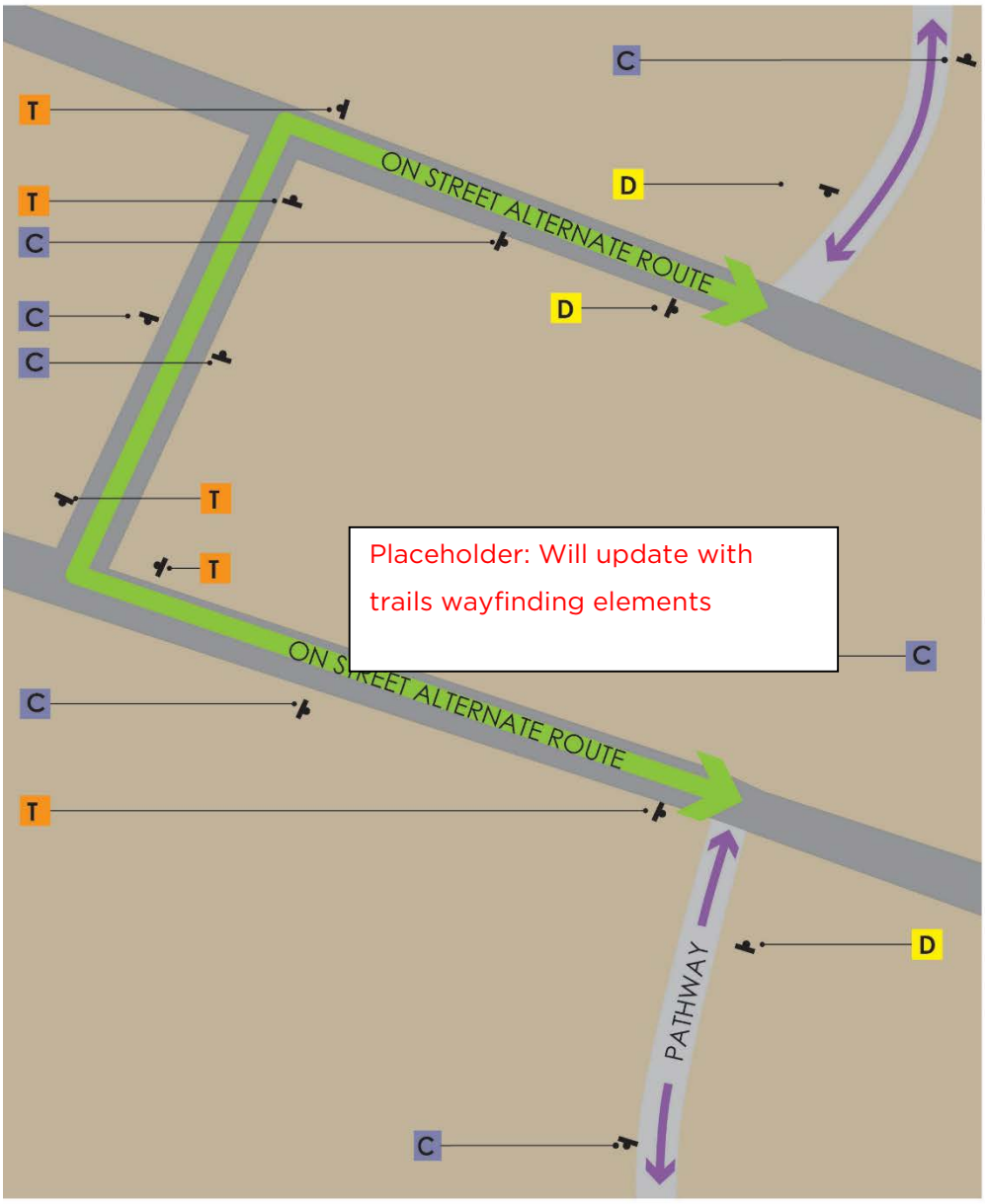
Figure 3.2



NOTES:
a. MOUNT TO UNDERSIDE OF BRIDGE
b. OK TO MOUNT TWO SIGNS PER POLE. SIGNS TO BE PLACED PERPENDICULAR TO DIRECTION OF TRAVEL.

Gap in Path Network

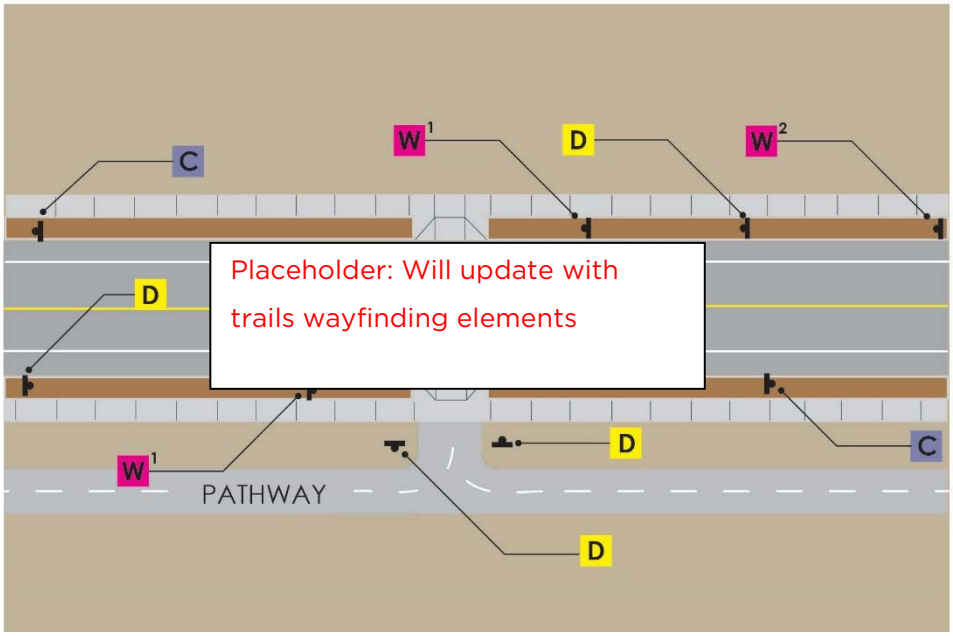
Figure 3.3



Where gaps in the off-street bicycle network exist, pathway users may be routed to on-street bicycle facilities to provide improved connectivity. The typical pattern for wayfinding signs includes a decision/directional sign prior to the intersection of route options, followed by an optional confirmation sign. Turn signs should be placed to reinforce the route in locations where only one route option exists.

Off-street / On-street Transition

Figure 3.4



When transitioning from an off-street facility to an on-street facility, it is important to advise travelers of their route options. In this scenario, decision/directional signs direct bicyclists to their destination choices while confirmation signs reinforce that the user is on a designated facility after a turn movement is made. Decision signs should also be placed at the entry to the off-street bicycle network. Once on the off-street bicycle network, confirmation signs are optional.

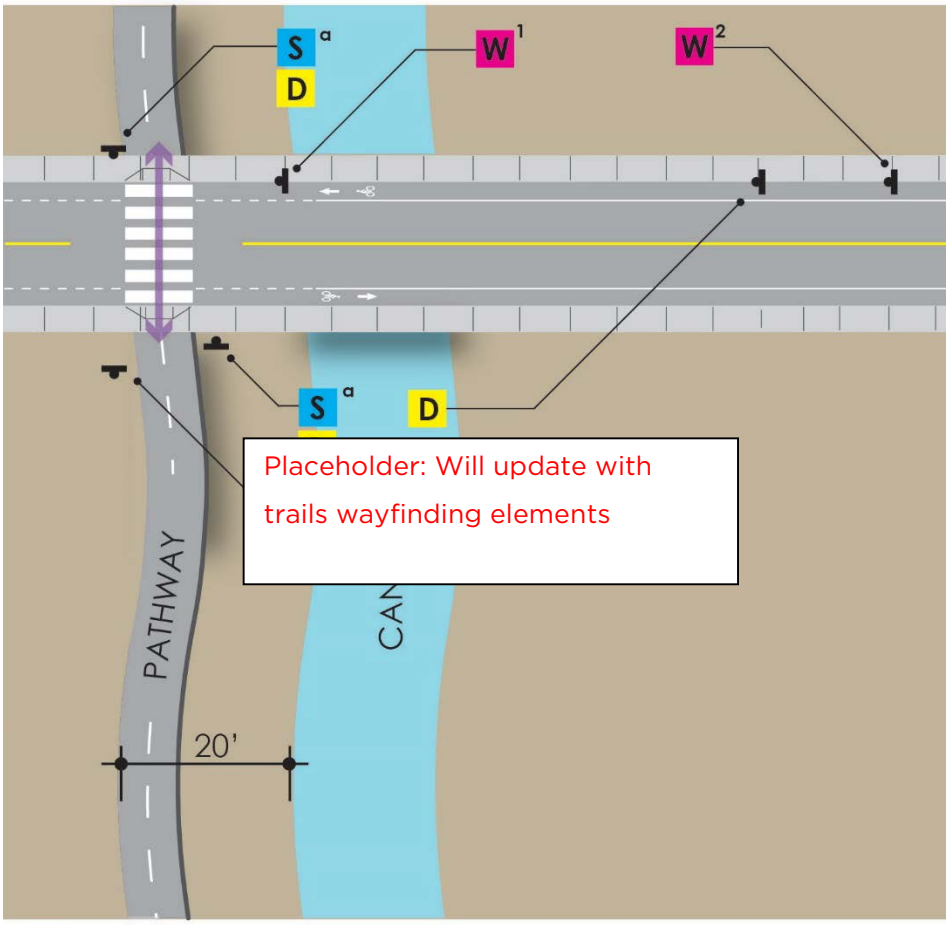
Vehicle oriented bicycle and pedestrian crossing warning signs should be placed in advance of crosswalks. In urban areas, signs should not be placed within four feet of a crosswalk in order to maintain visibility of those intending to cross the roadway.

Advance warning signs are optional per the MUTCD. If they are used, their placement should provide needed time for detection, recognition, decision, and reaction. Table 2C-4 within the MUTCD provides guidance for advance warning sign placement based on vehicle speeds.

On-street directional signs leading to the pathway network should not obscure other roadway signs including warning signs. They should be spaced according to roadway travel speeds with faster roadways warranting wider spacing. Guidelines for the placement of advance warning signs based on perception-response time may be found within Table 2C-4 of the MUTCD.

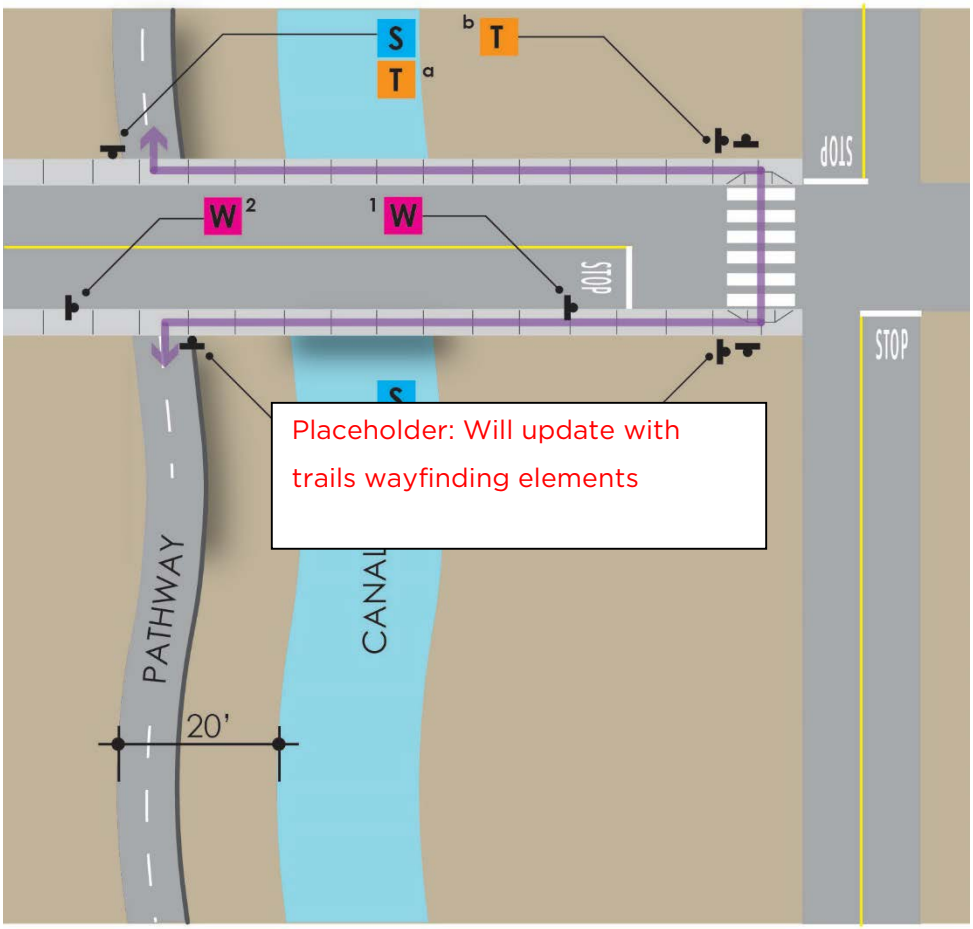
Path-Roadway Intersection

Figure 3.5



Pathway users should be directed to cross roadways only where improvements such as curb ramps, crosswalk striping, and warning signs exists. If the cross street has bicycle facilities such as bike lanes, a bicycle boulevard, or protected bike lanes, a decision/directional sign should be placed prior to the intersection to inform bicyclists of their route options. If a bicyclist oriented stop sign is present, it should not be obscured by the wayfinding sign. Decision signs may be topped with street name sign blades to enhance one's awareness of their location. As an option, confirmation (trailhead) signs may be placed at pathway entries to assure bicyclists that they are on a bicycle facility.

Figure 3.6



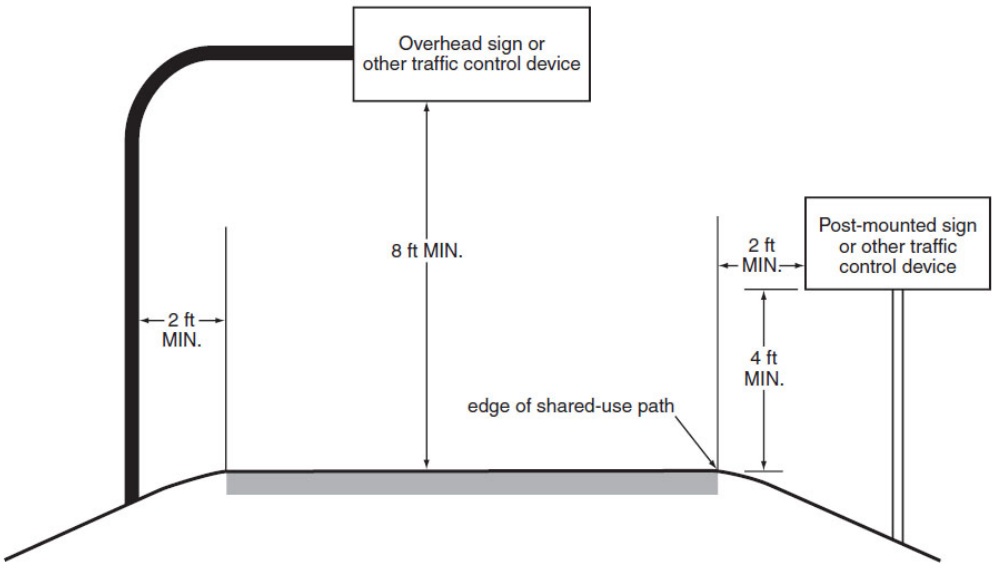
Oftentimes, direct travel via mid-block roadway crossings is not provided for. Instead, pathway users are expected to divert to the nearest improved or signalized intersection. In this scenario, turn signs should be used to direct cyclists to the intersection with safety improvements. Again street name blades may be mounted above decision signs to reinforce location.

3.4. Wayfinding Technical Guidance

3.4.1. 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 (MUTCD) for basic guidelines related to the design of wayfinding systems for bicycles (see page 16). Additional information provided by AASHTO regarding wayfinding is as follows:

- Many communities find that a bicycle wayfinding system enhances other encouragement efforts by providing a visible invitation to new bicyclists and encouraging current bicyclists to explore new destinations.
- Bicycle wayfinding signs along facilities do not improve safety or rider comfort and should supplement other infrastructure improvements so that conditions are favorable for bicycling.
- Guide signs may be used to designate continuous routes that are 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, should 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.



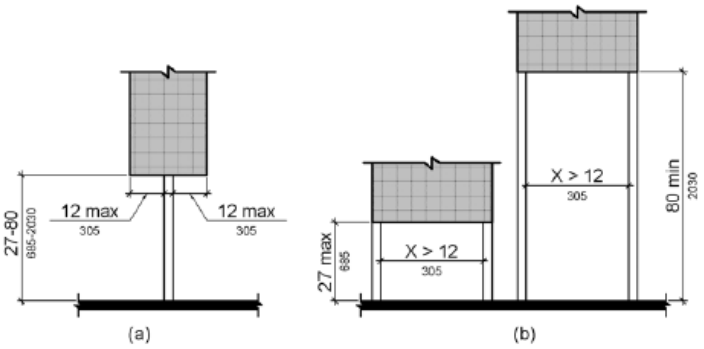
Minimum Sign Clearances on Shared-Use Paths

Accessibility Standards

As wayfinding systems often relate 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 should be a minimum of 80 inches high or maximum of 27 inches when signs protrude more than 12 inches from the sign post or support structure.



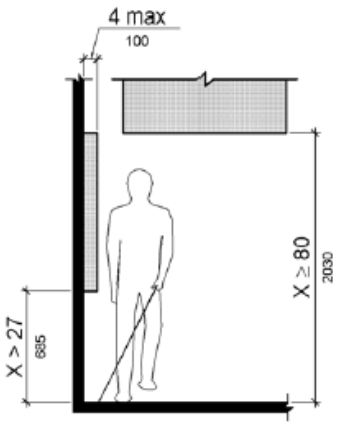
MUTCD Accessibility

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 should 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 should protrude 4 inches maximum horizontally into the circulation path.



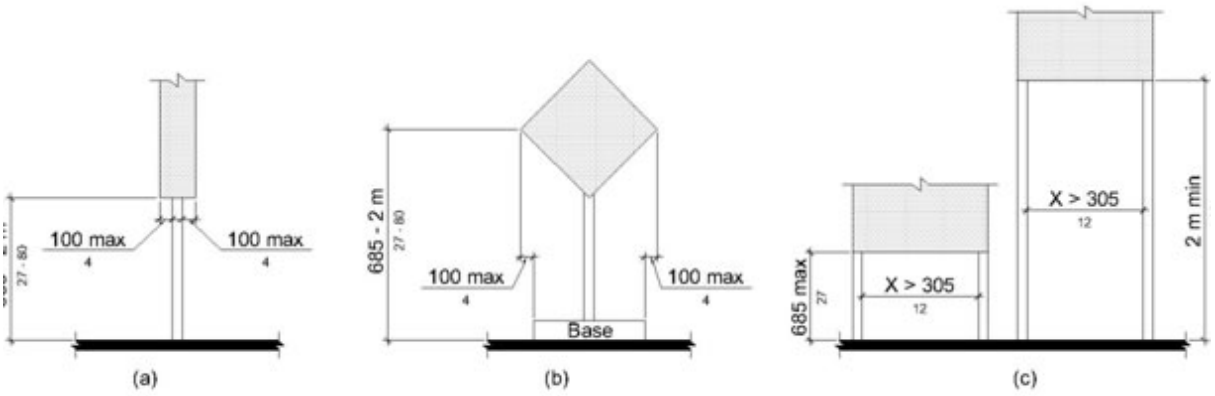
Limits of Protruding Objects

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.

Shared Use Paths

Proposed standards address post mounted objects. 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 should overhang pedestrian circulation paths 4 inches maximum measured horizontally from the post or pylon base. The base dimension should 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 should be 27 inches maximum or 80 inches minimum above the finish surface.



Current proposed standards for post mounted objects along shared use paths.

3.4.2. Manual on Uniform Traffic Control Devices (MUTCD)

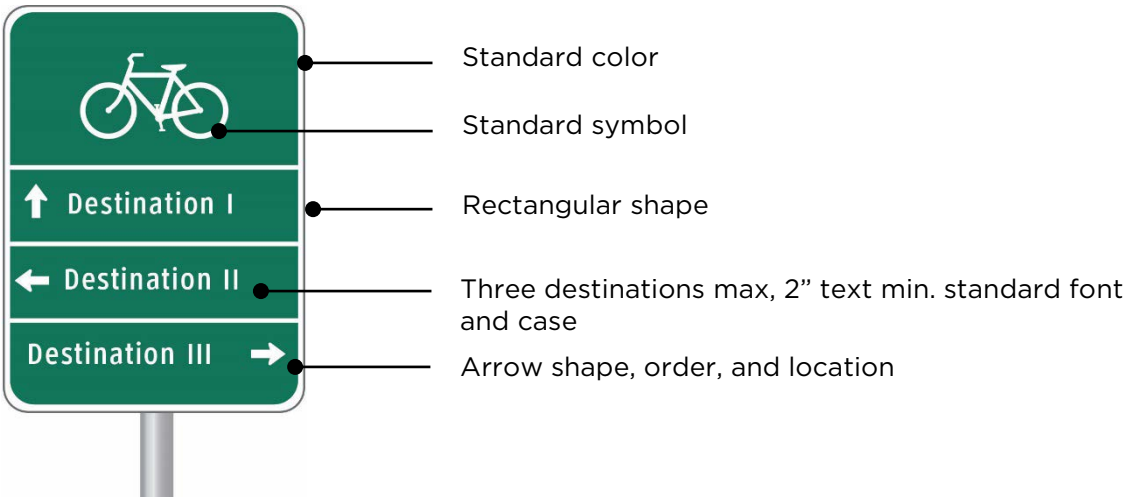
Bicycle Sign Standards

The Manual on Uniform Traffic Control Devices, or MUTCD, is a document issued by the 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.

Standard MUTCD compliant bicycle signs

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

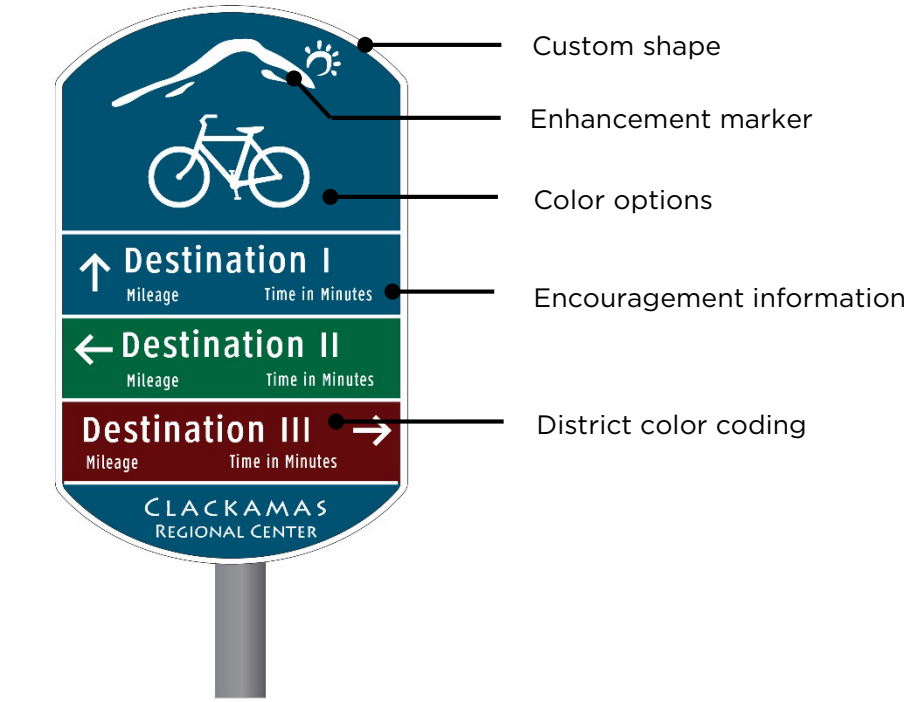
The MUTCD also recommends the arrangement and amount of text, or legend, on each section of each sign:

- 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 (incuding 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 forground (text and graphics) and background.

Community Wayfinding

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:

- 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.
- 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 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”.

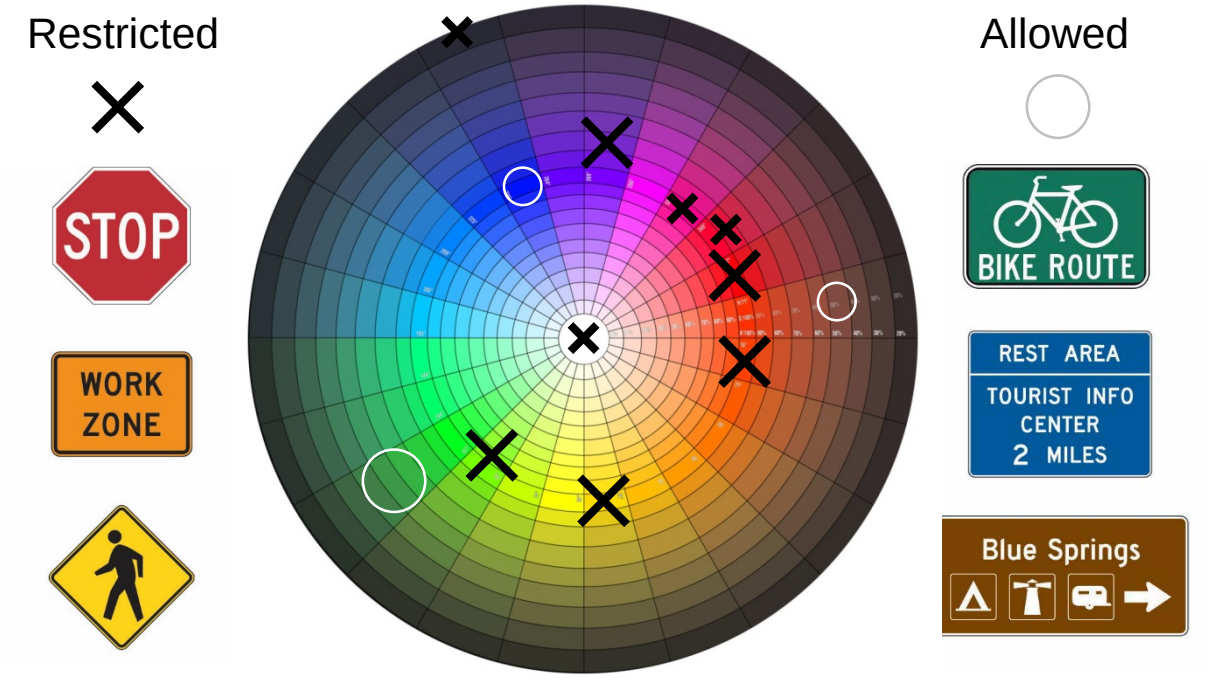


Figure 3-1 Each of the colors depicted with and “X” are not allowed for use on community wayfinding signs and have been accepted by some DOT’s for wayfinding signs. The remaining colors not having restricted uses are appropriate for wayfinding signs per the community wayfinding standards.

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. However, FHWA does not support providing time on bicycle wayfinding sign, but have also stated that it can be valuable information for motorists on some types of highway signs. 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 bicycle wayfinding signs. This is lower than typical bicycle design speed in order to best reflect and encourage the riding speed of the casual rider.

3.5. Enhanced Wayfinding Tools

3.5.1. 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 → Flex

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.

Portland, OR has turned the 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 standard shared lane markings with federal funds, and then makes modifications later with local monies to add the directional wayfinding component.

Columbia, MO is currently conducting an FHWA approved experiment regarding the use of small wayfinding medallions on both on- and off-street bikeways (second image from right). Note: The City of St. Louis is no longer using the arrow with the Bike St. Louis logo and text. The City of Portland previously used similar small medallions to aid with wayfinding. However, these marks were viewed as less effective than shared lane markings as they were only visible to cyclists.

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4. Fort Collins Wayfinding Sign Typologies

4.1. Introduction

Hundreds of miles of on-street and off-street bicycle facilities guide users of all ages and abilities (families, commuters, students, recreationalists, and visitors) around the City of Fort Collins to various destinations. As a dynamic system, this bicycle network should be identifiable and easy to use. It should highlight all of the existing and planned assets. The bicycle network is used by all types of people and wayfinding signs will provide travel clarity and connect users to the different destinations around Fort Collins.

4.2. Branding

Fort Collins Bikeways have one primary logo and associated logos for pavements markings and low stress routes (see page 4-3 and 4-6). The primary Bikeways logo complies with MUTCD guidelines and utilizes colors and fonts established in the City of Fort Collins graphic standards.

Figure 4-1: Fort Collins Bikeways logo

4.3. Sign Typologies

The Fort Collins sign family establishes a cohesive identity for the active transportation network. The sign designs improve navigation, encourage use and provide an identity for the bike network. Sign types include identification markers, time and distances to destinations, geographical references and directions to destinations and other bike routes. The signs support each other to create a network of routes for multiple types of bicyclists.

Primary sign typologies include:

- Decision sign
- Confirmation sign
- Turn sign
- Pavement marking

The primary signs are supplemented by a family of auxiliary signs which may be attached to posts of existing signage as sign toppers. Auxiliary signs include:

- Family friendly route sign toppers
- Regional Bike Route
- Low Stress Network
- Bikeway Street Sign

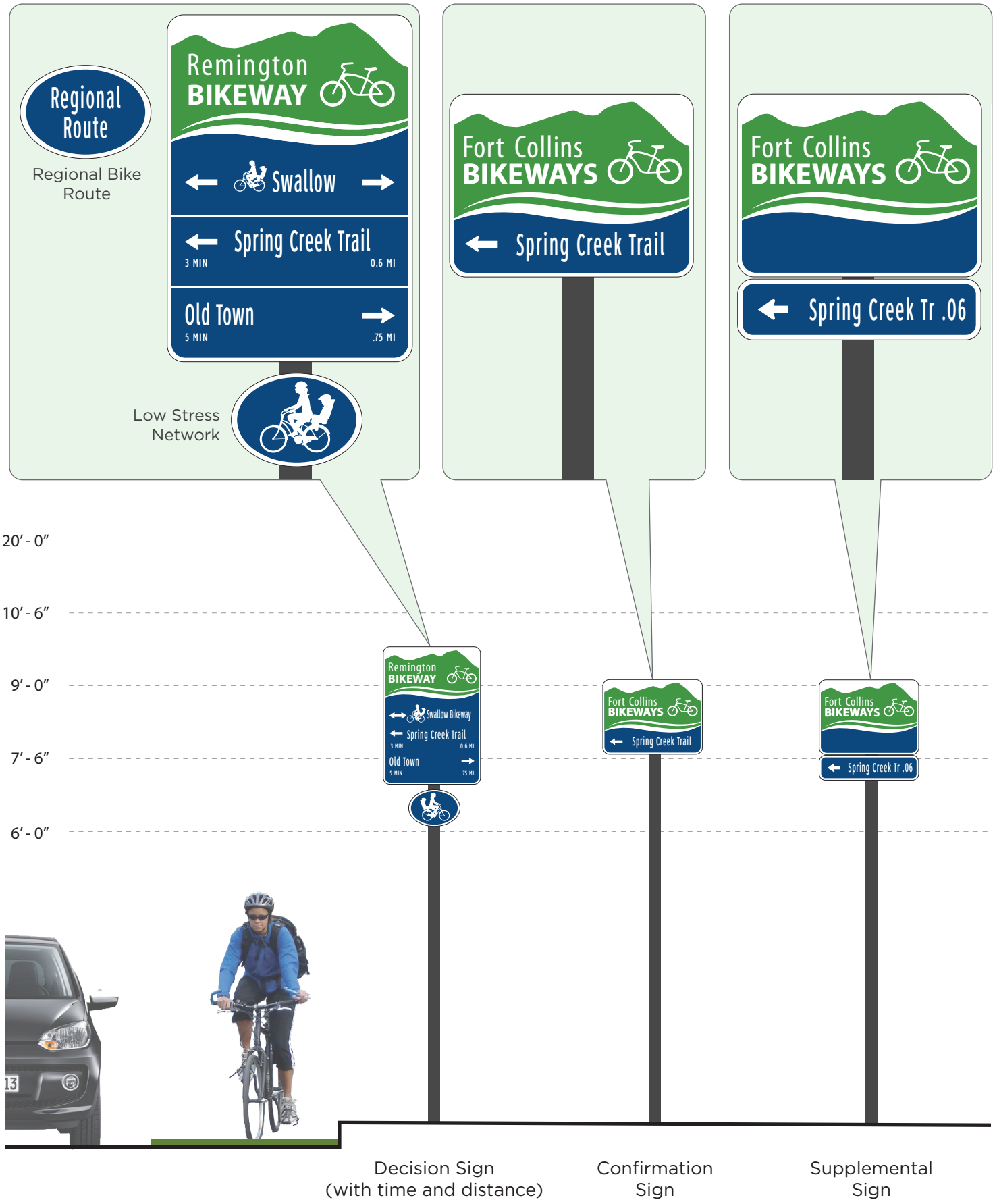


Figure 4.2

Primary Wayfinding Signs

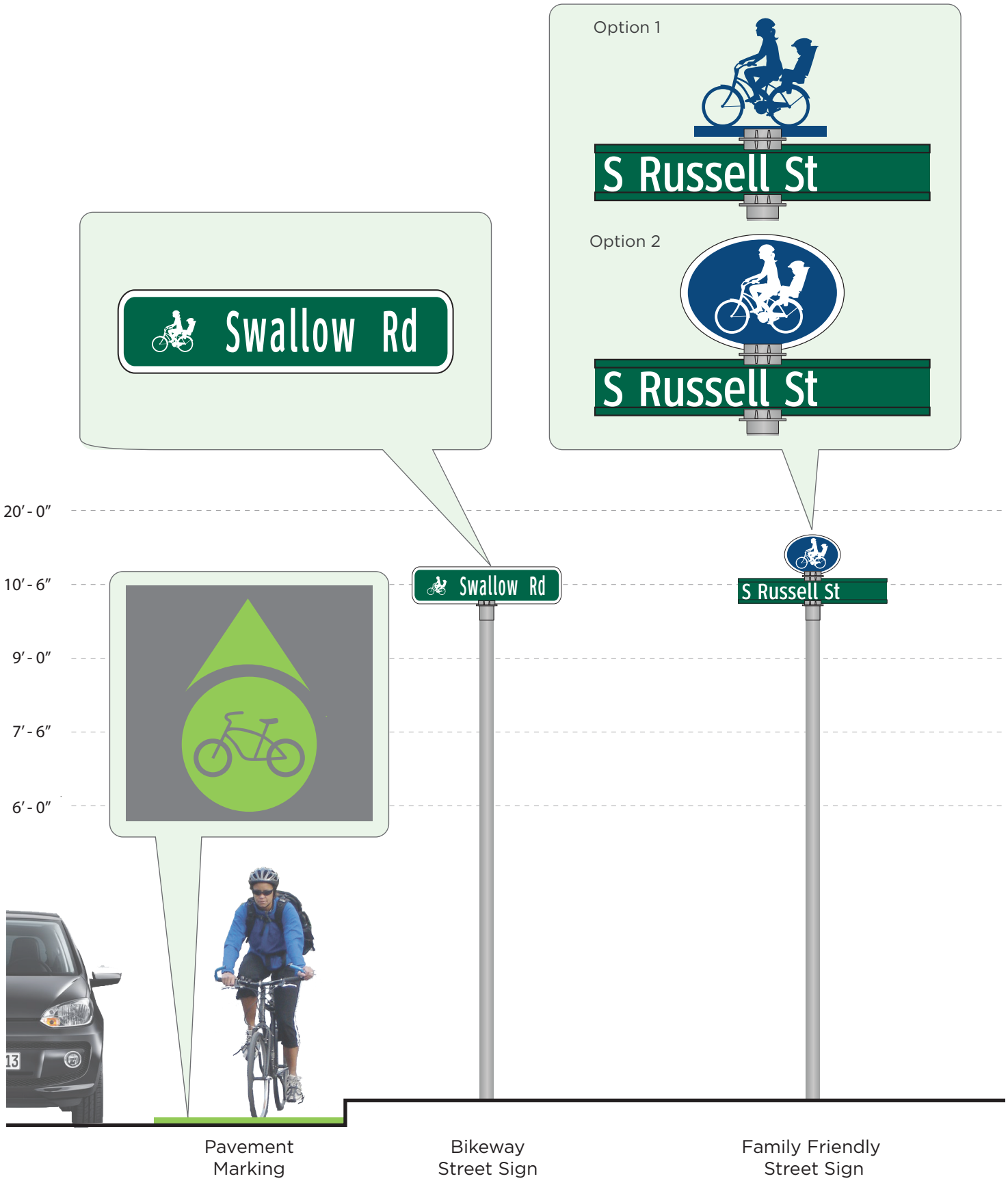


Figure 4.3

Auxiliary Wayfinding Signs

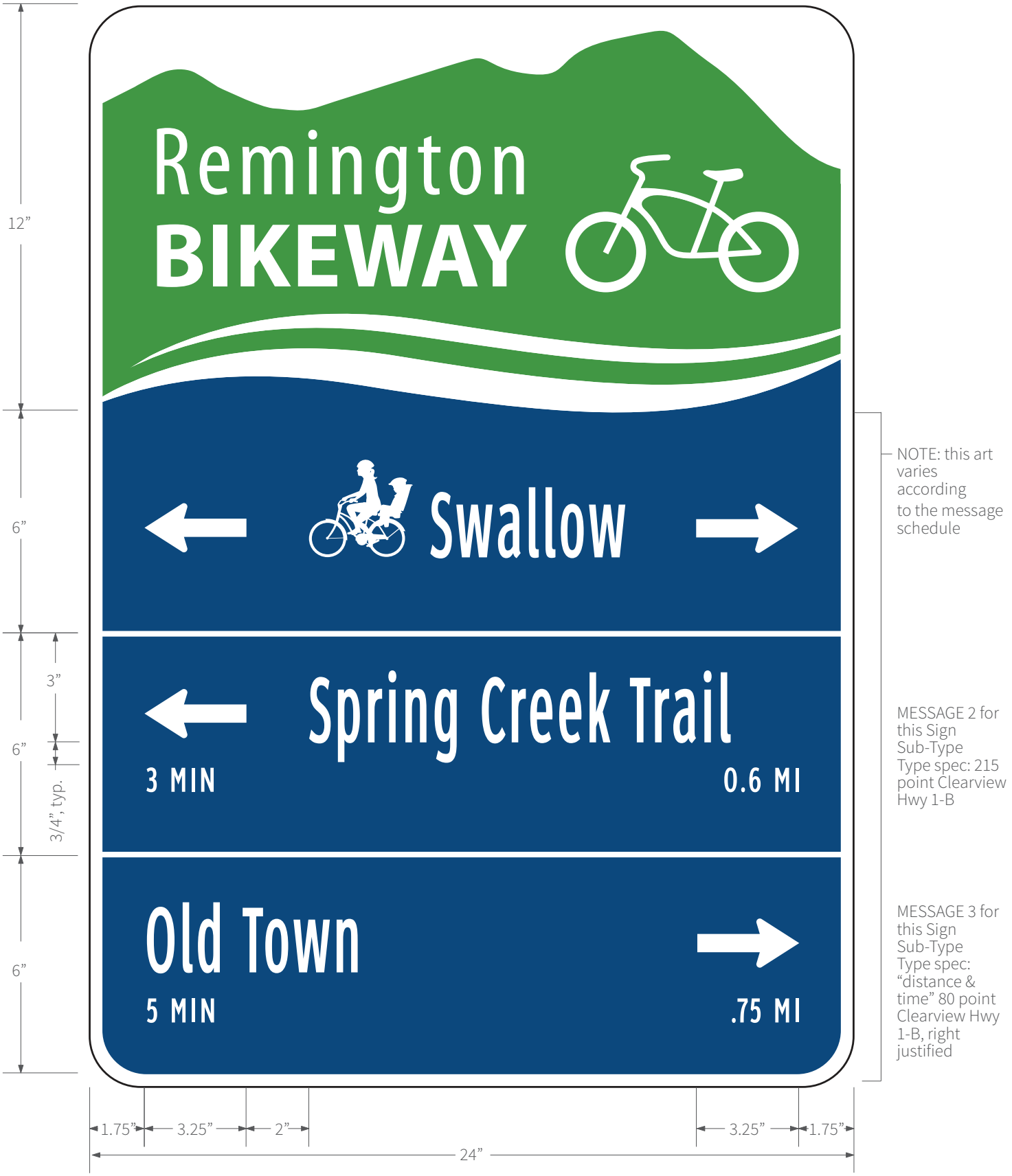


Figure 4.4

Decision Sign (with time and distance)

Figure 4.5

Confirmation Sign

4.4. Sign Programming

Sign implementation will occur in three phases over several years. As part of this master planning process, five phase one routes were selected for preliminary programming based on staff input, stakeholder input, proximity to destinations, route readiness, and gap closure (see Appendix E). A GIS model based on destination typologies and distances was developed to assist in the programming of phase one signs. This model can be reproduced as future phases are implemented.

4.4.1. Destination Selection

Listed below are the criteria for selecting destinations to be included on wayfinding signage based on a four tier hierarchy. All destinations to be signed should be open and accessible to the public.

Level 1 - Cities and Regional Destinations

Level 1 destinations include regional destinations found within Fort Collins and nearby cities. Highlighting nearby cities, such as Loveland, provides large scale geographic orientation for regional cycling. Level 1 destinations provide "pull through" destinations for bicyclists who are travelling significant distances as well as a full range of attractions and services. Pathway facilities that extend beyond the boundaries of the city may include prominent destination cities outside of Fort Collins. If a town/city does not include an activity center and services, it may be excluded from signs. Level 1 destinations should be included on directional signs and orientation maps. Signs within 5 miles of a level 1 destination should include it.

Level 2 – Districts and Neighborhoods

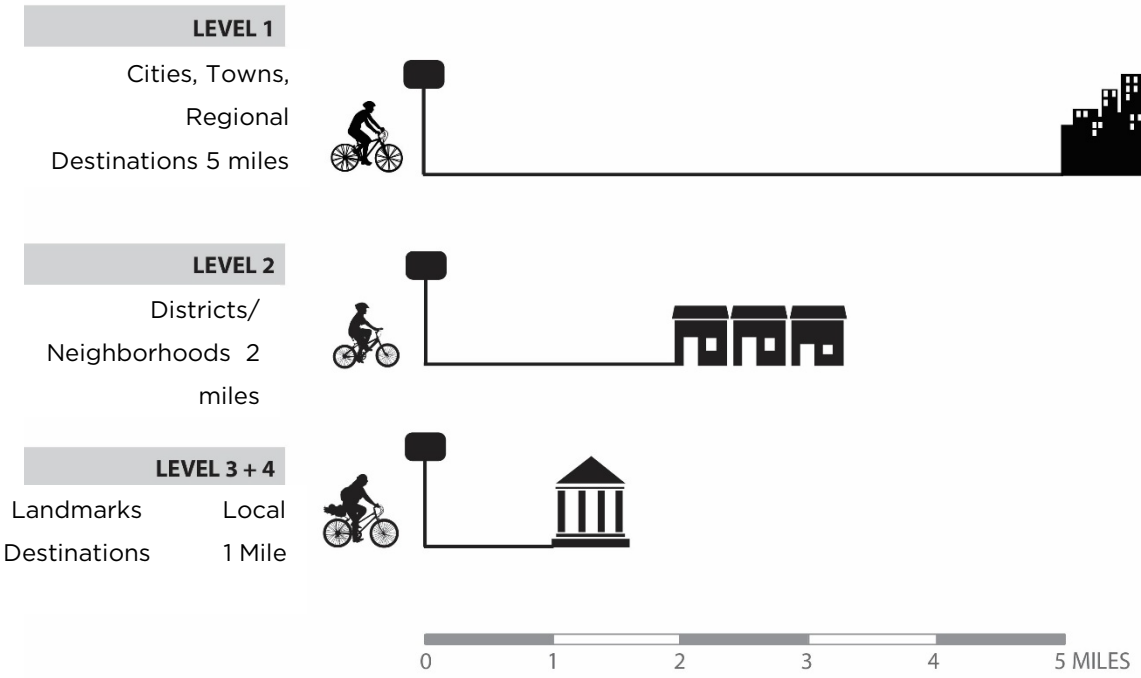
Level 2 destinations provide a finer grain of navigational information than level 1 destinations by directing users to comprehendible districts and neighborhoods. These may be city centers, historic, commercial, cultural, or educational districts, or neighborhoods with a distinct name and character. Emphasis should be placed on districts providing a mix of services. Neighborhoods not offering services or attractions, need not be included. Level 2 destinations should be included on signs up to 2 miles away.

Level 3 - Landmarks

Level 3 destinations are specific landmarks or major attractions which generate a high amount of bicycle travel. Landmarks include transit stations, major tourist venues, regional parks, open spaces and post-secondary educational institutions. Level 3 destinations should be signed up to 1 mile away.

Level 4 – Local Destinations

Level 4 destinations are local destinations such as civic buildings, parks, high schools, shopping centers, and healthcare facilities. They typically occur on signs in low density areas where few other destinations are present or along pathways not connecting higher priority level 1-3 destinations. Level 4 destinations may be signed up to 1 mile away.



4.4.2. Signing Distances

Signing distances suggest the maximum distance that destinations should appear on directional signs. This process ensures that information is spread along the journey in manageable amounts according to a cyclist's immediate needs.

Level 1 destinations provide navigational guidance to the widest spectrum of system users and thus should be prioritized on signs. As a priority, Level 1 destinations should appear on signs up to five miles away. Level 2 destinations appeal to a broad spectrum of users and should be included on signs up to two miles away. Level 3 and 4 destinations are places of either regional or local interest and should be signed up to one ¼ mile away. Cities farther from a principal city with important civic, commercial, or cultural resources may elect to sign that city even though it may be located at a distance farther than 3 miles.

Distances may be measured either to a destination boundary or center, as long as the approach is consistent throughout the region. Cities (Level 1 destinations) typically have a well-defined edge and thus should be measured to boundary lines. Districts (Level 2 destinations) are less defined in terms of their boundaries and thus should be measured to their centers. Level 3 and 4 destinations are typically specific addresses and thus distances should be measured to the main entrance of their specific location. If a Level 3 or 4 destination is large or has several access points, distance should be measured to the point at which the cyclist will arrive at the destination.

4.4.3. Destination Order

The closest destination lying straight ahead should be at the top of the sign or assembly, and below it the closest destinations to the left and to the right, in that order. If more than one destination is displayed in the same direction, the name of a nearer destination shall be displayed above the name of a destination that is further away.

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.

Abbreviations

When placing destination names on signs, the use of abbreviations should be kept to a minimum whenever possible. When insufficient space is available for full wording, abbreviations may be used. MUTCD accepted abbreviations are included in the table below. Unless necessary to avoid confusion, periods, commas, apostrophes, question marks, ampersands, and other punctuation marks or characters that are not letters or numerals should not be used in any abbreviation.

Table 4-1: MUTCD Approved Abbreviations

WORD MESSAGE	ABBREVIATION
Alternate	ALT
Avenue	AVE
Bicycle	BIKE
Boulevard	BLVD
Bridge	BR
Center (as part of a place name)	CTR
Circle	CIR
Court	CT
Crossing (other than highway)	X-ING
Drive	DR
East	E
Hospital	HOSP
Information	INFO
International	INTL
Junction / Intersection	JCT
Mile(s)	MI

WORD MESSAGE	ABBREVIATION
Miles Per Hour	MPH
Minute(s)	MIN
Mount	MT
Mountain	MTN
National	NATL
North	N
Parkway	PKWY
Pedestrian	PED
Place	PL
Road	RD
Saint	ST
South	S
Street	ST
Telephone	PHONE
Terrace	TER
Trail	TR
West	W

5. Master Plan Recommendations

5.1. Overview

Evaluation criteria was established to prioritize and develop a phased approach to the development of wayfinding improvements over time. The criteria are based on a thorough analysis of available data, input from community members and stakeholders and best practices in bicycle wayfinding system design. The corridor and destinations evaluation matrices guided wayfinding improvement priorities included in this plan and provides the City with a standardized methodology for prioritizing opportunities as the networks continues to expand.

5.2. Bicycle Wayfinding Route Corridor Selection and Prioritization

A stakeholder charrette was held to identify an initial network of bicycle wayfinding routes for consideration. The routes were largely based on the existing network of low stress bikeways and trails. A prioritization analysis was conducted to identify each bicycle wayfinding route corridor's priority for wayfinding enhancements. Characterizing each route's priority as first, second or third enables the City to establish a phased approach to the development of wayfinding improvements over time and will inform budgetary and funding decisions.

5.2.1. Prioritization Criteria

Wayfinding route corridor priorities were developed using a GIS overlay analysis of the following five criteria:

- Route Readiness. While bicycle facilities and wayfinding improvements are not codependent, they are typically employed in tandem to provide for safe, comfortable, and simple bicycle travel. The status of a bicycle facility, simply defined as existing, planned, or no facility, is an important prioritization criteria and should be weighted accordingly.
- Bicycle Level of Traffic Stress. Bicycle level of traffic stress (BLTS) is similar to the concept of level of service (LOS) for motor vehicles. Each attempts to measure the user experience along a roadway or at an intersection; however, LOS measures

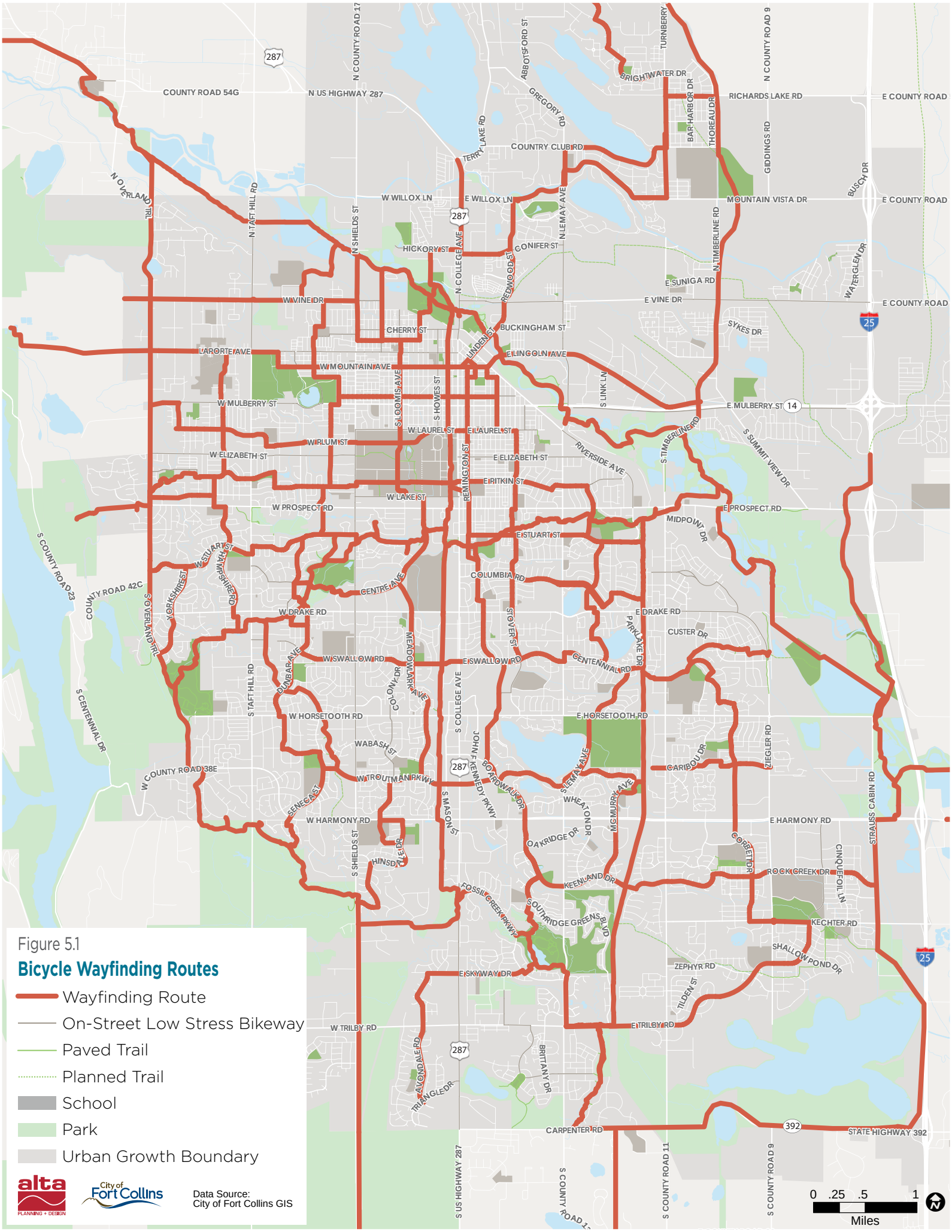


Figure 5.1

Bicycle Wayfinding Routes

- Wayfinding Route
- On-Street Low Stress Bikeway
- Paved Trail
- Planned Trail
- School
- Park
- Urban Growth Boundary

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City of Fort Collins

Data Source:
City of Fort Collins GIS

motorist delay, whereas BLTS measures a bicyclists' stress (or conversely, comfort). Less stressful roadways for bicycling can support a wider variety of bicyclists, from experienced recreational and commuter bicyclists to casual adult, teen and even child riders. By prioritizing wayfinding improvements based on BLTS, Fort Collins can ensure that bicycle travel along designated routes is accessible and comfortable for a broad segment of the population.

- Need. Need for wayfinding improvements can be derived from a number of factors. These include bicycle count data, data from third-party fitness and bicycle activity tracking devices and apps (like Strava and MapMyRide), and community input derived through this and other planning processes. The City of Fort Collins should examine various data sources to identify reliable data sources that indicate need for wayfinding improvements and can be used for prioritization purposes.
- Proximity to Destinations. Not all destinations are located along a bikeway. Wayfinding improvements can provide a vital link between bikeways and high priority destinations, particularly where safe and comfortable streets support bicycle travel.
- Gap Closure. Wayfinding improvements offer a cost-effective means for connecting existing bikeways along safe and comfortable routes. Wayfinding improvements should be prioritized based on their potential to address critical gaps, thereby expanding the bicycle network.

5.2.2. Evaluation Matrix

Relative weights between 0 and 5 were assigned to each criterion, where 0 represents a factor with low influence on wayfinding corridor selection and 5 represents a factor with a high influence on wayfinding corridor selection. For each criterion, corridors received a score between 0 and 5. For each corridor, all criteria scores were weighted and added together to produce a final priority for wayfinding improvements. Prioritization scores were divided into three categories: first priority for wayfinding improvements, second priority for wayfinding improvements and third priority for wayfinding improvements.

A description of the values assigned for each of the factors is included in Table 5.1.

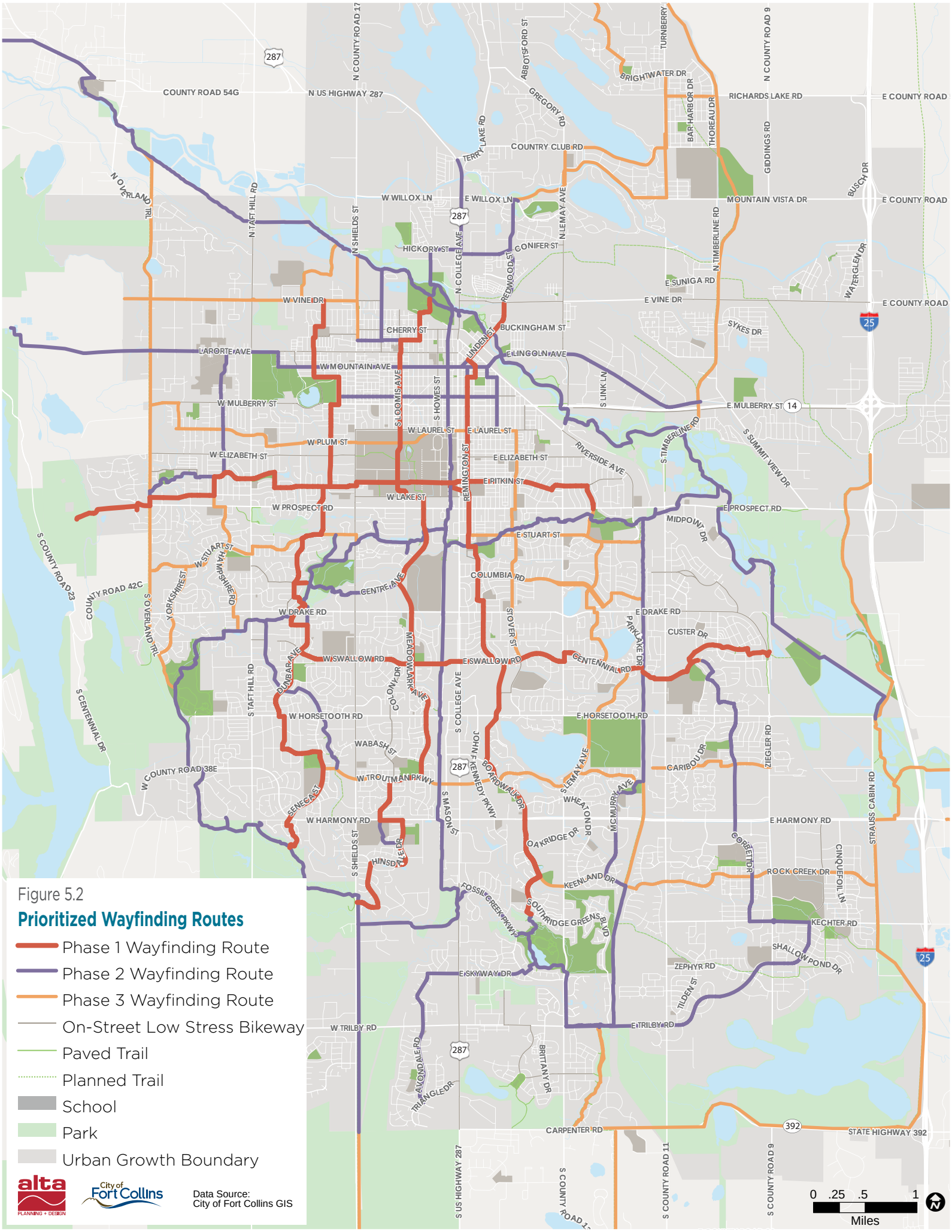
Based on this analysis, five Phase 1 corridors were selected for identification of wayfinding sign locations and destinations.

Table 5-1: Evaluation Matrix

Prioritization Criteria	Variable	Score
Route Readiness	Existing	5
	Planned	2
	No Facility	0
Bicycle Level of Traffic Stress	Level of Traffic Stress 1 (Lowest Stress)	5
	Level of Traffic Stress 2 (Low Stress)	4
	Level of Traffic Stress 3 (Medium Stress)	3
	Level of Traffic Stress 4 (High Stress)	2
	Level of Traffic Stress 5 (Highest Stress)	1
Need (Public Input)	Highest input	5
	Middle input	3
	Lowest input	1
	No input	0
Proximity to Destinations	Route provides direct or near access to multiple Level I and II destinations	5
	Route provides direct or near access to one Level I or II destination	3
	Route provides direct or near access to multiple lower level destinations	3
	Route provides direct or near access to one lower level destination	1
	Route provides no direct or near access to any destinations	0
Gap Closure	Segment or route connects two existing bicycle facilities less than ½ a mile apart	5
	Segment or route connects two existing bicycle facilities greater than half a mile apart	3
	Segment safely extends the length of an existing bicycle facility	2
	Segment does not connect to any existing bicycle facility or close a critical gap in the bike network	0

5.2.3. Naming Bicycle Wayfinding Routes

As bicycle wayfinding routes are comprised of several different streets and/or trails, a standard approach to naming routes was developed. The approach should be replicated as Phase 2 and 3 routes are programmed and additional routes are added to the network. Wayfinding route names were selected based on the street segment that is greater than 50% of the route. If a single street does not represent over 50% of the route, the route name should reflect the route's longest single street or trail segment.


N US HIGHWAY 287
COUNTY ROAD 54G
N COUNTY ROAD 17
N COUNTY ROAD 9
E COUNTY ROAD
RICHARDS LAKE RD
BRIGHTWATER DR
TURNBERRY
ABBOTSFORD ST
GREGORY RD
BAR HARBOR DR
THOREAU DR
GIDDINGS RD
BUSCH DR
COUNTRY CLUB RD
TERRY LAKE RD
N OVERLAND TRL
N TAFT HILL RD
W WILLOX LN
E WILLOX LN
N SHIELDS ST
N LEMAY AVE
N TIMBERLINE RD
MOUNTAIN VISTA DR
HICKORY ST
CONIFER ST
N COLLEGE AVE
REDWOODS ST
WATERGLEN DR
E SUNIGA RD
W VINE DR
E VINE DR
CHERRY ST
BUCKINGHAM ST
LINDEN ST
SYKES DR
LARIMER AVE
E LINCOLN AVE
W MOUNTAIN AVE
S LINK LN
W MULBERRY ST
E MULBERRY ST
14
SLOOMIS AVE
S HOWES ST
W LAUREL ST
E LAUREL ST
W PLUM ST
W ELIZABETH ST
E ELIZABETH ST
RIVERSIDE AVE
S TIMBERLINE RD
S SUMMIT VIEW DR
E PITKIN ST
REMINGTON ST
W LAKE ST
W PROSPECT RD
E PROSPECT RD
MIDPOINT DR
E STUART ST
W STUART ST
HAMPSHIRE RD
S COUNTY ROAD 23
COUNTY ROAD 42C
S OVERLAND TRL
YORKSHIRE ST
CENTRE AVE
COLUMBIA RD
W DRAKE RD
E DRAKE RD
CUSTER DR
STOVER ST
PARKLAKE DR
W SWALLOW RD
E SWALLOW RD
CENTENNIAL RD
DUNBAR AVE
MEADOWLARK AVE
COLONY DR
S TAFT HILL RD
S CENTENNIAL DR
S COLLEGE AVE
JOHN F KENNEDY PKWY
BOARDWALK DR
W HORSETOOTH RD
E HORSETOOTH RD
WABASH ST
W COUNTY ROAD 38E
W TROUTMAN PKWY
CARIBOU DR
ZIEGLER RD
S LEMAY AVE
MCMURRY AVE
WHEATON DR
SENECA ST
S MASON ST
W HARMONY RD
E HARMONY RD
OAKRIDGE DR
CORSETTO DR
STRAUSS CABIN RD
CINQUEFOIL LN
S SHIELDS ST
HINSDALE DR
ROCK CREEK DR
KEENLAND DR
FOSSIL CREEK PKWY
SOUTHRIDGE GREENS BLVD
KECHTER RD
SHALLOW POND DR
ZEPHYR RD
E SKYWAY DR
TILDEN ST
E TRILBY RD
W TRILBY RD
AVONDALE RD
TRIANGLE DR
BRITTANY DR
CARPENTER RD
392
STATE HIGHWAY 392
S US HIGHWAY 287
S COUNTY ROAD 11
S COUNTY ROAD 9
25
287
Figure 5.2
Prioritized Wayfinding Routes
Phase 1 Wayfinding Route
Phase 2 Wayfinding Route
Phase 3 Wayfinding Route
On-Street Low Stress Bikeway
Paved Trail
Planned Trail
School
Park
Urban Growth Boundary
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City of Fort Collins
Data Source:
City of Fort Collins GIS
0 .25 .5 1
Miles

5.3. Destination Selection and Prioritization

The guidelines for selecting and prioritizing destinations were based on the goal to connect bicyclists to places they want to travel. Given the number of potential destinations along wayfinding corridors and the limitation of three destinations per sign, a consistent selection approach is necessary. Destinations along the five Phase 1 wayfinding corridors were identified by developing four broad categories that capture the spectrum of potential destinations.

Based on these four categories, the City and stakeholders identified potential destinations throughout Fort Collins (see Appendix D). Potential destinations were mapped and the five Phase 1 corridors were analyzed to identify destinations along each route, using the following distance criteria:

- Level 1 - destinations are located within 5 miles of route
- Level 2 - destinations are located within 1 mile of route
- Level 3 and 4 – destinations are located within .25 miles of route

Destinations that met distance requirements were recorded for the five selected Phase 1 wayfinding corridors. This analysis informed the programming of destinations on wayfinding signs.

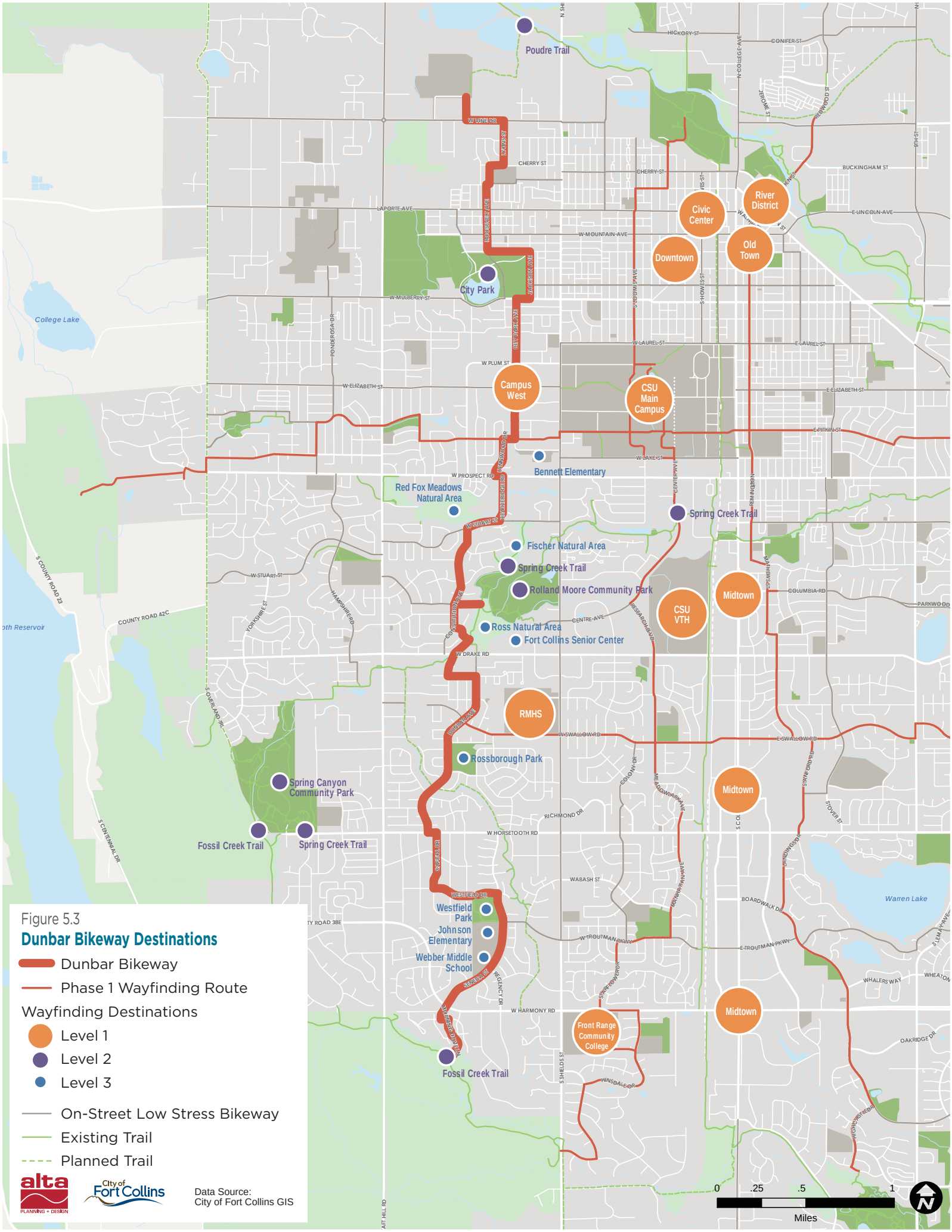

Figure 5.3

Dunbar Bikeway Destinations

- Dunbar Bikeway
- Phase 1 Wayfinding Route

Wayfinding Destinations

- Level 1
- Level 2
- Level 3

- On-Street Low Stress Bikeway
- Existing Trail
- Planned Trail

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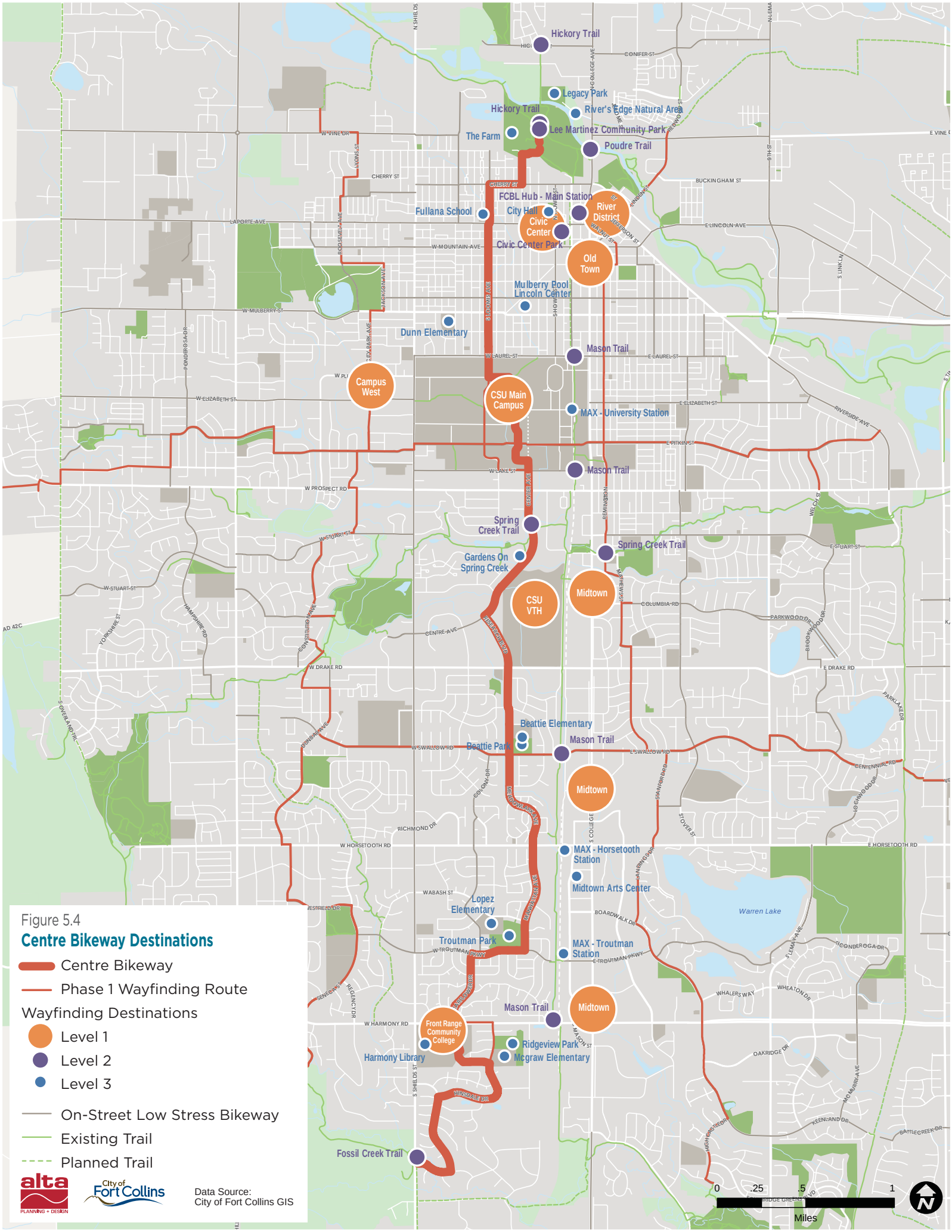
Hickory Trail
Legacy Park
River's Edge Natural Area
Hickory Trail
Lee Martinez Community Park
The Farm
Poudre Trail
FCBL Hub - Main Station
Fullana School
City Hall
River District
Civic Center
Civic Center Park
Old Town
Mulberry Pool
Lincoln Center
Dunn Elementary
Mason Trail
Campus West
CSU Main Campus
MAX - University Station
Mason Trail
Spring Creek Trail
Gardens On Spring Creek
Spring Creek Trail
CSU VTH
Midtown
Beattie Elementary
Beattie Park
Mason Trail
Midtown
MAX - Horsetooth Station
Midtown Arts Center
Lopez Elementary
Troutman Park
MAX - Troutman Station
Mason Trail
Midtown
Front Range Community College
Ridgeview Park
Mcgraw Elementary
Harmony Library
Fossil Creek Trail
Warren Lake
Figure 5.4
Centre Bikeway Destinations
Centre Bikeway
Phase 1 Wayfinding Route
Wayfinding Destinations
Level 1
Level 2
Level 3
On-Street Low Stress Bikeway
Existing Trail
Planned Trail
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City of Fort Collins
Data Source:
City of Fort Collins GIS
0
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1
Miles

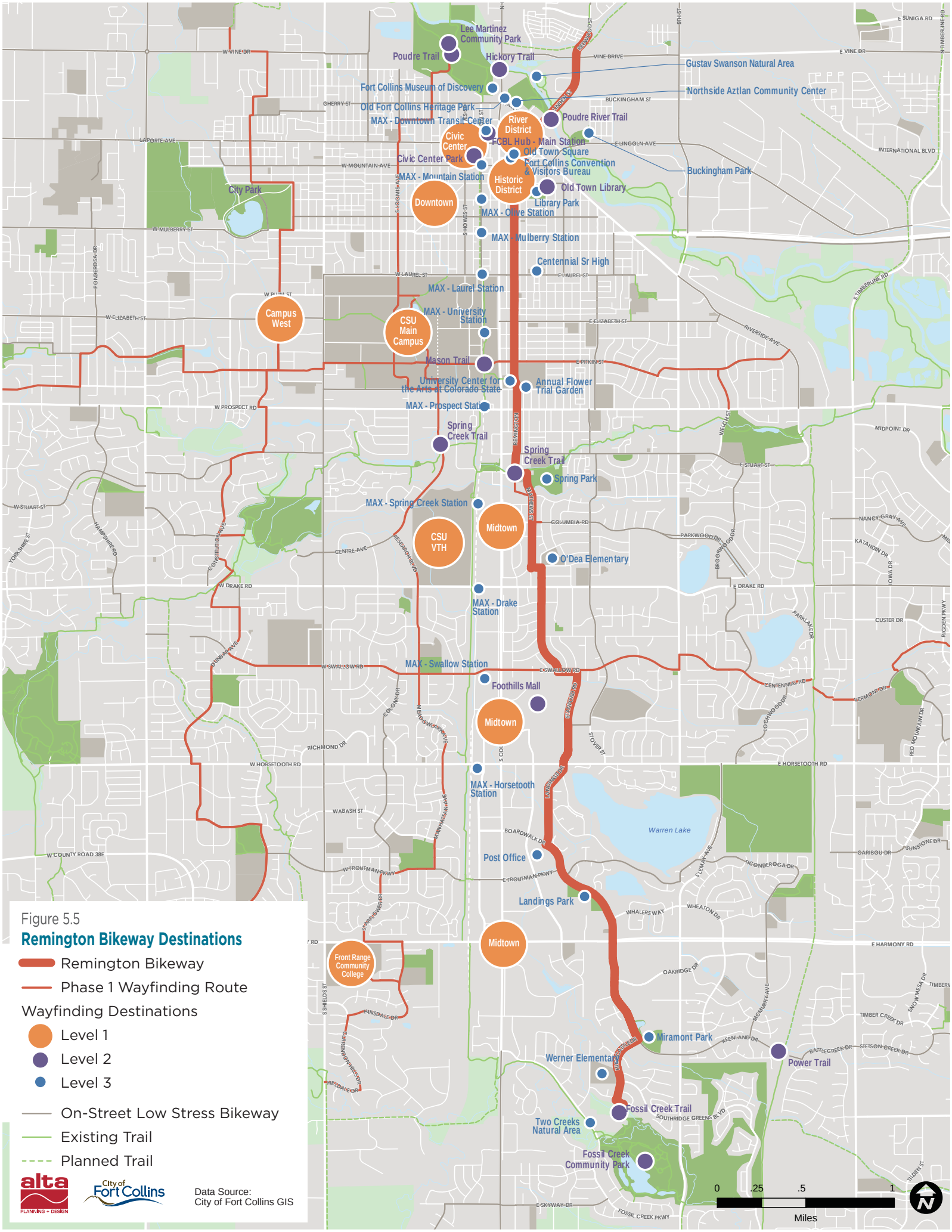

Figure 5.5

Remington Bikeway Destinations

- Remington Bikeway
- Phase 1 Wayfinding Route

Wayfinding Destinations

- Level 1
- Level 2
- Level 3

- On-Street Low Stress Bikeway
- Existing Trail
- Planned Trail

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Data Source:
City of Fort Collins GIS

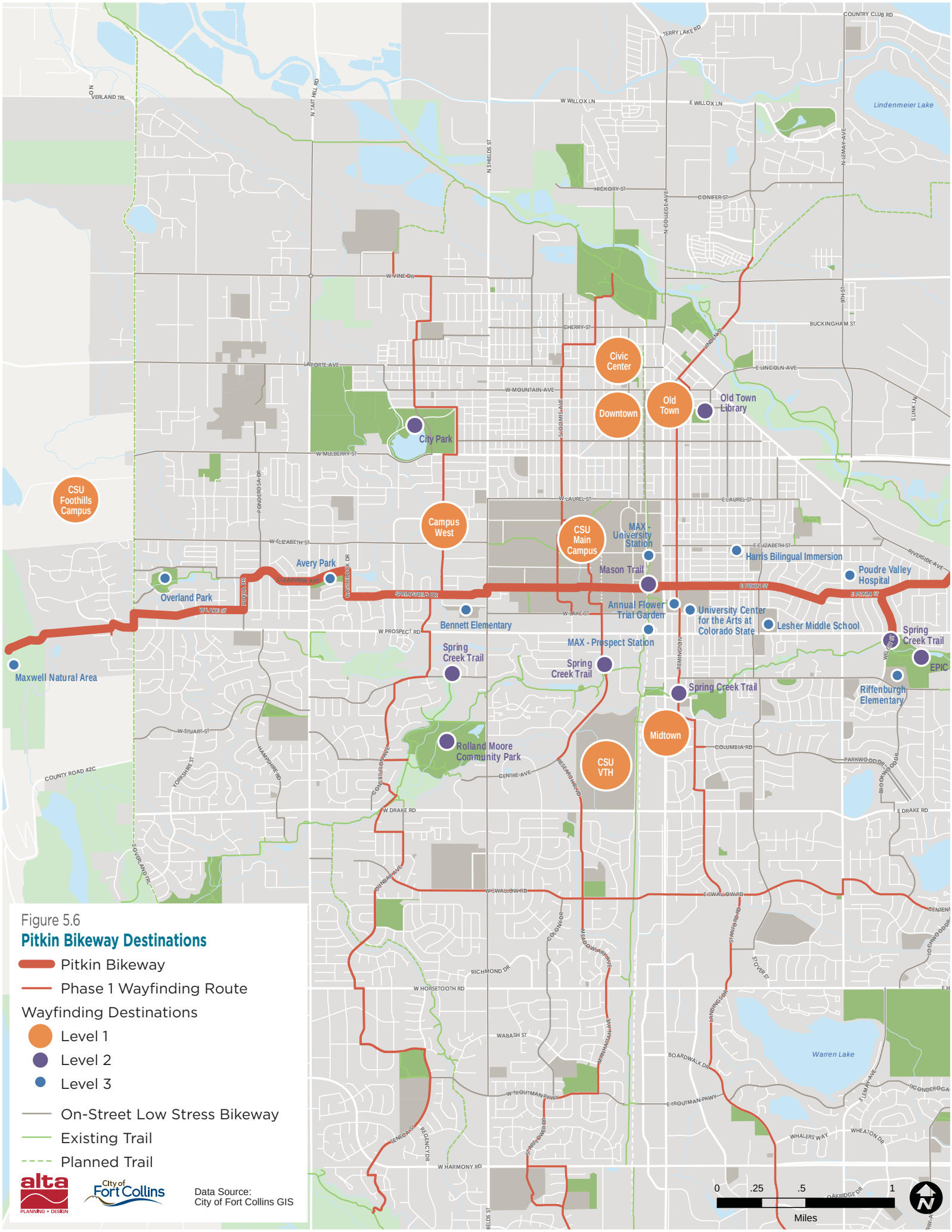

Figure 5.6

Pitkin Bikeway Destinations

- Pitkin Bikeway
- Phase 1 Wayfinding Route

Wayfinding Destinations

- Level 1
- Level 2
- Level 3

- On-Street Low Stress Bikeway
- Existing Trail
- Planned Trail

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Data Source:
City of Fort Collins GIS

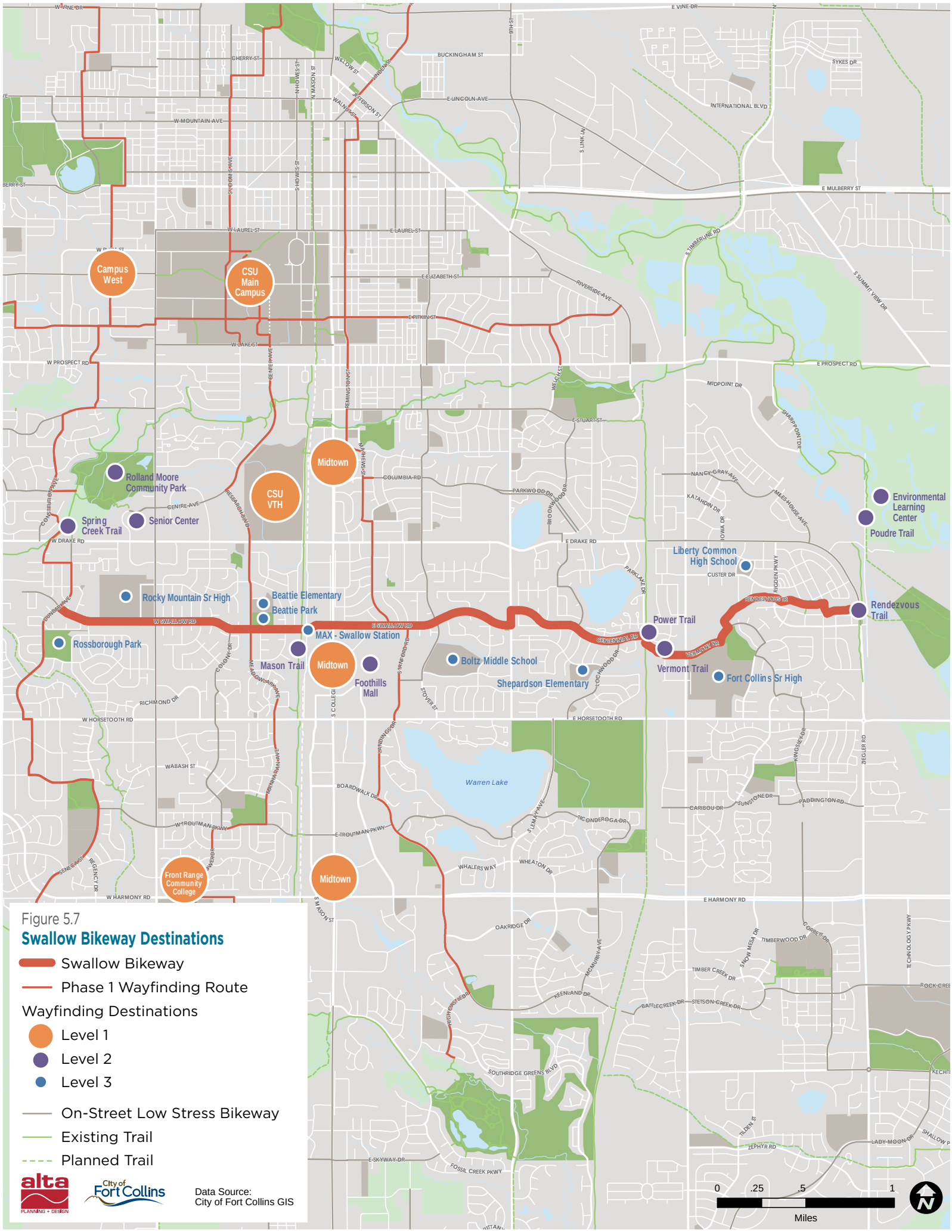

Figure 5.7

Swallow Bikeway Destinations

- Swallow Bikeway
- Phase 1 Wayfinding Route

Wayfinding Destinations

- Level 1
- Level 2
- Level 3

- On-Street Low Stress Bikeway
- Existing Trail
- Planned Trail

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City of Fort Collins

Data Source:
City of Fort Collins GIS

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6. Implementation Approach

6.1. Next Steps

Because a variety of bicycling facilities are found throughout the City of Fort Collins, this document focuses on both the on-street and off-street bicycle network. The on-street network touches all of the areas of the city and consists of many different facility types. The off-street network includes both paved and unpaved shared-use paths which extend through a variety of settings. Wayfinding improvements following these guidelines should be installed as routine accommodation when new facilities are initially built. Wayfinding elements should also be integrated into existing segments of both the on-street and off-street bicycle network.

Final Design and Fabrication

Based on the content of this wayfinding master plan, wayfinding sign designs within this document may be used as templates for in-house fabrication or for bidding the work to independent contractors.

As was done for Phase 1 routes, a sign schedule describing each wayfinding element in relation to placement, orientation, messaging, directional arrows, and distance/time measurements to be placed on each individual sign should be produced for the subsequent phases of implementation as described within the master plan. Note that placement recommendations generated through the master plan process should be refined during final design. Final sign placement should be field verified to ensure that conflicts are not present and that each location is in compliance with applicable laws and authorities. Verification of placement within the public right-of-way or negotiated easement need also occur.

For more complicated elements, such as the trailhead signs and kiosks, fabricators may be required to produce shop drawings indicating methods of assembly, as well as electrical and structural engineering (if needed). Shop drawings should be routed through the appropriate agency departments for approvals. The production of full-scale mock-ups of sign elements may be required as part of the fabrication contract.

As part of the contractor selection process, requirements may be outlined to assure a quality product. For more complex elements, fabricators should have at least five years of experience in the field completing projects of similar scope. References should be contacted to verify quality of products during the fabrication and installation phase, as well as in regard to ongoing maintenance support.

6.2. Capital Budget and Cost Calculator

Item	Description	Unit	Quantity	Unit Cost (Includes installation)	Expense
Phase 1: Wayfinding Signage Estimate of Unit Costs					
	Sign Type				
1	Decision Sign	EA	67	$135	$9,045.00
2	Confirmation Sign	EA	17	$135	$2,295.00
3	Confirmation/Turn Sign	EA	49	$135	$6,615.00
4	Turn Sign	EA	68	$100	$6,800.00
5	Green Thermo Plastic Pavement Marking (Custom with cruiser)	EA	61	$135	$8,235.00
6	Low-Stress Route Supplemental Sign	SF	0	$100	$0.00
7	Low-Stress Street Sign	SF	0	$100	$0.00
8	Family Friendly Street Sign Topper - Opt. 1	SF	0	$250	$0.00
9	Family Friendly Street Sign Topper - Opt. 2	SY	0	$100	$0.00
10	Galvanized Steel Post	EA	100	$100	$10,000.00
	SUBTOTAL				**$42,990**
	CONTINGENCY (20% OF SUBTOTAL)				**$8,598**
	PHASE 1 TOTAL				**$51,588**
		Unit	**Quantity**	**Cost (Includes Installation)**	**Expense**
Phase 2: Wayfinding Signage Estimate of Unit Costs (Per Mile)					
	PHASE 2 SUBTOTAL	Miles	65	$1,300.00	$84,500.00
	CONTINGENCY (20% OF SUBTOTAL)				**$16,900**
					$101,400
Phase 3: Wayfinding Signage Estimate of Unit Costs (Per Mile)					
	PHASE 3 SUBTOTAL		67	$1,300.00	$87,100.00
	CONTINGENCY (20% OF SUBTOTAL)				**$17,420**
					$104,520

MASTER PLAN TOTAL **$257,508**

ASSUMPTIONS:

1. Cost of wayfinding signage is based on a unit cost provided by Fort Collins Staff. Installation cost is covered by the City of Fort Collins crews. Phase 2 & 3 costs are a per mile estimated opinion of cost and are based upon phase 1 costs. Cost estimate assumes 50% of new signs would need new poles per phase of construction.

The above items, amounts, quantities, and related information are based on Alta Planning + Design's judgment at this level of document preparation and is offered only as reference data. Alta Planning + Design has no control over construction quantities, costs and related factors affecting costs, and advises the client that significant variation may occur between this estimate of probable construction costs and actual construction prices.

6.3. Funding Opportunities

Funding for bicycle projects may come from a variety of sources including matching grants, sales tax or other taxes, bond measures, or public/private partnerships. This section identifies sources of funding for planning, design, implementation, and maintenance of bicycle projects, including wayfinding improvements in Fort Collins. The descriptions are intended to provide an overview of available options and do not represent a comprehensive list. It should be noted that this section reflects the funding available at the time of writing. The funding amounts, fund cycles, and even the programs themselves are susceptible to change without notice.

6.3.1. Federal Funding

Federal transportation funding is typically directed through state agencies to local governments either in the form of grants or direct appropriations, independent from state budgets. Federal funding typically requires a local match of 20%, although there are sometimes exceptions, such as the 2009 American Recovery and Reinvestment Act stimulus funds, which did not require a match.

The Colorado Department of Transportation (CDOT) and North Front Range Metropolitan Planning Organization (NFRMPO) administer most federal monies. Federal funding is intended for capital improvements, and projects must relate to the surface transportation system. Most, but not all, of these programs are oriented toward transportation, (as opposed to recreation), with an emphasis on reducing auto trips and providing inter-modal connections. In the NFRMPO region, funding from the Federal Highway Administration (FHWA) requires a local match of generally between 10% and 20% depending on the funding

program, while Federal Transit Administration (FTA) requires a local match that ranges between 0 – 20%. Otherwise, Federal funding typically requires a local match of 20%.

The following is a list of federal funding sources that could be used to support the implementation of pathway wayfinding improvements. Most of these are competitive, and involve the completion of extensive applications with clear documentation of the project need, costs, and benefits. However, it should be noted that, in addition to stand alone projects, the Federal Highway Administration (FHWA) encourages the construction of bicycle improvements as an incidental element of larger ongoing projects, consistent with its 2010 policy statement on bicycle and pedestrian accommodation.[2] It is important to be in substantial conformance with the MUTCD standards in order to retain eligibility for federally available transportation funding resources.

Federal Aid Highway Program: MAP-21

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 when appropriate.

The largest source of federal funding for bicycle projects is the United States Department of Transportation's (US DOT) Federal-Aid Highway Program, which Congress has reauthorized roughly every six years since the passage of the Federal-Aid Road Act of 1916. The latest act, Moving Ahead for Progress in the Twenty-First Century (MAP-21) was enacted in July 2012 as Public Law 112-141. The Act replaces the Safe, Accountable, Flexible, Efficient Transportation Equity Act – a Legacy for Users (SAFETEA-LU), which was valid from August 2005 through June 2012. In October 2014, congress approved a short-term extension of MAP-21 through May 31, 2015.

MAP-21 authorizes funding for federal surface transportation programs including highways and transit. There are a number of programs identified within MAP-21 that are applicable to bicycle projects. Fort Collins should track the next reauthorization of this program and seek to allocate future funds to bicycle projects. For more information see: http://www.fhwa.dot.gov/map21/ and http://www.fhwa.dot.gov/map21/summaryinfo.cfm

[2] http://www.fhwa.dot.gov/environment/bicycle_pedestrian/overview/policy_accom.cfm

Transportation Alternatives (TAP)

Transportation Alternatives (TAP) is a funding source under MAP-21 that consolidates three former SAFETEA-LU programs: Transportation Enhancements (TE), Safe Routes to School (SRTS), and the Recreational Trails Program (RTP). These funds may be used for a variety of projects including sidewalks, multi-use paths, school safety, and rail-trails. TAP requires a local match of 20%. The NFRMPO region receives about $1 million per year for this program and directs these funds towards completing regional trail connections identified in the 2013 Regional Bicycle Plan. CDOT Region 4 also received TAP funds to allocate throughout the regional which has helped to secure bicycle parking along FLEX and MAX routes.

Transportation Alternatives as defined by Section 1103 (a)(29). This category includes the construction, planning, and design of a bicycle infrastructure including "on-road and off-road trail facilities for pedestrians, bicyclists, and other non-motorized forms of transportation, including sidewalks, bicycle infrastructure, pedestrian and bicycle signals, traffic calming techniques, lighting and other safety-related infrastructure, and transportation projects to achieve compliance with the Americans with Disabilities Act of 1990." Infrastructure projects and systems that provide "Safe Routes for Non-Drivers" is a new eligible activity.
For the complete list of eligible activities, visit:

http://www.fhwa.dot.gov/environment/transportation_enhancements/legislation/map21.cfm

Unless the Governor of a given state chooses to opt out of Recreational Trails Program funds, $85 million in dedicated funds for recreational trails continues to be provided nationally as a subset of TAP. The types of projects that are eligible for TAP funding include:

- Recreational Trails. TAP funds may be used to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. Examples of trail uses include hiking, bicycling, in-line skating, equestrian use, and other non-motorized and motorized uses. These funds are available for both paved and unpaved trails, but may not be used to improve roads for general passenger vehicle use or to provide shoulders or sidewalks along roads.

- Safe Routes to School. CDOT recently reinstated Safe Routes to School as a statewide program. Safe Routes to School activities are eligible for the Transportation Alternatives Program. Both infrastructure and non-infrastructure projects are eligible, and the program elements described in SAFETEA-LU are still in effect. The purpose of the Safe Routes to Schools eligibility is to promote safe, healthy alternatives to riding the bus or being driven to school. All projects must be within two miles of primary or middle schools (K-8).

- Planning, designing, or constructing roadways within the right-of-way of former interstate routes or divided highways.

- Funds available through TAP are based on a two percent set-aside of total MAP-21 authorizations. However, because MAP-21 allows state DOTs to transfer up to fifty percent of a given highway program's funds to other highway programs, the final amount of TAP funding available in Arizona may be more or less than the projected apportionments developed by FHWA.

The following provides an overview of how TAP funds flow from the federal government to states and local communities.

Surface Transportation Program (STP)

The Surface Transportation Program (STP) provides flexible funds to states which may be used for a variety of highway, road, bridge, and transit projects. Bicycle improvements are eligible, including off-street trails, sidewalks, crosswalks, and pedestrian signals and beacons. Fifty percent of each state's STP funds are sub-allocated geographically by population; the remaining fifty percent may be spent in any area of the state. STP-Metro requires a local match of 17.21%.

Highway Safety Improvement Program (HSIP)

HSIP provides $2.4 billion nationally for projects and programs that help communities achieve significant reductions in traffic fatalities and serious injuries on all public roads, bikeways, and walkways. MAP-21 requires each state to formulate a state safety plan, produced in consultation with non-motorized transportation representatives, in order to receive HSIP funds. Eligible projects will be evaluated on anticipated cost-effectiveness of reducing serious injuries and fatalities.

Bicycle and pedestrian safety improvements, enforcement activities, traffic calming projects, and crossing treatments for non-motorized users are eligible for these funds.

Federal Transit Administration Urbanized Area Formula Grants (5307)

Bicycling and walking projects and programs are eligible under this MAP-21 program as "associated transit improvements" (ATIs). Recipients must spend at least one percent of received funds on ATIs. According to the statute, ATIs are projects "designed to enhance public transportation service or use and that are physically or functionally related to transit facilities." Projects eligible as ATIs include:

- Bus shelters

- Landscaping and streetscaping
- Pedestrian access and walkways
- Signage
- Enhanced access for persons with disabilities

Wayfinding projects that support access to transit and bus shelter locations are potential candidates for such funding.

Congestion Mitigation and Air Quality Improvement (CMAQ) Program

The CMAQ program, at an average annual funding level of $3.3 billion, provides a flexible funding source to state and local governments for transportation projects and programs to help meet the requirements of the Clean Air Act. Funding is available to reduce congestion and improve air quality for areas that do not meet the National Ambient Air Quality Standards for ozone, carbon monoxide, or particulate matter (non-attainment areas) as well as former non-attainment areas that are now in compliance (maintenance areas). States with no non-attainment or maintenance areas may use their CMAQ funds for any CMAQ- or STP-eligible project. CMAQ generally requires a local match of 17.21%.

Federal Lands and Tribal Transportation Program

MAP-21 acknowledges the importance of access to federal and tribal lands. Recognizing the need for all public federal and tribal transportation facilities to be treated under uniform policies similar to the policies that apply to federal-aid highways and other public transportation facilities, MAP-21 creates a unified program for federal lands transportation facilities, federal lands access transportation facilities, and tribal transportation facilities.

The Tribal Transportation Program provides $450 million annually for projects that improve access to and within tribal lands. This program generally continues the existing Indian Reservation Roads program, while adding new set asides for tribal bridge projects (in lieu of the existing Indian Reservation Road Bridge program) and tribal safety projects. It continues to provide set asides for program management and oversight and tribal transportation planning. A new statutory formula for distributing funds among tribes, based on tribal population, road mileage, and average funding under SAFETEA-LU, plus an equity provision, is to be phased in over a four-year period.

MAP-21 also authorizes the Tribal High Priority Projects Program, a discretionary program modeled on an earlier program that was funded by set aside from the Indian Reservation Roads Program. MAP-21 provides $30 million per year from the General fund (subject to appropriation) for this new program.

Partnership for Sustainable Communities

Founded in 2009, the Partnership for Sustainable Communities is a joint project of the EPA, U.S. Department of Housing and Urban Development (HUD), and USDOT. The partnership aims to "improve access to affordable housing, more transportation options, and lower transportation costs while protecting the environment in communities nationwide." The Partnership is based on five Livability Principles, one of which explicitly addresses the need for bicycle and pedestrian infrastructure:

"Provide more transportation choices: Develop safe, reliable, and economical transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health."

The Partnership is not a formal agency with a regular annual grant program. MAG member agencies should track Partnership communications and be prepared to respond proactively to announcements of new grant programs. Initiatives that speak to multiple livability goals are more likely to score well than initiatives that are narrowly limited in scope to cycling goals. For more information see:

http://www.sustainablecommunities.gov/partnership-resources

Community Transformation Grants

Community Transformation Grants administered through the Centers for Disease Control and Prevention support community-level efforts to reduce chronic diseases such as heart disease, cancer, stroke, and diabetes. Active transportation infrastructure projects and programs that promote healthy lifestyles are a good fit for this program, particularly if the benefits of such improvements accrue to population groups experiencing the greatest burden of chronic disease. For more information see:

http://www.cdc.gov/communitytransformation/

Land and Water Conservation Fund

The Land and Water Conservation Fund (LWCF) provides grants for planning and acquiring outdoor recreation areas and facilities, including trails. Funds may be used for right-of-way acquisition and construction. Any projects located in future parks could benefit from planning and land acquisition funding through the LWCF. For more information see:

http://www.nps.gov/lwcf/

http://azstateparks.com/grants/index.html

Additional Federal Funding

The landscape of federal funding opportunities for bicycling programs and projects is always changing. A number of federal agencies, including the Bureau of Land Management, the Department of Health and Human Services, the Department of Energy, and the Environmental Protection Agency have offered grant programs amenable to bicycle planning and implementation, and may do so again in the future. For up-to-date information about grant programs through all federal agencies, see http://www.grants.gov/.

6.3.2. Local Funding

Building on Basics (BOB)

Fort Collins voters approved Building on Basics (BOB), a quarter cent sales and use tax which extends from January 2006 through December 2015. The City currently receives $125,000 each year toward implementation of the Bike Plan. The City has a ballot initiative for fall 2015 for BOB 2.0, a tax renewal. Currently, $500,000 per year is proposed for allocation to the Bike Plan; this would begin in 2016 if the initiative is approved.

Keep Fort Collins Great (KFCG)

In November 2010, Fort Collins voters passed Keep Fort Collins Great (KFCG), a 0.85 percent sales tax to fund critical services for the community (2011–2020). KFCG has been an important funding source for FC Bikes in the past and is expected to continue as source implementation of the 2014 Plan projects and programs.

Street Oversizing (SOS) Fees

Capital improvements that are required to serve new development are constructed by the developer generating demand are financed with Street Oversizing (SOS) Fees which are paid by new development; many of the City's bike lanes have been added through developer contributions.