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INTRODUCTION

This resource highlights ways that different communities have mapped their existing and proposed bicycle networks. It shows examples of maps at different scales, while also demonstrating a range of mapping strategies, techniques, and approaches. Facility types represented on the respective maps and legends are each different because they represent a community's unique context and needs.

It is intended to serve as a resource as communities work to identify, plan, and improve their bicycle networks.

Connected pedestrian and bicycle networks make walking, wheeling, and bicycling viable transportation choices for everyone. Networks enhance access to jobs, schools, and health care, while also promoting equity, physical activity, and health. Connected networks are comprised of a range of facility types (e.g. bike lanes, separated bike lanes, shared use paths, etc.), linked together to facilitate short trips to and from destinations and long linear connections across a city or region.

A first step to achieving connected networks is to document where bicycling infrastructure currently exists. It is also essential to establish a vision for the future network. This vision is often captured in the form of a map and it's developed as part of a local planning process that includes opportunities for public participation and input.

A community's existing and proposed bicycle network maps inform the day-to-day programming and prioritization of projects and help to ensure that all transportation improvements are enhancing the quality of the nonmotorized network and capturing opportunities to make linkages between existing and new facilities.
A bicycle transportation network consists of a series of interconnected facilities that enable bicyclists of all ages and abilities to safely and conveniently get where they need to go. By providing connected networks, communities are helping to facilitate all of the following types of bicycling trips:

- Access to work and school from residential areas
- Bicycling links to transit
- Recreation and physical activity opportunities
- Access to grocery stores, government buildings, health care, and other essential services

Understanding that different users have different needs, bicycle networks should be designed to provide options for continuous, safe, seamless, and convenient travel between all possible destinations.

Various mapping conventions can help your community to convey complex information graphically in a simple and easily digestible manner. The following pages highlight some tools and techniques used to develop effective bike network maps.

Planners and designers use various computer programs to create visually compelling maps. A typical workflow consists of the following:

1. Import and organize data in a GIS-based program.
2. Export maps to Adobe Illustrator or a similar program for minimal to extensive post-production work, such as editing of colors, lineweights, patterns, and type.
3. If the map will be presented in a report or plan, compile maps in Adobe InDesign or a similar program as part of a report or plan.

Within a planning-level bike network map, local context helps to orient users to their surroundings as well as support information the cartographer wishes to showcase.

Including local landmarks and points of interest helps users to quickly orient themselves and understand key bike network connections.

For instance, a map might display parks and open space as a background layer. This helps to clarify the connections between existing and proposed bicycle facilities and recreational destinations.

These layers may include information such as land use, community destinations, transit access points, and other important information. These vary based on the unique needs of each jurisdiction.
MAP BASICS

Common approaches for bicycle infrastructure planning maps are highlighted below. The maps that follow demonstrate these general approaches to varying degrees.

(1) COMMON INFORMATION LAYERS

BIKE NETWORK LAYERS

Specific Facility Types
- Bike path, bike lane, buffered bike lane, bike boulevard, separated bike lane, greenway, etc.

OR

Flexible Facility Types
- On-street vs. off-street bikeway systems

LOCAL CONTEXT LAYERS

- Transit lines & stations
- Bikeshare stations
- Community amenities: Schools, universities, libraries, community centers, hospitals etc.
- Building footprints
- Specific land use functions, such as commercial uses
- Study areas or corridors

BASE LAYERS

- Parks & open space
- Streets
- Waterbodies
- City boundaries
- Labels

(2) REPRESENTING DIFFERENT TYPES OF INFORMATION

PROPOSED VS. EXISTING NETWORK

- Identify ways to clearly denote what is existing and what is being proposed.

COLOR SCHEME

- Consider how color will play a role in highlighting the bicycle network. Bright, saturated colors stand out against softer and more subdued tones.

LEVEL OF INFORMATION

- Carefully consider the amount of information used to tell the story. More information can help, but it can also be overwhelming if not organized in a seamless way.
- Small icons and symbols can help to identify points of interest in a less obtrusive way.
(3) LEVEL OF DETAIL ON EXISTING/PROPOSED FACILITY TYPES

Providing more information about facility types requires more complex color schemes and line types.

MULTIPLE LAYERS AND INFORMATION
Example: Boston, pg. 34

This scheme helps to convey multiple facility types and specific street conditions in a clear and easily digestible manner. It can also fully integrate a series of community base layers and contextual information, including supplemental data like bicycle counts or safety information to aid decision making.

Consider a similar palette if creating a map that:

- Identifies specific facility types
- Needs a clear and concise color palette

FLEXIBLE NETWORK MAPS
Example: Cedar Rapids, pg. 42

This scheme helps to convey a bicycle network that does not identify specific facility types.

Consider a similar palette if the map:

- Is not intended to identify specific facility types
- Is focused on existing & proposed routes
## SUMMARY

The following chart identifies key features in each map.

<table>
<thead>
<tr>
<th>MAP</th>
<th>SCALE</th>
<th>DOES IT IDENTIFY:</th>
<th>DOES IT SHOW:</th>
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ARKANSAS

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<td>ARKANSAS STATE BICYCLE AND PEDESTRIAN PLAN</td>
<td>ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT</td>
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</table>

Full Map (Click to view full size)

KEY MAP FEATURES

- Calls out study corridors/areas
- Features State-specific landmarks; shown here are proposed bridge preservation projects
- Highlights regional connections to cities
- Identifies proposed U.S. bike routes

Region-specific maps are identified in the plan with more detail provided.
**KEY MAP FEATURES**

- Shows the beginning and end points of projects and identifies project areas
- Highlights connections to State and Federal lands
- Legend highlights paved, unpaved, and proposed connections
- Legend includes a numbered list of projects

**PROJECT LIST**

- **ID-1**: Stateline to Moose Creek
- **ID-2**: Moose Creek to Mountainside Village Park
- **ID-3**: Mountainside Village Park to Tetonia
- **ID-4**: Victor Driggs Rail-Trail Extension (Multiple Options)
- **ID-5**: Huntsman Springs to Tetonia (Multiple Options)
- **ID-6**: Ashton to Tetonia Rail Trail Renovations
- **ID-7**: Ashton to Warm River Campground (Multiple Options)
- **ID-8**: Warm River Campground to Bear Gulch Trailhead
- **ID-9**: Bear Gulch Trailhead to Montana State Line

**LEGEND**

- Paved Trail
- Existing Neighborhood Connections
- Existing Shared Use Path
- Proposed Path
- Interpretive Stations
- Caribou-Targhee National Forest
- Bridger-Teton National Forest
- Yellowstone National Park
- Bridger-Teton National Park
- Macks Inn
- Sawtelle Peak 9906'
- West Yellowstone Madison River
- Old Faithful
- West Thumb
- Signal Mtn. Lodge
- Jenny Lake
- Jackson Lake Lodge
- Colter Bay
- Flagg Ranch Ponds Lodge
- Last Chance Warm River
- Mesa Falls
- Marysville Ashton Squirrel Drump
- Chester Lamont Felt
tetonia
eeton Village
WYOMING PATHWAYS (NONPROFIT)
ALBEMARLE REGION, NC

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<td>ALBEMARLE REGIONAL BICYCLE PLAN</td>
<td>ALBEMARLE RURAL PLANNING ORGANIZATION</td>
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One of a series of additional local maps (Click to view full size)

KEY MAP FEATURES

- Neighborhood maps show connections to community destinations
- Highlights connections to State and Federal conservation lands
- Includes the amount of mileage of each type of bike facility

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Mileage</th>
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<td>Sharrow</td>
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<td>Bike Boulevard</td>
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<tr>
<td>Paved Shoulder</td>
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<td>Bicycle Lane</td>
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North of Sound Proposed Network

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SAN FRANCISCO AREA, CA

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<td>REGIONAL BICYCLE PLAN NETWORK</td>
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FULL MAP (Click to view full size)

KEY MAP FEATURES

- Identifies existing and planned connections to protected open space
- Differentiates between inside and outside the jurisdiction
- Identifies Urban Growth Limits, an important regional land use concept
# ALAMEDA COUNTY, CA

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<th>PUBLICATION</th>
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<td>ALAMEDA COUNTY PUBLIC WORKS AGENCY</td>
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## KEY MAP FEATURES

- **Highlights major employers, community centers, libraries, and hospitals**
- **Streamlined legend labels**
- **Identifies areas inside and outside the planning jurisdiction**
- **Includes a key to each neighborhood map**

[FIGURE 3-3b: MAP 2](#)
HENNEPIN COUNTY, MN

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<th>YEAR</th>
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<td>HENNEPIN COUNTY BIKE PLAN</td>
<td>HENNEPIN COUNTY</td>
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</table>

Full Map (Click to view full size)

KEY MAP FEATURES

- Simple symbology - Two colors and two line types
- Map focuses on county and state roads. Local roads not shown to improve legibility.
- Downtown area is shown in more detail for closer inspection
IDAHO FALLS, ID

**KEY MAP FEATURES**

- **Incorporates community feedback gathered from a range of public workshops and committees**
- **Highlights connections to nearby jurisdictions**
- **Community comment sidebar included**
- **Notes gaps in the bikeway network**

**Full Map (Click to view full size)**

[Map of Idaho Falls, ID with key features highlighted.]

**LOCATION** | **YEAR** | **PUBLICATION** | **RESPONSIBLE AGENCY**
---|---|---|---
IDAHO FALLS, ID | 2014 | CONNECTING OUR COMMUNITY | IDAHO FALLS PARKS AND RECREATION DIVISION AND THE BONNEVILLE METROPOLITAN PLANNING ORGANIZATION
CAMBRIDGE, MA

<table>
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<td>INTERNAL PLANNING MAP</td>
<td>CITY OF CAMBRIDGE</td>
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</table>

Full Map (Click to view full size)

KEY MAP FEATURES

- Identifies access points to transit hubs
- Bright and easily understandable color scheme
- Highlights how low and high stress networks connect
### Key Map Features

- **Vibrant color palette while maintaining legibility**
- **Shows alternate bikeways that were considered**
- **Clearly symbolizes two facilities on the same road**
FULL MAP (Click to view full size)

KEY MAP FEATURES

- Highlights corridors and transitions between facility types
- Unique line convention for proposed facilities
- Scale communicates to user how long travel will take
AUSTIN, TX

LOCATION: AUSTIN, TX
YEAR: 2014
PUBLICATION: AUSTIN BICYCLE MASTER PLAN
RESPONSIBLE AGENCY: CITY OF AUSTIN

KEY MAP FEATURES

- Highlights connections to high capacity transit stations and lines
- Highlights ‘all ages and abilities’ network
- Denotes facilities from corridor plans

Full Map (Click to view full size)
**FORT COLLINS, CO**

<table>
<thead>
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<th>YEAR</th>
<th>PUBLICATION</th>
<th>RESPONSIBLE AGENCY</th>
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<tbody>
<tr>
<td>FORT COLLINS, CO</td>
<td>2014</td>
<td>CITY OF FORT COLLINS BIKE PLAN</td>
<td>CITY OF FORT COLLINS</td>
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</tbody>
</table>

**KEY MAP FEATURES**

- Simple symbology and color scheme
- Shows planned bike share stations
- Lower stress facilities more visible

[Full Map (Click to view full size)]
**PORTLAND, OR**

<table>
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<th>LOCATION</th>
<th>YEAR</th>
<th>PUBLICATION</th>
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<td>CITY OF PORTLAND BICYCLE PLAN FOR 2030</td>
<td>CITY OF PORTLAND</td>
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</table>

### Full Map (Click to view full size)

#### KEY MAP FEATURES

- **Highlights connections to regional trails and parks**
- **Identifies both ‘existing and funded’ and ‘planned’ bike routes**
- **Shows elevation change**
BOSTON, MA

<table>
<thead>
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<th>YEAR</th>
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<th>RESPONSIBLE AGENCY</th>
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<td>BOSTON BIKE NETWORK PLAN</td>
<td>BOSTON DEPARTMENT OF TRANSPORTATION</td>
</tr>
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</table>

**Full Map (Click to view full size)**

**KEY MAP FEATURES**

- Shows connections between bike network and transportation hubs including rail and bike share stations
- Shared use paths is similar to the color used for parks to indicate low-stress
- A dominant color is used for cycle tracks, emphasizing the high comfort level this facility type provides
- Neighborhood scale maps are included within the plan for more specific details
SALT LAKE CITY, UT

<table>
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<td>SALT LAKE CITY</td>
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</tbody>
</table>

Full Map (Click to view full size)

**KEY MAP FEATURES**

- Shows connections to transit lines and stops
- Highlights a university campus master plan
- Highlights the Transvalley corridor, a planned future investment
**The exact alignment for the Transvalley Corridor (900 S/900 E) is pending. Per the 1992 Salt Lake City Open Space Plan, the Transvalley Corridor is an opportunity to link "the City east of I-15 to the City west of I-15 and provide a pedestrian and bicycle route from the foothills, through the urban area, into the wetlands." The map shows a western terminus based on the City’s 1992 Open Space Plan. Due to changes in this area of the city, a different western connection may now be appropriate, possibly extending to the Salt Lake Marina or Antelope Island.

*Includes marked & signed shared roadways

Requires Further Study

Bike Lanes

Neighborhood Bikeways

Bikeways Proposed in Univ. of Utah Bicycle Master Plan

Shared Roadways*

Existing Bikeways

Existing Transit Facilities

- TRAX/Streetcar/FrontRunner Stop

- TRAX/Streetcar/FrontRunner Line

Note: The protected bike lanes on 200 E (South Temple to 900 S) and 300 E (100 S to 600 S) are both shown on the map, but only one of the two options will be constructed.
<table>
<thead>
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<td>CHICAGO STREETS FOR CYCLING 2020</td>
<td>CITY OF CHICAGO</td>
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</table>

**Key Map Features**

- **Inset map provides additional information about important area**
- **Route hierarchy shown using line thickness and color saturation**
- **Shows connections to network of off-street trails**

**Loop Inset**

**Legend**

- Spoke Route
- Crosstown Bike Route
- Neighborhood Bike Route
- Existing Bike Lane or Marked Shared Lane
Full Map (Click to view full size)

**KEY MAP FEATURES**

- **Shows ‘restricted lanes,’ a unique facility where bicyclists share a lane with parking and right-turning vehicles**

- **Highlights future and existing paved shoulders, an important bike facility in more rural communities**

- **Highlights streets keyed for future traffic calming**
Coordinate System: NAD 1983 Wisconsin TM
Projection: Transverse Mercator

Existing Facilities
- Path
- Unpaved path
- Paved shoulder

Future Facilities
- Bike lane
- Restricted lane
- Path
- Sharrow
- Traffic calming
- Further study needed

Further study needed
- Traffic calming
- Sharrow
- Paved shoulder
- Path
- Unpaved path
- Bike lane

Further study needed
- Traffic calming
- Sharrow
- Paved shoulder
- Path
- Unpaved path
- Bike lane
CEDAR RAPIDS, IA

Full Map (Click to view full size)

KEY MAP FEATURES

- Highlights nearby jurisdictions
- Includes flexible facility typologies
SEATTLE, WA

KEY MAP FEATURES

- Unique symbology for proposed facilities
- Recommendation hierarchy delineated by line weight
- Neighborhood names highlighted to orient users
NORTH SANTA CLARA COUNTY, CA

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>YEAR</th>
<th>PUBLICATION</th>
<th>RESPONSIBLE AGENCY</th>
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<tr>
<td>NORTH SANTA CLARA COUNTY, CA</td>
<td>2015</td>
<td>GOOGLE BIKE VISION PLAN</td>
<td>GOOGLE</td>
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**KEY MAP FEATURES**

- **Identifies bike access points to Google’s North Bayshore campus**
- **Different line weights allow for layered information**
- **Clear color scheme and organization**

Full Map (Click to view full size)
Priority Corridor Network

- Shared-Use Paths
- Bike Lanes
- Bike Boulevards
- Bicycle Access Points to North Bayshore
- Transit Lines and Stations
PORT OF PORTLAND, OR

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<td>PORTLAND, OR</td>
<td>2014</td>
<td>PORTLAND INTERNATIONAL AIRPORT BICYCLE AND PEDESTRIAN MASTER PLAN</td>
<td>PORT OF PORTLAND</td>
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</table>

**KEY MAP FEATURES**

- **Legend** integrates facility types with user types
- **Simple color palette and contextual background layers including buildings and waterways**
- **Highlights connections to citywide bike network and other multimodal options**
OREGON STATE UNIVERSITY

LOCATION | YEAR | PUBLICATION | RESPONSIBLE AGENCY
---|---|---|---
CORVALLIS, OR | 2015 | OREGON STATE UNIVERSITY TRANSPORTATION PLAN | OREGON STATE UNIVERSITY

Full Map (Click to view full size)

**KEY MAP FEATURES**

- Highlights dismount zones
- Identifies areas for further refinement
- Highlights bicycle parking access routes

Note: Solid lines indicate existing alignments of travel routes; however, the design of facilities on these routes may not yet be designed to serve the future function of the alignment. Dashed lines indicate potential future bicycle routes to connect existing or future destinations. The preferred alignment of these future routes is to be determined - the dashed lines only indicate the general location.

Refinement areas are locations to be further refined as other campus planning and transportation analysis efforts progress.
Note: Solid lines indicate existing alignments of travel routes; however, the design of facilities on these routes may not yet be designed to serve the future function of the alignment. Dashed lines indicate potential future bicycle routes to connect existing or future destinations. The preferred alignment of these future routes is to be determined - the dashed lines only indicate the general location. Refinement areas are locations to be further refined as other campus planning and transportation analysis efforts progress.
UNIVERSITY OF NORTH CAROLINA

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<td>2014</td>
<td>UNC CHAPEL HILL BIKE MASTER PLAN</td>
<td>UNIVERSITY OF NORTH CAROLINA</td>
</tr>
</tbody>
</table>

**KEY MAP FEATURES**

- Shows recommended bridges with clean icons
- Clever symbology for climbing lanes
- Shows greenways

Full Map (Click to view full size)
Bike Network Mapping Idea Book

CAMPUS

Long Term Bicycle Plan

CAMPUS

N ROBERSON ST
S GRAHAM ST
KINGS MILL RD
MASON FARM RD
CARMICHEL ST
MCCAULEY ST
ROOSEVELT DR
HILLVIEW RD
MANNING DR
HAYES RD
CHRISTOPHER RD
HILLSBOROUGH ST
RALEIGH ST
S BOUNDARY ST
COKER DR
OLD MASON FARM RD
ARROW HEAD RD
PRESTWICK RD
WOODBINE DR
MORGAN CREEK RD
CARR ST
CHURCH ST
NORTH ST
LANARK RD
HAMILTON RD
HENDERSON ST
STADIUM DR
HIBBARD DR
WILLIAM BLYTHE DR
PAUL HARDIN DR
E FRANKLIN ST
W ROSEMARY ST
E CAMERON AVE
E ROSEMARY ST
MASON FARM RD
COUNTRY CLUB RD
SKIPPER BOWLES DR
KENAN DR
OTEYS RD
PITTSBORO ST
FORDHAM BLVD
W CAMERON AVE
S COLUMBIA ST
MLK JR. BLVD
¼0
⅛
Miles

LEGEND

Proposed Spot Improvements

Staircase Replacement
Bicycle Channel Retrofit
Intersection Improvement
Bicycle/Pedestrian Bridge
Pedestrian Bridge (UNC Campus Master Plan)
Bicycle Accommodation Recommended

Existing Facilities

Greenway/Side Path
Natural Surface Trail
Bike Lane
Shared-Lane Marking
Signed Route

Proposed Facilities

Greenway/Side Path
Bike Lane
Climbing Lane
Shared-Lane Marking
Signed Route
Further Study Needed

UNC-CH Campus
Town of Chapel Hill

Bike Network Mapping Idea Book [55]
This resource highlights different approaches and techniques for mapping existing and proposed bicycle networks.

As demonstrated by the best practices highlighted here, there have been significant positive advances in this area in recent years.

To build on this progress, it will be important to institutionalize these techniques so that they become standard practice across jurisdictions and at all scales.

The following next steps are offered to inform the continued development of this national capacity and they will involve partners and stakeholders at all levels.

1. Identify a consistent set of bicycle facility types and community destinations that can serve as a baseline for bicycle network planning efforts across jurisdictions and geographic locations. The tables below are intended to inform this conversation.

2. Undertake a significant national push to research, apply, and document methodologies for measuring bicycle network connectivity and tracking change in connectivity over time.

3. Examine ways to integrate bicycle network infrastructure data into national infrastructure databases and data management systems.

4. Continue to identify and promote strategies for integrating bicycle network planning into ongoing planning processes at the local, MPO, and State level (e.g. resurfacing, TIP and STIP, Highway Safety Improvement Program, project design and development, MPO certification review).

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**BICYCLE FACILITY TYPES**

- Bike Lane
- Buffered Bike Lane
- Climbing Lane (i.e., bike lane on uphill side only)
- Separated Bike Lane or Protected Bike Lane or Cycle Track
- Bike Boulevard
- Shared Use Path
- Other (such as shared lane marking and paved shoulder)

**COMMUNITY DESTINATIONS**

- Bike share stations
- Bus stops
- Community centers
- Community colleges
- Community service center
- High density residential
- Major retail and entertainment
- Parks
- Places of worship
- Public libraries
- Retirement homes
- Schools
- Government offices
- Universities or colleges
- Major tourist destinations
- Hospitals and other health care facilities
- Transit centers